Department of Economics and Applied Economics

1996-1997

STRATEGY - CONTROL - PERFORMANCE:
An Empirical Analysis in Large, Independent, Belgian Firms

Dissertation submitted in fulfillment of the degree of
"Doctor in Applied Economics"

by

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Promotor

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This doctoral research was funded by the *Intercollegiate Center for Management Science - ICM* (Brussels, Belgium) and some of the data was made available by *Bureau van Dijk* (Brussels, Belgium).

***"Always take your work,
but never yourself,
– seriously."***

1. *P*REFACE

Writing a dissertation is in many ways like riding a roller coaster: it looks impressive; you start it without really knowing what to expect; it's a bumpy ride all the way through; you often feel out of control; you get accelerations at times, but it's going pretty slow most of the time; and, you can talk about it with great excitement only when it's done. There seems to be one big distinction though: a ride on the roller coaster takes about 3 minutes - writing a dissertation about 3 years. Hence, a roller coaster experience is short-lived and one would hope that this is not the case for doctoral research. But, I am not sure - ... on a larger scale of things ...

Just like it's no fun to be in that bumpy roller coaster car all by yourself, it's no fun and simply impossible to write a dissertation without the input of a large number of individuals. As such, it's always encouraging that your car mates are yelling and screaming too (fellow doctoral students), that people in the control room are giving you a hell of a time but do everything to hold the car on its tracks (advisors, committee members), and that there are some folks with both feet on the ground looking at the spectacle from a little distance (workshop participants, colleagues, friends, ...).

First of all, I would like to thank the very qualified people in the control room, notably, prof. dr. Werner Bruggeman (*University of Ghent*) and prof. dr. Kenneth A. Merchant (*University of Southern California*). Without their input, the car would have derailed. Their advice, critical comments, and, above all, continuous support have been indispensable. My stay at *The University of Southern California* (1994-95) has been made

possible by both Ken and Werner. So far, this time-period has been the most significant in my life, both on an intellectual and personal front. Thanks for making this possible.

I would like to extend my gratitude to many other great people at *The University of Ghent*, *The University of Southern California*, and all other places where drafts of this thesis have been presented and/or discussed. To name names (in alphabetical order), many thanks to prof. dr. Peter Brownell (*University of Melbourne*), prof. dr. Koenraad Debackere (*Katholieke Universiteit Leuven*), prof. dr. Julia Liebeskind (*University of Southern California*), and prof. dr. S. Mark Young (*University of Southern California*). Thanks also to my other committee members, prof. dr. Aimé Heene (*University of Ghent*), prof. dr. Sophie Manigart (*University of Ghent*), and prof. dr. Roland Paemeleire (*University of Ghent*). Although these people have been looking at the spectacle from a little distance, their comments have been very valuable and have surely contributed to a stronger theoretical embeddedness of the dissertation into the broader context of management, organization, and economics.

The input of my fellow doctoral students, dr. Bart Clarysse (*University of Ghent*), James W. Hesford (*University of Southern California*) and dr. Dominique Waeytens (*University of Ghent*) are also gratefully acknowledged. Moreover, very useful comments have been received from workshop participants at *The Maastricht Accounting and Auditing Research Center* in The Netherlands. I have participated in these workshops from the very beginning and hope to do so in the future too. In Europe, such initiatives are of great importance given that the workshop circuits are not as well established as in the US.

Finally, there are many people I want to acknowledge for their financial, operational, and/or emotional support. I guess they are the maintenance crew in my

roller coaster analogy. This research and my stay at *The University of Southern California* would not have been possible without the financial support from *The Intercollegiate Center for Management Science (ICM)*: thanks to Mr. Dirk Symoens and his staff at ICM, I didn't have to worry about the bread and butter. I do also gratefully acknowledge the support of Mr. Dominique Carnoy from *Bureau van Dijk* for providing some of the data this research is based on (notably, the *Amadeus* CD-rom). I do also strongly appreciate the data-entry assistance of Gloria-Pi Barreto who showed great understanding for my unbearable fear to make errors. Finally, the support which I received from my colleagues at *The Vlerick School of Management* have made life easier in many ways. Without the assistance of all these people, the roller coaster surely would have broken down.

Last and definitely not least, I am deeply grateful to my parents, relatives, and friends. I am guilty of not explaining to them the details of what this "Ph.D.-stuff" is all about. Nonetheless, they have never showed any doubts as to what I was doing.

It was a worthwhile experience. Thanks to all.

A handwritten signature in dark ink, appearing to read 'Wim', followed by a large, sweeping, horizontal flourish that extends to the left and underlines the name.

Wim Van der Stede

Gent, February 15, 1997

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1996-1997

STRATEGY - CONTROL - PERFORMANCE:
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Tome I

CORE TEXT

Wim A.D. Van der Stede

1. SYNOPSIS AND INTRODUCTION¹

Previous *contingency research* has suggested that *related* and *unrelated diversification strategies* require systematically different and even conflicting *control system designs*: *related diversifiers* exploiting economies of scope (*operational economies*) should adopt control systems which are compatible with corporate involvement in business unit operating decisions (*involved* or *strategic controls*) whereas *unrelated diversifiers* exploiting internal capital market benefits (*financial economies*) should implement controls based on the full operating autonomy of divisions (*detached* or *purely financial controls*). A good “fit” between strategy and control should result in superior performance.

Although still inconclusive, *contingency thinking* was a major step forward from the classic *diversification-performance* views developed in the *economics* and *strategy literatures*. Actually, *economic theory* does not mention “*diversification*” or “*corporate strategy*” per se; rather, it makes a distinction between different types of organizations (e.g., *M-* vs. *U-forms*). Put boldly, economists traditionally have ignored *strategic action* (notably, that firms can pursue different corporate strategies, such as, *related* or *unrelated diversification*). Simply put, economists have completely ignored “*Conduct*” in the *Structure-Conduct-Performance (S-C-P) paradigm*.

Contingency researchers also go one step further than classic *strategy researchers*. Of course, it would be a misnomer if the *strategy literature* would not explicitly recognize *strategic action*. Unfortunately, this is where it usually ends though. Put differently, strategy research on corporate diversification has been exclusively *content-oriented*, i.e., it

¹ In this study, words such as *he* or *him* should also be taken to mean *she* or *her*.

has investigated how different *corporate diversification strategies* (cf., *related* vs. *unrelated diversification*) each with their own economic content (cf., *operational* vs. *financial economies*) affect *corporate performance*. As such, most prior corporate diversification studies assume that *internal organizational arrangements* are *invariant across firms*.

Although contingency research has considered both *strategic choice* and the *organizational consequences* derived from it - and, together, their impact on *performance* - empirical findings still have been very inconclusive. As aforementioned, conventional contingency theory postulates that superior performance will result if the control systems are "fitted" to the strategy, i.e., if *unrelated diversifiers* implement detached or tight *financial controls* and *related diversifiers* implement *strategic controls*. However, several organizational behavior studies have documented how an exclusive focus on tight *financial controls* and/or pure *objective performance measures* on the part of corporate management can encourage the worst practices of management within business units, such as *slack creation* and *short-run profit maximization* at the expense of *long-term effectiveness* and *competitive strength*. In short, it is contended that tight *financial controls* need not necessarily curtail *opportunism*, *dysfunctional behavior*, or, in short, "*control loss*" - on the contrary, they are more likely to cause precisely the opposite effect. Hence, when the behavioral consequences of control systems are taken into account too, it is unlikely that performance will be improved in the conditions specified by contingency frameworks (notably, in the "*unrelated diversification - detached financial controls*" - condition).

In short, this study integrates *economic*, *strategic*, and *behavioral arguments* to show that the *corporate diversification strategy* itself and the *internal control systems* derived from it, both separately and collectively, influence *corporate performance* (or, *antecedent performance indicators* operationalized as "*control loss*"). As such, this study shows that

through the nature of increased diversification, highly diversified firms are driven towards control and incentive systems which are not at all effective to attenuate *control loss*. As a result, it seems that the control and incentive systems implemented by large, diversified firms to exert control over their business units cannot totally offset the mounting *control loss* caused by increased diversification.

The major feature of this study is that it breaks open the organizational "*black-box*" and considers both *strategy content* and *strategy implementation* by drawing from the *economics, strategy, and organizational behavior literatures*. By doing so, this study provides some insight into the controversial macro-economic conclusion that excessive and unrelated forms of diversification are generally associated with inferior performance.

The dissertation proceeds as follows. Chapter II presents the theoretical underpinnings of the *strategy-control-performance* relationship derived from the *economics, strategy, and organizational behavior literatures*. These theoretical discussions are then summarized in a *research question*. Next, in Chapter III, the *research question* is translated into a *research model* and *research hypotheses*. Chapter IV describes the *data collection process* and Chapter V deals with the *measurement of variables*. Chapter VI discusses the *data analysis* and the *results/conclusions* derived from it. Finally, Chapter VII elaborates on the *contributions, limitations, and relevance* of the study and gives some directions for *future research*.

2. STRATEGY - CONTROL - PERFORMANCE: THEORETICAL UNDERPINNINGS

This chapter first defines *management control* and *strategy*, the main building blocks of the research. Next, the *Strategy-Control-Performance* relationship is discussed from the *economics*, *strategy*, and *organization behavior* literatures. Finally, as a wrap-up, the main *research question* is formulated.

2.1. Management Control and Strategy Defined

The relation between *management control* and *strategy* has received considerable attention in the management control literature. This is not surprising since *management control* refers to the process by which corporate managers ensure that the lower-level managers carry out organizational objectives and strategies [Merchant, 1989]. Hence, *management control directly deals with the implementation of intended strategies* [Anthony et al., 1992; Anthony, 1956].^{2, 3}

² *Management control* is not limited to one level in an organizational hierarchy [Hofstede, 1968: 9]. However, the focus of this study is on the *control relationship between the corporate headquarters and the business units*. This is what is referred to here as *corporate control*. This study does not deal with management control within business units (cf., *divisional control*), control in functional departments (e.g., plant control, marketing control, purchasing control, etc.), or control at other lower levels in the organization (e.g., workgroups, specific projects or tasks, etc.).

³ This is the classic definition of management control as "*the process by which managers assure that resources are obtained and used effectively and efficiently in the accomplishment of organizational objectives*" [Anthony, 1965]. This is a "*rational*" view of control because it assumes that firms are purposely designed for the pursuit of explicit objectives [Otley et al., 1995]. More generally, this view conforms to the well-established rational model of *strategy formulation/planning* followed by *strategy implementation/control* (cf., the "*intended*" strategy model). Although this model has received its share of critique [Mintzberg, 1994, 1993, 1978, 1973; Mintzberg and Waters, 1985; Quinn, 1980], it still dominates much of the literature, especially in management control [Otley et al., 1995: 41]. Since the rational model fits the purposes of this study well enough, a further discussion of the theoretical wars of position falls outside the scope of this dissertation. The interested reader is referred to, for example, Mintzberg [1991, 1990, 1981], Ansoff [1991], and Goold [1992].

Although the terminology of the strategy field is confusing [Aaker, 1988; Turnbull and Valla, 1987] and strategy is one of the broadest and most complex concepts used in studying organizations [Beard and Dess, 1981], the distinction between *corporate strategy* and *business strategy* is generally accepted [Simons, 1990; Porter, 1987; Andrews, 1980].

Corporate strategy refers to determining what businesses the firm should invest in and how these businesses should be coordinated [Anthony and Govindarajan, 1995; Rumelt et al., 1994; Hax and Maljuf, 1991; Daems and Douma, 1989; Porter, 1987; Beard and Dess, 1981; Hofer and Schendel, 1978]. Business strategy (or, competitive strategy), on the other hand, refers to the product-market choices made by strategic business units, divisions, or product-line management in a diversified company [Beard and Dess, 1981; Andrews, 1980].^{4,5} Phrased differently, *business strategy* refers to how a business unit competes in its market and tries to achieve a competitive advantage relative to its competitors [Andrews, 1980; Porter, 1980]. Porter [1987, 1980] argues that the key to effectively implementing strategy in large diversified corporations is to explicitly recognize that different business units within the same firm often pursue different competitive strategies. Simply put, *corporate strategy* is concerned about where to compete (cf., what businesses to be in) and *business strategy* with how to compete in each of the businesses [Anthony and Govindarajan, 1995: 266].

⁴ A *strategic business unit* is an operating unit or a planning focus that groups a distinct set of products or services sold to a uniform set of customers, facing a well-defined set of competitors [Hax and Maljuf, 1991]. More operationally, the term *business unit* is used to denote that portion of a company's operations which are wholly contained within a single industry. The term *corporation* or (*corporate*) *headquarters* is used to denote a legal company which owns and operates one or more business units [Rumelt, 1991: 171]. In summary, a diversified company consists of a number of identifiable different businesses (*the business units*) which are overseen by a central management (*the headquarters*) [Ghoshal and Mintzberg, 1994: 9].

⁵ The terms (*strategic*) *business unit* (*manager/controller*) and *division* (*manager/controller*) are used interchangeably. Similarly, the terms *top/senior/corporate management* and *headquarters*, *head office*, *corporate parent* are treated as synonyms.

Corporate strategy as well as business strategy have been operationalized in terms of strategy typologies.⁶ As aforementioned, the main assignment of corporate management is the determination of the set of businesses in which the firm will participate (or, by omission, those in which it will not participate) [Anthony and Govindarajan, 1995: 266]. This is a question of *degree of diversification*.⁷ The most widely accepted corporate strategy typology has been developed by Wrigley [1970] and refined by Rumelt [1974]. Specifically, Rumelt constructed a *diversification typology* with the following major categories: *single business* (firms which have diversified by less than 5 percent of total revenues into areas outside their main activity); *dominant business* (firms which have diversified by between 5 percent and 30 percent of total revenues into areas outside their main activity); *related business* (firms which have diversified by more than 30 percent of total revenues into areas outside their main activity, but which generate over 70 percent of total revenues by activities linked to each other by marketing or technological interrelationships); and *unrelated business* (firms which have diversified by more than 30 percent of total revenues into areas outside their main activity, but which generate less than 70 percent of total revenues by activities linked to each other by marketing or technological interrelationships).⁸

At the theoretical level, however, two strategies are usually highlighted: *related and unrelated diversification*. Firms pursue *related diversification* to benefit from a common set of

⁶ Several strategic archetypes or typologies have been developed to conceptualize competitive strategy at the business unit level. Of these, Porter's "low cost - differentiation"-typology [Porter, 1980] and Miles and Snow's "defender - prospector"-typology [Miles and Snow, 1978] are most commonly referred to in the literature. These typologies are not developed further here since competitive strategy is not the focus of this study.

⁷ Diversity or diversification can be defined as the extent to which firms are simultaneously active in distinct businesses [Pitts and Hopkins, 1982]. Many academics have developed their own definition and conceptualization of what is meant by "distinct businesses" (e.g., Rumelt [1974]). For a more detailed overview of some of the definitions of diversification, see Ramanujam and Varadarajan [1989: 524-525].

⁸ Rumelt's full classification contains nine categories: *single business*, *dominant-vertical*, *dominant-constrained*, *dominant-linked*, *dominant-unrelated*, *related-constrained*, *related-linked*, *unrelated-multi-business*, and *unrelated-portfolio* [Rumelt, 1982, 1974; see also Christensen and Montgomery, 1981; Montgomery, 1982].

core competencies [Prahalad and Hamel, 1990], i.e., to exploit operational interrelationships between business units (*operational synergies*). A strategy of unrelated diversification, on the other hand, is based on *financial connections between business units* and it is pursued to exploit economic benefits from *internalizing capital market transactions* [Hill, 1988; Hill and Hoskisson, 1987, Rumelt, 1974]. These two *diversification strategies* and their consequences for *management control* are explored next.

2.2. *Corporate Strategy and Control: Literature Review*

In his seminal work *Strategy and Structure*, Chandler [1962] described the adoption of the multidivisional (*M-form*) organization as a response to *diversification*.⁹ Chandler's main point was that a diversity of product lines tends to overload the decision process of centralized functional organizations leading to problems of coordination, accountability, and control. The reorganization of the functional firm to the *M-form* minimizes information overload and control design problems because the company is split into quasi-autonomous firms (business units, divisions) responsible for a given product or geographic area, each with its own purchasing, manufacturing, sales, finance, and other functions. Hence, most operating decisions now can be taken lower down the firm, control systems can be tailored to business unit needs, and top managers are freed to concentrate on long-run strategic problems. In short, Chandler describes how changes in *corporate strategy* (i.e., increased diversification) lead to changes in *structure* (i.e., creation

⁹ Academics have advanced several motives for why firms diversify: to utilize *slack capacity*, to obtain *technological capability*, to achieve greater *market power*, to overcome *entry barriers*, to reduce *dependence on markets* with substantial competitive pressures or with severe cyclicity, for *financial reasons* (e.g., free cash flows), for *managerial reasons* (e.g., managerial reputation, managerial hubris), etc. For an overview see, for example, Hitt et al. [1996], Montgomery [1994], Shleifer and Vishny [1994], and Mahoney [1992: 51]. Undoubtedly, some "*me-too*"-forces are going on as well (cf., institutional theory). Indeed, economic studies [e.g., Golbe and White, 1988] and stories in the popular (management) press [e.g., The Economist, February 3rd, 1996, pp.16-17, 59-60 (about UK's *Hanson Conglomerate*) and The Economist, May 18th, 1996, pp.72 (about France's *Lagardère Group*)] clearly demonstrate that (fashionable) waves of "*stick-to-the-knitting*," "*management focus*," "*small-is-beautiful*," "*downscoping*," or "*core competencies*" take turns with corporate obsession for "*mergers-and-acquisitions*," "*takeovers*," or "*synergies*."

of self-contained units) due to *increasing information-processing demands on corporate managers*. This argumentation is perfectly consistent with the *information processing model* of organizations as elaborated by Galbraith [1973]. However, the *creation of self-contained units* is but one strategy to reduce information processing at the top. More on this later.

Williamson [1975, 1970] took these ideas one step further and maintained that in addition to the internal organization benefits pointed out by Chandler [1962], *the M-form structure, if accompanied by the requisite corporate control systems, also allows diversified firms to realize economic benefits derived from internalizing capital market transactions*. He argues that external capital markets are costly because investors experience information and control disadvantages in their relationship with the firm. The head office of the *M-form* firm, on the other hand, can overcome these disadvantages in its relationship with its divisions through the implementation of internal control systems. The head office can use internal audits, performance monitoring systems, reward and incentive systems, and internal competition for capital resources as mechanisms for enhancing control and reducing opportunism by divisional management [see also Kay, 1992; Hill, 1988, 1985a]. In short, Williamson's main argument is that *reduced opportunism* by divisional managers and efficient resource allocation by the head office bring *M-form* firms closer to the *neoclassical profit maximization principle* than either the functional form or the single business firm governed by external capital markets. This argument is known as Williamson's *M-form hypothesis*. It is summarized in Table 1.

However, to realize fully the benefits from internalized capital market transactions, the firm must adopt the requisite control systems, i.e., *control systems within which divisions can be held accountable for their performance* [Hill, 1988, 1985a; Williamson, 1975]. And a precondition of accountability is operating autonomy [Hill, 1988, 1985a; Pitts, 1976]. Hence, divisions should be evaluated on the basis of objective, abstract,

market-based profit data such as ROI [Hoskisson et al., 1988]. Head office involvement in operating decisions leads to *subjectivity* and increases the possibility of bias entering into the control and cash allocation process. Such a “corruption” of the *M-form* principles will, in turn, lead to inferior performance [Williamson and Bhargava, 1972].¹⁰

Table 1
SUMMARY OF THE *M-FORM HYPOTHESIS*

	Economies of Scale / Scope	Incentive Incompatibility Problems (cf., Opportunism by Division Managers)
Single Business Firms	No	No internal control problems if firm is small enough.
Multi-business Firms: <i>Functionally Organized</i>	Yes	High internal control problems, due to info- overload at the top.
<i>Divisionally Organized (M-form)</i>	Yes	Less internal control problems than functional firms if appropriate <i>M-form</i> <i>controls</i> are installed. Moreover, economy-wise, <i>internalized M-form controls</i> over a set of businesses is more efficient than <i>external</i> <i>market control</i> over a set of independent single business firms.

¹⁰ If the head office gets involved in the operating decisions of its business units, it will prove difficult to determine the cause of poor performance, that is, it will be difficult to determine whether the decline is due to inefficiencies within the business unit or due to poor operating decisions made by the head office [Hill, 1988]. Put differently, the business units can no longer be held accountable for their own decisions. As an aside, it should be noted, however, that recent economic *theory of the firm* begins to question organization models in which systems and processes are modeled as purely *objective*. Specifically, Baker et al. [1996] clearly predict analytically that (control and incentive) systems that completely avoid judgment and subjectivity cannot survive. Indeed, if such objective systems worked well, the very basis for the existence of the firm should be questioned since a market relationship could perform equally well [Baker et al., 1996]. In sum, discretion, judgment, and/or subjectivity (i.e., “management”) are showed to be crucial in the governance of organizations as well.

In short, the *M-form* structure must exhibit *complete decentralization of operating decisions* and *tight corporate financial controls* of division level managers if internal capital market benefits and superior performance are to be realized [Hoskisson et al., 1988].

It should be noted that the ideas developed by Chandler and Williamson are still consistent with the *information processing model of organizations*. Up to this point, diversification has had two consequences for organizational design: *the installation of self-contained units* (cf., Chandler) and *the implementation of elaborate control systems* (cf., Williamson). Both are consistent with Galbraith [1973]: the installation of self-contained units *reduces the need for information processing* at the top, whereas the implementation of control systems *increases its information processing capacity*.

The influential writings of Chandler and Williamson gave rise to many empirical studies attempting to shed light on the relationship between *diversification, organization structure, and performance* (for an overview, see Dess et al. [1995: 364-374] and Data et al. [1991]). As expected from Table 1, empirical evidence should show that *M-form firms* outperform both *single business firms* and *functional firms*. However, some studies found that diversified firms show superior performance [e.g., Hill, 1985b; Teece, 1981; Steer and Cable, 1978], whereas other papers reported ambiguous results open to conflicting interpretations [e.g., Armour and Teece, 1978] or found no evidence of superior performance [e.g., Lang and Stulz, 1994; Cable and Dirrheimer, 1983]. This is not exactly a clear picture.

However, one major shortcoming of the above theoretical and empirical studies is that they fail to distinguish *related* from *unrelated diversification*. Phrased differently, the above studies have operationalized the *structural consequences of strategy* rather than the

content of the strategy itself. Indeed, Kay [1982] argued that all diversification strategies do not have the same economic content. Firms pursuing *related diversification*, i.e., firms in which the different physical capital and technical skills of businesses or products bear an important element of commonality [Teece, 1982: 59] are expected to derive benefits from *operating synergies* arising from inputs that are shared or used jointly by related activities.¹¹ Put simply, *related diversifiers* operate in businesses which are operationally connected through a common set of *core competencies* [Prahalad and Hamel, 1990]. On the other hand, firms pursuing *unrelated diversification*, i.e., firms whose businesses are characterized by quite disparate physical capital and technical skills [Teece, 1982: 59], are expected to exploit *financial economies* arising from internalizing capital market transactions [Hill and Hoskisson, 1987]. Hence, for *unrelated diversifiers*, the connection between businesses is purely *financial*.

Empirical studies which distinguished *related* and *unrelated diversification* (a stream of research initiated by Wrigley [1970] and popularized by Rumelt [1974]) generally found that the highest levels of profitability were exhibited by *related diversifiers* whereas the lowest levels of profitability were found in firms pursuing *unrelated diversification* [Robins and Wiersema, 1995; Wernerfelt and Montgomery, 1988; Rumelt, 1974]. This finding is in line with theoretical arguments holding that the efficiency rationale for *unrelated diversification* is much more circumscribed than that for *related diversification*.¹²

¹¹ *Synergies* or *economies of scope* arise when for all outputs y_1 and y_2 , the cost of joint production is less than producing each output separately, i.e., $c(y_1, y_2) < c(y_1, 0) + c(0, y_2)$ [Teece, 1980: 224].

¹² For instance, Teece [1982] argues that, since the only skill likely to be common for unrelated businesses is *management*, it is doubtful whether the scope economies arising from transferring managerial resources are large enough to provide compelling efficiencies. Besides the limited potential for reaping economies of scope, Porter [1987] even doubts whether internal capital markets are able to generate any *financial economies* not available to individual shareholders in increasingly well developed external capital markets. Along similar lines, some recent theoretical and empirical papers suggest that *financial synergies* do simply not exist and that internalized capital market transactions actually diminish, rather than increase, the value of the firm [Liebeskind, 1995; Berger and Ofek, 1995]. Hence, the only value to be gained from diversification seems to be *economies of scope* in real assets [Liebeskind, 1995].

Although the balance of empirical evidence favors Rumelt's conclusion that *related diversifiers* outperform *unrelated diversifiers*, this conclusion, however, is still a very tentative one [Dess et al, 1995; Ilinitich and Zeithaml, 1995; Lloyd and Jahera, 1994; Datta et al., 1991]. For instance, Varadarajan and Ramanujam [1987] found that although the odds are generally against *unrelated diversifiers*, a non-neglectable proportion of the firms in their sample appeared to be high performing *unrelated diversifiers* which seemed to manage the demands of an unrelated diversification strategy well [1987: 388]. On the other hand, the proportion of high performing *related diversifiers* was not that overwhelming as to cast related diversification in an unqualified favorable light. From these observations, Varadarajan and Ramanujam conclude that *relatedness* may be a necessary but not sufficient condition for superior performance.¹³ This is in line with Richardson and Dundas [1982] who suggest that the poor performance of *unrelated diversifiers* may not be due to the strategy exclusively, but to how it is implemented as well [Kazanjian and Drazin, 1987; Leontiades, 1986]. Hence, there is some evidence that nonsynergistic corporate strategies can be pursued profitably too [Anslinger and Copeland, 1996]. In short, although the twine of financial control may rarely suffice to bind together a successful enterprise, both *related* and *unrelated diversified firms* seem to have some rationale for survival if managed appropriately [Teece et al., 1994: 28].

The theoretical and empirical support for the existence of different diversification strategies, and the suggestion that the way in which the strategy is implemented may be as important for superior performance as the strategy by itself [Wheelen and Hunger, 1995: 159], calls, in turn, for a contingency perspective on the relationship between *corporate*

¹³ Some other studies found that *industry structure* [e.g., Bettis and Hall, 1982; Christensen and Montgomery, 1981] and *firm characteristics* [e.g., Grant and Jamine, 1988; Montgomery, 1985; Bettis, 1981] were more important in explaining *performance* than *relatedness*, the latter having little effect net of the former factors. Still other studies found that the relationship between *relatedness* and *performance* varied with the performance measure used (*accounting-based* vs. *market-based*) [Dubofsky and Varadarajan, 1987; see also Hall and St.John, 1994; De, 1992] or with how *relatedness* was operationalized [Markides and Williamson, 1995, 1994].

strategy and performance [Datta et al., 1991: 550]. More in particular, Hill [1988] and Hill and Hoskisson [1987] argue that the tight corporate financial controls of division managers as put forward by Williamson [1970, 1975] may actually be inadequate if the firm pursues a *related diversification strategy* aimed at exploiting *operating synergies* between divisions. In this case, it is crucial for corporate managers to become involved in operating decisions. However, head office involvement in divisional operating decisions will, according to the *M-form* arguments, lead to a "corruption" of internal capital markets and hence inferior performance [Williamson, 1975; Williamson and Bhargava, 1972]. Collecting all these ideas, Hill's [1988] main point is that the control systems necessary to realize operating synergies, i.e., *control systems based on corporate management involvement in divisional operating decisions*, are incompatible with the control systems necessary to pursue internal capital market benefits, i.e., *control systems based on the full operating autonomy of divisions*.¹⁴ Hence, the firm must choose to focus either on realizing benefits from an internal capital market or from operating synergies [see also Hill, 1994: 307-308; Porter, 1987: 53].

In his empirical study, Hoskisson [1987] found that *related diversifiers* outperformed *unrelated diversifiers*. However, adopting *M-form controls* in firms pursuing a strategy of *related diversification* led to a decrease in performance. Hence, *M-form controls* appeared to boost efficiency for *unrelated diversifiers* implementing an internal capital market only. Similarly, Hill [1988] found a negative relationship between the *M-form* and profitability for all but *unrelated businesses*, a finding consistent with the above contingency arguments. This suggests that firms pursuing *related diversification* but which operate along *M-form* lines may experience inferior performance because they fail to exploit the *operating synergies* on which their strategy is founded [Hill, 1988]. More

¹⁴ More generally, the realization of *economies of scope* requires organizational arrangements that stress *cooperation* between business units. In contrast, realizing *governance economies* of the internal market variety requires organizational arrangements that emphasize *competition* between business units [Hill, 1994: 308].

importantly, Hill's data also revealed that profitability deteriorated as corporate management puts more emphasis on abstract profit criteria, a finding completely in contradiction with Williamson's internal capital market perspective. Hill [1988] speculated that tight central financial controls encourage short-run profit maximization at the expense of long-run profitability.

Indeed, several studies in management control have documented how an exclusive focus on tight financial controls and/or pure objective performance measures on the part of corporate management can encourage the worst practices of management within business units aiming for *short-run profit maximization* at the expense of *long-term effectiveness* and *competitive strength* [Lavery, 1996; Kaplan and Norton, 1996, 1992; Baker et al., 1994; Grundy and Johnson, 1993; Goold, 1991; Roberts, 1990; Merchant, 1990; Goold and Quinn, 1990; Kellinghusen and Wübbenhorst, 1990; Ezzamel et al., 1990; Smith, 1989; Johnson and Kaplan, 1987; Merchant and Bruns, 1986; Jaeger and Baliga, 1985; Hayes and Abernathy, 1980; Horovitz, 1979]. These studies commonly rely on behavioral arguments which have been ignored completely by Williamson and colleagues. Recall that, according to Williamson, firms exist because of their superior ability to attenuate *opportunism* through the exercise of hierarchical *M-form controls* that are not accessible to markets. However, *such controls need not necessarily curtail opportunism*; on the contrary, they are more likely to cause precisely the opposite effect [Ghoshal and Moran, 1996]. Indeed, *behavioral studies* have shown how controls, and the sanctions and incentives associated with them, can actually increase opportunism because they create a negative feeling towards the organization [Ghoshal and Moran, 1996].

Interestingly, a very recent study by Berger and Ofek [1995] estimated the value of a diversified firm's segments as if they were operated as separate firms (*imputed value*).

Comparing the sum of the imputed stand-alone values of the segments of diversified companies to the actual values of those companies showed that diversified firms have values that average 13 to 15 percent below the sum of the imputed values of their segments. However, the loss in value is less for related diversifications. In short, Berger and Ofek [1995] demonstrate that, whether related or unrelated, *diversification reduces value and that the value loss increases with diversification*. They found some evidence that *over-investment* and *cross-subsidization* contribute to the value loss.¹⁵

However, another plausible cause of the value loss might be control loss. *Control loss* occurs when corporate managers are not adequately informed about the internal operations or external environments of their major businesses [Ellsworth, 1983]. Put differently, it refers to *the misalignment of incentives between central and divisional managers due to increased information asymmetry* [Harris et al., 1982]. These costs are higher in highly diversified firms to the extent that information is more diverse and is more widely dispersed within the company [Berger and Ofek, 1995]. Hence, as a result of *bounded rationality* alone, highly diversified firms may overload the ability of corporate managers to process the necessary information and adequately evaluate and control their business manager's performance [Hitt et al., 1996]. In addition, after a certain level of diversification, corporate managers implement *financial controls* that reduce their information processing requirements [Hoskisson et al., 1988; Galbraith, 1973]. Hence, as the span of control (number of business units) increases, more input-based and complex *strategic controls* are displaced by output-based and simplified *financial controls* which reduce corporate management information processing [Hill and Hoskisson, 1987]. But,

¹⁵ First, as to *over-investment*, it has been argued that diversified firms will invest too much in lines of business with poor investment opportunities simply because managers in diversified firms have access to more *free cash flows* than managers in independent firms [Jensen, 1986; for an empirical test see, for example, Riahi-Belkaoui and Bannister, 1994]. Second, as to *cross-subsidization*, unprofitable businesses create greater value losses if they are part of a diversified firm than they would as stand-alone firms because a failing business cannot have a value below zero if operated on its own, but can have a negative value if it is part of a diversified firm that provides cross-subsidies [Meyer et al., 1992].

the impact of financial *M-form controls* on *managerial opportunism* and *performance* is not straightforwardly determined. Indeed, *organizational economists* and *behaviorists* make exactly opposite predictions.

2.3. *Research Question*

The above literature review illustrates that the relationship between *diversification* and *performance* is not exactly a clear picture. Table 2 summarizes the theoretical arguments and empirical findings of the *economics*, *strategy*, and *organizational behavior* literatures.

First, there has been no strong empirical support for Williamson's *M-form hypothesis*: in spite of their theoretical ability to reap *economies of scale/scope* while attenuating *opportunism*, *M-form firms* did not seem to consistently outperform *single business firms* and *functional firms*. Besides empirical issues, too much aggregation probably explains the lack of conclusive findings. After all, this stream of research has blended together *strategy* and *structure* in terms of "*the M-form firm*." Put boldly, the firm is treated as a black-box and *organizational conduct* (i.e., *strategy*) is completely ignored [i.e., the "C" in the *Structure-Conduct-Performance (S-C-P)*-paradigm].

Strategy researchers have filled this gap in two ways: (i) they recognized not only that firms can pursue different strategies for different reasons (cf., *related* vs. *unrelated diversification*), (ii) they also maintained that different strategies require different organizational arrangements (cf., *contingency framework*). In other words, *organizational conduct* was made explicit in the *S-C-P*-paradigm through *strategic choice* and *strategy implementation*. Still, empirical findings have been tentative at best.

Table 2

SUMMARY OF THE THEORETICAL ARGUMENTS AND EMPIRICAL SUPPORT FROM THE ECONOMICS, STRATEGY, AND ORGANIZATIONAL BEHAVIOR LITERATURES FOR THE DIVERSIFICATION - PERFORMANCE RELATIONSHIP

	Theoretical Arguments	Empirical Support
Economics Literature	<i>Diversification accompanied with M-form structures/controls leads to superior performance: diversification allows to reap economies of scale/scope, and, at the same time, M-form structures attenuate opportunism.</i>	<i>Diversified M-form firms do not consistently outperform single business firms/functional firms.</i>
Strategy Literature	<i>Different strategies (related vs. unrelated diversification) have a different economic content and require different organizational arrangements and control systems (cf., notion of "fit" in contingency research). The main point is that the control systems necessary to realize operating synergies in related diversification, i.e., control systems based on corporate management involvement in divisional operating decisions, are incompatible with the control systems necessary to pursue internal capital market benefits in unrelated diversification, i.e., control systems based on the full operating autonomy of divisions.</i>	<i>The balance of evidence is generally against unrelated diversification per se.</i> <i>Some support is also found for a strategy-performance contingency relationship, that is, related diversifiers which operate along M-form lines seem to experience inferior performance because they fail to exploit the operating synergies on which their strategy is founded.</i> <i>However, whether related or unrelated, profitability seems to deteriorate as corporate managers put more emphasis on pure financial controls.</i>
Organizational Behavior Literature	<i>Information processing demands on corporate managers increase geometrically as firms diversify. This leads to an increased emphasis on financial controls by corporate management. And, such controls need not necessarily curtail opportunism; on the contrary, they are more likely to cause precisely the opposite effect because they create a negative feeling towards the organization.</i>	<i>Management control studies support how an exclusive focus on financial controls can encourage the business managers to trade off short-run profits at the expense of long-term effectiveness.</i> <i>But, no integrated framework has been offered that tests how diversification strategies affect internal controls and, together, influence performance.</i>

Although all elements of the S-C-P-paradigm have now been accounted for, the impact of *strategies* and *structures* on *management behavior* have been largely ignored. In effect, it is not unthinkable that tougher controls *increase* rather than *reduce* opportunistic

behavior on the side of the business unit managers. Indeed, it has been shown that as firms diversify, top corporate executives' span of control increases and their information processing capacity becomes strained. This drives them towards the use of simplified *financial controls* which are known in the management control literature for their *dysfunctional consequences* (cf., opportunistic behavior) and their bias towards *short-term profits* rather than *long-term effectiveness*.

In sum, the *research question* can be stated as follows:

*What is the effect on performance of corporate strategy
and corporate control, both separately and interactively?*

The aim of this research is to build an *integrated model* that shows that *excessive diversification* might produce *adverse performance effects* for a variety of reasons, including the design and use of internal control systems derived from their strategic actions. By looking at *control system design* as an intervening variable and by using arguments from the *behavioral literature*, it is hoped to provide a more fine-grained explanation of why highly diversified firms generally show inferior performance than focused firms.

The next chapter elaborates in detail on the specification of each individual element in the research question (i.e., *strategy*, *control*, and *performance*) and the expected relationships among them. In other words, the theoretical question will be translated into an integrated research model and specific hypotheses subject to further empirical testing.

3. THE RESEARCH MODEL AND HYPOTHESES

This chapter further elaborates on *strategy*, *control*, and *performance* - the three main elements of the research question. The aim is to turn the *research question* into a well-specified *research model* showing the *hypothesized relationships* among *strategy*, *control*, and *performance*. The chapter closes with a discussion of the assumptions and limitations of the research model.

3.1. Strategy, Control, and Performance: Further Specification

3.1.1. Corporate Strategy: Degree of Diversification

Corporate strategy was defined above as *diversification strategy*, or, the extent to which a firm is simultaneously active in distinct businesses [Pitts and Hopkins, 1982]. If one talks about *diversification*, one cannot go about the seminal work of Rumelt [1974], as discussed above. However, many adaptations of *Rumelt's typology* have been developed. One major adaptation has been to consider *diversification* as a *continuum* with "*single business firms*" at one end and "*unrelated diversified firms*" at the other end, rather than using Rumelt's original nine categories (cf., footnote 8, p.6 and Section 5.6, p.125) [Anthony and Govindarajan, 1995: 604]. As such, diversification is commonly defined to include both *the number of businesses in which the firm operates* (cf., size) and *the degree of relatedness among businesses*, as shown in Figure 1 [Anthony and Govindarajan, 1995: 265-269; Bettis and Hall, 1983; Palepu, 1985]. As Figure 1 exhibits, empirical evidence indicates that both elements of diversification are correlated in such a way that a fairly straight line can be fitted. Hence, the use of a *diversification-continuum* is warranted (see Section 5.6, p.125).

Figure 1
GRAPHICAL REPRESENTATION OF GENERIC DIVERSIFICATION STRATEGIES
 [ADAPTED FROM ANTHONY AND GOVINDARAJAN, 1995: 268]

In short, corporate strategy refers to the *degree of diversification* with “single business” at one end and “unrelated diversification” at the other end [Anthony and Govindarajan, 1995: 270 and 604]. As such, it captures both the *number of business units in the corporate portfolio* and the *degree of relatedness among those businesses* [Palepu, 1985]. The details of its operationalization are given in Section 5.6, *Corporate Diversification Strategy*, p.125.

3.1.2. Corporate Control: Detached vs. Involved Control

Organizational or management control has been defined above as *the process of ensuring that organizational objectives are achieved*. Its main purpose is to ensure that the organization does what management wants done [Anthony, 1956].

In order to achieve organizational control, i.e., in order to influence the behavior of people so that management gets done what it wants done, management can use a combination of mechanisms, such as *direct supervision, training, socialization, standard procedures, job descriptions, budgets, performance measurement systems, incentive compensation systems*, etc. [Otley, 1987; Merchant, 1985a; Flamholtz, 1983].

Although concepts vary slightly among writers, it can be derived from the literature that control can be achieved by (i) *structural mechanisms* such as centralization (i.e., the more centralized the structure, the more direct influence management has over subordinate activities); (ii) by *cultural or social mechanisms* such as indoctrination or socialization (i.e., the more subordinates share the same beliefs, the more their behavior becomes predictable) [Ghoshal and Moran, 1996: 24; Ouchi, 1979, 1977; Ouchi and Maguire, 1975]; (iii) by *rules and procedures* that clearly communicate what subordinates must or must not do; and, (iv) by the use of *formal accounting-based systems*, i.e., cybernetic, quantitative, financial and non-financial control systems, such as budgets, performance measurement systems, etc.¹⁶ Most controls treated in the management control literature can be categorized as belonging to one of the above categories.

¹⁶ *Cybernetic control* basically involves a process in which a *feedback loop* is represented by using standards of performance, measuring system performance, comparing that performance to standards, feeding back information about unwanted variances into the processes being controlled, and correcting the process [Green and Welsh, 1988; Anthony et al., 1992]. Hence, all cybernetic control models assume that there is a standard or a clearly defined goal, that accomplishment can be measured, that there is a communication network that feeds back variance information, and that the variance information can be used to intervene in the process in order to eliminate unwanted variances in the next round [Hofstede, 1978; Dermer and Lucas, 1986]. Furthermore, cybernetic control assumes that the mis-match signal, i.e., the signal which announces the discrepancy between "*what is*" and "*what ought to be*," contains all the information needed to correct or regulate it. But in organizations, the business manager may derive only that all is not well, i.e., that his policy has not had the expected effect, but it seldom tells him if he should continue, intensify, or reverse his policy. The mis-match information is by no means clear-cut, for his policy may be right and his error may lie simply in his forecast [Anthony et al., 1992; Vickers, 1967]. Hence, the way in which this mis-match information is used, reported, or interpreted can be one of the elements to describe an organization's *control style* (cf., *corporate management's tolerance for interim budgeting deviations* - see below in this Section and Section 5.3.7, p.95).

Although these different control mechanisms are not mutually exclusive but should complement each other to achieve effective organizational control [Jaworski et al., 1993; Cunningham, 1992], this study focuses on two accounting-based control systems (i.e., *budgeting and incentive compensation systems*) and one structural control component (i.e., *the degree of decentralization of the corporate control function*).¹⁷ These control systems are expected to play an important role in the *strategy-performance relationship* as explained now.

First, *budgets* are indispensable in controlling and coordinating the activities of most organizations [Kanodia, 1982; Otley, 1987; Bruns and Waterhouse, 1975; Hopwood, 1974; Buckley and McKenna, 1972] and represent one of the clearest manifestations of organizational objective setting [Guilding et al., 1994]. As such, *budgeting* is an essential component of implementing strategy [Bowman and Asch, 1987; Asch, 1992] since it serves as an early indicator of the effectiveness of the firm's strategy [Pearce and Robinson, 1994] and since it facilitates and provides measures of the efficiency of the firm's key processes [Veliyath, 1992]. In a word, budgets provide information about the progress towards the attainment of planned objectives and are, as such, an important tool to direct strategy implementation. Specifically, the following budgeting attributes are studied in this research: (i) emphasis on meeting the budget; (ii) tolerance for interim budget deviations; (iii) bottom-line vs. line-item budget control; (iv) allowance for budget revisions; (v) allowance for discretionary spending (cf., cash discipline); (vi) budget

¹⁷ Indeed, some authors have focused on *social/cultural* and *procedural* control arrangements as a complement to the more traditional *accounting-based control systems*. For instance, Nohria and Ghoshal [1994] and Kilmann et al. [1986] argued that highly diversified firms can promote a strong *corporate culture* or a sense of *corporate identity* to reduce incentive problems between the head office and its business units [see also Morris, 1996]. On the procedural/structural side, attention can also be paid to *corporate control manuals* and the *use of formal conferences* to achieve effective organizational control over business units [e.g., Roberts, 1990]. These control mechanisms are not examined in this study. However, hypotheses could be formulated about the effectiveness of such controls in diversified firms too. For instance, it seems reasonable to accept that establishing and maintaining a common corporate culture throughout a highly diversified firm composed of many distinct businesses each with their own set of values and norms is undoubtedly a daunting task [Hitt et al., 1996; 1092].

participation; (vii) formality of budget-related communication; and (viii) intensity of budget-related communication.¹⁸

Secondly, *incentive compensation systems* are a key part of both the enforcement and the feedback process of the control system [Fisher, 1995] and are likely to be one of the main mechanisms through which an organization can persuade managers to achieve corporate objectives [Coates et al., 1995: 128]. Moreover, Merchant [1985a] maintains that the main purpose of a budgeting system is the provision of information that is useful for monitoring and motivating personnel. As such, the budgeting system should be linked with the incentive compensation system so that there is a financial incentive for budget attainment [Fisher and Govindarajan, 1993; Salter, 1973]. This study includes two incentive system variables: (i) the extent to which bonus remuneration of business unit managers is established by formulas based on achieving budget targets rather than being discretionary; and (ii) the extent to which bonus remuneration of business unit managers depends on total corporate performance, business unit performance, or a mix of both.¹⁸

Third, besides budgeting and incentive system variables, this study also includes an organization structure variable, i.e., *the degree of (de)centralization of the corporate control function*. Control is *centralized* when the business unit controller reports directly to the corporate controller and has only a staff relationship with the business unit manager (i.e., the business unit controller's loyalty is with the head office rather than with the business unit). Control is *decentralized*, on the other hand, when the business unit controller cooperates very closely with the business unit manager and has only a staff relationship with the corporate controller (i.e., the business unit controller's loyalty is with the business unit rather than with the head office) [Anthony et al., 1992].¹⁸ It is commonly accepted in the control literature that the business unit controller's job priorities (cf.,

¹⁸ Each of these control attributes will be discussed and operationalized in detail in Section 5, p. 70.

internal financial control vs. business management service) and loyalties (cf., *corporate spy vs. business ally*) are affected when the reporting relationship is changed [Sathe, 1978a].

To summarize, management control in this study refers to two accounting-based control systems (i.e., *budgeting and incentive compensation systems*) and one structural control component (i.e., *the degree of decentralization of the corporate control function*). Traditionally, most management control studies primarily focused on *accounting control systems*. This is acceptable since what is called *structural and cultural control* is more related to the field of *organization theory*. More problematic, though, is that management control academics have commonly focused on the *cybernetic technique* of accounting control systems [Ansari, 1977]. However, management control should also be concerned with the *control process or control style*, i.e., with the way in which those systems are used and their *behavioral impact* [Simons, 1995].

It is indeed important to emphasize that, in this study, the notion of *management control (systems)* refers to both *technique* (i.e., design, form, content) and *process* (i.e., how they are used in getting a desired response from subordinates) [Roberts, 1993]. As such, the different control elements/attributes introduced above are combined in the following "control style:" corporate control can either be *detached* or *involved*. Corporate control is *detached* or *hands-off* if corporate management is tolerant of interim, temporary budget deviations [attribute 1], has a primary interest in the bottom-line budget result rather than in specific line-items [attribute 2], and does not impose a strict cash regime besides the net income budget target [attribute 3] as long as the overall budget is achieved by year-end. As such, *meeting the budget* is emphasized heavily by corporate management [attribute 4] and budget revisions during the year are exceptional and not easily accepted [attribute 5]. However, business unit managers are invited to participate in setting their budget targets [attribute 6], but once the budget is approved, the budget-related communication

between the top and the business units is formal [attribute 7] and not intensive unless performance is considerably below expectations [attribute 8]. In addition, incentives for the business unit managers are determined in a quantitative, formula-based way [attribute 9] and are based on their own business unit performance only [attribute 10]. Overall, corporate control is decentralized [attribute 11]. On the other hand, an *involved* or *hands-on* control style should exhibit opposite characteristics.¹⁹

In sum, as the hypotheses will show, it is expected that the way in which internal controls are designed and used, i.e., *detached* or *involved*, will depend on the corporate strategic actions, on the one hand, and will, in turn, affect organizational effectiveness, on the other hand.

3.1.3. Performance Revisited: Control Loss

Perhaps the most effective way to achieve organizational control is making all decisions centrally, but this may not be desirable or possible because local managers often have access to more relevant decision information than their superiors. Thus, it becomes inevitable that at least some decisions must be made at lower levels in the organization [Kren and Liao, 1988]. But, organizational and individual goals do not always coincide perfectly [Merchant, 1982; Lowe, 1971]. Thus, every time a manager delegates activities to subordinates, he creates the problem of determining whether the job is performed satisfactorily and in a way that contributes to the achievement of organizational goals [Dessler, 1976; Galbraith, 1973]. Thus, the need for control flows from the fact that

¹⁹ It should be noted that the operationalization of *detached* vs. *involved* controls will allow controls to be "primarily" *detached* or *involved*. In other words, rather than being forced into one of two "pure" categories, an organization's controls will empirically take a position somewhere along a continuum with *detached* controls at one end and *involved* controls at the other end. However, for ease of discussion, the theoretical part of the dissertation will generally refer to the "pure" *detached* vs. *involved* control styles. At this point, it also is interesting to note that studies which operationalize controls as two opposite or pure categories (e.g., *financial* vs. *strategic* controls in Hitt et al. [1996: 1099]) have sometimes come to the surprising result that the categories are related *positively* rather than *negatively* [Hitt et al., 1996: 1109], a result which surely is difficult to interpret [Hitt et al., 1996: 1113].

managers of sub-units have a good deal of discretion in their decisions and from the existence of individual objectives sometimes distinct from organizational objectives [Lowe, 1971]. The extent to which business unit managers make decisions in line with organizational goals (cf., *incentive compatibility* or *goal congruence*) makes the difference between "being under control" vs. "experiencing control loss."

Although it has not been used commonly as a *dependent variable*, the notion of *control loss* has been referred to in the extant management literature [e.g., Hitt et al., 1996: 1091; Ellsworth, 1983]. *Control loss* occurs when corporate managers are not adequately informed about the internal operations and external environment of the business units [Ellsworth, 1983] so that "errors" in formal business unit management practices and control reports are likely to go undetected [Lewin, 1989]. This statement contains two parts. The first part refers to *information asymmetry*, i.e., business unit managers are better informed about the internal operations and external environment of their business units than corporate management. The second part, the "errors" part, refers to all kinds of undesirable (i.e., incentive-incompatible) consequences information asymmetry is likely to result in, such as, *slack creation*, *earnings management*, *shirking*, *short-termism*, etc. As such, the notion of *control loss* tapping into concepts like *delegation of authority*, *information asymmetry* and *incentive-incompatibility* has its roots in *agency theory*.²⁰

²⁰ In *agency terms*, the "errors" part corresponds with the total *agency cost* of the relationship between the corporate parent and the business units minus the cost of *monitoring* by the corporate parent and *bonding* by the business unit manager. Hence, in *agency terms*, control loss simply corresponds with *residual loss*. *Agency costs* arise because the agents (i.e., the business unit managers) will not always act in the best interests of the principal (i.e., the corporate parent). The principal can limit divergences from his interests by incurring *monitoring costs*, i.e., costs associated with the efforts on the part of the principal to control the behavior of the agent through budget restrictions, compensation policies, operating rules, etc. In addition, an agent usually expends resources to guarantee that he will not take certain actions which would harm the principal or to ensure that the principal will be compensated if he does take such actions. Such *bonding costs* on the part of the agent can be pecuniary as well as non-pecuniary and can take such forms as, for example, contractual guarantees to have the financial accounts audited by a public accountant. However, despite monitoring and bonding, it is generally impossible for the principal or the agent at zero cost to ensure that the agent will make optimal decisions from the principal's viewpoint. The money equivalent of the reduction in welfare experienced by the principal due to this divergence of interests is called the *residual loss*. In sum, *agency costs* are defined as the sum of the *monitoring expenditures* by the principal, the *bonding expenditures* by the agent, and the *residual loss* [Jensen and Meckling, 1976: 308].

Control loss as used in this study refers to the "errors" part only and not to information asymmetry because information asymmetry is a *necessary* condition for "errors" to occur. Indeed, the whole agency concept falls apart in the case of perfect information [Govindarajan and Gupta, 1995]. However, information asymmetry is not *sufficient* for "errors" to go undetected because corporate management can increase *monitoring costs* to increase the chances of detecting "errors" in business unit practices [Milgrom and Roberts, 1992; Penno, 1984]. Indeed, previous studies in management control have suggested that the relationship between information asymmetry and *budget slack* (which is a particular example of control loss) is intervened by other budgeting characteristics, such as budget participation, budget emphasis, and the ability to detect slack [e.g., Wright, 1995; Dunk, 1993a; Merchant, 1985b; Young, 1985; Onsi, 1973]. Hence, a certain degree of information asymmetry can be associated with differing degrees of budget slack depending on the extent of monitoring by the corporate parent.

In short, *control loss* results from "errors" on the part of the business unit managers made possible by (i) *information asymmetry* between the corporate office and the business units, and (ii) *less than perfect controls* to detect or prevent such "errors." Compared to *related diversified firms* which focus on a relatively small set of business units connected through common core competencies, *unrelated diversifiers* will face, almost by definition, more information asymmetry given the large and diverse set of businesses they participate in. However, *unrelated diversifiers* must not necessarily experience more *control loss* because they may find ways to implement elaborate control arrangements which allow them to detect "errors." However, as the hypotheses below reveal, the main expectation of this study is that highly diversified firms will implement internal controls which further increase rather than decrease the likelihood of control loss.

The discussion on how to operationalize *control loss* is deferred to the Measurement section (Section 5.4.2, p.113). However, in order to understand the hypotheses developed below, *control loss* must be described by its “indicators” or *behaviors that contribute to control loss*, notably, the degree of *budget slack*, *earnings management*, and *short termism*. These indicators are also known in the literature as examples of *dysfunctional behavior* which occurs when business unit managers knowingly violate control system rules and procedures [Jaworski and Young, 1992: 18].²¹ However, although such self-interested behavior has negative connotations, it is not always clear to what extent such behavior is truly *dysfunctional* or *undesirable* [Nohria and Gulati, 1996; Jaworski and Young, 1992: 18; Milgrom and Roberts, 1992: 168]. Therefore, the definition of control loss used here also includes another assessment of *residual loss*. Specifically, there will be some evidence of *control loss* if the data show that the business units in diversified companies have an equal or better record of *meeting their budget* but show lower *performance* nonetheless than the business units in less diversified firms. The idea behind this argument is that a good record of achieving the budget signals to the top that the business units are performing well, although, in actuality, their performance is not as good as it could be.²²

Finally, an important question remains: *Why use control loss as a surrogate, complement, or antecedent of performance?* Firstly, as discussed in the literature review in Chapter 2, the direct effect of *strategic planning* itself on *performance* is far from empirically conclusive [Miller and Cardinal, 1995]. Secondly, the interactive effect of *strategy* and

²¹ Other labels have been used in the literature to describe the self-interested behavior on the part of the agent: *dysfunctional behavior* [Jaworski and Young, 1992; Hirst, 1981], *opportunistic behavior*, and *moral hazard* [Milgrom and Roberts, 1992] (see also Lavery [1996]). However, the common theme is that the principal and the agent have differing objectives and the principal cannot easily determine whether the agent's actions are being taken in pursuit of the principal's goals or are self-interested misbehavior [Milgrom and Roberts, 1992: 170]. Put differently, since *control* means securing effective compliance from subordinates, *control loss* occurs when subordinates' actions do not further organization goals [Leiffer and Mills, 1996: 127; Evans, 1975: 250, 252].

²² Strictly spoken, this comparison is *hypothetical* because “optimal performance” is unknown. If it were known, it would be straightforward to compare *actual performance* with *optimal performance* directly.

management control also has been notoriously difficult to test empirically because of the numerous confounding influences on *performance* beyond *control system design and use* (cf., the notion of “fit” in *contingency research* - see below) [Lillis, 1995; Abernethy and Lillis, 1995; Merchant and Simons, 1986; Otley, 1980]. Thirdly, it is not so clear whether it is *corporate* or *business unit performance* which matters. Indeed, value of diversification originates in first instance from the business units. Since in any multi-business firm, *corporate performance* is computed by aggregating the performance of the various constituent businesses, it does not necessarily show the real performance effects of diversification (e.g., a division in financial trouble will mask the performance effects of diversification in other divisions) [Dess et al., 1995: 373-374 and 384].

Therefore, this study takes a more direct approach and considers *control loss* rather than *performance* as the main dependent variable. And indeed, as will be discussed later, links between *strategy* and *control*, on the one hand, and *performance*, on the other hand, are weak, but significant links could be established with *slack* (which is a particular form of *control loss*). However, a problem with *control loss* as the dependent variable, is that it is not always clear whether the behaviors which contribute to *control loss* are truly *dysfunctional* or “negative” in terms of organizational effectiveness [Nohria and Gulati, 1996]. Moreover, it is not sure that if certain forms of *control loss* can be reduced through adequate controls, that they won’t re-emerge elsewhere in ways that make it more difficult to detect and curtail. Put differently, pushing control to the limit might lead to spillover effects from easy-to-meter onto hard-to-meter dysfunctional behaviors [Ghoshal and Moran, 1996; Williamson, 1993; Dow, 1987]. Indeed, in advance of the empirical results, it can now be revealed that it was intriguing to probe into the *curvilinear relationship* between *slack* and *performance*, on the one hand, and into the *spillover effects* between different types of *control loss*, on the other hand. More on this in the Empirical section of the dissertation (see Chapter 6, p.156).

3.2. The Research Model and Hypotheses

Now that all elements of the *research question* have been specified, the basic *research model* of this study can be depicted (Figure 2). The model is an *intervening variables model*, i.e., it contains a direct relationship between *diversification strategy* and *control loss* as well as an indirect relationship between both variables through the intervening variable *corporate control*.

Figure 2
RESEARCH MODEL

Referring to Figure 2 and the variables introduced above, four hypotheses are advanced. It is hypothesized that increased diversification will be associated with a greater emphasis on detached controls (H_1) and with increased control loss (H_4). To close the circle represented in Figure 2, H_3 states that a greater emphasis on detached controls will be associated with increased control loss. Additionally, H_2 maintains that increased diversification will be associated with more uniformity in the control attributes of the business units of the same firm. These hypotheses are developed next.

3.2.1. Diversification Strategy and Corporate Control

As aforementioned, H_1 states that *increased diversification will be associated with a greater emphasis on detached controls*. Generally, the problems of managing diversity increase as the firm's scope of diversification increases [Ramanujam and Varadarajan, 1989]. Increased diversification leads to an increase in corporate managers' *span of control*

exhausting their *information processing capacity* [Galbraith, 1973]. Hence, after a certain level of diversification, corporate executives replace more subjective, interpersonal controls by financial outcome controls which reduce top management information processing [Hitt et al., 1996; Hill and Hoskisson, 1987]. Put simply, high levels of diversification leading to the implementation of financial controls make corporate managers reduce evaluation of the idiosyncratic aspects of strategy implementation while increasing their emphasis on financial outcome criteria [Anthony et al., 1992; Hoskisson et al., 1988]. All this is in line with Bruns and Waterhouse [1975] and Merchant [1981] who showed that managers in the larger, more diverse, decentralized firms appear to rely more on *administrative controls* (as opposed to *interpersonal controls*) characterized by more formality, sophistication, and fewer direct interpersonal interactions. Or, more generally, as firms diversify and adopt more complex organizational structures (in the direction of *self-contained units* [Galbraith, 1973]), they also tend to become more bureaucratic [Grinyer et al., 1980; Grinyer and Yasai-Ardekani, 1980, 1981]. As a result, it becomes more difficult for corporate managers to use *involved controls* which require a deep understanding of business-level operations and markets. Stated as a hypothesis, it follows that: ²³

H₁: Increased diversification will be associated with a greater emphasis on a detached, hands-off control style that, in terms of the budgeting system, is consistent with:

- a) Greater importance placed on meeting the budget;*
- b) Greater tolerance for interim, temporary budget deviations;*
- c) Greater interest in the bottom-line budget result rather than in specific line-items;*
- d) Lower allowance for budget revisions during the year;*
- e) Greater participation by business unit managers in budget-related activities;*
- f) Less cash discipline besides the net income budget target;*
- g) More formal budget-related communication between the top and the business units;*
- h) Less intense budget-related communication between the top and the business units;*
- i) More formula-based incentives;*
- j) More divisional performance-based incentives;*
- k) More decentralized control.*

²³ For a textbook view on some of these relationships, see Anthony and Govindarajan [1995: 603-608] and Hill [1994: 307-313]. For an elaborate case-study account, see Roberts [1990].

Now, H_{1a-k} will be further elaborated. First, since it is almost impossible for corporate managers of highly diversified firms to rely on informal interpersonal interactions as a tool of control, much of the control has to be achieved through the formal budgeting system. Such "management-by-the-numbers" will result in more *emphasis on meeting the budget* (cf., H_{1a}). Moreover, budget-related communications between corporate and business unit management are likely to become *more formal* (cf., H_{1g}) and *less intense* (cf., H_{1h}) unless performance is considerably below expectations [Anthony et al., 1992: 696].

Second, a recent study by Gul et al. [1995] found that the effects of *budgetary participation* on managerial performance are positive in decentralized firms and negative in centralized firms. The underlying argument is that *participation* is an effective tool only if it brings the superior closer to the origin of information, which is the case in decentralized structures. In highly diversified firms with many self-contained units, corporate managers lack knowledge about the idiosyncratic aspects of the businesses too. As a result, participation in the budgetary process by business unit managers seems inevitable (cf., H_{1e}) [Anthony et al., 1992; Emmanuel et al., 1990; Merchant, 1981; Bruns and Waterhouse, 1975].

Third, Bruns and Waterhouse [1975] suggest that highly diversified firms with high levels of decentralization and many self-contained units will install control systems based on broader measurements permitting business unit managers more discretion on how to achieve financial results. Inversely, the more centralized the organization and less autonomous its units, the more interference is to be expected from superiors in budgeting matters in the form of, for instance, required explanation of variances. Translated to this study, these results suggest that corporate management of highly diversified firms will be more *tolerant for interim budget deviations* (cf., H_{1b}) and allow more discretion to business

managers for selection of investments and budget allocations. Put differently, it is expected that business managers in diversified firms will experience less *cash discipline* besides the net income budget target (cf., H_{1f}) and have only *bottom-line budget responsibility* rather than on a line-by-line basis (cf., H_{1c}) [Gordon and Narayanan, 1984].

Fourth, Rosenzweig [1981: 351] concluded that the controller's department and the administrative mechanisms are highly developed in companies suited to the use of *impersonal control*; in companies which emphasize *line control*, the opposite is the case. Similarly, Mintzberg [1979] and Grinyer and colleagues [1980; 1981] argued that most divisional organizations are driven to become bureaucratic and formalized because the head office standardizes procedures and emphasizes performance control through sophisticated information systems to improve control over the business units. In short, it is expected that *budget-related communication becomes more formalized* and sophisticated as diversification increases (cf., H_{1g}) [see also Merchant, 1981; Bruns and Waterhouse, 1975].²⁴

Fifth, several studies have shown that increased diversification leads to an increased use of *performance-based reward and incentive systems* mainly because it helps corporate managers in comparing diverse businesses [Napier and Smith, 1987; Kerr, 1985]. However, there are several dimensions to how financial incentives are administered [Pitts, 1976; Salter, 1973]. One dimension is *the reliance placed on subjectivity as contrasted with pre-specified objective formulas in determining bonuses*. Reliance on subjective approaches to bonus determination is likely to be more beneficial for *related diversifiers* because relatedness reduces each business unit manager's discretion over how business unit resources are employed. In other words, relatedness often implies a

²⁴ Also supportive for this hypothesis is the negative correlation between *centralization* and *formalization*, a result which has been replicated in several studies in the area of organization theory [see Child, 1972: 174].

"contamination" of a business unit's performance by the decisions and actions of managers from other business units [Kilmann, 1983: 355]. Hence, formula-based incentive plans strictly tied to quantitative business unit performance are likely to be counterproductive for *related diversifiers* (cf., H_{1i}) [Govindarajan and Fisher, 1990; Gupta and Govindarajan, 1986; see also Pitts, 1976 and Salter, 1973].

Another dimension of incentive bonus determination is *the extent to which the bonus is based on total corporate performance, business unit performance, or a combination of both* [Pitts, 1976; Salter, 1973]. If a business unit is essentially autonomous, tying the business unit manager's bonus to the performance of a cluster of several business units would weaken the link between performance and reward and is likely to be counterproductive. On the other hand, if a group of business units are strongly interrelated, linking the bonus to total corporate performance should foster greater cooperation among business units than would tying each business unit manager's bonus solely to the performance of the individual business unit [Gupta and Govindarajan, 1986: 700; Salter, 1973]. Similarly, Burton and Obel [1988] showed in a laboratory experiment that incentives which encourage *competition* (i.e., incentives based on business unit profit) lead to low overall corporate performance in situations characterized by a heavy interaction between business units (i.e., in strongly related businesses). This is also in line with prior analytical work [e.g., Fauli-Oller and Giralt, 1995]. Hence, *the business unit managers' bonuses in related businesses should depend on corporate performance because cooperation among business units is essential if economies of scope must be exploited* (cf., H_{1j}) [see also Porter, 1987: 53; Pitts, 1976].

Finally, the *management control function* is expected to become more *decentralized* as diversification increases. Sathe [1978a, 1978b] argues that as coordination between business units increases, direct reporting to the corporate controller (i.e., *solid-line* or

centralized control) becomes necessary. For example, in companies with high operating interdependences, business unit controllers get often involved in disputes concerning inter-division matters (e.g., transfer pricing). To the extent that the business unit controller's loyalties and priorities are with the corporate headquarters rather than with the business unit, these matters are likely to be settled in the best interest of the corporation as a whole [Sathe, 1978a: 102]. More generally, Sathe argues that in companies that practice tight delegation and in which top management closely assists business unit managers in solving day-to-day problems, *centralized control* offers considerable advantages because top managers can count on business unit controllers for timely information and independent judgment on business unit activities [1978a: 101]. In short, this line of argument actually maintains that *(de)centralization of control follows (de)centralization of decision-making*: the more (de)centralized decision-making, the more (de)centralized control should be. Hence, highly diversified firms with high levels of decentralized decision-making are expected to decentralize their management control function too (cf., H_{1k}).

In addition to H_1 , it is expected that all business units of highly diversified firms will be treated or controlled alike by the corporate office, i.e., in the same objective, tight, detached, hands-off way [for some anecdotal evidence, see Ghoshal and Mintzberg, 1994: 15]. On the other hand, top management in less diversified firms may be able to take the idiosyncratic situation of each business unit (e.g., its competitive strategy) into account and treat it accordingly (say, as the different "contingencies" at the business unit level would dictate it). Hence, it is expected that there will be more variation in the control attributes among business units of the same firm when it is a *related diversifier* than when it is an *unrelated diversifier*. Formally, this can be formulated as follows:

H₂: Increased diversification will be associated with more uniformity in the control attributes of the business units of the same firm.

If supported, this hypothesis may have quite severe consequences for contingency research at the business unit level because this means that control systems will only be “fitted” to the specific situation of the business unit (e.g., its competitive strategy) if the business unit is part of a *related diversifier*.²⁵ Moreover, research by Golden [1992] suggests that the accommodation of the corporate - business unit relationship to the particular needs of the business unit will enhance business unit performance. Put differently, if the number of distinct businesses in the corporate portfolio increases, so too should the ways in which the corporate office relates to the business units. If not, business unit performance will suffer [Golden, 1992: 156].

3.2.2. Corporate Control and Control Loss

Hoskisson et al. [1991] argue that as firms become more diversified and develop elaborate control systems designed to tighten control over business units, they will experience *control loss* simply because an increased emphasis on financial *hands-off controls* reduces corporate managers' insight into the idiosyncratic aspects of the business units [see also Hitt et al., 1996, 1990]. In addition, increasing *decentralized corporate control* makes it even more difficult for the corporate headquarters to know what is going on in the business units [Sathe, 1978a, 1978b; Onsi, 1973: 536].²⁶

A related aspect is that an increased emphasis on financial outcome criteria reduces risk taking by business unit managers inducing them to set their budget targets as low as possible [Hoskisson et al., 1991, 1988]. Put differently, business unit managers

²⁵ However, it should be noted that Haspeslagh found that, although diversified companies do not alter formal administrative systems in accordance with the specific situation of the business units, top managers can nevertheless informally adapt systems to fit the various businesses [1982: 66-67]. In other words, Haspeslagh suggests that top managers rely on a flexible, informal management process to differentiate influence patterns at the business unit level [1982: 71].

²⁶ The following quote from a corporate staff executive in Sathe's study says it all: “We don't know everything going on down there. There is probably some fat hidden in the divisional budget, but we can't be sure because the divisional controller does not report directly to us.” [Sathe, 1978b: 20].

are more likely to undertake risky projects if they believe they will be rewarded for the quality of their strategies rather than for short-term financial outcomes. In short, commitment to innovation, long-term effectiveness, and the like, will only accrue if the business managers feel that the top understands their strategic proposals. Such a rich understanding of strategic proposals is unlikely when *financial, detached, hands-off controls* are used by corporate managers [Hitt et al, 1996: 1095].

Actually, Hoskisson and colleagues found that increasing diversification and the accompanying control system tightness led to a decrease in R&D intensity.^{27,28} As aforementioned, *M-form controls* hold business unit managers fully accountable for their performance. This implies that earnings, resources, and career prospects of business unit managers are dependent on their ability to meet the specified budget targets. If they don't meet the targets, they face the prospect of intervention by the corporate office, the loss of annual earnings bonuses, the loss of business unit resources, and ultimately the loss of their job. As such, it is in the interest of business unit managers to do everything possible to meet the budget [Hitt et al., 1996; Hoskisson et al., 1988]. This can be achieved by reducing expenditures, such as R&D and market research expenditures which are not essential for the attainment of short-term returns but critical to maximize long-term efficiency and competitiveness [Jaeger and Baliga, 1985]. In short, *M-form controls will be negatively related to risky long-term expenditures* [Hoskisson et al., 1988; Hoskisson and Hitt,

²⁷ Hitt et al. [1996], Hoskisson et al. [1993, 1988], Hoskisson and Hitt [1988], and Hoskisson and Johnson [1992]. See also Ghoshal and Mintzberg [1994: 16] and Hayes and Abernathy [1980].

²⁸ At this stage, empirical evidence on the *impact of diversification on innovation* is still conflicting, inconclusive [Cardinal and Opler, 1995], and even spurious [Baysinger et al., 1991: 213]. The impact of diversification on innovation can be explained from two angles. First, many authors have claimed that the control systems typically found in diversified companies (cf., incentive systems based on current profitability) undermine the innovation process by creating dis-incentives to invest in risky, long term R&D projects [cf., Hayes and Abernathy, 1980]. On the other hand, it can be argued that diversified firms can achieve economies of scope in the R&D process and hence improve their R&D efficiency. Hence, the ultimate (positive or negative) impact of diversification on innovation will probably depend on the extent to which economies of scope offset incentive problems. Moreover, there might be ways to adapt organizations to minimize incentive problems which hinder the innovation process. For instance, Cardinal and Opler [1995] found that diversified firms are more likely to install separate R&D-centers which allow the tailoring of management incentives to spur effort on R&D projects.

1988]. Along similar lines, several other studies have pointed out how pressures on management to perform in the present reduce the probability of funding new innovative ideas [Loescher, 1984; Berg, 1965] and result in a loss of flexibility [Goold and Campbell, 1987a; Miller, 1986].

Finally, exclusive *reliance on objective formulas in bonus determination* (associated with *unrelated diversification*, as hypothesized in H_1) has the merits that rewards can be specified with great precision and that superiors cannot exercise any bias in assessing the performance of the business unit managers nor determine their rewards ex post facto. However, the main shortcoming of objective formulas is that they induce managers to pay less attention to performance dimensions that are difficult to quantify but which are crucial for the long-term success of the business (e.g., investment in quality circles, employee loyalty, R&D, etc.) [Gupta and Govindarajan, 1986; Loescher, 1984]. In total, incentive plans based solely on objective formulas have been much criticized for their bias toward short-term performance [Baker et al., 1994; Salter, 1973: 98].

In summary, given the informational problems associated with *detached controls* and assuming that organizational participants act in a rational, self-interested way, it follows that:

H₃: A greater emphasis on detached, hands-off controls will be associated with increased control loss.

Support for this hypothesis would be in line with Merchant's argument that a business unit manager's propensity to create budgetary *slack* (i.e., a particular form of *control loss*) can be augmented or diminished by the way in which the budgeting system is designed and implemented [Merchant, 1985b: 202].

3.2.3. *Diversification Strategy and Control Loss*

One of the costs of diversification is the misalignment of incentives between corporate and business unit managers due to increased information asymmetry [Milgrom and Roberts, 1992; Harris et al., 1982; Williamson, 1975]. These costs are higher in more diversified firms than in focused firms to the extent that information in diversified firms is more dispersed within the company [Berger and Ofek, 1995; Milgrom and Roberts, 1992; Williamson, 1975] and that it creates information overload at the top [Haspeslagh, 1982]. Put differently, in firms that have become highly diversified it seems highly unlikely that any given corporate manager will be adequately familiar with even a small portion of the businesses in the portfolio [Campbell et al., 1995 a, 1995b; Baysinger and Hoskisson, 1989: 315; Berg, 1965]. And making decisions without full information introduces error even when the issue of incentive incompatibility is disregarded [Keren and Levhari, 1989: 214]. In short, top management is at a disadvantage in determining the magnitude of *control loss* and its disadvantage increases with the degree of diversification [cf., Onsi, 1973: 536]. Hence, it can be hypothesized that:

H₄: Increased diversification will be associated with increased control loss.

These hypotheses (H_1 , H_3 , and H_4 in particular) explain the expected relationships delineated in the *research model* in Figure 2, p.30. Before moving on to the Methods section, the *assumptions* and *limitations* of the *research model* must be made explicit.

3.3. *Summary and Commentary about the Model, its Assumptions, and Limitations*

First, the reserach model depicted in Figure 2 and described by the hypotheses developed above alludes to a contingency perspective. *Contingency research* has become a

prominent paradigm for research on management control design [Fisher, 1995; Evans et al., 1986; Spicer and Ballew, 1983] and holds that *the design and optimal functioning of a management control system depends on the particular elements of a firm's context* [Abernethy and Stoelwinder, 1991; Waterhouse and Tiessen, 1978]. In other words, the contingency approach to management control is based on the premise that there is no universally best control system which applies to all organizations in every situation [Otley, 1987, 1980]. Moreover, the better the control systems match the organization's context the more effective the organization will perform [Merchant and Simons, 1986]. *Organization structure* [e.g., Bruns and Waterhouse, 1975], *organization culture* [e.g., Goddard, 1994], *external environment* [e.g., Gordon and Miller, 1976], *type of competition* [Khandwalla, 1973, 1972], and *technology* [e.g., Daft and MacIntosh, 1978] are some of the most important contingency variables that have been studied as having an influence on management control arrangements.²⁹

More recently, several studies also examined the impact of *strategy as a contingency variable* on the design of management control systems. Again, the core premise is that to successfully implement strategies, control systems should "fit" the strategy [Porter, 1985]. However, most *strategy-control contingency research* has focused on *business strategy* [e.g., Bruggeman and Van der Stede, 1993; Govindarajan and Fisher, 1990; Govindarajan 1989, 1988; Simons, 1987a; Govindarajan and Gupta, 1985, 1984] and almost totally neglected *corporate strategy* [Alexander, 1991; Ginsberg and Venkatraman, 1985].^{30,31} The relation

²⁹ For an overview of *contingency research in management control*, see Fisher [1995] and Neergaard [1994]. For a more *theoretical discussion of contingency theory* in general, see Donaldson, [1987].

³⁰ Fisher [1995] gives an exhaustive overview of the major management control contingency studies in the accounting and management literatures. Of the 15 studies listed in his overview, only one dealt with *corporate strategy*, namely, Merchant [1981].

³¹ Similarly, strategy academics have argued that research on the moderating effects of organizational factors (e.g., reward and control systems) on the diversification strategy vs. performance relationship are virtually non-existent [Datta et al., 1991: 539 and 551].

between *control* and *corporate strategy* is, as the above literature review reveals, not less relevant though: at this level too, firms should organize themselves to manage diversity in a way that fits their *corporate strategy* [Datta et al., 1991: 533; Porter, 1987: 57]. Moreover, given the current discussion about the ability of diversified firms to add value through portfolio techniques [e.g., Berger and Ofek, 1995], an insight into how corporate management should exercise control within the divisional firm would be most welcome [Alexander, 1991; Simons, 1990; Kazanjian and Drazin, 1987].

In spite of this, the following remarks should be made concerning the contingency perspective underlying this research. The contingency perspective is most strongly pronounced in the relationship between *corporate strategy* and *corporate control* (cf., H_1), i.e., it is expected that a different *corporate diversification strategy* will lead to different *management control arrangements*. But, conventional contingency research actually goes one step further and posits that *superior performance* will result if the control systems are "fitted" to the strategy. First, this study does not use *performance* as the dependent variable so that inferences about the impact of strategy and control on performance are unwarranted. *Control loss* is but one of the many antecedent variables expected to have an influence on performance.³² Second, it is *not* contended that the combinations "*unrelated diversification - detached control*" vs. "*related diversification - involved control*" will both be desirable "fits" and lead to less control loss. On the contrary, it is hypothesized that the combination "*unrelated diversification - detached control*" will lead to more control loss than the combination "*related diversification - involved control*" (cf., H_3 and H_4 combined). In short, compared to conventional contingency research, this study is restricted in terms of its performance effects and its notion of "fit." Therefore, *contingency* is only meant to indicate

³² Otley [1980] and Otley and Berry [1980] have argued that the *link with performance* is problematic in most contingency studies. Moreover, Otley [1978: 146] has questioned the use of performance as a *dependent variable* in budgeting research and suggested that performance might as well be an important *independent variable*.

that different corporate strategies are associated with different control arrangements which together are expected to have a (positive/negative) impact on control loss.

As a second note to the model, it should be emphasized that the relationships indicated by the arrows in Figure 2 are both *too strong* and *oversimplified*. This sounds as a contradiction, but it isn't. The relationships are *oversimplified* for two reasons: One, they are *uni-directional*; and, two, they have a *single sign* only.

As to the *uni-directionality*, arguments can be brought forward to hypothesize reverse relationships between each of the variables too. For instance, even though the arrow in Figure 2 goes from *corporate control* to *control loss*, it can be argued that an opposite relationship exists too because tighter controls might create a negative feeling towards the organization which increases the propensity to behave opportunistically which, in turn, increases the need for control [Ghoshal and Moran, 1996: 23]. Hence, rather than a simple *uni-directional* relationship between *corporate control* and *control loss*, there might well be a so-called *feedback loop*. In sum, the relationships in Figure 2 are *too strong* in that they suggest *causation*. However, given that the relationships might go both ways, care should be taken in making causal inferences.

Secondly, the relationships are oversimplified because they carry a *single sign* only. For example, based on "*game-the-system*"-arguments borrowed from the behavioral management control literature, it was hypothesized in Figure 2 that *tight, detached controls* will increase rather than decrease *control loss* (i.e., there is a positive relationship between *corporate control* and *control loss* - cf., H₃). However, based on *economic arguments*, this relationship would be negative because corporate controls increase the costs to the controllee (business unit managers) to engage in certain types of opportunistic behavior [Ghoshal and Moran, 1996].

In summary, the main point of this study is that unrelated diversification will be associated with organizational arrangements (control and incentive systems) which further increase rather than decrease control loss. However, this point should not be untied from its underlying assumptions based on the *behavioral management literature*. It is strongly believed though that the introduction of behavioral elements into the economic discussion of the *strategy-performance relationship* will lead to a more fine-grained understanding of why unrelated diversifiers generally show inferior performance (cf., ideas developed in Ghoshal and Moran [1996], and, Moran and Ghoshal [1996]).

4. DATA COLLECTION METHOD

This chapter discusses the details of the data collection procedure. Four major steps had to be considered:

- (i) Determining a relevant group of organizations (*population/sample*) for the research question at hand [this was done through the use of *publicly available databases*];
- (ii) Determining and defining the organizational levels at which data should be collected (i.e., *corporate headquarters* and *business units*);
- (iii) Determining the methods through which *private internal data* will be collected [this was done through *survey methods*]; and,
- (iv) Working out the procedures employed for the *development of the questionnaire* mentioned in (iii).

Generally, the hypotheses developed above are not amenable to testing using *publicly available data* alone. In management control research, this is the rule rather than the exception [Brownell, 1995: 1]. Instead, the study requires the collection of *private internal data* regarding such factors as the design and use of budgeting and incentive systems, the organization of the controllership function, and the degree of relatedness among business units. A *taylor-made survey at the corporate level* (see Appendix [B.1]) and a *standardized questionnaire at the business unit level* (see Appendix [D.1]) are the main methods of data collection. In addition, survey data are supplemented with publicly available data whenever possible. In total, data were collected in two stages from 46 corporations and from 153 bussiness units within these corporations (see Appendix [A.6] and [C.2]). Next, the four steps listed above are discussed one by one.

4.1. Selection of Companies

Sample selection is a very important issue since it ultimately determines the validity of the study. Sample selection is considered most often in terms of *external validity*, i.e., the population to which the results can be generalized. However, the nature of the sample and the way in which it is selected, has a potential impact on the strength of the results as well (i.e., *internal validity*). Basically, there are two ways in which a sample can be selected: *random sampling* and *convenience sampling*.

Convenience sampling is used to maximize the likelihood that the resulting sample exhibits the variation in the independent variables necessary to examine the nature of the hypotheses with sufficient power. Hence, the selection of companies is intentionally not random. Translated to this study, convenience sampling would imply that some (extremely) *unrelated diversifiers* or *conglomerates*, at one end, and some *single-business firms*, at the other end, are selected to investigate how this variation in diversification does (or does not) have an impact on internal control arrangements. Such a *quasi-experimental design* is stronger in terms of internal validity (i.e., causality), but weaker in terms of external validity (cf., statistical generalizations from a random sample).

However, it is very likely that both groups of companies (*conglomerates* vs. *single-business firms*) differ in many more dimensions than just their degree of diversification (e.g., size, geographical dispersion, degree of decentralization, etc.). This implies that it becomes very complicated and time-consuming to select the “right” companies for the study. After all, prior to selection, many firms must be examined carefully along many dimensions. It should be clear that good convenience sampling is everything but “convenient” since it involves much more than just selecting those firms to which the researcher has easy access. Unfortunately, this is what it often comes down to [Young, 1995]. In sum, if convenience samples are truly “convenient,” they are not only weak in terms of external validity; they become weak in terms of internal validity too.

Since this research is about large, diversified companies, it proved difficult to match comparable types of firms in a convenience sample. At face value, some companies looked very interesting to include in the study because they were well-diversified. However, a closer evaluation revealed that, for instance, those companies were not *independent*, i.e., they were (financially) controlled by another, mostly foreign-based, parent company. Hence, what is the impact of such higher (financial) control and/or foreign corporate cultures? Put simply, can a subsidiary of a foreign-based conglomerate be compared with an equally diversified Belgian-based, independent firm? Similarly, can a company which is only diversified in Belgium be compared with the same type of company except that it has its businesses spread all over the world? In short, although many companies look interesting to study because they are well-diversified, it is not sure that the variation in the dependent variable will be a result of diversification alone.

The more difficult it is to isolate the variable of interest, the more problematic it becomes to use convenience sampling. Therefore, rather than to pre-specify and rule out all possible confounding dimensions, it seems more appropriate to define a population of diversified firms and to measure and investigate the impact of other dimensions which show some variation in addition to the main independent variable. Specifically, given the variation in diversification, the impact of confounding factors such as geographical dispersion and decentralization, among other things, will be explicitly assessed in terms of their separate and interactive impact on internal control systems. Obviously, this requires a sufficient large number of companies.

If *random sampling* is used, the first step then is to define the population of diversified firms. Put simply, what is needed is a set of companies with several business units. The number of business units and the extent to which those business units are

related will account for the variation in the measure of diversification. However, a company can be diversified at several levels, i.e., a conglomerate can have business units which in turn are composed of several subunits. Actually, business units are often complex (and dynamic) entities in their own right consisting of a (changing) portfolio of businesses themselves [Galunic and Eisenhardt, 1996; Hill and Pickering, 1986; Bettis and Hall, 1983; Haspeslagh, 1982]. Hence, *subsidiaries* as well as *parent companies* will be included in the population if "*control over business units*" is the only selection criterion. In this study, diversification is studied at the highest organizational level.³³ In other words, it is important to select *ultimate parents* only. Moreover, the selection was limited to Belgian companies³⁴ with sales $\geq 3.000.000.000$ BEF (approximately 100.000.000 US\$)³⁵ in order to achieve a minimum of control. The study was *not* limited to a certain industry because this would decrease the variability in the degree of relatedness of diversification, i.e., diversification *within* one industry is likely to be more related than diversification

³³ Diversification is studied at the *highest organizational level* for two reasons. First, it is only at this level that diversification decisions can be assumed to be taken independently. Secondly, it is more likely to find more variability in the degree of relatedness of diversification (ranging from *strongly unrelated* to *strongly related* diversifications). On the contrary, subsidiary-level diversification is very likely to be influenced by the diversification strategy of the parent company and more likely to be strongly related to the core activities of the subsidiary [Hill and Pickering, 1986; Haspeslagh, 1982]. In short, it seems unlikely to find unrelated, conglomerate-type diversifications at lower organizational levels. *Studying diversification at lower organizational levels would therefore introduce a selection bias towards related diversification.*

³⁴ A more practical reason to limit the search to *Belgium* is data-availability. Accounting rules and/or reporting obligations are still not fully harmonized across all member-countries of the European Union (EU). Lack of uniformity in the official company reports published by the Federal Banks of EU-countries makes it difficult to define a population of ultimate parents on a European scale. Commercial databases, on the other hand, which do sometimes provide company reports on an international scale, are very expensive and often incomplete.

³⁵ The 3 billion BEF cut-off also has some practical reasons. First, the *Trends*-database used in sample selection (see below) lists only corporations ("*consolidated groups*") with a minimum *sales turnover* of 3 billion BEF. Secondly, a search on the *Amadeus*-database for independent, incorporated companies *without sales turnover limitation* results in more than 40.000 records (compared to 445 records if a sales limit is set, see below and Appendix [A.2]). It is clear that such a huge number of records makes it virtually impossible to do the type of reconciliation between several databases as done in this study (see below). Finally, based on both empirical and theoretical grounds, it is very likely that smaller firms have less or no business units and/or are less diversified than larger firms with a *sales turnover* well over 3 billion BEF, say.

across industries.³⁶ Only financial institutions were excluded on the grounds that their operations are highly regulated and their accounting data are not assembled in the same way as industrial companies.

In summary, the target population consists of *Belgian, independent companies with sales turnover $\geq 3.000.000.000$ BEF*. Where can those companies be found?

The official database of the *Nationale Bank van België (NBB)*³⁷ (i.e., the Federal Bank of Belgium) provides information about the *Belgian* shareholding companies for each firm listed in the database. However, this does not allow to select Belgian ultimate parents because foreign shareholding companies are not reported. For instance, *3M Belgium* is listed as having *no* Belgian shareholding companies. However, it is not an ultimate parent because it is a subsidiary of 3M in the US.

Bureau van Dijk, a commercial database wholesaler, has developed a pan-European financial database on CD-ROM, called *AMADEUS*, of the top 100.000-150.000 public and private companies in Europe.³⁸ The important feature of *AMADEUS* for this research is that it collects ownership information on a pan-European scale. As such, this database

³⁶ Controlling for *industry membership* is often a major concern in diversification research. On the one hand, given the nature of diversification, it is almost imperative to look at different industries simultaneously. On the other hand, however, it has been documented equally often that industry membership itself has an impact on internal control systems too (among other things) [e.g., Segelod, 1996:231-234].

³⁷ The official database of the *Nationale Bank van België* lists the financial accounts and footnotes of a company incorporated in Belgium if it employs more than 100 persons (regardless of sales turnover or total assets) or if at least two of the following criteria are exceeded: (1) average employment of 50 persons; (2) sales turnover (sales tax not included) of 170.000.000 BEF; or (3) total assets of 85.000.000 BEF [Ooghe and Van Wymeersch, 1994].

³⁸ *AMADEUS* contains descriptive information, activity codes, trade descriptions, annual accounts and ratios, and ownership information on 100.000 companies from the 15 EU-countries, Switzerland, Norway, Estonia, Poland, and the Czech Republic, making more than 10.000.000 ECU (approximately 400.000.000 BEF or 12.500.000 US\$) or employing more than 150 persons [Bureau van Dijk CD-ROM directory, November 1995]. In the latest version of the CD-ROM, the coverage has been extended to 150.000 companies in 26 European countries [AMADEUS User Manual, May 1996]. A subscription to this database costs around 15.000 ECU (approximately 600.000 BEF or 18.750 US\$). However, *Bureau van Dijk* has allowed to use this database without charge for the academic purposes of this study.

should be able to tell if a Belgian company is independent, i.e., has no *European* parent with a stake of more than 50%.³⁹ However, *AMADEUS* collects information from many national data sources some of which are less complete and/or reliable than others. Therefore, some ownership information is missing. Hence, the list of *independent Belgian companies* contains (i) Belgian companies which are really independent; (ii) companies with no *European* parent but which are nonetheless controlled by Japanese or US-based companies (e.g., *Toyota Motor Europe*); or (iii) companies about which *Bureau van Dijk* has been unable to collect ownership information. Only (i) provides the desired information. Again, *3M Europe* is still considered as an independent company (because it has no *European* parent).

A selection in *AMADEUS* was done using the following search criteria: (i) Belgium; (ii) incorporated companies; (iii) independent companies; and (iv) sales $\geq$ 75.000.000 US\$.⁴⁰ This search resulted in a list of 445 companies given in Appendix [A.2].⁴¹ As can be seen from this list, some of those companies are clearly not *ultimate parents* (e.g., *Bell Telephone Manufacturing Company*, *BP Belgium*, *Monsanto Europe*, *Caterpillar Belgium*, *Ford Motor Company Belgium*, etc.). For some companies on the list, it can be determined *prima facie* whether they are ultimate parents or not because they are

³⁹ The 50% cut-off for financial control is conservative in the sense that it is possible to exercise control over firms with lower than 50%-stakes. However, this cannot be said with certainty about all participations of less than 50%. Put differently, stakes of less than 50% *can but do not necessarily do allow* control over the operations of the firm in which the participation is held. On the other hand, with a stake of 50+%, control *can* always be exercised; whether it is effectively exercised is yet another question. Moreover, there are little alternatives to the 50% cut-off since there are no guidelines as to what would be a better limit: 40%, 30%, or even 20%? Finally, 50% cut-offs are commonly used in financial databases, such as, *Amadeus* and *WHOW* (see below).

⁴⁰ The cut-off for sales was set at 75.000.000 US\$ rather than 100.000.000 US\$ to account for currency fluctuations (i.e., the US\$ can rise to 40 BEF to be still within the 3.000.000.000 BEF limit) and to be somewhat flexible to compare data from different databases (see further). Not all databases use the same exchange rates and report on the same date. As such, a company with a turnover of 98.000.000 US\$ on 31/12/1993 and a turnover of 102.000.000 US\$ on 31/12/94 would be included in one database and excluded in another, depending on the latest update or the date which is reported.

⁴¹ It should be emphasized that this search was done on the January 1996 update of the *AMADEUS* CD-ROM. The same search on later updates might result in a different output.

well-known companies associated with a well-known country. However, *prima facie* judgment should not be used to delete companies from the list.

Ownership information is also provided in the *WHO OWNS WHOM (WHOW)* database of *Dun & Bradstreet* [Shaoul, 1996: 177]. *Dun & Bradstreet* provides many other databases too (e.g., *European Financial Records*) with sometimes overlapping information, but *WHOW* is focused on parent-subsidiary relationships and therefore most appropriate to view a corporation's entire group structure.⁴² An on-line search was done on 16/02/1996 using the keywords *parent companies* and *Belgium*. The result of this search, a list of 390 companies, is given in Appendix [A.1]. Those companies are ultimate parents, that's reasonably certain. However, nothing can be said about the size of these firms, i.e., it cannot be determined from this list whether these companies have sales $\geq 3.000.000.000$ BEF. Moreover, this list is definitely incomplete, i.e., it does not give *all* independent Belgian companies. This is because *Dun & Bradstreet* is a commercial database wholesaler.

Thus, *AMADEUS* allows to select on the size of a firm (i.e., sales $\geq 3.000.000.000$ BEF) but gives no complete certainty about whether the firm is an ultimate parent or a subsidiary. *WHOW*, on the other hand, gives reasonable certainty about the ownership of a firm, but it does not allow to select on size. Hence, matching both databases should allow to extract those Belgian companies which are ultimate parents with sales $\geq 3.000.000.000$ BEF. The companies which match in both databases are highlighted in Appendix [A.1] and [A.2]. This matching results in 56 Belgian ultimate parents with sales $\geq 3.000.000.000$ BEF.

⁴² *WHOW* contains information on the corporate structure of approximately 23.000 parent companies and their 400.000 subsidiaries. Approximately one third of the companies in *WHOW* are in the UK, one third in continental Europe, and one third in the rest of the world. Information is collected by a team of editors from questionnaires, telephone interviews, company annual reports, major business newspapers, and selected trade journals. A *subsidiary* is defined as a company which is more than 50% owned by another company [*Dun & Bradstreet* database description, 1996]. Information from the *WHOW*-database was obtained on-line through *Knight-Ridder (DataStar)*, the European equivalent of *Dialog* in the US) at the regular commercial fees for these information services.

However, an important question remains: How exhaustive is this list of 56 companies? Is this the *population* of Belgian, large, independent companies? Since both *AMADEUS* and *WHOW* are commercial databases, the answer is straightforward: *No*, this is *not* the population.

Then, how large is the population of Belgian, large, independent companies? This question can be answered from the *Trends Top 30.000* database. *Trends* publishes a list of large corporations (consolidated sales $\geq 3.000.000.000$ BEF), so-called *groups*, which are active in Belgium. A *group* is defined as the highest level of ownership and, hence, corresponds with the above notion of *ultimate parents* [Trends, 1996, 1995, 1994, 1993]. However, many groups are foreign corporations. The 1996-list contains 468 corporations, 195 of which are Belgian [Trends, 1996: 23-59].⁴³ Those 195 corporations are listed in Appendix [A.3] and constitute, with reasonable reliability, the population of large, Belgian, independent corporations.⁴⁴ In sum, the 56 companies selected through matching *AMADEUS* and *WHOW* are about one third of the population. Moreover, only 12 out of those 56 companies do not appear in the list from *Trends* (see Appendix [A.4]).⁴⁵ This

⁴³ The *Royal Decree of 6 March 1990 on the Publication of Consolidated Accounts* has determined that a company must consolidate its accounts with those of its subsidiaries if, together as a group, they exceed one of the following criteria: (1) sales of 680.000.000 BEF; (2) total assets of 340.000.000 BEF; or (3) employment of 250 persons. However, a company is exempted from consolidation if its accounts are consolidated at a higher level. Many foreign corporations make use of this exemption and do not publish their consolidated accounts in Belgium [Trends, 1994: 25]. However, this exemption has no influence on the completeness of the data for Belgian groups because the highest group-level of those companies is in Belgium anyway.

⁴⁴ *Trends* should be a reliable data-source because it gets its data primarily from the *Nationale Bank van België*.

⁴⁵ Of those 12 companies, three are included in *AMADEUS/WHOW* and not in *Trends* because of the "relaxed" sales figure (*Concentra* = 87.634.000 US\$; *Soconord* = 78.421.000 US\$; and *VTB-VAB* = 98.977.000 US\$, which is all less than 100.000.000 US\$ but more than 75.000.000 US\$ -- see footnote 40). Two other companies, *Hoste* and *Creyff's Interim*, are included in *AMADEUS/WHOW* and not in *Trends* because they were recently acquired by other companies. Finally, *Electrabel* is reported in *Trends* under *Tractebel* and not as a separate company, although *Tractebel* has less than 50% ownership over *Electrabel*. This leads to another important difference between *AMADEUS/WHOW* and *Trends*. Notably, in *AMADEUS/WHOW*, ownership is defined as having a stake in the subsidiary of at least 50%. In *Trends*, on the other hand, "consolidation" is the criterion. However, consolidation can be required at less than 50%. Hence, companies which are owned for less than 50% but which are consolidated at a higher level will not appear in *Trends* but might show up in *AMADEUS/WHOW*.

signifies that the data from the two commercial databases *AMADEUS* and *WHOW* are pretty reliable, but incomplete.

Given the nature of the above sources of information, each with its own imperfections, it was decided to consider the list of 195 companies in *Trends*, plus the 12 companies from *AMADEUS/WHOW* but not in *Trends*, as the best approximation of the population of large, independent, Belgian companies.

From this population, a random sample could be taken. However, given the commercial nature of the above data-sources (cf., reliability); given the limited number of companies in the population (195+12); and given that subsidiary-level data must be collected from those companies' business units in the second stage, it was decided to scrutinize each company in the population for three conditions: (i) Is the company truly an ultimate parent?; (ii) Does the company have a stake of more than 50% in at least three subsidiaries in Europe?; and (iii) Is the firm an incorporated company? For the sake of reliability, these conditions are checked using the information from the CD-ROM of the *Nationale Bank van België*, the most complete and reliable source of information. Using this database, condition (i) can only be double-checked by verifying if the company is not controlled by another Belgian shareholder for more than 50%. Condition (ii) is primarily important as an anticipation to the questionnaire which will be sent to the subsidiaries. If a response rate of 50% is the best a researcher can reasonably expect (and probably lower when it is administered on an international scale), then it is very likely that a company with only one or two subsidiaries will be lost in the second stage of the data-collection anyway. Therefore, a minimum of three subsidiaries in Europe seemed necessary to be reasonably successful at the second stage of data-collection. Finally, condition (iii) was used to exclude all kind of cooperative, public utility type of companies which are not necessarily set-up to *profit* from diversification. In other words, as the name itself reveals,

such cooperative organizations are often set-up to *cooperate* rather than to *control*, which this study is all about. These conditions are applied in Appendix [A.3] and [A.4], resulting in the final (reduced) population of 91 companies as given in Appendix [A.5].

4.2. *Two-stage Data Collection*

4.2.1. *Stage 1: Tailor-made Survey at the Corporate Level*

What is needed now from the above defined group of companies is an insight into their degree of diversification. For each of these companies, a list of subsidiaries/business units (legal entities) could be drawn up from several data sources. However, it was chosen to use the most reliable data-source from the *Nationale Bank van België* which lists the subsidiaries of each company and the percentage held by the parent company (directly and indirectly). Unfortunately, there is no indication of the percentage a subsidiary represents in the sales of the parent company. Moreover, an activity code (i.e., *NACE*-code) can only be obtained through this database if the subsidiary is a Belgian legal entity.⁴⁶ Had this information been available, it would have been possible to calculate some well-accepted product-count measures of diversification (for a detailed discussion, see Section 5.6, p.125).

Since the desired information was not readily available from public sources, it was decided to send a tailor-made survey to the *Corporate Financial Officer* (CFO) of each company. An example of the corporate survey is given in Appendix [B.1].

This corporate survey is tailor-made in the sense that it lists all the subsidiaries in which the company has a direct participation of more than 50%. The CFO is then asked:

⁴⁶ The *NACE*-codes in Belgium are the equivalent of the *Standard Industrial Classification* (*SIC*) system in the US. Unfortunately, each European country has its own coding system. Efforts to make these activity-codes uniform across Europe are still very preliminary.

(i) to verify if this information is still correct; (ii) to add any other subsidiaries over which the company has control (i.e., other subsidiaries with which the company has a (financial) control and reporting relationship); (iii) to cluster these subsidiaries into groups of related activities; and (iv) to indicate the percentage each group of activities represents in the corporation's total sales. For all details, see Appendix [B.1] and the section about the measures of diversification (Section 5.6, p.125).

This tailor-made corporate survey was sent to 83 companies.⁴⁷ Of those 83 firms, 52 replied in some way or another, which gives a total response rate of 63%.⁴⁸ Unfortunately, four CFOs replied in writing that they did not want to participate, one company wrote that the CFO has been replaced, and one survey was too incomplete to be useful. This leads to a usable response rate of $\{(52-4-1-1)/83\}=55\%$.⁴⁹ Three follow-ups

⁴⁷ The name of the CFO of each company was identified using the CD-ROM of *Trends Top 30.000* (names of managers are not given in the CD-ROM of the *Nationale Bank van België*). If the company or its CFO could not be located in this way, the company telephone number was looked up in the telephone directory and the company was called to ask for the name of the CFO. If the company was not listed in the telephone directory, it was tried to get hold of the corporate parent through one or more of its subsidiaries. Despite all these efforts, 7 companies (or their CFO) from the 91 in the population could not be located. Moreover, one company was into liquidation. In sum, the corporate survey was sent to 83 corporate parents (91-7-1). All details are given in Appendix [A.5].

⁴⁸ This is a pretty good response rate given how difficult it is to convince corporate executives to participate in research studies [cf., Gaedeke and Tootelian, 1976]. As an example and comparison, a very recent study in the accounting area using a postal questionnaire directed to *Financial Directors* (the same target respondents as in this study) of a sample taken from the *Times 1000* listing in the UK resulted in a response rate of 35% (with many incompletes) [Edwards and Smith, 1996: 159]. Another study using questionnaires to get information from *Corporate Human Resources Managers* only got a response of 23% [Goll and Sambharya, 1995: 830]. Yet another study, specifically related in terms of subject area to this study and published in the *Academy of Management Journal*, reports a response rate of 40% to a postal survey which asked executives themselves to evaluate the degree of diversification [McDougall and Round, 1984].

⁴⁹ As a comparison, some previous studies in the management literature were based on data collected from 12 [Merchant and Manzoni, 1989], 19 [Merchant, 1985b, 1984, 1981], 22 [Dundas and Richardson, 1982], 25 [Bruns and Waterhouse, 1975], 33 [Porter, 1987], 45 [Grinyer and Yasai-Ardekani, 1981, 1980], and 48 [Grinyer et al., 1980] companies. Moreover, Sathe [1982: 59] considers 24 firms "a fairly large number of companies" in his research on controllership in large multi-business firms, a study which is closely related in terms of subject and methodology to this study. Finally, the percentage of firms studied here (46 out of a total population of 207, i.e., 22%) is also larger than that in Segelod [1996] in which corporate control of investments is studied in 34 Swedish companies selected out of the 191 corporations listed on the *Stockholm Stock Exchange* (i.e., 18%).

were administered in order to maximize the response rate. Sixteen companies returned the survey immediately (16/46=35%). Twenty-one questionnaires or 46% (21/46) were returned after the first follow-up one week after the original mailing (Appendix [B.2]). Only 5 surveys or 11% (5/46) came in after the second follow-up with replacement three weeks after the original mail-out (Appendix [B.3]). Finally, only 4 surveys or 8% (4/46) were received after the third follow-up (Appendix [B.4]). All details are summarized in Appendix [A.5].

Based on these responses, a detailed indexcard was made per corporate parent containing general administrative information (corporate address, name of CFO, comments about the structure, *NACE*-code, etc.); corporate financial information (*return on capital*,⁵⁰ *(un)consolidated sales*, *(un)consolidated assets*, and *employment*); a description of the groups of activities in which the parent company is involved with an indication of the percentage share of each group in total corporate sales; and a list of all businesses grouped per activity (with as many details as possible about the subsidiary's location, general manager, etc.). This stack of indexcards (about 125 sheets) is not attached in appendix due to the non-public nature of some parts of these data. However, most of these data will be processed and presented in aggregate form in later sections of the dissertation (e.g., Appendix [E.1]).

Appendix [A.6] shows the characteristics of the companies in the final sample in terms of *(un)consolidated assets*, *(un)consolidated sales*, *number of employees* at the corporate level, corporate *return on capital (ROC)*,⁵⁰ and industry membership (*NACE*-code). Appendix [A.6] also shows some summary statistics which can be compared with the

⁵⁰ *Return on Capital* is defined by Amadeus as: $((P/L \text{ Before Tax} + \text{Interest Paid}) \div (\text{Shareholder Funds} + \text{Non-current Liabilities}) \times 100)$.

information given in Table 3. As a test of *non-response error*, the group of respondents ($n=46$) is compared to the group of non-respondents ($n=37$) with a *two-sample t-test for unequal variances*. The results are given in Table 3.

Table 3
COMPARISON OF MEANS BETWEEN RESPONSE & NON-RESPONSE GROUP OF CORPORATE SURVEY

	Response Group ($n=46$) [1]	Non-Response Group ($n=37$) [1]	Two-Sample t [2]	p -values (two-tailed) [2]
Consolidated Assets	53,933 ($n=40$) <i>109.554</i>	8.536 ($n=29$) <i>6.573</i>	[$\neq$] 2,61	[$\neq$] 0,013
Unconsolidated Assets	22.278 ($n=46$) <i>45.708</i>	4.156 ($n=36$) <i>4.224</i>	[$\neq$] 2,67	[$\neq$] 0,010
Consolidated Sales	51.534 ($n=46$) <i>109.573</i>	11.876 ($n=32$) <i>13.797</i>	[$\neq$] 2,43	[$\neq$] 0,019
Unconsolidated Sales	15.355 ($n=44$) <i>33.726</i>	4.700 ($n=36$) <i>7.691</i>	[$\neq$] 2,03	[$\neq$] 0,048
Employment	1.804 ($n=44$) <i>4.504</i>	526 ($n=34$) <i>935</i>	[$\neq$] 1,83	[$\neq$] 0,073
ROC	9,32 ($n=44$) <i>8,05</i>	11,4 ($n=37$) <i>10,6</i>	[$\neq$] -1,00 [$=$] -1,02	[$\neq$] 0,321 [$=$] 0,309

[1] Numbers in *italics* indicate *standard deviations*.

[2] At first sight, the variances for all variables, except maybe for ROC, are clearly not equal for the group of respondents vs. non-respondents. A formal F -test (*Levene's Test for Equality of Variances*) confirms this observation. The null-hypothesis that variances are equal is rejected for *consolidated assets*, *unconsolidated assets*; *consolidated sales*; *unconsolidated sales*; and *employment* at $p < 0,01$. The null-hypothesis of equal variances can only be accepted for ROC ($p = 0,198$). These F -tests demonstrate clearly that the method based on unequal variances (indicated as [$\neq$]) should be used for the two-sample t -tests, except for ROC where the outcome of both the method of equal ([$=$]) and unequal ([$\neq$]) variances are showed. In essence, the method based on equal variances is slightly more powerful because variances can be pooled).

From Table 3, it can be seen that the group of respondents differs statistically from the group of non-respondents in terms of *(un)consolidated assets*, *(un)consolidated sales*, and *employment* (i.e., the *two-tailed* null-hypotheses of equal means can be rejected at the $\alpha = 0,05$ level, although usually not at the $\alpha = 0,01$ level). Put differently, from the *one-tailed* p -values (which are the *two-tailed* p -values divided by 2), it can be derived that the companies in the responding group are, on average, larger in terms of *(un)consolidated assets*, *(un)consolidated sales*, and *employment*. This bias can be attributed to the fact that the

largest Belgian corporations all agreed to take part in the study (*Petrofina, Delhaize De Leeuw, Tractebel, Solvay, and GB-INNO-BM*). Each of these companies has consolidated sales of 250 billion BEF or more, whereas the largest sales in the non-response group is 72 million BEF only (see Appendix [A.6]). However, Table 3 shows that both groups do not differ significantly in terms of performance (*ROC*). Moreover, the industry membership of the participating companies shows that the sample represents a widely diverse set of industries. Finally, each group contains about the same percentage of holdings, 15/46 and 11/37 respectively (see Appendix [A.6] -- *NACE-code 8132 or dummy=1*). Hence, although the sample contains the largest organizations, there is no further *prima facie* evidence of other bias in the sample.

4.2.2. Stage 2: Standardized Mail Questionnaire at the Business Unit level

In the second stage of data collection, information on the internal control and incentive systems was gathered from the business unit general managers by means of a questionnaire.

In the ideal situation, it would be desirable to discuss the selection of business units with the CFO (or another corporate executive) because of the potential ambiguity concerning the definition of business units [Argyres, 1996: 403]. Moreover, the *legal entity structure* of a company does not necessarily correspond with its *operational business unit structure*. Therefore, the CFO was asked for help (see letter in Appendix [C.1]).

A positive reply to this request was received from 10 CFOs who offered their help to identify the managers to which a questionnaire could be sent. Seven companies replied

negatively, i.e., they wanted to stop their cooperation at the business unit level.⁵¹ The remaining 29 companies disregarded the request.

Those replies were respected, i.e., the 10 companies which wanted to offer help were heard and the 7 companies which explicitly wanted no further involvement were scratched off the list. However, non-response was *not* interpreted as a rejection of further cooperation. For those companies, the business unit managers were selected using the information contained in the above-mentioned indexcards, other publicly available data (e.g., *Trends Top 30.000*, *De Financieel Economische Tijd*),⁵² and company reports (on plain paper or from the *Internet*).

The number of managers identified in each company varied from 2 (*De Eik*, *VTB-VAB*) to 65 (*Tractebel*), with an average of about 9 per corporate parent (i.e., 341 units identified in 37 companies). In total, 341 questionnaires were mailed to each of the identified managers at their place of work (see Appendix [C.2], *Panel A*).⁵³ The

⁵¹ The ten companies which replied positively are: *Bekaert*, *Sofinal-Cotesa*, *Pieters Visbedrijf*, *Suiker Export*, *VPK Oudegem*, *Belgische Beton Maatschappij*, *De Persgroep*, *Unisel*, *Interbrew*, and *Vandemoortele*. The seven companies which stopped their cooperation at the business unit level are: *Lano*, *Interbuild*, *Dossche Bedrijven*, *Groep Van Roey*, *Van Genechten*, *Vlaamse Uitgevers Maatschappij*, and *Concentra Holding*. However, the CFOs of *Interbrew* and *Vandemoortele* who initially agreed to offer their help did not keep their promise after all. Many call-backs were made (probably more than ten) and always they promised to work on it "the next day," so to speak. Unfortunately, their response has never been received. As such, the final sample for the second stage of the research is reduced to 46-7-2=37 corporate parents, which is still 45% of the 83 organizations in the original (reduced) population.

⁵² *Trends* and *De Financieel Economische Tijd* are major business magazines/newspapers in Belgium.

⁵³ For the sake of completeness, it should be mentioned that the rejection of *Groep Van Roey* and *Dossche Bedrijven* to extent their cooperation at the business unit level (see footnote 51) was received one day (*Groep Van Roey* - letter from CFO *Frans De Ridder*, dated 21 May 1996) and one week (*Dossche Bedrijven* - telephone call from CFO *August Decoster*), respectively, after the mail-out of the questionnaire. It seems that the mailing of the questionnaire and the rejection letter from *Frans De Ridder* (*Groep Van Roey*) really crossed paths in the mail, whereas it is reasonable to assume that the telephone call from *August Decoster* (*Dossche Bedrijven*) was a reaction to the questionnaires which had by then reached the business unit managers. Although the questionnaires had been sent out (13 to *Groep Van Roey* and 12 to *Dossche Bedrijven*), they were disregarded due to the rejection. No follow-ups were done and not a single reply has ever been received.

geographical coverage was as follows: 238 (70%) in Belgium; 95 (28%) in Europe, and 8 (2%) in the rest of the world (mainly USA and Canada) (see Appendix [C.2], *Panel B*).⁵⁴

The response to the mailed questionnaire is acceptable: 190 firms replied to the questionnaire in some way or another, i.e., a total response of 56%. Of these replies, 37 were not valid leading to a usable response of 153 or 45%.^{55,56} Fifty-nine (31%) of the replies were received immediately, 72 (38%) came in after the first follow-up two weeks after the original mail-out, and 59 (31%) were returned after the second follow-up with replacement four weeks after the original mail-out. Of course, there is some variation in response rates among corporate parents, ranging from about 20-30% to a full response of 100% (see Appendix [C.2], *Panel A*). The geographical distribution of the 153 usable replies is as follows: 115 or 75% in Belgium; 36 or 24% in Europe, and 2 or 1% in the rest of the world. The response rate compared geographically is 48% (i.e., 115/238) in

⁵⁴ Overall, a questionnaire was sent to about one out of three entities (341 entities selected out of a total of 1180 – see Appendix [C.2], *Panel A*). Of course, there were no problems for the companies which offered their help to select the business unit managers. For the other companies, however, the following guidelines to select businesses were followed: (i) select *operating* business units only, i.e., no business units which are set up for “asset management” (cf., real estate subsidiaries) and/or fiscal purposes only; and (ii) select a business manager only once. Guideline (i) came down to not selecting any business from the group of activities usually labeled as “corporate services” or “holding and miscellaneous” without any sales. As to guideline (ii), it sometimes happened that *Trends Top 30.000* indicated the same general manager for two or more subsidiaries. This might be an indication that a *business unit* sometimes combines several *legal entities*. If only one questionnaire is sent per general manager (rather than per entity), it is very likely that the respondent is a “real” *business unit manager*, which corresponds with the target respondent in this study.

⁵⁵ Some replies were simply a notification of non-participation (lack of time, no budgeting responsibility, change of management, and other reasons), a request for replacement to which the applicant finally did not reply, or an incomplete reply.

⁵⁶ As a comparison, a very recent paper published in the *Academy of Management Journal* reports a response rate of 27% ($n=100$) to an international survey targeted at subsidiary managers (i.e., comparable international scope and type of respondents as in this study) [Roth and O'Donnell, 1996: 689]. Another study in the area of diversification, also published in the *Academy of Management Journal*, has obtained a response of 30% ($n=136$) to a questionnaire targeted at general managers as well [Markides and Williamson, 1996: 353]. Moreover, it is no exception to see some studies published in the *Strategic Management Journal* with response rates of less than 30% (e.g., 21% in Powell [1992]; 25% in Powell [1996], 28% in Gomez-Mejia [1992], and 28% in Zahra and Covin [1993]). More generally, in his review of survey research in management accounting, Young [1995] calculated that the average response rate in 38 management accounting survey studies was 66,75% with a standard deviation of 21,83. From these comparisons, it seems that the response rate achieved in this study is acceptable.

Belgium; 38% (i.e., 36/95) in Europe, and 25% (i.e., 2/8) in the rest of the world (see Appendix [C.2], *Panel B*). It is interesting to observe that a pretty good response rate was obtained outside Belgium too (especially in Europe).

On average, the respondents are 45,76 years old (*s.d.*=8,34; *n*=148); have been employed by their current corporation for 13,65 years (*s.d.*=10,47; *n*=150); and have been head of their business unit for 5,68 years (*s.d.*=4,90; *n*=151). The business units have average sales of 4.860 million BEF (approximately 150 million US\$ -- *s.d.*= 15.182 million BEF; *n*=148);⁵⁷ have been part of the corporate parent for 16,06 years (*s.d.*=14,89; *n*=141); and employ approximately 427 employees (*s.d.*=1092; *n*=150). Fifty-four or 36% of the business units have been acquired from outside the corporation, or, alternatively, 98 business units or 64% have been developed from inside the corporation (*n*=152). Finally, 112 respondents or 74% indicated that they have a university degree or higher (see Appendix [D.1], Section VI, items 1, 3, 4, 5, 6, 7, 8, and 11). Further details of the questionnaire construction and implementation are described below.

4.2.3. Two-stage Data Collection: Evaluation and Commentary

Two-stage data collection methods have been used in previous management control studies, although researchers have conducted *personal interviews* more often to collect data in the first stage (i.e., at the corporate level) [e.g., Williams et al., 1990; Merchant, 1985a, 1985b, 1984, 1981; Bruns and Waterhouse, 1975]. In most studies, *interviews* are conducted at the corporate level for a combination of reasons, notably, (i) to “explore” the research topic with a corporate executive (e.g., the corporate controller); (ii) to get a rich understanding of the organization (e.g., information about its structure,

⁵⁷ The exchange rates of 4 July 1996 as published in *De Standaard* (a major Belgian newspaper) were used to translate foreign currencies, the most important of which are: 1 US\$ = 31,41249 BEF; 1 CAN\$ = 23,13000 BEF; 1 French Franc = 6,09000 BEF; 1 British Pound = 48,99749 BEF; 1 Dutch Guilder = 18,35549 BEF; and 1 German Mark = 20,58350 BEF.

strategy, markets, products, accounting and control systems, etc.); and/or (iii) to set the stage and get commitment for a more standardized, larger-scale data collection procedure at lower organizational levels.

Although personal interviews with corporate executives are certainly interesting and surely lead to rich and sometimes unexpected insights, it was decided not to have an exploratory stage to this study since the underlying theory of the research has been well-established in the literature. Similarly, there is no doubt that this study could have benefited from a more detailed understanding of the organizations in the sample. However, the major goal of the corporate data collection was to find a European alternative to the US *SIC*-based product count measures of diversification. And as discussed above, all building blocks were available to obtain this information through a postal, tailor-made, larger-scale survey. Of course, such an approach does not lead to strong commitment from corporate executives to provide access to lower level managers, a problem which has been encountered here. But again, ways were found to get around this problem through publicly available data (see above).

At the business level, the study required the collection of *private internal data* regarding such factors as the design and use of budgeting and incentive systems, the organization of the controllership function, the impact of control systems on managerial behavior (cf., control loss indicators), and some control questions for variables measured at the corporate level (e.g., the degree of relatedness among business units, the degree of decentralization, etc.). Since these data are internal to the organization, since measures could be developed from the literature (cf., Chapter 5, p.70), and since a large number of business units were targeted, it was straightforward to rely on a *standardized questionnaire* as the method of data collection at the business unit level.

Generally, the choice of method used in this study is generally in line with Ramanujam and Varadarajan's argument that the need to focus more on the process and context issues of diversification (as in this study) should not necessarily be interpreted as a call for reversal to case-studies. In their opinion, small sample studies using a comparative research design will enable to study the complex web of issues surrounding diversification as well as cautious generalizations applicable to clearly defined contexts [1989: 544].⁵⁸

4.3. Questionnaire Development

Because a low response is a potential threat to survey research [Tomaskovic-Devey et al., 1994: 439; Kanuk and Berenson, 1975: 440], steps were undertaken to insure that the response rate would meet reasonable levels of acceptance. Specifically, a modified version of Dillman's *Total Design Method* was implemented [Dillman, 1978]. The *Total Design Method* consists of three parts: (i) writing questions, (ii) questionnaire construction, and (iii) survey implementation. Each part consists of a number of precise steps, the details of which are given in Dillman [1978]. Briefly, the first part, *writing questions*, deals with the kind of information being sought, deciding the question structure, and common wording problems. The second part, *questionnaire construction*, deals with designing the survey booklet, ordering the questions, formulating the pages, and pre-testing. Finally, *survey implementation*, deals with writing and printing the cover letter, preparing the envelope, adding postage, identifying the questionnaire, preparing return envelopes, assembling the mail-out package, selecting the mail-out date, and conducting follow-ups.

⁵⁸ In terms of generalizability, some academics have argued that even a sample survey with a low response rate is likely to produce more generalizable results than a case-study design that does not attempt to contact a general sample at all [Tomaskovic-Devey et al., 1994: 456].

The essence of the *Total Design Method* is that it shapes each aspect of the survey process in a way that will encourage good response [Dillman, 1978: 2, 12]. And indeed, Jaworski et al. [1993] and Jaworski and Young [1992], who have used the *Total Design Method* to administer their management control survey, reported that it is probably one of the most effective methods for maximizing response rates. Based upon this evidence, this study follows Dillman's approach to the extent possible. However, at some points, the procedure was modified for reasons given below. Therefore, rather than repeating each step of the *Total Design Method*, the details of which are published in Dillman [1978: 79-200], most attention will be devoted to the deviations from the method and the reasons why.

The first part of the *Total Design Method*, "writing questions," was based on a review of the management control, strategy, and organizational theory literatures. If no appropriate instruments could be located in these literatures, questions were designed *de novo* for this study. The questions were developed above and the full questionnaire is given in Appendix [D.1]. Except for the questions in Section VI of the questionnaire (General Information About the Business), all questions are close-ended. Finally, the questions were analyzed in line with recommendations given in Fowler [1993] and Dillman [1978] to avoid common wording problems and bias.

Dillman's procedures were also followed for the "questionnaire construction." Specifically, attention was paid to the order of the questions,⁵⁹ the page lay-out, and the design of the front and back cover. However, Dillman's detailed printing procedures and

⁵⁹ The impact of topic order and demographic item location on response rates is investigated in Roberson and Sundstrom [1990]. One important suggestion from their study is that topic order should be of greatest concern when the survey instrument is relatively lengthy [Roberson and Sundstrom, 1990: 357]. Given the length of the questionnaire used in this study (see below), it seemed definitely worthwhile not to be careless with question ordering.

booklet dimensions were modified since the American paper and envelope dimensions do not correspond with the European sizes. Nonetheless, attention was paid to present a well-organized booklet with dimensions which allowed it to be mailed conveniently and at minimum cost.

Once the questionnaire was in its "final" form, it was ready for *pre-testing*. The pre-test was designed to test the questions as well as the questionnaire [Dillman, 1978: 156]. The questionnaire was submitted to the scrutiny of three types of people. First, the survey was discussed with several *faculty colleagues* in order to assess validity issues and to reduce ambiguity. The most important concern of this pre-test was to assess whether the questionnaire would accomplish the study objectives. Therefore, it was important that these academics clearly understood the nature of the study [Dillman, 1978: 156-157]. All academic pre-testers were well acquainted with the study since they had read and discussed several drafts of the research proposal.⁶⁰ The second pre-test group consisted of *business unit managers*, i.e., the target subjects. Business unit managers were contacted and asked to complete the survey. These business unit managers were participants in residential seminars of *The Vlerick School of Management*. For each pre-test session, three to four managers were asked to complete the questionnaire individually in their hotel room. After completing the survey, the questionnaire was discussed in every detail during a debriefing session. In addition, the researcher was allowed to take home their marked-up copy of the questionnaire. After each "on-site" pre-test session, the questionnaire was modified and a new group of managers was contacted in another seminar. This procedure was repeated until only a very limited number of minor revisions was being made in the questionnaire [Dillman, 1978: 157-158; Jaworski and Young, 1992: 24-25]. A

⁶⁰ Kenneth Merchant (*University of Southern California*), Peter Brownell (*University of Melbourne*), Dominique Waeytens (*University of Ghent*), and the members of my Ph.D.-committee are gratefully acknowledged for their critical comments on the questionnaire.

total of eight managers participated in this pre-test.⁶¹ Finally, Dillman also advises submission of the questionnaire to the scrutiny of potential “users” of the data in order to obtain feedback from people with substantive knowledge of the survey topic [1978: 157]. Therefore, the questionnaire was also pre-tested with *controllers* selected from the *Management Accounting Roundtable* organized by *The Vlerick School of Management*. After a telephone invitation to participate in this pre-test, three controllers received a questionnaire in the mail. After having them evaluate and return the marked-up questionnaire, an extensive oral debriefing took place over the phone. A total of three corporate controllers participated in this third pre-test.^{62,63} The issues which arose from these pre-tests are discussed on the spot in Chapter 5 which deals with the measurement of variables.

Finally, “questionnaire implementation,” the third part of the *Total Design Method*, was largely conducted in line with Dillman's recommendations. Writing the cover letter, preparing the envelope, adding postage, identifying the questionnaire, preparing return envelopes, assembling the mail-out package, and selecting the mail-out date were all based on Dillman's procedures. An interesting point is that it was decided not to use the envelopes of the *Vlerick School of Management* for the mail-out package because these envelopes are used extensively for commercial purposes, i.e., to mail brochures for the short courses of the School. As such, it was feared that the envelope might be discarded without being opened by the prospective respondents who think that they have just

⁶¹ Werner Krott (*Vantix NV*), Johan Remmerie (*Barco NV*), Jacques Serrure (*Stork Mec NV*), Koen Smits (*Biffa Waste Services*), Rudi Labeau (*CMB Transport*), Michel Moyson (*Verimation*), Peter Scheerlinck (*Sabena Cargo*), and Philippe Waelkens (*Asea Brown Boveri*) are gratefully acknowledged for their participation in these pre-tests.

⁶² Extensive pre-testing by practitioners also served a second goal: it increased the likelihood that the survey instrument used a terminology which reflects contemporary business language. It has been argued that respondents can become offended if they are asked to complete a questionnaire which either uses outdated language or terminology that does not apply to their organization [Young, 1995].

⁶³ Geert Vanderstappen (*Spector Photo Group*), Karine De Vos (*Spector Photo Group*), and Erwin Van Gansbeke (*Interbrew*) are gratefully acknowledged for their participation in this pre-test.

received "another brochure from *The Vlerick School of Management*." Further, anonymity was considered important in this study because some questions are clearly "sensitive," such as, questions about *budget slack* and *earnings management* at the business unit level. However, in order to link the business unit data with the data obtained at the corporate level, it was necessary to use an identification code which was explained to the respondents (see Appendix [D.1], second page).

Finally, two *follow-ups* were administered.⁶⁴ Two weeks after the original mail-out, a first reminder was sent to non-respondents serving as a friendly and courteous reminder to return the questionnaire as soon as possible (see Appendix [D.3]). Four weeks after the first mailing, a letter and replacement questionnaire were sent to the remaining non-respondents (see Appendix [D.4]). This follow-up procedure is similar to the one recommended by Dillman [1978: 180-188]. However, Dillman also advises to do a third follow-up by certified mail seven weeks after the original mail-out. Although there is empirical evidence showing a positive but diminishing effect of reminders on response rates [Kanuk and Berenson, 1975], a third follow-up was not done because some reactions by phone or mail clearly illustrated that (potential) respondents had made up their mind about whether they would participate or not. Three mailings (original mail-out and two follow-ups) clearly were "enough." Moreover, the survey at the corporate level illustrates that a third follow-up might not be very effective.

In sum, the following materials were sent to the identified managers in the first mail-out package: a cover letter on university stationery explaining the purpose of the study (see Appendix [D.2]); the questionnaire itself (see Appendix [D.1]); a self-addressed, stamped return envelope; and a little gift (an automatic pencil with the

⁶⁴ It is interesting to note that Young [1995] found that, to date, most survey studies in management accounting did not use follow-up procedures to attempt to increase response rates.

Vlerick-logo). The same gift was also included in the second follow-up with replacement. Stamps were stuck on all mail-out envelopes in order to avoid a perception of "bulky mail" at the recipient's side.⁶⁵

It should be noted that the length of the questionnaire might have had a negative impact on the response rate [Tomaskevic-Devey et al., 1994: 445, 453]. The questionnaire is 18 pages long and contains about 150-160 items (depending on what is counted as an "item"). This is much more than the recommended maximum length of 11 pages and 125 items beyond which response rate reductions can be expected [Dillman, 1978: 55]. However, despite the fact that common sense suggests that short surveys should obtain higher response rates than longer ones, research evidence does not consistently support this view [Kanuk and Berenson, 1975]. Similarly, it is difficult to determine whether asking for financial information (cf., performance measures) and other sensitive information (e.g., earnings management) has had a negative impact on the response rate [Tomaskovic-Devey, 1994: 445, 453].

More corporate support for the survey also might have helped to boost response rates.⁶⁶ Unfortunately, only few CFOs were willing to bother their business managers with an academic questionnaire (cf., the low response to the request to help select the business unit managers to which a questionnaire could be sent - see above, Section 4.2.2, p.57).

⁶⁵ Kanuk and Berenson [1975] give a detailed overview of the effect of survey length, format, size, method of reproduction, personalization, anonymity, rewards, return envelopes, stamps, etc. on response rates.

⁶⁶ Previous studies which administered a questionnaire via a superior and/or obtained his full support reported response rates of 93% [Govindarajan, 1988; 1989]; 85% [Merchant, 1985b, 1984, 1981]; 82% (Singaporean sample) and 75% (Australian Sample) [Harrison, 1993; 1992]; 74% [Collins et al., 1984]; 71% [Fraser, 1995]; 68% [Cammann, 1976]; 64% [O'Connor, 1995]; and 56% [Dunk and Lysons, 1995].

The high English literacy rate among the target managers in Belgium and Europe enabled the survey to be conducted in English [cf., Govindarajan and Gupta, 1995]. Indeed, 134 respondents or 88% indicated that they use English in business-related communication at least “occasionally” (91 managers or 60% use English at least “frequently” — see Appendix [D.1], Section VI, item 9: *mean*=3,62; *s.d.*=0,94; *n*=152). Moreover, 112 respondents or 74% have a university degree or higher (see Appendix [D.1], Section VI, item 8: *mean*=1,87; *s.d.*=0,62; *n*=152). The use of English as the common language of the research overcomes interpretation problems associated with the translation of questionnaires into other languages [O'Connor, 1995: 389; Lau et al., 1995: 365; Chow et al., 1991: 214].

According to Dillman [1978: 21-28], the *Total Design Method* should result in response rates considerably higher than 40-50%, a level which is quite acceptable for mail surveys. Although the response rate was stuck at about this level, it seems reasonable to accept that without careful implementation it might have been much lower given the length of the questionnaire, the use of English, the high organizational level of the respondents, the possibility to check the identity of the respondent (cf., identification code), and the international nature of the mailing. Unfortunately, this statement cannot be validated empirically.

4.4. *Additional Reliability and Validity Tests*

In addition to the attention paid to the development of the questionnaire, two further steps were undertaken to secure highly reliable and valid data and/or measures.

First, a non-response bias analysis was conducted at the business level too. It is often maintained that the profile of non-respondents is likely to be more similar to that of

late respondents than that of early respondents [Fowler, 1993]. Therefore, this study compares the means of all major variables measured at the business level between the respondents who replied immediately and the respondents who replied after the second follow-up. This analysis is presented in Section 5.10, Table 30, p.154, after the major variables have been constructed from the questionnaire.

Secondly, the survey was designed to permit the evaluation of scale validity and reliability. Therefore, the questionnaire solicits, to the extent possible, several questions for each construct so that a *factor analysis* (validity) and *internal consistency analysis* (reliability) can be performed on the responses to each set of questions. The details of these validity and reliability tests are reported in Section 5.2 of the next chapter.

5. *D*EFINITION AND MEASUREMENT OF VARIABLES

In what follows, the variables included in this study are defined, operationalized, and empirically validated. The measures in this section are developed as they appear in the business unit questionnaire (see Appendix [D.1]).

5.1. *Scale Format*

Likert scaling has been widely used in accounting research [Brownell, 1995: 42; Schweikart and O'Connor, 1989: 104]. A desirable quality of a measurement scale is variability. There are two ways to increase opportunities for variability in scales: (i) have lots of scale items and (ii) have numerous response options within items [DeVellis, 1991: 64].⁶⁷ Since the questionnaire in this study contains many variables, the opportunity to have lots of items for each variable is obviously limited given the length of a survey instrument. Moreover, it should be emphasized that scales with too many items can create problems with respondent fatigue or response biases. Also, adding items indefinitely has progressively less impact on scale reliability [Hinkin, 1995: 972].

Given the limitations on the number of items in each scale, the desired variability will have to come, to a certain extent, from the number of response options within items. From this perspective, a 7-point scale will do better than a 5-point, 3-point, or dichotomous scale. Moreover, it has been argued that the typical coarse Likert-scales (e.g., 7-, 5-, or 3-point scales) reduce the probability of detecting true interaction effects and

⁶⁷ Yet another, and maybe best, way to get sufficient variation is to choose the sample to ensure variability. However, the limitations of this strategy have been discussed above in Section 4.1, p. 45.

cause spurious results [Russell and Bobko, 1992]. To overcome these deficiencies, a scale should be as nearly continuous as possible. However, continuous scales are cumbersome and labor intensive to employ [Russell and Bobko, 1992].

Given the above considerations, most variables in this study will be measured on anchored 7-point Likert-scales.⁶⁸ Such scales should provide enough opportunity for variability without posing any problems in terms of reliability. It has been shown that the reliability of Likert-scales increases up to the use of five-points, but then it levels off [Hinkin, 1975: 973]. The 7-point Likert-scales used in this study are presented as follows (the *labels* are adjusted according to the nature of the question and the *numbers* atop the scale are not printed in the final questionnaire) [cf., Lyne, 1988: 198]:

In this study, most scales use the labels *definitely false* vs. *definitely true* rather than *strongly disagree* vs. *strongly agree* because the first labeling points more to an actual situation rather than to whether the respondent does or does not agree with that actual situation. For instance, *strongly disagree* with the following statement "budgets accurately reflect business unit performance" can mean two things: (i) in this company, it is *not* the policy to use budgets as an accurate assessment of business unit performance; or (ii) in this company, it is the policy to use budgets as an accurate assessment of business unit performance, but the respondent does not agree with it.

⁶⁸ Originally, it was tried to use 11-point scales because such scales are still somewhat more "continuous" than 7-point scales. However, during the pre-tests some respondents seemed to experience difficulty with these 11-point scales because they felt they could not sufficiently distinguish between each of the choice alternatives (boxes). In short, from their remarks, it appeared that the respondents did not approach this 11-point scale as a "continuum." Hence, given that they took the scale as "categorical" it was necessary to reduce the categories to 7 in order to reduce partitioning error [Brownell, 1995: 46].

5.2. *Scale Validity and Reliability*

As aforementioned, the survey was designed to permit the evaluation of scale validity and reliability. Specifically, *validity* deals with the extent to which items in the survey truly measure what they purport to measure [DeVellis, 1991; Cook and Campbell, 1979; Kerlinger, 1973]. *Reliability*, on the other hand, mainly deals with the consistency of items within a measure or the extent to which item responses correlate with the total scale score [Hinkin, 1995; Nunnally, 1978].

Appendix [F.1] gives an overview of the descriptive statistics of each item in the questionnaire (without any manipulation, e.g., without reverse coding). Appendices [F.2]-[F.6] provide all the details of the analyses done to assess the validity and reliability of the scales which measure (i) *control system characteristics* (Section I of the survey and Appendix [F.2]); (ii) *impact of control systems on managerial behavior* (Section II of the survey and Appendix [F.3]); (iii) *business unit performance* (Section III of the survey and Appendix [F.4]); (iv) *business unit strategy* (Section IV of the survey and Appendix [F.5]); and (v) *(de)centralization of decision-making* (Section V of the survey and Appendix [F.6]). Key tables are also reported in the text to avoid turning back and forth to the Appendices.

First, factor analysis is used to assess the validity of scales, i.e., to determine empirically how many constructs, variables, or factors underlie a set of items. All items in the questionnaire were taken from previous studies to the extent possible and developed expressly for this study if no measures were available in the extant literature. Factor analysis should confirm whether or not items load on the variables as predicted. Simply

put, factor analysis summarizes the data by grouping together items that are correlated. Items that do not load as predicted will be deleted from the measure (see further).

At this point, it must be emphasized that factor analysis is not used in this study as a rigorous statistical tool which fulfills all conditions of statistical power necessary to produce strong (factor-)coefficients to be used in subsequent analyses. Rather, factor analysis is used to get a feel for the validity of the measures developed from previous studies or from scratch. If *theoretical predictions* and *empirical validations* reasonably converge (albeit not always with the strongest statistical power), then, there is enough reason to believe that the measures used in the study truly measure the constructs they purport to measure.

Although reliability is a necessary pre-condition for validity [Cook and Campbell, 1979; Nunnally, 1978; Kerlinger, 1973], it is important to assess *both* validity and reliability since a high internal consistency of items in a scale does not necessarily guarantee that all items reflect the influence of a single underlying variable [DeVellis, 1991: 92].⁶⁹

Cronbach's Alpha will be used as the overall indicator of scale reliability. Although there has been much discussion about the cut-off value of α , it is generally accepted that $\alpha=0,70$ should be used as a lower acceptable bound [Nunnally, 1978]. However, it is not unusual to see published scales with lower alphas, sometimes as low as $\alpha=0,55$ (which is

⁶⁹ In a sense, the *Cronbach Alpha* data are redundant because the measures were first constructed through factor analysis. As such, the items in a scale should be highly correlated since factor analysis made them so. However, *Cronbach Alpha alone* does not tell the full story since a high internal consistency of items in a scale does not necessarily guarantee that all items reflect the influence of a single underlying variable [DeVellis, 1991: 92]. This was the case, for example, for the scale designed to measure *top management's tolerance for interim budget deviations* which exhibits good reliability ($\alpha=0,68$) but lousy validity nonetheless (see Section 5.3.7, p.95). Moreover, from a pure practical side, *Cronbach's Alpha* is a well-understood and very informative statistic to use in summary tables of the final scales (e.g., Table 28, p.149).

usually the case for scales with few items) [Hinkin, 1995: 978]. Hence, alphas of 0,60 or more are usually considered as "acceptable" [DeVellis, 1991: 85]. Again, items that seriously reduced α -levels were deleted. Detailed computer output is given in Appendix [F.2]-[F.6] and key results and tables are reported and discussed in Sections [5.3]-[5.8] of the core text from p.74 onwards.

It should be emphasized that care must be taken in deleting items *post hoc* based only on the results of factor analysis and internal consistency measures [Hinkin, 1995: 977; Alt, 1990: 79]. However, researchers are not always good at making judgments and sometimes stick too easily to their priors, or, conversely, look for patterns in (random) data, depending on what makes their case. Therefore, a pretty *conservative stance* was taken in this study: items are retained in a scale only if three conditions are fulfilled, i.e., (i) if their categorization is in line with prior theoretical expectations; (ii) if they load together empirically in the factor analysis; and (iii) if they do not seriously reduce α -levels. Condition (i) should prevent to gather together items which result from patterns in the data derived mathematically pure and simple. Conditions (ii) and (iii) then should avoid to stick too strongly to priors. A summary of the final variables is reported in Table 28, p.149.

5.3. *Control System Design and Use (Section I of the Questionnaire)*

Merchant suggested that the overall control philosophy of a firm may be captured in a very few macro variables and hypothesized that one macro control characteristic is the degree of *tightness* or *looseness* of the control system [Merchant, 1985a: 76; Fisher, 1995]. However, there is much confusion in the literature about such macro constructs.

For instance, Hopwood's *budget-constrained* vs. *profit-conscious* control, Anthony's *tight* vs. *loose* control, and Simons' notion of *interactive* vs. *diagnostic* control all have some elements in common but also differ from one another in some other dimensions.⁷⁰

Therefore, this study focuses on several *micro control attributes* rather than on a monolithic and difficult to operationalize macro construct. In this respect, the *detached* vs. *involved* control construct referred to above is broken down into micro control attributes which are operationalized attribute per attribute. And indeed, the factor analysis presented in Appendix [F.2] and summarized in Table 5 clearly illustrates that the data do not fall into a single macro phenomenon.

Generally, the sequence which is followed goes from *constructs* (e.g., *detached* vs. *involved* control) to *variables* (e.g., *emphasis on meeting the budget*, *tolerance for interim budget*

⁷⁰ For instance, Hopwood [1973] distinguished the *budget-constrained* vs. *profit-conscious* budgeting style. Budgeting is *constrained* when the evaluation of managerial performance is primarily based upon the manager's ability to continually meet the budget on a short term basis. In this style, the manager will receive an unfavorable evaluation if his actual performance deviates negatively from the budget target [Hopwood, 1973]. Budgeting is *profit-conscious*, on the other hand, when the business unit manager's performance is evaluated on the basis of his ability to increase the general effectiveness of his unit's operations in relation to the longer term purposes of the organization [Hopwood, 1973]. The distinction between Hopwood's *budget-constrained* and *profit-conscious* budgeting style is comparable (but not equal) to the distinction made by Anthony et al. [1992] between *tight* and *loose* control. Budget control is *tight* when business unit managers are required to meet specific short term goals. In a *tight* control philosophy, deviations from the budget are not tolerated and should disappear in the short term. Furthermore, Anthony et al. [1992] argue that such *tight* control requires a strong involvement of top management in the day-to-day activities of the business units, i.e., it requires face-to-face discussions with business unit managers and an intimate knowledge of the operations of the business units. And at this point, Anthony's concept of *tight* vs. *loose* control comes very close to what Simons [1995, 1992, 1991, 1990, 1987b] calls *diagnostic* vs. *interactive* controls. According to Simons, control is *interactive* when top management actively uses planning and control systems to monitor and intervene in ongoing decision activities of business unit management. Control is *diagnostic*, on the other hand, when top managers direct their attention primarily to ensuring that predetermined control procedures are established and maintained by business unit managers. In a word, the control process is either *interactive* or *diagnostic* depending on the extent to which corporate managers use control systems to personally involve themselves in the decision activities of their business unit managers. In addition, other authors have made a distinction between an *external* and *internal* mode of control [Cammann and Nadler, 1976]; between *administrative* and *interpersonal* controls [Merchant, 1981; Bruns and Waterhouse, 1975], between *financial* and *strategic* controls [Hitt et al., 1990; Baysinger and Hoskisson, 1989; Hoskisson and Hitt, 1988], etc.

deviations, etc.) to measures (cf., the scales and items in the questionnaire). However, since the construct of detached vs. involved controls is poorly understood, it is also advisable to “construct the construct” from the empirical data [Brownell, 1995: 39].

Specifically, under this heading, 7 variables were developed to measure the characteristics of the control system, notably, (i) *emphasis on meeting the budget* (Section 0, p.82), (ii) *budget revisions during the year* (Section 5.3.2, p.85), (iii) *bottom-line budget control* (Section 5.3.3, p.86), (iv) *formality of budget-related communication* (Section 5.3.4, p.88), (v) *intensity of budget-related communication* (Section 5.3.5, p.89), (vi) *budget participation* (Section 5.3.6, p.94), and (vii) *tolerance for interim budget deviations* (Section 5.3.7, p.95). In turn, each variable was operationalized through several items taken from published research or developed from scratch if necessary. To avoid bias towards the pre-specified 7 variables, all items were then randomized in Section I.A of the questionnaire. Finally, as an empirical test, a factor analysis was performed on these randomized items to gather together those items which cluster statistically. Hence, the extent to which these empirical clusters correspond with the pre-specified theoretical variables will serve as an indication of the validity of the measures.

Before moving on to a discussion of each individual variable, the factor analysis carried out on all items is presented. This discussion might seem a bit out of order, but it avoids needless repetition in the text. Appendix [F.2] shows the correlation coefficients among all items and the output of the factor and reliability analysis. Key findings are summarized in Table 4, Table 5, Table 6, and Figure 3 and will be discussed shortly.

Factor analysis is very susceptible to sample size effects. Larger samples increase the stability and generalizability of the conclusions reached by means of factor analysis. Recommendations for *subject-to-item* ratios vary widely from as low as 4:1 to as high as

10:1, but, generally, a sample size of $n=150$ (as in this study) should be sufficient for exploratory factor analysis, especially if correlations among items are reasonably strong [Hinkin, 1995; DeVellis, 1991].⁷¹

In *Panel A* of Appendix [F.2], 47 items are factor analyzed which results in a rather low *subject-to-item ratio* of 153:47 (i.e., somewhat more than 3:1). However, the (*anti-image*) correlation matrix shows a fairly large proportion of (*low*) high correlations. Moreover, the overall *Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy* is more than acceptable (0,72454) and the individual *Measures of Sampling Adequacy (MSA)* for each item (which are shown on the diagonal of the *Anti-Image Correlation Matrix*) all have values higher than 0,50 except for items *I.A.10*, *I.A.13_R*, *I.A.17*, *I.A.23_R*, *I.A.34*, *I.A.44_R*, and *I.B.1_R*. Finally, the null-hypothesis that the correlation matrix is the *identity matrix* can be rejected ($p=0,00000$ for the *Bartlett Test of Sphericity*) (for more technical details on these tests, see footnote 71). In short, although the factor analysis is done with a low *subject-to-item ratio*, all tests lead to the conclusion that the use of factor analysis is appropriate.⁷²

⁷¹ The *correlation coefficients* among items are given in Appendices [F.2] along with their *significance* and *partial correlations*. Generally, items must be related to each other for the factor model to be appropriate. If the correlations among items are small, it is unlikely that they share common factors. If items share common factors, the *partial correlation coefficients* should be small when the linear effects of other items are eliminated. Put differently, the *partial correlations* estimate the correlations between each item's unique factor. Hence, for the factor analysis to be appropriate, the (*partial*) correlation matrix should show a fairly large proportion of (*low*) high coefficients. The (negative of the) *partial correlations* is given in the "*Anti-Image Correlation Matrix*" (see Appendices [F.2]). Hence, if the proportion of large coefficients in the *Anti-Image Correlation Matrix* is high, the use of a factor model might be inappropriate. The *Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy* is an index which compares the magnitudes of the correlation coefficients to the magnitudes of the *partial correlation coefficients*. Put simply, small values for the *KMO-index* indicate that the correlations are small relative to the *partial correlations*. Hence, the *KMO-index* should be as large as possible, preferably higher than 0,70 and definitely higher than 0,50 to be acceptable. A similar *Measure of Sampling Adequacy (MSA)* can be computed for each individual item and is shown on the diagonal of the *Anti-Image Correlation Matrix*. Again, reasonably large values for *MSA* should be observed for a good factor analysis. The *Bartlett Test of Sphericity* is designed to test the null-hypothesis that the correlation matrix is the *identity matrix*, i.e., all diagonal terms are 1 and all off-diagonal terms are zero. The null-hypothesis can be rejected when the calculated value of the test statistic is high and the *p-value* low (see also *SPSS Manual*). As will be discussed shortly, the data in this study generally fulfill these tests and conditions.

⁷² Technically, items with low *MSA-values* could be removed from the factor analysis which would, in turn, increase the *subject-to-item ratio*. However, given the exploratory nature of this analysis, it was decided to retain all items.

Next, several strategies were tried, evaluated, and compared to *extract* and *rotate* factors. Although there are relevant statistical considerations to both steps, the final test of the analysis is usually its reasonableness, interpretability and scientific utility [Tabachnick and Fidell, 1989: 598]. It is often recommended to use *principal component extraction* as a preliminary technique [Johnson and Wichern, 1992: 435; Tabachnick and Fidell, 1989: 623] - an advice which is followed in most management studies [Hinkin, 1995: 974-975]. Nonetheless, *maximum likelihood extraction* was tried too. However, none of the extraction techniques provided an interpretable solution without rotation. After rotation (which will be discussed next), both the *principal component* and *maximum likelihood* solutions became very comparable and, therefore, *principal component extraction* was chosen. The *maximum likelihood* solutions are not reported for the sake of brevity. No specific value was set to determine the appropriateness of factor loadings. The most commonly mentioned criterion for item loadings is 0,40 although it is no exception that items are retained with as little as 0,30 loading on a specified factor [Hinkin, 1995: 975].

Probably the most important consideration is the *number* of factors to extract. Table 4 shows 15 factors with an *eigenvalue* larger than 1. However, recall that, theoretically, 7 variables were expected to be represented by these items. Moreover, the *scree-plot* kind of suggests that 7 factors might be appropriate, although it does not give a very enlightening picture (see Figure 3). Also, statisticians have argued that there is a tendency to extract too many factors as the number of items is greater than 50 (cf., 47 in this analysis) [Alt, 1990: 64]. Given the exploratory nature of the factor analysis and the balancing act between theoretical and mathematical trade-offs, it was decided to extract 7 factors instead of the full 15 factors with an *eigenvalue* larger than 1. These 7 factors account for almost half of the variance (47,8% - see Table 4). Although the outcome of

factor analysis might have become less strong (e.g., less variance explained, lower communality), the 7-factor-solution makes sense for it to be of any use in the reconciliation of empirical outcomes and theoretical expectations.

Figure 3
FACTOR SCREE PLOT FOR CONTROL SYSTEM CHARACTERISTICS

To make the output interpretable, both orthogonal (*Varimax*) and non-orthogonal (*Oblique*) rotations were performed and compared (see Table 5). *Oblique* rotation ($\delta=0$) was finally chosen for two reasons. First, as shown by the *factor correlation matrix* (Table 6), it seems to make no sense to force the *control system characteristics* to be fully independent [Johnson and Wichern, 1992: 429]. Second, although not so fundamentally different, the *Oblique* solution results in stronger scales compared to the *Varimax* solution (see Table 5): both “bottom-line budget control” (+ item I.A.16_R) and “intensity of budget control” (+ item I.A.37 and I.A.45) are stronger with *Oblique* rotations (cf., underlined items in Table 5).

Table 4
PRINCIPAL COMPONENT ANALYSIS FOR CONTROL SYSTEM CHARACTERISTICS

Variable	Communality	Factor	Eigenvalue	Pct. of Var.	Cum. Pct.
I.A.1	1,00	1	8,36602	17,4	17,4
I.A.2	1,00	2	3,47799	7,2	24,7
I.A.3_R	1,00	3	2,97545	6,2	30,9
I.A.4	1,00	4	2,42413	5,1	35,9
I.A.5_R	1,00	5	2,03457	4,2	40,2
I.A.6	1,00	6	1,91271	4,0	44,1
I.A.7	1,00	7	1,74458	3,6	47,8
I.A.8_R	1,00	8	1,51245	3,2	50,9
I.A.9	1,00	9	1,45867	3,0	54,0
I.A.10	1,00	10	1,33615	2,8	56,8
I.A.11_R	1,00	11	1,32175	2,8	59,5
I.A.12	1,00	12	1,26499	2,6	62,1
I.A.13_R	1,00	13	1,17650	2,5	64,6
I.A.14	1,00	14	1,09320	2,3	66,9
I.A.15_R	1,00	15	1,02572	2,1	69,0
I.A.16_R	1,00	16	0,93890	2,0	71,0
I.A.17	1,00	17	0,85719	1,8	72,8
I.A.18_R	1,00	18	0,83496	1,7	74,5
I.A.19	1,00	19	0,79747	1,7	76,2
I.A.20_R	1,00	20	0,78532	1,6	77,8
I.A.21	1,00	21	0,72233	1,5	79,3
I.A.22	1,00	22	0,69476	1,4	80,7
I.A.23_R	1,00	23	0,66137	1,4	82,1
I.A.24_R	1,00	24	0,62717	1,3	83,4
I.A.25_R	1,00	25	0,58518	1,2	84,6
I.A.26_R	1,00	26	0,56693	1,2	85,8
I.A.27_R	1,00	27	0,50438	1,1	86,9
I.A.28	1,00	28	0,49037	1,0	87,9
I.A.29	1,00	29	0,48535	1,0	88,9
I.A.30	1,00	30	0,46888	1,0	89,9
I.A.31_R	1,00	31	0,43714	0,9	90,8
I.A.32	1,00	32	0,42538	0,9	91,7
I.A.33	1,00	33	0,39012	0,8	92,5
I.A.34	1,00	34	0,38641	0,8	93,3
I.A.35_R	1,00	35	0,36473	0,8	94,1
I.A.36_R	1,00	36	0,33536	0,7	94,8
I.A.37_R	1,00	37	0,30475	0,6	95,4
I.A.38_R	1,00	38	0,29533	0,6	96,0
I.A.39	1,00	39	0,27865	0,6	96,6
I.A.40	1,00	40	0,24657	0,5	97,1
I.A.41_R	1,00	41	0,23292	0,5	97,6
I.A.42	1,00	42	0,22013	0,5	98,0
I.A.43	1,00	43	0,19756	0,4	98,5
I.A.44_R	1,00	44	0,18306	0,4	98,8
I.A.45	1,00	45	0,16485	0,3	99,2
I.A.46A	1,00	46	0,14212	0,3	99,5
I.A.46B	1,00	47	0,13374	0,3	99,8
I.B.1_R	1,00	48	0,11576	0,2	100,0

In the next subsections [0]-[5.3.7], the empirical classifications in Table 5 will be compared with the theoretical expectations, i.e., with the items which were expected to measure each variable, notably, (i) *emphasis on meeting the budget*, (ii) *budget revisions during the year*, (iii) *bottom-line budget control*, (iv) *formality of budget-related communication*, (v) *intensity of budget-related communication*, (vi) *budget participation*, and (vii) *tolerance for interim budget deviations*, respectively.

Table 5
FACTOR GROUPINGS OF ITEMS WHICH MEASURE CONTROL SYSTEM CHARACTERISTICS:
COMPARISON OF VARIMAX VS. OBLIQUE ROTATIONS (7-FACTOR SOLUTION)

VARIMAX		OBLIQUE	
I.A.29	Emphasis on Meeting the Budget	I.A.29	Emphasis on Meeting the Budget
I.A.14	Emphasis on Meeting the Budget	I.A.14	Emphasis on Meeting the Budget
I.A.32	Emphasis on Meeting the Budget	I.A.19	Emphasis on Meeting the Budget
I.A.19	Emphasis on Meeting the Budget	I.A.42	Emphasis on Meeting the Budget
I.A.42	Emphasis on Meeting the Budget	I.A.32	Emphasis on Meeting the Budget
I.A.4	Emphasis on Meeting the Budget	I.A.4	Emphasis on Meeting the Budget
I.A.2	Emphasis on Meeting the Budget	I.A.2	Emphasis on Meeting the Budget
I.A.18_R	<i>Tolerance Interim Deviations</i>	I.A.38_R	Emphasis on Meeting the Budget
I.A.38_R	Emphasis on Meeting the Budget	I.A.18_R	<i>Tolerance Interim Deviations</i>
I.A.16_R	<i>Bottom-line Budget Control</i>		
I.A.24_R	Budget Revisions During Year	I.A.24_R	Budget Revisions During Year
I.A.6	Budget Revisions During Year	I.A.6	Budget Revisions During Year
I.A.31_R	Budget Revisions During Year	I.A.31_R	Budget Revisions During Year
I.A.28	Budget Revisions During Year	I.A.28	Budget Revisions During Year
I.A.36_R	Budget Revisions During Year	I.A.36_R	Budget Revisions During Year
I.A.33	Bottom-line Budget Control	I.A.33	Bottom-line Budget Control
I.A.43	<i>Intensity of Budget Control</i>	I.A.43	<i>Intensity of Budget Control</i>
I.A.37_R	<i>Intensity of Budget Control</i>	I.A.12	Bottom-line Budget Control
I.A.12	Bottom-line Budget Control	I.A.10	<i>Intensity of Budget Control</i>
I.A.27_R	Bottom-line Budget Control	I.A.27_R	Bottom-line Budget Control
I.A.10	<i>Intensity of Budget Control</i>	I.A.16_R	<i>Bottom-line Budget Control</i>

I.A.41_R I.A.15_R I.A.40 I.A.46B I.A.8_R I.A.20_R I.A.46A	Intensity of Budget Control Intensity of Budget Control <i>Budget Revisions During Year</i> Intensity of Budget Control Intensity of Budget Control Intensity of Budget Control Intensity of Budget Control	I.A.41_R I.A.15_R I.A.40 I.A.46B I.A.8_R I.A.37_R I.A.20_R I.A.46A I.A.45	Intensity of Budget Control Intensity of Budget Control <i>Budget Revisions During Year</i> Intensity of Budget Control Intensity of Budget Control <u>Intensity of Budget Control</u> Intensity of Budget Control Intensity of Budget Control <u>Intensity of Budget Control</u>
I.A.39 I.A.30 I.A.34 I.A.7 I.A.11_R I.A.35_R I.A.23_R	Formality of Budget Control Formality of Budget Control Formality of Budget Control Formality of Budget Control Formality of Budget Control <i>Tolerance Interim Deviations</i> <i>Intensity of Budget Control</i>	I.A.39 I.A.30 I.A.34 I.A.7 I.A.11_R I.A.35_R I.A.23_R	Formality of Budget Control Formality of Budget Control Formality of Budget Control Formality of Budget Control Formality of Budget Control <i>Tolerance Interim Deviations</i> <i>Intensity of Budget Control</i>
I.B.1_R I.A.3_R I.A.13_R I.A.5_R I.A.1 I.A.21	Participation in Budget Setting <i>Tolerance Interim Deviations</i> <i>Intensity of Budget Control</i> <i>Emphasis on Meeting the Budget</i> Participation in Budget Setting <i>Formality of Budget Control</i>	I.B.1_R I.A.3_R I.A.13_R I.A.5_R I.A.1 I.A.21	Participation in Budget Setting <i>Tolerance Interim Deviations</i> <i>Intensity of Budget Control</i> <i>Emphasis on Meeting the Budget</i> Participation in Budget Setting <i>Formality of Budget Control</i>
I.A.26_R I.A.22 I.A.25_R I.A.9 I.A.44_R I.A.45 I.A.17	Tolerance Interim Deviations Tolerance Interim Deviations <i>Bottom-line Budget Control</i> Intensity of Budget Control <i>Emphasis on Meeting the Budget</i> <u>Intensity of Budget Control</u> Intensity of Budget Control	I.A.22 I.A.26_R I.A.25_R I.A.44_R I.A.9 I.A.17	Tolerance Interim Deviations Tolerance Interim Deviations <i>Bottom-line Budget Control</i> <i>Emphasis on Meeting the Budget</i> Intensity of Budget Control Intensity of Budget Control

Table 6
CORRELATIONS OF OBLIQUE FACTORS OF CONTROL SYSTEM CHARACTERISITCS

	Factor 1					
Factor 2	0,05894	Factor 2				
Factor 3	-0,12462	0,00157	Factor 3			
Factor 4	0,09391	-0,02294	-0,09196	Factor 4		
Factor 5	-0,20627	-0,04063	0,09423	-0,06487	Factor 5	
Factor 6	0,16846	-0,01364	-0,04756	0,11925	-0,05924	Factor 6
Factor 7	-0,20667	-0,14239	0,18894	-0,08180	0,07738	-0,09226

5.3.1. Corporate Management's Emphasis on Achieving Budget Plans

This budgeting attribute captures the extent to which top management considers meeting the budget essential and even more important than the general effectiveness of the business units' operations in relation to the long-term purposes of the organization [cf., Hopwood, 1973].

In the management control literature, Hopwood's [1972] measure of *budget evaluative style* has been used very often to assess budget emphasis [e.g., Ross, 1995; Dunk and Wright, 1995; Dunk, 1993a, 1990, 1989; Harrison, 1993, 1992; Brownell and Dunk, 1991; Imoisili, 1989; Govindarajan, 1988; Brownell and Hirst, 1986; Brownell, 1985, 1982a; Otley, 1978]. However, this measure contains items (e.g., concern with quality, attitude toward work) which are very relevant at the operational level (e.g., work unit, cost center, etc.) and even at higher managerial levels within business units (e.g., marketing managers [cf., Brownell, 1985, 1982a] or other middle-level functional managers [cf., Harrison, 1993, 1992; Brownell and Hirst, 1986]), but less at the junction between the head office and the business unit general managers. Therefore, this measure will not be used in this study and a new instrument will be developed *de novo*.

Instead, respondents were asked to indicate the truth or falsehood of the following statements: (i) *I am constantly reminded by the corporate parent of the need to meet budget targets* (item I.A.2); (ii) *Responding to new, unforeseen opportunities is considered more important by the corporate office than achieving the budget target* (item I.A.38_R); (iii) *Budgets are used by the corporate parent mainly to give very broad guidelines as to authorized activities* (item I.A.44_R); (iv) *Corporate superiors judge my performance predominantly on the basis of attaining budget goals* (item I.A.29); (v) *Control over my business is achieved by the corporate parent principally by monitoring how well my budget is on target* (item I.A.4); (vi) *In the eyes of my corporate superiors, achieving the budget is an accurate reflection of whether I am succeeding in my business* (item I.A.32); (vii) *My corporate superiors are very considerate of my*

explanations of deviations from the budget (item I.A.5_R); (viii) *Not achieving my budget has a strong impact on how my performance is rated by my corporate superiors* (item I.A.14); (ix) *My promotion prospects depend heavily on my ability to meet the budget* (item I.A.19) [Hirst, 1983: 604]; and (x) *In the eyes of my corporate superiors, not achieving the budget reflects poor performance* (item I.A.42). The scoring ranges from 1 (definitely false) to 7 (definitely true). The higher the score, the more achieving the budget is emphasized relative to responding to opportunities which may be important for the long-term effectiveness of the business unit.⁷³

Table 7

CRONBACH'S ALPHA FOR "EMPHASIS ON MEETING THE BUDGET"

PANEL A: ORIGINAL SCALE (10 ITEMS) → $\alpha=0,7206$

PANEL B: ADJUSTED SCALE (8 ITEMS) → $\alpha=0,8280$

		Alpha if Item Deleted	
		Panel A	Panel B
<i>I am constantly reminded by the corporate parent of the need to meet budget targets</i>	I.A.2	0,6912	0,8143
<i>Control over my business is achieved by the corporate parent principally by monitoring how well my budget is on target</i>	I.A.4	0,7081	0,8182
<i>My corporate superiors are very considerate of my explanations of deviations from the budget</i>	I.A.5_R	0,7811	
<i>Not achieving my budget has a strong impact on how my performance is rated by my corporate superiors</i>	I.A.14	0,6605	0,7879
<i>My promotion prospects depend heavily on my ability to meet the budget</i>	I.A.19	0,6744	0,7948
<i>Corporate superiors judge my performance predominantly on the basis of attaining budget goals</i>	I.A.29	0,6463	0,7768
<i>In the eyes of my corporate superiors, achieving the budget is an accurate reflection of whether I am succeeding in my business</i>	I.A.32	0,6620	0,7887
<i>Responding to new, unforeseen opportunities is considered more important by the corporate office than achieving the budget target</i>	I.A.38_R	0,6957	0,8295
<i>In the eyes of my corporate superiors, not achieving the budget reflects poor performance</i>	I.A.42	0,6649	0,7971
<i>Budgets are used by the corporate parent mainly to give very broad guidelines as to authorized activities</i>	I.A.44_R	0,7581	

⁷³ All items are scored consistent with the direction of H_1 , i.e., increased diversification corresponds with high scores which, in turn, correspond with greater emphasis on meeting the budget, greater tolerance for interim budget deviations, greater interest in the bottom-line budget result, fewer budget revisions during the year, greater participation in budget-related activities, more formal and less interactive budget-related communications, more decentralized budget controls, and more divisional-based and formula-based incentives.

The factor analysis reveals that all items load on the same factor except items *I.A.5_R* and *I.A.44_R* (which are underlined in the text above, see also Table 5). *Cronbach's Alpha* for the full original scale (all 10 items) is 0,72 and goes up to 0,82 if items *I.A.5_R* and *I.A.44_R* are deleted (see Table 7). Since both the validity and reliability of the scale improve, items *I.A.5_R* and *I.A.44_R* are deleted from the final scale.

5.3.2. Budget Revisions During the Year

It is generally accepted that budgets used for control and evaluation purposes should be revised only in those circumstances where the approved budget has become so unrealistic that it no longer provides a useful control device. Clearly, if the budget could be revised any time at will by the budgetee, there would be no point in developing a budget. On the other hand, if budgets are essentially used as a planning tool, there may be procedures that provide for a systematic updating of the budgets (cf., roll-forward budgets) [Anthony et al., 1992].

An assessment of the budget revision policy was obtained by asking the respondents to indicate the truth or falsehood of the following newly developed items: (i) *Budgets are usually adjusted during the year to those circumstances which could not be foreseen at the time the budget was drawn up* (item *I.A.24_R*); (ii) *Changes in the budget are difficult to get approved by the corporate parent* (item *I.A.28*); (iii) *Budget targets are strong commitments and cannot be changed during the year* (item *I.A.6*); (iv) *Budgets are not revised during the year unless the assumptions on which the budget was based have become so unrealistic that the budget no longer provides a useful control device* (item *I.A.40*); (v) *Budgets are updated on a regular basis (e.g., monthly or quarterly) to the new business environment* (item *I.A.31_R*); and (vi) *In our company, a budget is essentially a forecast rather than a true commitment* (item *I.A.36_R*). The answer to these items can vary from 1 (definitely false) to 7 (definitely true). The higher the score, the more exceptional are budget revisions during the year.

Table 8
CRONBACH'S ALPHA FOR "BUDGET REVISIONS DURING THE YEAR"

ORIGINAL SCALE (6 ITEMS) → $\alpha=0,7945$	Alpha if Item Deleted	
<i>Budget targets are strong commitments and cannot be changed during the year</i>	I.A.6	0,7354
<i>Budgets are usually adjusted during the year to those circumstances which could not be foreseen at the time the budget was drawn up</i>	I.A.24_R	0,7250
<i>Changes in the budget are difficult to get approved by the corporate parent</i>	I.A.28	0,7575
<i>Budgets are updated on a regular basis (e.g., monthly or quarterly) to the new business environment</i>	I.A.31_R	0,7550
<i>In our company, a budget is essentially a forecast rather than a true commitment</i>	I.A.36_R	0,7991
<u><i>Budgets are not revised during the year unless the assumptions on which the budget was based have become so unrealistic that the budget no longer provides a useful control device</i></u>	I.A.40	0,7961

The factor analysis in Appendix [F.2] and Table 5 reveals that all items load on the same factor except item *I.A.40* (which is underlined in the text above). *Cronbach's Alpha* for the full original scale (all 6 items) is 0,7945 and goes up only slightly to 0,7961 if item *I.A.40* is deleted (see Table 8). Although the reliability is not adversely affected by item *I.A.40*, it was deleted nonetheless because the validity of this item is questionable.

5.3.3. Bottom-line vs. Line-item Control

If top management is only interested in the bottom-line of the budget, business unit managers have more discretion because they are allowed to shift funds between line-items as long as they achieve their overall budget [Merchant and Manzoni, 1989].

In order to capture this budgeting attribute, respondents were asked to indicate the truth or falsehood of the following newly developed items: (i) *My corporate superiors are interested not only in how well I achieve my overall budget, they also evaluate how well I am on target on each of the budget line-items (item I.A.27_R)*; (ii) *The control reports provided to*

corporate are not very detailed and only include overall, aggregate, bottom-line budgeting information on the performance of my business (item I.A.12) [Simons, 1987a: 373]; (iii) The bottom-line is what counts for my corporate superiors - how it is achieved is left to my responsibility (item I.A.33); (iv) I am required to submit control reports which explain in detail budget variances on a line-by-line basis (item I.A.16_R); and (v) From the comments made by my corporate superiors, I know that they investigate my budget in every detail (item I.A.25_R). The scoring ranges from 1 (definitely false) to 7 (definitely true). The higher the score, the less the top is interested in the details of each line-item, or, inversely, the more corporate is interested in the bottom-line only.

The factor analysis in Appendix [F.2] and Table 5 reveals that all items load on the same factor except item I.A.25_R (which is underlined in the text above). *Cronbach's Alpha* for the full original scale (all 5 items) is 0,65 and goes down considerably to 0,56 if item I.A.25_R is deleted (see Table 9). Hence, in this case, the validity and reliability analysis give contradictory information. However, Table 5 reveals that two other items which were intended to measure *intensity of budgeting control* (items I.A.10 and I.A.43) load on the same factor as the *bottom-line control* items. At face value, this makes sense. *Cronbach's Alpha* for the scale with item I.A.25_R deleted and items I.A.10 and I.A.43 added is 0,63 (see Appendix [F.2]). Balancing theory, validity and reliability, it was decided to use the adjusted 4-item scale (i.e., the original 5-item scale with item I.A.25_R deleted). This is in line with the *conservative stance* explained above (see Section 5.2, p.72). Although *Cronbach's Alpha* drops considerably (from 0,65 to 0,56), item I.A.25_R was deleted because its validity is questionable. On the other hand, although *Cronbach's Alpha* improves (from 0,56 to 0,63), items I.A.10 and I.A.43 were *not* added because it was not in line with prior theoretical expectations. After all, whichever option is chosen, *Cronbach's Alpha* seems to stick around 0,60 which is not great but acceptable, given that only as few as 4 items are included in the final scale [Hinkin, 1995; DeVellis, 1991].

Table 9
CRONBACH'S ALPHA FOR "BOTTOM-LINE BUDGET CONTROL"

ORIGINAL SCALE (5 ITEMS) → $\alpha=0,6521$	Alpha if Item Deleted	
<i>The control reports provided to corporate are not very detailed and only include overall, aggregate, bottom-line budgeting information on the performance of my business</i>	I.A.12	0,6397
<i>I am required to submit control reports which explain in detail budget variances on a line-by-line basis</i>	I.A.16_R	0,5482
<i><u>From the comments made by my corporate superiors, I know that they investigate my budget in every detail</u></i>	I.A.25_R	0,5641
<i>My corporate superiors are interested not only in how well I achieve my overall budget, they also evaluate how well I am on target on each of the budget line-items</i>	I.A.27_R	0,5407
<i>The bottom-line is what counts for my corporate superiors - how it is achieved is left to my responsibility</i>	I.A.33	0,6670

5.3.4. Formality of Budget-related Communication

Budget-related communication between the top and the business units can be accomplished through informal direct interpersonal interaction or through more formalized channels subject to rules, routines, and procedures [Merchant, 1981]. Formalization generally refers to the extent to which procedures, rules, instructions, and communication are written down [Child, 1972; Pugh et al., 1968].

In order to measure formality, respondents were asked to indicate the truth or falsehood of the following six items: (i) *Budget-related communication with the corporate parent is subject to a fairly strict set of rules and policies* (item I.A.7); (ii) *To the extent possible, there are manuals that define the courses of action to be taken for budget-related issues* (item I.A.34); (iii) *The corporate parent continuously monitors to ensure that budget rules and procedures are not violated* (item I.A.21) [items (i), (ii), and (iii) are adjusted from Nohria and Ghoshal, 1994: 500]; (iv) *Budget-related communication with my corporate superiors is fairly informal* (item I.A.11_R); (v) *Budget-related communication with the corporate parent is very bureaucratized* (item I.A.30); and (vi) *In this company, there is too much paperwork*

involved in the budgeting process (item I.A.39). Responses were scored on the usual 7-point scale ranging from 1 (definitely false) to 7 (definitely true) with higher scores indicating more formality.

Table 10
CRONBACH'S ALPHA FOR "FORMALITY OF BUDGET CONTROL"

ORIGINAL SCALE (6 ITEMS) → $\alpha=0,6657$	Alpha if Item Deleted	
Budget-related communication with the corporate parent is subject to a fairly strict set of rules and policies	I.A.7	0,5742
Budget-related communication with my corporate superiors is fairly informal	I.A.11_R	0,6629
<u>The corporate parent continuously monitors to ensure that budget rules and procedures are not violated</u>	I.A.21	0,6459
Budget-related communication with the corporate parent is very bureaucratized	I.A.30	0,6072
To the extent possible, there are manuals that define the courses of action to be taken for budget-related issues	I.A.34	0,6567
In this company, there is too much paperwork involved in the budgeting process	I.A.39	0,5841

The factor analysis in Appendix [F.2] and Table 5 reveals that all items load on the same factor except item I.A.21 (which is underlined in the text above). Cronbach's Alpha for the full original scale (all 6 items) is 0,67 and goes down slightly to 0,65 if item I.A.21 is deleted (see Table 10). Since the reliability of the scale stays about the same, item I.A.21 was deleted because the validity of this item is questionable. The reliability of the scale becomes unacceptable if item I.A.35_R (belonging to the category of *tolerance for interim budget deviations*) [$\alpha=0,32$] and item I.A.23_R (belonging to the category of *intensity of budget control*) [$\alpha=0,19$] are added (see Table 5, p.81, and Appendix [F.2]). In sum, the final scale for *formality* contains 5 items, i.e., all 6 original items with item I.A.21 deleted.

5.3.5. Intensity of Budget-related Communication

Budgeting information can either be subject to regular discussion between the top and the business unit managers (regardless of actual performance) or receive only passing consideration by corporate managers unless performance is considerably below expectations.

One way to measure intensity of budget-related communication is by referring to Simons' distinction between two patterns in control system use: control systems are used either *diagnostically* or *interactively* depending on the extent to which corporate managers use control systems to personally involve themselves in the decision activities of their business unit managers [Simons, 1995, 1992, 1991, 1990, 1987b]. According to Simons, control is *interactive* when top management actively uses planning and control systems to monitor and intervene in ongoing decision activities of business unit management. Control is *diagnostic*, on the other hand, when top managers direct their attention primarily to ensuring that predetermined control procedures are established and maintained by business unit managers. To use the exact wording of Simons, the process of interactive control contains the following four characteristics:

- Information generated by interactive control systems is an important and recurring agenda addressed by the highest levels of management;
- The interactive control process demands frequent and regular attention from operating managers at all levels of the organization;
- Data in the system are interpreted and discussed in face-to-face meetings of superiors, subordinates, and peers; and
- The process relies on the continual challenge and debate of underlying data, assumptions, and action plans.

Put differently, control information is treated diagnostically when it is collected and processed by staff specialists and receives only passing consideration by superiors unless performance is considerably below expectations. By contrast, information is used interactively when it receives periodic (e.g., weekly) scrutiny by top management

regardless of actual performance and is typically discussed with subordinates in face-to-face meetings^{74,75} [Simons, 1995, 1992, 1991, 1990, 1987b].

Since no measures of interactive budget use have been developed previously in questionnaire form (except for Abernethy [1994] in a working paper), steps were taken to develop a measure *de novo*. Based on Simons' description of interactive/diagnostic budget use [1995, 1992, 1991, 1990, 1987b], the following items were developed to assess the extent to which budgets are used interactively: (i) *My methods of reaching budget performance are accepted by the top without question* (item I.A.10); (ii) *Corporate superiors call me in to discuss budget deviations in face-to-face meetings* (item I.A.37_R); (iii) *During budget meetings, I usually offer suggestions for solving and improving business matters beyond the mere discussion of budget deviations* (item I.A.13_R); (iv) *My corporate superiors, myself, and my own subordinates often form a team to discuss and solve budgeting matters* (item I.A.8_R); (v) *I usually discuss budgeting matters with the corporate controller; my direct corporate superior, on*

⁷⁴ It should be noted that Simons [1991] found that top managers typically use only one control system interactively and the other control systems diagnostically. Since this study examines only one major control system, namely, the budgeting system, Simons' findings would suggest that some firms use their budgeting system interactively while others use it diagnostically. Strictly applied, Simons would argue that the firms in our sample that do not use their budgeting system interactively may nonetheless use another control system, e.g., their *intelligence system* or *human development system*, interactively. However, the distinction between the two patterns of use of control information has intuitive appeal within a particular control system and will therefore be used in this study.

⁷⁵ One may also question to what extent budget interaction differs from budget participation since both can be considered as bottom-up processes of involvement and a means for top management to elicit information from lower-level managers. Actually, the concept *participation* by itself means different things to different persons. At one extreme, participation may mean that management keeps subordinates informed about the decisions that are taken by management, whilst at the other extreme, participation may also mean giving complete responsibility for decision-making to subordinates [Bowman and Asch, 1987; Parker, 1979]. However, in the budgeting literature, budget participation is generally defined as the process in which the budgetee is both involved in and has influence over the setting of the budget targets [Anthony et al., 1992; Brownell, 1982b]. *Participation thus clearly involves interaction, but interaction is more than just participation*. One difference is that budget participation is generally restricted to the moment of setting the budget targets, whilst budget interaction takes place regularly during the whole budgeting period. Moreover, the primary aim of budget participation is to achieve a greater level of commitment from the budgetee toward the achievement of goals [Anthony et al., 1992; Welsch et al., 1988; Tiller, 1983: 581; Cherrington and Cherrington, 1973: 226], whilst the primary aim of interactive budgeting is to regularly question whether the goal is still valid. Again, the difference may seem subtle but the data confirms that both concepts are clearly not identical. Specifically, the factor analysis in Appendix [F.2] and Table 5 reveals that none but one (item I.A.13_R) of the items developed to measure *interaction* fall in the group which contains the *participation* items. This kind of confirms the "discriminant validity" of both concepts [DeVellis, 1991: 107].

the other hand, only pays passing attention unless my performance is considerably below expectations (item I.A.17); (vi) Unfavorable budget variances receive more attention from my corporate superiors than favorable variances (item I.A.9); (vii) Budgeting matters are discussed regularly with my corporate superior even if there are no negative budget deviations to report (item I.A.41_R); (viii) I consult with my corporate superior on how to achieve my budget (item I.A.15_R); (ix) My corporate superior leaves me alone as long as I meet my budget (item I.A.43); (x) When problems occur, I discuss budget matters with my corporate superior without being asked to (item I.A.20_R); and (xi) I consult with other business unit managers for preparing the budget for my own business (item I.A.23_R). Some of those items were inspired very broadly on Swieringa and Moncur [1975, 1972] and item (vi) is borrowed specifically from Brownell [1983a: 464]. The responses to these items can range from 1 (definitely false) to 7 (definitely true). Items are scored so that high (low) scores correspond with diagnostic (interactive) use of budgets.

Moreover, it was put that "budget-related communication between headquarters and business units can take place for a variety of reasons. Consider the kind of communication aimed more at sharing information than at control. On a scale from 1 (low) to 7 (high), rate the average level of budget-related communication with the corporate office aimed at sharing information" [cf., Nohria and Ghoshal, 1994: 501] (see Appendix [D.1], item I.A.45).

Finally, the business unit managers were asked to indicate the typical frequency with which they communicated with the corporate parent for budget-related issues, scored on a fully-anchored scale ranging from 1 (daily) to 7 (less than yearly) [cf., Nohria and Ghoshal, 1994: 501]. From the pre-tests, it seemed useful to make a distinction for this question between *formal* and *informal* budget communication. The reader is referred to Appendix [D.1], item I.A.46.a-b for the exact format of this question.

Table 11

CRONBACH'S ALPHA FOR "INTENSITY OF BUDGET CONTROL"		Alpha if Item Deleted	
PANEL A: ORIGINAL SCALE (14 ITEMS) → α=0,5983		Panel A	Panel B
PANEL B: ADJUSTED SCALE (8 ITEMS) → α=0,6868			
My corporate superiors, myself, and my own subordinates often form a team to discuss and solve budgeting matters	I.A.8_R	0,5282	0,6049
Unfavorable budget variances receive more attention from my corporate superiors than favorable variances	I.A.9	0,6309	
My methods of reaching budget performance are accepted by the top without question	I.A.10	0,5935	
During budget meetings, I usually offer suggestions for solving and improving business matters beyond the mere discussion of budget deviations	I.A.13_R	0,5917	
I consult with my corporate superior on how to achieve my budget	I.A.15_R	0,5347	0,6268
I usually discuss budgeting matters with the corporate controller; my direct corporate superior, on the other hand, only pays passing attention unless my performance is considerably below expectations	I.A.17	0,6193	
When problems occur, I discuss budget matters with my corporate superior without being asked to	I.A.20_R	0,5912	0,6866
I consult with other business unit managers for preparing the budget for my own business	I.A.23_R	0,6215	
Corporate superiors call me in to discuss budget deviations in face-to-face meetings	I.A.37_R	0,5150	0,6116
Budgeting matters are discussed regularly with my corporate superior even if there are no negative budget deviations to report	I.A.41_R	0,5259	0,6116
My corporate superior leaves me alone as long as I meet my budget	I.A.43	0,5580	
Budget-related communication between headquarters and business units can take place for a variety of reasons. Consider the kind of communication aimed more at sharing information than at control. On a scale from 1 (low) to 7 (high), rate the average level of budget-related communication with the corporate office aimed at sharing information	I.A.45	0,6170	0,7402
Indicate the typical frequency with which you communicate with the corporate parent for budget-related issues – formally	I.A.46a	0,5800	0,6685
Indicate the typical frequency with which you communicate with the corporate parent for budget-related issues – informally	I.A.46b	0,5773	0,6597

The factor analysis in Appendix [F.2] reveals that 8 items load on the same factor (see Table 5). Those items are underlined in the text above. At face value, it seems reasonable that those items cluster together and that they express the notion of *interactiveness* in budget-related matters. Cronbach's Alpha for the full original scale is 0,60 and goes up to 0,69 if only those 8 items are retained (see Table 11).

5.3.6. *Participation of Business Unit Management in Budget-related Activities*

This variable captures the extent to which business unit managers are allowed to participate in budget-setting [Bruggeman and Van der Stede, 1993; Merchant, 1981]. Specifically, budget participation is defined as the process in which the budgetee is both involved in and has influence over the setting of the budget targets [Anthony et al., 1992; Brownell, 1982b] (see also footnote 75).

Hofstede's [1968] single-item measure and Milani's [1975] six-item measure of budgetary participation are referred to most frequently in the management control literature. Both instruments have been validated repeatedly and measure budgetary participation equally well [e.g., Brownell, 1983a, 1983b, 1982a].⁷⁶ This study utilizes Hofstede's [1968: 179] single-item, eight-point budgetary participation measure (slightly adjusted to the wording of this paper). Specifically, Hofstede's participation scale has the following eight points (see also Appendix [D.1], item *I.B.1_R*):

The budget target is:

- *decided by me without consulting corporate superiors;*
- *proposed by me, followed by consulting corporate superiors, but my opinion generally prevails;*
- *proposed by me, but decided jointly;*
- *proposed sometimes by me, sometimes by corporate superiors, but decided jointly;*
- *proposed by corporate superiors, followed by my opinion which has a lot of weight;*
- *proposed by corporate superiors, followed by my opinion which does not have much weight;*
- *decided at the corporate office without asking my opinion, but the decision is explained to me;*
- *decided at the corporate office without asking my opinion and without any explanation.*

⁷⁶ Brownell reported a highly significant correlation ($p < 0.01$) between Hofstede's and Milani's measure of $r = 0.75$ [Brownell and Hirst, 1986], $r = 0.74$ [Brownell, 1983b; 1982a], $r = 0.59$ [Brownell and McInnes, 1986; Brownell, 1983a], and $r = 0.57$ [Brownell, 1985]. O'Connor [1995] found a somewhat lower ($r = 0.52$) but still highly significant ($p < 0.01$) correlation between both measures.

Although no particular effort was undertaken to validate this well-established measure, it was nonetheless decided to include the following item in the random section of the questionnaire as a control: *I am allowed to participate in setting the budget for my business unit* (see Appendix [D.1], item I.A.1). As expected, both items are positively and significantly correlated ($r=0,21$; $p=0,00543$, see Appendix [F.2]). Moreover, the factor analysis has clustered both items in the same group (see Table 5). This time, *Cronbach's Alpha* is not an adequate measure of reliability because there are only two items involved. Given its validity, Hofstede's measure of participation will be used henceforth to measure the degree of *participation in budget-setting* (i.e., item I.B.1_R).

5.3.7. Corporate Management's Tolerance for Interim Budget Deviations

Top management has a low tolerance for interim budget deviations if it requires from the business unit managers that they constantly keep their actual performance close to the budget target. Each month, performance to date is examined in detail and unfavorable variances, if any, should disappear in the short-run. On the other hand, top management is more tolerant toward budget deviations when interim deviations from the budget target are not scrutinized by the corporate office and when it is left to the business unit manager's discretion and responsibility to make sure that everything turns out right in the end [Bruggeman and Van der Stede, 1993; Anthony et al., 1992]. In short, top management's tolerance for interim budget deviations relates to the extent to which monthly variances from the budget immediately trigger high level corporate reviews and interventions.

Based on a factor analysis of the comprehensive budget-related behavior instrument developed by Swieringa and Moncur [1975], Merchant [1984: 295-297; 1981: 818-820] defined the factor "required explanations of variances" containing the following

four items (slightly adjusted to the wording of this study): (i) *I am required to prepare interim reports (e.g., monthly, quarterly) which compare the results-to-date with the budget* (item I.A.3_R); (ii) *I am required to submit an explanation in writing about causes of interim budget variances* (item I.A.35_R); (iii) *I am required to report actions taken to correct causes of interim budget variances* (item I.A.18_R); and (iv) *I am required to trace the cause of budget variances to groups or individuals within my business unit*. This measure seems to cover well what was defined above as “top management’s tolerance for interim budget deviations.” Williams et al. [1990: 229] who also performed a factor analysis on Swieringa and Moncur’s [1975] instrument found exactly the same items loading on the same factor as Merchant. However, Bruns and Waterhouse [1975: 187] who also applied the same analysis on the same instrument found support for the first three items only. Therefore, the instrument used in this study only includes items (i), (ii), and (iii). However, two new items are included in the scale, notably (iv) *My corporate superiors attach a great deal of importance to interim budget deviations* (item I.A.26_R); and (v) *My corporate superiors don’t care very much about interim budget deviations* (item I.A.22). The response to these items ranges from 1 (definitely false) to 7 (definitely true). All items except item (v) are reverse coded (see Appendix [D.1]). The higher the score, the more the corporate superiors tolerate interim budget deviations.

Although this scale has a good reliability (*Cronbach’s Alpha* = 0,68; see Table 12), its validity is very questionable (see Appendix [F.2] and Table 5). As can be seen from Table 5, the items intended to measure *tolerance for interim budget deviations* load all over the place. Hence, notwithstanding its good reliability, it was decided to drop this scale for validity reasons. This shows that although reliability is a necessary pre-condition for validity [Cook and Campbell, 1979; Nunnally, 1978; Kerlinger, 1973], it does not necessarily guarantee that all items reflect the influence of a single underlying variable [DeVellis, 1991: 92] (see also footnote 69, p.73).

Table 12
CRONBACH'S ALPHA FOR "TOLERANCE FOR INTERIM BUDGET DEVIATIONS"

ORIGINAL SCALE (5 ITEMS) → $\alpha=0,6778$	Alpha if Item Deleted	
<i>I am required to prepare interim reports (e.g., monthly, quarterly) which compare the results-to-date with the budget</i>	I.A.3_R	0,6917
<i>I am required to report actions taken to correct causes of interim budget variances</i>	I.A.18_R	0,6143
<i>My corporate superiors don't care very much about interim budget deviations</i>	I.A.22	0,6303
<i>My corporate superiors attach a great deal of importance to interim budget deviations</i>	I.A.26_R	0,5456
<i>I am required to submit an explanation in writing about causes of interim budget variances</i>	I.A.35_R	0,6313

Finally, as a pure empirical exercise (because it does not fulfill the conservative stance taken), *Cronbach's Alpha* was calculated for the "lost" items which load on *factor 6* and *factor 7*, respectively (see Appendix [F.2]). As no surprise, those α -values are terrible. This confirms that empirics cannot blindly replace theory. In other words, although these "lost" items load on the same factor, they were not expected to have any theoretical relationship at all.

All items developed up to this point have been randomized in the questionnaire (see Appendix [D.1], all of Section I.A, except item 47, which is a control item for *diversification*). Two more measures were included in Section I of the questionnaire to get an insight into the *incentive system* (Section I.D) and the *policy towards discretionary spending* (Section I.E).

5.3.8. Allowance for Discretionary Spending

Sometimes business unit managers should not only make sure that they meet their budget, they are also restricted in the amount of money they can spend and on what they spend it without approval from corporate headquarters (cf., cash discipline) [Goold and Campbell, 1987b; Merchant, 1985a: 69].

The instrument simply asks the respondents about *the amount of money they are allowed to spend on capital investments (not included in the budget) without receiving prior approval from the top*. Put differently, the question asks for *the limit of divisional authority for capital expenditures* [cf., Slagmulder et al., 1995: 140] (see Appendix [D.1], Section I.E).

However, during the pre-tests it became clear that this question was difficult to interpret (although the wording had been changed several times from pre-test to pre-test). Therefore, Section I.E of the questionnaire also provides some room for *optional comments*. Still, this question was not filled out appropriately. As can be seen from Appendix [F.1], only 109 respondents gave an answer (i.e., 44 missing values). And of those who completed this question, it is doubtful whether they all answered with a clear understanding because many comments and question marks were added in the area for optional remarks.

To make the amounts of discretionary spending comparable among business units, it was tried to standardize the responses by putting them relative to the *value of business unit assets* (see Appendix [D.1], Section VI, question 2) [cf., Goold and Campbell, 1987b]. Unfortunately, this question had even more missing values. Only 62 respondents gave a (valid?) answer, i.e., 91 missing values (see Appendix [F.1]).

Taken together, it seems that it will not be possible to use a measure of *discretionary spending* in this study. As an aside, this clearly illustrates the importance of pre-tests: if a question cannot get right in the pre-test, it's very unlikely that it will be filled out appropriately in the final questionnaire.

5.3.9. Formula-based vs. Discretionary Bonus Remuneration

This attribute relates to the extent that bonus remuneration is established by formulas based on achieving budget targets rather than discretionary [Simons, 1987a]. At one extreme, the business unit manager's bonus might be based on a strict formula-based plan tied to budget performance and hence quantifiable criteria. At the other extreme, the business unit manager's bonus might be based solely on the superior's subjective judgment or discretion. Finally, the bonus might be based on a combination of formula-based and discretionary approaches [Fisher and Govindarajan, 1993; Govindarajan and Gupta, 1985].

This variable is measured as follows (see Appendix [D.1], Section I.D, item 2) [cf., Simons, 1988; Simons, 1987a; Gupta and Govindarajan, 1986; Govindarajan and Gupta, 1985; Govindarajan, 1984]: *"On the one hand, bonuses can be calculated strictly by formulas based on meeting quantitative budget targets. Alternatively, bonuses can also be determined completely or some percentage in a discretionary manner based on the personal assessment of your superiors. On the scale below, indicate the percentage of bonus decided in a formula-based (F) vs. discretionary (D) manner."*

100%F	90%F	80%F	70%F	60%F	50%F	40%F	30%F	20%F	10%F	0%F
0%D	10%D	20%D	30%D	40%D	50%D	60%D	70%D	80%D	90%D	100%D
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

As can be seen in Appendix [F.1], the mean value for *formula-based* is 49,82 (*s.d.*=40,68; *n*=111), indicating that, on average, a business unit manager's bonus is about fifty-fifty based on strict formulas and his superior's discretion.

5.3.10. Corporate and/or Business Unit Performance-based Incentives

In addition to whether the bonus is formula-based vs. subjective, the business unit manager's bonus might depend on total corporate performance, business unit performance, or a mix of both.

The metric for this compensation characteristic looks as follows (see Appendix [D.1], Section I.D, item 3) [cf., Gupta and Govindarajan, 1986; Govindarajan and Gupta, 1995, 1985; Govindarajan, 1984]: *"In addition to whether the bonus is formula-based vs. discretionary, the business unit managers' bonus might depend on total corporate performance, business unit performance, or a mix of both. On the scale below, indicate the percentage of bonus based on corporate (CO) vs. business unit (BU) performance."*

100%CO	90%CO	80%CO	70%CO	60%CO	50%CO	40%CO	30%CO	20%CO	10%CO	0%CO
0%BU	10%BU	20%BU	30%BU	40%BU	50%BU	60%BU	70%BU	80%BU	90%BU	100%BU
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

The mean value for *corporate-based* is 28,56 (*s.d.*=29,75; *n*=111), indicating that, on average, a business unit manager's bonus is for about 30% (70%) based on corporate (business unit) performance (see Appendix [F.1]).

Of course, those two questions are not relevant if the business unit manager's salary is 100% fixed. Therefore, the following additional question was introduced: *Please indicate the approximate percentage of your salary that is fixed vs. variable* (see Appendix [D.1], Section I.D, item 1). Of the 153 respondents, 42 have a 100% fixed salary (remaining *n*=111). The salary of all 153 respondents taken together is for about 87% fixed, on average (*s.d.*=11,50; *n*=153) (see Appendix [F.1]).

In addition to the above budgeting and incentive system attributes, this study also includes a variable related to the controllership organization, notably, the degree of (de)centralization of the corporate control function. To avoid confusion with typical organizational (de)centralization (which will be discussed in Section 5.7, p.141), the former is often referred to as *solid- vs. dotted-line relationship in the controllership organization*.

5.3.11. *Solid- vs. Dotted-line Relationship in the Controllership Organization*

Sathe [1983, 1982] distinguishes two major responsibilities of the business unit controller. First, the business unit controller needs to help business unit management in the business decision-making process. This is the management-service responsibility. Second, the business unit controller must insure that the financial information from the business unit is accurate and that internal control practices conform to corporate policy and procedures. This is the financial reporting and internal control responsibility. The management-service responsibility requires that the business unit controller becomes actively involved in the local decision-making process. The financial reporting and internal control responsibility, on the other hand, requires the business unit controller to act as a "policeman" or as a local guardian for the corporate control department. Generally, most writings in management control maintain that both requirements, controller involvement vs. controller independence, are more or less mutual exclusive; emphasis on one makes effective performance of the other more difficult [Sathe, 1983, 1982]. Actually, Sathe's [1978a] data suggest that the business unit controller's job priorities and loyalties are altered when the reporting relationship is changed. This problem is known more generally in the management control literature as the *(de)centralization issue* or the *solid- vs. dotted-line relationship* in the controllership function.

More specifically, management control is *centralized* when the business unit controller reports directly to the corporate controller (cf., *solid-line* relationship between the corporate controller and business unit controller) and when the business unit controller has only a staff relationship with the business unit manager (cf., *dotted-line* relationship between the business unit manager and business unit controller). In contrast, control is *decentralized* when the business unit controller co-operates very closely with the business unit manager (cf., *solid-line* relationship between the business unit manager and business unit controller) and when the business unit controller only has a staff relationship with the corporate controller (cf., *dotted-line* relationship between the corporate controller and business unit controller) [Bruggeman and Van der Stede, 1993; Anthony et al., 1992]. Put differently, when management control is decentralized, the business unit manager and business unit controller are *allies* and the management-service responsibility of the controller is emphasized. In contrast, if management control is centralized, the corporate controller and the business unit controller are *allies*, but the business unit manager perceives the business unit controller as a *corporate spy*. In this situation, the financial reporting and internal control responsibility of the business unit controller is emphasized [Anthony et al., 1992; Sathe, 1983, 1982].

The degree of (de)centralization of control can be assessed by asking the respondents to indicate whether the "primary" reporting relationship of the business unit controller is to the corporate controller (i.e., *centralized control* or *solid-line relationship*) or to the business unit general manager (i.e., *decentralized control* or *dotted-line relationship*).⁷⁷ In

⁷⁷ It should be noted that (de)centralization of control does not always fall neatly within the two extremes discussed above. For instance, Sathe found that in 55% of the companies in his sample, the reporting relationship fell between these two extremes in the sense that the corporate controller had the greater authority on certain decisions whereas the business unit controller had it on others [1978b: 17]. As a comparison, our data reveal that 45 respondents consistently checked "4, 5, 6, or 7" or, conversely, "1, 2, 3, or 4" on at least 7 items of the 8-item business-unit-controller-scale. This means that in 45 cases or 47% (i.e., 45/95, because only 95 businesses had their own controller - see further), the organization of the controllership function is "predominantly" (de)centralized. Conversely, the reporting relationship is not consistently (de)centralized in 53% of the cases, indicating that the corporate controller has the greater authority on certain decisions and the business unit controller on others, or, that the *internal control* vs. *management-service responsibility* or *controller involvement* vs. *independence* are not mutual exclusive.

addition, the respondents were asked to indicate the importance attached to the *financial reporting vs. management-service responsibility* of business unit controllers. Those questions should provide an insight into whether both control responsibilities are mutually exclusive as is usually maintained in the literature [Sathe, 1978a]. Specifically, the following eight newly developed items were used in the scale: (i) *My business unit controller is actively involved in the business unit decision-making process* (item I.C.1); (ii) *My business unit controller primarily acts as the local "policeman" for the corporate control department* (item I.C.2_R); (iii) *The business unit controller must primarily ensure that the financial information about my business is accurate and that internal control practices conform to corporate policy and procedures* (item I.C.3_R); (iv) *The business unit controller cooperates very closely with me and has only a staff relationship with his corporate controller* (item I.C.4); (v) *The primary role of the business unit controller is to assist me in the business decision-making process* (item I.C.5); (vi) *I consider my business unit controller as my "ally"* (item I.C.6); (vii) *The business unit controller reports directly to his corporate controller and has only an administrative, control-oriented relationship with me* (item I.C.7_R); and (viii) *I perceive my business unit controller as a "corporate spy"* (item I.C.8_R). The usual "definitely false" - "definitely true" 7-point scale was used with higher (lower) scores indicating more decentralized (centralized) control. However, during the pre-tests it became clear that not all business units have a division controller. In order to avoid questionnaires with missing or unreliable answers, the following screening question was introduced: *If you don't have a controller in your business unit, check this box ☐ and continue with the next question.* All details are given in the questionnaire in Appendix [D.1], all of Section I.C. And indeed, as can be seen from Appendix [F.1], 58 respondents have no business unit controller. Hence, the screening question was definitely worthwhile.

Panel B of Appendix [F.2] exhibits the validity and reliability of this measure of (de)centralized control. The correlation matrix shows a large proportion of relatively high coefficients (except item I.C.3_R) [Coefficients are significant at the 5%-level if $r > 0,17$ one-

tailed or $r > 0,20$ two-tailed]. *Cronbach's Alpha* is 0,70 for the eight items taken as a whole. If item I.C.3_R is deleted, α goes up only slightly to 0,72 (see Table 13). Therefore, the full 8-item scale was retained as the final measure.

Table 13
CRONBACH'S ALPHA FOR "BUSINESS UNIT CONTROLLERS"
ORIGINAL SCALE (8 ITEMS) $\rightarrow \alpha = 0,6964$

	Alpha if Item Deleted	
<i>My business unit controller is actively involved in the business unit decision-making process</i>	I.C.1	0,6655
<i>My business unit controller primarily acts as the local "policeman" for the corporate control department</i>	I.C.2_R	0,6886
<i>The business unit controller must primarily ensure that the financial information about my business is accurate and that internal control practices conform to corporate policy and procedures</i>	I.C.3_R	0,7207
<i>The business unit controller cooperates very closely with me and has only a staff relationship with his corporate controller</i>	I.C.4	0,6675
<i>The primary role of the business unit controller is to assist me in the business decision-making process</i>	I.C.5	0,6211
<i>I consider my business unit controller as my "ally"</i>	I.C.6	0,6300
<i>The business unit controller reports directly to his corporate controller and has only an administrative, control-oriented relationship with me</i>	I.C.7_R	0,6528
<i>I perceive my business unit controller as a "corporate spy"</i>	I.C.8_R	0,6752

5.4. *Impact of Control Systems on Managerial (Dysfunctional) Behavior* *(Section II of the Questionnaire)*⁷⁸

This section is designed to measure *information asymmetry* (Section 5.4.1, p.111) and *control loss* (Section 5.4.2, p.113). As aforementioned, *control loss* will be measured through several indicators, notably, *budget slack* (Section 5.4.2.1, p.113), *earnings management* (Section 5.4.2.2, p.115), and *short termism* (Section 5.4.2.3, p.116). In general, the measurement of *control loss* and the conclusions drawn from empirical research have been problematic [Lavery, 1996]. Therefore, careful attention will be paid to the validation of scales which were partly borrowed from previous studies and partly developed *de novo*.

⁷⁸ Note that "*Impact of Control Systems on Managerial Dysfunctional Behavior*" was not the heading used in the questionnaire. Instead, Section II of the questionnaire was labeled "*Attitudes Towards Control Systems*" because it is more neutral and less suggestive (see Appendix [D.1]).

All together, 27 items were developed to represent the variables *information asymmetry*, *budget slack*, *earnings management*, and *short termism*. A factor analysis was conducted to check how these items cluster together and how well these clusters correspond with the pre-specified variables. The outcome of this empirical validation is shown in Appendix [F.3] and summarized in Table 14, Table 15, Table 16, and Figure 4. Appendix [F.3] also presents the correlation coefficients, the significance of these correlations, and the output of the reliability analysis - the key findings of which are summarized in the text.

As to the appropriateness of factor analysis, the *subject-to-item ratio* is 153:27 ($\approx 6:1$), which is acceptable. The overall *Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy* is acceptable too (0,65366) and the individual *Measures of Sampling Adequacy (MSA)* for each item (which are shown on the diagonal of the *Anti-Image Correlation Matrix* in Appendix [F.3]) all have values higher than 0,50 except for item *II.B.4_R* and *II.E.2_R*. Finally, the null-hypothesis that the correlation matrix is the *identity matrix* can be rejected ($p=0,0000$ for the *Bartlett Test of Sphericity*) (for more technical details on these tests, see footnote 71, p.77). In short, although the (*anti-image*) correlation matrix does not show a very large proportion of (*low*) high correlations, all tests lead to the conclusion that the use of factor analysis is appropriate.

Here again, *principal component analysis* was used as the method of factor extraction. As shown in Table 14 and Appendix [F.3], nine factors with an *eigenvalue* higher than 1 were identified. However, it was not so straightforward to determine the *number of factors* to extract. Theoretically, four variables were underlying the data. Four factors would also make the case based on the *scree-plot* (Figure 4). Unfortunately, four factors explain less than half of the variance (42,6%) whereas nine factors explain about two-thirds of the variance (66,7% - see Table 14). Moreover, it has been argued that the

criterion to select all *factors with an eigenvalue higher than 1* is most reliable when the number of items is between 20 and 50 (27 in this case) [Alt, 1990: 64]. Also, the *4-factor solution* seems to “squeeze” the data in a way which makes it impossible to interpret the 4th factor. Hence, only three variables survive (see Table 15, *Panel A*). Actually, there is no need to “force” the data into 4 factors since the *9-factor solution* will ultimately (i.e., after deletion of mis-matched items) result in about the same composition of the three strongest variables of the *4-factor solution* anyway (see footnote 79, p.110). On top of that, *earnings management* does not get lost in the *9-factor solution* as was the case in the *4-factor solution* where it is dumped in the 4th factor (compare *Panel A* and *B* of Table 15). Considering this, it was opted to use the *9-factor solution*, especially because the variables have not been well-developed in previous literature. As such, it does not made sense to force them into a rigid, pre-specified theoretical structure either.

Figure 4
FACTOR SCREE PLOT FOR IMPACT OF CONTROL SYSTEMS

Table 14
PRINCIPAL COMPONENT ANALYSIS FOR IMPACT OF CONTROL SYSTEMS

Variable	Communality	Factor	Eigenvalue	Pct. of Var.	Cum. Pct.
I.B.2_R	1,00	1	4,05771	15,0	15,0
II.A.1_R	1,00	2	2,73823	10,1	25,2
II.A.2_R	1,00	3	2,65867	9,8	35,0
II.A.3_R	1,00	4	2,06000	7,6	42,6
II.A.4_R	1,00	5	1,51522	5,6	48,3
II.A.5_R	1,00	6	1,39552	5,2	53,4
II.A.6_R	1,00	7	1,32633	4,9	58,3
II.A.7_R	1,00	8	1,17505	4,4	62,7
II.A.8	1,00	9	1,07983	4,0	66,7
II.B.1_R	1,00	10	0,93659	3,5	70,2
II.B.2	1,00	11	0,87554	3,2	73,4
II.B.3_R	1,00	12	0,82960	3,1	76,5
II.B.4_R	1,00	13	0,79072	2,9	79,4
II.B.5	1,00	14	0,71070	2,6	82,0
II.B.6	1,00	15	0,64409	2,4	84,4
II.C1D_R	1,00	16	0,60487	2,2	86,7
II.C.2_R	1,00	17	0,56057	2,1	88,7
II.C.4	1,00	18	0,48742	1,8	90,5
II.C.5	1,00	19	0,41657	1,5	92,1
II.C.6_R	1,00	20	0,37354	1,4	93,5
RAT.IIC3	1,00	21	0,36055	1,3	94,8
RAT.IIC7	1,00	22	0,33072	1,2	96,0
II.D.1	1,00	23	0,30555	1,1	97,2
II.D.2	1,00	24	0,27256	1,0	98,2
II.E.1A	1,00	25	0,22836	0,8	99,0
II.E.1B	1,00	26	0,20455	0,8	99,8
II.E.2_R	1,00	27	0,06093	0,2	100,0

Table 15
FACTOR GROUPINGS OF ITEMS WHICH MEASURE IMPACT OF CONTROL SYSTEMS:
COMPARISON OF VARIMAX VS. OBLIQUE ROTATIONS

PANEL A: 4-FACTOR SOLUTION

VARIMAX		OBLIQUE	
II.A.4_R	Information Asymmetry	II.A.4_R	Information Asymmetry
II.A.6_R	Information Asymmetry	II.A.6_R	Information Asymmetry
II.A.5_R	Information Asymmetry	II.A.3_R	Information Asymmetry
II.A.3_R	Information Asymmetry	II.A.5_R	Information Asymmetry
II.A.7_R	Information Asymmetry	II.A.7_R	Information Asymmetry
II.A.2_R	Information Asymmetry	II.A.2_R	Information Asymmetry
II.A.1_R	Information Asymmetry	II.A.1_R	Information Asymmetry
II.C.2_R	<i>Short Termism (control question)</i>	II.C.2_R	<i>Short Termism (control question)</i>
II.E.2_R	<i>Harm (control question)</i>	II.E.2_R	<i>Harm (control question)</i>

II.B.1_R	Budget Slack	II.B.1_R	Budget Slack
I.B.2_R	Budget Slack	I.B.2_R	Budget Slack
II.B.3_R	Budget Slack	II.B.3_R	Budget Slack
II.B.6	Budget Slack	II.B.6	Budget Slack
II.B.2	Budget Slack	II.B.2	Budget Slack
II.C1D_R	<i>Short Termism</i>	II.C1D_R	<i>Short Termism</i>

II.E.1A	<i>Harm (control question)</i>	II.E.1A	<i>Harm (control question)</i>
II.E.1B	<i>Harm (control question)</i>	II.E.1B	<i>Harm (control question)</i>
II.C.5	Short Termism	II.C.5	Short Termism
RAT.IIC7	Short Termism	RAT.IIC7	Short Termism
RAT.IIC3	Short Termism	RAT.IIC3	Short Termism
II.C.4	Short Termism	II.C.4	Short Termism

II.B.5	<i>Budget Slack</i>	II.B.5	<i>Budget Slack</i>
II.A.8	<i>Information Asymmetry</i>	II.A.8	<i>Information Asymmetry</i>
II.C.6_R	<i>Short Termism</i>	II.C.6_R	<i>Short Termism</i>
II.B.4_R	<i>Budget Slack</i>	II.D.1	Earnings Management
II.D.1	Earnings Management	II.B.4_R	<i>Budget Slack</i>
II.D.2	Earnings Management	II.D.2	Earnings Management

Table 15 (Continued)

FACTOR GROUPINGS OF ITEMS WHICH MEASURE IMPACT OF CONTROL SYSTEMS:
COMPARISON OF VARIMAX VS. OBLIQUE ROTATIONS

PANEL B: 9-FACTOR SOLUTION

VARIMAX		OBLIQUE	
II.A.4_R	Information Asymmetry	II.A.4_R	Information Asymmetry
II.A.6_R	Information Asymmetry	II.A.6_R	Information Asymmetry
II.A.5_R	Information Asymmetry	II.A.5_R	Information Asymmetry
II.A.3_R	Information Asymmetry	II.A.3_R	Information Asymmetry
II.A.7_R	Information Asymmetry	II.A.2_R	Information Asymmetry
II.A.2_R	Information Asymmetry	II.A.7_R	Information Asymmetry
II.A.1_R	Information Asymmetry	II.A.1_R	Information Asymmetry

II.B.1_R	Budget Slack	II.B.3_R	Budget Slack
II.B.3_R	Budget Slack	II.B.1_R	Budget Slack
I.B.2_R	Budget Slack	I.B.2_R	Budget Slack
II.B.6	Budget Slack	II.B.6	Budget Slack

II.D.1	Earnings Management	II.D.1	Earnings Management
II.D.2	Earnings Management	II.D.2	Earnings Management

RAT.IIC7 II.C.5 II.C.6_R	Short Termism Short Termism Short Termism	RAT.IIC7 II.C.5 II.C.6_R	Short Termism Short Termism Short Termism
II.E.1A II.E.1B	Harm (control question) Harm (control question)	II.E.1B II.E.1A	Harm (control question) Harm (control question)
II.C.4	<i>Short Termism</i>	II.C.4 II.A.8	<i>Short Termism</i> <i>Information Asymmetry</i>
II.B.5 II.B.2 II.B.4_R II.A.8	Budget Slack Budget Slack Budget Slack <i>Information Asymmetry</i>	II.B.5 II.B.2 II.B.4_R	Budget Slack Budget Slack Budget Slack
II.C1D_R RAT.IIC3 II.C.2_R	Short Termism Short Termism Short Termism (control question)	II.C1D_R RAT.IIC3	Short Termism Short Termism
II.E.2_R	Harm (control question)	II.E.2_R II.C.2_R	Harm (control question) Short Termism (control question)

To make the output interpretable, both orthogonal (*Varimax*) and non-orthogonal (*Oblique*) rotations were performed and compared (see Table 15). Both rotations resulted in almost identical structures (Table 15, *Panel A* and *B*). Indeed, Table 16 shows that the factors are basically uncorrelated, especially for the 4-factor solution (Table 16, *Panel A*) but less so for the 9-factor solution - but still *insignificant* (Table 16, *Panel B*).

Table 16
CORRELATIONS OF OBLIQUE FACTORS OF *IMPACT OF CONTROL SYSTEMS*
PANEL A: 4-FACTOR SOLUTION

	Factor 1		
Factor 2	0,05786	Factor 2	
Factor 3	-0,03344	-0,00888	Factor 3
Factor 4	0,05883	-0,00469	0,05327

Table 16 (Continued)
CORRELATIONS OF OBLIQUE FACTORS OF *IMPACT OF CONTROL SYSTEMS*
PANEL B: 9-FACTOR SOLUTION

	Factor1							
Factor2	0,01458	Factor2						
Factor3	-0,03461	-0,02408	Factor3					
Factor4	0,00010	0,04406	-0,02994	Factor4				
Factor5	-0,17214	0,02181	-0,10087	-0,12038	Factor5			
Factor6	-0,03920	-0,00387	-0,08703	-0,03678	0,09467	Factor6		
Factor7	-0,03257	-0,08546	-0,14722	0,09546	0,12099	-0,02435	Factor7	
Factor8	0,00086	0,04701	-0,09328	-0,05033	0,09197	0,0677	-0,01150	Factor8
Factor9	0,11438	0,08673	-0,06618	0,01151	-0,03030	0,05246	0,01198	0,07687

In sum, the *9-factor solution* is chosen because the *4-factor solution* explains less than half the variance and forces the data into a structure which is difficult to interpret. This is not desirable given the preliminary stage of variable development. The method of rotation is less crucial here since both the *Varimax*- and *Oblique*-methods lead to about the same structure, which is definitely true if the mis-matched items are not taken into account. Actually, after cleaning up, i.e., after deleting mis-matched items and items with low reliability (see further), the ultimate outcome obtained from the *4-* and *9-factor solution* is almost identical. Hence, the ultimate construction of variables is not too dependent on the choices made in the factor analysis.^{79,80}

In the next subsections [5.4.1]-[5.4.2.3], the empirical classifications in *Panel B* of Table 15 will be compared with the theoretical expectations, i.e., with the items which

⁷⁹ In the *4-* and *9-factor solutions*, the ultimate scale for *information asymmetry* and *earnings management* is identical. The scale for *budget slack* has one item more (item II.B.2) in the *4-factor solution* but this hardly has any impact on its reliability (see Table 18, p.115). The loadings of the *short-termism* items are different in both solutions, but whichever combination of items is considered, its reliability remains problematic (see Table 19, p.118).

⁸⁰ In the above section, *information asymmetry* was factor analyzed together with the *control loss* variables. However, it could be argued that the former is a *contextual variable* whereas the latter variables represent a number of *dysfunctional behaviors*, notably, *budget slack*, *earnings management*, and *short termism*. To take this comment into account, a factor analysis was carried out on 19 items only, excluding the 8 items used to measure *information asymmetry* (i.e., items II.A.1 through II.A.8). Although the factor analysis and its statistics looked different for obvious reasons, the same "ultimate" result or item-composition was obtained for *budget slack*, *earnings management*, and *short termism*.

were expected to measure each variable individually, notably, (i) *information asymmetry*, (ii) *budget slack*, (iii) *earnings management*, and (iv) *short termism*, respectively.

5.4.1. Information Asymmetry

Information asymmetry exists when the business unit managers' information exceeds that of the head office [Dunk, 1993a: 401]. Dunk developed a measure of information asymmetry because "there was no measure of information asymmetry designed for use in field studies" [1993a: 403].⁸¹ Indeed, research dealing with information asymmetry has taken place primarily in laboratory settings [e.g., Young, 1985]. The measure of information asymmetry used in this study is based on Dunk [1993a] and Jaworski and Young [1992]. The instrument contains the following items: (i) *My corporate superiors possess good information regarding the activities undertaken in my business unit* (item II.A.1_R); (ii) *My corporate superiors are well-informed about the performance potential of my business unit* (item II.A.2_R); (iii) *My corporate superiors are able to assess the potential impact of external factors on the activities of my business unit* (item II.A.3_R); (iv) *My corporate superiors are intimately familiar with the day-to-day decisions that I take in my business unit* (item II.A.4_R); (v) *My corporate superiors can specify the factors which*

⁸¹ At about the same time as Dunk [1993a], Jaworski and Young [1992] also developed a survey measure of information asymmetry. Although both scales include the same kind of questions, the main difference is that Jaworski and Young constructed a *difference scale* by asking the respondents to rate seven items both for themselves and their superiors [1992: 26 and 35]. Jaworski and Young [1992] argue that difference scales have the advantage of reducing the likelihood of response bias (i.e., comparative scales are likely to bias business unit managers in the direction of always knowing more than their superiors). This contention makes intuitive sense but is less relevant for this study because no inferences are made about the *degree* of information asymmetry. Instead, the hypotheses are formulated in terms of the *difference* in information asymmetry between related and unrelated diversifiers. In other words, the difference in information asymmetry between related and unrelated diversifiers is not afflicted if both groups are exposed to the same bias (if any). Moreover, a major drawback of difference scales is that they require twice as much questions. Therefore, this study uses a comparative measure of information asymmetry. However, in contrast to Dunk [1993a], the instrument in this study does not ask to indicate who has the better information (top vs. business unit management), but, instead, asks the respondents to indicate the truth or falsehood of items stated in the direction of low information asymmetry. This should help reduce any potential bias.

are critical to success in my business unit (item II.A.5_R); (vi) My corporate superiors know as much as I do about the details of my business (item II.A.6_R); (vii) If it became necessary for some reason, at least one of my corporate superiors would be able to step into my position and manage this business effectively (item II.A.7_R); and (viii) With some skill, I can make my budget "look" challenging to my corporate superiors even if it is not (item II.A.8). Respondents were asked to indicate the truth or falsehood of these items on a scale ranging from 1 (definitely false) to 7 (definitely true). The higher the score, the more information asymmetry. The full measure is presented in Appendix [D.1], Section II.A.

As can be seen from Appendix [F.3] and Table 15, all these items are strongly correlated and load on the same factor, except item II.A.8. Cronbach's Alpha for the whole 8-item scale is 0,80 and goes up to 0,84 if item II.A.8 is deleted (see Table 17). Given the questionable validity of item II.A.8, it will be deleted from the final information asymmetry scale.

Table 17
CRONBACH'S ALPHA FOR "INFORMATION ASYMMETRY"

ORIGINAL SCALE (8 ITEMS) → $\alpha=0,8004$	Alpha if Item Deleted	
<i>My corporate superiors possess good information regarding the activities undertaken in my business unit</i>	II.A.1_R	0,7861
<i>My corporate superiors are well-informed about the performance potential of my business unit</i>	II.A.2_R	0,7735
<i>My corporate superiors are able to assess the potential impact of external factors on the activities of my business unit</i>	II.A.3_R	0,7569
<i>My corporate superiors are intimately familiar with the day-to-day decisions that I take in my business unit</i>	II.A.4_R	0,7407
<i>My corporate superiors can specify the factors which are critical to success in my business unit</i>	II.A.5_R	0,7655
<i>My corporate superiors know as much as I do about the details of my business</i>	II.A.6_R	0,7700
<i>If it became necessary for some reason, at least one of my corporate superiors would be able to step into my position and manage this business effectively</i>	II.A.7_R	0,7781
<u><i>With some skill, I can make my budget "look" challenging to my corporate superiors even if it is not</i></u>	II.A.8	0,8378

5.4.2. Control Loss

Control loss is measured through three indicators, notably, *budget slack*, *earnings management*, and *short termism*.

5.4.2.1. Budget Slack

Budget slack has been referred to in the literature under a variety of labels, e.g., *loose budget targets* (see Merchant [1985b: 202] for more on this). There is slack in the budget if the business unit manager has intentionally set his budget target lower than his “honest” forecast about the future so that the budget becomes easier to achieve [Lukka, 1988]. Put differently, there is slack in the budget if the business unit manager has been able to negotiate a *loose* budget target.⁸² Dunk [1993a] has developed a six-item measure of budget slack focusing on the ease with which budgetary targets can be achieved. The instrument contains the following items: (i) Budget targets induce high productivity in my business unit (item II.B.1_R); (ii) *I succeed to submit budgets that are easily attainable* (item II.B.2); (iii) Budget targets require costs to be managed carefully in my business unit (item II.B.3_R); (iv) *The budget targets for my business unit should be made less difficult to achieve* (item II.B.4_R); (v) *I build some slack in the budget in order to make sure to achieve my budget target* (item II.B.5); and (vi) Budget targets have not caused me to be particularly concerned with improving efficiency in my business unit (item II.B.6). Items (i), (ii), (iii), and (vi) are based on Dunk [1993a: 408]. The scores can range from 1 (definitely false) to 7 (definitely true). Although this scale is partly developed *de novo*, it is very similar to instruments previously used to assess *budget goal difficulty* [e.g., Hirst and Lowy, 1990; Kenis, 1979]. Therefore, this study also includes a fully-anchored question

⁸² A budget is *tight* if the probability that it will be met is low [Merchant and Manzoni, 1989; Holstrom, 1971] or if it requires serious effort and a high degree of efficiency in accomplishment [Simons, 1988].

asking whether the budget is (1) *very easy to attain*; (2) *attainable with reasonable effort*; (3) *attainable with considerable effort*; (4) *very tight, practically unattainable*; or (5) *impossible to achieve* [Otley, 1994; Lyne, 1988] (see Appendix [D.1], item *I.B.2_R*).⁸³

Appendix [F.3] shows that the control item *I.B.2_R* is significantly correlated with all other budget slack items, except item *II.B.4_R*. The factor analysis reveals that the budget slack items fall apart in two factors (see Table 15, *Panel B*). The items which collapse into the first factor (factor 2 in Table 15, *Panel B*) are underlined in the text above; the other items which cluster into the second factor (factor 7 in Table 15, *Panel B*) are typed in bold. A possible explanation is that the items which load on factor 2 kind of express budget slack very indirectly and in a “positive” way through the use of words like *efficiency*, *productivity*, and *cost consciousness*. In contrast, the items which load on factor 7 are very negatively formulated, i.e., words as *slack* and *easily attainable* are used very directly.

This duality also shows in the reliability analysis (Table 18). *Cronbach's Alpha* for the full 7-item scale is only 0,53 and improves to 0,67 if the first group of items are taken apart. *Cronbach's Alpha* of the second group of items is meaningless because item *II.B.4_R* is negatively correlated with item *II.B.2* ($r=-0,22$) and item *II.B.5* ($r=-0,42$). *Cronbach's Alpha* on items *II.B.2* and *II.B.5* alone is 0,61, which is very high for only two items. Hence,

⁸³ Ideally, an insight into control loss as measured by *budget slack* or *budget attainability* should be obtained by comparing the perceptions of the corporate executive vs. his business unit managers. This is important because Merchant and Manzoni [1989] found that the corporate executives may actually support a policy of “achievable” budgets. Hence, if this is so, there may be slack in the budget (in the sense that the budget is more often than not achievable) but no control loss since it is a policy supported by the corporate managers. Control loss in the real sense of the word, in contrast, occurs when top managers believe that budgets are difficult to achieve whereas the business unit managers know that the budget targets are easy to attain. Hence, the larger the discrepancy between the responses of both parties, the more control loss. For instance, in unrelated diversifiers relying on detached, hands-off controls, it is expected that the corporate executive will believe that budget targets are difficult to attain whereas the business unit managers with their detailed knowledge of the business may report that the budgets are actually pretty easy to achieve. However, the research design used in this study does not allow such a detailed analysis/comparison since the degree of budget slack is only measured at the business unit level.

item *II.B.4_R* clearly is problematic.⁸⁴ By the way, this item had a low individual *Measure of Sampling Adequacy* (MSA) also (see the diagonal of the *Anti-Image Correlation Matrix* in Appendix [F.3]). Moreover, if the full budget slack scale is taken with only this problematic item *II.B.4_R* deleted, then *Cronbach's Alpha* goes up to 0,66 (Table 18). Nonetheless, it was decided to play safe and to use the reduced 4-item scale of budget slack only, i.e., items *I.B.2_R*, *II.B.1_R*, *II.B.3_R*, and *II.B.6* (factor 2 in Table 15, *Panel B*).

Table 18
CRONBACH'S ALPHA FOR "BUDGET SLACK"

		Alpha if Item Deleted	
		Panel A	Panel B
PANEL A: ORIGINAL SCALE (7 ITEMS) → $\alpha=0,5304$			
PANEL B: ADJUSTED SCALE (5 ITEMS) → $\alpha=0,6843$			
<i>Budget targets induce high productivity in my business unit</i>	II.B.1_R	0,3923	0,5917
<i>I succeed to submit budgets that are easily attainable</i>	II.B.2	0,4509	0,6710
<i>Budget targets require costs to be managed carefully in my business unit</i>	II.B.3_R	0,4334	0,6326
<i>The budget targets for my business unit should be made less difficult to achieve</i>	II.B.4_R	0,6581	
<i>I build some slack in the budget in order to make sure to achieve my budget target</i>	II.B.5	0,5742	
<i>Budget targets have not caused me to be particularly concerned with improving efficiency in my business unit</i>	II.B.6	0,3771	0,6099
<i>The budget is (1) very easy to attain; (2) attainable with reasonable effort; (3) attainable with considerable effort; (4) very tight, practically unattainable; or (5) impossible to achieve</i>	I.B.2_R	0,4615	0,6516

5.4.2.2. Earnings Management

The second indicator of control loss is the extent to which business unit managers engage in *earnings management*, i.e., in the manipulation of performance measures in order to look good. *Smoothing*, i.e., changing the time period in which a performance indicator is affected, is probably one of the most popular tricks to manipulate performance measures [Merchant, 1990: 300; Birnberg et al., 1983: 121]. In this study, the measurement

⁸⁴ This might be caused by the reverse coding, which is especially problematic for this item because of the kind of *double negation* [Hinkin, 1995].

of earnings management is based on Merchant [1990]. Specifically, the business unit managers were asked to indicate how frequently they (i) *Pulled profits from future periods into the current period by deferring a needed expenditure or by accelerating a sale* (item II.D.1); and (ii) *Shifted funds between accounts to avoid budget overruns* (item II.D.2). Scoring ranged between 1 (never) and 7 (frequently) [Merchant, 1990: 303].⁸⁵

Appendix [F.3] reveals that both items are strongly correlated ($r=0,38$; $p<0,00000$), load on the same factor (cf., factor 3 in Table 15, Panel B), and have a Cronbach's Alpha of 0,58 which is definitely acceptable for a 2-item scale. Hence, both items are kept to form the *earnings management* scale.

5.4.2.3. Short-termism

Third, the questionnaire contains explicit questions about *short-termism*, another indicator of control loss. Managerial short-termism or *management myopia* implies sacrificing greater long-term benefits in the pursuit of smaller but more immediate gains [Lavery, 1996; Coates et al., 1994; Merchant and Bruns, 1986].

An example of a time-orientation instrument can be found in Merchant [1990]. The instrument asks managers to *indicate the percentage of their time that is devoted to working on matters which will show up in their profit and loss statement within 1 month or less, 1 month to 1 quarter, 1 quarter to 1 year, and 1 year to 5 years*. The time devoted to working on matters which will appear in the profit and loss statement within 1 to 5 years was used as an indication of the business unit manager's long-term orientation [Merchant, 1990: 303] (this corresponds with item II.C.1.d_R in this study).

⁸⁵ The third item of Merchant's scale asked about the extent to which equipment from outside the company was bought so that the design portion of the expenditure could be capitalized, although the job could have been done as well within the company [Merchant, 1990: 303]. Merchant identified this issue during the interview phase of his study. However, this item seems very idiosyncratic to the target company in which Merchant conducted his research. Since this study targets a cross-section of companies rather than a single company, this item was dropped from the *earnings management* scale.

The second measure assesses the effect of control on innovation by asking the business unit managers to indicate *whether they would have spent more or less money if they had been given complete freedom to operate their business for expenditures of the following types: (i) new product development; (ii) product engineering, i.e., improvement of existing products; (iii) manufacturing process engineering, i.e., cost reductions; (iv) basic research; (v) capacity expansion; (vi) advertising and sales promotion; (vii) employee training and development; and (viii) information systems* [Merchant, 1985a: 85] (item II.C.3.a,b,c,d,e,f,g,h). Scoring can range from 1 (much less) to 7 (much more). Similarly, respondents were asked to indicate *whether budget controls have encouraged or discouraged new ideas for expenditures in the following areas: same categories as above, but scores range from 1 (great discouragement) to 7 (great encouragement)* [Merchant, 1990: 303-304] (item II.C.7.a,b,c,d,e,f,g,h).⁸⁶

Third, respondents were asked to indicate *whether their performance is evaluated by the top in terms of (1) predominantly financial measures of asset returns (e.g., ROI, ROA); (2) predominantly sales-related and/or operational criteria (e.g., sales growth, sales margin, market share, quality, efficiency); or (3) a combination of both financial returns and operational/sales-related criteria* [cf., *short-term financial performance vs. strategic performance* - Slagmulder et al., 1995: 141] (item II.C.2_R). This item serves as a control question since previous studies have argued that asset return measures are generally short-termist in application whereas sales-related measures can be considered to have a longer term orientation [Coates et al., 1995: 130-131; Bailes and Assada, 1991]. In addition, respondents were asked directly about their attitude toward risk taking in their business unit. Two identical but opposite items were used to measure risk attitude: (i) *Within my business unit, there is a strong tendency to fund low risk projects with normal and certain rates of return* (item II.C.4); and the

⁸⁶ During the pre-tests it became obvious that not all business unit managers have full responsibility in all these decision areas or that not all categories are relevant for each business unit. Therefore, it was decided to add the answer choice *-na-* (not applicable) to each category. The scale was then transformed into a ratio (RAT.II.C.3) obtained by summing items II.C.3a through II.C.3h and by dividing this sum by the number of categories for which a valid answer was given (i.e., not a "not available" answer). The ratio RAT.II.C.7 was calculated in the same way on items II.C.7a through II.C.7h.

opposite (ii) *Within my business unit, managers are stimulated to undertake risky projects with uncertain returns* (item II.C.6_R) [Miller and Friesen, 1982: 24]. Scoring ranges from 1 (definitely false) to 7 (definitely true) with higher scores indicating the presence of risk avoidance and, hence, management myopia. Finally, the business unit managers were asked straightforwardly to indicate on a scale from 1 (definitely false) to 7 (definitely true) whether *budget targets prevent them from taking advantage of new opportunities* (item II.C.5).

Table 19
CRONBACH'S ALPHA FOR "SHORT TERMISM"

		Alpha if Item Deleted		
		Panel A	Panel B	Panel C
<u>PANEL A:</u> ORIGINAL SCALE (7 ITEMS) → $\alpha=0,2114$				
<u>PANEL B:</u> ADJUSTED SCALE (4 ITEMS) → $\alpha=0,4051$				
<u>PANEL C:</u> ADJUSTED SCALE (3 ITEMS) → $\alpha=0,2514$				
Indicate the percentage of your time that is devoted to working on matters which will show up in your profit and loss statement within 1 month or less, 1 month to 1 quarter, 1 quarter to 1 year, and 1 year to 5 years	II.C.1d_R	0,2915		
Indicate whether you would have spent more or less money if you had been given complete freedom to operate your business for expenditures of the following types: (i) new product development; (ii) product engineering, i.e., improvement of existing products; (iii) manufacturing process engineering, i.e., cost reductions; (iv) basic research; (v) capacity expansion; (vi) advertising and sales promotion; (vii) employee training and development; and (viii) information systems	II.C.3 a,b,c,d e,f,g,h	0,1697	0,3735	
Indicate whether budget controls have encouraged or discouraged new ideas for expenditures in the following areas: (i) new product development; (ii) product engineering, i.e., improvement of existing products; (iii) manufacturing process engineering, i.e., cost reductions; (iv) basic research; (v) capacity expansion; (vi) advertising and sales promotion; (vii) employee training and development; and (viii) information systems	II.C.7 a,b,c,d e,f,g,h	0,0825	0,3230	-0,0707
Indicate whether your performance is evaluated by the top in terms of (1) predominantly financial measures of asset returns (e.g., ROI, ROA); (2) predominantly sales-related and/or operational criteria (e.g., sales growth, sales margin, market share, quality, efficiency); or (3) a combination of both financial returns and operational/sales-related criteria	II.C.2_R	0,3063		
Within my business unit, there is a strong tendency to fund low risk projects with normal and certain rates of return	II.C.4	0,1312	0,4400	
Budget targets prevent me from taking advantage of new opportunities	II.C.5	0,0972	0,1657	0,2126
Within my business unit, managers are stimulated to undertake risky projects with uncertain returns	II.C.6_R	0,1847		0,4478

As can be seen from Table 15, the items for short-termism load all over the place, although two underlying factors can probably be distinguished (factor 4 and 8 in Table 15, Panel B). The dimension underlying factor 4 can best be captured by using the words from items *RAT.II.C.7*, *II.C.5*, and *II.C.6_R*, notably, *encouragement of new ideas, taking advantage of new opportunities, and undertaking risky projects*. Hence, this factor seems to represent willingness to undertake new and uncertain projects or opportunities. Factor 8 (items *II.C.1.d_R* and *RAT.II.C.3*), on the other hand, is more difficult to interpret. Anyway, the whole 7-item scale, as well as the reduced scales have an unacceptable Cronbach's Alpha ($\alpha=0,21$ for the whole scale, see Table 19). In short, the construction of a *short-termism* scale has not been successful. Henceforth, only item *II.C.1.d_R* will be used tentatively as an indicator of managerial short-termism. This item was originally developed by [Merchant, 1990] and measures *the time managers devote to working on matters which will appear in the profit and loss statement within 1 to 5 years*.⁸⁷

Recall from the theoretical part of this paper that there will also be evidence of residual loss if the data show that the business units in unrelated diversifiers have an equal or worse record of meeting their budget and generally show lower performance than the business units in related diversifiers. Therefore, a measure of business unit performance and the number of times the budget has been achieved is needed.⁸⁸

⁸⁷ Apart from *budget slack, earnings management, and short-termism*, two more general control questions were introduced in this section of the questionnaire. The aim was to assess the extent to which budget controls have been harmful to the long-run success of the business (item *II.E.1*) and have allowed to make improvement which would otherwise not have been made (item *II.E.2*). However, as can be seen from Appendix [F.3] and Table 15, those items did not really contribute to the understanding of control loss.

⁸⁸ Almost all diversification research focuses on the link between corporate strategy and corporate performance. However, if there is value to be created by diversification, it is at the business level. Hence, the proper question is whether a business unit benefits from being part of a diversified firm. Since in any multi-business firm, corporate performance is computed by aggregating the performance of the various constituent businesses, using corporate performance may mask the effect of diversification on business unit performance (e.g., a division suffering from financial problems will mask the performance effects of diversification in the other divisions [Dess et al., 1995: 373-374 and 384]).

5.5. Business Unit Performance (Section III of the Questionnaire)

Business unit performance is obtained through five self-typing ratings. Firstly, following several studies in the management (control) literature [e.g., Chia, 1995; Abernethy and Stoelwinder, 1995; Abernethy and Lillis, 1995; Slagmulder et al., 1995; Fraser, 1995; Abernethy and Brownell, 1994; Dunk, 1994; Jaworski et al., 1993; Hirst and Lowy, 1990; Chenhall and Brownell, 1988; Merchant, 1985a, 1984, 1981], respondents were asked to rate their "overall" business unit performance (relative to the industry average) on a 7-point scale ranging from "well below average" to "well above average" (see Appendix [D.1], item III.A.1). Secondly, it was put that *overall performance has several dimensions, notably a market-related dimension (e.g., sales growth, market share, etc.), an operations-related dimension (e.g., cost-effectiveness, quality, etc.), and a development-related dimension (e.g., R&D, personnel development, new product development, etc.)* – Please indicate (i) how important each of these dimensions is for the competitiveness of your business unit, and (ii) how well your business unit is performing along each dimension (item III.A.2). The answers to both questions allowed to derive a weighted measure of business unit performance.⁸⁹ Thirdly, the business unit managers were asked to indicate their business unit's *return on sales* (i.e., *profit before tax ÷ sales turnover*) over the last three years on a fully-anchored scale ranging from "negative" to "30%+" (item III.C.a,b,c). Fourth, it was asked which of the following

⁸⁹ The performance measure derived from this question was calculated as follows: $\sum \ln[(PER_i \times 7) / IMP_i]$, where PER_i stands for the score on the *performance scale*; IMP_i for the score on the *importance scale*; and where $i=1$ to 3, i.e., the three performance dimensions. Ignoring the log-transformation and the multiplication by 7, "good performance" occurs when the business unit is performing at least in line with the importance attached to that particular performance dimension. As such, low performance (e.g., $PER_i=1$) is not so bad as long as performing well on the i^{th} -dimension is not important (i.e., $IMP_i=1$ also). Hence, performing badly on a non-important dimension is as good as performing very well on a very important dimension (i.e., $PER_i=7$ and $IMP_i=7$). In short, a business unit is performing "just right" when the value of $PER_i / IMP_i = 1$ (again, ignoring the log-transformation and the multiplication by 7). On the contrary, a business is performing badly if the value of $PER_i / IMP_i < 1$, i.e., when it is showing low performance on an important dimension. So, if the log-transformation and the multiplication by 7 are ignored, the worst performance corresponds with a value of 0,14 (i.e., $PER_i=1$ and $IMP_i=7$) whereas the best performance corresponds with 7 (i.e., $PER_i=7$ and $IMP_i=1$). And, the turning point between good and bad performance is 1. Hence, this range between 0,14 and 7, turning at 1 is highly skewed. Therefore, two transformations are used: the PER_i -scale is multiplied by 7 leading to the following performance values: min=1, max=49, turning point=7. Doing a log-transformation then reduces the skewness giving the following values: min=0, max=3,89, turning point=1,94. Summing these scores for each dimension gives the aggregate performance measure for this performance scale.

terms best describes the business unit's performance in the past year: (i) *losing money*; (ii) *about break-even*; (iii) *profitable, but less so than most of the direct competitors*; and (iv) *more profitable than most of the direct competitors* (item III.D). Finally, respondents were asked to consider *ideal* overall performance of their business units as 100% and then to rate the *actual* performance over the last year relative to this ideal performance on a scale from 0 to 100% (item III.E).⁹⁰ For the exact format of all these items, see Appendix [D.1], Section III.A, C, D, and E).

Although self-ratings have been criticized for lack of objectivity, there is no clear evidence that objective measures are more reliable or valid [Brownell, 1995; McInnes and Ramakrishnan, 1991; Venkatraman and Ramanujam, 1987; Dess and Robinson, 1984]. Actually, Heneman [1974] found that self-ratings possess less leniency (i.e., they do not exhibit a tendency to have higher mean values) and less halo error (i.e., managers do not evaluate themselves on a "global" basis) than supervisor ratings. Miller and Cardinal [1994: 1661] also suggest that key informants provide performance data that are more accurate than the data available through archival sources. Their conjecture is that informant performance data basically reflect true performance whereas archival performance data to a substantial degree reflect public relations, tax, and other extraneous considerations. Since all respondents were business unit managers (or subsidiary CEOs), it can be assumed that they are reasonably well-informed of their business units' financial position [Powell, 1992: 125]. Apart from these reliability and validity issues (see also Dunk [1993b: 579-580] and Young [1995] for a more detailed discussion), self-rated measures are often the only way to assess performance at the business unit level [Powell, 1992; Dess and Robinson, 1984; Govindarajan, 1984]. This is particularly true in this study since public data on performance were not always available for foreign subsidiaries. Moreover, it is very unlikely that each unit of a diversified

⁹⁰ The fourth and fifth measure of performance are based on scales developed by Kenneth A. Merchant for his 1985a and 1990-studies. Those measures are taken directly from his questionnaire since they are not described in his published articles [1985a, 1990].

organization will have the same role, strategy, priorities, and/or goals. For instance, units which are focusing on building a presence in a sophisticated market through leading-edge technological developments might be evaluated on dimensions other than traditional profitability indicators [Roth and O'Donnell, 1996: 688]. As it is not always possible to use the same set of criteria to evaluate every business, it is necessary to rely on perceived performance measures [Govindarajan and Fisher, 1990: 269]. Finally, perceptual measures also facilitate performance comparisons across industries without distortions based on capital structures and accounting conventions [Powell, 1996: 329].

Finally, performance was also defined as the extent to which the business unit has been successful in achieving its planned targets [Mia and Clarke, 1995]. In this respect, performance was measured as the number of times the budget has been achieved. Therefore, the business unit managers were asked to indicate on a 6-point scale ranging from "never" to "all 5 years" *how often they met their budget goals over the last five years*⁹¹ [Hirst and Lowy, 1990: 427] (see Appendix [D.1], Section III.B).

Appendix [F.4] presents the correlation coefficients among all items used to capture *business unit performance*, the significance of these correlations, the output of the factor analysis (see also Table 20), and an assessment of the reliability of the performance scale. In total, 8 items are factor analyzed which results in a very high *subject-to-item ratio* of 135:8 (>16:1). Moreover, the (*anti-image*) correlation matrix shows a fairly large proportion of (*low*) high correlations. Also, the overall *Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy* is more than acceptable (0,78953) and the individual *Measures of Sampling Adequacy (MSA)* for each item (which are shown on the diagonal of the *Anti-*

⁹¹ In order to get a useful answer to this question, it was first asked *for how many years the manager has had budget responsibility in his business unit* (see Appendix [D.1], item III.B.1). The number of years the budget has been achieved was then put relative to the number of years the manager has had budget responsibility. In other words, the "degree to which the budget has been met" was measured in relative terms by dividing the answer to item 2 by the answer to item 1 of Section III.B (resulting in a value between 0 and 1).

Image Correlation Matrix) all have values higher than 0,70. Finally, the null-hypothesis that the correlation matrix is the *identity matrix* can be rejected ($p=0,00000$ for the *Bartlett Test of Sphericity*) (for more technical details on these tests, see footnote 71, p.77). In short, the use of factor analysis seems appropriate.

Table 20
PRINCIPAL COMPONENT ANALYSIS FOR BUSINESS UNIT PERFORMANCE

Variable	Communality	Factor	Eigenvalue	Pct. of Var.	Cum. Pct.
III.A.1	1,00	1	3,96106	49,5	49,5
PERFORM ^[1]	1,00	2	1,49181	18,6	68,2
III.B ^[2]	1,00	3	0,80003	10,0	78,2
III.C.A	1,00	4	0,66770	8,3	86,5
III.C.B	1,00	5	0,44773	5,6	92,1
III.C.C	1,00	6	0,38166	4,8	96,9
III.D	1,00	7	0,18856	2,4	99,2
III.E	1,00	8	0,06145	0,8	100,0

[1] "PERFORM" was calculated from items III.A.2(a), III.A.2(b), and III.A.2(c) as follows: $\Sigma \ln[(PER_i \times 7) / IMP_i]$, where PER_i stands for the score on the *performance scale*, IMP_i for the score on the *importance scale*, and where $i=1$ to 3, i.e., the three performance dimensions.

[2] "III.B" is obtained by dividing III.B.2 by III B.1.

It is interesting to observe that the factor analysis has resulted in two factors with an *eigenvalue*>1 (see Table 20). Moreover, the results are the same for *Varimax* and *Oblique* rotation, i.e., all items load on the same factor except the more quantitative, financial, *return on sales (ROS)* measure (item III.C.a,b,c) (see Table 21). On top of that, the loadings on both factors have opposite signs (cf., a negative correlation between the two *oblique factors* of $r=-0,3932$). This clearly illustrates that, in the mind of the managers, financial ROS-performance does not reflect the same dimensions as *overall performance*, say. Indeed, the point has been made before that, for instance, units which are focusing on building a presence in a sophisticated market through leading-edge technological developments might actually be doing very well but show lousy performance on traditional profitability indicators nonetheless [Roth and O'Donnell, 1996: 688].

Table 21
FACTOR GROUPINGS^[1] & CRONBACH'S ALPHA^[2] FOR ITEMS
WHICH MEASURE BUSINESS UNIT PERFORMANCE

Item #	Factor Groupings	Alpha if Item Deleted
III.A.1	"Overall Performance" relative to <i>industry average</i> .	0,8115
III.B	Budget achievement	0,8400
III.D	"Overall Performance" expressed as: (i) <i>losing money</i> ; (ii) <i>about break-even</i> ; (iii) <i>profitable, but less so than most of the direct competitors</i> ; and (iv) <i>more profitable than most of the direct competitors</i> .	0,8065
III.E	"Overall Performance" expressed as <i>ideal performance vs. actual performance</i> .	0,8368
PERFORM	"Overall Performance" expressed along three dimensions, i.e., <i>market-related</i> , <i>operations-related</i> , and <i>development-related dimension</i> .	0,8390
III.C.A	"Financial Performance" (ROS 3yrs)	0,7952
III.C.B	"Financial Performance" (ROS 2yrs)	0,7827
III.C.C	"Financial Performance" (ROS 1yr)	0,7794

[1] The solution is then same for *Varimax* vs. *Oblique* rotations. The correlation between both oblique factors is $r=-0,39326$.

[2] The overall, 8-item Cronbach's Alpha is **0,8336**.

Finally, Table 21 exhibits that Cronbach's Alpha is 0,83 if all 8 items are included in the scale and that it remains about the same if items are deleted one by one ($\alpha=0,74$ if items *III.C.a,b,c* are deleted). In sum, the whole performance scale is highly valid and reliable. However, since item *III.A.1* is strongly correlated with all other items, this *overall performance* item will be used in subsequent analyses as the only measure of business unit performance.

5.6. Corporate Diversification Strategy

The degree of diversification can be measured by objective product-count measures as well as by subjective categorical measures as popularized by Rumelt [1974].

The product-count measures are mostly based on the *Standard Industrial Classification (SIC)*-system.⁹² The underlying assumption is that businesses classified under the same industry code (usually at the two-digit level) are more related than businesses classified under different (two-digit) industry codes. The major advantages of *SIC*-based product-count measures are simplicity (i.e., they are easy to calculate and hence time-efficient) and objectivity (i.e., they are highly reliable since each researcher should for a given company arrive at the same measure). However, the major drawback is that product-count measures are very crude and, hence, possibly less valid.

Rumelt-type, subjective, categorical measures (cf., *single, dominant, related, and unrelated* business), on the other hand, require the evaluation of a large amount of qualitative data (e.g., annual reports, company reports, and other publications). Given the depth of analysis in the categorization process, these measures should be more valid. However, reliability may be at stake due to the researcher's judgment [Robins and Wiersema, 1995; Hall and St.John, 1994; Chatterjee and Blocher, 1992; Varadarajan and Ramanujam, 1987; Pitts and Hopkins, 1982; Montgomery, 1982].

The measurement of diversification remains a controversial and unsettled area [Varadarajan and Ramanujam, 1987: 381] and using both objective product-count and

⁹² The *Standard Industrial Classification (SIC)* system is a numerical system developed by the federal government for classifying all types of activity within the U.S.-economy. The system is based on establishment classifications in which each of a firm's establishments (e.g., plants) is classified according to its primary activity [Montgomery, 1982: 299].

subjective categorical measures allows to assess their reliability and validity. Many studies have been devoted to the reliability and validity of diversification measures (e.g., Hoskisson et al. [1993]; Lubatkin et al. [1993]; Montgomery [1982]). Since these studies usually find a reasonably high degree of correspondence between both types of measures, it is often concluded that the choice of measure should be guided by the aims of the research. More in particular, it is often advised to use subjective, in-depth, qualitative measures which tap underlying strategic intent if the relationship between diversification and firm-specific managerial variables is studied [Hoskisson et al., 1993: 232; Montgomery, 1982: 306]. Given the purpose of this study, it seems wise enough to use qualitative measures of diversification.

More in particular, the measures of diversification used in this study are based on self-reported data from the corporate survey rather than from annual reports or other secondary publications, although these secondary sources will be used to check the face validity of the perceptual measures (see footnote 93). In short, the executives themselves were asked to indicate if they are diversified or not [cf., McDougall and Round, 1984: 388-389]. Specifically, the *Corporate Financial Officers* were asked to do the following (see also Appendix [B.1]):

[...] "Now, we wish to assess the relatedness among the businesses listed above. Multi-business firms can be composed of businesses which are related from an *operational* point of view (e.g., related *products, markets, logistics, distribution channels, technologies, ...*). On the other hand, a company can be composed of a diverse set of unrelated businesses ranging, for example, from food processing to car manufacturing (cf., *conglomerates*). In other words, businesses are considered to be *unrelated* if they do not have an important element of commonality in their physical assets and/or technical skills.

Referring to this brief description, please cluster the above businesses into groups of related activities. Suppose that, at one extreme, every business is completely *unrelated* to all other businesses, then you should place only one business per group. If, at the other extreme, all businesses are strongly *related* to each other, then they should all be placed in one and the same cluster. Please use the pre-printed form below to provide this information.

Please, also indicate the approximate percentage of your company's total sales (=turnover or operating revenue) that is accounted for by each group of activities." [...]

Some authors have pointed out that self-reported measures of diversification are particularly appropriate in studies looking for the organizational determinants and effects of diversification [Needham, 1978]. Given the focus on the effects of diversification on the internal management control arrangements, this study seems to qualify for a self-reported measure. More in particular, Needham argues that "the appropriate concept of diversification is one which is behaviorally significant, in the sense of the concept which decision-makers themselves consider in their decision-making" [1978: 204; see also Reger and Huff, 1993]. Moreover, it has been suggested that perceptual measures can be more discriminating than objective measures too [Powell, 1996: 326]. For instance, in their study about strategic groups, Reger and Huff [1993] found that: (i) managers group firms in subtle ways not captured by economically-oriented research; (ii) the groupings by executives across firms show strong uniformity; and (iii) the strategic groups explained significant performance differences. In short, although executives' perceptions do not necessarily parallel objective measures, they almost certainly have more influence on executive decisions and may be more discriminating than objective measures [Powell, 1996: 326].⁹³

To date, most subjective diversification measures originated from the judgment of researchers rather than allowing executives themselves to decide if they have diversified or not. Of course, executives do make mistakes and might perceive the same phenomena differently [Powell, 1996: 326]. However, it is not sure that this bias exceeds the categorization and reporting biases embodied in accounting reports or even activity codes [Reger and Huff, 1993: 119]. On the contrary, it could be argued that the groupings by executives are more accurate than those by researchers because the latter often lack

⁹³ As a preliminary assessment of convergence, it is interesting to compare how the groupings by the corporate executives compare to the information obtained from publicly available activity-codes (i.e., NACE-codes from the *Nationale Bank van België*) – see below.

specific industry and/or business knowledge and base their judgments mostly on secondary data (with all its distortions). Moreover, executives have a greater motivation for accuracy given the stakes involved in understanding their own structure, competitive positioning, and performance [Powell, 1996: 326]. Finally, it is likely that the strategies of some firms are difficult to interpret because their strategic actions are intentionally obscured to gain competitive advantage [Porter, 1980].

In sum, a perceptual/cognitive approach should allow to assess diversification as executives organize it and make sense of it rather than as an analytical convenience constructed by researchers. Indeed, Markides and Williamson [1996] provide some anecdotal evidence about how a senior executive perceives his company (*British Steel*) as an unrelated business although it only makes steel. *Citizen Watch Company Ltd.*, on the other hand, claims that its diversified products (including watches, printers, computers, TVs, advanced machine tools, and robots) all share a common set of technologies that the company developed in the course of manufacturing watches [Markides and Williamson, 1996: 340]. These arguments and examples clearly are in favor of a more cognitive approach to the measurement of diversification.

The simplest measure of diversification which can be derived from the corporate survey-data is a straightforward count of the *number of groups of activities* in which the firm is involved (this measure was used in Finkelstein [1992], for instance). This simple measure compares to what Varadarajan and Ramanujam [1987] call *Broad Spectrum Diversification (BSD)*, defined as the number of two-digit SIC-categories in which a firm currently operates.⁹⁴ *Mean Narrow Spectrum Diversity (MNSD)* is then defined as the

⁹⁴ Sometimes, a simple count of the *number of businesses* is used as a proxy for diversification [e.g., Henderson and Fredrickson, 1996: 585-586]. Such a measure is derived by counting four-digit SIC-codes.

number of four-digit *SIC*-categories in which a firm operates divided by the number of two-digit *SIC*-categories in which it operates. The closest approximation of *MNSD* in this study is the ratio of the number of entities to the number of groups [cf., Raghunathan, 1995: 996]. The feature of this conceptualization is that it does not require data on revenues of activity groups but still provides insights into both the degree (*BSD*) and direction (*MNSD*) of diversification [Varadarajan and Ramanujam, 1987: 383]. Another very simple indicator of diversification is the so-called *Specialization Ratio*, defined as the proportion of a firm's total sales concentrated in the largest single identifiable area of the firm's activities [Rumelt, 1974; Hill, 1983: 201-202]. This simple measure nonetheless requires information about the revenues of at least the largest group of activities.

However, more sophisticated measures assign weights to the relative importance of each group of activities within the corporation's total activity mix. For instance, the *Herfindahl*-index of diversification is calculated as $H=(1-\sum P_i^2)$, where P_i is the percentage of total sales attributed to group i .⁹⁵ Hence, the share of each group of activities is weighted by itself [Jacquemin and Berry, 1979]. The entropy measure is another weighted index which is used very often in diversification studies [Baysinger and Hoskisson, 1989: 321]. It is defined as $\sum P_i \ln(1/P_i)$, where P_i is the sales value attributed to group i and $\ln(1/P_i)$ is the weight for each group i (i.e., the logarithm of the inverse of its sales). Hence, these weighted measures take into account both the number of groups in which the firm operates and the relative importance of each group of activities in total corporate sales [Palepu, 1985]. However, apart from some minor sensitivity issues, the entropy

⁹⁵ The *Herfindahl*-index was used also in the diversification study of Tallman and Li [1996]. Interestingly, a high degree of correspondence was found between the *Herfindahl*-index and the categorical measure of Rumelt [Tallman and Li, 1996: 187-188].

measure is usually preferred because it can be decomposed into additive elements [Jacquemin and Berry, 1979].⁹⁶

So far, all measures of diversification are continuous, i.e., corporate strategy is treated as a continuum with *single business* at one end of the spectrum and *unrelated diversification* at the other end [Anthony and Govindarajan, 1995: 270 and 604]. However, those measures can be broken down into categories also. A simple categorization can occur by setting cut-off values for the continuous values. For instance, using the *specialization ratio*, a corporation is considered *unitarian* if $SR \geq 0.95$; *dominant* if $0.7 \leq SR < 0.95$; and *diversified* if $SR < 0.7$ [cf., Cuerva-Cazurra, 1996; and also Rumelt, 1974; Wrigley, 1970]. Another way to form categories is to cluster continuous measures, usually with the aim of identifying corporate strategy types which correspond with Rumelt's categories (*dominant*, *related-constrained*, *related-linked*, and *unrelated*) [e.g., Hoskisson et al., 1993; Baysinger and Hoskisson, 1989]. Finally, categories can be obtained by juxtaposition of continuous measures in a matrix. This was done by Varadarajan and Ramanujam [1987: 382]: *firms with very low diversity* (low MNSD, low BSD); *related diversified firms* (high MNSD, low BSD); *unrelated diversified firms* (low MNSD, high BSD); and *firms with very high diversity* (high MNSD, high BSD).

Besides categorical and continuous measures of diversification, *mode of diversification* can serve as yet another operationalization of corporate strategy [Datta et al., 1994]. For instance, it could be argued that another way to measure *conglomerate*

⁹⁶ This measure can usually be broken down into two additive components, an *unrelatedness component* (DU) and a *relatedness component* (DR), so that *total diversification* (DT) is the sum of DU and DR (mathematical proof in Palepu [1985: 252-253] and further refinement in Raghunathan [1995]). DR is defined as the *related diversification* arising out of operating in several business segments within an industry group, whereas DU is defined as *unrelated diversification* between industry groups. Using SIC-codes, *industry groups* are usually treated at the two-digit SIC-level and *business segments* at the four-digit SIC-level. However, in this study, there is no information about the share of each business in its respective group (only the share of each industry group in total corporate sales is known). Therefore, the breakdown of total diversification in its (un)relatedness components could not be performed.

diversification is to introduce a dummy for *holdings* [cf., Henderson and Fredrickson, 1996: 585-586]. *Holding companies* are primarily interested in financial control over their businesses which they run by the numbers (cf., *unrelated diversifiers*). From Table 22 (and Appendix [E.1], *Panel B*), it can be seen that the dummy for *holdings* is significantly and positively correlated with the *ratio of consolidated sales to unconsolidated sales* ($r=0,442$; $p<0,01$). This means that *holdings* have low *unconsolidated sales*, relatively spoken.⁹⁷ This is in line with the interpretation that *holdings* do not develop themselves operational activities, but rather exercise (financial) control over operations of companies in their portfolio. Similarly, the dummy for *holdings* is also positively correlated with the *ratio of consolidated assets to unconsolidated assets*, but less strongly ($r=0,273$; $p<0,1$).⁹⁸

However, it is interesting to observe in Table 22 that the dummy for *holdings* has weak and insignificant correlations with all other diversification measures (both parametric and non-parametric correlations are insignificant here, see footnote 98). This clearly suggests that not all *holding companies* are unrelated diversified (e.g., *Ets. Brepols*, *Interbrew*, *Associated Weavers International*, *Almabo*) or, alternatively, that not all *unrelated diversifiers* adopt a holding structure (e.g., *Solvay*, *CFE*, *BMT*, *Barco*, *Dredging International*). After all, it is very likely that the formation of a *holding structure* is guided more by fiscal

⁹⁷ It is important to look at the *ratio of consolidated sales (assets) to unconsolidated sales (assets)*, i.e., in relative terms. As can be seen from Table 22, the correlations between the holding dummy and *consolidated assets* ($r=0,100$); *unconsolidated assets* ($r=-0,070$); *consolidated sales* ($r=-0,004$); and *unconsolidated sales* ($r=-0,099$) are very low and totally insignificant. Of course, the absolute size of these variables is meaningless simply because there are small and large *holdings*. Indeed, Appendix [A.6] shows that the *consolidated sales* of *holdings* (NACE-code 8132) vary from 2.641 million BEF (*Concentra Holding*) to as large as 270.771 million BEF (*Tractebel*). Conversely, there are some very large corporations which have not adopted a holding structure (e.g., *Solvay* – consolidated sales = 244.146 million BEF; *Delhaize De Leeuw* – consolidated sales = 371.492 million BEF; and *Petrofina* – consolidated sales = 558.982 million BEF).

⁹⁸ Table 22 reports *Pearson correlation coefficients*. However, the same (but stronger) conclusions are obtained with non-parametric correlations, such as, *Kendall's τ* and *Spearman's ρ* . The correlations are as follows: (i) between "*holdings*" and "*consolidated assets + unconsolidated assets*": $\tau=0,441$ ($p=0,001$) or $\rho=0,534$ ($p=0,000$); (ii) between "*holdings*" and "*consolidated sales + unconsolidated sales*": $\tau=0,508$ ($p=0,000$) or $\rho=0,615$ ($p=0,000$). Interestingly, the dummy for *holdings* also shows a significant negative correlation with *corporate employment* ($\tau=-0,399$ ($p=0,002$) or $\rho=-0,482$ ($p=0,001$)) and with *unconsolidated sales* ($\tau=-0,384$ ($p=0,002$) or $\rho=-0,465$ ($p=0,001$)) which lends support to the interpretation that *holdings* do not develop themselves operational activities (i.e., low *unconsolidated sales* and low *headcount* at corporate).

considerations than by operational and/or diversification ones. Given these low correlations, the dummy for *holdings* will not be considered as a valid alternative measure of diversification.

Table 22
CORRELATIONS FOR THE HOLDING DUMMY

	<i>Correlation Coefficient</i>	<i>t</i> ₄₄	<i>p</i> -value
<i>Consolidated Assets</i>	0,100	0,6667	0,254
<i>Unconsolidated Assets</i>	-0,070	-0,4655	0,322
<i>Consolidated Sales</i>	-0,004	-0,0265	0,490
<i>Unconsolidated Sales</i>	-0,099	-0,6599	0,256
<i>Ratio of Consolidated Assets to Unconsolidated Assets</i>	0,273*	1,8824	0,033
<i>Ratio of Consolidated Sales to Unconsolidated Sales</i>	0,442***	3,2685	0,001
<i>Employment</i>	0,007	0,0464	0,482
<i>ROC</i>	0,156	1,0476	0,150
<i>Entities</i>	0,038	0,2522	0,401
<i>Groups</i>	0,109	0,7274	0,235
<i>Country</i>	-0,101	-0,6734	0,252
<i>Entropy</i>	0,184	1,2417	0,110
<i>Herfindahl</i>	0,167	1,1235	0,134
<i>SR</i>	-0,128	-0,8561	0,198
<i>MNSD</i>	-0,044	-0,2921	0,386

The significance of correlations is tested using the following statistic: $t_{n-2} = [r(\sqrt{n-2})] / [\sqrt{(1-r^2)}]$, with $n=46$.

Hence, the corresponding *p*-values reported in the last column of Table 22 represent a *one-tailed* test.

The critical *t*₄₄-values and corresponding correlation coefficients (*r*) are:

$\alpha=0,900 \quad \rightarrow \quad t_{44}=1,3011 \quad \rightarrow \quad r=0,19248$

$\alpha=0,950 \quad \rightarrow \quad t_{44}=1,6802 \quad \rightarrow \quad r=0,24555$

$\alpha=0,975 \quad \rightarrow \quad t_{44}=2,0154 \quad \rightarrow \quad r=0,29071$

$\alpha=0,990 \quad \rightarrow \quad t_{44}=2,4142 \quad \rightarrow \quad r=0,34201$

$\alpha=0,995 \quad \rightarrow \quad t_{44}=2,6923 \quad \rightarrow \quad r=0,37608$.

Hence, all correlations larger than $r=0,24555$ are *two-tailed* significant at the $\alpha=0,90$ -level (*); all correlations larger than $r=0,29071$ are *two-tailed* significant at the $\alpha=0,95$ -level (**); and all correlations larger than $r=0,37608$ are *two-tailed* significant at the $\alpha=0,99$ level (***). The *two-tailed* *p*-values can be obtained directly by multiplying by 2 the one-tailed *p*-values reported in the last column of Table 22.

Geographical diversification might be considered as another *mode of diversification*. After all, geographical diversification is, in some way, conceptually similar to engaging in related product diversification [Tallman and Li, 1996: 180]. Geographical diversity can only be measured in this study in terms of *country scope*, i.e., the number of countries in

which the corporation has operating businesses. This study provides no information to assess the degree of *multinationality*, i.e., the proportion of a firm's sales derived from operations outside the home country to total sales [cf., Tallman and Li, 1996: 188].

Most of the diversification measures discussed above are calculated in Appendix [E.1]. *Panel A* gives an overview per company of the *number of entities*; the *number of groups of activities* (cf., *BSD*); the *number of countries* (cf., *country scope*); *MNSD* (i.e., *number of entities* divided by *number of groups*); the *entropy measure*; the *Herfindahl-index*; and the *specialization ratio* (i.e., the share in total corporate sales of the largest group of activities) together with the *shares* of the remaining groups of activities.^{99,100} *Panel B* of Appendix [E.1] shows the *descriptive statistics* of these diversification measures and a *correlation matrix* of all variables measured at the corporate level. In *Panel C*, the significance of the correlations among the diversification measures is calculated. *Panel C* is summarized in Table 23 below.

As can be seen from Table 23, the correlations between most measures of diversification are significant at the $p=0,05$ -level or better. As can be expected, the *entropy measure*, the *Herfindahl-index*, and the *specialization ratio* are very strongly correlated.¹⁰¹ After all, these measures basically use the same underlying data but apply different weights. However, the *MNSD*-measure does not correlate significantly with the *entropy*-,

⁹⁹ *SR* is simply the *largest group of activities* in terms of share in total corporate sales. The sum of *SR* and the shares of the remaining groups of activities equals 1. The entropy and *Herfindahl* measures are calculated on the basis of these data on shares.

¹⁰⁰ It should be noted that some corporations list a group of activities with a share in total sales equal to zero (see Appendix [E.1], *panel A*). This usually corresponds with a group of activities labeled "*corporate services*" or "*holding and miscellaneous*." The entities brought together in such a group usually provide corporate services internally (e.g., accounting, consulting, MIS, etc.) and have no external sales so that their share in corporate sales equals zero (or can be ignored).

¹⁰¹ The correlations with the *specialization ratio* are negative since *more* specialization corresponds with *less* diversification.

Herfindahl-, and *SR*-measures.¹⁰² This is in line with the findings in many other validation studies [e.g., Lubatkin et al., 1993; Hoskisson et al., 1993]. An interesting observation is that a simple count of the *number of entities* and *groups* correlates significantly ($p<0,01$), and in the desired direction, with the *entropy*-, *Herfindahl*-, and *SR*-measures. Indeed, previous studies have confirmed that simple measures like a count of the *number of entities* are as valid as more complex measures [Henderson and Fredrickson, 1996; Lubatkin et al., 1993]. Since simple as well as more complex objective measures are strongly related in this study and since it has been shown in other studies that objective measures like the *entropy*- and *Herfindahl*-index exhibit a high degree of correspondence with categorical, *Rumelt*-type measures [Tallman and Li, 1996; Lubatkin et al., 1993; Hoskisson et al., 1993], it can be argued that the measures used here and the underlying data on which they are based are reasonably valid and reliable.

Table 23
CORRELATION COEFFICIENTS BETWEEN SEVERAL DIVERSIFICATION MEASURES

	entities					
groups	0,330**	groups				
countries	0,747***	0,193 ^{n.s.}	countries			
entropy	0,400***	0,649***	0,301**	entropy		
herfindahl	0,371***	0,577***	0,299**	0,987***	herfindahl	
SR	-0,401***	-0,517***	-0,365**	-0,965***	-0,984***	SR
MNSD	0,857***	-0,084 ^{n.s.}	0,772***	0,136 ^{n.s.}	0,130 ^{n.s.}	-0,200 ^{n.s.}

The significance of correlations is tested using the following statistic: $t_{n-2}=[r(\sqrt{n-2})]/[\sqrt{1-r^2}]$, with $n=46$.

The critical t_{44} -values and corresponding correlation coefficients (r) are:

$\alpha=0,900$	--	$t_{44}=1,3011$	--	$r=0,19248$
$\alpha=0,950$	--	$t_{44}=1,6802$	--	$r=0,24555$
$\alpha=0,975$	--	$t_{44}=2,0154$	--	$r=0,29071$
$\alpha=0,990$	--	$t_{44}=2,4142$	--	$r=0,34201$
$\alpha=0,995$	--	$t_{44}=2,6923$	--	$r=0,37608$

Hence, all correlations larger than $r=0,24555$ are *two-tailed* significant at the $\alpha=0,90$ -level (*); all correlations larger than $r=0,29071$ are *two-tailed* significant at the $\alpha=0,95$ -level (**), and all correlations larger than $r=0,37608$ are *two-tailed* significant at the $\alpha=0,99$ level (***).

¹⁰² *MNSD* is positively correlated with the *number of entities* ($r=0,857$; $p<0,01$) simply because the *number of entities* is in the numerator of the *MNSD*-measure. *MNSD* is negatively correlated with the *number of groups* ($r=-0,084$; $n.s.$) because the *number of groups* is in the denominator of the *MNSD*-measure. The fact that *MNSD* is significantly correlated with the *number of entities* but not with the *number of groups* suggests that the *number of entities* has a greater impact on the value of *MNSD*.

An interesting observation is that most measures of diversification are significantly correlated with *country scope* ($p < 0,05$ except the correlation with the *number of groups*). Hence, as companies become more diversified, they seem to operate more internationally too. Since *country scope* is strongly correlated with the *number of entities* ($r = 0,75$; $p < 0,01$) but not with the *number of groups*, at least not significantly, it could be suggested very tentatively that geographical diversification is indeed a form of related product diversification [Tallman and Li, 1996: 180].¹⁰³

Besides these quantitative comparisons, it might also be interesting to look at the outcome of these measures from a qualitative point of view. Rather than discussing each company in detail, attention will be directed to those companies which are kind of outliers. To select these companies, some broad diversification categories are developed and compared. Appendix [E.2] gives an overview of the degree of diversification of the corporations in this study sorted by the *Varadarajan & Ramanujam (V&R) measure* (Panel A); *specialization ratio* (Panel B); *entropy measure* (Panel C); and *Herfindahl-index* (Panel D). Using simple cut-off values for the *specialization ratio*, it can be seen from Panel B that the sample contains 17 *unitarian* ($SR \geq 0,95$); 9 *dominant* ($0,7 \leq SR < 0,95$); and 19 *diversified* companies ($SR < 0,7$), which is a nice spread [cf., Cuerva-Cazurra, 1996; and also Rumelt, 1974; Wrigley, 1970]. A nice spread is also obtained in Panel A which illustrates the *V&R*-categories obtained by calculating the median values for *BSD* ($= 4,00$) and *MNSD* ($= 4,17$). The matrix is formed as follows: *firms with very low diversity* ($BSD \leq 4,00 - MNSD \leq 4,17$; 12 firms); *related diversified firms* ($BSD \leq 4,00 - MNSD > 4,17$; 14 firms); *unrelated diversified firms* ($BSD > 4,00 - MNSD \leq 4,17$; 11 firms); and *firms with very high diversity* ($BSD > 4,00 - MNSD > 4,17$; 9 firms).

¹⁰³ *Country scope* is very strongly correlated with *MNSD* ($r = 0,772$; $p < 0,01$) simply because the former is strongly correlated with the *number of entities* with which *MNSD* is strongly correlated too (see footnote 102).

Panel B illustrates how the groupings based on *SR* correspond with the categorizations based on *V&R*. If it is assumed that *unitarian companies* ($SR \geq 0.95$) should correspond predominantly with *firms with very low diversity and related diversified firms* (Cells A-B); *dominant companies* ($0.7 \leq SR < 0.95$) with *related diversified firms and unrelated diversified firms* (Cells B-C); and *diversified companies* ($SR < 0.7$) with *unrelated diversified firms and firms with very high diversity* (Cells C-D), then it can be assessed how both categorizations correspond. All in all, 13 companies, or 28%, are misclassified. This tentatively confirms the weak(er) validity of the *V&R-measure* [see also Lubatkin et al., 1993; Hoskisson et al., 1993].

In *Panel C* of Appendix [E.2], the companies are sorted on *entropy* on which a quartile split is performed. The entropy cut-off values are 0,056 for the first quartile; 0,583 for the median or second quartile; and 1,025 for the third quartile. Only 6 companies are misclassified if it is liberally assumed that the *first quartile* of the entropy measure can correpond with Cells A-B of the *V&R-measure*; the *second quartile* with Cells A-B-C; the *third quartile* with Cells B-C-D; and the *fourth quartile* with Cells C-D.

Similarly, in *Panel D* of Appendix [E.2], the companies are sorted on *Herfindahl* and a quartile split is performed again. The *Herfindahl* cut-off values are 0,020 for the first quartile; 0,354 for the median; and 0,536 for the third quartile. Five companies are misclassified if it is again liberally assumed that the *first quartile* of the *Herfindahl* measure can correpond with Cells A-B of the *V&R-measure*; the *second quartile* with Cells A-B-C; the *third quartile* with Cells B-C-D; and the *fourth quartile* with Cells C-D.¹⁰⁴

¹⁰⁴ It is interesting to observe that the sorting procedure based on *entropy* results in exactly the same order as the sorting procedure based on *Herfindahl*. Only the quartile split is very slightly different (compare *Panel C* with *D*). The ranking based on *SR* is somewhat different than the rankings based on *entropy* and *Herfindahl*, especially for the more diversified companies. All in all, these results are in line with the strong correlations between these three measures (see Table 23).

Although it is often very difficult to advance technical arguments to choose cut-off values [Rumelt, 1974: 15], the use of simple quartile splits might not be error-free either because it assumes that the companies in the sample are evenly distributed over all four categories or quartiles. However, rather than being obsessed by exact demarcation lines, it is more important to focus on the five companies which are systematically mismatched in Panel B through D. Those companies are *Bekaert*, *Rombouts*, *VTB-VAB*, *VPK Oudegem*, and *Pauwels International*. All other companies are pretty close to the demarcation lines.

Bekaert is classified by V&R as *highly diversified* although it is still classified as a *unitarian* or very *undiversified* company by *SR*-, *entropy*-, or *Herfindahl*-measures. The explanation is pretty straightforward: although *Bekaert* has 61 businesses in 7 groups (which makes it *highly diversified* according to V&R), it sees itself mainly concentrated on a single activity, notably, “*engineering, manufacturing, and/or sales of wire, wire products, and steelcord*,” which takes up more than 98% of its total sales. It is also interesting to note that a *Rumelt*-type researcher would be inclined to make a distinction between *steel cord* and *steel wire*, which are the two main product groups of *Bekaert*. However, the corporate executives themselves see these segments as highly related.

Rombouts provides kind of the opposite case. *Rombouts* only has 5 businesses in 3 groups, 2 of which are operational (the third is “*holding and miscellaneous*,” see footnote 100). Hence, according to V&R, *Rombouts* is a company with *very low diversity*. A *Rumelt*-type researcher would also be inclined to classify *Rombouts* as a *single business* company focused on “*sawmilling*.” However, the executives themselves consider “*manufacture and sales of sawn timber*” (73% of corporate sales) and “*imports of timber*” (27% of corporate sales) as two distinct businesses which require fairly different competencies. Moreover, based on *NACE*-codes, yet another classification would have been obtained since the businesses in the main activity group (“*manufacture and sales of sawn timber*”) fall within different *NACE*-industries, notably 0200 (*forestry*) and 4611 (*sawmilling*).

VTB-VAB is comparable to *Rombouts* in that it also has 5 businesses in 3 groups (2 of which are operational). Again, according to *V&R*, VTB-VAB is a company with *very low diversity*. However, *Rumelt*-type researchers would probably have distinguished the two groups of activities which the executives themselves mentioned too, notably, "*travel*" and "*assistance*." But this distinction would not have been detected by *NACE*-code researchers since the businesses in both groups have the same industry-code (7710). Finally, VTB-VAB is considered more diversified according to *SR*-, *entropy*-, or *Herfindahl*-standards because its largest group of activities only represents 67% of total corporate sales.

For the same reasons as *Rombouts* and VTB-VAB, VPK Oudegem is a company with *very low diversity* with its 6 businesses in 3 operational groups (cf., *V&R*-measure). Here, it's not easy to tell whether a *Rumelt*-type researcher would have distinguished "*cardboard manufacturing*" (67% of total corporate sales), "*paper recycling*" (30% of total corporate sales), and "*scrap paper*" (3% of total corporate sales) as three distinct groups of activities. In any case, *NACE*-code researcher would have lumped together "*paper recycling*" and "*cardboard manufacturing*" since the businesses in these groups have the same industry-code (4713). Only "*scrap paper*" has a different *NACE*-code (6220).

Finally, the same reasoning holds true for *Pauwels International*, where the executives have structured their business around different types of transformers ("*power transformers*" and "*distribution transformers*") and a separation of *production* and *service*. The former distinction would definitely not have been captured by *NACE*-codes (both 3420), whereas the latter distinction would have been picked up (3420 vs. 6145).

In summary, the quantitative comparison of several measures of diversification (cf., Table 23) and the qualitative assessment of the classifications obtained, lends further

support to the reliability and validity of the proposed diversification measures and the data on which they are based. As such, the findings based on these measures should be fairly "robust" [Ramanujam and Varadarajan, 1989: 540].

Finally, as a further validation, some control questions for corporate strategy were introduced in the questionnaire at the business level too. The most straightforward control question is an almost identical replication of the description presented to the corporate executives. This item has a Likert-type format and sounds as follows: *On the one hand, multi-business firms can be composed of businesses which are related from an operational point of view and bear an important element of commonality in their physical assets and/or technical skills. On the other hand, a corporation can be composed of a diverse set of unrelated businesses ranging, for example, from dairy products to car manufacturing (such firms are often called conglomerates). On the scale below, please indicate how you would describe your corporate parent.* The answer can range from 1 (strongly related) to 7 (strongly unrelated) (see Appendix [D.1], Section IV.E). As expected, the scores on this control question are (more or less) significantly correlated in the desired direction with the *Herfindahl-index* ($r=0,1615$; $p=0,047$; $n=152$); *entropy measure* ($r=0,1433$; $p=0,078$; $n=152$); and *specialization ratio* ($r=-0,1478$; $p=0,069$; $n=152$). The control item is also significantly correlated with the *number of entities* ($r=0,1814$; $p=0,025$; $n=153$) but *not* with the *number of groups* ($r=0,1005$; $p=0,216$; $n=153$) and *country scope* ($r=0,0613$; $p=0,452$; $n=153$).¹⁰⁵

Since related diversification is assumed to involve more collaboration among business units, yet another control question was introduced in the questionnaire at the business unit level to determine *the percentage of the manager's working time which is spent on interaction with peers, colleagues, or subordinates in the other business units of the parent company* (see Appendix [D.1], Section I.A, item 47). Again, as expected, the scores on this

¹⁰⁵ Two-tailed significance test of correlation coefficients.

control question are significantly correlated in the desired direction with the *Herfindahl-index* ($r=-0,2556$; $p=0,002$; $n=151$); *entropy measure* ($r=-0,2703$; $p=0,001$; $n=151$); and *specialization ratio* ($r=0,2176$; $p=0,007$; $n=151$). This time, the control item is *not* significantly correlated with the *number of entities* ($r=-0,0716$; $p=0,381$; $n=152$) whereas it is significantly correlated with the *number of groups* ($r=-0,1681$; $p=0,038$; $n=152$). As with the previous control question, there seems to be no significant correlation with *country scope* ($r=-0,0431$; $p=0,598$; $n=152$).¹⁰⁶ Hence, it seems that the real barrier to communication among business unit managers is the *number of groups of activities* rather than the *number of entities* and *locations*.

Moreover, it has been suggested that the method of growth, internal or acquisition, can suit as an alternative measure of diversification [Berg, 1965]. It is generally accepted that externally acquired businesses lead to more unrelated portfolios than internally developed businesses. Therefore, as an alternative measure of diversification, information was obtained about whether the corporation's businesses were primarily *developed internally* or *acquired from outside* (See Appendix [D.1], Section VI, item 5). However, this control variable does not correlate significantly with any of the diversification variables. This might have two reasons. First, this control question was measured on a dichotomous scale which obviously limits the potential variation in scores and hence the ability to statistically detect relationships among variables. Secondly, and more important, the "factual" information on whether the business unit has been *developed from inside* or *acquired from outside* was only obtained for those business units which took part in the study. Hence, this information is very incomplete and potentially distorted. Actually, this control measure is only appropriate if complete data can be obtained on the *acquisition vs. development* status of each business unit so that a ratio can be calculated which can then be usefully correlated with other measures of

¹⁰⁶ Two-tailed significance test of correlation coefficients.

diversification. In short, it was not very useful to include this item as a control question unless very high response rates would have been obtained.

5.7. Control Variables

Since diversification strategy is expected to be correlated with *size* [Pitts and Hopkins, 1982: 623] and *decentralization* [Chandler, 1962], and since *size* and *decentralization* have been shown to have an influence on control design [Merchant, 1981; Bruns and Waterhouse, 1975], it is important to control for these two variables and to determine whether diversification strategy has additional explanatory power net of these factors [e.g., Donaldson, 1982, 1986].

Several measures of *organization size* have been advanced and those based on accounting data, such as, *total revenues*, *total assets*, and *number of employees*, have been used most often. However, as far as the impact of size on the (control) relationship between the head office and the business units is concerned, the *number of businesses* perhaps best reflects the complexity of the information exchange [Alexander, 1991: 176]. Table 24 shows the correlations between accounting measures of size (the $\log_e$ of *consolidated assets*, *consolidates sales*, and *corporate employment*), the *number of entities* and *groups*, and the three major *diversification measures*.

Table 23 (p.134) and Table 24, taken together, provide interesting information. Table 24 shows that the *accounting measures of size* [especially $\log_e(\text{ConAsset})$ and $\log_e(\text{ConSales})$] are strongly correlated with the *number of entities* ($p < 0,01$) but not with the *entropy*-, *Herfindahl*-, and *SR*-measure of diversification (although all correlation coefficients are in the right direction). Table 23, on the other hand, shows that the *number of entities* is strongly correlated with the *entropy*-, *Herfindahl*-, and *SR*-measure of diversification ($p < 0,01$). The same argument can be brought forward for the *number of*

groups. However, as can be seen from Table 23 and Table 24, compared to the *number of entities*, the *number of groups* is less strongly correlated with $\log_e(\text{ConAsset})$ and $\log_e(\text{ConSales})$ but more strongly with the *entropy*-, *Herfindahl*-, and *SR*-measure of diversification. This makes perfect sense since the *number of groups* has already been taken into account in the calculation of the *entropy*- and *Herfindahl*-measures. Moreover, the fact that the *number of groups* is less strongly correlated with the *accounting measures of size* confirms that the *number of groups* captures more *diversity* than *size*. Hence, if *organization size* needs to be controled for in this study, it should best be done through the *number of businesses*.

Table 24
CORRELATION COEFFICIENTS BETWEEN SIZE AND DIVERSIFICATION MEASURES

	<i>entities</i>	<i>groups</i>	<i>entropy</i>	<i>herfindahl</i>	<i>SR</i>
$\log_e(\text{ConAsset})$	0,642***	0,303**	0,196 ^{n.s.}	0,134 ^{n.s.}	-0,119 ^{n.s.}
$\log_e(\text{ConSales})$	0,618***	0,297**	0,180 ^{n.s.}	0,133 ^{n.s.}	-0,120 ^{n.s.}
$\log_e(\text{Emplt})$	0,420***	0,157 ^{n.s.}	0,164 ^{n.s.}	0,159 ^{n.s.}	-0,176 ^{n.s.}

The significance of correlations is tested using the following statistic: $t_{n-2} = [r(\sqrt{n-2})] / \sqrt{1-r^2}$, with $n=46$.

The critical t_{44} -values and corresponding correlation coefficients (r) are:

$\alpha=0,900$	--	$t_{44}=1,3011$	--	$r=0,19248$
$\alpha=0,950$	--	$t_{44}=1,6802$	--	$r=0,24555$
$\alpha=0,975$	--	$t_{44}=2,0154$	--	$r=0,29071$
$\alpha=0,990$	--	$t_{44}=2,4142$	--	$r=0,34201$
$\alpha=0,995$	--	$t_{44}=2,6923$	--	$r=0,37608$

Hence, all correlations larger than $r=0,24555$ are *two-tailed* significant at the $\alpha=0,90$ -level (*); all correlations larger than $r=0,29071$ are *two-tailed* significant at the $\alpha=0,95$ -level (**); and all correlations larger than $r=0,37608$ are *two-tailed* significant at the $\alpha=0,99$ level (***).

Diversification is also expected to be correlated with decentralization. Decentralization refers to the extent to which formal decision-making autonomy is shifted from the head office to the business unit [Mangaliso, 1995: 233; see also Child, 1972; Pugh et al., 1968]; it should not be confused with (de)centralization of corporate control as defined above. To measure the degree of decentralization of decision-making authority, a series of standard decisions were put forward to which the respondents had to indicate

their level of decision autonomy (Chenhall and Morris [1986: 24], see also references in footnote 107). Specifically, the following decisions were formulated: (i) *Setting the strategy for the business unit*; (ii) *Discontinuing a major product or product line*; (iii) *Changing the selling price of a major product*; (iv) *Increasing (beyond budget) the level of expenditure for advertising and promotion*; (v) *Selecting the vendor to supply an important raw material or component used in operations*; (vi) *Buying materials from an outside vendor when they could be supplied by another business within the corporate parent*; (vii) *Increasing (beyond budget) the level of expenditure for research and development*; (viii) *Hiring consultants for business unit matters*; (ix) *Determining the transfer price at which your business will sell products to other business units in your corporate parent*; (x) *Making a change in your business unit's organizational setting*; (xi) *Creating a new management position in your business unit*; (xii) *Increasing (beyond budget) the number of personnel employed in your business*; (xiii) *Modifying or revising personnel policy for the business*; (xiv) *Hiring or firing one of your direct reports (a manager at the next level below you)*; and (xv) *Selecting significant investments (capital budgeting)*.¹⁰⁷ Answers range from 1 (my decision) to 7 (corporate decision). At one extreme, "my decision" means that the business unit managers or their subordinates take the decision without consulting the superiors at the head office. At the other extreme, "corporate decision" means that the decision is determined at the top with little or no influence from the business unit managers. Hence, the higher (lower) the score, the more (de)centralized the decision-making. The full scale is given in Appendix [D.1], all of Section V.

As can be seen from Appendix [F.6] and Table 25, most items are strongly and significantly correlated and the whole scale has a *Cronbach's Alpha* of 0,86.

¹⁰⁷ Some of these items were adopted from previous studies [e.g., Chia, 1995: 817; Mangaliso, 1995: 239 and 246; Gul et al., 1995: 109; Gul and Chia, 1994: 419; Nohria and Ghoshal, 1994: 501; Govindarajan, 1988: 852; Hill, 1985b: 213; Gordon and Narayanan, 1984: 46; Miller and Friesen, 1982: 20; Rosenzweig, 1981: 353] whereas other items were developed from scratch.

Table 25
CRONBACH'S ALPHA FOR "CENTRALIZATION OF DECISION-MAKING"

ORIGINAL SCALE (15 ITEMS) → $\alpha=0,8571$	Alpha if Item Deleted	
Setting the strategy for the business unit	V.A	0,8448
Discontinuing a major product or product line	V.B	0,8423
Changing the selling price of a major product	V.C	0,8457
Increasing (beyond budget) the level of expenditure for advertising and promotion	V.D.	0,8439
Selecting the vendor to supply an important raw material or component used in operations	V.E	0,8506
Buying materials from an outside vendor when they could be supplied by another business within the corporate parent	V.F	0,8545
Increasing (beyond budget) the level of expenditure for research and development	V.G	0,8440
Hiring consultants for business unit matters	V.H	0,8480
Determining the transfer price at which your business will sell products to other business units in your corporate parent	V.I	0,8533
Making a change in your business unit's organizational setting	V.J	0,8473
Creating a new management position in your business unit	V.K	0,8476
Increasing (beyond budget) the number of personnel employed in your business	V.L	0,8471
Modifying or revising personnel policy for the business	V.M	0,8538
Hiring or firing one of your direct reports (a manager at the next level below you)	V.N	0,8544
Selecting significant investments	V.O	0,8478

5.8. Other measures

Although *business unit strategy* is not the primary focus of this research, measures of business strategy will nonetheless be used at some point in the final data analysis (e.g., Table 38). Business-level strategy, or *competitive strategy*, is difficult to operationalize [Hambrick, 1980] and has been measured in several ways [Dess et al., 1995; Snow and Hambrick, 1980]. The business unit strategy depends upon two interrelated concepts: (i) the strategic mission or goals, and (ii) the competitive position, i.e. the way in which the business unit chooses to compete in its industry to accomplish its goals [Fisher and Govindarajan, 1993]. Four strategic missions have been proposed in the literature: *build*,

hold, *harvest*, and *divest* [Govindarajan and Gupta, 1984]. The *build* mission implies goals of increased market share, even at the expense of short term earnings and cash flows. The *harvest* mission, on the other hand, aims at maximizing short term earnings and cash flows, even at the expense of market share. The *hold* mission falls somewhere in between the pure build and pure harvest missions. The *divest* mission simply corresponds with preparing the business for sale or liquidation [Govindarajan and Gupta, 1984]. These missions can be considered as constituting a continuum with pure *build* at one end and pure *divest* at the other end [Fisher and Govindarajan, 1993; Anthony et al., 1992; Govindarajan and Shank, 1992; Govindarajan, 1986; Govindarajan and Gupta, 1985; Govindarajan and Gupta, 1984]. In this study, strategic mission is operationalized as in Govindarajan and Gupta [1985: 56]. More in particular, the respondents are given a conceptual description of each mission and then asked to break down their total current business unit sales into each of the categories. In addition, respondents were asked about the expected market share evolution of their principal products. Scoring for this question ranged from "decline rapidly" or "increase rapidly" on an 7-point scale. The full strategic mission measure is given in Appendix [D.1], Section IV, B and D.

Porter's *low cost* vs. *differentiation* typology has been used most often in the management control literature to operationalize competitive position [Dess et al., 1995: 375]. A *cost leader* wants to achieve low cost relative to competitors and vigorously pursues cost reduction, exploits economies of scale, standardizes the task environment, and produces standard undifferentiated products. A *differentiator*, on the other hand, wants to create something that is perceived by customers as unique and pays more attention to superior product features, customer service, brand image, etc. [Porter, 1980]. In the management control literature, Govindarajan and Fisher [1990] and Govindarajan [1989, 1988] developed an instrument based on this conceptual description of *low cost* and *differentiation*. More in particular, respondents were asked to indicate the percentage of

their business unit's current sales accounted for by either of these strategies. In addition, the business unit managers were asked to position their business unit relative to competitors in terms of product selling price, R&D expenditures, product quality, brand image, and product features. Given the validity of this approach [see Govindarajan and Fisher, 1990: 271-272], the same measures were used in this study (see Appendix [D.1], Section IV, A and C.a, b, c, d, e).

Appendix [F.5] and Table 26 confirms the validity and reliability of the *low cost* vs. *differentiation* instrument. The *overall strategy question* (item IV.A) and the *market position question* (items IV.C.a, b, c, d, and e) are significantly correlated and the whole scale has a Cronbach's Alpha of 0,70. Henceforth, the answer to the *overall strategy question* (item IV.A) will be used as the measure of *low cost* vs. *differentiation* strategy.

Table 26
VALIDATION OF "COMPETITIVE STRATEGY"

Item #	Description	Correlation with DIFFSTRA [2]	Alpha if Item Deleted [3]
DIFFSTRA [1]	Low Cost / Differentiation	1,00000	0,6910
IV.C.a	Position in terms of <i>product price</i>	0,35978***	0,6619
IV.C.b	Position in terms of <i>pct. of sales spent on R&D</i>	0,26592**	0,6497
IV.C.c	Position in terms of <i>product quality</i>	0,27721***	0,6488
IV.C.d	Position in terms of <i>brand image</i>	0,16451*	0,6570
IV.C.e	Position in terms of <i>product features</i>	0,25413**	0,6389

[1] "Diffstra" means *differentiation strategy* and is calculated as follows: $[(100-IV.A)/14]$. Item IV.A was coded as the *percentage low cost strategy*; it was recoded here into the *percentage differentiation strategy* $(100-IV.A)$ in order to have positive correlations with items IV.C.a, IV.C.b, IV.C.c, IV.C.d, and IV.C.e. Moreover a "compression" or linear transformation was performed by *dividing by 14* in order to make the variances of the *percentage scales* and the *7-point Likert-scales* comparable.

[2] *** $p < 0,001$; ** $p < 0,01$; * $p < 0,05$ (two-tailed).

[3] Cronbach's Alpha for full 6-item scale is 0,6966.

The validation of the *mission scale* is less straightforward, mainly because all items of the *mission question* (items IV.D.a, b, c, d) are mutually exclusive (which shows in the

negative correlations among those items, as expected). Nonetheless, it can be seen from Appendix [F.5] and Table 27 that the *build item* (item IV.D.a) is significantly correlated with the *market growth* control item (item IV.B) ($r=0,16$; $p\approx 0,05$).¹⁰⁸ Also in line with expectations, all other items of the *mission scale* (items IV.D.b, c, and d) are negatively correlated with the *market growth* control item (item IV.B), but not significantly though. From the descriptive statistics in Appendix [F.1] and Table 27, it can be seen that the average business is in moderately growing markets (item IV.B: $mean=4,71$; $min=1$; $max=7$; $s.d.=1,04$; $n=153$) which corresponds with the answers on the *mission scale* (items IV.D.a, b, c, and d; see Table 27): about 50% of the business units' total sales come from markets in which they want to maintain market share (*hold mission* - item IV.D.b: $mean=51,98$; $s.d.=27,10$; $n=146$); 25% from growth markets (*build mission* - item IV.D.a: $mean=25,97$; $s.d.=25,21$; $n=146$); somewhat less than 20% from *harvest markets* (item IV.D.c: $mean=18,69$; $s.d.=20,67$; $n=146$); and somewhat less than 5% from markets in which they want to *divest* (item IV.D.d: $mean=3,40$; $s.d.=7,49$; $n=147$). Hence, it seems that the *mission instrument* is well developed, at least at face value. An estimate of reliability could not be calculated because of the negative correlations and the mutual exclusivity of the items in the *mission question* (items IV.D.a, b, c, d).

In order to derive one variable, the *mission items* (items IV.D.a, b, c, d) are transformed as follows: a value of +1 was attached to a *build* strategy; a value of 0 to a *hold* strategy, a -1 to a *harvest* strategy, and a -2 to a *divest* strategy, and, the percentage breakdown provided by the respondent was used to arrive at a weighted average of the mission strategy of each business unit [Govindarajan and Gupta, 1985: 56]. This new *mission variable* ($mean=0,0043$; $s.d.=0,4093$; $min=-1$; $max=+1$; $n=146$) is positively correlated with the *market growth* control question (item IV.B) ($r=0,13824$; $p=0,10088$; $n=146$), which lends further support for the validity of the *mission measure*. Henceforth, this new *mission variable* will be used as the measure of *competitive mission*.

¹⁰⁸ Two-tailed significance test of correlation coefficients.

Table 27
VALIDATION OF "COMPETITIVE MISSION"

Item #	Description	Correlation with Market Growth (item IV.B) ^[2]	Item Mean (n=146)	Item St.dev.
MISSION ^[1]	Overall Scale	0,13824 *	0,0043	0,4093
IV.B	Market Growth	1,00000	4,71 ^[4]	1,04
IV.D.A_c ^[3]	Build	0,16116 **	25,97 ^[5]	25,21
IV.D.B_c ^[3]	Hold	-0,11243 ^{ns}	51,98 ^[5]	27,10
IV.D.C_c ^[3]	Harvest	-0,01523 ^{ns}	18,69 ^[5]	20,67
IV.D.D_c ^[3]	Divest	-0,08381 ^{ns}	3,40 ^[5]	7,49

[1] "Mission" = $\frac{[itemIV.D.A*(1)] + [itemIV.D.B*(0)] + [itemIV.D.C*(-1)] + [itemIV.D.D*(-2)]}{100}$.

[2] * $p=0,10088$; ** $p=0,05536$ (two-tailed).

[3] "c" stands for "compression," i.e., the linear transformation (dividing by 14) performed on the percentages in order to make the variances of the percentage scales and the 7-point Likert-scales comparable.

[4] $min=1$, $max=7$.

[5] These figures are percentages.

5.9. Summary and Commentary

Extensive attention has been paid to the development and operationalization of measures, both at the business unit level and the corporate level. All measures were developed from theory first and then validated empirically. Overall, a rather *conservative approach* was followed to form the final scales, i.e., items were *deleted* from theoretical scales rather than *added* to form new/unexpected scales. Put differently, items which *empirically* loaded on the same factor, but which were *theoretically* not expected to, were not used to construct new scales. After all, such unpredicted scales usually show very low *reliability* anyway.

Table 28 summarizes all final scales derived from the questionnaire at the business level and Table 29 gives an overview of the descriptive statistics of all variables at the corporate level (*Panel A*) and business level (*Panel B*).

Table 28
SUMMARY OF MEASURES DEVELOPED AT THE BUSINESS UNIT LEVEL

<p><i>Emphasis on Meeting the Budget</i></p> <p>(8 items -- $\alpha=0,82$)</p>	<p>I am constantly reminded by the corporate parent of the need to meet budget targets (item I.A.2).</p> <p>Responding to new, unforeseen opportunities is considered more important by the corporate office than achieving the budget target (item I.A.38_R).</p> <p>Corporate superiors judge my performance predominantly on the basis of attaining budget goals (item I.A.29).</p> <p>Control over my business is achieved by the corporate parent principally by monitoring how well my budget is on target (item I.A.4).</p> <p>In the eyes of my corporate superiors, achieving the budget is an accurate reflection of whether I am succeeding in my business (item I.A.32).</p> <p>Not achieving my budget has a strong impact on how my performance is rated by my corporate superiors (item I.A.14).</p> <p>My promotion prospects depend heavily on my ability to meet the budget (item I.A.19).</p> <p>In the eyes of my corporate superiors, not achieving the budget reflects poor performance (item I.A.42).</p>
<p><i>Budget Revisions During the Year</i></p> <p>(5 items -- $\alpha=0,80$)</p>	<p>Budgets are usually adjusted during the year to those circumstances which could not be foreseen at the time the budget was drawn up (item I.A.24_R).</p> <p>Changes in the budget are difficult to get approved by the corporate parent (item I.A.28).</p> <p>Budget targets are strong commitments and cannot be changed during the year (item I.A.6).</p> <p>Budgets are updated on a regular basis (e.g., monthly or quarterly) to the new business environment (item I.A.31_R).</p> <p>In our company, a budget is essentially a forecast rather than a true commitment (item I.A.36_R).</p>
<p><i>Bottom-line vs. Line-item Control</i></p> <p>(4 items -- $\alpha=0,56$)</p>	<p>My corporate superiors are interested not only in how well I achieve my overall budget, they also evaluate how well I am on target on each of the budget line-items (item I.A.27_R).</p> <p>The control reports provided to corporate are not very detailed and only include overall, aggregate, bottom-line budgeting information on the performance of my business (item I.A.12).</p> <p>The bottom-line is what counts for my corporate superiors - how it is achieved is left to my responsibility (item I.A.33).</p> <p>I am required to submit control reports which explain in detail budget variances on a line-by-line basis (item I.A.16_R).</p>
<p><i>Formality of Budget-related Communication</i></p> <p>(5 items -- $\alpha=0,65$)</p>	<p>Budget-related communication with the corporate parent is subject to a fairly strict set of rules and policies (item I.A.7).</p> <p>To the extent possible, there are manuals that define the courses of action to be taken for budget-related issues (item I.A.34).</p> <p>Budget-related communication with my corporate superiors is fairly informal (item I.A.11_R).</p> <p>Budget-related communication with the corporate parent is very bureaucratized (item I.A.30).</p> <p>In this company, there is too much paperwork involved in the budgeting process (item I.A.39).</p>

***Intensity of
Budget-related
Communication***

(8 items – $\alpha=0,69$)

Corporate superiors call me in to discuss budget deviations in face-to-face meetings (item I.A.37_R).

My corporate superiors, myself, and my own subordinates often form a team to discuss and solve budgeting matters (item I.A.8_R).

Budgeting matters are discussed regularly with my corporate superior even if there are no negative budget deviations to report (item I.A.41_R).

I consult with my corporate superior on how to achieve my budget (item I.A.15_R).

When problems occur, I discuss budget matters with my corporate superior without being asked to (item I.A.20_R).

A distinction can be made between budget-related communication aimed at *sharing information* and budget-related communication aimed at *control*.

Please, indicate the extent to which budget-related communication between the corporate parent and your business unit is predominantly aimed at *sharing information* (=1) or *control* (=7) (item I.A.45).

Indicate the typical frequency with which you communicated with the corporate parent for budget-related issues (item I.A.46.a-b).

***Participation in
Budget-Setting***

The budget target is:

- decided by me without consulting corporate superiors;
- proposed by me, followed by consulting corporate superiors, but my opinion generally prevails;
- proposed by me, but decided jointly;
- proposed sometimes by me, sometimes by corporate superiors, but decided jointly;
- proposed by corporate superiors, followed by my opinion which has a lot of weight;
- proposed by corporate superiors, followed by my opinion which does not have much weight;
- decided at the corporate office without asking my opinion, but the decision is explained to me;
- decided at the corporate office without asking my opinion and without any explanation (item I.B.1_R).

***Fixed vs. Variable
Salary***

Please indicate the approximate percentage of your salary that is fixed vs. variable (item I.D.1).

***Formula-based vs.
Discretionary
Bonus
Remuneration***

On the one hand, bonuses can be calculated strictly by formulas based on meeting quantitative budget targets. Alternatively, bonuses can also be determined completely or some percentage in a discretionary manner based on the personal assessment of your superiors. On the scale below, indicate the percentage of bonus decided in a formula-based (F) vs. discretionary (D) manner (item I.D.2).

***Corporate and/or
Business Unit
Performance-based
Incentives***

In addition to whether the bonus is formula-based vs. discretionary, the business unit managers' bonus might depend on total corporate performance, business unit performance, or a mix of both. On the scale below, indicate the percentage of bonus based on corporate (CO) vs. business unit (BU) performance (item I.D.3).

***Centralized vs.
Decentralized
Management
Control***

(8 items -- $\alpha=0,70$)

My business unit controller is actively involved in the business unit decision-making process (item I.C.1).

My business unit controller primarily acts as the local "policeman" for the corporate control department (item I.C.2_R).

The business unit controller must primarily ensure that the financial information about my business is accurate and that internal control practices conform to corporate policy and procedures (item I.C.3_R).

The business unit controller cooperates very closely with me and has only a staff relationship with his corporate controller (item I.C.4).

The primary role of the business unit controller is to assist me in the business decision-making process (item I.C.5).

I consider my business unit controller as my "ally" (item I.C.6).

The business unit controller reports directly to his corporate controller and has only an administrative, control-oriented relationship with me (item I.C.7_R).

I perceive my business unit controller as a "corporate spy" (item I.C.8_R).

***Information
asymmetry***

(7 items -- $\alpha=0,84$)

My corporate superiors possess good information regarding the activities undertaken in my business unit (item II.A.1_R).

My corporate superiors are well-informed about the performance potential of my business unit (item II.A.2_R).

My corporate superiors are able to assess the potential impact of external factors on the activities of my business unit (item II.A.3_R).

My corporate superiors are intimately familiar with the day-to-day decisions that I take in my business unit (item II.A.4_R).

My corporate superiors can specify the factors which are critical to success in my business unit (item II.A.5_R).

My corporate superiors know as much as I do about the details of my business (item II.A.6_R).

If it became necessary for some reason, at least one of my corporate superiors would be able to step into my position and manage this business effectively (item II.A.7_R).

Budget Slack

(4 items -- $\alpha=0,67$)

Budget targets induce high productivity in my business unit (item II.B.1_R).

Budget targets require costs to be managed carefully in my business unit (item II.B.3_R).

Budget targets have not caused me to be particularly concerned with improving efficiency in my business unit (item II.B.6).

The budget is (1) very easy to attain; (2) attainable with reasonable effort; (3) attainable with considerable effort; (4) very tight, practically unattainable; or (5) impossible to achieve (item I.B.2_R).

***Earnings
Management***

(2 items -- $\alpha=0,58$)

How frequently have you pulled profits from future periods into the current period by deferring a needed expenditure or by accelerating a sale (1=never; 7=frequently) (item II.D.1).

How frequently have you shifted funds between accounts to avoid budget overruns (1=never; 7=frequently) (item II.D.2).

***(Managerial Short-
Termism)***

Indicate the percentage of your time that is devoted to working on matters which will appear in your profit and loss statement within 1 to 5 years (item II.C.1.d_R).

<i>Business Unit Performance</i>	Rate your overall business unit performance (relative to the industry average) on an 7-point scale ranging from "well below average" to "well above average" (item III.A.1).
<i>Budget Achievement</i>	Indicate on a 6-point scale ranging from "never" to "all 5 years" how often you met your budget goals over the last five years (item III.B).
<i>SBU Strategic Mission</i>	The respondents are given a conceptual description of each mission (<i>build, hold, harvest, and divest</i>) and then asked to break down their total current business unit sales into each of the categories (item IV.D). The mission items are transformed as follows: a value of +1 was attached to a <i>build strategy</i> ; a value of 0 to a <i>hold strategy</i> , a -1 to a <i>harvest strategy</i> , and a -2 to a <i>divest strategy</i> , and, the percentage breakdown provided by the respondent was used to arrive at a weighted average of the mission strategy of each business unit.
<i>Low Cost vs. Differentiation Strategy</i>	Respondents were asked to indicate the percentage of their business unit's current sales accounted for by either of these strategies (Item IV.A).
<i>Decentralization of Decision-Making</i> (15 items -- $\alpha=0,86$)	Indicate who takes the following decisions (1=my decision; 7=corporate decision) [item V.a-o_R]: <ul style="list-style-type: none"> - Setting the strategy for the business unit; - Discontinuing a major product or product line; - Changing the selling price of a major product; - Increasing (beyond budget) the level of expenditure for advertising and promotion; - Selecting the vendor to supply an important raw material or component used in operations; - Buying materials from an outside vendor when they could be supplied by another business within the corporate parent; - Increasing (beyond budget) the level of expenditure for research and development; - Hiring consultants for business unit matters; - Determining the transfer price at which your business will sell products to other business units in your corporate parent; - Making a change in your business unit's organizational setting; - Creating a new management position in your business unit; - Increasing (beyond budget) the number of personnel employed in your business; - Modifying or revising personnel policy for the business; - Hiring or firing one of your direct reports (a manager at the next level below you); - Selecting significant investments (capital budgeting).

Table 29
PANEL A: SUMMARY STATISTICS OF THE CORPORATE LEVEL VARIABLES [1]

<i>Corporate Variables</i>	<i>Mean</i>	<i>Std Dev</i>	<i>Min</i>	<i>Max</i>	<i>n</i>
<i>Consolidated Sales</i>	59,855	120,532	3,015	558,982	37
<i>ROC</i>	9,19	8,87	-30,27	24,85	35
<i>Entities</i>	27,89	38,05	4	174	37
<i>Groups</i>	4,24	2,15	1	8	37
<i>Country</i>	8,16	7,59	1	33	37
<i>Entropy</i>	0,57	0,50	0	1,49	36
<i>Herfindahl</i>	0,31	0,27	0	0,76	36
<i>Specialization Ratio</i>	0,77	0,23	0,32	1	36
<i>MNSD</i>	6,67	7,10	1	34,80	37

[1] The corporate values are calculated for $n=37$, i.e., the number of corporations which agreed to cooperate at both the corporate and business unit level (see Section 4.2.2, p. 57, and footnote 51, p.58).

Table 29 (Continued)
PANEL B: SUMMARY STATISTICS OF THE BUSINESS UNIT VARIABLES [2]

<i>SBU Variables</i>	<i>Mean</i>	<i>Std Dev</i>	<i>Min</i>	<i>Max</i>	<i>n</i>
<i>Budget Emphasis (BU_EMPH)</i>	35,83	8,57	11	52	153
<i>Budget Revisions (BU_REV)</i>	21,76	7,70	5	35	153
<i>Bottom-line Control (BU_BOT)</i>	15,80	4,80	4	28	153
<i>Budget Formality (BU_FORM)</i>	17,38	5,73	5	31	153
<i>Budget Intensity (BU_INT)</i>	26,86	7,16	15	53	153
<i>Budget Participation (BU_PART)</i>	6,16	1,06	3	8	153
<i>Variable Salary (SAL_VAR)</i>	12,46	11,50	0	50	153
<i>Formula-based Salary (SAL_FOR)</i>	49,82	40,68	0	100	111*
<i>SBU-based Salary (SAL_SBU)</i>	71,44	29,75	0	100	111*
<i>Decentral Control (SBU_CON)</i>	39,15	7,40	14	55	96*
<i>Asymmetry (INF_ASY)</i>	23,01	7,61	8	43	153
<i>Budget Slack (SLACK)</i>	10,98	3,82	5	23	153
<i>Earnings Management (EAR_MGT)</i>	4,16	2,34	2	11	152
<i>Short-termism (MYOPIA)</i>	79,07	17,87	0	100	138
<i>SBU Performance (SBU_PER)</i>	5,17	1,34	1	7	152
<i>Budget Achievement (BU_ACH)</i>	0,68	0,33	0	1	151
<i>SBU Differentiation (LC_DIFF)</i>	50,34	28,73	0	100	150
<i>SBU Mission (MISSION)</i>	0,00	0,41	-1	1	146
<i>Decentralization (DECENT)</i>	69,19	14,06	15	102	151

[2] Most items are scored consistent with the direction of H_1 , i.e., increased diversification corresponds with high scores which, in turn, correspond with greater emphasis on meeting the budget, fewer budget revisions during the year, greater interest in the bottom-line budget result, more formal and less interactive budget-related communication, more budget participation, a higher percentage of the salary that is variable, more formula-based and more SBU-based incentives, more decentralized budget controls, more information asymmetry, more budget slack, more earnings management, and more managerial short-termism. Moreover, SBU performance and budget achievement are coded so that high scores correspond with better performance. Also, the higher the score, the more differentiated the business strategy, and, the closer to -2 (+1) the more the mission is divest (build). Finally, high scores indicate highly decentralized decision-making.

* Low n for formula/SBU-based salary and decentral control is not because of many missing values, but simply because a screening question was introduced to allow the respondents to indicate that their salary was 100% fixed or that they didn't have a business unit controller.

5.10. *Non-Response Analysis at the Business Unit Level*

Finally, a non-response analysis is conducted at the business level too.¹⁰⁹ Since it is often maintained that the profile of non-respondents is likely to be more similar to that of late respondents than that of early respondents [Fowler, 1993], this study compares the means of all major business-level variables between the *respondents who replied immediately* ($n=50$) and the *respondents who replied after the second follow-up* ($n=47$).

As can be seen from Table 30, there is no evidence of response-bias in the sample. The null-hypothesis that the means of both groups are the same cannot be rejected except for *budget revisions* ($p=0,001$) and *decentralization* ($p=0,03$). Specifically, the late respondents seem to have *fewer budget revisions during the year* (high scores correspond with fewer revisions - see Table 29) and *less decentralized decision-making*. No sense can be made of the first observation. However, some suggestion can be made for the second observation, notably, that managers in centralized organizations need to get approval from the top to take part in the study so that it takes longer to complete and return the questionnaire.

At this stage, both the *theory (hypotheses)* and the *measures* have been developed. The next step is to use the measures to test the hypotheses. This is done in the next chapter, *data analysis*.

¹⁰⁹ At this point, it is interesting to mention that Young [1995] found that very few studies in management accounting used or even mentioned the idea of non-response bias [see also Brownell, 1995: 100].

Table 30
COMPARISON OF MEANS BETWEEN EARLY & LATE RESPONDENTS TO SBU-QUESTIONNAIRE

	Early Replies ^[1]	Late Replies ^[1]	Two-Sample <i>t</i> ^[2]	<i>p</i> -values (two-tailed) ^[2]
<i>Budget Emphasis</i>	35,18 (<i>n</i> =50) 9,12	37,83 (<i>n</i> =47) 8,05	[=] 1,51	[=] 0,134
<i>Budget Revisions</i>	19,94 (<i>n</i> =50) 7,47	24,60 (<i>n</i> =47) 6,10	[=] 3,35	[=] 0,001
<i>Bottom-line Control</i>	16,64 (<i>n</i> =50) 5,06	14,78 (<i>n</i> =47) 4,49	[=] 1,90	[=] 0,060
<i>Budget Formality</i>	16,82 (<i>n</i> =50) 5,77	18,23 (<i>n</i> =47) 5,96	[=] 1,19	[=] 0,238
<i>Budget Intensity</i>	28,52 (<i>n</i> =50) 8,20	25,91 (<i>n</i> =47) 6,49	[=] 1,73	[=] 0,087
<i>Budget Participation</i>	6,28 (<i>n</i> =50) 0,99	5,94 (<i>n</i> =47) 1,11	[=] 1,61	[=] 0,111
<i>Variable Salary</i>	13,08 (<i>n</i> =50) 12,02	12,75 (<i>n</i> =47) 12,65	[=] 0,13	[=] 0,894
<i>Formula-based Salary</i>	46,77 (<i>n</i> =34) 42,69	54,55 (<i>n</i> =33) 39,85	[=] 0,77	[=] 0,444
<i>SBU-based Salary</i>	76,47 (<i>n</i> =34) 26,73	69,70 (<i>n</i> =33) 31,273	[=] 0,95	[=] 0,344
<i>Decentral Control</i>	37,87 (<i>n</i> =31) 9,04	39,30 (<i>n</i> =27) 7,08	[=] 0,66	[=] 0,511
<i>Information Asymmetry</i>	23,14 (<i>n</i> =50) 7,63	23,63 (<i>n</i> =47) 7,02	[=] 0,33	[=] 0,739
<i>Budget Slack</i>	11,60 (<i>n</i> =50) 4,24	10,64 (<i>n</i> =47) 3,35	[=] 1,24	[=] 0,220
<i>Earnings Management</i>	4,16 (<i>n</i> =50) 2,47	4,39 (<i>n</i> =46) 2,53	[=] 0,45	[=] 0,652
<i>Short- Termism</i>	80,07 (<i>n</i> =44) 17,15	78,89 (<i>n</i> =45) 17,09	[=] 0,32	[=] 0,746
<i>SBU Performance</i>	5,40 (<i>n</i> =50) 1,37	5,17 (<i>n</i> =47) 1,26	[=] 0,86	[=] 0,392
<i>Budget Achievement</i>	0,68 (<i>n</i> =50) 0,336	0,73 (<i>n</i> =46) 0,335	[=] 0,70	[=] 0,485
<i>SBU Differentiation</i>	54,90 (<i>n</i> =49) 32,52	46,63 (<i>n</i> =46) 25,58	[=] 1,37 [≠] 1,38	[=] 0,174 [≠] 0,171
<i>SBU Mission</i>	0,0062 (<i>n</i> =45) 0,348	-0,0017 (<i>n</i> =47) 0,461	[=] 0,09 [≠] 0,09	[=] 0,926 [≠] 0,926
<i>Decentralization</i>	72,43 (<i>n</i> =49) 12,39	66,46 (<i>n</i> =46) 13,96	[=] 2,21	[=] 0,030

[1] Numbers in *italics* indicate *standard deviations*.

[2] *Levene's Test for Equality of Variances* leads to the conclusion that the null-hypothesis of equal variances can be accepted for all variables but *SBU-Differentiation* ($p=0,012$) and *SBU-Mission* ($p=0,029$). Hence, the two-sample *t*-test based on equal variances (indicated as [=]) can be used, except for *SBU-Differentiation* and *SBU-Mission* where the outcome of both the method of equal ([=]) and unequal ([≠]) variances are showed.

6. DATA ANALYSIS AND RESULTS

This chapter contains three parts. First, the constructs (i.e., *corporate strategy*, *corporate control*, and *control loss*) are constructed from the variables defined in the previous chapter. Secondly, the hypotheses developed in Chapter 3 are tested empirically. Finally, conclusions are drawn as to the empirical findings and the extent to which theoretical predictions are supported.

6.1. Construction and Evaluation of the Constructs

6.1.1. Corporate Control: Detached (Involved) or Tight (Loose) ?

Table 31 shows the correlations among the budgeting characteristics. Specifically, the following budgeting attributes were studied: (i) *emphasis on meeting the budget* (BU_EMPH); (ii) *bottom-line vs. line-item budget control* (BU_BOT); (iii) *allowance for budget revisions* (BU_REV); (iv) *budget participation* (BU_PART); (v) *formality of budget-related communication* (BU_FORM); and (vi) *intensity of budget-related communication* (BU_INT). Recall that *tolerance for interim budget deviations* and *allowance for discretionary spending* were dropped from the analysis for validity and reliability reasons (see Sections 5.3.7 and 5.3.8, p.95).

In line with H_1 , it was expected that the above budgeting characteristics would collapse into the macro construct of “*detached control*” which was defined to exist if corporate management puts much emphasis on meeting the budget (BU_EMPH), has a primary interest in the bottom-line budget result rather than in specific line-items (BU_BOT), and does not easily accept budget revisions during the year (BU_REV).

However, business unit managers are invited to participate in setting their budget (*BU_PART*), but once the budget is approved, the budget-related communication between the top and the business units is formal (*BU_FORM*) and not intensive unless performance is considerably below expectations (*BU_INT*). On the other hand, an “involved control” style should exhibit opposite characteristics.

Table 31
CORRELATIONS BETWEEN *BUDGETING CHARACTERISTICS VARIABLES* ^{[1],[2]}

	<i>BU_EMPH</i>				
<i>BU_REV</i>	0,3151 <i>p</i> =0,000		<i>BU_REV</i>		
<i>BU_BOT</i>	-0,3685 <i>p</i> =0,000	-0,1805 <i>p</i> =0,026	<i>BU_BOT</i>		
<i>BU_FORM</i>	0,3012 <i>p</i> =0,000	0,1855 <i>p</i> =0,022	-0,1157 <i>p</i> =0,154	<i>BU_FORM</i>	
<i>BU_INT</i>	-0,2871 <i>p</i> =0,000	-0,1194 <i>p</i> =0,142	0,3744 <i>p</i> =0,000	-0,1397 <i>p</i> =0,085	<i>BU_INT</i>
<i>BU_PART</i>	-0,0281 <i>p</i> =0,731	-0,0855 <i>p</i> =0,294	0,1936 <i>p</i> =0,016	0,0049 <i>p</i> =0,952	-0,0038 <i>p</i> =0,963

[1] *n*=153 – all variables were measured at the business unit level; reported *p*-values are two-tailed.
 [2] Items are scored consistent with the direction of *H1*, i.e., increased diversification corresponds with high scores which, in turn, correspond with greater emphasis on meeting the budget (*BU_EMPH*), fewer budget revisions during the year (*BU_REV*), greater interest in the bottom-line budget result (*BU_BOT*), more formal (*BU_FOR*) and less interactive (*BU_INT*) budget-related communication, and more budget participation.

Since all budgeting variables were coded consistent with the direction of *H1*, the correlations in Table 31 should be positive if the macro construct of *detached* vs. *involved* control is to survive as it was defined. However, contrary to expectations, much emphasis on meeting the budget (*BU_EMPH*), few budget revisions during the year (*BU_REV*), and highly formal budgeting policies (*BU_FORM*) are not downright in contradiction with detailed line-item budget follow-ups (*BU_BOT*) and highly intensive and interactive budgeting discussions (*BU_INT*). Put differently, it seems that a “tight” budgeting policy involves much formality (*BU_FORM*), much emphasis on meeting the budget (*BU_EMPH*),

few budget revisions during the year (*BU_REV*), detailed line-item budget follow-ups (*BU_BOT*) and highly intensive and interactive budgeting discussions (*BU_INT*). A “loose” budgeting policy, on the other hand, is characterized by low formality, low intensity, little emphasis on meeting the budget, many budget revisions during the year, and an eye-ball follow-up of the bottom-line budget result only.

In short, the construct of *detached vs. involved control* as it was theoretically defined contains empirically conflicting characteristics. Instead, the notion of control tightness or looseness seems to capture very well what the empirical results in Table 31 exhibit. This observation is in line with Merchant [1985a: 76] who suggested that the degree of *tightness* or *looseness* of the control system is probably an accurate way to capture the overall control philosophy of a firm.

It is also interesting to observe that budget participation (*BU_PART*) is not significantly correlated with the other control attributes, except with bottom-line control (*BU_BOT*) (see Table 31). Remember from Table 29 (p.153) that budget participation exhibits very little variation. This might indicate that budget participation is kind of *taken for granted* at the management levels considered in this study (*corporate executives* and *business unit general managers*). Hence, not very much explanatory power has to be expected from this variable. This is in line with the author’s previous study where budget participation did not show any variation at all and did not depend on the competitive strategy of the business unit either [Bruggeman and Van der Stede, 1993: 215].

In sum, the notion of *control tightness* or *looseness* seems to capture adequately the overall control philosophy of the firm. Tight control involves much formality (*BU_FORM*), much emphasis on meeting the budget (*BU_EMPH*), few budget revisions during the year (*BU_REV*), detailed line-item budget follow-ups (*BU_BOT*), and highly intensive and

interactive budgeting discussions (BU_INT). Therefore, the single *tight* vs. *loose* measure of overall control design will be used in subsequent analyses.¹¹⁰ More in particular, *budget tightness* is defined as the sum of the standardized scores on *BU_EMPH*, *BU_REV*, *BU_BOT*, *BU_FORM*, and *BU_INT*, with *BU_BOT* and *BU_INT* negatively weighted. The resulting measure of overall control design has a mean of zero; a standard deviation of 3,13; and ranges from -9,49 to +7,89 (*n*=153). A negative score on *budget tightness* indicates a design that is predominantly *loose*, whereas a positive score indicates a predominantly *tight* style. Table 32 shows the correlations between the overall measure of tight control and its components. As expected, all correlations are very significant.

Table 32
CORRELATIONS BETWEEN "BUDGET TIGHTNESS" AND
THE ORIGINAL BUDGETING CHARACTERISTICS VARIABLES

	<i>BU_EMPH</i>	<i>BU_REV</i>	<i>BU_BOT</i>	<i>BU_FORM</i>	<i>BU_INT</i>
<i>n</i> =37 <i>TIGHT</i>	0,8298 <i>p</i> =0,000	0,6684 <i>p</i> =0,000	-0,6813 <i>p</i> =0,000	0,6928 <i>p</i> =0,000	-0,6577 <i>p</i> =0,000
<i>n</i> =153	0,7267 <i>p</i> =0,000	0,5759 <i>p</i> =0,000	-0,6522 <i>p</i> =0,000	0,5572 <i>p</i> =0,000	-0,6143 <i>p</i> =0,000

Reported *p*-values are two-tailed;
n=37 is obtained by aggregating all business-level variables per corporate parent (see further).

6.1.2. Control Loss: Slack

Table 33 exhibits the correlations between the *control loss* variables, most of them insignificant, except the correlation between *slack* and *myopia*. Nonetheless, some careful inferences can be made from Table 33. For instance, it can be seen that *information asymmetry* is positively (but weakly) associated with *slack* which, in turn, is negatively

¹¹⁰ This procedure is consistent with concepts of design as a "gestalt phenomenon" [Gresov, 1989: 442 and 452; Khandwalla, 1973: 493].

associated with *myopia* ($p=0,003$). *Slack* and *earnings management* are insignificantly correlated. Hence, it can be concluded from Table 33 that higher levels of *information asymmetry* are associated with higher levels of *slack* (*one-tailed* $p=0,109$) which, in turn, are associated with lower levels of *managerial short-termism* (*one-tailed* $p=0,001$). From this, it might be suggested that slack reduction comes with a price, notably, an increasing focus on the short-term.

Table 33
CORRELATIONS BETWEEN VARIABLES WHICH MEASURE "IMPACT OF CONTROL SYSTEMS"

	INF_ASY		
SLACK	0,1001 $p=0,218$	SLACK	
EAR_MGT	0,0092 $p=0,910$	0,0320 $p=0,696$	EAR_MGT
MYOPIA	-0,0391 $p=0,649$	-0,2480 $p=0,003$	0,0976 $p=0,256$

$n=153$ – all variables were measured at the business unit level; p -values are two-tailed.

Put differently, *slack* might be a necessary condition for managers to think long-term: if the budget is too tight and the manager runs the danger of not meeting short-term targets, he might become more concerned, in the first place, about short-run results rather than about long-term profitability and competitive strength. In this respect, it is also interesting to observe that *slack* has a positive association with *business unit performance* (AVG_ROS: $r=0,3023$, $p=0,000$; insignificant for SBU_PER) whereas *myopia* is negatively correlated with *performance* (AVG_ROS: $r=-0,1833$, $p=0,042$; insignificant for SBU_PER).¹¹¹ Thus, (too much) slack reduction might have a reverse impact on performance. Indeed, as will be seen from subsequent analyses, the relationship between slack and performance is probably not linear but curvilinear, i.e., moderate levels of *slack* have beneficial effects on performance whereas both too much and too little slack seem to be counterproductive.

¹¹¹ Reported p -values are two-tailed.

6.1.3. Corporate Strategy: Degree of Diversification

Table 34, then, exhibits the correlations between *corporate size*, *diversification*, and *decentralization*. The *logarithm of average consolidated sales* ($\log_e(\text{AVGCS})$), the *number of entities*, *groups*, and *countries* are all positively and significantly correlated. However, it seems that the strongest correlations are between *sales* ($\log_e(\text{AVGCS})$), *entities*, and *countries*, on the one hand, and between *groups* and *entropy*, on the other hand. This is in line with the prior observation that the first set of variables measures a blend of *size* and (*geographical*) *diversity* whereas the second set of variables captures more of *diversity* alone.

Table 34
CORRELATIONS BETWEEN CORPORATE SIZE, DIVERSITY, AND DECENTRALIZATION VARIABLES ^[1]

	$\log_e(\text{AVGCS})$ ^[2]				
ENTITIES	0,6174 $p=0,000$	ENTITIES			
GROUPS	0,3197 $p=0,065$	0,3731 $p=0,023$	GROUPS		
COUNTRY	0,5429 $p=0,001$	0,7440 $p=0,000$	0,2373 $p=0,157$	COUNTRY	
ENTROPY	0,1939 $p=0,280$	0,4524 $p=0,006$	0,5811 $p=0,000$	0,3672 $p=0,028$	ENTROPY
DECENT	-0,0520 $p=0,770$	-0,1770 $p=0,295$	0,1969 $p=0,243$	-0,2110 $p=0,210$	0,0143 $p=0,934$

[1] Overall, $n=37$ because the data were aggregated by taking the mean of all observations per corporate parent. reported p -values are two-tailed.

[2] $\log_e(\text{AVGCS})$ is the log of the 3-year average of Consolidated Sales.

A somewhat surprising result is that *size* and *diversity* are not strongly associated with *decentralization*. Although very insignificant, Table 34 “suggests” (at best) that the association of *diversity* (i.e., *groups* and *entropy*) with *decentralization* has a *positive sign* (correlation between *groups* and *decentralization* is $r=0,1969$, *one-tailed* $p=0,122$) whereas the opposite holds true for the *size* and *geographical diversity* related variables ($\log_e(\text{AVGCS})$):

negative correlation but highly insignificant; *entity*: $r=-0,170$, one-tailed $p=0,1475$; and *country*: $r=-0,2110$, one-tailed $p=0,105$). From this, it can be put tentatively that only growth through new groups of activities (kind of “unrelated diversification”) seems to necessitate more decentralization. In contrast, growth through expansion of current businesses or geographical diversification seems to be possible without losing much influence over the decision-making process at the business unit level. This is in line with the *bounded rationality* argument that diversification into unrelated activities takes up much more information processing capacity from corporate management so that delegation of decision-making becomes inevitable.

6.2. Hypotheses Testing

Next, the four hypotheses developed in Chapter 3 will be empirically tested. In order to do so, some statistical clarifications and assumptions must be made explicit first.

6.2.1. Statistical Considerations

This section discusses the *unit of analysis*, the *alpha-level of significance*, and the *regression diagnostics*.

6.2.1.1. Unit of Analysis: Corporate or Business Unit ?

Attention must be paid to the *unit of analysis*, especially because data are collected at both the corporate and business unit level. Previous studies looking at the control relationship between two organizational levels usually took the higher level as the unit of analysis and averaged the data collected at the lower level to represent the collective higher level variables [e.g., Merchant, 1981; Child, 1973]. However, some reservations have been expressed about this procedure, the most important of which is data reduction

and, hence, waste of information. Indeed, focusing on the corporation as the unit of analysis and using averages of business unit data (i.e., aggregation of variables) results in throwing away all the *within-corporation* information. On the other hand, disaggregation of the corporate variables to the business unit, leads to a violation of *statistical independence* because business unit managers of the same corporation have the same value on each of the corporate variables (in casu, *corporate strategy*, *size*, etc.) (For a more detailed discussion, see Vancouver et al. [1994: 669-670] and Bryk and Raudenbush [1992]).

However, these arguments are not particularly strong for the following reasons. First, *aggregation* is not really a waste of information because one can always come back and perform analyses at the lower level of analysis. Second, it's true that *disaggregation* causes problems with *statistical independence*, but this problem does not get solved through aggregation *per se* because the higher-level variables are still based on data collected within one and the same organization.

Recently, statistical techniques, such as, *Hierarchical Linear Models*, have been developed to overcome the drawbacks of (dis)aggregation [Vancouver et al., 1994].¹¹² Although very appealing, these techniques cannot be applied to the data of this study due to a lack of a large enough number of business unit observations per corporate parent (see Appendix [C.2], *Panel A*).

Given that arguments in favor or against *(dis)aggregation* are not strong at best, it was decided not to let the final results depend on the choice of method. After all, the most

¹¹² *Hierarchical linear models* also go by the name of *multi-level linear models*, *mixed-effects models*, *random-effects models*, *random-coefficient regression models*, and *covariance components models* [Bryk and Raudenbush, 1992: 3]. Although much social research involves hierarchical data structures, fitting this new class of multi-level models has become possible only recently thanks to the availability of advanced computing techniques and programs [Bryk and Raudenbush, 1992].

important issue is whether the sample at the lower level of analysis is truly representative of the higher level of analysis. In this respect, the main research question in this study deals with the impact of *corporate strategy* on *control* and *control loss* over business units. Hereto, most variables were captured at the business unit level (notably, all of the *corporate control* variables and all of the *control loss* variables, and even some back-up variables for *corporate strategy*, such as, the degree of decentralization).

Therefore, the *main regression analyses* used for hypotheses testing were conducted on the full sample ($n=153$) at the business level. However, in order to have a feel for the extent to which the results are influenced by this choice, all *exploratory analyses* (usually correlations) are done on the aggregated file ($n=37$). Given that aggregation involves *data reduction*, it can be argued that these exploratory analyses will therefore be rather conservative. This is desirable in order not to jump to (spurious) conclusions. Moreover, since the *main regression analyses* are done on the full sample ($n=153$), the findings obtained in this way can be checked back to the conservative conclusions from the exploratory analyses. Of course, this *level of analysis* problem disappears for the relationships which involve variables measured at one level only (e.g., the *corporate strategy* - *corporate performance* relationship). In these cases, the "right" level of analysis could be chosen straightforwardly ($n=37$ or $n=153$, respectively). In short, rather than using only one level of analysis in a *consistent* (but maybe *wrong*) way, data will be analyzed at both levels and be checked back and forth.

6.2.1.2. Alpha-Level of Significance: 0,05 or 0,10 ?

The *level of significance* for rejecting a null hypothesis was not always obsequiously set at $\alpha=0,05$ but sometimes relaxed to $\alpha=0,10$ (all reported *p*-values are two-tailed, unless

otherwise stated). After all, the data were assumed to contain some noise as they were collected both between and within organizations and across several industries and countries. By relaxing α beyond its usual 0,05-base, the chance of rejecting true relationships was reduced (cf., type I error) [Aguinis, 1995; Rockness and Shields, 1984: 171].

6.2.1.3. Regression Diagnostics

Before the final regression results are presented and discussed, the major assumptions underlying regression analysis were verified for the data at hand. The graphs produced to evaluate *normality*, *linearity*, and *homoskedasticity* are given in Appendix G.¹¹³ All in all, there were no major violations of the regression assumptions. Most *normality plots* clearly demonstrate that the observed points scatter fairly well about the expected straight line (see Appendix G). *Multicollinearity* was not an issue either because most regressions involve one independent variable only. Moreover, as could be expected from the nature of the data, the residuals are not serially correlated (all *Durbin-Watson* statistics have values close to 2). In short, *normality*, *multicollinearity*, and *autocorrelation* do not seem to be a threat to the regression estimates. Furthermore, the data were analyzed for *outliers*. *SPSS* generally identifies an outlier if its $|Standardized Residual| \geq 3$. However, this is a very simple rule of thumb. Therefore, *Cook's Distances* were calculated too and compared with the 50% and 10% ellipsoids based on the *F*-distribution (i.e., $F_{p;n-p-1;0,50}$ and $F_{p;n-p-1;0,10}$, respectively, where p =the number of predictor variables + 1 for the intercept). In addition, *leverage values* were calculated as well and compared with the cut-off value of $3p/n$, i.e., three times its average value. High

¹¹³ Graphs were only generated for the main relationships of interest to this study, i.e., for the relationships between *corporate strategy*, *corporate control*, and *control loss*; it was not done for the relationships with *corporate performance* because these relationships are not of primary interest here and ended up being insignificant anyway (see further).

leverage points (with high *leverage values*) and high influence points (with high *Cook's Distance*) are indicated on the scatterplots in Appendix G (an "O" is used to indicate *high leverage points*, and an "*" for *high influence points*).

For the regressions with *slack* as the dependent variable, there seemed to be one observation which regularly showed up as an outlier, notably *Case #49* with its $|Standardized\ Residual| \approx 3$ (see Figure 1.2, 2.2, 3.2, and 4.2 in Appendix G). However, its *Cook's Distance* was always safely lower than the *F*-value for the 50% ellipsoid and even the 10% ellipsoid. More generally, for all these regressions, no single observation exceeded the critical value for *Cook's Distance* (not even for the 10% ellipsoid). Hence, it can be concluded that the regression estimations have not been detrimentally influenced by outliers. However, as an additional test, all regressions with *slack* as the dependent variable were re-estimated without *Case #49* and, as expected, no appreciable changes occurred. This is plausible since it can be seen from the scatterplots in Appendix G that *Case #49* kind of always tops the graphs but does not really stand out by far. The same is true for the *high leverage points* which are never located way out from the scatter of points. Moreover, the regressions of *SAL-FOR* on *Slack* (Figure 5.2 in Appendix G); *SAL-SBU* on *Slack* (Figure 6.2 in Appendix G); *Entity* on *Tight* (Figure 7.2 in Appendix G); *Entity* on *SAL-FOR* (Figure 10.2 in Appendix G); and *Entity* on *SAL-SBU* (Figure 11.2 in Appendix G) exhibit no high influence nor high leverage points. Only the regression of *Entity* on *SBU-CON[-R]* (Figure 8.2 in Appendix G) has one *high influence point*, but again, its *Cook's Distance* is still much lower than the critical *F*-values for the 50% and 10% ellipsoids. Finally, the regression of *Entity* on *SAL-VAR* (Figure 9.2 in Appendix G) has two *high influence points*, one for which $Cook's\ Distance < F_{p;n-p-1;0,50}$ and $F_{p;n-p-1;0,10}$ (*Case #87*), and one for which $F_{p;n-p-1;0,10} < Cook's\ Distance < F_{p;n-p-1;0,50}$ (*Case #151*). A re-estimation of this regression with omission of these two observations is discussed in the footnote of Table 42.

In sum, there is no real concern that the regression estimations have been detrimentally influenced by outliers. However, as soon as there was any doubt, the models were re-estimated and the results reported in the footnotes to the tables. Moreover, the scatterplots in Appendix G exhibit no prima facie evidence of severe violations of *homoskedasticity* either. However, as will be shown in the analysis below, the assumption of *linearity* is not always fulfilled. For instance, Figure 7.2 in Appendix G clearly demonstrates a curvilinear relationship between *corporate strategy* and *control system tightness*. Interesting enough though, a thorough examination of the (lack of) linearity among the variables in the model will actually provide intriguing insights which might otherwise have gone unnoticed. An extension of the results based on the exploration of curvilinearity will be discussed in Section 0, p.184.

6.2.2. Hypothesis 4: Impact of Corporate Strategy on Control Loss

Hypothesis 4 stated that *increased diversification will be associated with increased control loss*. As an exploration, Table 35 shows the correlations between *corporate size*, *diversification*, and *decentralization*, on the one hand, and, the *control loss* variables and *corporate performance*, on the other hand. A first interesting observation from Table 35 is that the relationship between *corporate size - diversification* and *corporate performance* (*AVG_ROC*) is generally weak, except when *diversification* is measured in its purest and undiluted form by the *number of groups*. In short, it seems that adding groups of activities to the corporate portfolio and (consequential) decentralization (both are positively related - cf., Table 34, p.161) have a negative impact on corporate performance. This finding is in line with prior diversification studies in which the link between corporate diversification and performance was generally weak too and the balance of evidence for superior performance was usually *against* unrelated diversification [Dess et al., 1995: 365].

Although sometimes at lower levels of significance, Table 35 suggests overall that increased *corporate size*, *diversification*, and *decentralization* are associated with more *information asymmetry*, *slack*, and *earnings management*, but less *managerial myopia*. And again, the relationship with *information asymmetry* and *slack* is strongest ($\approx$ acceptable levels of significance, i.e., one-tailed $p=0,10$ or better) for the *number of groups* and *decentralization*. As an aside, *geographical diversification (country)* is strongly associated with *information asymmetry* too.

Table 35
CORRELATIONS BETWEEN CORPORATE SIZE, DIVERSITY, AND DECENTRALIZATION,
AND, CONTROL LOSS VARIABLES, AND CORPORATE PERFORMANCE ^[1]

	SLACK	EAR_MGT	MYOPIA	INF_ASY	AVG_ROC ^[2]
<i>log_e(AVGCS)</i> ^[2]	0,0390 (<i>n</i> =34) <i>p</i> =0,826	0,2606 (<i>n</i> =34) <i>p</i> =0,137	-0,2286 (<i>n</i> =34) <i>p</i> =0,194	0,0707 (<i>n</i> =34) <i>p</i> =0,691	0,0216 (<i>n</i> =32) <i>p</i> =0,907
ENTITIES	0,0811 (<i>n</i> =37) <i>p</i> =0,633	0,2661 (<i>n</i> =37) <i>p</i> =0,111	-0,2268 (<i>n</i> =37) <i>p</i> =0,177	0,1568 (<i>n</i> =37) <i>p</i> =0,354	-0,0468 (<i>n</i> =34) <i>p</i> =0,793
GROUPS	0,1905 (<i>n</i> =37) <i>p</i> =0,259	0,2173 (<i>n</i> =37) <i>p</i> =0,196	-0,0532 (<i>n</i> =37) <i>p</i> =0,754	0,2111 (<i>n</i> =37) <i>p</i> =0,210	-0,3189 (<i>n</i> =34) <i>p</i> =0,066
COUNTRY	0,0992 (<i>n</i> =37) <i>p</i> =0,559	0,2200 (<i>n</i> =37) <i>p</i> =0,191	-0,1761 (<i>n</i> =37) <i>p</i> =0,297	0,2010 (<i>n</i> =37) <i>p</i> =0,233	0,0668 (<i>n</i> =34) <i>p</i> =0,707
ENTROPY	-0,1436 (<i>n</i> =36) <i>p</i> =0,403	0,1711 (<i>n</i> =36) <i>p</i> =0,319	-0,1471 (<i>n</i> =36) <i>p</i> =0,392	-0,0519 (<i>n</i> =36) <i>p</i> =0,764	-0,0801 (<i>n</i> =33) <i>p</i> =0,658
DECENT	0,3205 (<i>n</i> =37) <i>p</i> =0,053	0,0179 (<i>n</i> =37) <i>p</i> =0,916	-0,1757 (<i>n</i> =37) <i>p</i> =0,298	0,3751 (<i>n</i> =37) <i>p</i> =0,022	-0,3391 (<i>n</i> =34) <i>p</i> =0,050

[1] Overall, $n=37$ because the data were aggregated by taking the mean of all observations per corporate parent. Reported p -values are two-tailed.

[2] *AVG_ROC* is the 3-year average of *Return on Capital* and *log_e(AVGCS)* is the log of the 3-year average of *Consolidated Sales*.

The overall exploratory conclusion from Table 35 ($n=37$) that increased *corporate size* and *diversification* are associated with more *information asymmetry*, *slack*, and *earnings management*, but with less *short-termism* can be reconciled with the findings from Table 33 ($n=153$) where it was found that *information asymmetry*, *slack*, (and *earnings management*)

were positively correlated whereas their relationship with *myopia* was negative. Hence, although *slack* is, at first sight, an unwanted consequence of increasing *size* and *diversification*, it probably creates a cushion which allows business managers to think long-term and undertake (risky) projects with uncertain pay-offs. Therefore, an important challenge for corporate management is to strike the right balance between *degree of diversification* and consequent *slack* vs. *long-term orientation*. As aforementioned, the curvilinear relationship between these variables will be explored in more detail later.¹¹⁴

Table 36 then reports the regression results of the corporate strategy variables (*entity*, *group*, and *country*) on the major D.V., *slack*. From this, it can be seen that taking the *logarithm* of the *number of entities* or *groups* does not improve the regression model compared to the base model with untransformed variables (compare regression #1 with #2, and regression #3 with #4). Secondly, the *number of entities* explains more of *slack* than

¹¹⁴ As an aside and methodological appendix, the reader might have noticed that the above relationships produce inconsistent and counterintuitive results if the *entropy measure* of diversification is used. For instance, as to the sign of the correlations, higher levels of *entropy* (i.e., more diversification) seem to be associated with less *information asymmetry* and less *slack* in Table 35 (very insignificantly though). The same results are obtained with the other weighted measures of diversification, notably, the *Herfindahl index* and the *specialization ratio* (not reported in Table 35). [...] Actually, one could argue that, at this point, this inconsistency does not merit particular attention given the insignificance of the correlations with *entropy* in Table 35. However, this inconsistency will show up time and time again, so that it surely seems worthwhile to discuss it here ...].

The counterintuitive results are likely to be caused by the weighting procedure used to derive this class of diversification measures, which are, after all, *concentration indices*. Indeed, although the *number of entities* and *groups* is positively and significantly correlated with the *entropy measure*, the *Herfindahl index*, and the *specialization ratio* (see Table 34, p.161, and Table 23, p.134), the weighting procedure produces some high *entropy*-values for companies which have actually relatively few entities (see Appendix [E.2], Panel C, e.g., *Dredging International*, *BMT*, and *Aviapartner*). Conversely, some firms with low *entropy* have a relatively large number of entities (see Appendix [E.2], Panel C, e.g., *Cimenteries CBR* and *Bekaert*).

To pursue this point further, consider the following fictitious example: *Company X* and *Y* both have 10 groups of activities, but *X* gets 91% of its sales from one group and 1% from each other group, whereas for *Y* each group of activities is equally important in terms of percentage of consolidated sales (10% each). According to the weighted measures, *Company X* is highly specialized (*S.R.*=0,91) and little diversified (*Entropy*=0,50; *Herfindahl*=0,17) whereas *Y* is not very specialized (*S.R.*=0,10) and very diversified (*Entropy*=2,30; *Herfindahl*=0,90). However, both *X* and *Y* have 10 groups of activities which have to be controlled by the corporate parent regardless of their size or importance in terms of percentage of consolidated sales. Since this study focuses on the control relationship between the corporate parent and its business units, where each business unit is considered equally important as a full-blown unit to be controlled, small or large, it seems that, for the purposes of this study, simple count measures of diversification (cf., *number of entities* and *groups*) will do a better job than the weighted measures (cf., *entropy*, *Herfindahl*, and *specialization ratio*).

the *number of groups* (compare regression #1 with #3: Model #3 with *entity* as I.V. has a more significant overall *F* and a higher *R*²). Moreover, if both *entity* and *group* are entered as predictors (Model #5), then only *entity* is highly significant; *group* becomes very insignificant; and the overall model does not improve very much on the regression with only *entity* as predictor (Model #3). In sum, since *entity* and *group* are strongly correlated (*r*=0,3731; *p*=0,023; *n*=37 - see Table 34, p.161); since both variables are significant predictors of *slack* when entered individually in the regression, but *entity* more so than *group*; and since *group* becomes insignificant when entered in the regression with *entity*, it seems that *entity* is the best choice to represent *corporate strategy* as the main I.V. However, using *entity* as the sole I.V. implies that the effects of *size* and *product diversification* are “blended” (cf., discussion of results in Table 34, p.161).

Table 36
LINEAR REGRESSIONS BETWEEN CORPORATE STRATEGY AND CONTROL LOSS ^[1]

#	D.V.	I.V.	β ^[2]	<i>t</i>	<i>F</i>	<i>R</i> ² ^[3]
1.	SLACK	GROUP	0,177890	2,221 (<i>p</i> =0,0278)	4,93451 (<i>p</i> =0,0278)	0,03164 <i>0,02523</i>
2.	SLACK	log _e (GROUP)	0,121217	1,501 (<i>p</i> =0,1355)	2,25181 (<i>p</i> =0,1355)	0,01469 <i>0,00817</i>
3.	SLACK	ENTITY ^[4]	0,249073	3,160 (<i>p</i> =0,0019)	9,98724 (<i>p</i> =0,0019)	0,06204 <i>0,05583</i>
4.	SLACK	log _e (ENTITY)	0,236358	2,989 (<i>p</i> =0,0033)	8,93476 (<i>p</i> =0,0033)	0,05587 <i>0,04961</i>
5.	SLACK	ENTITY	0,219636	2,268 (<i>p</i> =0,0247)	5,10800 (<i>p</i> =0,0071)	0,06376 <i>0,05128</i>
		GROUP	0,050921	0,526 (<i>p</i> =0,5997)		
6.	SLACK	COUNTRY	0,097051	1,198 (<i>p</i> =0,2327)	1,43577 (<i>p</i> =0,2327)	0,00942 <i>0,00286</i>
7.	SLACK	ENTITY	0,280880	2,968 (<i>p</i> =0,0035)	5,15884 (<i>p</i> =0,0068)	0,06436 <i>0,05188</i>
		COUNTRY	-0,057723	-0,610 (<i>p</i> =0,5429)		

[1] *n*=153; *p*-values are two-tailed.

[2] β_k is the standardized regression coefficient of the independent variable *K*, i.e., the regression coefficient (*B_k*) multiplied by the ratio of the standard deviation of *K* (*S_k*) to the standard deviation of the dependent variable *Y* (*S_y*). This results in a dimensionless coefficient which is the slope of the least-squares line when both *K* and *Y* are expressed as Z-scores. When *K* is the sole independent variable in the regression model, β_k corresponds with the *Pearson Bivariate Correlation Coefficient* between *K* and *Y* (ρ_{ky}). Moreover, squaring β_k (or ρ_{ky}) results in *R*², given that *K* is the sole independent variable in the regression model.

[3] *Adjusted R*² reported in italics.

[4] If three outliers are removed (*Case* #49, #140, and #142 – see Appendix G), the model becomes stronger and the regression coefficient more significant (*p*=0,0001) and *R*² goes up to 0,10448.

Table 36 further reveals that *country*, i.e., geographical diversification, is not a significant predictor of *slack* by itself (*Model #6*) nor does it add anything if entered with *entity* (compare *Model #7* with *Model #3*). Recall that the findings in Table 23 (p.134) suggested that geographical diversification is, in some way, conceptually similar to engaging in related product diversification [Tallman and Li, 1996: 180].¹¹⁵ And this does not seem to have a significant relationship with *slack*.

In sum, it is really *size* and *product diversity* together which influence *slack*. As can be seen from the β -column in Table 36, the correlation between *entity* and *slack* is $r=0,249$ ($p=0,002$), but this drops to $r=0,182$ ($p=0,025$) for the *partial correlation* between *entity* and *slack* controlled for *group*.¹¹⁶ In contrast, the correlation between *entity* and *slack* ($r=0,249$; $p=0,002$) hardly drops to $r=0,236$ ($p=0,003$) if the *partial correlation* between *entity* and *slack* is controlled for *country*. Hence, the relationship between *entity* and *slack* is "contaminated" by *product diversification* but not by *geographical diversification*.

These findings basically confirm H_4 which stated that *increased diversification would be associated with increased control loss, in casu, slack*. This hypothesis stands firm even if diversification is narrowly interpreted in terms of the *number of groups*, as is shown in regression #1 in Table 36.

6.2.3. Hypothesis 3: Impact of Corporate Control on Control Loss

Based on behavioral arguments from the management control literature, *hypothesis 3* stated that an *increased emphasis on detached controls will be associated with increased control*

¹¹⁵ Because *country scope* was strongly correlated with the *number of entities* ($r=0,75$; $p<0,01$) but not with the *number of groups*, at least not significantly.

¹¹⁶ Reversely, the correlation between *group* and *slack* ($r=0,178$; $p=0,028$) drops to complete insignificance $r=0,043$; $p=0,600$) for the *partial correlation* between *group* and *slack* controlled for *entity*. This is plausible since there are always at least as many *entities* as *groups*.

loss. As an exploratory analysis, Table 37 shows the correlations between the *budgeting*, *incentive*, and *controllershship-structure* variables, on the one hand, and, the *control loss* variables and *corporate performance*, on the other hand.

Table 37
CORRELATIONS BETWEEN *BUDGETING*, *INCENTIVE*, AND *CONTROL STRUCTURE* VARIABLES,
AND, *CONTROL LOSS* VARIABLES, AND *CORPORATE PERFORMANCE* [1]

	<i>SLACK</i>	<i>EAR_MGT</i>	<i>MYOPIA</i>	<i>INF_ASY</i>	<i>AVG_ROC</i> [2]
<i>BU_EMPH</i>	-0,6078 (n=37) p=0,000	-0,1333 (n=37) p=0,432	-0,1545 (n=37) p=0,361	0,0644 (n=37) p=0,705	0,2550 (n=34) p=0,146
<i>BU_REV</i>	-0,6008 (n=37) p=0,000	-0,3085 (n=37) p=0,063	0,0169 (n=37) p=0,921	-0,1875 (n=37) p=0,266	0,0789 (n=34) p=0,658
<i>BU_BOT</i>	0,1844 (n=37) p=0,275	-0,0909 (n=37) p=0,593	-0,2605 (n=37) p=0,119	0,1941 (n=37) p=0,250	-0,2327 (n=34) p=0,185
<i>BU_FORM</i>	-0,1829 (n=37) p=0,278	0,0846 (n=37) p=0,618	-0,2017 (n=37) p=0,231	0,0794 (n=37) p=0,640	0,0221 (n=34) p=0,901
<i>BU_INT</i>	0,4145 (n=37) p=0,011	0,1164 (n=37) p=0,493	0,0148 (n=37) p=0,931	0,3866 (n=37) p=0,018	0,1258 (n=34) p=0,479
<i>BU_PART</i>	0,1741 (n=37) p=0,303	0,2890 (n=37) p=0,083	0,1510 (n=37) p=0,372	0,3845 (n=37) p=0,019	-0,3471 (n=34) p=0,044
<i>SAL_VAR</i>	-0,2696 (n=37) p=0,107	0,2040 (n=37) p=0,226	-0,3222 (n=37) p=0,052	0,0777 (n=37) p=0,648	0,1208 (n=34) p=0,496
<i>SAL_FOR</i>	-0,0716 (n=36) p=0,678	-0,1519 (n=36) p=0,376	0,2417 (n=36) p=0,156	0,3801 (n=36) p=0,022	0,0689 (n=33) p=0,703
<i>SAL_SBU</i>	-0,0100 (n=36) p=0,954	-0,1737 (n=36) p=0,311	-0,0257 (n=36) p=0,882	-0,1718 (n=36) p=0,316	0,0068 (n=33) p=0,970
<i>SBU_CON</i>	-0,5162 (n=32) p=0,002	-0,4105 (n=32) p=0,020	-0,3986 (n=32) p=0,024	0,0411 (n=32) p=0,823	-0,0170 (n=30) p=0,929

[1] Overall, n=37 because the data were aggregated by taking the mean of all observations per corporate parent. Reported p-values are two-tailed.

[2] *AVG_ROC* is the 3-year average of *Return on Capital* and $\log_e(\text{AVGCS})$ is the log of the 3-year average of *Consolidated Sales*.

Overall, the *budgeting, incentive, and controllership-structure* variables in Table 37 exhibit very weak associations with *corporate performance (AVG_ROC)*. This confirms the concern which was expressed in the theoretical part of this thesis too and which led to the decision to use antecedent variables such as *slack, myopia, and earnings management* as the main dependent variables. Fortunately, as can be seen from Table 37, there is a strong association between most of the *control system variables* and *slack*. In a nutshell, it can be derived that *slack is associated with a loose control style*, i.e., little emphasis on meeting the budget (*BU_EMPH* - one-tailed $p=0,000$), many budget revisions during the year (*BU_REV* - one-tailed $p=0,000$), an eye-ball follow-up of the bottom-line budget result only (*BU_BOT* - one-tailed $p=0,137$), informal budgeting policies (*BU_FORM* - one-tailed $p=0,139$), and diagnostic budget-related communications (*BU_INT* - one-tailed $p=0,005$). More or less the same conclusions can be "suggested" as to the relationship with *earnings management*, but with much less significance (cf., *earnings management* is associated with little emphasis on meeting the budget, many budget revisions during the year, and diagnostic budget discussions).

Moreover, some interesting conclusions can be reached as to the impact of variable salaries (*SAL_VAR*). Table 37 reveals that *a higher percentage variable salary is associated with less slack* (one-tailed $p=0,053$), *less myopic behavior* (one-tailed $p=0,026$), *but more earnings management* (one-tailed $p=0,113$). After all, as the salary becomes more variable, lower business performance leads to lower personal income.¹¹⁷ Interesting enough, a manager clearly is concerned about his *future personal income* too since he doesn't seem to take actions that are detrimental to the long term effectiveness of his business unit (cf., less

¹¹⁷ The argument goes as follows. Assuming that the manager wants to maximize personal income, he will try to achieve good business unit performance because this translates directly into more personal income under a variable pay scheme. However, the drive to achieve maximum business unit performance signals the real profit potential of the business and hence reduces the ability to submit subsequent slack budgets.

myopic behavior). However, given that the salary depends directly on actual performance, the manager seems to engage in some *manipulation of earnings* to achieve the agreed performance target.

Another interesting observation from Table 37 is that decentralization of the controllership function (SBU_CON) significantly reduces *slack, earnings management, and myopia* (for each, *one-tailed* $p=0,01$ or better). In other words, a positive control atmosphere where the business unit controller is actively involved in the local decision-making process, rather than to act as a “*policeman*” or “*corporate spy*,” appears to have a beneficial impact on goal-oriented management behavior (cf., less dysfunctional behavior).

Although it is impossible to distinguish cause from effect on the basis of simple correlations, it makes perfect sense that situations of high *information asymmetry* are positively associated with bottom-line controls (*BU_BOT* - *one-tailed* $p=0,125$), diagnostic budget discussions (*BU_INT* - *one-tailed* $p=0,009$), many budget revisions during the year (*BU_REV* - *one-tailed* $p=0,133$), and highly participative budget setting (*BU_PART* - *one-tailed* $p=0,009$). Moreover, such situations make it impossible for the superior to assess his business unit managers’ performance other than on the basis of financial figures, which explains why high *information asymmetry* is significantly correlated with *formula-based incentives* too (*SAL_FOR* - *one-tailed* $p=0,011$) (see Table 37).

Mostly as a methodological back-up, Table 38 shows the correlations between the *control, incentive, performance, and business strategy* variables measured at the business unit level, on the one hand, and, the *control loss* variables, also measured at the business level, on the other hand ($n=153$). As was found from the aggregated dataset ($n=37$, see Table 37, p.172), *slack* is significantly associated with *loose control*, i.e., little emphasis on meeting

the budget (*BU_EMPH* - one-tailed $p=0,000$), many budget revisions during the year (*BU_REV* - one-tailed $p=0,001$), an eye-ball follow-up of the bottom-line budget result only (*BU_BOT* - one-tailed $p=0,007$), informal budgeting policies (*BU_FORM* - n.s. - one-tailed $p=0,230$), and diagnostic budget-related communications (*BU_INT* - one-tailed $p=0,000$). The relationships of these variables with *earnings management* are highly insignificant (which was also the case in Table 37, but to a lesser extent). However, note from Table 38 that *myopia* is significantly associated with *tight controls*, i.e., with much emphasis on meeting the budget (*BU_EMPH* - one-tailed $p=0,037$), fewer budget revisions during the year (*BU_REV* - n.s. - one-tailed $p=0,148$), a detailed line-item follow-up of the budget result (*BU_BOT* - one-tailed $p=0,004$), and interactive budget-related communications (*BU_INT* - one-tailed $p=0,012$).¹¹⁸ This again illustrates the trade-off between *slack* and *myopia*: although tighter controls might reduce slack, they probably fuel myopic management behavior.

Further in line with the findings from the aggregated data in Table 37 (p.172), Table 38 exhibits that situations of high *information asymmetry* are positively associated with bottom-line controls (*BU_BOT*), diagnostic budget discussions (*BU_INT*), many budget revisions during the year (*BU_REV*), and participation in setting the budget (*BU_PART*) [all one-tailed $p<0,05$]. Simply put, *information asymmetry* is associated with *loose controls*. Finally, *information asymmetry* is also correlated with *formula-based incentives* (*SAL_FOR* - one-tailed $p=0,103$), but somewhat less significant than in Table 37.

Moreover, a higher percentage of *variable salary* (*SAL_VAR*) is again associated with less *slack* (one-tailed $p=0,061$) and less *myopic behavior* (one-tailed $p=0,038$). The arguments for this finding were developed above. Also in line with the findings in Table 37 but at

¹¹⁸ It should be noted that the negative correlation between *myopia* and *budget formality* (*BU_FORM* - one-tailed $p=0,024$) is inconsistent in this respect.

acceptable levels of significance in Table 38, it shows that *formula-based bonuses* (SAL_FOR) reduce *slack* (one-tailed $p=0,061$) but encourage *myopic behavior* (one-tailed $p=0,040$). Hence, *formula-based incentives seem to have the same effect on the trade-off between slack vs. myopia as tight controls.*

Table 38
CORRELATIONS BETWEEN ALL BUSINESS LEVEL VARIABLES (BUDGETING,
INCENTIVE, CONTROL STRUCTURE, PERFORMANCE, STRATEGY,
AND MODE OF GROWTH) AND CONTROL LOSS VARIABLES ^[1]

	SLACK	EAR_MGT	MYOPIA	INF_ASY
BU_EMPH	-0,5106 (n=153) p=0,000	0,1312 (n=152) p=0,107	0,1520 (n=138) p=0,075	-0,0684 (n=153) p=0,401
BU_REV	-0,2543 (n=153) p=0,002	-0,0589 (n=152) p=0,471	0,0895 (n=138) p=0,296	-0,1669 (n=153) p=0,039
BU_BOT	0,1961 (n=153) p=0,015	-0,0223 (n=152) p=0,785	-0,2212 (n=138) p=0,009	0,3110 (n=153) p=0,000
BU_FORM	-0,0602 (n=153) p=0,460	0,0599 (n=152) p=0,463	-0,1676 (n=138) p=0,049	0,0970 (n=153) p=0,233
BU_INT	0,2807 (n=153) p=0,000	-0,0319 (n=152) p=0,696	-0,1904 (n=138) p=0,025	0,3661 (n=153) p=0,000
BU_PART	-0,0025 (n=153) p=0,976	0,0126 (n=152) p=0,878	-0,0711 (n=138) p=0,407	0,1457 (n=153) p=0,072
SAL_VAR	-0,1254 (n=153) p=0,122	-0,0734 (n=152) p=0,369	-0,1517 (n=138) p=0,076	-0,0196 (n=153) p=0,810
SAL_FOR	-0,1475 (n=111) p=0,122	-0,0857 (n=110) p=0,373	0,1736 (n=102) p=0,081	0,1206 (n=111) p=0,207
SAL_SBU	-0,1073 (n=111) p=0,263	-0,1322 (n=110) p=0,168	0,0050 (n=102) p=0,960	-0,0689 (n=111) p=0,473
SBU_CON	-0,2442 (n=96) p=0,017	-0,2947 (n=96) p=0,004	-0,1361 (n=85) p=0,214	-0,1276 (n=96) p=0,215
AVG_ROS	0,3023 (n=139) p=0,000	-0,0482 (n=138) p=0,575	-0,1833 (n=124) p=0,042	-0,0585 (n=139) p=0,494
SBU_PER	0,0674 (n=152) p=0,409	-0,0577 (n=151) p=0,482	-0,0242 (n=137) p=0,779	0,0959 (n=152) p=0,240
LC_DIFF	0,1649 (n=150) p=0,044	-0,0327 (n=149) p=0,692	0,1056 (n=136) p=0,221	0,0640 (n=150) p=0,437
MISSION	-0,1150 (n=146) p=0,167	-0,0319 (n=145) p=0,703	0,0017 (n=134) p=0,985	0,0452 (n=146) p=0,588
ACQUIS	0,0289 (n=152) p=0,724	-0,1703 (n=151) p=0,037	-0,0480 (n=137) p=0,578	-0,0788 (n=152) p=0,334

[1] Overall, $n=153$ because the data were all reported and measured at the business unit level.
Reported p -values are two-tailed.

Finally, *decentralized control* (SBU_CON) significantly reduces *slack* (one-tailed $p=0,008$), *earnings management* (one-tailed $p=0,002$), and *myopia* (one-tailed $p=0,107$). Hence, Table 38 again confirms that a positive control atmosphere with an active involvement of the business unit controller in the local decision-making process can ease off dysfunctional behavior.

Hence, as a conclusion to this methodological aside, the above discussion and comparison of the results in Table 37 ($n=37$) and Table 38 ($n=153$) illustrate that the aggregated findings converge very well with the findings obtained from the full dataset.¹¹⁹

Next, Table 39 reports the output of the regressions between the *control* and *incentive* variables (I.V.) and *Slack* (D.V.). Firstly, *tight controls* (TIGHT) have a negative and significant effect on *slack* (Model #1), indicating that tighter controls reduce slack. Secondly, centralization of the controllership function (SBU_CON[-R]) is positively and significantly associated with slack (Model #2), which confirms earlier observations that a positive control atmosphere where the business unit controller is actively involved in the local decision-making process (*decentralized control*), rather than to act as a “policeman” or “corporate spy” (*centralized control*), has a beneficial impact on goal-oriented management

¹¹⁹ In addition, but not of direct importance to this study, Table 38 also reveals that *business unit performance* (especially AVG_ROS, and, to a lesser extent SBU_PER) is positively associated with slack (one-tailed $p=0,000$ for AVG_ROS), but negatively with earnings management (n.s. - one-tailed $p=0,287$ for AVG_ROS) and *myopia* (one-tailed $p=0,021$ for AVG_ROS). Hence, *earnings management* and *myopia* appear to be truly dysfunctional. In contrast, business units with some slack resources seem to perform better. Again, one must be very careful about cause-effect statements on the basis of correlations. For instance, one could easily reverse the chain of inference, notably: *businesses which are performing well can build up slack, feel less pressure from short-term targets, and need not manipulate earnings to make budgets look good*.

Finally, Table 38 reveals that *differentiation strategies at the business level* (LC_DIFF) are positively associated with *slack* (one-tailed $p=0,022$), which is generally in line with prior theoretical arguments and empirical findings (e.g., Porter [1980], Govindarajan and colleagues [1988, 1985], and Bruggeman and Van der Stede [1993]). No significant correlations were found with *competitive mission* (MISSION). As to the *mode of growth* (ACQUIS), internally developed businesses seem to engage less in *earnings management* (one-tailed $p=0,018$).

Table 39
LINEAR REGRESSIONS BETWEEN CORPORATE CONTROL AND CONTROL LOSS ^[1]

#	D.V.	I.V.	β ^[2]	<i>t</i>	<i>F</i>	<i>R</i> ² ^[3]
1.	SLACK	TIGHT ^[4] (LOOSE) ^[5]	-0,416416	-5,628 (<i>p</i> =0,0000)	31,67647 (<i>p</i> =0,0000)	0,17340 <i>0,16793</i>
2.	SLACK	SBU_CON[-R] ^{[6],[7]}	0,244151	2,441 (<i>p</i> =0,0165)	5,95852 (<i>p</i> =0,0165)	0,05961 <i>0,04961</i>
3.	SLACK	SAL_VAR ^[8]	-0,125403	-1,553 (<i>p</i> =0,1225)	2,41254 (<i>p</i> =0,1225)	0,01573 <i>0,00921</i>
4.	SLACK	SAL_SBU	-0,107253	-1,126 (<i>p</i> =0,2625)	1,26844 (<i>p</i> =0,2625)	0,01150 <i>0,00243</i>
5.	SLACK	SAL_FOR	-0,147473	-1,557 (<i>p</i> =0,1224)	2,42326 (<i>p</i> =0,1224)	0,02175 <i>0,01277</i>
6.	SLACK	TIGHT SBU_CON[-R]	-0,398658 0,206323	-4,325 (<i>p</i> =0,0000) 2,239 (<i>p</i> =0,0276)	 12,89509 (<i>p</i> =0,0000)	 0,21711 <i>0,20027</i>
7.	SLACK	TIGHT SAL_VAR SAL_SBU SAL_FOR	-0,369140 -0,019990 -0,073644 -0,100672	-4,095 (<i>p</i> =0,0001) -0,211 (<i>p</i> =0,8832) -0,817 (<i>p</i> =0,4158) -1,082 (<i>p</i> =0,2817)	 5,32745 (<i>p</i> =0,0006)	 0,16739 <i>0,13597</i>

[1] *n*=153; *p*-values are two-tailed.

[2] β_k is the standardized regression coefficient of the independent variable *K*, i.e., the regression coefficient (*B_k*) multiplied by the ratio of the standard deviation of *K* (*S_k*) to the standard deviation of the dependent variable *Y* (*S_y*). This results in a dimensionless coefficient which is the slope of the least-squares line when both *K* and *Y* are expressed as Z-scores. When *K* is the sole independent variable in the regression model, β_k corresponds with the Pearson Bivariate Correlation Coefficient between *K* and *Y* (ρ_{ky}). Moreover, squaring β_k (or ρ_{ky}) results in *R*², given that *K* is the sole independent variable in the regression model.

[3] *Adjusted R*² reported in italics.

[4] *Budget Tightness* is defined as the sum of the standardized scores on *BU_EMP*, *BU_REV*, *BU_BOT*, *BU_FOR*, and *BU_INT*, with *BU_BOT* and *BU_INT* negatively weighted.

[5] For the sake of interpretation, the opposite of *Budget Tightness*, "*LOOSE*," can be defined as the sum of the standardized scores on *BU_EMP*, *BU_REV*, *BU_BOT*, *BU_FOR*, and *BU_INT*, but this time with *BU_EMP*, *BU_REV*, and *BU_FOR* negatively weighted. Of course, the regression output is the same except for the sign of the regression coefficient and its corresponding *t*-value.

[6] *SBU_CON[-R]* refers to the degree of decentralization of the control structure and was recoded in order to have high scores correspond with a centralized control structure.

[7] The model does not get much worse if a high influence point (*Case #49*) and a high leverage point (*Case #40*) are omitted (see Appendix G): the model becomes only slightly weaker and the regression coefficient less significant (*p*=0,0242) and *R*² goes slightly down to 0,05397.

[8] The model becomes more insignificant if a high influence point (*Case #49*) and two high leverage points (*Case #87* and *#151*) are omitted (see Appendix G): the model becomes less strong and the regression coefficient less significant (*p*=0,2670). *R*² goes down to 0,00832.

behavior (cf., less slack). Thirdly, the *incentive variables* (*SAL_VAR*, *SAL_SBU*, and *SAL_FOR*) are all negatively associated with *slack* (*Model #3*, *#4*, and *#5*), but at weak levels of

significance (especially *Model #4*, and, also *Model #3* after outliers were omitted, see footnote [8] in Table 39). Thus, a higher percentage variable pay (*SAL_VAR*), which is increasingly based on SBU-performance (*SAL_SBU*), and determined on the basis of strict formulas (*SAL_FOR*) seems to be able to reduce slack.

These findings contradict *H₃* which predicted that *tighter controls*, *SBU-based* and *formula-based incentives*, and *decentralization of the controllership function* would be associated with increased *control loss*, in casu, *slack*. These findings should not be relaxed in any sense for the two *incentive* variables (*SAL_SBU* and *SAL_FOR*) and the *decentralized control variable* (*SBU_CON[-R]*) because these variables have been measured exactly in line with the theoretical arguments put forward to develop *H₃*. However, some reservations should be made for the *tight-slack* relationship, because the *tight control* construct as derived empirically does not correspond perfectly with the theoretical *detached control* construct used to develop *H₃* (cf., Table 31, p.157).

Finally, it is interesting to observe from Table 39 that a *tight control policy* (*TIGHT*) and *decentralization of the controllership function* (*SBU_CON[-R]*) predominantly influence *slack*. This can be derived from *Model #6* in Table 39 where both *TIGHT* and *SBU_CON[-R]* stay significant when introduced in one regression (with a high overall *F* and increased *R²* - compare *Model #6* with #1). This cannot be said of the *incentive variables* (*SAL_VAR*, *SAL_SBU*, and *SAL_FOR*) which do not lead to any improvement in the regression on *slack* (compare *Model #7* with #1).

All in all, it seems that *tight controls* increase the ability of the corporate manager to detect *slack* and, hence, increase the (economic) cost to the business unit managers to game the budget through easy-to-achieve budget targets. Hence, in terms of the relative strength of the two opposing influences, i.e., *economical* vs. *behavioral*, the data suggest that the *economic impact overrules the behavioral*. Indeed, if a positive relationship between

tight controls and *slack* were found, then there would be reasons to believe that such controls create negative feelings towards the organization which, in turn, increase rather than decrease the propensity to behave opportunistically.

In short, the implementation of *tight controls* effectively increases the information processing ability of corporate managers. However, the “style” in which such controls are exercised seems to be important too. Indeed, the data clearly illustrate that a positive control atmosphere where the business unit controller is actively involved in the local decision-making process (i.e., *decentralized controllership function*) has a beneficial impact on goal-oriented management behavior. In contrast, situations where the business controller acts as a “policeman” or “corporate spy” (i.e., *centralized controllership function*) can create a feeling of distrust whereby opportunistic behavior will increase [Ghoshal and Moran, 1996].

6.2.4. Hypothesis 1: Impact of Corporate Strategy on Corporate Control

Hypothesis 1 stated that *increased diversification will be associated with an increased emphasis on detached controls*. Table 40 exhibits the correlations between the *budgeting, incentive, and control structure* variables, on the one hand, and, *corporate size, diversification, and decentralization*, on the other hand.

As expected, *decentralization* is (significantly) associated with a higher percentage variable salary (SAL_VAR - one-tailed $p=0,101$), more formula-based (SAL_FOR - one-tailed $p=0,085$) and SBU-based (SAL_SBU - one-tailed $p=0,072$) incentives, more decentralized control (SBU_CON - one-tailed $p=0,011$), and kind of loose controls, i.e., less emphasis on meeting the budget (BU_EMPH - n.s. - one-tailed $p=0,171$), more bottom-line control (BU_BOT - one-tailed $p=0,017$), more diagnostic control (BU_INT - one-tailed $p=0,031$), and more budget participation (BU_PART - one-tailed $p=0,019$) [roughly the same conclusions emerge when the analysis is

done on the full dataset, i.e., $n=153$, see Table 40 [Addendum] reported in footnote 120].¹²⁰⁾

¹²⁰⁾ Table 40 [Addendum] exhibits the correlations between the *control* and *incentive* variables, on the one hand, and, *business unit performance*, *size*, *strategy*, and *decentralization*, on the other hand, for the full data-set ($n=153$).

Table 40 [Addendum]

CORRELATIONS BETWEEN BUDGETING, INCENTIVE, AND CONTROL STRUCTURE VARIABLES, AND, BUSINESS UNIT PERFORMANCE, SIZE, STRATEGY, AND DECENTRALIZATION ^[1]

	<i>SBU_PER</i>	$\log_e(\text{SAL})$	$\log_e(\text{EMPL})$	<i>LC_DIFF</i>	<i>MISSION</i>	<i>DECENT</i>
<i>BU_EMPH</i>	-0,0131 ($n=152$) $p=0,873$	0,1708 ($n=148$) $p=0,038$	0,2077 ($n=150$) $p=0,011$	-0,1619 ($n=150$) $p=0,048$	-0,0792 ($n=146$) $p=0,342$	0,0140 ($n=151$) $p=0,865$
<i>BU_REV</i>	-0,0263 ($n=152$) $p=0,748$	0,2898 ($n=148$) $p=0,000$	0,3713 ($n=150$) $p=0,000$	-0,1721 ($n=150$) $p=0,035$	-0,0893 ($n=146$) $p=0,284$	0,1011 ($n=151$) $p=0,217$
<i>BU_BOT</i>	0,0214 ($n=152$) $p=0,793$	0,0112 ($n=148$) $p=0,892$	-0,0906 ($n=150$) $p=0,270$	0,0699 ($n=150$) $p=0,395$	-0,0290 ($n=146$) $p=0,729$	0,1366 ($n=151$) $p=0,094$
<i>BU_FORM</i>	-0,1230 ($n=152$) $p=0,131$	0,1486 ($n=148$) $p=0,071$	0,1528 ($n=150$) $p=0,062$	-0,1126 ($n=150$) $p=0,170$	0,1160 ($n=146$) $p=0,163$	-0,0535 ($n=151$) $p=0,514$
<i>BU_INT</i>	0,0605 ($n=152$) $p=0,459$	-0,1542 ($n=148$) $p=0,061$	-0,2156 ($n=150$) $p=0,008$	0,1162 ($n=150$) $p=0,157$	-0,0134 ($n=146$) $p=0,873$	0,0167 ($n=151$) $p=0,838$
<i>BU_PART</i>	0,0634 ($n=152$) $p=0,438$	0,0642 ($n=148$) $p=0,438$	0,0062 ($n=150$) $p=0,940$	-0,0387 ($n=150$) $p=0,638$	0,0772 ($n=146$) $p=0,354$	0,3536 ($n=151$) $p=0,000$
<i>SAL_VAR</i>	0,1468 ($n=152$) $p=0,076$	0,3267 ($n=148$) $p=0,000$	0,3501 ($n=150$) $p=0,000$	-0,0127 ($n=150$) $p=0,877$	-0,1037 ($n=146$) $p=0,213$	0,2896 ($n=151$) $p=0,000$
<i>SAL_FOR</i>	0,0877 ($n=110$) $p=0,363$	-0,0726 ($n=107$) $p=0,457$	-0,0077 ($n=109$) $p=0,937$	0,0295 ($n=108$) $p=0,762$	-0,0054 ($n=107$) $p=0,956$	0,2218 ($n=109$) $p=0,020$
<i>SAL_SBU</i>	0,1428 ($n=110$) $p=0,137$	-0,1050 ($n=107$) $p=0,282$	-0,0896 ($n=109$) $p=0,354$	0,1425 ($n=108$) $p=0,141$	0,0127 ($n=107$) $p=0,896$	0,3189 ($n=109$) $p=0,001$
<i>SBU_CON</i>	0,0132 ($n=95$) $p=0,899$	0,2270 ($n=92$) $p=0,030$	0,3555 ($n=93$) $p=0,000$	-0,0468 ($n=95$) $p=0,653$	-0,0857 ($n=91$) $p=0,419$	0,2389 ($n=95$) $p=0,020$

[1] Overall, $n=153$ because the data were all reported and measured at the business unit level.

Reported p -values are two-tailed.

SBU_PER is the overall *Business Unit Performance* as measured by item III.A.1 of the questionnaire;

$\log_e(\text{SAL})$ is the log of the *Sales* reported at the business unit level in item VI.1 of the questionnaire;

$\log_e(\text{EMPL})$ is the log of the *Number of Employees* reported at the business unit level in item VI.3;

LC_DIFF and *MISSION* are measures of *Low Cost vs. Differentiation Strategy* and *Competitive Mission*, respectively;

DECENT is the measure of *Decentralization* as reported in Section V of the questionnaire.

The relationship between the *control* and *incentive* variables and *decentralization* coincide with the findings from the aggregated data in Table 40 (p.183): *decentralization* is significantly associated with a higher *percentage variable salary* (*SAL_VAR* - one-tailed $p=0,000$), more *formula-based* (*SAL_FOR* - one-tailed $p=0,010$) and *SBU-based* (*SAL_SBU* - one-tailed $p=0,000$) incentives, more *decentralized control* (*SBU_CON* - one-tailed $p=0,010$), more *bottom-line control* (*BU_BOT* - one-tailed $p=0,047$), and more *budget participation* (*BU_PART* - one-tailed $p=0,000$).

Other than this, Table 40 has not much informative value since most correlations between the *control system* variables and *corporate size and diversification* appear insignificant. The only other significant result is that increased size and diversity are associated with more formality in the control process (BU_FORM). Moreover, with borderline significance, it can be derived that increased size and diversity are associated with a higher reliance on corporate-based incentives (cf., negative correlations with SAL_SBU). This relationship is strongest for the diversity variable "groups" (one-tailed $p=0,064$), suggesting that *corporate-based incentives* are used in highly diversified companies to refocus the business managers' attention on corporate performance rather than individual business unit performance alone. In a similar vein, *size and diversification* seem to exhibit a positive relationship with discretionary-based bonuses (cf., negative correlations with SAL_FOR). However, this relationship becomes insignificant for the diversification variable "groups." On the whole, this might suggest that as firms grow in size and diversity, the business managers' bonuses depend more heavily on corporate performance and the discretion of their corporate superiors. However, as the firm becomes more diversified, the ability of the superior to assess his business managers' overall performance decreases so that discretionary bonuses run the danger of being considered as unfair or inaccurate. This could explain why the *diversity*-related variable

Further, and of secondary importance to this study, Table 40 [Addendum] shows that the *control* and *incentive* variables are not significantly associated with *competitive mission* (MISSION). However, businesses which pursue a *differentiation strategy* (LC_DIFF) seem to be controlled in a *looser* way, especially with less emphasis on meeting the budget (BU_EMPH - one-tailed $p=0,024$) and more allowance for budget revisions during the year (BU_REV - one-tailed $p=0,017$) [cf., prior findings in Bruggeman and Van der Stede [1993]]. Table 40 [Addendum] also reveals that *larger* businesses ($\log_e[SAL]$ and $\log_e[EMPL]$) are controlled more *tightly*, i.e., with much emphasis on meeting the budget (BU_EMPH - one-tailed $p<0,05$), few budget revisions during the year (BU_REV - one-tailed $p<0,000$), formal budgeting policies (BU_FORM - one-tailed $p<0,05$), and intensive budget-related discussions (BU_INT - one-tailed $p<0,05$). Managers of larger businesses also seem to receive a higher variable pay (SAL_VAR - one-tailed $p<0,000$) and work with controllers who actively participate in their decision-making process (cf., more decentralization of the controllership function (SBU_CON - one-tailed $p<0,05$)).

Finally, Table 40 [Addendum] shows that the *control* and *incentive* variables have very weak or even inexistent associations with *business unit performance* (SBU_PER). This signals again the problems involved in using performance as a D.V. Clearly, control and incentive systems are but one of many stimulating as well as opposing factors of overall business unit effectiveness.

“groups” shows a higher correlation with *corporate-based incentives* (SAL_SBU) but a lower and insignificant association with *discretionary bonuses* (SAL_FOR) relative to the *size-diversity* blended variables ($\log_e(\text{AVGCS})$, *entity*, and *country*).

Table 40
CORRELATIONS BETWEEN BUDGETING, INCENTIVE, AND CONTROL STRUCTURE VARIABLES,
AND, CORPORATE SIZE, DIVERSITY, AND DECENTRALIZATION ^[1]

	$\log_e(\text{AVGCS})$ ^[2]	ENTITIES	GROUPS	COUNTRY	ENTROPY	DECENT
BU_EMPH	0,1000 (n=34) p=0,573	0,1995 (n=37) p=0,237	0,0371 (n=37) p=0,828	0,1926 (n=37) p=0,253	0,3629 (n=36) p=0,030	-0,1608 (n=37) p=0,342
BU_REV	0,0518 (n=34) p=0,771	-0,0151 (n=37) p=0,930	-0,1611 (n=37) p=0,341	0,0132 (n=37) p=0,938	-0,0689 (n=36) p=0,690	-0,0031 (n=37) p=0,985
BU_BOT	-0,1085 (n=34) p=0,541	-0,0232 (n=37) p=0,892	0,0043 (n=37) p=0,980	0,0001 (n=37) p=0,999	0,0053 (n=36) p=0,975	0,3495 (n=37) p=0,034
BU_FORM	0,3656 (n=34) p=0,033	0,4564 (n=37) p=0,005	0,2456 (n=37) p=0,143	0,4881 (n=37) p=0,002	0,3074 (n=36) p=0,068	-0,1284 (n=37) p=0,449
BU_INT	0,0814 (n=34) p=0,647	-0,0854 (n=37) p=0,615	0,1796 (n=37) p=0,287	0,0781 (n=37) p=0,646	-0,0591 (n=36) p=0,732	0,3100 (n=37) p=0,062
BU_PART	0,1875 (n=34) p=0,288	0,0821 (n=37) p=0,629	0,0358 (n=37) p=0,833	0,1515 (n=37) p=0,371	-0,1015 (n=36) p=0,556	0,3427 (n=37) p=0,038
SAL_VAR	0,2206 (n=34) p=0,210	0,2448 (n=37) p=0,144	-0,1120 (n=37) p=0,509	0,1786 (n=37) p=0,290	0,1944 (n=36) p=0,256	0,2141 (n=37) p=0,203
SAL_FOR	-0,2371 (n=33) p=0,184	-0,2503 (n=36) p=0,141	-0,0307 (n=36) p=0,859	-0,2761 (n=36) p=0,103	-0,0043 (n=35) p=0,980	0,2331 (n=36) p=0,171
SAL_SBU	-0,2130 (n=33) p=0,234	-0,1666 (n=36) p=0,332	-0,2582 (n=36) p=0,128	-0,2394 (n=36) p=0,160	-0,2044 (n=35) p=0,239	0,2482 (n=36) p=0,144
SBU_CON	0,0835 (n=29) p=0,667	-0,0058 (n=32) p=0,975	-0,0086 (n=32) p=0,963	-0,0640 (n=32) p=0,728	0,1014 (n=32) p=0,581	0,4014 (n=32) p=0,023

[1] Overall, n=37 because the data were aggregated by taking the mean of all observations per corporate parent.
Reported p-values are two-tailed.

[2] $\log_e(\text{AVGCS})$ is the log of the 3-year average of *Consolidated Sales*.

Next, Table 41 uses regression analysis to establish the empirical links between *corporate strategy* (ENTITY) and *corporate control* (TIGHT and SBU_CON[-R]). At first sight, it seems from *Model #1* that ENTITY and TIGHT are not significantly related. However, when

Model #2 is considered, a clear *quadratic relationship* is revealed between *ENTITY* and *TIGHT*. In a similar vein, Model #3 shows that there is no relationship between *ENTITY* and *SBU_CON[-R]*. Maybe, there is a curvilinear relationship between these variables too? This is investigated in Table 42, Panel A-C.

Table 41

LINEAR REGRESSIONS BETWEEN CORPORATE STRATEGY AND CORPORATE CONTROL ^[1]

#	D.V.	I.V.	β ^[2]	<i>t</i>	<i>F</i>	<i>R</i> ² ^[3]
1.	<i>TIGHT</i> ^[4]	<i>ENTITY</i>	0,043399	0,534 (<i>p</i> =0,5943)	0,28494 (<i>p</i> =0,5943)	0,00188 <i>-0,00473</i>
2.	<i>TIGHT</i>	<i>ENTITY</i>	0,787302	2,030 (<i>p</i> =0,0441)	2,06837 (<i>p</i> =0,1300)	0,02684
		<i>ENTITY</i> ²	-0,760491	-1,961 (<i>p</i> =0,0517)		<i>0,01386</i>
3.	<i>SBU_CON[-R]</i> ^{[5],[6]}	<i>ENTITY</i>	0,028902	0,280 (<i>p</i> =0,7798)	0,07859 (<i>p</i> =0,7798)	0,00084 <i>-0,00979</i>

- [1] *n*=153; *p*-values are two-tailed.
- [2] β_k is the *standardized* regression coefficient of the independent variable *K*, i.e., the regression coefficient (B_k) multiplied by the ratio of the standard deviation of *K* (S_k) to the standard deviation of the dependent variable *Y* (S_y). This results in a dimensionless coefficient which is the slope of the least-squares line when both *K* and *Y* are expressed as Z-scores. When *K* is the sole independent variable in the regression model, β_k corresponds with the *Pearson Bivariate Correlation Coefficient* between *K* and *Y* (ρ_{ky}). Moreover, squaring β_k (or ρ_{ky}) results in *R*², given that *k* is the *sole independent variable* in the regression model.
- [3] *Adjusted R*² reported in italics.
- [4] *Budget Tightness* is defined as the sum of the standardized scores on *BU_EMP*, *BU_REV*, *BU_BOT*, *BU_FOR*, and *BU_INT*, with *BU_BOT* and *BU_INT* negatively weighted.
- [5] *SBU_CON[-R]* refers to the degree of decentralization of the control structure and was recoded in order to have high scores correspond with a centralized control structure.
- [6] The model becomes stronger and the regression coefficient more significant (*p*=0,5715) if a high influence point (Case #40) is omitted from the analysis (see Appendix G). *R*² goes up to 0,00346. However, overall, the regression stays very insignificant.

All in all, from these exploratory analyses, there is little support for the hypothesized relationship between *corporate strategy* and *corporate control*. Maybe, some methodological extensions will bring more fine-grained insights?

6.2.5. Extension: Curvilinear Relationships

Panel A of Table 42 shows that the relationship between *ENTITY* and *SLACK* is definitely *linear* (cf., Table 36) but potentially *exponential*, although curvilinearity might

have been caused by outliers in this case (see footnote [4] to Panel A of Table 42). Hence, H₄ - stating that increased diversification will be associated with increased control loss - stands firm and remains strongly supported.

Table 42
CURVE ESTIMATIONS BETWEEN THE MAIN VARIABLES IN THE MODEL ^[1]
PANEL A: SLACK AS D.V.

I.V.	D.V.	Curve ^[2]	R ² ^[3]	F	p	Shape
ENTITY	SLACK ^[4]	linear	0,062	9,99	0,002	+
		exponential	0,068	11,06	0,001	)
TIGHT ^[5]	SLACK	linear	0,173	31,68	0,000	-
		quadratic	0,185	16,67	0,000	∪
		exponential	0,130	22,58	0,000	∖
SBU_CON[-R] ^{[6],[7]}	SLACK	linear	0,060	5,96	0,017	+
		quadratic	0,084	4,26	0,017	∩
		inverse	0,084	8,57	0,004	f
SAL_VAR	SLACK ^[8]	linear	0,016	2,41	0,122	-
		exponential	0,017	2,62	0,107	∖ ^[9]
SAL_FOR	SLACK	linear	0,022	2,42	0,122	-
		exponential	0,025	2,84	0,095	∖ ^[9]
SAL_SBU	SLACK	linear	0,012	1,27	0,263	-
		exponential	0,020	2,24	0,137	∖ ^[9]

[1] *n*=153; *p*-values are two-tailed. The *p*-values in this table indicate the significance of the whole regression model (*F*-test). However, for models with only one independent variable (hence, NOT for the quadratic model), the *p*-value for the whole regression model is the same as the *p*-value of the regression coefficient of that single independent variable.

[2] The curves have the following shape: linear $y=b_0+b_1x$; quadratic $y=b_0+b_1x+b_2x^2$; inverse $y=b_0+(b_1/x)$; and exponential $y=b_0(e^{b_1x})$.

[3] Compared to a linear relationship, *R*² always goes up if a quadratic curve is estimated because the latter incorporates an additional term (*x*²). However, this additional term consumes a degree of freedom so that *F* and its corresponding *p*-value is affected too. This trade-off has to be taken into account when the goodness-of-fit of different curves is evaluated.

[4] If three outliers are removed (Case #49, #140, and #142 – see Appendix G), the linear model (*R*²=0,104; *F*=17,27; *p*=0,000) becomes somewhat stronger than the exponential model (*R*²=0,097; *F*=15,96; *p*=0,000).

[5] *Budget tightness* is defined as the sum of the standardized scores on *BU_EMP*, *BU_REV*, *BU_BOT*, *BU_FOR*, and *BU_INT*, with *BU_BOT* and *BU_INT* negatively weighted.

[6] *SBU_CON[-R]* refers to the degree of decentralization of the control structure and was recoded in order to have high scores correspond with a centralized control structure.

[7] The same conclusions are reached if a high influence point (Case #49) and a high leverage point (Case #40) are omitted (see Appendix G): all three models become somewhat less strong but the inverse model stays the best.

[8] The same conclusions as to the choice of model are reached if a high influence point (Case #49) and two high leverage points (Case #87 and #151) are omitted (see Appendix G). However, the models become less significant (exponential model: *R*²=0,011; *F*=1,71; *p*=0,193).

[9] If *SAL_VAR*, *SAL_FOR*, and *SAL_SBU* are reverse-coded, then the relationship becomes positive exponential, i.e., ∪.

Similarly, the relationship between *TIGHT* and *SLACK* seems to be strongest when captured by a straight line. However, the relationship between *SBU_CON[-R]* and *SLACK* improves considerably when caught by an *inverse curve*, a result which is robust even when outliers are omitted (see footnote [7] to *Panel A* of Table 42). In addition, the relationships between the *incentive variables* (*SAL_VAR*, *SAL_SBU*, and *SAL_FOR*) and *SLACK* become (borderline) significant when an *exponential curve* is fitted (cf., Table 39). All in all, *H₃ - stating that tight controls, decentralization of the control structure, and SBU-based and formula-based incentives will be associated with increased control loss - remains contradicted.*

Panel B of Table 42 shows that *ENTITY* and *AVGROC* are best related by an *inverse curve* (with weak significance, $p=0,138$). This is a very interesting finding because it seemed, at first sight, that the relationship between *ENTITY* and *AVGROC* is negative. However, when looked at it more carefully, it appears that growth in *size* and *diversity* can add value (i.e., increasing performance) although it tones down after a certain threshold. *ENTITY* also shows an *inverse* relationship with *TIGHT* and *SBU_CON[-R]* (weak though - $p=0,279$). Finally, *ENTITY* shows no significant relationship with *SAL_VAR* or *SAL_SBU*, whichever curve is fitted, but the relationship between *ENTITY* and *SAL_FOR* is significantly negative and linear. Hence, *H₁ is supported partly in the sense that increased diversification leads to tighter controls; it is not supported in its other two parts because increased diversification is associated with more centralization of the controllership function and less formula-based (and less SBU-based) incentives.*

Table 42 (Continued)
CURVE ESTIMATIONS BETWEEN THE MAIN VARIABLES IN THE MODEL ^[1]
PANEL B: ENTITY AS I.V.

I.V.	D.V.	Curve ^[2]	R ² ^[3]	F	p	Shape
ENTITY	AVGROC ^{[4],[5]}	linear	0,008	1,11	0,294	-
		quadratic	0,013	0,90	0,411	∩
		inverse	0,016	2,23	0,138	∪
ENTITY	TIGHT ^[6]	linear	0,002	0,28	0,594	+
		quadratic	0,027	2,07	0,130	∩
		inverse	0,032	5,04	0,026	∪
ENTITY	SBU_CON[-R] ^{[7],[8]}	linear	0,001	0,08	0,780	+
		quadratic	0,007	0,33	0,722	∩
		inverse	0,012	1,18	0,279	∪
ENTITY	SAL_VAR ^[9]	linear	0,003	0,44	0,510	-
		quadratic	0,014	1,04	0,357	∩
ENTITY	SAL_FOR	linear	0,188	25,29	0,000	- ^[10]
ENTITY	SAL_SBU	linear	0,003	0,37	0,546	-
		quadratic	0,023	1,30	0,278	∩

- [1] $n=153$; p -values are two-tailed. The p -values in this table indicate the significance of the whole regression model (F -test). However, for models with only one independent variable (hence, NOT for the quadratic model), the p -value for the whole regression model is the same as the p -value of the regression coefficient of that single independent variable.
- [2] The curves have the following shape: linear $y=b_0+b_1x$; quadratic $y=b_0+b_1x+b_2x^2$; inverse $y=b_0+(b_1/x)$; and exponential $y=b_0(e^{b_1x})$.
- [3] Compared to a linear relationship, R^2 always goes up if a quadratic curve is estimated because the latter incorporates an additional term (x^2). However, this additional term consumes a degree of freedom so that F and its corresponding p -value is affected too. This trade-off has to be taken into account when the goodness-of-fit of different curves is evaluated.
- [4] AVGROC is the 3-year average of *Corporate Return on Capital*.
- [5] The same conclusions (but with different levels of significance) are reached if the analysis is done on the aggregated file ($n=37$ – after all, both *Entity* and *AVGROC* are corporate level variables) and if two outliers in terms of the number of entities are removed from the analysis (notably, *Solvay* with 174 and *Tractebel* with 150 entities).
- [6] *Budget tightness* is defined as the sum of the standardized scores on *BU_EMP*, *BU_REV*, *BU_BOT*, *BU_FOR*, and *BU_INT*, with *BU_BOT* and *BU_INT* negatively weighted.
- [7] *SBU_CON[-R]* refers to the degree of decentralization of the control structure and was recoded in order to have high scores correspond with a centralized control structure.
- [8] The same conclusions as to the choice of model are reached if a high influence point (*Case #40*) is omitted (see Appendix G): all three models become more strong but the *inverse model* stays the best ($R^2=0,015$; $F=1,44$; $p=0,233$). Nonetheless, the regression stays insignificant.
- [9] The *linear model* becomes the best if two high influence points (*Case #87* and *#151*) are omitted (see Appendix G): $R^2=0,010$; $F=1,44$; $p=0,232$ for the *linear model* compared to $R^2=0,012$; $F=0,88$; $p=0,417$ for the *quadratic model*.
- [10] The linear relationship between *Entity* and *SAL_FOR* is very significant and its significance cannot be improved by alternative non-linear curve estimations.

Finally, as an addendum, *Panel C* of Table 42 shows the relationships of the main variables in the model with “ultimate” corporate performance (AVGROC) as the D.V. instead of SLACK. Except for the interesting direct *inverse relationship* between *ENTITY* and

AVGROC (which has been discussed above), most other links appear (highly) insignificant. However, it is noteworthy how much the relationship between SLACK and AVGROC improves if a *quadratic curve* ($\cap$) is fitted. Very tentatively, this suggests that *slack* is not necessarily “*dysfunctional*” across the line as long as it can be contained within bounds [Jaworski and Young, 1992; Milgrom and Roberts, 1992].

Table 42 (Continued)
CURVE ESTIMATIONS BETWEEN THE MAIN VARIABLES IN THE MODEL ^[1]
PANEL C: AVERAGE ROC AS D.V.

I.V.	D.V.	Curve ^[2]	R ² ^[3]	F	p	Shape
ENTITY	AVGROC ^{[4],[5]}	linear	0,008	1,11	0,294	-
		quadratic	0,013	0,90	0,411	$\cap$
		inverse	0,016	2,23	0,138	$\cup$
SLACK	AVGROC	linear	0,000	0,00	0,973	+
		quadratic	0,011	0,78	0,462	$\cap$
TIGHT ^[6]	AVGROC	linear	0,001	0,12	0,727	+
		quadratic	0,009	0,64	0,528	$\cap$
SBU_CON[-R] ^[7]	AVGROC	linear	0,023	2,20	0,142	+
SAL_VAR	AVGROC	linear	0,000	0,00	0,994	+ ^[8]
SAL_FOR	AVGROC	linear	0,006	0,58	0,448	+ ^[8]
SAL_SBU	AVGROC	linear	0,005	0,54	0,465	+ ^[8]

- [1] $n=153$; p -values are two-tailed. The p -values in this table indicate the significance of the whole regression model (F -test). However, for models with only one independent variable (hence, NOT for the quadratic model), the p -value for the whole regression model is the same as the p -value of the regression coefficient of that single independent variable.
- [2] The curves have the following shape: linear $y=b_0+b_1x$; quadratic $y=b_0+b_1x+b_2x^2$; inverse $y=b_0+(b_1/x)$; and exponential $y=b_0(e^{b_1x})$.
- [3] Compared to a linear relationship, R^2 always goes up if a quadratic curve is estimated because the latter incorporates an additional term (x^2). However, this additional term consumes a degree of freedom so that F and its corresponding p -value is affected too. This trade-off has to be taken into account when the goodness-of-fit of different curves is evaluated.
- [4] AVGROC is the 3-year average of Corporate Return on Capital.
- [5] The same conclusions (but with different levels of significance) are reached if the analysis is done on the aggregated file ($n=37$ -- after all, both *Entity* and AVGROC are corporate level variables) and if two outliers in terms of the number of entities are removed from the analysis (notably, *Solvay* with 174 and *Tractebel* with 150 entities).
- [6] *Budget tightness* is defined as the sum of the standardized scores on BU_EMP, BU_REV, BU_BOT, BU_FOR, and BU_INT, with BU_BOT and BU_INT negatively weighted.
- [7] SBU_CON[-R] refers to the degree of decentralization of the control structure and was recoded in order to have high scores correspond with a centralized control structure.
- [8] The relationship between *incentive variables* and *performance* is completely insignificant and non-linear curve estimations do not improve the strength of association.

6.2.6. Conclusions as to H_1 , H_3 , and H_4 taken Separately - A Fragmented View

First, there is strong support for H_4 stating that *increased diversification will be associated with increased control loss*, where *diversification strategy* is captured by a size-diversity blended measure (*ENTITY*) and *control loss* by *SLACK*.

Second, H_1 and H_3 articulated the relationship between *diversification strategy* and *corporate control*, and, between *corporate control* and *control loss*, respectively. However, *corporate control* turned out empirically as “tight control” characterized by much formality, much emphasis on meeting the budget, few budget revisions during the year, detailed line-item budget follow-ups, and highly intensive and interactive budgeting discussions. Hence, H_1 and H_3 should be re-stated as follows:

H_1 : *Increased diversification will be associated with a greater emphasis on tight controls, more formula-based and SBU-based incentives; and more decentralization of the controllership function;*

and,

H_3 : *A greater emphasis on tight controls, formula-based and SBU-based incentives; and decentralization of the controllership function will be associated with more control loss.*

As to H_3 , strong associations were found between *corporate control* and *control loss*, but contrary to the predicted direction. Specifically, *tight controls*, (*formula-based and SBU-based incentives*), and *decentralization of the controllership function* are negatively associated with *slack*. This suggests that *tight controls* which are implemented in cooperative, service-oriented way (cf., *decentralization of the controllership function*) and the achievement of which translates directly into individual and formula-based incentives (cf., *formula-based and SBU-based incentives*) reduce *slack*. Hence both *economic* and *behavioral* forces are at play. First, from an *economic* viewpoint, *tight controls* increase the information processing capacity of corporate management and, as a result, increase the cost to business unit managers to behave opportunistically. Second, from a *behavioral* standpoint, using *tight*

controls in a cooperative way where the business unit controller is actively involved in the local decision-making process (cf., *decentralization of the controllership function*) can avoid a feeling of distrust and, consequentially, opportunistic behavior by business managers.

Third, as to H_1 , only weak associations could be established between *corporate strategy* and *corporate control*, except for *tight controls*. Indeed, as predicted, *increased diversification* is strongly associated with *tighter controls*. However, some associations were covered up by *curvilinearity*, as shown in Figure 5. This figure also invites to take an *integrative view* on the relationships between *corporate strategy*, *corporate control*, and *control loss*.

Figure 5
EMPIRICAL MODEL

6.2.7. *An Integrated View on the Interactive Effects of Corporate Strategy and Corporate Control on Control Loss*

First, in line with H_4 , Figure 5 suggests that *increased size and diversification* are clearly associated with *slack*, and probably in an *exponential way*. *Increased size and diversification* are also associated with *tighter controls*, as was predicted by H_1 . However, *tight controls* reduce *slack*. Hence, increased slack caused by larger *size* and more *diversification* seems to be kept under control through the implementation of elaborate and tight control arrangements. This seemingly is in contradiction with H_3 which predicted that *tighter controls* would further induce rather than *decrease slack* (based on the *behavioral consequences of "management-by-the-numbers"*). Hence, *economic, information-processing advantages of tighter controls* overrule *behavioral consequences*. However, if curvilinearity is taken into account too, then it seems that if *size and diversification* pass a certain threshold, the *diversification strategy* itself induces more slack than that can reasonably be contained through the implementation of *tight(er) controls*. Indeed, as can be seen from Figure 5, there appears to be a ceiling to the degree of tightness of control systems (cf., "*"*"-shape of the relationship between *corporate size and diversification* and *control tightness*), whereas slack creation does not seem to gear down with increased size and diversification (cf., "*"*"-shape of the relationship between *corporate size and diversification* and *slack*). This interpretation supports and gathers up the threads behind H_1 , H_3 , and H_4 taken collectively (cf., *integrated view*).

As aforementioned, and as shown in Figure 5, only weak links could be established between *corporate size and diversification* and the *degree of centralization of the controllership function*. Nonetheless, it seems that increased *size and diversification* are associated with more *centralized control*, i.e., with a shift from the *management-service responsibility* of the business-unit controller to the *financial reporting and internal control responsibility* [Sathe, 1983, 1982]. Clearly, top management in large, diversified firms wants to regain "control" over their business units through the installation of a *solid-line*

relationship between the corporate and business unit controller. However, this is only an *illusion of control* since more *centralized control* seems to lead to more *slack*. In short, leaving the business unit managers on the sideline and putting a heavier emphasis on the control-responsibility of the business unit controller induces rather than decreases slack. This again is in line with the theoretical argumentation behind the relationships between *corporate strategy*, *corporate control*, and *control loss*, although the relationship was expected to hold for *decentralized control* instead of *centralized control*. However, in this respect, it is interesting to observe that a positive control atmosphere with an active involvement of the controlled party, i.e., the business unit manager, is associated with less dysfunctional behavior compared to situations where the business unit manager is looked over the shoulder from the top down.

A same line of argument can be derived as to the *incentive variables* (although with weak significance). To regain control, top management in large, diversified companies is inclined to make bonuses more *corporate-based* and less *formula-based*. However, such incentive policies seem to have adverse effects on *slack*.

All in all, the data suggest that top management of large, diversified firms installs a *control structure* and implements *incentive policies* which cannot offset the increased *slack* caused by the growth and diversification strategy. Only *tighter controls* seem to be able to do the job initially, but very likely up to a certain point only.

Some additional analyses were performed to dig further into the (interactive) relationship between *corporate size and diversification*, *control and incentive systems*, and *control loss*. Hereto, the correlations between *control and incentive variables* and *slack* were performed on split samples. Panel A of Table 43 reports the results for the sample split on

“size,” notably, the *number of entities* and *consolidated sales*; Panel B for the sample split on “diversity,” i.e., the *number of groups* and *entropy*; and Panel C for the sample split according to the diversification categories as defined by Varadarajan and Ramanujam (V&R) [1987].

Panel A of Table 43 clearly illustrates that the relationship between the *control* and *incentive variables*, on the one hand, and *slack*, on the other hand, is different for large and small firms. Overall, *slack* is associated with *loose controls* (see also Table 37, p.172), i.e., little emphasis on meeting the budget (*BU_EMPH*), many budget revisions during the year (*BU_REV*), an eye-ball follow-up of the bottom-line budget result only (*BU_BOT*), informal budgeting policies (*BU_FORM*), and diagnostic budget-related communications (*BU_INT*). However, Panel A of Table 43 shows that this relationship is stronger for larger firms, i.e. for firms with many units (large consolidated sales) compared to firms with few units (small consolidated sales).¹²¹ This is completely consistent with the *integrative view* developed above.

Moreover, Table 43 shows that *budget participation* (*BU_PART*) has no appreciable association with *slack* in small firms, but it becomes positive and reasonably significant in large firms. This confirms the well-established trade-off or controversy on *budget participation*. On the one hand, *participation* is a necessity for corporate managers of large, diversified firms to elicit information about the businesses. On the negative side, however, *budget participation* gives business unit managers an opportunity to fool their superiors as to the difficulty of their budget targets.

¹²¹ This does not hold for only one variable, notably, *bottom-line control* (*BU_BOT*) if the sample is split on the *number of entities* (it still holds for *BU_BOT* if the sample is split on *consolidated sales*) [see Table 43, Panel A].

In addition, implementation of *variable pay schemes* (SAL_VAR) seems to have a (somewhat) stronger impact on slack reduction in larger firms. And, *formula-based* (SAL_FOR) and *SBU-based* (SAL_SBU) incentives have opposite effects in large and small firms: *formula-based* {*SBU-based*} incentives reduce {increase} slack in large firms, whereas they increase {decrease} slack in small firms.¹²² Phrased differently, large firms seem to benefit from *objectively determined, corporate-based incentives*, whereas small firms benefit from *subjectively determined, SBU-based incentives* to fight slack. This combination makes sense. On the one hand, *corporate-based incentives* foster greater *cooperation* and a *sense of unity* among business unit managers of large firms. However, corporate managers of large organizations probably have too little knowledge about business unit operations and effectiveness in order to be able to determine bonuses on the basis of subjective criteria. In small firms, on the other hand, corporate superiors are familiar enough with the businesses to be able (i) to determine bonuses in a subjective way, and, (ii) to stimulate cooperation among business units directly rather than through the implementation of corporate-based incentives.

Finally, although *decentralization of the controllership function* (SBU_CON) exhibits the characteristic to reduce *slack*, this effect seems to fade in large firms.

In sum, it seems that larger firms invest in formal control and incentive systems to increase the information processing capacity at the top and to reduce slack at the business unit level. In addition, it seems also important to devote attention to the way in which the formal controls are implemented or used, e.g., through participation in budget setting and involvement of business unit managers in the control process. However, as firms grow larger and more diversified, the effectiveness of formal controls and incentives levels off and the behavioral benefits of a positive control atmosphere fade.

¹²² Sometimes, these results exhibit pretty low significance, but in this kind of exploratory analysis on split samples it is the *difference in correlations* which is of primary interest.

Table 43
CORRELATIONS BETWEEN CONTROL CHARACTERISTICS VARIABLES
AND SLACK FOR FULL AND SPLIT SAMPLE ^[1]

PANEL A Split on "Size"	SLACK				Total Sample
	Few Entities	Many Entities	Small Sales	Large Sales	
BU_EMPH	-0,5317 (n=18) p=0,023	-0,8676 (n=19) p=0,000	-0,3733 (n=18) p=0,127	-0,7766 (n=19) p=0,000	-0,6078 (n=37) p=0,000
BU_REV	-0,5539 (n=18) p=0,017	-0,6890 (n=19) p=0,001	-0,5036 (n=18) p=0,033	-0,6486 (n=19) p=0,003	-0,6008 (n=37) p=0,000
BU_BOT	0,2926 (n=18) p=0,239	0,0326 (n=19) p=0,895	0,0231 (n=18) p=0,927	0,3412 (n=19) p=0,153	0,1844 (n=37) p=0,275
BU_FORM	-0,0779 (n=18) p=0,759	-0,4928 (n=19) p=0,032	0,2062 (n=18) p=0,412	-0,5660 (n=19) p=0,012	-0,1829 (n=37) p=0,278
BU_INT	0,4117 (n=18) p=0,090	0,4582 (n=19) p=0,049	0,3544 (n=18) p=0,149	0,4628 (n=19) p=0,046	0,4145 (n=37) p=0,011
BU_PART	-0,0539 (n=18) p=0,832	0,5627 (n=19) p=0,012	0,0789 (n=18) p=0,756	0,2369 (n=19) p=0,329	0,1741 (n=37) p=0,303
SAL_VAR	-0,2821 (n=18) p=0,257	-0,3335 (n=19) p=0,163	-0,2107 (n=18) p=0,401	-0,3976 (n=19) p=0,092	-0,2696 (n=37) p=0,107
SAL_FOR	0,0514 (n=17) p=0,845	-0,1565 (n=19) p=0,522	0,2647 (n=18) p=0,288	-0,3655 (n=18) p=0,136	-0,0716 (n=36) p=0,678
SAL_SBU	-0,1226 (n=17) p=0,639	0,2085 (n=19) p=0,392	-0,2017 (n=18) p=0,422	0,2110 (n=18) p=0,401	-0,0100 (n=36) p=0,954
SBU_CON	-0,6497 (n=15) p=0,009	-0,2620 (n=17) p=0,310	-0,6707 (n=16) p=0,004	-0,2126 (n=16) p=0,429	-0,5162 (n=32) p=0,002

[1] Overall, $n=37$ because the data were aggregated by taking the mean of all observations per corporate parent. The sample was split at the median for the variables *Entity* and $\log_e(AVGCS)$, respectively. Reported p -values are two-tailed.

The same conclusions extend to *Panel B* of Table 43 if the sample is split on the *number of groups* (the results are even somewhat stronger and the conclusion also holds for *BU_BOT*, cf., footnote 121, p.193).¹²³ Again, the results are inconsistent and counter-intuitive if the sample is split on *entropy*, and this for the reasons discussed above (see footnote 114, p.169).

¹²³ The difference in correlations is larger than 0,30 in 8 of the 10 relationships considered.

Table 43 (Continued)
CORRELATIONS BETWEEN CONTROL CHARACTERISTICS VARIABLES
AND SLACK FOR FULL AND SPLIT SAMPLE^[1]

PANEL B <i>Split on "Diversity"</i>	SLACK				Total Sample
	<i>Few Groups</i>	<i>Many Groups</i>	<i>Low Entropy</i>	<i>High Entropy</i>	
<i>BU_EMPH</i>	-0,3291 (n=18) p=0,182	-0,8256 (n=19) p=0,000	-0,6721 (n=18) p=0,002	-0,3864 (n=19) p=0,102	-0,6078 (n=37) p=0,000
<i>BU_REV</i>	-0,5659 (n=18) p=0,014	-0,6199 (n=19) p=0,005	-0,5908 (n=18) p=0,010	-0,6729 (n=19) p=0,002	-0,6008 (n=37) p=0,000
<i>BU_BOT</i>	-0,0246 (n=18) p=0,923	0,3626 (n=19) p=0,127	0,4830 (n=18) p=0,042	-0,2843 (n=19) p=0,238	0,1844 (n=37) p=0,275
<i>BU_FORM</i>	0,1982 (n=18) p=0,430	-0,5637 (n=19) p=0,012	-0,3076 (n=18) p=0,214	0,2836 (n=19) p=0,239	-0,1829 (n=37) p=0,278
<i>BU_INT</i>	0,1984 (n=18) p=0,430	0,5284 (n=19) p=0,020	0,5651 (n=18) p=0,015	0,0993 (n=19) p=0,686	0,4145 (n=37) p=0,011
<i>BU_PART</i>	0,0194 (n=18) p=0,939	0,2773 (n=19) p=0,250	0,1178 (n=18) p=0,641	0,2870 (n=19) p=0,234	0,1741 (n=37) p=0,303
<i>SAL_VAR</i>	-0,0369 (n=18) p=0,884	-0,4458 (n=19) p=0,056	-0,1104 (n=18) p=0,663	-0,4123 (n=19) p=0,079	-0,2696 (n=37) p=0,107
<i>SAL_FOR</i>	0,1695 (n=18) p=0,501	-0,3207 (n=18) p=0,194	0,1145 (n=17) p=0,662	-0,3151 (n=19) p=0,189	-0,0716 (n=36) p=0,678
<i>SAL_SBU</i>	-0,1921 (n=18) p=0,445	0,1798 (n=18) p=0,475	0,3986 (n=17) p=0,113	-0,6395 (n=19) p=0,003	-0,0100 (n=36) p=0,954
<i>SBU_CON</i>	-0,6936 (n=16) p=0,003	-0,1403 (n=16) p=0,604	-0,3083 (n=14) p=0,284	-0,6785 (n=18) p=0,002	-0,5162 (n=32) p=0,002

[1] Overall, n=37 because the data were aggregated by taking the mean of all observations per corporate parent. The sample was split at the median for the variables *Groups* and *Entropy*, respectively. Reported p-values are two-tailed.

The data are split in 4 categories based on *Varadarajan and Ramanujam (V&R)* in Panel C of Table 43. This way of presenting the data tentatively shows that *slack*, on the one hand, and, *control and incentive systems*, on the other hand, are associated in a *curvilinear* way as *diversification* increases from very low (related) to very high (unrelated). This seems to hold fairly well for most variables, except for *BU_INT*, *SAL_FOR*, and *SAL_SBU*.

Table 43 (Continued)
CORRELATIONS BETWEEN CONTROL CHARACTERISTICS VARIABLES
AND SLACK FOR FULL AND SPLIT SAMPLE ^[1]

PANEL C <i>Split on "V&R"</i>	SLACK				Total Sample
	Cell A ^[2]	Cell B ^[2]	Cell C ^[2]	Cell D ^[2]	
<i>BU_EMPH</i>	-0,2822 (<i>n</i> =10) <i>p</i> =0,430	-0,6875 (<i>n</i> =11) <i>p</i> =0,019	-0,8866 (<i>n</i> =8) <i>p</i> =0,003	-0,3827 (<i>n</i> =8) <i>p</i> =0,349	-0,6078 (<i>n</i> =37) <i>p</i> =0,000
<i>BU_REV</i>	-0,4436 (<i>n</i> =10) <i>p</i> =0,199	-0,5915 (<i>n</i> =11) <i>p</i> =0,055	-0,8081 (<i>n</i> =8) <i>p</i> =0,015	-0,4414 (<i>n</i> =8) <i>p</i> =0,274	-0,6008 (<i>n</i> =37) <i>p</i> =0,000
<i>BU_BOT</i>	-0,0147 (<i>n</i> =10) <i>p</i> =0,968	0,6517 (<i>n</i> =11) <i>p</i> =0,030	0,4009 (<i>n</i> =8) <i>p</i> =0,325	-0,1443 (<i>n</i> =8) <i>p</i> =0,733	0,1844 (<i>n</i> =37) <i>p</i> =0,275
<i>BU_FORM</i>	0,0562 (<i>n</i> =10) <i>p</i> =0,877	-0,2060 (<i>n</i> =11) <i>p</i> =0,543	-0,8490 (<i>n</i> =8) <i>p</i> =0,008	0,0872 (<i>n</i> =8) <i>p</i> =0,837	-0,1829 (<i>n</i> =37) <i>p</i> =0,278
<i>BU_INT</i>	0,4011 (<i>n</i> =10) <i>p</i> =0,251	0,2144 (<i>n</i> =11) <i>p</i> =0,527	0,6704 (<i>n</i> =8) <i>p</i> =0,069	0,3230 (<i>n</i> =8) <i>p</i> =0,435	0,4145 (<i>n</i> =37) <i>p</i> =0,011
<i>BU_PART</i>	-0,4176 (<i>n</i> =10) <i>p</i> =0,230	-0,0714 (<i>n</i> =11) <i>p</i> =0,835	0,7358 (<i>n</i> =8) <i>p</i> =0,037	0,1359 (<i>n</i> =8) <i>p</i> =0,748	0,1741 (<i>n</i> =37) <i>p</i> =0,303
<i>SAL_VAR</i>	-0,0607 (<i>n</i> =10) <i>p</i> =0,868	-0,1825 (<i>n</i> =11) <i>p</i> =0,591	-0,5313 (<i>n</i> =8) <i>p</i> =0,175	-0,4466 (<i>n</i> =8) <i>p</i> =0,267	-0,2696 (<i>n</i> =37) <i>p</i> =0,107
<i>SAL_FOR</i>	-0,1819 (<i>n</i> =10) <i>p</i> =0,615	0,1784 (<i>n</i> =11) <i>p</i> =0,600	-0,6807 (<i>n</i> =7) <i>p</i> =0,092	-0,1585 (<i>n</i> =8) <i>p</i> =0,708	-0,0716 (<i>n</i> =36) <i>p</i> =0,678
<i>SAL_SBU</i>	-0,2949 (<i>n</i> =10) <i>p</i> =0,408	0,2575 (<i>n</i> =11) <i>p</i> =0,445	0,0454 (<i>n</i> =7) <i>p</i> =0,923	0,3231 (<i>n</i> =8) <i>p</i> =0,435	-0,0100 (<i>n</i> =36) <i>p</i> =0,954
<i>SBU_CON</i>	-0,6582 (<i>n</i> =7) <i>p</i> =0,108	-0,5924 (<i>n</i> =11) <i>p</i> =0,055	-0,3279 (<i>n</i> =6) <i>p</i> =0,526	0,0079 (<i>n</i> =8) <i>p</i> =0,985	-0,5162 (<i>n</i> =32) <i>p</i> =0,002

[1] Overall, *n*=37 because the data were aggregated by taking the mean of all observations per corporate parent. Reported *p*-values are two-tailed.

[2] *Varadarajan and Ramanujani (V&R)* defined *Cell A* as firms with very low diversity; *Cell B* as related diversified firms; *Cell C* as unrelated diversified firms; and *Cell D* as firms with very high diversity.

In sum, the strongest results from Table 43 confirm that as firms grow *larger* and more *diversified*, they rely on *tighter controls* and *formal, corporate-based incentives* if *slack* is to be contained. However, these effects seem to tone down as firms grow too large or too diversified (cf., curvilinear relationship).

The same “data-split” analysis as reported in Table 43 for *slack* could be performed for *myopia*, *earnings management*, and eventually *corporate performance* too. However, Table 37 (p.172) showed relatively weak associations between these variables and the *control* and *incentive* variables, and, splitting the data did not lead to any stronger findings. Therefore, these tables are not reported here.

Hence, as predicted, there does not seem to be a true *contingency relationship* between *corporate strategy* and *corporate control*. This is formally tested next in Table 44.

6.2.8. A Contingency View on the Interactive Effects of Corporate Strategy and Control

Recall that a *contingency view* on the relationship between *corporate strategy* and *corporate control* implies that the combinations “*high diversification - tight controls*” vs. “*low diversification - loose controls*” are both desirable “fits” and lead to less *control loss*. This is

shown in Figure 6. However, contrary to this premise, this study maintains that the combination “high diversification - tight controls” will lead to more control loss than the combination “low diversification - loose controls” (cf., H_3 and H_4 combined).

Table 44
INTERACTION EFFECTS BETWEEN CORPORATE STRATEGY, CONTROL AND CONTROL LOSS ^[1]

#	D.V.	I.V.	β ^[1]	t	F	R^2 ^[2]
1.	SLACK	ENTITY	0,267649	3,769 ($p=0,0002$)	24,32502 ($p=0,0000$)	0,24490 0,23484
		LOOSE ^[3]	0,428031	6,027 ($p=0,0000$)		
1'.	SLACK	ENTITY	0,265075 ^[4]	3,721 ($p=0,0003$)	16,31338 ($p=0,0000$)	0,24725 0,23209
		LOOSE	0,385160	4,055 ($p=0,0001$)		
		ENTITY x LOOSE	0,064644	0,681		
			0,001236 ^[5]	($p=0,4968$)		
2.	SLACK	ENTITY	0,204381	2,078 ($p=0,0404$)	5,24409 ($p=0,0070$)	0,10135 0,08202
		SBU_CON[-R] ^[6]	0,238244	2,423 ($p=0,0173$)		
2'.	SLACK	ENTITY	0,635543	1,681 ($p=0,0962$)	3,97562 ($p=0,0103$)	0,11476 0,08590
		SBU_CON	0,345820	2,583 ($p=0,0114$)		
		ENTITY x SBUCON[-R]	-0,462136	-1,181		
			-0,001224	($p=0,2407$)		

[1] $n=153$; p -values are two-tailed; and β are the standardized regression coefficients.
 [2] Adjusted R^2 reported in italics.
 [3] Budget Tightness is defined as the sum of the standardized scores on BU_EMP, BU_REV, BU_BOT, BU_FOR, and BU_INT, with BU_BOT and BU_INT negatively weighted. For the sake of interpretation, the opposite of Budget Tightness, “LOOSE,” can be defined as the sum of the standardized scores on BU_EMP, BU_REV, BU_BOT, BU_FOR, and BU_INT, but this time with BU_EMP, BU_REV, and BU_FOR negatively weighted. Of course, the regression output is the same except for the sign of the regression coefficient and its corresponding t -value.
 [4] The information in the shaded area should be regarded as essentially meaningless. To learn about the nature of the main effects, one should rely on the regression equation without interaction term (cf., footnote 124).
 [5] Figures in bold and italics report the unstandardized regression coefficient of the interaction term (cf., footnote 124).
 [6] SBU_CON[-R] refers to the degree of decentralization of the control structure and was recoded in order to have high scores correspond with a centralized control structure.

Following the arguments of Schoonhoven [1981], Brownell [1982a], Govindarajan and Gupta [1985], and Aguinis [1995], the most appropriate method to test a contingency relationship is through an interaction term in the regressions. However, testing and

interpreting interactions in regression analysis is problematic and has led to considerable confusion [Aiken and West, 1991].¹²⁴

Table 44 (Continued)
INTERACTION EFFECTS BETWEEN *CORPORATE STRATEGY*, *INCENTIVES* AND *CONTROL LOSS* [1]

#	D.V.	I.V.	β [1]	<i>t</i>	<i>F</i>	<i>R</i> ² [2]
3.	SLACK	ENTITY	0,243046	3,090 (<i>p</i> =0,0024)	6,04842 (<i>p</i> =0,0030)	0,07463 <i>0,06229</i>
		SAL_VAR	-0,1112366	-1,429 (<i>p</i> =0,1552)		
3'.	SLACK	ENTITY	0,244152 [3]	2,164 (<i>p</i> =0,0321)	4,00547 (<i>p</i> =0,0089)	0,07463 <i>0,05600</i>
		SAL_VAR	-0,111405	-1,056 (<i>p</i> =0,2928)		
		ENTITY x SAL_VAR	-0,001789 -0,000006 [4]	-0,014 (<i>p</i> =0,9891)		
4.	SLACK	ENTITY	0,276664	2,706 (<i>p</i> =0,0079)	4,94414 (<i>p</i> =0,0088)	0,08388 <i>0,06691</i>
		SAL_FOR	-0,027420	-0,268 (<i>p</i> =0,7890)		
4'.	SLACK	ENTITY	0,243015	1,816 (<i>p</i> =0,0722)	3,32140 (<i>p</i> =0,0226)	0,08519 <i>0,05954</i>
		SAL_FOR	-0,061571	-0,437 (<i>p</i> =0,6484)		
		ENTITY x SAL_FOR	0,051117 -0,000077	0,392 (<i>p</i> =0,6961)		
5.	SLACK	ENTITY	0,283299	3,084 (<i>p</i> =0,0026)	5,43809 (<i>p</i> =0,0056)	0,09149 <i>0,07467</i>
		SAL_SBU	-0,090836	-0,989 (<i>p</i> =0,3250)		
5'.	SLACK	ENTITY	0,225394	0,916 (<i>p</i> =0,3618)	3,61546 (<i>p</i> =0,0156)	0,09204 <i>0,06658</i>
		SAL_SBU	-0,113204	-0,887 (<i>p</i> =0,3770)		
		ENTITY x SAL_SBU	0,065189 -0,000054	0,254 (<i>p</i> =0,8001)		

[1] *n*=153; *p*-values are two-tailed; and β are the standardized regression coefficients.

[2] *Adjusted R*² reported in italics.

[3] The information in the shaded area should be regarded as essentially meaningless. To learn about the nature of the main effects, one should rely on the regression equation without interaction term (cf., footnote 124).

[4] Figures in bold and italics report the *unstandardized regression coefficient* of the interaction term (cf., footnote 124).

¹²⁴ One of the problems is that simply rescaling by additive constants, which has no effect in regressions without interaction, has a profound effect on the regression coefficients when an interaction is introduced in the regression equation. Hence, the coefficients of the main effects in the regression with interactions become basically meaningless because they can be made zero through rescaling. What remains invariant to rescaling in the regression with interaction is the *unstandardized regression coefficient of the interaction term, its level of significance, and the *R*² and overall *F*-ratio for the whole equation itself*. [Aiken and West, 1991: 29; Govindarajan and Gupta, 1985: 60]. In sum, the regression with interaction is only useful to learn about the significance and nature of the interaction but not about the nature of their main effects [Govindarajan and Gupta, 1985: 60].

As can be seen from Table 44, none of the interactions are significant and R^2 hardly increases, if at all, from the base regressions to the regressions with interaction. This suggests, for instance, that *tighter controls reduce slack, regardless of corporate strategy*. Put differently, it is not so that reduced slack is observed in *large or diversified firms with tight controls*, and, in *small or less diversified firms with loose controls* (cf., Figure 6). Or, similarly, it cannot be stated that large, diversified firms benefit from tighter controls because it helps to contain slack, whereas, if implemented in smaller and less diversified firms, tight controls would exhibit adverse effects on slack. Of course, it should be noted that the smallest firms in this sample are still pretty large (cf., Table 3, p.56, and Appendix [A.6]). In addition, it is often problematic to detect interaction effects on relatively small samples [Aguinis, 1995: 1147]. However, the results Table 44 are so insignificant that one can be reasonably affirmative about the absence of any contingency relationship.

6.2.9. Additional Test for the Control Loss Hypothesis

Recall from the theoretical part that it was argued that there would be some evidence of *control loss* if the data reveal that the business units in diversified companies have an equal or better record of meeting their budget but show lower performance nonetheless than the business units in less diversified firms. The idea behind this argument is that a good record of achieving the budget signals to the top that the business units are performing well, although, in actuality, their performance is not as good as it could be. Table 45 provides pretty solid evidence in this direction.

Specifically, Table 45 illustrates that business units in large, diversified firms have a better record of *meeting the budget* than those in small and less diversified companies. However, the former experience more *tight controls* and more *budget emphasis* from the top too. Nonetheless, they show more *slack* and inferior *performance* compared to their small and less diversified counterparts. In sum, despite tight controls and high effectiveness in

achieving the budget, diversified firms generally show more slack and inferior performance. In other words, despite inferior performance *levels*, business units in diversified firms show fewer negative budgeting *variances* [cf. Hirst and Yetton, 1995].

Table 45
DIFFERENCE IN MEANS FOR SPLIT SAMPLE
TO TEST FOR “CONTROL LOSS HYPOTHESIS” [1]

	ENTITIES [2]	V&R [3]
BUDGET ACHIEVEMENT	$\mu=0,5505$ [4] $\eta=0,6997$ [4] $p=0,115$	$\mu=0,6487$ $\eta=0,6623$ $p=0,901$
BUDGET TIGHTNESS	$\mu=-1,3975$ $\eta=1,2537$ $p=0,066$	$\mu=-0,6667$ $\eta=1,6522$ $p=0,070$
BUDGET EMPHASIS	$\mu=32,3846$ $\eta=36,9766$ $p=0,126$	$\mu=34,2500$ $\eta=38,4537$ $p=0,141$
SBU PERFORMANCE	$\mu=5,4359$ $\eta=5,0514$ $p=0,209$	$\mu=5,1667$ $\eta=4,9918$ $p=0,651$
BUDGET SLACK	$\mu=9,6795$ $\eta=11,1980$ $p=0,251$	$\mu=9,6333$ $\eta=10,5676$ $p=0,517$

[1] Overall, $n=37$ because the data were aggregated by taking the mean of all observations per corporate parent.
Reported p -values are two-tailed.

[2] The sample was split into two extreme groups for the variable *Entity*; each group containing 13 companies.

[3] *V&R* compares Cell A (*firms with very low diversity*; $n=10$) with Cell D (*firms with very high diversity*; $n=8$).

[4] μ is the mean for the companies with *small size* or *low diversity*; η is the mean for the companies with *large size* or *high diversity*; p is the significance of the t -test for difference of means based on equal variances.

6.2.10. Hypothesis 2: Uniformity of Control Systems in Diversified Firms

Finally, H_2 maintained that increased diversification would be associated with more uniformity in control and incentive systems. Overall, this is confirmed in Table 46 in which the standard deviations are compared for two groups of firms, notably, in *Panel A*

for firms with *very low diversity* (Cell A) and *very high diversity* (Cell D) according to the Varadarajan & Ramanujam-categories [1987], and, in Panel B for firms with *few* and *many* entities (median split). One consistent exception to H_2 is that the *percentage variable pay* (SAL_VAR) seems to vary more in large and diversified firms compared to smaller and less diversified companies. However, this is consistent with the finding that large and diversified firms rely more on *discretionary bonus determination*.

Table 46
DIFFERENCE IN STANDARD DEVIATIONS (s.d.)

PANEL A SPLIT ON V&R	s.d. Cell A (n=10)	s.d. Cell D (n=8)	p-value ^[1]
BU_EMPH	6,404	4,693	0,292
BU_REV	5,085	3,874	0,588
BU_BOT	3,639	2,666	0,429
BU_FORM	4,026	4,020	0,804
BU_INT	4,280	5,580	0,564
BU_PART	0,587	0,482	0,489
SAL_VAR	8,325	9,176	0,999
SAL_FOR	41,126	26,857	0,172
SAL_SBU	21,318	16,762	0,204
SBU_CON	7,298	2,932	0,159

PANEL B SPLIT ON ENTITY	s.d. Few Entities (n=18)	s.d. Many Entities (n=19)	p-value ^[1]
BU_EMPH	7,933	6,572	0,410
BU_REV	6,309	4,488	0,188
BU_BOT	4,452	2,269	0,023
BU_FORM	3,371	4,742	0,313
BU_INT	5,739	4,504	0,354
BU_PART	0,816	0,512	0,155
SAL_VAR	7,630	8,952	0,400
SAL_FOR	37,551	30,066	0,086
SAL_SBU	27,888	26,701	0,405
SBU_CON	5,889	5,052	0,742

[1] Reported p-values are two-tailed and indicate the significance of the F-test for difference of variances.

6.3. Conclusions from the Empirical Analyses

In this section, the major results from the empirical analyses are summarized. As a warm-up, the following conclusions were drawn with reference to the "CONSTRUCTION OF CONSTRUCTS:"

1. *Corporate Control*. The notion of control tightness or looseness seems to capture adequately the overall control philosophy of the firm. *Tight control* involves much formality, much emphasis on meeting the budget, few budget revisions during the year, detailed line-item budget follow-ups, and highly intensive and interactive budgeting discussions. Hence, much emphasis on meeting the budget, few budget revisions during the year, and highly formal budgeting policies are not downright in contradiction with detailed line-item budget follow-ups and highly intensive and interactive budgeting discussions (cf., Table 31, p. 157 | Table 32, p.159).
2. *Control Loss*. Higher levels of *information asymmetry* are associated with higher levels of *slack* which, in turn, are associated with lower levels of *managerial short-termism*. Hence, *slack* reduction seems to come at the price of increased *myopia*. Or, *slack* might be a necessary condition for managers to think long-term: if the budget is too tight and the manager runs the danger of not meeting short-term targets, he might become more concerned, in the first place, about short-run results rather than about long-term profitability and competitive strength (cf., Table 33, p.160). In this respect, it is also interesting to observe that *slack* has a positive association with *business unit performance* whereas *myopia* is negatively correlated with *performance* (cf., Table 38, p.176). However, the relationship between *slack* and *performance* is likely to be curvilinear ($\cap$ - cf., Table 42, p.185, Panel C). In sum, *myopia* seems to be truly "dysfunctional" which is not the case for *slack* as long as it can be kept within bounds.

3. *Corporate Strategy*. The data suggest that unlike *related diversifications*, *unrelated diversifications* (i.e., growth through new groups of activities) lead to more *decentralization* (cf., Table 34, p.161). This finding is in line with the *bounded rationality* argument that diversifications into unrelated activities take up much more information processing capacity from corporate management so that delegation of decision-making becomes inevitable. Moreover, the variable “entity” which is a blend of *size* and *diversification* captures best the notion of *corporate strategy* (cf., Table 36, p.170).

Secondly, as to the HYPOTHESES TESTS, the following major conclusions stood out from the analyses:

1. *Corporate Diversification and Control Loss* (cf., H_4). Fully in line with previous diversification studies, only weak links could be established between *corporate diversification* and *performance*. In spite of this, the data suggest that the balance of evidence for superior performance is generally *against* unrelated diversification (cf., Table 35, p.168 | Table 42, p.185, Panel C). All in all, H_4 is strongly supported in the sense that *increased diversification is associated with increased control loss*, in casu, *slack* (cf., Table 36, p.170).
2. *Corporate Control and Control Loss* (cf., H_3). Here also, *corporate control* shows only weak associations with *corporate performance* (cf., Table 37, p.172 | Table 42, p.185, Panel C). As predicted though, there is a strong relationship between *corporate control* and *control loss*, in casu, *slack*. In sum, (i) *tight controls*, (ii) *a higher percentage variable pay which is based on SBU-performance and determined on the basis of strict formulas*, and (iii) *decentralization of the controllership function* seem to reduce *slack* (substantial results were established for *tight controls* and *decentralization of*

control - cf., Table 39, p.178 | Table 42, p.185, Panel A). As such, the direction of influence is in contradiction with the expectations of H_3 . The main conclusion is that the implementation of *tight controls* effectively increases the information processing ability of corporate managers and, hence, increases the cost to the business unit managers to game the budget through easy-to-achieve budget targets, that is, to build *slack* (cf., *economic arguments*). However, the "style" through which such controls are exercised seems important too. Indeed, the data clearly illustrate that a positive control atmosphere where the business unit controller is actively involved in the local decision-making process (i.e., *decentralized control*) has a beneficial impact on goal-oriented management behavior. In contrast, situations where the business controller acts as a "policeman" or "corporate spy" (i.e., *centralized control*) can create a feeling of distrust whereby opportunistic behavior will increase.

3. *Corporate Strategy and Corporate Control* (cf., H_1). At first, only weak links could be established between *corporate strategy* and *corporate control* (cf., Table 40, p.183 | Table 41, p.184). However, when *curvilinearity* was taken into account, strong associations showed up between *diversification strategy*, on the one hand, and *control systems* and *control structure*, on the other hand; but, the links with *incentive systems* remained weak/insignificant (cf., Table 42, p.185, Panel B). All in all, H_1 is supported partly in the sense that *increased diversification* leads to *tighter controls*. On the part of *control structure*, H_1 is not supported because *increased diversification* is associated with more *centralization of the controllership function*. No significant results could be obtained as to the relationship with *incentive systems*.

Taken COLLECTIVELY, the following conclusions emerge (cf., Figure 5, p.190):

1. *Tight Controls*. In line with H_4 , *size* and *diversification* are clearly positively associated with *slack*, and probably in an *exponential* way. Increased *size* and

diversification are also associated with *tighter controls*, as was predicted by H_1 . However, *tight controls* reduce *slack*. Hence, increased *slack* caused by larger size and *diversification* seems to be kept under control through the implementation of elaborate and tight control arrangements. This seemingly is in contradiction with H_3 which predicted that *tighter controls* would further induce rather than *decrease slack* (based on the *behavioral consequences* of “*management-by-the-numbers*”). Hence, *economic, information-processing advantages* of *tighter controls* dominate their *behavioral consequences*. However, if curvilinearity is taken into account too, then it seems that if *size* and *diversification* pass a certain threshold, the *diversification strategy* itself induces more *slack* than that can reasonably be contained through the implementation of *tight(er) controls*. Put differently, there appears to be a ceiling to the degree of tightness of control systems, whereas *slack creation* does not gear down with increased size and *diversification*.

This finding is consistent with the *information-processing model of organizations* as developed by Galbraith [1973]. Galbraith maintains that diversity will put pressure on the information processing capacity at the top. Several strategies can be implemented to reduce information overload at the top: either it can *increase the capacity to handle more information*, or, it can *reduce the amount of information that is processed*. *Creation of slack resources* is an *information reduction strategy* because a lower level of required performance reduces the chance of a target being missed; and, the fewer the exceptions, the less the overload on the top [Galbraith, 1973]. *Investing in information systems*, on the other hand, is an effective strategy to increase the capacity to handle information. Now, as *diversity*, and, hence, *the need to handle information* increases, the firm will have to adopt one or more information processing strategies. However, if it does not consciously choose a strategy, then the first, *reduced performance standards*, will happen automatically. In other words, not to decide is to decide upon *slack resources* as the only strategy for removing

information overload at the top [Galbraith, 1973: 19]. The findings of this study clearly illustrate that both *investment in information systems* (cf., *tight controls*) and *creation of slack resources* appear as strategies to solve the problem of information overload at the top. Actually, the data show that both strategies, each with its own costs and benefits, are best used in combination. Finally, *decentralization* or the *creation of self-contained units* is another information processing reduction strategy [Galbraith, 1973]. Indeed, as aforementioned, the data suggest that *diversification* (i.e., growth through new groups of activities) leads to more *decentralization* as well (cf., Table 34, p.161).

2. *(De)centralization of the Controllershship Function.* The data also suggest that increased *size* and *diversification* are associated with more *centralized control*, i.e., with a shift away from the *management-service responsibility* to the *financial reporting and internal control responsibility* of the business-unit controller. Clearly, top management in large, diversified firms wants to regain "control" over their business units through the installation of a *solid-line relationship* between the corporate and business unit controller. However, this is only an *illusion of control* since more *centralized control* leads to more *slack*. Hence, *behavioral arguments* dominate in the sense that *centralized controls* create a *negative feeling for the entity* which, in turn, increases the propensity to behave opportunistically.

3. *Incentive Systems.* The same line of argument also applies with respect to *incentive systems* (although with weaker significance). That is, to regain control, top management in large, diversified companies is inclined to make bonuses more *corporate-based* and less *formula-based*. However, such incentive policies produce adverse effects on *slack*. All in all, the data suggest that corporate managers in large, diversified firms seem to favor *discretionary bonuses* for their business unit

managers, but *discretion* is likely to increase *slack*. Both *economic* and *behavioral* arguments can be brought forward to explain this result. The main feature of *formula-based incentives* is that they create "certainty" for the business unit manager. Indeed, *bonus formulas* are established and known in advance so that the bonus becomes reasonably *predictable* within a window of expected performance levels. Many sophisticated, analytical studies have modeled the effects of *certainty* on the *level of effort* chosen (cf., agency models). Put simply, however, it is reasonable to accept that a known and positive relationship between *own effort/performance* and *reward* will trigger the best of effort on the part of business unit management. Moreover, *formula-based incentives* do not depend on the *discretion* of corporate managers. *Discretion* clearly introduces *uncertainty* about the bonus. Moreover, the more discretion the superior has, the more intensive become the efforts to influence. In a word, discretion leads to higher *influence costs* also, i.e., costs resulting from having subordinates trying hard to influence the superior's decisions to the extent such decisions impact on their welfare [Holmstrom, 1989: 320]. Corporate managers cannot close their eyes and ears to the efforts by their business unit managers to look good, the result of which is that they may divert energies to prove their worth in ways that are less productive and/or more opportunistic [Holmstrom, 1989: 321; see also Goold and Campbell, 1987]. From the side of corporate management, though, *discretion* allows more *influence/control/power* over the actions of business unit managers. However, as the data reveal, it is again an "illusion of control" at best. The same line of argumentation holds for *bonuses based on SBU-performance* which do not depend on the efforts and decisions taken by other business unit managers. As such, there is a direct link between *own effort/performance* and *reward* (that is to say, if the bonus is determined *objectively* too).

4. *Contingency Relationships*. As predicted, there is no evidence of a *contingency relationship* between *corporate strategy* and *control*. Hence, it cannot be maintained that large, diversified firms benefit from tighter controls because it helps to contain slack, whereas, if implemented in smaller and less diversified firms, tight controls would exhibit adverse effects on slack. (cf., Figure 6, p.198 | Table 44, p.199).

All in all, the data suggest that the *control structure* and *incentive policies* installed in large, diversified firms cannot offset the increased *slack* caused by the *diversification strategy*. On the contrary, corporate managers often pursue control and incentive strategies which, at best, create an “illusion of control” and produce adverse effects on business unit management behavior. Only *tighter controls* seem to be able to do the job initially, but very likely up to a certain point only. However, the notions of *diversification*, *control*, and *control loss* are complex and multifaceted, let alone the relationships among their constituent components, and, individually and combined, their relationships with *performance*. As such, many more side-aspects have been elaborated in the empirical part of the dissertation (e.g., about *budget participation*, *information asymmetry*, *decentralization*, *geographical diversification*, *business unit strategy*, etc.). Although interesting, these results will not be repeated here for the sake of brevity. However, two more findings must be reported:

1. *Additional Evidence for the Control Loss Hypothesis*. The data illustrate that business units in large, diversified firms have a better record of *meeting the budget* but show more *slack* and inferior *performance* compared to business units in small and less diversified firms (cf., Table 45, p.202). In sum, despite *tight controls* and *high effectiveness in achieving the budget*, diversified firms generally show more *slack* and inferior *performance*. As such, it seems important to business units of large,

diversified firms to “look good on paper,” which is probably one of the best exemplifications of what is meant by “control loss” in this study.

2. *Uniformity of Control Systems in Diversified Firms* (cf., H_2). Finally, the data suggest that diversified firms implement more uniform control and incentive systems across all business units (cf., Table 46, p.203). As a bare minimum, this finding confirms that (contingency) research at the business level should take corporate-level variables into account too. Moreover, it has been shown that an adequate accommodation of the *corporate - business unit relationship* enhances *business unit performance* [Golden, 1992]. As a result, it will be difficult for diversified firms to add value since an increase in the number of distinct businesses puts a cap on the flexibility with which corporate management can accommodate to the specific situation of its business units.

“Management-by-the-numbers” is clearly easier said than done !

As a round-up, the multiple regressions in Table 47 clearly show that *slack* is negatively affected by increased *size* and *diversification* (ENTITY) and positively by *tight controls* (TIGHT), *decentralization of the controllership function* (SBU_CON), and (*objectively determined*) *SBU-based incentives* (SAL_SBU).¹²⁵ However, the whole point of this research is that corporate management does not always implement those *control systems, structures, and incentives* which help reduce *control loss* - quite the contrary !

¹²⁵ Panel B of Table 47 multiplies the degree to which incentives are based on SBU-performance with the degree to which they are determined on the basis of strict formulas ($SAL_SBU * SAL_FOR$). As can be seen from Panel A of Table 47, SAL_SBU is highly significant. However, SAL_FOR is not significant at all (not shown). In spite of the insignificance of the “combined variable” ($SAL_SBU * SAL_FOR$) - see Table 47, Panel B), the results surely are supportive for the theoretical explanations developed. Actually, the results for the *incentive variables* (SAL_VAR , SAL_SBU , and SAL_FOR) have been weak and sometimes inconsistent all the way through. They were added to Table 47 for the sake of completeness.

Table 47

MULTIPLE REGRESSION OF CORPORATE STRATEGY AND CONTROL ON CONTROL LOSS^[1]

PANEL A

INCENTIVE SYSTEMS REPRESENTED BY "SBU-BASED INCENTIVES" (SAL_SBU)

D.V.	I.V.	$\beta^{[1]}$	t		
SLACK	Constant	--	6,706 ($p=0,000$)	F	6,413 ($p=0,000$)
	TIGHT ^[3]	-0,295	-2,792 ($p=0,007$)	R ² [2]	0,283 0,239
	SBU_CON ^[4]	-0,173	-1,646 ($p=0,105$)	SSR	260,703 df=4
	SAL_SBU	-0,261	-2,464 ($p=0,016$)	SSE	660,569 df=65
	ENTITY	0,242	2,291 ($p=0,025$)	SST	921,271 df=69

PANEL B

INCENTIVE SYSTEMS REPRESENTED BY THE PRODUCT OF "SBU-BASED INCENTIVES" AND "FORMULA-BASED INCENTIVES" (i.e., SAL_SBU * SAL_FOR)

D.V.	I.V.	$\beta^{[1]}$	t		
SLACK	Constant	--	6,112 ($p=0,000$)	F	4,805 ($p=0,002$)
	TIGHT ^[3]	-0,322	-2,946 ($p=0,004$)	R ² [2]	0,228 0,181
	SBU_CON ^[4]	-0,169	-1,545 ($p=0,127$)	SSR	210,236 df=4
	SAL_SBU * SAL_FOR	-0,121	-1,014 ($p=0,314$)	SSE	711,036 df=65
	ENTITY	0,219	1,837 ($p=0,071$)	SST	921,271 df=69

[1] $n=153$, but with all missing values removed, it is reduced to $n=70$ (recall that many businesses do not have a *business unit controller*); p -values are two-tailed; and β are the standardized regression coefficients.

[2] Adjusted R² reported in italics.

[3] *Budget Tightness (TIGHT)* is defined as the sum of the standardized scores on BU_EMP, BU_REV, BU_BOT, BU_FOR, and BU_INT, with BU_BOT and BU_INT negatively weighted.

[4] SBU_CON refers to the degree of decentralization of the controllership function.

7. **D**ISCUSSION AND CONCLUDING THOUGHTS

The conclusions have been summarized at the end of the previous chapter in Section 6.3, p.204. In this chapter, some additional thoughts will be presented on (i) the *relevance* of the research; (ii) the *contributions, features, and limitations* of the study; and, (iii) some avenues for *future research*.

7.1. *Relevance*

As aforementioned, the data generally suggest that the *corporate controls* and *incentives* implemented by large, diversified firms to exert control over their business units cannot totally offset the mounting *slack* caused by increased growth and diversification. *Tighter controls* initially seem to do the job, but *centralization of the controllership function*, and *corporate-based and discretionary-based incentives* only create an “*illusion of control*” but cannot, as such, overrule increased *slack*. In a word, large, diversified firms face more *control loss*, probably for a variety of reasons, but, as shown here, surely because of their strategic actions and the structure and implementation of the internal control systems derived from their strategic actions.

“Making the internal control systems of corporations work is the major challenge facing economists and management scholars in the 1990s ... The major challenge is understanding how these systems work ... (and therefore) we have to break open the black box called the firm ...” [Jensen, 1993: 873, brackets added; see also Jensen, 1983; Jensen and Meckling, 1976]. The most relevant aspect of this study is that it opens the organizational “black box” situated between *corporate diversification strategy*, on the one

hand, and some measure of *performance* (*control loss*), on the other hand, as called for by Jensen [1993] and other academics [e.g., Hill, 1994; Burton and Obel, 1988]. Or, as Ramanujam and Varadarajan put it, "we need to begin to address the process and contextual issues in diversification, since the link between *diversity* and *performance* is likely to be moderated by a host of other factors" [1989: 543]. And for such complex but important issues, both *survey instrumentation* as well as *structured interviews within organizations* have been proposed as more adequate methods compared to *mining publicly available data* [Hill, 1994: 320; Hoskisson et al., 1993: 337]. And indeed, this study, utilizing survey methods across and within firms, has shown that not just corporate strategy makes a difference for performance or its antecedent variables, but that the way in which diversification is managed [Ghoshal and Mintzberg, 1994: 25-26], in general, and the extent to which the control and incentive systems are designed and used, in particular, matter [Hill, 1994: 319-320; Porter, 1987: 57].

Indeed, this study suggests that controllership could definitely contribute to more successful diversification. For instance, it was interesting to observe that certain controls and incentives installed to regain control over loosely coupled business units actually create an "*illusion of control*" and bring about adverse effects on management behavior. And the value of adequate management controls should not be underscored. To give a "guesstimate" of the importance of control, Sathe reported that the difference between an outstanding and simply adequate controllership might result in a bottom-line impact of 5 to 25 percent of net income [1978b: 7]. Given then that the economies of the industrial world depend crucially on the performance of large multi-business, diversified firms [Chandler, 1994: 323], it is no exaggeration that this line of research is of great economic importance too.

On the other hand, however, the impact of the corporate headquarters on business unit effectiveness should not be overstated either. There is of course little doubt that the decisions made by competent managers at the business unit level are at least as important, if not more important, for the success of the whole corporation [Rumelt, 1991]. The crucial point, however, is that *corporate management should provide a conducive environment to improve the decisions of the managers running the businesses* [Campbell et al., 1995a, 1995b]. Clearly, installing adequate control and incentive systems is an important part of creating such an environment. Unfortunately, it has been shown that as firms grow larger and more diversified, they tend to implement uniform controls regardless of the specific needs of their business units (e.g., business strategy). Clearly, this is not a classic example of how to create “parenting advantages” [Goold, 1996, Campbell et al., 1995a, 1995b; Goold et al., 1994].

In addition, insights into how to manage diversification adequately is not superfluous given the extent to which the modern corporation remains remarkably diversified [Montgomery, 1994; Baysinger and Hoskisson, 1989; Leontiades, 1986] and given that diversification decisions are among the most important top managers make [Pennings et al., 1994: 608]. Many studies have documented the “value destroying” impact of diversification [e.g., Berger and Ofek, 1995], or, alternatively, the profitability improvements associated with refocusing [Markides, 1995], but few have explored what organizational design decisions can make diversification nonetheless more successful [Mahoney, 1992: 66]. Actually, the current stream of research can only recommend not to diversify or to de-diversify [Leontiades, 1986]. However, a more pertinent and managerial relevant issue is to find out how organizations can diversify “better” [Campbell et al., 1995a, 1995b]. And, as has been shown in this study, it seems fair to suggest that not all forms of *incentives* and *controls* are equally effective to attenuate *control loss*.

7.2. Features and Limitations

Most *features* involve *limitations*, and *vice versa*. For instance, using *control loss* instead of *performance* is a feature as well as a limitation of this study. On the positive side, using *control loss* has resulted in stronger results. Indeed, not so many organization studies have been successful in establishing strong links with *performance* as the “ultimate” dependent variable. Unfortunately, choosing *control loss* as the dependent variable has its limitations too, the most important of which relates to the question *whether control loss is necessarily a “bad” thing or not*. Although this study generally supports that small and focused firms experience less *slack* than large and diversified firms, care should be taken in positing that focused firms will therefore be more profitable than diversified firms. On the contrary, the data suggests that, within bounds, size and diversification can actually add value. Moreover, the data suggest that *slack* is not unconditionally negative in terms of its impact on performance. Specifically, it was suggested that moderate levels of *slack* may actually have beneficial effects and serve as a facilitator of creative behavior, innovation, and long-term thinking [Bourgeois, 1981; Onsi, 1973; Cyert and March, 1963]. And this touches on an old faithful in the management accounting and control literature, notably, how to modify control systems to bring about behavior that is oriented more towards long-range goals rather than to short-run variances [Becker, 1973]. The data suggest that this will involve trade-offs: to make managers think long-term, they will have to be allowed some slack resources. Hence, the right question to ask is not whether *slack* is uniformly good or bad for performance, but rather, *what amount of slack is optimal?* As such, both too much and too little *slack* may be detrimental to performance [Nohria and Gulati, 1996].

A second issue of this study is that not all relationships could be supported at very high *levels of significance*. As such, the present study could not be “conclusive” in all its aspects, but, on the whole, it allowed to interpret the empirical results correctly in the

light of established theory. Besides methodological issues, which will be discussed shortly, the sometimes weak support for the hypotheses might be explained by the general micro-economic insight that product-market competition should pressure non-optimally organized firms to reduce *control loss* through *organizational adaptation* [Cardinal and Opler, 1995; Armour and Teece, 1978]. For example, firms may take action at the source and reduce diversification by *divesting highly unrelated businesses* [Hoskisson et al., 1994; Hoskisson and Turk, 1990] or, alternatively, may try to reduce consequential incentive and control loss problems by adopting *complementary organizational arrangements* (other than the ones considered in this study), such as, promoting a strong *corporate culture* or *sense of corporate identity* [Morris, 1996; Nohria and Ghoshal, 1994]. Studying *organizational adaptation or change over time*, however, is not the virtue of cross-sectional research designs.

Indeed, the choice of a *cross-sectional design* has several consequences, such as, the difficulty to distinguish cause from effect (cf., *reverse causality*) and the control of unobservable factors [Dess et al., 1995: 370-371; Goll and Sambharya, 1995: 839; Priem et al., 1995: 926; Hill and Hansen, 1991: 187]. Indeed, many other important variables such as characteristics of the environment (e.g., complexity, dynamism, etc.) and industry membership [Segelod, 1996: 231-234] may influence *internal control systems*, *control loss*, and ultimately *performance*. Cross-sectional designs offer the fewest assurances that rival explanations are considered and ruled out so that the burden of internal validity falls wholly on the theory [Brownell, 1995: 99]. Therefore, the theory was stated in terms specific enough to be tested. No doubt that diversification decisions and control system changes could also have been studied through direct observation as they unfold and evolve over time (cf., *longitudinal research designs*) [Priem et al., 1995: 919]. However, in this study, the emphasis was on generalizability from a larger sample. This is a more *positivistic view*: the emphasis is on *empirical testing* rather than on *persuasive exemplification* [Lukka and Kasanen, 1995; Donaldson, 1992].

Fourth, this study is subject to the usual limitations of the *questionnaire survey methodology* [see Birnberg et al., 1990; Merchant and Simons, 1986]. However, it should be recalled that no effort was spared in all stages of the questionnaire development to keep potential drawbacks of this methodology to a minimum.

Fifth, the selection of companies was limited to large, *Belgian firms* so that generalizing the results to other US-based or Japanese companies should be done with caution. Nonetheless, as a feature, the sample has been well-defined so that generalizations to this specific population are definitely justified. After all, the 37 firms in the sample constitute about 20% of the entire population of large, independent, Belgian firms.

A final potential weakness is that the measurement of some variables was based completely on the *respondent's perceptions*. This has been criticized on the grounds that such measures are not objective. However, this may not be the most serious limitation since managers' actions and decisions are based on their perceptions anyway [Gul et al., 1995].

In spite of these limitations, this study has many important features too. First, an elaborate methodology to establish *corporate - business unit relationships* was developed. Diversification studies in the US are facilitated through uniform accounting rules and segment reporting. In Europe, on the contrary, diversification research has been hindered by a lack of harmonization of accounting rules and *highly blurred corporate group structures* [Van Waterschoot, 1996; Deloof, 1996; Wymeersch, 1996]. The methodology developed in this study is unique in its kind and has allowed, for the first time, to do a relatively large-scale study on the *strategy and internal control systems* of large, diversified firms in Belgium.

Secondly, letting corporate managers themselves judge the relatedness among their business units was another important, though not perfect, innovation. This approach is in line with recent calls to consider "strategic" relatedness rather than simple product-market relatedness based on incomplete, coarse-grained industry codes [Markides and Williamson, 1996]. However, much work still needs to be done to develop measures of relatedness that take into account its cognitive aspects. After all, it seems that managerial cognition often is the major impediment to manage diversification effectively. There are many examples in the popular and academic press of "managerial hubris" or over-evaluation of managerial capability in the diversification process. However, it is not unlikely that a good understanding of the businesses and their "true" synergies (in terms of "strategic" relatedness) could have avoided many diversification disasters [Hitt et al., 1996; Roll, 1986].

The third important feature of this study is that considerable attention has been paid to the role of implementation of corporate strategies rather than being exclusively content-oriented. Indeed, this study has shown that the assumption that internal organizational arrangements are invariant across firms, which is implicit in most prior corporate diversification studies, is simply untenable [Dess et al., 1995]. Actually, by opening up the organizational black-box, explicit recognition was given to organizational conduct, or, the "C" in the Structure-Conduct-Performance (S-C-P) paradigm. Specifically, the "C" was present through giving firms degrees of freedom in their strategic actions as well as in the design and use of internal control systems. As such, the S-C-P-paradigm was operationalized into a Strategy-Control-Performance-framework, which explains the title of the dissertation. Moreover, the relationships between strategy, control, and control loss were drawn from the economics, strategic management, and organizational behavior literatures, an integration which is too rare. As such, this study supports, extends, and refutes economic, strategic, and behavioral views on the strategy-control-performance

relationship. For instance, through reliance on behavioral arguments, this study has clearly challenged the thread of the true conglomerate, which is, *loss avoidance* through *tight financial controls*. Top managers of highly diversified firms may have little choice but to control via financial results rather than provide strategic leadership. However, corporate managers should know that diversification involves *control loss* which cannot be avoided in total through a "make-your-budget" management style.

Fourth, this study has actually examined how *corporate control* affects *business unit variables*. Researchers have assumed that the proper *unit of analysis* for diversification studies is the corporation as a whole. However, the appropriate research question that should be asked is whether a business unit benefits from being part of a diversified corporation [Dess et al., 1995; Campbell et al., 1995a, 1995b]. And indeed, as aforementioned, this study has given some clues as to the negative feelings that are created on the side of business management through inadequate corporate controls and incentives.

Finally, this study is one of the few (for an exception, see Merchant [1981]) which concentrates on how to fit management control systems to the *corporate strategy* rather than to the *business strategy* (cf., the whole stream of research at the business unit level by Govindarajan and colleagues). It is probably fair to say that most research in management control has neglected corporate strategy, not in the least because data collection is more problematic at the corporate level than at the business unit level (both in terms of access to corporate executives and the reduction of the number of data points at the corporate level). However, some academics in the field of corporate strategy have called for "... a more daring approach that shows a willingness to wrestle with admittedly difficult process and context issues instead of continuing to be fixated on the more tractable but overworked content issues" [Ramanujam and Varadarajan, 1989: 544]. This study was hopefully a small step in this direction.

7.3. *Future Research and Extensions*

The obvious next step should be a field study that allows to unpack the concepts of *diversification strategy* and *corporate control* in order to get a more fine-grained understanding of how they create or potentially avoid *control loss* problems. A field study could obviously shed light upon the multiple aspects of both *corporate strategy* and *control* (e.g., how control and incentive systems stimulate or inhibit the transfer of core competencies among businesses). It is hoped at least that the findings of this study will be a useful starting point for such a field study endeavor.

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Department of Economics and Applied Economics

1996-1997

STRATEGY - CONTROL - PERFORMANCE:
An Empirical Analysis in Large, Independent, Belgian Firms

Tome II

APPENDICES

Wim A.D. Van der Stede

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Appendix A

APPENDIX [A.1]

Dun & Bradstreet - "Who Owns Whom"

ULTIMATE PARENTS

Search: "Parent Companies" + "Belgium"

Date: 16 Februari 1996

Hits: 390 Companies

List: [Companies which correspond with the list of companies drawn from the *AMADEUS*-database (from *Bureau van Dijk*) are highlighted].

A. Maas & Co. N.V
A.D.D. Management & Finance S.A
A.T.O N.V
Abbeloos N.V
Abelor N.V
ABPC N.V., S.A
Absalon S.A., Ets
Accumulateurs Tudor S.A
Ackermans & van Haaren N.V
Adrihold N.V
Agence Maritime Minne S.A
Agridec S.A
Alcopa N.V
Alfac S.A
Algemene Ledercentrale N.V
Algemene Maatschappij voor Nijverheidskrediet N.V
Almabo N.V
Almon C.V.A
Anciens Ateliers Leon Delbeque & Fils S.A
Andries Steel Co. N.V
Andromeda Hotel

AnHyp N.V. (Caisse Hypothécaire Anversoise S.A.)
 Ankersmit S.A., N.V.
 Antilope N.V.
 Asco Management S.A.
 ASLK-CGER Bank & Insurance
 Asphales S.A.
 Assupar N.V.
 Ateliers Léon Bruneau S.A.
 Ateliers Louis Carton S.A.
 Aurora N.V., S.A.
 Aviapartner N.V.
 Axima S.A.
 B.M.T. N.V.
 B.N.S. Trade S.A.
 Banque Bruxelles Lambert S.A. (BBL)
 Banque Degroof S.C.S.
 Barco N.V.
 Beguelin Import Co. S.A.
 Beheers- & Participatiemaatschappij van Biervliet N.V.
 Bekaert N.V., S.A.
 Belamco S.A.
 Belgacom E.P.A.
 Belgapraline N.V.
 Belge d'Affrètements S.A., Cie. (COBELFRET)
 Belge d'Etudes et de Promotions, S.A. Sté. (SOBEP)
 Belge de Manutention, Cie. (CBM)
 Belge des Bétons S.A., Sté. (SBB)
 Belge des Combustibles Nucléaires Synatom S.A., Sté.
 Belgian Bunkering & Stevedoring Co. S.A.
 Belgian Sewing Thread N.V.
 Belgische Olie Maatschappij N.V.
 Belgomine N.V.
 Belgonucléaire S.A.
 Bentex N.V.
 Bernheim-Comofi S.A.
 Betonfabriek Goudezeune N.V.
 Bomaco S.A.
 Bonneterie Bosteels-de Smeth N.V.
 Boone International N.V.
 Bouwbedrijf VMG-de Cock N.V.
 Bouwwerken Willy Knippenberg N.V. (B.W.K.)
 Bréderode S.A.
 Brasserie de Cerfontaine S.P.R.L.
 Brasserie Magotteaux S.P.R.L.
 Brepols N.V., Ets
 Brouwerij Martens N.V.
 Brouwerij Moortgat N.V.
 Brugefi S.A.
 Bruyneel Textiles N.V.

Building Plastics N.V
 Building S.A
 Bureau d'Etudes Pirnay et Schwachhofer S.A
 C.P. Bourg S.A
 Caisse Privée Banque S.A
 Caldic N.V
 Cangefi S.A
 Cappelle Frères S.A., Ets
 Carbodiam S.A
 Carpet-Land N.V
 Carrières Gauthier et Wincqz S.A
 Casterman S.A
 Cavenor S.A
 CBC-Electro N.V
 CBR Cimenteries S.A
 Centrauto N.V
 Centre Européen d'Evolution Economique S.A. (CEDEC)
 Ceres N.V., S.A
 CFE S.A
 CIM Belgique S.A
 Cimescaut S.A
 City Hotels S.A
 City 7 Investments S.A
 Clovis Matton N.V
 Cobéton S.A
 Cockerill-Sambre S.A
 COFINPAR S.A
 Comet N.V
 CO Commerce de Participation & d'Investissements S.A., Sté. de (SOCOPARIN)
 Commerciale Belge N.V., Cie
 Commerciale de Brasserie S.A., Sté. (CO.BR.HA.)
 Comptoir de Matériaux S.A
 Comptoir Panaméricain Sidérurgique S.A. (COMPANSID)
 Concentra Holding N.V
 Contimine N.V., S.A
 Continental Lines S.A
 Cordinvest N.V
 Corona-Lotus N.V
 Cotubel S.A
 Crédit Communal de Belgique S.A
 Crayères, Cimenterie et Fours à Chaux d'Harmignies, Sté. des
 Creyf's Interim N.V
 D.C.A. N.V
 Défi S.A
 Définance S.A
 CO Développement et de Participations du Bassin de Charleroi S.A., Sté.
 d'Ieteren N.V., S.A
 Dakpannenfabriek Sterreberg N.V
 Danly International S.A

Data Info N.V
 de Boog N.V
 de Vlier N.V
 Delhaize Frères & Cie. "Le Lion" S.A., Ets
 Democo N.V
 Derere Industries N.V
 Deritex N.V
 Desimpel Kortemark Co. N.V
 Despriet Gebroeders N.V
 Devis N.V
 Distri South S.A
 Distribution du Gaz S.A., Sté. de (Distrigaz)
 Dits N.V
 Dolomies de Marche-Les-Dames S.A
 Dossche Bedrijven N.V
 Dredging, Environmental & Marine Engineering (DEME) N.V
 Drugmand et Meert Ets. S.A
 Dufina N.V
 Edifin N.V
 Egta Contractors N.V., S.A
 Electrabel S.A
 Electrorail S.A
 Engetil S.A
 Engrais Rosier S.A
 Engrais Semaille S.A
 Entreprises et Chemins de Fer en Chine S.A
 Entreprises Réunies R. de Cock S.A
 Equipements, Machines et Appareils Spéciaux S.A. (E.M.A.S.)
 Espérance et Bonne Fortune S.A
 Espace Midi S.A
 Etudes et Investissements Immobiliers S.A
 Euramco S.A
 Euro Shoe Unie N.V
 Eurogra S.P.R.L
 Europdata Systems N.V
 Eurosense Belfotop N.V
 Excelsior S.A
 Extensa N.V
 Fabrique de Fer de Charleroi S.A
 Fagemat N.V
 Famcoo N.V
 Fashion Marketing N.V. (F.M.G.)
 Femont N.V
 Fidra S.A
 Fiduciaire de Contrôles et Services S.P.R.L
 Finance et de Développement Immobilier, Sté. de, (FINDIM)
 Financière des Applications de l'Electricité S.A
 Financière des Caoutchoucs S.A., Sté. (SOCFIN)
 Financière des Sucres S.A., Sté. (FINASUCRE)

Financière et Commerciale de Clabecq S.A., Sté. (SOCOCLABECQ)
 Finatex N.V
 Fineter S.A
 Finimco N.V
 Finuick S.A
 Firma Bijttebier-Vandenavenne N.V
 Firma Dam de Saedeleir N.V
 Floridienne N.V., S.A
 Fonderies du Lion S.A. (EFEL)
 Fortis AG S.A
 Fourcroy S.A., Ets
 Frère-Bourgeois S.A., Ets
 Franz Colruyt N.V., Ets
 G. Coveliers B.V.B.A
 G.V. Holding S.A
 Générale de Banque S.A
 Générale de Sucreries et Raffineries en Roumanie, Sté
 Gabriel S.A
 Gebroeders Behaegel B.V.B.A
 Geens-Benelux N.V
 Gerard Koninckx Frères S.A
 Gevaert N.V
 Gewestelijke Investeringsmaatschappij voor Vlaanderen N.V. (G.I.M.V.)
 Gewestelijke Ontwikkelingsmaatschappij West-Vlaanderen
 GIB S.A
 GMIC Security S.A
 Groep Antverpia
 Groep Den Dam N.V
 Groep van Roey N.V., S.A
 Group Tam N.V
 Group Verhelst
 Groupe ARCO Groep
 Groupe Bouvy
 Groupe Bruxelles Lambert S.A
 Groupe Mouyard S.A
 Groupe P.S
 Gyproc Benelux
 Haco N.V
 Hamon & Cie. (International) S.A
 Harol N.V
 Herfurth & Boutmy N.V
 Herpain Enterprise S.A
 Het Volk N.V
 Hocké N.V., S.A
 Holdifima N.V
 Hoste N.V
 Hypothécaire et Immobilière d'Anvers, Sté. (MOBAN)
 I.M.O.P. N.V
 IJsfabriek Strombeek N.V

Immo Hermans N.V
 Immobilière Belle-Vue S.A
 Immobilière de Belgique S.A., Cie. (Immobel)
 Imperbel S.A
 Inbelco N.V
 Inco Zuivelindustrie C.V
 Indosuez Bank België voorheen Benelux Bank N.V
 Inorec S.A
 Interbrew S.A
 CO Intercoopérative Laitière des Régions Herbagères Liégeoises S.C. (INTERLAC)
 International Compounding Managing N.V
 Internationale de Plantations et de Finances S.A., Sté. (SIPEF)
 Invest V P N.V
 Ion Beam Applications S.A
 J. Janssens & J. van Noten N.V
 J. van Breda & Co
 Jan Meuleman & Co. N.V
 Jean Marie Ledoux S.A
 Jean Olivier S.A., Ets
 Joseph et Co. S.P.R.L
 Joseph Soubry N.V
 Josi & Co. S.A
 Kaasmakerij Passendale N.V
 Karl Hugo S.A
 Katoennatie Trucking N.V
 Kempisch Asphaltbedrijf N.V
 Koramic Services Co- Dako N.V
 Koromat N.V
 Kredietbank N.V
 Kuststadbouwbedrijf N.V
 L.V.D. Co. N.V
 L'Acide Carbonique Pur N.V., S.A. (A.C.P.)
 L'Alliage Léger et ses Applications N.V
 La Financière Générale S.A
 Lambrechts N.V
 Lano N.V
 Lastek N.V
 Les Editions du Lombard S.A
 Louis de Poortere S.A., Ets
 Louis Delhaize S.A
 Lys N.V
 Magotteaux International S.A
 Maltem S.A
 Manufacture J. Legrand S.A
 Manuval S.A
 Marcel Wantens S.A., Ets
 Marlux N.V
 Materne-Confilux S.A
 Mecam N.V

Meelbergs N.V
 Meunerie Liégeoise S.A
 Meurice S.A., Ets
 Molimex en Vanandel N.V
 Nationale des Chemins de Fer Belges, Sté. (SNCB)
 Nationale pour la Restructuration des Secteurs Nationaux S.A., Sté
 Nicolas Goffart S.P.R.L
 Nissim S.A
 NMC S.A
 Noordstar S.A
 Office des Nettoyages S.A
 Onderprodukten N.V
 Ooms Products N.V
 Oost-Vlaanderen P.V.B.A
 Orda-B N.V
 Orgatech S.A
 Oscar van Assche S.A
 Ostend Stores N.V
 Pétrofina S.A
 Packo International N.V
 Peltzer & Fils S.A
 Petercam Securities S.A
 Photogravure Deloge S.A
 Pierre Arthur International N.V
 Pietercil Resta Foodbrokers N.V
 Pieters Visbedrijf N.V
 Pittsburgh Corning Europe N.V
 Polfliet Gebroeders P.V.B.A
 Promotion Générale Immobilière en Europe S.A. (PROGIME)
 Proost N.V
 Prosibel International N.V
 Prothermac S.A
 PSAL S.A
 Public Relations Partners N.V., S.A
 R. & G. Staels N.V., Ets
 R. Maes N.V
 Régionale d'Investissement de Wallonie S.A., Sté. (S.R.I.W.)
 Régionale d'Investissements pour Bruxelles Sté, (S.R.I.B.)
 Real Estate Leasing Corp. S.A
 Rena Konserven N.V
 Riskin Tin Industrie N.V
 Riva N.V
 Robuco N.V
 Rombouts Koffie F. Rombouts N.V
 Rossel & Cie. S.A
 Roton Cie. Industrielle et Financière S.A
 S.A.P.E.C. S.A
 S.C.R.-Sibelco S.A
 Sabena S.A

Salamander Holding N.V
 Santens Engineering Services N.V
 Sari Finance S.C
 Scabal S.A
 Scheerders van Kerchove's Verenigde Fabrieken N.V
 Scitex Europe S.A
 Sea-Invest N.V
 Seghers Béton N.V
 SMB S.A
 Smeets Distillerie N.V
 Socantra N.V
 SOCOBOM S.A
 SOCOGETRA S.A
 Soconord Group
 SOFICOM S.A
 Sofina S.A
 Sogedim S.A
 Sogex Publicité International S.A
 Sogifinance N.V
 Sole Mio Manta N.V
 Soliver N.V
 Solvay S.A
 Sonica N.V., S.A
 Sparta N.V
 Splintex Holding S.A
 Stichelbout N.V., S.A
 Sucrierie Couplet S.A
 Sun Oil Co. (Belgium) N.V
 Supermarkt Jawa P.V.B.A
 Suter S.A
 T.C.M. Cars N.V
 Tecnovo S.A
 Teleson S.A
 Telinfo N.V., S.A
 Th. Houben S.A., Ets
 Theuma Deurenindustrie N.V
 Tilmans Trading International N.V. (TTI)
 Tiscar S.A
 Tissage Alfred Flamme S A
 TP Industries S.A
 Tractebel S.A
 Tractor & Equipment Co. N.V., S.A. (TRECO)
 Transintra N.V
 Travaux S.A
 Travelcar S.A
 Trenal S.A
 Trust Métallurgique S.A
 UCB S.A
 UCO N.V., S.A

Uitgeverij die Keure N.V
Uitgeversbedrijf TIJD N.V
Unibra S.A
Union Financière Boël S.A
Usines Samsons S.P.R.L
V.P.K. Oudegem N.V
van de Weghe N.V
van den Broeke-Lutosa S.A
van Genechten N.V
van Hoorbeke et Fils N.V
Vandemoortele International N.V
Vanden Berghe Roger N.V
Vander S.A
Velge & Co. N.V
Viafobel S.A
Victor Buyck N.V
Vito-Paint S.A
Voeders Depre N.V
Volksdepositokas N.V
VTB - VAB N.V
Wérister S.A
Walibi S.A
Warcoing S.A
Watco Treatment S.A
Weverij Ter Lembeek
Wittock van Landeghem S.A., Ets
Zakenkantoor Kerckhof & Verraes N.V

APPENDIX [A.2]

Bureau van Dijk - "Amadeus"

INDEPENDENT BELGIAN COMPANIES

No.	Company Name	National Industrial Code	#Employees	Operating Revenue (000 USD)
1	PETROFINA	6122	519	18.239.034
2	ETABLISSEMENTS DELHAIZE FRERES ET CIE - LE LION, GEBROEDERS DELHAIZE EN CIE - DE LEEUW	6411	12.395	12.143.851
3	TRACTEBEL	8132	1.668	9.664.477
4	SOLVAY	2530	10.780	8.475.769
5	GB-INNO-BM	8132	-	7.794.550
6	ELECTRABEL	1690	16.921	6.645.311
7	TOYOTA MOTOR EUROPE MARKETING AND ENGINEERING	8391	455	5.455.805
8	SOCIETE GENERALE DE BELGIQUE	8132	95	4.897.385
9	SIDMAR	2211	5.861	2.906.410
10	VOLVO CARS EUROPE INDUSTRY	3510	3.228	2.045.132
11	LOUIS DELHAIZE-COMPAGNIE FRANCO-BELGE D'ALIMENTATION	8132	2	2.168.247
12	VOLKSWAGEN BRUXELLES-VOLKSWAGEN BRUSSEL	3510	5.815	2.077.531
13	INTERBREW	8132	69	1.875.550
14	SABENA	7500	9.342	1.927.763
15	B.A.S.F. ANTWERPEN	2510	3.588	1.881.204
16	ETABLISSEMENTEN FR. COLUYT	6411	4.196	1.949.167
17	BEKAERT	2234	4.800	1.863.798
18	TRANSCOR	6320	7	1.855.346
19	UCB	2510	2.138	1.795.490
20	BELL TELEPHONE MANUFACTURING COMPANY	3440	6.096	1.789.498
21	AGRIDEC	8132	2	1.738.889
22	CIMENTIERIES CBR CEMENTBEDRIJVEN	2421	955	1.675.849
23	BP BELGIUM	6121	884	1.624.314
24	OPEL BELGIUM	3510	7.563	1.519.950
25	FINETER	8132	1	1.513.184
26	D'IETEREN	6147	1.115	1.504.513
27	EQUIHOT DELFSTOFFEN	6320	-	1.449.577
28	VANDEMOORTELE INTERNATIONAL	8132	10	1.305.439
29	RENAULT INDUSTRIE BELGIQUE	3510	3.438	1.344.802
30	MAKRO-ZELFBEDIENINGSGROOTHANDEL	6197	3.390	1.310.414

31	MONSANTO EUROPE	2510	1.790	1.301.150
32	ALMABO	8132	10	1.270.114
33	BELGISCHE SCHEEPVAARTMAATSCHAPPIJ-COMPAGNIE MARITIME BELGE	7410	15	1.252.756
34	VOLVO EUROPA TRUCK	3510	1.645	1.232.662
35	CATERPILLAR-BELGIUM	3254	3.661	1.216.411
36	GLAVERBEL	2471	3.081	889.434
37	AGF/ASSUBEL HOLDING	8132	-	966.423
38	PIONEER ELECTRONIC - EUROPE	6153	184	1.007.329
39	RENAULT BELGIE LUXEMBOURG - RENAULT BELGIE LUXEMBURG	6147	262	958.288
40	UNILEVER BELGIUM - UNILEVER BELGIE	4115	2.158	942.038
41	RAFFINERIE TIRLEMONT-TOISE-TIENSE SUIKERRAFINADRRIJ	4201	866	925.771
42	PROCTER ET GAMBLE BENELUX	2581	739	-
43	COMPAGNIE D'ENTREPRISES CFE - AANNEMINGSMAATSCHAPPIJ CFE	5001	771	758.210
44	PEUGEOT FINANCE, CITROEN FINANCE, PEUGEOT LEASE, CITROEN LEASE	8131	63	815.344
45	MARUBENI BENELUX	6197	60	846.415
46	TABACOFINA-VANDER ELST	4290	844	835.052
47	ACKERMANS EN VAN HAAREN	8132	16	786.006
48	TEXACO PETROLEUM	8132	3	764.075
49	BAYER ANTWERPEN	2520	2.641	761.626
50	CINTA, COMPAGNIE INDEPENDANTE DES TABACS - CINTA ONAFHANKELIJKE TABAKSMAATSCHAPPIJ	4290	265	740.397
51	GRAANDERIVATEN RAFFINADERIJEN AMYLUM /AUPARAVANT GLUCOSERIES REUNIES/	4181	780	744.648
52	KRAFT JACOBS SUCHARD	4131	666	728.030
53	SOCIETE BELGE DES BETONS-BELGISCHE BETON MAATSCHAPPIJ	5001	3	723.507
54	SMITHKLINE BEECHAM BIOLOGICALS	2571	1.195	715.162
55	VERENIGDE ZAND EN STEENGROEVEN EN BELGISCHE KWARTSMEELVENNOOTSCHAP - SABLIERES ET CARRIERES ET CON	2314	312	711.240
56	CARGILL	4113	88	684.309
57	COMPAGNIE BELGE D'AFFRETEMENTS	7720	152	676.127
58	ATLAS COPCO AIRPOWER	3283	1.993	644.558
59	PHILIP MORRIS BELGIUM	4290	515	632.153
60	TOTAL BELGIEQUE-LUXEMBOURG	6122	132	621.865
61	DE EIK	8132	4	620.495
62	KUWAIT PETROLEUM - BELGIUM	6122	142	592.007

63	NEW HOLLAND BELGIUM	3211	2.374	577.990
64	FORD MOTOR COMPANY (BELGIUM)	6147	126	506.152
65	DREDGING, ENVIRONMENTAL & MARINE ENGINEERING	8132	6	554.535
66	NON-FERROUS INTERNATIONAL	9970	-	570.437
67	MECANIVER	8132	-	545.780
68	LHOIST	2312	12	531.644
69	USINES GUSTAVE BOEL	2211	2.967	506.114
70	DU PONT DE NEMOURS (BELGIUM)	2550	900	514.704
71	BMW BELGIUM	6147	228	514.541
72	DIVISIE VAN DE SOCIETE EUROPEENNE DE CARBURANTS S.A. SECA	6122	145	505.870
73	ALCOPA	8132	1	459.466
74	UNIGROBEL	8330	-	461.542
75	PEUGEOT TALBOT BELGIE - PEUGEOT TALBOT BELGIE	6147	132	491.424
76	MITSUBI ET CO BENELUX	6197	66	489.894
77	BOREALIS	2520	624	438.448
78	VAN HOOL	3520	3.398	475.999
79	AMOCO CHEMICAL BELGIUM	2520	565	473.854
80	BELGOMINE-SINT-NIKLAAS	6121	16	484.719
81	HOOGOVENS ALUMINIUM	2243	1.294	462.012
82	TOYOTA BELGIUM	6147	260	459.248
83	SOCIETE CHIMIQUE PRAYON-RUPEL - PRAYON-RUPEL CHEMISCHE BEDRIJVEN	2510	882	452.486
84	KOMATSU EUROPE INTERNATIONAL	6142	160	461.728
85	ALBEMARLE	2510	486	392.218
86	AGENCE ET MESSAGERIES DE LA PRESSE - PERSAGENTSCHAP VERVOER EN DISTRIBUTIE	6192	1.074	428.993
87	URALS ARA	6122	11	428.278
88	DOMO TUFT	4381	233	382.963
89	HONDA EUROPE	6147	630	438.347
90	TER LEMBECK INTERNATIONAL	4381	735	418.766
91	ROBERT BOSCH PRODUKTIE	3530	1.123	417.438
92	UPJOHN	2571	1.130	415.890
93	BAT BENELUX	4290	465	408.833
94	CALLEBAUT	4211	689	408.613

95	PVH		9970	-	403.598
96	MARUBENI AUTO - EUROPE		6147	21	402.381
97	GROEP VAN ROEY		6132	5	365.817
98	BAXTER		2570	1.064	401.251
99	DASSAULT BELGIQUE AVIATION		3641	5	398.968
100	PROCTER AND GAMBLE EUROPEAN TECHNICAL CENTER		8370	962	387.806
101	ROSY BLUE		6194	40	395.817
102	MAZDA MOTOR EUROPE		6147	63	394.145
103	SUN INTERNATIONAL		8132	4	354.679
104	VERSELE-LAGA GROEP		8132	3	384.050
105	ARJO WIGGINS BELGIUM		4713	1.139	382.306
106	BALTA		8132	13	378.340
107	ALDI		6411	731	374.998
108	HOECHST CELANESE		2600	370	373.832
109	ONDERNEMINGEN JAN DE NUL - ENTREPRISES JAN DE NUL - JAN DE NUL		5021	1.069	370.479
110	DOSSCHE BEDRIJVEN DOSSCHE ENTREPRISES		8132	12	361.849
111	LAMITREF METALS		2243	319	321.389
112	APPLICATIONS DE LA CHIMIE, DE L'ELECTRICITE ET DES METAUX-AANWENDING VAN CHEMIE, ELEKTRICITEIT EN METALE		2242	182	350.547
113	NISSAN BELGIUM		6147	172	350.472
114	NESTLE BELGIUX		4238	606	341.528
115	STAR DIAMOND COMPANY (BELGIUM)		4914	15	338.858
116	BARCO		3440	1.392	306.608
117	OWENS - CORNING		2475	1.191	335.347
118	RAYCHEM		4830	1.065	326.708
119	BEREMCO		8132	-	301.503
120	CAMPBELL FOODS BELGIUM		4233	269	323.800
121	DURACELL BELGIUM		6196	10	323.507
122	MASTER FOODS		6179	295	328.208
123	FORGES DE CLABECQ		2211	2.058	320.518
124	DIAMDEL		6194	24	326.258
125	PETROBEL		6121	5	326.097
126	SAPEC		6113	8	296.375

127	DAF TRUCKS VLAANDEREN	6710	952	324,906
128	NAFTA (B)	6122	60	321,527
129	SIEMENS ATEA	3440	1,520	323,841
130	BELGISCHE OLIE MAATSCHAPPIJ - COMPAGNIE BELGE DE PRODUITS PETROLIERS	6122	7	316,396
131	PNEU UNIROYAL ENGLEBERT - UNIROYAL ENGLEBERT BANDEN - UNIROYAL ENGLEBERT REIFEN	4811	1,112	309,962
132	HONDA BELGIUM	3530	320	314,990
133	FIAT AUTO (BELGIO)	6147	266	301,698
134	ALDI	6411	569	295,922
135	GENERAL BISCUITS BELGIE	4195	1,842	290,950
136	MAGOTTEAUX INTERNATIONAL	3110	36	285,533
137	FINSPA	8132	6	288,404
138	SOCIETE DE SERVICES, DE PARTICIPATIONS, DE DIRECTION ET D'ELABORATION	8391	61	287,603
139	MAZDA MOTOR PARTS CENTER (EUROPE)	6147	237	285,707
140	KNP LEYKAM BELGIUM	4713	825	284,388
141	ALDI	6171	405	282,374
142	POWER TOOLS DISTRIBUTION	6141	121	280,424
143	SIEMENS NIXDORF INFORMATION SYSTEMS	6144	752	282,778
144	ALDI	6171	437	279,912
145	L'OREAL BELGIUM	2582	778	279,602
146	DIGITAL EQUIPMENT	6144	878	273,215
147	HENKEL BELGIUM	2581	524	276,202
148	SNACK VENTURES EUROPE	4193	2,126	274,660
149	BRICOUT BELGIUM	6122	19	263,953
150	3M BELGIUM N.V.	2520	666	263,655
151	MONROE EUROPE	3530	1,081	263,311
152	MICHELIN BELUX	4811	236	261,713
153	HEWLETT - PACKARD BELGIUM	6196	392	255,335
154	BELGIAN REFINING CORPORATION	1401	234	229,368
155	SCITEX EUROPE	6145	249	246,914
156	ALDI	6411	345	246,702
157	SAMSONITE EUROPE	4830	1,129	245,485
158	IKEA WHOLESale BELGIUM	6151	17	247,070

159	COMPAGNIE IMMOBILIERE DE BELGIQUE	8330	28	242.234
160	MAISON F. MATHIEU	6124	48	241.312
161	HESSENATIE	7232	1.902	238.345
162	ROSSEL ET CIE	4744	536	238.222
163	THY MARCINELLE	2211	300	235.690
164	DAIKIN EUROPE N.V.	3284	336	245.498
165	CARPETLAND	6491	183	212.689
166	DIAROUGH	6194	19	240.587
167	CLARK-HURTH COMPONENTS	3261	589	229.490
168	COMPAGNIE DES CEMENTS BELGES - C.C.B.	2421	848	208.962
169	KABELWERK EUPEN - CABLERIE D'EUPEN - KABELFABRIEK EUPEN	3410	1.230	229.156
170	BEAULIEU REAL	4382	258	227.680
171	FERRERO ARDENNES	4211	739	227.114
172	ARAL BELGIE	6122	49	226.901
173	GE POWER CONTROLS BELGIUM	3420	1.323	235.607
174	PAUWELS INTERNATIONAL	6145	110	205.671
175	ALPHA REPARTITION	6181	342	225.459
176	HOLDIFIMA	8132	4	224.278
177	VANDEN AVENNE-IZEGEM	6112	24	220.817
178	UCO	4323	132	220.081
179	LEE EUROPE	4534	861	219.986
180	EUROSTAR DIAMOND TRADERS	6194	-	199.611
181	UNIVERSAL REFINING	1401	101	219.162
182	ASAHI CHEMICAL INDUSTRY (EUROPE)	6193	31	226.140
183	CROWN CORK COMPANY BELGIUM (PACKAGING DIVISION - MACHINERY DIVISION)	3164	746	216.734
184	HANDELSMAATSCHAPPIJ EUGENE HUYGEBAERT N.V.	6171	325	224.652
185	CERES	4161	181	206.650
186	FABRIQUE DE FER DE CHARLEROI	2211	961	198.902
187	FIRME DERWA	6173	230	207.188
188	INEX	4131	420	193.449
189	SITAGRO	6176	29	204.793
190	TEMPO VEDIOR-GREGG INTERIM	8393	5.122	203.930

AMADEUS (Bureau van Dijk)
WHO OWNS WHOM (Dun Bradstreet)

List of Independent Belgian Companies
List of Belgian "Ultimate Parents"

191	ENICHEM BENELUX	6127	24	203.389
192	EURO SHOE UNIE	6461	365	201.864
193	KEMIRA	2568	366	201.426
194	DOUWE EGBERTS	4231	412	196.671
195	BOELINVEST	8132	3	189.229
196	NISSHO IWAI (BENELUX)	6197	26	208.209
197	SONY BELGIUM	6153	165	207.366
198	SOFINAL-COTESA	4397	538	178.461
199	WILJO	6122	15	177.959
200	DANONE	4131	457	190.573
201	FIRMA LEON VAN PARYS, FIRME LEON VAN PARYS	6172	20	187.495
202	PHILLIPS PETROLEUM CHEMICALS	2520	143	187.220
203	GROUPE JOSI - GROEP JOSI	8230	-	186.203
204	SAINT BRICE	6560	613	173.687
205	FINA POLYMERS	2520	-	185.014
206	CIBA - GEIGY	2571	200	184.263
207	JET-AIR	7710	48	185.195
208	MOLNLYCKE	6183	283	181.709
209	BAYER RUBBER	2510	480	180.750
210	GLACERIES DE SAINT-ROCH	2471	879	180.731
211	VLAAMSE MEDIA HOLDING	8132	-	163.040
212	CREYF'S INTERIM	8393	4.047	179.036
213	BELGIAN BUNKERING AND STEVEDORING CO	7720	38	179.028
214	VEE- EN VLEESHANDEL VANLOMMEL	6173	29	178.425
215	CASTROL	6122	180	177.373
216	RAVAGO	8132	1	158.530
217	SUPERCONFEX	6452	545	173.155
218	ELF OIL BELGIUM	6122	98	172.690
219	E C P - ENICHEM POLIMERI BELGIO	6156	14	171.562
220	FORUM LEOPOLD	8330	-	171.238
221	VCST	3530	74	168.269
222	SANDOZ	2570	307	169.838

223	BURGO ARDENNES	4711	668	167.827
224	NOORD NATIE	7630	137	152.613
225	ESTEE LAUDER	2582	595	-
226	DHL AVIATION	7900	778	164.445
227	MACTAC EUROPE	4726	464	166.203
228	SPACIFIC	8380	25	163.066
229	ZIEGLER	7232	833	161.313
230	JAYAM	6194	16	160.711
231	WOLTERS KLUWER BELGIE - WOLTERS KLUWER BELGIQUE	4745	812	159.921
232	PACIFIC FRUIT COMPANY N.V.	6172	3	159.828
233	KODAK	6193	403	157.970
234	DECEUNINCK PLASTICS INDUSTRIES	4830	203	157.518
235	BEKAERT - TINSLEY	2234	679	157.104
236	HARRIS	6145	44	153.708
237	GEC ALSTHOM ACEC TRANSPORT	3440	579	163.391
238	HONEYWELL	6145	491	156.453
239	AKZO NOBEL COATINGS	2550	734	153.676
240	NECKERMANN REIZEN BELGIE - NECKERMANN VOYAGES BELGIQUE	7710	199	154.954
241	LABORATORIA FLANDRIA	6181	216	153.506
242	CARAT CRYSTAL	8380	38	152.848
243	REINSHAGEN TOURNAI	3510	470	151.579
244	VAN GENECHTEN	8132	-	137.815
245	COCA-COLA BEVERAGES BELGIUM	4282	335	137.697
246	MILLER	6152	65	150.859
247	HAECK FINANCE COMPANY	8391	4	150.256
248	SONY SERVICE CENTRE (EUROPE) N.V.	6153	205	155.984
249	ECA	4554	956	142.900
250	VENDEX FOOD	6411	690	155.031
251	SCHNEIDER MGT	3420	526	147.606
252	NMC	4830	330	146.624
253	VANDEN AVENNE OOIGEM	4220	104	146.325
254	ZENECA	2570	256	146.149

255	UNILIN	4622	463	145.199
256	MECASEAT	8132	-	145.108
257	MCCAIN FOODS BELGIUM	4123	534	139.674
258	KASZIRER DIAMONDS	6194	34	142.571
259	MOLKEREI - LAITERIE WALHORN	4131	95	141.933
260	SUZUKI EUROPE	6147	-	141.813
261	ECONOCOM GROUP	8430	24	127.779
262	BROUW	6122	15	145.230
263	IDB BENELUX	4131	160	138.905
264	TECHSPACE AERO	3641	1,192	138.834
265	KB-SECURITIES	8310	32	138.410
266	HERCULES BELGIUM	2510	290	138.291
267	BOSAL BENELUX	3530	600	138.002
268	STAF LORNOY EN ZONEN	4121	70	137.559
269	TACHE COMPANY	6194	25	137.290
270	DOCKWISE	7720	57	137.150
271	FABELTA INDUSTRIES	2600	425	137.108
272	LAZARE KAPLAN BELGIUM	6194	2	134.165
273	EURANTEX	6169	333	136.134
274	BAYER	6181	327	135.921
275	WARNER-LAMBERT (BELGIUM)	4212	647	135.395
276	DE VLIJT	4731	659	135.254
277	BEECHAM	2570	485	133.284
278	PENTAX EUROPE	6193	60	138.751
279	SMITHKLINE BEECHAM PHARMA	6181	218	131.985
280	UNITED INDUSTRIAL DIAMONDS	6194	44	131.285
281	DE PERSGROEP	4744	-	131.155
282	CHAMPION SPARK PLUG BELGIUM	3431	903	119.120
283	MEDIA - PARTICIPATION	8132	-	118.351
284	DIAMANT BOART	3222	758	129.823
285	DIMINCO	6194	15	129.776
286	DE STER	4830	475	129.565

287	KRONOS EUROPE	2530	294	129.271
288	A. SCHULMAN PLASTICS	2520	233	129.430
289	GE MEDICAL SYSTEMS BENELUX	3440	347	128.165
290	HOSTE	4744	503	127.957
291	FERCHIMEX	6113	22	127.867
292	COMPUTER 2000	8392	105	128.864
293	VERLIPACK BELGIUM	2472	33	126.994
294	DIATRADA BELGIUM	6194	9	126.868
295	PHILIPS MATSUSHITA BATTERY CORPORATION	3432	395	126.342
296	ETABLISSEMENTS BREPOLS	8132	1	125.611
297	SCOTT CONTINENTAL	4722	285	125.561
298	HACO	3221	90	129.391
299	RHONE-POULENC BELGIQUE	6127	34	123.972
300	SOCIETE DE PROMOTION DES INVESTISSEMENTS-PROMOTIE VAN INVESTERINGEN	8132	2	121.305
301	SUMITOMO BENELUX	6197	36	128.403
302	WILLEM SPOORMANS	0100	54	122.835
303	SUGRO	6177	179	121.964
304	BELAIRBUS	8391	5	121.794
305	WHIRLPOOL BELGIUM	6152	209	121.495
306	CHAMPION SPARK PLUG	3431	553	121.390
307	BEKAERT TEXTILES	4325	1.165	121.318
308	BOLIDEN CUIVRE ET ZINC (LIEGE)	3110	409	121.106
309	INGRAM MICRO	6144	98	121.080
310	WESTIMEX BELGIUM	4238	476	121.052
311	CARMEUSE	2315	477	120.657
312	UTEXBEL	4326	1.067	120.627
313	SCANIA BELGIUM	6147	258	119.960
314	VLEESGROOTHANDEL GEORGES GOOSSENS EN ZONEN	6173	83	119.812
315	BELGOMAZOUT	6122	16	-
316	ADIA PERSONNEL SERVICES	8393	2.787	118.567
317	SOBEMI	3164	606	118.549
318	RHENUS BELGIUM	7720	207	117.817

319	VLAAMSE UITGEVERSMATTSCHAPPIJ	4732	749	107.124
320	BRISTOL-MYERS SQUIBB BELGIUM	6181	233	117.095
321	V.A.P.O.	4121	90	116.820
322	CITY HOTELS	6651	23	105.703
323	BULL	6144	426	116.000
324	NOORDVLEES - VAN GOOL	4121	116	115.778
325	SIERRA GEM DIAMONDS COMPANY	6194	6	115.661
326	SUN CHEMICAL	2550	151	105.006
327	FLORIDIENNE	8132	10	115.246
328	AKZO NOBEL CHEMICALS	2510	290	114.901
329	INTERBUILD	5011	200	104.392
330	ABAY-T.S.	8330	469	114.581
331	PANASONIC BELGIUM	6153	106	119.057
332	CONSTRUCTIONS ET ENTREPRISES INDUSTRIELLES - CONSTRUCTIES, ELECTRICITEITSWERKEN EN INDUSTRIEBOUW	5021	1.136	103.505
333	NYNAS	6122	43	103.378
334	TRIPLE-A. DIAMONDS	6190	7	113.062
335	PB. PAPIER	6191	136	102.805
336	VOLVO TRUCK FINANCE BELGIUM	8450	12	112.672
337	ADVANCED ELASTOMER SYSTEMS	6127	111	112.530
338	ALLIED SIGNAL EUROPE	6127	58	102.443
339	D.D. MANUFACTURING	4914	31	102.373
340	SOCIETE GENERALE DE GRANDES SOURCES BELGES	4281	110	112.230
341	B.M.T.	3135	739	101.880
342	GEMBEL	6194	21	111.739
343	PETRONED BELGIUM	6122	6	111.549
344	PRINTINVEST	8132	-	111.469
345	BANKSYS	8392	444	111.389
346	HOECHST BELGIUM	6127	270	110.416
347	TYCO DISTRIBUTION (EUROPE)	6195	136	110.312
348	VAMIX	4236	322	109.897
349	V.P.K. OUDEGEM	4713	643	109.330
350	INTERNATIONALE UITGEVERSMATTSCHAPPIJ	4744	246	108.928

351	LEMMERZ BELGIE	3110	628	107.088
352	VTB - VAB	7710	308	98.977
353	NUTRICIA BELGIE	4238	307	108.512
354	AIR PRODUCTS	2561	258	108.676
355	BECTON DICKINSON BENELUX	6441	274	108.604
356	LANO	4381	620	107.580
357	COBAM	7410	6	107.276
358	SUPERGEMS	6194	15	107.189
359	SOCIETE ANONYME BELGE AEG / BELGISCHE NAAMLOZE VENNOOTSCHAP AEG	5035	475	107.188
360	ROCHE	2570	292	107.058
361	SPANO	4622	308	106.933
362	TNT EXPRESS BELGIUM	7720	560	104.591
363	ELECTRONIC DATA SYSTEMS-BELGIUM	8392	598	106.737
364	CYNAMID BENELUX (BELGIUM)	6181	275	106.553
365	SCHINDLER	3255	805	96.978
366	GEDIMO	6450	295	110.949
367	PWA MABELPAP	4713	418	106.334
368	S C A PACKAGING BELGIUM	4724	616	104.168
369	UNIFERT EUROPE	6113	15	105.700
370	SEAGRAMS BELGIUM	6175	53	105.570
371	UNIVERSAL MEDIA	8380	29	104.839
372	LEIEVOEDERS	4220	53	95.267
373	ONTEX	4397	349	94.861
374	T.V.B.	8380	-	104.169
375	NEW CARBOCHIMIQUE	2520	86	104.099
376	LVD - INVEST	8361	-	104.030
377	BROUWERIJ - HANDELSMAATSCHAPPIJ - SOCIETE COMMERCIALE DE BRASSERIE	8132	3	103.985
378	VERTABAK	6110	-	108.218
379	COCA-COLA SOFT DRINKS	6175	4	103.644
380	DSM SPECIALTY COMPOUNDS	2520	210	103.327
381	SOCIETE ANONYME BELGE POUR LA FABRICATION DU CITRATE DE CHAUX ET DE L'ACIDE CITRIQUE	2510	430	102.522
382	SIPEF	8132	39	102.347

383	EVC BENELUX-FRANCE	6127	19	102.201
384	SEKURIT SAINT-GOBAIN BENELUX	2471	565	101.852
385	BELGIAN SHIP SERVICE CENTER	6196	42	99.590
386	KONE BELGIUM	3255	360	101.551
387	PIONEER ELECTRONICS MANUFACTURING	3451	353	105.329
388	ROMBOUTS	4611	5	100.717
389	VEE- EN VLEESHANDEL VANLOMMEL	6115	27	96.284
390	ECC INTERNATIONAL	6125	107	100.592
391	SOCIETE NATIONALE DE CONSTRUCTIONS AEROSPATIALES	3641	1.139	100.410
392	HENDRICKX RADIATOREN	3165	236	91.004
393	JANSSEN BIOTECH	6127	23	99.755
394	LALEMANT	7720	62	100.387
395	ISP (BELGIUM) INTERNATIONAL	6197	1	99.439
396	GREPAPIER	6191	98	89.977
397	HABITEX INTERNATIONAL	6160	22	98.578
398	STEINBACH - INTERMILLS	4713	234	98.387
399	BRUSSELS AIRPORT TERMINAL COMPANY	7640	34	89.335
400	SCHERDERS VAN KERCHOVE'S VERENIGDE FABRIEKEN	2431	694	97.981
401	GLASOL	6194	5	97.810
402	DETRY FRERES	4122	370	97.720
403	SUNKYONG BELGIUM	6197	10	97.238
404	DRESSER EUROPE	6145	20	97.955
405	VAN DEN BROEKE - LUTOSA	4238	281	97.071
406	TEEPAK PRODUKTIE	4830	483	97.727
407	LOCADIF	8440	125	96.838
408	ALUMINIUM EUROPE	2243	572	95.908
409	ICI BELGIUM	2570	247	95.860
410	METHANEX EUROPE	6127	6	95.724
411	BANK CARD COMPANY	8310	357	95.057
412	PIETERS VISBEDRIJF	6179	203	86.526
413	TETRA PAK BELGIUM	6196	46	94.996
414	NITTO EUROPE	4830	342	95.440

415	SCANA - NOLIKO	6179	115	98.352
416	ROVER BELGIUM	6147	33	94.211
417	PLUCZENIK DIAMOND CO	4914	44	93.637
418	ENDIAMA SELLING CORPORATION	6194	1	92.976
419	ASFALT-, WEGENIS- EN BOUWWERKEN	5025	544	92.651
420	GAMMA BELGIE	6132	22	91.938
421	BELGIAN SKY SHOPS	6560	185	83.669
422	SANYO SALES	6153	11	91.882
423	SYLVANIA	3471	569	91.809
424	KERAMO - WIENERBERGER HOLDING	8132	-	91.680
425	VIANGROS	6173	243	91.501
426	CONFORTLUXE	4674	481	82.900
427	PDV FUELS	6320	-	90.795
428	MIELE	6152	171	90.523
429	OLIEFABRIEKEN DEBEIL	4114	94	90.369
430	HENKEL-ECOLAB	2581	256	90.194
431	KIABI STOCK CENTRAL BELGIEUE	6160	-	90.187
432	CONFISERIE LEONIDAS	4211	452	81.926
433	MERCATOR - PRESS	4732	176	87.158
434	INTERTRADE DIAMONDS	6190	-	88.525
435	REFRIFOOD BENELUX	6173	392	88.372
436	ECHO	6171	338	88.253
437	CHRYSLER IMPORT BELGIUM	6147	42	88.177
438	CACAO GOEMAERE	4211	159	88.074
439	GATES EUROPE	4812	660	86.660
440	CUMMINS DIESEL	6145	102	87.953
441	CONCENTRA HOLDING	8132	3	87.634
442	EUROSTAR MALAYSIA	4914	1	79.598
443	WESTINGHOUSE ENERGY SYSTEMS EUROPE	8370	266	87.335
444	SYSTEMS BIO-INDUSTRIES BENELUX	2567	276	86.699
445	SOCONORD GROUP	8500	5	78.421

APPENDIX [A.3]

Trends - Top 30.000, 1996

**BELGIAN COMPANIES WHICH PUBLISH A
CONSOLIDATED ACCOUNT IN BELGIUM**

#	Company Name (Trends Top 30000, 1996)	Selection Criteria (CD-ROM NBB, Nov. 1995)
1	Ackermans & Van Haaren	Selected
2	AIB Vincotte	Could not be identified in database of NBB
3	Alcopa	Selected
4	Aldaver	Selected
5	Almabo	Selected
6	Alpha Repartition	No direct majority participations
7	Alvo	No direct majority participations
8	Arjav Diamonds	No direct majority participations
9	Arslanian Freres	No direct majority participations
10	Asma(-Borgers)	Four direct majority participations, but co-operative organization
11	Associated Weavers International	Selected
12	Aveve	Not an ultimate parent
13	Aziapartner	Selected
14	Balta	Selected
15	Banksys	Only one direct majority participation
16	Barco	Selected
17	Batc (Brussels Airport Terminal Company)	Only two direct majority participations
18	Beaulieu Real	Only one direct majority participation
19	Beherman Invest	Only two direct majority participations
20	Bekaert	Selected
21	Belgacom	Public Organization
22	Belgian Bunkering & Stevedoring	Only two direct majority participations, one of which in the USA
23	Belgian Sky Shops	Only one direct majority participation
24	Belgische Beton Maatschappij	Selected
25	Belgische Fruitveiling	No direct majority participations
26	Belgische Olie Maatschappij	Only one direct majority participation
27	Belgomazout	Only one direct majority participation
28	Belgomilk	Four direct majority participations, but co-operative organization
29	Belgomine	Only one direct majority participation

30	Berenco		Selected
31	Berkovic Charles		No direct majority participations
32	Berry Group of Companies (Berry Finance)		Only one direct majority participation + not an ultimate parent
33	Biothera Finances		Only one direct majority participation
34	BMT		Selected
35	Brilliant Gems		No direct majority participations
36	Brouw		No direct majority participations
37	BZU Melkaanvoer		Only one direct majority participation + co-operative organization
38	Carat Crystal		Only one direct majority participation
39	Carneuse		Selected
40	Carpeland		Selected
41	Casternan		Selected
42	Chemitex		Not an ultimate parent
43	City Hotels		Selected
44	Cobam		Only two direct majority participations
45	Cobelfret		Selected
46	Cockerill Sambre		Not an ultimate parent
47	Confortluxe		No direct majority participations
48	Covavee (Coöperatieve Afzet van Vee & Varkens)		Three direct majority participations, but co-operative organization
49	De Eik		Selected
50	De Lijn (Vlaamse Vervoermaatschappij)		Only one direct majority participation + public organization
51	De Persgroep		Selected
52	De Poortere Finance		Only one direct majority participation
53	De Post		No direct majority participations + public organization
54	De Vlijt		Selected
55	Deceuninck Plastics Industries		Selected
56	Delhaize De Leuw		Selected
57	Delhaize Louis		Only two direct majority participations
58	Denali		Selected
59	Derra		No direct majority participations

60	<i>Detry Freres</i>	Only one direct majority participation
61	<i>Diamdel</i>	No direct majority participations
62	<i>Diatrada Belgium</i>	No direct majority participations
63	<i>D'Ieteren</i>	Selected
64	<i>Digrom 92</i>	Selected
65	<i>Diminco</i>	Four majority participations, but three in Asia and one in the USA
66	<i>Discounter Vlees</i>	No direct majority participations
67	<i>Domo Tuft</i>	Only one direct majority participation
68	<i>Dossche Bedrijven</i>	Selected
69	<i>Dredging Environmental & Marine Engineering</i>	Selected
70	<i>Eca</i>	Only two direct majority participations
71	<i>Entreprises Reunies R. De Cock</i>	Selected
72	<i>Espeka</i>	Only one direct majority participation
73	<i>Eternit Group</i>	Not an ultimate parent
74	<i>Ets. Brepols</i>	Selected
75	<i>Ets. Franz Colruyt</i>	Selected
76	<i>Euro Shoe Unie</i>	Selected
77	<i>Fabrique de Fer de Charleroi</i>	Selected
78	<i>Ferchimex</i>	No direct majority participations
79	<i>Finspa</i>	Only one direct majority participation
80	<i>Floridienne</i>	Selected
81	<i>Forges de Clabecq</i>	Three direct majority participations, but one in the USA
82	<i>GB-INNO-BM</i>	Selected
83	<i>Gembel</i>	Only one direct majority participation
84	<i>Goossens Vleeshandel</i>	No direct majority participations
85	<i>Groep Jan de Nul</i>	Selected
86	<i>Groep MultiPharma</i>	Outdated information going back to 1991
87	<i>Groep Van Roey</i>	Selected
88	<i>Groep Versele Laga</i>	Selected
89	<i>Groupe Lhoist</i>	Selected

90	Habitex	No direct majority participations
91	Haco	Selected
92	Haeck Finance Company	Selected
93	Hamon & Cie.	Selected
94	Holdifima (Plouvier & Kreglinger)	Selected
95	Huygebaert	No direct majority participations
96	Ibeco	No direct majority participations
97	ICI Paris XL	No direct majority participations + not an ultimate parent
98	Inco Zuivelindustrie	Only two direct majority participations + co-operative organization
99	Indika	Only one direct majority participation
100	Inex	Selected
101	Inter Nos	Only one direct majority participation
102	Interbrew	Selected
103	Interbuild	Selected
104	International Diamond Exporters	No direct majority participations
105	Jayam	Only two direct majority participations
106	Jet-Air	Only two direct majority participations
107	Kabelwerken Eupen	Only two direct majority participations
108	Kaszirer Diamonds	Only one direct majority participation
109	Konings Graanstokerij	Only two direct majority participations
110	Lalemant	Only two direct majority participations, both in the USA
111	Lano	Selected
112	Laub Abraham	No direct majority participations
113	Lornoy en Zonen	No direct majority participations + not an ultimate parent
114	LVD Invest	Selected
115	Magotteaux International	Selected
116	Mechelse Veilingen	Only one direct majority participation + co-operative organization
117	Mestdagh	Not an ultimate parent
118	MIVB (Maatschappij voor Intercommunaal Vervoer Brussel)	No direct majority participations + public organization
119	Nationale Loterij	Public Organization

120	NMBS	Public Organization
121	NMC	Selected
122	Non Ferrous International	Selected
123	Ontex	Selected
124	Pacific Fruit	No direct majority participations
125	Parfund	Selected
126	Pauwels International	Selected
127	Petrofina	Selected
128	Pieters Visbedrijf	Selected
129	Prayon Rupel	Selected
130	Printinvest	Selected
131	Ravago	Selected
132	RMT (Regie voor Maritiem Transport)	No direct majority participations + co-operative organization
133	Rombouts	Selected
134	Rossel et Cie.	Selected
135	Rosy Blue	Only one direct majority participation
136	Roularta	No direct majority participations
137	Sabam (Belgische Vereniging der Auteurs, ...)	Only one direct majority participation + co-operative organization
138	Sabena	Selected
139	Sait Radio Holland	Selected
140	Sana Diam	Only one direct majority participation
141	Santens	Not an ultimate parent
142	Sapac	Selected
143	Scheeders Van Kerchove	Only two direct majority participations
144	Sierra Gems	No direct majority participations
145	Sitagro	No direct majority participations
146	SLA Trading	No direct majority participations
147	Sofinal Cotesa	Selected
148	Solvay	Selected
149	Spacific	No direct majority participations

150	<i>Spano</i>	No direct majority participations
151	<i>Spoormans Willem</i>	No direct majority participations
152	<i>Star Diamond Company</i>	Only two direct majority participations
153	<i>Steinmetz & Son</i>	Only one direct majority participation + not an ultimate parent
154	<i>Sugro</i>	No direct majority participations
155	<i>Suiker Export</i>	Selected
156	<i>Suikergroep</i>	Not an ultimate parent
157	<i>Sun International</i>	Selected
158	<i>Swift</i>	12 majority participations, but 7 outside Europe + co-operative organization
159	<i>Tache Company</i>	Selected
160	<i>TEC (Sté Regionale Wallone du Transport Public de Personnes)</i>	Public Organization
161	<i>Telinfo</i>	Not an ultimate parent
162	<i>Ter Beke</i>	Not an ultimate parent
163	<i>Ter Lembeek International</i>	Selected
164	<i>Terca Brick Industries</i>	Not an ultimate parent
165	<i>Tractebel</i>	Selected
166	<i>Transcor</i>	Selected
167	<i>Triple A Diamonds</i>	No direct majority participations
168	<i>TVB</i>	No direct majority participations
169	<i>UCB</i>	Selected
170	<i>UCO</i>	Selected
171	<i>Unilin</i>	Only one direct majority participation
172	<i>Unisel</i>	Selected
173	<i>United Industrial Diamonds</i>	Only two direct majority participations
174	<i>Usines Gustave Boel</i>	Selected
175	<i>Utexbel</i>	Only one direct majority participation
176	<i>Van de Wiele Michel</i>	Selected
177	<i>Van Den Avenne Izegem</i>	Only one direct majority participation
178	<i>Van Den Broeke</i>	Selected
179	<i>Van Genechten</i>	Selected

180	<i>Van Gool Noordvlees</i>	Only two direct majority participations
181	<i>Van Hool</i>	Selected
182	<i>Van Lommel Vee & Vlees</i>	Only one direct majority participation
183	<i>Van Marcke Logistics</i>	No direct majority participations
184	<i>Vandemoortele International</i>	Selected
185	<i>Vanden Avenue Ooigem</i>	Selected
186	<i>Vapo</i>	Only two direct majority participations
187	<i>Veiling Roeslaere</i>	No direct majority participations + co-operative organization
188	<i>Vijaydiamon</i>	No direct majority participations
189	<i>Vlaamse Milieuholding</i>	Not an ultimate parent
190	<i>Vlaamse Televisie Maatschappij</i>	Not an ultimate parent
191	<i>Vlaamse Uitgevers Maatschappij</i>	Selected
192	<i>VPK Oudegem</i>	Selected
193	<i>Wiljo</i>	Only two direct majority participations
194	<i>Zand & Steengroeven</i>	Selected
195	<i>Ziegler</i>	Only two direct majority participations

APPENDIX [A.4]

Dun & Bradstreet - "Who Owns Whom"

Bureau van Dijk - "Amadeus"

and

Trends - Top 30.000, 1996

ALL COMPANIES IN MATCHED DATABASES OF
Dun & Bradstreet AND *Bureau van Dijk*
WHICH ARE NOT IN *Trends Top 30.000*

All companies in matched databases of Dun Bradstreet / Bureau van Dijk which are not in Trends Top 30000

#	Company Name (Dun & Bradstreet / Bureau van Dijk)	Selection Criteria (CD-ROM NBB, Nov. 1995)
1	<i>Agridec</i>	Only one majority participation
2	<i>Ceres</i>	Selected
3	<i>CFE</i>	Selected
4	<i>Cimenteries CBR</i>	Selected
5	<i>Concentra Holding</i>	Selected
6	<i>Creyf's Interim</i>	Recently under the control of Ackermans & Van Haaren
7	<i>Electrabel</i>	Most of its businesses are public companies ("Intercommunales")
8	<i>Fineter</i>	Only two majority participations
9	<i>Hoste</i>	Recently under the control of De Persgroep
10	<i>Scitex Europe</i>	Selected
11	<i>Soconord Group</i>	Selected
12	<i>VTB-VAB</i>	Selected

APPENDIX [A.5]

Dun & Bradstreet - "Who Owns Whom"

Bureau van Dijk - "Amadeus"

and

Trends - Top 30.000, 1996

FINAL POPULATION

#	Company Name (from: Trends Top 30000, 1996)	Corporate Reply First Stage
1	Ackermans & Van Haaren	
2	Alcopa	Reply After Third Follow-Up
3	Aldaver	
4	Almabo	Reply After First Follow-Up
5	Associated Weavers International	Reply After Second Follow-Up
6	Aviapartner	Immediate Reply
7	Balta	
8	Barco	Immediate Reply
9	Bekaert	Reply After First Follow-Up
10	Belgische Beton Maatschappij	Immediate Reply
11	Beremco	
12	BMT	Reply After Second Follow-Up
13	Carneuse	
14	Carpetland	
15	Casterman	Final Notification of Non-Participation
16	City Hotels	Immediate Reply
17	Cobelfret	
18	De Eik	Reply After First Follow-Up
19	De Persgroep	Reply After First Follow-Up
20	De Vlijt	Notification of Change of CFO
21	Deceuninck Plastics Industries	Reply After Second Follow-Up
22	Delhaize De Leenw	Immediate Reply
23	Denali	Company and/or CFO could not be located
24	D'teteren	Immediate Reply
25	Digrom-92	Company and/or CFO could not be located
26	Dossche Bedrijven	Reply After Third Follow-Up
27	Dredging Environmental & Marine Engineering	Reply After First Follow-Up
28	Entreprises Reunies R. De Cock	
29	Ets. Brepols	Immediate Reply
30	Ets. Franz Colruyt	

31	Euro Shoe Unie		
32	Fabrique de Fer de Charleroi		
33	Floridienne		
34	GB-INNO-BM		Reply After Second Follow-Up
35	Groep Jan de Nul		
36	Groep Van Roey		Immediate Reply
37	Groep Versele Laga		Notification of Non-Participation After Second Follow-Up
38	Groupe Lhoist		Immediate Notification of Non-Participation
39	Haco		
40	Haack Finance Company		
41	Hamon & Cie.		Company and/or CFO could not be located
42	Holdifima (Plouvier & Kreglinger)		
43	Inex		
44	Interbrew		Reply After Third Follow-Up
45	Interbuild		Reply After First Follow-Up
46	Lano		Immediate Reply
47	LVD Invest		
48	Magotteaux International		Reply After First Follow-Up
49	NMC		
50	Non-Ferrous International		
51	Ontex		Bankrupt / Into Liquidation
52	Parfund		Company and/or CFO could not be located
53	Pauwels International		Immediate Reply
54	Petrofina		Reply After First Follow-Up
55	Pieters Visbedrijf		Reply After First Follow-Up
56	Prayon Rupel		Final Notification of Non-Participation
57	Printinvest		Company and/or CFO could not be located
58	Ravago		
59	Rombouts		Reply After First Follow-Up
60	Rossel et Cie.		
61	Sabena		Immediate Reply
62	Sait Radio Holland		Reply After First Follow-Up

63	Saptec		Reply After First Follow-Up
64	Sofinal Cotesa		Reply After Third Follow-Up
65	Solvay		Reply After First Follow-Up
66	Suiker Export		Immediate Reply
67	Sun International		Company and/or CFO could not be located
68	Tache-Company		Company and/or CFO could not be located
69	Ter-Lenbeek International		Reply After First Follow-Up
70	Tractebel		
71	Transcor		
72	UCB		Reply After First Follow-Up
73	UCO		Reply After First Follow-Up
74	Unisel		Immediate Reply
75	Usines Gustave Boel		Immediate Reply
76	Van de Wiele Michel		Immediate Reply, but Incomplete Data
77	Van Den Broecke-Lutosa		Reply After First Follow-Up
78	Van Genechten		
79	Van Hool		
80	Vandemoortele International		Reply After Second Follow-Up
81	Vanden Avenue Ooigem		
82	Vlaamse Uitgevers Maatschappij		Immediate Reply
83	VPK Oudegem		Reply After First Follow-Up
84	Zand & Steengroeven		
#	Company Name (from: D&B and BvD)		Corporate Reply First Stage
85	Ceres		
86	CFE		Reply After First Follow-Up
87	Cimenteries CBR		Reply After First Follow-Up
88	Concentra Holding		Immediate Reply
89	Scitex Europe		
90	Soconord Group		
91	VTB-VAB		Reply After First Follow-Up

APPENDIX [A.6]

**CHARACTERISTICS
OF THE SAMPLE**

#	Company Name	[1] Cons.Assets	[2] Uncon.Assets	[1] / [2]	[3] Cons.Sales	[4] Uncon.Sales	[3] / [4]	Empl.	ROC(%)	NACE	d
1	Alcopa	9.014	4.251	2,12	16.593	32	518,53	3	18,81	8132	1
2	Almabo	94.736	12.968	7,31	41.816	54	774,37	11	5,60	8132	1
3	Associated Weavers International	n.a.	2.539	n.a.	9.227	292	31,60	12	24,85	8132	1
4	Aviapartner	n.a.	461	n.a.	5.053	132	38,28	2.500	n.a.	8392	0
5	Barco	14.029	14.793	0,95	11.073	6.847	1,62	1.392	11,70	3440	0
6	Bekaert	64.039	35.010	1,83	54.333	27.061	2,01	4.887	5,92	2234	0
7	Belgische Beton Maatschappij	28.284	2.293	12,33	23.176	28	827,71	4	12,22	5001	0
8	BMT	3.419	1.845	1,85	3.679	2.113	1,74	739	16,81	3135	0
9	CFE	81.734	42.097	1,94	27.382	8.515	3,22	771	8,99	5001	0
10	Cimenteries CBR	81.592	44.802	1,82	49.081	11.086	4,43	947	10,22	2421	0
11	City Hotels	3.545	944	3,76	3.817	115	33,19	23	9,63	6651	0
12	Concentra Holding	2.921	1.384	2,11	2.641	88	30,01	4	6,59	8132	1
13	De Eik	6.150	3.207	1,92	17.143	12	1.428,58	2	8,79	8132	1
14	De Persgroep (12/31/94)	4.372	1.969	2,22	4.176	n.a.	n.a.	n.a.	15,76	4744	0
15	Deceuninck Plastics	3.856	3.052	1,26	4.752	2.961	1,60	184	16,62	4830	0
16	Delhaize De Leeuw	123.034	44.580	2,76	371.492	86.318	4,30	12.419	12,64	6411	0
17	D'Ieteren	30.537	31.410	0,97	47.285	42.258	1,12	1.183	9,37	6147	0
18	Dossche Bedrijven	4.881	1.218	4,01	11.440	69	165,80	12	13,96	8132	1
19	Dredging (DEME)	17.011	4.007	4,25	16.068	68	236,29	6	11,24	8132	1
20	Ets. Brepols	3.454	1.047	3,30	3.611	27	133,74	1	9,82	8132	1
21	GB-INNO-BM	86.930	56.074	1,55	231.526	136.028	1,70	24.092	14,60	8132	1
22	Groep Van Roey	10.358	1.398	7,41	13.211	59	223,92	5	5,68	6132	0
23	Interbrew	79.765	34.476	2,31	65.487	1.482	44,19	69	7,32	8132	1
24	Interbuild	1.915	1.515	1,26	3.770	3.205	1,18	200	16,52	5011	0
25	Lano	n.a.	2.446	n.a.	3.380	3.322	1,02	603	12,05	4381	0
26	Magotteaux International	6.936	2.123	3,27	8.681	578	15,02	36	7,93	3110	0
27	Pauwels International	6.313	3.375	1,87	7.428	5.510	1,35	110	9,65	6145	0

Population / Sample / Non-Response Group Characteristics

28	Petrofina	358.653	179.413	2,00	558.982	141.718	3,94	537	9,66	6122	0
29	Pieters Vishedrijf	1.661	1.388	1,20	3.125	2.955	1,06	203	14,95	4142	0
30	Rombouts	3.100	1.187	2,61	4.840	157	30,83	20	3,96	4611	0
31	Sabena	83.804	67.827	1,24	56.662	53.130	1,07	10.044	0,83	7500	0
32	Sait Radio Holland	n.a.	2.405	n.a.	11.611	202	57,48	24	5,48	8132	1
33	Sofinal Cotesa	11.200	8.493	1,32	6.445	4.968	1,30	538	4,21	4397	0
34	Solvay	268.360	219.224	1,22	244.146	83.509	2,92	11.612	2,36	2530	0
35	Suiker Export	2.854	1.812	1,58	14.762	9.201	1,60	26	0,54	6177	0
36	Sun International	10.914	2.451	4,45	12.809	68	188,37	4	9,75	8132	1
37	Tractebel	561.794	134.412	4,18	270.771	9.118	29,70	1.648	11,56	8132	1
38	UCB	46.932	30.941	1,52	52.584	19.568	2,69	2.129	9,72	2510	0
39	UCO	6.404	5.536	1,16	6.871	1.705	4,03	158	0,96	4323	0
40	Unisel	n.a.	293	n.a.	3.015	19	158,68	3	n.a.	6165	0
41	Van de Wiele Michel	3.390	3.122	1,09	3.896	3.342	1,17	500	18,66	3231	0
42	Van Genechten	3.671	714	5,14	4.977	n.a.	n.a.	n.a.	7,73	8132	1
43	Vandemoortele International	22.355	5.139	4,35	47.145	45	1.047,67	10	9,55	8132	1
44	Vlaamse Uitgevers Maatschappij	2.580	2.374	1,09	3.869	3.700	1,05	749	8,98	4732	0
45	VPK Oudegem	n.a.	2.198	n.a.	3.164	3.015	1,05	642	18,24	4713	0
46	VTB-VAB	827	571	1,45	3.574	957	3,73	308	-30,27	7710	0
47	Ackermans & Van Haaren	15.293	4.424	3,46	19.495	69	282,54	16	6,38	8132	1
48	Aldaver (1994)	n.a.	725	n.a.	n.a.	n.a.	n.a.	n.a.	-0,01	8132	1
49	Balta	7.666	1.210	6,34	10.972	59	185,97	14	10,94	8132	1
50	Berenco	7.846	918	8,55	10.889	4	2.722,25	n.a.	-1,23	8132	1
51	Carmeuse	n.a.	2.719	n.a.	n.a.	1.216	n.a.	125	45,47	2315	0
52	Carpetland	6.675	2.932	2,28	7.681	1.371	5,60	183	12,63	6491	0
53	Casterman	3.124	2.735	1,14	3.170	2.682	1,18	626	12,13	4732	0
54	Ceres	n.a.	4.376	n.a.	n.a.	7.639	n.a.	179	19,08	4161	0
55	Cobelfret	13.038	7.694	1,69	20.149	15.155	1,33	165	9,47	7720	0
56	De Vlijt	2.660	2.538	1,05	4.114	4.023	1,02	647	3,72	4731	0

Population / Sample / Non-Response Group Characteristics

57	Entreprises Reunies R. De Cock	n.a.	1.126	n.a.	3.525	826	4,27	191	8,05	5022	0
58	Ets. Franz Colruyt	21.499	18.972	1,13	43.497	41.476	1,05	3.773	21,88	6411	0
59	Euro Shoe Unie	n.a.	4.550	n.a.	6.468	6.513	0,99	354	9,97	6461	0
60	Fabrique de Fer de Charleroi	9.902	9.359	1,06	6.914	6.854	1,01	983	2,57	2211	0
61	Floridienne	3.399	1.638	2,08	4.886	52	93,96	11	11,90	8132	1
62	Groep Jan de Nul	13.034	n.a.	n.a.	12.693	12.470	1,02	1.020	9,15	5021	0
63	Groep Versele Laga	4.620	1.842	2,51	11.909	5	2.381,80	4	13,88	8132	1
64	Groupe Lhoist (12/31/1992)	24.342	4.191	5,81	17.693	1.465	12,08	12	14,54	2312	0
65	Haco	2.620	1.375	1,91	3.236	1.389	2,33	107	14,12	3221	0
66	Haeck Finance Company	1.522	879	1,73	4.373	23	190,13	4	7,61	8391	1
67	Holidifima (Plouvier & Kreglinger)	6.299	1.996	3,16	5.615	10	561,50	3	-3,90	8132	1
68	Inex	2.911	1.746	1,67	6.112	5.327	1,15	442	15,83	4131	0
69	LVD Invest	3.828	996	3,84	3.140	67	46,87	n.a.	3,27	8361	1
70	NMC	2.995	1.865	1,61	4.262	547	7,79	68	23,13	4830	0
71	Ontex	2.598	2.022	1,28	3.426	2.540	1,35	349	9,14	4397	0
72	Prayon Rupel	11.430	10.133	1,13	12.951	8.885	1,46	869	11,36	2510	0
73	Ravago	3.605	1.629	2,21	5.725	44	130,11	1	12,48	8132	1
74	Rossel et Cie.	6.797	3.739	1,82	7.413	3.423	2,17	553	9,93	4744	0
75	Sapac	8.036	3.042	2,64	10.703	35	305,80	8	17,87	6113	0
76	Scitex Europe	n.a.	11.459	n.a.	n.a.	6.622	n.a.	226	37,36	6145	0
77	Soconord Group	3.751	1.994	1,88	2.832	192	14,75	5	1,02	8500	1
78	Transcor	7.929	995	7,97	72.903	1.240	58,79	7	17,68	6320	0
79	Usines Gustave Boel	14.527	13.591	1,07	17.592	14.499	1,21	2.967	-17,52	2211	0
80	Van Den Broeke-Lutosa	n.a.	1.438	n.a.	n.a.	2.223	n.a.	301	14,78	4238	0
81	Van Hool	10.131	9.086	1,12	13.193	12.927	1,02	3.239	14,03	3520	0
82	Vanden Avenue Ooigem	n.a.	1.439	n.a.	4.110	4.256	0,97	105	9,92	4220	0
83	Zand & Steengroeven	25.472	8.248	3,09	18.382	3.087	5,95	321	14,86	2314	0

Population / Sample / Non-Response Group Characteristics

sample average (n=46)	53.933	22.278	51.534	15.355	1.804	9.32
sample standard deviation (n=46)	109.554	45.708	109.573	33.726	4.504	8.05
smallest value in sample (n=46)	827	293	2.641	12	1	-30.27
largest value in sample (n=46)	561.794	219.224	558.982	141.718	24.092	24.85
population average (n=83)	34.853	14.322	35.264	10.561	1.247	10.29
population standard deviation (n=83)	86.086	35.359	86.480	25.957	3.480	9.30
smallest value in population (n=83)	827	293	2.641	4	1	-30.27
largest value in population (n=83)	561.794	219.224	558.982	141.718	24.092	45.47
non-response average (n=37)	8.536	4.156	11.876	4.700	526	11.45
non-response stand. dev. (n=37)	6.573	4.224	13.797	7.691	935	10.60
smallest value in non-response (n=37)	1.522	725	2.832	4	1	-17.52
largest value in non-response (n=37)	25.472	18.972	72.903	41.476	3.773	45.47

Remark: - shaded companies are part of the response sample (n=46)

- figures in **bold + italics** come from *Trends* [1995], *Nationale Bank van België*, or from AMADEUS (but another year than 1993)

- the last column, *d*, is a dummy (0-1) where 1 stands for "holding companies" (mostly NACE-code 8132)

Appendix B

APPENDIX [B.1]

CORPORATE SURVEY

Gent, [### date ###]

Dear [### chief financial officer ###],

We are writing to ask for your help with a study we are currently conducting on **the relationship between the corporate parent and business units in multi-business companies**. Specifically, we are interested in the methods of budgeting and performance measurement used by corporate management to evaluate and control business units.

[### corporate ###] is part of a relatively small sample carefully selected to take part in the study. Through publicly available data we have been able to determine that your company owns several businesses.

In our study it is essential that we obtain an insight into **the degree of diversification at the corporate level**. Attached is a list of businesses in which your company participates for more than 50%. We obtained this information from three sources, notably, *Nationale Bank van België*, *Bureau van Dijk*, and *Dun & Bradstreet*. Unfortunately, it is very difficult to get an insight into the extent to which those businesses are related to each other. Therefore, we ask for your cooperation.

The only thing we ask is **to cluster the businesses into groups of related activities**. More details are given below. We don't ask for any other confidential information.

Your participation is critical to the success of the study. We would therefore be most grateful if you could complete and return the attached information sheet. We are convinced that this research will contribute significantly to our understanding of the management practices in multi-business firms. A summary of the results will be sent to everybody who participates in the study.

If you have any questions concerning the study, please do not hesitate to call us. Thanks again for your cooperation. We hope you find it worthwhile.

Sincerely,

Wim Van der Stede
Research Fellow
tel. 09/210.97.73
e-mail wim.vanderstede@rug.ac.be

Prof. Dr. Werner Bruggeman
President - Director

Enc.: Information Sheet

FAX MESSAGE TO **09/210.97.00**, WIM VAN DER STEDE

DE **Vlerick** SCHOOL VOOR MANAGEMENT

Bellevue 6 – 9050 Gent-Ledeberg – tel. 09/210.97.11 – fax. 09/210.97.00

INFORMATION SHEET

This information sheet is designed to get an insight into the **corporate structure** and the **degree of relatedness among the business units (BU)** in your company. If you have any questions concerning this questionnaire and how to complete it, please contact *Wim Van der Stede* at 09/210.97.73. If you don't want to **fax back** this information sheet, you can also use the **pre-addressed envelope** to return it directly to the researchers. Your participation in this study is greatly appreciated.

According to our data sources (*Nationale Bank van België, Bureau van Dijk, and Dun & Bradstreet*), [### corporate ###] has a direct participation of more than 50% in the following businesses. Make all necessary corrections if this information is outdated or inaccurate. Please, indicate for each subsidiary if it reports its financial performance *directly* (i.e., not through another subsidiary) to [### corporate ###].

This unit reports its financial performance
directly to [### corporate ###]

- BU 1: [### business unit (country) ###] Yes ☐ No ☐
- BU 2: [### business unit (country) ###] Yes ☐ No ☐
- BU 3: [### business unit (country) ###] Yes ☐ No ☐
- BU 4: [### business unit (country) ###] Yes ☐ No ☐
- BU 5: [### business unit (country) ###] Yes ☐ No ☐

Please, add any other business which reports its financial performance directly (i.e., not through another subsidiary) to [### corporate ###] (the participation percentage does not matter here).

- BU 6:
- BU 7:
- BU 8:

If there are more businesses than the number provided on this pre-printed form, please add an additional sheet of paper.

Now, we wish to assess the **relatedness among those businesses**. Multi-business firms can be composed of businesses which are **related** from an *operational* point of view (e.g., related *products, markets, logistics, distribution channels, technologies, ...*). On the other hand, a company can be composed of a diverse set of **unrelated** businesses ranging, for example, from food processing to car manufacturing (cf., *conglomerates*). In other words, businesses are considered to be *unrelated* if they do not have an important element of commonality in their physical assets and/or technical skills.

Referring to this brief description, please **cluster the above businesses into groups of related activities**. Suppose that, at one extreme, every business is completely *unrelated* to all other businesses, then you should place only one business per group. If, at the other extreme, all businesses are strongly *related* to each other, then they should all be placed in one and the same cluster. Please use the pre-printed form below to provide this information.

Please, also indicate the approximate percentage of [### corporate ###]'s total sales (=turnover or operating revenue) that is accounted for by each group of activities.

Group 1: Short description of activity

BU ... / BU ... / BU ... / BU ... / BU ... / BU ... / BU ... / BU ... / BU ...

Percent of total sales:%

Group 2: Short description of activity

BU ... / BU ... / BU ... / BU ... / BU ... / BU ... / BU ... / BU ... / BU ...

Percent of total sales:%

Group 3: Short description of activity

BU ... / BU ... / BU ... / BU ... / BU ... / BU ... / BU ... / BU ... / BU ...

Percent of total sales:%

Group 4: Short description of activity

BU ... / BU ... / BU ... / BU ... / BU ... / BU ... / BU ... / BU ... / BU ...

Percent of total sales:%

If there are more groups than the number provided on this pre-printed form, please add those groups on an additional sheet of paper.

If there are any additional comments you would like to make, please use this space for that purpose.

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Thank you for completing this questionnaire. We are convinced that this research will contribute significantly to our understanding of the management practices in diversified companies. We appreciate your valuable contribution.

Please,
fax back to +32/(0)9/210.97.00,
or,
return the questionnaire in the **pre-addressed envelope** provided
or,

mail to **De Vlerick School voor Management**
Wim Van der Stede
Bellevue 6
B-9050 Gent-Ledeberg

tel +32/(0)9/210.97.73
fax +32/(0)9/210.97.00
e-mail wim.vanderstede@rug.ac.be

APPENDIX [B.2]

FIRST FOLLOW-UP FOR CORPORATE SURVEY

Gent, [### date ###]

Dear [### chief financial officer ###],

Last week, we wrote to you seeking your help with a study we are conducting on the relationship between the parent company and its businesses.

If you have already completed and returned the questionnaire, please accept our sincere thanks. If not, we want to ask you to do so as soon as you can. Our study is based on a small but carefully selected sample of Belgian corporations. Most studies on diversified firms have been done in the United States, mainly because of easy data-availability. However, we are convinced that a European study can contribute significantly to our understanding of the management practices in diversified firms. Unfortunately, the data in Europe is not as readily available as in the United States. Therefore, it is critical that we receive your response. We would be most grateful if you would agree to participate. A summary of the results will be sent to everybody who participates in the study.

If you have never received the questionnaire or it has been misplaced, please feel free to call us and we'll make sure you get a replacement.

Sincerely,

Wim Van der Stede
Research Fellow
tel. 09/210.97.73
e-mail wim.vanderstede@rug.ac.be

APPENDIX [B.3]

SECOND FOLLOW-UP FOR CORPORATE SURVEY

Gent, [### date ###]

Dear [### chief financial officer ###],

On [### date ###], we wrote to you seeking your assistance with a study we are conducting on the relationship between the corporate parent and its business units in multi-business firms. **However, as of today, we have not yet received your response.**

The difference between an outstanding and simply adequate control over business units might result in a bottom-line impact of 5 to 25 percent of net income. Moreover, it appears that diversification decisions are among the most important top managers make. Therefore, insights into how to manage diversification adequately is not superfluous. This is the purpose of this study.

Our research is based on a small but carefully selected sample of diversified firms. In this study, it is essential that we obtain an insight into **the degree of diversification at the corporate level**. Attached is a list of businesses in which your company participates for more than 50% (Source: *Nationale Bank van België*, *Bureau van Dijk*, and *Dun & Bradstreet*). The only thing we ask is **to verify this information and to cluster the businesses into groups of related activities**.

We would be most grateful if you would agree to participate. A summary of the results will be sent to everybody who participates in the study. In the event that you have never received the questionnaire, or that it has been misplaced, **a replacement is enclosed**. If this letter and your completed questionnaire have crossed paths in the mail, please disregard this letter and accept our sincere thanks for your help.

If you would like more information about the study, please don't hesitate to ask. Thanks again for your time and effort. We are sure you will find it worthwhile.

Sincerely,

Wim Van der Stede
Research Fellow
tel. 09/210.97.73

e-mail wim.vanderstede@rug.ac.be

Prof. Dr. Werner Bruggeman
President - Director

APPENDIX [B.4]

THIRD FOLLOW-UP FOR CORPORATE SURVEY

Gent, [### date ###]

Dear [### chief financial officer ###],

It's the fourth time now that we write to ask your help with a study we are conducting on the relationship between the corporate parent and its business units in multi-business firms. **However, as of today, we have not yet received your response.**

In our previous letters, we have emphasized the importance of your cooperation. We have done all possible effort to obtain information about your company from publicly available data-sources. However, we still need your help to cluster the listed businesses into groups of related activities. This information is not available from public sources and only people internal to the company can do it accurately and reliably.

Our research is based on a small but carefully selected sample of diversified firms. We would be most grateful if you would agree to participate. A summary of the results will be sent to everybody who participates in the study. If you need a replacement of the questionnaire, please feel free to call us. If this letter and your completed questionnaire have crossed paths in the mail, please disregard this letter and accept our sincere thanks for your help.

If you would like more information about the study, please don't hesitate to ask. Thanks again for your time and effort. We appreciate your valuable contribution.

Sincerely,

Wim Van der Stede
Research Fellow
tel. 09/210.97.73
e-mail wim.vanderstede@rug.ac.be

PS. Could you please take two minutes of your time to complete and return the **attached fax sheet**? Thank you very much.

FAX MESSAGE TO **09/210.97.00**, WIM VAN DER STEDE

DE **Vlerick** SCHOOL VOOR MANAGEMENT

Bellevue 6 – 9050 Gent-Ledeberg – tel. 09/210.97.11 – fax. 09/210.97.00

[### corporate ###]

***Yes**, I want to participate in the study, but,*

- ☐ I need some more time to complete the questionnaire;
- ☐ I want some more explanation about the study; please give me a call at / - -

***No**, I don't want to participate in the study, because,*

- ☐ I think it will take too much time to complete the questionnaire;
- ☐ The information you want is too sensitive;
- ☐ It's our company policy not to participate in academic studies;
- ☐ Our company is not well chosen for the study, because,
.....
- ☐ The study is in English;
- ☐ Other reason(s) (please specify)
.....
.....

Thank you very much.

Appendix C

APPENDIX [C.1]

REQUEST
TO
CORPORATE FINANCIAL OFFICERS
FOR
NAMES AND ADDRESSES
OF
BUSINESS UNIT MANAGERS

Gent, [### date ###]

Dear [### chief financial officer ###],

First and foremost, I want to express my sincere thanks for providing me with the information about the groups of activities [### corporate ###] is involved in. Of the small population of large, independent, Belgian corporations, about 40 agreed to participate in the study. This is a very good response, but still, it's a very select group of companies.

From the information I received from you, I have been able to assess the number of legal entities which are part of [### corporate ###], the countries in which those entities are located, and the activities which are undertaken by those entities. This will allow me to measure the size, diversity, and geographical dispersion of your company.

In the second stage of my research, I want to investigate how size, diversity, and geographical dispersion have an influence on the control relationship between the corporate parent and its business units. Specifically, **I am interested in the methods of budgeting and performance measurement used by the corporate parent to evaluate and control its business units.** This stage involves data-gathering from business unit managers by means of a questionnaire.

However, the *legal entity* structure of a company does not necessarily correspond with its *operational business unit* structure. Would you therefore be willing to give me a **list of managers (+address) who have a direct budgeting and performance measurement relationship with the corporate parent?** Those managers will then receive a survey in which I ask questions about the design and use of budgeting systems. Of course, this information will be kept strictly **confidential** and will not be made available to anyone except in aggregate form.

Again, I would like to emphasize the importance of your participation to the success of the study. A summary of the results will be sent to everybody who participates in the study.

If you have any questions concerning the study, please do not hesitate to call me. Thanks again for your cooperation. In the meantime, I remain,

Very truly yours,

Wim Van der Stede
Research Fellow
Management Accounting & Control
tel. 32-(0)9-210.97.73
e-mail wim.vanderstede@rug.ac.be

APPENDIX [C.2]

RESPONSE CHARACTERISTICS
OF THE
QUESTIONNAIRE
AT THE
BUSINESS LEVEL

Corporate	Entities	Surveys Sent	Total Reply	Immediate Reply	Reply after 1st FU	Reply after 2nd FU	Reply of Non-participation or Other	Usable Responses	Total R.Rate	Usable R.Rate
Alcopa	27	15	8	1	4	3	2	6	0,53	0,40
Almabo	7	5	2	2	0	0	1	1	0,40	0,20
Associated Weavers Int'l	9	5	4	1	1	2	2	2	0,80	0,40
Aviapartner	14	7	6	2	2	2	0	6	0,86	0,86
Barco	33	7	4	3	0	1	0	4	0,57	0,57
Bekaert	61	6	5	0	4	1	1	4	0,83	0,67
Belgische Beton Mtschppij	4	4	2	1	0	1	0	2	0,50	0,50
BMT	9	8	4	1	1	2	0	4	0,50	0,50
CFE	57	14	4	3	0	1	0	4	0,29	0,29
Cimenteries CBR	28	10	6	1	2	3	1	5	0,60	0,50
City Hotels	9	6	2	0	1	1	0	2	0,33	0,33
Concentra Holding	13	none	none	none	none	none	none	none	none	none
De Eik	8	2	2	1	0	1	1	1	1,00	0,50
De Persgroep	7	3	3	3	0	0	0	3	1,00	1,00
Deceuninck Plastics	16	9	7	4	2	1	1	6	0,78	0,67
Delhaize De Leeuw	9	7	5	0	2	3	3	2	0,71	0,29
D'Ieteren	15	8	6	2	2	2	3	3	0,75	0,38
Dossche Bedrijven	23	none	none	none	none	none	none	none	none	none
Dredging (DEME)	13	9	7	3	2	2	1	6	0,78	0,67
Ets. Brepols	4	3	2	0	2	0	0	2	0,67	0,67
GB-INNO-BM	40	18	10	2	3	5	2	8	0,56	0,44
Groep Van Roey	18	none	none	none	none	none	none	none	none	none
Interbrew	24	none	none	none	none	none	none	none	none	none
Interbuild	5	none	none	none	none	none	none	none	none	none
Lano	8	none	none	none	none	none	none	none	none	none
Magotteaux International	16	4	3	1	1	1	1	2	0,75	0,50
Pauwels International	15	7	2	0	1	1	0	2	0,29	0,29
Petrofina	48	22	12	2	5	5	6	6	0,55	0,27
Pieters Visbedrijf	11	7	4	2	2	0	1	3	0,57	0,43

Response Pattern at the Business Level -- Overall Analysis

Rombouts	5	3	3	1	2	0	0	3	1,00	1,00
Sabena	20	6	3	0	1	2	0	3	0,50	0,50
Sait Radio Holland	26	11	7	3	3	1	2	5	0,64	0,45
Sofinal Cotesa	14	3	3	1	1	1	0	3	1,00	1,00
Solway	174	10	4	0	3	1	1	3	0,40	0,30
Suiker Export	26	3	2	1	0	1	1	1	0,67	0,33
Sun International	20	12	4	2	0	2	1	3	0,33	0,25
Tractebel	150	65	31	9	13	9	5	26	0,48	0,40
UCB	100	24	13	5	6	2	1	12	0,54	0,50
UCO	12	5	3	1	2	0	0	3	0,60	0,60
Unisel	7	2	2	0	1	1	0	2	1,00	1,00
Van de Wiele Michel	7	6	2	1	0	1	0	2	0,33	0,33
Van Genechten	14	none	none	none	none	none	none	none	none	none
Vandemoortele International	35	none	none	none	none	none	none	none	none	none
Vlaamse Uitgevers Mtschppij	8	none	none	none	none	none	none	none	none	none
VPK Oudegem	6	3	1	0	1	0	0	1	0,33	0,33
VTB-VAB	5	2	2	0	2	0	0	2	1,00	1,00
Sum	1180	341	190	59	72	59	37	153	0,56	0,45

Response Rate Break-down

Questionnaires Sent / Entities

0,29

min

0,29

max

1,00

0,20

1,00

Corporate	Surveys Sent	Belgium	Europe	Rest of the World	Total Usable Replies	Reply Belgium	Reply Europe	Reply Rest of the World
Alcopa	15	14	1	0	6	6	0	irrelevant
Almabo	5	5	0	0	1	1	irrelevant	irrelevant
Associated Weavers Int'l	5	2	3	0	2	1	1	irrelevant
Aviapartner	7	6	1	0	6	5	1	irrelevant
Barco	7	7	0	0	4	4	irrelevant	irrelevant
Bekaert	6	4	1	1	4	3	1	0
Belgische Beton Mtschppij	4	4	0	0	2	2	irrelevant	irrelevant
BMT	8	5	3	0	4	2	2	irrelevant
CFE	14	11	3	0	4	3	1	irrelevant
Cimenteries CBR	10	6	1	3	5	3	0	2
City Hotels	6	5	1	0	2	1	1	irrelevant
Concentra Holding	none	none	none	none	none	none	none	none
De Eik	2	2	0	0	1	1	irrelevant	irrelevant
De Persgroep	3	3	0	0	3	3	irrelevant	irrelevant
Deceuninck Plastics	9	3	6	0	6	3	3	irrelevant
Delhaize De Leeuw	7	3	3	1	2	0	2	0
D'teteren	8	7	1	0	3	3	0	irrelevant
Dossche Bedrijven	none	none	none	none	none	none	none	none
Dredging (DEME)	9	8	1	0	6	6	0	irrelevant
Efs. Brepols	3	1	2	0	2	1	1	irrelevant
GB-INNO-BM	18	15	3	0	8	7	1	irrelevant
Groep Van Roey	none	none	none	none	none	none	none	none
Interbrew	none	none	none	none	none	none	none	none
Interbuild	none	none	none	none	none	none	none	none
Lano	none	none	none	none	none	none	none	none
Magotteaux International	4	2	2	0	2	2	0	irrelevant
Pauwels International	7	4	1	2	2	2	0	0
Petrofina	22	9	13	0	6	4	2	irrelevant

Response Pattern at the Business Level -- Geographical Analysis

Pieters Visbedrijf	7	3	4	0	3	1	2	irrelevant
Rombouts	3	3	0	0	3	3	irrelevant	irrelevant
Sabena	6	6	0	0	3	3	irrelevant	irrelevant
Sait Radio Holland	11	2	9	0	5	0	5	irrelevant
Sofinal Cotesa	3	3	0	0	3	3	irrelevant	irrelevant
Solvay	10	6	3	1	3	3	0	0
Suiker Export	3	1	2	0	1	0	1	irrelevant
Sun International	12	7	5	0	3	2	1	irrelevant
Tractebel	65	57	8	0	26	23	3	irrelevant
UCB	24	9	15	0	12	6	6	irrelevant
UCO	5	5	0	0	3	3	irrelevant	irrelevant
Unisel	2	2	0	0	2	2	irrelevant	irrelevant
Van de Wiele Michel	6	4	2	0	2	1	1	irrelevant
Van Genechten	none	none	none	none	none	none	none	none
Vandemoortele International	none	none	none	none	none	none	none	none
Vlaamse Uitgevers Mtschppij	none	none	none	none	none	none	none	none
VPK Oudegem	3	2	1	0	1	0	1	irrelevant
VTB-VAB	2	2	0	0	2	2	irrelevant	irrelevant
Sum	341	238	95	8	153	115	36	2

[1] [2] [3] [4] [5] [6] [7] [8]

Geographical Response Rate

0,48	0,38	0,25
[6] / [2]	[7] / [3]	[8] / [4]

Geographical Proportion

0,70	0,28	0,02
[2] / [1]	[3] / [1]	[4] / [1]

0,75	0,24	0,01
[6] / [5]	[7] / [5]	[8] / [5]

Appendix D

APPENDIX [D.1]

BUSINESS UNIT QUESTIONNAIRE

DE **Vlerick** SCHOOL VOOR MANAGEMENT

Management Control in Multi-Business Firms

A Survey of Business Unit Managers

This study investigates the design and use of management control systems in companies with several businesses or subsidiaries. The aim is to better understand the methods of budgeting and performance measurement used by the parent company to evaluate and control its businesses.

Your cooperation in this study is gratefully appreciated.

ID:

CONFIDENTIALITY

The nature of the study requires that the data collected from you at the business unit level be linked with the data obtained from the parent company. Therefore, we must be able to identify the subsidiaries and the parent company from which they are a part. However, instead of writing the name of your business on the questionnaire, we used a **code** which is only known to the researchers (see code in left-hand upper corner of this page). We guarantee that your individual responses will be kept in the **strictest confidence** and will not be made available to anyone inside or outside your company except in aggregate form. Completed questionnaires can be returned directly to the researchers in the **pre-addressed envelope**.

INSTRUCTIONS

This questionnaire should be completed by the **Business Unit General Manager**. The term "**Business**" is used to refer to a subsidiary, business unit, division, profit center, or branch which is part of a higher-level parent company. The term "**Corporate**" is used to refer to the parent company of which your business is a part.

The term "**Business Unit Controller**" refers to the financial/administrative director located at the business unit level (not every business has a Business Unit Controller). The "**Corporate Controller**," on the other hand, is located in the parent company and is responsible for (financial) control of the whole group. The term "**Corporate Superior**" is used to refer to your direct corporate boss/manager in the parent company. Finally, words such as *he* or *him* should also be taken to mean *she* or *her*.

Most questions require that you check a box on a scale. There are no right or wrong answers to any of the questions asked here.

Missing data is a major concern of survey research. Please check that no item is unanswered. Some questions may appear similar or redundant; this is for statistical purposes, and **we need your response to each question**.

I. CONTROL SYSTEM DESIGN AND USE

A. Budgeting Characteristics

In this section, we seek to measure the characteristics of the budgeting process between the corporate parent and your business. Please, indicate the extent of truth or falsehood of each of the following statements. (Check one box for each statement.)

	Definitely False				Equally False/True				Definitely True
1. I am allowed to participate in setting the budget for my business.	☐	☐	☐	☐	☐	☐	☐	☐	☐
2. I am constantly reminded by the corporate parent of the need to meet budget targets.	☐	☐	☐	☐	☐	☐	☐	☐	☐
3. I am required to prepare interim reports (e.g., monthly, quarterly) which compare the results-to-date with the budget.	☐	☐	☐	☐	☐	☐	☐	☐	☐
4. Control over my business is achieved by the corporate parent principally by monitoring how well my budget is on target.	☐	☐	☐	☐	☐	☐	☐	☐	☐
5. My corporate superiors are very considerate of my explanations of deviations from the budget.	☐	☐	☐	☐	☐	☐	☐	☐	☐
6. Budget targets are strong commitments and cannot be changed during the year.	☐	☐	☐	☐	☐	☐	☐	☐	☐
7. Budget-related communication with the corporate parent is subject to a fairly strict set of rules and policies.	☐	☐	☐	☐	☐	☐	☐	☐	☐
8. My corporate superiors, myself, and my own subordinates often form a <i>team</i> to discuss and solve budgeting matters.	☐	☐	☐	☐	☐	☐	☐	☐	☐
9. Unfavorable budget variances receive more attention from my corporate superiors than favorable variances.	☐	☐	☐	☐	☐	☐	☐	☐	☐

	Definitely False				Equally False/True				Definitely True
10. My methods of reaching budget performance are accepted by corporate without question.	☐	☐	☐	☐	☐	☐	☐	☐	☐
11. Budget-related communication with my corporate superiors is fairly <i>informal</i> .	☐	☐	☐	☐	☐	☐	☐	☐	☐
12. The control reports provided to corporate are not very detailed and only include overall, aggregate, bottom-line budgeting information on the performance of my business.	☐	☐	☐	☐	☐	☐	☐	☐	☐
13. During budget meetings, I usually offer suggestions for solving and improving business matters beyond the pure discussion of budget deviations.	☐	☐	☐	☐	☐	☐	☐	☐	☐
14. Not achieving my budget has a strong impact on how my performance is rated by my corporate superior.	☐	☐	☐	☐	☐	☐	☐	☐	☐
15. I consult with my corporate superior on how to achieve my budget.	☐	☐	☐	☐	☐	☐	☐	☐	☐
16. I am required to submit control reports which explain in detail budget variances on a line-by-line basis.	☐	☐	☐	☐	☐	☐	☐	☐	☐
17. I usually discuss budgeting matters with the corporate <i>controller</i> . My direct corporate superior, on the other hand, only pays passing attention unless my performance is seriously below expectations.	☐	☐	☐	☐	☐	☐	☐	☐	☐
18. I am required to report the actions taken to correct causes of interim budget variances.	☐	☐	☐	☐	☐	☐	☐	☐	☐
19. My promotion prospects depend heavily on my ability to meet the budget.	☐	☐	☐	☐	☐	☐	☐	☐	☐
20. When problems occur, I discuss budget matters with my corporate superior without being asked to.	☐	☐	☐	☐	☐	☐	☐	☐	☐
21. The corporate parent continuously monitors to ensure that budget rules and procedures are not violated.	☐	☐	☐	☐	☐	☐	☐	☐	☐

	Definitely False			Equally False/True			Definitely True
22. My corporate superiors don't care very much about interim budget deviations.	☐	☐	☐	☐	☐	☐	☐
23. I consult with other business unit managers for preparing the budget for my own business.	☐	☐	☐	☐	☐	☐	☐
24. Budgets are usually adjusted during the year to those circumstances which could not be foreseen at the time the budget was drawn up.	☐	☐	☐	☐	☐	☐	☐
25. From the comments made by my corporate superiors, I know that they investigate my budget in every detail.	☐	☐	☐	☐	☐	☐	☐
26. My corporate superiors attach a great deal of importance to interim budget deviations.	☐	☐	☐	☐	☐	☐	☐
27. My corporate superiors are interested not only in how well I achieve my overall budget, they also evaluate how well I am on target on each of the budget line-items.	☐	☐	☐	☐	☐	☐	☐
28. Changes in the budget are difficult to get approved by the corporate parent.	☐	☐	☐	☐	☐	☐	☐
29. Corporate superiors judge my performance predominantly on the basis of attaining budget goals.	☐	☐	☐	☐	☐	☐	☐
30. Budget-related communication with the corporate parent is very bureaucratized.	☐	☐	☐	☐	☐	☐	☐
31. Budgets are updated on a regular basis (e.g., monthly or quarterly) to the new business environment.	☐	☐	☐	☐	☐	☐	☐
32. In the eyes of my corporate superiors, achieving the budget is an accurate reflection of whether I am succeeding in my business.	☐	☐	☐	☐	☐	☐	☐
33. The bottom-line is what counts for my corporate superiors. How it is achieved is left to my responsibility.	☐	☐	☐	☐	☐	☐	☐
34. To the extent possible, there are manuals that define the courses of action to be taken for budget-related issues.	☐	☐	☐	☐	☐	☐	☐

	Definitely False				Equally False/True				Definitely True
35. I am required to submit an explanation in writing about causes of interim budget variances.	☐	☐	☐	☐	☐	☐	☐	☐	☐
36. In our company, a budget is essentially a forecast rather than a true commitment.	☐	☐	☐	☐	☐	☐	☐	☐	☐
37. Corporate superiors call me in to discuss budget deviations in face-to-face meetings.	☐	☐	☐	☐	☐	☐	☐	☐	☐
38. Responding to new, unforeseen opportunities is considered more important by the corporate parent than achieving the budget target.	☐	☐	☐	☐	☐	☐	☐	☐	☐
39. In our company, there is too much paperwork involved in the budgeting process.	☐	☐	☐	☐	☐	☐	☐	☐	☐
40. Budgets are not revised during the year unless the assumptions on which the budget was based have become so unrealistic that the budget no longer provides a useful control device.	☐	☐	☐	☐	☐	☐	☐	☐	☐
41. Budgeting matters are discussed regularly with my corporate superior even if there are no negative budget deviations to report.	☐	☐	☐	☐	☐	☐	☐	☐	☐
42. In the eyes of my corporate superiors, not achieving the budget reflects poor performance.	☐	☐	☐	☐	☐	☐	☐	☐	☐
43. My corporate superior leaves me alone as long as I meet my budget.	☐	☐	☐	☐	☐	☐	☐	☐	☐
44. Budgets are used by the corporate parent mainly to give very broad guidelines as to authorized activities.	☐	☐	☐	☐	☐	☐	☐	☐	☐
45. A distinction can be made between budget-related communication aimed at "sharing information" and budget-related communication aimed at "control." On the scale below, indicate the extent to which budget-related communication between the corporate parent and your business unit is predominantly aimed at:									
	"Sharing Information"				both			"Control"	
	☐	☐	☐	☐	☐	☐	☐	☐	☐

46. Indicate the typical frequency with which you communicate with your **corporate parent** for budget-related issues.

	daily	weekly	monthly	quarterly	every six months	yearly	less than yearly
Formal communication:	☐	☐	☐	☐	☐	☐	☐
Informal communication:	☐	☐	☐	☐	☐	☐	☐

47. In general, what percentage of your working time do you spend on interaction with **peers, colleagues, or subordinates** in the other business units of your parent company?

_____ % of my time.

B. Participation in Budget-related Activities

1. Please indicate how the budget target is set: (Check one.)

- ☐ decided by me without consulting corporate superiors;
- ☐ proposed by me, followed by consulting corporate superiors, but my opinion generally prevails;
- ☐ proposed by me, but decided jointly;
- ☐ proposed sometimes by me, sometimes by corporate superiors, but decided jointly;
- ☐ proposed by corporate superiors, followed by my opinion which has a lot of weight;
- ☐ proposed by corporate superiors, followed by my opinion which does not have much weight;
- ☐ decided at the corporate parent without asking my opinion, but the decision is explained to me;
- ☐ decided at the corporate parent without asking my opinion and without any explanation.

2. Generally, the budget is:
(Check one.)

- ☐ very easy to attain;
- ☐ attainable with reasonable effort;
- ☐ attainable with considerable effort;
- ☐ very tight, practically unattainable;
- ☐ impossible to achieve.

C. *Business Unit Controllers*

This question looks for an assessment of the role of the Business Unit Controller in your business.

If you *don't* have a controller in your business unit, check this box ☐ and continue with the next question on p.8.

Otherwise, indicate the extent of truth or falsehood of each of the following statements. (Check one box for each statement.)

	Definitely False			Equally False/True			Definitely True
1. My Business Unit Controller is actively involved in the business unit decision-making process.	☐	☐	☐	☐	☐	☐	☐
2. My Business Unit Controller primarily acts as the local "policeman" for the Corporate Control department.	☐	☐	☐	☐	☐	☐	☐
3. The Business Unit Controller must primarily ensure that the financial information about my business is accurate and that internal control practices conform to the corporate policies and procedures.	☐	☐	☐	☐	☐	☐	☐
4. The Business Unit Controller co-operates very closely with me and only has an <i>indirect</i> relationship with his Corporate Controller.	☐	☐	☐	☐	☐	☐	☐
5. The primary role of my Business Unit Controller is to assist me in the business decision-making process.	☐	☐	☐	☐	☐	☐	☐
6. I consider my Business Unit Controller as my "ally."	☐	☐	☐	☐	☐	☐	☐
7. The Business Unit Controller reports directly to his Corporate Controller and only has an administrative, control-oriented relationship with me.	☐	☐	☐	☐	☐	☐	☐
8. I perceive my Business Unit Controller as a "corporate spy."	☐	☐	☐	☐	☐	☐	☐

D. Compensation

1. Please indicate the approximate percentage of your salary that is *fixed* versus *variable*.

(a) Fixed _____ % of total salary

(b) Variable (Bonus) _____ % of total salary

100 %

If your answer to this question is **100% fixed**, then skip questions 2 and 3 below and go to question E. *Discretionary Spending* on the bottom of this page.

2. On the one hand, bonuses can be calculated strictly by *formulas* based on meeting quantitative budget targets. Alternatively, bonuses can also be determined completely or some percentage in a *discretionary* manner based on the personal assessment of your superiors. On the scale below, indicate the percentage of bonus decided in a formula-based (F) vs. discretionary (D) manner.

[illegible]

3. In addition, your bonus might depend on total corporate performance, your own business unit performance, or a mix of both. On the scale below, indicate the percentage of your bonus which is based on corporate (CO) vs. your own business unit (BU) performance.

[illegible]

E. Discretionary Spending

What amount of money are you allowed to spend on capital investments (not included in the budget) without receiving prior approval from the corporate parent? Put differently, what is your authorized limit for capital expenditures?

_____ (Currency _____)

[Remarks (optional):

.....

II. ATTITUDE TOWARD CONTROL SYSTEMS

The previous part of the questionnaire looked into the characteristics of the budgeting process. This section, on the other hand, is designed to measure the impact of those budgeting characteristics on organizational behavior. Please indicate the extent of truth or falsehood of each of the following statements. (Check one box for each statement.)

	Definitely False				Equally False/True				Definitely True
A. 1. My corporate superiors possess good information regarding the activities undertaken in my business unit?	☐	☐	☐	☐	☐	☐	☐	☐	☐
2. My corporate superiors are well informed about the performance potential of my business unit.	☐	☐	☐	☐	☐	☐	☐	☐	☐
3. My corporate superiors are able to assess the potential impact of external factors on the activities of my business unit.	☐	☐	☐	☐	☐	☐	☐	☐	☐
4. My corporate superiors are very familiar with the day-to-day decisions that I take in my business unit.	☐	☐	☐	☐	☐	☐	☐	☐	☐
5. My corporate superiors can specify the factors which are critical to success in my business unit.	☐	☐	☐	☐	☐	☐	☐	☐	☐
6. My corporate superiors know as much as I do about the details of my business.	☐	☐	☐	☐	☐	☐	☐	☐	☐
7. If it became necessary for some reason, at least one of my corporate superiors would be able to step into my position and manage this business effectively.	☐	☐	☐	☐	☐	☐	☐	☐	☐
8. With some skill, I can make my budget "look" challenging to my corporate superiors even if it is not.	☐	☐	☐	☐	☐	☐	☐	☐	☐

	Definitely False			Equally False/True			Definitely True
B. 1. Budget targets induce high productivity in my business unit.	☐	☐	☐	☐	☐	☐	☐
2. I succeed to submit budgets that are easily attainable.	☐	☐	☐	☐	☐	☐	☐
3. Budget targets require costs to be managed carefully in my business unit.	☐	☐	☐	☐	☐	☐	☐
4. The budget targets for my business unit should be made less difficult to achieve.	☐	☐	☐	☐	☐	☐	☐
5. I build some slack in the budget in order to make sure to achieve my budget target.	☐	☐	☐	☐	☐	☐	☐
6. Budget targets have not caused me to be particularly concerned with improving efficiency in my business unit.	☐	☐	☐	☐	☐	☐	☐

C. 1. Managerial activities involve working on current and future problems. Indicate the percentage of your time that you devote to working on matters which will show up in your business unit's profit and loss statement within each of the periods given.

1 month or less	_____ %
1 month to 1 quarter	_____ %
1 quarter to 1 year	_____ %
1 year to 5 years	_____ %
	Σ <u>100 %</u>

2. Please indicate whether your performance is evaluated by your corporate parent in terms of (1) predominantly financial measures of asset returns (e.g., ROI, ROA); (2) predominantly sales-related and/or operational criteria (e.g., sales growth, sales margin, market share, quality, efficiency); or (3) a combination of both financial returns and operational/sales-related criteria.

Financial Returns			Combination			Operational- Sales
☐	☐	☐	☐	☐	☐	☐

3. Assume that in the past year you had been given complete freedom to operate your business unit in whatever manner you thought best served the long-term interests of your business. Would you then have spent more or less money in each of the following areas? (Check one box in each row or circle *-na-* if *not applicable*.)

		Much Less			About the Same			Much More
(a) new product development	-na-	☐	☐	☐	☐	☐	☐	☐
(b) product engineering (improvement of existing products)	-na-	☐	☐	☐	☐	☐	☐	☐
(c) manufacturing process engineering (cost reductions)	-na-	☐	☐	☐	☐	☐	☐	☐
(d) basic research	-na-	☐	☐	☐	☐	☐	☐	☐
(e) capacity expansion	-na-	☐	☐	☐	☐	☐	☐	☐
(f) advertising / sales promotion	-na-	☐	☐	☐	☐	☐	☐	☐
(g) employee training / development	-na-	☐	☐	☐	☐	☐	☐	☐
(h) information systems	-na-	☐	☐	☐	☐	☐	☐	☐

	Definitely False			Equally False/True			Definitely True
4. Within my business unit, there is a strong tendency to fund low risk projects with normal and certain rates of return.	☐	☐	☐	☐	☐	☐	☐
5. Budget targets prevent me from taking advantage of new opportunities.	☐	☐	☐	☐	☐	☐	☐
6. Within my business unit, subordinates are stimulated to undertake risky projects with uncertain returns.	☐	☐	☐	☐	☐	☐	☐

7. In your business unit, have budget controls encouraged or discouraged new ideas for expenditures in the following areas? (Check one box in each row or circle *-na-* if *not applicable*.)

		Great Discouragement			No Effect			Great Encouragement
(a) new product development	-na-	☐	☐	☐	☐	☐	☐	☐
(b) product engineering (improvement of existing products)	-na-	☐	☐	☐	☐	☐	☐	☐
(c) manufacturing process engineering (cost reductions)	-na-	☐	☐	☐	☐	☐	☐	☐
(d) basic research	-na-	☐	☐	☐	☐	☐	☐	☐
(e) capacity expansion	-na-	☐	☐	☐	☐	☐	☐	☐
(f) advertising / sales promotion	-na-	☐	☐	☐	☐	☐	☐	☐
(g) employee training / development	-na-	☐	☐	☐	☐	☐	☐	☐
(h) information systems	-na-	☐	☐	☐	☐	☐	☐	☐

D. In the past year, how frequently have you (or someone within your business unit) engaged in each of the following behaviors in order to comply with the corporate controls?

	Never	Sometimes			Frequently		
1. Pulled profits from future periods into the current period by deferring a needed expenditure or by accelerating a sale.	☐	☐	☐	☐	☐	☐	☐
2. Shifted funds between accounts to avoid budget overruns.	☐	☐	☐	☐	☐	☐	☐

	Definitely False	Equally False/True			Definitely True		
E. 1. Generally, budget controls have done more harm than good to the long-run success of:							
-- my business unit;	☐	☐	☐	☐	☐	☐	☐
-- my corporate parent.	☐	☐	☐	☐	☐	☐	☐
2. My business unit has been stimulated to make some improvements that would not have been made if the budgeting system had not been in place.	☐	☐	☐	☐	☐	☐	☐

III. PERFORMANCE

	Well Below Average	Average			Well Above Average		
A. 1. Please rate the <i>overall</i> performance of your business unit (relative to the industry average).	☐	☐	☐	☐	☐	☐	☐
2. Of course, overall performance has several dimensions. Roughly speaking, one could distinguish a <i>market-related dimension</i> (e.g., sales growth, market share, etc.), an <i>operations-related dimension</i> (e.g., cost-effectiveness, quality, etc.), and a <i>development-related dimension</i> (e.g., research and development, personnel development, new product development, etc.). First, indicate how important each of those dimensions is for the competitiveness of your business unit, and second, how well your business unit is performing along each dimension.							

	IMPORTANCE						PERFORMANCE					
	Not Important	Somewhat Important	Extremely Important				Well Below Average	Average			Well Above Average	
(a) Market	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
(b) Operations	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
(c) Development	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

- B. 1. For how many years have you had budget responsibility in this business unit?
1	2	3	4	5	> 5
☐	☐	☐	☐	☐	Years ☐
2. Of those years, or over the last five years, how often have you met your budget goals?
Never	1	2	3	4	All 5
☐	☐	☐	☐	☐	Years ☐
- C. What has been your business unit's approximate *return on sales* (=profit before tax/turnover) over the last three years? (Circle one for each year.)
(a) 3 years ago:	negative	0-5%	6-10%	11-15%	16-20%	21-25%	26-30%	30%+
(b) 2 years ago:	negative	0-5%	6-10%	11-15%	16-20%	21-25%	26-30%	30%+
(c) Last year:	negative	0-5%	6-10%	11-15%	16-20%	21-25%	26-30%	30%+
- D. Which of the following terms best describes your business unit's economic performance in the past year? (Check one.)
- ☐ Losing money;
 - ☐ About break-even;
 - ☐ Profitable, but less so than most of my direct competitors;
 - ☐ More profitable than most of my direct competitors.
- E. Consider *ideal* overall performance for your business unit as 100%. What percentage value would you assign to the *actual* performance of your business unit over the last year? (Circle the appropriate percentage.)
0-10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	81-90%	91-100%

IV. STRATEGY

- A. Generally, two competitive strategies can be distinguished. On the one hand, a *cost leader* emphasizes achieving low cost relative to competitors and vigorously pursues cost reduction, economies of scale, standardization, etc. (e.g., *Black & Decker* in tools). On the other hand, a *differentiator* focuses on creating something that is perceived by the customers as unique through superior product features, customer service, brand image, etc. (e.g., *Mercedes-Benz* in automobiles). Please indicate the percentage of your business unit's current total sales accounted for by either the low cost or differentiation strategy.

(a) Low Cost	_____ % of current total sales
(b) Differentiation	_____ % of current total sales
	<u>100 %</u>

- B. How do you expect the market share of your business unit's principal products to evolve in the short to medium term?
Decline
Rapidly				Stay
the Same				Increase
Rapidly
☐	☐	☐	☐	☐	☐	☐	☐	☐
- C. Position your business unit relative to your leading competitors in terms of:
	My Business Unit is Positioned						
	Significantly
Lower			About
the Same			Significantly
Higher
(a) product selling price	☐	☐	☐	☐	☐	☐	☐
(b) percent of sales spent on R&D	☐	☐	☐	☐	☐	☐	☐
(c) product quality	☐	☐	☐	☐	☐	☐	☐
(d) brand image	☐	☐	☐	☐	☐	☐	☐
(e) product features	☐	☐	☐	☐	☐	☐	☐
- D. Given below are descriptions of several alternative strategies. Depending upon the context, each of these descriptions may represent the strategy for all, a fraction, or none of a business unit's products. Indicate the percentage of your business unit's current total sales accounted for by products represented by each of these strategy descriptions.
- (a) Increase sales and market share, be willing to accept low returns on investment in the short to medium run, if necessary. _____ % of sales
- (b) Maintain market share and obtain reasonable return on investment. _____ % of sales
- (c) Maximize profitability and cash flow in the short to medium run, be willing to sacrifice market share if necessary. _____ % of sales
- (d) Prepare for sale or liquidation. _____ % of sales
100 %
- E. Finally, multi-business firms can be composed of businesses which are *related* from an *operational* point of view (e.g., related products, markets, logistics, distribution channels, technologies, etc.). On the other hand, a corporation can be composed of a diverse set of *unrelated* businesses ranging, for example, from food processing to car manufacturing (cf., *conglomerates*). In other words, businesses are considered to be *unrelated* if they do not have an important element of commonality in their physical assets and/or technical skills. On the scale below, please indicate how you would describe your corporate parent.
			Some
Commonality				
Strongly
Related			Among
Businesses			Strongly
Unrelated	
☐	☐	☐	☐	☐	☐	☐	☐

V. CENTRALIZATION OF DECISION-MAKING

Listed below are actions or decisions which could affect your business. Indicate the *degree of influence* you have in determining what action is taken. To guide your answer, the following legend is used on the scale:

"My Decision"	I (or my subordinates) take the decision without consulting my corporate superiors.
"Both"	The decision is determined jointly by me and my corporate superiors.
"Corporate Decision"	The decision is determined at the corporate level; I have little or no influence.

		My Decision		Both		Corporate Decision	
A.	Setting the strategy for the business unit.	☐	☐	☐	☐	☐	☐
B.	Discontinuing a major product or product line.	☐	☐	☐	☐	☐	☐
C.	Changing the selling price of a major product.	☐	☐	☐	☐	☐	☐
D.	Increasing (beyond budget) the level of expenditure for advertising and promotion.	☐	☐	☐	☐	☐	☐
E.	Selecting the vendor to supply an important raw material or component used in operations.	☐	☐	☐	☐	☐	☐
F.	Buying materials from an outside vendor when they could be supplied by another business within the corporate parent.	☐	☐	☐	☐	☐	☐
G.	Increasing (beyond budget) the level of expenditure for research and development.	☐	☐	☐	☐	☐	☐
H.	Hiring consultants for business unit matters.	☐	☐	☐	☐	☐	☐
I.	Determining the transfer price at which your business will sell products to other business units in your corporate parent.	☐	☐	☐	☐	☐	☐
J.	Making a change in your business unit's organizational setting.	☐	☐	☐	☐	☐	☐
K.	Creating a new management position in your business unit.	☐	☐	☐	☐	☐	☐
L.	Increasing (beyond budget) the number of personnel employed in your business.	☐	☐	☐	☐	☐	☐
M.	Modifying or revising personnel policy for the business.	☐	☐	☐	☐	☐	☐
N.	Hiring or firing one of your direct reports (a manager at the next level below you).	☐	☐	☐	☐	☐	☐
O.	Selecting significant investments (capital budgeting).	☐	☐	☐	☐	☐	☐

VI. INFORMATION ABOUT YOUR BUSINESS

1. What was the approximate turnover of your business unit in the last fiscal year?
_____ (Currency _____)
2. What is the approximate book value (net of depreciation) of assets of your business?
(If you *don't know*, check this box ☐)
_____ (Currency _____)
3. How many full-time employees are in your business unit? _____ employees.
4. For how long has your business been part of the corporate parent? _____ years.
5. Was your business unit: ☐ acquired from outside the corporation;
(tick one.) ☐ developed from inside the corporation.
6. For how long have you been head of the business unit? _____ years.
7. For how long have you been employed by the current corporation? _____ years.
8. What is the highest level of education you have completed? (Check one.)
 - ☐ Non-university higher education or less;
 - ☐ University degree;
 - ☐ Masters or professional school degree.
9. How often do you use English in business-related communication? (Check one.)
 - ☐ Never;
 - ☐ Rarely;
 - ☐ Occasionally;
 - ☐ Frequently;
 - ☐ English is the company-language.
10. What is your title? _____
11. Your age? _____ years. Your name (*optional*)? _____

If there are any additional comments you would like to make, please use this space for that purpose.

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Thank you for completing this questionnaire. We are convinced that this research will contribute significantly to our understanding of the management control practices in multi-business companies. We appreciate your valuable contribution.

Please return the questionnaire in the **pre-addressed envelope** provided

or mail to

De Vlerick School voor Management
Wim Van der Stede
Bellevue 6
B-9050 Gent-Ledeberg

tel +32-(0)9-210.97.73

fax +32-(0)9-210.97.00

e-mail wim.vanderstede@rug.ac.be

APPENDIX [D.2]

COVER LETTER FOR BUSINESS UNIT QUESTIONNAIRE

Gent, [### date ###]

Dear [### manager ###],

I am writing to ask for your help with a study I am conducting on **the methods of budgeting used by corporate management to evaluate business units**.

At this stage, I have obtained information from [### chief financial officer ###] about the group-structure of your parent company, [### corporate ###]. However, I also need information about the individual businesses, namely about the budgeting process and how it is perceived by managers with budget responsibility. Therefore, I have sent the attached questionnaire to you as well as to other business managers of [### corporate ###].

It is important that I get your individual response. Of course, I will maintain strict **confidentiality**. Your response will never be made available to your corporate superiors nor anybody else except in aggregate form. The completed questionnaire can be returned directly to me in the **pre-addressed envelope**.

I would be most grateful if you agree to complete the questionnaire. This should take not more than 45 minutes of your time. A **summary of the results** will be sent to everybody who participates in the study.

If you have any questions concerning the study, please do not hesitate to call me. Thanks again for your cooperation. I hope you find it worthwhile.

Sincerely,

Wim Van der Stede
Research Fellow
Management Accounting & Control
tel. 32-(0)9-210.97.73
e-mail wim.vanderstede@rug.ac.be

APPENDIX [D.3]

FIRST FOLLOW-UP FOR BUSINESS UNIT QUESTIONNAIRE

Gent, [### date ###]

Dear [### manager ###],

Two weeks ago, I wrote to you seeking your help with a study I am conducting on the **methods of budgeting used by corporate parent-companies to evaluate their business units**. In the first stage of my research, I have obtained information from [### chief financial officer ###] about the group-structure of your parent company, [### corporate ###].

If you have already completed and returned the questionnaire, please accept my sincere thanks. If not, I want to ask you to do so as soon as you can. My study is based on a small but carefully selected sample of companies. **It is therefore critical that I receive responses from each business unit I have contacted within [### corporate ###].**

I would be most grateful if you would agree to participate. The difference between an outstanding and simply adequate control over business units might result in a bottom-line impact of 5 to 25 percent of net income. Therefore, this study is important. A summary of the results will be sent to everybody who participates in the study.

If you have never received the questionnaire or it has been misplaced, please feel free to call me and I will make sure you get a replacement.

Sincerely,

Wim Van der Stede
Research Fellow
Management Accounting & Control
tel. 32-(0)9-210.97.73
e-mail wim.vanderstede@rug.ac.be

APPENDIX [D.4]

SECOND FOLLOW-UP FOR BUSINESS UNIT QUESTIONNAIRE

Gent, [### date ###]

Dear [### manager ###],

On [### date ###], I wrote to you seeking your help with a study I am conducting on the methods of budgeting used by corporate management to evaluate business units. However, as of today, **I have not yet received your completed questionnaire.**

At this stage, I have obtained information from [### chief financial officer ###] about the group-structure of your parent company, [### corporate ###]. Also, I received information from some of your colleagues who have already completed the questionnaire. **However, it is critical that I receive responses from each business unit I have contacted within [### corporate ###].** Therefore, I would really appreciate if you complete the questionnaire too.

Of course, I will maintain strict **confidentiality**. Your response will never be made available to your corporate superiors nor anybody else except in aggregate form. The completed questionnaire can be returned directly to me in the **pre-addressed envelope**.

In the event that you have never received the questionnaire, or that it has been misplaced, a **replacement** is enclosed. If this letter and your completed questionnaire have crossed paths in the mail, please disregard this letter and accept my sincere thanks for your help.

If you would like more information about the study, please don't hesitate to ask. A **summary of the results** will be sent to everybody who participates in the study. Thanks again for your time and effort. I am sure that you will find it worthwhile.

Sincerely,

Wim Van der Stede
Research Fellow
Management Accounting & Control
tel. 32-(0)9-210.97.73
e-mail wim.vanderstede@rug.ac.be

Appendix E

APPENDIX [E.1]

**DEGREE OF DIVERSIFICATION
OF THE
COMPANIES INCLUDED IN THE STUDY**

Degree of Diversification

Company Name	Entities	Groups (BSD)	Countries	MNSD	Entropy	Herfindahl	SR	 Shares
<i>Alcopa</i>	27,00	3,00	6,00	9,00	0,518	0,265	0,850	0,100 0,050
<i>Almabo</i>	7,00	6,00	2,00	1,17	0,223	0,078	0,960	0,010 0,010 0,010 0,010 0,000
<i>Associated Weavers International</i>	9,00	2,00	6,00	4,50	0,254	0,130	0,930	0,070
<i>Aviapartner</i>	14,00	6,00	3,00	2,33	1,396	0,709	0,440	0,250 0,150 0,080 0,080 0,000
<i>Barco</i>	33,00	5,00	17,00	6,60	1,152	0,633	0,520	0,260 0,160 0,060 0,000
<i>Bekaert</i>	61,00	7,00	22,00	8,71	0,124	0,038	0,981	0,006 0,004 0,004 0,003 0,002 0,000
<i>Belgische Beton Maatschappij</i>	4,00	4,00	2,00	1,00	0,486	0,227	0,875	0,075 0,040 0,010
<i>BMT</i>	9,00	5,00	7,00	1,80	1,330	0,723	0,363	0,281 0,218 0,138 0,000
<i>CFE</i>	57,00	8,00	12,00	7,13	1,356	0,669	0,492	0,231 0,182 0,043 0,022 0,018 0,008 0,006
<i>Cimenteries CBR</i>	28,00	2,00	10,00	14,00	0,000	0,000	1,000	0,000
<i>City Hotels</i>	9,00	1,00	3,00	9,00	0,000	0,000	1,000	
<i>Concentra Holding</i>	13,00	3,00	3,00	4,33	0,686	0,455	0,660	0,330 0,010
<i>De Eik</i>	8,00	4,00	4,00	2,00	####	####		
<i>De Persgroep</i>	7,00	3,00	1,00	2,33	0,000	0,000	1,000	0,000 0,000
<i>Deceuninck Plastics Industries</i>	16,00	2,00	11,00	8,00	0,000	0,000	1,000	0,000
<i>Delhaize De Leeuw</i>	9,00	2,00	5,00	4,50	0,008	0,002	0,999	0,001
<i>D'Teteren</i>	15,00	3,00	6,00	5,00	0,539	0,354	0,770	0,230 0,000
<i>Dossche Bedrijven</i>	23,00	7,00	7,00	3,29	1,464	0,713	0,398	0,326 0,101 0,099 0,038 0,026 0,012
<i>Dredging (DEME)</i>	13,00	8,00	3,00	1,63	1,149	0,580	0,580	0,280 0,060 0,030 0,020 0,020 0,010 0,000
<i>Ets. Brepols</i>	4,00	1,00	4,00	4,00	0,000	0,000	1,000	
<i>GB-INNO-BM</i>	40,00	5,00	8,00	8,00	1,020	0,556	0,610	0,250 0,070 0,070 0,000
<i>Groep Van Roey</i>	18,00	7,00	8,00	2,57	0,946	0,523	0,620	0,300 0,050 0,010 0,010 0,010 0,000
<i>Interbrew</i>	24,00	2,00	11,00	12,00	0,000	0,000	1,000	0,000

Degree of Diversification

<i>Interbuild</i>	5,00	3,00	1,00	1,67	0,000	0,000	1,000	0,000	0,000
<i>Lano</i>	8,00	2,00	2,00	4,00	0,098	0,039	0,980	0,020	
<i>Magotieux International</i>	16,00	1,00	11,00	16,00	0,000	0,000	1,000		
<i>Pauwels International</i>	15,00	4,00	9,00	3,75	0,805	0,526	0,520	0,450	0,030
<i>Petrofina</i>	48,00	5,00	21,00	9,60	0,859	0,417	0,750	0,100	0,090
<i>Pieters Visbedrijf</i>	11,00	2,00	4,00	5,50	0,000	0,000	1,000	0,000	
<i>Rombouts</i>	5,00	3,00	1,00	1,67	0,583	0,394	0,730	0,270	0,000
<i>Sabena</i>	20,00	7,00	7,00	2,86	0,229	0,078	0,960	0,012	0,011
<i>Sait Radio Holland</i>	26,00	5,00	15,00	5,20	1,271	0,694	0,427	0,245	0,233
<i>Sofinal Cotesa</i>	14,00	7,00	2,00	2,00	1,025	0,502	0,680	0,160	0,090
<i>Solvay</i>	174,00	5,00	27,00	34,80	1,492	0,758	0,320	0,280	0,180
<i>Suiker Export</i>	26,00	8,00	11,00	3,25	0,151	0,057	0,971	0,023	0,004
<i>Sun International</i>	20,00	6,00	5,00	3,33	0,638	0,336	0,800	0,150	0,040
<i>Tractebel</i>	150,00	8,00	12,00	18,75	0,995	0,489	0,690	0,160	0,090
<i>UCB</i>	100,00	4,00	33,00	25,00	1,095	0,664	0,370	0,330	0,300
<i>UCO</i>	12,00	2,00	1,00	6,00	0,000	0,000	1,000	0,000	
<i>Unisel</i>	7,00	2,00	2,00	3,50	0,056	0,020	0,990	0,010	
<i>Van de Wiele Michel</i>	7,00	4,00	5,00	1,75	0,518	0,265	0,850	0,100	0,050
<i>Van Genechten</i>	14,00	3,00	5,00	4,67	0,746	0,445	0,700	0,250	0,050
<i>Vandemoortele International</i>	35,00	7,00	7,00	5,00	1,420	0,709	0,450	0,210	0,160
<i>Vlaamse Uitgevers Maatschappij</i>	8,00	8,00	1,00	1,00	1,108	0,536	0,650	0,160	0,120
<i>VPK Oudegem</i>	6,00	4,00	3,00	1,50	0,735	0,460	0,670	0,300	0,030
<i>VTB-VAB</i>	5,00	3,00	1,00	1,67	0,634	0,442	0,670	0,330	0,000

Descriptive Statistics

Variable	N	N*	Mean	Median	TrMean	StdDev	SEMean	Min	Max	Q1	Q3
entities	46	0	25.6500	14.0000	20.1900	34.5800	5.1000	4.000	174.000	8.0000	26.2500
groups	46	0	4.3260	4.0000	4.3100	2.2020	0.3250	1.000	8.000	2.0000	6.2500
country	46	0	7.5400	5.5000	6.7900	7.0600	1.0400	1.000	33.000	2.7500	11.0000
entropy	45	1	0.6024	0.5833	0.5891	0.5148	0.0767	0.000	1.4917	0.0320	1.0601
herfin	45	1	0.3219	0.3542	0.3172	0.2738	0.0408	0.000	0.7576	0.0109	0.5459
spectrat	45	1	0.7606	0.7700	0.7693	0.2250	0.0335	0.320	1.0000	0.5950	0.9945
MNSD	46	0	6.2030	4.1670	5.3230	6.5620	0.9680	1.000	34.800	2.0000	8.0000

Correlations (Pearson)

	consass	unconsas	consales	unconsal	employmt	roc	holding	c/ucass	c/ucsal	entities	groups	country	entropy	herfin	spectrat
unconsas	0.855														
consales	0.784	0.812													
unconsal	0.495	0.717	0.854												
employmt	0.254	0.443	0.492	0.764											
roc	0.012	-0.086	0.022	0.004	0.005										
holding	0.100	-0.070	-0.004	-0.004	0.007	0.156									
c/ucass	0.032	-0.150	-0.055	-0.214	-0.185	0.062	0.273								
c/ucsal	-0.117	-0.173	-0.109	-0.203	-0.177	0.047	0.442	0.507							
entities	0.745	0.795	0.483	0.355	0.324	-0.065	0.038	-0.118	-0.133						
groups	0.263	0.206	0.105	0.068	0.095	-0.121	0.109	0.124	0.119	0.330					
country	0.432	0.598	0.416	0.397	0.223	-0.012	-0.101	-0.222	-0.204	0.747	0.193				
entropy	0.206	0.241	0.121	0.113	0.111	-0.047	0.184	-0.039	0.111	0.400	0.649	0.301			
herfin	0.156	0.199	0.087	0.096	0.099	-0.087	0.167	0.009	0.065	0.371	0.577	0.299	0.987		
spectrat	-0.120	-0.197	-0.059	-0.078	-0.106	0.090	-0.128	0.032	-0.035	-0.401	-0.517	-0.365	-0.965	-0.984	
MNSD	0.540	0.693	0.399	0.327	0.282	-0.029	-0.044	-0.191	-0.202	0.857	-0.084	0.772	0.136	0.130	-0.200

The significance of correlations is tested using $t_{n-2} = r(\sqrt{n-2}) / \sqrt{1-r^2}$, with $n=46$. The critical t_{44} -values and corresponding correlation coefficients (r) are:

$[\alpha=0.900; t_{44}=1.301; r=0.19248] - [\alpha=0.950; t_{44}=1.6802; r=0.24555] - [\alpha=0.975; t_{44}=2.0154; r=0.29071] - [\alpha=0.990; t_{44}=2.4142; r=0.34201] - [\alpha=0.995; t_{44}=2.6923; r=0.37608]$.

Hence, all correlations larger than $r=0.24555$ are two-tailed significant at the $\alpha=0.90$ -level; all correlations larger than $r=0.29071$ are two-tailed significant at the $\alpha=0.95$ -level; and all correlations larger than $r=0.37608$ are two-tailed significant at the $\alpha=0.99$ level.

Degree of diversification --- significance of correlations between different measures of diversification

correlation between ... and ...	correlation	calculated t	cumulative probability (t-distribution)	p-value one-tailed	p-value two-tailed
entities - groups	0,3300	2,3189	0,9875	0,0126	0,0251
entities - countries	0,7470	7,4532	1,0000	0,0000	0,0000
entities - entropy	0,4000	2,8950	0,9971	0,0029	0,0059
entities - herfindahl	0,3710	2,6501	0,9944	0,0056	0,0111
entities - SR	-0,4010	-2,9036	0,0029	0,0029	0,0057
entities - MNSD	0,8570	11,0315	1,0000	0,0000	0,0000
groups - countries	0,1930	1,3047	0,9006	0,0994	0,1988
groups - entropy	0,6490	5,6586	1,0000	0,0000	0,0000
groups - herfindahl	0,5770	4,6861	1,0000	0,0000	0,0000
groups - SR	-0,5170	-4,0064	0,0001	0,0001	0,0002
groups - MNSD	-0,0840	-0,5592	0,2894	0,2894	0,5789
country - entropy	0,3010	2,0937	0,9790	0,0210	0,0421
country - herfindahl	0,2990	2,0784	0,9782	0,0218	0,0435
country - SR	-0,3650	-2,6006	0,0063	0,0063	0,0126
country - MNSD	0,7720	8,0565	1,0000	0,0000	0,0000
entropy - herfindahl	0,9870	40,7355	1,0000	0,0000	0,0000
entropy - SR	-0,9650	-24,4083	0,0000	0,0000	0,0000
entropy - MNSD	0,1360	0,9106	0,8163	0,1837	0,3675
herfindahl - SR	-0,9840	-36,6345	0,0000	0,0000	0,0000
herfindahl - MNSD	0,1300	0,8697	0,8054	0,1946	0,3892
SR - MNSD	-0,2000	-1,3540	0,0913	0,0913	0,1826

The formula used to test for the significance of correlations is: $t_{(n-2)} = [r(\sqrt{n-2})] / [\sqrt{1-r^2}]$

APPENDIX [E.2]

DEGREE OF DIVERSIFICATION
OF THE
COMPANIES INCLUDED IN THE STUDY

VARADARAJAN & RAMANUJAM MEASURE (*Panel A*);
SORTED BY SPECIALIZATION RATIO (*Panel B*);
ENTROPY (*Panel C*); AND HERFINDAHL (*Panel D*).

Degree of Diversification -- "Varadarajan and Ramanujam" Measure

Alcopa	27,00	3,00	9,00	Cell B: related diversified firms	0,850	0,518	0,265
UCB	100,00	4,00	25,00	Cell B: related diversified firms	0,370	1,095	0,664
BMT	9,00	5,00	1,80	Cell C: unrelated diversified firms	0,363	1,330	0,723
Almabo	7,00	6,00	1,17	Cell C: unrelated diversified firms	0,960	0,223	0,078
Aviapartner	14,00	6,00	2,33	Cell C: unrelated diversified firms	0,440	1,396	0,709
Sun International	20,00	6,00	3,33	Cell C: unrelated diversified firms	0,800	0,638	0,336
Sofinal Cotesa	14,00	7,00	2,00	Cell C: unrelated diversified firms	0,680	1,025	0,502
Groep Van Roey	18,00	7,00	2,57	Cell C: unrelated diversified firms	0,620	0,946	0,523
Sabena	20,00	7,00	2,86	Cell C: unrelated diversified firms	0,960	0,229	0,078
Dossche Bedrijven	23,00	7,00	3,29	Cell C: unrelated diversified firms	0,398	1,464	0,713
Vlaamse Uitgevers Maatschappij	8,00	8,00	1,00	Cell C: unrelated diversified firms	0,650	1,108	0,536
Dredging (DEME)	13,00	8,00	1,63	Cell C: unrelated diversified firms	0,580	1,149	0,580
Suiker Export	26,00	8,00	3,25	Cell C: unrelated diversified firms	0,971	0,151	0,057
Sait Radio Holland	26,00	5,00	5,20	Cell D: firms with very high diversity	0,427	1,271	0,694
Barco	33,00	5,00	6,60	Cell D: firms with very high diversity	0,520	1,152	0,633
GB-INNO-BM	40,00	5,00	8,00	Cell D: firms with very high diversity	0,610	1,020	0,556
Petrofina	48,00	5,00	9,60	Cell D: firms with very high diversity	0,750	0,859	0,417
Solutay	174,00	5,00	34,80	Cell D: firms with very high diversity	0,320	1,492	0,758
Vandemoortele International	35,00	7,00	5,00	Cell D: firms with very high diversity	0,450	1,420	0,709
Bekaert	61,00	7,00	8,71	Cell D: firms with very high diversity	0,981	0,124	0,038
CFE	57,00	8,00	7,13	Cell D: firms with very high diversity	0,492	1,356	0,669
Tractebel	150,00	8,00	18,75	Cell D: firms with very high diversity	0,690	0,995	0,489

Median	4,00	4,17
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Degree of Diversification -- "Varadarajan and Ramanujam" Measure -- Sorted by Specialization Ratio

Company Name	Entities	BSD	MNSD	Varadarajan & Ramanujam	SR	Entropy	Herfindahl
De Eik	8,00	4,00	2,00	Cell A: firms with very low diversity	####	####	####
Ets. Brepols	4,00	1,00	4,00	Cell A: firms with very low diversity	1,000	0,000	0,000
Interbuild	5,00	3,00	1,67	Cell A: firms with very low diversity	1,000	0,000	0,000
De Persgroep	7,00	3,00	2,33	Cell A: firms with very low diversity	1,000	0,000	0,000
City Hotels	9,00	1,00	9,00	Cell B: related diversified firms	1,000	0,000	0,000
Magofteaux International	16,00	1,00	16,00	Cell B: related diversified firms	1,000	0,000	0,000
Pieters Visbedrijf	11,00	2,00	5,50	Cell B: related diversified firms	1,000	0,000	0,000
UCO	12,00	2,00	6,00	Cell B: related diversified firms	1,000	0,000	0,000
Deceuninck Plastics Industries	16,00	2,00	8,00	Cell B: related diversified firms	1,000	0,000	0,000
Interbrew	24,00	2,00	12,00	Cell B: related diversified firms	1,000	0,000	0,000
Cimenteries CBR	28,00	2,00	14,00	Cell B: related diversified firms	1,000	0,000	0,000
Delhaize De Leeuw	9,00	2,00	4,50	Cell B: related diversified firms	0,999	0,008	0,002
Unisel	7,00	2,00	3,50	Cell A: firms with very low diversity	0,990	0,056	0,020
Bekaert	61,00	7,00	8,71	Cell D: firms with very high diversity	0,981	0,124	0,038
Lano	8,00	2,00	4,00	Cell A: firms with very low diversity	0,980	0,098	0,039
Suiker Export	26,00	8,00	3,25	Cell C: unrelated diversified firms	0,971	0,151	0,057
Almabo	7,00	6,00	1,17	Cell C: unrelated diversified firms	0,960	0,223	0,078
Sabena	20,00	7,00	2,86	Cell C: unrelated diversified firms	0,960	0,229	0,078
Associated Weavers International	9,00	2,00	4,50	Cell B: related diversified firms	0,930	0,254	0,130
Belgische Beton Maatschappij	4,00	4,00	1,00	Cell A: firms with very low diversity	0,875	0,486	0,227
Van de Wiele Michel	7,00	4,00	1,75	Cell A: firms with very low diversity	0,850	0,518	0,265
Alcopa	27,00	3,00	9,00	Cell B: related diversified firms	0,850	0,518	0,265
Sun International	20,00	6,00	3,33	Cell C: unrelated diversified firms	0,800	0,638	0,336
D'teteren	15,00	3,00	5,00	Cell B: related diversified firms	0,770	0,539	0,354

Degree of Diversification -- "Varadarajan and Ramaniujam" Measure -- Sorted by Specialization Ratio

Petrofina	48,00	5,00	9,60	Cell D: firms with very high diversity	0,750	0,859	0,417
Rombouts	5,00	3,00	1,67	Cell A: firms with very low diversity	0,730	0,583	0,394
Van Genechten	14,00	3,00	4,67	Cell B: related diversified firms	0,700	0,746	0,445
Tractebel	150,00	8,00	18,75	Cell D: firms with very high diversity	0,690	0,995	0,489
Sofinal Cotesa	14,00	7,00	2,00	Cell C: unrelated diversified firms	0,680	1,025	0,502
VTB-VAB	5,00	3,00	1,67	Cell A: firms with very low diversity	0,670	0,634	0,442
VPK Oudegem	6,00	4,00	1,50	Cell A: firms with very low diversity	0,670	0,735	0,460
Concentra Holding	13,00	3,00	4,33	Cell B: related diversified firms	0,660	0,686	0,455
Vlaamse Uitgevers Maatschappij	8,00	8,00	1,00	Cell C: unrelated diversified firms	0,650	1,108	0,536
Groep Van Roey	18,00	7,00	2,57	Cell C: unrelated diversified firms	0,620	0,946	0,523
GB-INNO-BM	40,00	5,00	8,00	Cell D: firms with very high diversity	0,610	1,020	0,556
Dredging (DEME)	13,00	8,00	1,63	Cell C: unrelated diversified firms	0,580	1,149	0,580
Pauwels International	15,00	4,00	3,75	Cell A: firms with very low diversity	0,520	0,805	0,526
Barco	33,00	5,00	6,60	Cell D: firms with very high diversity	0,520	1,152	0,633
CFE	57,00	8,00	7,13	Cell D: firms with very high diversity	0,492	1,356	0,669
Vandemoortele International	35,00	7,00	5,00	Cell D: firms with very high diversity	0,450	1,420	0,709
Aviapartner	14,00	6,00	2,33	Cell C: unrelated diversified firms	0,440	1,396	0,709
Sait Radio Holland	26,00	5,00	5,20	Cell D: firms with very high diversity	0,427	1,271	0,694
Dossche Bedrijven	23,00	7,00	3,29	Cell C: unrelated diversified firms	0,398	1,464	0,713
UCB	100,00	4,00	25,00	Cell B: related diversified firms	0,370	1,095	0,664
BMT	9,00	5,00	1,80	Cell C: unrelated diversified firms	0,363	1,330	0,723
Solvay	174,00	5,00	34,80	Cell D: firms with very high diversity	0,320	1,492	0,758

Median	4,00	4,17
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Degree of Diversification -- "Varadarajan and Ramanujam" Measure -- Sorted and Quartile Split by Entropy

Company Name	Entities	BSD	MNSD	Varadarajan & Ramanujam	SR	Entropy	Herfindahl
<i>De Eik</i>	8,00	4,00	2,00	Cell A: firms with very low diversity	####	####	####
<i>Ets. Brepols</i>	4,00	1,00	4,00	Cell A: firms with very low diversity	1,000	0,000	0,000
<i>Interbuild</i>	5,00	3,00	1,67	Cell A: firms with very low diversity	1,000	0,000	0,000
<i>De Persgroep</i>	7,00	3,00	2,33	Cell A: firms with very low diversity	1,000	0,000	0,000
<i>City Hotels</i>	9,00	1,00	9,00	Cell B: related diversified firms	1,000	0,000	0,000
<i>Magotteaux International</i>	16,00	1,00	16,00	Cell B: related diversified firms	1,000	0,000	0,000
<i>Pieters Visbedrijf</i>	11,00	2,00	5,50	Cell B: related diversified firms	1,000	0,000	0,000
<i>UCO</i>	12,00	2,00	6,00	Cell B: related diversified firms	1,000	0,000	0,000
<i>Decuninck Plastics Industries</i>	16,00	2,00	8,00	Cell B: related diversified firms	1,000	0,000	0,000
<i>Interbrew</i>	24,00	2,00	12,00	Cell B: related diversified firms	1,000	0,000	0,000
<i>Cimenteries CBR</i>	28,00	2,00	14,00	Cell B: related diversified firms	1,000	0,000	0,000
<i>Delhaize De Leuw</i>	9,00	2,00	4,50	Cell B: related diversified firms	0,999	0,008	0,002
<i>Unisel</i>	7,00	2,00	3,50	Cell A: firms with very low diversity	0,990	0,056	0,020
<i>Lano</i>	8,00	2,00	4,00	Cell A: firms with very low diversity	0,980	0,098	0,039
<i>Bekaert</i>	61,00	7,00	8,71	Cell D: firms with very high diversity	0,981	0,124	0,038
<i>Suiker Export</i>	26,00	8,00	3,25	Cell C: unrelated diversified firms	0,971	0,151	0,057
<i>Alnabo</i>	7,00	6,00	1,17	Cell C: unrelated diversified firms	0,960	0,223	0,078
<i>Sabena</i>	20,00	7,00	2,86	Cell C: unrelated diversified firms	0,960	0,229	0,078
<i>Associated Weavers International</i>	9,00	2,00	4,50	Cell B: related diversified firms	0,930	0,254	0,130
<i>Belgische Beton Maatschappij</i>	4,00	4,00	1,00	Cell A: firms with very low diversity	0,875	0,486	0,227
<i>Van de Wiele Michel</i>	7,00	4,00	1,75	Cell A: firms with very low diversity	0,850	0,518	0,265
<i>Alcopa</i>	27,00	3,00	9,00	Cell B: related diversified firms	0,850	0,518	0,265
<i>D'Teteren</i>	15,00	3,00	5,00	Cell B: related diversified firms	0,770	0,539	0,354
<i>Rombouts</i>	5,00	3,00	1,67	Cell A: firms with very low diversity	0,730	0,583	0,394
<i>VTB-VAB</i>	5,00	3,00	1,67	Cell A: firms with very low diversity	0,670	0,634	0,442

Degree of Diversification -- "Varadarajan and Ramanujam" Measure -- Sorted and Quartile Split by Entropy

<i>Sun International</i>	20,00	6,00	3,33	Cell C: unrelated diversified firms	0,800	0,638	0,336
<i>Concentra Holding</i>	13,00	3,00	4,33	Cell B: related diversified firms	0,660	0,686	0,455
<i>VPK Oudegem</i>	6,00	4,00	1,50	Cell A: firms with very low diversity	0,670	0,735	0,460
<i>Van Genechten</i>	14,00	3,00	4,67	Cell B: related diversified firms	0,700	0,746	0,445
<i>Pauwels International</i>	15,00	4,00	3,75	Cell A: firms with very low diversity	0,520	0,805	0,526
<i>Petrofina</i>	48,00	5,00	9,60	Cell D: firms with very high diversity	0,750	0,859	0,417
<i>Groep Van Roey</i>	18,00	7,00	2,57	Cell C: unrelated diversified firms	0,620	0,946	0,523
<i>Tractebel</i>	150,00	8,00	18,75	Cell D: firms with very high diversity	0,690	0,995	0,489
<i>GB-INNO-BM</i>	40,00	5,00	8,00	Cell D: firms with very high diversity	0,610	1,020	0,556
<i>Sofinal Cotesa</i>	14,00	7,00	2,00	Cell C: unrelated diversified firms	0,680	1,025	0,502
<i>UCB</i>	100,00	4,00	25,00	Cell B: related diversified firms	0,370	1,095	0,664
<i>Vlaamse Uitgevers Maatschappij</i>	8,00	8,00	1,00	Cell C: unrelated diversified firms	0,650	1,108	0,536
<i>Dredging (DEME)</i>	13,00	8,00	1,63	Cell C: unrelated diversified firms	0,580	1,149	0,580
<i>Barco</i>	33,00	5,00	6,60	Cell D: firms with very high diversity	0,520	1,152	0,633
<i>Sait Radio Holland</i>	26,00	5,00	5,20	Cell D: firms with very high diversity	0,427	1,271	0,694
<i>BMT</i>	9,00	5,00	1,80	Cell C: unrelated diversified firms	0,363	1,330	0,723
<i>CFE</i>	57,00	8,00	7,13	Cell D: firms with very high diversity	0,492	1,356	0,669
<i>Aviapartner</i>	14,00	6,00	2,33	Cell C: unrelated diversified firms	0,440	1,396	0,709
<i>Vandemoortele International</i>	35,00	7,00	5,00	Cell D: firms with very high diversity	0,450	1,420	0,709
<i>Dossche Bedrijven</i>	23,00	7,00	3,29	Cell C: unrelated diversified firms	0,398	1,464	0,713
<i>Solvay</i>	174,00	5,00	34,80	Cell D: firms with very high diversity	0,320	1,492	0,758

Median 4,00 4,33

First quartile 0,056
Median 0,583
Third quartile 1,025

Degree of Diversification -- "Varadarajan and Ramanujam" Measure -- Sorted and Quartile Split by Herfindahl

Company Name	Entities	BSD	MNSD	Varadarajan & Ramanujam	SR	Entropy	Herfindahl
<i>De Eik</i>	8,00	4,00	2,00	Cell A: firms with very low diversity	####	####	###
<i>Ets. Brepols</i>	4,00	1,00	4,00	Cell A: firms with very low diversity	1,000	0,000	0,000
<i>Interbuild</i>	5,00	3,00	1,67	Cell A: firms with very low diversity	1,000	0,000	0,000
<i>De Persgroep</i>	7,00	3,00	2,33	Cell A: firms with very low diversity	1,000	0,000	0,000
<i>City Hotels</i>	9,00	1,00	9,00	Cell B: related diversified firms	1,000	0,000	0,000
<i>Magotteaux International</i>	16,00	1,00	16,00	Cell B: related diversified firms	1,000	0,000	0,000
<i>Pieters Visbedrijf</i>	11,00	2,00	5,50	Cell B: related diversified firms	1,000	0,000	0,000
<i>UCO</i>	12,00	2,00	6,00	Cell B: related diversified firms	1,000	0,000	0,000
<i>Deceuninck Plastics Industries</i>	16,00	2,00	8,00	Cell B: related diversified firms	1,000	0,000	0,000
<i>Interbrew</i>	24,00	2,00	12,00	Cell B: related diversified firms	1,000	0,000	0,000
<i>Cimenteries CBR</i>	28,00	2,00	14,00	Cell B: related diversified firms	1,000	0,000	0,000
<i>Delhaize De Leeuw</i>	9,00	2,00	4,50	Cell B: related diversified firms	0,999	0,008	0,002
<i>Unisel</i>	7,00	2,00	3,50	Cell A: firms with very low diversity	0,990	0,056	0,020
<i>Lano</i>	8,00	2,00	4,00	Cell A: firms with very low diversity	0,980	0,098	0,039
<i>Bekaert</i>	61,00	7,00	8,71	Cell D: firms with very high diversity	0,981	0,124	0,038
<i>Suiker Export</i>	26,00	8,00	3,25	Cell C: unrelated diversified firms	0,971	0,151	0,057
<i>Almabo</i>	7,00	6,00	1,17	Cell C: unrelated diversified firms	0,960	0,223	0,078
<i>Sabena</i>	20,00	7,00	2,86	Cell C: unrelated diversified firms	0,960	0,229	0,078
<i>Associated Weavers International</i>	9,00	2,00	4,50	Cell B: related diversified firms	0,930	0,254	0,130
<i>Belgische Beton Maatschappij</i>	4,00	4,00	1,00	Cell A: firms with very low diversity	0,875	0,486	0,227
<i>Van de Wiele Michel</i>	7,00	4,00	1,75	Cell A: firms with very low diversity	0,850	0,518	0,265
<i>Alcopa</i>	27,00	3,00	9,00	Cell B: related diversified firms	0,850	0,518	0,265
<i>D'teteren</i>	15,00	3,00	5,00	Cell B: related diversified firms	0,770	0,539	0,354
<i>Rombouts</i>	5,00	3,00	1,67	Cell A: firms with very low diversity	0,730	0,583	0,394
<i>VTB-VAB</i>	5,00	3,00	1,67	Cell A: firms with very low diversity	0,670	0,634	0,442

Degree of Diversification --- "Varadarajan and Ramanujam" Measure -- Sorted and Quartile Split by Herfindahl

Sun International	20,00	6,00	3,33	Cell C: unrelated diversified firms	0,800	0,638	0,336
Concentra Holding	13,00	3,00	4,33	Cell B: related diversified firms	0,660	0,686	0,455
VPK Oudegem	6,00	4,00	1,50	Cell A: firms with very low diversity	0,670	0,735	0,460
Van Genechten	14,00	3,00	4,67	Cell B: related diversified firms	0,700	0,746	0,445
Parwels International	15,00	4,00	3,75	Cell A: firms with very low diversity	0,520	0,805	0,526
Petrofina	48,00	5,00	9,60	Cell D: firms with very high diversity	0,750	0,859	0,417
Groep Van Roey	18,00	7,00	2,57	Cell C: unrelated diversified firms	0,620	0,946	0,523
Tractebel	150,00	8,00	18,75	Cell D: firms with very high diversity	0,690	0,995	0,489
GB-INNO-BM	40,00	5,00	8,00	Cell D: firms with very high diversity	0,610	1,020	0,556
Sofinal Cotesa	14,00	7,00	2,00	Cell C: unrelated diversified firms	0,680	1,025	0,502
UCB	100,00	4,00	25,00	Cell B: related diversified firms	0,370	1,095	0,664
Vlaamse Uitgevers Maatschappij	8,00	8,00	1,00	Cell C: unrelated diversified firms	0,650	1,108	0,536
Dredging (DEME)	13,00	8,00	1,63	Cell C: unrelated diversified firms	0,580	1,149	0,580
Barco	33,00	5,00	6,60	Cell D: firms with very high diversity	0,520	1,152	0,633
Sait Radio Holland	26,00	5,00	5,20	Cell D: firms with very high diversity	0,427	1,271	0,694
BMT	9,00	5,00	1,80	Cell C: unrelated diversified firms	0,363	1,330	0,723
CFE	57,00	8,00	7,13	Cell D: firms with very high diversity	0,492	1,356	0,669
Aviapartner	14,00	6,00	2,33	Cell C: unrelated diversified firms	0,440	1,396	0,709
Vandemoortele International	35,00	7,00	5,00	Cell D: firms with very high diversity	0,450	1,420	0,709
Dossche Bedrijven	23,00	7,00	3,29	Cell C: unrelated diversified firms	0,398	1,464	0,713
Solvay	174,00	5,00	34,80	Cell D: firms with very high diversity	0,320	1,492	0,758

Median	4,00	4,33	First quartile	0,020
			Median	0,354
			Third quartile	0,536

Appendix F

APPENDIX [F.1]

QUESTIONNAIRE ITEM STATISTICS

All items are as given in the questionnaire in Appendix [D.1]
(no reverse coding or other transformations).

Variable	Mean	Std Dev	Min	Max	Valid n
I.A.1	6,78	0,71	2	7	153
I.A.2	5,08	1,75	1	7	153
I.A.3	6,58	1,12	1	7	153
I.A.4	5,38	1,60	1	7	153
I.A.5	5,61	1,36	1	7	153
I.A.6	4,45	1,98	1	7	153
I.A.7	4,75	1,79	1	7	153
I.A.8	4,76	1,95	1	7	153
I.A.9	5,19	1,70	1	7	153
I.A.10	5,01	1,62	1	7	153
I.A.11	4,24	1,81	1	7	153
I.A.12	3,12	2,03	1	7	153
I.A.13	5,69	1,21	1	7	153
I.A.14	4,76	1,55	1	7	153
I.A.15	4,54	1,72	1	7	153
I.A.16	3,85	1,86	1	7	153
I.A.17	3,27	1,98	1	7	153
I.A.18	4,63	1,72	1	7	153
I.A.19	4,14	1,55	1	7	153
I.A.20	5,50	1,50	1	7	153
I.A.21	4,41	1,75	1	7	153
I.A.22	2,50	1,57	1	6	153
I.A.23	3,09	2,13	1	7	153
I.A.24	3,99	2,28	1	7	153
I.A.25	4,18	1,77	1	7	153
I.A.26	4,74	1,56	1	7	153
I.A.27	4,33	1,66	1	7	153
I.A.28	4,22	1,86	1	7	153
I.A.29	4,42	1,65	1	7	153
I.A.30	3,15	1,78	1	7	153
I.A.31	3,44	2,19	1	7	153
I.A.32	4,71	1,46	1	7	153
I.A.33	4,86	1,72	1	7	153
I.A.34	2,46	1,69	1	7	153
I.A.35	3,78	1,97	1	7	153
I.A.36	3,48	2,04	1	7	153
I.A.37	4,38	2,06	1	7	153
I.A.38	4,83	1,62	1	7	153
I.A.39	3,25	1,83	1	7	153
I.A.40	4,43	2,11	1	7	153
I.A.41	4,57	1,87	1	7	153
I.A.42	4,16	1,65	1	7	153
I.A.43	3,68	1,84	1	7	153
I.A.44	3,94	1,72	1	7	153
I.A.45	4,10	1,39	1	7	153
I.A.46A	3,56	0,97	2	6	153
I.A.46B	2,95	0,94	1	7	153
I.A.47	12,99	13,42	0	80	152

Variable	Mean	Std Dev	Min	Max	Valid N	
I.B.1	2,84	1,06	1	6	153	
I.B.2	2,66	0,60	1	4	153	
[58 businesses have no business unit controller - user-defined missing value=0]						
I.C.1	4,71	2,08	1	7	95	
I.C.2	2,81	1,70	1	7	95	
I.C.3	5,77	1,33	1	7	95	
I.C.4	4,99	1,65	1	7	95	
I.C.5	4,62	1,73	1	7	95	
I.C.6	5,33	1,59	1	7	95	
I.C.7	2,23	1,60	1	7	95	
I.C.8	1,61	1,28	1	7	95	
[53 managers have a 100% fixed salary - user-defined missing value=11]						
I.D.FIX	87,54	11,50	50	100	153	[% fixed]
I.D.FOR	49,82	40,68	0	100	111	[% formula-based]
I.D.COR	28,56	29,75	0	100	111	[% corporate-based]
I.E	10.187,792	71.948.354	0	750.000.000	109	[many missing values]
II.A.1	5,78	1,22	1	7	153	
II.A.2	5,97	1,05	2	7	153	
II.A.3	5,31	1,35	1	7	153	
II.A.4	3,95	1,80	1	7	153	
II.A.5	4,91	1,50	1	7	153	
II.A.6	2,93	1,82	1	7	153	
II.A.7	4,14	1,78	1	7	153	
II.A.8	2,78	1,56	1	7	153	
II.B.1	5,07	1,47	1	7	153	
II.B.2	2,69	1,34	1	6	153	
II.B.3	5,73	1,41	1	7	153	
II.B.4	3,03	1,48	1	7	153	
II.B.5	2,56	1,46	1	6	153	
II.B.6	2,44	1,65	1	7	153	
II.C.1A	26,99	20,12	0	100	138	
II.C.1B	24,82	13,31	0	100	138	
II.C.1C	27,25	14,65	0	80	138	
II.C.1D	20,93	17,87	0	100	138	
II.C.2	4,01	1,53	1	7	153	
[missing values indicate "not applicable" - user-defined missing value=0]						
II.C.3A	4,98	1,09	3	7	129	
II.C.3B	4,77	0,99	3	7	129	
II.C.3C	4,56	1,12	1	7	129	
II.C.3D	4,16	0,95	1	7	110	
II.C.3E	4,35	1,14	1	7	136	
II.C.3F	4,37	1,12	1	7	139	
II.C.3G	4,69	0,93	3	7	150	
II.C.3H	4,70	1,13	2	7	148	
II.C.4	4,03	1,70	1	7	153	
II.C.5	2,80	1,69	1	7	153	
II.C.6	2,78	1,64	1	7	153	
[missing values indicate "not applicable" - user-defined missing value=0]						
II.C.7A	4,09	1,31	1	7	127	
II.C.7B	4,33	1,19	1	7	126	
II.C.7C	4,74	1,32	2	7	129	
II.C.7D	3,87	0,88	2	7	106	
II.C.7E	4,00	1,35	1	7	134	
II.C.7F	4,01	1,20	1	7	137	
II.C.7G	4,01	1,11	1	7	149	
II.C.7H	3,96	1,24	1	7	149	
II.D.1	2,22	1,55	1	7	152	
II.D.2	1,93	1,21	1	6	152	

Variable	Mean	Std Dev	Min	Max	Valid N	
II.E.1A	2,24	1,55	1	7	153	
II.E.1B	2,14	1,40	1	7	152	
II.E.2	4,77	1,76	1	7	153	
III.A.1	5,17	1,34	1	7	152	
IMP_A	5,70	1,39	1	7	152	
PER_A	5,16	1,37	1	7	152	
IMP_B	6,12	,90	3	7	151	
PER_B	5,30	1,14	2	7	151	
IMP_C	5,10	1,63	1	7	151	
PER_C	4,60	1,44	1	7	151	
III.B	0,68	0,33	0,00	1,00	151	[ratio -> III.B.2/III.B.1]
III.C.A	2,96	1,74	0	8	139	[more missing values
III.C.B	2,97	1,69	0	8	143	with years back -- 3>2>1]
III.C.C	2,93	1,71	1	8	149	
III.D	3,04	1,12	1	4	152	
III.E	7,62	1,81	1	10	151	
IV.A	49,66	28,73	0	100	150	[low cost strategy]
IV.B	4,71	1,04	1	7	153	
IV.C.A	4,47	1,26	1	7	152	
IV.C.B	4,10	1,44	1	7	151	
IV.C.C	5,28	1,06	2	7	152	
IV.C.D	4,97	1,35	1	7	152	
IV.C.E	5,04	1,05	2	7	151	
IV.D.A	25,97	25,21	0	100	146	
IV.D.B	51,98	27,10	0	100	146	
IV.D.C	18,69	20,67	0	100	146	
IV.D.D	3,40	7,49	0	50	147	
IV.E	2,56	1,75	1	7	153	
V.A	3,46	1,46	1	7	153	
V.B	3,66	1,61	1	7	152	
V.C	2,33	1,60	1	7	153	
V.D	3,28	1,76	1	7	153	
V.E	2,32	1,66	1	7	152	
V.F	3,22	1,84	1	7	153	
V.G	3,86	1,69	1	7	152	
V.H	3,58	1,79	1	7	153	
V.I	3,95	1,77	1	7	152	
V.J	2,86	1,49	1	7	153	
V.K	3,65	1,48	1	7	153	
V.L	3,50	1,50	1	7	153	
V.M	3,69	1,59	1	7	153	
V.N	3,25	1,50	1	7	153	
V.O	4,13	1,48	1	7	153	
VI.1	4.859.460	15.182.231	23.500	150.000.000	148	
VI.2	3.544.753	11.248.382	1.257	80.000.000	62	[many missing values]
VI.3	427,45	1091,52	3	8.800	150	
VI.4	16,06	14,89	1	75	141	
VI.5	1,64	0,48	1	2	152	
VI.6	5,68	4,90	1	31	151	
VI.7	13,65	10,47	1	40	150	
VI.8	1,87	0,62	1	3	152	
VI.9	3,62	0,94	1	5	152	
VI.11	45,76	8,34	28	65	148	

APPENDIX [F.2]

VALIDATION OF "CONTROL SYSTEM DESIGN AND USE" (SECTION I OF QUESTIONNAIRE)

Panel A: Budgeting Characteristics

(Items I.A.1 to I.A.46, and Item I.B.1)

1. Correlation Matrix

--- Coefficients ---

	I.A.1	I.A.2	I.A.3_R	I.A.4	I.A.5_R	I.A.6	I.A.7
I.A.1	1,00000						
I.A.2	,14154	1,00000					
I.A.3_R	-,06657	-,31370	1,00000				
I.A.4	-,00285	,44719	-,16425	1,00000			
I.A.5_R	-,23503	-,37568	,40340	-,35803	1,00000		
I.A.6	,13090	,27231	-,13169	,05973	-,05767	1,00000	
I.A.7	,10307	,27955	-,28942	,26722	-,20675	,39702	1,00000
I.A.8_R	-,08589	-,35600	,24222	-,40793	,26968	-,17267	-,34599
I.A.9	,01786	,24991	-,16439	,13316	-,10048	,19537	,28437
I.A.10	-,01600	-,08376	-,01610	-,00096	-,13573	-,07258	-,06525
I.A.11_R	,05268	,01211	-,20102	,01509	-,08333	,15445	,31922
I.A.12	-,06375	-,13243	,04333	-,20067	,14240	-,17901	-,13271
I.A.13_R	-,18181	-,06759	,16842	,00951	,04197	-,02095	-,13991
I.A.14	-,07685	,38870	-,09035	,24871	-,15075	,21929	,22127
I.A.15_R	-,10794	-,26398	-,01627	-,11612	,20040	-,03588	-,08057
I.A.16_R	-,04518	-,32667	,22218	-,34771	,28642	-,03628	-,25716
I.A.17	-,11849	,08901	-,14734	,15262	-,06326	-,07298	,06730
I.A.18_R	-,07555	-,25294	,15529	-,12981	,25246	-,21509	-,25308
I.A.19	,03453	,26286	-,04317	,31192	-,16726	,16932	,26218
I.A.20_R	-,06582	-,06758	,08136	-,06791	,09910	-,00945	-,07382
I.A.21	,17199	,39303	-,12221	,31753	-,19880	,29345	,45613
I.A.22	-,18706	-,27005	,08883	-,20051	,18383	-,10811	-,14286
I.A.23_R	-,01761	-,01044	,01927	-,08829	,00319	,09257	-,07002
I.A.24_R	,16126	,03278	-,05656	-,06090	,03666	,61496	,04925
I.A.25_R	-,12611	-,28989	,07271	-,18369	,31882	-,05302	-,13456
I.A.26_R	-,16898	-,23368	,24129	-,26838	,29309	-,14224	-,31296
I.A.27_R	-,05496	-,29288	,07908	-,22806	,27558	-,05093	-,03420
I.A.28	-,03452	,21964	-,09848	,08736	,05291	,59700	,28561
I.A.29	-,03491	,32310	-,14332	,37209	-,14563	,33143	,26229
I.A.30	-,15191	,05747	-,15819	,03526	,04663	,11485	,34235
I.A.31_R	,10843	,00558	,01737	-,10221	,03056	,39192	,01066
I.A.32	,07348	,37766	-,18713	,34265	-,15624	,22026	,37583
I.A.33	-,09594	-,07048	,06621	-,06119	,14765	-,08875	-,07572
I.A.34	-,02701	,13914	-,06536	,13482	-,02866	,06367	,22499
I.A.35_R	-,01732	-,24172	,22295	-,18940	,24802	-,16214	-,38724
I.A.36_R	,15615	,18732	-,13270	,13004	-,12536	,49520	,26980
I.A.37_R	-,09292	-,30462	,17964	-,34975	,24605	-,17729	-,21901
I.A.38_R	,04956	,22317	-,10221	,10956	,01190	,33078	,06698
I.A.39	,04280	,12114	-,03726	,02966	,11374	,19288	,26661
I.A.40	,07590	,01214	,03613	-,09133	,04480	,24354	,08590
I.A.41_R	-,09361	-,17366	,17040	-,24870	,24284	,00042	-,15683
I.A.42	-,02038	,19862	-,13096	,19069	-,11359	,17857	,20126
I.A.43	-,08867	-,11653	,06012	-,07664	,21509	-,05736	-,10000
I.A.44_R	,08081	,13829	-,08156	-,14174	-,04917	,07118	-,00377
I.A.45	,12218	,26206	-,08217	,11028	-,14569	,16527	,24801
I.A.46A	,04178	-,18953	,30446	-,01370	,21684	-,20036	-,16329
I.A.46B	,00485	-,21757	,15637	-,06260	,07566	-,28489	-,15133
I.B.1_R	,20540	-,03533	-,24801	-,00959	-,08974	-,03840	,15330

	I.A.8_R	I.A.9	I.A.10	I.A.11_R	I.A.12	I.A.13_R	I.A.14
I.A.8_R	1,00000						
I.A.9	-,09729	1,00000					
I.A.10	-,03691	-,03545	1,00000				
I.A.11_R	-,15691	-,13465	-,32716	1,00000			
I.A.12	-,26772	-,03744	-,13774	-,26959	1,00000		
I.A.13_R	-,33757	-,08997	-,07482	-,13123	-,00010	1,00000	
I.A.14	-,08122	-,28792	-,12804	-,05533	-,14987	-,04463	1,00000
I.A.15_R	-,36502	-,04578	-,24728	-,00735	-,06098	-,09505	-,02857
I.A.16_R	-,41657	-,28592	-,12609	-,14559	-,18635	-,00646	-,21828
I.A.17	-,10548	-,05644	-,01383	-,05583	-,08836	-,07107	-,13266
I.A.18_R	-,30316	-,22061	-,06540	-,17553	-,07562	-,01720	-,24501
I.A.19	-,29416	-,06966	-,11308	-,05440	-,13747	-,02420	-,47003
I.A.20_R	-,17421	-,07648	-,07170	-,05061	-,06357	-,16348	-,07621
I.A.21	-,37470	-,17535	-,05655	-,20041	-,23424	-,12848	-,25387
I.A.22	-,23037	-,33620	-,09163	-,11584	-,36774	-,08341	-,18418
I.A.23_R	-,07666	-,03586	-,09379	-,14421	-,08802	-,01123	-,12350
I.A.24_R	-,02887	-,09984	-,13022	-,10137	-,10424	-,03251	-,11298
I.A.25_R	-,33540	-,18285	-,03016	-,11388	-,25461	-,06187	-,06372
I.A.26_R	-,27643	-,39829	-,10581	-,18046	-,24876	-,05021	-,14581
I.A.27_R	-,34557	-,00346	-,13553	-,06530	-,26429	-,13211	-,14055
I.A.28	-,13420	-,19164	-,20389	-,19345	-,11013	-,08382	-,27444
I.A.29	-,26790	-,14985	-,04034	-,05513	-,09988	-,06219	-,54581
I.A.30	-,04624	-,21708	-,04141	-,15815	-,15864	-,06649	-,19219
I.A.31_R	-,01873	-,06840	-,05286	-,02857	-,12211	-,09166	-,03148
I.A.32	-,34950	-,38376	-,10499	-,07641	-,10560	-,11619	-,45690
I.A.33	-,10622	-,05217	-,30450	-,12917	-,18387	-,10440	-,05638
I.A.34	-,16529	-,03151	-,01792	-,02684	-,03702	-,04810	-,00889
I.A.35_R	-,24055	-,23501	-,08401	-,24539	-,04567	-,03951	-,22448
I.A.36_R	-,25284	-,08702	-,07857	-,16169	-,20136	-,05027	-,29746
I.A.37_R	-,56539	-,10568	-,18252	-,18339	-,19582	-,18554	-,12968
I.A.38_R	-,04938	-,10807	-,03056	-,00423	-,14270	-,08680	-,28702
I.A.39	-,01368	-,13266	-,18695	-,20899	-,08526	-,06164	-,11432
I.A.40	-,17037	-,10544	-,00109	-,03875	-,06406	-,14569	-,00095
I.A.41_R	-,46018	-,17558	-,08391	-,12561	-,22534	-,17839	-,02842
I.A.42	-,16356	-,39823	-,22706	-,16301	-,14961	-,05222	-,59334
I.A.43	-,20236	-,11411	-,13938	-,10946	-,24077	-,03129	-,10716
I.A.44_R	-,06617	-,05022	-,02137	-,00186	-,07363	-,03527	-,01948
I.A.45	-,04514	-,28228	-,01490	-,12437	-,18388	-,06760	-,20367
I.A.46A	-,21775	-,18113	-,09857	-,16943	-,13904	-,06562	-,14095
I.A.46B	-,26008	-,13460	-,00020	-,16089	-,13724	-,12809	-,11139
I.B.1_R	-,12671	-,03387	-,09511	-,02098	-,16774	-,31169	-,06466
	I.A.15_R	I.A.16_R	I.A.17	I.A.18_R	I.A.19	I.A.20_R	I.A.21
I.A.15_R	1,00000						
I.A.16_R	-,21903	1,00000					
I.A.17	-,03730	-,01816	1,00000				
I.A.18_R	-,19516	-,39636	-,04460	1,00000			
I.A.19	-,17579	-,26967	-,03844	-,37384	1,00000		
I.A.20_R	-,26619	-,05278	-,09396	-,15378	-,07904	1,00000	
I.A.21	-,05765	-,27670	-,08998	-,36250	-,26916	-,10957	1,00000
I.A.22	-,18080	-,29982	-,14095	-,26608	-,20763	-,00767	-,14506
I.A.23_R	-,00828	-,06497	-,03719	-,06156	-,05392	-,02897	-,02945
I.A.24_R	-,08262	-,00667	-,04025	-,02481	-,00613	-,13096	-,04483
I.A.25_R	-,24356	-,42221	-,13219	-,33536	-,14109	-,06647	-,28901
I.A.26_R	-,14633	-,45172	-,10064	-,38591	-,19760	-,02000	-,24060
I.A.27_R	-,28176	-,49748	-,03292	-,25051	-,25313	-,07978	-,21681
I.A.28	-,02870	-,12927	-,05529	-,16126	-,20873	-,03871	-,14685
I.A.29	-,01688	-,25772	-,18092	-,30952	-,60068	-,07372	-,31585
I.A.30	-,09146	-,11201	-,07261	-,12369	-,21160	-,09219	-,13430
I.A.31_R	-,08445	-,09025	-,09715	-,03579	-,00123	-,04940	-,03961
I.A.32	-,19672	-,41497	-,11133	-,39143	-,48426	-,12969	-,38048
I.A.33	-,23824	-,20978	-,08289	-,22498	-,01193	-,00236	-,05468
I.A.34	-,06356	-,12440	-,03002	-,08310	-,10036	-,00979	-,13693
I.A.35_R	-,10392	-,39399	-,07280	-,39989	-,29925	-,02867	-,21480
I.A.36_R	-,06867	-,07957	-,01212	-,22579	-,24219	-,03164	-,19588
I.A.37_R	-,43360	-,38957	-,09804	-,31386	-,19352	-,02733	-,27489
I.A.38_R	-,06659	-,07186	-,05343	-,13873	-,22912	-,08427	-,00572
I.A.39	-,07571	-,04412	-,07720	-,08438	-,19583	-,03984	-,13168
I.A.40	-,16710	-,03995	-,08293	-,02930	-,05123	-,18203	-,07589
I.A.41_R	-,32605	-,26882	-,11646	-,19894	-,23773	-,19782	-,08396
I.A.42	-,18005	-,20731	-,01474	-,24694	-,43904	-,02239	-,12041
I.A.43	-,26261	-,21510	-,20950	-,14119	-,00680	-,00632	-,09389
I.A.44_R	-,01309	-,04380	-,12259	-,02384	-,13393	-,02667	-,07337
I.A.45	-,02444	-,23952	-,03348	-,35452	-,13703	-,01120	-,32935
I.A.46A	-,22265	-,14707	-,04556	-,19806	-,16366	-,18512	-,11445
I.A.46B	-,23288	-,11275	-,05347	-,15300	-,13531	-,18388	-,16814
I.B.1_R	-,15382	-,06075	-,17983	-,13324	-,02641	-,04721	-,04910

	I.A.22	I.A.23_R	I.A.24_R	I.A.25_R	I.A.26_R	I.A.27_R	I.A.28
I.A.22	1,00000						
I.A.23_R	-,02763	1,00000					
I.A.24_R	,01287	,05463	1,00000				
I.A.25_R	,37437	,00251	,13409	1,00000			
I.A.26_R	,59678	-,03037	-,00836	,51047	1,00000		
I.A.27_R	,39816	,06615	,03426	,44463	,40889	1,00000	
I.A.28	-,05719	-,09500	,48182	-,02787	-,09209	-,05604	1,00000
I.A.29	-,27524	-,02836	,14014	-,13296	-,17754	-,36040	,34776
I.A.30	-,01509	-,07286	-,03296	-,04121	-,09933	,00784	,26289
I.A.31_R	,00816	,02662	,60039	-,06802	,00291	-,01066	,36577
I.A.32	-,36166	-,09555	-,01669	-,27205	-,39958	-,32485	,26360
I.A.33	,05810	,12938	-,15387	,11186	,08735	,15166	-,07666
I.A.34	-,12070	-,08169	-,05116	-,05964	-,07048	-,08250	,07110
I.A.35_R	,20604	,01745	,01548	,23737	,36319	,25194	-,19658
I.A.36_R	-,20214	,08534	,32388	-,09683	-,15433	-,10659	,33266
I.A.37_R	,25802	-,06221	-,01862	,35959	,28903	,34963	-,05602
I.A.38_R	-,17043	,02560	,17448	-,06702	-,05932	-,11903	,30981
I.A.39	-,13338	-,00073	,04025	-,09086	-,07173	-,02658	,24319
I.A.40	,03603	,06154	,37053	-,02090	-,00051	-,05337	,29123
I.A.41_R	,26261	,11283	,08381	,34966	,21586	,27977	-,02893
I.A.42	-,26999	-,03138	,10812	-,02119	-,26434	-,14889	,20771
I.A.43	,20704	,06462	,00257	,20098	,24135	,24308	,02414
I.A.44_R	-,17360	,04643	,10890	-,03090	-,08641	-,06008	,06599
I.A.45	-,23607	-,02590	,09316	-,17672	-,23898	-,08025	,20596
I.A.46A	,22851	,02493	-,13497	,22473	,24303	,24154	-,24339
I.A.46B	,26866	-,03499	-,12558	,30209	,18700	,18431	-,08843
I.B.1_R	,10482	,00960	-,02541	,20824	,04946	,08672	-,06146

	I.A.29	I.A.30	I.A.31_R	I.A.32	I.A.33	I.A.34	I.A.35_R
I.A.29	1,00000						
I.A.30	,25132	1,00000					
I.A.31_R	,07262	-,05547	1,00000				
I.A.32	,62062	,29806	-,08279	1,00000			
I.A.33	,05594	,14016	-,14388	,08819	1,00000		
I.A.34	,02054	,18042	-,11064	,11247	,06797	1,00000	
I.A.35_R	-,33166	-,33590	,05308	-,48341	,02498	-,20853	1,00000
I.A.36_R	,36546	,02348	,20558	,24072	-,23657	-,16889	-,20064
I.A.37_R	-,20673	,12719	-,03122	-,28901	,19639	-,17896	,24832
I.A.38_R	,32026	,10534	,13792	,19656	-,15887	,01229	-,24515
I.A.39	,19942	,54763	-,00151	,17553	,04093	,38330	-,20550
I.A.40	,11558	,05957	,47496	,04476	,11832	,05304	,05420
I.A.41_R	-,17830	,04372	-,08531	-,22722	,04808	-,06925	,11863
I.A.42	,50847	,12837	,07814	,52598	,01760	,00133	-,19960
I.A.43	,08954	,14900	-,03813	,00711	,27324	-,07932	,05770
I.A.44_R	-,04339	,06580	,06086	-,00108	-,15468	-,05455	-,03102
I.A.45	,21404	,11902	,06165	,29640	-,21124	-,00522	-,21699
I.A.46A	-,24958	-,19434	-,24149	-,27815	,06812	-,01971	,21813
I.A.46B	-,13139	-,05477	-,18816	-,20612	-,01220	-,05293	,03743
I.B.1_R	,02456	-,04447	-,09347	,10715	,19307	,00206	-,07100

	I.A.36_R	I.A.37_R	I.A.38_R	I.A.39	I.A.40	I.A.41_R	I.A.42
I.A.36_R	1,00000						
I.A.37_R	-,23143	1,00000					
I.A.38_R	,41106	-,00226	1,00000				
I.A.39	,08555	-,06335	,12531	1,00000			
I.A.40	,10129	-,14531	-,10431	,05981	1,00000		
I.A.41_R	-,11995	,47168	,00825	-,06129	-,17749	1,00000	
I.A.42	,27735	-,12143	,27828	,08425	,09291	-,16635	1,00000
I.A.43	-,08796	,36340	,03600	-,01269	,11492	,18368	,06492
I.A.44_R	,21945	,01750	,24450	,13095	-,00159	,00843	,07079
I.A.45	,20433	-,06522	,27941	,17120	-,07494	-,07475	,22275
I.A.46A	-,28829	,22281	-,09032	-,08437	-,22123	,35888	-,21032
I.A.46B	-,12435	,26644	,06132	-,08866	-,12224	,29590	-,09692
I.B.1_R	-,10045	,10106	-,07384	-,07246	,10333	,03063	-,06055

	I.A.43	I.A.44_R	I.A.45	I.A.46A	I.A.46B	I.B.1_R
I.A.43	1,00000					
I.A.44_R	-,26126	1,00000				
I.A.45	-,09289	,05807	1,00000			
I.A.46A	-,13375	-,20972	-,18301	1,00000		
I.A.46B	,12789	-,12013	,08392	,45511	1,00000	
I.B.1_R	,13791	,01632	-,25203	,05853	,08004	1,00000

--- One-tailed Significance of Correlations ---

	I.A.1	I.A.2	I.A.3_R	I.A.4	I.A.5_R
I.A.1					
I.A.2	,04048				
I.A.3_R	,20680	,00004			
I.A.4	,48606	,00000	,02124		
I.A.5_R	,00173	,00000	,00000	,00000	
I.A.6	,05339	,00033	,05233	,23165	,23943
I.A.7	,10244	,00023	,00014	,00042	,00517
I.A.8_R	,14557	,00000	,00128	,00000	,00037
I.A.9	,41326	,00092	,02115	,05040	,10827
I.A.10	,42218	,15167	,42172	,49530	,04718
I.A.11_R	,25892	,44096	,00636	,42656	,15289
I.A.12	,21684	,05136	,29741	,00644	,03956
I.A.13_R	,01225	,20322	,01871	,45357	,30325
I.A.14	,17252	,00000	,13336	,00097	,03144
I.A.15_R	,09207	,00049	,42090	,07645	,00650
I.A.16_R	,28961	,00002	,00289	,00001	,00017
I.A.17	,07231	,13694	,03457	,02983	,21863
I.A.18_R	,17667	,00080	,02763	,05489	,00082
I.A.19	,33589	,00051	,29813	,00004	,01939
I.A.20_R	,20943	,20327	,15872	,20212	,11146
I.A.21	,01676	,00000	,06617	,00003	,00688
I.A.22	,01030	,00037	,13743	,00647	,01146
I.A.23_R	,41448	,44902	,40657	,13890	,48440
I.A.24_R	,02322	,34375	,24370	,22731	,32638
I.A.25_R	,06018	,00014	,18589	,01152	,00003
I.A.26_R	,01840	,00182	,00133	,00040	,00012
I.A.27_R	,24992	,00012	,16560	,00229	,00028
I.A.28	,33593	,00319	,11293	,14145	,25798
I.A.29	,33420	,00002	,03859	,00000	,03623
I.A.30	,03043	,24022	,02541	,33261	,28353
I.A.31_R	,09108	,47271	,41564	,10433	,35385
I.A.32	,18336	,00000	,01027	,00001	,02689
I.A.33	,11906	,19331	,20807	,22620	,03427
I.A.34	,37015	,04314	,21107	,04831	,36256
I.A.35_R	,41585	,00131	,00280	,00952	,00100
I.A.36_R	,02696	,01021	,05101	,05456	,06129
I.A.37_R	,12664	,00006	,01314	,00000	,00109
I.A.38_R	,27148	,00278	,10435	,08880	,44194
I.A.39	,29969	,06790	,32375	,35795	,08077
I.A.40	,17554	,44081	,32875	,13075	,29121
I.A.41_R	,12488	,01591	,01761	,00097	,00124
I.A.42	,40127	,00692	,05332	,00911	,08105
I.A.43	,13786	,07572	,23020	,17320	,00379
I.A.44_R	,16035	,04413	,15810	,04026	,27306
I.A.45	,06621	,00053	,15632	,08738	,03618
I.A.46A	,30406	,00948	,00007	,43325	,00355
I.A.46B	,47628	,00345	,02679	,22104	,17630
I.B.1_R	,00543	,33230	,00100	,45315	,13498

	I.A.6	I.A.7	I.A.8_R	I.A.9	I.A.10
I.A.6					
I.A.7	,00000				
I.A.8_R	,01641	,00001			
I.A.9	,00776	,00018	,11576		
I.A.10	,18630	,21145	,32527	,33178	
I.A.11_R	,02831	,00003	,02637	,04851	,00002
I.A.12	,01342	,05099	,00041	,32297	,04476
I.A.13_R	,39860	,04228	,00001	,13437	,17902
I.A.14	,00323	,00299	,15914	,00015	,05736
I.A.15_R	,32986	,16109	,00000	,28708	,00103
I.A.16_R	,32810	,00067	,00000	,00017	,06020
I.A.17	,18500	,20423	,09721	,24418	,43264
I.A.18_R	,00379	,00080	,00007	,00307	,21094
I.A.19	,01821	,00053	,00011	,19611	,08200
I.A.20_R	,45385	,18224	,01563	,17370	,18922
I.A.21	,00012	,00000	,00000	,01508	,24376
I.A.22	,09173	,03907	,00209	,00001	,12998
I.A.23_R	,12755	,19486	,17312	,32996	,12444
I.A.24_R	,00000	,27273	,36159	,10974	,05432
I.A.25_R	,25754	,04862	,00001	,01184	,35566
I.A.26_R	,03972	,00004	,00027	,00000	,09651
I.A.27_R	,26591	,33735	,00001	,48309	,04742

	I.A.6	I.A.7	I.A.8_R	I.A.9	I.A.10
I.A.28	,00000	,00017	,04907	,00882	,00574
I.A.29	,00001	,00053	,00041	,03224	,31028
I.A.30	,07872	,00001	,28517	,00352	,30565
I.A.31_R	,00000	,44798	,40912	,20042	,25818
I.A.32	,00311	,00000	,00000	,00000	,09824
I.A.33	,13765	,17612	,09563	,26094	,00006
I.A.34	,21714	,00259	,02059	,34948	,41298
I.A.35_R	,02262	,00000	,00137	,00173	,15092
I.A.36_R	,00000	,00037	,00081	,14240	,16717
I.A.37_R	,01417	,00327	,00000	,09679	,01197
I.A.38_R	,00001	,20538	,27222	,09181	,35385
I.A.39	,00845	,00043	,43338	,05105	,01034
I.A.40	,00121	,14554	,01763	,09729	,49466
I.A.41_R	,49795	,02643	,00000	,01497	,15122
I.A.42	,01361	,00631	,02168	,00000	,00238
I.A.43	,24062	,10937	,00606	,08008	,04288
I.A.44_R	,19096	,48156	,20821	,26879	,39660
I.A.45	,02060	,00100	,28976	,00020	,42749
I.A.46A	,00651	,02186	,00343	,01252	,11271
I.A.46B	,00018	,03093	,00058	,04857	,49903
I.B.1_R	,31874	,02925	,04599	,33885	,12111

	I.A.11_R	I.A.12	I.A.13_R	I.A.14	I.A.15_R
I.A.11_R	,				
I.A.12	,00038				
I.A.13_R	,05295	,49949			
I.A.14	,24849	,03223	,29191		
I.A.15_R	,46407	,22700	,12125	,36296	
I.A.16_R	,03627	,01055	,46841	,00336	,00326
I.A.17	,24652	,13872	,19134	,05106	,32356
I.A.18_R	,01499	,17643	,41646	,00113	,00781
I.A.19	,25211	,04508	,38326	,00000	,01487
I.A.20_R	,26723	,21751	,02174	,17455	,00044
I.A.21	,00650	,00178	,05674	,00077	,23952
I.A.22	,07695	,00000	,15268	,01133	,01266
I.A.23_R	,03766	,13965	,44523	,06414	,45952
I.A.24_R	,10623	,09987	,34496	,08218	,15499
I.A.25_R	,08051	,00075	,22370	,21694	,00121
I.A.26_R	,01280	,00097	,26883	,03605	,03554
I.A.27_R	,21131	,00048	,05177	,04156	,00021
I.A.28	,00829	,08769	,15147	,00030	,36237
I.A.29	,24924	,10965	,22253	,00000	,41796
I.A.30	,02544	,02508	,20709	,00866	,13044
I.A.31_R	,36297	,06634	,12990	,34964	,14967
I.A.32	,17393	,09694	,07632	,00000	,00740
I.A.33	,05577	,01145	,09952	,24441	,00151
I.A.34	,37096	,32479	,27746	,45660	,21753
I.A.35_R	,00112	,28756	,31389	,00264	,10057
I.A.36_R	,02293	,00628	,26859	,00009	,19949
I.A.37_R	,01163	,00764	,01083	,05507	,00000
I.A.38_R	,47930	,03923	,14301	,00016	,20671
I.A.39	,00476	,14734	,22456	,07971	,17613
I.A.40	,31721	,21572	,03618	,49537	,01948
I.A.41_R	,06093	,00255	,01368	,36363	,00002
I.A.42	,02205	,03246	,26075	,00000	,01297
I.A.43	,08902	,00136	,35049	,09368	,00052
I.A.44_R	,49088	,18288	,33258	,40556	,43618
I.A.45	,06279	,01144	,20318	,00578	,38213
I.A.46A	,01814	,04325	,21015	,04112	,00284
I.A.46B	,02348	,04536	,05729	,08522	,00188
I.B.1_R	,39844	,01911	,00004	,21357	,02883

	I.A.16_R	I.A.17	I.A.18_R	I.A.19	I.A.20_R
I.A.16_R	,				
I.A.17	,41187				
I.A.18_R	,00000	,29206			
I.A.19	,00037	,31855	,00000		
I.A.20_R	,25853	,12399	,02886	,16575	
I.A.21	,00027	,13434	,00000	,00038	,08880
I.A.22	,00008	,04112	,00044	,00501	,46253
I.A.23_R	,21247	,32406	,22486	,25401	,36111
I.A.24_R	,46739	,31067	,38041	,47002	,05332
I.A.25_R	,00000	,05167	,00001	,04096	,20716
I.A.26_R	,00000	,10789	,00000	,00718	,40310
I.A.27_R	,00000	,34310	,00089	,00080	,16347
I.A.28	,05562	,24863	,02322	,00481	,31736

	I.A.16_R	I.A.17	I.A.18_R	I.A.19	I.A.20_R
I.A.29	,00065	,01261	,00005	,00000	,18257
I.A.30	,08402	,18619	,06385	,00432	,12853
I.A.31_R	,13361	,11611	,33027	,49399	,27213
I.A.32	,00000	,08534	,00000	,00000	,05504
I.A.33	,00463	,15419	,00259	,44184	,48844
I.A.34	,06275	,35630	,15357	,10854	,45222
I.A.35_R	,00000	,18560	,00000	,00009	,36249
I.A.36_R	,16410	,44091	,00251	,00128	,34893
I.A.37_R	,00000	,11398	,00004	,00827	,36869
I.A.38_R	,18871	,25592	,04362	,00219	,15018
I.A.39	,29408	,17144	,14986	,00764	,31246
I.A.40	,31195	,15408	,35960	,26469	,01216
I.A.41_R	,00039	,07585	,00685	,00154	,00712
I.A.42	,00507	,42824	,00104	,00000	,39175
I.A.43	,00379	,00468	,04085	,46676	,46909
I.A.44_R	,29542	,06558	,38493	,04943	,37176
I.A.45	,00143	,34059	,00000	,04560	,44537
I.A.46A	,03483	,28800	,00706	,02162	,01099
I.A.46B	,08263	,25577	,02950	,04769	,01145
I.B.1_R	,22784	,01306	,05030	,37295	,28113

	I.A.21	I.A.22	I.A.23_R	I.A.24_R	I.A.25_R
I.A.21	,				
I.A.22	,03680				
I.A.23_R	,35893	,36728			
I.A.24_R	,29109	,43728	,25122		
I.A.25_R	,00015	,00000	,48773	,04923	
I.A.26_R	,00137	,00000	,35471	,45916	,00000
I.A.27_R	,00355	,00000	,20829	,33709	,00000
I.A.28	,03504	,24127	,12139	,00000	,36617
I.A.29	,00003	,00029	,36393	,04201	,05067
I.A.30	,04895	,42654	,18540	,34295	,30649
I.A.31_R	,31344	,46013	,37197	,00000	,20175
I.A.32	,00000	,00000	,12001	,41888	,00033
I.A.33	,25102	,23782	,05548	,02878	,08432
I.A.34	,04573	,06862	,15773	,26500	,23198
I.A.35_R	,00383	,00531	,41524	,42471	,00157
I.A.36_R	,00762	,00611	,14711	,00002	,11689
I.A.37_R	,00029	,00064	,22245	,40966	,00000
I.A.38_R	,47203	,01759	,37670	,01550	,20523
I.A.39	,05235	,05013	,49643	,31067	,13199
I.A.40	,17558	,32921	,22492	,00000	,39882
I.A.41_R	,15108	,00052	,08247	,15151	,00000
I.A.42	,06909	,00037	,35007	,09171	,39741
I.A.43	,12416	,00512	,21371	,48743	,00637
I.A.44_R	,18371	,01593	,28437	,09012	,35227
I.A.45	,00002	,00165	,37533	,12603	,01444
I.A.46A	,07947	,00225	,37986	,04812	,00261
I.A.46B	,01887	,00039	,33383	,06097	,00007
I.B.1_R	,27336	,09861	,45314	,37758	,00490

	I.A.26_R	I.A.27_R	I.A.28	I.A.29	I.A.30
I.A.26_R	,				
I.A.27_R	,00000				
I.A.28	,12879	,24570			
I.A.29	,01407	,00000	,00001		
I.A.30	,11094	,46168	,00051	,00086	
I.A.31_R	,48577	,44795	,00000	,18618	,24791
I.A.32	,00000	,00002	,00050	,00000	,00009
I.A.33	,14148	,03064	,17314	,24611	,04199
I.A.34	,19333	,15533	,19123	,40052	,01282
I.A.35_R	,00000	,00084	,00744	,00001	,00001
I.A.36_R	,02840	,09487	,00001	,00000	,38665
I.A.37_R	,00015	,00000	,24578	,00518	,05859
I.A.38_R	,23321	,07140	,00005	,00003	,09751
I.A.39	,18912	,37217	,00123	,00673	,00000
I.A.40	,49752	,25618	,00013	,07742	,23224
I.A.41_R	,00368	,00023	,36132	,01372	,29576
I.A.42	,00048	,03312	,00499	,00000	,05689
I.A.43	,00133	,00123	,38353	,13553	,03302
I.A.44_R	,14409	,23035	,20883	,29718	,20951
I.A.45	,00146	,16205	,00532	,00395	,07142
I.A.46A	,00124	,00132	,00122	,00093	,00804
I.A.46B	,01032	,01129	,13851	,05273	,25066
I.B.1_R	,27187	,14324	,22520	,38158	,29259

	I.A.31_R	I.A.32	I.A.33	I.A.34	I.A.35_R
I.A.31_R	,				
I.A.32	,15448	,			
I.A.33	,03800	,13917			
I.A.34	,08667	,08316	,20191		
I.A.35_R	,25731	,00000	,37961	,00485	,
I.A.36_R	,00540	,00136	,00162	,01845	,00644
I.A.37_R	,35082	,00015	,00749	,01344	,00098
I.A.38_R	,04456	,00744	,02491	,44008	,00113
I.A.39	,49261	,01499	,30772	,00000	,00541
I.A.40	,00000	,29138	,07260	,25747	,25288
I.A.41_R	,14722	,00237	,27755	,19751	,07207
I.A.42	,16852	,00000	,41451	,49350	,00669
I.A.43	,31992	,46524	,00032	,16488	,23933
I.A.44_R	,22743	,49472	,02813	,25153	,35172
I.A.45	,22453	,00010	,00438	,47447	,00353
I.A.46A	,00132	,00025	,20139	,40446	,00338
I.A.46B	,00993	,00529	,44050	,25789	,32298
I.B.1_R	,12525	,09370	,00840	,48990	,19156

	I.A.36_R	I.A.37_R	I.A.38_R	I.A.39	I.A.40
I.A.36_R	,				
I.A.37_R	,00200	,			
I.A.38_R	,00000	,48892			
I.A.39	,14653	,21830	,06138		
I.A.40	,10642	,03655	,09973	,23136	,
I.A.41_R	,06986	,00000	,45970	,22583	,01408
I.A.42	,00026	,06742	,00025	,15023	,12666
I.A.43	,13982	,00000	,32932	,43816	,07860
I.A.44_R	,00321	,41499	,00116	,05333	,49220
I.A.45	,00565	,21157	,00023	,01718	,17861
I.A.46A	,00015	,00282	,13343	,14989	,00300
I.A.46B	,06283	,00044	,22573	,13789	,06613
I.B.1_R	,10833	,10693	,18218	,18671	,10185

	I.A.41_R	I.A.42	I.A.43	I.A.44_R	I.A.45
I.A.41_R	,				
I.A.42	,01994	,			
I.A.43	,01152	,21263			
I.A.44_R	,45881	,19229	,00055		
I.A.45	,17922	,00282	,12672	,23791	,
I.A.46A	,00000	,00453	,04965	,00464	,01178
I.A.46B	,00010	,11666	,05757	,06956	,15118
I.B.1_R	,35350	,22860	,04457	,42063	,00084

	I.A.46A	I.A.46B	I.B.1_R
I.A.46A	,		
I.A.46B	,00000	,	
I.B.1_R	,23618	,16268	,

--- Anti-Image Correlation Matrix ---
 (Measures of Sampling Adequacy -MSA- are printed on the diagonal)

	I.A.1	I.A.2	I.A.3_R	I.A.4	I.A.5_R	I.A.6	I.A.7
I.A.1	,58739						
I.A.2	-,09705	,76209					
I.A.3_R	-,05085	,30676	,65482				
I.A.4	,12071	-,29019	-,14271	,72860			
I.A.5_R	,20211	,11148	-,27394	,28088	,69525		
I.A.6	,01552	-,15328	-,06466	,18067	,12418	,71482	
I.A.7	-,00437	,03126	,08808	-,06030	,00251	-,29984	,81678
I.A.8_R	-,08952	,14051	-,01282	,15473	,11219	-,00212	,05650
I.A.9	,10897	-,15446	-,05737	,01828	-,03974	-,09389	,00007
I.A.10	-,00259	,15217	,02962	-,04721	,26980	-,00252	-,04559
I.A.11_R	-,02046	,10216	,08926	,03234	,08241	,09929	-,14785
I.A.12	-,03481	-,13113	-,03769	,08471	,02669	,16992	-,00555
I.A.13_R	,05082	-,01957	-,09551	-,18113	,02723	-,00153	-,04220
I.A.14	,09232	,31569	-,15545	,05779	,11948	,17210	-,08079
I.A.15_R	,08613	,17123	,15947	-,07257	-,07424	,07524	,04943
I.A.16_R	,02268	-,05184	-,14052	,10788	,05236	-,13363	,04371
I.A.17	,08639	-,00408	,05309	-,04276	,09740	,14806	-,01813
I.A.18_R	-,05437	-,03881	-,03845	-,20159	-,06926	,11306	-,13237
I.A.19	-,04105	-,02740	-,12510	-,00108	,10306	,11820	-,04041
I.A.20_R	,05921	-,01026	-,02790	,08805	-,03338	,00511	-,07586
I.A.21	-,12346	-,17314	-,14066	-,10345	-,06261	-,07217	-,22031
I.A.22	,12068	,07506	,10229	-,01866	-,03132	-,14354	-,03277
I.A.23_R	,08782	,10050	,05796	,08204	,01920	-,12230	,07772
I.A.24_R	-,15322	,09957	,04508	-,09508	,03503	-,41954	,23219
I.A.25_R	,02301	,05746	,12434	-,19025	-,26697	-,07878	-,08137
I.A.26_R	,08953	-,13989	-,16931	,24056	,08337	,08213	,16583
I.A.27_R	-,04728	,08633	,07770	-,16013	-,12540	-,01037	-,19140
I.A.28	,10231	-,03205	,00829	-,01702	-,07209	-,32476	,00203
I.A.29	,08302	,03410	,05915	-,15516	-,08717	-,19217	,03090
I.A.30	,10723	,17835	,17659	-,03479	-,00730	,01352	-,18792
I.A.31_R	-,03297	,05328	,05763	,01598	-,06754	,04979	-,00404
I.A.32	-,08706	-,02010	-,01967	-,06869	-,16354	,00154	-,01597
I.A.33	-,01081	-,09523	-,03499	,03569	-,10892	-,09790	,13673
I.A.34	,05439	,00697	,03466	-,01563	-,00198	-,04762	-,12957
I.A.35_R	-,05681	,05837	,11908	-,08894	-,15462	-,06609	,14240
I.A.36_R	-,13145	,13480	,03857	-,00660	-,02555	-,23120	-,09489
I.A.37_R	,01067	-,09451	-,13936	,20318	,03883	,06654	-,06113
I.A.38_R	-,05161	-,09762	,09164	-,16748	-,24396	-,22403	,11345
I.A.39	-,14441	-,04332	-,02006	-,02338	-,11827	-,06627	,02336
I.A.40	-,01716	-,11622	-,19649	,07897	-,02919	,04205	-,12859
I.A.41_R	,05540	-,08900	-,03287	,09773	-,07473	-,12289	,10166
I.A.42	,02701	,21858	,10152	,02048	,12350	,02913	,01291
I.A.43	-,06215	-,01172	,04037	-,04565	-,11786	,03442	,06786
I.A.44_R	,02462	-,25912	-,11755	,18984	,05800	,16527	-,01147
I.A.45	-,07844	-,11201	-,04264	,09428	,02257	,07774	-,12077
I.A.46A	-,13660	-,04097	-,19034	-,16427	-,15244	-,12256	-,09873
I.A.46B	-,03784	,05685	-,04108	,04312	,20112	,29294	,03040
I.B.i_R	-,21901	,15996	,21536	,02951	,10782	,01246	-,15127

	I.A.8_R	I.A.9	I.A.10	I.A.11_R	I.A.12	I.A.13_R	I.A.14
I.A.8_R	,80799						
I.A.9	-,06782	,71001					
I.A.10	,14733	-,22967	,46030				
I.A.11_R	-,05469	-,06919	,27593	,66533			
I.A.12	-,19478	-,10451	-,00023	,23723	,68949		
I.A.13_R	-,31670	-,06295	,12604	,15129	,10705	,45148	
I.A.14	-,25135	-,05584	,05017	,11068	,19642	,22042	,74533
I.A.15_R	-,12513	,03623	-,18874	-,10327	,10618	-,02044	-,07940
I.A.16_R	-,15766	,16471	-,00565	-,00148	,03324	,12267	,09395
I.A.17	,15718	,03106	,18205	,05837	,02884	,03566	-,07263
I.A.18_R	-,10574	-,00641	,05124	,07421	,19575	,12430	,10657
I.A.19	,08212	,17652	,04335	,09020	,09701	,02661	-,11495
I.A.20_R	,02463	-,18014	,05348	-,02680	,00158	-,12094	-,13095
I.A.21	,07366	-,08649	,09935	-,07859	,15190	,16227	,01228
I.A.22	,03285	,21774	-,10034	-,04508	-,31297	-,18377	-,08938
I.A.23_R	-,00723	-,01709	-,02557	,10629	-,09264	-,11173	-,21993
I.A.24_R	-,06364	-,01681	,13567	,00353	,00753	,18634	-,00867
I.A.25_R	-,14755	,00602	-,03153	,01265	-,07343	,11550	,00714
I.A.26_R	,05918	,18438	-,06933	-,04696	,04439	-,06523	-,05360
I.A.27_R	-,09373	-,25696	,02188	,02641	-,05287	,18786	-,01456

	I.A.8_R	I.A.9	I.A.10	I.A.11_R	I.A.12	I.A.13_R	I.A.14
I.A.28	,17197	-,03114	,14547	-,11675	-,05586	-,12090	-,17033
I.A.29	-,01148	,16708	-,18239	-,02738	-,17968	-,17543	-,16713
I.A.30	-,03257	-,10500	-,02674	-,02373	-,11424	-,01282	-,10122
I.A.31_R	-,04840	-,01848	-,10496	,09023	,03985	-,18692	-,02869
I.A.32	-,07286	-,12385	,04966	,20047	,03024	,08635	,00612
I.A.33	-,02692	,08283	-,29508	-,03712	-,05461	-,02412	-,05990
I.A.34	,05541	,09039	-,12349	,09546	-,06676	-,09186	-,00184
I.A.35_R	,00695	,00824	-,02428	,18457	-,00467	-,07596	-,08537
I.A.36_R	,25220	,09676	-,10570	-,09116	-,11046	-,20493	-,18850
I.A.37_R	-,20118	,01539	-,10510	,07305	,07839	-,09957	,11152
I.A.38_R	-,19141	,01940	-,06528	,04234	,06635	,14121	,00136
I.A.39	,02589	-,02603	-,18010	-,12546	-,12886	-,03856	,01118
I.A.40	,02216	-,04525	-,02826	-,05496	,00804	,17483	,10712
I.A.41_R	-,11319	,21180	-,13048	-,07672	-,12604	-,15274	-,10837
I.A.42	,17147	-,28248	,24772	-,14404	-,00693	-,02507	-,36970
I.A.43	-,01810	-,17009	-,03078	,01715	-,06900	,02589	-,02678
I.A.44_R	-,07970	,04299	-,06974	,10275	,08729	,01298	,13312
I.A.45	-,08070	-,05166	-,19209	-,02898	,05407	-,00749	,06561
I.A.46A	-,05539	,02990	-,10951	,00013	-,01684	,17996	,01882
I.A.46B	,02899	-,02395	,20163	,18576	,08862	-,05821	,08106
I.B.1_R	,20083	-,13244	,08135	,01612	-,13107	,10152	-,02123

	I.A.15_R	I.A.16_R	I.A.17	I.A.18_R	I.A.19	I.A.20_R	I.A.21
I.A.15_R	,72868						
I.A.16_R	,01887	,85894					
I.A.17	,06440	,03448	,42270				
I.A.18_R	,04368	-,08487	-,02769	,84333			
I.A.19	,10646	,07630	,23802	,17718	,82713		
I.A.20_R	-,21711	,05283	,05771	-,15583	-,06314	,50665	
I.A.21	-,13311	,02746	,05750	,19236	-,02695	,11290	,72283
I.A.22	-,06908	,02095	-,16022	-,07840	-,08572	,03630	-,19116
I.A.23_R	,06600	,01570	-,05480	-,13138	-,02641	,11865	-,14948
I.A.24_R	-,10756	,17973	-,02826	-,03020	,03262	-,20555	,03878
I.A.25_R	-,00372	-,14195	-,11429	-,00816	-,13032	,01769	,13346
I.A.26_R	,13772	-,01386	,03171	-,13831	,09634	-,07214	-,07693
I.A.27_R	-,14633	-,25635	-,00902	,08102	-,09704	,21073	,16812
I.A.28	-,07954	,05344	,08075	-,05977	-,01396	,12779	,09167
I.A.29	-,20148	-,07778	-,26008	-,02064	-,32914	,09129	-,11216
I.A.30	,05302	,03336	-,06417	-,02396	-,06939	,10929	-,10722
I.A.31_R	,07837	-,20565	-,06228	-,02519	-,00600	,03366	-,21122
I.A.32	,08427	,07932	-,00624	,03470	-,04419	,09352	-,05051
I.A.33	-,15562	-,13530	-,06820	-,17498	,00896	-,08458	-,09785
I.A.34	-,01747	-,01616	-,14127	-,00851	-,03774	,03547	-,15980
I.A.35_R	-,05078	-,14811	,02593	-,19501	,01259	,09006	-,17269
I.A.36_R	-,04722	-,13504	-,11164	-,03334	-,03875	,01319	-,08961
I.A.37_R	-,19446	-,02802	-,13278	-,07829	-,13856	,17270	,07484
I.A.38_R	-,04320	-,00065	,03180	,02305	-,11843	-,02353	,23307
I.A.39	-,12118	-,10227	,09549	-,05446	-,09506	-,07612	,08593
I.A.40	,06896	,14006	,09633	,07567	,00062	,14835	,31680
I.A.41_R	,00226	-,03037	-,11087	-,03246	,09214	-,14054	-,19421
I.A.42	,17913	-,03866	,11896	-,01343	-,07535	,01720	,08260
I.A.43	-,11244	-,09232	-,14142	-,00510	,00874	,00824	-,03492
I.A.44_R	-,10081	,09168	,05049	-,03519	,19625	,07079	,01379
I.A.45	-,01914	,05683	-,20333	,15408	,06957	-,04401	-,23669
I.A.46A	-,07446	,11487	-,13938	,08868	-,03154	-,05294	,03802
I.A.46B	-,02983	-,00093	,25068	-,02764	,14089	-,08086	-,00278
I.B.1_R	-,12918	-,06915	-,10400	-,07930	-,02102	-,02109	-,12318

	I.A.22	I.A.23_R	I.A.24_R	I.A.25_R	I.A.26_R	I.A.27_R	I.A.28
I.A.22	,75128						
I.A.23_R	,10072	,32987					
I.A.24_R	-,05906	-,02854	,67217				
I.A.25_R	,05977	,00030	-,17693	,77921			
I.A.26_R	-,37864	,08955	,03777	-,35127	,78487		
I.A.27_R	-,12173	-,06085	-,02936	-,01418	-,24175	,78899	
I.A.28	-,00239	,14790	-,11677	-,00554	-,00281	-,03851	,83191
I.A.29	,28847	,06757	-,06411	,05315	-,20589	,23598	-,02391
I.A.30	-,00946	,10641	,00668	,00942	-,01845	,01303	-,05494
I.A.31_R	,04226	,06375	-,41261	,14967	-,03177	-,03277	-,10456
I.A.32	,01067	,14895	,02280	,11408	,02388	,05880	-,09451
I.A.33	,08538	-,11834	,08850	,02231	,04503	-,08588	-,01837
I.A.34	,21536	,12565	-,09362	-,02810	-,07748	-,00381	-,01999

	I.A.22	I.A.23_R	I.A.24_R	I.A.25_R	I.A.26_R	I.A.27_R	I.A.28
I.A.35_R	,10844	,10304	-,00941	,03129	-,13068	-,01242	,00487
I.A.36_R	,16688	-,01566	-,09274	-,00833	-,02744	-,09793	,04809
I.A.37_R	,04549	,15726	-,05504	-,03027	,02059	,01224	-,09053
I.A.38_R	,01218	-,05656	,12958	,18600	-,14975	,13682	-,08783
I.A.39	,03608	-,10646	,06730	,08478	-,06180	,00930	-,00624
I.A.40	-,12862	-,10551	-,12731	,03330	-,00155	,12884	-,09375
I.A.41_R	,03748	-,07792	-,06465	-,11528	,13674	-,10066	-,00719
I.A.42	-,08062	,06442	-,02599	-,20981	,14318	-,03875	,14819
I.A.43	-,00487	-,06344	-,01765	,09276	-,13689	-,02053	-,00688
I.A.44_R	,05570	-,04923	-,09337	-,05360	,01859	-,02305	-,02727
I.A.45	,10347	-,03246	-,07587	-,02905	-,00201	-,11853	-,07091
I.A.46A	,03824	-,03276	,00118	,09737	-,09805	-,02972	,06625
I.A.46B	-,21229	,00048	,05555	-,22309	,11535	-,03546	-,13090
I.B.1_R	-,00117	-,02368	,04138	-,16461	-,03346	,02517	,02667

	I.A.29	I.A.30	I.A.31_R	I.A.32	I.A.33	I.A.34	I.A.35_R
I.A.29	,78139						
I.A.30	,01060	,65260					
I.A.31_R	,05368	,07666	,62831				
I.A.32	-,24318	-,10788	,13326	,88022			
I.A.33	,03401	-,07062	,12621	-,14284	,63126		
I.A.34	,21164	,12424	,17142	,00833	,00294	,45417	
I.A.35_R	,07810	,16537	,13838	,22774	,10946	,16756	,80790
I.A.36_R	,03530	,12371	,12575	-,05551	,16809	,31230	,08724
I.A.37_R	,09804	-,18780	-,03451	,10877	-,06409	,10782	-,09132
I.A.38_R	-,02617	-,06881	-,14349	,09527	,09029	-,14727	,14357
I.A.39	-,08991	-,47386	-,03853	,05701	-,00527	-,37929	-,03281
I.A.40	-,11201	-,10384	-,38329	,05461	-,20394	-,14756	-,21007
I.A.41_R	,07907	-,08204	,09606	-,07524	,14962	-,01421	,06011
I.A.42	-,22034	,12636	-,09796	-,24091	-,12919	-,09619	-,13543
I.A.43	-,02680	-,05384	,11544	-,00522	,00725	,05407	,06665
I.A.44_R	,03224	-,09546	,07456	,01321	,11016	,08210	-,00361
I.A.45	,03834	,12799	,05928	-,16154	,15532	,16271	-,02029
I.A.46A	,08497	,14031	,06480	,04810	,03654	,08290	-,07977
I.A.46B	-,16597	-,06855	,06877	,09856	-,01590	-,07783	,10391
I.B.1_R	-,02852	,22456	,02909	-,20604	-,03967	,08764	,08076

	I.A.36_R	I.A.37_R	I.A.38_R	I.A.39	I.A.40	I.A.41_R	I.A.42
I.A.36_R	,72973						
I.A.37_R	,05297	,82504					
I.A.38_R	-,24485	-,00516	,62609				
I.A.39	-,06102	,04578	,09315	,61421			
I.A.40	-,10657	,15415	,21805	,02267	,52625		
I.A.41_R	,04227	-,20510	,00840	,08250	-,02275	,80216	
I.A.42	-,01116	-,14886	-,14959	,04176	-,03391	-,00686	,72787
I.A.43	-,00428	-,21047	-,08728	,02605	-,19531	,00348	-,07028
I.A.44_R	-,16518	-,00404	-,19419	-,14892	-,01922	-,03139	-,18415
I.A.45	,10935	-,07293	-,19666	-,20553	-,02538	,07347	-,06478
I.A.46A	,17508	,00416	-,01026	-,12791	,11539	-,17471	-,07286
I.A.46B	-,15045	-,03396	-,14059	,07227	-,10994	-,09352	,01049
I.B.1_R	,18618	-,16774	-,12632	-,02848	-,15930	-,01516	,16578

	I.A.43	I.A.44_R	I.A.45	I.A.46A	I.A.46B	I.B.1_R
I.A.43	,76409					
I.A.44_R	,25699	,46134				
I.A.45	,08804	,08973	,67702			
I.A.46A	,00666	,10528	,22111	,74950		
I.A.46B	-,01290	,11472	-,27605	-,39459	,61503	
I.B.1_R	,00352	-,12970	,28912	,03876	-,09675	,48644

2. Principal Components Analysis (PC)

Variable	Communality	Factor	Eigenvalue	Pct of Var	Cum Pct
I.A.1	1,00000	1	8,36602	17,4	17,4
I.A.2	1,00000	2	3,47799	7,2	24,7
I.A.3_R	1,00000	3	2,97545	6,2	30,9
I.A.4	1,00000	4	2,42413	5,1	35,9
I.A.5_R	1,00000	5	2,03457	4,2	40,2
I.A.6	1,00000	6	1,91271	4,0	44,1
I.A.7	1,00000	7	1,74458	3,6	47,8
I.A.8_R	1,00000	8	1,51245	3,2	50,9
I.A.9	1,00000	9	1,45867	3,0	54,0
I.A.10	1,00000	10	1,33615	2,8	56,8
I.A.11_R	1,00000	11	1,32175	2,8	59,5
I.A.12	1,00000	12	1,26499	2,6	62,1
I.A.13_R	1,00000	13	1,17650	2,5	64,6
I.A.14	1,00000	14	1,09320	2,3	66,9
I.A.15_R	1,00000	15	1,02572	2,1	69,0
I.A.16_R	1,00000	16	,93890	2,0	71,0
I.A.17	1,00000	17	,85719	1,8	72,8
I.A.18_R	1,00000	18	,83496	1,7	74,5
I.A.19	1,00000	19	,79747	1,7	76,2
I.A.20_R	1,00000	20	,78532	1,6	77,8
I.A.21	1,00000	21	,72233	1,5	79,3
I.A.22	1,00000	22	,69476	1,4	80,7
I.A.23_R	1,00000	23	,66137	1,4	82,1
I.A.24_R	1,00000	24	,62717	1,3	83,4
I.A.25_R	1,00000	25	,58518	1,2	84,6
I.A.26_R	1,00000	26	,56693	1,2	85,8
I.A.27_R	1,00000	27	,50438	1,1	86,9
I.A.28	1,00000	28	,49037	1,0	87,9
I.A.29	1,00000	29	,48535	1,0	88,9
I.A.30	1,00000	30	,46888	1,0	89,9
I.A.31_R	1,00000	31	,43714	,9	90,8
I.A.32	1,00000	32	,42538	,9	91,7
I.A.33	1,00000	33	,39012	,8	92,5
I.A.34	1,00000	34	,38641	,8	93,3
I.A.35_R	1,00000	35	,36473	,8	94,1
I.A.36_R	1,00000	36	,33536	,7	94,8
I.A.37_R	1,00000	37	,30475	,6	95,4
I.A.38_R	1,00000	38	,29533	,6	96,0
I.A.39	1,00000	39	,27865	,6	96,6
I.A.40	1,00000	40	,24657	,5	97,1
I.A.41_R	1,00000	41	,23292	,5	97,6
I.A.42	1,00000	42	,22013	,5	98,0
I.A.43	1,00000	43	,19756	,4	98,5
I.A.44_R	1,00000	44	,18306	,4	98,8
I.A.45	1,00000	45	,16485	,3	99,2
I.A.46A	1,00000	46	,14212	,3	99,5
I.A.46B	1,00000	47	,13374	,3	99,8
I.B.1_R	1,00000	48	,11576	,2	100,0

(7 factors selected)

3. Scree Plot

4. Factor Analysis (Scale Validity)

--- Test Statistics ---

Kaiser-Meyer-Olkin Measure of Sampling Adequacy = 0,72454

Bartlett Test of Sphericity = 3008,1581 -- Significance = 0,00000

--- Factor Matrix (Unrotated Factor Loadings) ---

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
I.A.32	,70554	,08777	,37324	,02367	,08962	-,12476	-,08727
I.A.29	,61661	,32027	,29182	-,02144	,32795	-,18212	,07237
I.A.16_R	-,60166	,27991	-,08040	,16365	,04726	-,01594	-,03032
I.A.26_R	-,60154	,23326	,02136	,16183	,14980	-,09750	,34682
I.A.2	,59161	-,05926	,09237	,03025	,14910	,16634	,01211
I.A.8_R	-,59114	,35149	,01779	-,37446	-,07200	-,00192	-,24529
I.A.18_R	-,57915	,06306	-,03227	,11344	,03883	,00417	-,02310
I.A.37_R	-,56138	,37382	,21259	-,14674	-,01221	,10140	-,21186
I.A.19	,55121	,12102	,26317	-,05054	,23173	-,26771	,18877
I.A.7	,54900	,13837	,18063	,20798	-,32454	,26244	,17085
I.A.35_R	-,54348	-,04195	-,27856	,08928	,23361	-,09238	,00748
I.A.22	-,54034	,18743	,08586	,22625	,02541	,02770	,38671
I.A.21	,53069	-,02511	,14317	,08898	-,03046	,24956	,21954
I.A.27_R	-,51507	,31868	,09707	,22152	-,11125	,18275	,01273
I.A.42	,51431	,27732	,17515	-,10069	,27379	-,19789	-,10067
I.A.25_R	-,50864	,38234	,14131	,15316	,10358	,11122	,21545
I.A.14	,49458	,34554	,29510	-,13316	,36482	-,09014	-,00841
I.A.4	,47659	-,20379	,26317	,00057	,25305	,09396	,25477
I.A.46A	-,46804	-,06438	,24125	-,15061	,10860	,23439	,28732
I.A.36_R	,46581	,34375	-,27977	-,04609	,22405	,18171	,03265
I.A.41_R	-,45411	,35319	,16133	-,23337	,00024	,27401	,04868
I.A.5_R	-,42281	,33863	-,02139	-,08509	-,15083	-,35134	,11691
I.A.45	,41051	,15170	,01200	-,34350	-,04477	,22963	-,05724
I.A.46B	-,37368	,07382	,22970	-,30554	,07696	,25849	,22069
I.A.12	-,36087	,13072	,30485	,21611	-,12114	-,13240	-,10128
I.A.28	,40707	,59770	-,19168	,05966	-,09970	-,04626	,17209
I.A.24_R	,16600	,57481	-,50875	,17629	,07485	,15609	,06794
I.A.6	,45165	,54467	-,32749	,17902	-,00719	,16877	,09313
I.A.38_R	,30748	,40911	-,04350	-,34222	,18552	,16688	-,07627
I.A.15_R	-,34712	,37167	,25253	-,13978	-,10252	,33425	-,12311
I.A.31_R	,13715	,40324	-,59378	,20813	,09136	-,10320	-,04225
I.A.33	-,19522	,11596	,44039	,30017	,01386	-,21390	-,33293
I.A.43	-,24089	,37984	,40535	,18302	,17322	-,10734	-,10936
I.A.17	,00181	,04335	,38073	,21898	,20647	,12936	,16720
I.A.13_R	-,10179	,14945	-,09306	-,55522	,01554	-,19609	,01908
I.A.40	,13809	,24959	-,30798	,52961	-,01533	-,32749	-,08048
I.B.1_R	-,06876	-,00332	,27849	,52499	,01137	,36260	-,07661
I.A.20_R	-,11698	,11380	-,00095	-,41588	-,03495	,18550	,06158
I.A.39	,25708	,30236	,16183	-,08782	-,59448	-,17221	,06313
I.A.30	,24423	,36598	,39976	-,02276	-,51009	-,19373	-,07208
I.A.34	,18252	-,06914	,21002	,08827	-,44150	-,12040	,18976
I.A.11_R	,31259	,05855	-,11639	,00943	-,42279	,13280	,22107
I.A.1	,16385	-,09432	-,21484	,15888	,00713	,40839	-,09905
I.A.3_R	-,35801	,04828	-,10985	-,26219	,11931	-,39358	,13616
I.A.9	,42110	,16406	,15170	,00378	-,12183	,05010	-,43553
I.A.10	-,20832	-,06125	,20458	,20293	,17491	,18147	-,41915
I.A.44_R	,09995	,09106	-,28901	-,15777	-,15337	,17495	-,38211
I.A.23_R	-,05199	,08149	-,02878	,07101	,18298	,02859	-,30310

--- Communalities ---

Variable	Communality
I.A.1	,28379
I.A.2	,41300
I.A.3_R	,39900
I.A.4	,47569
I.A.5_R	,46100
I.A.6	,67716
I.A.7	,59982
I.A.8_R	,67888
I.A.9	,43430
I.A.10	,36939
I.A.11_R	,36004
I.A.12	,32941
I.A.13_R	,38868
I.A.14	,61010
I.A.15_R	,47933
I.A.16_R	,47700
I.A.17	,28211
I.A.18_R	,35536
I.A.19	,55129
I.A.20_R	,23901
I.A.21	,42208
I.A.22	,53661
I.A.23_R	,14138
I.A.24_R	,68245
I.A.25_R	,51785
I.A.26_R	,59513
I.A.27_R	,47128
I.A.28	,60495
I.A.29	,71436
I.A.30	,65684
I.A.31_R	,59809
I.A.32	,67657
I.A.33	,49239
I.A.34	,33542
I.A.35_R	,44586
I.A.36_R	,49982
I.A.37_R	,57693
I.A.38_R	,44901
I.A.39	,57846
I.A.40	,57067
I.A.41_R	,48890
I.A.42	,50649
I.A.43	,45359
I.A.44_R	,32684
I.A.45	,36768
I.A.46A	,45338
I.A.46B	,41265
I.B.1_R	,49538

--- Varimax Rotation ---

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
I.A.29	.81395	.18661	.05209	-.01523	-.09054	.07663	.00072
I.A.14	.75196	.16204	.09136	-.06158	.07285	-.01745	-.02547
I.A.32	.71348	-.01819	.04483	-.23645	-.18340	.22658	.15586
I.A.19	.69835	.02907	-.08215	.05071	-.17379	.13643	-.06797
I.A.42	.65309	.17365	.07791	-.17367	-.07403	.00555	-.08980
I.A.4	.52758	-.17063	-.28701	.08617	-.08184	.01026	.26765
I.A.2	.46440	.05853	-.22062	-.18794	-.09381	.03366	.31619
I.A.18_R	-.38991	-.03125	.27147	.26137	.11567	-.19421	-.09616
I.A.38_R	.38283	.34309	-.06591	-.22543	.34943	-.04884	-.07137
I.A.16_R	-.38137	.16031	.37983	.30048	.14526	-.17709	-.13725
I.A.24_R	-.01226	.82155	-.04498	.02164	.02618	-.04014	.05057
I.A.6	.21739	.75035	-.08782	-.06412	-.01842	.15671	.17367
I.A.31_R	-.07611	.71425	-.03273	-.05192	-.22619	-.11935	-.11387
I.A.28	.28150	.64953	-.02661	.00509	-.00276	.31725	-.04924
I.A.36_R	.34271	.54046	-.21487	-.14998	.05782	-.08264	.10695
I.A.33	.05900	-.19474	.65703	.02508	-.13191	.00982	.03418
I.A.43	.17134	.01631	.59373	.23520	.11598	-.04456	-.02641
I.A.37_R	-.21287	-.00140	.50518	.07996	.48433	-.08683	-.16704
I.A.12	-.15062	-.14221	.49070	.18631	.00603	.10068	-.02887
I.A.27_R	-.34427	.12880	.41200	.29934	.26020	.02579	.09194
I.A.10	-.07995	-.16015	.40176	-.12732	.04092	-.30182	.25876
I.A.26_R	-.24177	.07975	.22536	.64279	.12840	-.12714	-.18359
I.A.22	-.26642	.04322	.19294	.63618	.14655	.00049	-.01854
I.A.25_R	-.15916	.14923	.34143	.50785	.30275	-.06337	-.00900
I.A.9	.27480	.09722	.21570	-.50059	-.02936	.16094	.15955
I.A.44_R	-.16477	.21983	-.02457	-.48634	.11353	-.03572	.00809
I.A.45	.30351	.13845	-.21312	-.33179	.28061	.13653	.05918
I.A.17	.24838	-.11636	.16790	.31272	.05387	-.02739	.27791
I.A.41_R	-.15034	.05061	.23200	.19169	.60544	-.03241	-.07459
I.A.15_R	-.12423	.04479	.35860	.03133	.56940	.05658	.06996
I.A.40	-.04599	.46677	.21660	.04822	-.54753	.03735	-.01579
I.A.46B	-.05739	-.18280	-.00278	.27258	.54366	-.06101	-.04842
I.A.8_R	-.30715	.02856	.36667	-.05008	.51756	-.10122	-.41067
I.A.20_R	-.02600	-.00632	-.12907	-.04906	.44476	.01119	-.14592
I.A.46A	-.14433	-.27625	.00116	.40894	.41893	-.11423	.02138
I.A.39	.07994	.11497	.09164	-.14507	.03030	.71464	-.13336
I.A.30	.21548	.02594	.33655	-.15429	.04999	.68122	-.07808
I.A.34	.02029	-.14558	-.03721	.04002	-.14026	.53665	.05624
I.A.7	.26846	.17319	-.10908	-.07131	-.03004	.52125	.45626
I.A.11_R	-.03380	.18385	-.27636	-.07435	-.00840	.47104	.14573
I.A.35_R	-.38933	.04208	.08744	.26230	-.03075	-.41663	-.20380
I.A.23_R	.00848	.07859	.21938	-.15103	-.00960	-.25066	.03568
I.B.1_R	-.06247	-.03679	.31876	.15576	-.03097	-.01378	.60258
I.A.3_R	-.10202	-.05939	.00464	.21638	.03388	-.13587	-.56446
I.A.13_R	.05255	.00780	-.11778	-.10064	.28927	-.01334	-.52726
I.A.5_R	-.20569	.11425	.26805	.26459	.09333	.14709	-.48315
I.A.1	-.11110	.16677	-.17189	-.17646	.00537	-.11370	.41230
I.A.21	.36891	.06277	-.26153	-.01753	-.02475	.23957	.39412

--- Oblique Rotation ---

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
I.A.29	,82943	,15553	,09176	,05639	-,02958	-,03607	,04915
I.A.14	,78180	,12735	,12095	-,10411	,05918	-,05011	-,01287
I.A.19	,70810	,00556	-,04566	,14707	-,09638	-,11019	,10436
I.A.42	,66556	,13562	,12917	,04689	,03200	-,12025	-,13532
I.A.32	,66028	-,06539	,13601	,13393	-,19001	,11375	-,18521
I.A.4	,50805	-,18744	-,26511	,04660	,02542	,24181	,13814
I.A.2	,40355	,02333	-,16564	,05046	,00024	,29743	-,13679
I.A.38_R	,38565	,30142	-,05630	-,37255	,07158	-,06127	-,20144
I.A.18_R	-,31612	,01164	,20259	-,07818	,16957	-,07198	,22612
I.A.24_R	-,01725	,82967	-,08170	-,02219	,05525	,07271	,07223
I.A.6	,16661	,73925	-,08596	-,00181	-,13246	,18124	,00750
I.A.31_R	-,06801	,72381	-,04695	,24256	,13317	-,10816	-,02186
I.A.28	,24791	,63819	-,02467	-,01157	-,29813	-,05215	,06775
I.A.36_R	,32168	,51420	-,20665	-,08081	,11656	,11061	-,09492
I.A.33	,09576	-,18178	,68037	,13698	-,02037	,02051	,00599
I.A.43	,25197	,03841	,56246	-,10620	,04261	-,02580	,23675
I.A.12	-,11430	-,11394	,47194	,01097	-,12321	-,02663	,16471
I.A.10	-,05896	-,15727	,41459	-,04286	,29530	,26994	-,15230
I.A.27_R	-,30425	,17153	,33929	-,23698	-,05385	,12679	,28824
I.A.16_R	-,29464	,20847	,29817	-,10315	,15294	-,10832	,27338
I.A.41_R	-,09247	,06415	,15582	-,59209	,01153	-,03277	,17060
I.A.15_R	-,10591	,04578	,31781	-,57026	-,07944	,10964	,01251
I.A.40	-,04830	,49213	,23097	,56323	-,02845	-,03530	,07966
I.A.46B	,00069	-,16982	-,07837	-,53512	,04809	-,01831	,25541
I.A.8_R	-,23189	,03036	,31940	-,48656	,06808	-,37386	-,11591
I.A.37_R	-,13955	,01226	,45200	-,46223	,05839	-,13191	,03533
I.A.20_R	-,01561	-,02314	-,15523	-,44618	-,01895	-,12263	-,06641
I.A.46A	-,07527	-,24434	-,08805	-,40241	,09910	,04841	,39162
I.A.45	,24229	,08623	-,17003	-,31745	-,12145	,06372	-,31175
I.A.39	-,01295	,08965	,14374	-,05048	-,72942	-,14539	-,13066
I.A.30	-,14019	-,00170	,39974	-,07572	-,69378	-,09519	-,14150
I.A.34	-,05851	-,14880	-,00153	,12447	-,54745	,03773	,05618
I.A.7	,14008	,15140	-,06082	-,01894	-,50980	,44833	-,00360
I.A.11_R	-,14190	,16953	-,25124	-,01440	-,47476	,14679	-,04037
I.A.35_R	-,28797	,08826	,01086	,07919	,40365	-,18541	,22687
I.A.23_R	,03339	,07346	,23095	,01186	,25426	,04041	-,16300
I.B.1_R	-,09103	-,01064	,30895	,01583	,00987	,61505	,18258
I.A.3_R	,00155	-,03887	-,04683	,00760	,12778	-,56799	,17936
I.A.13_R	,10101	-,01486	-,13022	-,27540	,00967	-,52312	-,13412
I.A.5_R	-,13175	,14421	,21303	-,05351	-,17012	-,47711	,23754
I.A.1	-,17613	,15805	-,15800	-,02455	,11925	,43019	-,15678
I.A.21	,28768	,04167	-,22978	-,01866	-,21502	,38256	,04514
I.A.22	-,18291	,11020	,07872	-,11000	-,01884	,00358	,64084
I.A.26_R	-,12000	,14840	,10278	-,08075	,11216	-,16413	,63805
I.A.25_R	-,06786	,20138	,23539	-,27378	,04865	,02066	,51172
I.A.44_R	-,22490	,18296	,02314	-,12454	,02833	,02593	-,50744
I.A.9	,19633	,04591	,31231	-,00903	-,15186	,14791	-,49115
I.A.17	,28002	-,09602	,13765	-,06422	,03914	,27444	,34504

--- Factor Correlation Matrix (Oblique Rotation) ---

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Factor 2	,05894					
Factor 3	-,12462	,00157				
Factor 4	,09391	-,02294	-,09196			
Factor 5	-,20627	-,04063	,09423	-,06487		
Factor 6	,16846	-,01364	-,04756	,11925	-,05924	
Factor 7	-,20667	-,14239	,18894	-,08180	,07738	-,09226

--- Summary ---

VARIMAX		OBLIQUE	
I.A.29	Emphasis on Meeting the Budget	I.A.29	Emphasis on Meeting the Budget
I.A.14	Emphasis on Meeting the Budget	I.A.14	Emphasis on Meeting the Budget
I.A.32	Emphasis on Meeting the Budget	I.A.19	Emphasis on Meeting the Budget
I.A.19	Emphasis on Meeting the Budget	I.A.42	Emphasis on Meeting the Budget
I.A.42	Emphasis on Meeting the Budget	I.A.32	Emphasis on Meeting the Budget
I.A.4	Emphasis on Meeting the Budget	I.A.4	Emphasis on Meeting the Budget
I.A.2	Emphasis on Meeting the Budget	I.A.2	Emphasis on Meeting the Budget
I.A.18_R	Tolerance Interim Deviations	I.A.38_R	Emphasis on Meeting the Budget
I.A.38_R	Emphasis on Meeting the Budget	I.A.18_R	Tolerance Interim Deviations
I.A.16_R	Bottom-line Budget Control		
I.A.24_R	Budget Revisions During Year	I.A.24_R	Budget Revisions During Year
I.A.6	Budget Revisions During Year	I.A.6	Budget Revisions During Year
I.A.31_R	Budget Revisions During Year	I.A.31_R	Budget Revisions During Year
I.A.28	Budget Revisions During Year	I.A.28	Budget Revisions During Year
I.A.36_R	Budget Revisions During Year	I.A.36_R	Budget Revisions During Year
I.A.33	Bottom-line Budget Control	I.A.33	Bottom-line Budget Control
I.A.43	Intensity of Budget Control	I.A.43	Intensity of Budget Control
I.A.37_R	Intensity of Budget Control	I.A.12	Bottom-line Budget Control
I.A.12	Bottom-line Budget Control	I.A.10	Intensity of Budget Control
I.A.27_R	Bottom-line Budget Control	I.A.27_R	Bottom-line Budget Control
I.A.10	Intensity of Budget Control	I.A.16_R	Bottom-line Budget Control
I.A.41_R	Intensity of Budget Control	I.A.41_R	Intensity of Budget Control
I.A.15_R	Intensity of Budget Control	I.A.15_R	Intensity of Budget Control
I.A.40	Budget Revisions During Year	I.A.40	Budget Revisions During Year
I.A.46B	Intensity of Budget Control	I.A.46B	Intensity of Budget Control
I.A.8_R	Intensity of Budget Control	I.A.8_R	Intensity of Budget Control
I.A.20_R	Intensity of Budget Control	I.A.37_R	Intensity of Budget Control
I.A.46A	Intensity of Budget Control	I.A.20_R	Intensity of Budget Control
		I.A.46A	Intensity of Budget Control
		I.A.45	Intensity of Budget Control
I.A.39	Formality of Budget Control	I.A.39	Formality of Budget Control
I.A.30	Formality of Budget Control	I.A.30	Formality of Budget Control
I.A.34	Formality of Budget Control	I.A.34	Formality of Budget Control
I.A.7	Formality of Budget Control	I.A.7	Formality of Budget Control
I.A.11_R	Formality of Budget Control	I.A.11_R	Formality of Budget Control
I.A.35_R	Tolerance Interim Deviations	I.A.35_R	Tolerance Interim Deviations
I.A.23_R	Intensity of Budget Control	I.A.23_R	Intensity of Budget Control
I.B.1_R	Participation in Budget Setting	I.B.1_R	Participation in Budget Setting
I.A.3_R	Tolerance Interim Deviations	I.A.3_R	Tolerance Interim Deviations
I.A.13_R	Intensity of Budget Control	I.A.13_R	Intensity of Budget Control
I.A.5_R	Emphasis on Meeting the Budget	I.A.5_R	Emphasis on Meeting the Budget
I.A.1	Participation in Budget Setting	I.A.1	Participation in Budget Setting
I.A.21	Formality of Budget Control	I.A.21	Formality of Budget Control
I.A.26_R	Tolerance Interim Deviations	I.A.22	Tolerance Interim Deviations
I.A.22	Tolerance Interim Deviations	I.A.26_R	Tolerance Interim Deviations
I.A.25_R	Bottom-line Budget Control	I.A.25_R	Bottom-line Budget Control
I.A.9	Intensity of Budget Control	I.A.44_R	Emphasis on Meeting the Budget
I.A.44_R	Emphasis on Meeting the Budget	I.A.9	Intensity of Budget Control
I.A.45	Intensity of Budget Control	I.A.17	Intensity of Budget Control
I.A.17	Intensity of Budget Control		

5. Cronbach Alpha (Scale Reliability)

5.1. Emphasis on Meeting the Budget

5.1.1. Original Scale

--- Item Description ---

		Mean	Std Dev	Cases
1.	I.A.2	5,0784	1,7492	153
2.	I.A.4	5,3791	1,6018	153
3.	I.A.5_R	2,3856	1,3578	153
4.	I.A.14	4,7647	1,5465	153
5.	I.A.19	4,1438	1,5493	153
6.	I.A.29	4,4183	1,6528	153
7.	I.A.32	4,7124	1,4585	153
8.	I.A.38_R	3,1699	1,6173	153
9.	I.A.42	4,1634	1,6482	153
10.	I.A.44_R	4,0588	1,7215	153

--- Correlation Matrix ---

	I.A.2	I.A.4	I.A.5_R	I.A.14	I.A.19	I.A.29	I.A.32	I.A.38_R	I.A.42	I.A.44_R
I.A.2	1,000									
I.A.4	,447	1,000								
I.A.5_R	-,375	-,358	1,000							
I.A.14	,388	,248	-,150	1,000						
I.A.19	,262	,311	-,167	,470	1,000					
I.A.29	,323	,372	-,145	,545	,600	1,000				
I.A.32	,377	,342	-,156	,456	,484	,620	1,000			
I.A.38_R	,223	,109	,011	,287	,229	,320	,196	1,000		
I.A.42	,198	,190	-,113	,593	,439	,508	,526	,278	1,000	
I.A.44_R	,138	-,141	-,049	-,019	-,133	-,043	-,001	,244	,070	1,000

--- Scale Description ---

Statistics for Scale		Mean	Variance	Std Dev	Items	
		42,2745	72,3189	8,5041	10	
Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	4,2275	2,3856	5,3791	2,9935	2,2548	0,7957
Item Variances	Mean	Minimum	Maximum	Range	Max/Min	Variance
	2,5416	1,8437	3,0596	1,2159	1,6595	0,1356
Inter-item Correlations	Mean	Minimum	Maximum	Range	Max/Min	Variance
	0,1992	-0,3757	0,6206	0,9963	-1,6520	0,0692

--- Item-total Statistics ---

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
I.A.2	37,1961	57,9745	,4237	,3982	,6912
I.A.4	36,8954	61,6600	,3217	,3393	,7081
I.A.5_R	39,8889	77,1126	-,2783	,2085	,7811
I.A.14	37,5098	55,7647	,6132	,4934	,6605
I.A.19	38,1307	57,4565	,5306	,4292	,6744
I.A.29	37,8562	53,3081	,6745	,5679	,6463
I.A.32	37,5621	56,5899	,6198	,4898	,6620
I.A.38_R	39,1046	59,7521	,3980	,2147	,6957
I.A.42	38,1111	55,5073	,5739	,4756	,6649
I.A.44_R	38,2157	68,8413	,0180	,1742	,7581

--- Reliability Coefficients - 10 items ---

Alpha = 0,7206 Standardized item alpha = 0,7132

5.1.2. Adjusted Scale (Items I.A.5_R and I.A.44_R deleted)

--- Scale Description ---

Statistics for Scale		Mean	Variance	Std Dev	Items	
		35,8301	73,4051	8,5677	8	
Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	4,4788	3,1699	5,3791	2,2092	1,6969	,4621
Item Variances	Mean	Minimum	Maximum	Range	Max/Min	Variance
	2,5761	2,1273	3,0596	,9323	1,4383	,0780
Inter-item Correlations	Mean	Minimum	Maximum	Range	Max/Min	Variance
	,3698	,1096	,6206	,5111	5,6644	,0194

--- Item-total Statistics ---

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
I.A.2	30,7516	58,1090	,4589	,3266	,8143
I.A.4	30,4510	60,4071	,4190	,2732	,8182
I.A.14	31,0654	56,1141	,6431	,4878	,7879
I.A.19	31,6863	57,1246	,5927	,4122	,7948
I.A.29	31,4118	53,4938	,7106	,5674	,7768
I.A.32	31,1176	57,0519	,6457	,4887	,7887
I.A.38_R	32,6601	62,2521	,3345	,1468	,8295
I.A.42	31,6667	56,4868	,5732	,4657	,7971

--- Reliability Coefficients - 8 items ---

Alpha = 0,8220 Standardized item alpha = 0,8244

5.2. Budget Revisions During the Year

5.2.1. Original Scale

--- Item Description ---

		Mean	Std Dev	Cases
1.	I.A.6	4,4510	1,9833	153
2.	I.A.24_R	4,0131	2,2768	153
3.	I.A.28	4,2157	1,8565	153
4.	I.A.31_R	4,5621	2,1940	153
5.	I.A.36_R	4,5229	2,0426	153
6.	I.A.40	4,4314	2,1144	153

--- Correlation Matrix ---

	I.A.6	I.A.24_R	I.A.28	I.A.31_R	I.A.36_R	I.A.40
I.A.6	1,0000					
I.A.24_R	,6150	1,0000				
I.A.28	,5970	,4818	1,0000			
I.A.31_R	,3919	,6004	,3658	1,0000		
I.A.36_R	,4952	,3239	,3327	,2056	1,0000	
I.A.40	,2435	,3705	,2912	,4750	,1013	1,0000

--- Scale Description ---

Statistics for Scale		Mean	Variance	Std Dev	Items	
		26,1961	77,0008	8,7750	6	
Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	4,3660	4,0131	4,5621	,5490	1,1368	,0443
Item Variances	Mean	Minimum	Maximum	Range	Max/Min	Variance
	4,3367	3,4466	5,1840	1,7374	1,5041	,3891
Inter-item Correlations	Mean	Minimum	Maximum	Range	Max/Min	Variance
	,3927	,1013	,6150	,5137	6,0715	,0222

--- Item-total Statistics ---

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
I.A.6	21,7451	53,6517	,6683	,5565	,7354
I.A.24_R	22,1830	49,6110	,6923	,5400	,7250
I.A.28	21,9804	57,2957	,5785	,3943	,7575
I.A.31_R	21,6340	53,5494	,5804	,4369	,7550
I.A.36_R	21,6732	60,5636	,3858	,2489	,7991
I.A.40	21,7647	59,3522	,4045	,2485	,7961

--- Reliability Coefficients - 6 items ---

Alpha = **0,7945** Standardized item alpha = 0,7951

5.2.2. Adjusted Scale

If Item I.A.40 is deleted, Alpha will slightly improve to **0,7961**.

5.3. Bottom-line Budget Control

5.3.1. Original Scale

--- Item Description ---

		Mean	Std Dev	Cases
1.	I.A.12	3,1242	2,0304	153
2.	I.A.16_R	4,1503	1,8630	153
3.	I.A.25_R	3,8170	1,7750	153
4.	I.A.27_R	3,6732	1,6576	153
5.	I.A.33	4,8562	1,7222	153

--- Correlation Matrix ---

	I.A.12	I.A.16_R	I.A.25_R	I.A.27_R	I.A.33
I.A.12	1,0000				
I.A.16_R	,1863	1,0000			
I.A.25_R	,2546	,4222	1,0000		
I.A.27_R	,2643	,4975	,4446	1,0000	
I.A.33	,1839	,2098	,1119	,1517	1,0000

--- Scale Description ---

Statistics for Scale	Mean	Variance	Std Dev	Items		
	19,6209	34,1448	5,8434	5		
Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	3,9242	3,1242	4,8562	1,7320	1,5544	,4086
Item Variances	Mean	Minimum	Maximum	Range	Max/Min	Variance
	3,2915	2,7478	4,1226	1,3749	1,5004	,2861
Inter-item Correlations	Mean	Minimum	Maximum	Range	Max/Min	Variance
	,2727	,1119	,4975	,3856	4,4475	,0171

--- Item-total Statistics ---

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
I.A.12	16,4967	23,7122	,3191	,1123	,6397
I.A.16_R	15,4706	22,0534	,4927	,3134	,5482
I.A.25_R	15,8039	23,0666	,4650	,2677	,5641
I.A.27_R	15,9477	23,0630	,5235	,3309	,5407
I.A.33	14,7647	26,9969	,2337	,0665	,6670

--- Reliability Coefficients - 5 items ---

Alpha = **0,6475** Standardized item alpha = 0,6521

5.3.2. Adjusted Scale

(Item I.A.25_R deleted; Item I.A.10 and I.A.43 added)

--- Item Description ---

		Mean	Std Dev	Cases
1.	I.A.10	5,0065	1,6202	153
2.	I.A.12	3,1242	2,0304	153
3.	I.A.16_R	4,1503	1,8630	153
4.	I.A.27_R	3,6732	1,6576	153
5.	I.A.33	4,8562	1,7222	153
6.	I.A.43	3,6797	1,8448	153

--- Correlation Matrix ---

	I.A.10	I.A.12	I.A.16_R	I.A.27_R	I.A.33	I.A.43
I.A.10	1,0000					
I.A.12	,1377	1,0000				
I.A.16_R	,1261	,1863	1,0000			
I.A.27_R	,1355	,2643	,4975	1,0000		
I.A.33	,3045	,1839	,2098	,1517	1,0000	
I.A.43	,1394	,2408	,2151	,2431	,2732	1,0000

--- Scale Description ---

Statistics for Scale		Mean	Variance	Std Dev	Items	
		24,4902	40,5279	6,3661	6	
Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	4,0817	3,1242	5,0065	1,8824	1,6025	,5410
Item Variances	Mean	Minimum	Maximum	Range	Max/Min	Variance
	3,2226	2,6250	4,1226	1,4977	1,5706	,3105
Inter-item Correlations	Mean	Minimum	Maximum	Range	Max/Min	Variance
	,2206	,1261	,4975	,3714	3,9454	,0087

--- Item-total Statistics ---

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
I.A.10	19,4837	32,9751	,2648	,1061	,6166
I.A.12	21,3660	29,2204	,3273	,1178	,5992
I.A.16_R	20,3399	28,9890	,4022	,2712	,5659
I.A.27_R	20,8170	29,8479	,4379	,2911	,5553
I.A.33	19,6340	30,6283	,3637	,1696	,5819
I.A.43	20,8105	29,7862	,3644	,1435	,5814

--- Reliability Coefficients - 6 items ---

Alpha = 0,6275

Standardized item alpha = 0,6294

5.4. Formality of Budget Control

5.4.1. Original Scale

--- Item Description ---

		Mean	Std Dev	Cases
1.	I.A.7	4,7516	1,7892	153
2.	I.A.11_R	3,7647	1,8092	153
3.	I.A.21	4,4052	1,7526	153
4.	I.A.30	3,1503	1,7799	153
5.	I.A.34	2,4575	1,6897	153
6.	I.A.39	3,2549	1,8300	153

--- Correlation Matrix ---

	I.A.7	I.A.11_R	I.A.21	I.A.30	I.A.34	I.A.39
I.A.7	1,0000					
I.A.11_R	,3192	1,0000				
I.A.21	,4561	,2004	1,0000			
I.A.30	,3423	,1582	,1343	1,0000		
I.A.34	,2250	,0268	,1369	,1804	1,0000	
I.A.39	,2666	,2090	,1317	,5476	,3833	1,0000

--- Scale Description ---

Statistics for Scale		Mean	Variance	Std Dev	Items	
		21,7843	42,4861	6,5181	6	
Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	3,6307	2,4575	4,7516	2,2941	1,9335	,7245
Item Variances	Mean	Minimum	Maximum	Range	Max/Min	Variance
	3,1530	2,8551	3,3491	,4940	1,1730	,0302
Inter-item Correlations	Mean	Minimum	Maximum	Range	Max/Min	Variance
	,2479	,0268	,5476	,5208	20,4053	,0186

--- Item-total Statistics ---

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
I.A.7	17,0327	29,0713	,5294	,3422	,5742
I.A.11_R	18,0196	33,3088	,2827	,1322	,6629
I.A.21	17,3791	32,7896	,3301	,2138	,6459
I.A.30	18,6340	30,6283	,4411	,3461	,6072
I.A.34	19,3268	33,8399	,2946	,1783	,6567
I.A.39	18,5294	29,2245	,5010	,3991	,5841

--- Reliability Coefficients - 6 items ---

Alpha = **0,6657** Standardized item alpha = 0,6641

5.4.2. Adjusted Scale (Item I.A.21 deleted; Item I.A.35_R added)

--- Item Description ---

		Mean	Std Dev	Cases
1.	I.A.7	4,7516	1,7892	153
2.	I.A.11_R	3,7647	1,8092	153
3.	I.A.30	3,1503	1,7799	153
4.	I.A.34	2,4575	1,6897	153
5.	I.A.35_R	4,2222	1,9709	153
6.	I.A.39	3,2549	1,8300	153

--- Correlation Matrix ---

	I.A.7	I.A.11_R	I.A.30	I.A.34	I.A.35_R	I.A.39
I.A.7	1,0000					
I.A.11_R	,3192	1,0000				
I.A.30	,3423	,1582	1,0000			
I.A.34	,2250	,0268	,1804	1,0000		
I.A.35_R	-,3872	-,2454	-,3359	-,2085	1,0000	
I.A.39	,2666	,2090	,5476	,3833	-,2055	1,0000

--- Scale Description ---

Statistics for Scale		Mean	Variance	Std Dev	Items	
		21,6013	26,9650	5,1928	6	
Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	3,6002	2,4575	4,7516	2,2941	1,9335	,6734
Item Variances	Mean	Minimum	Maximum	Range	Max/Min	Variance
	3,2885	2,8551	3,8845	1,0294	1,3606	,1138
Inter-item Correlations	Mean	Minimum	Maximum	Range	Max/Min	Variance
	,0851	-,3872	,5476	,9349	-1,4142	,0821

--- Item-total Statistics ---

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
I.A.7	16,8497	19,1417	,2952	,2630	,1706
I.A.11_R	17,8366	20,8087	,1747	,1468	,2614
I.A.30	18,4510	18,3019	,3608	,3773	,1188
I.A.34	19,1438	20,5187	,2346	,1921	,2219
I.A.35_R	17,3791	32,7896	-,4301	,2254	,6459
I.A.39	18,3464	16,0305	,5176	,4017	-,0274

--- Reliability Coefficients - 6 items ---

Alpha = **0,3219** Standardized item alpha = 0,3581

--- Remark ---

If Item I.A.23_R is added, Alpha goes down even more to **0,1858**.

5.5. Intensity of Budget Control

5.5.1. Original Scale

--- Item Description ---

		Mean	Std Dev	Cases
1.	I.A.8_R	3,2418	1,9535	153
2.	I.A.9	5,1895	1,6966	153
3.	I.A.10	5,0065	1,6202	153
4.	I.A.13_R	2,3137	1,2111	153
5.	I.A.15_R	3,4575	1,7167	153
6.	I.A.17	3,2680	1,9769	153
7.	I.A.20_R	2,4967	1,5005	153
8.	I.A.23_R	4,9085	2,1255	153
9.	I.A.37_R	3,6209	2,0552	153
10.	I.A.41_R	3,4314	1,8665	153
11.	I.A.43	3,6797	1,8448	153
12.	I.A.45	4,0980	1,3896	153
13.	I.A.46A	3,5556	,9658	153
14.	I.A.46B	2,9542	,9413	153

--- Correlation Matrix ---

	I.A.8_R	I.A.9	I.A.10	I.A.13_R	I.A.15_R	I.A.17	I.A.20_R	I.A.23_R
I.A.8_R	1,0000							
I.A.9	-,0973	1,0000						
I.A.10	,0369	,0354	1,0000					
I.A.13_R	,3376	-,0900	-,0748	1,0000				
I.A.15_R	,3650	-,0458	,2473	,0951	1,0000			
I.A.17	-,1055	-,0564	,0138	-,0711	,0373	1,0000		
I.A.20_R	,1742	,0765	-,0717	,1635	,2662	-,0940	1,0000	
I.A.23_R	,0767	,0359	,0938	,0112	-,0083	,0372	-,0290	1,0000
I.A.37_R	,5654	-,1057	,1825	,1855	,4336	,0980	,0273	-,0622
I.A.41_R	,4602	-,1756	,0839	,1784	,3261	,1165	,1978	,1128
I.A.43	,2024	,1141	,1394	-,0313	,2626	,2095	-,0063	,0646
I.A.45	-,0451	,2823	-,0149	,0676	-,0244	,0335	,0112	-,0259
I.A.46A	,2177	-,1811	,0986	-,0656	,2226	,0456	,1851	,0249
I.A.46B	,2601	-,1346	,0002	,1281	,2329	-,0535	,1839	-,0350

	I.A.37_R	I.A.41_R	I.A.43	I.A.45	I.A.46A	I.A.46B
I.A.37_R	1,0000					
I.A.41_R	,4717	1,0000				
I.A.43	,3634	,1837	1,0000			
I.A.45	-,0652	-,0748	-,0929	1,0000		
I.A.46A	,2228	,3589	,1338	-,1830	1,0000	
I.A.46B	,2664	,2959	,1279	,0839	,4551	1,0000

--- Scale Description ---

Statistics for Scale		Mean	Variance	Std Dev	Items	
		51,2222	88,3713	9,4006	14	
Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	3,6587	2,3137	5,1895	2,8758	2,2429	,7694
Item Variances	Mean	Minimum	Maximum	Range	Max/Min	Variance
	2,8051	,8861	4,5179	3,6318	5,0989	1,3932
Inter-item Correlations	Mean	Minimum	Maximum	Range	Max/Min	Variance
	,0978	-,1830	,5654	,7484	-3,0894	,0265

--- Item-total Statistics ---

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
I.A.8_R	47,9804	69,1904	,4728	,4663	,5282
I.A.9	46,0327	87,1371	-,0519	,1928	,6309
I.A.10	46,2157	81,0519	,1609	,1255	,5935
I.A.13_R	48,9085	83,3074	,1627	,1847	,5917
I.A.15_R	47,7647	71,7206	,4713	,3222	,5347
I.A.17	47,9542	82,5571	,0531	,1331	,6193
I.A.20_R	48,7255	81,4899	,1709	,1938	,5912
I.A.23_R	46,3137	81,5193	,0608	,0709	,6215
I.A.37_R	47,6013	66,8071	,5161	,5045	,5150
I.A.41_R	47,7908	69,5481	,4927	,3825	,5259
I.A.43	47,5425	73,9735	,3465	,2370	,5580
I.A.45	47,1242	86,7411	-,0116	,1694	,6170
I.A.46A	47,6667	82,5132	,2807	,3445	,5800
I.A.46B	48,2680	82,1711	,3114	,3141	,5773

--- Reliability Coefficients - 14 items ---

Alpha = 0,5983 Standardized item alpha = 0,6028

5.5.2. Adjusted Scale

(Item I.A.9; I.A.10; I.A.13_R; I.A.17; I.A.23_R; I.A.43 deleted)

--- Scale Description ---

Statistics for Scale		Mean	Variance	Std Dev	Items	
		26,8562	51,3081	7,1630	8	
Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	3,3570	2,4967	4,0980	1,6013	1,6414	,2271
Item Variances	Mean	Minimum	Maximum	Range	Max/Min	Variance
	2,5590	,8861	4,2238	3,3377	4,7670	1,6128
Inter-item Correlations	Mean	Minimum	Maximum	Range	Max/Min	Variance
	,2104	-,1830	,5654	,7484	-3,0894	,0352

--- Item-total Statistics ---

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
I.A.8_R	23,6144	34,5937	,5613	,3891	,6049
I.A.15_R	23,3987	38,0176	,4886	,2719	,6289
I.A.20_R	24,3595	44,2844	,2389	,1374	,6866
I.A.37_R	23,2353	34,1548	,5382	,4450	,6116
I.A.41_R	23,4248	35,7065	,5433	,3477	,6116
I.A.45	22,7582	50,7240	-,0681	,0737	,7402
I.A.46A	23,3007	45,7643	,3529	,3085	,6685
I.A.46B	23,9020	45,0759	,4230	,2836	,6597

--- Reliability Coefficients - 8 items ---

Alpha = 0,6868 Standardized item alpha = 0,6807

5.6. Tolerance for Budget Deviations

--- Item Description ---

		Mean	Std Dev	Cases
1.	I.A.3_R	1,4248	1,1162	153
2.	I.A.18_R	3,3660	1,7158	153
3.	I.A.22	2,4967	1,5733	153
4.	I.A.26_R	3,2614	1,5634	153
5.	I.A.35_R	4,2222	1,9709	153

--- Correlation Matrix ---

	I.A.3_R	I.A.18_R	I.A.22	I.A.26_R	I.A.35_R
I.A.3_R	1,0000				
I.A.18_R	,1553	1,0000			
I.A.22	,0888	,2661	1,0000		
I.A.26_R	,2413	,3859	,5968	1,0000	
I.A.35_R	,2230	,3999	,2060	,3632	1,0000

--- Scale Description ---

Statistics for Scale		Mean	Variance	Std Dev	Items	
		14,7712	28,3881	5,3280	5	
Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	2,9542	1,4248	4,2222	2,7974	2,9633	1,1050
Item Variances	Mean	Minimum	Maximum	Range	Max/Min	Variance
	2,5988	1,2460	3,8845	2,6385	3,1177	,9104
Inter-item Correlations	Mean	Minimum	Maximum	Range	Max/Min	Variance
	,2926	,0888	,5968	,5080	6,7182	,0204

--- Item-total Statistics ---

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
I.A.3_R	13,3464	24,4121	,2475	,0846	,6917
I.A.18_R	11,4052	18,6373	,4594	,2297	,6143
I.A.22	12,2745	19,9505	,4242	,3615	,6303
I.A.26_R	11,5098	17,8568	,6120	,4580	,5456
I.A.35_R	10,5490	17,3019	,4392	,2259	,6313

--- Reliability Coefficients - 5 items ---

Alpha = 0,6778 Standardized item alpha = 0,6741

5.7. "Factor 6"

--- Item Description ---

		Mean	Std Dev	Cases
1.	I.A.1	6,7843	,7066	153
2.	I.A.3_R	1,4248	1,1162	153
3.	I.A.5_R	2,3856	1,3578	153
4.	I.A.13_R	2,3137	1,2111	153
5.	I.A.21	4,4052	1,7526	153
6.	I.B.1_R	6,1634	1,0604	153

--- Correlation Matrix ---

	I.A.1	I.A.3_R	I.A.5_R	I.A.13_R	I.A.21	I.B.1_R
I.A.1	1,0000					
I.A.3_R	-,0666	1,0000				
I.A.5_R	-,2350	,4034	1,0000			
I.A.13_R	-,1818	,1684	,0420	1,0000		
I.A.21	,1720	-,1222	-,1988	-,1285	1,0000	
I.B.1_R	,2054	-,2480	-,0897	-,3117	,0491	1,0000

--- Scale Description ---

Statistics for Scale		Mean	Variance	Std Dev	Items	
		23,4771	7,5011	2,7388	6	
Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	3,9129	1,4248	6,7843	5,3595	4,7615	4,9265
Item Variances	Mean	Minimum	Maximum	Range	Max/Min	Variance
	1,5419	,4992	3,0716	2,5723	6,1526	,7571
Inter-item Correlations	Mean	Minimum	Maximum	Range	Max/Min	Variance
	-,0361	-,3117	,4034	,7151	-1,2942	,0399

--- Item-total Statistics ---

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
I.A.1	16,6928	7,1353	-,0353	,1242	-,2833
I.A.3_R	22,0523	5,7472	,0949	,2242	-,4912
I.A.5_R	21,0915	5,9521	-,0445	,2266	-,3057
I.A.13_R	21,1634	7,0981	-,1648	,1317	-,1209
I.A.21	19,0719	5,7908	-,1614	,0679	-,0840
I.B.1_R	17,3137	7,5325	-,1986	,1595	-,0987

--- Reliability Coefficients - 6 items ---

Alpha = -0,2800 Standardized item alpha = -0,2646

5.8. "Factor 7"

--- Item Description ---

		Mean	Std Dev	Cases
1.	I.A.9	5,1895	1,6966	153
2.	I.A.17	3,2680	1,9769	153
3.	I.A.22	2,4967	1,5733	153
4.	I.A.25_R	3,8170	1,7750	153
5.	I.A.26_R	3,2614	1,5634	153
6.	I.A.44_R	4,0588	1,7215	153

--- Correlation Matrix ---

	I.A.9	I.A.17	I.A.22	I.A.25_R	I.A.26_R	I.A.44_R
I.A.9	1,0000					
I.A.17	-,0564	1,0000				
I.A.22	-,3362	,1409	1,0000			
I.A.25_R	-,1828	,1322	,3744	1,0000		
I.A.26_R	-,3983	,1006	,5968	,5105	1,0000	
I.A.44_R	,0502	-,1226	-,1736	-,0309	-,0864	1,0000

--- Scale Description ---

Statistics for Scale	Mean	Variance	Std Dev	Items		
	22,0915	20,5837	4,5369	6		
Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	3,6819	2,4967	5,1895	2,6928	2,0785	,8372
Item Variances	Mean	Minimum	Maximum	Range	Max/Min	Variance
	2,9700	2,4444	3,9080	1,4636	1,5988	,2884
Inter-item Correlations	Mean	Minimum	Maximum	Range	Max/Min	Variance
	,0346	-,3983	,5968	,9951	-1,4984	,0794

--- Item-total Statistics ---

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
I.A.9	16,9020	22,7995	-,3144	,1751	,4308
I.A.17	18,8235	15,4621	,0781	,0380	,1253
I.A.22	19,5948	14,9400	,2605	,3929	-,0339
I.A.25_R	18,2745	12,8715	,3582	,2758	-,1746
I.A.26_R	18,8301	14,3262	,3222	,4882	-,0916
I.A.44_R	18,0327	19,7555	-,1395	,0421	,3100

--- Reliability Coefficients - 6 items ---

Alpha = 0,1611 Standardized item alpha = 0,1768

Panel B: Business Unit Controllers

(Items I.C.1 to I.C.8)

--- Item Description ---

		Mean	Std Dev	Cases
1.	I.C.1	4,7053	2,0776	95
2.	I.C.2_R	5,1895	1,7029	95
3.	I.C.3_R	2,2316	1,3325	95
4.	I.C.4	4,9895	1,6470	95
5.	I.C.5	4,6211	1,7270	95
6.	I.C.6	5,3263	1,5875	95
7.	I.C.7_R	5,7684	1,6009	95
8.	I.C.8_R	6,3895	1,2824	95

--- Correlation Matrix ---

	I.C.1	I.C.2_R	I.C.3_R	I.C.4	I.C.5	I.C.6	I.C.7_R	I.C.8_R
I.C.1	1,0000							
I.C.2_R	-,0201	1,0000						
I.C.3_R	,0595	,1445	1,0000					
I.C.4	,2602	,1828	-,0377	1,0000				
I.C.5	,5675	,1766	,0200	,3202	1,0000			
I.C.6	,3069	,3350	,0645	,2251	,5268	1,0000		
I.C.7_R	,2607	,1607	,0653	,4873	,2834	,2854	1,0000	
I.C.8_R	,1673	,3361	,0587	,0423	,2115	,3915	,2361	1,000

--- Scale Description ---

Statistics for Scale		Mean	Variance	Std Dev	Items	
		39,2211	54,8123	7,4035	8	
Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	4,9026	2,2316	6,3895	4,1579	2,8632	1,4975
Item Variances	Mean	Minimum	Maximum	Range	Max/Min	Variance
	2,6768	1,6446	4,3165	2,6719	2,6247	,6783
Inter-item						
Correlations	Mean	Minimum	Maximum	Range	Max/Min	Variance
	,2185	-,0377	,5675	,6051	-,15,0694	,0248

--- Item-total Statistics ---

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
I.C.1	34,5158	39,8056	,4078	,3656	,6655
I.C.2_R	34,0316	45,1798	,2941	,2267	,6886
I.C.3_R	36,9895	51,3722	,0871	,0393	,7207
I.C.4	34,2316	43,7118	,3851	,3108	,6675
I.C.5	34,6000	39,4128	,5726	,4773	,6211
I.C.6	33,8947	41,0739	,5513	,3935	,6300
I.C.7_R	33,4526	42,8036	,4509	,3060	,6528
I.C.8_R	32,8316	46,9288	,3551	,2407	,6752

--- Reliability Coefficients - 8 items ---

Alpha = 0,6964 Standardized item alpha = 0,6911

APPENDIX [F.3]

VALIDATION OF "IMPACT OF CONTROL SYSTEMS" (SECTION II OF QUESTIONNAIRE)

1. Correlation Matrix

--- Coefficients ---

	I.B.2_R	II.A.1_R	II.A.2_R	II.A.3_R	II.A.4_R	II.A.5_R	II.A.6_R
I.B.2_R	1,00000						
II.A.1_R	-,02525	1,00000					
II.A.2_R	,00846	,67831	1,00000				
II.A.3_R	,04575	,39188	,55190	1,00000			
II.A.4_R	-,05336	,33851	,46726	,57204	1,00000		
II.A.5_R	,12845	,27245	,43387	,57169	,52985	1,00000	
II.A.6_R	,05587	,20943	,27917	,46318	,63338	,48647	1,00000
II.A.7_R	,19724	,14238	,25887	,37315	,44785	,48921	,54017
II.A.8	,11188	,17387	,16470	,12667	,07263	-,10309	-,02966
II.B.1_R	,44622	-,09857	-,03718	-,01916	,00694	,03472	,02284
II.B.2	,41569	-,12233	-,00870	,02569	-,08941	,02187	-,06402
II.B.3_R	,37314	,08356	,06887	-,02934	-,00312	,01245	,02816
II.B.4_R	,08539	,03499	-,00896	-,03709	,10278	-,04165	,01396
II.B.5	,19684	,14040	,20564	,15208	-,03072	,18756	-,08605
II.B.6	,32313	-,10480	-,08105	,06734	-,03556	,14371	,00502
II.C1d_R ¹	-,28218	,14203	,03945	,01693	-,10945	,08172	-,10190
II.C.2_R	-,00797	,05974	-,01823	,05284	,09937	,16394	,19340
II.C.4	,04283	,12664	,13054	,09181	,04808	-,00956	-,04545
II.C.5	-,09554	,13929	,12683	,09877	-,06343	-,02857	-,13295
II.C.6_R	,03620	-,02474	-,06640	,03822	,07158	,02841	,04937
RAT.IIC3 ²	-,02093	,13030	-,01755	-,02449	-,04338	-,00326	-,16822
RAT.IIC7	,02703	,19338	,10208	,15526	,07138	,02806	,04732
II.D.1	,08929	,11451	,12574	,05769	-,01568	,01712	-,01892
II.D.2	-,18110	,02356	,01925	-,05682	-,02579	-,06999	-,12920
II.E.1A	,09237	,29768	,25541	,30924	,06392	,19524	,03847
II.E.1B	,07983	,29742	,19305	,28536	,00354	,12212	-,01257
II.E.2_R	-,01567	,13296	,09279	,15185	,06724	,14815	,17422

¹ "II.C1d_r" was obtained as follows: $[(100-II.C.1.d)/14]$, where II.C.1.d is the percentage of managerial activities spent on matters which will show up in the business unit's profit and loss statement within 1 to 5 years. The division by 14 was performed on this percentage in order to make the variances of the percentage scales and the 7-point Likert-scales comparable (see also footnote 7).

² "RAT.IIC3" was obtained by summing items II.C.3a through II.C.3h and by dividing this sum by the number of categories for which a valid answer was given (i.e., not a "not available" answer). The ratio "RAT.IIC7" was calculated in the same way on items II.C.7a through II.C.7h.

	II.A.7_R	II.A.8	II.B.1_R	II.B.2	II.B.3_R	II.B.4_R	II.B.5
II.A.7_R	1,00000						
II.A.8	-,01383	1,00000					
II.B.1_R	,07722	,11432	1,00000				
II.B.2	,03284	,28880	,21064	1,00000			
II.B.3_R	,08789	,07503	,51936	,11634	1,00000		
II.B.4_R	-,03116	-,15772	,00444	-,14304	,09039	1,00000	
II.B.5	,05294	,30772	,07192	,32578	-,01552	-,40188	1,00000
II.B.6	,16034	-,00768	,42898	,32591	,29193	,01462	,16162
II.C1D_R	-,15761	,04955	-,23673	-,11917	-,26700	-,09010	,13984
II.C.2_R	,18395	-,09608	-,12856	-,02504	-,21633	,04902	-,07885
II.C.4	-,09103	,05931	-,02998	-,03185	,02077	,08975	-,13777
II.C.5	-,18207	-,08388	-,10755	,10929	,02741	-,15419	,06936
II.C.6_R	,11148	-,20740	,09067	-,10196	,00276	,10967	-,17633
RAT.IIC3	-,01122	-,17598	,01674	-,10548	,02550	,10137	-,09018
RAT.IIC7	-,00350	-,04344	-,03374	,05914	,00953	-,04065	-,05315
II.D.1	-,09996	,16969	,02441	,14286	,02874	,05030	,16077
II.D.2	-,17099	,10609	-,10761	-,05963	-,06865	-,06979	,21349
II.E.1A	,18809	,08003	,12248	,01955	,04931	-,11111	,11769
II.E.1B	,14414	,12225	,07191	,02889	,02529	-,10288	,12267
II.E.2_R	,10175	-,02745	,14298	,02434	-,02677	,13498	-,01345

	II.B.6	II.C1D_R	II.C.2_R	II.C.4	II.C.5	II.C.6_R	RAT.IIC3
II.B.6	1,00000						
II.C1D_R	-,06210	1,00000					
II.C.2_R	,03149	-,03378	1,00000				
II.C.4	-,16172	-,05294	-,03392	1,00000			
II.C.5	,06212	-,04958	-,04669	,18385	1,00000		
II.C.6_R	,08669	-,08407	,02838	,11012	-,02224	1,00000	
RAT.IIC3	,00496	,08302	-,21166	,15818	,24662	,09792	1,00000
RAT.IIC7	-,02125	,00821	-,02663	,05137	,39264	,20763	,20635
II.D.1	,23911	,09419	-,05685	-,04088	,26129	-,18220	-,07199
II.D.2	-,00506	,07383	-,05936	-,02367	,26749	-,08479	-,00092
II.E.1A	,05632	,07254	,08132	,17282	,21043	-,08011	,13709
II.E.1B	,08832	,07427	,07915	,15837	,18893	-,06919	,12860
II.E.2_R	,14153	-,02110	,16156	,09661	-,06000	,08402	-,03019

	RAT.IIC7	II.D.1	II.D.2	II.E.1A	II.E.1B	II.E.2_R
RAT.IIC7	1,00000					
II.D.1	-,03700	1,00000				
II.D.2	,06739	,37946	1,00000			
II.E.1A	,20073	,08229	,09153	1,00000		
II.E.1B	,17911	,12465	,09700	,92486	1,00000	
II.E.2_R	,04635	,01559	-,06815	,14747	,12584	1,00000

--- One-tailed Significance of Correlations ---

	I.B.2_R	II.A.1_R	II.A.2_R	II.A.3_R	II.A.4_R
I.B.2_R	,				
II.A.1_R	,38523	,			
II.A.2_R	,46108	,00000	,		
II.A.3_R	,29845	,00000	,00000	,	
II.A.4_R	,26862	,00003	,00000	,00000	,
II.A.5_R	,06808	,00067	,00000	,00000	,00000
II.A.6_R	,25913	,00720	,00050	,00000	,00000
II.A.7_R	,01068	,04911	,00117	,00000	,00000
II.A.8	,09735	,02146	,02768	,07084	,20036
II.B.1_R	,00000	,12680	,33368	,41240	,46805
II.B.2	,00000	,07799	,45994	,38330	,15030
II.B.3_R	,00000	,16673	,21281	,36727	,48562
II.B.4_R	,16146	,34294	,45876	,33406	,11688
II.B.5	,01081	,05152	,00816	,03858	,36127
II.B.6	,00006	,11232	,17412	,21801	,34054
II.C1D_R	,00044	,04952	,32421	,42247	,10232
II.C.2_R	,46334	,24481	,41658	,27063	,12486
II.C.4	,31026	,07089	,06491	,14389	,28916
II.C.5	,13427	,05291	,07059	,12630	,23159
II.C.6_R	,33784	,38750	,22122	,32932	,20379
RAT.IIC3	,40446	,06527	,41964	,38859	,30804
RAT.IIC7	,37736	,01204	,11850	,03555	,20445
II.D.1	,15063	,09218	,07233	,25233	,42812
II.D.2	,01743	,39273	,41196	,25558	,38285
II.E.1A	,14242	,00022	,00135	,00012	,22986
II.E.1B	,17780	,00022	,01217	,00038	,48369
II.E.2_R	,42818	,06141	,14132	,03880	,21834

	II.A.5_R	II.A.6_R	II.A.7_R	II.A.8	II.B.1_R
II.A.5_R	,				
II.A.6_R	,00000	,			
II.A.7_R	,00000	,00000	,		
II.A.8	,11618	,36587	,43652	,	
II.B.1_R	,34409	,39593	,18579	,09255	,
II.B.2	,40025	,22952	,35214	,00032	,00692
II.B.3_R	,44279	,37242	,15446	,19264	,00000
II.B.4_R	,31510	,43591	,35937	,03334	,47953
II.B.5	,01439	,15960	,27023	,00013	,20268
II.B.6	,04754	,47687	,03111	,46466	,00000
II.C1D_R	,17213	,11891	,03344	,28339	,00276
II.C.2_R	,02825	,01204	,01602	,13291	,06790
II.C.4	,45603	,29965	,14596	,24639	,36449
II.C.5	,37062	,06142	,01694	,16581	,10633
II.C.6_R	,37131	,28406	,09816	,00770	,14690
RAT.IIC3	,48498	,02514	,44842	,02021	,42332
RAT.IIC7	,37287	,29218	,48386	,30779	,34827
II.D.1	,42158	,41348	,12347	,02413	,38893
II.D.2	,20907	,06692	,02327	,10948	,10620
II.E.1A	,01137	,32828	,01416	,17718	,07772
II.E.1B	,07835	,44224	,04705	,07811	,20271
II.E.2_R	,04261	,02125	,11925	,37553	,04840

	II.B.2	II.B.3_R	II.B.4_R	II.B.5	II.B.6
II.B.2	,				
II.B.3_R	,08870	,			
II.B.4_R	,04833	,14767	,		
II.B.5	,00005	,42883	,00000	,	
II.B.6	,00005	,00028	,43293	,03007	,
II.C1D_R	,08350	,00084	,14844	,05222	,23631
II.C.2_R	,38614	,00571	,28545	,18077	,35795
II.C.4	,35640	,40515	,14938	,05486	,02999
II.C.5	,10266	,37569	,03655	,21118	,23625
II.C.6_R	,11878	,48728	,10186	,02001	,15780
RAT.IIC3	,11082	,38411	,12013	,14822	,47715
RAT.IIC7	,24701	,45617	,31920	,26942	,40301
II.D.1	,04854	,36991	,28043	,03076	,00253
II.D.2	,24521	,21356	,20975	,00629	,47670
II.E.1A	,41064	,28432	,09890	,08620	,25746
II.E.1B	,36924	,38503	,11666	,07741	,15327
II.E.2_R	,38924	,37853	,05859	,43826	,05014

	II.C1D_R	II.C.2_R	II.C.4	II.C.5	II.C.6_R
II.C1D_R	,				
II.C.2_R	,34813	,			
II.C.4	,27024	,34752	,		
II.C.5	,28325	,29469	,01608	,	
II.C.6_R	,16526	,37148	,10094	,39860	,
RAT.IIC3	,16830	,00669	,03294	,00190	,12838
RAT.IIC7	,46222	,37916	,27628	,00000	,00764
II.D.1	,13771	,25546	,31827	,00106	,01688
II.D.2	,19650	,24623	,39224	,00082	,16319
II.E.1A	,20068	,17331	,02211	,00697	,17693
II.E.1B	,19507	,17984	,03277	,01381	,21175
II.E.2_R	,40369	,03012	,13159	,24388	,16541

	RAT.IIC3	RAT.IIC7	II.D.1	II.D.2	II.E.1A
RAT.IIC3	,				
RAT.IIC7	,00797	,			
II.D.1	,20246	,33444	,		
II.D.2	,49576	,21782	,00000	,	
II.E.1A	,05575	,00956	,17043	,14461	,
II.E.1B	,06784	,01847	,07411	,13063	,00000
II.E.2_R	,36360	,29604	,42853	,21525	,04333

	II.E.1B	II.E.2_R
II.E.1B	,	
II.E.2_R	,07218	,

--- Anti-Image Correlation Matrix ---
 (Measures of Sampling Adequacy -MSA- are printed on the diagonal)

	I.B.2_R	II.A.1_R	II.A.2_R	II.A.3_R	II.A.4_R	II.A.5_R	II.A.6_R
I.B.2_R	,61191						
II.A.1_R	-,05072	,66798					
II.A.2_R	-,05997	-,57153	,72908				
II.A.3_R	-,01840	,05772	-,24369	,84524			
II.A.4_R	,21605	-,08862	-,11117	-,23355	,77017		
II.A.5_R	-,12051	,04775	-,12877	-,26737	-,21577	,80519	
II.A.6_R	-,07659	-,07529	,11835	-,14494	-,38278	-,08792	,76818
II.A.7_R	-,09012	,09733	-,10610	,03026	-,09275	-,17398	-,30862
II.A.8	,01145	-,13848	,01597	-,13482	-,13546	,26716	,07347
II.B.1_R	-,23149	,14071	-,03620	,07209	-,11694	,02116	-,01036
II.B.2	-,28342	,17159	-,05931	,03744	-,00315	-,01184	,02892
II.B.3_R	-,13367	-,19553	-,00867	,08734	,08207	-,03636	-,04219
II.B.4_R	-,20666	-,03182	-,04128	-,01421	-,16758	,05597	,12944
II.B.5	-,22567	-,09645	-,08238	-,04785	,03325	-,14658	,15978
II.B.6	-,03132	,05528	,10365	-,09488	,00609	-,07188	,09117
II.C1D_R	,24316	-,13610	,05547	,00630	,18112	-,20927	-,02562
II.C.2_R	-,05693	-,16261	,13037	,10011	,00241	-,11474	-,04869
II.C.4	-,15341	,03551	-,07642	-,01379	-,05773	-,01473	,03991
II.C.5	,17889	-,01612	-,06039	-,10896	,06454	,02987	,02279
II.C.6_R	-,02604	-,04311	,05513	-,06006	-,03156	,03282	,06689
RAT.IIC3	-,02364	-,19840	,15568	,04467	-,04389	-,05262	,17652
RAT.IIC7	-,13133	-,11042	,04303	-,05688	-,04187	,05512	-,05412
II.D.1	-,15490	-,04698	-,07531	,02885	,02007	-,00030	-,08756
II.D.2	,16414	,07637	,02277	,11406	-,08963	-,01054	,02873
II.E.1A	-,04873	,09634	-,15021	,03714	-,03592	-,08100	,01304
II.E.1B	,03169	-,17125	,17122	-,14188	,09564	,08662	,04162
II.E.2_R	,20939	-,11682	,02580	-,05209	,16994	-,05652	-,15309
	II.A.7_R	II.A.8	II.B.1_R	II.B.2	II.B.3_R	II.B.4_R	II.B.5
II.A.7_R	,77705						
II.A.8	-,05317	,55378					
II.B.1_R	,15922	-,12310	,62965				
II.B.2	,01250	-,25543	,04386	,67016			
II.B.3_R	-,06635	-,04028	-,36894	,05611	,63579		
II.B.4_R	,08017	,09271	,11509	,04034	-,08432	,49235	
II.B.5	-,02789	-,14466	,00219	-,16150	,09855	,35690	,63140
II.B.6	-,14463	,10623	-,28517	-,20328	-,15532	-,04363	-,05542
II.C1D_R	,15873	-,08558	,09646	,04811	,14459	,00300	-,11167
II.C.2_R	-,09399	,03241	,06471	-,00138	,23472	-,05484	,08571
II.C.4	,12479	-,13490	,06261	,00361	-,02078	-,01729	,15286
II.C.5	,16578	,18080	,13093	-,14906	-,10960	,18133	-,02756
II.C.6_R	-,12392	,14765	-,11663	,07569	,08411	-,02017	,05821
RAT.IIC3	-,16054	,12903	-,08960	,05489	,08968	-,12025	,03815
RAT.IIC7	,04167	-,01861	,03425	-,09670	,01453	,03277	,12282
II.D.1	,06084	-,09711	,00290	-,01809	,08647	-,13427	,06009
II.D.2	,06678	-,08192	,05031	,14001	-,02028	-,05135	-,25056
II.E.1A	-,09113	,09038	-,20342	,01302	-,00297	,03254	,03157
II.E.1B	-,00173	-,09458	,13396	,00662	,02026	,00516	-,01349
II.E.2_R	,01864	,02965	-,18001	-,06593	,11501	-,17535	-,06805
	II.B.6	II.C1D_R	II.C.2_R	II.C.4	II.C.5	II.C.6_R	RAT.IIC3
II.B.6	,64459						
II.C1D_R	-,10654	,51407					
II.C.2_R	-,09139	,05479	,53029				
II.C.4	-,15488	,00672	,01711	,51811			
II.C.5	-,11187	,20829	-,08389	-,19032	,52615		
II.C.6_R	-,10519	,00459	,00967	-,15451	,03988	,57418	
RAT.IIC3	-,02220	-,10249	,26326	-,10206	-,21911	,01450	,50229
RAT.IIC7	,06502	-,07803	,04847	,14786	-,34802	-,22344	-,07425
II.D.1	-,20632	-,12533	,09100	,06957	-,26393	,11963	,11284
II.D.2	,00731	,06455	,00141	,01646	-,11595	-,04261	,01432
II.E.1A	,14651	-,11368	-,03359	-,04109	-,12335	,11328	-,00383
II.E.1B	-,14097	,08336	-,01079	-,02217	,09439	-,04844	-,01766
II.E.2_R	-,11251	,08183	-,09358	-,13900	,10352	-,03257	,03124

	RAT.IIC7	II.D.1	II.D.2	II.E.1A	II.E.1B	II.E.2_R
RAT.IIC7	,56802					
II.D.1	,14802	,53741				
II.D.2	-,07160	-,33457	,58950			
II.E.1A	-,05230	,10275	-,07209	,58457		
II.E.1B	,00626	-,11321	,02461	-,90906	,56857	
II.E.2_R	-,06543	-,02692	,04107	-,07441	,04463	,49315

2. Principal Components Analysis (PC)

Variable	Communality	* Factor	Eigenvalue	Pct of Var	Cum Pct
I.B.2_R	1,00000	*	4,05771	15,0	15,0
II.A.1_R	1,00000	*	2,73823	10,1	25,2
II.A.2_R	1,00000	*	2,65867	9,8	35,0
II.A.3_R	1,00000	*	2,06000	7,6	42,6
II.A.4_R	1,00000	*	1,51522	5,6	48,3
II.A.5_R	1,00000	*	1,39552	5,2	53,4
II.A.6_R	1,00000	*	1,32633	4,9	58,3
II.A.7_R	1,00000	*	1,17505	4,4	62,7
II.A.8	1,00000	*	1,07983	4,0	66,7
II.B.1_R	1,00000	*	,93659	3,5	70,2
II.B.2	1,00000	*	,87554	3,2	73,4
II.B.3_R	1,00000	*	,82960	3,1	76,5
II.B.4_R	1,00000	*	,79072	2,9	79,4
II.B.5	1,00000	*	,71070	2,6	82,0
II.B.6	1,00000	*	,64409	2,4	84,4
II.C1D_R	1,00000	*	,60487	2,2	86,7
II.C.2_R	1,00000	*	,56057	2,1	88,7
II.C.4	1,00000	*	,48742	1,8	90,5
II.C.5	1,00000	*	,41657	1,5	92,1
II.C.6_R	1,00000	*	,37354	1,4	93,5
RAT.IIC3	1,00000	*	,36055	1,3	94,8
RAT.IIC7	1,00000	*	,33072	1,2	96,0
II.D.1	1,00000	*	,30555	1,1	97,2
II.D.2	1,00000	*	,27256	1,0	98,2
II.E.1A	1,00000	*	,22836	,8	99,0
II.E.1B	1,00000	*	,20455	,8	99,8
II.E.2_R	1,00000	*	,06093	,2	100,0

3. Factor Analysis (Scale Validity)

--- Test Statistics ---

Kaiser-Meyer-Olkin Measure of Sampling Adequacy = 0,65366

Bartlett Test of Sphericity = 1271,4704; Significance = 0,00000

--- Scree Plot ---

3.1. Four Factor Solution

--- Factor Matrix (Unrotated Factor Loadings) ---

	Factor 1	Factor 2	Factor 3	Factor 4
II.A.3_R	.79075	-.11743	.02756	-.06451
II.A.5_R	.71728	-.13014	-.18426	-.12965
II.A.2_R	.71286	-.09887	.19025	-.10495
II.A.4_R	.68587	-.32908	-.23544	-.09917
II.A.6_R	.61450	-.29214	-.39579	-.12863
II.A.1_R	.61348	-.12673	.32074	.05182
II.A.7_R	.60256	-.07328	-.40756	-.04215
II.E.1A	.51823	.23726	.43957	.31154
II.E.2_R	.25848	-.00912	-.10766	.16341
II.B.2	.07323	.62144	-.09081	-.20609
II.B.1_R	.11356	.62054	-.39612	.22043
I.B.2_R	.18594	.61899	-.38184	.11358
II.B.6	.14253	.57568	-.26564	.05553
II.B.3_R	.11462	.51304	-.30305	.27324
II.D.1	.11434	.32991	.30891	-.21272
II.C.2_R	.16692	-.22679	-.13639	-.07622
II.C.5	.09647	.16506	.54223	.28667
II.D.2	-.03807	.10885	.48619	-.17168
II.E.1B	.46231	.25794	.46909	.29212
II.C1D_R	-.02339	-.19630	.41564	-.23834
RAT.IIC3	.00365	-.01414	.24398	.54073
II.B.5	.22446	.43676	.24716	-.51483
II.C.6_R	.02309	-.14561	-.24212	.43854
RAT.IIC7	.20722	.01312	.27464	.41717
II.A.8	.15888	.35050	.17295	-.40666
II.C.4	.11565	-.05127	.19620	.40219
II.B.4_R	-.04654	-.18710	-.26121	.36870

--- Communalities ---

Variable	Communality
I.B.2_R	.57643
II.A.1_R	.49798
II.A.2_R	.56516
II.A.3_R	.64400
II.A.4_R	.64397
II.A.5_R	.58218
II.A.6_R	.63616
II.A.7_R	.53633
II.A.8	.34338
II.B.1_R	.60346
II.B.2	.44227
II.B.3_R	.44285
II.B.4_R	.24134
II.B.5	.56728
II.B.6	.42538
II.C1D_R	.26864
II.C.2_R	.10370
II.C.4	.21625
II.C.5	.41274
II.C.6_R	.27267
RAT.IIC3	.35213
RAT.IIC7	.29257
II.D.1	.26259
II.D.2	.27915
II.E.1A	.61514
II.E.1B	.58565
II.E.2_R	.10519

--- Varimax Rotation ---

	Factor 1	Factor 2	Factor 3	Factor 4
II.A.4_R	.79543	-.05915	-.02511	-.08449
II.A.6_R	.76658	.03533	-.16799	-.13799
II.A.5_R	.75621	.07285	.02980	.06429
II.A.3_R	.75302	.00061	.23784	.14278
II.A.7_R	.67992	.23669	-.08944	-.10011
II.A.2_R	.64104	-.09032	.29200	.24658
II.A.1_R	.50017	-.15899	.43992	.17032
II.C.2_R	.26623	-.10429	-.11412	-.09449
II.E.2_R	.23831	.12764	.12768	-.12570
II.B.1_R	-.01361	.77583	.02362	-.02836
I.B.2_R	.06572	.75344	-.01180	.06552
II.B.3_R	-.01352	.65353	.10243	-.07123
II.B.6	.01829	.63787	.00336	.13475
II.B.2	-.06165	.51183	-.07251	.41381
II.C1D_R	-.03319	-.43325	.07453	.27255
II.E.1A	.23307	.11977	.70958	.20730
II.E.1B	.17177	.10780	.69932	.23553
II.C.5	-.14965	-.06409	.59914	.16514
RAT.IIC7	.04464	-.00025	.52722	-.11233
RAT.IIC3	-.14314	-.00944	.51205	-.26336
II.C.4	.00391	-.02971	.42417	-.18824
II.B.5	.09121	.13909	-.03081	.73394
II.A.8	.05958	.12292	-.04446	.56810
II.C.6_R	.05701	.11458	.11659	-.49265
II.B.4_R	.02260	.06346	.02732	-.48586
II.D.1	-.04128	.07471	.15195	.48189
II.D.2	-.16631	-.20985	.20573	.40636

--- Oblique Rotation ---

	Factor 1	Factor 2	Factor 3	Factor 4
II.A.4_R	.79377	-.03292	-.09611	-.00876
II.A.6_R	.76328	.06122	-.15324	-.15394
II.A.3_R	.75787	.02346	.13861	.25891
II.A.5_R	.75694	.09670	.05434	.04876
II.A.7_R	.68397	.25927	-.11249	-.07706
II.A.2_R	.64354	-.07179	.24559	.31349
II.A.1_R	.50801	-.14481	.17547	.45624
II.C.2_R	.26101	-.09483	-.10101	-.11008
II.E.2_R	.24851	.13574	-.12581	.12937
II.B.1_R	.00775	.77510	-.02922	.02013
I.B.2_R	.08320	.75477	.06260	-.01087
II.B.3_R	.00845	.65296	-.06967	.09812
II.B.6	.03200	.63727	.13313	.00539
II.B.2	-.05954	.50716	.41140	-.06446
II.C1D_R	-.04712	-.43593	.27584	.08231
II.B.5	.07855	.13748	.73119	-.00957
II.A.8	.04943	.12135	.56554	-.02830
II.C.6_R	.07419	.11915	-.49032	.10436
II.D.1	-.04363	.07004	.48618	.16350
II.B.4_R	.03512	.06710	-.48535	.01469
II.D.2	-.17231	-.21805	.41450	-.21323
II.E.1A	.25744	.12439	.22284	.71967
II.E.1B	.19495	.11030	.25165	.70879
II.C.5	-.13270	-.07120	.18346	.59990
RAT.IIC7	.06605	.00074	-.09867	.52493
RAT.IIC3	-.11921	-.01353	-.24741	.50143
II.C.4	.02241	-.02932	-.17670	.41908

--- Factor Correlation Matrix (Oblique Rotation) ---

	Factor 1	Factor 2	Factor 3
Factor 2	.05786		
Factor 3	-.03344	-.00888	
Factor 4	.05883	-.00469	.05327

--- Summary 4-factor Solution ---

VARIMAX		OBLIQUE	
II.A.4_R	Information Asymmetry	II.A.4_R	Information Asymmetry
II.A.6_R	Information Asymmetry	II.A.6_R	Information Asymmetry
II.A.5_R	Information Asymmetry	II.A.3_R	Information Asymmetry
II.A.3_R	Information Asymmetry	II.A.5_R	Information Asymmetry
II.A.7_R	Information Asymmetry	II.A.7_R	Information Asymmetry
II.A.2_R	Information Asymmetry	II.A.2_R	Information Asymmetry
II.A.1_R	Information Asymmetry	II.A.1_R	Information Asymmetry
II.C.2_R	Short Termism (control question)	II.C.2_R	Short Termism (control question)
II.E.2_R	Harm (control question)	II.E.2_R	Harm (control question)
II.B.1_R	Budget Slack	II.B.1_R	Budget Slack
I.B.2_R	Budget Slack	I.B.2_R	Budget Slack
II.B.3_R	Budget Slack	II.B.3_R	Budget Slack
II.B.6	Budget Slack	II.B.6	Budget Slack
II.B.2	Budget Slack	II.B.2	Budget Slack
II.C1D_R	Short Termism	II.C1D_R	Short Termism
II.E.1A	Harm (control question)	II.E.1A	Harm (control question)
II.E.1B	Harm (control question)	II.E.1B	Harm (control question)
II.C.5	Short Termism	II.C.5	Short Termism
RAT.IIC7	Short Termism	RAT.IIC7	Short Termism
RAT.IIC3	Short Termism	RAT.IIC3	Short Termism
II.C.4	Short Termism	II.C.4	Short Termism
II.B.5	Budget Slack	II.B.5	Budget Slack
II.A.8	Information Asymmetry	II.A.8	Information Asymmetry
II.C.6_R	Short Termism	II.C.6_R	Short Termism
II.B.4_R	Budget Slack	II.D.1	Earnings Management
II.D.1	Earnings Management	II.B.4_R	Budget Slack
II.D.2	Earnings Management	II.D.2	Earnings Management

3.2. Nine Factor Solution

--- Factor Matrix (Unrotated Factor Loadings) ---

	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Factor7	Factor8	Factor9
II.A.3_R	,79075	-,11743	,02756	-,06451	,07459	,04111	-,07298	,02477	,06129
II.A.5_R	,71728	-,13014	-,18426	-,12965	-,04463	,20501	-,08526	-,20691	,05702
II.A.2_R	,71286	-,09887	,19025	-,10495	,33960	-,17787	,02142	-,00913	,10426
II.A.4_R	,68587	-,32908	-,23544	-,09917	,26871	,06012	,01892	,05228	-,11409
II.A.6_R	,61450	-,29214	-,39579	-,12863	,02938	,13484	,02838	,08282	-,15863
II.A.1_R	,61348	-,12673	,32074	,05182	,25200	-,22837	,08647	-,07174	,17207
II.A.7_R	,60256	-,07328	-,40756	-,04215	-,18442	,08280	-,14901	-,08152	-,19991
II.E.1A	,51823	,23726	,43957	,31154	-,46920	-,19989	,05029	-,05594	-,23479
II.B.2	,07323	,62144	-,09081	-,20609	-,03116	,11810	-,17588	,33436	,27861
II.B.1_R	,11356	,62054	-,39612	,22043	,03576	-,10584	,05432	-,17685	-,02236
I.B.2_R	,18594	,61899	-,38184	,11358	,01275	-,08075	-,05718	,10993	,05849
II.B.6	,14253	,57568	-,26564	,05553	-,12164	,40369	,16579	-,24481	,14468
II.B.3_R	,11462	,51304	-,30305	,27324	,34133	-,17845	,05672	-,15789	-,22837
II.C.5	,09647	,16506	,54223	,28667	,21973	,44575	-,09622	,25398	-,09361
II.D.2	-,03807	,10885	,48619	-,17168	,18119	,35365	,30685	,00236	-,25781
RAT.IIC3	,00365	-,01414	,24398	,54073	,15417	,05837	-,22426	-,38129	,09628
II.B.5	,22446	,43676	,24716	-,51483	-,03572	,05669	-,26380	-,10128	,17979
II.C.6_R	,02309	-,14561	-,24212	,43854	,00734	,25862	-,18239	,03746	,28587
RAT.IIC7	,20722	,01312	,27464	,41717	,10361	,33298	-,31448	,22841	,11041
II.C.4	,11565	-,05127	,19620	,40219	,13548	-,32545	,05407	,38209	,19699
II.C.2_R	,16692	-,22679	-,13639	-,07622	-,52420	,19253	,24253	,36070	,02673
II.E.1B	,46231	,25794	,46909	,29212	-,48899	-,20561	,08228	-,04608	-,21665
II.A.8	,15888	,35050	,17295	-,40666	,15687	-,41415	,02621	,24678	,12718
II.B.4_R	-,04654	-,18710	-,26121	,36870	,20400	-,07951	,58438	-,05039	,14591
II.D.1	,11434	,32991	,30891	-,21272	,22023	,31755	,55431	-,02962	-,03740
II.C1D_R	-,02339	-,19630	,41564	-,23834	-,15858	-,01091	-,00425	-,49614	,40526
II.E.2_R	,25848	-,00912	-,10766	,16341	-,28076	,02666	,37231	,06775	,49411

--- Communalities ---

Variable	Communality
I.B.2_R	,60189
II.A.1_R	,65587
II.A.2_R	,72354
II.A.3_R	,66095
II.A.4_R	,73590
II.A.5_R	,67954
II.A.6_R	,68803
II.A.7_R	,64601
II.A.8	,61727
II.B.1_R	,65067
II.B.2	,67754
II.B.3_R	,67150
II.B.4_R	,65461
II.B.5	,68394
II.B.6	,71149
II.C1D_R	,70432
II.C.2_R	,60519
II.C.4	,52825
II.C.5	,74225
II.C.6_R	,45600
RAT.IIC3	,58425
RAT.IIC7	,57744
II.D.1	,72147
II.D.2	,59767
II.E.1A	,93603
II.E.1B	,92286
II.E.2_R	,57208

--- Varimax Rotation ---

	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Factor7	Factor8	Factor9
II.A.4_R	.82875	-.01960	-.09506	-.12495	.01867	.00718	.11321	-.09182	-.04897
II.A.6_R	.76502	.00756	-.05697	-.11008	-.07275	-.05586	-.09352	-.26127	.04403
II.A.5_R	.76500	.03168	.08138	.10838	-.03567	.03458	-.19231	.10804	.15436
II.A.3_R	.74881	-.01784	.17221	.14184	.02554	.12169	.15283	.04933	.09426
II.A.7_R	.66127	.17197	.16295	.01070	-.23266	-.04597	-.26055	-.16820	.00843
II.A.2_R	.65944	-.01767	.09939	.11751	.15124	.01339	.43852	.22159	-.01484
II.A.1_R	.49737	-.07496	.21468	.01370	.13790	.05244	.47044	.32953	.07021
II.B.1_R	-.01556	.78839	.08274	.03228	-.06481	-.06948	-.07342	.03914	.07087
II.B.3_R	.04616	.76490	.02190	-.13294	.04892	-.03195	.09635	.06849	-.22080
I.B.2_R	.03964	.70129	.03131	.23407	-.11309	.02183	.04284	-.15960	.11027
II.B.6	.03626	.56898	.01520	.16831	.21880	.08408	-.41564	.06427	.35505
II.E.1A	.14614	.07252	.93888	.05023	.05390	.09886	.08909	.03720	.05820
II.E.1B	.07926	.05681	.93835	.06510	.08060	.07616	.09374	.03361	.07998
II.B.5	.10830	.05641	.06753	.76736	.16924	-.07742	-.05743	.19228	-.02667
II.B.2	-.08823	.37283	-.09750	.64173	.03795	.13846	.06551	-.21978	.19034
II.B.4_R	.00013	.17753	-.17703	-.64029	.10361	-.09832	.19730	.03931	.34771
II.A.8	.01708	.11748	.03048	.49877	.13364	-.29873	.49181	-.04832	-.04652
II.D.1	.02027	.11992	.01295	.08172	.82058	-.04932	.01562	.02864	.15161
II.D.2	-.07343	-.15895	.07819	.02953	.72536	.09053	-.06168	-.00353	-.14791
RAT.IIC7	.09034	-.03567	.10195	.05874	-.00246	.73780	.09723	.01882	.00091
II.C.5	-.05537	-.05961	.15227	.08693	.43619	.69627	.10285	-.02525	-.13642
II.C.6_R	.05988	.07975	-.17768	-.19930	-.30388	.45877	-.09578	.04198	.24701
II.C.4	-.05872	.00475	.14103	-.14455	-.11544	.24667	.62616	-.05467	.12151
II.C1D_R	-.04575	-.42605	.07657	.18964	.05886	-.15081	-.10867	.62483	.22464
RAT.IIC3	-.07432	.08745	.15158	-.22670	-.09743	.43533	-.01154	.53735	-.09390
II.C.2_R	.14368	-.27076	.16705	-.03769	-.04152	-.04310	-.15740	-.51199	.43752
II.E.2_R	.11653	.04579	.10039	-.06960	-.02985	-.00094	.09953	.00075	.72848

--- Oblique Rotation ---

	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Factor7	Factor8	Factor9
II.A.4_R	,85720	-,01902	,04149	,01346	,13224	-,08482	,12281	,09879	-,06714
II.A.6_R	,77664	-,02317	-,04079	-,05030	,07458	,11303	,09656	,24253	,03225
II.A.5_R	,74893	,01712	-,03206	,04323	-,04345	,22591	-,09331	-,14730	,11078
II.A.3_R	,72849	-,03603	,01543	,11384	-,12588	-,11457	-,12918	-,06230	,06092
II.A.2_R	,65966	,00741	,12464	,00379	-,04472	-,39839	-,08277	-,21073	-,04200
II.A.7_R	,63751	,14473	-,22175	-,05305	-,16273	,28637	-,01331	,15559	-,01950
II.A.1_R	,47593	-,03097	,10572	,03213	-,16730	-,43042	,03113	-,31444	,04303
II.B.3_R	,05687	,80445	,05223	-,04412	-,03234	-,07213	,14070	,03314	-,21381
II.B.1_R	-,04235	,78109	-,06655	-,07675	-,09812	,08532	-,03943	,00083	,07399
I.B.2_R	,01459	,63822	-,11687	,01994	-,03543	-,04300	-,27646	,17511	,11964
II.B.6	,00766	,52187	,23766	,10013	-,00385	,43187	-,16664	-,08676	,35007
II.D.1	,03226	,12182	,83184	-,05064	,01986	,02395	-,00752	-,02109	,17531
II.D.2	-,04690	-,13396	,73440	,08231	-,05786	,10080	,04736	,04209	-,13276
RAT.IIC7	,08323	-,07325	,00939	,73776	-,06275	-,08596	-,11084	,02970	-,01761
II.C.5	-,04581	-,07936	,44843	,68676	-,11176	-,07132	-,08901	,10421	-,13659
II.C.6_R	,05939	,04613	-,26588	,48344	,19458	,07349	,11246	-,04322	,23396
II.E.1B	-,04482	,07142	,02928	-,00638	-,95918	-,03204	,02211	,00428	,06339
II.E.1A	,02377	,08898	,00424	,01657	-,95760	-,02484	,03464	,00573	,03782
II.C.4	-,08666	-,00652	-,12575	,21963	-,13142	-,63210	,10395	,09406	,13876
II.A.8	,01214	,08650	,07944	-,30846	-,01497	-,49109	-,48067	,02382	-,03278
II.B.5	,09756	,01621	,11345	-,06385	-,03230	,07171	-,73332	-,25038	-,05615
II.B.2	-,10052	,25109	,02174	,15779	,12030	-,08304	-,70068	,17442	,20134
II.B.4_R	,00565	,21674	,15066	-,09815	,17231	-,20304	,63002	-,01967	,37898
II.C1D_R	-,07147	-,36876	,01461	-,13841	-,05122	,11327	-,12320	-,70766	,18130
RAT.IIC3	-,08582	,16875	-,10500	,42976	-,13554	,03145	,23657	-,46266	-,13312
II.E.2_R	,04858	-,01157	-,01991	-,00382	-,08638	-,10724	,04600	-,08358	,73547
II.C.2_R	,09176	-,36745	-,01394	-,05640	-,18299	,14769	,01272	,42847	,46008

--- Factor Correlation Matrix (Oblique Rotation) ---

	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Factor7	Factor8
Factor2		.01458						
Factor3	-,03461		-,02408					
Factor4	.00010	.04406		-,02994				
Factor5	-,17214	.02181	-,10087	-,12038				
Factor6	-,03920	-,00387	-,08703	-,03678	.09467			
Factor7	-,03257	-,08546	-,14722	.09546	.12099	-,02435		
Factor8	.00086	.04701	-,09328	-,05033	.09197	.0677	-,01150	
Factor9	.11438	.08673	-,06618	.01151	-,03030	.05246	.01198	.07687

--- Summary 9-factor Solution ---

VARIMAX		OBLIQUE	
II.A.4_R	Information Asymmetry	II.A.4_R	Information Asymmetry
II.A.6_R	Information Asymmetry	II.A.6_R	Information Asymmetry
II.A.5_R	Information Asymmetry	II.A.5_R	Information Asymmetry
II.A.3_R	Information Asymmetry	II.A.3_R	Information Asymmetry
II.A.7_R	Information Asymmetry	II.A.2_R	Information Asymmetry
II.A.2_R	Information Asymmetry	II.A.7_R	Information Asymmetry
II.A.1_R	Information Asymmetry	II.A.1_R	Information Asymmetry
II.B.1_R	Budget Slack	II.B.3_R	Budget Slack
II.B.3_R	Budget Slack	II.B.1_R	Budget Slack
I.B.2_R	Budget Slack	I.B.2_R	Budget Slack
II.B.6	Budget Slack	II.B.6	Budget Slack
II.D.1	Earnings Management	II.D.1	Earnings Management
II.D.2	Earnings Management	II.D.2	Earnings Management
RAT.IIC7	Short Termism	RAT.IIC7	Short Termism
II.C.5	Short Termism	II.C.5	Short Termism
II.C.6_R	Short Termism	II.C.6_R	Short Termism
II.E.1A	Harm (control question)	II.E.1B	Harm (control question)
II.E.1B	Harm (control question)	II.E.1A	Harm (control question)
II.C.4	<i>Short Termism</i>	II.C.4	<i>Short Termism</i>
		II.A.8	<i>Information Asymmetry</i>
II.B.5	Budget Slack	II.B.5	Budget Slack
II.B.2	Budget Slack	II.B.2	Budget Slack
II.B.4_R	Budget Slack	II.B.4_R	Budget Slack
II.A.8	<i>Information Asymmetry</i>		
II.C1D_R	Short Termism	II.C1D_R	Short Termism
RAT.IIC3	Short Termism	RAT.IIC3	Short Termism
II.C.2_R	Short Termism (control question)		
II.E.2_R	Harm (control question)	II.E.2_R	Harm (control question)
		II.C.2_R	Short Termism (control question)

4. Cronbach Alpha (Scale Reliability)

4.1. Information Asymmetry

--- Item Description ---

		Mean	Std Dev	Cases
1.	II.A.1_R	2,2222	1,2152	153
2.	II.A.2_R	2,0261	1,0510	153
3.	II.A.3_R	2,6863	1,3498	153
4.	II.A.4_R	4,0458	1,7967	153
5.	II.A.5_R	3,0915	1,4972	153
6.	II.A.6_R	5,0719	1,8177	153
7.	II.A.7_R	3,8627	1,7773	153
8.	II.A.8	2,7843	1,5599	153

--- Correlation Matrix ---

	II.A.1_R	II.A.2_R	II.A.3_R	II.A.4_R	II.A.5_R	II.A.6_R	II.A.7_R	II.A.8
II.A.1_R	1,0000							
II.A.2_R	,6600	1,0000						
II.A.3_R	,4118	,5391	1,0000					
II.A.4_R	,3750	,4697	,5892	1,0000				
II.A.5_R	,2961	,4709	,5514	,5316	1,0000			
II.A.6_R	,2310	,2676	,4302	,6053	,4641	1,0000		
II.A.7_R	,1696	,2591	,3851	,4841	,4572	,5305	1,0000	
II.A.8	,1712	,2001	,1520	,1209	-,0591	-,0363	,0201	1,000

--- Scale Description ---

Statistics for Scale		Mean	Variance	Std Dev	Items	
		25,7908	62,6402	7,9146	8	
Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	3,2239	2,0261	5,0719	3,0458	2,5032	1,0623
Item Variances	Mean	Minimum	Maximum	Range	Max/Min	Variance
	2,3461	1,1046	3,3040	2,1994	2,9912	,7066
Inter-item Correlations	Mean	Minimum	Maximum	Range	Max/Min	Variance
	,3481	-,0591	,6600	,7191	-11,1668	,0393

--- Item-total Statistics ---

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
II.A.1_R	23,5686	53,0101	,4608	,4490	,7861
II.A.2_R	23,7647	52,4180	,5991	,5645	,7735
II.A.3_R	23,1046	48,2521	,6701	,4894	,7569
II.A.4_R	21,7451	42,5596	,7189	,5508	,7407
II.A.5_R	22,6993	48,0669	,5940	,4657	,7655
II.A.6_R	20,7190	45,4797	,5652	,4631	,7700
II.A.7_R	21,9281	46,8698	,5183	,3585	,7781
II.A.8	23,0065	57,9539	,0949	,1038	,8378

--- Reliability Coefficients - 8 items ---

Alpha = 0,8004 Standardized item alpha = 0,8103

4.2. Budget Slack

4.2.1. Original Scale

--- Item Description ---

		Mean	Std Dev	Cases
1.	I.B.2_R	3,3399	,5978	153
2.	II.B.1_R	2,9281	1,4739	153
3.	II.B.2	2,6863	1,3351	153
4.	II.B.3_R	2,2680	1,4142	153
5.	II.B.4_R	4,9673	1,4798	153
6.	II.B.5	2,5621	1,4592	153
7.	II.B.6	2,4444	1,6459	153

--- Correlation Matrix ---

	I.B.2_R	II.B.1_R	II.B.2	II.B.3_R	II.B.4_R	II.B.5	II.B.6
I.B.2_R	1,0000						
II.B.1_R	,4087	1,0000					
II.B.2	,4065	,2425	1,0000				
II.B.3_R	,3584	,4512	,1354	1,0000			
II.B.4_R	,0573	-,0373	-,2217	,0765	1,0000		
II.B.5	,1566	,0954	,3748	-,0448	-,4149	1,0000	
II.B.6	,3336	,3902	,3333	,3385	-,0021	,1391	1,000

--- Scale Description ---

Statistics for Scale		Mean	Variance	Std Dev	Items	
		21,1961	24,4613	4,9458	7	
Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	3,0280	2,2680	4,9673	2,6993	2,1902	,8534
Item Variances	Mean	Minimum	Maximum	Range	Max/Min	Variance
	1,9058	,3574	2,7091	2,3517	7,5796	,5447
Inter-item Correlations	Mean	Minimum	Maximum	Range	Max/Min	Variance
	,1703	-,4149	,4512	,8661	-1,0873	,0512

--- Item-total Statistics ---

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
I.B.2_R	17,8562	21,0976	,5474	,3270	,4615
II.B.1_R	18,2680	16,5922	,4744	,3172	,3923
II.B.2	18,5098	18,5147	,3624	,3139	,4509
II.B.3_R	18,9281	17,7514	,3952	,2771	,4334
II.B.4_R	16,2288	24,6907	-,1645	,2097	,6581
II.B.5	18,6340	21,4967	,0617	,2699	,5742
II.B.6	18,7516	15,5037	,4821	,2530	,3771

--- Reliability Coefficients - 7 items ---

Alpha = 0,5304 Standardized item alpha = 0,5897

4.2.2. Adjusted Scale, Version 1

(Item II.B.5 and II.B.4_R deleted)

--- Scale Description ---

Statistics for Scale	Mean	Variance	Std Dev	Items		
	13.6667	19.9342	4.4648	5		
Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	2.7333	2.2680	3.3399	1.0719	1.4726	.1770
Item Variances	Mean	Minimum	Maximum	Range	Max/Min	Variance
	1.8043	.3574	2.7091	2.3517	7.5796	.7716
Inter-item Correlations	Mean	Minimum	Maximum	Range	Max/Min	Variance
	.3398	.1354	.4512	.3158	3.3319	.0080

--- Item-total Statistics ---

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
I.B.2_R	10.3268	16.9451	.5347	.3072	.6516
II.B.1_R	10.7386	12.3128	.5268	.3130	.5917
II.B.2	10.9804	14.5720	.3512	.2155	.6710
II.B.3_R	11.3987	13.3597	.4425	.2649	.6326
II.B.6	11.2222	11.6345	.4979	.2491	.6099

--- Reliability Coefficients - 5 items ---

Alpha = **0.6843** Standardized item alpha = 0.7202

4.2.3. Adjusted Scale, Version 2

(Item II.B.5; II.B.2; and II.B.4_R deleted)

--- Scale Description ---

Statistics for Scale	Mean	Variance	Std Dev	Items		
	10.9804	14.5720	3.8173	4		
Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	2.7451	2.2680	3.3399	1.0719	1.4726	.2351
Item Variances	Mean	Minimum	Maximum	Range	Max/Min	Variance
	1.8097	.3574	2.7091	2.3517	7.5796	1.0286
Inter-item Correlations	Mean	Minimum	Maximum	Range	Max/Min	Variance
	.3801	.3336	.4512	.1176	1.3526	.0019

--- Item-total Statistics ---

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
I.B.2_R	7,6405	12,2318	,4742	,2286	,6561
II.B.1_R	8,0523	7,9051	,5423	,3113	,5386
II.B.3_R	8,7124	8,5089	,4924	,2595	,5764
II.B.6	8,5359	7,7372	,4506	,2096	,6218

--- Reliability Coefficients - 4 items ---

Alpha = 0,6710 Standardized item alpha = 0,7104

4.3. Earnings Management

--- Item Description ---

		Mean	Std Dev	Cases
1.	II.D.1	2,2237	1,5492	152
2.	II.D.2	1,9342	1,2107	152

--- Correlation Matrix ---

	II.D.1	II.D.2
II.D.1	1,0000	
II.D.2	,4245	1,0000

--- Scale Description ---

Statistics for Scale		Mean	Variance	Std Dev	Items	
		4,1579	5,4583	2,3363	2	
Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	2,0789	1,9342	2,2237	,2895	1,1497	,0419
Item Variances	Mean	Minimum	Maximum	Range	Max/Min	Variance
	1,9329	1,4658	2,4000	,9341	1,6373	,4363
Inter-item Correlations	Mean	Minimum	Maximum	Range	Max/Min	Variance
	,4245	,4245	,4245	,0000	1,0000	,0000

--- Item-total Statistics ---

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
II.D.1	1,9342	1,4658	,4245	,1802	.
II.D.2	2,2237	2,4000	,4245	,1802	.

--- Reliability Coefficients - 2 items ---

Alpha = 0,5835 Standardized item alpha = 0,5960

4.4. Short Termism

4.4.1. Original Scale

--- Item Description ---

		Mean	Std Dev	Cases
1.	II.C1D_R	5,6418	1,2794	137
2.	II.C.2_R	4,0000	1,5577	137
3.	RAT.IIC3	4,6022	,5096	137
4.	RAT.IIC7	3,8823	,8741	137
5.	II.C.4	4,0730	1,6700	137
6.	II.C.5	2,8175	1,7202	137
7.	II.C.6_R	5,1314	1,6664	137

--- Correlation Matrix ---

	II.C1D_R	II.C.2_R	RAT.IIC3	RAT.IIC7	II.C.4	II.C.5	II.C.6_R
II.C1D_R	1,0000						
II.C.2_R	-,0337	1,0000					
RAT.IIC3	,0863	-,2112	1,0000				
RAT.IIC7	,0075	-,0266	,2050	1,0000			
II.C.4	-,0531	-,0339	,1576	,0514	1,0000		
II.C.5	-,0516	-,0466	,2431	,3928	,1838	1,0000	
II.C.6_R	-,0869	,0283	,0936	,2080	,1101	-,0198	1,0000

--- Scale Description ---

Statistics for Scale		Mean	Variance	Std Dev	Items	
		30,1482	16,6241	4,0773	7	
Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	4,3069	2,8175	5,6418	2,8243	2,0024	,8494
Item Variances	Mean	Minimum	Maximum	Range	Max/Min	Variance
	1,9445	,2597	2,9591	2,6994	11,3933	1,1656
Inter-item Correlations	Mean	Minimum	Maximum	Range	Max/Min	Variance
	,0573	-,2112	,3928	,6040	-1,8601	,0187

--- Item-total Statistics ---

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
II.C1D_R	24,5064	15,8169	-,0815	,0266	,2915
II.C.2_R	26,1482	15,0193	-,0681	,0472	,3063
RAT.IIC3	25,5460	15,5511	,2023	,1397	,1697
RAT.IIC7	26,2659	13,7957	,3179	,2137	,0825
II.C.4	26,0752	12,1510	,1447	,0636	,1312
II.C.5	27,3307	11,5919	,1770	,2228	,0972
II.C.6_R	25,0169	12,8063	,0873	,0849	,1847

--- Reliability Coefficients - 7 items ---

Alpha = 0,2114 Standardized item alpha = 0,2986

4.4.2. Adjusted Scale - Version 1

(Items RAT.IIC3; RAT.IIC7; II.C.4; and II.C.5 together)

--- Scale Description ---

Statistics for Scale		Mean	Variance	Std Dev	Items	
		15,3011	9,6898	3,1128	4	
Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	3,8253	2,8158	4,6068	1,7911	1,6361	,5550
Item Variances	Mean	Minimum	Maximum	Range	Max/Min	Variance
	1,6864	,2613	2,8533	2,5919	10,9181	1,8430
Inter-item Correlations	Mean	Minimum	Maximum	Range	Max/Min	Variance
	,1818	,0432	,3500	,3068	8,0978	,0104

--- Item-total Statistics ---

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
RAT.IIC3	10.6942	8.6342	.2644	.0762	.3735
RAT.IIC7	11.4292	7.5903	.2674	.1259	.3230
II.C.4	11.2945	5.5252	.1670	.0376	.4400
II.C.5	12.4853	4.3757	.3482	.1825	.1657

--- Reliability Coefficients - 4 items ---

Alpha = **0.4051** Standardized item alpha = 0.4706

4.4.3. Adjusted Scale - Version 2

(Items RAT.IIC7; II.C.5; and II.C.6_R together)

--- Scale Description ---

Statistics for Scale		Mean	Variance	Std Dev	Items	
		11.8916	7.6126	2.7591	3	
Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	3.9639	2.8158	5.2039	2.3882	1.8481	1.4322
Item Variances	Mean	Minimum	Maximum	Range	Max/Min	Variance
	2.1122	.7900	2.8533	2.0632	3.6116	1.3174
Inter-item Correlations	Mean	Minimum	Maximum	Range	Max/Min	Variance
	.1526	-.0341	.3500	.3842	-10.2530	.0296

--- Item-total Statistics ---

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
RAT.IIC7	8.0197	5.3572	.3561	.1462	-.0707
II.C.5	9.0758	3.8976	.1292	.1297	.2126
II.C.6_R	6.6876	4.6943	.0317	.0282	.4478

--- Reliability Coefficients - 3 items ---

Alpha = **0.2514** Standardized item alpha = 0.3508

APPENDIX [F.4]

VALIDATION OF "BUSINESS PERFORMANCE"

(SECTION III OF THE QUESTIONNAIRE)

1. Item Description

		Mean	Std Dev	Cases
1.	III.A.1	5,1778	1,3036	135
2.	PERFORM ³	5,5165	,6852	135
3.	III.B ⁴	,6882	,3237	135
4.	III.C.A	2,9630	1,7509	135
5.	III.C.B	3,0222	1,7037	135
6.	III.C.C	3,0222	1,7384	135
7.	III.D	3,1481	1,0617	135
8.	III.E	7,6519	1,7420	135

2. Correlation Matrix

--- Coefficients ---

	III.A.1	PERFORM	III.B	III.C.A	III.C.B	III.C.C	III.D	III.E
III.A.1	1,0000							
PERFORM	,3900	1,0000						
III.B	,4655	,2518	1,0000					
III.C.A	,2971	,2026	,3044	1,0000				
III.C.B	,3779	,1773	,2754	,9259	1,0000			
III.C.C	,4395	,2065	,2770	,7824	,8364	1,0000		
III.D	,5847	,2488	,4064	,4124	,4644	,5804	1,0000	
III.E	,5466	,3010	,3878	,1816	,2515	,3229	,5244	1,000

--- One-tailed significance ---

	III.A.1	PERFORM	III.B	III.C.A	III.C.B	III.C.C	III.D	III.E
III.A.1	,							
PERFORM	,0000	,						
III.B	,0000	,0016	,					
III.C.A	,0002	,0092	,0001	,				
III.C.B	,0000	,0198	,0006	,0000	,			
III.C.C	,0000	,0081	,0005	,0000	,0000	,		
III.D	,0000	,0018	,0000	,0000	,0000	,0000	,	
III.E	,0000	,0001	,0000	,0174	,0016	,0000	,0000	,

³ "PERFORM" was calculated from items III.A.2(a), III.A.2(b), and III.A.2(c) as follows: $\Sigma \ln[(PER_i \times 7) / IMP_i]$, where PER_i stands for the score on the performance scale, IMP_i for the score on the importance scale, and where $i=1$ to 3, i.e., the three performance dimensions.

⁴ "III.B" is obtained by dividing III.B.2 by III.B.1.

--- Anti-Image Correlation Matrix ---

(Measures of Sampling Adequacy -MSA- are printed on the diagonal)

	III.A.1	PERFORM	III.B	III.C.A	III.C.B	III.C.C	III.D	III.E
III.A.1	,8116							
PERFORM	-,2570	,7876						
III.B	-,2557	-,0264	,8206					
III.C.A	-,2027	-,1692	-,2302	,7030				
III.C.B	-,1807	,1367	,1284	-,8057	,7042			
III.C.C	-,0754	-,0072	,0896	-,0911	-,3877	,8834		
III.D	-,2603	,0300	-,1258	-,0004	,0376	-,3149	,8615	
III.E	-,2322	-,1232	-,1560	,1409	-,0853	-,0297	-,2581	,8436

3. Principal Components Analysis (PC)

Variable	Communality	*	Factor	Eigenvalue	Pct of Var	Cum Pct
III.A.1	1,00000	*	1	3,96106	49,5	49,5
PERFORM	1,00000	*	2	1,49181	18,6	68,2
III.B	1,00000	*	3	,80003	10,0	78,2
III.C.A	1,00000	*	4	,66770	8,3	86,5
III.C.B	1,00000	*	5	,44773	5,6	92,1
III.C.C	1,00000	*	6	,38166	4,8	96,9
III.D	1,00000	*	7	,18856	2,4	99,2
III.E	1,00000	*	8	,06145	,8	100,0

4. Factor Analysis (Scale Validity)

--- Test-statistics ---

Kaiser-Meyer-Olkin Measure of Sampling Adequacy = **0,78953**

Bartlett Test of Sphericity = 662,31611; Significance = **0,00000**

--- Factor Matrix (Unrotated) ---

	Factor 1	Factor 2
III.C.C	,84363	-,37619
III.C.B	,82352	-,50994
III.C.A	,78304	-,53928
III.D	,76444	,20457
III.A.1	,71564	,43541
III.E	,59556	,52642
III.B	,56801	,36727
PERFORM	,42913	,39497

--- Communalities ---

Variable	Communality
III.A.1	,70172
PERFORM	,34016
III.B	,45752
III.C.A	,90398
III.C.B	,93823
III.C.C	,85324
III.D	,62622
III.E	,63180

--- Oblique Rotation ---

(correlation between factors -0,39326)

	Factor 1	Factor 2
III.E	,82385	,08308
III.A.1	,80594	-,07374
III.B	,65992	-,03944
III.D	,61772	-,30813
PERFORM	,60825	,07365
III.C.B	-,01624	-,97490
III.C.A	-,06623	-,97487
III.C.C	,11983	-,86999

--- Varimax Rotation ---

	Factor 1	Factor 2
III.C.B	,95297	,17343
III.C.A	,94259	,12452
III.C.C	,87826	,28618
III.A.1	,23935	,80277
III.E	,08923	,78984
III.D	,43027	,66415
III.B	,17544	,65325
PERFORM	,05380	,58074

5. Cronbach Alpha (Scale Reliability)

--- Scale description ---

Statistics for Scale		Mean	Variance	Std Dev	Items	
		31,1899	57,0007	7,5499	8	
Item Means		Mean	Minimum	Maximum	Range	Max/Min
		3,8987	,6882	7,6519	6,9636	11,1183
Item Variances		Mean	Minimum	Maximum	Range	Max/Min
		1,9282	,1048	3,0658	2,9610	29,2645
Inter-item Correlations		Mean	Minimum	Maximum	Range	Max/Min
		,4080	,1773	,9259	,7486	5,2215

--- Item-total Statistics ---

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
III.A.1	26,0121	45,0828	,5837	,5185	,8115
PERFORM	25,6734	53,2494	,3282	,1920	,8390
III.B	30,5016	54,7140	,4557	,3069	,8400
III.C.A	28,2269	38,8183	,6928	,8740	,7952
III.C.B	28,1676	38,0504	,7635	,8963	,7827
III.C.C	28,1676	37,3673	,7816	,7509	,7794
III.D	28,0417	46,3178	,6613	,5237	,8065
III.E	23,5380	43,8300	,4394	,3944	,8368

--- Reliability Coefficients - 8 items ---

Alpha = 0,8336 Standardized item alpha = 0,8465

APPENDIX [F.5]

VALIDATION OF "STRATEGY" (SECTION IV OF THE QUESTIONNAIRE)

1. Correlation Matrix

--- Coefficients ---

	DIFFSTRA	MISSION	IV.B	IV.C.A	IV.C.B	IV.C.C	IV.C.D
DIFFSTRA ⁵	1,00000						
MISSION ⁶	-,04995	1,00000					
IV.B	,19091	,13824	1,00000				
IV.C.A	,35978	-,04625	,04738	1,00000			
IV.C.B	,26592	-,16462	,02924	,35540	1,00000		
IV.C.C	,27721	,01969	,11162	,26260	,29707	1,00000	
IV.C.D	,16451	-,07681	,02024	,19163	,30434	,41787	1,00000
IV.C.E	,25413	,11087	,35816	,30060	,33147	,43747	,42487
IV.D.A_C ⁷	,01575	,80744	,16116	-,02630	-,08155	,12618	-,04260
IV.D.B_C	-,08767	-,11121	-,11243	,01416	-,05534	-,16469	-,01917
IV.D.C_C	,07755	-,71295	-,01523	-,02420	,13083	,01294	,06136
IV.D.D_C	,05764	-,39739	-,08381	,11384	,13360	,14109	,05427
IV.C.E	1,00000						
IV.D.A_C	,14947	1,00000					
IV.D.B_C	-,10795	-,66144	1,00000				
IV.D.C_C	-,04069	-,34785	-,42280	1,00000			
IV.D.D_C	,00503	-,04275	-,24056	,00456	1,00000		

--- One-tailed Significance ---

	DIFFSTRA	MISSION	IV.B	IV.C.A	IV.C.B	IV.C.C	IV.C.D
DIFFSTRA	,27748						
MISSION	,01143	,05044					
IV.B	,00001	,29234	,28777				
IV.C.A	,00069	,02513	,36489	,00001			
IV.C.B	,00042	,40802	,09301	,00080	,00017		
IV.C.C	,02521	,18180	,40550	,01117	,00012	,00000	
IV.C.D	,00114	,09450	,00001	,00014	,00003	,00000	,00000
IV.D.A_C	,42620	,00000	,02768	,37803	,16734	,06729	,30737
IV.D.B_C	,14976	,09383	,09141	,43358	,25650	,02508	,41042
IV.D.C_C	,17949	,00000	,42861	,38748	,06034	,43925	,23410
IV.D.D_C	,24782	,00000	,16069	,08867	,05647	,04698	,26061

5 "Diffstra" means *differentiation strategy* and is calculated as follows: $[(100-IV.A)/14]$. Item IV.A was coded as the *percentage low cost strategy*; it was recoded here into the *percentage differentiation strategy* $(100-IV.A)$ in order to have positive correlations with items IV.C.A, IV.C.B, IV.C.C, IV.C.D, and IV.C.E. Moreover a "compression" or linear transformation was performed by dividing by 14 in order to make the variances of the *percentage scales* and the 7-point *Likert-scales* comparable.

6 "Mission"= $[(itemIV.D.a*(1))+[itemIV.D.b*(0)]+[itemIV.D.c*(-1)]+[itemIV.D.d*(-2)]]/100$.

7 "C" stands for "compression," i.e., the linear transformation (dividing by 14) performed on the percentages in order to make the variances of the *percentage scales* and the 7-point *Likert-scales* comparable.

--- One-tailed Significance (continued) ---

	IV.C.E	IV.D.A_C	IV.D.B_C	IV.D.C_C	IV.D.D_C
IV.C.E					
IV.D.A_C	,03792				
IV.D.B_C	,10049	,00000			
IV.D.C_C	,31535	,00001	,00000		
IV.D.D_C	,47631	,30671	,00196	,47853	

2. Cronbach Alpha for "Low Cost/Differentiation" Scale

--- Item Description ---

		Mean	Std Dev	Cases
1.	DIFFSTRA	3,6132	2,0199	147
2.	IV.C.A	4,4830	1,2625	147
3.	IV.C.B	4,1361	1,4365	147
4.	IV.C.C	5,2993	1,0561	147
5.	IV.C.D	4,9864	1,3395	147
6.	IV.C.E	5,0476	1,0425	147

--- Correlation Matrix ---

	DIFFSTRA	IV.C.A	IV.C.B	IV.C.C	IV.C.D	IV.C.E
DIFFSTRA	1,0000					
IV.C.A	,3558	1,0000				
IV.C.B	,2703	,3072	1,0000			
IV.C.C	,2707	,2196	,2890	1,0000		
IV.C.D	,1883	,1781	,3106	,4241	1,0000	
IV.C.E	,2892	,2686	,3387	,4349	,4321	1,0000

--- Scale Description ---

Statistics for Scale		Mean	Variance	Std Dev	Items	
		27,5656	27,9693	5,2886	6	
Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	4,5943	3,6132	5,2993	1,6861	1,4666	,4082
Item Variances	Mean	Minimum	Maximum	Range	Max/Min	Variance
	1,9556	1,0868	4,0801	2,9933	3,7544	1,2286
Inter-item Correlations	Mean	Minimum	Maximum	Range	Max/Min	Variance
	,3052	,1781	,4349	,2568	2,4424	,0064

--- Item-total Statistics ---

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
DIFPSTRA	23,9524	17,1142	,4054	,1934	,6910
IV.C.A	23,0826	21,5516	,4115	,1898	,6619
IV.C.B	23,4295	20,1359	,4475	,2102	,6497
IV.C.C	22,2663	22,0791	,4811	,2829	,6488
IV.C.D	22,5792	20,9516	,4259	,2731	,6570
IV.C.E	22,5180	21,7786	,5246	,3144	,6389

--- Reliability Coefficients - 6 items ---

Alpha = 0,6966

Standardized item alpha = 0,7249

APPENDIX [F.6]

VALIDATION OF "CENTRALIZATION OF DECISION MAKING" (SECTION V OF THE QUESTIONNAIRE)

1. Item Description

		Mean	Std Dev	Cases
1.	V.A	3,4702	1,4551	151
2.	V.B	3,6556	1,6168	151
3.	V.C	2,3444	1,6085	151
4.	V.D	3,3046	1,7550	151
5.	V.E	2,3311	1,6602	151
6.	V.F	3,2384	1,8429	151
7.	V.G	3,8609	1,6933	151
8.	V.H	3,5960	1,7932	151
9.	V.I	3,9669	1,7566	151
10.	V.J	2,8411	1,4971	151
11.	V.K	3,6424	1,4893	151
12.	V.L	3,4967	1,5138	151
13.	V.M	3,6887	1,6008	151
14.	V.N	3,2384	1,5087	151
15.	V.O	4,1325	1,4908	151

2. Correlation Matrix

--- Coefficients ---

	V.A	V.B	V.C	V.D	V.E	V.F	V.G	V.H	V.I	V.J
V.A	1,0000									
V.B	,5510	1,0000								
V.C	,4858	,5458	1,0000							
V.D	,4474	,4413	,5695	1,0000						
V.E	,1559	,3383	,5312	,4365	1,0000					
V.F	,1270	,3477	,3522	,3484	,6103	1,0000				
V.G	,3027	,4426	,3971	,5685	,3272	,3333	1,0000			
V.H	,3645	,2897	,1942	,2936	,1482	,0818	,4666	1,0000		
V.I	,2565	,3457	,3415	,3212	,4038	,2928	,2495	,0825	1,0000	
V.J	,3987	,3215	,2111	,1911	,1232	,0863	,1648	,4328	,2591	1,0000
V.K	,3611	,3112	,1519	,1567	,0644	,0264	,2022	,4947	,1866	,6591
V.L	,2474	,2174	,2496	,2237	,2153	,1628	,3626	,4280	,2820	,3322
V.M	,3151	,1798	,0678	,2476	,0315	,1315	,1930	,1440	,1480	,3242
V.N	,3069	,1350	-,0011	,0807	-,0663	,0466	,1670	,4055	-,0549	,4980
V.O	,3153	,3925	,2422	,2342	,2461	,2457	,3745	,3518	,2206	,2813
	V.K	V.L	V.M	V.N	V.O					
V.K	1,0000									
V.L	,4342	1,0000								
V.M	,3697	,4411	1,0000							
V.N	,5396	,3302	,4395	1,0000						
V.O	,2977	,3251	,2549	,3564	1,0000					

--- One-tailed Significance of Correlations ---

	V.A	V.B	V.C	V.D	V.E	V.F	V.G	V.H
V.A	,							
V.B	,00000	,						
V.C	,00000	,00000	,					
V.D	,00000	,00000	,00000	,				
V.E	,02798	,00001	,00000	,00000	,			
V.F	,06014	,00001	,00000	,00001	,00000	,		
V.G	,00008	,00000	,00000	,00000	,00002	,00001	,	
V.H	,00000	,00015	,00845	,00013	,03465	,15905	,00000	,
V.I	,00074	,00001	,00001	,00003	,00000	,00013	,00100	,15695
V.J	,00000	,00003	,00463	,00938	,06583	,14597	,02159	,00000
V.K	,00000	,00005	,03127	,02730	,21609	,37375	,00639	,00000
V.L	,00110	,00366	,00100	,00288	,00397	,02291	,00000	,00000
V.M	,00004	,01357	,20408	,00109	,35044	,05371	,00880	,03884
V.N	,00006	,04918	,49469	,16244	,20920	,28512	,02019	,00000
V.O	,00004	,00000	,00137	,00190	,00116	,00118	,00000	,00000

	V.I	V.J	V.K	V.L	V.M	V.N	V.O
V.I	,						
V.J	,00066	,					
V.K	,01090	,00000	,				
V.L	,00023	,00002	,00000	,			
V.M	,03483	,00002	,00000	,00000	,		
V.N	,25174	,00000	,00000	,00002	,00000	,	
V.O	,00324	,00023	,00010	,00002	,00079	,00000	,

3. Cronbach Alpha (Scale Reliability)

--- Scale Description ---

Statistics for Scale		Mean	Variance	Std Dev	Items	
		50,8079	197,5829	14,0564	15	
Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	3,3872	2,3311	4,1325	1,8013	1,7727	,2828
Item Variances	Mean	Minimum	Maximum	Range	Max/Min	Variance
	2,6354	2,1174	3,3961	1,2787	1,6039	,1720
Inter-item Correlations	Mean	Minimum	Maximum	Range	Max/Min	Variance
	,2887	-,0663	,6591	,7254	-9,9364	,0220

--- Item-total Statistics ---

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
V.A	47,3377	173,5985	,5703	,5055	,8448
V.B	47,1523	169,4766	,6056	,5134	,8423
V.C	48,4636	172,0637	,5434	,5619	,8457
V.D	47,5033	168,4383	,5722	,5346	,8439
V.E	48,4768	174,9978	,4514	,5470	,8506
V.F	47,5695	174,9268	,3951	,4375	,8545
V.G	46,9470	169,5172	,5715	,5076	,8440
V.H	47,2119	170,8481	,5017	,5018	,8480
V.I	46,8411	175,5212	,4077	,3248	,8533
V.J	47,9669	174,9122	,5159	,5226	,8473
V.K	47,1656	175,2457	,5103	,5651	,8476
V.L	47,3113	174,4825	,5203	,4319	,8471
V.M	47,1192	178,4390	,3877	,4086	,8538
V.N	47,5695	180,2868	,3707	,4991	,8544
V.O	46,6755	175,3540	,5067	,3216	,8478

--- Reliability Coefficients - 15 items ---

Alpha = 0,8571

Standardized item alpha = 0,8589

Appendix G

APPENDIX [G]

REGRESSION DIAGNOSTICS

1. Regression of *Entity* (IV) on *Slack* (DV)

FIGURE 1.1: NORMALITY PLOT

FIGURE 1.2: SCATTER PLOT OF STUDENTIZED RESIDUALS

2. Regression of *Tight* (IV) on *Slack* (DV)

FIGURE 2.1: NORMALITY PLOT

FIGURE 2.2: SCATTER PLOT OF STUDENTIZED RESIDUALS

3. Regression of SBUCON[-R] (IV) on Slack (DV)

FIGURE 3.1: NORMALITY PLOT

FIGURE 3.2: SCATTER PLOT OF STUDENTIZED RESIDUALS

4. Regression of SAL-VAR (IV) on Slack (DV)

FIGURE 4.1: NORMALITY PLOT

FIGURE 4.2: SCATTER PLOT OF STUDENTIZED RESIDUALS

5. Regression of *SAL-FOR* (IV) on *Slack* (DV)

FIGURE 5.1: NORMALITY PLOT

FIGURE 5.2: SCATTER PLOT OF STUDENTIZED RESIDUALS

6. Regression of SAL-SBU (IV) on Slack (DV)

FIGURE 6.1: NORMALITY PLOT

FIGURE 6.2: SCATTER PLOT OF STUDENTIZED RESIDUALS

7. Regression of Entity (IV) on Tight (DV)

FIGURE 7.1: NORMALITY PLOT

FIGURE 7.2: SCATTER PLOT OF STUDENTIZED RESIDUALS

8. Regression of *Entity* (IV) on *SBU-CON[-R]* (DV)

FIGURE 8.1: NORMALITY PLOT

FIGURE 8.2: SCATTER PLOT OF STUDENTIZED RESIDUALS

9. Regression of *Entity* (IV) on *SAL-VAR* (DV)

FIGURE 9.1: NORMALITY PLOT

FIGURE 9.2: SCATTER PLOT OF STUDENTIZED RESIDUALS

10. Regression of Entity (IV) on SAL-FOR (DV)

FIGURE 10.1: NORMALITY PLOT

FIGURE 10.2: SCATTER PLOT OF STUDENTIZED RESIDUALS

11. Regression of Entity (IV) on SAL-SBU (DV)

FIGURE 11.1: NORMALITY PLOT

FIGURE 11.2: SCATTER PLOT OF STUDENTIZED RESIDUALS