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Integration of risk controlling into controllership in Germany: Conceptual framework and empirical findings from 2003 to 2007

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Abstract

Risk in the sense of potential negative outcome is inherent to managerial action. In the last decade, an increasing focus has been put in theory as well as practice on the conceptual design of risk management and risk controlling systems, even though no clear concept exists up to now on how a risk controlling should be integrated into the existing controllership structures.

Our paper addresses this research gap (1) by comprising the existing literature on risk controlling to a comprehensive conceptual framework and (2) by comparing this framework to a review on the empirical status-quo of risk controlling practice in German organizations from 2003-2007.

The framework is organized along the functional structure of German controllership, which comprises tasks in the fields of planning, reporting, performance measurement, accounting information technology and administration of the controllers' department. For each task we derive the necessary risk-related adaptations.

Contrasting the empirical status-quo of German risk controlling practice to this framework indicates that overall only a low degree of integration can be observed. The resulting deficiencies not only reduce controllership effectiveness regarding risk-related decision-making and control, but are also a risk in themselves as insufficient risk controlling may hinder firms in achieving their profitability and shareholder value goals.

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1 Introduction

Risk is inevitable within business environments, as uncertainty of conditions and outcome is part of nearly any economic action organizations undertake to create profits and shareholder value. Even though uncertainty can lead to either better or worse results than initially anticipated, in the context of our paper we will follow common business practice and therefore use the term ‘risk’ only as ‘danger’ in a negative sense, i.e. risk comprises all detrimental future uncertainties that may prevent a firm from achieving its set of profitability and shareholder value goals.

In the last decade, the efficient as well as effective management of business risks has become an increasing challenge. Developments like the globalization of the value chain as well as the capital markets or the growing cross-linking of enterprises and customers have augmented the impact of unforeseen changes and turbulences even far out of a firm’s influence area. In rare cases, this may lead to occurrences that are so catastrophic that it is not possible for a firm to recover. But even on a lesser and much more common scale, the realization of risks inherent to a firm’s action or environment may severely harm its financial and strategic position.

The increased relevance of risk management as well as several spectacular crises and balance sheet fraud cases on the capital markets in the last years have lead to extensive regulatory activities, with which the implementing of risk management systems has been pressed ahead. In Germany, especially the law for control and transparency in management (KonTraG) which was enacted in 1998 is to be named. This law, among other things, explicitly states that risk management constitutes an integral part of the CEO function. Therefore any person holding such a function is now legally obliged to implement a risk management system that guarantees the identification of fundamental dangers to the firm’s existence in time for effective counteractive measures.

Further legislation in this context is provided by the BilReG, which modernized German GAAP in 2004. This law requires the disclosure of goals and methods of the firm’s risk management system as well as an analysis of the firm’s major risks and opportunities in the management report, which forms a part of the German set of financial statements. Finally, the Deutsche Corporate Governance Kodex (DCGK), which was initiated in 2002 and reformed

in 2005, commits the firm's supervisory board to superintend the implementation of the risk management system.

In spite of the intense regulatory pressure, until now no specific guidelines exist on the subject of exactly *how* an appropriate risk management system is supposed to be implemented (*Diederichs* 2004, 32). Additionally, no best practice business solution has emerged as extremely divergent solutions can be observed (*Winter* 2007, 120-134; *Hoitsch et al.* 2006, 72, 77). This holds especially for the implementation of a so-called 'risk controlling'.

From a conceptual point of view, 'risk controlling' as a specialized managerial service function has to be traced back to the concept of controllership. Even though the term 'controllership' – the collective expression for controllers' activities – has its roots in the Anglo-American business practice of the 19th century, controllers' roles and tasks in German-speaking countries have a different scope compared to their Anglo-American counterparts (*Weber/Schäffer* 2006, 3-8). In Germany, controllership has been established after World War II as a managerial support function embracing tasks related to management accounting as well as divulging into the fields of planning, reporting and performance measurement (*International Group of Controlling* 2005, 53-55). Other tasks like financial accounting, tax accounting, treasury, internal auditing, administration of human resources or computer services which are included into controllership in Anglo-American companies (*Anthony/Govindarajan* 2004, 105; *Roehl-Anderson/Bragg* 2004, 11-18), are not part of the typical German controller's job description.

To fulfil their tasks, two principal roles are attributed to controllers in German organizations: they provide (1) information for managerial decision-making and control – not so much from a technical point of view, but rather from a conceptual perspective, and therefore rely heavily, but not exclusively, on the management accounting systems – and they (2) act as a management's counterpart, a role which is also described as consultant or navigator in the managerial decision-making and control process, by evaluating managerial actions with regards to the firm's set of profitability and shareholder value goals and also by managing the underlying planning and control cycles.

Based upon this common understanding of controllership in German-speaking countries, risk controlling is an integral part of controllership acting as a support function in decision-making and control for managerial action under risk. Nevertheless, empirical studies on risk management practice in Germany indicate that even though both terms – 'risk management' as well

as ‘risk controlling’ – are often used in practice, they are typically implemented as independent functions (*Hoitsch et al.* 2006, 69; *Chrobok et al.* 2007, 103; *Diederichs* 2004, 70), so that many risks are not adequately accounted for in the managerial planning and control cycle. Additionally, a clear concept on exactly how risk controlling is supposed to be integrated into controllership in German business is still missing (*Chrobok et al.* 2007, 103; *Ernst & Young* 2007, 28; *Denk et al.* 2006, 9, 33; *Hoitsch et al.* 2006, 77). Even though since 1998 a substantial body of literature on risk management in Germany dealing with isolated issues in risk controlling exists, a comprehensive suggestion on the integration of risk controlling in controllership is still missing.

Regarding these considerations, our paper follows two objectives.

(1) First, a conceptual framework for an integrated risk controlling as part of controllership will be derived from the existing body of literature on controllership as well as on risk management. Based on the traditional concept of German controllership, such a risk controlling function is supposed to support decision-making and control in the managerial risk management process. The importance of the integration of risk controlling into controllership is implied by the fact, that the overwhelming majority of listed companies in Germany now describe risk management as part of the group controllers’ responsibilities (*Ernst & Young* 2006, 16) instead of e.g. the internal auditor’s department.

(2) Second, we will give an empirical assessment to which extent such an integrated risk controlling has already been implemented in German business practice by reviewing empirical studies from 2003 – 2007 on this subject. It is shown that the intensity of integration of risk controlling into controllership is still relatively low (*Ernst & Young* 2007, 8; *Hoitsch et al.* 2006, 72), so that many organizations might benefit from suggestions in this area.

We restrict our paper to the field of operational risk management in non-financial businesses, as the management of financial risks is in German organizations not part of the controller’s activities but included in the treasurers’ task. Additionally, business practice in financial risk management – as well as in the financial services industries – is distinctly different from operational risk management, as risks can easily be transferred on other parties by using capital markets, e.g. via derivatives. However, the framework developed in this paper might be trans-

ferred to the financial services industries regarding operational risk management (*Bühler* 1998, 206; *Winter* 2007, 178).

Our paper is organized as follows. In section 2, the theoretical background of risk management and risk controlling is presented and embedded in the specifics of controllership in German-speaking countries. In section 3, the conceptual framework for an integrated risk controlling is presented based on the literature on risk management and risk controlling. Section 4 presents a literature review on the empirical status-quo of risk controlling and controllership in German businesses. Section 5 closes the paper with a summary and some concluding remarks.

2 Theoretical background on risk management and risk controlling in Germany

2.1 Risk management as integral part of the management function

Any firm must determine its 'risk appetite' (*Gai/Vause* 2006, 168), i.e. define the amount of risk that it is willing to undertake. Risk management therefore comprises not only the identification of uncertainties that may have a negative impact on a firm's profitability and shareholder value goals, but also the implementation of managerial actions to restrict any excessive amount of risk that is incurred by the firm's activities (*Diederichs* 2004, 12-14).

Therefore, risk management cannot be implemented as an isolated function that is carried out independently from managerial decision-making and control. Virtually all managerial decisions not only lead to a given action, e.g. the launch of a new product or the design of a contract with a supplier or customer, but also yield in a given amount of risk that has to be taken into consideration. Additional risk may also stem from developments after an action has been taken, e.g. the unforeseen entry of a new competitor on the firm's markets. In the latter case, risk is an impulse for additional managerial decision-making that has to be coordinated with the firm's strategic as well as operating goals.

Since business risk is inseparably connected with managerial action, the risk management system has to be integrated as a sub-system into the managerial planning and control cycle (*Lazanowski* 2006, 28). In the literature, the underlying risk management process is typically divided into the steps risk identification, risk evaluation, risk aggregation, risk handling and risk monitoring (*Heinen* 1966, 59; *Pollanz* 1999, 394; *Burger/Buchhart* 2002, 29;

Schorcht/Brösel 2005, 16). This process is accompanied by other elements, i.e. the determination of the risk philosophy, of the risk strategy and of the risk policy as well as the implementation of a corporate risk culture and the monitoring of the risk management itself (*Steinle et al.* 1997, 364; *Burger/Buchhart* 2002, 27). Figure 1 (e.g. *Scharpf* 1997, 740; *Lück* 1998, 1926; *Weber et al.* 1999, 1712) summarizes these considerations.

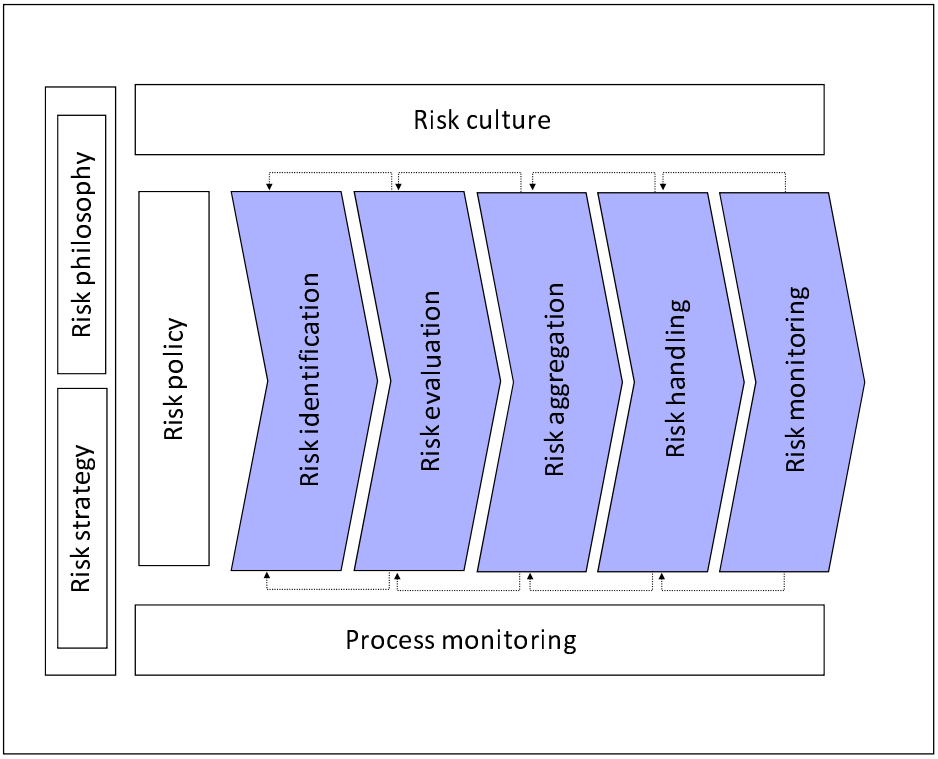

Figure 1: Elements of a risk management system

2.2 Risk controlling as managerial support function

In German business practice, controllership comprises the controllers' tasks in providing managerial decision support. More formally, this implies that in the decision-making process controllers ex ante measure and evaluate the possible courses of action that a manager can choose and ex post provide the appropriate performance measures.

Applying this formal understanding of controllership conceptually on risk controlling implies that risk controlling has to provide support for any risk-related decision-making by either evaluating the existing risks in itself or by giving a comprehensive evaluation of a risky action including the uncertainty of outcome. This makes measuring and evaluation tasks in all steps of the risk management process necessary (*Horváth/Gleich* 2000, 114; *Rudolph/Johanning* 2000, 18; *Bühler* 1998, 214).

With respect to the controllers' roles, it is not only required that they provide the risk-relevant information to the managerial decision-makers, but also that they accompany the risk management process itself as navigators to help the firm's decision-makers to achieve the desired risk position (*Hornung et al.* 2000, 157; *Schorcht/Brösel* 2005, 28; *Burger/Buchhart* 2002, 58). As risk and risk management is necessarily inherent to any managerial action, risk controlling therefore cannot be a separate set of tasks besides the controllers' traditional responsibilities, but has to be integrated into controllership so that all risk-related aspects included in the decision-making and control process are considered in an appropriate fashion.

2.3 'House of Controlling' as representation of the functional structure of controllership in German companies

To embed risk controlling into the firm's controllership (*Hoitsch et al.* 2005, 126; *Diederichs/Richter* 2001, 137; *Mikus* 2001, 70; *Weber* 2000, 1934) we use the 'House of Controlling' as a basic theoretical structure describing the typical features of controllership in German organizations (*International Group of Controlling/Weißenberger* 2006, 21; *Lutz* 2007, 104).

Essentially, the House of Controlling (see figure 2) consists of three parts. The 'foundation' of the House of Controlling is the controllers' role as information providers as well as counterparts or consultants in the process of managerial decision-making and control. Only if controllers fill both roles, they are able to achieve their mission that consists in designing and accompanying the managerial planning and control cycle and thus being co-responsible for achieving the firm's strategic and operating goals (*International Group of Controlling* 2005, p. 53).

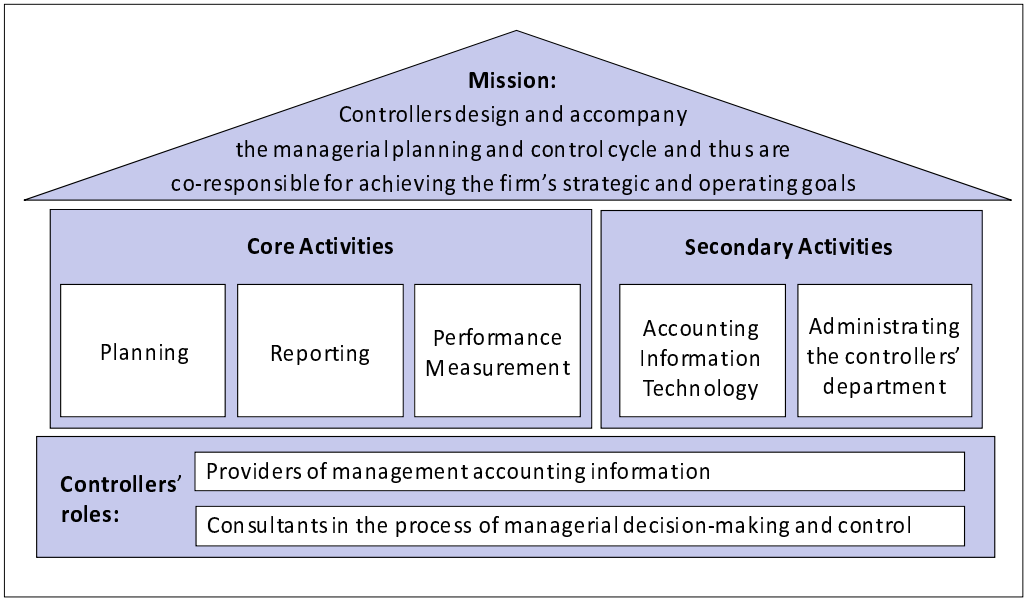

Figure 2: House of Controlling

The connecting link between the controllers' roles and their mission consists in the functional activities attributed to them. Controllers' core activities comprise the planning function, the reporting function and the firm's performance measurement (e.g. *Roehl-Anderson/Bragg* 2004, 12-13). Secondary activities cover the conceptual management of the necessary accounting information technologies as well as the administration of the controller's department (e.g. *Roehl-Anderson/Bragg* 2004, 777, 913).

With regards to the *planning* function, controllers are responsible for the preparation of operating budgets as well as for providing managerial decision-support in the tactical or strategic planning process and in the field of project planning. For monitoring purposes within the planning process, controllers provide forecast information that are used for feed-forward purposes.

The controllers' *reporting* function comprises all tools and procedures that are used to present information for decision-making and control purposes to the management. External reporting is typically not part of controllership in German companies, but belongs to the financial accountants' task. Nevertheless, under IFRS internal risk-related information is used for financial accounting purposes as well, so that the controllers' reporting function has become more extensive.

In the field of *performance measurement*, controllers provide managers with the necessary profitability measures for decentralized control purposes. Ex ante, these performance meas-

ures are used as incentives e.g. for a decentralized manager of a business unit so that the actual performance monitoring ex post only has a feed-back purpose.

Apart from these core activities, controllers have to make sure that the necessary *accounting information technologies* are implemented so that the relevant accounting information and other ratios required in the decision-making and control process are provided. Finally, controllers have to *administrate the controllers' department*, i.e. they have to implement an efficient as well as effective organizational structure for controllership purposes.

3 Integrating risk controlling into controllership: A conceptual framework

In most papers that deal with risk controlling on a conceptual basis, the functional structure is only discussed with reference to the risk management process (*Burger/Buchhart* 2002, 56-59; *Schorcht/Brösel* 2005, 23-27; *Diederichs/Richter* 2001, 137-138). Even though this approach might be helpful as a first step, it does not give an in-depth insight into how risk controlling is to be integrated into controllership. Only few papers take this view (e.g. *Winter* 2006; *Torok/Wood* 2006; *Mikus* 2001; *Helten* 1984), but the discussion is limited to isolated aspects of risk controlling.

In this section, we attempt to develop a comprehensive risk controlling framework by integrating both the basic risk management process with the controllers' activities representing the core of controllership (see figure 3).

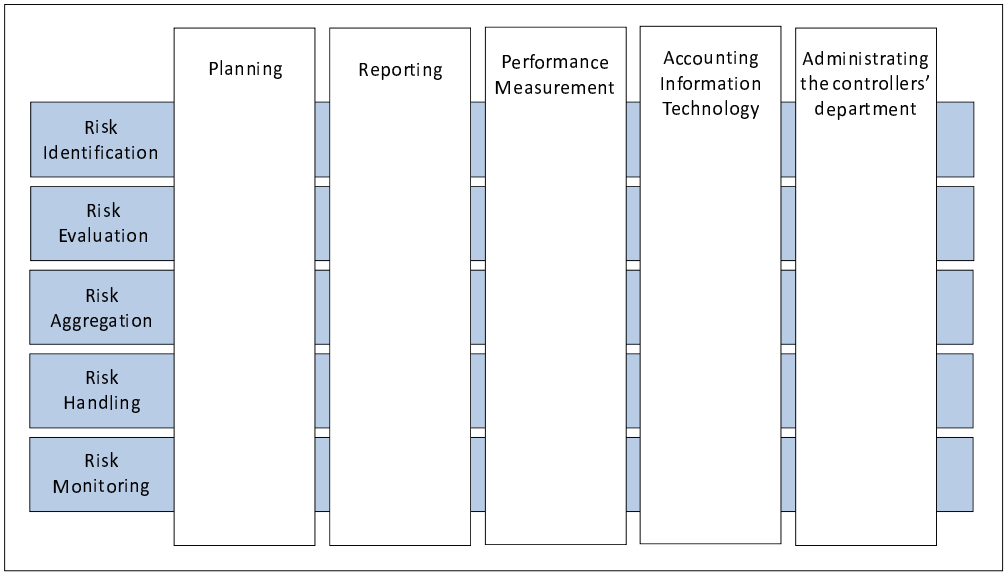

Figure 3: Systematic integration of risk controlling into controllership

From a systematic point of view, we will follow along the five activities mentioned above that constitute controllership and discuss how each of these activities is to be adapted with regards to the risk management process. This makes clear that typically no specialised 'risk controller' has to be employed, but the controllers integrate the support of the risk management process into their activities.

3.1 Integration of risk controlling into the planning function

The planning function represents a significant action field for the integration of risk controlling into controllership since risks are causal to plan deviations and thus the amount of risk incurred always refers to a given planning position. Therefore, the firm's risk position cannot be planned in an isolated fashion, but is an inherent result of the planning process (*Lazanowski* 2006, 100; *Gleißner* 2005a, 2).

The firm's planning process typically consists of three inter-linked time levels, i.e. strategic, tactical and operating planning. Additionally, the regular planning cycles which are typically implemented on a yearly basis, are complemented by project plans for singular activities. The resulting matrix structure of the planning process – time levels vs. regularity – constitutes the theoretical structure for the integration of risk controlling.

Starting with the regular planning cycle, the strategic planning process defines the strategic positioning of a firm, setting the framework for the tactical planning (mid-term development plan) and the short-term operations plan/budget. It relies on the identification of strategic success potentials as well as the firm's core competences, which serve as a basis for the strategy formulation. Typical instruments used in the strategic planning process are scenario techniques, SWOT-analyses, the balanced scorecard or – as a strategic information system for feed-forward monitoring purposes – early-warning systems. Since these instruments explicitly deal with the uncertainties of the managerial choice of action regarding profitability and shareholder value goals, any risk-related instrumental measures can be easily integrated.

For example, the results of the SWOT-analyses identifying strategic weaknesses and threats to the firm can be integrated into the strategic risk inventory for risk identification purposes. The same applies for the risks identified by the early-warning system, which is explicitly required as a risk management instrument by the KonTraG. Additionally, the key ratios used in the different perspectives of a firm's balanced scorecard as well as the underlying strategy

map may not only be used to identify the relevant risks as well as the interaction between these risks but also to track these risks during the firm's strategic planning cycle (*Homburg et al.* 2005, 1069-1072).

The explicit consideration of business risks in the strategic planning process has several advantages. First, the strategic planning becomes more effective as the planning dimensions now comprise not only divisional, regional or functional activities but also important business risks (*Hoeve/Schweizer* 2001, 110). Second, the risks included into the strategic planning process can be aligned with the risk controlling database so that any gaps or redundancies are easily identified (*Vogler/Gundert* 1998, 2382). Finally, the integration of risk controlling in the strategic planning process may even serve to identify competitive advantages, e.g. if business risks can be identified that can be incurred at lower costs compared to a firm's competitors (*Gates* 2006, 88; *Pritsch/Hommel* 1997, 685). Assuming that all risks are basically a result of strategic choices in the first place, the integration of risk controlling into the strategic planning process is of principal importance.

The tactical planning process serves as a link between the strategic and operating planning by translating the rather qualitative strategic goals into quantitative mid-term objectives that may serve as cornerstones for the operating planning and budgeting process. Typical mid-term objectives concern profitability measures (EBIT, EAT), cash flows, capital expenditure, sales volumes or number of employees (*Hirsch et al.* 2005, 253). The integration of risk controlling into the tactical planning process mainly deals with a risk-oriented coordination of these objectives. Another focus is put on risk interaction, i.e. some risks may counter-balance each other, e.g. in the case of product diversification, but some risks may amplify, e.g. if two divisions are dependent on the same supplier. A comprehensive coverage of these interactions in the course of the tactical planning process improves the risk aggregation as part of the risk management process.

In the context of the operating planning process, the integration of risk controlling mainly regards the variance analyses resulting from the comparison of actual or forecast data with planned values (*Shenkir/Walker* 2006, 38; *Gates* 2006, 88). As e.g. the assumptions behind the budgeting process are assessed in the light of the variance analyses, the results can be used on a feed-forward basis not only to evaluate future operating risks more precisely (*Gleißner* 2005a, 5) but also to set more realistic risk-adjusted goals and budgets in future planning rounds.

Additionally to the regular planning cycle, risk controlling also has to be integrated into the project planning process for singular activities.

Projects with a dominant strategic perspective are, for example, merger & acquisition (M&A) projects. If controllers are included in the M&A-process, they will receive a more extensive and reliable insight into the risk structure of the potential management purchase and management alliance. This allows for risk interaction with other, already existing business areas being included into the evaluation of the target object and preventing over-excessive purchase price premiums. In consequence, the integration of the risk controlling may lead to an improved effectiveness of the M&A-process (*Keller* 2002, 44, 99; *Schmitting* 2005, 271-276). Additionally, the risk information generated in the M&A-process may later on be used in the regular planning cycle.

Tactical project planning often deals with investment planning. Decentralized business units submit their investment plans to the group controllers' department that prepares a proposal to the CEO/CFO regarding the firm's capital expenditure (*Pedell* 2004, 6; *Hoeve/Schweizer* 2001, 113). The traditional evaluation methods for investment projects are often marked by assumptions, whose fulfilment seem realistic only in the rarest cases; an appropriate risk estimation of the project itself or of the interaction with other investment projects is often missing (*Lehner* 2005, 4). In addition to these conceptual gaps, an insufficient risk consciousness can be observed with the business managers that are responsible for the realization of an investment project once it has been approved. Typical mistakes are prioritizations based on technical possibilities instead of long-term profitability criteria, wilful ignorance of undesired developments or over-optimistic estimations of the project's progress (*Tödtmann* 2007, 1).

An effective risk controlling as part of the investment planning takes steps against these dysfunctional developments by monitoring the ongoing validity of the profitability assumptions behind the project approval. If these assumptions cannot be met, the underlying reasons indicate business risks that have to be included in the companies risk inventory (*Berger/Gleißner* 2007, 67).

Operating project planning occurs for example in industries with high-volume make-to-order production which implies discontinuities regarding incoming orders, a low degree of repetition and standardisation potential and extensive variances in the budgeting monitoring process (*Troßmann/Baumeister* 2004, 75). Additionally, in these industries risks also stem from the financing and payment modes as well as from prolonged guarantee periods. Warranty claims,

which may occur a long time after completion of a product can, for example, incur high costs. These and other identified risks have to be evaluated during the operating project planning with respect to the price calculation as the negotiated prices have to cover an appropriate but still competitive risk premium.

Summarizing the basic gains from integrating risk controlling into controllership with regards to the planning process, the guidelines can be identified:

- Gaps and redundancies regarding risk identification are already identified in the strategic planning process. The types and levels of risk a firm is taking becomes part of the chosen strategic position.
- Interactions between different risks are taken into consideration, so that a valid evaluation and aggregation of risks is supported and appropriate risk handling actions can be chosen.
- Risk-oriented variance analyses as a monitoring tool identify the ex post validity of the assumptions behind the planning process and supports feed-forward learning for future risk assessment.
- Risk-adjusted price calculation supports the risk compensation e.g. in the case of make-to-order production.

3.2 Integration of risk controlling into the reporting function

Controllers are mainly responsible for the internal management reporting procedures, ensuring that necessary information for decision-making and control is provided on a regular scheduled or – if necessary – on an unscheduled basis (*Vogler/Gundert* 1998, 2382; *Burger/Buchhart* 2002, 177).

Traditionally, standard management reports do not provide explicit risk information, but describe planned/forecast values as if under certainty. However, for risk identification as well as monitoring purposes, the existing business risks have to be included into the management reports.

Even though operational risks have not necessarily to be quantified for these reporting purposes, a categorization according at least to high/medium/low realization probability is essential. Thus, information on significant changes of important business risks is given. Additionally, the total risk position has to be described in an appropriately aggregated fashion depend-

ing on the hierarchical level of the management report. For example, a report to the head of a division would indicate the risk position of the division and not take inter-divisional risks – which may interact on a higher hierarchical level – into account.

This presupposes, among other things, the bottom-up consolidation of the risk reports provided by decentralized controllers. In inter-company supply chains, a vertically integrated risk reporting e.g. identifying risk interactions among the different members of the supply chain may also support a coordinated risk management approach (*Pedell 2004*, 8; *Seiter* 2006, 577).

If the probability increases that a risk will be realized i.e. affect the firm's profitability and shareholder value goals in a fashion that exceeds a pre-determined threshold, a report outside the scheduled reporting cycle is triggered to initiate immediate risk handling actions. Examples may be the sudden loss of an important customer or a product liability suit (*Vogler/Gundert* 1998, 2382; *Burger/Buchhart* 2002, 178).

Regarding the regulatory compliance demands made e.g. by the KonTraG, the BilReG or the DGCK in Germany, a reporting interface between the risk reporting as a part of the management reporting system and the financial statements, mainly the management discussion and analysis (MD&A, called 'Lagebericht') is necessary. The controllers therefore are providers for relevant as well as reliable information on business risks to the financial accountants that can be disclosed to investors without leading to strategic competitive disadvantages, thus supporting the firm's disclosure strategies (*Freidank/Steinmeyer* 2005, 2515; *Kajüter/Winkler* 2003, 217).

In addition to the compulsory risk report required in the MD&A, firms may choose to give voluntary information on business risks or on the changes of risk position as well. Such a disclosure strategy necessarily relies on an effective risk reporting as part of the controllership as well and may lead to a reduction of the costs of capital, thus increasing the firm's shareholder value (*Diederichs* 2006, 387; *Gates* 2006, 88).

In summary, regarding the integration of risk controlling into the reporting function follows two guidelines:

- Integration of business risks as well as the changes in risk position aggregated in an appropriate fashion into the regular management reporting procedures induces managerial learning and instigates the required risk handling with regards to the firm's desired risk position.

- A comprehensive risk reporting is necessary for financial disclosure purposes, supporting not only the firm's disclosure policies but also creating potentials for the reduction of costs of capital, if the overall business risk position is reduced.

3.3 Integration of risk controlling into performance measurement

Performance measurement as the third of the core activities constituting controllership is particularly relevant in decentralized organizations. In this field of activities, controllers support central managers, e.g. the CEO, to identify performance measures for local managers, e.g. division managers, and to set ex ante appropriate performance targets. Regarding the firm's shareholder value goals, especially on the level of division management value based performance measures like EVA, CVA or RoCE, which include cost of capital as a performance target, play an important role. On lower hierarchical levels, e.g. in cost or profit centers, budgets, revenue or EBIT targets are a typical basis for financial performance measurement implemented by controllers.

The relevance of risk controlling in the field of performance measurement depends on the amount of local decision-making and the risks a local manager may thus incur in behalf of the firm. In many firms, some of the bigger risks are excluded by centralised compliance instructions that e.g. prohibit certain types of transactions or investments, thus restricting the local choices of action. A centralized approach is especially efficient if there are risk interactions between local managers, e.g. if both managers implement a single-sourcing strategy with a low cost provider which causes a disproportionate risk to the firm as a whole regarding the risk of delivery default (*Pedell* 2004, 6).

Nevertheless, not all risks can be managed centrally if at least some decisions remain delegated to local units. Besides, this would not be an efficient strategy, if one assumes that e.g. a division manager has better information on the local business and its inherent risks compared to the CEO (*Wohland/Wiemeyer* 2006).

Integration of risk controlling into performance measurement therefore implies that the locally chosen risk handling is in line with the firm's risk policy and target risk-position. This requires first that a variable pay-per-performance scheme is implemented even if the local manager is risk averse. Otherwise, the local manager would be indifferent between choosing a high-risk vs. low-risk course of action.

Some authors propose the adaptation of financial performance measures for risk controlling purposes, e.g. choosing risk-adjusted ratios like RoRAC (return on risk-adjusted capital) for evaluating divisional profitability (*Winter* 2007, 366-368). Conceptually, RoRAC shows the (expected) gain per unit of risk capital, with the latter being determined via value-at-risk concepts (*Viemann* 2005, 377; *Homburg/Stephan* 2004, 317; *Albrecht* 1998, 239). However, as an effective performance measurement requires a reliable profitability evaluation, such ratios are only viable if risk can be measured in an objective fashion. This is often the case with financial risks, but very rarely with operational business risks. Additionally, it can be shown that the adequate choice of risk position can also be achieved in a different way, e.g. by using conservative accounting measures that recognize unrealized losses but not unrealized gains and therefore put more weight on risks than on possible opportunities (*Wagenhofer* 1996).

Second, costs of capital – as any other profit target – have to be adjusted with regards to the local level of business risk. If local managers act in different industries and/or business models, then the individual risk profiles can deviate significantly from each other due to the industry-specific economic environment (*Hachmeister* 2006, 146). In this case, a company-wide homogeneous rate of capital costs would lead to wrong decisions, because business areas with a lower risk position compared to the firm's overall risk position would be charged with too high costs of capital resulting in an under-investment problem, and vice versa (*Arbeitskreis Finanzierung* 1996, 550).

Nevertheless, determining an appropriate level of divisional costs of capital often proves to be difficult, especially if the divisions do not act independently on capital markets. Information on the divisional risk profile provided by the risk controlling may then help to determine a suitable risk-adjusted divisional rate of capital costs (*Freygang* 1993, 253-258; *Hahn/Hungenberg* 2001, 164; *Arbeitskreis Finanzierung* 1996, 552-558; *Gleißner* 2005b).

Finally, divisional performance measurement also depends on the transfer prices used for inter-divisional transactions. Set in an appropriate fashion, transfer prices lead to efficiency gains through 'fictitious' competitive pressure (*Ewert/Wagenhofer* 2005, 577; *Beißel* 2005, 124, 135). However, negotiations on transfer prices between local managers often are controversial. While the manager of the selling division prefers a high transfer price including a risk premium for price risks, production risks or delivery risks, the manager of the buying division favours a low transfer price including a discount e.g. for his own production or resale risks (*Pfaff/Stefani* 2006, 517). An appropriate transfer price must take both risk positions into account (*Beißel* 2005, 127, 131), if the optimal transaction volume is to be induced between

both divisions (*Kley* 2001, 268). This can be achieved by including controllers into the negotiation process providing the relevant business risk information

Summarizing the core features of integrating risk controlling into performance measurement results in the following guidelines:

- Delegation of decision-making necessarily gives the local managers freedom to choosing a risk position that may not be in line with the firm's overall choice of risk level. Central restrictions e.g. excluding certain transactions may alleviate this problem.
- To set an incentive for local managers to choose an adequate risk position, variable pay-per-performance systems have to be implemented even if the agent is risk averse. This is in line with the existing guidelines for designing performance measurement systems.
- Ratios that rely on direct risk measurement, e.g. RoRAC, are usually not suitable for controlling operating risks, as such risks cannot be measured in an objective fashion.
- On a divisional level, costs of capital have to be risk-adjusted to the local risk profile to ensure the appropriate investment levels.
- Transfer prices negotiated with other divisions affect a division's performance and therefore the division manager's bonus. To realize the optimal transaction volume from a central perspective, the transfer price must cover the risks of both the selling and buying division.

3.4 Adaptation of the accounting information technology with reference to risk controlling

Due to the task variety in the controllers' core activities and the complexity of existing accounting data sets, the efficiency and effectiveness of controllers' core activities depend on the support by modern accounting information technology (IT). The main components of the relevant accounting IT consist in enterprise resource planning (ERP) systems, data warehouses and management information systems (*Samtleben/Hess* 2006, 604). ERP systems encompass a firm's operations including the generated paperwork and map all current business transactions into a homogeneous database. To allow for time series analyses of accounting data, the ERP data are extracted from this database on a regular basis and, subsequently to consolidation and harmonizing processes, saved in a data warehouse together with data from

other internal and external sources. Thus, all information for decision-making and control, independently from the format and structure of their primary origin, are pooled and made available for reporting purposes as well as decision-specific analyses in a standardized fashion, which are provided by management information systems (*Friedl et al.* 2005, 211; *Samtleben/Hess* 2006, 603; *Wall* 2007, 485). As can easily be seen, the more the different components of the accounting information technology are integrated on a technical as well as functional basis, the more efficient as well as effective is the resulting support for planning, reporting and performance measurement purposes (*Samtleben et al.* 2006, 86).

Since risk management makes the processing and analysis of a huge amount of data necessary, the accounting IT has to be adapted for risk controlling purposes as well (*Gleißner/Romeike* 2005, 154; *Diederichs/Kaminski* 2003, 703). Concerning the ERP systems, this presupposes that all risk-relevant criteria, e.g. region, customer, supplier or risk category, are entered whenever a transaction takes place, allowing later for analyses whether a given risk position has changed, e.g. because the firm has become dependent on a small group of customers. This requires an ex ante identification of the relevant risks and the resulting transaction criteria.

Concerning the accounting IT as a whole, the processing of risk amounts, risk probabilities and risk correlations should be possible. Additionally, the registration of risk handling instruments, frequencies and findings of feed-forward monitoring as well as additional risk information resulting from external data sources should be supported (*Gleißner/Romeike* 2005, 155; *Diederichs* 2001, 114). In that case, the risk-adjusted data warehouse represents an information pool which is homogeneously saving not only all extracted standard information, but also risk-specific data provided by the risk controlling (*Samtleben et al.* 2006, 89).

The main advantage of such a data warehouse lies in detaching the implicit knowledge of the knowledge carrier, allowing for fast and timely risk information research, avoiding inconsistent or redundant data, and providing relevant risk information in its entirety to all business units and functions (*Lazanowski* 2006, 108).

Summarizing the guidelines for adapting the accounting information technology for risk controlling purposes results in the following statements:

- The accounting information technology used by controllers consists in integrated ERP systems, data warehouses and management information systems. For risk controlling purposes, risk-relevant data have to be saved and processed in all three components.

- Accounting IT appropriately adapted for risk controlling purposes yields a higher measure of accuracy, completeness and timeliness of the risk management process due to data availability.
- Individual risk reports, generated by management information systems, increase in quality since they contain risk-related information relevant for managerial decision-making and control.

3.5 Administrative aspects of risk controlling

Apart from the accounting IT systems, the integration of risk controlling into controllership also affects the administration of the controllers' department. Risk controlling is to be embedded into the operational and organizational structure of a company, so that the effective execution of the risk management process is ensured and the successful perception of the integration advantages is realized (*Diederichs* 2004, 203).

First of all, the institutional integration of risk controlling into the controllers' department is to be realized. Even though for specific risk management instruments an individual specialization within the controllers' department, e.g. within the central or group controllers' department, may be efficient (*Burger/Buchhart* 2002, 268-271; *Lazanowski* 2006, 156-158), the controller co-operating with local managers is supposed to cover all risk-relevant advice and valuation techniques. Alternatively, central controllers specializing in risk management instruments may also be associated with other central functions, e.g. risk management. However, in that case the dotted-line-principle of subordination should be used, i.e. the controller is disciplinary associated with the risk management department, but technically integrated into the central controllers' department. While the technical assignment to the central controllers' department, which is responsible for the controllership, facilitates the perception of the represented integration benefits due to a close coordination of both departments, the disciplinary assignment to the risk management department increases the acceptance of the controller's work (*Lazanowski* 2006, 155).

In the context of embedding risk controlling into the process organization, it is particularly to be taken care of that activities of risk controlling are integrated into the strategic, tactical and operating planning processes, as well as to reconcile them with each other in a timely and technical manner (*Gates* 2006, 88; *Burger/Buchhart* 2002, 273; *Vogler/Gundert* 1998, 2379). Since risk controlling makes its consulting and information providing services available also

to other business departments (e.g. the M&A department, *Lazanowski* 2006, 156), it is of prime importance that in the course of the cooperation occurring interface problems get minimized. In this context, behavioural aspects come to the fore, e.g. a customer-oriented attitude of cooperation as well as an ability to moderate risk-specific discussions to a consensus between the involved business managers (*Gates* 2006, 88).

Finally, controllers that are responsible for the risk controlling activities, must possess an appropriate personal profile. Even though several requirements of this profile can be derived by the general controllers' profile (e.g. professional competence, knowledge of foreign languages, analytic intelligence, communication and team ability as well as other soft skills; *Borchers/Trebes* 1999, 24), further risk-specific requirements (e.g. strongly developed competence in the area of statistic, mathematic and economical informatics) are to be considered in the profile formulation.

In summary, the administrative and behavioural oriented integration of risk controlling into the controllers' department leads to the following guidelines:

- In a central controllers' department or another function, e.g. the risk management department, certain employees might specialize on risk controllership. In the latter case, a dotted-line subordination to the controllers' department is recommended.
- Independent of such a specialization, the line controlling towards the business managers nevertheless covers overall controllership issues including risk controlling.
- By taking behavioural aspects into consideration, controllers fill their roles of consultants and information providers for risk-related decision-making and control more effectively.

4 Empirical findings on the integration of risk controlling into controllership in Germany from 2003 - 2007

4.1 Database of the review

The empirical research on risk controlling in non-financial industries is a very young research area (*Hoitsch et al.* 2006, 69). However, since 2003 several authors have collected empirical evidence on the design of risk management respectively risk controlling systems in Germany. The objective of the following review is to provide a synthesis of the empirical status-quo as a

contrast to the theoretical framework presented in section 3. Table 1 summarizes the 16 studies that have been identified from 2003 to 2007.[1]

A first glance indicates that in the recent past a generally increased interest to the topic of risk management / risk controlling can be observed, since alone 10 of the 16 studies (63%) have been published in the years 2006 and 2007. Most studies analyse an extensive sample of companies (48 to 1.103 companies / average: 230 companies[2]) either by questionnaire or by analysis of published business documents; only in one study (*Hoitsch/Winter/Bächle* 2005) an in-depth analysis based on structured interviews is conducted.

No.	Year	Author	Title	Methodology	Sample (usable responses)
1	2003	Henschel	Risikomanagement im Mittelstand. Eine empirische Untersuchung	Study based on a questionnaire	266 companies (16%)
2	2003	KPMG	Risikomanagement in deutschen Unternehmen. Ergebnisse der Umfrage über den Status von Risikomanagement-Systemen und deren Beitrag zur Unternehmenssteuerung	Study based on a questionnaire	1,103 companies (17%)
3	2003	Kajüter/Winkler	Die Risikoberichterstattung der DAX100-Unternehmen im Zeitvergleich. Ergebnisse einer empirischen Untersuchung	Document analyses	Evaluation of the business reports of 81 quoted companies
4	2004	Diederichs	Risikomanagement und Risikocontrolling	Study based on a questionnaire	55 companies (22%)
5	2004	Kajüter/Winkler	Praxis der Risikoberichterstattung deutscher Konzerne	Document analyses	Evaluation of the business reports of 81 quoted companies
6	2005	Hoitsch/Winter/ Bächle	Risikokultur und risikopolitische Grundsätze. Strukturierungsvorschäge und empirische Ergebnisse	Study based on a questionnaire and structured interviews	10 companies (33%)
7	2006	Hölscher/Giebel/ Karrenbauer	Stand und Entwicklungstendenzen des industriellen Risikomanagements. Teil 1: Ergebnisse einer aktuellen Studie der Technischen Universität Kaiserslautern	Study based on an online questionnaire	138 companies (7%)
8	2006	Denk/Exner-Merkelt/Ruthner	Risikomanagement im Unternehmen	Document analyses	Evaluation of the business reports of 48 quoted companies
9	2006	Hoitsch/Winter/ Baumann	Risikocontrolling bei deutschen Kapitalgesellschaften. Ergebnisse einer empirischen Untersuchung	Study based on a questionnaire	111 companies (24%)
10	2006	Seiter	Risikomanagement in komplexen Unternehmenskooperationen	Study based on a questionnaire and structured interviews	572 companies (10%)
11	2006	Krystek/Herzhoff	Szenario-Technik und Frühaufklärung: Anwendungsstand und Integrationspotenzial	Study based on a questionnaire	75 companies (27%)
12	2007	Winter	Risikocontrolling in Nicht-Finanzunternehmen. Entwicklung einer tragfähigen Risikocontrolling-Konzeption und Vorschlag zur Gestaltung einer Risikorechnung	Study based on a questionnaire	111 companies (24%)
13	2007	Hölscher/Giebel/ Karrenbauer	Stand und Entwicklungstendenzen des industriellen Risikomanagements. Teil 2: Ergebnisse einer aktuellen Studie der Technischen Universität Kaiserslautern	Study based on an online questionnaire	138 companies (7%)
14	2007	Berger/Gleißner	Risikosituation und Stand des Risikomanagements aus Sicht der Geschäftsberichterstattung. Ergebnisse einer empirischen Studie im Überblick	Document analyses	Evaluation of the business reports of 137 quoted companies
15	2007	Ernst&Young	Ernst&Young Best Practice Survey "Risikomanagement 2006". Ergebnisse einer repräsentativen Studie über die Weiterentwicklung wertorientierter Risikomanagementsysteme	Study based on a questionnaire	85 companies (17%)
16	2007	Kajüter/Esser	Risiko- und Chancenberichterstattung im Lagebericht. Eine empirische Analyse der HDAX-Unternehmen	Document analyses	Evaluation of the business reports of 92 quoted companies

Table 1: List of empirical studies on risk management / risk controlling included in the review

[1] With the exception of one German-speaking study, that analysed business reports of companies in Austria (*Denk/Exner-Merkelt/Ruthner* 2006), all the above listed studies analysed companies in Germany. Since the structure of Austrian and German companies is definitely comparable, we involved that Austrian study in our review.

[2] As three studies (3/5, 6/12 and 7/13) refer to the same subsample they are counted only once.

4.2 Risk controlling in the planning process: Status-quo

Regarding status-quo of risk controlling with respect to the planning process, empirical evidence indicates that the degree of integration is rather low. *Hoitsch et al.* (2006, 72) show that 31% of the surveyed firms rate their integration level as average, while further 8% even state that they do not undertake any integration activities at all. Merely 18% of the respondents judge their integration activities to be complete. These results are supported by two further studies. *Ernst & Young* (2007, 8) state that nearly 35% of the surveyed entities do not have a planning system that is effectively integrated into the risk controlling process, whereas on the other hand 29% state a complete integration. *Henschel* (2003, 334) comes to similar results for small and medium-sized enterprises, according to which merely a third of the respondents integrate their planning process directly with the risk controlling activities. The remaining two thirds respondents do not integrate risk controlling and planning process.

Regarding the use of risk controlling instruments in the strategic planning process, apart from a qualitative evaluation of risks, sometimes also a quantification is necessary, e.g. for risk aggregation purposes or for estimate a purchase price in the course of a due diligence. Nevertheless, significant deficits have been noticed for the use of qualitative instruments of risk evaluation as well as for the application of analytic evaluation methods (*Krystek/Herzhoff* 2006, 307-310; *Winter* 2007, 210; *KPMG* 2003, 21; *Ernst & Young* 2007, 18; *Hölscher et al.* 2006, 153.

Similar deficiencies can be found regarding the integration of risk controlling into the area of tactical planning. 40% of the firms, that have been included in the empirical sample by *Ernst & Young* (2007, 21), state that they do not use an explicitly project-referred risk management or risk controlling for significant and even critical projects, apart from the common project management. However, 70% of the sample firms hold the opinion that an effective and efficient risk management has a high respectively very high relevance for reaching project targets.

With respect to the integration of risk controlling into the operating planning activities, only few empirical findings exist so far. Nevertheless, some conclusions can be drawn on the basis of two studies analyzing the frequency of risk identification and evaluation in business practice. For example, 60% of the enterprises that have been analysed by *Diederichs* (2004, 81), carry out a risk evaluation in regular up to three-month intervals; with merely 33%, this happens only once a year. With regard to risk information adjusting frequencies between the de-

partments of risk management and corporate planning, *KPMG* (2003, 15) find that 45% of the sample firms carry out a quarterly to monthly adjusting. Both results support the notion that even though a close risk monitoring in the operating planning cycle is not implemented, at least in the yearly operating planning process risk controlling is integrated.

From an overall perspective this result is not satisfactory. As most business risks originally are rooted in strategic and/or tactical decisions, even a sufficient integration of risk controlling in the operating planning process cannot compensate the deficiencies on the higher planning levels.

4.3 Risk controlling in the reporting process: Status-quo

Regarding the internal management reporting process, *Diederichs* (2004, 83) finds that 90% of the firms included in his sample have implemented risk-related reporting elements. This result is contradicted by *Hoitsch et al*. (2005, 130), who find that in merely 40% of the responding DAX-30-firms the internal risk reporting is integrated into the standard reporting system. However, the results of the study conducted by *Winter* (2007, 208) give heed to the assumption that the degree of integration of risk reporting into the regular management reporting system increases, since at least 57% of the surveyed firms own a strongly to very strongly integrated risk reporting system and merely 11% do without an integration.

Additionally, in *Diederichs'* (2004, 84) sample 80% of the surveyed firms use unscheduled risk reporting elements if necessary. This is confirmed by *Winter* (2007, 207), who finds that 74% of the firms included in his study use threshold values for unscheduled risk reporting. The effectiveness of these reporting elements however is to be questioned, as merely 40% of the firms analysed by *Diederichs*, take a serious deterioration of key figures as an occasion for unscheduled reporting.

Finally, with respect to risk reporting in firm networks and supply chains, *Seiter* (2006, 577, 579) shows that the inter-organizational communication quality represents the most significant influence factor for decreasing behaviour risks. The result indicates that risk reporting for intra-organizational purposes should not solely be organized along the vertical hierarchy lines, but should also include horizontal risk reporting in order to improve inter-divisional and inter-functional cooperation on the same hierarchy level.

With a look at the external risk reporting, several empirical studies (*Kajüter/Winkler* 2003; *Kajüter/Winkler* 2004; *Denk/Exner-Merkelt/Ruthner* 2006; *Berger/Gleißner* 2007; *Ka-*

jüter/Esser 2007) investigate the publication of risk-referred information in the business areas of listed firms from 1999 to 2006. These studies find unanimously, that the extent of risk reporting in the financial statements not only has constantly increased after the enactment of the KonTraG in 1998, but also that the formal disclosure on business risks has improved. This especially holds for the DAX-30-firms (*Kajüter/Winkler* 2003, 219-228). Additionally, a positive correlation between the adoption of IFRS and a more detailed disclosure of business risks in the MD&A can be observed (*Kajüter/Winkler* 2004, 252).

Nevertheless, despite the quantitative and formal improvements of risk disclosure in the firms' financial statements, risk reporting is still marked by extensive deficiencies. Apart from information on the firm's risk strategy and the design of the internal risk management system, more detailed information on the firm's major risks as well as risk position is lacking in many cases. Also information on the risk interactions required by DRS 5 and IDW PS 340 as well as on the total risk position of the enterprise based on the overall risk aggregation, is often not meaningful or even completely missing (*Berger/Gleißner* 2007, 65; *Kajüter/Esser* 2007, 386-388).

Voluntary disclosure of risk information may lead to decreased costs of capital, e.g. due to favourable credit rating. According to *Ernst & Young* (2007, 10) half of the firms surveyed in 2006 name the improved credit ratings as explicit target of the risk management. Whether this leads to improved risk disclosure policies has not yet been analysed. Nevertheless, until 2004 firms giving voluntary risk information rather remained an exception. (*Hoitsch et al.* 2005, 131).

4.4 Risk controlling and performance measurement: Status-quo

Integrating risk controlling into performance measurement has not been a detailed subject of empirical studies so far. However, 8% of the firms analysed by *KPMG* (2003, 21) outside the financial sector state that they use risk-adjusted performance measures like value-at-risk, cashflow-at-risk or RoRAC; a comparable result is given by *Hoitsch et al.* (2006, 71).

Nevertheless, only 48% of the *KPMG* sample analyse cause-effect relations in the risk-monitoring process (*KPMG* 2003, 9, 19). Additionally, *Diederichs* (2004, 80) finds that 64% of the responding firms solely carry out an isolated risk estimation, which prevents the identification of possible risk interactions. Both results indicate that there are grave deficiencies re-

garding risk identification, evaluation and aggregation which would all be necessary to adapt divisional profitability targets according to the local risk level.

4.5 Risk controlling and accounting information technology: Status-quo

The adaptation of accounting information technology (IT) for risk controlling purposes has also not yet been analysed empirically to a broad extend, as the surveys we identified only give sporadic and indirect information. *Hölscher et al.* (2006, 154) find out, that only 20% of the sample firms have implemented a standardized IT-based recording of realized risks. This result points either to an insufficient risk-specific adaptation of ERP systems and/or a missing integration of the overall accounting IT. *Ernst & Young* (2007, 14) confirm for 40% of the analyzed firms a lacking adaptation of ERP systems for risk controlling purposes.

This seems to be contradicted by *Diederichs* (2004, 89), who states that 75% of the surveyed firms indicate that risk controlling is supported by information technologies. But having a closer look, the majority of these firms merely uses Microsoft standard software (Excel) instead of risk-specific adapted advanced accounting IT. Thus, the so-called IT support for risk controlling purposes is implemented in rather simple, inefficient and isolated fashion prone to errors. This is corroborated by *KPMG* (2003, 22) who find that missing IT-interfaces represent a significant problem in the practice of risk controlling IT support. Additionally, data warehouse applications do not seem to be realizable for 80% of the firms analysed.

4.6 Risk controlling and administration of the controllers' department: Status-quo

Regarding to the integration of risk controlling into the organizational structure of controllership, *Winter* (2007, 206) states that 40% of the surveyed firms have established a position and/or a department called 'risk controlling'. In that case, 39% of the firms subordinated this department to the central controllers' department, 17% to a central risk management department. 27% of the firms try to deal with the disadvantages that result to such a one-sided subordination by falling back on a matrix-type organization and by subordinating the risk controlling to both controllers' department and risk management.

However, it is to be considered critically, that merely 21% of the firms with an institutionalized risk controlling department actually let the respective tasks, that we have conceptually identified as being the core of risk controlling, be carried out by that department. In practice,

even if a risk controlling department exists, it is rather responsible for risk management, so that risk controlling in the conceptual sense of the meaning still has to be carried out by the central controllers' department. This gives head to the question whether the central controllers' department has enough capacities to effectively fulfil all necessary tasks if risk controlling is taken only as an additional, but secondary responsibility. *Hölscher et al.* (2007, 5), assume that this is the reason for the deficient integration of risk controlling into the strategic planning process.

Regarding the effectiveness of risk controlling, *Hölscher et al.* (2007, 5) find out that only 19% of the firms analysed have implemented an altogether well-arranged risk management, whereas the remaining 81% are marked by an insufficient or even lacking risk management. This implies that the tasks regarding the management of the planning and control cycle which are also underlying part of the controllership are not fulfilled with respect to risk-related issues. This notion is also supported by *KPMG* (2003, 21) who state that merely 6% of the firms surveyed carry out a regular monitoring of risk developments and the subsequent risk handling.

Once again, we assume that this is due to deficiencies in the integration of risk controlling in the controllers' department. This alarming tendency is emphasized by the results of *Ernst & Young* (2007, 15), according to which merely 47% of the analysed firms integrate risk-related elements into the existing controlling systems.

Finally, there exist no empirical findings to the requirement profile of controllers dealing with risk-related issues so far. On the other hand, some general results have been found regarding training measures in the area of risk controlling. *Diederichs* (2004, 72) states that almost two thirds of the responding DAX-30-firms carry out trainings in the field of risk controlling and even 80% hold risk-specific workshops. However, additional training measures for the deeper risk understanding, such as seminars or case studies and the use of special learning software in the form of web-based-trainings (WBT), are only used in the fewest cases of the analysed enterprises.

5 Summary and conclusions

In the last decade, the relevance of risk management has gained importance in Germany, due to firms' increasing risk exposure as well as to regulatory pressure. A function often mentioned in this context is 'risk controlling'. Based upon the common understanding of control-

lership – a collective expression of the controllers' tasks – 'risk controlling' is an integral part of controllership acting as a support function in decision-making and control for managerial action under risk.

In spite of its relevance, a comprehensive concept on exactly how risk controlling is to be integrated into controllership is yet missing in theory as well as in business practice, even though a broad body of literature deals with both functions. Our paper therefore attempts in a first step to comprise the theoretical literature on risk controlling to a conceptual framework on the integration of risk controlling into controllership, using the basic structure of the 'House of Controlling' which subdivides controllership into the core activities planning, reporting and performance measurement as well as the secondary activities implementation of accounting information technology and administration of the controllers' department. In a second step, sixteen empirical studies on risk management and risk controlling in German organizations from 2003 to 2007 are reviewed with respect to the empirical evidence on the conceptual framework we developed.

We find, that even though some indications for an integration of risk controlling into risk management can be found, there still exist grave deficiencies regarding all fields of controllers' activities. We assume that these deficiencies not only reduce controllership effectiveness regarding risk-related decision-making and control, but also represent a risk in themselves as insufficient risk management and controlling may hinder firms in achieving their profitability and shareholder value goals.

An important step in future research would be analysing the degree of integration in the field of risk controlling and relating it to (risk) management effectiveness. We put forward the hypothesis that the degree of integration of risk controlling into controllership has a positive impact on managerial effectiveness variables. However, as our review on the empirical status-quo of risk controlling shows, there is a rather low degree of variance in the degree of integration of existing risk controlling systems into controllership which makes it difficult to examine the validity of the hypothesis put forward by extensive standardized questionnaire investigations. A next stage would therefore be the in-depth analysis of firms' risk controlling with qualitative research methods, e.g. expert interviews, so that in the course of a case-oriented research strategy the risk controlling as research object can be examined as thoroughly as possible allowing for a direct access to the causal mechanisms behind risk controlling and managerial effectiveness.

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