Franz Michael Fischer

The Application of the Controllability Principle and Managers' Responses

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WHU – Otto Beisheim School of Management, Vallendar.

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A Role Theory Perspective

With a foreword by Prof. Dr. Utz Schäffer

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RESEARCH

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Foreword

The starting point of Franz Fischer's dissertation thesis is the long-established claim to hold people accountable only for what they can control. Whereas early publications take the application of the so-called controllability principle as a matter of course, subsequent works justify the principle's application with the help of psychological or social psychological findings: The violation of the controllability principle is supposed to have negative motivational effects and thus decreases managers' effort on the job. Recently, however, doubts have been raised about the principle's meaningfulness. Also, empirical studies show that the principle is frequently not applied in corporate practice. In short: We do not have satisfactory knowledge about the effects of the principle's application or nonapplication on managers' mental models and their behavior. At the same time, we recognize that the question of whether or not to apply the principle is a major issue for management control in organizations of all sizes.

In view of this, Franz Fischer's dissertation thesis contributes to existing literature in at least three ways: First, Franz Fischer successfully adopts a role theory perspective in the investigation of cognitive, affective, and behavioral consequences of (not) applying the controllability principle in managers' performance evaluation. Thus, he demonstrates that role theory enriches a stream of literature that has so far been dominated by motivational theories. Second, he introduces a new conceptualization and operationalization of the application of the controllability principle which depict this latent variable as a second-order construct. Third, Franz Fischer does not restrict his empirical study to the investigation of mechanistic relationships between the (non)application of the controllability principle in managers' performance evaluation on the one hand and their perceptions and work behavior on the other. He rather draws a more sophisticated conclusion: Franz Fischer reveals that the relationships between the (non)application of the controllability principle and its affective and behavioral implications are mediated by managers' role perceptions. He also shows that the relationships between the (non)application of the controllability principle and these mediating variables are additionally moderated by organizational factors and personality factors, i.e. managers' hierarchical level and their self-efficacy.

Together with further findings delineated in this work, Franz Fischer's dissertation thesis is highly conducive to academic research in the field of management accounting and control. It also contains several practical implications and suggestions. For these reasons, I hope that the dissertation thesis will be well received by a large circle of readers and that it stimulates further research on this topic. If this did not happen, it would be a pity.

Utz Schäffer

Preface

The politician Woodrow T. Wilson is known to have said: “I not only use all the brains that I have, but all that I can borrow”. It is my firm conviction that such an approach is not only beneficial to the work of great political minds but, more generally, adds value to any intellectual endeavor. In fact, I rather intensively borrowed the brains of others while writing my dissertation thesis “The Application of the Controllability Principle and Managers’ Responses: A Role Theory Perspective”. And I did not only borrow the brains of others, but also their commitment, devotion, patience, and encouragement. For this, I would like to give credit to all of them.

First and foremost, I would like to thank my doctoral supervisor and academic mentor Prof. Dr. Utz Schäffer. At many stages in the course of my dissertation project I benefited from the resources he made available to me and, more importantly, from his advice and guidance, particularly so when developing my research questions and hypotheses. His positive attitude, open-mindedness towards new ideas, and clear trains of thought inspired me and made the dissertation project a rewarding experience. At the same time, I would like to thank Prof. Dr. Andreas Hackethal who was kind enough to undertake the secondary review of my dissertation thesis demonstrating an unusually high level of involvement and interest.

Several others have contributed to my dissertation thesis in one way or another. To name only a few, I would like to thank Dr. Michael Burkert, Dr. Augustin Kelava, Prof. Dr. Pascal Langevin, Dr. Martin Messner, Dr. Clemens Pelster, Prof. Dr. Bob Scapens, Prof. Dr. Karin Schermelleh-Engel, and Prof. Dr. Dr. h.c. Jürgen Weber for their ideas, suggestions for improvement, discussions at doctoral workshops and conferences, feedback to my working papers, and their general interest in my topic. I also owe thanks to Sebastian Becker, Danijela Fischer, Gerhard Fischer, Maria Fischer, and Rüdiger Schmidt who all read this dissertation and contributed much helpful advice concerning its linguistic quality, layout, and style. Furthermore, I would like to thank the office managers Angela Molinari and Sabine Petrakakis as well as the research fellow Stevan Lutz who numerously assisted the administrative side of my work in a very professional and friendly manner.

I further want to express my gratitude to several colleagues at the European Business School (EBS). Sebastian Becker, Marc Ehrenberg, Kerim Galal, Dr. Christian Gessner, Dr. Philipp Götting, Yvonne Kiefer, Dr. Carsten Kruchen, Dr. Rainer Lueg, Dr. Marius Mann, Dr. Philip Matlachowsky, Eike Perrey, Nico Rose, Christian Schürmann, Dr. Joachim Vogt, and Elmar Wyszomirski created an enjoyable and, at the same time, stimulating working environment

with many of them having become true friends. Their helpfulness, sense of humor, and honesty have a large share in making my dissertation project an unforgettable experience.

Apart from great friends and colleagues, my utmost thanks go to my family. My wife Danijela Fischer was at any moment willing to grant me the necessary freedom to finish my dissertation thesis and supported me in such an amicable way for which I will always admire and love her. My parents Gerhard and Maria Fischer, my sister Luisa Fischer, and my uncle Dr. Helmut Steinsdorfer always had a sympathetic ear for my everyday research problems, helped me to stay focused, and constantly supported me throughout my academic career without asking for anything in return. This dissertation thesis is, therefore, dedicated to my family.

Franz Michael Fischer

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List of Abbreviations

AGFI	Adjusted goodness-of-fit index
AVE	Average variance explained
BBE	Brutto-Betriebsergebnis
CEO	Chief executive officer
CFA	Confirmatory factor analysis
CFI	Comparative fit index
CTT	Classical test theory
EBIT	Earnings before interest and tax
EFA	Exploratory factor analysis
EVA	Economic value added
FR	Factor reliability
df	Degrees of freedom
GFI	Goodness-of-fit index
GLS	Generalized least squares
HR	Human resources
IR	Indicator reliability
IT	Information technology
JIT	Just in time
LISREL	Linear structural relationship
MA	Management accounting
MAS	Management accounting system
MBA	Master of business administration
MbO	Management by objectives
MCS	Management control system
MIMIC	Multiple indicators and multiple causes
ML	Maximum likelihood

NPM	New public management
PEP	Performance excellence process
PLS	Partial least squares
PM	Performance measure
RAPM	Reliance on accounting performance measures
RMSEA	Root mean square error of approximation
RPE	Relative performance evaluation
RQ	Research question
R&D	Research and development
SEM	Structural equation modeling
S-O-R	Stimulus-organism-response
SPMS	Strategic performance measurement system
Std. dev.	Standard deviation
Std. er.	Standard error
TQM	Total quality management
VHB	Verband der Hochschullehrer für Betriebswirtschaft e.V.
VIF	Variance inflation factor
yrs.	Years

A Introduction

“The effectiveness of performance measurement systems will depend on how they affect individuals’ behavior” (Chenhall & Langfield-Smith, 2007, p. 277)

1. Motivation and Objective

The controllability principle stipulates that managers should be held accountable only for what they can control (Atkinson, Kaplan, Matsumura, & Young, 2007, p. 588; Bhimani, Horngren, Datar, & Foster, 2008, p. 488). Mostly regarded as a normative principle (Bourguignon & Chiapello, 2005, p. 686), it is intuitive and well-accepted throughout management accounting literature (Merchant & Otley, 2006, p. 793). Due to its importance in the design of management control systems (MCSs) the controllability principle has even been termed one of the strongest maxims in management accounting (Merchant & Van der Stede, 2007, p. 33; Simons, 2007, p. 1).

At first glance, the application of the controllability principle seems to be in the interests of both the organization and the managers evaluated (Giraud, Langevin, & Mendoza, 2008, p. 32). From a corporate perspective, the adherence to the controllability principle is supposed to circumvent dysfunctional managerial behavior (Dent, 1987, p. 135; Magee, 1986, p. 337; Marginson & McAulay, 2001, pp. 2-3; Merchant, 1989, p. 130) and to facilitate reliable assessment of managerial performance (Choudhury, 1986, pp. 189-190; Merchant, 1989, p. 87). Similarly, the striving for fairness in their performance evaluation should lead managers themselves to desire the controllability principle to be applied (Atkinson et al., 1997, p. 84; Hartmann & Slapničar, 2007, pp. 7-8).

Notwithstanding, several empirical studies find that the controllability principle is rarely applied in practice (Bushman, Indjejikian, & Smith, 1995; Dent, 1987; Drury & El-Shishini, 2005; Giraud et al., 2008; Merchant, 1987; 1989; Otley, 1990; Ugras, 1994; Vancil, 1979). Managers are rather often confronted with performance evaluation practices that are based on a mismatch of responsibility and authority. In the light of these findings, doubts on the appropriateness of the controllability principle arise (Choudhury, 1986, pp. 196-197; Giraud, Langevin, & Mendoza, 2004, p. 33; Simons, 2007, p. 3). However, management accounting researchers have just begun to investigate the rationale and the effect of holding managers accountable for more than they can control. There is growing evidence that organizational interests often lead superiors and designers of performance evaluation systems to intentionally include uncontrollable factors in appraisals (Drury & El-Shishini, 2005, pp. 22, 35-37; Fremgen & Liao, 1981, pp. 7, 21-23; Merchant, 1989, pp. 105-107; Simons, 2005, pp. 94-153; Skinner, 1990, pp. 136-140). Apart from organizational interests, high degrees of complexity and uncertainty in modern business contexts represent practical constraints that often render it impossible to separate controllable from uncontrollable factors (Hartmann, 2000, p. 472; Merchant & Manzoni, 1989, p. 541). Marginson and Ogden (2005b, p. 49) therefore conclude that "the principle of controllability is more honoured in the breach than its observance".

Notably, the behavioral responses of managers confronted with breaches of the controllability principle are apart from initial case study insights still barely explored (Drury & El-Shishini, 2005, pp. 45-46; Giraud et al., 2008, p. 34; Shields, Deng, & Kato, 2000, p. 198). As it is their responses that eventually determine the principle's importance for the effective design of MCSs, further research is warranted here (Marginson & Ogden, 2005b, p. 49). The lack of empirical research in this area was already highlighted by McNally (1980, p. 165) three decades ago: "The 'principle of controllability' has attracted widespread support in accounting, however examinations of its desirability or necessity . . . have been limited. Consequences of not observing [the principle] . . . are related topics which have been rather neglected". Since then management accounting research on the controllability principle has made only little progress (Drury & El-Shishini, 2005, p. 3; Simons, 2007, p. 3) and, accordingly, we do not have satisfactory insights into the drawbacks or merits of holding managers accountable for more than they can control. Addressing this research gap, this study aims in the first place to investigate the effects of the principle's application (and therewith also its nonapplication) on behavioral outcomes. Correspondingly, the first research question is:

Research question 1: Does the application of the controllability principle have an effect on managers' behavior?

Apart from behavioral responses, this study intends to investigate managers' affective responses (i.e. the experience of feeling and emotion) to the inclusion of uncontrollable factors in their performance appraisals. Despite the voluminous research on accountability in general (Lerner & Tetlock, 1999, p. 255; Merchant & Otley, 2006, p. 792) and performance evaluation in particular (Hartmann, 2000, p. 451; Neely, Gregory, & Platts, 2005, p. 1228), there is surprisingly little and inconclusive research on managers' psychological well-being when faced with the nonapplication of the controllability principle in performance evaluation.

Again, one finds some empirical evidence from case study research which indicates that breaches of the controllability principle seem to induce discomfort and tension (Dent, 1987, pp. 133-135; Merchant, 1989, pp. 103-104; Simons, 2005, p. 94). The intuitive assumption that managers would always desire to have the controllability principle applied, however, is questionable. On the contrary, managers are sometimes even reported to find a lack of controllability positively challenging and a source of motivation (Budding, 2004, p. 301; Frow, Marginson, & Ogden, 2005, pp. 288-289; Giraud et al., 2008, pp. 40-41). For this reason, the second research question extends the scope of this study by an affective dimension:

Research question 2: Does the application of the controllability principle have an effect on managers' psychological well-being?

In an effort not only to identify but also to explain the relationships between the application of the controllability principle and the above outcomes, this work proposes managers' role perceptions as potential mediators (Kahn, Wolfe, Quinn, & Snoeck, 1964, pp. 55-96; Parker, Wall, & Jackson, 1997, pp. 900-901; Rizzo, House, & Lirtzman, 1970, pp. 155-162). It is suggested that the application of the controllability principle does not directly affect behavioral and affective responses. This study rather adopts the view that the effects are indirect in nature and operate through cognitive constructs. Individuals are thought to process and to reflect on environmental stimuli before they respond to them (Robbins, 2003, pp. 145-146). Such a view is in agreement with other contemporary management accounting studies investigating related effects of MCSs on behavioral and affective outcomes (Burney, Henle, & Widener, 2009; Burney & Widener, 2007; Hall, 2008; Marginson & Bui, 2009; Nouri & Kyj, 2008). The inclusion of mediators which transmit the influence of an antecedent to a consequence has a long tradition in behavioral research (Ajzen, 1991, p. 179; James & Brett, 1984, p. 307; Tetlock, 1985, pp. 300-301) as it serves a better understanding of the underlying mental mechanisms (Baron & Kenny, 1986, p. 1176). In detail, this work integrates the classical constructs of role conflict and role ambiguity (Rizzo et al., 1970, pp. 155-162) as well as the recently developed construct of role orientation (Parker, 2007, pp. 404-407). The third research question addresses the potential relevance of these mediating variables:

Research question 3: Do managers' role perceptions mediate the proposed relationships between the application of the controllability principle and managers' behavior and psychological well-being?

Additionally, this work examines the existence of moderating effects in order to assess the strength of the above relationships across different contexts and types of managerial personality. As indicated in prior studies on performance evaluation (Giraud et al., 2008;

Marginson & McAulay, 2001; Ross, 1994) and role stress (Gilboa, Shirom, Fried, & Cooper, 2008; Jackson & Schuler, 1985; Schuler, 1977; Viswesvaran, Sanchez, & Fisher, 1999), organizational factors, personality factors, and interpersonal relations are likely to have an influence on the relationships under investigation. Generally, many scholars in the field of organizational behavior call for an increased attention to potential moderators when conducting research that incorporates role perceptions (Elovainio & Kivimäki, 2001, p. 366; Ilgen & Hollenbeck, 1991, p. 199; Örtqvist & Wincent, 2006, p. 416). The intended investigation of such moderating effects is reflected in the fourth research question:

Research question 4: Do organizational factors, personality factors, and interpersonal relations moderate the proposed relationships between the application of the controllability principle and managers' role perceptions?

From a theoretical perspective, the outlined research is embedded in a role theory framework (Kahn et al., 1964; Kahn, Wolfe, Quinn, & Snoeck, 1966; Katz & Kahn, 1966; 1978). Role theory states that the building blocks of any organization are the roles assigned to its members. For every role in the organization there are expectations which the incumbents of those roles are confronted with and which influence their perceptions, affectivity, and behavior. In the context of this study, it is argued that the design of performance evaluation systems and in particular the application or nonapplication of the controllability principle can be interpreted as such role expectations. These expectations come from the representatives of organizational interests (i.e. superiors and designers of performance evaluation systems) and translate into role forces which act upon the role incumbents (i.e. managers whose performance is being evaluated). Role theory predicts that role incumbents will respond to the role forces imposed on them and engage in various coping efforts which can imply both affective and behavioral symptom formation. Due to its focus on the subjective perception of organizational realities and its emphasis on the causal interplay of cognition, affectivity, and behavior (Ilgen & Hollenbeck, 1991, p. 203), role theory represents a meaningful framework for studying managers' responses to the application of the controllability principle (Collins, 1982, p. 119; Frink & Klimoski, 1998, p. 21).

To summarize, this work intends to shed empirical light on the relationship between the application of the controllability principle and several individual outcomes. The underlying motivation is a lack of empirical research in this field: "Managers' position regarding the controllability principle is not as clear as it seems and needs further investigation" (Giraud et al., 2008, p. 33). This study contributes to existing literature on the controllability principle in three ways. First and foremost, it pioneers in the utilization of role theory to investigate the cognitive, affective, and behavioral consequences of applying the controllability principle in managers' performance evaluation. Second, the impact of several contextual variables on the basic relationships is investigated, which results in the development of moderated mediation models. Third, from a methodological point of view, this work introduces a new measurement scale for the application of the controllability principle that operationalizes this variable as a second-order construct (Bisbe, Batista-Foguet, & Chenhall, 2007, p. 805) and integrates the construct in its nomological net. The resulting causal frame of reference for this work and the corresponding research questions are summarized in Figure 1:

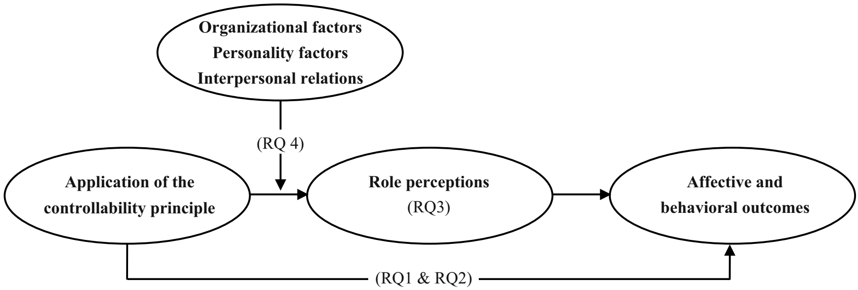

Figure 1: Causal Frame of Reference

2. Course of Analysis

This work is split into three consecutive sections (see Figure 2). The first section (parts B, C, and D) includes the theoretical basis of this work. It reviews existing literature on the controllability principle, introduces role theory and, on this basis, develops testable hypotheses. The second section (parts E and F) refers to the empirical research which has been conducted to test the proposed hypotheses. It presents the methodological conception of this work as well as the corresponding empirical results. The third and final section (parts G and H) contains a discussion of the empirical results and some concluding remarks.

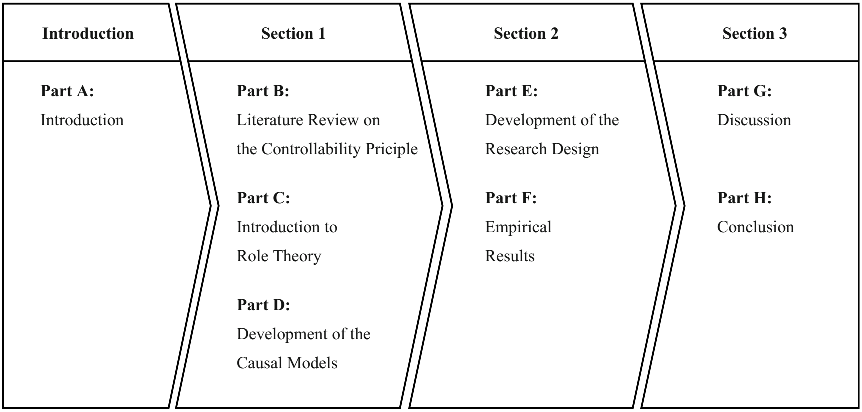

Figure 2: Course of Analysis

The controllability principle is the central theme of this work. It represents the starting point for the reasoning in the following chapters which is why part B provides an in-depth elaboration of the principle and its research tradition. In particular, part B contrasts the principle's rationale with its application in practice.

Since this work relies on role theory for developing hypotheses, part C gives an overview of the theory, its key concepts, and the basic causal relationships predicted by the theory. As can be learned in this part, formulations of role theory vary across the several social sciences which have employed the theory. For the purpose of this study, the role theory framework developed by Kahn et al. (1964; 1966) and Katz and Kahn (1966; 1978) is used since it is this version of role theory that has had a profound influence on behavioral management accounting research during the last decades.

The insights from parts B and C are vital for the development of this study's hypotheses in part D. Several direct and indirect relationships between the application of the controllability principle and managers' cognitive, affective, and behavioral responses are proposed. Also, an exploratory set of research questions is generated in order to allow the testing of potential moderating effects.

Part E details the research design chosen to test the proposed hypotheses. It outlines this study's mixed-methods approach which combines semi-structured interviews with 12 managers and a questionnaire survey among 432 managers. Such an approach focuses on method triangulation, for which a number of calls have been made in recent management accounting literature (Hopper & Hoque, 2006, p. 482; Modell, 2005, p. 232; Shields, 1997, p. 10). In addition, part E highlights this study's contribution in terms of the successful development of a new survey instrument to measure the application of the controllability principle.

The empirical results of this study are presented in part F. It commences with the descriptive statistics for all variables used in later analyses. Subsequently, the hypotheses advanced in part D are tested. For this purpose, structural equation modeling (SEM) employing a linear structural relationships (LISREL) approach is used (Jöreskog & Sörbom, 2001).

Parts G and H discuss the empirical results and summarize the study's main contributions to management accounting theory and practice. This also encompasses a critical evaluation of the controllability principle's relevance for the design of performance evaluation systems. Suggestions for a more expedient application of the principle are also made. Finally, part H presents some notes on this study's limitations and gives an outlook on promising directions for future research addressing these very limitations.

B Literature Review on the Controllability Principle

Today, the controllability principle appears throughout the management accounting literature (Merchant, 1985, p. 21). Historians trace the origin of the principle back to the founding of American railroads. Charles Perkins, who was president of the Chicago, Burlington, and Quincy Railroad in 1885, is quoted with the following statement: “It is obvious that to hold a manager responsible for results it is necessary to give him pretty full power over the property which he must use to produce those results” (Chandler, McCraw, & Tedlow, 1996, p. 26). At that time, companies were confronted for the first time with the problem of managing people who worked at considerable distance from central executive offices (Simons, 2007, p. 2). With companies being structured into decentralized and autonomous divisions, questions arose as to the best way to control such organizations (Sloan, 1963, p. 46). Results control instead of direct supervision of behaviors and the corresponding management by objectives (MbO) school of thought (Odiorne, 1965) gained in importance (Giraud et al., 2004, p. 3). It is Solomons (1965, p. 83) who closely relates the controllability principle to the decentralization of business operations. In the course of the devolution of authority to make decisions, he recommends that “in appraising the performance of divisional management, no account should be taken of matters outside the division’s control”. It appears that the application of the controllability principle is particularly relevant when organizational decision-making becomes decentralized (Chenhall & Langfield-Smith, 2007, p. 267; Modell & Lee, 2001, pp. 191-192). More generally, Merchant and Van der Stede (2007, p. 33) argue that any indirect form of control requires that “the employees whose behaviors are being controlled must be able to affect the results in a material way in a given time period”. This leads to the core of the controllability principle which is often depicted to play a decisive role in the struggle for organizational effectiveness and managerial motivation (Kennedy & Schleifer, 2006, p. 126; Merchant, 1998, p. 583; Otley, 2006, pp. 299-300).

Having briefly highlighted the history of the controllability principle, the following chapters of part B provide an overview of extant literature on the principle. First, the research streams that deal with aspects of controllability are introduced in chapter B1. Chapter B1 also outlines a variety of definitions of the controllability principle originating from the different research streams as to demonstrate that notions of controllability may vary and depend on the respective school of thought. In the following, chapters B2 and B3 review the key findings from prior research. While chapter B2 describes the theoretical rationale of the controllability principle, chapter B3 contrasts the principle’s rationale with its application in practice. Chapter B3 concludes with some remarks on the seeming contradiction between the principle’s theoretical rationale and its observed relevance for company practice.

1. The Conceptual Scope of the Controllability Principle

1.1 The Controllability Principle in Different Research Streams

To foster a comprehensive understanding of the controllability principle, it is first advisable to acquaint oneself with the main research streams that either implicitly or explicitly deal with aspects of controllability. For this purpose, the current chapter introduces three relevant research streams (management accounting, administrative science, and psychology) and briefly refers to the different disciplines and schools of thought from which they originate.

1.1.1 Management Accounting

Certainly, the field of management accounting represents the primary source of insight when addressing the controllability principle. The principle was first mentioned in management accounting literature by Solomons (1965) in his work on the divisionalization of US companies. Meanwhile the controllability principle is an integral part of virtually all management accounting textbooks (e.g. Atkinson et al. (2007, p. 581), Bhimani et al. (2008, p. 488), or Merchant and Van der Stede (2007, p. 32))[1]. As such, it is usually addressed as being vital for systems of responsibility accounting (see also chapter B2.1) which refers to the various concepts and tools used to measure the performance of people and work units in order to foster goal congruence in organizations (Hilton, 2008, p. 502). Within the field of management accounting, there is both an analytical and an empirical research stream focusing on the controllability principle (Giraud et al., 2008, pp. 33-34). Both start from a traditional normative formulation of the principle and attempt to either (a) gather evidence that (at least partially) supports the principle (e.g. Hopwood (1972), Lawler and Rhode (1976), Ronen and Livingstone (1975), or Merchant (1989)), (b) refine the principle (e.g. Merchant (1987), Antle and Demski (1988), or Banker and Datar (1989)), or (c) test its practical application (e.g. Bushman et al. (1995) or Giraud et al. (2008)).

1.1.1.1 Analytical Management Accounting

This stream of literature employs analytical modeling to conduct research on the controllability principle. Its proponents draw predominantly on agency theory (Jensen & Meckling, 1976; Levinthal, 1988; Pratt & Zeckhauser, 1985). Broadly speaking, agency

1 Similarly, the controllability principle is also covered in most German management accounting textbooks, see e.g. Ewert and Wagenhofer (2005, p. 380), Küpper (2005, p. 246), or Weber and Schäffer (2008, p. 248). Though a single, generally accepted translation for the term controllability principle has not been established in the German literature. Instead, the terms “Beeinflussbarkeitsprinzip”, “Verantwortlichkeitsprinzip”, “Kongruenzprinzip”, and “Prinzip der sachlichen Entscheidungsverbundenheit” are used (Pelster, 2007, p. 16).

theory is directed at the ubiquitous agency relationship in which one party delegates work to another who performs that work (Eisenhardt, 1989a, p. 58). Typically the owners of a company are called principals in agency models. The term agents refers to the managers who are engaged to perform work on behalf of the principals and who receive compensation in return. Hence, corporate management can be considered to be the agents of the company's shareholders, and, throughout the organizational hierarchy, subordinate managers can be seen as the agents of their respective superiors (Jensen & Meckling, 1976, p. 308; Merchant & Simons, 1986, p. 188; Milgrom & Roberts, 1992, p. 214).

In order to solve incentive problems in the design of MCSs, agency theory relies on the application of economic principles and tools of organizational control (Lambert, 2001, p. 4). Deliberations based on the agency theory paradigm thereby generally strive for "maximizing behavior on the part of all individuals" (Jensen & Meckling, 1976, p. 307). The agency problem can thus be thought of as maximizing a weighted combination of the expected utilities of the principals and the agents (for a mathematical formulation see e.g. Lambert (2001, p. 12)). According to Jensen and Meckling (1976, p. 308), the agency costs related to incentive problems are the sum of (a) the monitoring expenditures by the principals, (b) the bonding expenditures by the agents, and (c) the residual loss which refers to the monetary reduction in welfare experienced by the principals due to the divergence between the agents' decisions and those decisions which would maximize the principals' welfare, given the optimal monitoring and bonding activities by the principals and the agents. These costs occur at every level of the company and are generally non-zero (Jensen & Meckling, 1976, p. 328).

As agency costs most notably depend on contracts, agency theory considers organizations as "legal fictions which serve as a nexus for a set of contracting relationships among individuals" (Jensen & Meckling, 1976, p. 310). Against this background, agency theory often claims to address the generality of the incentive problem: How can the contracts within a company induce agents to behave as if they were maximizing the principals' welfare? This motivation arises from the theory's underlying assumption that the motives and the behavior of individuals operating in a company differ. It is most likely that agents choose actions and decisions which are not in accordance with the principals' objectives. This is due to the characteristics and utility functions of agents which are specified as follows: agents are risk- and effort-averse, their utility functions are additively separable in utility from compensation and disutility from effort, and they select effort levels that maximize their expected utility (Frederickson, 1992, p. 651). The principals, on the contrary, are commonly assumed to be risk-neutral and their expected utilities are simply the expected net profits of the company (Lambert, 2001, p. 9).

Within agency models, a small set of variables is typically used to explore the conditions that maximize the expected utilities of the principals and the agents and to describe the characteristics of principal-agent relationships and the environments in which they function (Merchant & Simons, 1986, p. 188). To assess the quality of particular contract designs, agency theory refers to the so-called first-best solution where actions are chosen cooperatively with all individuals' interests in mind and all reports issued truthfully (Lambert, 2001, pp. 11-12). The agents' opportunism and the asymmetry of information thereby pose two of the main challenges in agency models. As the agents' actions cannot always be observed by the principals, incentive problems which are referred to as moral hazard or hidden actions (Macintosh, 1994, pp. 32-33; Milgrom & Roberts, 1992, pp. 166-196) preclude first-best solutions and necessitate second-best solutions where only the outcome of the agents' actions is observable to the principals. Agency models strive to identify contracts which come as close to first-best solutions as possible (Holmström, 1979, pp. 76-80).

Facing the two central challenges of agents' opportunism and asymmetry of information, the agency models employed in management accounting research traditionally focus on the latter challenge: "Principal-agent modeling emphasizes information asymmetries in understanding responsibility accounting" (Demski & Sappington, 1989, p. 40). Among the agency-inspired management accounting publications on the controllability principle, the work of Antle and Demski (1988) represents the most frequently cited article (Pelster, 2007, p. 33). Offering a "refined version of the controllability principle", Antle and Demski (1988, p. 715) develop an information content perspective which is supposed to allow for a more precise notion of controllability (see chapter B1.2.2).

Even though agency research (for reviews see e.g. Baiman (1982; 1990), Prendergast (1999), and Lambert (2001)) represents one of the "most important theoretical paradigms in accounting during the last 20 years" (Lambert, 2001, pp. 3-4), the use of analytical models in management accounting research has met with mixed reception from academics. They often tend to dismiss such analytical models as irrelevant to the real concerns of managers in highly complex environments (Anthony, 1989, pp. 15-16; Baiman, 1990, pp. 344-345; Kaplan, 1984, pp. 404-405; Merchant & Otley, 2006, p. 787). The "simplifying assumptions" (Merchant, 1987, p. 318) of agency models cannot fully take the context of organizational settings into consideration. For example informal arrangements and understandings which are involved in many employer-employee relationships have been hardly addressed. It is also questionable if risk aversion is as important as classical agency models commonly suggest (Indjejikian, 1999, pp. 152-153). Similarly, labeling all motivation as self-serving does not adequately explain employee actions (Davis, Schoorman, & Donaldson, 1997, p. 24; Jensen & Meckling, 1994, p. 10). Next, especially early work inspired by agency theory focuses on only one control mechanism (e.g. incentive payments or supervisor monitoring) and tradeoffs or interactions among the types of control mechanisms are neglected (Merchant & Simons, 1986, p. 188). A lack of empirical tests of agency models is a further point of criticism (Baiman, 1990, pp.