Introduction
The financial crisis led to widespread calls for increased regulation to reform economic markets. Public opponents claim, however, that these markets are so complex that it is difficult to establish whether increased regulation alone will lower chances of future crises. They further contend that stringent regulation merely burdens compliance costs without changing the decisions of management boards fundamentally. This is problematic because upper management has ultimate decision power over firm strategies and needs to translate these strategies into tangible results (Adams, Hermelin & Weisbach, 2010). Scandals like the Libor case or the recent Volkswagen fraud and controversies about executive compensation plans indeed suggest that, despite a more regulated climate, top managers still make decisions that harm stakeholder’s interests and firm viability. Accordingly, there is an urgent need to investigate when regulation will influence upper management echelons and why.

To date, research is inconclusive about the influence of different regulating practices, such as codes, policies, guidelines, rules and laws (Kaptein, 2014), on management decisions (Tihanyi, Graffin & George, 2014). Scholars have therefore emphasized the importance of considering the social context in which these practices are embedded (Cummings & Anton, 1990; Treviño, 1986). For top managers this social context is largely determined by the relations they have with the main supervisory bodies who monitor them; the internal supervisory board within their firm and the external central market regulator outside their firm (e.g., DNB, Walsh & Seward, 1990).

Economic and psychological theories lead to opposing predictions about the influence of the two supervisory bodies on management decisions; whereas economists maintain that internal supervisory boards should be less influential than external regulators, psychologists propose just the contrary. The central goal of this project is to test a theoretical framework on how internal supervisory boards and external regulators influence top management decisions that helps resolve this debate.

I will rely on theories and methods from economics, management and psychology to reach my goal. This interdisciplinary research approach will offer a fundamental contribution to the discussion about the regulation of top management decisions. First, the findings will help the different disciplines to bridge their diverging theoretical perspectives on this topic. Second, the findings will have clear implications for institutions and policy makers on how the two supervisory bodies should position themselves in their monitoring role.

Theoretical Background
Extant theory development across economics, management and psychology reflects the relevance of studying top management decision making. At the firm-level, top management decisions are considered effective when they (a) maximize shareholder value or profit (b) meet customer interests and (c) ensure firm viability (Adams et al., 2010). Yet theories on agency conflict, strategic paradoxes and decision dilemmas predict that at the behavioral level, top managers experience competing pressures when attempting to meet these three goals simultaneously (Ross, 1973, Mitnick, 1975, Smith, 2014). Maximizing profits, for example, can be at odds with customer interests or viability demands (Margolis & Walsh, 2001). The unique context in which top managers operate (i.e., unpredictable, rich in resources and driven by profit-based incentive schemes) further strengthens these pressures (Wong, Ormiston & Tetlock, 2011; Keltner, Gruenfeld & Anderson, 2003).

Regulation of Top Management Decisions
Because top managers face decision dilemmas, scientists widely agree that regulation is needed to hold them accountable for their actions. Empirical evidence indeed demonstrates that regulating practices make client interests more salient (Lerner & Tetlock, 1999; Kaptein, 2014), help top managers understand why certain decision options are inappropriate (Cialdini, Demaine, Sagarin, Barret, Rhoads & Winter, 2006), and trigger reputational concerns (Baumeister & Leary, 1987). Nonetheless, psychological findings show that stringent regulation can also undermine cooperation and can prompt managers to provide strategic justifications for their decisions (Mulder &
Nelissen, 2010; Frink & Ferris, 1998). Economists and management scholars acknowledge that recent legal reforms and new practices have had relatively small effects on management decisions (Tihanyi et al., 2014). Research shows, for example, that the impact of these practices strongly depends on context factors (e.g., board diversity and board size: Coles, Daniel & Naveen, 2008, Adams & Ferreira, 2009), the actions that are being monitored (e.g., decision processes, Pitesa & Thau, 2013) and on the use of specific practice combinations (e.g., complementing combinations, Misangyi & Acharya, 2014).

**Internal versus External Supervisory Bodies**

These studies have generated valuable insights, but they also pose challenges to the regulation of management decisions. Practically, one can adapt board diversity or board sizes, but there are certainly limits to the enforceability of rules. It is simply not feasible to monitor all decision processes and the varied nature of different markets make it impossible to develop one complementary set of regulating practices that can be used for a wide range of top managers. Theoretically, accountability literature also states that management responses to regulation do not hinge on contextual management factors or regulating practices alone (Frink & Klimoski, 2004). Management responses further depend on characteristics of the key supervisory bodies that monitor them because much of the variance in human behavior is driven by dynamic forces rooted in social relationships (Treviño, 1986, Lerner & Tetlock, 1999). It is therefore crucial to examine whether the unique relational positions of internal supervisory boards and external regulators determine the degree to which they can influence top management decisions.

*Internal supervisory boards* operate inside firms under order of important stakeholders whereas *external central regulators* are commissioned by national governments and international legislative bodies (e.g., DNB or The Netherlands Authority for Financial Markets [AFM]). Both monitoring principles formally control important resources upon which top management depends and have legitimate authority to sanction ineffective management decisions (Walsh & Seward, 1990, Brass, Butterfield & Skaggs, 1998). For example, they can both change firm operations or management incentive structures and can replace top managers if needed (Barth, Caprio & Levine, 2004; John & Senbet, 1998).

Nonetheless, economists and psychologists hold contesting views on the influence that internal supervisory boards and external regulators exert on top management decisions. Agency theory predicts that in business, there is inherent conflict between the interests of management and relevant stakeholders (Ross, 1973, Mitnck, 1975). Economists therefore promote complete supervisory independence as the key means to objectively evaluate the decision dilemmas top managers face (Cormier, Ledoux, Magnan & Aerts, 2010; Zattoni & Cuomo, 2010). External regulators, who clearly operate from a distance, should therefore have a stronger influence on top management decisions than internal supervisory boards. Yet intergroup identity theory posits that humans derive part of how they view themselves from the groups to which they belong (i.e., their social identity; Tajfel & Turner, 1986). Consequently, psychologists argue that managers should be motivated to adapt their behavior for others within their firm who are trustworthy and share common group goals (Ellemers, De Gilder & Haslam, 2004; Ellemers & Rink, 2005). So this field predicts that internal supervisory boards, who have such a proximal position, may have greater influence on management decisions than external regulators (Haslam, 2004; Jetten & Hornsey, 2014; De Waal, Rink & Stoker, 2015). This controversy signifies the importance of my interdisciplinary approach to examine this topic. I have the following three objectives:

1. Examine the unique and combined influences of internal supervisory boards and external regulators on top management decisions and the relational dynamics underlying these influences.
2. Examine whether the influence of internal supervisory boards on top management decisions is contingent on three relational work structures often discussed in the literatures (supervisory sub-committees, two-tier systems and director mobility).
3. Examine whether the influence of external regulators on top management decisions depends on the use of two specific communication strategies psychological literature
proposes to use in intergroup settings (comprehensive framing and indirect communication channels).

I designed 3 subprojects to reach each objective. Figure 1 summarizes my overall model and depicts the relationships I will examine in these projects. More detail on each subproject is provided after the methodological approach section.

![Overall Conceptual Model](image)

**Methodological approach**

Profit-driven management decisions are not unique to the financial sector. I will therefore study top managers from a wide range of sectors. I will use methods from economy, management and psychology to cross validate the responses of the management to internal supervisory boards and external regulators, and I will link these responses to firm-level outcomes. Method triangulation helps me to deal with endogeneity issues in archival and field data and generalizability problems related to experimental data (Antonakis, Bendahan, Jacquart & Lalive, 2014). I will pay explicit attention to the different measurement levels in the model in my analyses.

**Methods**

In experiments, I will present decision dilemmas to managers on the basis of controlled monitoring scenarios in which possible extraneous variables are ruled out. I will thus examine the causal effects of internal supervisory boards and external regulators on management responses under strictly equal conditions. All experiments will be evaluated by the ethical research committee within my faculty and managers will be fully debriefed after participation.

In field surveys and archival data, I will test whether my experimental findings generalize to actual work settings in different sectors. In my field surveys, I will collect data from all parties involved to prevent common method bias (top managers, internal supervisory boards and external regulators; Podsakoff, MacKenzie, Lee & Podsakoff, 2003). To further counteract possible response issues in the data, I will use a referent shift informant sampling approach to measure subjective team-level constructs. This means that such construct items will already be framed at the team-level so that individual respondents can give qualified ratings of team properties (Van der Vegt & Bunderson, 2005).

My main independent variables (i.e., practices from the two supervisory bodies) will be
assessed with adapted versions of a validated compliance scale that measures a wide range of regulating practices (e.g., formal regulations, training, investigations of management incidents, Kaptein, 2014). In the adapted versions, information is added on who executes these practices; internal supervisory boards or external regulators (De Waal, Rink, Veltrop & Stoker, 2015).

The relational dynamics that underlie my predictions (i.e., trust, independence and influence) will be measured with validated scales from psychological and management research (Rink & Ellemers, 2015; Kane & Rink, 2015; Bunderson, Van der Vegt, Cantimur & Rink, 2015).

The central dependent variable (i.e., effective management decision making) will be obtained in two ways. In the field survey, I will use adapted versions of validated scales that capture the degree to which top managers experience decision pressures (Nenkov, Inman & Hulland, 2008), reflect upon their decisions (Schippers, Den Hartog & Koopman, 2007) and focus on profits, clients and firm viability (Ancona & Caldwell, 1992). From archival data, I will derive objective decision indicators (e.g., number of board meetings, R&D investments, stock performance, compensation plans, Adams & Ferreira, 2009, Adams & Ferreira, 2012).

I will discuss the operationalization of the moderating variables proposed in the subprojects in their respective sections.

**Data sources**

1. I am part of an interdisciplinary research group within the faculty that has developed an online platform for top management teams for benchmark purposes ([www.boardresearch.org](http://www.boardresearch.org)). With this tool, I can also collect quantitative micro- and macro-level data for scientific research.

2. The “Behavioural change in organizations” division of Accounting firm PriceWaterhouseCoopers (PWC) has agreed to participate in this project, and allows me to collect data among her clients. PWC has access to a unique pool of top management teams across a wide range of sectors.

3. The “Expert centre on governance, behaviour and culture” of DNB as well as the AFM endorse this project and have agreed to facilitate data collections among their own supervisors and corresponding supervisory boards. They will also help me establish networks with other external regulators.

4. The faculty has access to several archival sources that I can use, such as the ESG database, the BoardEx-database (that offers detailed information on directors of European and American boards) and the European Top Managers Database. I follow strict research guidelines to limit selection bias effects in the data. Statistical results from Kolmogorov-Smirnov two-sample tests confirm that earlier data collections from these sources yielded representative samples.

**Subproject 1 (PI, FEB collaborators)**

**Objective:** examine the unique and combined influences of internal supervisory boards and external regulators on top management decisions and the relational dynamics underlying these influences.

I will investigate who has stronger influence on management decisions; internal supervisory boards or external regulators. Unfortunately, so few economic and management studies have examined the influence of external regulators on management decisions that scholars consider their influence estimations unreliable (Aguilera, Desedner, Bender & Lee, 2015). There are more studies on internal supervisory boards. Some of this work found that their proximity to top managers can lead to conflict (e.g., Knapp, Dalziel, & Lewis, 2011), but quite a few studies suggest that internal supervisory boards can positively influence management decisions (Rhoades, Rechner & Sundaramurthy, 2000; Dalton, Hitt, Certo & Dalton, 2007). These effects yielded varying scholarly responses, ranging from critical claims that negative outcomes of internal supervisory boards have been systematically overlooked in the data to supporting remarks that their positive effects substantiate stewardship theory (Pugliese, Bezemer, Zattoni, Huse, Van den Bosch & Volberda, 2009; Daily, Dalton & Cannella, 2003). This
economic theory acknowledges that top managers may adapt their decisions for internal supervisory boards because of their shared sense of responsibility for the firm’s interests (Davis, Schoorman & Donaldson, 1997).

In psychology, intergroup identity theory also predicts that, due to their proximity, top managers will see internal supervisory boards as insiders and more distant external regulators as outsiders (Brass et al., 1998; De Waal et al., 2015). This field further shows that in general, humans are open to criticism from insiders because they are seen as trustworthy (Ellemers et al., 2004). It remains to be investigated, however, whether relational trust (as opposed to independence) also underlies the influences of the two key supervisory bodies on top management decisions. Given current findings, I expect that internal supervisory boards will influence management decisions more strongly than external regulators because they are seen as more trustworthy.

Because internal supervisory boards and external regulators often monitor management decisions in conjunction, I will also explore their combined influence. Lack of empirical evidence and contradicting arguments make it difficult to develop specific predictions at this point. Economists argue that the two supervisory bodies together should have additive effects (as each supervisory body can compensate for each other’s weaknesses, Walsh & Seward, 1990) whereas psychologists argue that, together, they may have little surplus value (because internal supervisory boards may already offer such clear guidelines due to their proximity, Green, Visser & Tetlock, 2000).

**Approach:** The project consists of 3 phases; (1) literature review and experimental research, (2) field and archival research and (3) knowledge dissemination through paper submissions, policy reports and a book. In experiments, we specifically test the direct influence of each supervisory body on management decisions against a neutral condition (practice from: supervisory board vs regulator vs no information) and their mutual dependency in this respect (practices from supervisory board: yes vs. no x practices from regulator: yes vs. no). The basic design of the field survey and the use of archival data is described under the general approach.

**Outcome:** Insights on whether, and if so why, internal supervisory boards and external regulators differ in the degree to which they influence management decisions.

**PhD project 1 (PI, PhD1)**

**Objective:** examine whether the influence of internal supervisory boards on top management decisions is contingent on three relational work structures.

Although it is likely that, under strictly equal conditions, internal supervisory boards will influence management decisions more strongly than external regulators, research shows that internal supervisory boards often encounter conformity pressures (Pugliese et al., 2009). They can suffer from normative pressures due to high levels of firm identification and from informational pressures because their evaluations depend on management information (Walsh & Seward, 1990). So successful monitoring relies on a delicate balance between trust and independence; whereas external regulators may not be trusted because of their distance, internal supervisory boards may not be sufficiently independent because of their proximity. Economists and management scholars have therefore examined how firms should structure the work relation between top managers and their internal supervisory boards (Cormier et al., 2010). Two key relational work structures stand out. Supervisory boards tend to be divided into smaller expert-based committees and they often work in two-tier systems where they are separated from management boards. Through the first structure, committee representatives are expected to have brokerage positions that enable them to gain more management information and through the second structure, supervisory directors should remain sufficiently independent in their monitoring role (Johnson, Ellstrand & Daily, 1996).

Most economic findings seem to speak in favour of the two work structures but different national legislations make it difficult to conduct systematic comparative analyses (Adams & Ferreira, 2007). Moreover, only few studies actually examined how
the work structures affect the social relations between internal supervisory boards and top managers (Bezemer, Peij, de Kruijs & Maassen, 2014). Finally, in psychology, studies strongly suggest that supervisory board mobility represents yet another important work structure that can enhance their influence on management decisions. A quicker follow-up of new supervisory directors, who still have independent views and unique expertise, will reduce normative pressures because they create divergence of opinions and prevent supervisory boards from becoming too identified with their firms (Rink, Kane, Ellemers & Van der Vegt, 2013; Veltrop, Molleman, Hooghiemstra & Van Ees, in press). I will therefore examine whether these three work structures will indeed help internal supervisory boards to balance relational trust and independence, and hence increase their influence on top management decisions.

**Approach:** This subproject has the same structure as subproject 1, except that phase 3 consists of finalizing a dissertation. In experiments, I will test how the separate structures determine the influence of internal supervisory boards on management decisions independently (e.g., work structure: sub committees vs no sub committees vs no information). However, I will also test whether the structures may reinforce or obstruct each other (e.g., sub committees: yes vs. no x supervisory director mobility: high vs. low). The basic set-up of the field survey and use archival data is similar to subproject 1, except that I will obtain additional data on the specific work structures. I can derive these structures from archival data, but will also assess how the structures are perceived through adapted versions of validated measurement scales from psychology (sub committees: Meyer, Glenz, Antino, Rico & González-Romá, 2014, two-tier systems: De Waal et al., 2015, mobility; Rink et al., 2013).

**Outcome:** Insights on whether, and if so how, the three work structures affect the influence of internal supervisory boards on management decisions.

**PhD project 2 (PI, PhD2)**

**Objective:** Examine whether the influence of external regulators on top management decisions depends on the use of two specific communication strategies.

Across disciplines, scientists agree that communication represents a vital tool for external regulators, who need to influence top management decisions from a distance. Economists and management scholars assume that external regulators will be most influential when they approach top managers directly, and communicate clearly and comprehensively (Raiborn & Payne, 1990). Yet psychological studies demonstrate that clear communication is often not comprehensive whereas comprehensive communication is often unclear (Ashford & Anand, 2003). Clear practices, such as specific rules and policies, generally tend to be more influential than comprehensive practices because clarity disables managers to rationalize their decisions (Mulder, Jordan & Rink, 2015; Detert, Treviño & Sweitzer, 2008). Nonetheless, comprehensive communication does have advantages because it emphasizes shared norms and values and increases managers’ understanding of why regulation is needed (Eyal, Sagristano, Trope, Liberman, & Chaiken, 2009; Tenbrunsel, Wade Benzioni, Messick & Bazerman 2000).

Research also shows that it is generally more effective to use direct, rather than indirect communication channels, such as intermediaries or third parties (Harwood, 2010). But here too, scholars recognize that the use of indirect channels can have its merits. Studies demonstrate, for example, that intermediaries are particularly helpful in (re-)establishing trust among representatives of different groups with opposing goals (Ury, Brett & Goldberg, 1989).

To date, research has not yet tested which of these communication strategies are most useful to external regulators. I will therefore address this practically relevant question in this project. I expect that external regulators may be better able to establish trust, and hence will increase their influence on management decisions, when they use comprehensive, value-based communication that indicates the “spirit” behind their practices and clearly signals their intentions (Mulder et al., 2015; Kane & Rink, 2015a;
Rink et al., 2013). And for similar reasons, external regulators may also establish more trust, and become more influential, when they communicate their practices through intermediates (like the internal supervisory board), rather than through direct channels (Keashly, Fisher & Grant, 1993; Hornsey, Blackwood & O’Brien, 2005; Greenaway, Wright, Willingham, Reynolds, & Haslam, 2015).

**Approach:** This subproject uses the same approach as subproject 2. In experiments, I will first test how the communication strategies independently and jointly affect the influence of external regulators on management decisions (e.g., strategy: comprehensive vs. specific x channel: indirect vs. direct). Subsequently, I will test whether these effects are indeed unique to external regulators (e.g., monitoring: supervisory board vs. regulator x strategy: comprehensive vs. specific). For this subproject, I will add validated scales of the two communication strategies to the basic field surveys (practice framing; Mulder et al., 2015, communication channels; adapted version of Keashly et al., 1993).

**Outcome:** Insights on whether, and if so how, the two communication strategies affect the influence of external regulators on top management decisions.

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**Knowledge Utilization**

The project directly feeds into current scientific, societal and political discussions about the (over)regulation of top management decisions.

**Scientific utilization.**

Although economists, management scholars and psychologists have extensively examined how management decisions can best be regulated, they draw contradicting conclusions because they use different theoretical angles and different methods. The results of this interdisciplinary project will therefore help consolidate theory development across the different literatures. Moreover, by focusing on the relations that managers have with their internal supervisory boards and external regulators, this project goes beyond classic notions that top management decisions are primarily determined by management characteristics and specific regulating practices. As such, the project capitalizes on opportunities for the two main supervisory bodies to enhance their influence on management decisions (either through specific work structures or through communication strategies that effectively balance trust and independence).

Importantly, the project will derive data from top managers and supervisory bodies across a wide range of sectors. This broad focus will increase the generalizability of my findings and will increase chances of knowledge spill over between the different scientific disciplines. Furthermore, the relational dynamics underlying the influences of internal supervisory boards and external regulators on top management decisions are so fundamental that it can be expected that they will surpass cultural and legislative differences across countries. Consequently, the outcomes of the research project can yield international interest of scientists and policy makers.

**Societal utilization.**

The crisis and recent management controversies have raised public calls to use a more behavioural approach in the regulation of top management decisions. Because this project uses insights from psychology to explain the relational interplay between top management boards and their two key supervisory bodies, the results will provide policy makers with a clear road map for such behavioural reform and cultural change.

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**2d. Literature references**


