HELENA HOLOPAINEN

Essays on corporate governance, stakeholders, and restructuring

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Foreword

Helena Holopainen’s doctoral dissertation is a collection of essays focusing on important topics in corporate governance from various viewpoints. It presents models of project choice by adopting the incomplete contracts approach where the internal structure of the firms plays a significant role in determining the magnitude and character of investments as well as on how the benefits (or costs) from these investments are shared among independent stakeholders. The first essay examines human capital investments within firms by asking the question: How can the firm’s owners by choosing between a general technology and a specific technology best induce human capital investments when these are not directly contractible. There are two ways for the firm’s owner to protect the employee’s investments. The owner can either choose a general technology or give to employees a veto right on the technology choice. The focus is to ask when one form of protection is better than the other one. The second essay examines the question of how decision rights over the projects should be allocated between owners and managers. This essay allows for owners to make an initial choice of a business strategy. The business strategy gives a better payoff for good projects, but also reduces the owners’ ability to monitor the project choice of managers. Third essay highlights the divergence in the managers’ and owners’ preferences concerning project choices when studying the role and structure of the board when the board is responsible for three tasks: selection, monitoring and counseling of a successor as CEO. The question is to ask when the CEO should also be a board member and whether a former CEO ought to stay on the board after a new CEO has been selected. The essay addresses the question of what is the optimal composition of the board in these respects.

This study is part of the research agenda carried out by the Research Unit of Economic Structures and Growth (RUESG). The aim of RUESG is to conduct theoretical and empirical research with respect to important issues in industrial economics, real option theory, game theory, organization theory, theory of financial systems as well as problems in labour markets, natural resources, taxation and time series econometrics.

RUESG was established at the beginning of 1995 and is one of the National Centres of Excellence in research selected by the Academy of Finland. It is financed jointly by the Academy of Finland, the University of Helsinki, the Yrjö Jahnsson Foundation, Bank of Finland and the Nokia Group. This support is gratefully acknowledged.

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Helena Holopainen
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I Introduction

1 General background

The characteristic feature of a large publicly owned company is the separation of ownership and control whereby the dispersed shareholders delegate the day-to-day management of the company to professional managers. While this separation has obvious benefits, for instance, by allowing finance and management to be undertaken by specialized entities, it also creates potential for an agency conflict.\(^1\)

For many, corporate governance is synonymous to solving the adverse selection and the moral hazard problems associated with this agency relationship: how to select the most able managers and to keep them accountable to the shareholders (Tirole (2001)). This view of corporate governance as a collection of means to primarily protect the interests of the shareholders is perhaps best captured by the definition of Shleifer and Vishny (1997, p. 737) who specify corporate governance as the ways by which "suppliers of finance to corporations assure themselves of getting a return on their investment".

\(^1\)Jensen and Meckling (1976) were among the first to formalize this idea in their classical paper.
In order to safeguard the interests of the shareholders and to promote shareholder value, a lot of attention has been paid in the corporate governance literature on the role various measures such as hostile takeovers, large shareholders, board of directors, and executive compensation contracts as ways of controlling managerial discretion. This listing is by no means a comprehensive description of all the viewpoints and mechanisms analyzed in the corporate governance literature.\(^2\) In what follows, I will briefly discuss each of the preceding mechanisms concentrating, however, strictly on aspects that are particularly relevant from the viewpoint of the essays of this dissertation. After that, I turn to discuss the concept of shareholder value itself.

The hostile takeovers and leveraged buyouts in the United States in the 1980s focused attention on the market for corporate control as a disciplinary device on managers.\(^3\) Typically, takeovers tend to be value-increasing in the sense that the combined market value of the acquiring and the acquired company usually rises. In their influential paper, Shleifer and Summers (1988) argue that this takeover premia may not be the result of efficiency gains from improved management but may, to a large extent, come from transfers from other stakeholders (such as employees). In particular, hostile takeovers may

\(^2\)For surveys on corporate governance, see Becht et al. (2002), Hart (1995), Shleifer and Vishny (1997), and the first chapter in Tirole (2006). For a survey taking an international perspective, see also Denis and McConnell (2003).

\(^3\)For an interesting account on how the nature of the merger and acquisition wave changed in the United States in the 1990s when internal governance mechanisms (such as executive stock option plans and board of directors) replaced external ones (hostile takeovers and leveraged buyouts) as the engine of corporate restructuring, see Holmström and Kaplan (2001, 2003). For a recent survey reviewing the existing literature on takeovers, see Burkart and Panunzi (2006).
allow shareholders to breach implicit contracts that exist between employees and the current management. An important conclusion of the small strand of literature that has developed around this theme is that some takeovers may be undesirable since, if a breach of trust through a takeover is anticipated, the incentive of employees to acquire firm-specific human capital is impaired; consequently, certain forms of takeover defences may actually be justified.4

Hostile takeovers function by concentrating ownership of the target firm in the hands of a raider and, thereby, allow the raider to replace (or at least control) the management. Takeovers are, however, a relatively rare event even in the United States. An alternative, and a much more common way to concentrate ownership is the firm to have at least one large shareholder.5 Although having one or few large shareholders may mitigate collective action problems among the shareholders by creating a party interested in monitoring the management, there are also potential costs to this mechanism. One example of such cost is the destruction of managerial initiative to look for new investment projects if the existence of a large shareholder increases the likelihood that shareholders will interfere with the manager’s project choice.6

4For formalizations along these lines, see Chemla (2003), Knoeber (1986), Maug (1997), and Schnitzer (1995).
5With the exception of the United States and the United Kingdom, large shareholdings of some form are the norm elsewhere; for papers which investigate the identity of these large owners as well as analyze the relationship between the legal rules and the degree of ownership concentration and capital market development, see La Porta et al. (1997, 1998, 1999). For a political economy model of investor and employment protection, see Pagano and Volpin (2005).
6Other examples of costs related to large shareholdings are reduced stock market liquidity and expropriation of small shareholders (and potentially other claimholders such as
In their paper, Burkart et al. (1997) show that, by determining the shareholders’ incentives to monitor, the firm’s ownership structure (i.e., the degree of ownership concentration) can function as a mechanism to control the over-monitoring problem.\(^7\)

In practice, the board of directors is the body to which the shareholders delegate the duty to monitor the management and, especially, the chief executive officer (CEO). A typical complaint concerning boards is that they tend to be "captured" by the management; that is, rather than controlling the management boards are in effect controlled by the management.\(^8\) Recently, in the wake of corporate scandals like those of Enron and WorldCom, both legislative and regulatory changes to enhance the independence of the board from managerial influence have been taken. For instance in the United States, examples of such actions are the Sarbanes-Oxley Act and the amendment of the listing rules of New York Stock Exchange and NASDAQ to require the boards of listed firms to have majority of independent directors. However, while the trend has been towards increasingly independent boards, the empirical evidence on the effects of board composition on corporate performance (creditors) by large shareholders; for a discussion of the latter two effects, see Shleifer and Vishny.

\(^7\)For a paper arguing that dispersed ownership may simultaneously also deter shareholders from breaching implicit contracts, see Habib (1997); for papers that analyze how other organizational factors such as corporate diversification or the type of information available affect the managerial incentives to gather information, see Rotemberg and Saloner (1994, 1995, 2000) and Stein (2002), respectively.

\(^8\)Hermalin and Weisbach (1998) develop a model where good prior performance may enable the CEO to "capture" the board by allowing him to exercise greater control over director selection and, consequently, over board’s decisions whether to replace him.
is mixed. Although increased board independence seems to have a positive (shareholder value enhancing) impact on particular corporate decisions (such as CEO replacement and design of incentive schemes), no clear connection has been found between board composition and the overall firm performance (for a discussion on the mixed empirical results, see the survey by Hermalin and Weisbach (2003)).

In addition of the trend towards greater board independence, another two trends have been pronounced in corporate governance during the recent years: increase in pay levels of top executives in large companies and more frequent appointment of CEOs through external hiring instead of internal promotions.\footnote{There is a vast literature on design of executive compensation packages so as to align managerial objectives with those of the shareholders. This literature is not reviewed here. However, for more on this issue, see one of the surveys on corporate governance or the excellent review of incentive provision by Prendergast (1999).} There is now a line of literature that aims at reconciling these two trends. Murphy and Zábojník (2004a, 2004b) relate the rise in executive compensation and the change in appointment patterns to an increase in the importance of general (as opposed to firm-specific) managerial knowledge while Hermalin (2004) argues that these two trends are related to a greater board diligence in monitoring.

While varied in terms of the mechanisms, much of the debate in the corporate governance literature is about the ways to promote shareholder value than about the concept itself.\footnote{Most of the literature also concentrates on the governance of firms that are investor-owned. There is, however, a range of other ownership forms (such as cooperatives and partnerships) where the owners’ relationship to the firm is dominantly characterized by transaction other than that of supplier of finance; for more discussion of this subject, see}
versial questions of corporate governance is whose interests should corporate governance represent? As opposed to the Anglo-Saxon countries, in continental Europe and Japan firms are widely perceived to have obligations to other stakeholders beyond the interests of the shareholders. In part, this is also reflected on the institutional design most prominent example being the German system of codetermination which entitles employee representatives a fraction of the board seats on the supervisory board.\footnote{The German corporations are governed by two-tier board system where the supervisory board oversees (and approves the actions of) the management board; for a more detailed discussion of the German governance system, see Gorton and Schmid (2004).}

That the shareholders should be the ones in control is typically justified by referring to concepts of exit and voice; voice (ability to directly affect corporate decisions) should be given to the constituent of firm who can make most effective use of it and whose interests cannot be easily protected by other means like exit options (see, e.g., Holmström (1999) and Zingales (1998)). Both of these factors then favor allocating control to the shareholders who are a highly homogeneous group (and, consequently, effective users of voice as Hansmann has convincingly argued in his work), and who as a collective lack an exit option (i.e., the ability as a group to sell their shares). However, whether the interests of other stakeholders such as employees can be protected by exit options, depends on factors like the underlying economic environment. According to Tirole (2001), one of the reasons why shareholder value is currently more controversial in continental Europe than in the Anglo-Saxon countries is that, due to the differences in the underlying economic environment and, especially, in the flexibility of labor market (in Hansmann (1996, 1999)).
terms of the employees’ ability to quickly find comparable-quality job after layoff), the interests of the employees are much less well-protected by exit options in continental Europe than in the Anglo-Saxon countries.

In the essays of this thesis, I analyze issues related to the preceding themes. There are two common aspects in all the essays. The first is the need (or potential) for corporate restructuring; the second is how allocation of control within a firm is related to undertaking restructuring. The first essay of the thesis builds upon the idea that, what means are appropriate to protect the interests of the employees in context of restructuring, depends not only on the institutional setting where the firm operates but also on the choices made by the firm concerning its production technology. By taking an approach used in the breach of trust literature, I then analyze two mechanisms (explicit stakeholder protection in the form of veto power and severance pay, and the firm’s choice of production technology) to reconcile the interests of the employees with those of the shareholders. In the second essay, I use the idea that monitoring by the shareholders may reduce managerial initiative to study how a bias in the shareholders’ monitoring ability in favor of the current business strategy affects the shareholders’ decision to allocate authority to a manager and to restructure the firm’s current business strategy. In the third essay, I study the interaction between the board of directors and the retiring chief executive officer in hiring a new CEO; the question is to which extent the shareholders are willing to involve the departing CEO in decisions concerning his successor so as to balance the benefits from the old CEO’s expertise against the costs that arise from his desire to protect access to private benefits through distortion of the successor’s project choice.
In the next section, before summarizing the content of the essays in more detail, I will present a brief theoretical framework for each of the essays by discussing important papers related to the essays.

2 Background of the essays

In this section, I briefly review papers most directly connected to the themes analyzed in the essays of this dissertation. Unfortunately, it is not possible to make justice to all related contributions. As a result, in what follows, I do not provide a complete literature review; for a broader and more in-depth analysis of the related literature, I encourage the reader to take a look at the individual essays.

2.1 Stakeholder protection

When analyzing the feasibility and potential problems associated with replacing shareholder value with a broader concept of stakeholding, Tirole (2001) notes that one way of protecting employees from biased decision-making resulting from undivided shareholder control is to make the claims of employees insensitive to biased decision-making through, for instance, exit options. However, when the knowledge of employees is highly specific to a particular firm, exit options provide only limited protection to the employees since, by definition, firm-specific skills are not valued equally by other employers. Building upon this idea, Roberts and Van den Steen (2000) develop a model where the protection of employee interests is made even more challenging by the presence of contractual incompleteness which (further) restricts the
means available to induce the employees to invest in valuable firm-specific human capital. Among other things, Roberts and Van den Steen then show that, to induce the employees to invest in human capital, it may be in the interest of profit-maximizing shareholders to voluntarily grant the employees a role in the firm’s governance and that doing so becomes more attractive as the human capital of the employees increases in importance.

In the first essay of my dissertation, I extend a framework used in Roberts and Van den Steen to analyze how, in context of corporate restructuring, choices made by the shareholders regarding the firm’s production technology could function both as a substitute and also as a complement to forms of explicit stakeholder protection in safeguarding the investment incentives of the employees. In particular, as opposed to Roberts and Van den Steen who concentrate on human capital investments affected adversely by restructuring, I construct a model where the shareholders are able to control through their choice of production technology just how adversely subsequent restructuring influences the value of employee skills.

2.2 Allocation of authority

Recently, the influential contribution by Aghion and Tirole (1997) has drawn attention to an idea that a principal (e.g., shareholders) may benefit from giving decision-making power to an agent (e.g., employees, managers). In their paper, Aghion and Tirole show that delegating authority over a decision (such as the choice of investment project) to an agent fosters the agent’s initiative but leads, from the viewpoint of the principal, to a loss of control over the decision taken. Secondly, even if the principal holds the formal right
to decide, the possibility for *ex post* asymmetric information may transfer real authority (i.e., effective control over the decisions) to a better informed agent. Aghion and Tirole then study how factors like the principal’s overload may function as ways to transfer real power to an agent although the principal holds the formal authority. In somewhat different context, Burkart et al. (1997) show that, in terms of restoring managerial initiative, dispersed ownership structure may have similar effect by reducing the incentives of shareholders to monitor the manager and, consequently, to interfere with the manager’s project choice.

In the second essay of this dissertation, I extend the framework of Aghion and Tirole to study how the allocation of authority within the firm interacts with the owners’ choice of business strategy when the ability of the owners to monitor the project proposals of the manager is biased in favor of the *status quo* strategy. In particular, I extend the model of Aghion and Tirole to analyze how the biased monitoring ability of the owners affects the allocation of control within the firm, and what consequences the resulting allocation of authority has on the decision of the owners to abandon the *status quo* business strategy.

### 2.3 Tasks and structure of corporate board

One of the reasons why corporate governance has attracted an increasing amount of attention in recent years is a series of corporate scandals that have shaken the corporate landscape for instance in the United States (for a longer listing and discussion of reasons behind the recent prominence of corporate governance issues, see the survey by Becht et al.). These events have
led to regulatory and legislative changes so as to enhance the independence of board of directors. However, taking the viewpoint that boards have other functions besides the task of monitoring the management, a strand of literature has developed emphasizing that governance reforms regarding board structure should leave room for individual choice since insider-dominated (i.e., less independent) boards may actually sometimes be in the interest of the shareholders. Examples of work along these lines are Adams and Ferreira (2005), Gutiérrez-Urtiaga (2000), Harris and Raviv (2005), and Raheja (2005).

The basic insight in this literature is that the ideal structure of the board and the tasks of the board are interrelated. In particular, once the perspective regarding the roles of the board is widened to also cover tasks like provision of advice to the management, the shareholders may benefit from lessening the independence of the board so as to induce corporate insiders (CEO, members of top management team) to reveal (more of) their private information to the board.

In the third essay of my dissertation, I take the approach that the board has multiple tasks and study the role and structure of corporate board in context of a CEO succession process. In particular, I analyze to which extent the shareholders are willing to involve the departing CEO in decisions concerning his successor when, despite the fact of having important expertise that improves the board’s ability to first find a fitting successor and then to provide counseling to him, the departing CEO is simultaneously also eager to interfere with the successor’s project choice so as to assure access to private benefits.
3 Summaries of the essays

In this section, I summarize the research questions and the main findings of the essays of this dissertation.

3.1 Essay I: Stakeholder protection and technological choice

The first essay analyzes two mechanisms (explicit stakeholder protection in the form of veto power and severance pay, and the firm’s choice of production technology) as a means to reconcile the interests of the employees with those of the shareholders in context of corporate restructuring. The essay is based on the idea that, whether formal stakeholder protection really matters in term of counteracting the effect of anticipated future restructuring on the investment incentives of the employees, depends on whether the employees expect their interests to diverge from those of the shareholders; this, in turn, can be affected (controlled) by the shareholders’ choice of how to initially organize the production.

More specifically, the essay builds upon the idea that the shareholders are able to choose between two initial production technologies, and that this choice determines how flexibly employee human capital can be adapted to new circumstances such as the arrival of a new production technology. When the initial technological choice is highly inflexible (i.e., the value of employee human capital is exclusively geared to the status quo production technology), this essay argues that employee veto power over all technological changes should be combined with severance pay so as to allow the shareholders to
undertake value-enhancing changes in the initial production technology while still simultaneously protecting the *ex ante* investment incentives of the employees. No such explicit protection is, however, needed if the shareholders, at the price of higher investment costs, initially organize the production so as to allow the human capital of the employees to be flexibly adapted to new circumstances.

The main findings of the first essay are that, when the initial technological choice is highly inflexible, the shareholders are indeed willing to forego some restructuring opportunities by granting the employees a right of veto over minor changes; the level of protection offered, however, falls short of the socially desirable one. Secondly, an increase in the probability that restructuring opportunities arise in the future makes it more attractive both socially and from the viewpoint of the shareholders to initially build a flexible organization. Thirdly, if (in order to implement restructuring) the consent of employees has to be bought by using severance pay, the likelihood that the shareholders initially adopt the flexible technology increases.

Taken together, the results of the model imply that the shareholders’ choice of how to initially organize the production depends not only on the type of industry but also on the governance system where the firm operates. In particular, technological choices may act not only as substitutes to certain governance arrangements in protecting the interests of employees but also as complements to system-wide governance provisions. In particular, as long as rights granted by law (such as mandatory board representation) or a high degree of unionization raise the ability of employees to push for concessions in context of restructuring, attractiveness of flexible technologies may also
be increased by the presence of certain institutional factors.

3.2 Essay II: Monitoring ability, allocation of authority, and choice of business strategy

The second essay analyzes how the allocation of authority within the firm interacts with the owners’ choice of business strategy when the ability of the owners to monitor the project proposals of the manager is biased in favor of the status quo strategy. The key idea in the essay is that, although the management of the firm could be changed so as to reflect the changes in the business strategy, restructuring may not be undertaken by the owners if their human capital is biased towards the current business strategy.

In particular, this essay argues that the owners’ lack of knowledge of the new business strategy, as captured by their lower ability to monitor the project proposals of the new business area’s management, may lead to suboptimal (i.e., non-total surplus maximizing) choice of strategy. This result arises because, when making their strategy choice, the owners care not only about how divergent the interests of the manager are from those of the owners but also how often the owners have to rely on the manager’s potentially divergent project proposal. As a result, the owners may fail to switch to a new business strategy, even though more congruent managerial expertise is available under this strategy, because of the value loss from having to trust the project choice of the manager more often.

Interestingly, when the monitoring ability of the owners is biased in favor of the status quo business strategy, it will affect not only the choice of business strategy but also the allocation of authority within the firm. In fact, these
two elements are shown to be closely linked in the sense that the effects of the strategy change on the allocation of authority help to understand why the strategy choice of the owners may exhibit inefficient inertia. Especially, when delegation has incentive effects by inducing the manager to use his expertise to gather information about potential projects, delegation turns out to be more attractive under the new business strategy because the improved managerial incentives are a way for the owners to try to compensate their own reduced information gathering ability. This effect, however, simultaneously makes the owners hesitant to switch the strategy since it would involve a more frequent loss of control over the project choice.

More generally, this essay shows that the degree of the managerial expertise (in information gathering) positively affects the willingness of the owners to delegate only if the interests of the manager are sufficiently aligned with the owners’. More precisely, for low values of congruence, delegation is never chosen; in the mid-range, the choice depends on whether the degree of the managerial superiority in information gathering exceeds a certain threshold while with high levels of interest alignment delegation is always chosen.

3.3 Essay III: Board structure and CEO succession

The third essay of the dissertation applies the idea of board as a multitasking entity to analyze the implications of succession process for the ideal board structure. The essay develops a model where the board is responsible for three tasks. It is first responsible for selecting a successor to the incumbent CEO who is due to retire at a pre-specified date. Once the successor has taken office, the board is in charge of monitoring the successor’s project choice and
providing advice to the successor.

In this essay, there are two key ideas. First, the presence of the departing CEO on the board, although facilitating the ability of the board both to find a matching successor and then to counsel him, simultaneously also weakens the ability of the board to restructure since the predecessor (either due to legacy concerns or because of empire-building tendencies) uses the opportunity to distort the successor’s project choice. Second, there are two ways for the predecessor to affect the successor’s project choice and the access to these can be regulated by the shareholders through the beginning and the length of the predecessor’s term on the board. In particular, if on the board before his retirement, the predecessor is able to select a successor who shares his biased project preferences while, if on the board after his retirement, the predecessor is able to use the monitoring role of the board to interfere with the successor’s project choice.

This then implies that, at which point (if at all) and for how long the shareholders nominate the predecessor to the board, determines how much the predecessor is able to distort the project choice and, consequently, to which extent the shareholders are able to realize restructuring gains. However, the beginning and the length of the predecessor’s term simultaneously also affects the predecessor’s opportunity and incentives to raise the match of and provide counseling to his successor. At each stage, the shareholders then face a trade-off. An early (i.e., pre-retirement) nomination, while increasing the predecessor’s incentives to raise the match of his successor, simultaneously also allows the predecessor to choose a successor who shares his biased project preferences. A late (i.e., post-retirement) or a continued nomination,
although inducing the predecessor to advice his successor, simultaneously also allows the predecessor to interfere with the successor’s project choice through the monitoring function of the board.

Taken together, this paper suggests that the extent of restructuring gains, the firm’s ability to hire good outside directors and the importance of board’s advisory role affect at which point and for how long the shareholders want to nominate the predecessor to the board. Low restructuring gains (i.e., good firm performance) favor an early and prolonged nomination while high restructuring gains, the availability of good outside directors and the low importance of mentoring for the successor’s (and the firm’s) performance favor either an independent board or an early but only a short-term nomination.
References


II Stakeholder protection and technological choice

Abstract

This paper argues that, by influencing the sensitivity of employee human capital to restructuring, the type of production technology chosen by the shareholders affects their need to offer explicit stakeholder protection so as to counteract the effect of anticipated future changes on the investment incentives of the employees. Consequently, to preserve investment incentives, initially organizing the production so as to allow employee skills to be flexibly adapted to new circumstances can substitute for explicit stakeholder protection such as right of veto and severance pay. Furthermore, when certain stakeholder rights are granted by law, this paper suggests that technological choice can be used to ensure that these rights are exercised by employees with interests close to the shareholders’.

JEL classification: G34; J50; M54.

Keywords: corporate governance, technological choice, stakeholders, human capital, severance pay.
1 Introduction

The operations of firms are shaped not only by individual corporate governance practices but also by system-wide governance arrangements. In continental European countries firms are widely perceived to have obligations to other stakeholders beyond the interests of the shareholders; this is also reflected on the institutional design. For example in Germany, the system of codetermination entitles employee representatives a fraction of the board seats on the supervisory board.\footnote{The German corporations are governed by two-tier board system where the supervisory board oversees (and approves the actions of) the management board. Under the German law, in firms with 500 - 2000 employees, the employee representatives are entitled to one-third of the supervisory board seats; in firms with over 2000 employees, the fraction rises to half of the seats (for a more detailed discussion of the German governance system, see Gorton and Schmid (2004)).} However, a recent boardroom scandal (see The Economist (2005a, 2005b)) has facilitated the demand for German firms to be able to decide on the number of seats allocated to employees. Would such a reform deprive the basis for effective employee participation in management? In particular, if left to the voluntary initiative of the shareholders, would the opportunity of the employees to affect decisions on corporate restructuring (currently requiring the approval of the supervisory board) significantly diminish?

This paper argues that the answer to these questions is not necessarily a yes. When the human capital of the employees is important in production but vulnerable to restructuring, this paper suggests that the shareholders may well voluntarily grant the employees explicit protection (e.g., a right of
veto) so as to counteract the effect of anticipated future changes on the investment incentives of the employees. However, even more interestingly, this paper argues that, by affecting the sensitivity of human capital to restructuring, the type of production technology chosen by the shareholders affects their need to offer such explicit stakeholder protection. Consequently, this paper suggests that not only may technological choices act as substitutes to voluntary governance arrangements in protecting the value of employee human capital but they may also function as complements to system-wide governance provisions. That is, when employee interests are represented at the firm level by law, technological choice can be used to ensure that these rights are exercised by employees with interests close to the shareholders’.

These results are based on the idea that, whether explicit stakeholder protection, either imposed from outside or voluntarily adopted, really matters (i.e., has real consequences on behaviour), depends on whether the parties expect their interests to diverge in context of restructuring; this, in turn, can be affected (controlled) by the shareholders’ choice of how to organize the production. More specifically, this paper builds on the idea that the shareholders are able to choose between two initial production technologies, and that this choice determines how flexibly employee human capital can be adapted to new circumstances such as the arrival of a new production technology. When the initial technological choice is highly inflexible (i.e., the value of employee human capital is exclusively geared to the status quo production technology), the shareholders are willing to forego (so as to protect the ex ante investment incentives of the employees) some restructuring opportunities by granting the employees a right of veto over minor technological
changes. The level of protection offered, however, falls short of the socially desirable one which would require granting the employees veto-power over all technological changes and then using severance pay to implement value-enhancing switches in the production technology.

The preceding case is then contrasted with the alternative that, at the price of a higher investment cost, the shareholders initially organize the production so as to allow the human capital of the employees to be flexibly adapted to new circumstances. Since the value of employee human capital is no longer vulnerable to restructuring, in this case the initial technology choice itself is enough to protect the interests and the investment incentives of the employees.

Empirically, the results of this model imply that the shareholders’ choice of how to initially organize the production depends not only on the type of industry but also on the governance system where the firm operates. In particular, an increase in the probability that restructuring opportunities arise in the future (which is typical to new, innovative and developing industries) makes it more attractive both socially and from the viewpoint of the shareholders to initially build a flexible organization. Even more interestingly, if the employees are able to push for severance pay when feeling threatened by restructuring, the likelihood of flexible technology being initially adopted increases. As long as rights granted by law (such as mandatory board representation) or a high degree of unionization raise the ability of employees to push for this type of concessions, this result implies that, in case of industries with high restructuring likelihood, flexible technologies may be even more attractive in the stakeholder-oriented governance systems of continental
Europe (e.g., Germany and France) than in the Anglo-Saxon ones.\textsuperscript{2}

This paper is connected to several strands of earlier theoretical literature. I defer a more complete discussion of this literature until Section 6 and only comment here on most direct linkages (however, on the interpretation of the initial production technologies as the choice between line production and advanced manufacturing technology, see the next section). In analyzing employee involvement in governance, this paper is linked to that of Roberts and Van den Steen (2000) who show that commitment to preserve the status quo production technology may arise endogenously as an investor-chosen response to the \textit{ex ante} problem of how to induce an employee to invest in human capital specific to certain technology.\textsuperscript{3} Here, however, it is argued that it may be both privately and socially optimal \textit{not} to develop such a technology initially so as to avoid dealing with specific human capital later on.

Secondly, this paper also departs from that of Roberts and Van den Steen in analyzing the question of how the \textit{ex ante} investment incentives of employees can be reconciled with the ability of the shareholders to implement value-enhancing changes in the production technology when the human capital of employees is specific to a certain technology. In this respect, this paper

\textsuperscript{2}In the case of Germany, see Gorton and Schmid (2004) for some empirical evidence on the use of codetermination practice to resist restructuring; for works councils, see Vitols (2004) and, especially, Grund (2003) who discusses the evidence that works councils help employees to receive severance pay in restructuring.

\textsuperscript{3}In context of asymmetric information, similar conclusion is also reached by Boyer and Robert (1996). They show that, to induce an agent to invest in specific human capital, it may sometimes be in the interest of the principal to let the agent to observe the signal regarding an alternative project's profitability and to recommend change.
is connected to those of Chemla (2005), Maug (1997), and Schnitzer (1995) who use the "breach of trust" framework introduced by Shleifer & Summers (1988) to formulate a model of how to induce corporate managers to invest in firm-specific knowledge while simultaneously allowing for efficiency-enhancing restructuring (takeovers, project liquidation). Chemla concentrates on the role of a stakeholder’s bargaining power vis-a-vis an incumbent manager and a potential acquirer while Maug and Schnitzer, respectively, focus on the design of takeover defences and the role of independent directors. Here, however, the emphasis is on the importance of technological choice and how it affects the severeness of the preceding trade-off.

This paper is organized in the following way. The basic model is developed in Section 2. In Sections 3 and 4, I analyze how initially choosing a flexible or inflexible production technology, respectively, affects the design of firm’s governance structure and the adoption of new production technology. In Section 5, I endogenize the technological choice to derive comparative static results. Section 6 discusses the related theoretical literature more in detail. Finally, Section 7 concludes. All the proofs are in Appendix.

2 The model

In this section, I set up the model so as to analyze the implications of two alternative status quo technologies as well as severance pay for the restructuring outcomes of a firm. To address these issues, I use a simple one-period model which builds on Roberts and Van den Steen. I start by specifying the

---

4For a model along these lines, see also Knoeber (1986).
production technologies available for the shareholders. After that, I characterize how the proceeds from the production are shared between the shareholders and the employees, and how this process depends on the governance structure of the firm.

*Production technology:* consider a firm owned by risk-neutral shareholders who can choose between two initial production technologies: one which is called specific (or, alternatively, inflexible) and a second which is called general (or flexible). Both technologies require that employees invest in costly, non-verifiable human capital whose value is tied to the current firm; the investment is denoted by $h$ while $c(h) = \frac{1}{2}h^2$ captures the investment cost of the employees. The employees are assumed to be risk-neutral and to have zero initial wealth. For simplicity, the reservation utility of the employees is normalized to zero.

Given that the employees invest in human capital, the output under the initial production technology is

$$y = \begin{cases} \alpha h, & \text{if the general production technology is chosen,} \\ \beta h, & \text{if the specific production technology is chosen,} \end{cases}$$

where $0 < \alpha < \beta$. Hence, for any given level of $h$, the specific production technology is, at the outset, more productive than the general.

The initial production technologies could be interpreted as a choice between line production and advanced manufacturing technology with the specific production technology referring to line production and the general production technology to advanced manufacturing technology. The initial productivity difference could then capture the higher investment cost of advanced manufacturing technology (AMT), such as flexible manufacturing
systems and CAD-CAM equipment, as compared to more traditional line production (for a more complete listing of AMTs, see Colombo and Delmas-tro (2002)). Line production is based on narrow and specialized tasks, strict work rules and close supervision while advanced manufacturing methods, to be operable, require complementary, innovative human resource management practices such as extensive screening of new workers, team work, job rotation and regular information sharing.\(^5\) Interestingly, Ichniowski et al. (1995) link the costs of adopting these new innovative work systems to their limited adoption in the American steel industry.\(^6\)

After the initial production technology has been chosen and the employees have invested *but before* any production has taken place, a new production technology, which is profitable *ex post* for the shareholders to adopt, arrives with probability \(p \in (0, 1)\). A key idea here is that, if the general production technology was initially chosen, the human capital of the employees can flexibly be adapted to the new circumstances while, if the specific production technology was chosen, the adoption of the new technology renders the

\(^5\)An illustrative example of these complementarities is given by Milgrom and Roberts (1995, p. 194): in the 1980s, General Motors spent billions of dollars on robotics but did not adjust its organization otherwise; despite its state-of-the-art technology, General Motors continued to make losses at unparalleled rates; for more on this complementarity argument, see also Milgrom and Roberts (1990). For a detailed characterization of traditional and more innovative human resource management practices, see also Ichniowski et al. (1995, 1997).

\(^6\)Ichniowski et al. (1995) account for two potential sources of adoption costs: searching for and gathering information about these practices and, in steel lines already operating, overcoming employee resistance to new work practices that may threaten (line-specific) skills and knowledge developed under the traditional system.
previous human capital investment of the employees valueless. As a result, if the new technology is adopted, the output is

\[ y' = \begin{cases} \alpha h + \delta, & \text{if the general production technology was initially chosen,} \\ \delta, & \text{if the specific production technology was initially chosen.} \end{cases} \]

One possible interpretation of the situation is that the new production technology increases the productivity of some physical assets under the control of the shareholders; this increase in productivity is then captured by the parameter \( \delta \).

To draw a parallel to the preceding discussion regarding line production and advanced manufacturing technologies, note that, as Ichniowski et. al. (1995) acknowledge, traditional line production with its specific and narrow task description may involve major rigidities (sunk costs) in case of restructuring since many skills and practices needed to run a particular production line are highly specific to that line. The assumption that the skills developed under the specific technology are highly vulnerable to changes in the status quo organization is then in line with this observation.

I will next characterize how the employees can be motivated to invest in human capital in this framework.

The output sharing rule: in terms of motivating the employees to invest in human capital it is clear that, due to the non-verifiability of the investment, the investment level of the employees cannot be contracted upon before the investment is made. As the value of the investment is tied to the current firm, neither does the external labor market provide protection and, hence, motivation for the investment. Since the employees have no wealth, the shareholders cannot either simply solve the investment problem by making
the employees residual claimants and extracting the expected returns _ex ante_ through a lump sum transfer.\textsuperscript{7}

The employees could nevertheless be induced to acquire at least some human capital if, before the investment is made, the parties entered into a long-term profit sharing agreement giving the employees a fraction of the returns generated by their investment. However, I assume that the parties cannot contract upon (the division of) the output before the investment is made. Instead, following the approach taken by Roberts and Van den Steen, I assume that the shareholders and the employees bargain over the output after the investment has been made and the _final_ production technology has been chosen. In what follows, the nature of this bargaining process depends on the governance structure of the firm which can be agreed upon before the investment is made. Before going over the specifics of the governance structure specifying the general provisions according to which future changes are dealt with, I first describe how the bargaining process proceeds.

The bargaining game is modelled as a generalized Nash bargaining game in which the employees’ bargaining power is denoted by \( q \) and the shareholders’ by \((1 - q)\). A key feature in this bargaining process is the idea that, if the specific production technology was initially chosen, the adoption of the new technology eliminates the ability of the employees to negotiate a share of the output because, under the new technology, their human capital adds no value. That is, given \( q \), the payoff to the employees, \( w, w \geq 0 \), is given

\textsuperscript{7}The parties could potentially get around the wealth constraint problem by using a debt contract; however, I assume that this option is ruled out for instance because of credit constraints.
by the solution to the following maximization problem:

\[ w \equiv \begin{cases} \arg \max_w (y - w)^{1-q} w^q, & \text{if the new technology is not adopted,} \\ \arg \max_w (y' - w - \delta)^{1-q} w^q, & \text{if the new technology is adopted,} \end{cases} \tag{1} \]

where the outside option of the employees is zero under all technologies while the outside option of the shareholders depends on the technology choice; it is equal to \( \delta \) if the new technology is adopted and zero otherwise. These differences in outside options then reflect the ideas that the employees’ human capital is tied to the firm and that \( \delta \) is something the shareholders can realize even without access to the human capital of employees.

Solving (1) and then inserting \( w \) into \( (y - w) \) and \( (y' - w) \), respectively, results in the following payoffs for the employees and shareholders:

\[ w = \begin{cases} qy, & \text{if the new technology is not adopted,} \\ q (y' - \delta), & \text{if the new technology is adopted,} \end{cases} \tag{2} \]

\[ \pi = \begin{cases} (1 - q) y, & \text{if the new technology is not adopted,} \\ \delta + (1 - q) [y' - \delta], & \text{if the new technology is adopted,} \end{cases} \tag{3} \]

where \( \pi \) refers to the payoff of the shareholders. By inspecting (2), it is clear that the payoff of the employees depends both on their bargaining power, \( q \), and also on the choice of production technology. In particular, if the specific production technology was initially chosen, the employees are able to negotiate a positive payoff only if the new technology is not adopted. To ensure that a switch from the specific production technology to the new one is attractive for the shareholders, I make the following assumption:

**Assumption 1**: \( \delta > \frac{1}{4}(1 + \sqrt{1 - (1 - p)^2})\beta^2 \).

In this model, assumption 1 will guarantee that, if the specific technology is initially chosen, the new production technology is profitable for the shareholders to adopt when it arrives (the role and implications of assumption 1
are formally derived on page 18). Despite assumption 1, the shareholders may, however, benefit from credibly committing not to adopt the new technology. The reasoning is as follows. If the employees anticipate that the shareholders will switch to the new technology whenever it arrives, it will reflect negatively in their _ex ante_ investment incentives since the employees take into account that they will be able to negotiate a positive payoff only with probability \(1 - p\); i.e., in the case when no new technology arrives. Consequently, a credible commitment not to change the specific technology in the future may turn out to be valuable for the shareholders insofar as it helps to avoid the adverse effects on the investment incentives. I will next discuss the measures available for the shareholders to establish such commitment through the design of the governance structure of the firm.

**Governance structure**: in the beginning of the relationship, the shareholders design the governance structure of the firm by taking into account that the investment incentives of the employees are affected both by their bargaining power, \(q\), and, given that the specific production technology was initially chosen, whether the new technology is adopted.

Instead of taking the bargaining power of the employees as exogenously given, I follow Roberts and Van den Steen and assume that \(q\) is the shareholders’ choice variable; its chosen level will determine the bargaining power of the employees in the _ex post_ negotiations and, as a result, also their share of the surplus.\(^8\)

\(^8\)According to Roberts and Van den Steen, one possibility is to assume that bargaining takes place at the corporate board; then, at the beginning of the relationship, the shareholders choose the fraction of the votes, \(q\), on the board allocated to the employees.
In addition to determining \( q \), the shareholders specify in the beginning of the relationship how (or by whom) the final production technology is chosen. The shareholders have the following option at their disposal:

**Assumption 2:** the shareholders can credibly commit not to change the specific production technology by giving the employees a right of veto over technological changes.

If the employees are given the right of veto, they can prevent changes in the initial specific production technology which will have a positive effect on their *ex ante* investment incentives. As a result, the shareholders may profit from granting the employees a right to block future changes in the technology.\(^9\)

**Severance pay:** while improving the investment incentives under the specific production technology, the right of veto has the downside that the employees can use it to block any changes (including value-enhancing ones) that threaten the value of their human capital. The shareholders can, however, get around this problem by offering the employees a severance pay, \( S \), in exchange for their veto (and \( q \)) after the new production technology has arrived but before the final production technology is chosen. In this model, the combination of veto power and severance pay creates a (second-best) optimal governance structure in the sense that it allows the shareholders to undertake value-enhancing changes in the initial specific technology without

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\(^9\)The approach to corporate governance taken here comes very close to that advocated by Zingales (1998), who defines corporate governance as the set of rules that shape the *ex post* bargaining over quasi-rents in a firm. This is much the situation we have here: the relationship generates quasi-rents that have to be divided between the parties through *ex post* bargaining.
simultaneously diminishing the investment incentives of the employees. In particular, the combination allows value-enhancing changes in the technology without at the same time aggravating the initial underinvestment problem characteristic to this type of incomplete contracts framework; therefore the reference to second-best optimality.

**Timing:** taken together the timing of the events is as follows:

1. the shareholders choose the initial production technology and the governance structure (q, and veto or no veto);
2. the employees invest in human capital;
3. a new production technology arrives with probability p;
4. if a veto was initially granted, a severance payment can be offered by the shareholders in exchange for the employees’ veto and q;
5. the final production technology is chosen;
6. if no severance payment was offered and accepted, the parties bargain over the output;
7. production takes place; output is realized and distributed.

---

10 Note that severance pay fixed before human capital investments are made would not do the trick since, in contrast to one agreed upon ex post, it cannot condition the payment on the actual investment. To support the view that severance pay can, in fact, be determined ex post (i.e., after the arrival of a shock), there is evidence that in Germany works councils operating in individual firms help the employees to receive substantial severance pay in connection with restructuring through ex post negotiation (see Grund (2003)).
I will next turn to analyze how initially choosing general or specific production technology, respectively, affects the design of firm’s governance structure and, subsequently, the adoption of the new technology. In all cases, the model is solved by backwards induction.

3 General production technology

In this section, I analyze how initially choosing the general production technology affects (the desirability of) adopting the new production technology.

Given that the general production technology is initially chosen, the human capital input of the employees can flexibly be adapted to new circumstances; as a result, the new technology is optimally adopted whenever it arrives and the expected output is given by \((\alpha h + p\delta)\). Consequently, because of the knowledge that their human capital will definitively add value, the employees know that, for any given \(q\), they are able to bargain a fraction \(q\) of \(\alpha h\). As a result, they will choose \(h\) so as to maximize

\[
\max_h q\alpha h - \frac{1}{2}h^2,
\]

\(h = q\alpha\).

As expected, the investment incentives of the employees are increasing in \(q\) and \(\alpha\). The shareholders’ maximization problem, in turn, is given by

\[
\max_q (1 - q)\alpha h + p\delta \text{ s.t. } h = q\alpha,
\]

\(q = \frac{1}{2}\).
The investment level of the employees and the (expected) payoffs of the parties are then simply

\[ h = \frac{1}{2} \alpha, \]
\[ w = \frac{1}{8} \alpha^2, \]
\[ \pi = \frac{1}{4} \alpha^2 + p\delta. \]

I will now turn to study how the situation changes if specific production technology is initially chosen.

4 Specific production technology

The preceding analysis of general production technology showed that, if it is initially chosen, it is irrelevant from the viewpoint of the employees’ \textit{ex ante} investment incentives whether the new production technology is adopted whenever it arrives. If the specific production technology is initially chosen, this will no longer be the case. I will next analyze whether (and to what extent) the shareholders are willing to voluntarily protect stakeholder interests by granting the employees a right of veto over changes in the initial production technology.

4.1 Explicit stakeholder protection is not granted

At first, I will analyze the case where the specific technology is initially chosen but the shareholders do not grant the employees a right of veto over technological changes. I will start the analysis by taking assumption 1 as
given. I will then check that under this condition the shareholders indeed prefer to adopt the new technology whenever it arrives.

Since, according to assumption 1, the new production technology is profitable \textit{ex post} for the shareholders to adopt, they switch to it when it becomes available. This, in turn, means that the human capital of the employees will only be valuable when no new technology arrives; that is, with probability \((1 - p)\). The expected output is given by \([(1 - p) \beta h + p\delta]\), and the employees are only able to negotiate a fraction \(q\) of \(\beta h\) with probability \((1 - p)\). Consequently, the employees invest so as to maximize

\[
\max_h (1 - p)q\beta h - \frac{1}{2}h^2,
\]

which gives

\[
h = (1 - p)q\beta.
\]

As expected, the investment incentives of the employees are decreasing in \(p\).

The shareholders’ maximization problem, in turn, is given by

\[
\max_q (1 - p)(1 - q)\beta h + p\delta \text{ s.t. } h = (1 - p)q\beta,
\]

\[
\hat{q} = \frac{1}{2}.
\]

The investment level of the employees and the (expected) payoffs of the parties are then the following:

\[
\hat{h} = \frac{1}{2}(1 - p)\beta, \quad (4)
\]

\[
\hat{w} = \frac{1}{8}(1 - p)^2\beta^2,
\]

\[
\hat{\pi} = \frac{1}{4}(1 - p)^2\beta^2 + p\delta. \quad (5)
\]
Next, I need to check that the shareholders indeed always prefer to switch to the new technology when it arrives. Formally, this requires that two conditions are met. The first requirement is that, given $\hat{h}$, the shareholders’ payoff from the switch is larger than their payoff if the new technology is not adopted:

$$(1 - p) (1 - \tilde{q}) \beta \hat{h} + p \delta > (1 - \tilde{q}) \beta \hat{h}.$$  

This can be rewritten as $\delta > (1 - \tilde{q}) \beta \hat{h}$ and solved to give the switching criterion of the shareholders:

$$\delta > \frac{1}{4} (1 - p) \beta^2.$$  

Since $\frac{1}{4} (1 - p) \beta^2 < \frac{1}{4} (1 + \sqrt{1 - (1 - p)^2}) \beta^2$, this criterion is already fulfilled by assumption 1. Second, I need to check that the employees, knowing the shareholders’ switching criterion of $\delta > (1 - \tilde{q}) \beta \hat{h}$, do not invest extra (i.e., $h \geq \delta (1 - \tilde{q}) \beta \hat{h}$) to deter the switching altogether.\footnote{Such an extra investment case could be interpreted as one in which an employee successfully “entrenches” himself by a clever choice of investment policy; on this type of management entrenchment, see Shleifer and Vishny (1989).} Clearly, for the employees not to invest extra (i.e., $h = \frac{2 \delta}{\beta}$), it must be true that the payoff for them from the extra investment is less than their payoff from the regular investment:

$$\delta - \frac{2 \delta^2}{\beta^2} < \frac{1}{8} (1 - p)^2 \beta^2.$$  

Solving this and taking into account assumption 1 gives a condition which coincides with assumption 1:

$$\delta > \frac{1}{4} (1 + \sqrt{1 - (1 - p)^2}) \beta^2. \quad (6)$$  

Since $\frac{1}{4} (1 - p) \beta^2 < \frac{1}{4} (1 + \sqrt{1 - (1 - p)^2}) \beta^2$, this criterion is already fulfilled by assumption 1. Second, I need to check that the employees, knowing the shareholders’ switching criterion of $\delta > (1 - \tilde{q}) \beta \hat{h}$, do not invest extra (i.e., $h \geq \frac{\delta}{1 - \tilde{q} \beta \hat{h}}$) to deter the switching altogether.\footnote{Such an extra investment case could be interpreted as one in which an employee successfully “entrenches” himself by a clever choice of investment policy; on this type of management entrenchment, see Shleifer and Vishny (1989).} Clearly, for the employees not to invest extra (i.e., $h = \frac{2 \delta}{\beta}$), it must be true that the payoff for them from the extra investment is less than their payoff from the regular investment:

$$\delta - \frac{2 \delta^2}{\beta^2} < \frac{1}{8} (1 - p)^2 \beta^2.$$  

Solving this and taking into account assumption 1 gives a condition which coincides with assumption 1:

$$\delta > \frac{1}{4} (1 + \sqrt{1 - (1 - p)^2}) \beta^2. \quad (6)$$
It is then clear that the shareholders prefer to adopt the new production technology whenever it arrives. Notice that the shareholders may be tempted to adopt the new technology too often (i.e., with $\delta$ too low). It would be optimal to adopt the new technology only when $\delta > \beta h$ which is equal to $\delta > \frac{1}{2} (1 - p) \beta^2$. However, when $p \in (0, \frac{1}{5})$, this condition is larger than the one given in (6).

I will next turn to the case where the specific production technology is initially chosen and the shareholders grant the employees a right of veto over subsequent technological changes.

### 4.2 Explicit stakeholder protection is granted

I will now analyze the case where the specific production technology is initially chosen and the shareholders grant the employees a right of veto over subsequent technological changes.

When granted the right of veto, the employees will definitively use it to block any changes in the status quo technology; this follows simply from the nature of the initial technology and the vulnerability of the employees’ human capital to any changes in it. As a result, the output will be $\beta h$, of which the employees are able to bargain a fraction $q$. The employees’ maximization problem is then given by

$$
\max_q q\beta h - \frac{1}{2} h^2,
$$

$$
h = q\beta.
$$

The shareholders, in turn, choose $q$ so as to maximize

$$
\max_q (1 - q) \beta h \text{ s.t. } h = q\beta,
$$

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which gives
\[ \tilde{q} = \frac{1}{2}, \]
and
\[ \tilde{h} = \frac{1}{2} \beta, \tag{7} \]
\[ \tilde{w} = \frac{1}{8} \beta^2, \]
\[ \tilde{\pi} = \frac{1}{4} \beta^2. \]
Comparing \( \tilde{h} = \frac{1}{2} \beta \) in (7) to \( h = \frac{1}{2} (1 - p) \beta \) in (4), it is immediately clear that the investment incentives of the employees are now higher for all \( p > 0 \). Consequently, veto power has a positive effect on the investment incentives of the employees.

However, this positive effect of strong stakeholder protection has to be contrasted with its negative effect on the shareholders’ ability to restructure. In particular, the employees will also use their veto power to block value-enhancing changes in the technology. Interestingly, by offering the employees severance pay, \( S \), after the new technology has arrived in exchange for their veto and \( \tilde{q} \), the shareholders can realize value-enhancing changes in the production technology without compromising the \textit{ex ante} investment incentives of the employees.

To see this, note that the shareholders have to set the severance pay \( S \) at
\[ S = \tilde{q} \tilde{\beta} \tilde{h} \]
for the employees to be willing to accept it.\(^{12}\) Given \( S = \tilde{q} \tilde{\beta} \tilde{h} \), it is in the interest of the shareholders to offer severance pay to the employees and adopt
\(^{12}\)It is assumed here that the shareholders are the ones making the severance pay offer to the employees. However, if the situation were reversed, it would be possible for the
the new technology when

\[ \delta - S > (1 - \tilde{q}) \beta \tilde{h}, \]

which reduces to

\[ \delta > \beta \tilde{h}. \] (8)

**Proposition 1** *The new technology is adopted efficiently with severance pay \( S = \tilde{q} \beta \tilde{h}. \)*

Proposition 1 follows directly from the equation (8) which says that, with severance pay \( S \), the shareholders will switch to the new technology only when the output under it is larger than the output under the status quo technology.

Given severance pay \( S \), the shareholders’ payoff is modified to

\[ \bar{\pi} = \begin{cases} \frac{1}{4} \beta^2, & \text{when } \frac{1}{4} (1 + \sqrt{1 - (1 - p)^2}) \beta^2 < \delta \leq \frac{1}{2} \beta^2, \\ \frac{1}{4} \beta^2 + p \left( \delta - \frac{1}{2} \beta^2 \right), & \text{when } \delta > \frac{1}{2} \beta^2. \end{cases} \] (9)

To find out to what extent the shareholders are voluntarily willing to protect stakeholder interests, their payoff in (9) should then be compared with their payoff in (5). I will take up this issue in the next section.

employees to push the severance pay up to the level of

\[ S = \delta - (1 - \tilde{q}) \beta \tilde{h}. \]

However, even in this case, the same switching rule as that given in (8) would result since the employees would make the offer when

\[ \delta - (1 - \tilde{q}) \beta \tilde{h} > \tilde{q} \beta \tilde{h}. \]
4.3 The choice of governance structure

Given that the specific production technology is initially chosen, it is now possible to derive the shareholders’ choice of the governance structure by comparing their payoffs in (5) and (9):

**Proposition 2** When \( \frac{1}{4}(1 + \sqrt{1 - (1 - p)^2})\beta^2 < \delta \leq \frac{1}{4}(2 - p)\beta^2 \), the shareholders voluntarily protect stakeholder interests by granting the employees a right of veto if \( p < p^- \); otherwise, no veto is granted and, consequently, restructuring is undertaken by the shareholders whenever an alternative technology arrives.

**Proof.** See the appendix. ■

Proposition 2 captures the key trade-off the shareholders face between providing ex ante investment incentives to the employees and guaranteeing the firm’s long-term flexibility to change its production technology. When the specific production technology is initially chosen, lack of explicit stakeholder protection will lead to a lower level of human capital investments but will preserve the flexibility of the shareholders to restructure. On the other hand, granting the employees a veto enhances their investment incentives but allows the adoption of new technology only if severance pay is paid. Balancing the options then leads the shareholders to grant the employees a veto only when \( \delta \) is small enough (i.e., when it is never in the interest of the shareholders to use severance pay anyway). For larger values of \( \delta \), the shareholders keep the control rights to themselves so as to be able to restructure whenever an opportunity arises. To link these results to our earlier discussion about line production and advanced technology, note that, if interpreted in terms of
choice between these two types of technologies, the predictions of this model fit to the empirical findings of Colombo and Delmastro who, by using data on Italian manufacturing plants, show that line production increases organizational inertia while advanced technologies favor organizational change.\(^\text{13}\)

Taken together, the payoffs of the parties are for all \( p < p \)

\[
\pi_w = \begin{cases} 
\frac{1}{8} \beta^2, & \text{when } \frac{1}{4} (1 + \sqrt{1 - (1 - p)^2}) \beta^2 < \delta \leq \frac{1}{4} (2 - p) \beta^2, \\
\frac{1}{8} (1 - p)^2 \beta^2, & \text{when } \delta > \frac{1}{4} (2 - p) \beta^2, 
\end{cases}
\]

\[
\pi = \begin{cases} 
\frac{1}{8} \beta^2, & \text{when } \frac{1}{4} (1 + \sqrt{1 - (1 - p)^2}) \beta^2 < \delta \leq \frac{1}{4} (2 - p) \beta^2, \\
\frac{1}{4} (1 - p)^2 \beta^2 + p \delta, & \text{when } \delta > \frac{1}{4} (2 - p) \beta^2. 
\end{cases}
\]

Proposition 2 indicates that there exists a conflict of interest between the privately and socially optimal governance structure. While combining employee veto power with severance pay \( S \) would force the shareholders to internalize the effect of restructuring on the welfare of the employees, it is unfortunately not in the private interest of the shareholders to use severance pay \( S \) because the proceeds (from the improved investment incentives) would have to be shared with the employees while the costs would be borne entirely by the shareholders.

**Corollary 3** *The shareholders offer too little employee protection.*

Corollary 3 follows directly from the comparison of proposition 2 to the behaviour of shareholders under the severance pay alternative in (9). As a

\(^{13}\)Boyer and Moreaux (1995) construct a duopoly model to analyze the role of industry characteristics such as market volatility and size in explaining the tendency of Japanese firms to invest heavily in flexible technologies and, in somewhat related manner, find that increased market volatility may favor the adoption of flexible technologies.
result, although their ultimate technology choice will display some inertia, the shareholders will restructure too often and without voluntarily resorting to severance pay $S$.

In the next section, I turn to analyze under which circumstances the shareholders prefer to choose general or specific production technology initially and how their choice is related to the total surplus maximizing one.

## 5 The choice of initial production technology

The shareholders’ choice of initial production technology is based on the comparison between their payoffs under the specific and general production technology, respectively:

$$
\pi = \begin{cases} 
\frac{1}{4} \beta^2, & \text{when } \frac{1}{4}(1 + \sqrt{1 - p})^2 \beta^2 < \delta \leq \frac{1}{4}(2 - p) \beta^2, \\
\frac{1}{4}(1 - p)^2 \beta^2 + p \delta, & \text{when } \delta > \frac{1}{4}(2 - p) \beta^2 
\end{cases}
$$

(10)

$$
\pi = \frac{1}{4} \alpha^2 + p \delta \text{ for all } \delta > \frac{1}{4}(1 + \sqrt{1 - (1 - p)^2}) \beta^2.
$$

(11)

**Proposition 4** When $p \to 0$, the shareholders commit to the specific production technology for all $\delta$. When $p \to 1$, the shareholders choose the more flexible general production technology.

**Proof.** See the appendix. □

The results of proposition 4 are very intuitive. When the probability that a new technology arrives approaches zero, only the relative productivity of the two initial technologies matters; the shareholders obviously choose the more productive specific production technology. However, when $p$ increases, both
the short-run productivity and the long-term flexibility of the human capital input matter. For high values of \( p \), the shareholders then opt for the more flexible general technology so as to avoid the trade-off between the \textit{ex ante} investment incentives and flexibility.

Proposition 4 then captures the key finding that, when \( p \) increases, choosing the general production technology initially becomes more attractive for the shareholders. Interestingly, the preferences of the shareholders also shift towards choosing the general production technology initially if, to achieve restructuring, the consent of the employees has to be bought by offering them severance pay \( S \):

**Corollary 5** If the employees can push for severance pay when feeling threatened by restructuring, the shareholders choose the specific production technology less often.

**Proof.** See the appendix. ■

Consequently, corollary 5 suggests that, in a corporate governance system with high level of employee voice, the general production technology can be relatively more attractive, i.e., chosen more often. Intuitively, the choice of the initial production technology in such an environment fundamentally affects the terms under which restructuring can be undertaken by determining how divergent the interests of the parties are in the face of change. While choosing the specific production technology initially aggravates the conflict of interest in context of restructuring, the general technology alleviates it. This then implies that technological choice may act not only as a substitute to explicit stakeholder protection in guarding the \textit{ex ante} investment incentives.
of the employees but also as a complement to system-wide governance provisions. In particular, if rights granted by law (such as codetermination) or a high degree of unionization raise the ability of the employees to push for concessions when feeling threatened by restructuring, general type of production technology can be relatively more attractive in a stakeholder-oriented governance system like that in Germany than in a typical shareholder-dominated Anglo-American governance system.\textsuperscript{14} This applies especially to times of major economic transformation and/or to industries which are developing and, hence, subject to greater uncertainty.

Finally, let us briefly characterize the total surplus maximizing technology choice. Recall that, if the specific production technology is initially chosen, total surplus is maximized by granting the employees a veto and then using severance pay to realize value-enhancing new technologies. Total surplus under this governance structure should then be compared with that under the general production technology:

\[
TS_{\text{specific}} = \begin{cases} 
\frac{3}{8} \beta^2, & \text{when } \frac{1}{4}(1 + \sqrt{1 - (1 - p)^2}) \beta^2 < \delta \leq \frac{1}{2} \beta^2, \\
\frac{3}{8} \beta^2 + p \left( \delta - \frac{1}{2} \beta^2 \right), & \text{when } \delta > \frac{1}{2} \beta^2,
\end{cases} \\
TS_{\text{general}} = \frac{3}{8} \alpha^2 + p \delta \text{ for all } \delta > \frac{1}{4}(1 + \sqrt{1 - (1 - p)^2}) \beta^2.
\]

(12)

(13)

Given the specific technology, a comparison of (12) to (13) reveals that, while the severance pay removes the negative effect of technological change on the \textit{ex ante} investment incentives, it does not, however, prevent the new technology from rendering these investments valueless. As a result, the general

\textsuperscript{14}See footnote 2 for discussion on the ability of employees for example in Germany to push for preceding type of concessions.
production technology may well be the total surplus maximizing technology choice.

**Proposition 6** For all $p > 0$, it is possible to find $\alpha < \beta$ so that total surplus is maximized by choosing the general production technology initially.

**Proof.** See the appendix. ■

Proposition 6 then captures the idea that choosing the specific production technology initially and insuring the employees against losing the value of their human capital by using severance pay is the total surplus maximizing solution only if the human capital thereby protected is productive enough.

### 6 Related literature

As mentioned in introduction, this paper is connected to several strands of earlier theoretical literature. Instead of discussing some of this literature anew, I urge the reader to look at introduction as here I intend to take up only the literature not already discussed there (see also the section titled as "The Model" for discussion related to interpreting the initial technology choice as that between line production and advanced manufacturing technology).

A central question in this paper is, whose interests should count in corporate decision-making. Consequently, by touching the issue of allocation of authority, this paper is connected to those of Aghion and Tirole (1997, 2001). By arguing that technological choices made by the shareholders may importantly affect how divergent the interests of employees are when faced with an alternative project in future, this paper, however, differs from Aghion and
Tirole (1997) who in analyzing how the allocation of authority affects the incentives of employees to show initiative take the degree of interest alignment over the project choice as given. Simultaneously, this paper identifies technological choice as a potential means to decrease the effects of biased decision-making which Aghion and Tirole (2001) acknowledge as a potential downside of undivided shareholder control.15

By considering the effects of firm’s technological choices, this paper is, in turn, linked to the models of Almazan et al. (2003) and Saint-Paul (1992). However, whereas Almazan et al. concentrate on investigating the interaction between technological standards and the location decisions of firms, here the focus is on the interaction between technological choices and the internal governance structure of the firm. By looking at an organization with a distinct hierarchy and by considering how technological choices can be used to control the amount of intra-firm frictions that arise in context of restructuring, this paper also differs from that of Saint-Paul where an entrepreneur may choose a less specialized and, hence, less productive technology if financial markets are underdeveloped.

In analyzing the role of severance pay as a means to overcome employee resistance to restructuring, this work is connected to the recent paper of Almazan and Suarez (2003), where different combinations of severance pay, incentive compensation and managerial entrenchment may emerge as optimal depending on how noisy signal performance is of managerial effort. In

15 By considering explicit measures to protect stakeholder rights, this paper is also connected to Cespa and Cestone (2004) where formal stakeholder protection, however, serves an opposite purpose: to deprive the firm’s management of the possibility to self-entrenchment.
contrast to Almazan and Suarez, who concentrate on specific human capital and connect the design of governance structure to pay-performance sensitivity, I argue that the design of governance structure (including the need to pay severance pay) is intimately related to the type of human capital (in particular, to its sensitivity to future restructuring) which can be controlled by the firm’s choice of production technology.

By touching the issue of asset specificity and the resulting potential for a hold-up problem, this paper is also linked to the seminal work of Williamson (1985), Grossman and Hart (1986) and Hart and Moore (1990). The latter two papers are also relevant in the sense that the approach to contractual incompleteness applied in this paper (i.e., some factors are assumed to be noncontractible ex ante but contractible ex post) follows in their footprint.

More generally, there is an extensive literature both in organization theory and corporate finance that examines the interaction between specific human capital and corporate restructuring (for the "breach of trust" literature, see the introduction of this paper). For example, both Arya et al. (2003) and Ferreira and Rezende (2005) provide motivation for why, to induce firm-specific human capital, it may be beneficial for the management to make early, less-informed investment decisions, or to publicly announce the corporate strategy. Here, however, the emphasis is on the idea that to which extent these type of measures are needed is affected by the organizational design.
7 Concluding remarks

A central question in this paper is how the incentives of employees to acquire valuable human capital can be reconciled with the ability of shareholders to undertake value-enhancing restructuring. In this paper, the answer to this question in terms of the need of the shareholders to use explicit stakeholder protection (such as veto power and severance pay) depends crucially on the sensitivity of employees’ human capital to changes in the status quo production technology; this, in turn, can be controlled by the shareholders through their choice of the initial production technology. This paper then suggests that, when the human capital of employees is highly vulnerable to changes in the status quo technology, employee veto power over technological changes should be combined with severance pay so as to protect the investment incentives of employees; no such explicit protection is, however, needed if the shareholders, at the price of higher investment costs, initially organize the production so as to allow the human capital of the employees to be flexibly adapted to new circumstances.

The main findings of this paper are that, when the initial technological choice is highly inflexible (i.e., the value of employee human capital is exclusively geared to the status quo production technology), the shareholders are indeed willing to forego some restructuring opportunities by granting the employees a right of veto; the level of protection offered, however, falls short of the socially desirable one. Secondly, an increase in the probability that restructuring opportunities arise in the future makes it more attractive both socially and from the viewpoint of the shareholders to initially build a flexible organization. Thirdly, if (in order to implement restructuring) the consent of
employees has to be bought by using severance pay, the likelihood that the shareholders initially adopt the flexible technology increases.

Taken together, the results of this paper suggest that technological choices may act as substitutes to certain governance arrangements in protecting the interests of employees in context of restructuring. Furthermore, technological choices may, under certain circumstances, also function as complements to system-wide governance provisions. Addressing these questions empirically would be an interesting avenue for future work.
APPENDIX:

Proof of Proposition 2:

When \( \frac{1}{4}(1 + \sqrt{1 - (1 - p)^2})\beta^2 < \delta \leq \frac{1}{2}\beta^2 \), the relevant comparison is between \( \bar{\pi} = \frac{1}{4}\beta^2 \) in (9) and \( \bar{\pi} = \frac{1}{4}(1 - p)^2\beta^2 + p\delta \) in (5); obviously, the shareholders grant the employees a veto only if their payoff from doing so exceeds their payoff from not doing so:

\[
\frac{1}{4}\beta^2 > \frac{1}{4}(1 - p)^2\beta^2 + p\delta,
\]

which gives the condition

\[
\delta < \frac{1}{4}(2 - p)\beta^2. \tag{A.1}
\]

Combining (A.1) with the condition \( \delta > \frac{1}{4}(1 + \sqrt{1 - (1 - p)^2})\beta^2 \) from assumption 1 then gives the following condition:

\[
\frac{1}{4}(1 + \sqrt{1 - (1 - p)^2})\beta^2 < \delta < \frac{1}{4}(2 - p)\beta^2,
\]

which is non-empty when \( p < p \equiv (1 - \frac{1}{2}\sqrt{2}) \approx 0,293 \). This then gives the first part of proposition 2.

When \( \delta > \frac{1}{2}\beta^2 \), the shareholders’ choice is found by comparing \( \bar{\pi} = \frac{1}{4}\beta^2 + p\left(\delta - \frac{1}{2}\beta^2\right) \) in (9) to \( \bar{\pi} = \frac{1}{4}(1 - p)^2\beta^2 + p\delta \) in (5); naturally, the shareholders are willing to grant the employees a veto and then use severance pay to buy it back only if their payoff from doing so exceeds their payoff from not doing so:

\[
\frac{1}{4}\beta^2 + p\left(\delta - \frac{1}{2}\beta^2\right) > \frac{1}{4}(1 - p)^2\beta^2 + p\delta,
\]

which can be rewritten as

\[
\frac{1}{4}(1 - 2p)\beta^2 + p\delta > \frac{1}{4}(1 - p)^2\beta^2 + p\delta. \tag{A.2}
\]
It is immediately clear that for all $p > 0$ the LHS of (A.2) cannot exceed the RHS of (A.2). This then gives the second part of proposition 2.

**Proof of Proposition 4:**

To facilitate the understanding of this proof, I restate the equations (10) and (11) from the body of the text and renumber them as (A.3) and (A.4), respectively:

$$
\pi = \begin{cases} 
    \frac{1}{4} \beta^2, & \text{when } \frac{1}{4}(1 + \sqrt{1 - (1 - p)^2})\beta^2 < \delta \leq \frac{1}{4}(2 - p)\beta^2, \\
    \frac{1}{4}(1 - p)^2\beta^2 + p\delta, & \text{when } \delta > \frac{1}{4}(2 - p)\beta^2, 
\end{cases}
$$

(A.3)

$$
\pi = \frac{1}{4} \alpha^2 + p\delta \text{ for all } \delta > \frac{1}{4}(1 + \sqrt{1 - (1 - p)^2})\beta^2.
$$

(A.4)

When $p \to 0$, (A.3) reduces to $\frac{1}{4} \beta^2$ and (A.4) to $\frac{1}{4} \alpha^2$; the former is larger than the latter for all $0 < \alpha < \beta$.

In the case of $p \to 1$, notice first that, when $p > p \equiv (1 - \frac{1}{2}\sqrt{2}) \approx 0,293$, the region $\frac{1}{4}(1 + \sqrt{1 - (1 - p)^2})\beta^2 < \delta \leq \frac{1}{4}(2 - p)\beta^2$ becomes empty. Consequently, as $p \to 1$, the relevant comparison is between $\pi = \delta$ and $\pi = \frac{1}{4} \alpha^2 + \delta$; the latter is larger than the former for all $\alpha > 0$.

**Proof of Corollary 5:**

If, when the specific production technology is initially chosen, restructuring can be implemented without resorting to severance pay, the relevant comparison of payoffs is between

$$
\pi = \begin{cases} 
    \frac{1}{4} \beta^2, & \text{when } \frac{1}{4}(1 + \sqrt{1 - (1 - p)^2})\beta^2 < \delta \leq \frac{1}{4}(2 - p)\beta^2, \\
    \frac{1}{4}(1 - p)^2\beta^2 + p\delta, & \text{when } \delta > \frac{1}{4}(2 - p)\beta^2, 
\end{cases}
$$
and
\[ \pi = \frac{1}{4} \alpha^2 + p\delta \text{ for all } \delta > \frac{1}{4}(1 + \sqrt{1 - (1 - p)^2})\beta^2. \]

The shareholders then choose the specific production technology initially when \( p \in \left(0, \left[1 - \frac{a}{b} \right]\right)\); notice that this condition is possible to satisfy without violating the condition \( p < p \equiv (1 - \frac{1}{2}\sqrt{2}) \approx 0, 293. \)

If, when the specific production technology is initially chosen, the shareholders have to buy the consent of the employees with severance pay in order to restructure, the relevant comparison of payoffs is between
\[ \tilde{\pi} = \begin{cases} \frac{1}{4}\beta^2, & \text{when } \frac{1}{4}(1 + \sqrt{1 - (1 - p)^2})\beta^2 < \delta \leq \frac{1}{2}\beta^2, \\ \frac{1}{4}\beta^2 + p\left(\delta - \frac{1}{2}\beta^2\right), & \text{when } \delta > \frac{1}{2}\beta^2, \end{cases} \]

and
\[ \pi = \frac{1}{4} \alpha^2 + p\delta \forall \delta > \frac{1}{4}(1 + \sqrt{1 - (1 - p)^2})\beta^2. \]

The shareholders then choose the specific production technology initially when \( p \in \left(0, \frac{1}{2} \left[1 - \frac{a^2}{b^2}\right]\right)\). Since \( \frac{1}{2} \left[1 - \frac{a^2}{b^2}\right] < \left(1 - \frac{1}{2}\right)\) for all \( \alpha < \beta \), the range of \( p \)-values for which the shareholders now choose the specific production technology decreases; this then implies corollary 5.

**Proof of Proposition 6:**

When \( \frac{1}{4}(1 + \sqrt{1 - (1 - p)^2})\beta^2 < \delta \leq \frac{1}{2}\beta^2 \),
\[ TS_{general} > TS_{specific} \text{ requires that } \alpha > \sqrt{\beta^2 - \frac{4}{3}p \times 2\delta}; \]

when \( \delta > \frac{1}{2}\beta^2 \),
\[ TS_{general} > TS_{specific} \text{ requires that } \alpha > \sqrt{\beta^2 - \frac{4}{3}p}\beta^2. \]
The relevant condition then is
\[ \alpha > \max \left\{ 0, \sqrt{\beta^2 - \frac{4}{3}p \times 2\delta} \right\} , \text{ where } \delta \in \left( \frac{1}{4}(1 + \sqrt{1 - (1 - p)^2})\beta^2, \frac{1}{2}\beta^2 \right) . \]

This can be rewritten as
\[ \alpha > \max \left\{ 0, \sqrt{\beta^2 - \frac{8}{3}p\delta} \right\} \] \hspace{1cm} (A.5)

where \( \delta \in \left( \frac{1}{4}(1 + \sqrt{1 - (1 - p)^2})\beta^2, \frac{1}{2}\beta^2 \right) . \) Looking at (A.5), it is then clear that, for all \( p > 0, \) it is possible to find \( \alpha < \beta \) so that \( TS_{\text{general}} > TS_{\text{specific}}. \)
References


III Monitoring ability, allocation of authority, and choice of business strategy

Abstract

This paper studies how the allocation of authority within the firm interacts with the owners’ choice of business strategy when the ability of the owners to monitor the project proposals of the manager is biased in favor of the status quo strategy. It is shown that, when delegation induces the manager to use his expertise in finding a project, delegation is more attractive under the new strategy because the bias in the owners’ monitoring ability raises the opportunity costs of not delegating. However, this same effect may simultaneously cause inefficient inertia as the expectation of having to trust the managerial advice more often prevents the owners from adopting the new strategy.

JEL Classification: G32; G34; L21.

Keywords: monitoring, allocation of authority, congruence, choice of business strategy, inertia.
1 Introduction

There is empirical evidence from transition economies suggesting that, to achieve restructuring, it does not simply suffice to give monetary incentives to the old management but new managerial human capital is needed (see Barberis et al. (1996)). Even more interesting is, however, the evidence indicating that restructuring may require a change in the human capital of the owners. In the study of Barberis et al., when coupled with new management, new ownership sharply raises the likelihood of restructuring.\footnote{In general, the privatization process in the transition economies has generated plenty of empirical evidence on restructuring; Djankov and Murrell (2002) offer a comprehensive, recent survey of this literature.}

The aim of this paper is to develop a theoretical model to explain why the human capital of the owners matters for the restructuring of the firm’s business strategy. The key idea in this paper is that, although the management of the firm could be changed so as to reflect the changes in the business strategy, restructuring may not be undertaken by the owners if their human capital is biased towards the current business strategy.

In particular, the owners’ lack of knowledge of the new business strategy, as captured by their lower ability to monitor the project proposals of the new business area’s management, may lead to suboptimal (i.e., non-total surplus maximizing) choice of strategy. This result arises because, when making their strategy choice, the owners care not only about the degree of agency costs (i.e., how divergent the interests of the manager are from those of the owners) but also the frequency of these costs (i.e., how often the owners have to rely on the manager’s potentially divergent project proposal). As a result,
the owners may fail to switch to a new business strategy, even though more congruent managerial expertise is available under this strategy, because of the value loss from having to trust the project choice of the manager more often.\textsuperscript{2}

Interestingly, when the monitoring ability of the owners is biased in favor of the \textit{status quo} business strategy, it will affect not only the choice of business strategy but also the allocation of authority within the firm. In fact, these two elements are shown to be closely linked in the sense that the effects of the strategy change on the allocation of authority help to understand why the strategy choice of the owners may exhibit inefficient inertia. Especially, when delegation has incentive effects by inducing the manager to use his expertise to gather information about potential projects, delegation turns out to be \textit{more attractive} under the new business strategy because the improved managerial incentives are a way for the owners to try to compensate their own reduced information gathering ability. This effect, however, simultaneously makes the owners hesitant to switch the strategy since it would involve a more frequent loss of control over the project choice.\textsuperscript{3}

\textsuperscript{2}The idea that a switch in the business strategy increases the informational asymmetry from the point of view of the owners is somewhat parallel to the concept of mean-preserving spread which puts more weight on the tails of a distribution for a given mean. In a sense, the change in the business strategy comes close to this kind of a modification and makes the project choice more risky for the owners.

\textsuperscript{3}Here the informational advantage of the owners on one particular activity makes them "conservative" and reluctant to abandon that activity. This idea is similar to that in Minetti (2005) where informed finance can be an obstacle to technological progress; to preserve the value of its information on mature technologies, it does not finance new technologies (see also Guiso (1998)).
More generally, the degree of the managerial expertise (in information gathering) is shown to positively affect the willingness of the owners to delegate only if the interests of the manager are sufficiently aligned with the owners'. More precisely, for low values of congruence, delegation is never chosen; in the mid-range, the choice depends on whether the degree of the managerial superiority in information gathering exceeds a certain threshold while with high levels of interest alignment delegation is always chosen.\(^4\)

In focusing on the role of the human capital of the owners, this paper differs from that of Mailath et al. (2004) where the inefficiency in the business strategy choice results from the fact that the human capital of the manager is tied to the current strategy; that is, a strategy change (in specific, a merger) is not undertaken by a firm because it would make the provision of managerial incentives more costly. By showing that the owners may not restructure although informed about alternative strategies, this paper also differs from that of Inderst and Mueller (2005) who study how a manager can be induced to reveal information about strategy when disclosure may lead to his dismissal. Simultaneously, in emphasizing the monitoring function of the owners, this paper is different from those of Frydman et al. (1999, 2000) which, to explain the differences in the successfulness of restructuring, stress the differing abilities of different owners to accept risk as well as the differing needs to (politically) justify their decisions.

The two theoretical papers most closely related to this one are Aghion and

\(^4\)By concentrating on the role of managerial expertise, the viewpoint of this paper is different from those papers where a generalist manager (someone with broad and flat knowledge) might be preferable to an expert with narrow and intimate knowledge (see Ferreira & Sah (2002), Hart & Holmström (2002) and Hart & Moore (2005)).
Tirole (1997) and, especially Aghion and Tirole (1995). The latter takes the framework of real and formal authority developed in the former and applies it to analyze the effects of corporate growth (e.g., an increase in the scale of the activities) to the extent of organizational integration. The main implication of the analysis is that growth, by increasing the headquarter’s overload, may lead to refocus on core competencies (i.e., on something the headquarter has expertise in and, hence, can cheaply monitor) through, for example, spin-offs. While building on the framework of real vs. formal authority, this paper differs from those of Aghion and Tirole by analyzing the role of the managerial expertise for the allocation of authority and by showing that the (relatively) good monitoring ability of the principal on one particular business activity may lead to inefficient status quo dependence when the private gains from better monitoring ability in the status quo business activity outweigh both the increase in the profits and the reduction in the degree of the agency costs in the new business activity.

In addition to Aghion and Tirole, several other authors have also analyzed extensively how different organizational factors such as the degree of ownership concentration, the competition between business units over a limited overall capital budget or the type of information available about the projects affect the information gathering incentives in hierarchies (see Burkart et al. (1997), Rotemberg and Saloner (1994, 1995, 2000) and Stein (2002), respectively). Similarly, possible explanations for organizational inertia have been
studied both theoretically and empirically. However, none of these papers analyze the ownership base of the firm as a source of inertia.

This paper is organized as follows: in Section 2, I set up the model; in Sections 3 to 5, I analyze the alternative allocations of authority under a given business strategy. In Section 6, I endogenize the strategy choice of the firm and examine under which conditions a change in the business strategy will lead to a change in the allocation of authority; I then proceed to show that the strategy choice of the owners may exhibit inefficient inertia. Finally, in Section 7, I conclude.

2 The model

Parties and business strategies: consider a firm, which is owned by risk-neutral shareholders with perfectly aligned interests. The firm is run by a manager, who is an expert of the status quo business strategy (what I mean by managerial expertise will be explained in detail below). However, an alternative business strategy is also available and it could raise the firm’s profits beyond what is achievable under the status quo one. This alternative strategy could be the result of an exogenous change in the firm’s environment (such as deregulation). Although the new business strategy is outside the

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5For explanations arising from employee behaviour, see Ruckes and Rønde (2005) and Schaefer (1998)); for an empirical study of the role of HRM practices and manufacturing technologies, see Colombo and Delmastro (2002).

6Alternatively, there could be a controlling blockholder and a group of minority shareholders with perfectly aligned interests holding the rest of the shares; the results of the model are robust to this modification.

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area of expertise of the current manager, there is a new manager available with appropriate expertise. As a result, the owners are faced with the choice of continuing under the \textit{status quo} strategy (with the guidance of the current manager) or redirecting the business into the new business area (and replacing the current manager). When making their choice, the owners will weigh not only the potential profitability of the alternative strategies but also how the degree of interest alignment and the owners’ own monitoring ability differ between the strategies. I will next discuss each of these factors in detail. In what follows, both of the managers are assumed to be risk-neutral.

\textit{Projects:} given the choice of business strategy, there are four alternative projects which could be undertaken. At most one project can be implemented; which project it is, cannot be contracted for \textit{ex ante}. The project payoffs are summarized in the following table where the first term in the parentheses is the profit accruing to the owners, \( b > 0 \) is the private benefit of the expert manager, \(-D < 0\) and \(-l < 0\) are large negative payoffs and \( \alpha, \beta \in (0, 1) \) is the congruence parameter (of common knowledge) measuring the degree of interest alignment between the parties:\footnote{To reduce the amount of necessary parameters, I concentrate to the symmetrical case where the parties have a common congruence parameter. The results of the model are, however, robust to the removal of this assumption.}
Only three of the projects are relevant in the sense that they yield a non-negative payoff to both parties; neither party ever wants to undertake the failure project. The zero project generates a zero payoff to both parties while the other two relevant projects differ in terms of the payoffs they yield. One of these projects is preferred by the owners while the other one is preferred by the manager. The fact that the new business strategy is potentially more profitable for the owners is then captured by the assumption that

**Assumption 1**: $B > 1$.

In what follows, I assume that, with respect to the project choice, all possibilities of aligning the interests of the parties by means of incentive pay have already been exhausted (however, for more discussion on this issue, see Section 7).

**Screening technology**: except for the zero project which is known, the other projects cannot be distinguished from each other without further investigation. As a result, once the business strategy has been chosen, the parties
simultaneously engage in information gathering to learn the project payoffs. To simplify the analysis, the screening costs of the parties are assumed to be zero (this assumption can, however, be removed at the expense of additional notation).

The probability that the owners are able to identify the project payoffs will depend on the choice of business strategy. In the *status quo* business area, the owners are able to identify the projects with probability \( p \in (0, 1) \); with probability \( 1 - p \) the owners still view the projects as identical. On the other hand, if the owners decide to change the business strategy, the ability of the owners to gather information decreases so that, under the new strategy, the owners are informed about the project payoffs with probability \( q, 0 < q < p \).

The probability that the manager is informed depends on whether he puts his expertise into the use. More precisely, after he has been hired but before the screening takes place, the manager can take an unobservable action \( i \) at a cost \( c \). Taking the action \( i \) can be interpreted as a situation where the manager exerts effort to put his expertise into the use:

<table>
<thead>
<tr>
<th>action ( i ) taken at cost ( c )</th>
<th>manager ( j )'s probability of being informed in his area of expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>no action ( i ) taken</td>
<td>( s, ) ( 0 &lt; s &lt; p )</td>
</tr>
<tr>
<td></td>
<td>( p \left( \theta^j \right) \equiv p + \theta^j (1 - p), )</td>
</tr>
<tr>
<td></td>
<td>( \theta^j \in [0, 1], )</td>
</tr>
<tr>
<td></td>
<td>( j = \text{old, new} )</td>
</tr>
</tbody>
</table>
The superscript $j = \text{old}, \text{new}$ refers to the manager of the *status quo* and the new business strategy, respectively. The parameter $s$ captures the probability that the manager is informed if he does not put his expertise into the use.\(^8\,^9\)

One can then define the increase in the manager’s probability of finding a positive value project, given that he puts his expertise into the use, as

$$\Delta^j_p \equiv \theta^j(1 - p) - s \in (\theta^j(1 - p), \ p + \theta^j(1 - p)).$$

Here $\Delta^j_p$ depends positively on the parameter $\theta^j$, which is common knowledge and can be interpreted as the degree of managerial expertise. When $\theta^j = 1$, the manager is able to identify the projects perfectly; for all $\theta^j < 1$, there is a positive probability that the manager views the projects identical even after screening.

For now, I will treat $\theta^j$ as exogenously given and concentrate on the case

\(^8\)For simplicity, the probability that the manager is able to identify the projects if he is moved outside his area of expertise is assumed to be zero. However, even if this assumption were relaxed (say, $s$ would describe the probability of being informed in this case too), the main conclusions of the model would remain intact. The only difference would be that in the case of centralized decision-making (to be explained below) a change in the business strategy would lead to replacement of the current manager only if $\alpha < \beta$. In the existing setup, replacement takes place always when business strategy is changed.

\(^9\)Remark: to more clearly separate mere management changes from strategic changes, the *status quo* option could be interpreted as a situation where only the management is changed; the new strategy would then represent the combined effect of new management and new strategy. The empirical evidence, however, seems to suggest that management changes often overlap with fundamental changes in strategy (see Inderst and Mueller (2005) and the references therein). The evidence also indicates that different owners are equally able to identify, attract and hire competent management (on this, see Frydman et al. (2000)).
where equivalent expertise is also available in the new business area:

**Assumption 2**: $\theta^{old} = \theta^{new} \equiv \theta$ and $\Delta^j_p \equiv \Delta_p$.

**Allocation of authority**: after screening has been completed, the owners hold the right to choose the project unless otherwise agreed. In practise, this means that, after both parties have independently gathered information, the manager makes a project proposal to the owners, who then perform monitoring - i.e., pick their preferred project whenever they are informed about the project payoffs. As a result, the manager will only be able to choose the project when the owners are uninformed. I will call this case as *centralized decision-making*.

Alternatively, the owners can choose to delegate decision-making authority to the manager. In this case, whenever the manager is informed, the owners rubberstamp his project proposal; hence, the owners’ preferred project gets implemented only when the owners are informed but the manager is not. I will call this case as *delegated decision-making*. The common element in both of these authority structures is then the possibility for *ex post* asymmetric information which transfers real authority to the better informed party.

---

10 Whether the information is hard (i.e., costlessly verifiable) or soft (a pure suggestion), does not really matter because the parties do not have incentives to lie. That is, the expected payoff from randomly picking a project is sufficiently low compared to the zero project so that, when uninformed, both parties always prefer to confess their ignorance while, when informed, both parties always propose their preferred project.

11 Whichever authority structure is chosen, it is assumed that the owners can commit to it either as a result of a specific contract or, more generally, through corporate charter or law. For a recent paper which studies what decisions are delegated to a better informed and biased agent when the ability of the principal to commit to any chosen allocation of authority can vary, see Alonso and Matouschek (2005).
The owners choose the allocation of authority by taking into account that

**Assumption 3**: the cost $c$ of exerting the managerial expertise is large enough so that the expertise will not be used if the decision-making is centralized. Once the decision-making is delegated, the manager will use his expertise.

As a result, $\Delta_p \equiv p(\theta) - s$ will capture the incentive gains from delegation while $\alpha, \beta < 1$ will capture the loss of control over the project choice.

**Timeline of events**: the events proceed as follows:

1. The owners choose the business strategy.
2. The owners hire an expert manager of the chosen business strategy and choose the allocation of decision-making authority.
3. Depending on the allocation of authority, the manager either puts his expertise into the use or doesn’t.
4. The parties screen the projects in the chosen business area.
5. The project is selected and implemented; payoffs realize.

This time sequence is chosen to simplify the analysis. However, the main conclusions of the model regarding the attractiveness of delegation under the new strategy and the possibility for inefficient *status quo* bias are not conditional on the owners’ strategy choice preceding the project screening stage.\(^{12}\)

\(^{12}\)Reversing the time sequence would involve hiring two managers instead of just one.
While endogenizing the time sequence is outside the scope of this paper, it is, however, worth noting that the owners’ decision whether to screen first is likely to be affected not only by intra-firm considerations but also by external factors (such as (time) pressure created by competing firms). Consider, for example, a situation where new markets open as a result of deregulation and there is competition to enter from other potential entrants; then the time lag from waiting the screening to be completed may well prevent firms from screening before entry. As a result, the chosen time sequence can also be justified by market conditions.

3 Delegated decision-making

The model is solved by backwards induction. Given delegated decision-making, the action $i$ has already been taken by the manager by the time when screening takes place. As a result, the payoffs of the parties from screening under the status quo business strategy are given by

$$\pi_D^M = p(\theta)b + (1 - p(\theta))p\alpha b - c,$$

$$\pi_D^O = p(\theta)\alpha + (1 - p(\theta))p,$$

The additional factors to be considered would then include i) the cost of monitoring two managers (instead of just one), ii) the effects on the probability that no positive value project is found (with two managers this occurs only when neither of the managers nor the owners are informed) and iii) the effects on the managerial incentives when at most one project can be implemented (with two managers there is the possibility that no project will be implemented in the manager’s business area even though the manager is informed; with one manager this additional complication does not arise).
where the superscripts $M$ and $O$ denote the manager and the owners, respectively. Whenever the manager is informed (which happens with probability $p(\theta)$), he picks his preferred project with a private benefit of $b$ to himself and a profit $\alpha$ to the owners. When the manager is uninformed but the owners are informed (which happens with probability $(1 - p(\theta))p$), the owners get to choose their preferred project with profit 1 to themselves and a private benefit of $\alpha b$ to the manager. When neither party is informed, the expected payoff from randomly choosing a project is sufficiently low so that both parties prefer the zero project.

For the payoffs in (1) and (2) to realize, the following condition has to be met:

$$\pi^{M}_{D} > sb + (1 - s)p\alpha b.$$  \hspace{1cm} (3)

That is, the manager’s payoff from taking the action $i$ has to exceed his payoff of not taking it.\(^{13}\) From the equation (3) we get (after some rewriting) the following condition for $c$:

$$c < \triangle_p (1 - p\alpha) b.$$  \hspace{1cm} (4)

In contrast, if the new business strategy is chosen, the payoffs from delegation are given by

$$r^{M}_{D} = p(\theta) b + (1 - p(\theta)) q\beta b - c;$$

$$r^{O}_{D} = p(\theta) \beta B + (1 - p(\theta)) qB;$$

\(^{13}\text{Remark: when the screening costs are normalized to zero, both parties find it optimal to screen independently of the authority structure. The condition (3) then guarantees that the expert screens using his expertise. When } g > 0 \text{, additional conditions have to be met for both parties to screen independently of the authority structure. It is, however, possible to find } g > 0 \text{ for this to happen.}\)
where the condition

\[ r^M_D > sb + (1 - s) q\beta b \]  \hspace{1cm} (5)

has to hold. Solving the equation (5) gives the following condition:

\[ c < \Delta_p (1 - q\beta) b. \]  \hspace{1cm} (6)

Together with (4), this condition then simply says that the cost of exercising managerial expertise has to be low enough for expertise to be used whenever delegation is chosen.

4 Centralized decision-making

When the decision-making is centralized, the manager is not willing to exert effort to use his expertise. As a result, the payoffs of the parties from screening in the status quo business area are given by

\[ \pi^M_C = pab + (1 - p) sb, \]  \hspace{1cm} (7)

\[ \pi^O_C = p + (1 - p) s\alpha. \]  \hspace{1cm} (8)

Whenever the owners are informed (which happens with probability \( p \)), they pick their preferred project that generates a profit 1 to themselves and a private benefit \( ab \) to the manager. When the owners are uninformed but the manager is informed (which happens with probability \( (1 - p)s \)), the manager gets to choose his preferred project with private benefit \( b \) to himself and a profit \( \alpha \) to the owners.

For the payoffs in (7) and (8) to realize, the manager’s payoff from not taking the action \( i \) has to exceed his payoff from taking it:

\[ \pi^M_C > pab + (1 - p) p(\theta) b - c, \]
which gives the following condition for $c$:

$$c > \Delta_p (1 - p) b. \quad (9)$$

However, if the new business strategy is chosen, the payoffs under centralization are given by

$$r^M_C = q \beta b + (1 - q) sb,$$
$$r^O_C = q B + (1 - q) s \beta B,$$

where

$$r^M_C > q \beta b + (1 - q) p (\theta) b - c$$

has to hold. This then gives the following condition:

$$c > \Delta_p (1 - q) b. \quad (10)$$

**Lemma 1** The necessary condition for both the manager of the status quo business strategy and the manager of the new strategy to exercise their expertise if delegated decision-making is chosen by the owners is

- $\Delta_p (1 - q) b < c < \Delta_p (1 - p \alpha) b$, when $\alpha \geq \beta$ and $\alpha p < q < p$, or when $\alpha < \beta$ and $\alpha p < q < \frac{\alpha p}{\beta} p$;
- $\Delta_p (1 - q) b < c < \Delta_p (1 - q \beta) b$, when $\alpha < \beta$ and $\frac{\alpha p}{\beta} p < q < p$.

**Proof.** See the Appendix. ■

Lemma 1 simply says that it is possible to find $c > 0$ so that the manager of a given business strategy acts according to the assumption 3; i.e., puts his expertise into the use only if authority is delegated to him.
5  The choice of authority structure

Let’s first look at the owners’ choice of the authority structure given their choice of the business strategy. Obviously, the owners will choose delegated decision-making if and only if their profits under it are larger than their profits with centralized decision-making:

\[
\pi_O^D - \pi_O^C = p(\theta)(\alpha - p) - s(1 - p)\alpha > 0, \quad (11)
\]

\[
r_O^D - r_O^C = [p(\theta)(\beta - q) - s(1 - q)\beta]B > 0. \quad (12)
\]

**Proposition 2**  The willingness of the owners to choose delegated decision making depends

- **positively on the congruence parameter under both business strategies;**
- **negatively on** \(s\);
- **negatively on** \(q\) **under the new business strategy;**
- **positively on the degree of expertise,** \(\theta\), **under the status quo business strategy if** \(\alpha > p\), **and similarly under the new business strategy if** \(\beta > q\);

the critical value of \(\theta\) for delegation to dominate centralization is \(\theta > \theta_{\text{old}} \equiv \frac{p^2 - \alpha p - s(1 - p)}{(1 - p)(\alpha - p)}\) under the status quo business strategy and \(\theta > \theta_{\text{new}} \equiv \frac{pq - \beta p - s(1 - q)}{(1 - p)(\beta - q)}\) under the new business strategy.

The first three results are straightforward: the owners will choose delegation more likely, when the interests of the parties are close to each other, when the incentive gains from delegation are high and when their own ability to identify the projects is low.
The most interesting result of proposition 2 is the last one. First of all, it tells us that, given $\alpha > p$ and $\beta > q$, delegation is more likely to take place the more experienced and competent the expert is (i.e., the higher the core competency parameter $\theta$ is).

Secondly, and more importantly, the degree of managerial expertise has a positive impact on the willingness of the owners to delegate *only if* the interests of the manager are sufficiently congruent with the owners’ (i.e., only if $\alpha > p$ and $\beta > q$). As a result, even though $\theta$ were equal to one so that the manager could perfectly identify the projects, the owners wouldn’t necessarily want to delegate decision-making to him. The intuition for this result is that the more competent the manager is the more able he also is to steer the company to his preferred direction.

Thirdly, since $q < p$, the required threshold value for expertise to have a positive impact on the willingness to delegate is lower under the new strategy. This result simply captures the idea that delegation, and the subsequent use of the managerial expertise, is a way for the owners to compensate their own imperfect screening (i.e., a way to increase the probability of finding a positive value project). As the imperfectness of their own screening increases, this compensation effect becomes more valuable for the owners lowering the threshold level after which they are willing to consider delegation.

Fourthly, the critical values of $\theta$ for which delegation dominates centralization are decreasing with the congruence parameters: $(\partial \theta_{old}^\alpha / \partial \alpha) < 0$ and $(\partial \theta_{new}^\beta / \partial \beta) < 0$. This is also a very intuitive result. As long as a basic level of congruence exists (i.e., $\alpha > p$ and $\beta > q$), the manager can compensate an increase in the *dis*congruence of interests by better expertise (i.e., higher
Finally, $\theta_{old}$ and $\theta_{new}$ are positive and do not exceed one only if $\frac{p}{1-s(1-p)} \leq \alpha < \frac{p^2}{p-s(1-p)}$ and $\frac{q}{1-s(1-q)} \leq \beta < \frac{qp}{p-s(1-q)}$, respectively. It is then clear that:

**Corollary 3** When $\alpha \in \left(0, \frac{p}{1-s(1-p)}\right)$ and $\beta \in \left(0, \frac{q}{1-s(1-q)}\right)$, delegation is never chosen; when $\alpha \in \left[\frac{p}{1-s(1-p)}, \frac{p^2}{p-s(1-p)}\right)$, and $\beta \in \left[\frac{q}{1-s(1-q)}, \frac{qp}{p-s(1-q)}\right)$, the manager has to possess a certain positive minimum amount of expertise determined by $\theta^j$, $j = old, new$, for the owners ever to choose delegation; when $\alpha \in \left[\frac{p^2}{p-s(1-p)}, 1\right)$ and $\beta \in \left[\frac{qp}{p-s(1-q)}, 1\right)$, delegation will be chosen for all $\theta \in [0, 1]$.

**Proof.** See the Appendix.

The first part of corollary 3 simply follows from the fact that, at low levels of interest alignment, it is not possible to find $\theta^j \leq 1$ so that the owners would choose delegation. However, when the value of the congruence parameter belongs to the intermediate range, delegation will be chosen if the manager has enough expertise. Finally, when the interests of the manager become increasingly congruent with the owners’, even small positive incentive effects from delegation are likely to dominate the costs from slightly discongruent decisions. As a result, it is in the interest of the owners to choose delegation even when $\theta$ approaches zero.\(^{14}\)

\(^{14}\)Remark: to understand this result, it is important to remember that the parameter $\theta \in [0, 1]$ determines, first of all, how much more superior the manager is in finding a positive value project: $p(\theta) - p \in [0, 1-p]$, $p(\theta) - q \in [p-q, 1-q]$ in the status quo and the new business area, respectively. Secondly, it determines the magnitude of managerial incentive effects from delegation: $p(\theta) - s \in [p-s, 1-s]$. This latter effect is independent of the choice of business strategy. When $\theta$ approaches 0, $(p(\theta) - p)$ approaches zero while
6 The choice of business strategy

In the previous section, we derived the owners’ choice of authority structure for a given business strategy. In this section, I will endogenize the strategy choice and ask two things: first of all, if there is a change in the equilibrium business strategy, when will it be accompanied with a change in the allocation of authority? Secondly, once the owners make their strategy choice, is it an efficient (i.e., total surplus maximizing) one?

6.1 Business strategy and the allocation of authority

To answer the first question, I will proceed in a step-wise manner and inspect separately each of the ranges of \( \alpha \)-parameter (given in corollary 3) under the assumption that \( \beta \) does not take on values higher than \( \alpha \). Proceeding in this way, allows me to cover all the possible cases because the threshold value after which delegation is chosen for sure under the new strategy (i.e., \( \frac{qp}{p-s(1-q)} \)) is lower than that of the status quo one (i.e., \( \frac{p^2}{p-s(1-p)} \)). After going through all the steps, I summarize the findings in Figure 1.

Step 1. \( \alpha < \frac{p}{1-s(1-p)} \equiv \alpha \) (pure centralization under the status quo strategy): centralization is chosen under the new strategy as long as \( \beta < \frac{q}{1-s(1-q)} \); what happens after \( \beta \) reaches this value depends on whether i) \( \frac{qp}{p-s(1-q)} < \alpha \) or ii) \( \alpha < \frac{qp}{p-s(1-q)} \). Case i): when \( \frac{q}{1-s(1-q)} \leq \beta < \frac{qp}{p-s(1-q)}, \) delegation is chosen under the new strategy if the new manager possesses enough expertise (i.e., if \( \theta > \theta_{\text{new}} \)); for \( \frac{qp}{p-s(1-q)} \leq \beta < \alpha \), delegation is always chosen. Case both \( p(\theta - q) \) and \( p(\theta - s) \) remain positive. Hence, there are still incentive advantages from delegation under both business strategies.
ii): when $\frac{q}{1-s(1-q)} \leq \beta < \alpha$, delegation is chosen under the new strategy if $\theta > j\theta_{new}$.

Step 2. $\alpha \leq \alpha < \frac{p^2}{p-s(1-p)} \equiv \overline{\alpha}$ (conditional delegation under the status quo strategy): the answer again depends on whether i) $\frac{qp}{p-s(1-q)} < \alpha$ or ii) $\alpha < \frac{qp}{p-s(1-q)}$. Case i): delegation is chosen for sure under the new strategy for all $\alpha \leq \beta < \overline{\alpha}$. Case ii): when $\alpha \leq \beta < \frac{qp}{p-s(1-q)}$, (the direction of) the potential change in the allocation of authority is determined by the core competency parameter and whether it i) falls below both $\theta_{old}$ and $\theta_{new}$, ii) falls in between these two threshold values or iii) exceeds both $\theta_{j}$. (Interestingly, a switch in the business strategy may involve a move from delegation to centralization if $\theta_{old} < \theta < \theta_{new}$; the latter is, however, only possible if $\beta < \alpha$ since $\theta_{old} > \theta_{new}$ for all $\beta \geq \alpha$); when $\frac{qp}{p-s(1-q)} \leq \beta < \overline{\alpha}$, delegation is chosen for sure under the new strategy.

Step 3. $\alpha \geq \frac{p^2}{p-s(1-p)}$ (pure delegation under the status quo strategy): there is no change in the allocation of authority unless $\beta$ is small enough.

The Figure 1 summarizes these findings (see the next page). The following proposition then captures the main result of the preceding analysis:

**Proposition 4** Delegation is more attractive under the new business strategy.

The intuition behind proposition 4 is simple. When the monitoring ability of the owners is biased in favor of the status quo strategy, the higher opportunity costs from not delegating direct the owners’ choice towards more delegation under the new business strategy.

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15The dashed lines in the Figure 1 refer to the assumption that $\alpha, \beta \in (0, 1)$.
Case 1: \( \frac{qp}{p-s(1-q)} < \frac{p}{1-s(1-p)} \)

\[
\begin{align*}
0 & \quad \frac{q(1-s(1-q))}{p(1-s(1-p))} & \quad \frac{p(1-s(1-p))}{p(1-s(1-p))} & \quad \frac{p^2}{p(1-s(1-p))} \\
\text{no delegation} & \quad \text{conditional delegation} & \quad \text{delegation} & \quad \text{status quo}
\end{align*}
\]

Case 2: \( \frac{qp}{p-s(1-q)} > \frac{p}{1-s(1-p)} \)

\[
\begin{align*}
0 & \quad \frac{q(1-s(1-q))}{p(1-s(1-p))} & \quad \frac{p(1-s(1-p))}{p(1-s(1-p))} & \quad \frac{p^2}{p(1-s(1-p))} \\
\text{no delegation} & \quad \text{conditional delegation} & \quad \text{delegation} & \quad \text{status quo}
\end{align*}
\]

Figure 1: Allocation of authority under alternative business strategies
6.2 Optimal choice of business strategy

Interestingly, when one moves to examine whether the owners actually prefer to change the business strategy, it turns out that their choice may exhibit inefficient inertia because of the bias in their monitoring ability. To see this, note that, as opposed to switching to the new strategy with parallel allocation of authority, the owners prefer to continue under the status quo one with delegated versus centralized decision-making when

\[
\Delta_{old,D}^O \equiv (\pi_D^O - r_D^O) = p(\theta)[\alpha - p - (\beta - q)B] + p - qB > 0, \quad (13)
\]

\[
\Delta_{old,C}^O \equiv (\pi_C^O - r_C^O) = s[(1 - p)\alpha - (1 - q)\beta B] + p - qB > 0. \quad (14)
\]

To limit the amount of cases to be considered, I concentrate on these two situations and assume that \(\alpha > p\) and \(\beta > q\) (based on (11) and (12), the latter two are the necessary but not sufficient conditions for delegation ever to be considered).

The equations (13) and (14) are increasing with \(\alpha\) and decreasing with \(\beta\) and \(q\). As is intuitive, continuing under the status quo business strategy is more likely when the manager of the status quo strategy has well-aligned interests, when the manager of the new activity has discongruent interests and when the informational asymmetry caused by strategic changes is large (i.e., \(q\) is low). In addition, \(\Delta_{old,C}^O\) is increasing with \(p\) so that staying in the status quo business area with centralized decision-making is more likely when the owners’ own monitoring ability is high.

From the viewpoint of total surplus maximization, the firm should switch to the new business strategy whenever

\[
\Delta_{new,D}^{TS} \equiv T S_{new}^D - T S_{old}^D > 0,
\]
\[ \Delta_{TS}^{new,C} = T S_{new}^C - T S_{old}^C > 0, \]

which can be expressed as

\[ \Delta_{TS}^{new,D} = (1 - p(\theta)) [q,\beta - p,\alpha] b - \Delta_{old,D}^O > 0, \quad (15) \]

\[ \Delta_{TS}^{new,C} = [q(\beta - s) - p(\alpha - s)] b - \Delta_{old,C}^O > 0. \quad (16) \]

By looking at (15) and (16), it is clear that, if \( \Delta_{old,t}^O > 0, t = D, C, \) the owners will not change the status quo strategy. However, when \( \Delta_{new,t}^{TS} > 0, \) such a change would be efficient.

**Proposition 5** The owners’ lack of knowledge of the new business strategy may lead to inefficient inertia: a total surplus maximizing restructuring of the business strategy is not undertaken by the owners.

**Proof.** See the Appendix.

Based on the equations (15) and (16), it is evident that, in order for the inefficient inertia ever to emerge when the monitoring ability of the owners is biased in favor of the status quo strategy (i.e., when \( p > q \)), the degree of managerial congruence has to be higher under the new strategy (i.e., \( \beta \) has to exceed \( \alpha \)). The reasoning for the owners’ unwillingness to switch the strategy, even though the congruence of interests were higher, is then the following: when making their choice, the owners consider not only the differences in the degree of interest alignment between the two managers but also how often these conflicts of interest realize (i.e., how often the owners have to rely on the potentially discongruent project proposal of the manager). From the viewpoint of the owners, it is possible that the latter effect dominates the former. As a result, even if the managerial advise were more congruent
under the new business strategy, this is not necessarily enough to induce restructuring because, once undertaken, the owners are forced to trust the managerial advise more often.

7 Concluding remarks

As is shown in the experimental study of Samuelson & Zeckhauser (1988), individual behavior may exhibit substantial status quo bias originating from convenience, habit or policy. In this paper, status quo bias is studied in the context of business strategy choices of firms. It is argued that a potential source of status quo bias in the business strategy is the reduced ability of the owners to control the new management. While the existing theoretical literature on the allocation of authority in organizations has emphasized the role of the agent with discongruent interests as the source of organizational frictions and concentrated on finding means to mitigate these frictions, here, based on the well-established framework by Aghion & Tirole, it is shown that the resulting inefficiencies may well be the outcome of the principal’s own behavior. In particular, problems may result not just because the manager chooses a "wrong" project given the business strategy but because the owners themselves choose the "wrong" business strategy.

Although this paper concentrates on the possibility of inefficient inertia originating from the owners’ behaviour, not all inertia is necessarily inefficient. In other words, even if the new business strategy were more profitable (as is assumed in this paper), it is possible that the owners’ choice of not changing the business strategy is efficient. This happens if the degree of in-
terest alignment is sufficiently low under the new strategy or, even though the degree of interest alignment were the same (or even higher), if the monitoring ability of the owners is sufficiently low under the new strategy.

It is, however, worth emphasizing that the inefficiency result is robust to some natural extensions of the model. For example, if the owners could hire a consultant to raise their monitoring ability under the new strategy, inefficient status quo bias would still result given that the advice of the consultant is costly enough. More generally, if and when monitoring is subject to learning-by-doing (as is suggested in this model), allowing the current owners to sell out may not be enough to achieve restructuring. Put differently, under these circumstances, it is not obvious that there exists alternative owners with sufficient amount of knowledge so that they can compensate the current owners for their monitoring advantage on the current strategy.

Whether the results of this paper would apply directly, if monetary incentives were included, is a more involved question. To shed some light on this issue, note first that in this model the owners face two incentive problems: how intensively the manager screens the projects and which project the manager picks when informed. Without monetary incentives, delegation can be used to tackle the first problem (i.e., to raise the screening intensity of the manager). However, when the interests of the parties grow more divergent, delegation makes the second problem (i.e., project selection) more severe as the owners simultaneously commit to monitor the project choice of the manager less (in essence, they commit not to interfere in the manager’s choice).

When monetary incentives are introduced into this framework, it may
be optimal for the owners to use them to tackle both, only one or none of these problems.\textsuperscript{16} The owners’ choice depends on the costs of these options which, in turn, are essentially determined by the level of the managerial private benefit, \( b \), and the degree of the agency costs \((\alpha, \beta)\). Interestingly, when \( b \) is sufficiently high, it may well be too costly for the owners to align the project choice using monetary incentives; this then gives rise to two potential scenarios under which the results of this model could (to somewhat different degrees) still apply. Under the first of these, the owners set a positive wage (to be paid whenever the owners’ preferred project is chosen) not to align the project choice but to raise the screening intensity of the manager under \textit{centralized} decision-making. In other words, once monetary incentives are allowed for, it may be optimal for the owners to use them to raise the screening intensity of the manager while centralized decision-making is used to monitor more closely the project proposal of the manager. As the interests of the parties become more aligned, it may even be optimal for the owners to give up monetary incentives altogether; this then gives rise to a scenario under which, in accordance with the analysis conducted above, the owners use delegation to raise the effort level.

Taken together, this paper offers a human capital based explanation on why privatized firms with old managers and workers as their owners may fail to restructure their operations. In particular, this paper suggests that special attention should be paid as to whom firms with evident restructuring needs

\textsuperscript{16}In sketching these ideas, I have in mind incentive schemes that pay a bonus to the manager whenever he picks the owners’ favorite project and, due to the manager’s limited liability, a zero wage when he does the opposite.
are privatized since the initial choices may turn out to be enduring. Simultaneously, this paper also suggests that a near-permanent (static) ownership structure may be a barrier to change for a firm by increasing the risk that the owners become "too good" at monitoring the management under the status quo strategy. At the worst, reallocation of capital to new and growing sectors of economic activity may be threatened if the existing firms are dominated by owners with vested interests in the current way of doing business. Consequently, this paper then implies that, how the ownership of the firm is structured, is particularly important where new and better strategic opportunities frequently arise.
APPENDIX:

Proof of Lemma 1:

To prove lemma 1 note that, by comparing \( c > \triangle_p (1 - p) b \) in (9) and \( c > \triangle_p (1 - q) b \) in (10), it is clear that the latter is the more strict condition because \( q < p \). Combining this with \( c < \triangle_p (1 - p\alpha) b \) in (4) and \( c < \triangle_p (1 - q\beta) b \) in (6) gives the following condition:

\[
\triangle_p (1 - q) b < c < \min \{ \triangle_p (1 - p\alpha) b, \triangle_p (1 - q\beta) b \}.
\]  

(A.1)

By inspecting (A.1) it is clear that \( \triangle_p (1 - q) b < c < \triangle_p (1 - p\alpha) b \) is the necessary condition, whenever \( \alpha \geq \beta \), because \( p > q \). For this to be a non-empty region the condition

\[
\alpha p < q < p
\]

then has to hold. When \( \alpha < \beta \), the necessary condition for \( c \) is \( \triangle_p (1 - q) b < c < \triangle_p (1 - p\alpha) b \), when

\[
\alpha p < q < \frac{\alpha}{\beta} p,
\]

and \( \triangle_p (1 - q) b < c < \triangle_p (1 - q\beta) b \), when

\[
\frac{\alpha}{\beta} p < q < p.
\]

Proof of Corollary 3:

From the equations (11) and (12) we know that delegation is never chosen when \( \alpha \in (0, p] \) and \( \beta \in (0, q] \). It follows that delegation will neither be chosen when \( \alpha \in \left( p, \frac{p}{1-s(1-p)} \right) \) and \( \beta \in \left( q, \frac{q}{1-s(1-q)} \right) \) because \( \theta^j \) would have
to exceed one; this contradicts the assumption that $\theta \in [0, 1]$. The second and third part of corollary 3 then result from the facts that $\theta^{old} > 0$ if $\alpha < \frac{p^2}{p-s(1-p)} = \frac{p}{p(1-p)}$ and $\theta^{new} > 0$ if $\beta < \frac{qp}{p-s(1-q)} = \frac{q}{1-q(1-q)}$ (it is straightforward to show that $\frac{p}{1-s(1-p)} < \frac{p}{p(1-p)}$ and $\frac{q}{1-s(1-q)} < \frac{q}{1-q(1-q)}$).

**Proof of Proposition 5:**

To facilitate the understanding of the proof, I will first restate the equations (15) and (16), respectively, and number them anew:

$$\Delta^{TS}_{new,D} = (1 - p(\theta)) \left[q\beta - p\alpha\right]b - \Delta^{O}_{old,D}, \quad (A.2)$$

where

$$\Delta^{O}_{old,D} = p(\theta) \left[\alpha - p - (\beta - q)B\right] + p - qB,$$

and

$$\Delta^{TS}_{new,C} = \left[q(\beta - s) - p(\alpha - s)\right]b - \Delta^{O}_{old,C}, \quad (A.3)$$

where

$$\Delta^{O}_{old,C} = s \left[(1 - p)\alpha - (1 - q)\beta B\right] + p - qB.$$

Note first that $\alpha > p$ and $\beta > q$ are the necessary conditions for the owners ever to consider delegation and they were assumed to hold. Simultaneously, by assumption, $p > q$ and $p > s$. By combining these inequalities with $q \lesssim s$, we get seven possible rankings of the parameters: i) $\beta > \alpha > p > q > s$, ii) $\beta > \alpha > p > s > q$, iii) $\alpha > \beta > p > q > s$, iv) $\alpha > \beta > p > s > q$, v) $\alpha > p > \beta > q > s$, vi) $\alpha > p > \beta > s > q$, vii) $\alpha > p > s > \beta > q$.

In the cases iii) - vii) it is never possible that the first term on the RHS of (A.2) or (A.3) is positive. Simultaneously, given the parameter rankings, it is possible that $\Delta^{O}_{old,t} > 0$, $t = C, D$. This requires that $B$ is relatively close
to 1 and/or i) $\alpha$ is sufficiently large compared to $\beta$, and/or ii) $p$ is sufficiently large compared to $q$. None of these requirements contradicts the ranking of the parameters in iii) - vii). Hence, given that $\Delta_{\text{old},t}^O > 0$, it follows that $\Delta_{\text{new},t}^{TS} < 0$ so that one can concentrate on the cases i) and ii).

When $\beta > \alpha > p > q > s$ or $\beta > \alpha > p > s > q$, it is possible that the first term on the RHS of (A.2) is positive: even though $p > q$, it is possible that $(q\beta - p\alpha) > 0$, when $\beta > \alpha$. Similarly, the first term on the RHS of (A.3) is positive, if $(p - q) > 0$ isn’t too large. Next, by looking at $\Delta_{\text{old},D}^O$ and $\Delta_{\text{old},C}^O$, it is clear that the first term on the RHS is negative, because $\alpha < \beta$, $q < p$ and $B > 1$. For $\Delta_{\text{old},t}^O > 0$ still to hold $B$ then has to be relatively close to 1 and/or $p$ has to be sufficiently large compared to $q$. None of these requirements contradicts the ranking of the parameters in i) and ii). Hence, given $\Delta_{\text{old},t}^O > 0$, it is possible that $\Delta_{\text{new},t}^{TS} > 0$ if $\beta$ is relatively large compared to $\alpha$ and/or $b$ is large (the latter has to hold especially, when $(p - q) > 0$ increases).

More formally, the parameter values have to fulfill the following six conditions for the inefficient inertia to emerge under both allocations of authority:

1. $B > 1$ which guarantees that assumption 1 continues to hold;

2. $B < \min \left\{ \frac{p + p(\theta)[\alpha - p]}{q + p(\theta)[\beta - q]} \equiv B_D, \frac{p + s\alpha(1 - p)}{q + s\beta(1 - q)} \equiv B_C \right\}$ which guarantees that $\Delta_{\text{old},t}^O > 0$, $t = C, D$;

3. either $\max \left\{ \tilde{\theta}_{\text{old}}, \tilde{\theta}_{\text{new}} \right\} < \theta < \frac{p[1 + (\alpha - p) - (\beta - q) - q]}{(1 - q)\beta - (1 - p)\alpha} \equiv \bar{\theta}$ or $0 < \theta < \min \left\{ \tilde{\theta}_{\text{old}}, \tilde{\theta}_{\text{new}}, \bar{\theta} \right\}$ which guarantee that delegation or centralization, respectively, is chosen under both business strategies and that $B_D > 1$;
4. \( \frac{\alpha}{\beta}p < q < \frac{p(1-p-(\beta-\alpha))}{1-p} \) which guarantees that i) action \( i \) is only taken under delegation, ii) \( (q\beta - p\alpha) > 0 \) in (A.2), and iii) \( \beta > 0 \);

5. \( (1 - p) > \beta > \alpha > p \) where the first inequality guarantees that \( \frac{\alpha}{\beta}p < q < \frac{p(1-p-(\beta-\alpha))}{1-p} \) is a non-empty region;

6. \[ \max \left\{ \frac{p(\beta-q)}{\beta(1-q)}; \frac{p(\alpha-p)}{\alpha(1-p)} \right\} < s < \min \left\{ \frac{\beta-q}{\beta(1-q)}; \frac{\alpha-p}{\alpha(1-p)}; \frac{p-q}{(1-q)\beta-(1-p)\alpha} \right\} \] which guarantees that \( \theta_j \in (0, 1) \) and that \( B_C > 1 \).

Under these conditions, it is then possible to find \( b > 0 \) so that \( \Delta_{new,t}^{TS} > 0 \) given that \( \Delta_{old,t}^{O} \), \( t = C, D \), are both positive. An example of possible parameter values is \( \beta = \frac{55}{100}, \alpha = \frac{50}{100}, p = \frac{25}{100}, q = \frac{23}{100} \) and \( s = \frac{10}{100} \). The appropriate values of \( \theta \) and \( B \) are then found using conditions 1, 2 and 3 from the list above.
References


IV Board structure and CEO succession

Abstract

This paper studies the role and structure of board in context of succession process by using a framework where the board is responsible for three tasks: selection, monitoring, and counseling of successor. The departing CEO has important knowledge that improves the board’s ability to first find a matching successor and then to provide counseling to him. However, the departing CEO is simultaneously also eager to interfere with the successor’s project choice so as to assure access to private benefits. This paper then argues that, at which point (if at all) and for how long the predecessor is nominated to the board, can be used by the shareholders to balance the benefits from the predecessor’s expertise with the costs that arise from distorted project choice.

JEL Classification: G34; J41; J44.
Keywords: board of directors, composition of board, succession planning, advisory role of board.
"The paramount duty of the board of directors of a public corporation is to select a chief executive officer [...]" (Business Roundtable Principles of Corporate Governance 2005)

1 Introduction

Recently, actions to enhance the independency of the board of directors have been taken both in the USA and in Europe. For instance, New York Stock Exchange and NASDAQ both just amended their listing rules to require the boards of listed firms to have majority of independent directors (see NYSE Corporate Governance Rules Section 303A (first approved in 2003) and NASDAQ Listing Qualifications (2003)).

The preceding efforts reflect the view that the independence of the board from managerial influence is important for the board’s ability to fulfill its obligations towards the shareholders. For example, it is commonly feared that the practice where the incumbent CEO simultaneously also serves as a member (and, especially, the chairman) of the board compromises the board’s monitoring role (for discussion of this, see for example Monks and Minow (1995)). Similarly, it is also feared that the presence of the firm’s former CEO on the board may threaten the interests of the shareholders by weakening the successor’s ability to realize reforms. According to Monks and Minow, one argument against the presence of ex-CEOs on the board is that they could dominate the board’s agenda and block changes not approved by them. In the case of Germany, this concern was voiced clearly in a recent

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1In France, a new default structure of one-tier board was adopted in 2001 that breaks the formerly mandatory combination of the roles of the chief executive officer and the chairman of the board while in the United Kingdom a recent revision of the corporate governance standards of listed firms recommends both separating the roles of CEO and chairman and composing majority of the board of independent directors (see Hopt & Leyens (2004)).
article by The Economist (2005); it pointed out that one of the most serious problems facing German firms is that any new CEO wishing to make radical changes has to get his plans past his predecessor who typically chairs the supervisory board and is not keen to see his legacy destroyed.

However, while the board’s ability to act as an effective monitor and a critical reviewer of corporate strategy is obviously of significance, it is not the only function of the board. Taking the viewpoint that boards have other functions besides the task of monitoring the management this paper builds upon the idea that the ideal structure of the board and the tasks of the board are interrelated in the sense that, once the role of the board is widened to also cover other tasks, the shareholders may benefit from having a less independent board. In this paper, the idea is used to study the role and structure of board in context of succession process so as to analyze the potential costs and benefits for shareholders from having the company’s incumbent or former CEO on the board.

To analyze the implications of succession process for the ideal board structure, this paper develops a model where the board is responsible for three tasks. It is first responsible for selecting a successor to the incumbent CEO who is due to retire at a pre-specified date. Once the successor has taken office, the board is in charge of monitoring the successor’s project choice and providing advice to the successor. There are two key ideas in this paper. First, the presence of the departing CEO on the board, although facilitating the ability of the board both to find a matching successor and then to counsel him, simultaneously also weakens the ability of the board to restructure since the predecessor (either due to legacy concerns or because of empire-building tendencies) uses the opportunity to distort the successor’s project choice. Secondly, there are two ways for the predecessor to affect the successor’s project choice and the access to these depends on the beginning and the length of the predecessor’s term on the board. In particular, if on the board
before his retirement, the predecessor is able to select a successor who shares his biased project preferences while, if on the board after his retirement, the predecessor is able to use the monitoring role of the board to interfere with the successor’s project choice.

This then implies that, at which point (if at all) and for how long the shareholders nominate the predecessor to the board, determines how much the predecessor is able to distort the project choice and, consequently, to which extent the shareholders are able to realize restructuring gains. However, the beginning and the length of the predecessor’s term simultaneously also affects the predecessor’s opportunity and incentives to raise the match of and provide counseling to his successor. At each stage, the shareholders then face a trade-off. An early (i.e., pre-retirement) nomination, while increasing the predecessor’s incentives to raise the match of his successor, simultaneously also allows the predecessor to choose a successor who shares his biased project preferences. A late (i.e., post-retirement) or a continued nomination, although inducing the predecessor to advice his successor, simultaneously also allows the predecessor to interfere with the successor’s project choice through the monitoring function of the board.

Taken together, this paper suggests that the extent of restructuring gains, the firm’s ability to hire good outside directors and the importance of board’s advisory role affect at which point and for how long the shareholders want to nominate the predecessor to the board. Low restructuring gains (e.g., good firm performance) favor an early and prolonged nomination while high restructuring gains, the availability of good outside directors and the low importance of mentoring for the successor’s (and the firm’s) performance favor either an independent board or an early but only a short-term nomination.

This paper also gives rise to two implications of the role of firm and industry characteristics in affecting the ideal board composition. First, this paper suggests that, for any given firm, different board structures can be optimal
under different timepoints of the firm’s life cycle depending on the issues on the board’s agenda. In accordance with this view, Hermalin and Weisbach (1988) find that both poor corporate performance and the succession process affect board composition. In particular, poorly performing firms replace inside directors by outsiders which is consistent with the predictions of this model; in addition, when the CEO nears retirement, insiders are added to the board which supports the idea that succession process is important for the ideal board composition.  

Second, this paper suggests that, at any given timepoint, different firms may differ in terms of their ideal board structures because of differences in factors such as restructuring needs. This role of firm and industry factors is reflected, for example, on the recent empirical results of Perry and Shivdasani (2005) who find that poorly performing firms with majority of outside directors initiate more fundamental restructuring and experience more rapid recovery, and of Lasfer (2002) and Gillan et al. (2003) who find that high growth firms have more independent boards. Consequently, as a by-product of emphasizing how the performance-enhancing effects of increased board independency are connected to differences in firm and industry factors, this paper is able to provide one rationale why much of the empirical research on board composition has failed to find a clear connection between increased board independency and improved firm performance.  

On a more general level, one of the main messages of this paper is that

2That ideal board composition is affected by firms’ life cycle is also evident in Boone et al. (2005) which traces firms for ten years on from their IPOs and finds that firm growth and diversification tend to increase board size and independence.

3For a general discussion on the mixed empirical results of board composition and firm performance, see the survey by Hermalin and Weisbach (2003); for papers indicating a negative, a non-existent and a positive connection between the split of CEO and chairman titles and firm performance, see, respectively, Brickley et al. (1997), Baliga et al. (1996) and Rechner and Dalton (1991).
the shareholders may benefit from management-controlled boards. In this respect, this paper is connected to a growing strand of theoretical literature which examines the benefits of weak boards. Before discussing this literature in detail in the next section, I first briefly comment why the focus of this paper is on the board’s role in succession planning and in provision of advice to the management and why the circumstances surrounding the incumbent’s exit are relevant.

According to the American Business Roundtable Principles of Corporate Governance (2005), the single most important duty of the board of directors of a public corporation is to select a well-qualified CEO. However, CEO selection is a demanding task to accomplish successfully as the characteristics of the successor should fit to the organizational structures and business conditions (see, e.g., Gerstein and Reisman (1983)). The importance, complexity and sensitivity of the task together with the intimate knowledge required then suggests that not only is the adequacy of the outside directors extremely important for successful succession but also that, as a previous title holder, the predecessor may possess an advantage in finding a matching successor. Similarly, based on his experience and knowledge, the predecessor may also have a corresponding advantage in counseling his successor. This idea of the relevance of the insider’s knowledge is also reflected in the argument of Tirole (2006) who, in context of considering the ways to reform the functioning of board, notes that it is not a trivial task since parties close to the firm (and therefore susceptible to conflict of interest) are also likely to be best informed about the firm and its environment.

4Simultaneously, organizational studies also show that a change of CEO is a disruptive event for whole organization (see Kesner and Sebora (1994)).

5That the quality of outside board members is critical for finding a fitting successor is evident in the examples provided by Khurana (2001) where, for instance, the lack of functional diversity in director backgrounds led a technology company to choose an unsuitable successor.
However, the predecessor’s knowledge is likely to be of value only when the predecessor’s tenure as CEO has been sufficiently long and the departure is voluntary since both of these factors suggest that the incumbent has done reasonably good job and that he has had the opportunity to accumulate enough knowledge to make his skills of value. Taken together, the preceding factors then imply that, although this model could equally well apply to departures due to alternative employment, this framework is particularly applicable to situations where the incumbent CEO is leaving due to normal retirement. This view is further supported by the findings of Brickley et al. (1999) according to which normal retirement is the dominant reason for CEO departures and that nearly 60 to 70 percent of outgoing CEOs in retirement age (i.e., aged 60 or older) continue to serve on their own board. Furthermore, Brickley et al. find the likelihood of service on own board to be positively linked to firm’s good pre-retirement performance and, especially, to the length of CEO’s tenure.

This paper is organized as follows. In Section 2, I discuss the related theoretical literature. In Section 3, I set up the model. In Section 4, I analyze the model so as to derive comparative static results. Finally, Section 5 concludes. All proofs are in Appendix.

2 Related theoretical literature

One of the general messages of this paper is that governance reforms regarding board structure should leave room for individual choice since practices (like managerial dominance of the board) typically seen as detrimental can actually sometimes be desirable for the shareholders. Consequently, this paper is related to a growing strand of theoretical literature examining the potential benefits of weak (i.e., management-friendly or management-controlled) boards.
For instance, Almazan and Suarez (2003) show that yielding the CEO control over the board in replacement decisions can be in the interest of the shareholders when firm performance is a noisy signal of managerial effort. Hermalin and Weisbach (1998), in turn, show that good prior performance may enable the CEO to exercise greater control over director selection and, consequently, may allow the CEO to control board’s replacement decisions. These papers, however, deal with direct managerial entrenchment (i.e., look at situations where the incumbent CEO wants to stay on) while this paper is concerned with another source of entrenchment; namely, a retiring CEO’s ability to entrench his strategic visions through the selection process of his successor. In a sense, good past performance leads also here to greater CEO control through the increased likelihood that the predecessor will be involved in selecting and advising his successor.6

The papers of Almazan and Suarez, and Hermalin and Weisbach also differ from this one by concentrating on boards as the monitors of management and by defining monitoring as a mechanism to learn managerial ability so that effective replacement decisions can be made by the board. Consequently, this paper is more closely related to those by Adams and Ferreira (2005), Gutiérrez-Urtiaga (2000), Harris and Raviv (2005), and Raheja (2005) which, as this paper, define the board’s monitoring role as the power to approve management’s project proposals as well as specify the board’s role more broadly (so that the board may also have other roles besides monitoring).7

6Reluctance to initiate managerial replacement may also result from the fear that it reveals unfavorable information about board members and leads to losing of board seat. In Graziano and Luporini (2003), the board is unwilling to replace CEO because it reveals the board’s incompetency to select an able CEO in the first place and, consequently, exposes the firm to takeovers; in Warther (1998), reluctance arises as a failed replacement attempt by a board member leads to his own dismissal.

7For a paper that treats monitoring as a process to unveil managerial ability but con-
In Adams and Ferreira, the board has a dual role as an advisor and monitor of management. The quality of board’s advice is improved if the manager shares his private information with the board. However, information sharing also enables the board to interfere more effectively with the manager’s project choice. Since independent boards are assumed to be more intensive monitors to start with, the shareholders may benefit from selecting a less independent board so as to induce the manager to reveal his information to the board. In a framework where the board has similar role as a monitor and a provider of expertise or advice, Gutiérrez-Urtiaga and Harris and Raviv reach the same conclusion. Raheja, in turn, uses somewhat different framework where the board is responsible for approving the project choice but may use CEO succession decision as a reward to induce corporate insiders (i.e., members of top management team) to reveal their private information concerning the projects. Once again, the shareholders may benefit from a less independent board since, as Raheja argues, a lower number of outside directors on the board may intensify the competition among insiders to become the next CEO and, consequently, may increase the incentives of insiders to reveal their information to the board.

The authors then draw varying implications. Adams and Ferreira argue that, by allowing the separation of advisory and monitoring roles of the board, a two-tier board can be a possible vehicle to induce more information sharing. Gutiérrez-Urtiaga and Raheja, in turn, argue that industry differences may arise in the degree of desired board independence and, in the case

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siders the board to have multiple roles, see Graziano and Luporini (2005). In their paper, board structure (in particular, two-tier board) serves as a mechanism to restore managerial initiative without reducing the ability of the board to make replacement decisions. In analyzing the succession process and a trade-off between managerial skills and potential for expropriation of private benefits, this paper is also connected to that of Burkart et al. (2003) who study the decision of a firm’s founder to pass the management of the company either over to an heir or a professional manager.
of Raheja, also in the size of the ideal board. Harris and Raviv, in addition to addressing the questions of board size and number of outside directors, argue that the importance of the insiders knowledge may lead a formally outsider-controlled board to delegate project selection to the insiders.

Although this paper is related to those of Adams and Ferreira, Gutiérrez-Urtiaga, Harris and Raviv, and Raheja, there is, however, one important difference. In the preceding papers, the shareholders are essentially concerned how to make good project selection decisions, and the corporate insiders have private information from the viewpoint of this decision. In this paper, the shareholders are concerned how to make two interrelated but sequential decisions (namely, successor and project selection), and the insiders have relevant knowledge from viewpoint of both of these decisions. As a result, in contrast to just asking whether the shareholders could benefit from having inside directors on the board, this paper is then able to address the issue whether it makes any difference for the shareholders at which point an insider (with relevant knowledge from the viewpoint of board’s functions) enters and exits the board. In particular, since selecting the successor comes up on the board’s agenda at an earlier timepoint than monitoring and counseling the successor, this paper suggests that the shareholders can use the beginning and the length of the CEO’s term on the board as a mechanism to determine which of its functions are under the control of the CEO and, consequently, to which extent the CEO is able to distort the project selection.

3 The model

Consider a firm with shareholders, a board of directors and a CEO. Initially, the firm is run by an incumbent CEO who holds an equity stake $\alpha$ in the company; the rest of the shares are held by the shareholders. The incumbent CEO is due to retire at a pre-specified date. Before the incumbent retires,
it is the responsibility of the board of directors to choose a successor to the incumbent CEO. Once the incumbent has retired, the board is in charge of monitoring the successor’s project choice and counseling the successor on the project’s implementation. Given the tasks of the board, the shareholders have to choose the structure of the board by taking into account how it affects the ability of the board to fulfill its functions. In particular, the shareholders need to decide to which extent (if any) they want to utilize the expertise of the incumbent CEO in facilitating the board’s ability to execute some of its tasks.

There are two time periods indexed as $t = 1, 2$ in the model. The incumbent CEO is due to retire at the end of $t = 1$. I will next go through in detail the decisions the parties face at the pre-retirement stage $t = 1$ and at the post-retirement stage $t = 2$. After that I summarize the timing of events. All the parties in the model are assumed to be risk-neutral. In addition, the managers are assumed to be protected by limited liability.

**Time period $t = 1$:** The pre-retirement stage.

*The choice of board structure.* In the beginning of the first period, the shareholders face a decision concerning the structure of the board. By assumption, the board of directors can be of two polar types: independent or management-controlled. Under the first alternative, the board is composed of independent (i.e., non-affiliated) directors. To abstract from any moral hazard concerns, the interests of independent directors are assumed to be perfectly aligned with those of the shareholders; this ensures that any decision taken by an independent board is in the interest of the shareholders. Under the second alternative, the incumbent CEO sits on the board and is able to control the issues that come up on its agenda; consequently, the board’s decisions will reflect the interests of the incumbent CEO and may conflict those of the shareholders.

In the beginning of $t = 1$, the shareholders choose whether to nominate
the incumbent CEO to the board or not. The selected board will then be in charge of choosing the successor to the incumbent CEO. In the beginning of $t = 2$, the shareholders again choose whether to nominate the predecessor to the board or not. Consequently, since the choice of the shareholders at $t = 2$ may differ from that at $t = 1$, the type of board in charge of monitoring and counseling the successor after the incumbent’s retirement is not necessarily the same that is responsible for selecting the successor at the pre-retirement stage.

This then implies that, depending on the beginning and the length of the incumbent CEO’s term on the board, the incumbent is able to control a different array of the board’s functions. The shareholders can then use the beginning and the length of the incumbent’s term to affect the magnitude of board’s decisions under the incumbent’s control. Taken together, the following four possibilities arise for the shareholders: i) the incumbent never sits on the board and, consequently, controls none of its functions, ii) the incumbent sits on the board until his retirement and is able to control the selection of his successor, iii) the incumbent sits on the board only after his retirement and is able to control the monitoring and counseling of his successor or iv) the incumbent sits on the board both before and after his retirement and controls all the board’s functions. Which of these alternatives is ideal from the viewpoint of the shareholders will depend not only on the skills of the incumbent CEO in screening and advising the successor but also on the incentives and the opportunity of the incumbent to interfere with the successor’s project choice.

The selection of successor. Before the incumbent retires, it is the responsibility of the board to find a successor to the incumbent CEO. There are two "quality" levels of successors, high or low. The quality of the successor refers here to the successor’s match (fit) to this particular organization and job. The match of the successor affects the cash flow that is generated by a
project. If the successor is a good match, the profits are $X = \Pi > 0$ while, if the successor is a poor match, the profits are $X = 0$. In what follows, it will use the terms quality, match and fit interchangeably so as to refer to the compatibility of the successor with the job.

The composition of the board determines the board’s ability to choose a successor who is a good match. An independent board is able to choose a good match with an exogenously given probability $\theta^L$. The ability of management-controlled board to select a successor who is a good match depends on whether the incumbent CEO takes a non-contractible effort choice $e \in \{0, 1\}$ with a cost $ce$. By choosing $e = 1$, the incumbent CEO can raise $\theta^L$ to $\theta^H$, $\Delta \theta = (\theta^H - \theta^L) > 0$.

There are at least two possible interpretations for $\Delta \theta$. First, the difference could capture the role of the incumbent CEO’s knowledge (as the previous title holder) about the required qualifications for the job of CEO in increasing the match between the successor and the job. This interpretation of $\Delta \theta$ emphasizes the fact that, although the firm could attract and hire good outside directors, the firm and industry characteristics are such (the role of firm- and industry-specific knowledge is important, the industry is complex etc.) that the incumbent CEO has an experience-based advantage in the screening of successor. Alternatively, the difference $\Delta \theta$ could capture the role of some firm or industry characteristics (e.g., relatively low visibility) which weakens the ability of the firm to attract and hire good outside directors. Such an effect could also be caused by legislative action. For instance, Holmström and Kaplan (2003) note that some provisions of the recent Sarbanes-Oxley Act may invite aggressive litigation; the fear of litigation, in turn, makes it harder for companies to attract qualified board members.

After the successor has been chosen, the incumbent CEO retires and leaves the post of CEO.

**Time period $t = 2$:** The post-retirement stage.
The selection of project. Under the successor’s term, the firm can implement one project. The successor is in charge of looking for and implementing the project while the board is responsible for monitoring and counseling the successor. As in Aghion and Tirole (1997) and Burkart et al. (1997), the process of looking for a project is modelled here as an attempt by the successor to distinguish a priori identical projects; similarly, monitoring is modelled as the attempt by the board to interfere with the successor’s project choice.

The firm faces all together \( N \geq 4 \) potential projects which generate a verifiable cash flow and, potentially, a non-verifiable private benefit. One of the projects (indexed as project 0) is so called safe project which generates a known cash flow of zero as well as zero private benefits. Of the remaining \((N - 1)\) projects only two (indexed as projects 1 and 2) are relevant; all the other \((N - 3)\) projects involve large negative payoffs and no one wants to undertake them. However, all the \((N - 1)\) projects look a priori identical. To distinguish the projects 1 and 2 the successor then needs to undertake further investigation. For simplicity, the successor’s screening technology is assumed to take the following form: with no cost, the successor is able to distinguish the projects 1 and 2 with probability one.8

The projects 1 and 2 are similar in the sense that, if the successor is of low quality, both projects generate a zero cash flow and no private benefits. However, if the successor is of high quality, the two projects differ in terms of

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8That the successor is perfectly informed about the projects is not crucial here; nor is it crucial that becoming informed is independent of match quality. However, what is important, as will become more clear in below, is the possibility that the successor is the only one informed. The successor’s cost of acquiring information, in turn, is set to zero so as to abstract from the problem (emphasized in Aghion and Tirole and Burkart et al.) that monitoring could reduce the incentives of the successor to acquire information. However, despite this simplification, monitoring is costly in this model because it allows the distortion of project choice.

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the level of the cash flow as well as in terms of the private benefits they generate; the project 1 generates a private benefit $b > 0$ to the predecessor (i.e., the former CEO) and a cash flow of $R > 0$ while the project 2 yields a higher cash flow of $(R + \tau), \tau > 0$, but zero private benefits to the predecessor.

In this model, the private benefit $b$ has two alternative interpretations. First of all, it could stand for the extent of the predecessor’s legacy concerns capturing the benefit for the predecessor of successfully preserving his legacy in the firm. Alternatively, $b$ could capture the benefit for the predecessor, who is an empire-builder, of sitting on the board of a successfully expanded firm. In both cases, $\tau$ could capture the restructuring gains from successfully streamlining the corporate structure.

While the interpretation of $\tau$ is invariant to the choice between legacy concerns and empire-building, the interpretation of $b$ has implications for the value that the predecessor places on having a post-retirement board seat. In particular, if interpreted as a legacy benefit, the consumption of $b$, although conditional on the post-retirement project choice, does not necessarily require that the predecessor sits on the board under his successor’s term; it merely necessitates a successor sympathetic to these concerns. Under the alternative interpretation, the access to $b$, however, requires a post-retirement board seat. Since the interpretation of $b$ will have some bearing on the incentives of the predecessor, I do not at this point exclude either of these interpretations.

The existence of the private benefits imply that, despite the predecessor’s equity stake $\alpha$, the private benefits (if high enough) can create a conflict of interest between the shareholders and the predecessor over the choice of post-retirement project. To concentrate on situations where a conflict of interest arises, I make the following assumption:

**Assumption 1**: $b > \alpha \tau$.

Assumption 1 ensures that the private benefits associated with the project 1 exceed the predecessor’s share of the additional cash flow generated by the
project 2. Consequently, assumption 1 implies that, if given the opportunity, the predecessor will try to make sure that the project 1 is chosen.

There are two avenues for the predecessor to affect the post-retirement project choice. The first of these arises in the selection phase of the successor. In particular, as opposed to an independent board which is assumed to be able to choose for sure a successor who shares the shareholders’ project preferences, the predecessor, if on the board before his retirement, is assumed to be able to choose with a probability $\lambda \in [0, 1]$ a successor who shares the predecessor’s project preferences. In this case, the private benefits $b$ are assumed to have a public good nature; in particular, the successor is assumed to be able to share the private benefits with the predecessor without the successor’s consumption decreasing the amount available to the predecessor. Consider, for example, the possibility of a predecessor with empire-building tendencies to select a successor with similar attributes.\(^9\)

Interestingly, there is also a potential alternative justification for a positive $\lambda$. Cornell and Welch (1996) argue that people can distinguish between high- and low-character individuals more accurately when the people being sorted are of similar cultural type (cultural type refers to factors like race, sex, schooling and professional background). Consequently, in this setting, the ability of the predecessor to raise the quality of his successor (i.e., to raise $\theta$) could be tied to the similarity of the successor with his predecessor (i.e., to a positive $\lambda$). This could then explain the entrenchment of the predecessor’s visions even without preference for similarity.

\(^9\)Note that, although information acquisition is costless so that the successor does not have to be offered an equity stake so as to induce him to acquire information, an equity stake might be offered so as to align interests over the project choice. However, as long as the size of possible equity stake is restricted to $\alpha$, assumption 1 ensures that offering a stake to the successor does not solve the project selection problem. In what follows, I concentrate on this situation and assume, for simplicity, that the successor is offered no stake.
The second opportunity for the predecessor to affect the post-retirement project choice arises in the project selection phase since the implementation of a project is conditional on the board’s approval. In particular, to monitor and potentially interfere with the successor’s project choice, the board also gathers information about the projects so as to distinguish them. For simplicity, the board’s monitoring technology takes the following form: with no cost, the board is able distinguish the projects with probability $p$.\textsuperscript{10} Whenever the board is able to distinguish the projects, it will choose its preferred project which, depending on the composition of the board, is either the project 1 or the project 2. When the board is unable to distinguish the projects, the successor will choose his preferred project which, once again, is either the project 1 or the project 2. In this model, the project selection then boils down to a choice between the projects 1 and 2. In particular, because the successor is always fully informed about the projects and because the projects 1 and 2 are (from the viewpoint of all parties) at least as good as the safe project, the project 0 is never actually undertaken in this model.

A natural follow-up question arises. What motivates the shareholders to nominate the predecessor to the board given that the private benefits drive the predecessor to distort the post-retirement project choice at the expense of the cash flow? At the pre-retirement stage such a motive arises if the prospect of private benefits induces the predecessor to take action (i.e., to raise the successor’s fit) that the equity stake $\alpha$ alone is insufficient to induce. To concentrate on this situation, I make the following assumption:

\textsuperscript{10}Consequently, both types of board are assumed to have access to the same monitoring technology. However, if (as is typically thought) an independent board were assumed to be more effective monitor than a management-controlled board, it should not undermine the result of this paper that the shareholders could benefit from a weak board; in fact, (if anything) it should strengthen the willingness of the shareholders to involve the predecessor in the functioning of the board because it reduces the costs from doing so.
Assumption 2: the equity stake $\alpha$ alone is insufficient to induce the predecessor to raise the fit of the successor.

Taken together, assumptions 1 and 2 ensure that, to improve the successor’s match, the predecessor has to have an opportunity to affect the post-retirement project choice and, once in the possession of such opportunity, he will use it to distort the project choice.

In what follows, I concentrate on a situation where the possibility to affect the project choice through monitoring is not enough for the predecessor to raise $\theta$ but he has to be given control over the choice of his successor. This then immediately raises another question. What motivates the shareholders either to keep or nominate the predecessor to the board at the post-retirement stage given that the possibility to monitor the successor’s project choice has no positive effect on the willingness of the predecessor to raise the match quality? I argue that such a motive may arise from the advisory role of the board. I will next turn to this issue.

The counseling by the board. After the choice of the project but before its implementation, the board can provide advice to a low quality successor so as to increase the probability of realizing the cash flow $X = \Pi > 0$; after counseling, the successor will implement the project and the payoffs realize.

The board’s ability to provide counseling depends here on two factors: the access to information about the projects and the composition of the board. First, for the board to be able to advise the successor it has to have information about the projects. In this model, the role of information in the advisory process is captured in the following simple way: only if informed about the projects (i.e., only if capable to distinguish the projects), the board is able to counsel the successor. This is a rather natural assumption. For instance, in the case of independent board it means that only if able to determine which strategy allows the successful streamlining of the corporate structure, the independent directors are able to assist the successor on implementing such a
strategy. Secondly, when informed, the management-controlled board has an advantage in the counseling of the successor. That is, while the independent board is able to raise the probability that a successor of poor match generates the cash flow $X = \Pi > 0$ from zero to $a^L$, the management-controlled board is able to raise that probability from zero to $a^H$, $\Delta_a = (a^H - a^L) > 0$.

Two conclusions immediately follow. First, to which degree counseling actually is needed depends on how good match the successor initially is. This, in turn, may depend not only on the ability of the board to find a fitting candidate but also on the job characteristics such as the importance of mentoring and on-the-job training for performance. Secondly, although there are no direct effort costs from counseling so that advice will automatically be provided, the gathering of information by the board that is necessary for the counseling also forms the basis for the monitoring of projects. This then means that the same information that allows the management-controlled board to interfere with the successor’s project choice is also essential to realize the management-controlled board’s higher advisory potential.\textsuperscript{11}

As a result, when deciding on the beginning and the length of the predecessor’s term on the board, the shareholders face a twofold trade-off. At the pre-retirement stage, the trade-off is between the likelihood of finding an unbiased versus a highly matching successor. More specifically, the management-controlled board, although having a higher chance of selecting a high-quality successor, simultaneously will choose a successor whose project preferences contradict (with a positive probability) those of the shareholders; the independent board, at the expense of having a lower chance of finding a successor of good match, will in turn choose a successor with aligned pref-

\textsuperscript{11}In essence, monitoring and counseling cannot be separated here; in particular, to make the provision of advice a non-trivial matter, an independent board cannot communicate its information to the predecessor (either due to too large time delay or loss of information) so as to extract advice from him.
ferences. At the post-retirement stage, the trade-off is between the advisory potential versus the opportunity to interfere with the project choice. In particular, although the advisory potential of the management-controlled board is higher, the information that the board needs so as to counsel the successor simultaneously enables it to distort the project choice; the independent board, in turn, has a lower advisory potential but any interference with the successor’s project choice is in the interest of the shareholders.

The timing of events. Taken together, the events of the model proceed in the following way:

Time period $t = 1$ (the pre-retirement stage):

- the shareholders choose whether to nominate the departing CEO to the board or not;
- the board selects a successor to the incumbent after which the incumbent retires and steps down as CEO;

Time period $t = 2$ (the post-retirement stage):

- the shareholders choose whether to have the predecessor on the board or not;
- the board monitors the project choice of the successor; after the choice of project, the board provides counseling to the successor; after this, the successor implements the project and the payoffs realize.

4 The analysis

In this section, I first derive the payoffs of the shareholders and the predecessor under the alternative board structures; after that, I turn to analyze the comparative statics.
The model is solved by using backwards induction. To separate the alternative board structures, I refer to the case where the incumbent never sits on the board as the fully independent board, to the case where the incumbent sits on the board only after his retirement as the ex-CEO-controlled board, to the case where the incumbent sits on the board only until his retirement as the incumbent-controlled board and to the case where the incumbent sits on the board both before and after his retirement as the fully management-controlled board.

4.1 The fully independent board

In the case of fully independent board, the predecessor never sits on the board. Consequently, the successor is selected and then monitored and advised by a board consisting of independent directors. In this case, the successor is of high quality with probability $\theta^L$ and of low quality with probability $(1 - \theta^L)$. When the successor is of low quality, the board provides counseling to him which raises the probability of realizing $X = \Pi > 0$ from zero to $a^L$. Counseling, however, requires that the board is informed about the projects; this happens with probability $p$. As a consequence, the overall advisory potential of the independent board is $(1 - \theta^L) p a^L$. When informed about the projects, the board can also use its information to interfere with the successor’s project choice. However, in the case of fully independent board, there is no need for such intervention since the board is able to choose for sure a successor with aligned preferences. As a result, whenever the successor is informed about the projects (which happens with probability one) the project with the cash flow of $(R + \tau)$ and zero private benefits is chosen.

The payoffs to the shareholders and the predecessor, respectively, are

$$\pi^S_{IH} = [\theta^L + (1 - \theta^L) p a^L] (1 - \alpha) [R + \tau],$$

(1)
\[ \pi_{I}^{PR} = \left[ \theta^L + (1 - \theta^L) \, pa^L \right] \alpha \left[ R + \tau \right]. \]

These payoffs require that the equity stake \( \alpha \) alone is insufficient to induce the predecessor to raise \( \theta \) at the pre-retirement stage. Formally, this necessitates that the following condition holds:

\[ \pi_{I}^{PR} \left( \theta = \theta^L \right) > \pi_{I}^{PR} \left( \theta = \theta^H \right), \]

\[ c > \Delta_\theta \left( 1 - pa^L \right) \alpha \left[ R + \tau \right] \equiv \zeta. \] (C1)

In essence, condition (C1) rules out the possibility that the predecessor would help the independent directors in finding a fitting and unbiased successor.

### 4.2 The ex-CEO-controlled board

In the case of ex-CEO-controlled board, the predecessor sits on the board after his retirement. As a result, the successor is selected by an independent board while monitoring and counseling are conducted by a board controlled by the predecessor. In this case, the successor is of high quality with probability \( \theta^L \) and of low quality with probability \( (1 - \theta^L) \). When the successor is of low quality, the predecessor (whenever informed about the projects) provides counseling to the successor; this raises the probability of realizing \( X = \Pi > 0 \) from zero to \( a^H \). The overall advisory potential of the ex-CEO-controlled board is then \( (1 - \theta^L) \, pa^H \) which is higher than that of the independent board.

However, when informed about the projects, the predecessor also uses his information to interfere with the successor’s project choice. As a result, whenever the predecessor is informed about the projects, the project 1 with the cash flow of \( R \) and private benefit \( b \) is chosen. Only when the predecessor is uninformed, which happens with probability \( (1 - p) \), the successor is able to choose the project 2 with the cash flow of \( (R + \tau) \) and zero private benefits.
In comparison with the fully independent board, the project 2 is then chosen with a lower probability.

The payoffs to the shareholders and the predecessor, respectively, are now given by

$$\pi_{EH} = \left[ \theta^L + (1 - \theta^L) \, pa^H \right] (1 - \alpha) \, R + (1 - p) \, \theta^L \, (1 - \alpha) \, \tau, \quad (2)$$

$$\pi_{PR} = \left[ \theta^L + (1 - \theta^L) \, pa^H \right] \alpha R + (1 - p) \, \theta^L \, \alpha \tau + p \, \left[ \theta^L + (1 - \theta^L) \, a^H \right] b.$$  

For these payoffs to realize the predecessor still has to be unwilling to help the independent directors in finding a fitting but unbiased successor.\(^{12}\) Formally, this requires that

$$\pi_{PR} (\theta = \theta^L) > \pi_{PR} (\theta = \theta^H),$$

$$c > \Delta_\theta (1 - pa^H) \, \alpha R + \Delta_\theta (1 - p) \, \alpha \tau + \Delta_\theta p (1 - a^H) \, b \equiv \zeta_i. \quad (C2)$$

From now on, I will concentrate on situations where the conditions (C1) and (C2) simultaneously hold. This then requires that \(c > \max \{ \zeta_0, \zeta_i \} \) is satisfied. Under these circumstances, nominating the predecessor to the board before his retirement may be valuable for the shareholders if it induces the predecessor to raise \(\theta\).

### 4.3 The incumbent-controlled board

In the case of incumbent-controlled board, the predecessor sits on the board until his retirement. As a result, the successor is selected by a board controlled by the predecessor and monitored and advised by a board controlled by independent directors. Given that the predecessor exerts effort in the

\(^{12}\) These payoffs also necessitate that the firing costs are sufficiently high so that the predecessor doesn’t fire the unbiased successor chosen by the independent board and hire a replacement who (with a positive probability) shares the predecessor’s project preferences. For the derivation of the sufficient firing costs, see the Appendix.
selection phase of the successor so as to raise $\theta$, the successor is of high quality with probability $\theta^H$ and of low quality with probability $(1 - \theta^H)$. When the successor is of low quality, the independent directors (whenever informed about the projects) provide counseling to him. The overall advisory potential of the board will then be $(1 - \theta^H) pa^L$. Notice that, since $\theta^H > \theta^L$, the advisory role of the board is reduced in comparison to the preceding two cases.

However, since in control of the board before his retirement, the predecessor uses the opportunity to select a successor who (with probability $\lambda$) shares his project preferences. Consequently, when informed about the projects, the independent directors now also use their information to interfere with the project choice of the successor. As a result, whenever the independent directors are informed about the projects, the project 2 with the cash flow of $(R + \tau)$ and zero private benefits is chosen. When the independent directors are uninformed, which happens with probability $(1 - p)$, the project 1 with the cash flow of $R$ and private benefit $b$ is chosen with probability $\lambda$.

The payoffs to the shareholders and the predecessor, respectively, are

$$\pi^{SH}_C = \left[ \theta^H + (1 - \theta^H) pa^L \right] (1 - \alpha) R + \left[ \theta^H (1 - \lambda (1 - p)) + (1 - \theta^H) pa^L \right] (1 - \alpha) \tau,$$

$$\pi^{PR}_C = \left[ \theta^H + p (1 - \theta^H) a^L \right] \alpha R + \left[ \theta^H (1 - \lambda (1 - p)) + (1 - \theta^H) pa^L \right] \alpha \tau + \theta^H (1 - p) \lambda b - c.$$ 

Naturally, for the predecessor to be willing to raise the successor’s fit, it must be true that

$$\pi^{PR}_C (\theta = \theta^H) > \pi^{PR}_C (\theta = \theta^L),$$

$$c < \Delta_\theta (1 - pa^L) \alpha (R + \tau) + \Delta_\theta (1 - p) \lambda (b - \alpha \tau) \equiv \overline{c}_0.$$ 

(D1)
Interestingly, a comparison between the conditions (C1) and (D1) reveals that the nature of the predecessor’s private benefit has an important impact on his incentives.

**Lemma 1** When the predecessor is an empire-builder who derives a positive private benefit from sitting on the board of a successfully enlarged company, restricting the predecessor’s term on the board to cover only the pre-retirement period will not motivate the predecessor to improve the quality of his successor.

Lemma 1 follows immediately when one sets $b$ equal to zero in (D1); i.e., assumes that the access to empire benefits is conditional on a post-retirement board seat. This then leaves the equity stake $\alpha$ as the sole source of incentives. However, the equity stake has already been ruled out as a sufficient motive by the condition in (C1). Consequently, the condition in (D1) cannot be satisfied without simultaneously violating the condition that $c > \max \{c_0, c_1\}$.

**Lemma 2** When the predecessor derives a private benefit from successfully preserving his legacy in the firm, a term on the board restricted to cover only the pre-retirement period may induce the predecessor to improve the quality of his successor.

To understand lemma 2, note first that, when $b$ is positive in (D1), the condition in (D1) is always greater than that in (C1). This then implies that, if (D1) also exceeds (C2), a pre-retirement nomination may be valuable for the shareholders since, in contrast to the cases of delayed nomination or no nomination at all, it may induce the predecessor to raise $\theta$.\(^\text{13}\)

\(^{13}\text{Remark: this paper concentrates on board membership as a means to induce the predecessor to raise } \theta.\) However, such a motivation could also possibly arise from the fact that a formally outsider-controlled board delegates the selection of successor to the predecessor. Fortunately, this possibility does not invalidate the result that a weak board
4.4 The fully management-controlled board

In the case of fully management-controlled board, the predecessor sits on the board both before and after his retirement. Consequently, the predecessor controls the selection, monitoring and counseling of the successor. Given that the predecessor exerts effort to raise \( \theta \), the successor is of high quality with probability \( \theta^H \) and of low quality with probability \( (1 - \theta^H) \). When the successor is of low quality, the predecessor (whenever informed about the projects) provides counseling to him. The overall advisory potential of the fully management-controlled board is then \( (1 - \theta^H) p a^H \). Consequently, as compared to the case where the predecessor’s term on the board ends with his retirement, one advantage of extending the predecessor’s term to the post-retirement period is the improved advisory potential of board.

However, when in control of the board both before and after his retirement, the predecessor uses the opportunity not only to select a successor who (with probability \( \lambda \)) shares his project preferences but also, when informed about the projects, to interfere with the successor’s project choice. As a result, whenever the predecessor is informed about the projects, the project 1 with the cash flow of \( R \) and private benefit \( b \) is chosen. When the predecessor is uninformed, which happens with probability \( (1 - p) \), the successor still chooses the project 1 with probability \( \lambda \) and the project 2 with the cash flow of \( (R + \tau) \) and zero private benefits only with probability \( (1 - \lambda) \). It is then evident that, from the viewpoint of the shareholders, this board structure leads to the lowest chance of their preferred project being implemented.

may be optimal; nor does it invalidate the differences between this paper and that of Harris and Raviv which considers a situation where the insiders have relevant knowledge only with respect of one decision (i.e., project selection). Consequently, in contrast to Harris and Raviv, the issue of which decisions (successor and/or project selection) the insiders are allocated control over still arises.
The payoffs to the shareholders and the predecessor, respectively, are

\[
\pi_{SM}^H = [\theta^H + (1 - \theta^H) pa^H] (1 - \alpha) R + \theta^H (1 - p) (1 - \lambda) (1 - \alpha) \tau, \quad (4)
\]

\[
\pi_{SM}^{PR} = [\theta^H + (1 - \theta^H) pa^H] \alpha R + \theta^H (1 - p) (1 - \lambda) \alpha \tau
+ [\theta^H (p + \lambda (1 - p)) + (1 - \theta^H) pa^H] b - c.
\]

Of course, these payoffs require that the predecessor is willing to raise the successor’s fit. Formally, this necessitates that

\[
\pi_{SM}^{PR} (\theta = \theta^H) > \pi_{SM}^{PR} (\theta = \theta^L),
\]

\[
c < \Delta_\theta (1 - pa^H) \alpha R + \Delta_\theta (1 - p) \alpha \tau + \Delta_\theta (1 - a^H) b + \Delta_\theta \lambda (1 - p) (b - \alpha \tau).\]

(D2)

In contrast to the case where the predecessor’s term on the board ends with his retirement (and, consequently, the predecessor’s access to private benefits may not be guaranteed), extending the predecessor’s term to cover the post-retirement period allows the predecessor to consume \(b\) independently of its type. As a result, in contrast to the shorter term, an extended term of the predecessor on the board may have another advantage besides the board’s improved advisory potential:

**Lemma 3** Extending the predecessor’s term on the board to cover both the pre-retirement and the post-retirement periods may motivate the predecessor to improve the quality of his successor independently of the type of predecessor’s private benefits.

To understand lemma 3, note first that, in contrast to the case where the predecessor’s term on the board ends with his retirement, \(b\) is now positive in (D2) under both interpretations of private benefits; as a result, the condition in (D2) always exceeds that in (C2). This then implies that, if the condition
in (D2) also exceeds that in (C1), an extended term on the board may induce the predecessor to raise $\theta$ independently of the type of predecessor’s private benefits.

Taken together, the analysis of the alternative board structures suggests that, for the pre-retirement nomination to have a differing impact on the incentives of the predecessor than a post-retirement nomination or no nomination at all, the conditions (C1) and (C2) as well as the conditions (D1) and (D2) have to simultaneously hold. This then requires that not only the condition $c > \max \{c_0, c_1\}$ but also the condition $c < \min \{\bar{c}_0, \bar{c}_1\}$ is satisfied. A comparison of these conditions reveals that:

**Proposition 4** When $\alpha \tau < b < \underline{b}$, the level of private benefits is so low that even an early nomination to the board is insufficient to induce the predecessor to raise the quality of his successor. When $\underline{b} < b < \bar{b}$, an early nomination, in contrast to a delayed nomination or no nomination at all, can induce the predecessor to raise the quality of his successor. When $b > \bar{b}$, the level of private benefits is so high that even an anticipated post-retirement nomination would induce the predecessor to raise the quality of his successor.

**Proof.** See Appendix. ■

Proposition 4 captures the idea that, for a pre-retirement board seat to have a differing impact on the predecessor’s incentives, the private benefits have to be sufficiently high so as to motivate the predecessor to act but not too lucrative so that the control over the selection process of the successor loses its relevance.

### 4.5 Comparative statics

Now that I have derived the payoffs of the shareholders under the alternative board structures, it is possible to analyze under which circumstances each of
them is ideal from the viewpoint of the shareholders. The following proposition summarizes the findings that arise from a simple comparison of the shareholders’ payoffs in the equations (1), (2), (3) and (4).

**Proposition 5** The ideal board structure is

- **the fully management-controlled board when the restructuring gains are low** (i.e., $τ = 0$);
- **the fully independent board when the predecessor’s ability to hire a biased successor is high** (i.e., $λ$ is large) and i) the restructuring gains are high (i.e., $R = 0$), ii) the advisory potential of the independent directors is high (i.e., $a_L = a_H > 0$) or iii) the role of mentoring or on-the-job training is low (i.e., $a_L = a_H = 0$);
- **the incumbent-controlled board when the predecessor’s ability to hire a biased successor is low** (i.e., $λ$ is small) and i) the restructuring gains are high (i.e., $R = 0$), ii) the advisory potential of the independent directors is high (i.e., $a_L = a_H > 0$) or iii) the role of mentoring or on-the-job training is low (i.e., $a_L = a_H = 0$);
- **the ex-CEO-controlled board when the advisory role of the board is important and the advisory potential of the predecessor is high relative to the independent directors but the ability of the predecessor to hire a biased successor is large.**

The first of these results is very intuitive. When the restructuring gains are low, the project preferences of the shareholders and the predecessor become aligned. What matters is to take advantage of the higher screening and advisory potential of the predecessor. This then favors having the predecessor on the board both before and after his retirement. One instance where close involvement of the predecessor both in the selection and in the counseling of
his successor could be expected is mature industries where the predecessor has a long and successful history with the company.

The second result is also intuitive. Note first that, when the predecessor’s ability to find a biased successor is high, the shareholders want to avoid giving the predecessor any role in the selection phase of his successor. However, when the restructuring gains are large or the added value that the predecessor can bring to the counseling process of his successor is low (either because the advisory potential of the independent directors is equally good or because the advisory role of the board itself is insignificant), the shareholders do not either want the predecessor to have any role on the board after his retirement. This model then suggests that the shareholders should favor independent board when there is an obvious successor candidate favored by the predecessor and likely to share his project preferences (e.g., a long-term subordinate of the predecessor) and i) the prospects of the firm look weak if a strategy similar to the past one is continued, ii) the firm operates in developing, unstable industry where fundamental reforms are needed promptly and the knowledge of the predecessor may become out-dated easily; iii) the firm can attract and hire qualified outside directors who are capable to guide the successor in the restructuring of the firm or iv) the role of strategy- or project-specific advice and knowledge is not important.

The third result, in turn, captures the idea that, when the predecessor’s ability to hire a biased successor is low (or, alternatively, when the willingness of the predecessor to hire a biased successor is low because career concerns arising from factors like the predecessor’s desire to ensure additional board seats are high), the shareholders may want to nominate the predecessor to the board before his retirement so as to utilize the predecessor’s greater screening ability but exclude him from the board after his retirement so as to realize the restructuring gains (or, alternatively, the shareholders may want to exclude the predecessor from the board after his retirement
because his counseling ability and/or role is weak). High career concerns of
the predecessor could arise, for instance, in situations where the predecessor
withdraws from the leadership of highly visible firm and/or the predecessor
is still relatively young.

Finally, the shareholders prefer to exclude the predecessor from the board
before his retirement but to have him on the board after his retirement when
the likelihood that the predecessor hires a biased successor is high but the
advisory role of the board and the advisory potential of the predecessor are
significant. This then suggests that one could observe intimate involvement
of the predecessor in the counseling process of his successor in industries
and firms (like ones with strong and specific organization culture) where
mentoring and on-the-job training are important and the knowledge of the
predecessor does not get out-dated fast.

5 Concluding remarks

This paper studies the role and structure of board in context of succession
process by using a framework where the board is responsible for three tasks:
selection of successor, monitoring of successor’s project choice, and provision
of advice to the successor. In this paper, the departing CEO has important
expertise that improves the board’s ability to first find a matching successor
and then to provide counseling to him. However, the departing CEO is
simultaneously also eager to interfere with the successor’s project choice so
as to assure access to private benefits. This paper then argues that, at which
point (if at all) and for how long the predecessor is nominated to the board,
can be used by the shareholders as a means to balance the benefits from
the predecessor’s expertise with the costs that arise from distorted project
choice.

In the main result of this paper, the shareholders’ willingness to involve
the predecessor in decisions concerning his successor is derived as a function of potential firm and industry characteristics. The results indicate, among other things, that low restructuring gains (e.g., good firm performance) favor an early and prolonged nomination while high restructuring gains, the availability of good outside directors and the low importance of mentoring for the successor’s (and the firm’s) performance favor either an independent board or an early but only a short-term nomination.
APPENDIX:

The ex-CEO-controlled board: the derivation of sufficient firing costs

If the predecessor doesn’t fire the successor chosen by the independent board, the payoff of the predecessor is

$$\pi_{PR}^E = \left[ \theta^L + (1 - \theta^L) \rho a^H \right] \alpha R + (1 - p) \theta^L \alpha \tau + p \left[ \theta^L + (1 - \theta^L) a^H \right] b. \quad (A1)$$

Firstly, the payoff in (A1) has to be larger than the payoff available for the predecessor if he incurs the firing costs denoted by $F$ so as to hire a biased but more fitting successor:

$$\pi_{PR}^E > p \left[ \theta^H + (1 - \theta^H) a^H \right] (\alpha R + b) + (1 - p) \theta^H \left[ \lambda (\alpha R + b) + (1 - \lambda) \alpha (R + \tau) \right] - c - F,$$

$$F > \Delta_\phi (1 - \rho a^H) \alpha R + \Delta_\phi (1 - p) \alpha \tau + \Delta_\phi p (1 - a^H) b + \theta^H (1 - p) \lambda (b - \alpha \tau) - c \equiv F_0.$$

Secondly, the payoff in (A1) has to be larger than the payoff available for the predecessor if he incurs the firing costs so as to hire an equally fitting but biased successor:

$$\pi_{PR}^E > p \left[ \theta^L + (1 - \theta^L) a^H \right] (\alpha R + b) + (1 - p) \theta^L \left[ \lambda (\alpha R + b) + (1 - \lambda) \alpha (R + \tau) \right] - F,$$

$$F > \theta^L (1 - p) \lambda (b - \alpha \tau) \equiv F_1.$$

The sufficient level of firing costs is then $F > \max \{F_0, F_1\}$.

Proof of Proposition 4:

Proof of Proposition 4 requires finding an appropriate level of effort cost $c$ so that the conditions $c > \max \{c_0, c_1\}$ and $c < \min \{c_0, c_1\}$ can be simultaneously satisfied. To facilitate the understanding of the proof, I first restate
the conditions (C1), (C2), (D1) and (D2):

\[ c > \Delta_\theta \left(1 - p a^L\right) \alpha [R + \tau] \equiv \xi_0, \quad (C1) \]

\[ c > \Delta_\theta \left(1 - p a^H\right) \alpha R + \Delta_\theta (1 - p) \alpha \tau + \Delta_\theta (1 - p) (1 - a^H) b \equiv \xi_1, \quad (C2) \]

\[ c < \Delta_\theta \left(1 - p a^L\right) \alpha (R + \tau) + \Delta_\theta (1 - p) \lambda (b - \alpha \tau) \equiv \xi_0, \quad (D1) \]

\[ c < \Delta_\theta \left(1 - p a^H\right) \alpha R + \Delta_\theta (1 - p) \alpha \tau + \Delta_\theta (1 - p) \lambda b + \Delta_\theta \lambda (1 - p) (b - \alpha \tau) \equiv \xi_1. \quad (D2) \]

I first compare the conditions (C1) and (C2) after which I proceed to the comparison of (D1) and (D2). Finally, I draw together the results.

**Comparison of (C1) and (C2):**

The comparison between conditions (C1) and (C2) reveals that the former is the stricter condition when \( b < \frac{\Delta_\theta \alpha R + \Delta_\theta (1 - p) \alpha \tau + \Delta_\theta (1 - p) (1 - a^H) b}{1 - a^H} \equiv b_2 \). Together with the condition \( b > \alpha \tau \) from assumption 1, it is then clear that, when \( \alpha \tau < b < b_2 \), the condition \( c > \xi_0 \) is the relevant one and, when \( b > b_2 \), the condition \( c > \xi_1 \) is the relevant one.

**Comparison of (D1) and (D2):**

The comparison between conditions (D1) and (D2) reveals that the former is the stricter condition when \( b > \frac{\Delta_\theta \alpha R + [p(1 - a^L) + (1 - \Delta_\theta)(1 - p)\lambda] \alpha \tau}{p(1 - a^H) \tau + (1 - \Delta_\theta)(1 - p) \lambda} \equiv b_1 \). Together with the condition \( b > \alpha \tau \) from assumption 1, it is then clear that, when \( \alpha \tau < b < b_1 \), the condition \( c < \xi_1 \) is the relevant one and, when \( b > b_1 \), the condition \( c < \xi_0 \) is the relevant one.

**Comparison of (C1) and (C2) to (D1) and (D2):**

Note first that \( b_2 > b_1 \). This then implies that i) when \( \alpha \tau < b < b_1 \), the condition \( \xi_0 < c < \xi_1 \) has to hold, ii) when \( b_1 < b < b_2 \), the condition \( \xi_1 < c < \xi_0 \) has to hold and iii) when \( b > b_2 \), the condition \( \xi_0 < c < \xi_0 \) has to hold. By looking at these, it is immediately clear that it is possible
to find $c$ so that $c_0 < c < \tau_0$ is satisfied. It then remains to show that it is possible to find $c$ so that $c_0 < c < \tau_1$ and $c_1 < c < \tau_0$ are satisfied. The first of these requires the comparison of (C1) and (D2); the second requires the comparison of (C2) and (D1).

The comparison of (C1) and (D2) reveals that $c_0 < c < \tau_1$ can be satisfied when $b > \frac{\Delta \alpha \rho R + [p(1-a^r)+(1-p)\lambda] \alpha \tau}{p(1-a^r)+(1-p)\lambda} \equiv b_0$. The comparison of (C2) and (D1) in turn reveals that $c_1 < c < \tau_0$ can be satisfied when $b < \frac{\Delta \alpha \rho R + [p(1-a^r)-(1-p)\lambda] \alpha \tau}{p(1-a^r)-(1-p)\lambda} \equiv b_3$ (note that $\lambda < \frac{p(1-a^r)}{1-p}$ ensures that both the nominator and the denominator of $b_3$ are positive). Finally, a comparison of $b_0$ to $\alpha \tau$ and $b_1$ and a comparison of $b_3$ to $b_2$ tells that $b_0$ is larger than $\alpha \tau$ but smaller than $b_1$ while $b_3$ is larger than $b_2$. This then allows me to draw together the results.

**Drawing together the results:**

When $\alpha \tau < b < b_0$, the level of private benefits is so low that the condition $c < \tau_1$ cannot be satisfied without simultaneously violating the condition that $c > c_0$; when $b_0 < b < b_1$, the necessary condition is $c_0 < c < \tau_1$ and it can be satisfied; when $b_1 < b < b_2$, the necessary condition is $c_0 < c < \tau_0$ and it can be satisfied; when $b_2 < b < b_3$, the necessary condition is $c_1 < c < \tau_0$ and it can be satisfied; finally, when $b > b_3$, the level of private benefits is so high that $c > \tau_1$ cannot be satisfied without simultaneously violating $c < c_0$.

Proposition 4 then follows directly when one denotes $b_0$ by $\underline{b}$ and $b_3$ by $\overline{b}$ and bears in mind that whether just a pre-retirement nomination is sufficient to induce the predecessor to raise $\theta$ (or whether an extended nomination is needed) depends also on the nature of the predecessor’s private benefits.
References


