CORPORATE GOVERNANCE FOR KNOWLEDGE PRODUCTION: THEORETICAL FOUNDATIONS AND PRACTICAL IMPLICATIONS

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Abstract

Agency Theory as the dominant view of Corporate Governance disregards that the key task of firm governance is to generate, accumulate, transfer, and protect firm specific knowledge. Three different foundations to the theory of the firm which underpin different concepts of corporate governance are discussed: The traditional view of the firm as a nexus of contracts, the view of the firm as a nexus of firm specific investments and the view of the firm as a nexus of firm specific *knowledge* investments. The latter view distinguishes two fundamental differences between contracting firm specific knowledge investments in contrast to financial investment: (1) A knowledge worker cannot contract his or her future knowledge in the same way as the exchange of tangible goods. (2) Only insiders can evaluate firm specific knowledge generation and transformation. We suggest a concept of corporate governance that takes investments in firm specific knowledge into account: (1) The board should rely more on *insiders*. (2) Those employees of the firm *making firm-specific knowledge investments* should elect the insiders. (3) A *neutral person* should chair the board. This concept provides a theoretical foundation of corporate governance based in the knowledge-based theory of the firm.

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1. Firm specific knowledge and Corporate Governance

The dominant view of Corporate Governance disregards what is today common understanding in the strategic management literature: the key task of firm governance is to generate, accumulate, transfer, and protect firm specific knowledge (e.g. Grant, 1996; Teece et al., 1997; Kogut and Zander, 1996; Spender, 1996; Foss and Foss, 2000; Grandori and Kogut, 2002). In particular, agency theory as the main approach in the corporate governance discussion has disregarded knowledge work aspects. Nevertheless, agency theory has had a marked influence on the discussion, both in theory and practice. Agency theory contends that the key activity for boards is to monitor management on behalf of the shareholders. It ignores that governing the management of knowledge work might be different from governing the management of physical work.

We present three different foundations to the theory of the firm which underpin different concepts of corporate governance: the traditional view of the firm as a nexus of contracts, the view of the firm as a nexus of firm specific investments and the view of the firm as a nexus of firm specific *knowledge* investments.

The *view of the firm as a nexus of contracts* (Jensen and Meckling 1976) of which agency theory is a subset is the dominant view in corporate governance theory and practice. It leads to the view of shareholders´supremacy. This approach is inadequate when it comes to carrying out a theoretical analysis of today's firms, which gain their competitive advantage through knowledge rather than actual investments (Asher, Mahoney and Mahoney, 2005; Blair, 2005; Grandori, 2005). It would be surprising if proposals derived from an inadequate theory could lead to successful practical implications. The *view of the firm as a nexus of firm specific investments* (Zingales 1998, Blair and Stout 2001) argues that it is not in the interest of the shareholders to be the only residual owners. Firms exist because they produce synergies or quasi-rents which cannot be obtained by the markets. They can be contracted ex ante before entering the relationship only at high transaction costs. Thus boards should not only represent the shareholders´ ínterests, but also those of other stakeholders with firm specific investments that are expensive to be contracted ex ante. The board should act as a "mediating hierarch". Nevertheless it should consist mainly of outsiders elected by the shareholders.

Our *view of the firm as a nexus of firm specific knowledge investments* states that the fundamental difference between contracting firm specific knowledge investments in contrast to financial investment should be taken into account. Firstly, a knowledge worker cannot contract his or her future knowledge in the same way as the exchange of tangible goods. Secondly, only insiders can evaluate firm specific knowledge generation and transformation. Outside directors usually evaluate knowledge investments by judging the financial consequences of knowledge encapsulated in marketable products or projects successfully carried out. They are not able to evaluate the quality of the knowledge process itself, and are thus not able to protect knowledge investors from a deterioration of their bargaining position during the interim period when joint knowledge has not yet led to a recoverable output. Employees therefore will refuse to make firm-specific investments if their interests are not protected by the board.

We suggest a concept of corporate governance that takes investments in firm specific knowledge into account: (1) The board should rely more on *insiders*. (2) The insiders should be elected by those employees of the firm *making firm-specific knowledge investments*. (3) The board should be chaired by a *neutral person.* This concept helps to provide a theoretical foundation of corporate governance that is based in the knowledge-based theory of the firm.

In the *second* section, we present various theoretical approaches to the theory of the firm which underpin different suggestions for improving corporate governance: the traditional view of the firm as a nexus of explicit contracts, the view of the firm as a nexus of firm specific investments and the view of the firm as a nexus of firm specific *knowledge* investments. In the *third* section, we come up with suggestions for improving corporate governance that result from our view of the firm as a nexus of firm specific knowledge investments. In the fourth and fifth sections, we discuss arguments for and against our proposal. We conclude by stating that corporate governance reform must be based on an adequate theory of the firm that integrates theories of knowledge generation *and* value distribution.

2. Alternative theoretical views on Corporate Governance

2.1 The firm as a nexus of explicit contracts

Agency theory is a subset of contract theory. In the view of contract theory, the firm is 'a legal fiction which serves as a focus for the complex process in which the conflicting objectives of individuals … are brought in equilibrium within a framework of contractual relationship' (Jensen and Meckling, 1976: 312). All possible conflicts between shareholders and other stakeholders (including the employees) can be solved ex ante by contracts. Only shareholders carry a residual risk and should therefore have residual ownership and control. The basis for shareholders' supremacy derives from this.

The nexus of contract view is, however, misleading and projects a legalistic picture of the firm (Zingales, 2000). Although de jure equity is the only residual contract, de facto firms' decisions have a strong impact on other members of the nexus, sometimes to an even greater extent than shareholders' decisions. This argument has been taken up by proponents of the theory of incomplete contracts. They argue that shareholders' supremacy is nevertheless justified because they have fewer contractual safeguards than other stakeholders (Williamson, 1985). Hansmann (1996) argues that the costs of (external and internal) decision-making between different stakeholders should be taken into account. There is a preference for leaving the ultimate decisions to the shareholders, because the interests among shareholders have the highest degree of homogeneity.

A critique of shareholders' supremacy has been formulated by Zingales (1998). He argues that it is not even in the interest of the shareholders to be the only owners of residual control. Firms exist because they produce what are commonly called synergies (Foss and Iversen, 1997) or quasi-rents (Zingales, 1998). Quasi-rents represent the difference between what the parties inside the firm generate together and what they can obtain on the market. Quasi-rents are the outcome of mutually specialized assets of people who make firm-specific investments (Rajan and Zingales, 1998). These investments can only be protected at high cost by contracts *ex ante* when the parties enter into a relationship. They represent transaction specific investments that cause sunk costs once the contract has been made. What matters is that investors' *ex post* bargaining position is weakened when the quasi-rents are divided (e.g. by discussing their wages after entering the contract). Their firm-specific investment is of little or no value outside the firm and decreases their outside opportunities during the term of the contract. It has been empirically shown that employees who are forced to find new jobs lose, on average, 15 percent of their wages (Osterman, 1999). If they were employees of the firm for more than 21 years, they lose as much as 44 percent of their wages (Topel, 1991). As a consequence, employees have no incentive to undertake firm-specific investments if their bargaining position is not protected after entering into the labor contract (Freeman and Lazear, 1996).

2.2. The firm as a nexus of firm-specific investments

The above critique of the view of the firm as a nexus of explicit contracts leads to a view of the firm as a nexus of explicit and implicit contracts (Zingales 2000) or of firm-specific investments (Zingales 1998, Blair and Stout 1999). These firm-specific investments create room for implicit contracts and ex post bargaining after the contracts have been made. For this reason, corporate governance can be defined as a set of constraints shaping the ex post bargaining over the joint output of firm-specific investments (Zingales, 1998). Blair and Stout (1999, 2001) claim that it is the board that has to take over the task of governing the firm-specific investments and mediating between possible conflicting interests of investors in firm-specific assets which cannot be contracted ex ante. In Blair and Stout's view, the board should act as a neutral third party, which itself is not involved in firm-specific investments. The board should act as an impartial 'mediating hierarch' and therefore should consist mainly of outside directors. This proposal constitutes a pioneering development in the corporate government discussion, but should be expanded upon. Blair and Stout's proposal neglects important differences between firm-specific investments in *knowledge* compared to physical or financial capital, as explained in the next subsection.

2.3 The firm as a nexus of firm-specific knowledge investments

There are fundamental differences between firm-specific investments in knowledge compared to physical goods. *Firstly*, where knowledge investments are concerned, it is not only expensive to contract firm-specific investments ex ante before entering a contract, but impossible. A knowledge worker cannot contract his or her future knowledge as such because of a simple contradiction highlighted by Arrow (1973: 171): The value of knowledge invested in the potential acquirer is not known until after the knowledge is revealed. Once revealed, the potential acquirer has no need to pay for it.

Secondly, the generation of knowledge cannot be evaluated in the same way as physical goods during the contract term. Only insiders or peers can evaluate firm specific knowledge generation and transformation, because outsiders are rarely able to comprehend the processes involved. Outside directors usually evaluate knowledge investments by judging the financial consequences of knowledge encapsulated in marketable products or projects successfully carried out. They are not able to evaluate the quality of the knowledge process itself, and are thus not able to protect knowledge investors from a deterioration of their bargaining position during the interim period when joint knowledge has not yet led to a recoverable output.

Thirdly, the information asymmetry between management and outside directors leads to the external board members being dependent on executives for information. Under present conditions, a board dominated by outside directors has to rely largely on information provided by the top executives. In most cases, the CEO sets the agenda for the board. Most of the information that board members receive originated from the CEO. It seldom happens that the board meets without the CEO's presence (Jensen, Murphy and Wruck, 2004: 54).

Fourthly, the owners of knowledge compared to the owners of financial capital have gained power (Zingales, 2000). The increased competition at the international level has increased the demand for process innovations, which can only be generated with knowledge intensive work. At the same time, the outside options of talented employees have increased due to easier access to financing.

Taken together, these arguments suggest that when firm-specific knowledge investments are crucial for a sustained competitive advantage for the firm – which is a widely shared view today – corporate governance should involve insiders in the decision-making process of the firms' boards. This is in the interests of the shareholders themselves as it leads to an increase in the value of the firm. How this can be achieved is discussed in the following section.

3. New proposals for Corporate Governance

The specific characteristics of firm-specific knowledge investments justify that the knowledge workers are represented on the board. All other stakeholders, with the exception of shareholders, are better able to form ex ante contracts and therefore need not be represented on the board. Thus, the knowledge workers and the shareholders should be involved in the residual control because they carry the brunt of the non-contractible residual risk. This leads us to propose board arrangements contrary to what have been proposed by principal agent theory:

- *Firstly*, the board should rely more on *insiders*. The percentage of insiders relative to outsiders should be determined by the relationship of firm-specific knowledge capital to financial capital.
- *Secondly*, these insiders should be elected by, and responsible for, those *employees of the firm making firm-specific knowledge investments*. The board should no longer be solely an instrument of financial investors, but also an instrument of knowledge investors, and should have the task of aligning the interests of these constituents.

- *Thirdly*, a *neutral person* should chair the board. His or her main task is to enable the board members to engage in a productive discourse to the mutual benefit of all members of the firm. Moreover, he or she has to ensure that the conditions are such that the board members are prepared to contribute to the firm's common good, and to refrain from rent seeking.

The next subsections discuss these three proposals in more detail.

3.1 Insiders on the board

Insiders of the firm, especially those who are knowledge workers, have three major advantages over outsiders on the board. Firstly, they are better informed about the issues and problems concerning the firm's business (Baysinger and Hoskisson, 1990; Hillmann and Dalziel, 2003). This may explain empirical evidence that there is no correlation between the number of outside directors and the financial performance of the firm (Dalton et al, 2003; Hermalin and Weisbach, 2003). The more important firm-specific knowledge is, and the more diversified and decentralized the organization structure of a company is, the less knowledge outsiders on the board have knowledge about what is really going on in the firm (Child and Rodrigues, 2003). Outside directors are able to monitor executives mainly through exerting output control, based upon clearly defined performance targets (Ouchi, 1978). They have only limited control over the transformation processes, which help with evaluating the performance when innovative knowledge work is crucial. The more firms competing on the base of innovations, the more this applies. In times of high uncertainty and rapid change, it is no longer possible to maintain control through targets set by hierarchical control, because targets in these cases have to be reset at regular intervals. It follows that control has to be based on a mutually agreed, ongoing revision of goals that are informed by new search procedures. Such a procedural control is similar to the one commonly used in various professions. It is not possible to evaluate the quality of performance from outside, but only from mutual monitoring on the inside. Our proposal applies the insight of organization theory that the decision rights should be assigned to the actors possessing relevant knowledge in the design of corporate governance (Grandori, 2004, 5).

A second important advantage of having insiders on the board is that it lessens the board's dependence on CEOs for supplying information. Knowledge workers as directors give the board a well-informed source of inside information not filtered by the CEOs. These inside directors have superior explicit knowledge, as well as tacit knowledge, on the specific issues and problems facing the firm. At the same time, insiders mitigate the problem of double agency-relationship. The first consists of owners and management, the second of management and employees (Child and Rodrigues, 2004). The inside directors are able to bridge the gap between these groups.

Thirdly, it is not in the interests of outside executive directors, who are CEOs of other firms, to seriously challenge the policies, especially the remuneration of executives. It is well known that outside CEOs view the board through CEO eyes, i.e. through a lens, which does not seriously challenge the power of the CEO. For example, a study by O'Reilly et al. (1988) found that, where CEO compensation was concerned, the pay of the compensation committee members was a better predictor than the actual performance of the firm. Thus, the membership of employees in the compensation committees would have a moderating effect upon the mutual hiking up of compensations by the cross-board membership of outside CEOs.

The three advantages might be criticized by arguing that knowledge workers, as employees of the firm, are subservient to the interests of the executives to whom they are subordinated in the firm's hierarchy. But, as we will argue in the next section, these knowledge directors gain a measure of independence by being elected by, and responsible to, the body of knowledge investors in the firm.

3.2 Representation of knowledge investors on the board

To solve the problem that contracts cannot be formed ex ante and that the insiders may be subservient to the very managers whom they are supposed to control, we propose an institutional solution: *Financial and knowledge investors should be represented on the board*. Other stakeholders and employees with no firm-specific investments are better able to contract their contributions to the firm ex ante. Suppliers of plant equipment, for example, normally retain the equipment as long as they have not received full payment. The claims of employees with no firm-specific investments are also ex ante contractible via market wages. Therefore, these groups do not need protection via representation on the board. In contrast, the whole investment of a shareholder is placed at risk of being a residual claim (Williamson, 1985). The same applies to the investors in firm-specific knowledge. To protect them, and to give them an incentive to invest, these groups must be represented on the board.

The relationship of the two groups ought to be proportional to the relation of investment in financial capital and investment in firm-specific knowledge capital. As a consequence, in a firm in which firm-specific knowledge investment is very important, the board should contain a large percentage of representatives of knowledge investors. An example are the employees who made a huge effort to learn 'who knows what' in their firm and thus contribute to what is called the firm-specific transactive memory (Wegner, 1987; Moreland, 1999). This kind of relational capital is lost if such employees have to leave the firm. In contrast, knowledge which has the same value irrespective of the firm in which it is used, should not be represented on the board. Examples are professionals working in consultancies, accounting firms or legal companies, who often have closer relationships to their customers than to their firm. When they decide to work for another company, they often take their customers with them and have no sunk costs.

There are several proposals for measuring knowledge capital (e.g. Bontis, 2001; Lev, 2001; Lev and Radhakrishnan, 2003; Strassmann, 1999). To get the firm specific investment of employees in knowledge capital, the knowledge capital must be reduced by a factor which, on the one hand, captures the average reduction in wages employees of the firm would suffer if they had to work in another firm. On the other hand, it should include the average investment the firm has made in the knowledge of its employees. This calculation requires an econometric analysis in which average wage rates in the firm are estimated, depending on a set of individual characteristics of the employees, as well as a variable capturing the time each employee spent in the firm.

We suggest that each employee has a voting right, according to his or her firm-specific investment. It ranges from zero to one. The size of this investment is captured by the estimated individual reduction in wage an employee would sustain if he or she had to transfer to another firm. Employees who sustain no estimated loss from having invested their firm specific knowledge, or who gain an estimated net profit from knowledge investments by the firm, should have no vote. The econometric analysis to calculate individual wage reductions or gains must include a large set of personal characteristics of the employees, as well as a variable capturing the fact of having been an employee of the firm in question. If the coefficient of this latter variable is negative, the employee suffers a loss due to having invested knowledge in the firm in question. In that case, the group of employees meeting these characteristics should have the right to vote according to the size of the coefficient econometrically estimated.

3.3 Neutral chair of the board

We envisage a *neutral chair*, whose task it would be to guarantee an open discussion on the board so that all aspects can be duly considered. He or she should establish, as best they can, what has been called an ideal speech situation (Habermas, 1987; Steinmann, 1990). In particular, he or she has to see that the procedural rules are strictly observed and that all relevant arguments are heard and considered. The chair should aim at securing consensus on the board, especially when complicated issues are at stake.[1] Unanimous decisions on the board should be required for constitutional issues of the firm (Buchanan and Tullock, 1962, Romme, 2004). The chair should also decide when it would be useful, and when not, to have the executives partake in the meetings of the board, thus securing the board a further measure of independence. The chair is therefore a specialist in procedures; he or she should not have any voting right in order to exhibit true independence. This can be compared to the task of a judge in relation to the jury.

The neutral chair of the board should be elected by the unanimous vote of its members. This ensures ex ante neutrality and grants him or her independence vis-à-vis any special faction of the board. Therefore, this person should be an outsider to the firm and should not be connected to the firm through previous employment or through any other capacity. Thus, we reject the common practice of appointing former CEOs as chairpersons of the board. [2]

4. Potential counterarguments

It could be argued that the proposals made on how the board should be constituted are lacking in various respects. We discuss three potential major counterarguments.

1. Professionals tend to invest less firm-specific knowledge than other employees, because their higher education allows them to productively use their knowledge in a variety of firms. Higher education means that one has 'learned to learn', a faculty raising flexibility and adaptation to new challenges. Moreover, professionals define themselves to a high degree by following rules and norms developed by the respective professional community of which they are members. These rules and norms are specific to their particular activity and not to the firm in which they are employed? (Scott, 1966; Larson, 1979). This allows them to keep valuable outside options open. According to our proposal, if they fail to undertake any substantial firm-specific investments, they should not be represented on the board. This would mean that their considerable knowledge cannot be used to counter the executives'

[1] See Nickerson and Zenger (2004), who argue that simple problems can be left to the market, while problems of medium complexity to authority-based hierarchy and complex problems can be left to consensus-based hierarchy.

[2] We side, in this respect, with Jensen, Murphy and Wruck (2004).

superior knowledge. The board's dependence on information from the CEOs is not solved?

This argument does not take into account that, under the present corporate governance system, professionals have little incentive to actively apply and merge their specialist knowledge to any great extent with the specific circumstances prevalent in a particular firm. But our plan to offer them representation on the board provides them with an incentive to invest in firm-specific knowledge. As a compensation for the reduction in valuable outside opportunities, they gain bargaining power in the firm they are associated with. Thus, the counterargument mentioned starts from a static point of view. In equilibrium, after certain adjustments have taken place, professionals will be represented on the board.

2. It could be argued that a representation of knowledge investors can be achieved within the prevailing corporate governance system. Knowledge investors can be remunerated by equity-based compensation, which makes them shareholders. In that capacity, they can elect persons representing them on the board.

This argument does not take into account that such shares, given to the knowledge investing employees, must be restricted in order to hinder a coalition of executives and inside directors from exploiting pure financial investors. Such a coalition could provide incentives for rent seeking and 'earnings management', due to the unlimited power of increasing the dependence of outside directors on accessing information. Stock-based compensation, first and foremost, gives an incentive to increase expectations, but not performance (Martin, 2003). A coalition of both knowledge investors and executives being shareholders might be unbeatable in manipulating expectations of financial investors to their own advantage. The latter mostly do not understand the processes of knowledge generation in the firm. For instance, they find it difficult to evaluate the emergence and potential of a new technological trajectory[3] in which the firm invests.

Therefore, knowledge investors owning shares must be forced to restrict any advantages they have from insider information, at least in the same way as executives owning shares. However, it is well known that such restrictions have proved to be ineffective. Restrictions mean that the respective stocks are not fully tradable and can therefore not be used as part of a risk diversification strategy. As a consequence, they are less valuable to the individual restricted stockholder than the cost to the firm? as a means of remuneration. It is estimated that, under reasonable conditions, individuals evaluate e.g. a standard option program of less than 60 percent of the cost to the providing firm (Hall and Murphy, 2002; Meulbroeck, 2000).

3. Our plan might be criticized for being like German co-determination. In German corporations with more than 2000 employees, the board must have a 50 percent representation of the employees[4]. Many economists consider such a legal imposition to reduce firm efficiency (e.g. Jensen and Meckling, 1979) or pareto-efficiency (Freeman and Lazear, 1996). It therefore seems a bad idea to imitate such co-determination. However, empirical evidence produces contradictory results. Some authors argue that co-determination reduces efficiency (e.g. FitzRoy and Kraft, 1993), while others find that it raises efficiency (e.g. Zwick, 2004). A comprehensive survey of the existing empirical literature finds neither negative nor significantly positive effects for co-determination on firm performance (Addison, Schnabel and Wagner, 2004). In any case, the empirical analyses do not differentiate the effect of co-determination according to the importance of firm-specific knowledge investments. Moreover, it is important to see that our plan is purely voluntary and should be adopted by shareholders because of its efficiency enhancing quality. It aligns the interests of knowledge investors with those of financial investors in knowledge intensive industries. In contrast to our proposal, specifying a representation of employees according to the extent of knowledge investment, the rigid requirements of German co-determination law imposes a fixed percentage of employees on the board. This regulation, in general, leads to few knowledge investors represented on the board. Our plan provides an incentive to undertake knowledge investments and therefore raises the efficiency of the firm.

5. Advantages of our Proposal

5.1 Countervailing the dominance of executives

It's worth repeating our plan's greatest strength. Insiders, with their intense familiarity with internal processes, as well as with internal tacit knowledge, can monitor the executives more efficiently than outsiders, because they are less dependent on the information given by the executives. In addition, their function as representatives of the employees strengthens participation and self-governance by the corporate community as a part of corporate governance. Anyone

[3] Technologies typically evolve along different technological trajectories (Dosi et al, 1988; Teece, 1987). Usually, only one of these different trajectories will emerge as the dominant design.

[4] The chairperson of the board, who is elected by the shareholders, has a double vote in the case of disagreement.

breaking the rules is more easily identified by colleagues than by superiors, and can be informally admonished. This has the express function of ensuring that others are doing their part in contributing to the firm's common good, and are refraining from rent seeking. One of the most important common goods inside companies is corporate virtue. This entails a generally shared notion of what business honesty is about, and behaving correctly, even when not being watched or formally sanctioned (Osterloh and Frey, 2004). In contrast, in the case of the corporate scandals involving Enron and WorldCom, it is well known that the dishonest behavior of top management was common knowledge among employees (Spector, 2003). But formal, as well as informal, accusations of malpractice or whistle-blowing were the exception rather than the rule. External directors have neither the necessary information to reveal misbehavior, nor are they sufficiently trusted to be approached by the employees; they are considered to be representatives of the shareholders and, as such, their opponents rather than their confederates.

Another advantage of having insiders on the board stems from the insight that the control undertaken by peers or insiders in the form of process control is seen less as an external surveillance and viewed more as having a supporting function. As has been established by crowding theory (Frey 1997; Osterloh and Frey 2000; Frey and Osterloh 2002, 2005), an intervention perceived to be controlling undermines intrinsic work motivation, while a procedural control by experts is perceived to be supporting (Gittell 2000) and fair (Bies and Shapiro 1988), crowding in intrinsic work motivation.

5.2 Providing incentives for knowledge investors

Employees have more of an incentive to become knowledge investors, i.e. to invest in firm-specific knowledge capital. This incentive is particularly important for highly educated professionals who, under the present corporate governance conditions, have little incentive to become more fully engaged with the firm they are working for. Investing in firm-specific knowledge reduces their options outside, and thus their bargaining position inside and outside of the firm.

These missing incentives stand in sharp contrast to the emphasis on firm-specific knowledge as the most important competitive advantage, which is hard to imitate. In contrast, our plan to provide these incentives contributes to building up firm-specific knowledge capital and therewith leads to sustainable efficiency rents to firms. Our proposal helps to overcome one important criticism of the knowledge based theory of the firm, namely that it disregards the incentives individuals would have to generate and transfer knowledge[5].

5.3 Strengthening intrinsic work motivation and loyalty to the firm by distributive fairness

Representation of knowledge workers on the board helps to prevent their exploitation by executives and shareholders. Many employees, in particular knowledge workers, are to a considerable extent intrinsically motivated. To be creative, knowledge work needs autonomy (Amabile, 1996), which is the most important condition for becoming intrinsically motivated (Deci and Ryan, 2000; Frey, 1997). But such intrinsic motivation is undermined if individuals feel unfairly treated or feel exploited, as the conditions of distributive justice are disregarded (Osterloh, 2005). At the same time, loyalty to superiors and the firm as a whole is reduced, as the literature on psychological contracts (Rousseau, 1995) and Organizational Citizenship Behavior (OCB) impressively shows (Organ and Ryan, 1995). To ensure that distributive fairness can be exercised, the respective authorities able to judge who has contributed what to the body of firm-specific knowledge must be represented in the top decision making unit, the board. As has already been argued, external directors are not able to perform this job. They normally cannot judge the quantity and quality of knowledge work itself. They are only able to evaluate the financial effects of knowledge encapsulated in marketable products or projects successfully carried out. Only participants in the knowledge process – who must therefore be inside knowledge workers and peers – have a good chance of successfully performing this job and being perceived by their colleagues as acceptable evaluators.

5.4 Strengthening intrinsic work motivation and loyalty to the firm by procedural fairness

Individuals' intrinsic work motivation depends largely on perceived procedural, and not only on distributive fairness (Tyler and Blader, 2003; Frey, Benz and Stutzer, 2004). Moreover, obeying rules of fairness emits a signal that conveys an orientation towards partners in joint production. This creates a framing effect signaling a partial suspension of gain driven behavior (Lindenberg, 2002; 2004). Our proposal entails an institutional safeguard for procedural fairness in the form of the neutral chair of the board being an outsider

[5] With regard to this criticism, see e.g. Dosi and Marengo (2000), Osterloh, Frey and Frost (2002).

not involved in firm-specific investments. This person, elected unanimously by all other members of the board, but without voting rights on the board, has the function of an impartial mediator. He or she is institutionally safeguarded against being subjected to the 'self-serving bias'. Even honest people are subject to such an unconscious bias, which conflates judgments of what constitutes fairness with what is beneficial for oneself. Unlike conscious corruption, such conflation cannot be deterred by sanctions (Babcock and Loewenstein, 1997; Bazerman, Loewenstein and Moore, 2002). Instead, it can be reduced, by lowering the incentives to take care of one's own interests. This is exactly what the institution of the neutral chair of the board ensures and what makes him or her a credible mediator for the shareholders, knowledge workers and executives alike.

5.5 Ensuring diversity on the board while lowering transaction costs

The neutral chair has a second important function on the board. On the one hand, representation of shareholders and knowledge workers ensures that a multitude of different aspects are represented on the board. Such diversity is considered to be important in making wise strategic decisions, in particular in diversified and decentralized organizational structures (Child and Rodrigues, 2003). On the other hand, diversity of interests and control rights raises the transaction costs of decision-making on the board (Hansmann 1996), a disadvantage which needs to be counterbalanced by the advantages of having diversity. The neutral chairperson, as a specialist in procedures or a 'facilitator' (Grandori 2001), is able to find generally acceptable solutions to conflicting issues.

6. Conclusions

The dominant theory of corporate governance, principal agency theory, does not sufficiently take into consideration that the key task of modern corporations is to generate, accumulate and transfer firm-specific knowledge. It does not differentiate between firms producing in a traditional way, based on industrial work, and firms based on knowledge work. Instead, it should be taken into account that, in modern corporations, knowledge capital is just as important, if not more important, than financial capital. In traditional agency theory, it is claimed that only the returns of corporate financial cannot be contracted ex ante and therefore must be given residual claims and residual control. This means that the board, as the top decision-making unit in the firm, should be composed solely of representatives of corporate financial capital. Agency theory therefore proposes that to overcome the widespread corporate scandals and misbehavior, the interests of top management and directors should be increasingly aligned to shareholder interests, e g. by linking compensation closely to performance, making the board more responsible to shareholders, and strengthening the monitoring of top management by independent outside directors.

This paper argues that, by taking the importance of knowledge work into account, the reform of corporate governance should go in a different direction. Knowledge investments, in particular firm-specific investments, are, similar to financial investments, not ex ante contractible. Firm-specific knowledge investments are the essential basis for a sustainable competitive advantage. To produce what are commonly called synergies or quasi-rents, financial and knowledge investments must be combined. As a consequence, the quasi-rents need to be divided up in a way perceived to be fair by the participants. In particular, knowledge investors should not feel exploited, otherwise they will refuse to make firm-specific investments, and will prefer to make investments in outside options. Corporate governance must secure their ex-post bargaining position, once the (necessarily incomplete) labor contracts have been fixed. It is the board which has to take over this task.

With this end in mind, this paper advances three specific proposals:

1. The board should rely much more on *insiders*. The percentage of insiders relative to outsiders should be determined by the relationship of firm-specific knowledge capital to financial capital.
2. The insiders are to be elected by, and responsible for, those employees of the firm making firm-specific knowledge investments.
3. The board is to be chaired by a *neutral person,* whose main task is to enable the board members to engage in a productive discourse to the mutual benefit of all members of the firm. He or she also has to make sure that the board members are prepared to contribute to the firm's common good and refrain from rent seeking.

While arguments may be raised against these proposals, they have the following major advantages over the reform suggested by principal agency theory. At the level of *corporate governance design*, they countervail the dominance of executives; they provide incentives for knowledge investors; they strengthen intrinsic work motivation and loyalty to the firm by distributive as well as procedural justice; and they ensure diversity on the board while lowering transaction costs. At the level of *corporate governance theory,* our approach considers insights from organization theory that multi-party decisions, and even conflicting interests, are not just costly but can improve the quality of decisions (Grandori, 2005). Moreover, it overcomes the separation between approaches focusing on value generation *or* distribution criticized by Asher, Mahoney and Mahoney (2005). We combine knowledge based theory of the firm, focusing on producing a sustained competitive advantage on the one hand, with property rights theory focusing on the distribution of residual claims on the other hand. We thus hope to provide a step in the direction of a more adequate theory of the firm as a basis for corporate governance.

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