

- The extended agency problem includes governments, banks, employees and other stakeholders, who also influence corporate governance.
- One good reason to care about corporate governance is that it will influence the value of your future pension.
- The financial crisis has been (at least partly) attributed to bad corporate governance.



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Theories of Corporate Governance

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2.1 Introduction

In this chapter we review corporate governance theories beginning with the market model of standard microeconomics, which essentially rules out agency problems because of full information and competition. We go on to agency theory, which is in a sense just applied microeconomics based on the idea that people will respond rationally to incentives under asymmetric information. We also discuss other economic theories based on the same assumptions including transaction cost and incomplete contract theory.

While agency theory appears to lead to many insights about real world behaviour, and while it is unquestionably the single most important theory in corporate governance, it cannot explain all human behaviour. For a better understanding of corporate governance we also need to draw on other theories within the fields of economics, psychology, law, political science and sociology. An intelligent user will apply agency theory, but take into consideration, for example, that soft variables like ethics or prestige are sometimes more important to people than monetary gain.

We therefore also summarize relevant theories from related disciplines. For example, psychology offers more nuanced theories of human motivation and cognition, group behaviour and personality which can enrich our understanding of governance issues like design of incentive systems, board composition and board behaviour. Political science and what has come to be known as the political theory of governance allows a deeper understanding of how politics creates law and regulation which have an enormous independent influence on corporate governance. Sociology tends to emphasize the importance of social context, particularly social networks and social norms. Finally, management research has produced influential theories like stewardship, resource dependency and stakeholder theory.

Most of these are not strictly speaking theories of corporate governance, but more general theories which have applications in corporate governance. Together they form the basis for what we call 'enlightened agency theory', which takes its point of departure in mainstream economic agency theory, but allows the analysis to be modified by the psychological, political and sociological issues which come up in particular situations.

2.2 The market model

In abstract microeconomic theory the firm is a black box characterized by a technology (a set of production possibilities) and profit maximization. The theory abstracts from what actually goes on inside firms (e.g. whether, why and how they maximize profits). For a theoretical exposition see Debreu (1959).

In this model all resource allocation is handled by the price mechanism. Firms maximize profits by choosing what to produce while taking market prices for given and do not have to expend resources on solving information or incentive problems. In jargon, there are no transaction costs in the neoclassical economy.

The standard assumptions for this model to work optimally are:

- many firms (sellers) who compete prices down
- many buyers (no buyer power)
- centralized exchange (market clearing)
- full information
- complete markets (a complete set of forward markets)
- no transaction costs.

Under these and other assumptions it's possible to show that the price mechanism may lead to a market equilibrium (i.e. a set of prices for which supply equals demand). Moreover, it can be shown

that this equilibrium is efficient in the sense that it will not be possible to find a universally better resource allocation. Nor will it be possible for individual agents to do better by changing their production or consumption plans.

The concept of market efficiency has been further developed in financial economics to characterize an asset market in which it will not be possible for individual investors to make above-average returns by reallocating their portfolios. This implies that the prices are unpredictable (if they were predictable investors could make money by trading) and that they already incorporate all relevant information (i.e. all publicly available or perhaps even in the strong form all accessible information).

The seamless working of the price system implies that there is no rationale for other institutions such as governments or companies. By default such institutions must be justified by 'market failure', which must again depend on breach of one or more of the basic assumptions mentioned above. For example, with perfectly informed competitive stock markets there would be no need for governance mechanisms like shareholder monitoring, boards or performance-based pay.

If we accept that not just markets, but other institutions like governments, boards or firms can fail as well, the relevant benchmark for comparison becomes the opportunity costs of using a particular institution, or more abstractly its *transaction costs*. *Institutional economics* is the sub-discipline concerned with assessing the relative costs and benefits of alternative institutions. Since corporate governance is concerned with the institutions which regulate company behaviour, it may therefore be regarded as a sub-discipline of institutional economics. Institutional economics also works to explain other institutions like money, families or property rights, which will not be addressed in this book. The core institutions of concern in corporate governance are legal forms (companies, cooperatives etc.), ownership structure, boards, incentive systems, information systems (accounting) and government regulation hereof.

As general as the market model may be, it informs much of the corporate governance discussion. For example, policymakers often attempt to increase transparency in the belief that more information will lead to a better resource allocation. The EU is trying to harmonize standards in the belief that a common European capital market would benefit the competitiveness of European companies. The large liquid stock markets in the US and UK provide quite a good fit with the market model.

One reason for this is that the market model is relatively robust. Competition works. The price system can survive substantial transaction costs and some degree of monopoly and still produce excellent results compared with systemic alternatives like centrally planned economies. Market actors can contract around incomplete markets and find second-best alternatives to hedging risk. Non-market institutions like firms, joint ventures, organizations, standards and even ethics may emerge more or less spontaneously to fill gaps in the market mechanism.

In the perfect market model ownership is just a parameter which determines income distribution: $O_i = \text{consumer } i\text{'s ownership share of firm } j$, where ownership shares must sum to 1 for each firm, and case means dividend rights; it does not matter to overall resource allocation (except by influencing the demand for goods and services), since firms maximize profits no matter who owns them, and since ownership does not influence technology.

The fact that firms are owned by consumers goes some way towards explaining profit maximization. Since consumers are assumed to be inattentive, they want as high profits as possible. Moreover, on the assumption of a complete set of forward markets, consumers can insure against all future contingencies and do not have to be risk averse.

The idea that ownership is irrelevant to resource allocation (for example firm behaviour) was formalized in the Coase theorem (Coase, 1960), which states that ownership does not matter to resource allocation in the absence of transaction costs. This is trivial when there are no interdependencies (externalities) between economic activities, but even when there are, rational actors will manage to find an optimal solution. Imagine for example a train that causes sparks which may set fire to an adjacent field. If the railroad company owns the field, it has an incentive to take steps to prevent fire, e.g. make the train travel more slowly or put up a fence. A farmer who owns the railroad will have exactly the same incentive to maximize joint profits. More surprisingly, the same cost-effective measures will be taken if the farmer and the railroad company bargain rationally as

independent owners. The farmer will put up a fence to protect his land, or force the railroad company to do so by a court order. Alternatively he can pay to have the trains run slower if that is cheaper. In other words, in the absence of transaction costs an efficient solution may be found.

This means that efficient ownership depends on transaction costs. It may for example be optimal for the railroad company to buy the adjacent land in order to save on transaction costs (bargaining with stubborn farmers). Alternatively we may ask whether it makes sense to assume that firm managers (producers) maximize profits regardless of whether they or others own the firm.

2.3 Agency theory

How can we be sure that firms maximize profits, if individuals maximize their utility? This is perhaps (or perhaps not) intuitive in an owner-managed firm, but remember that ownership in the market model was a parameter which could in principle be fixed arbitrarily. If owner-management was generally optimal, we would have a strong theoretical prediction (good governance = owner management), but perhaps there is more to it than that? More generally we need to think about whether a manager acting as an agent for an anonymous owner will maximize profits.

Agency problems arise whenever someone does something for somebody else. This somebody else we designate 'the principal' and the actor we denote the 'agent':

All ... an agency relationship has arisen between two (or more) parties when one, designated as the agent, acts for, or on behalf of, or as a representative for the other, designated the principal, in a particular domain of decision problems.¹

Agency relationships lead to costly incentive problems. There are many examples of agency problems in corporate governance.

For example, there is an agency relationship between a boss and his employees. The boss would like the employees to work hard or to do certain tasks which he believes to be beneficial (although these tasks may not be beneficial to anyone else). In contrast, the employees will have their own ideas about what they would like to do. Only in rare cases (i.e. by luck) will these tasks coincide with what the manager would like them to do. For example, the employees may like to relax rather than to work hard, or they may prefer to hold meetings among themselves rather than talk to the customers. The boss will therefore want to induce them to 'behave'; for example she will tell them what to do and will threaten to fire them if they do not obey. Or she may be a more modern type of manager who prefers to motivate employees by more subtle means: for example through offering a bonus scheme or through psychological tricks. A hierarchical organization can be defined as a chain of such boss-employee relationships from top management to middle managers to workers on the shop floor.

Another example of an agency relationship is the affiliation between a house seller and a real estate agent (Fosner, 2000). In this case, the house seller is the principal and the real estate agent acts on her behalf. The house seller would like the real estate agent to contact as many prospective buyers as possible, to bargain hard on her behalf to get a high price, and so on. But the real estate agent may prefer to take it easy and wait until the customers come along, or he may prefer to concentrate his energy on selling other people's houses. It may be difficult for the seller to verify whether the agent in fact devotes a reasonable amount of effort to the task, so this is a case of asymmetric information (the real estate agent is better informed than the house seller). In general, all relationships between firms and sales agents involve similar incentive problems.

More general problems with agency relationships include the relationships between citizens and their governments, where the citizens want the government to act on their behalf. In this

light democracy can be seen as a (political) governance mechanism which allows the voters to replace inefficient politicians. In the absence of democracy, politicians become dictators who govern according to their own ideas (and very likely for their own benefit). Thus the citizens, much like shareholders in a firm, must organize a system to ensure that their interests are served.

Finally, the relationship between a patient and a doctor is a classical principal-agent problem (Arrow, 1963). The doctor is better informed than the patient about medicine and sickness; that is why the patient seeks his advice. So we again have a case of asymmetric information. And with that comes the incentive problem: the doctor could prescribe useless, expensive treatments and medicines (especially since many patients get better without treatment and since some patients get worse even with the best possible treatment). So how are the patients to know whether the doctor is fooling them? One solution to this asymmetry would be for the government to step in and require all practising doctors to have a university degree in medicine. Another solution would be the invention within the medical profession of a 'medical ethic' (Arrow, 1963), e.g. the Hippocratic Oath, which is enforced through internalization (i.e. doctors identify with it) and through strong collegial pressure. The pressures may be so strong that doctors who are criticized by their peers have been known to commit suicide and they certainly can lose their licence to practise. Note that the doctors have an economic interest in this medical ethic; if they did not have it, they would get far fewer patients, since the patients would rationally fear being taken advantage of. The medical profession up to the 19th century is a vivid example.

We find similar social sanctions in corporate governance; for example, when an opportunistic manager gets a bad reputation this makes it more difficult for him to find a new job or to do business in the future. We note that law, reputation and ethics can all function as governance mechanisms.

So how about the relationship between sellers and buyers? This also involves a conflict of interest. When buying an apple from a grocer, a consumer would like to get as good an apple as possible and to pay as little as possible for it. The grocer, however, would like to charge as much as possible. But we would not usually talk of an agency relationship in this case. We assume that the customer knows what she is buying, and the grocer knows what he sells. So there is no asymmetric information here, and conflicting interests as such are not enough to create an agency problem. To be sure there is always some asymmetric information in any transaction, but unless it is significant, we tend to disregard it. However, under certain circumstances, there are significant information asymmetries even in standard transactions. For example, if I buy an organic apple, I may not be able to tell whether it is really organic, whereas the grocer may know very well. Here a standard solution is to have a declaration of contents (a label) which is guaranteed by the government or some other body that can punish the grocer if he cheats people. Note that this kind of control may be in the grocer's own interest because it will encourage people to buy more. Similar guarantees, like product labels, are found in corporate governance. We call them 'corporate governance codes'.

In summary, agency problems are universal. There are many different solutions to them: monitoring and sanctions, bonus systems, laws, and even ethical codes can be regarded as governance mechanisms. In Chapter 11 we will see how these different mechanisms can be applied to corporate governance. For now we would like to take a closer look at the agency problems which these governance mechanisms intend to solve.

2.4

The owner-manager problem

The owner-management agency problem begins with the separation of ownership and management or, as it is sometimes (confusingly) called, the separation of ownership and control (Berle and Means, 1932). Without this separation, in owner-managed firms, the basic agency problem disappears.

Owner-managers have a natural incentive to work hard and to employ somebody else if they are not the best managers. If they choose to use company funds for private expenditure (on-the-job consumption), they will only do so if consuming on the job is more beneficial to them than

¹ Ross (1973).

consuming at home² (taxes and other complications aside). From the viewpoint of professional managers, the incentives look different since it is not their money which they manage. Their incentives may be to spend money on things that they like without thinking too much of the costs, and they may also have an interest in maintaining their jobs because they need the money.

A CEO once described to us how his view of corporate expenditure changed after he bought 1.5% of the company's stock. Every time he authorized the payment of a bill by using his signature, he questioned immediately whether this expense was really necessary.

By separation of ownership and management we get a specialization of resources where the principal/owner/investor is a supplier of finance, whereas the agent/manager supplies human capital. The idea is that managers act on behalf of the shareholders and the agency problem is to find ways in which shareholders can ensure that the manager will act in their interests, for example how they can make sure that she maximizes the stock price (value) of the firm.

From the viewpoint of the shareholders, a value-maximizing manager is an entrepreneurial and creative leader, who is able to implement her ideas in the organization. She is hard working and economical with the shareholders' money and she delivers results (we could easily extend the list). In reality, we expect the average manager to be more ordinary, but normally a very decent and conscientious person. But unfortunately, there are also many examples of managers who do not live up to this ideal.

The following are generic agency problems: some managers act criminally and embezzle (steal) shareholders' funds. In a way, that is easy for the shareholder: it is a criminal act and the police will come after them. Some managers are known to undertake 'self dealing', i.e. they use company money for transactions which benefit themselves, for example with a company which they own themselves. This was apparently the case in Parmalat, a publicly listed Italian dairy controlled by a founding family. Parmalat transferred money to a company which was 100% owned by the family. This type of transaction is illegal in most countries but the police will typically be unable to uncover such problems on their own accord, so shareholders must be on their toes and monitor company activities.

Another classical agency problem is excess expenditure. The question here is when an expense is business motivated and when it is really private consumption for the manager. Paper and pencils will typically not be much of a problem, but how about a company jet? The managers may argue that they need a company jet so as not to waste precious managerial time in the airport and, if the board approves, they can buy one. So one jet might be OK, or perhaps it is not. But how about two? Or three? At some point, this expense seems difficult to justify from a company viewpoint. Similar uncertainties apply to meals in expensive restaurants, luxurious headquarters, expensive thick carpets, and very good-looking secretaries (i.e. do we really need a Playmate secretary?). One American manager was known to let the company plane fly around with his dog. The problem with excess expenditure is that it is a grey area. It will usually be possible for the manager to make a case that this was necessary or beneficial from a business point of view; a nice-looking secretary may charm business relations, it may be easier to close important deals over a meal, and the company jet saves time. Remember that a court must prove beyond reasonable doubt that this was harmful to shareholders in order to send him to jail, and this is very difficult. Courts will be reluctant to do this because of the *business judgement rule*: a legal principle according to which managers are assumed to be in the right, unless proven otherwise. The underlying argument seems to be that if the shareholders do not like what the manager does, they can fire him. But we want managers to be dynamic and to do things: that is, to take risks, since that is part of their job. Sometimes this means that they make mistakes. If we sent them to jail every time they made a mistake, it would soon be difficult to fill CEO positions. Or, even worse, the CEOs would only think about how not to make mistakes and all activity would cease.

Empire building, particularly through mergers and acquisitions, is another example of a conflict of interest between shareholders and managers. Usually managers like growth and size. It is more fun to lead a growth company, it is more prestigious to lead a large company, and managerial pay

² This point was forcefully made by Harold Demsetz (1983).

is positively correlated with company size. The risk of being taken over by another company also declines with firm size. So managers like to build their own little empires. But it is well known that many mergers and acquisitions fail to create value for the acquiring company, so shareholders often have a different view, particularly if the acquisitions are outside the company's core business. Usually, hidden private consumption is not what takes a company down; private consumption is trifling compared with other business expenses. But there are many examples of acquisitions which cost a company dearly, so in a way this is a more serious problem for shareholders, and they will typically be considered to be a normal part of doing business. Thus, courts would not accept a case against a manager because the company made an acquisition. After all, there are examples of good acquisitions which create value.

Overinvestment falls into the same category as empire building. Oil companies are known to have overinvested in finding new sources of oil when it would have been much cheaper to buy it on the market (Shleifer and Vishny, 1997).

Entrenchment – when managers create barriers which make it difficult to fire them and they then stay on for too long – can also be regarded as an agency problem. The CEO likes his job, the prestige and the money. But shareholders may prefer to have a new, more dynamic profile to head the company. This may be why some studies found that share prices actually rise when entrenched CEOs suddenly die. A 5% increase in share prices would then indicate that the old manager cost the company 5% of its value.

Finally, the inventor of 'shareholder value' Alfred Rappaport (and later, Jensen 1993) found that many, if not most, US companies did not cover their costs of capital during the 1970s and 1980s. In other words, they lost money for their shareholders. Jensen calculated that General Motors (GM) lost 100 billion dollars during the 1980s. Obviously, at the time, many managers could have done better in terms of maximizing shareholder value, and it is difficult to argue that they were unlucky over such a long period of time. So whatever else they did could, in principle, be attributed to agency problems.

2.5 Assumptions in agency theory

Theoretically, the key elements of the agency problem are:

- Separation between principal and agent;
- Conflicting interests (selfishness), since principal and agent each have their own utility functions;
- Rationality: both principal and agent are rational and rationally further their own interests;
- Asymmetric information: the agent is better informed about his own abilities, his own activities and what is going on in the firm than is the principal;
- Uncertainty (risk): the existence of 'other factors' – weather, bad luck and unforeseen changes of any kind – means there is no one-to-one relationship between the activities of the agent and the outcome. If the information asymmetry problem disappeared, then the agency problem itself would disappear, since the principal would be able to deduce the behaviour of the agent by monitoring his performance;
- Risk aversion: performance pay will usually involve some kind of risk for the agent (either over- or underpay), and the risk averse will demand compensation for this. If the agent is sufficiently risk averse, he will only want to work for a fixed pay to avoid economic uncertainty altogether. The risk will then be carried by the principal who, like entrepreneur capitalists, gets a variable profit while his employees are paid a fixed salary.

The appendix to this chapter provides a formal treatment of the optimal compensation contract between principal and agent. In the basic model the 'principal delegates decision-making authority to an agent whose behaviour influences the welfare of the principal'. The goal of the principal is to find an optimal contract that makes the agent maximize her utility or value function.

2.6 Types of agency problems

Type 1 agency problems (owner-manager problems) arise between shareholders (the principals) and managers (agents). They arise because the agents (managers) do not always act in the interests of the shareholders.

Type 2 agency problems between majority and minority investors occur if there are conflicts of interests between the two groups. A founding family in control of the firm may have different views from those of minority investors. The family in charge effectively acts on behalf of the other investors, so in this case the family is the agent, while the minority investors are the principals.

Type 3 agency problems between shareholders and stakeholders occur when shareholders make self-interested decisions which influence the welfare of stakeholders. For example, shareholders may decide to pay out high dividends or to pursue a risky strategy, both of which increase the risk of bankruptcy and reduce the welfare of creditors. In the same way shareholders may decide to close down a factory and this can harm the welfare of the employees, the suppliers, the local government, and perhaps the customers. Type 3 agency problems fall under the broad heading of corporate social responsibility.

The three types of generic problems can be regarded as an expression of increasing responsibility. In the first instance, managers and the firm are responsible to the controlling owners, who decide whether they are hired or fired. In the second instance, the responsibility is extended to all shareholders, not just the controlling shareholders. In the third instance, the responsibility is extended further to cover all stakeholders, not just shareholders.

2.7 Information problems

There are two particularly important types of information asymmetry: moral hazard (i.e. hidden action) and adverse selection (i.e. hidden knowledge), which will be discussed in greater detail in the following sections.

To distinguish between moral hazard and adverse selection, it is useful to draw a timeline (Figure 2.1). Adverse selection problems tend to occur before the principal is to make a decision. Moral hazard problems tend to occur after the decision.

For example, to ensure good management of the company is perhaps the most important task in corporate governance. This task involves:

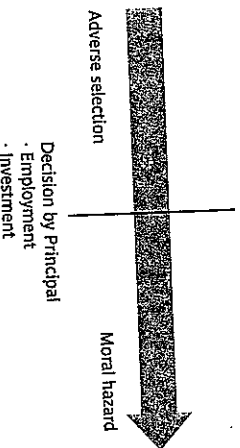


Figure 2.1 Adverse selection and moral hazard

- 1 Selection: hire the right managers and replace bad ones, if necessary. The key problem here is 'adverse selection'.
- 2 Motivation: encourage management to do their best through incentives and monitoring. The key problem here is 'moral hazard'.

Since the moral hazard problem is easier to understand, we begin with that.

2.8 Moral hazard

Moral hazard (also known as hidden action) occurs when the activity of the agent cannot be observed by the principal. For example, as shareholders we do not know what managers are doing. We can observe some indicators, but most of their behaviour remains hidden. For all we know they could spend their time playing golf or checking all day, eating expensive lunches with their friends at the company's expense while demanding sky-high salaries.

The term 'moral hazard' originates in the insurance literature. Insurers found that when people have fire insurance, the probability of fire increases. This can to some extent be attributed to direct fraud; some people may set their shop on fire in the hope of getting a new one financed with insurance money. But it is also possible that people become more careless when they know they are insured. For example, when you leave your house you may ask yourself if you forgot a burning candle or if you forgot to turn off the stove. If you are not insured, agency theory would predict that you are more likely to go back and check an extra time. Thus, on top of the usual risk of fire, there is an additional element – a moral hazard – which insurance companies must take into account.

The moral hazard case illustrates a general principle: there is a trade-off between risk and incentives. If you insure people against risk they also lose the incentive to do something about it. For example, insurers will routinely ask people to pay a minimum amount (deductible) when their car is insured and there is an accident. The argument for this is that the insured person will then share some of the risk and will therefore not lose all of the incentive.

In the case of shareholders and managers, managers can be given incentives: for example, a bonus if profits are high or a stock option scheme so that the manager benefits if the stock price increases. In this case, the manager shares some of the shareholders' risk and receives an incentive to act in our interest as stockholders.

Monitoring is another strategy. Insurance companies may examine whether there is any indication of fraud or negligence before they pay out the insurance premium. When there is even a small chance of detection, or a small chance that one will not receive an insurance claim, people will be much more careful about negligence and fraud.

In the case of company managers, shareholders commission auditors to inform them annually (in the annual report) about the company's performance and management's performance. Although there are many examples of non-performance which auditors do not detect, at least some checks are probably better than no checks.

2.9

Adverse selection

Adverse selection, or hidden knowledge, occurs when there is some element in the situation which is known to the agent but not known to the principal. For example, when the shareholders (via the board) hire a new manager for the company, they may not know how capable she is. She may be more or less intelligent, more or less hard-working, but she may also be an alcoholic or a sex offender. Prior to appointment, shareholders can scan some signs of performance – her grades from business school or her references, for example – but they cannot measure what they really want to know:

how will she actually perform in the new job? The agent, of course, knows herself much better than principals do. Therefore, she has some hidden knowledge.

For the sake of the argument imagine that an agent, Susan, knows she is worth €40,000 a month but she gets an offer of only €20,000. In this case, Susan may decide not to take the offer. Instead, she could choose to become self-employed and make €40,000 per month plus incur a risk premium. In contrast, if she knows that she is worth only €10,000, she might want to take the job, because it is an attractive bargain from her viewpoint.

This means that the company will have selected the wrong employee, or rather that the wrong employees were self-selected to work for the company. This is 'adverse selection'; the term was suggested by George Akerlof who received the Nobel Prize in economics for identifying this problem (and many other contributions to economic theory).

The now classic example is the market for bad cars, so-called 'lemons'. As the story goes, auto workers in the old days would not work on Sundays and they would take this opportunity to drink. When they returned to work on Mondays, the auto workers had hangovers. The result was that the cars produced that day would be full of errors. It would be referred to as a 'Monday car' or 'lemon', which was lower quality than cars produced on the other five workdays. It would be impossible for a new buyer to tell the difference between Monday and Tuesday cars before they made their purchase. Post-purchase, however, there would be constant problems with Monday cars. They would need constant repairs. So let us say that a Monday car is worth 0 and that a normal weekday car is worth 100 000. People would then only be willing to pay 83 333 for the new cars because they knew there was a 16,666% chance of buying a lemon.³

A customer who bought a new car would quickly discover it was a Monday car and might want to sell it to buy another one. Used car buyers would consider that the fraction of Monday cars for sale in the used car market would be substantially higher than 1/6, since many more owners of Monday cars would want to sell their cars than owners of Tuesday cars. Since some cars are worth 100 000 minus usage and some cars are worth 0, what could one expect the price of used cars would be? 0!

If the price was 50 000, the owners of good cars would not want to sell. Thus only Monday cars (lemons) would be on the market. The same is true for any price < 100 000 minus a little. Now suppose that the price was 100 000. All the Monday cars would then be put up for sale. For the sake of the argument, let us assume that the other cars would also be put up for sale because the price was slightly higher than what the cars were worth. The problem is, however, that nobody would want to buy at that price. Rational buyers would certainly not pay more than the 83 333 that they would pay for a new car, given that the probability of a lemon car was around the same for new and used cars. But at a price of 83 333, none of the good-car owners would want to sell. Thus there would be only lemons, worth 0, on the market. Buyers would recognize this and not buy. Ultimately, the sellers would have to offer a lower price; in fact they would have to lower the price to 0 before anyone would buy.

It is possible to make this example more realistic (and more complicated) by assuming that there would also be sellers of good cars at lower prices; for example because some of them had changed their mind and wanted to buy a new car or because they found that they could afford a better car because of increased income or wealth. Without going too much into detail, suppose that half of all car owners had good cars, but they would sell at a price of 60. But the lemon owners would of course also offer their cars for sale. This means that $\frac{1}{2} + \frac{1}{2} = \frac{1}{2}$ of the cars would be up for sale, and 25% of them would be lemons. Buyers would have to consider that the cars would not be worth 60 to them, but only 45, since $\frac{1}{4}$ of the used cars for sale would turn out to be lemons. So they would offer 45. But at that price, perhaps only $\frac{1}{2}$ of the cars up for sale of which $\frac{1}{4}$ would be lemons. So the cars on sale would on average only be worth 30 to the buyers, which would encourage even fewer good car owners to sell. The number of lemons on the market would increase and demand would fall. You can see where this leads. The market will collapse.

³ We assume that one out of six cars is a lemon because one out of six workdays is a Monday.

In the real world, of course, there is a market for used cars. In part this is because very few cars have no value at all, so prices will not fall to zero. Moreover, it is possible to examine cars to reduce the information asymmetry.

In corporate governance we would call this monitoring. Owners of good cars or the intermediaries (dealers) may signal to buyers that they are good – by offering a guarantee, for example. The law may also help the process by punishing cheaters. Nevertheless, used car dealers still have a bad name, and the prices for used cars are substantially lower than for new cars.

We can apply the same logic to the job market. Suppose that $\frac{1}{6}$ of the applicants for a new job are no good (value 0), while the rest have a value of 100 to the firm. In order that the appointment creates value for the firm, the company cannot offer more than a salary of 83.3. But at that salary level, all the 'good applicants' might decide to start their own businesses or find another job offer. So the value of the new hires to the firm would be 0, and the firm would lose money if it offered them more. Alternatively, half of the good applicants might want to work for 60, since that was what they could make on their own. But there would still be $\frac{1}{6}$ 'good-for-nothings'. Thus the firm could only offer 45. You can work the rest out for yourself.

One solution to this problem is to screen, or monitor, incoming applicants. For example a human resource function can screen applicants prior to appointment. Another solution to this problem is incentives. If the firm offers performance-based pay, the good-for-nothings will not want to risk it, but the high-performers will.

Example 1: The IPO market

Adverse selection also occurs among firms that want to go public: an Initial Public Offering (IPO). Some firms go public because they need new capital. Others go public because the owners want to cash out. A third group wants to go public to sell out because the business is bad. It is difficult for investors to tell the difference. As a result, there is a discount on IPOs. In some cases, owners are better off to keep their ownership and live off the dividends which profitable businesses can generate. One of the solutions is that owners can signal to the market that they believe in the firm by retaining a high ownership share. During the dot.com boom, investors were apparently unable to tell the difference between good and bad. In hindsight, it might have been a good rule-of-thumb for investors to only buy stock in companies where the incumbent owners also had some money at stake rather than to buy stock in those companies where the owners ran away as fast as they could.

Example 2: Banking

The same problem occurs in banking. Some loans are bad and bankers try to sort the good from the bad, but they cannot perfectly do so *ex ante* (i.e. beforehand). Some of the bad borrowers have unrealistic expectations, some are gamblers, and some want to use the money for their own consumption. So banks have to charge a risk premium on their loans over the risk-free rate of interest (e.g. treasury bills). This will make the 'good' borrowers less likely to borrow, but the bad borrowers will not be discouraged. So there can be adverse selection. In fact, one theory is that banks exist because they can specialize in handling adverse selection and moral hazard problems in the market for loans.

2.10 Extensions to agency theory

The simple agency model can be extended in many ways. For example, many shareholders are agents (employees) rather than ultimate owners. Thus we get *agents watching agents*. Since fund managers do not have their own money at stake, this creates a new set of incentive problems. They may for example be satisfied with normal performance compared with other investors, but averse to underperformance. Investors may therefore tend to herd.

Another extension is to recognize that there may be not just one single principal but many, and they may have conflicting objectives. For example there may be many owners with different preferences, or the firm may be accountable to multiple constituencies. From an agency-theoretical viewpoint this implies that firm behaviour should be modelled as a *common agency problem* (Bermheim and Whinston, 1986) in which the agent (management) faces not just one but a set of principals whose objectives (preferences) differ and may even conflict sufficiently to constitute a zero-sum game between them. If the firm is seen as a nexus of contracts (Jensen and Meckling, 1976), the principals are the buyers and sellers of its products and services plus stakeholders whose welfare is affected by external effects produced by the firm.

A third extension is that agency problems often have a time dimension or in other words we have a *repeated game* (Kreps, 1986). An agent who misbehaves will see her reputation suffer, and she will find it more difficult to get a new job or attract funds from investors or banks. Knowing this the agent has incentives to behave better so reputation may reduce agency problems.

2.11 Incomplete contracts

As relevant as agency theory is, it misses one important point (which we will return to in the chapter on ownership): there is more to ownership than dividends or monetary incentives. Ownership also implies control which is a valuable asset in all those situations which are not contracted for in advance (Grossman and Hart, 1986). Since economic actors have access to different information it seems natural to allocate ownership to agents which have the most important information. According to agency theory, it would be possible to achieve the same outcome by a pay-for-performance contract, but since such a contract could not possibly specify all future contingencies, agents only get the full incentive when they acquire ownership.

In incomplete contracts theory (Grossman and Hart, 1986; Hart, 1988, 1995a, 1995b), whoever has asset ownership possesses the residual rights of control, i.e. control rights in all those situations which are not covered by formal contracts between the parties. The allocation of ownership influences incentives to invest and value creation. Unlike in neoclassical theory or the zero transaction cost benchmark proposed by Coase (1960), the identity of the owner therefore becomes important. This provides the theoretical foundation for a theory of 'best owner'. Moreover, the theory shows that it may be preferable to integrate ownership under the same owner. It therefore also provides the theoretical foundation for a theory of firm size and scope, including mergers and acquisitions.

For example, incomplete contracts theory explains why it is not possible for large organizations to replicate the incentives of entrepreneurial firms even with full profit sharing (i.e. letting an employee have all the profits). Since an employee does not have the residual rights of control she has less incentive to make an effort and to invest in the job because the employer can act in his own interest in all those cases not covered by the incomplete contract. Thus there is a strong rationale for owner management. However, when two firms need to work together, joint ownership may be more efficient because they do not have to fear 'hold up' (the risk that one party exploits their mutual dependence to her own benefit) to the same extent.

2.12 Transaction costs

Like information asymmetry in agency theory, transaction costs are at the root of many deviations from the market model. Coase (1960) showed that ownership is irrelevant to resource allocation in the absence of transaction costs. In an earlier paper, Coase (1937) had demonstrated how firms sometimes internalize market transactions (conduct the same activities internally in the firm) and that the decision of whether or not to do so will depend mainly on transaction costs, which he defined

as the costs of using the price system (relative to internal governance in firms). Subsequently, Oliver Williamson (1975) found that transaction costs could be attributed to general human characteristics under conditions of asset specificity, uncertainty and high transaction frequency.

Applied to corporate governance, transaction costs are relevant because it can explain vertical integration, i.e. why two possibly independent firms doing business with each other might save costs by joint ownership. In particular, asset specificity can create interdependencies which one firm may use to extract benefits from the other (e.g. hold-up problems).

The classical example in transaction cost economics is vertical integration, sometimes known as the make-or-buy decision: should a company produce a product or service itself or outsource it to independent suppliers? Effectively this is a choice between market (outsourcing) and hierarchy (insourcing). Transaction cost theory tells us that insourcing is more efficient if the relationship between buyer and seller is characterized by asset specificity, uncertainty and a high transaction frequency. Asset specificity gives rise to monopolistic or monopsonistic problems which are particularly difficult to handle when there is high uncertainty about business conditions. For one or two transactions insourcing may be overdoing it because of higher fixed administration costs, but for a continuing relationship it may be the optimal solution. Thus transaction costs economics predicts that there will be more hierarchy, i.e. larger and more integrated firms, under such conditions.

Transaction costs theory is also relevant for pointing to more complex human behaviour than the rational and selfish, but law-abiding, agents in the market model. Opportunism, defined as self-interest seeking with guile, seems quite consistent with some types of managerial behaviour such as distorting information, fraud, internal political games and so on. Bounded rationality – that humans are in Herbert Simon's words (1958) 'intendedly rational but only limitedly so' – may be a more realistic description of owners, managers, board members and other important agents that we find in the neoclassical model. In fact, because bounded rationality implies costs of information collection, it can explain why there will usually be information asymmetries in corporate governance.

2.13 Psychology

In recent years it has become generally accepted in economics that human beings are not completely rational or completely selfish. The neoclassical model is an approximation which leaves room for improvement. A body of research in behavioural economics or behavioural finance has emerged, and this research also has implications for corporate governance. Behavioural economics has drawn primarily on cognitive psychology so we start by considering that, but psychology is also important to corporate governance in other respects and we go on to discuss many of these possible applications. For reference we refer to Hayes (2000).

Cognitive psychology is full of so-called biases or deviations from rationality. Here is a list of the most well-established ones.

Confirmation bias (Watson, 1968) means that decision makers look for information which confirms their own ideas and past decisions. They may therefore persist in erroneous judgements for a long time. For example, CEOs and boards will continue to hold on to bad strategies and bad practices for a long time because they selectively look for (and find) confirmation of their own ideas. This implies that external control mechanisms such as active owners or vigilant boards can be useful to get managers to change direction. *Entrapment bias* – aversion to admitting a mistake – only makes this bias stronger and often leads to throwing good money after bad.

Small sample bias implies that decision makers will often make decisions based on small samples (one or two observations). For example, a board member once argued against foreign board members because the board had already had one and this was not a success (he tended to doze off during the board meetings). More generally, they tend to underestimate or ignore statistical information (base

rates bias). A related visibility bias makes people tend to put more stock in data which is highly visible to them. For example, bankers may learn from their own past experience with bad loans or those of other domestic banks, whereas information from other sectors or countries is neglected.

Illusory patterns and correlations biases imply that decision makers see patterns even when there are none (like tea leaves on the bottom of a tea cup). Moreover, from Gestalt theory we know that they tend to prefer certain patterns over others, e.g. symmetrical, well-defined shapes. Such biases will not necessarily disappear over time as decision makers learn. In fact, when people are misled by stochastic feedback, misunderstandings and spurious correlations may reinforce superstition rather than learning so that 'superstitious learning' takes place (Skinner, 1938).

The *fundamental attribution error* implies that people tend to see their own failures as a result of bad luck or external causes, while they attribute their successes to their own performance and ability. Thus (using popular, non-scientific jargon) the egos of successful CEOs and chairs will tend to inflate over time. In contrast, when assessing others people tend to ascribe success to external causes or luck to a much greater degree. This will, for example, influence the way CEOs assess their employees or competitors.

Anchoring bias implies that people tend to use reference points when assessing situations. In a famous experiment Kahnemann and Tversky (1973) spun a wheel to generate a random number and then asked participants a quantity question, e.g. 'What is the population of Nigeria?' The higher the random numbers the higher these estimates were. More generally, human judgement and decision will depend very much on how decisions are framed (*framing bias*). Skilled managers and chairs are experts in framing proposals to the board or to shareholders to get their way. According to prospect theory (Kahnemann and Tversky, 1979) preferences will depend critically on the reference point (e.g. the status quo). Decision makers will be strongly averse to small losses, but much less strongly pleased by small gains.

Simple mechanisms like memory loss probably aggravate cognitive biases, because they create distortions when information is passed up and down hierarchical levels (Bartlett, 1932; Williamson, 1967). Boards or top management may have little idea of what happens on the shop floor, and shop floor workers may be imperfectly informed about what the board wants. Generally, these biases will exacerbate agency problems.

Emotional stress can lead to even more biased decision making in times of crisis. In the short term, the 'fight-or-flight response' leads some decision makers to become aggressive when their position is threatened. Challenged leaders may react irrationally with denial, threats and distortion. In the long term, when there is time to cool down and reflect, they may be able to respond more rationally however.

Hindsight bias is another source of bias which matters in corporate governance. They say that hindsight is the most exact of all sciences. Everybody always knew what would happen, 5 minutes after. This is important when shareholders or boards find fault with the performance of managers who should (in their opinion) have known better. In the same way successful decisions tend to be obvious afterwards.

All of this means that people (economic actors) are far from perfectly rational, but it does not entirely dispense with rationality. Experienced business people are often aware of biases and try to correct for them in ways which are not available in laboratory experiments; for example they continuously experiment, i.e. try out ideas and reject those that do not work. To some extent governance mechanisms like boards or auditing may even function as checks or balances to reduce some of the biases. However, it would be an exaggeration to say that psychological biases have been eliminated by corporate governance.

Personality may also have a bearing on corporate governance. This is particularly true of the personal characteristics of CEOs who may influence an entire organization as well as corporate governance.

Leaders have different capabilities, e.g. analytical or interpersonal intelligence (Gardner, 1983). The personalities of board chairs or large owners may also influence governance.

Summarizing many personality studies, Norman (1963) found that people (and leaders) differ in terms of extroversion (or introversion), stability (or neuroticism), agreeableness (or criticalness), conscientiousness (or disorganization) and openness (or closedness). Generally we expect leaders to be extrovert, emotionally stable, conscientious and open (Judge et al., 2002), but there are also many exceptions. For example, Collins (2001) argued that great leaders tend to be introvert and to subordinate their own personality to organizational goals. Moreover, many well-known leaders have been known to have neurotic tendencies (e.g. to be prone to fits of anger).

Neuroticism, in particular, can create serious problems in governance. Eric Fromm (1994) identified three negative personality orientations which are easily recognizable from corporate governance cases:

- *exploitative (sadistic) and dominant characters*, who derive satisfaction from controlling and outsmarting others, have little empathy for their equals and contempt for their inferiors;
- *hoarding characters*, who try to protect what they have and resist change;
- *marketing characters*, who are concerned with image, appearances and style and derive satisfaction from admiration and social success.

In addition, there are *receptive (masochistic) characters*, who are self-effacing and loyal, but pass responsibilities to others. These traits could be characteristic of 'useful idiots' who may have insufficient personal integrity to stand up to despotic CEOs or corrupt corporate culture. *Authoritarian characters* (Adorno et al., 1950), who are deferential to authority, intolerant to deviations, dominating and hard-liners, may also play a role both as leaders and followers in corporate governance.

Group psychology matters to board behaviour since boards are in essence small groups. This means, for example, that board work is highly influenced by social roles and subject to pathologies such as groupthink.

In an effective team there is room for a division of labour between team roles (Belbin, 1993; Hayes, 2000). Some group members contribute ideas, other make contacts to the outside world, coordinate group activities or give support to whatever is happening. For a non-exhaustive list, see Table 2.1. At a more mundane level, it seems important that the psychological characteristics of board members complement rather than substitute each other. A creative board which is unable to finish on time or implement its ideas is worthless.

Groupthink (Janis, 1972) is a pathological uniformity of group behaviour which prevents the group from understanding its environment and invites bad decisions. It consists of defending and rationalizing the group's own decisions, brushing away criticism by stereotyping critics ('theorists', 'radicals'), preserving an illusion of moral superiority, pressuring members to conformity and

Table 2.1 A sketch of Belbin's team roles (after Hayes, 2000)

Shaper	Pushes towards agreement
Plant	Ideas, proposals and suggestions
Monitor	Analyses problems and contributions
Implementer	Gets on with the job, puts into practice
Team worker	Gives support and help
Resource investigator	Negotiates with outsiders to locate resources
Completer	Pushes to meet schedules and targets
Coordinator	Clarifies goals, allocates tasks and expresses the conclusions of the group

suppressing disagreements. Organizations with a long successful history and a strong leader are particularly likely to fall into this trap.

A rationale for groupthink may be found in studies of conformity (Sherif, 1936), which show that groups often tend to establish group norms to which the minority tends to conform even in cases when this is obviously wrong. However, subsequent studies indicated that minority dissent (Moscovici et al., 1969) may be effective in making group members change their mind and see the situation more correctly. Such studies provide a rationale for independent board members.

In a famous experiment, Milgram (1963) showed how people could be manipulated to give electroshocks to others in what they believed to be a learning experiment. While designed to reveal authoritarian behaviour more generally, this study may also be helpful to understand how employees and other insiders may effectively connive in fraud and other scandalous behaviour. Milgram's explanation of this was an alternative agency theory according to which individuals acting in an official capacity come to act in an agentic state in which they lose moral conscience and the sense of responsibility for their own actions. They tend to redefine the situation in ways which make it easier to accept, i.e. to deny how serious it is, avoid contact with victims or try to compensate somewhat by helping them. In contrast, the same people in an autonomous state would act much more morally and rationally. Note that this agency theory is quite the reverse of economic agency theory.

2.14 Sociology

Sociology, the science of society, is obviously also relevant to corporate governance, although many branches of sociology – sociology of religion, secularization, science, medicine – are not (or are only indirectly) concerned with corporate governance. However, some branches of sociology explicitly study corporate governance.

Social network theory is used to describe connections between companies through board membership (interlocking directorates) and ownership (cross-ownership). The contention that there is more to governance than formal institutions is captured by Kogut and Walker (2003): '... governance and control operate through the constitution of relationships that bind economic organizations and individual actors. The ultimate source of governance is society rather than the rule of formal law or even boards of directors narrowly defined'. It is also possible to put this a bit more radically: 'People and organizations are not the source of action so much as they are the vehicles for structurally induced action' (Burt, 1982). This implies a view of governance which is different from the methodological individualism of economics and agency theory. Depending on their constellations (i.e. network structure) rather than their individual characteristics, carbon atoms may yield soft graphite or hard diamonds (Parkhe et al., 2006). In the same way, network theory postulates that network structure rather than individual agent attributes determine behaviour and performance. However, network theory does not exclude the study of individual actors or rule out that they influence behaviour; it just focuses on the network relations. Network theory may thus be complementary to rather than competing with the more individualistic agency models of economic theory.

Quantitative measures can be used to describe and compare the density and other properties of such networks. Most have been found to be 'small worlds' in the sense that although they cluster locally there are 'weak ties' which make the entire system interconnected. As shown by Mark Granovetter (1973), weak ties can be important even though they are less intense because they can supply information from outside the immediate neighbourhood. Such information will probably be different and is more likely to be new than information supplied by one's immediate neighbourhood. The idea of 'six degrees of separation' implies that most actors are connected through no more than six steps.

Formally, a social network can be defined as a set of agents (firms, board members, owners ... also called vertices) connected by a set of ties (ownership, board interlocks ... also called nodes). The neighbourhood of an agent is defined as its immediately connected neighbours (agents). The degree of an agent is the number of other agents in its neighbourhood.

The clustering coefficient for an agent is the proportion of links between the agents within its neighbourhood divided by the number of links that could possibly exist between them. This measure is 1 if every neighbour connected to the agent is also connected to every other agent within the neighbourhood, and 0 if no agent that is connected to the agent connects to any other agent connected to the agent. The clustering coefficient for the whole system is given by Watts and Strogatz (1998) as the average of the clustering coefficient for each agent.

Given a social network, the path length between two agents is the number of connections in the shortest path connecting the two agents. The average path length is the average of the path length for all agents in the network.

We say that a network is a 'small world' if the clustering coefficient (cc) is high and the average path length (apl) is low, in other words if the small world statistic (sws = apl/cc) is large and particularly > 1 . We measure the small world statistics only for connected firms since in particular the average path length is not defined for firms that are not connected.

Network theory has been applied to the study of business groups (Granovetter, 1994), but can also inform the study of board diversity. Board members around the world tend to belong to the business elite (Whight Mills, 1956) and to be homogeneous in terms of gender (men), education (economists, lawyers, engineers), nationality (national rather than international citizenship), age (50+) and other characteristics such as club memberships, residential area, political views etc. This may create a uniformity which on the one hand can facilitate decision making on boards, but on the other hand may also lead to groupthink problems. It may also be that board members come to identify too much with the CEO because they belong to the same social class. To break this conformity it has been argued that boards need to become more diverse, e.g. to include more international or female members.

The study of *social norms, values and cultures* is another aspect of sociology which has an obvious bearing on corporate governance. Attitudes towards honesty and fairness directly influence the magnitude of agency problems. Cultures vary across nations and can influence corporate governance, for example the degree of control which owners need to have to counter opportunistic behaviour or the degree to which managers can be motivated by performance-based pay. Thus it may be that board oversight or monetary incentives are less effective and less necessary in cultures governed by strong social norms. It is also conceivable that social norms can change over time, for example weaken, which would then necessitate more control and/or stronger economic incentives. Informal stories about growing greed might in principle be explained in this way.

2.15 Political science

Politics is clearly important because it shapes the law, because policymakers influence corporations through taxation and other policies, and because governments often own companies.

Political theory is also important because there are parallels between corporate governance and political democracy. Activists may advocate greater shareholder democracy in order to make companies more responsive to shareholders. This may imply one share-one vote (e.g. eliminating shares with different voting rights or secret voting (secret ballot). It is worth noting, however, that democracy is only a metaphor which has already been abandoned since shareholders tend to vote according to number of shares rather than one person-one vote.

Shareholder democracy is subject to some of the failures observed in political systems. For example, because of free-rider effects it may not be economically advantageous for small shareholders to be active in monitoring and influencing managers because they have to share the gains with all other shareholders. So shareholders (like voters) may rationally decide to be passive which creates a power vacuum that favours managers. Furthermore, if there are serious disagreements between shareholders it may be difficult to reach a decision which reflects their overall views in a meaningful way (Arrow, 1951). Voting may be subject to agenda effects such that manipulating the agenda may

change the decision outcome. This implies that shareholder heterogeneity may be an important source of transaction costs. A key advantage of listed companies in this respect may be the ability of shareholders to sell their shares and leave. Public choice theory and political economy try to model the politics of governance in the sense that special interest groups influence the political process. For example, crony capitalism may enable strong interest groups like family dynasties to protect their interest at the expense of the general public.

Finally, political ideology is not infrequently closely linked to governance. There have been many political conflicts between adherents of different styles of corporate governance, for example between government ownership (socialism, communism) and capitalism (private property and free markets). Around 1900, cooperatives and friendly societies (mutuals) were regarded by many as a way to address inequality in society.

2.16 Law

Law influences corporate governance in a myriad of ways, for example through company and securities law. Law can be defined as a set of rules for society enforced by institutions such as courts, the police and public administration. Both rules and enforcement are crucial to governance. For example, capitalism presupposes private property. When the basic institutions fail, e.g. when governments or criminals can freely steal from citizens or companies, when judges and public officials are corrupt, the system ceases to function as is the case to various degrees in some 'failed states' in developing countries. Thus the rule of law is an important determinant of economic efficiency.

We follow Armour, Hansmann and Krakman (2009a) in regarding company law as a response to agency problems including both type 1 agency problems between shareholders and managers, type 2 conflicts between shareholders and type 3 conflicts between shareholders and other stakeholders (Armour, Hansmann and Krakman, 2009a, p. 2). Company law can be seen as a set of legal strategies to mitigate such agency problems (Armour, Hansmann and Krakman, 2009b).

These legal strategies can be divided into regulation and governance. Regulation consists for example of rules which require or prohibit certain kinds of behaviour (e.g. minimum capital requirements or dividend restrictions) or more open-ended standards such as the duty of loyalty to the company or the duty of fair dealing. Governance rules regulate who has the right to decide what, such as the right of the shareholders to elect the board.

Across jurisdictions, five core characteristics common to most business corporations have emerged (Armour, Hansmann and Krakman, 2009a): 1) legal personality, 2) limited liability, 3) transferable shares, 4) centralized management, and 5) shared ownership by investors.

Legal personality is useful for the firm as a nexus for contracting, i.e. an entity which is independent of its owners as a 'separate patrimony' with its own asset base and management. The managers can pledge the firm's capital and other resources in transactions with third parties, and separate rules are necessary to determine who has the ability to do this. Moreover, companies can be sued directly, irrespective of who owns them. Legal personality serves to shield the company from the personal creditors of the owners and vice versa to shield the owners from the creditors of the company. The company's creditors have priority over the creditors of the owners. This necessitates a certain liquidation protection, i.e. the shareholders cannot at will withdraw their share of the company's capital.

Limited liability is a strong form of shielding the owners from the company. Risk can be shared with creditors who have no recourse to the shareholders. The security which limited liability gives shareholders is regarded as a condition for the emergence of modern stock markets.

Transferable shares allow the firm to do business continuously independently of ownership changes. For owners this implies a convenience in yield in the form of liquidity and the ability to diversify investments.

Centralized management implies the company is run by the board that is formally separate from both the management and the shareholders. While some corporate decisions can be made by the

management, others must be made by the board and some even by the shareholders. The board is invariably a group and is invariably elected by shareholders.

Investor ownership implies that the investors have the right to control the firm (including electing the board members) and the right to profits.

2.17 Management

Management researchers have developed their own toolbox. Concepts like corporate strategy, core competences, resource dependency, business ethics and corporate social responsibility are useful to better understand corporate governance. We deal with these important issues in subsequent chapters.

Here we just want to mention that there is a connection between leadership style and governance. A classic study by Lewin, Lippitt and White (1939) distinguished between authoritarian and democratic leaders. An authoritarian leader would typically want to centralize decision making and avoid intervention by the board or sharing power with employees. This obviously creates a different kind of corporate governance than would a more open consultative decision style, where the board can have greater influence.

2.18 Philosophy

Philosophy has a bearing on corporate governance primarily when it is applied to business, such as for example business ethics. A particularly influential branch is stakeholder theory (Freeman, 1984), which emphasizes that the purpose of the corporation is to create value for all its primary stakeholders, i.e. suppliers, customers, employees etc. and not just its stockholders. Stakeholder theory is normative, instrumental and descriptive (Donaldson and Preston, 1995). Many studies have normatively defended stakeholder theory on moral grounds (Evan and Freeman, 1983) because paying attention to stakeholders is the right thing to do. The theory is therefore perhaps at heart philosophical (the seminal contribution was by Freeman, who is a philosopher).

However, others argue instrumentally that corporate profits are served best by paying attention to stakeholders (Jones, 1995). To maximize shareholder value you need to nurture your employees and be close to your customers, the argument goes. This effectively makes stakeholder theory a management theory. It may in fact be a bit of both philosophy and management as in the following definition of stakeholder theory (Dunham et al., 2006; Steb, 2009).

*¹¹ We hypothesize that a firm ought to interact with other communities that it affects or is affected by, seeking to understand their perspectives, listen to their preferences, and evaluate the impact of actions on them. Such interaction is best characterized as ... cooperation ... it ought to be in closer community with those upon whom it relies for support – employees, suppliers and customers. Such interaction requires a deeper commitment than that necessary for the first set of communities. It requires a more active pursuit ... – sharing interest, actions, and values. The firm's interaction with these groups must be ... collaboration.*¹²

It is even possible to see stakeholder theory as a branch of social science, for example sociology or economics. Descriptive stakeholder theory emphasizes that managers do in fact spend their time managing stakeholders and seeks to understand their relative influence (Mitchell et al., 1997; Jones and Wicks, 1999; Jawahar and McLaughlin, 2001). Hill and Jones (1992) propose to integrate stakeholder and agency theory in a 'stakeholder-agency theory', which holds managers accountable not just to stockholders but to stakeholders more generally. Descriptive agency theory can help identify which

¹¹ Dunham et al., 2006, p. 38.

stakeholders are particularly influential. Thomsen (2004, 2005) shows how stakeholder influence is internalized in companies through ownership structures, board composition and market pressures. For example, cooperative ownership of a dairy by a group of farmers assures these suppliers of having a say over the company. Mandatory employee representation on company boards is intended to have the same effect. Likewise, firms in highly competitive industries may come to identify with their customers.

2.19 Enlightened agency theory

The many theories in corporate governance can be seen as a toolkit for use in specific situations. However, the richness of theoretical frameworks also poses challenges because it can create confusion and allow for conflicting interpretations.

The approach we advocate to handle this complexity is to start with the basic agency problem and to nuance the analysis with attention to the institutional context, the psychology of the individuals concerned and so on. We call this approach 'enlightened agency theory'.

For example, the egos of alpha male imperial CEOs may sometimes drive them to actions which are difficult to imagine in dry mathematical agency theory. Families may value control of the business to the point of madness. Investors may herd to buy fashionable stocks, blind to the underlying businesses. Laws may require companies to do things which conflict with their business judgment.

We will argue that taking such things into consideration often makes agency theory more powerful. For example, the imperial CEO may need more discipline than a self-interest in stock options. Control preferences in families make the type 2 agency problem between majority and minority investors even more acute. Investor irrationality may foster a rethink of accountability to shareholders.

To be sure, there are also instances in which psychology or sociology make agency problems less acute. For example, as emphasized in stewardship theory some managers appear to be motivated by an unselfish need to do a good job. In such cases we would argue that agency theory should 'back off' in the same way that a safety belt is for the most part not very useful, but can still come in very handy in extreme situations. Moreover we maintain that the many scandals and failures in recent years have shown that selfishness and opportunism are not pure fiction. Investors or boards can seldom know for sure what kind of person they are dealing with. Most people tend to look their cars!

The approach we advocate is to identify the key decision makers and the key social and psychological constraints facing them. Given this understanding, it will be easier to understand how corporate governance mechanisms work and how they could be changed for the better.

2.20 Discussion

Agency theory remains the most influential theory of corporate governance, but has been challenged and enriched in recent years by alternative perspectives from economics, law, psychology, sociology, political science and even philosophy. Given our definition of governance as the control and direction of companies, agency issues like control, information and incentives are clearly of paramount importance. Moreover, people do appear to respond to economic incentives in ways which make agency theory useful to understanding corporate governance. However, the assumptions of selfishness and rationality are clearly simplifications which can be nuanced by a deeper understanding of human psychology, law and other influential factors. For example, we know from cognitive psychology that human beings are not perfectly rational, but are subject to biases. We also know that motivation is not just a question of money. Furthermore we know that the goals and aspirations of managers or shareholders are shaped by social context and the way they perceive their situation. Because of this the way they act changes over time and varies across countries.

Our viewpoint is that the different approaches to corporate governance are complementary rather than contradictory. Rather than negating the role of incentives of information asymmetries,

psychology and law and a host of other factors shape how they are perceived and handled in particular companies. Corporate governance students can examine to what extent the governance of a particular company is shaped by the factors and understand more of what is going on. The risk of rich theory is of course that we end up with a lot of 'hand waving' and little value added. We therefore recommend that students start with agency theory and introduce alternative perspectives when they are in fact believed to add significantly to understanding the problem at hand.

Minicase

Bankers' pay 2010

According to the *Financial Times* of 15 June 2011, bankers' pay started to rise again in 2010 – just a year after the financial crisis. Lloyd Blankfein, CEO of Goldman Sachs, took a pay increase of 1535% from \$862,657 in 2009 to \$14,114,080 in 2010. Jamie Dimon, CEO of JPMorgan Chase, got \$20,776,324 in 2010, up by 1541% from \$1,265,708 in 2009. James Gorman, CEO of Morgan Stanley, hired in 2010, got \$14,854,049. These figures do not include capital gains on equity awards granted in earlier years. These gains can be significant; for example in the case of Jamie Dimon they are estimated at \$35 million dollars in 2010. The pay increase reflects both increases in share prices for equity-linked pay and increases in fixed salaries.

Critics are outraged that the same people who nearly destroyed the world's financial system are now again paid so much. Banks report that the CEOs got much more before the crisis. For example Lloyd Blankfein took home \$70 million in 2007.

Bankers' pay also rose in the UK. Stephen Hester of Royal Bank of Scotland got \$11,537,346, up 15% from 2009. The British Government had to take over 83% of RBS during the crisis. Eric Daniels of Lloyds Banking Group got \$8,367,953 in 2010, up 68% from 2009. Eric Daniels is criticized for a disastrous tie-up between Lloyds and HBOS during the crisis. John Varley of Barclays got \$5,945,946 in 2010, up 239% from 2009. Barclays bought the failed investment bank Lehman's US business cheaply and did not have to get government aid.

The trend was less expansive in continental Europe. Brady Dougan of Credit Suisse had to take a pay cut of 33% to \$11,807,725. The Swiss media was outraged that he got \$83 million in 2010 under a long-term incentive plan. Joseph Ackerman of Deutsche Bank got \$8,548,380 in 2010, down 19%. Francisco Gonzalez of Banco Bilbao got \$8,070,985 in 2010, down 10%. Badoutin Prot of BNP Paribas got \$3,530,624, up 3% from 2009.

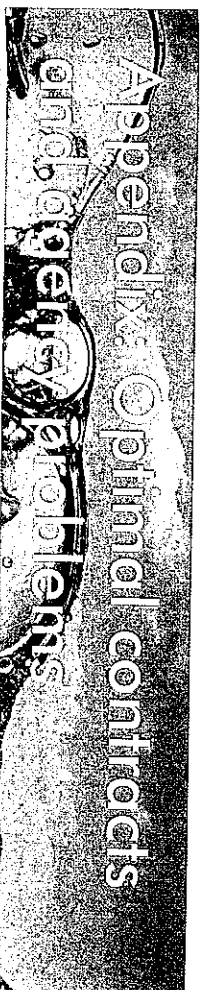
Source: *Bank chiefs ditch the hair shirts* by Megan Murphy, 15 June 2011 © The Financial Times Ltd 2012.

Discussion questions

- 1 What would be the agency-theoretic view of bankers' pay?
- 2 Does equity-linked compensation make bank managers behave like owners? What would be the incomplete contract view of this?
- 3 Is it possible to argue from an agency-theoretic viewpoint that bankers are overpaid?
 - a What might a sociologist say to this discussion?
 - b What might a psychologist say?
 - c What could a philosopher say?
 - d What do you think?
- 4 Why might European bank CEOs get less and face a different trend?
 - a What would a political scientist say to this?

Summary (learning points)

- Agency theories assume rational selfish agents and principals.
- Agents (e.g. managers) are assumed to be better informed than principals (e.g. shareholders).
- Agents (e.g. managers) create incentive problems (also known as agency problems).
- The information asymmetry creates incentives which give rise to two different agency problems: moral hazard (hidden action) and adverse selection (hidden knowledge).
- There are three generic agency problems: type 1: owner vs. managers, type 2: majority vs. minority owners, type 3: shareholders vs. stakeholders (aka CSR issues).
- There are three generic agency problems: type 1: owner vs. managers, type 2: majority vs. minority owners, type 3: shareholders vs. stakeholders (aka CSR issues).
- Psychology can modify agency theory because it demonstrates that agents are not always rational or self-interested.
- The political theory of corporate governance stresses that governance is fundamentally shaped by politics, primarily through law, which leads to international differences in corporate governance.
- Sociology emphasizes social context such as networks and norms, i.e. not just formal but also informal institutions, which influence governance.
- Philosophy has given rise to stakeholder theory which emphasizes that companies should pay heed not just to stakeholders, but also to stockholders.



2.21 Introduction

Principal agent theory is frequently used to understand executive compensation and corporate governance issues. Agency theory helps understand how to motivate managers in the presence of asymmetric information. Importantly, it gives important predictions on the optimal design of executive compensation contracts. It contrasts to sociological pay models that assert that CEO behaviour stems from the use of power (i.e. rent-extraction). In these alternative power models of pay determination, CEOs extract greater than necessary pay because shareholders are weak. In contrast, the economics of executive pay literature has used agency theory to outline central features of empirically observed CEO pay contracts. The usefulness of such models is a) they make clear the assumptions that are in play when thinking about and designing the optimal CEO pay contract, and b) a parsimonious model may lead to significant insights about contract design (Laffont and Martimort, 2002; Bolton and Dewatripont, 2005). In particular, the canonical agency model helps understand why performance related elements (such as stock options and annual incentive pay based on earnings) are important in CEO pay contracts. Our goal is to describe the main elements of this model. The basic principal-agent model has the following features. There are two parties. The 'principal' delegates decision-making authority to an 'agent' who takes actions that materially affect the welfare of the principal. The classic principal-agent problem is the shareholder and CEO-manager relation. The shareholders are assumed to want to optimize the firm's profits but are not involved in the strategic decisions of the firm directly. Usually, the principal cannot monitor or observe at zero cost the actions that the agent takes. This asymmetric information is termed a moral hazard. Moral hazard arises from the fact that one party (the agent) can take actions that cannot be completely monitored by the other party (the principal) at zero cost. In the economics of information literature, this means that information is asymmetrically distributed. In this case the agent's actions are hidden from the principal. The agent knows 'more' than the principal. Specifically, the agent knows with certainty whether he worked hard or not, or tried to take the most beneficial course of action for the principal or not. This information is 'hidden' from the principal, who has to figure out what contract elicits efficient behaviour from the CEO.

2.22 Moral hazards

The agency problem gives rise to a complex set of contracting problems. How does the principal (shareholder) guarantee that the agent (CEO) takes the right action to optimize the principal's welfare? There is a vast economics literature that deals with this (Laffont and Martimort, 2002). The principal's objective is to find an optimal or efficient contract that induces the agent to take the 'right' action of his own free will, without coercion from shareholders. The solution to this agency problem, though, depends critically on the underlying structure of the model, and it is not easy to function at general predictions or easy answers. The answers typically depend on the payoff (or utility) number of times the parties interact with each other.

Moral hazards are everywhere in the ownership and control of firms. Thinking carefully about them is important. Tirole (2006) lists four types of moral hazard. First is *insufficient effort*. This does not mean the number of hours worked by CEOs, but instead it refers to the allocation of their time to

the right type of tasks. For example, CEOs may not lay off workers when it is an economic necessity to do so because firing workers is an unpleasant task to perform. The second moral hazard is the tendency to *engage in extravagant investments*. These include pet projects that the CEO is interested in, or activities that build empires, but do not increase shareholder value. For example, CEOs might engage in diversifying merger and acquisition activities that increase the size of the firm (and the CEO's pay packet) but do not necessarily increase the firm's value, as they do not focus on core competencies. The third moral hazard is *entrenchment strategies*. CEOs may take actions that secure their own tenure and position within the firm, at the expense of shareholder value. First, CEOs might invest in shareholder value-destroying related diversifications because this increases their power in the combined organization. Second, CEOs might resist a hostile takeover, perhaps by adopting a poison pill strategy. The takeover might benefit incumbent shareholders but will result in the loss of the CEO's job. Other examples undoubtedly exist. The fourth moral hazard is *self-dealing*. Self-dealing increases the private benefits enjoyed by the CEO, possibly at the expense of shareholders. Self-dealing activities lie on a continuum from the benign to the prohibited. CEOs might use corporate jets or have country club memberships. It is important to recognize that these are legal benefits that might also increase shareholder welfare as well as being enjoyed by the CEO. Some activities are illegal. Robert Maxwell stole from the employees' pension fund, and Bernard Madoff stole from investors in a sophisticated Ponzi scheme. Corporate scandals are a very public (and obvious) form of moral hazard. Controlling moral hazards (arising from insufficient effort, extravagant investments, entrenchment strategies and self-dealing) is an important issue in corporate governance.

Agency costs can arise in many areas of corporate life. One is the field of corporate finance and especially the capital structure decision that the firm makes. What are some of the agency costs associated with the capital structure decision? First, there is an asset substitution effect. As the debt to equity ratio increases within the firm, management has an increased incentive to undertake risky and possibly negative net present value projects. Why is this? If the project is successful, shareholders will get all the upside from that success. Conversely, if the project fails the risks are shared with debtholders. The shareholder can lose up to the maximum of his investment. If the project is undertaken, there is a chance of firm value decreasing and a wealth transfer from debtholders to shareholders. An optimal contract from a bondholder perspective will use covenants to restrict excessively risky management behaviour. Second, there is a free cash flow problem. Suppose the firm generates earnings greater than is currently necessary to fund positive present value projects. Management may not return this free cash flow to investors. In consequence, management has an incentive to destroy firm value through activities such as empire building and perks which do not contribute to firm value.

2.23 The standard model

Define the following variables: V is the output of the firm; e is the effort of the employee; α is the agent's salary. This is 'insurance' from the perspective of the agent since it does not vary with the performance of the enterprise, or agent effort. The term βv is the proportion of the firm's output V that is to be paid to the CEO or employee. It is the division of the pie, or so-called 'sharing-rate'; W is the CEO wage; w_0 is the exogenous wage that prevails in the market place. The CEO's payoff function (or utility) is denoted by U . The payoff for the firm is the net profit (or surplus) given by the function $c(e)$ is the agent's cost of effort function. The cost of effort is convex ($c'(e) > 0$, $c''(e) > 0$). We define $c(e)$ as the agent's cost of effort function. The additional e term impacts randomness to the outcome of firm output. We assume that firm performance is subject to stochastic shocks (luck), such that $\epsilon \sim N(0, \sigma_\epsilon^2)$, and is independent and identically distributed ('iid'). The term r is the CEO's coefficient of absolute risk aversion. With this notation, we are in a position to determine the optimal linear compensation contract that solves the moral hazard problem.

Following the standard literature we consider a linear compensation contract (α), β and an element Roberts, 1992, Chapter 7). We find the agent's wage that is made up of a fixed part and an element

that varies linearly with observable variables such as output (which in turn depends on agent effort and a stochastic component). The logic of this is that such contracts are often observable in practice, but not always so. For example, the optimal compensation contract might depend in a complex way on observable effort and other signals of agent effort. However, as discussed in Holmstrom and Milgrom (1987) various assumptions are necessary to make the linear contract optimal, such as exponential agent utility and normal distributions. The general case is given in Holmstrom (1979).

The principal (shareholders) must take into account two binding constraints. The first is the incentive compatibility constraint. The agent (CEO) must take the costly actions of his own volition. Since effort adversely affects agent welfare, the tendency is towards low rather than high effort that the principal wants the agent to take. The contract must make it worthwhile for the CEO to work hard in the presence of the moral hazard, rather than not. The second concern is the participation constraint. This means the agent must receive at least what can be received by not accepting the contract (i.e. the market alternative).

We posit that the CEO is risk averse, and that production (firm output, $V = e + \epsilon$) is non-separable in both effort and luck (e and ϵ). We find the efficient linear contract such that $W = \alpha + \beta v$ and that the employee's simple convex cost of effort function is $c(e) = e^2/2$. First, consider the employee's optimal effort response to a given linear contract.

The employee optimizes expected utility $E[U]$, with respect to own effort:

$$\max_e E[U] = \max_e \left[E[W] - c(e) - \frac{1}{2} \text{var}(W) \right]$$

where $E[W]$ is the expected wage, and $(r/2)\text{var}(W)$ is a term reflecting the loss to the agent's utility associated with accepting the risky contract. Statistical decision theory tells us that:

$$\begin{aligned} \text{var}(W) &= \text{var}(\alpha + \beta(e + \epsilon)) \\ &= \beta^2 \sigma_\epsilon^2 \end{aligned}$$

so that the CEO's objective function can be rewritten as:

$$\max_e E[U] = \max_e \left\{ \alpha + \beta e - \frac{e^2}{2} - \frac{1}{2} \beta^2 \sigma_\epsilon^2 \right\}$$

The agent's first order labour supply condition (which gives us the incentive compatibility condition) is:

$$\frac{\partial E[U]}{\partial e} = \beta_\epsilon - e$$

In consequence, optimal CEO effort / labour supply is simply $e^* = \beta_\epsilon$. This is the incentive compatibility constraint. It ensures that the CEO takes the right action of his own volition. The agent sets the marginal returns to effort equal to the marginal costs of effort. In addition, the CEO will only accept the contract if the expected utility is at least as good as the expected utility he would expect elsewhere (i.e. w_0). This is the participation constraint (P.C.).

$$E[U] = W_0 = \alpha + \beta_\epsilon e - \frac{e^2}{2} - \frac{1}{2} \beta^2 \sigma_\epsilon^2$$

Knowing the optimal labour supply actions of the agent we next consider the principal's (or shareholder's) problem. The investor would like to maximize their expected surplus, i.e. $E[\text{firm output}] - E[\text{wages}]$. Namely investors maximize

$$\max_{\alpha, \beta} E[S] = \max_{\alpha, \beta} [E[V] - E[W]]$$

subject to the constraint that the CEO chooses the optimal effort level (I.C.) and that compensation is sufficiently high to meet the participation constraint (P.C.). Other solutions are not enforceable in an open market. Given that the employee uses effort e^* , the expected output of the firm will be e^* ,

the expected wages paid to the employee will be $\alpha + \beta v^*$ and the employer will maximize $e^* - (\alpha + \beta v^*)$:

$$\begin{aligned}\frac{\partial E[S^*]}{\partial \beta_v} &= \frac{\partial}{\partial \beta_v} (e^* - \alpha - \beta_v e^*) \\ &= \frac{\partial}{\partial \beta_v} \left\{ \beta_v - \frac{\beta_v^2}{2} - \frac{1}{2} \beta_v^2 \sigma_v^2 \right\} \quad (\text{using I.C. and P.C.}) \\ &= 1 - \beta_v - \beta_v \sigma_v^2\end{aligned}$$

At the expected level firm profit, $E[S^*]$, the optimal sharing rate (that is the intensity of the CEO's incentives) is given as

$$\beta v^* = \frac{1}{1 + \sigma_v^2}$$

This is the well-known result showing an inverse relation between incentives and risk. The optimal output of α can be found by simply substituting this output of βv into the participation constraint:

$$\begin{aligned}w_0 &= \alpha + \beta_v e^* - \frac{e^{*2}}{2} - \frac{1}{2} \beta_v^2 \sigma_v^2 \\ \alpha^* &= w_0 - \frac{1}{2(1 + \sigma_v^2)}\end{aligned}$$

From this simplified model we get a number of important predictions. First, the optimal sharing rate between the principal (shareholder) and the agent (CEO) is less than 100%. This arises because the employee is risk averse and the shareholder is risk neutral, and firm production function is subject to a stochastic component.

Second, the optimal sharing rate is equal to 100% if the CEO is risk neutral ($\sigma_v = 0$). This is because the CEO is willing to accept the risky gamble. In effect, the moral hazard externality has been internalized and the enterprise is sold to the CEO. Liquidity constraints are assumed to be non-binding in the model. This is equivalent to assuming the CEO can borrow sufficient funds to buy the expected income stream from the principal.

Third, as CEO risk-aversion increases, the optimal sharing rate declines. The optimal contract does not impose 'too much' risk on a risk-averse agent.

Fourth, the more noise there is in firm output, the lower is the sharing rate. Intuitively, the less that output is due to the CEO and the more it is due to luck, the less high-powered should be the incentive function. The more the CEO is responsible for the fortunes of the firm, the greater is the incentive rate. Finally, the model predicts the presence of risky pay in the CEO's contract. Such 'pay at risk' can include bonuses that depend on earnings or accounting profits, or equity contracts such as restricted stock, stock options, or stock appreciation rights.

The model described here provides fundamental insights into the optimal design of CEO contracts. However, it is necessarily simplified. We have imposed structure on it, and this helps derive tractable solutions. In more complex models this is not the case. Holmstrom (1979) describes a model where any performance metric that provides a signal of the CEO's effort may be (optimally) contracted on. This is the 'informativeness' principle in contract theory. In summary, although formal models may be abstract, they do give insight into rational behaviour, incentives and risk preferences. In addition, in developing models the underlying objective functions and core assumptions need to be made explicit, which helps in evaluating the realism of the model for empirical purposes.

2.2.4 Relative performance evaluation

The standard model can be extended in a number of ways. One important area is so-called relative performance evaluation. The basic idea here is that although shareholders cannot observe at zero

cost CEO effort, they can receive a signal of it by comparing CEO output with the output of others in similar situations. Shareholders can benchmark CEO performance against the performance of similarly situated CEOs and improve upon the contract.

Consider a CEO of a publicly traded firm that operates in a fairly standardized and homogeneous industry. This means that the firms in the same industry are good candidates to compare our CEO against. Suppose now that stock returns in the focal firm increased by 10% over a given interval. At first sight this looks like good news for shareholders. However, if the stock market performance of all the other similar firms has increased by 20% then our CEO would appear to have underperformed relative to the market. Analogously, suppose that stock returns in the focal firm declined by 10% over a given interval. At first sight this looks like bad news for shareholders. However, if the stock market performance of all the other similar firms has decreased by 20% then our CEO would appear to have outperformed relative to the market. Benchmarking, or relative performance, is an informative signal for shareholders. Filtering out common shocks (namely the performance of similarly situated firms) can improve the contracting environment.

2.2.5 A simple model

The standard model described above can be extended. We ask what happens if $E[e] = k \neq 0$? In this case the mathematical expectation is $E[V] = E[e] + E[e] = E[e] + k$. Therefore, expected output $E[V]$ contains one component due to the effort of the employee and another component due to other (relative) factors. Now, the CEO's expected wage is

$$E[W] = \alpha + \beta E[V] = \alpha + \beta(\bar{e} + k) \text{ where } \bar{e} = E[e]$$

$$\text{So } \alpha = E[W] - \beta(\bar{e} + k)$$

If the firm assumes that $k = 0$ but $k > 0$ then the firm will pay a salary which is too high – they will pay the CEO for output which is not due to his effort. This will lead to happy employees but the firm will not be maximizing profits. On the other hand, if the firm assumes that $k > 0$ but $k = 0$, the firm will pay a salary which is too low – they will assume that some of the output is due to favourable conditions rather than worker effort. This will lead to disgruntled CEOs who may quit. The firm wants to reward the employee's efforts but not reward favourable conditions. If the firm knew k with certainty they could simply factor it into the wage equation. However, k is difficult to measure. A performance standard is used instead; there are three suitable standards: 1) a suitable peer group of individuals or firms, 2) a standard that is determined subjectively by an evaluator, 3) the firm can use employee performance from a previous period.

Suppose that firm production is as before: $V = e + \varepsilon$. Now we suppose that a performance standard is defined as $P = \bar{e} - E[e] + k$. Wages are paid to the CEO net of the performance standard $W = \alpha + \beta(V - P)$. As before the convex cost of effort function is: $c(e) = e^2/2$. We first determine the employees' labour supply (the incentive constraint). The CEO optimizes expected utility:

$$\begin{aligned}\max E[U] &= \max \left[E[W] - c(e) - \frac{1}{2} \text{var}(W) \right] \\ \max E[U] &= \max \left[\alpha + \beta_v (e + k - \bar{e} - k) - \frac{e^2}{2} - \frac{1}{2} \beta_v^2 \sigma_v^2 \right] \\ \frac{\partial E[U]}{\partial e} &= \beta_v - e \\ \text{So } e^* &= \beta_v\end{aligned}$$

The optimal labour supply condition is unchanged compared with the standard model, but rewards relative performance. The participation constraint requires expected utility from taking this job is at least as good as the expected utility from the next best alternative: w_0 .

$$E[U] = w_0 = \alpha + \beta_v(e - \bar{e}) - \frac{\sigma^2}{2} - \frac{1}{2}\beta_v^2\sigma_e^2$$

From the firm's perspective, the employer would like to maximize their expected surplus, i.e. $E[\text{firm production}] - E[\text{wages}]$:

$$\max_{\alpha} E[S] = \max_{\alpha} \{E[U] - E[W]\}$$

subject to the constraint that the employee will choose their optimal effort level (I.C.) and the pay is high enough for participation by the employee (P.C.). So, given that the employee uses effort e^* , the expected production of the firm will be $e^* + k$, the expected wages paid to the employee will be $\alpha + \beta_v(e^* - \bar{e})$ and the employer will maximize $e^* + k - (\alpha + \beta_v(e^* - \bar{e}))$

$$\begin{aligned}\frac{\partial E[S]}{\partial \beta_v} &= \frac{\partial}{\partial \beta_v} \left\{ e^* + k - \alpha - \beta_v(e^* - \bar{e}) \right\} \\ &= \frac{\partial}{\partial \beta_v} \left\{ \beta_v - \frac{\beta_v^2}{2} - \frac{1}{2}\beta_v^2\sigma_e^2 \right\} \quad (\text{using I.C. and P.C.}) \\ &= 1 - \beta_v - \beta_v\sigma_e^2\end{aligned}$$

So, at the optimal value $E[S^*]$, the efficient contract is the same as the standard model: $\beta v^* = 1/(1 + \sigma_e^2)$. The optimal value of α can be found by substituting this value of βv into P.C.:

$$\begin{aligned}w_0 &= \alpha^* + \beta_v(e^* - \bar{e}) - \frac{\sigma^2}{2} - \frac{1}{2}\beta_v^2\sigma_e^2 \\ \alpha^* &= w_0 - \frac{1 - \sigma_e^2}{2(1 + \sigma_e^2)} + \frac{1}{(1 + \sigma_e^2)}\bar{e}\end{aligned}$$

The relative performance evaluation model shows that if $P = E[e] = k$, i.e. k can be estimated, then α^* in this case would be exactly the same as in the standard model where $E[e] = 0$. However, if a relative performance measure is used, the incentive payment will reflect any improvements over the standard – the average performance of the peer group, a subjective standard or a previous period performance. However, the salary component of the wage will increase from that in the standard model to the point where the employee is performing at the standard.

2.26 Discussion

This appendix has considered the optimal contract approach to CEO compensation. The firm defines an efficient contract in the presence of moral hazard. Moral hazards are ubiquitous in firms, so agency models are central to understanding the control of organizations. Conditions for the optimal contract in the presence of moral hazard were outlined. We have shown the results of the standard model. We have shown the importance of relative performance evaluation. These ideas are central in the economics of corporate governance.

Minicase

Safelite Auto

Getting the structure of incentives right in a firm is critical if agents are to be properly motivated. Professor Edward Lazear at Stanford University studied the Safelite Auto Glass Company. Safelite is an auto glass repair company. Its business is to replace broken windshields. Professor Lazear showed that Safelite faced a big problem. Although windshields took a little over an hour to

install, the average installation rate per worker was a little over three per day. Even accounting for travel time etc. this was a low rate of productivity. The company decided to move from a fixed salary compensation scheme for its workers to a piece rate system. That is, windshield installers would now be paid on the basis of the number of windshields that they installed, and not simply a fixed salary per day.

Professor Lazear, and other labour economists, predicted a number of effects from the switch from salaries to piece rates. First, and fundamentally, it was predicted that productivity would increase. Why? Now instead of working to the minimum standard, installers would receive more compensation the more windshields they installed. In the language of this chapter, it solved a moral hazard problem and provided the worker with more pay tied to performance. Second, they predicted that there would be a sorting effect. This means that workers who did not like the new compensation arrangements would leave the firm. In addition, workers who heard about the new programme and thought they could install a lot of windshields would join the company. Naturally, workers were therefore sorted and matched differently according to their preferences and abilities. In the language of this chapter, an adverse selection problem was solved with the new optimal contract. Finally, there were unanticipated (but predictable) consequences of the new pay scheme. Workers would rush to complete jobs and the quality of the windshield installation would suffer.

What happened? Professor Lazear showed that productivity increased by about 30%: a dramatic amount. Approximately half of the increase was attributed to the incentive effects of the new pay-for-performance scheme. Approximately half the increase in productivity was attributed to changes in personnel. As predicted, negative reports of failed windshield installations increased, but the company instituted steps to address this.

Discussion questions

- 1 How can the compensation scheme at Safelite solve the productivity problem?
- 2 Contrast the effects of these two schemes. Scheme 1 is a fixed salary that does not vary with performance or output. Scheme 2 pays a salary proportional to performance or output. What is the effect on a) incentives, b) personnel recruitment?
- 3 Why is the optimal contract not likely to reward the employee with 100% of his or her performance?
- 4 Is a compensation scheme that does not relate pay to performance likely to be optimal?

Summary (learning points)

- An optimal compensation contract is one that solves a manager and shareholder objective optimization problem subject to the binding constraints imposed by limited information sets.
- To motivate the agent CEO, the contract must get the agent to engage in effort of his or her own volition (incentive compatibility constraint) and make sure that the contract is attractive to the CEO (participation constraint).
- Moral hazards are unobserved effort. They include insufficient effort, extravagant investments, entitlement and self-dealing.
- The informativeness principle says that any performance measure that provides information to

the owner about level of effort expended by the agent is a good candidate variable to include in the compensation contract.

- Evaluating the performance of one individual relative to the performance of suitable peers is useful in the optimal contract. It reduces the noise in the contract and tells the principal something about the amount of 'luck' that the employee faced in the production process.



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