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Finance for Innovation

Policy options for improving the financial component of the Dutch innovation system

Study commissioned by the Dutch Advisory Council on Science and Technology Policy

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Rens van Tilburg
August 2009

Key findings

- A large and growing body of literature shows that differences amongst the financial sectors of developed countries result in different levels and directions of innovation in those countries.
- This finding stands in contrast to a long held consensus that financial markets and institutions work in a near-perfect way to provide funds for profitable investments. Under this consensus, it was thought that, driven by market forces, financial institutions would adapt to best serve the needs of non-financial companies (the real economy).
- In reality, the financial sector is the product of many other influences, with government regulation and taxation being one of the most important. Frictions can arise and be persistent, especially with the intangible and long-term investments needed for innovation.
- Improving the performance of the financial sector in driving innovation offers policy makers a highly relevant, yet under-utilised, way to strengthen the innovative performance of the economy.
- However, there is no single 'best' model for the financial sector. Each financial sector must be assessed in its specific context; the structure of the real economy, national financial institutions and the wider international economic and technological environment are all important.
- Based on a study of recent economic literature and developments in the financial sector this report identifies frictions in the financial component of the Dutch innovation system and suggests the following policy interventions:
  - better disclosure of non-financial information, pay for performance in the long-run, more active involvement of shareholders in the corporate governance and stimulating long-term shareholders to reduce the pressure for an excessive short-term focus at public companies;
  - stimulating entry and competition in the Dutch banking sector;
  - co-investing in risk capital for young companies (venture capital) and improving the broader environment for venture capital;
  - stimulating so called 'patient' capital (long-term private equity).

Summary

Financial institutions as imperfect investors in innovation

- The worlds of finance and the real economy strongly depend on each other. Financiers need entrepreneurs and managers with profitable proposals to invest in. Entrepreneurs need the funds to realize their ideas.
- Until quite recently financial institutions did not attract much attention from academic economists and policymakers dealing with innovation. The consensus amongst economists was that financial markets and institutions work in a near-perfect way to provide funds for profitable investments. Driven by market forces, financial institutions would adapt to best serve the needs of the real economy.
- However, from the 1990s onwards a growing body of academic literature has disputed this view. Empirical studies found that the specific characteristics of national financial sectors are an important determinant of the speed and direction of innovation and growth of the economy. The financial sector therefore not only reflects the stage of development of the real economy, it is also a determinant of it.
- It is not only the size of the financial sector that matters. Different financial institutions are more or less suited for specific companies and sectors; this finding has given rise to a large literature on the relative merits of different financial institutions.
- Most investments for innovation are made with retained earnings. An advantage of this 'internal finance' may be that corporate managers as 'insiders' have better information. Others argue that problems like moral hazard and bureaucratic rigidities make internal financial markets inferior to raising capital from external investors.
- The consensus from research is that banks loans are not a particularly good source of finance for innovative investments, especially for new companies. This may be especially the case when there is a lack of competition in the banking sector.
- Private equity investors share in the potential profits from innovation and are therefore more willing to take risk than banks. These investors often behave as 'patient investors', holding their stakes relatively long-term and developing a close relationship with company management.
- The added value of the knowledge, network and skills of the private equity financier are especially visible in the case of young companies (venture capital). However, the average return of venture capital seems to be quite low.
- Public equity, traded through the stock market, provides the possibility of sharing risk over many investors. This makes it highly suitable for large-scale innovative investments. However, the stock market may induce companies to become myopic, due to information problems, the costs of (long-term) arbitrage and the (short-term) competition for investment mandates.

- The many unsolved debates in the literature on the merits of different financial institutions show that there is not one 'best' source of finance. Each financial sector must be assessed in its specific context; the structure of the real economy, the national financial institutions and the wider international economic and technological environment.

Finance from the 1970s to the present: from 'managerial capitalism' to 'global financial capitalism'

- Four developments have fundamentally changed the financial sector since the early 1970s. These are the deregulation of international finance, the rise of the emerging markets, the ageing of society and technological progress (in particular ICT).
- Since then, the financial sector has grown strongly and become an ever bigger influence on companies' decision making; moving the Netherlands and other developed countries from 'managerial economies' towards today's 'financial economies'.
- The 1980s saw the development of a market for corporate control through mergers and acquisitions and through the use of debt by private equity investors (leveraged buy-outs).
- The 1990s witnessed the growing importance of the stock market, where institutional investors became the dominant investor type. Today's stock markets show many signs of myopic behaviour: average holding periods have fallen from 5-10 years to under one year, a mere 10% of shares are traded on the basis of a fundamental analysis of the firm and investors are still not very active in the corporate governance of companies.
- The stock market is relatively important for the Netherlands due to its by international comparison large size and the large share of R&D done by large publicly listed companies. With around 75% of its shares held by foreign (mostly Anglo-Saxon) investors, it is also one of the most open stock markets.
- Pay for managers of publicly listed companies has increasingly been linked to stock market performance. Here again the Netherlands has followed international developments.
- After 2000, low interest rates made debt the most important source of finance. As a result of stock buybacks, the stock market has become a net drain of funds.
- Fuelled by cheap funds, private equity became highly active in (highly) leveraged buy-outs.
- After the sharp decline following the burst of the ICT-bubble in the early 2000s, venture capital investments picked up, but stayed below the record levels of 1999. The level of venture capital investments in the Netherlands is around the EU average, but lagging behind the leading European countries.

- Whereas retail banks have increasingly entered the international market for financial derivatives, the national market for loans to small and medium sized companies in the Netherlands has remained mostly national and highly concentrated.
- The increasing importance of the financial sector seems to have led to a decrease in real investments, especially in big firms. Some argue that it has resulted in a systematic bias against innovation. A recent survey finds that a majority of financial managers in the US would indeed give up long-term value creation to meet the market's expectations for quarterly earnings; expectations that are often set at historic record levels.
- Strained as the internal financial markets may have been even before the "credit crunch", with the fall of the US investment bank Lehman Brothers in September 2008, many financial markets have essentially 'frozen up'.
- In the near future more regulation is to be expected, but global financial markets will most likely maintain their domination of the financial sector. The cost of raising capital will increase. Many of the frictions between the financial sector and the real economy that have been identified have been exacerbated by recent events.

An 'innovation agenda' for the financial sector

- Innovation has become central to economic policy in most developed economies. However, the results of this focus are (so far) meagre; with little improvement in productivity performance in most developed countries and stable (EU on average) or even declining (US, NL) levels of R&D. For the Netherlands this decline is particularly worrisome given the already low level of innovation.
- Even though innovation policy has developed in recent years to encompass other elements of the innovation system such as the product and labour markets and university-industry relationships, only very recently have policy makers turned their attention towards the financial sector.
- The current financial and economic crisis has decisively proven that financial markets do not always work in a near-perfect way. Government regulation and taxes are important factors shaping the financial sector. However, little or no attention has been given to the consequences for the innovative strength of the economy of new financial regulations and fiscal policies.
- Financial and economic policymakers are currently busy taking emergency measures. There are however several reasons why this would be a particularly good time to look at the financial sector as an important component of the national innovation system.
- First, credit will be tighter in coming years as banks repair their balance sheets. Government funds will be tight as well as a result of current emergency spending.

- Second, this moment also offers a unique opportunity with many fundamental changes taking place, government ownership of many financial institutions and a historically strong level of international co-ordination.
- We present a preliminary 'innovation agenda' for the Dutch financial sector. The policy proposals presented cannot be more than tentative. Each of these issues deserves closer inspection by policy makers and market participants. Improving the fit between the financial sector and the real economy is in the interest of all parties involved, since in the long-run it is the real profits that sustain the financial sector.
- Potential policy interventions relate to:
  - the stock market, where 'agency'-problems related to the management of both corporations and investment funds can result in a preference for short term gains at the expense of long term value creation. Policy should aim for better disclosure of non-financial information, pay for performance in the long run, more direct monitoring and discouraging short-termism amongst shareholders;
  - the banking sector, where a lack of competition may hurt especially small and medium sized companies and start-ups. Policy should aim to increase entry of new banks and/or competition;
  - venture capital, where there may be both a quantitative and a qualitative lack of funds, strongly exacerbated by the current credit crunch. Structurally there seems to be a gap between the public value of venture capital and the low realized private returns. Policy interventions could be either direct (co-)investments or creating a favourable environment for venture capitalists;
  - private equity, including family funds and employee ownership, that may warrant stimulation due to the relatively long holding periods and direct relationship between financiers and company managers which is favourable for innovation.

1 Introduction

"Companies don't make money, companies make shoes", Peter Drucker (1999)

1.1 Background

The Advisory Council on Science and Technology Policy (AWT) advises the Dutch government and parliament. On the 2009 working programme of the AWT is an advice on 'Capital, Entrepreneurship and Innovation'. It raises the question whether there are problems in the financial sector that hamper innovation in non-financial companies. It thereby focuses on the financial sector as an enabler of innovation, as a component of the innovation system in which companies operate.

The world of finance and the real economy strongly depend on each other. Financiers need entrepreneurs and managers with profitable proposals to invest in. Entrepreneurs need the funds to realize their ideas. The separation of these roles, and the subsequent specialisation that has taken place, is one of the defining features of modern capitalism.
Many however feel that financiers and entrepreneurs have grown too far apart in recent decades. The financial sector is said to have developed a logic of its own, losing touch with the fundamentals of the real economy. Financial demands would be incompatible with the need to invest in new products and services. This criticism is directed at different parts of the financial sector, ranging from the short-term view of shareholders and financial managers to the danger of over-leveraging after a private equity buy-out and the reluctance of banks to provide loans for small and medium-sized enterprises. The recent financial turmoil and its economic consequences have driven this discussion to the centre of the policy agenda.
Even before the escalation of the financial crisis in late 2008 a growing empirical literature suggested that the composition and development of the financial sector is as much a driver of economic development as it is the result of it. This moves away from a long held consensus that the financial sector responds smoothly to the needs of the real economy, with high tech start-ups as the only notable exception. The financial landscape is increasingly identified as one of the most important elements of the innovation system in which firms operate. One in which all kinds of frictions can result in higher capital costs, or even the total absence of capital needed for investment. These problems seem to be the largest for investments in innovation, due to their intangible nature, their high risk, the dynamic environment in which they have to be made and the long time it often takes for the benefits to materialise.

1.2 Aim of the study: financial issues for innovation policy makers

The aim of this study is to identify the frictions between the financial sector and the innovating real economy, as well as possible policy interventions to alleviate them. To this purpose a literature study was undertaken and interviews held. The ambition was to take stock, bringing together what has been said and published on this theme.

Because of the broad scope of the study the results cannot be more than tentative. However, the study does present an overview of the main issues discussed in the literature.

Where possible reference is made to publications in peer reviewed journals. However, where interest in certain issues is only very recent, reference is made to working papers, policy studies and articles in the business press.

1.3 Organisation of the paper

Chapter 2 starts by discussing the two central concepts of this study: 'finance' and 'innovation'. It then looks at the way the theoretical and empirical economic literature have viewed the relation between finance and the real economy, in particular the capacity of non-financial companies to innovate. The different financial institutions are introduced with their specific advantages and disadvantages with regard to innovation.

Chapter 3 describes the developments that have taken place in finance since the beginning of the 1970s. We identify the main drivers and the changes to which they have led, globally and in particular in the Netherlands.

Chapter 4 discusses the issues for innovation policy makers that arise from chapters 2 and 3. What are the frictions between the financial sector and innovating companies? Which possible remedies follow from the analysis? And which role, if any, is there for government intervention?

2 Finance and innovation in the economic literature

"Where enterprise leads finance follows", Joan Robinson (1952)

This chapter starts by discussing the two central concepts of this study: 'finance' and 'innovation'. It then looks at the way the theoretical and empirical economic literature have viewed the relation between finance and the real economy, in particular the capacity of non-financial companies to innovate. The different financial institutions are introduced with their specific advantages and disadvantages with regard to innovation.

2.1 Terminology

Innovation

In its most recent definition of innovation the OECD makes a distinction between product-, process-, marketing- and organisational innovations (Oslo manual revision 2005). This shows the broadness of the concept of innovation, going beyond the mere radical technological innovations.

Following this broad definition, two concepts are central to 'innovation' as it is used in AWT reports: 'newness' and 'success in the market'. Something is to be considered an innovation when it introduces a new feature (new to: the world, the market, the company) that is recognised in the market as an improvement, as evidenced by an increase in profit. This increase in profit can be the result of a larger market share, the higher price the buyer is willing to pay or lower cost of production and distribution. According to this definition an innovation can be a better service or product or an improvement in the production process or business model. This innovation can be both incremental, small step, or a more radical (or disruptive) innovation. What matters is that the innovation contributes to the competitiveness of the firm. A successful radical innovation like a new strong light-weight material can fit this definition of innovation, but so can the implementation of existing ICT in the production process. Both the invention and the diffusion of innovations matter. Innovation is therefore not limited to certain sectors (like the so-called high tech ones that invest heavily in R&D), or to certain types of firms (like start-ups and university spin-offs). Actually, much innovation takes place with no or limited R&D, and the majority of global R&D is undertaken by firms that are listed on the stock market, many of which are very large and old (think of the chemical sector in the Netherlands).

Innovation is more than R&D

R&D investments generally result in more innovation and better business performance. However, R&D in itself only generates new knowledge and technology. It is the business development and marketing that transforms the 'invention' into an innovation. Innovation and R&D should therefore not be used interchangeably. As Schrage (2008) notes: "The most innovative companies, like Apple, Google and Toyota have not been R&D leaders in their sector."

Innovation also needs investments in human resources, software and databases. The European Community Innovation Survey characterises also the acquisition of new capital goods, licensing fees etc. as innovative investments. An even less tangible input for innovation is what Lev (2004) calls 'organizational capital': the organisation, culture, business practices, processes and designs, and incentive and compensation systems of firms.

On the other hand R&D is in many cases not even needed to innovate. Christensen and Lundvall (2004) distinguish the 'doing, using and interactive learning' mode of innovation (DUI) as distinct from the 'science, technology and innovation' mode (STI). In certain sectors DUI is a more important approach to innovation than STI (Tylecote, 2007). However the costs of this kind of innovation, like the time spent with customers discussing their needs (Tylecote, 2007) or their own solutions (von Hippel, 2005), are not as visible as R&D expenditures.

The focus in this report will be on innovation in the real economy, in non-financial companies. Financial innovations are only looked at in so far as they influence the ability for the non-financial companies to innovate.

Since the relationship between finance and economic growth has been studied more extensively than the relationship between finance and '(growth through) innovation', we will not always be able to make this distinction clearly. However, for a country with a highly developed economy, saturated markets and low unemployment, like the Netherlands, this distinction is also becoming less relevant since economic growth increasingly depends on innovation.

Finance

With the term 'finance' we refer to all financial decision-makers, the people involved in moving capital from one place in the economy to another. It is the world of finance that decides whether the plans of entrepreneurs, business developers and R&D managers, will get the funding needed to realize them. These decision-makers can be both within or outside the company.

It is important to bear in mind that companies almost always use several sources of finance at the same time. They have different financiers for different financing needs. Most of the capital flowing through a company can be referred to as 'working capital'; spending on wages, raw materials, office rent etc. The focus here will be on 'investment capital', and in particular on capital for investment in innovation.

Next to the 'internal funds' of companies, their retained earnings, we distinguish four external sources of finance. Each is classified by two characteristics, namely whether:

- the financier gets an equity stake (becomes part owner) in return for the capital provided;
- the financial claim is tradable or not.

Table 1. Classification of external sources of finance

Does the financier get equity?	No	Yes
Is the claim tradable?		
No	(Bank)loan	Private equity
Yes	Bondmarket	Stock market

The distinction made here follows from the literature on finance and innovation that shows that these sources of finance strongly differ with respect to the kind of firms and innovations they best match. However, it is important to keep in mind that this classification is a simplification of reality. Several hybrids exist: banks have increasingly been able to trade in their loans (the 'originate and distribute' model); 'convertible bonds', a hybrid between the bond- and stock market; the increasingly popular 'dark pools', private markets where public stocks are traded in large quantities; the 'mezzanine debt' (junk bonds) through which private equity houses effectively provide loans, etc.

2.2 Does finance matter for innovation?

Reports on frictions between financiers and entrepreneurs go back to at least the 17th century (Frentrop, 2002). However, modern economic literature has largely ignored this issue, assuming that the financial sector serves the real economy in a near perfect way, providing funds for profitable investment projects when they present themselves. However, in recent years has a rapidly growing body of literature emerged suggesting that financial development is not only the result of a developing real economy, but is actually driving economic development.

The irrelevance of finance

For a long time economists and policymakers showed little interest in the role of finance in economic growth through innovation. This is not to say that the role of finance was neglected. Schumpeter (1911) is often credited with being the first in arguing that a well-developed financial system enhances productivity by accelerating the speed of capital reallocation in the process of "creative destruction". Financial markets channel capital from declining industries to firms, entrepreneurs and sectors with good growth prospects.

However, even amongst the followers of Schumpeter the role of the financial sector has never drawn much attention. In Schumpeter's vision (Perez, 2004) the financial world itself is not entrepreneurial. Schumpeter defines the entrepreneur as the dynamic force driving innovations and hails him as "the real hero of development". The banker is merely a 'bridge', "a facilitator, the one that provides the means for the entrepreneur to exercise his creative will."

The dominant neoclassical school of economics saw the role of financial development in growth strictly in quantitative terms, by supporting a higher level of investment and so accumulating physical and human capital. The importance of finance was not denied, but the general view was one of perfect markets in which finance would readily be available if profitable opportunities would present themselves. Or in the words of Joan Robinson (1952): "where enterprise leads finance follows." In this view there are no frictions in the relationship between the financier and the entrepreneur.

This view of perfect financial markets has been formalised in the Efficient Market Hypothesis (Fama, 1970) that asserts that financial markets are "informationally efficient". This means that prices of traded assets (e.g., stocks, bonds) reflect all known information, and instantly change to reflect new information.

Any investment project with a positive return, a positive net present value (NPV, see below), will be provided with the necessary financial means. Therefore, from an economic point of view, finance is largely irrelevant.

Net Present Value in theory

There is a widespread consensus on the theoretical superiority of the method of Net Present Value (NPV) in order to decide which investments are worth undertaking. The NPV takes the free cash flow of all coming years (the yield minus the cost) of a project and then discounts these cash flows by the cost of capital. Thus, profits in this year are worth more than those in the future. The cost of capital is based on the general interest rate plus a firm specific extra depending on its risk profile. All projects that have a positive NPV should be undertaken, since they create value, they are a more profitable way of using the funds then can be achieved elsewhere.

Theoretical frictions

Berle and Means (1932) are credited for laying the foundation of the modern corporate governance and finance literature. They have done so through defining modern capitalism by the separation of ownership and management through the stock market, and the spreading of this ownership. This has the benefit of specialisation, with expert management operating at 'arms length' of the providers of capital. However, as they argued, it also creates the possibility of abuse by the corporate managers. The provider of funds (the investor, in this case the principal) and the user of these funds (the manager in the company, the agent) may have different objectives. For example, investors may wish to maximise long-term value, whereas managers (or employees and unions) may want to give priority to other, sometimes

conflicting, objectives such as maintaining control, increasing the size of the firm (empire building) or preserving employment. The insiders of the firm (agents) have superior information to the owners of the capital (principals), which they may use to pursue their own agenda at the expense of the outside investor. As a result, two problems may arise that increase the cost of capital, and if unchecked, may even result in a total deadlock in the capital markets (Boot and Schmeits, 2004; Stein, 2003). These problems are the phenomena of 'adverse selection' (Akerlof, 1970) and 'moral hazard' (Jensen and Meckling, 1976).

With 'adverse selection' the financier is not able to distinguish between investments of different quality as well as the better informed company management. This can lead to a process that drives out the best investments, since the financier will base the terms he offers for finance on his perception of the average quality of the investments. These terms will be less favourable for the best investment opportunities, than it would have been if the investor had the same information as the corporate manager has. Therefore the best investment opportunities will get a relatively bad deal, and will seek other ways of finance or not be undertaken at all.

With 'moral hazard' the management may behave in ways that are not in the interest of the financier, after the investment is made. This may involve both excessive risk-taking and being lazy. The financier will have to take this into account and raise the cost of capital.

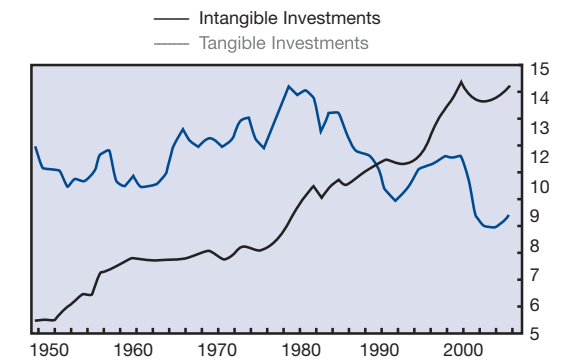
This principal-agent problem characterises all relations between financiers on the one hand and entrepreneurs and managers on the other, whether the former are banks or stock markets and whether the latter is a small start-up or a well-established multinational in a mature market. It even exists within companies, between the financial managers and the R&D- and business development managers (Stein, 2003). However, the information problems are in general more severe for innovative companies (Arrow, 1962). By definition innovative firms are working with concepts that are fully or partly 'new' and therefore less tested and known. Also they are often active in a rapidly changing environment and with rapidly developing knowledge and technology. In fact, through their innovative actions they will modify the context (Knight 1921; Shackle 1955). An extra complication is the increasingly intangible nature of many innovations and their input (OECD, 2008a). Think of innovations in services, software, business models or brands. Think of inputs like research and development (R&D) or organizational capital (Lev, 2004). A further complication in valuing intangibles is that the value is often highly skewed. For example, a small number of patents can account for the bulk of the value of firms' patent portfolios (Harhoff *et al.*, 1999).

Small and young firms encounter specific difficulties when raising finance due to shorter track records and having less collateral (Carpenter and Petersen, 2002).

The increasingly intangible nature of the economy

Corrado, Hulten and Sichel (2006) show that since the '90s investments in intangibles in the US are larger than the investments in tangibles. They define intangibles as either computerized information (software, computerized databases), innovative property (scientific R&D, non-scientific R&D, design) and economic competencies (brand equity, firm-specific human capital and organizational capital).

Figure 1. Tangible and intangible business investments in the US (ratio to business output)



Source: Corrado *et al.* (2006)

A comparable study for the Netherlands by Rooijen-Horsten, van den Bergen and Tanriseven (2008) found this number to be around 10% of GDP in the years 2001–2004.

Another strand of research that challenges the notion of efficient financial markets is the field of 'behavioural finance'. Behavioural finance argues that "some financial phenomena can be understood using models in which some agents are not fully rational." The field has two building blocks: limits to arbitrage, which argues that it can be difficult for rational traders to undo the dislocations caused by less rational traders; and psychology, which catalogues the kinds of deviations from full rationality we might expect to see (Barberis and Thaler, 2002).
Using psychological and sociological insights this literature leads to sharply differing positions from the efficient market hypothesis (Shiller, 2003) and explains why markets may over- or under react and why the resulting over- and undervaluations can be very persistent; in some cases leading to so-called 'herd behaviour' and the subsequent creation of financial bubbles. This is what Soros (2008) calls the 'reflexivity of financial markets', where the biases of individuals enter into market transactions, thereby potentially changing the fundamentals of the economy, affecting the market in a pro-cyclical 'virtuous or vicious' circle.

The reality check: "finance matters for growth and innovation"

In recent years a substantial literature of empirical studies has emerged that leads to the conclusion that finance, in effect does matter for growth. As Levine (2005),

author of an influential general survey from 1993, concludes: "the preponderance of evidence suggests that both financial intermediaries and markets matter for growth and that reverse causality alone is not driving this relationship." Financial development, here defined as the size of the stock market and banking sector, not only increases the quantity of production factors, but also the quality of the use of these production factors, increasing the total factor productivity (Levine, Loyaza and Beck (2000a); Levine, Norman and Beck (2000b); Benhabib and Spiegel, 2000).

This qualitative effect of financial development is realized through three channels. In the first place by stimulating Schumpeterian "creative destruction" through enhanced firm entry and the expansion of successful new businesses (Beck and Levine, 2004; Aghion, Fally and Scarpetta, 2007; Perez 2002 and 2004).

Technological Revolutions and Financial Capital

Carlota Perez (2002 and 2004) presents a special case of the role of finance in stimulating innovation through creative destruction. Perez argues that finance plays an 'entrepreneurial' role in the instalment phase of radical new (basic) technologies. Bold, even reckless, financiers are needed to install both the physical and the social infrastructure of new techno-economic paradigms. According to Perez, Schumpeter's innovator needs the help of the more flexible world of finance: "Undoubtedly, radical innovations confront the stubborn resistance of routines on all fronts. (..) The new firms are too small, too weak or too inexperienced to confront the resistance of the establishment by themselves."

Secondly, financial development enables firms to invest more in R&D and human capital. Rajan and Zingales (1998) find that in financially developed countries sectors that for technological reasons depend more on external financing grow faster. Brown, Fazzari and Petersen (2009) find that in the U.S. booms (or busts) in the supply of equity finance led to booms (or busts) in R&D by young high-tech companies. This type of companies was almost exclusively responsible for the increase in R&D in the '90s. In contrast, during this same period, bank-based economies such as Germany and France had substantially less success.

Thirdly, financial development spurs innovation through enabling firms to adopt new technologies more quickly by lifting financial constraints (Aghion *et al.*, 2007; Wurgler, 2000; Fisman and Love, 2007).

Hubbard (1998) shows that firms actually do find themselves financially constrained in the sense as described by Stiglitz and Weiss (1981): not being able to find the funds for investments, even though they are willing to pay the price for equivalent contracts. Hall (2002) shows that in particular investment in R&D are vulnerable for financial constraints. Also small firms are more prone to financial constraints as a

result of indivisibilities in search costs, shorter track records and less collateral (Bond, Harhoff and Van Reenen, 2003).
Using the broader definition of innovative investment of the CIS, Canepa and Stoneman (2008) find for the UK, that financial factors do impact upon innovative activity. They find this effect more severe in higher tech sectors and for smaller firms. Specifically for the Netherlands Mohnen *et al*. (2008) conclude that the constraints faced by innovative firms are important and have had a major negative impact on innovative activity. Financial constraints continue to hamper innovative activity.

2.3 But how does finance matter for innovation?

Finding that the development of the financial sector matters for growth and innovation, the next question is: how does it matter? Financial development can take many different forms. In most of the studies mentioned before, financial development was measured by simply adding the size of the credit market (bank loans) to that of the stock market. However, different financial markets and institutions strongly differ in the way they interact with the real economy, being more suitable for some companies and activities than for others. In this section we will discuss the pros and cons of the different financial institutions when it comes to financing innovation, as found in the literature.

Internal capital markets

The majority of funds that companies invest are retained profits, so-called internal funds (Mayer, 1988; Corbett and Jenkinson, 1996 and 1997). This is the preferred source of funding because of the low transaction costs and minimum loss of autonomy. However this source is only an option for a company that is making profits. For many start-ups this is not the case. Also fast growing companies often need external capital.
In the literature there has been much discussion on the relative performance of the so-called 'internal capital market' of diversified firms, firms that are active in more than one sector. According to one argument, diversified corporations can do more R&D because the central office can allocate resources within the firm better than the external capital markets. These advantages could be particularly important for investments in R&D, where the information asymmetry between the firm and outside investors is likely to be greatest (Myers and Majluf, 1984; Stein, 1988) leading to capital constraints specifically for R&D (Kamien and Schwartz, 1978; Himmelberg and Petersen, 1994; Brown, 1997).
By contrast, the strategic-management literature has generally argued that diversification is harmful to innovation due to rent seeking by divisional managers (Scharfstein and Stein, 2000), bargaining problems within the firm (Rajan, Servaes, and Zingales, 1997) or bureaucratic rigidity (Shin and Stulz, 1998).

Hoskisson and Hitt (1988) argue that in decentralized, widely diversified firms managers do not have the expertise to evaluate the long-term potential of R&D investments. As a result, they overly rely on the use of internal rate-of-return measures to assess divisional performance, thus discouraging divisional managers from investing in projects like R&D with long-term, uncertain payoffs. Consequently, large, diversified enterprises suffer from a form of managerial myopia; they make relatively smaller investments in R&D and over time perform worse than smaller, more centralized firms. Recent empirical work of Klein (2007) supports the view that internal financial markets are less conducive for innovation. Studying a twenty-year period from 1980 to 1999, he finds a strong, robust negative relationship between the level of diversification of firms and R&D intensity.

Net Present Value in practice

There is widespread consensus on the theoretical superiority of the method of Net Present Value (NPV) in order to decide on which investments are worth undertaking by a firm. However, in everyday business practice it is often hard to find the numbers needed to calculate the NPV of a project (cost of capital, costs and profits over the years). For the cost of capital, Arnold and Hatzopoulos (2000) find that only half of the UK firms they looked at use the theoretically correct way of calculating the Weighted Average Cost of Capital. The difficulties are even larger for estimating the yield and costs of an innovation. As Lazonick (2008) puts it: "anyone who contends that, when committing resources to an innovative investment strategy, one can foresee the stream of future earnings that are required for the calculation of net present value knows nothing about the innovation process." Christensen, Kaufman and Shih (2008) suggest that in daily practice managers often just give the numbers of expected earnings that they know will pass the threshold. Which in turn leads to ever higher discount rates used by the financial department. Rappaport (2005) argues that the problem is not the use of NPV as an instrument, but the way it is applied. They argue in favour of evaluating not projects but rather strategies. Thereby linking the financial and strategy discussion in the firm.

Bankloans

The bank is often the preferred source of finance when internal funds are insufficient. Although the cost of money, the interest rate, is relatively high, the transaction costs are relatively low. Most companies already have a relation with a bank. Another attractive feature for entrepreneurs is that as long as the payments are met, the bank does not play a significant role in the governance of the firm. However this changes dramatically when payments are not met. Then the bank does take charge, and can do so in a much more forceful way than shareholders can.

The main advantage of banks is that they have superior monitoring capabilities. Markets may not effectively monitor managers due to a free-rider problem (Stiglitz,

1985). Banks play an important role in signalling to other investors whether or not a company is to be considered trustworthy. In that sense they are also the gate-keepers to other sources of finance, who will only invest in companies that already get loans from a bank. They can play this role because they have data on general and sectoral economic development and because they often have a relationship with the firm, in which also much non-financial information is exchanged. These are the merits of the so-called 'relationship-oriented banking' (Boot and Marinc, 2008) that is seen as a characteristic of the Continental European and Japanese financial landscape; where the role of banks is relatively large, compared to the US and UK where financial markets are more dominant. Hence the often used characterisation of bank versus market dominated financial systems.

Levine and Zervos (1998) and Levine (2002, 2005) find that both the extent of bank lending and the development of stock markets have independent beneficial effects for growth. Markets and banks may also provide complementary growth enhancing financial services to the economy (Boyd and Smith, 1998). Empirical evidence supports this notion (Beck and Levine, 2002). With regard to innovation Benfratelloa, Schiantarellic and Sembenelli (2008) find that banking development affects the probability of process innovation, particularly for firms in high-tech sectors, in sectors more dependent upon external finance, and for firms that are small.
Bond, Harhoff and Van Reenen (2003) find that firms in 'bank dominated' Germany outspend their British competitors, who rely much stronger on financial markets, on R&D by a ratio of roughly two to one. They conclude that British firms apparently only use external finance for R&D with significantly higher returns than their German competitors.

However, in recent years it has been argued that bank-dominated economies are at a disadvantage, particularly when it comes to innovating companies (Aghion *et al.,* 2007; Tadesse, 2002; Brown *et al.* 2009). Hall (2002) shows that R&D-intensive firms use less leverage (debt) than other firms. The reasons given for this are diverse:

- the structure of a debt contract not being suited for R&D-intensive firms with uncertain and volatile returns (Hall, 2002; Stiglitz, 1985; Cornell and Shapiro, 1988);
- the limited collateral value of intangible assets (Berger and Udell, 1990);
- an implicit protection of incumbent firms (Rajan and Zingales, 2001);
- a difficulty to lend to small borrowers that is in the nature of large banks (Stein, 2002);
- banks may gain too large an influence over firms (Hellwig, 1991; Rajan, 1992).

In this discussion of 'banks versus markets' it is important to bear in mind that there are large differences between banking sectors of different countries in terms of level of competition and culture.

One important question is whether there is ample competition in the banking sector. The theory offers competing hypotheses about how competition ought to influence firm entry and access to bank credit by mature firms.
Barth, Caprio and Levine (2004) find that tighter entry requirements reduce bank efficiency leading to higher interest rates and overhead. Claessens, Demirguç-Kunt and Huizinga (2001) show that foreign bank entry is typically shown to improve the efficiency of local markets. Cetorelli and Strahan (2006) test how competition in local U.S. banking markets affects the market structure of non-financial sectors. They find strong support for the idea that in markets with concentrated banking, potential entrants face greater difficulty gaining access to credit than in markets in which banking is more competitive.
Others however point to the disadvantages of increased competition in the banking sector. Petersen and Rajan (1995) show that financial liberalisation hurts small business formation because too much competition makes it difficult for banks to recoup potential upfront costs, and could make banks stricter in their initial credit assessment. Boot and Marinc (2008) draw attention to the advantage of relationship banking. These relations may come under pressure when the competition is increasingly focused on transactions and customers switch too often for investments in relationships to be worthwhile. Monitoring may then become less effective, and risks may increase (OECD, 2007b). On the other hand competition could also elevate investments in relationships, these being an effective instrument for competition (Boot and Thakor, 2000). Boot and Schmeits (2005) find this indeed to be the case.

Private equity

If a company attracts capital in exchange for a part of the ownership of the company we speak of equity finance. If this equity cannot be traded on a public market (stock market) we call this private equity. We distinguish three different kinds of private equity:

– trade in mature companies (the so-called (leveraged) buy-out). This is the most well known part of the private equity world, the private equity houses that buy and sell firms, often within 3-5 years. In the last years this almost always involved high levels of debt as well; effectively making this a combination of private money and bank loans. These private equity houses often have high financial engineering and management consultancy skills;
– trade in start-up and young companies (venture capital and 'angel investors'). Here the goal is also to exit the company but the focus is on young, start-up, firms;
– hold the equity share of mature companies over a longer period (>5 years). These investors have a more long-term view. Often they have been involved in the start of the company, either as a family (through an ancestor) or in the case of 'corporaties' (co-operative or collective) of different individual entrepreneurs. Some of these long-term private equity investors have effectively developed into a 'holding company' that buy into existing firms.

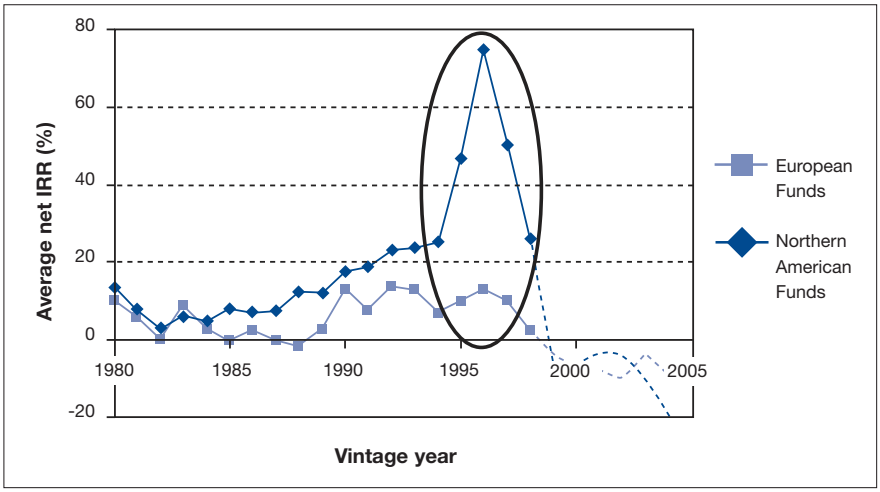
In general, equity finance has some important advantages when it comes to financing innovation, in particular for young high-tech firms (Carpenter and Petersen, 2002). Shareholders share fully in the profits in both the short- and the long-term. Further, there are no collateral requirements, and additional equity does not magnify problems associated with financial distress.

An advantage of private over public equity might be that private equity is more directly involved (reducing the agency problem) and holds the equity over a longer period of time. According to Jensen (1989), the rise of private equity from the '80s onwards must be seen as a reaction to regulations (from the 1930s onwards) that have placed the shareholder at too great a distance, leaving the management room to pursue its own goals. According to Jensen this is especially a problem in declining industries where profitable investment opportunities are rare. In that case a private ownership structure, often with a large debt as an extra disciplining mechanism, can deter management from over-investing.
This longer and more direct involvement with the company also provides investors the opportunity to move beyond the short-term financial aspects. In practice (anno 2006) shareholders sell their share quicker than private equity parties. Average holding periods of equity for private equity houses were 3-5 years. This is comparable to the holding period of shares by US mutual funds between 1935-85, but substantially higher than in the last years when the holding period of shares dipped under an average holding period of one year.
From an innovation point of view an especially interesting group are those financiers that explicitly have a long-term view, as witnessed by the fact that they seldom trade their equity stake. They therefore do not profit from trading, but are entirely dependent on the organic growth of the firm.

Empirical studies indeed find that there is an added-value in private equity due to the transfer of knowledge, contacts and expertise. This is especially the case for the venture capitalists. Da Rin and Penas (2007) find for Dutch companies that ownership by venture capitalists increases the building of absorptive capacity and permanent in-house R&D efforts. By contrast, they find that public funding relaxes financial constraints, but does not lead to a build-up of absorptive capacity. Venture capital also seems to increase the efficiency of R&D. Popov and Roosenboom (2008a) find for the European biotech industry that venture capital financing increases the number of patent applications per unit of industrial R&D. Kortum and Lerner (2000) and Hellmann and Puri (2000) find for the United States more patent counts and patent citations. Also the efficiency of the innovation process is positively related to venture capital involvement. Engel and Keilbach (2007) find German venture capital-backed firms to be more focused on bringing existing innovations to the markets. Lerner, Sorensen and Stromberg (2008) find for the US that receiving venture capital funding is associated with a significant reduction in the time to bring a product to the market. It is therefore undisputed that venture capital is a highly appro-

priate source of external capital for young and innovating companies.
Most research indicates that average returns on venture capital investments are nevertheless quite low. This is especially true for studies that look at the EU, where returns of close to zero are found. Machado and Raade (2006) find that by 2003, the average internal rates of return (IRRs) for five and ten year investment horizons were 2.3% and 8.3%, respectively. The performance of early stage venture investment appears particularly disappointing with five and ten year investment horizon IRRs as low as -1.8% and 1.3%. They find the US market to be much more profitable, with IRRs of 22.8% and 25.4% for five and ten year investment horizons. The performance gap between the European and US funds is even more striking in early stage venture investments, with US funds showing IRRs of 54.9% and 37.0% for five and ten year horizons. Jenkinson (2009) comes to similar figures for the EU countries looking at a longer timeframe (1986-2007), with the average investor in early stage actually losing money. As figure 2 shows, the better US performance seems mostly due to the higher returns during the ICT boom (Lindstrom and Maula, 2007).

Figure 2. Venture capital performance EU and US, 1980-2005 (average IRR in %)

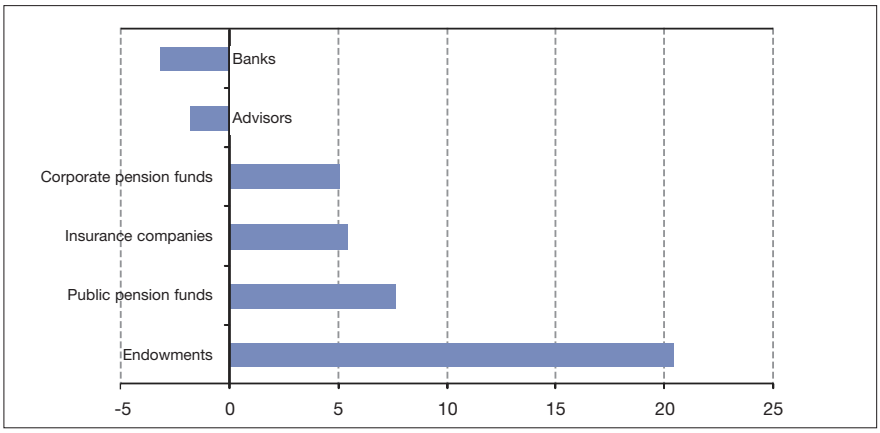


Source: Lindstrom and Maula (2007)

Taking the development of stock prices after the listing on the stock market into account, the overall returns of US venture capital investments even turn negative (Hendershott, 2003, in Bolton, Scheinkman and Xiong, 2006).

Lerner, Schoar and Wong (2005) find that the returns realized from private equity investments differ dramatically across different classes of investors; with endowments making returns of over 20%, pension funds around 7% and banks negative returns of around minus 3% (see figure 3). They included family offices and foundations in "endowments" and noted that these impressive returns were mainly driven by venture returns.

Figure 3. Private equity investment performance by investor type (average IRR in %)



Source: Lerner *et al.* (2005)

There has been much more discussion on the effect of private equity on the innovative capacity of mature firms; especially on the so-called leveraged-buy-outs (LBO) involving considerable debt. Some emphasizing private equity's valuable role in transforming under-performing companies (Blundell-Wignall, 2007) while others draw attention to the risk of over-leveraging companies (Schenk, 2007).
Since private equity originally focused on declining industries, the issue of innovation may seem less relevant here. However, more recently private equity houses have become active with growth companies in innovative industries as well, see for example Permira (2008), Carlyle (2008) and AXA (2008).
The research on the relative merits of private equity ownership leads to inconclusive results. For the interpretation of these results it is important to take into account the developments in both size and character of private equity investments that have taken place over time.
A first line of research looks at the performance of private equity and hedge funds relative to other channels of investment. Ackermann, McEnally and Ravenscraft (1999), Capocci and Hubner (2004) and Kaplan and Schoar (2005) suggest that they perform relatively well. Positive studies can also be found when looking at the level of the real firms involved. NVP and Ernst&Young (2004) find that both sales and profits increase after a leveraged buy-out.
Bloom, Sadun and Van Reenen (2008) find that private equity owned firms have strong people management practices (hiring, firing, pay and promotions) but even stronger operations management practices (lean manufacturing, continuous improvement and monitoring). This suggests that private equity ownership is associated with broad based operational improvement in management rather than just stronger performance incentives. Finally, looking at changes in management practices over time, it appears that private equity targets poorly managed firms and these firms improve their management practices at a faster rate than other ownership types.

Specifically with regard to innovation Zahra (1995) finds for the US that the quality of R&D spending increases after a buy-out. Davis *et al*. (2008) find that capital investment in the United States is associated with more innovation as measured by patent counts and patent citations. Bruining and Wright (2002) find for the Netherlands that after a buy-out more new products are developed and more new markets entered. Also Wright, Thompson and Robbie (1992) find an increase in product development after a management buy-out in the UK. Looking at European firms Popov and Roosenboom (2008b) find that private equity (including venture capital) investment has a beneficial effect on entry, which is relatively higher for industries which naturally have higher entry rates and are more R&D intensive. Specifically looking at innovation, Popov and Roosenboom (2008c) find that while private equity investment accounts for 8% of aggregate industrial spending, private equity accounts for as much as 18% of industrial innovation. In this respect European risk capital markets are somewhat less efficient than their US counterparts in spurring innovation. On the other hand, Long and Ravenscraft (1993) find that after a buy-out R&D spending is cut by 40%.

Public equity

On public equity (stock) markets ownership shares are sold and traded. The stock market is in many ways highly suitable for financing large-scale risky investments. Like private equity it has an advantage over banks and bonds in that the investors do benefit from any upward potential. Therefore the willingness to finance riskier investments is larger. With the share price reflecting the expected discounted free cash flow (DCF) over all years to come, shareholders have an interest in maximizing the long-term value of the company.

Advantages of public over private equity are that the shareholders share the risk amongst each other and the generally high liquidity of stocks. Also the cost of control can be shared, up to the point that many shareholders effectively take a 'free-ride'. However, there are limits to this, which we will discuss below.

A drawback of the stock market for the company is the relatively high costs. These are the costs of brokers and the exchange when issuing shares, and the continuous cost of complying with the rules of transparency for stock-listed firms and the communication with shareholders. A special 'cost' results from the so-called 'signalling effect' of issuing shares. The issuance of new stock is generally perceived by the market as a sign that the management of the firm thinks its shares are overvalued. Therefore, share prices often drop on the announcement of stock issues, thereby raising the cost of capital (Roll, 1986).

The reputation of the stock market as an important driver of innovation has been boosted by the success of the US in the ICT and biotech sectors at the end of the '90s (Brown *et al*., 2009). Other studies confirm that the stock market values long-term investments. Share prices reflect ten or more years of future cash flows and the expected dividends over the next five years account for less than 20 percent of

the share price (Mauboussin, 2006). Cools (2004) cites studies showing that the stock market does value long-term investments, with stock prices rising after the announcement of long-term incentive schemes for the top-management, long-term investments in core activities, increasing R&D and marketing expenditures. Others find that more patents lead to higher market value (Bloom and van Reenen, 2002), as do higher R&D investments (Lev, 2005; Eberhart, Maxwell and Siddique, 2004). Even investments in the highly intangible 'organization capital'- the internal business practices, processes and designs of a firm- lead to higher stock prices (Lev, 2004). However, these studies also show that the market captures only partially the increased potential of the firms. This means that some long-term investments go unnoticed or unappreciated by the stock market. And even though analysts are getting better in valuing intangibles over time, important sectors remain where this is not the case yet (Amir, Lev and Sougiannis, 2003).

The stock market's blind eye for incremental innovations

The US stock market proved highly effective in channelling funds towards new radical innovators in sectors like ICT and biotech in the late '90s (Brown *et al*. 2009). However, it seems to be much less able to support sectors where innovation is less visible (like in the car industry where design and engineering dominate) or dependent on co-operation between customers and suppliers (like in business software). There the bank or stakeholder-based European and Japanese systems seem more suitable (Mayer, 2002; Tylecote, 2007).
Carlin and Mayer (2001) find strong correlations between a country's financial institutions and the sectoral specialisation of it's real economy, in particular in the case of R&D; the ranking of industries by patent registrations of Germany is almost inversely related to the US. Where the US has information technology, semiconductors and biotechnology in its top six, these industries are in the bottom four for Germany. Germany's patent specialization is highest in civil engineering and transport equipment, which are in the bottom three industries for the US (Mayer, 2002).

So on the whole the agency problem between shareholders and company managers (Berle and Means, 1932; Stein, 2003) does not seem to have inhibited the stock market from becoming a productive channel for investments in innovation. One explanation for this is that shareholders increasingly channel their investments through so-called 'institutional investors', like insurance companies, mutual and pension funds.
The scale of operation of these institutional investors offers the possibility to do research and take large stakes in companies, thereby becoming sufficiently 'sophisticated' and powerful to effectively monitor 'their' companies (Shleifer and Vishny, 1986; Gillan and Starks, 2003; Stein, 2009).
On balance the empirical findings show firm value and innovation to benefit from large holdings and/or institutional shareholders. However, there are noticeable differences between different kinds of institutional shareholders.

Concerning the effect of concentrated ownership holdings a trade off exists. On the one hand, larger stock holdings enable shareholders to have both the scale and sophistication to effectively play their role in the corporate governance. On the other hand, this introduces the danger that the dominant shareholders use the company to pursue their own specific interest (La Porta, Lopez-De-Silanes and Shleifer, 1999). Hence, a distinction is made between 'insider' and 'outsider' models of ownership; where insider dominated models can be either dominated by banks or by stock markets where non-institutional investors (often families, banks, cross-holding companies or government) have large block holdings (Franks and Mayer, 1997).

The empirical research on ownership concentration and firm performance and innovation finds mixed results. Morck, Schleifer and Vishny (1988) find that profitability is higher for firms with shareholders that have up to 5% stakes. Battaggion and Tajoli (1999) also find a weak positive relation between dispersed ownership and innovation. Bloom *et al*. (2007) find that governance by 'dispersed shareholders' score best in implementing management 'best practices' that correlate strongly with rising productivity levels and hence innovation.
The explanation of these findings may be that through the use of mandated corporate governance agencies distributed shareholders may play an active and professional monitoring role, without the drawback of concentrated block holdings pursuing specific insider interests.
However, Francis and Smith (1995) find higher ownership concentration to be correlated with higher R&D expenditures. Andersona and Reeb (2003) find publicly listed firms in which families hold large stakes to outperform on growth and profitability.

There seems to be empirical evidence that sophisticated institutional investors are good for firm value (McConnell and Servaes, 1990). Specifically with regard to innovation Eng and Shackell (2001) find a positive correlation of institutional ownership and R&D. Bushee (1998) finds that a higher degree of institutional ownership reduces the likelihood of cuts in R&D following poor earnings performance.
Aghion, van Reenen and Zingalis (2009) find a positive association between innovation and institutional ownership. Institutions have a small and positive impact on R&D, but a larger positive effect on the productivity of R&D (as measured by future cite-weighted patents per R&D dollar).

However, not all institutional investors are found to have a positive influence on companies management. Aghion *et al*. (2009) find that only institutional owners that pursue non-indexed investment strategies are associated with more innovation. They find this effect to be stronger after the 1992 change in the American Proxy Rules, which increased the influence of shareholders.

Bushee (2001) finds stocks with high levels of institutional investors that sell their shares quickly, so-called "transient" institutional investors, to be myopically mis-priced; meaning that too much weight is given to short-term expected earnings. Firms with a large percentage of transient investors are also more likely to manage earnings by cutting R&D (Bushee, 1998).
In the market for corporate control, target firms with short horizon institutional shareholders get lower premiums, indicating the belief of the market that they have been badly managed (Gaspar, Massa and Matos, 2005). Chen, Harford and Lia (2007) find that only concentrated holdings by independent, long-term monitoring institutions have any relation with post-merger performance, which they see as an indicator of good monitoring.

These last studies indicate that in contrast to the 'sophisticated'-shareholder theorem even institutional investors can be myopic. If a specific stock is myopically priced this distracts company managers from simply raising the share prices through maximizing the long-term value creation of the firm. This can be especially damaging to the innovative efforts of companies. For instance, corporate managers can increase current earnings by cutting expenses that will only yield benefits in years to come. Given a myopic stock market this will lead to a higher stock price today, even though the long-term prospects are diminished. This may lead to lower investments in R&D, training and education or new product development investments, even when these have a positive net present value (van Ees *et al*., 2007; Bushee 2004).

So why would shareholders act in a myopic way? Most capital owners have a long-term orientation, as they are saving for a retirement that is years away. Why then would investors pressure managers to be more short-term oriented, to the extent that possibilities for value creation are foregone? The literature gives several different explanations.

A first reason for this may be what is called 'availability bias' (Mauboussin, 2006). The share price and reported earnings are readily available, easy to communicate, and allow for comparison with other companies. This is not the case for the theoretically superior measure of the firm's value, the discounted free cash flow (DCF). As Rappaport (2005) notes: "Most investment professionals recognize that DCF analysis is the appropriate model for valuing financial assets, including equities. But they believe that estimating distant cash flows is too time-consuming, costly, and speculative to be useful. Because they have much less information about a company's operations and prospects than insiders do, they tend to attach substantial weight to reported short-term performance."

Different indicators for valuing strategies differ in the short run

In the long run it does not make a difference whether you value a company's strategy through its discounted cash flow (DCF), the earnings per share (EPS) or the total shareholder return (TSR). However, in the short run, these indicators do differ.
Whereas DCF by definition has a long-term outlook, being the sum of all future discounted free cash flows, EPS and TSR can rise in the short-term, even when the long-term prospects are hurt.
In the case of EPS this is because foregoing investments now, result in higher present earnings while the reduced future yields remain invisible. In the case of TSR the stock price can jump, for instance as a result of higher EPS, given a critical level of short-term oriented shareholders.
Therefore when investment decisions are taken on the basis of optimising short-term EPS and TSR, this will lead to less long-term investments.

In the 'availability bias' explanation the short-term focus is an unintended by product of the fact that short-term data are available, whereas longer-term data are not (or only with a wide margin of error and against high costs).
Other explanations look at the way the investment chain is organised. This may give rise to an agency problem, where the one who is mandated to trade in shares (the fund manager) optimises his own interest, rather than the interest of the actual owner of the capital (Bogle, 2006).

An important issue on which the interest of the fund managers and the actual capital owners can diverge is the time horizon over which they want the stocks to perform. Whereas most capital owners have a long-term outlook (for instance saving for their pension) many fund managers have to perform over a much shorter period of time.
This is largely due to the way pension funds and others allocate the investment mandates to asset managers. The reality for fund managers is that they are rewarded (and punished) for their short-term performance (Parenteau, 2005). Short-term underperformance can lead to the firing of fund managers, or to partial liquidation of funds through fund outflow. New money inflows to mutual funds respond to recent fund performance, especially significant out performance (Brown, Harlow and Starks, 1996; Chevalier and Ellison, 1997; Sirri and Tufano, 1998; Khorana, 1996).
As a result of this, the term on which asset managers seek a good return is three years or less. Three years being the average period of the mandates that pension funds give to their asset managers. But individual fund managers are often evaluated yearly, or even quarterly, concerning promotion- and remuneration decisions (Lee, 2008). Jin and Kogan (2008) find that funds facing more of these short-term performance pressures, indeed invest for shorter-horizons.

What does this mean for actual investment strategies and the real companies involved? Banham (2009) speaks of a strategy of 'reckless caution'. Since the punishment for under-performing the index far outweighs the benefits of superior performance, the safest strategy is not to diverge too much from the benchmark and focus on stocks that generate short-term gains through an attractive speculative dimension. This means spreading the investments, clinging to short-term accounting metrics and high turnover (Rappaport, 2005; Bolton *et al*., 2006; Banham, 2009). Such a strategy has several implications for the role of the shareholder in the corporate governance. First, they may not play any active part (Clearfield, 2005). Or, perhaps worse, speculative investors might use their influence to actively induce corporate management to implement myopic business strategies, for instance through incentives to maximize the speculative component in the remuneration (Bolton *et al*., 2006) or through actively forcing changes of strategy. Another result may be that shareholders are tempted to accept a takeover bid, even if the price offered is too low according to their own fundamental estimates, since the premium translates immediately into a higher return for that period than the benchmark (Economist, 2007).

This myopia of fund managers is exacerbated by the high cost and risk of trading on long-term expectations. The so-called 'costly trade theory' (Shleifer and Vishny, 1990) predicts that due to the capital needs and risk of arbitrage, prices reflect much less long-term information. Therefore the mispricing of assets whose true value will only show in the longer run will be greater. Although such highly mispriced assets offer potential large returns through arbitrage, in practice investment managers may shy away from them out of fear that the potential gain will not materialize before they may lose the investment mandate (Shleifer and Vishny, 1997). Given the short time on which investment managers are judged, it can be rational to go with the 'herd' instead of following one's own rational analysis. Investment managers will out of career concerns rather go with the 'herd', even when their fundamental analyses contradicts this (Scharfstein and Stein, 1990; Parenteau, 2005). Stein (2005): "[Open-end] funds will stick primarily to short-horizon strategies and earn low excess returns. In so doing, they will leave large long horizon mispricings such as the internet bubble mostly untouched because attacking such mispricings aggressively would require a closed-end structure." Or as John Maynard Keynes (1936) said about the investments business in his day: "Worldly wisdom teaches that it is better for reputation to fail conventionally than to succeed unconventionally."

A last factor that induces short-termism in investment management is the way sell-side research is paid for. This is largely done through the brokerage fees. In effect, investment managers can outsource their research through excessive trading (Lee, 2008; Parenteau, 2005).

2.4 Conclusion

A long held consensus amongst scientists and policymakers alike was that the financial sector works in a near-perfect manner, providing the finance needed for profitable investments. A large and growing body of literature however shows that the financial sector not simply 'follows' the real economy; with financial institutions, driven by market forces, adapting to best serve the needs of the real economy. Empirical studies found that the specific characteristics of national financial sectors determine the speed and direction of innovation and growth of the economy. The financial sector therefore not only reflects the stage of development of the real economy, it is also a determinant of it. Firms can be 'financially constrained', not being able to get finance, even though they are willing to pay the price for equivalent contracts.

It is not only the size of the financial sector that matters. Different financial institutions are more or less suited for specific companies and sectors; giving rise to a large literature on the relative merits of different financial institutions.

From this literature we can conclude that debates on the superiority of one financial institution over the other(s) are rather fruitless. So far, the evidence is inconclusive on whether 'internal financial markets' are better for financing innovation than external markets, whether 'market based' systems are superior to 'bank based' system or that private equity is more or less conducive to innovation than the stock market.

The relative merits of financial institutions cannot be determined in isolation of the specific context, the structure of the real economy, the size and age of its companies, its sectoral specialization, and the wider international economic and technological environment.

There can also be big differences between the same financial institutions in different countries and over time. Within the banking sector for instance the level of competition is important for how well it is able to finance small and new firms, different venture capitalists show highly diverging returns and effects on the firm's innovative performance and the stock market is in the end the sum of the many shareholders who may pursue strongly divergent strategies.

In order to arrive at potential policy interventions for the Netherlands the main developments in both the wider environment and the financial sector will be discussed in the next chapter.

3 Developments in finance (1970-2009)

Capitalism's permanent revolution

"Much of the institutional scenery of two decades ago – distinct national business elites, stable managerial control over companies and long-term relationships with financial institutions – is disappearing into economic history. We have, instead the triumph of the global over the local, of the speculator over the manager and of the financier over the producer. We are witnessing the transformation of mid-20th century managerial capitalism into global financial capitalism." Martin Wolf (2007)

This chapter describes the rising prominence of the financial sector, and the dramatic changes that have taken place within the sector. It covers the period from the early 1970s until present. We start with discussing the main drivers of change and end by looking at the way the changes in the financial sector have translated into the investment decisions within companies.

3.1 Four main drivers of change

The '70s were a turbulent economic period, characterised by a combination of low growth and rising inflation ('stagflation'). It contrasted sharply with the preceding decades, in which the western economies experienced high and stable growth. In that period capital flows were relatively stringently regulated by rules created after the stock market crash of 1929 and the following Great Depression (New Deal) and after the Second World War (Bretton Woods). All that changed around 1970, when the four main drivers of change that we identified started to change the financial landscape. We start with a discussion of these drivers of change:

- the deregulation of international finance;
- the rise of the emerging markets;
- the ageing of society;
- the technological progress, in particular ICT.

Deregulation of international finance

From 1970 to 2000 government policy in industrialised countries can be characterized as 'capital friendly': removing regulation, easing taxation and from the '90s onwards a lax monetary policy. On all fronts the US led the way. Many observers see 1971 as the turning point towards more free financial markets. In that year the American president Richard Nixon sought to solve the mounting crisis of a large trade deficit and a costly war in Vietnam by suspending the dollar's convertibility into gold. In effect, that put an end to the Bretton Woods system of fixed exchange

rates. One consequence of a system of floating exchange rates was that capital controls were no longer strictly necessary. Increasingly insurance companies and pension funds could move money across borders.
This policy of deregulation, of tearing down walls between different financial institutions and national borders was followed in most countries, albeit to different degrees. Notable examples of this are the decision in the US in 1979 allowing pension fund money to be invested in more speculative assets, including new ventures, the UK Big Bang in 1986 liberalising stock brokering and the introduction of the euro and the expansion of the EU internal market, increasingly also for financial services. Also the Netherlands moved in this direction by allowing pension funds to hold an increasingly large share of their asset base in (also foreign) public equity.
This trend continued well into the '90s; with the abolishment of the Glass-Steagall Act in 1999, making financial conglomerates in both investment and commercial banking possible, as the last major deregulation in the US.
Another field in which policy became more 'capital friendly' was taxation. One example to illustrate the extent of this development: In 1978 the US Congress reduced the capital gains tax from almost 50 percent to 28 percent, thus reversing a 36-year trend toward higher capital gains taxes. In 1981 the capital gains tax rate was further reduced to a maximum of 20 percent (Auten and Carroll, 1999).
A particular case of policy geared towards the interests of the financial sector was the low interest rate policy followed in the '90s by the US Federal Reserve under circumstances of low unemployment and high growth. Its chairman Alan Greenspan argued that ICT and globalisation strongly reduced inflationary pressures through enabling the outsourcing of work and immigration.

After the crash of the ICT and telecom shares in 2000 and 2001, and the discovery of a series of corporate frauds (e.g. WorldCom, Enron) the era of deregulation ended and new rules were laid upon the financial markets. The most notable example being the Sarbanes-Oxley Act of 2002 (SOx) that regulates publicly listed companies in the US. The UK (notable for its 'light touch regulation') and EU did follow suit, but to a lesser extent. In the Netherlands the shareholders were given more power in their monitoring of the management (Tabaksblat, 2003).
International agreement was reached on regulating banks through the so-called Basel II treaty. However the development of 're-regulation' has in many respects not been carried through. Interest rates remained low after 2000, partly as a result of the need to support the US economy after the 9-11 terrorist attacks. No effective regulatory response has followed on the explosive development of new financial instruments and practices that were driven to a large extent by a desire to circumvent these new rules. Examples of this are the use of the so-called 'originate and distribute' model by banks, the 'going private' of publicly listed companies and the move to other jurisdictions by hedge funds.

Rise of the emerging economies

In the 1950s and '60s economic growth was concentrated to a large extent in the US and Western Europe, Japan and parts of Communist Eastern Europe. During the '70s this growth spread to other parts of the world, beginning with the oil exporting countries, mainly in the Middle East, due to rising oil prices. In the '80s economic growth took off in the so-called Asian Tiger economies. As a result, for the first time large sums of money were reinvested in the Western economies, most notably Japanese investments in the US. In the '90s the most visible newcomers on the economic stage have been the so-called BRIC countries, Brasil, Russia, India and most notably China. This spread of economic growth fuelled a dramatic rise in the demand for energy, food and basic materials, whose price have all risen sharply; adding to the economic growth of the countries exporting oil and raw materials. These developments led to large currency reserves in the countries concerned. In China for instance reserves were less than $200 billion in 2000; today they are about $2 trillion (NYT, 2008). Much of this money came back to the US in the form of Treasury Bills and other loans that sustained a high level of consumption in the US, and other western economies like the UK. But the emerging economies also became big investors themselves, often through what are called Sovereign Wealth Funds. These funds contained $3.7 trillion in 2008 (IFSL, 2009).

Emerging Information and Communication Technology

1971 was also the year that the Intel microprocessor was announced. This is seen as the start of a new technological revolution, the age of the Information and Telecommunications with the US at its core, but spreading to Europe and Asia (Perez, 2002). The new ICT technology has offered enormous investment opportunities, feeding in the '90s into what in 2000 turned out to be a bubble on the stock market. These investments however did lay the foundation and infrastructure for great rises in productivity levels. The financial sector itself has been one of the most active users of ICT. The speed and low cost with which information could be transported drastically changed the sector: its institutions, with more interconnectedness of global markets, and its products, like automation of the investment process and an increasing sophistication of financial innovations/products.

Ageing of society

A last important driver of change is the so-called 'ageing' of many societies. The twin development of people living longer and getting fewer children leads to sharply higher ratios of old to young people in society. The ageing of society is not limited to the US and Europe, but visible in all regions with growing economies. Especially China will face a strong demographic shift due to its one-child-per-family-policy, introduced in 1979.

Countries are preparing differently for this demographic shift. Especially in the high-income countries people have been encouraged to save, privately or in some collective form through a pension fund. The Netherlands and Switzerland are the biggest

savers with accumulated pension fund assets of over 100% of GDP in 2001, followed by the UK and the US (65-70%) (OECD, 2005). But there are also less well known pension savings vehicles, like sovereign wealth funds (SWF) and Public Pension Reserve Funds (PPRFs). The total amount for PPRFs is even larger than the SWF's, with around USD 4.4 trillion in 2006/7, if the US Trust Fund is included (USD 2.2 trillion if excluded).

3.2 The 1980s and '90s: the market for corporate control

The '80s: first signs of things to come

The '80s witnessed in many respects the first signs of developments that would come to dominate the financial sector and broader economy in later years. A big difference with later years was the economic situation: economic growth was relatively low and with the fear of inflation present, monetary conditions were tight.

In the '80s company ownership started changing hands on a scale that had not existed before. Through mergers and acquisitions and the buy-out by private equity firms there developed what has become known as a 'market for corporate control'. The wave of, often hostile, takeovers is attributed to a combination of deregulation, ICT and the rise of institutional investors (Holmstrom and Kaplan, 2001; Lazonick and O'Sullivan, 2000).
With the Leveraged Buy-Out (LBO)-alliance private equity houses took firms from the public stock markets for restructuring (Jensen, 1989). In that era of low economic growth this meant mostly downsizing firms in sectors with little attractive investment opportunities, using the debt as a disciplining mechanism for the management. An important part of the concept of the 'LBO-association' was a strong link of management pay to the performance of the firm. As a consequence the salary of the typical LBO business-unit manager was almost 20 times more sensitive to performance than that of the typical public company manager.

In this period also the use of ICT in fund management started, such as the automation of stock trading. When the stock market crashed on Monday, October 19, 1987, it was this practice of automated selling that was blamed for it to a large extent. The stock market quickly went up after the just elected chairman of the US central banking system (FED) Alan Greenspan cut interest rates swiftly.

The '90s: The growing prominence of the stock market

The '90s witnessed the rising importance of the stock markets. In the early '90s it was mainly the privatisation of state companies that were responsible for most of the activity on the stock market in terms of issuance of new shares. In the second half of the '90s it were new technology companies, mostly in the ICT sector, that became newly listed companies; raising large sums of money through their so-called

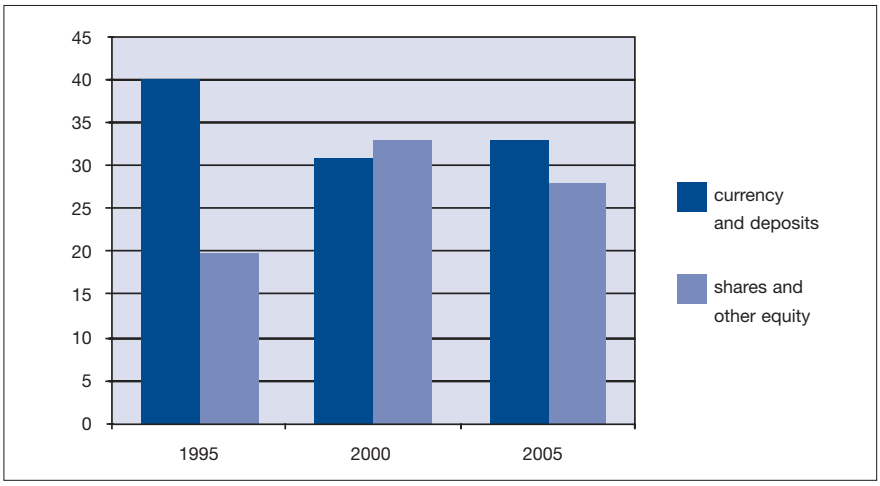
initial public offering (IPO). Most popular was the US alternative market NASDAQ. Alternative (regulation-light) stock markets developed in Europe as well, e.g. AIM in London, Neue Borse in Germany, Alternext in Amsterdam, albeit with less success. The popularity of IPO's, as well as the acquisition of young companies by established firms, led to a sharp increase in the availability of venture capital.

This increased demand for capital through the stock market was matched by an increasing amount of capital flowing into the market. Since the '70s large monetary reserves had been built up in both the developed economies (due to saving for pensions), as in the emerging economies (due to trade surpluses). These funds were looking for investment opportunities, often with a long-term horizon and therefore a willingness to take on the short-term risks involved in equity financing. It was generally thought that only investing in the stock market could provide the desired returns (Siegel, 2007).

These funds, that came to dominate the stock markets in the '90s, were generally not managed by the actual owners of the capital, as had been the case before. Large institutional investors, like insurers pension, mutual and sovereign wealth funds became the dominant players. Some numbers can illustrate the profound changes that have taken place:

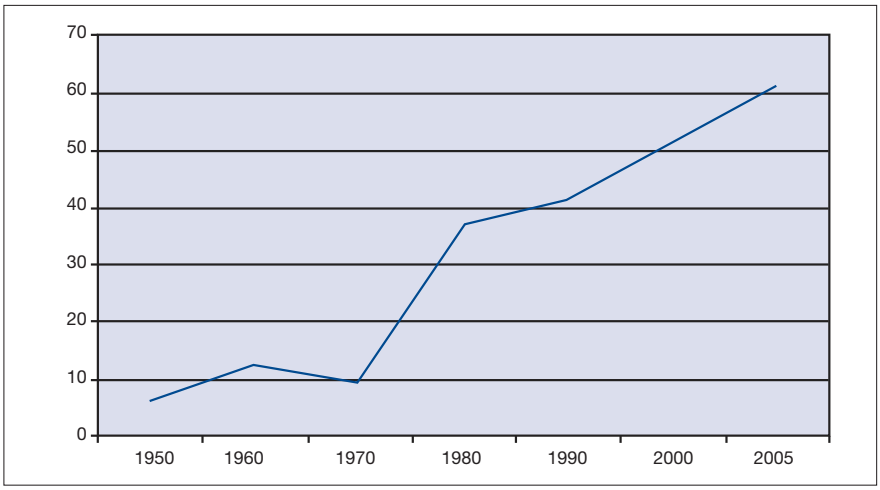
- The largest Dutch pension fund, the ABP, invested in 1970 over 96% of its 10 billion euro under management in fixed income assets, and only 0,4% in shares. In 2005 it invested almost 40% of its 190 billion in the stock market and another 5% in private equity and hedge funds (ABP, 2006);
- Investment funds in the euro area have increased the percentage invested in equity over the last few years to almost 50% by end-2007. In the United States this is even significantly higher (ECB, 2007);
- This has resulted in a dramatic shift in the overall household allocation of assets, from having twice the number of assets held in 'currency and deposits' compared to 'shares and other equity' in 1995 to an equal amount in 2000 (figure 4);
- In the 1950s over 90% of the corporate equities in the US were held by individual households (Allen and Gale, 2001 and 2004). In 2008 this 'household share' had dropped to 25% (FED, 2008). The percentage of shares held by institutional investors increased in the US from 10% in 1970, to over 60% in 2005 (figure 5). The role of institutional investors has grown in all OECD countries (Davis, 2001).

Figure 4. Euro-area household allocation of assets, 1995-2005 (as % total)



Source: European Central Bank (2007)

Figure 5. Proportion of US stock market held by institutional investors, 1950-2005 (as % total)



Source: Federal Reserve Board Flow of Funds reports

What does the shareholder want?

As a result of these developments the actual investment decision of which stock to buy (and when) has increasingly been delegated to professional intermediaries: the pension funds, mutual funds and insurance companies that in their turn often mandate external fund managers to take the actual trading decisions.

As we saw in the preceding chapter, the literature generally expects this institutionalisation of the shareholders to increase the efficiency of the market. Ideally these sophisticated investors take a long-term perspective in valuing their investments and actively play their role in the corporate governance to ensure the firm's strategy is about optimising long-term value creation.

However, we also saw that some specific aspects of how the investment chain is organised may give rise to agency problems; situations where the fund manager who is deciding on the actual buying and selling of the stock is not necessarily acting in the best interest of the actual owner of the capital. Two main problems have received attention in recent years:

1. the possible shorter time horizon of fund managers (the agents) as opposed to the actual owners of the funds do (the principals, the individuals saving for their pensions) and
2. the neglect of their role in corporate governance.

Especially the analysis that fund managers (here: the agents) have a shorter time horizon than the owners of the capital (here: the principals) has received attention in recent years (Bogle 2006, Rappaport 2005, Economist 2007, Tuckett, 2009). The ECB (2007) concluded "The performance evaluation of fund managers often takes place at relatively short time periods, even if the contractual liabilities of managed funds are often of long duration, as in the case of pension funds and insurance corporations. This could lead to excessively short-term views being taken on fund managers' investment behaviour." Einhorn (2009) goes as far as to call this the "modern agent problem", suggesting this is actually more of a problem than the agency problem of corporate managers that has received far more attention in the literature. This agency problem is especially relevant for innovative investments that cost now and will only yield results in the medium to long-run.

So what do we know about the kind of strategies with which stock portfolios are being managed? In the end what matters for the management of public companies is to understand these investors in order to be able to make sure finance can be attracted on favourable terms (here: with a high share price). Recently Ira Millstein (2008) typified today's stock markets as a " 'zoo' of owners with different stripes, teeth, sensors, claws, vision, strength, will, and attitudes." However, trying to create some order we will make a distinction here between:

- 'Passive investors', the so called indexers that take a small stake in many companies. They trade only to reflect changes that are taking place in the market so that their portfolio still reflects 'the market'. These investors aim for an average return, against minimum cost. The possibilities for this have been increased as a result of deregulation and ICT to spread the portfolio;
- 'Active investors', who aim to generate 'above average' returns, where a further distinction can be made between:
  - 'Fundamental investors': These investors base their trading decisions on an analysis of the company itself: its market, its balance sheet, its strategy, etc. So they arrive at an estimation of the expected free cash flow, and therefore the 'right' price of the share;

- 'Technical investors', whose strategy is based on finding short-term disequilibria between prices of different assets, and profiting from these. This is mostly done through automated trading, based on software that embodies theories about how different asset prices should relate;
- 'Activist investors', characterised by their active behaviour in the corporate governance discussion, often taking a substantial share in the company for only a short time.

Both Bushee (2004) and Palter, Rehm and Shih (2008) have tried to quantify the size of these different investor groups for the US. Their findings are shown in table 2, which classifies investors on the basis of the turnover of their shareholding and the size of the stakes they take. Bushee and Palter *et al*. do identify three of the four groups described above, and come to similar numbers for both the groups of active investors. A group both do not take into account are the investors that have a high turnover and take big stakes. In the twenty-year period covered by Bushee this probably was a mostly empty field. However, the activist shareholders, mostly hedge funds, which have risen to prominence in the early years of 2000, have filled this void. Hedge funds are important 'active technical' investors as well.

Table 2. Stock investor categories

	Low turnover	High turnover
Big stakes	**Active fundamental** 8% Dedicated investors (Bushee) 10% Intrinsic investors (Palter *et al*.)	**Activist investor** 1% Hedge funds (own estimation)
Small stakes	**Passive indexer** 61% Quasi-indexers (Bushee) 32% Mechanical funds (Palter *et al*.)	**Active technical** 31% Transient investors (Bushee) 35% Trader group (Palter *et al*.)

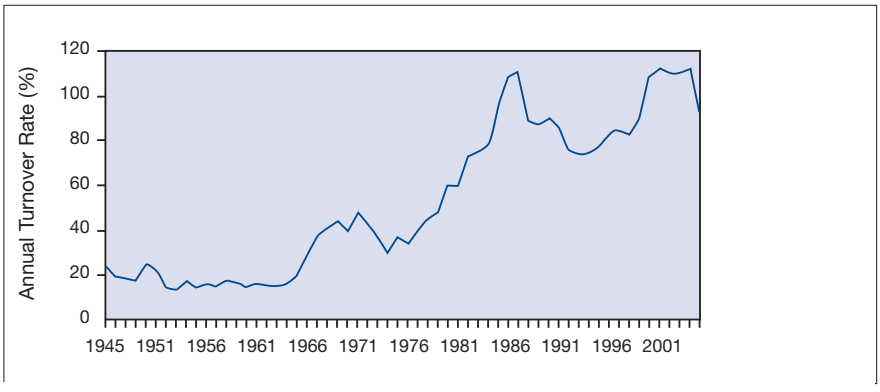
Source: Bushee (2004); Palter *et al*. (2008)

From these numbers it becomes clear that the stockholders that base their investment strategy on looking at the fundamentals of the business are only a small minority of around one-tenth of all investors. This may even be an overestimation, since where it is argued that fundamental analysis is taking place, in reality this often entails "the use of short-cut metrics", like price/earnings multiples etc. (Rappaport, 2005; Banham, 2009). It is these investors that are most likely to take a long-term view of their investments and have a clear incentive and the leverage to actively be involved in the corporate governance.
'Technical active' investors by their very nature, using highly automated investment strategies that react to movements in financial data that are readily available, are short-term oriented (Kalff, 2006). Thereby enlarging the importance of these indicators for the movement of the stock price. These investors generally do not play an active role in corporate governance.

The 'activist shareholders' are also mostly short-term shareholders, but nonetheless very active in the corporate governance. However, it is hard to judge whether these activist investors are pursuing myopic business strategies, or rather are (rightly) impatient to correct long-term mistakes being made by the company concerned.
It are the 'passive indexers', the largest, and strongest growing, group of shareholders that is the hardest to judge in terms of their influence on companies. Given that they hold stakes in companies for mostly long times, they have an incentive to monitor these firms (Davis, 2001). However, at the same time the incentive to free-ride is also large, knowing that almost all stock is held by others. According to some, in today's stock markets the latter is the dominant driver, leading to a general lack of shareholder involvement in corporate governance (Bogle, 2006; Clearfield, 2005; Cools and Winter, 2008).
A study of the Erasmus University (2007) concludes that large number of institutional investors in both the Netherlands as in the UK, US and Canada are not yet active enough in corporate governance discussions; a point that was made earlier by the Myners commission (2001) in the UK and in Tabaksblat (2003) in the Netherlands. So, even though in most countries, including the Netherlands, large institutional investors are becoming more active, it seems to still be too little (Davis, 2001; ISC, 2009).

A last indicator to look at in assessing the stock market is the average holding period of stocks. This was less than ten months in 2005. Down from between five and ten years between 1935 to 1985. The last time holding periods were this short was in the 1920s bull market. The average turnover rate for stocks held by mutual funds rose from about 25% in 1950 to more than 110% in 2004 (Bogle, 2006).

Figure 6. Post war US mutual fund turnover rate



Source: Bogle Financial Markets Research Center

To sum up, against the traders that look at the fundamental soundness of the share price stands a group of roughly three times as many traders that base their trading decisions almost entirely on short-term financial data. The 'passive' majority follows the market developments that these active traders create. This does create the possibility of a myopic stock market. The low number of long-term shareholders that

take a substantial share in companies also seems to prevent a serious involvement in the corporate governance from the shareholders.

Although much of the research presented here is based on the US, the findings are not only relevant for the Anglo-Saxon countries. In the first place, many of the above described mechanisms occur in the management of Dutch funds as well, and a large part of the funds managed by Dutch institutional investors are actually 'mandated' towards US and UK fund managers (around 40% in 2001, Engelen, 2002).
But secondly, and most importantly for Dutch public companies, the Anglo-Saxon investors actually dominate the Dutch stock market. This makes their behaviour and wishes probably more relevant for Dutch companies than those of the Dutch institutional investors who have invested most of their funds overseas. The share of foreign ownership of AEX companies rose towards 75% in the ten years before 2005, while the share of Dutch institutional investors was reduced to 10%.

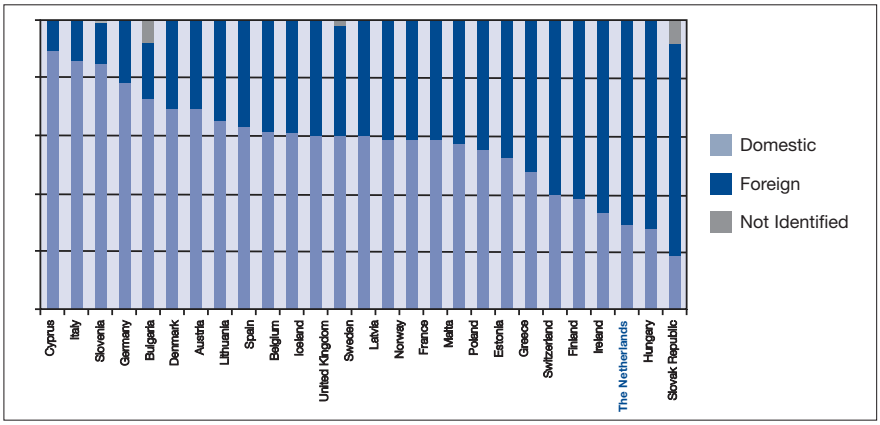
Table 3. Development in share ownership AEX listed companies (in %)

	1995	2005
Foreign investors	37	75
Dutch institutional investors	24	10
Dutch non-financial corporations	19	2
Dutch private	19	5
Dutch governments	0	1
Unknown	1	7

Source: Abma en Munsters (2007)

With this percentage of stock owned by foreign investors, the Dutch stock market has one of the highest percentages of foreign ownership (figure 7).

Figure 7. Domestic and foreign investors on national stock markets, 2007



Source: Federation of European Stock Exchanges (2008)

Pay for (stock market) performance

The rising importance of the stock market was not only the result of the funds that were being raised on it. The stock price also became increasingly important because management pay became ever more strongly linked to it. The tying of pay to (financial) performance was one of the distinguishing features of the private equity model in the '80s. During the '90s it quickly became mainstream in public companies as well.

This development was most pronounced in the US. In the mid-1980s, virtually no chief executive's pay was tied to the stock price. By the mid-1990s, that ratio surpassed 40 percent. Today in the US, approximately 60 percent of CEO pay is market-related (Mauboussin, 2006). Most western nations have followed this example, except for Sweden due to its specific taxation structure. Also in the Netherlands variable pay has increased dramatically, although the overall level of pay has remained modest compared to most other countries. Between 1998-2005 the typical Dutch CEO saw his variable pay rise from 41% of his fixed income, to 95% (van Ees *et al*., 2007). A more recent survey finds that total variable pay of CEO's of AEX-listed companies now is over three times fixed income (accounting for 75% of total income). Of the rise in variable pay 55% is a short-term bonus, mostly linked to the yearly profit. And 40% is for the so-called long-term bonus, the target being the relative total shareholder return (dividends and price development, TSR) or Earnings per Share over several years (Hewitt and EUR, 2009), around 3 years on average.

3.3 After 2000: the era of cheap debt

The new millennium started with the crash of the ICT-stocks in 2000, followed by the terrorist attacks of 9-11 in 2001. This led to a lax monetary policy of the US Federal Reserve, with low interest rates to stimulate the economy. This signalled the start of the era of cheap debt. Bond markets and bank loans took precedence, fuelling private equity investors and activist hedge funds that both heavily influenced developments in the stock market.

The dwindling stock market

The prominent position of the stock market ended abruptly with the crash of the ICT and telecom stocks and the regulation that followed. After 2002 worldwide stock prices went up again, but they did so in a period of generally low interest rates and therefore the availability of cheap debt. This made the stock market relatively unattractive as a source of funding. The figures below show stable levels of secondary offerings (stocks issues by already listed companies) and a strong decline in new listings (IPO's, figure 8a). Because there was a strong increase in share buy back (figure 8b), the net effect in many cases has been negative, with companies putting money into the stock market instead of attracting finance from it.

Figure 8a. Number of euro area IPO and SPO, 1995-2005

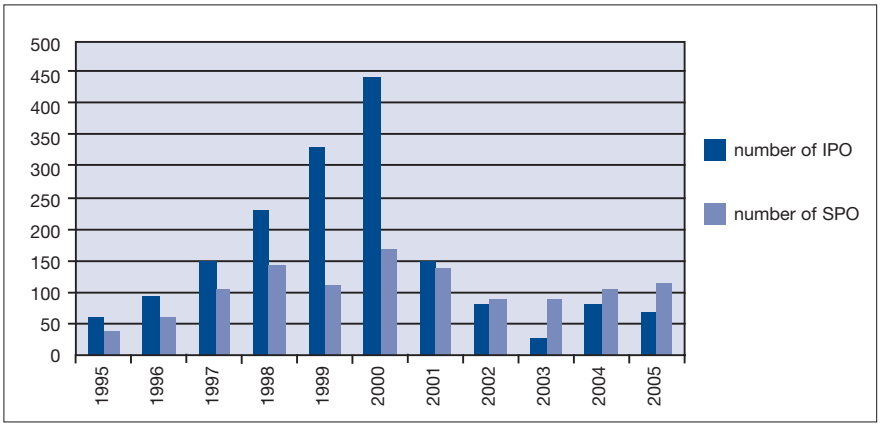
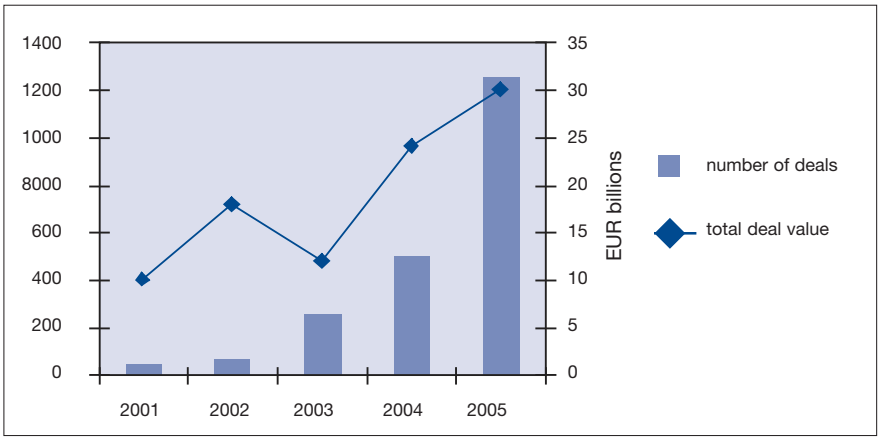


Figure 8b. Euro area share buybacks by non financial corporation (total deal value (right) and number of deals (left))



Source: European Central Bank (2007)

In the EU the stock market became a drain of funds rather than a source after 2000. In the US this was the case even in the '90s, but accelerated after 2000. US companies in the S&P 500 index repurchased $120 billion in 2003 and $597 billion in 2007; in 2007 repurchases represented 90 per cent of their net income, while dividends were another 39 per cent. In total they spent $1,700 billion on buy-backs in 2003-07 (Lazonick, 2008).

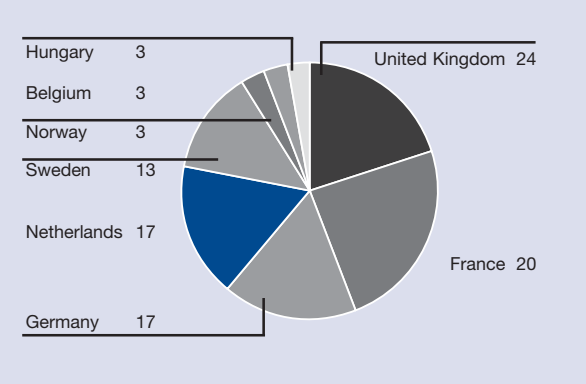
The fact that rising stock prices didn't lead to stock issues is a break with previous booms in the stock market like the US in the 1920s and Japan in the 1980s (Lazonick and O'Sullivan, 2000). Buying back stocks does not necessarily contradict the maximisation of long-term value creation. For instance, when more profitable investment opportunities are available to investors elsewhere companies should allow them to reallocate the free cash flow. At a minimum what these figures show is that the stock market has not been a source of finance for innovation.

Debt empowered hedge funds as activist shareholders

Another feature of the stock markets after 2000 were the so-called hedge funds. Hedge funds originate from investment funds set up in the late '60s that used the technique of 'hedging', reducing risk by taking countervailing transactions. These evolved into funds that are nowadays mainly distinguished from other asset managers by the fact that they are unregulated, mostly off-shore, with a limited possibility for investors to draw back their money. This enables them to invest in more flexible ways, using debt (leveraging) and taking short positions, speculating on decreasing prices (Stultz 2007; Arnold, 2005). As 'activist investors', a small but 'loud' minority of the hedge funds, they often led the discussion on individual companies' strategies in shareholder meetings. They were able to gain the needed 'bargaining power' through funds attracted from institutional funds and by using considerable debt. In this way the availability of cheap and easy debt had a direct influence on the governance of companies through the stock market: it empowered the activist hedge funds. Another reason why the relative small stakes of hedge funds were able to successfully initiate changes in corporate strategy was the rising interest of large institutional investors to be more actively engaged in corporate governance. This was partly in reaction to the criticism that they had been too absent in the '90s, for instance at firms like Enron that became entangled in accounting scandals. This increased engagement of institutional investors reduced the passive majority that, by default, backed the management. The more assertive behaviour of shareholders was also enabled by legal changes and the introduction of corporate governance codes like Tabaksblat (2003) in the Netherlands.

Activist investors have been relatively common in the Netherlands. Hedge fund activism in the Netherlands being in the same 'league' as countries with much bigger economies and stock markets such as Germany, UK and France (figure 9).

Figure 9. Hedge fund activism in Europe by country, 2007 (as % of total)



Source: Thomson Financial

There are several reasons for this strong presence of activist hedge funds in the Netherlands. The first one is the relative importance of the Dutch stock market in the Dutch economy (table 4).

Table 4. European stock markets compared

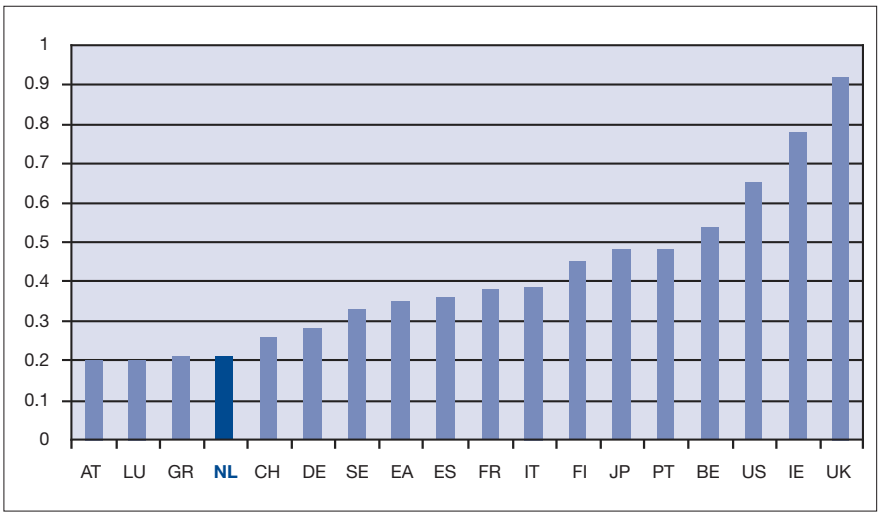
	Stock market capitalisation to GDP (ratio)	Average market capitalisation of stock listed firm (in billion euro)
UK	2.12	1.6
NL	1.43	3.0
France	1.06	3.0
Belgium	0.84	2.0
Germany	0.59	1.2
Italy	0.51	2.6

Source: van der Elst, de Jong, Raaijmakers (2007)

Second, in the '90s Dutch companies have voluntarily diminished their protection against take-overs, as it was estimated these protection measures reduced stock prices by up to 10% (De Jong, DeJong, Mertens and Wasley, 2005). As a result, Dutch companies may have the same legal possibilities to protect themselves against hostile take-overs as their peers abroad (like cross-participations or large block holdings), but they have less of these defence mechanisms in place.

However, the relatively powerful position of shareholders in the Netherlands is not extended to minority shareholders. According to Djankov *et al*. (2006) and the Worldbank (2009) the Netherlands have an exceptionally weak protection of this specific group (figure 10).

Figure 10. Enforcement of shareholder rights against self-dealing

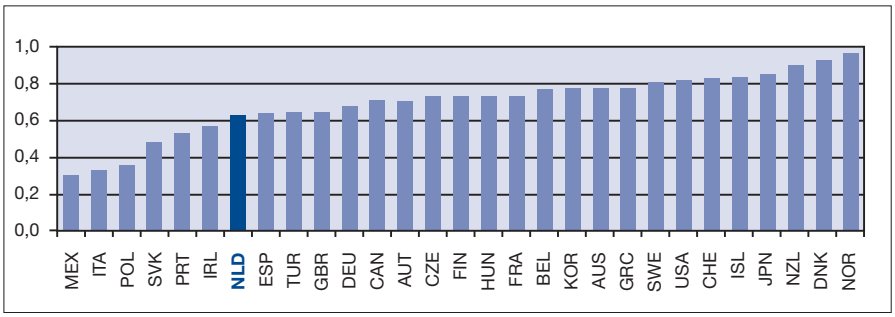


Source: Djankov *et al.* (2006)

Also the relatively large average size of companies listed on the Amsterdam stock exchange is often perceived as a sign that the stock market is less attractive for small and medium sized companies, as a result of the weak protection of minority shareholders (van der Elst, de Jong and Raaijmakers, 2007).

The Dutch stock market also performs poorly in the field of contract enforcement (figure 11). This efficiency of commercial contract enforcement (based on the number of procedures and calendar days for dispute resolution and the official cost of court procedures) is found to be significantly contributing to financial development (de Serres *et al*, 2006).

Figure 11. Level of contract enforcement in OECD countries



Source: de Serres *et al.* (2006)

Return of private equity

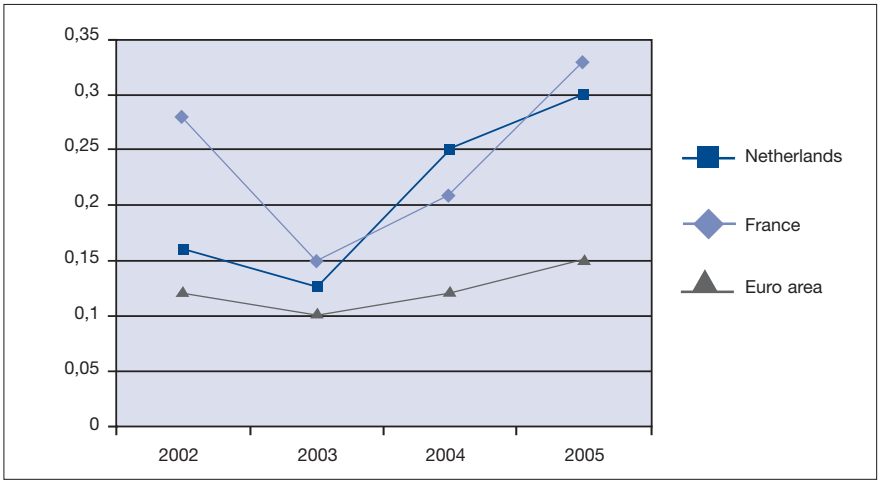
Private equity, in particular the leveraged buy-outs (LBO), has grown strong after 2000. In 2006 and 2007 the total amount of money spend in LBO's reached 1.4 trillion dollar, the equivalent of one third of all LBO's ever. The explosive growth of private equity has been fuelled by cheap and readily available debt. In combination with rising stock markets this made it attractive to take firms (temporarily) from the stock market with borrowed money. Institutional investors were also attracted to investing in private equity because of the (supposed) low correlation with stock market performance. For corporate managers 'going private' also became a more attractive option. New laws like Sarbanes-Oxley in the US not only increased the regulation of public companies, they also added personal risk to the top management by holding them personally responsible for the information provided. At the same time the rising payment of management came under increased scrutiny of the public and shareholders. The private equity sector offered comparable, and much higher, pay without these downsides.

Other than in the '80s, this LBO-association was not restricted to declining sectors and firms. Private equity firms now also developed what they called a 'buy and build' strategy aimed at growth companies. Another strategy of LBO's was to break up firms, thereby often undoing mergers and acquisitions from the '90s.

The phenomenon of private equity has certainly not gone by at the Netherlands. The figure below shows that private equity funds under Dutch management in

2005 invested twice as much as the EU average, measured as percentage of GDP. However, note that this figure does include Dutch private equity investments abroad and excludes foreign private equity investments in the Netherlands.

Figure 12. Buy out investment by country of management (as % GDP)



Source: European Central Bank (2007)

To give an impression of the importance of privately owned companies for the Dutch economy (although there is probably some overlap between these groups of firms):

- private equity houses At the end of 2008 Dutch private equity firms had funds of € 23,3 billion under management, invested in over 1.300 companies, of which around 75% in the Netherlands. Foreign private equity firms have also become increasingly active in the Netherlands, currently owning around 25 (often large) companies. Private equity financed companies have a share of 6% in total employment and create around 19% of GDP (NVP, 2009).
- private and family companies Depending on the definition (ranging from 'the owner is known' to a strict definition of family ownership that includes listed firms whose stock is owned for more than 50% by one family) the share of these companies in aggregate production in the Netherlands ranges from 15% to more than 50%. This includes many very small businesses, but also some very big companies. For example, the 30 biggest 'co-operaties' alone represent 10% of the Dutch economy (Duijvestein, Noordhoff and de Ridder, 2004).

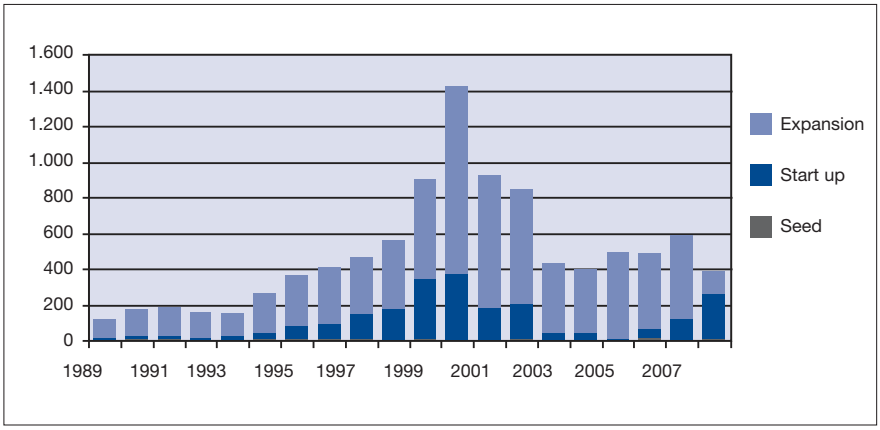
Even though in numbers the private equity investments still grew strong between 2006 and 2007, some already saw signs of cooling. In May 2006 KKR, one of the worlds largest private equity houses, listed a daughter company on the public stock exchange, later followed by two other leading private equity houses (Apollo and Blackstone). The argument for these listings was that also private equity houses

would benefit from owning a larger own capital base. However, some observers at the time thought this move of private equity, a superior way of governance and finance on its own account, towards public markets, might indicate that the top of the market had been reached.
With the financial crisis of 2007 and 2008 it seems this has indeed been the case. Since the credit crunch the number of LBO's has been sharply reduced. However at the same time, historically the start of a recession is a good period for private equity investments: asset prices are low and there is a need for rapid corporate transformations. This may explain why private equity fundraising continues, and investor surveys show an increase in asset allocation to private equity (Jenkinson, 2008).

Venture capital never recovered

The exponential growth in private equity spending on mature companies has not happened to a similar degree with regard to start-up companies. The venture capital investments did pick up globally after the strong decline that followed the bursting of the ICT-bubble. In the Netherlands it reached almost its pre 2000 levels. This is especially the case for the investments in the start-up phase that rose sharply in 2008 (see figure 13).

Figure 13. Venture capital spending in the Netherlands, 1989-2008 (in euro's * 1000)



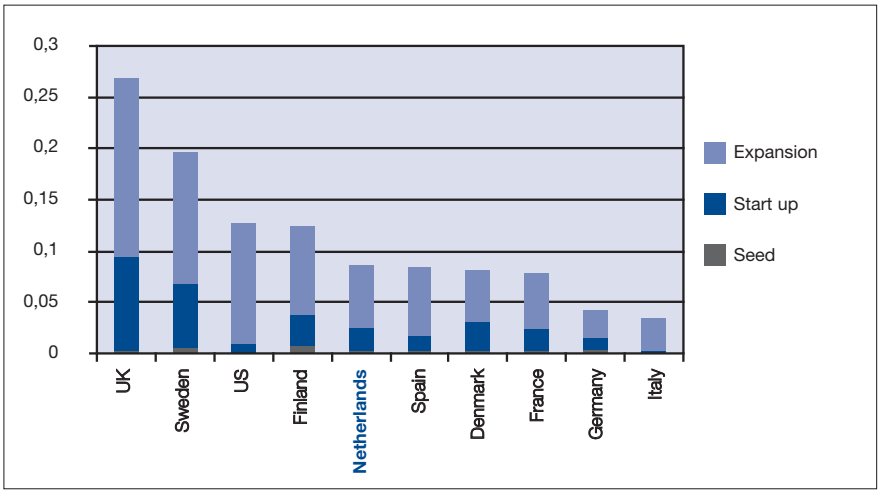
Source: European Venture Capital Association

However, venture capital investments can fluctuate strongly from year to year. The positive development of start and seed capital invested in the Netherlands in 2008 should therefore be treated as only a cautious reason for celebration. In the first place, over half of the start financing in 2008 was the result of a small number of big investments. Secondly, the positive development was out of step with the international development that shows a much bleaker picture. Preliminary numbers for 2009 do show a sharp drop for all venture capital in the Netherlands, in line with most other countries.

US numbers for the first quarter of 2009 showed investment activity down 47 percent in dollars from the fourth quarter of 2008, reaching the lowest level since 1997. Preliminary data from the EVCA indicate that following the escalation of the financial crisis in September 2008 also the seed and start-up investments in the EU have sharply dropped.

Compared to other countries the Dutch venture capital sector is around the same as other European countries, but lagging the front-runners, in the case of UK and Sweden to quite a large extent (figure 14). What is not shown in the figure below is the percentage of GDP that is invested in the global venture capital-hotspot California. There it reached on average around 0,7% of GDP between 2004-2007 (Napier, 2008).

Figure 14. Average venture capital spending, 2006-2008 (as % GDP)

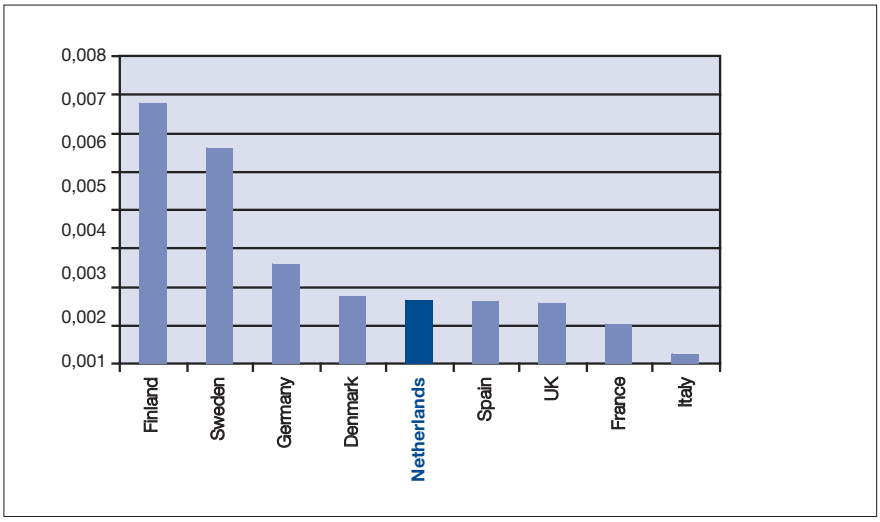


Source: European Venture Capital Association and OECD

Looking in particular at the earliest stage (the so-called seed money) we find that the difference with the leading countries increases. With Finland and Sweden for instance having percentages around three times as high (see figure 15).

Napier (2008) found on the basis of additional interviews with Dutch venture capitalists that: "Dutch investors have "moved up" leading to shrinking investment activity in the early-stage segment, which in turn could hamper the development of entrepreneurship in the Netherlands. (..) This development has continued and left the market for early-stage financing vulnerable and shattered."
The current financial crisis may lead to a further move 'up' the investment chain. The global survey of venture capital managers of Deloitte (2009) found that around 40% of investment managers expects a shift to later stage companies and existing portfolio companies.

Figure 15. Average seed capital spending, 2006-2008 (as % GDP)



Source: European Venture Capital Association and OECD

A majority of managers expects the willingness to invest in venture capital of all financial institutions to decrease, most notable the willingness of commercial and investment banks. The Dutch venture capital market may be especially vulnerable in this respect with banks playing a relatively large role. Being the source of 48% of the private equity funds over 2006-2008 (NVP, 2009) compared to only 16% for the EU as a whole (2003-2007, EVCA).

This strong dependence on banks may point to another relative weakness of the Dutch venture capital market. We saw that there are large differences between venture capital investors in the effect they have on the companies they invest in, and their profitability. With entrepreneurial family funds and university endowments being the most successful investors. The share of these investors in Dutch private equity is low with around 5%. However, this is the case for the whole of Europe where it stays under the 10%.

Bond market taking off?

Traditionally the bond market has been small in Europe compared to the US and UK. However, after the introduction of the euro it has been growing faster in the EU than the US market. This is not the case for the market for what is called mezzanine debt, or high yield/junk bonds. This market started in the '80s in the US, and grew strongly after a slump in the beginning of the '90s. In the EU this market so far hasn't really taken off, and was around a tenth of the size of the equivalent US market in 2004 (Arnold, 2005).

The recent strong growth of the bond market is partly the result of the low price of debt. Another reason may be the appetite of institutional investors for fixed-income securities. The argument being that, since a pension fund's liabilities form a future

stream of payment obligations that closely resemble a portfolio of fixed-income obligations, a bond portfolio can best provide the certainty that the pension fund will meet its liabilities as they fall due.

The crash of the stock market in 2000 (and 2008) may have added to this desire of investors, raising further questions on the 'equity-premium' that drove them to invest in equities in the '90s in the first place (Authers, 2009). However, at the same time with equity prices so low, many would not deem it a good moment to make this shift. The OECD (2005) however suggested that many sponsor companies and pension funds may consider moving to a larger bond allocation if their funding ratio rebounds, moving closer to 100 per cent. In the UK this shift seems to have taken place. With the pension fund of retail firm Boots as most visible example, moving to a 100 per cent bond allocation in 2001. On a macro level in the UK since 2000 the pension funds- and insurers have reduced their share in the UK stock market from 30-35% to 15-20% now. However this figure also includes the internationalization of UK investments in equities overseas.

New accounting rules for insurers and pension funds add to the pressure to move from the more volatile equities into the more stable bonds. However, with stock prices that have fallen as much as they have since 2008, this shift may also take place only after prices have rebounded to some extent.

Banks going global through securitisation...

What really did accelerate after 2000 was the market for so-called derivatives, financial assets whose value is determined by (derived from) the value of an underlying asset. Estimates put the total market (medio 2008) for derivatives at around 600 trillion dollar. As a comparison, the total American stock market value is just $10 trillion, but at the Chicago equity futures and options market some $45 trillion of contracts is traded on the S&P 500 index alone in 2007. ICT and a highly conducive regulatory system are the main drivers for the growth of the derivatives market. And even though the exceptional growth of derivatives has contributed to the current financial crisis, it can be argued that in the years before 2007 it did enable companies to invest in innovation.

In the first place through the relative ease with which credit was given (Hartmann, 2007; Expertgroep KMO, 2007). One of the fastest growing derivative markets was the one fed by the 'securitisation' of loans made by banks. Through securitisation banks were able to sell their, until then, illiquid risks. It offered the possibility to remove the risk of loans off their balance sheet.

This securitisation fundamentally changed the role of banks. It provided banks the possibility to profit from the opportunities that the easy credit conditions offered and at the same time comply with the risk-weighed Basel regime. But this so-called "originate and distribute" model also "turned banking into a shorter-term, more transactional business." (Plender, 2009) The selling of risks reduced the incentive for the banks to monitor the debtor, one of the traditional roles played by banks.

A second way that derivative markets may have contributed to innovation is by enabling non-financial companies to take on larger risk on their core activities. The argument here is that any company can only allow for a certain level of risk. The 'selling' the risk on for instance fluctuating exchange rates and costs of raw materials used as input in the production process, then allows the company to take on more risky innovative strategies.

... but national markets for loans to small and medium-sized enterprises (SMEs)

Through securitisation and the integration of commercial and investment banking many 'national' banks became involved in a global competition between ever larger banking conglomerates. However, this competition was largely limited to new markets; global markets for new products (derivatives) or geographically new markets of emerging economies.

Competition is still limited in the traditional banking products in the home markets, with banks again emphasizing the value of deep local knowledge and relationships. As the OECD (2007a) concluded "The Dutch market measured along virtually any dimension is one of the more concentrated in Europe." The ECB ranks the Netherlands second after only Estonia when it comes to concentration, as measured by the market share of the 5 largest banks. In 2004 85% of financial services to SMEs is provided by just 3 banks (ABN, Rabo and ING), with Fortis holding another 10%. OECD: "Considering the importance of proximity for many SMEs and the sporadic presence of Fortis in many local markets in the Netherlands, Dutch SMEs often have a realistic choice of between only two or three providers." In practice SME customers also do not switch frequently.
The OECD (2007a) points to the danger of this kind of concentration. "A typical competitive strategy of banks in the Dutch market might well be to compete for prospective new account holders rather than compete for already established customers out of fear of cannibalising on existing customers who will demand the better conditions offered to lure new customers."

However, it is disputed whether concentration is a good proxy for competition. Competitive pressure may also emerge from the threat of entry (Baumol *et al*. 1982). This may also be true in the case of banking, as Besanko and Thakor (1992) showed how lower entry barriers alone can improve the efficiency in the banking sector. National comparisons of concentration may also hide regional specialisations of banks. Therefore even though a country may have many different banks, if these are very regionally focused the SME may still have only few banks to turn to.

Another proxy for competition is to look at the pricing strategy and the margins. Most recently the Dutch competition authority (NMa, 2009) found that between 1990 and 2007 all three main banks have charged the same higher rent for SME loans, that has been absent with larger companies. And even though the NMa does

not find this a breach of competition rules, it does seek as an explanation of this 'parallel' behaviour of the banks either individual market power or oligopolistic follow behaviour.
McKinsey (2006) found that corporations (including SMEs) subsidize consumer payment services. The OECD also calls it a puzzle that despite these indications that some areas of banking activities in the Netherlands are profitable, such as SME services, there is a relative absence of significant entry. As is evidenced by the low level of entry of foreign owned banks in the Netherlands, which is in the same range as that for much larger EU countries. Also in the Eurobarometer 2005 SME Financing survey the Netherlands doesn't score particularly well (see box).

Dutch banking services to SMEs in a European perspective

SME managers in the Netherlands stated that obtaining loans had become more difficult in the last few years much more frequently than SMEs from other countries. Perceptions among SME managers about Dutch banks willingness to take risks are close to the EU-15 average. But the Netherlands has the second lowest reported perception of banks supportiveness of the SME firm's financial needs. The reported perception among SME managers of bank's understanding of their sector of activity placed it among the lowest three. SME managers in the Netherlands were among the most frequent in the EU-15 to perceive that the offers from banks were not suited to their needs (European Commission, 2005).

Also Boot and Schmeits (2004) conclude that there is reason to worry about the availability of bank loans for especially the smallest companies. A recent report of the Expertgroup on SME financing (2007) however did not find proof for the existence of a large group of SME's having financing difficulties. They found the problem to be concentrated at young ambitious companies without collateral and/or in high tech sectors like life sciences and ICT.

3.4 Finance for innovation- 2007 and beyond

Companies' internal financial market in an era of 'financialisation'

We saw that since the 1970s the financial sector was freed from regulation and fed by savings and surpluses. It used the new technological opportunities to develop into a highly dynamic global sector. This has made it arguably an ever bigger influence for corporate managers to reckon with; hence what some call the 'financialisation' of the economy (Lazonick and O'Sullivan, 2000) and what Martin Wolf (2009) describes as the transformation of the 'managerial capitalism' of the '70s into today's 'global financial capitalism'. The following figures for the US illustrate the scale of this development. They show how since the mid '80s the share of the financial sector of total profits has sharply increased. Jumping from never more than

20% after the second world war, to over 40%. The same development happened in the relative pay in the financial sector. This was around the national average until the '80s, and almost doubled in 2007.

Figure 16a. Post war US financial industry profits (share of total business profits)

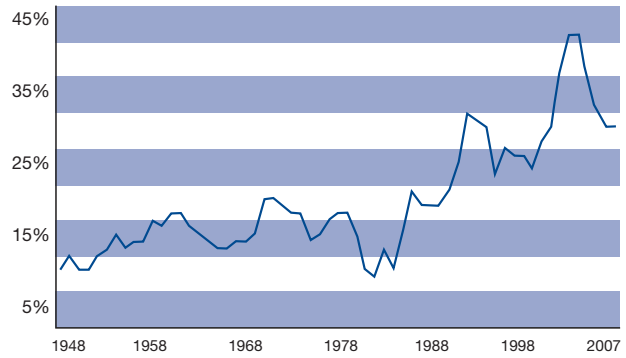
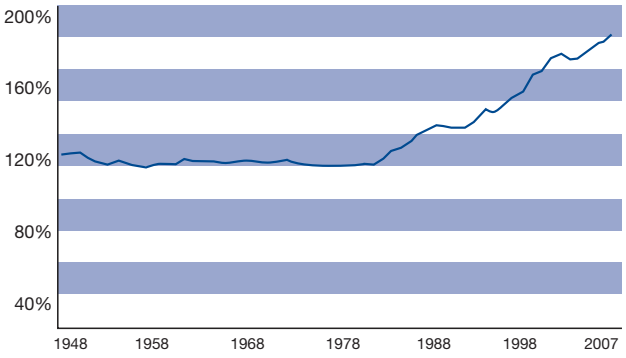


Figure 16b. Post war relative pay US financial sector (as % of average compensation)

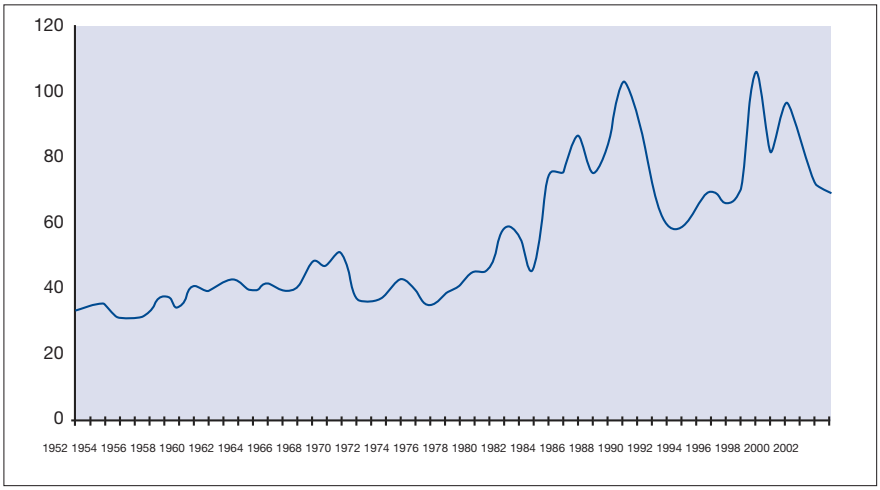


Source: Bureau of Economic Analysis, National Income and Product Accounts tables

But maybe even more illustrative of the drastic rise to prominence of the financial sector is figure 17 showing which share of profits US non-financial companies reserved for financial payments, like interest and dividend payments and stock buy-backs. These being around 40% on average, rising sharply from the mid-'80s on, reaching over 100% in the early and late '90s.

So how have the dramatic changes and growth that the financial sector has gone through affected the financial decision making within the non-financial firm? More specifically how has it affected the propensity to make the long-term investments needed to develop innovative products and services, the investments in research, education, development and marketing? Has the so-called internal financial market

Figure 17. Financial payments US non-financial companies 1952-2003 (as % of pre-tax profits)



Source: Bureau of Economic Analysis, National Income and Product Accounts tables

where the companies financial executives and its 'innovators' decide on which projects to implement become more or less conducive to innovation?

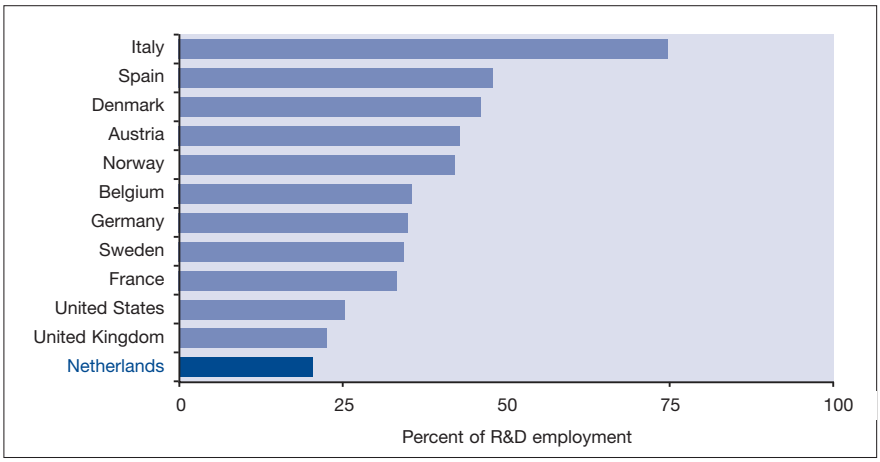
There are basically two positions. One starting from the hypothesis of efficient markets basically arguing that more influence from perfect financial markets necessarily only adds to the efficiency of real investments.
As early as 1965 however Tobin noted that financial investment and real investment can be substitutes. Lazonick and O'Sullivan (2000) argued that the increased size and significance of the financial sector led companies to shift from a strategy of 'retain and reinvest' to one of 'downsize and distribute'. Froud *et al*. (2002) argue that the increasing need to attract capital for investments from outside sources will especially hamper long-term investments; due to the increased uncertainty about the ability to attract capital in the future and against which conditions.

In recent years the first empirical studies have been done into the real effects of financialisation.
Stockhammer (2004) finds for the US, France and UK (but not for Germany) that increased activity of non-financial companies on financial markets (measured by income streams) has a negative effect on capital accumulation. Dumenil and Levy (2004) find for France and the US that the rate of capital accumulation has slowed down while interest and dividend payments have risen. Orhangazi (2008) analysing US-data at firm level over the period 1973-2003, looks whether increased financial investment and increased financial profit opportunities crowd out real investment and whether increased payments to financial markets impede real investment. Orhangazi finds support for the view that financialisation has negative effects on firm investment behaviour. The negative effect of financialisation through increased financial payout ratios is unambiguous across industries as well as small and large firms. The negative effect of increased financial profits is most obvious in large cor-

porations. It is the large corporations that have been most involved in financial investments.

This finding is the more relevant for the Netherlands due to its strong dependence on big firms in doing R&D (figure 18). It would be interesting to further study what role financialisation plays in explaining the relative poor absolute level and trend of R&D in the Netherlands, next to the structural factors that account for around halve the difference.

Figure 18. Share of enterprises with fewer than 100 employees in total R&D employment



Source: Schmitt and Lane (2009)

Also in the business literature many take a pessimistic view. Echoing a critique on the role of financial decision makers on innovation from the '80s and '90s (Hayes and Abernathy, 1980; Drucker, 1986; Porter, 1992) they stress the negative effects for specifically the long-term investments needed for innovation.

Christensen, Kaufman and Shih (2008) argue that pressures from the stock market create a "systematic bias against innovation", with "the emphasis on earnings per share as the primary driver of share price (..) diverting resources away from investments whose payoff lies beyond the immediate horizon."

Mauboussin (2006) concludes that: "corporations today focus more on the short-term than they did in the past. (..) Ironically, many of today's issues reflect unintended consequences of trying to minimize agency costs. Starting earnestly in the 1980s, companies recognized the importance of delivering shareholder returns. The result has been a massive increase in the percentage of CEO pay tied to stock price results. But rather than internalising the principles of shareholder value, many managers (..) defaulted to a near-messianic focus on EPS growth."

Lazonick (2008) sees the tying of compensation to the stock performance as the prime reason for the growth in the repurchasing of shares that according to him happened at the cost of investing in innovation: "Given that top executives, with their stock-based compensation, stand to gain from repurchases, we can expect

that they will tend to set the "relevant cost of capital" high, thus biasing their decisions against making investments in productive capabilities for an uncertain future and hence designating a larger proportion of the company's cash flow as "free".

These commentators all point towards the stock market as the main driver of an excessive, value destroying, focus on the short-term. As we have seen there are certain aspects of the way the investment chain is organized that could explain such short-termism. Myopic pricing of shares would in itself induce corporate managers to focus more on the short-term, as it translates into lower cost of capital though a higher share price. However, it is through the linking of executive pay to short-term indicators like earnings and the share price that they also get a personal incentive to focus on the short-term. Bolton *et al*. (2006) show in their model that speculative shareholders will overemphasize short-term stock performance in corporate managers remuneration. They point out that their theory explains why over the last decades, in a time of increasing shareholder influence, management pay has risen so strongly and has been more strongly tied to short-term earnings performance and shareholder return. Assuming enough myopic shareholders present, both indicators offer the opportunity for manipulation, for instance by boosting short-term earnings through not investing in the long run, or through 'financial engineering' like the repurchasing of shares or announcing a super-dividend, attracting even more speculative shareholders. This may fuel "an untenable cycle", whereby managers have an incentive to attract short-term oriented investors. However, once attracted, the transient investors in turn demand more guidance and growth (Mauboussin, 2006).

The empirical literature does show that corporate managers are more inclined to 'manage' earnings when their stock is overvalued (Jensen, 2004) or the higher the variable share in the CEO compensation (Bergstresser and Philippon, 2006; Peng and Roell, forthcoming). Kaplan and Minton (2006) found the effect of variable pay on managed earnings to be stronger when the CEO tenure is shorter, as has in general been the case over the last years. Denis, Hanouna and Sarin (2006) and Cools (2005) find a relationship between variable pay (through options) and fraud (which can be considered to be an extreme case of 'managed earnings').
More evidence of the pressure to perform in the short run is presented by Goedhart, Russell and Williams (2001). They find that corporate executives feel pressure to reach, or even beat, the earnings projections made by equity analysts leading them to go "to great lengths to satisfy Wall Street expectations in their financial reporting and even in long-term strategic moves".
Executives also often make promises that seem impossible to achieve. Mauboussin (2008) finds that the average earnings growth forecasts in 2006 was twice as high as the growth in sales that was realized (on average) in the ten preceding years.
Direct evidence of managers focusing on Earnings per Share (EPS) at the detriment of long-term value creation comes from a survey by Graham, Harvey and Rajgopal

(2005) amongst over 400 financial executives in the US. They find that the majority of firms view not 'cash flows' but 'earnings', especially EPS, as the key metric for an external audience. The majority of managers would even avoid initiating a positive NPV project if it meant falling short of the current quarter's consensus earnings. Similarly, more than three-fourths of the surveyed executives would give up economic value in exchange for smooth earnings.

Company's internal financial market after the financial crisis

Strained as the internal financial markets may have been at the beginning of 2008, the worst was yet to come. With the fall of the US investment bank Lehman Brothers in September 2008 many financial markets essentially 'froze up', spurring governments all over the world to commit many billions in support to the financial institutions and the wider economy. All sources of finance have been severely hit by the current crisis -creating immediate problems for many firms to finance even their everyday working capital.

At the height of the credit crisis many predicted radical changes. Some even predicting the "End of Wall Street Capitalism" (Wijffels, 2008) and proposing to "rethink the entire financial and monetary system" (Sarkozy, 2008). Or to quote Martin Wolf (2009) again: "Another ideological god has failed. The assumptions that ruled policy and politics over three decades suddenly look as outdated as revolutionary socialism."
Much has since been said and thought about a 'New Capitalism'. However, it has so far proven difficult to reach international agreement on the more radical policy proposals. Looking at the proposals on the table in nations capitals, Brussels, Basel and G20 meetings we can safely predict that the future will bring stronger regulation, better transparency, especially with regard to derivatives and hedge funds, and more international co-operation in supervision; a supervision that will not only focus on individual financial institutions, but will take a more holistic approach with a stronger emphasis on prevention.

Looking beyond the crisis, at the wider environment, it is to be expected that the saving surpluses that have been flowing towards the western financial markets will be less as a result of emerging economies increasingly investing in their own economies. Take for example IPO activity in 2007, where China led the world in the number of newly listed firms and capital raised, with Brazil ranking third after the US. Increasingly also pension funds will enter a new period in their life cycle, saving less, and spending more on pensions.

With regard to the long-term cycle, we can conclude that much of the development that has taken place is in line with the start of the deployment period as described by Perez (2002). According to which, following a period of frenzy that ends in a bust of the stock market, new rules are made for the financial markets. According

to this theory of 'waves' the next big technological shift will only come in 20-30 years time. For now innovation will be more about deploying existing technologies. There will be less of a technology-push to innovation. However, a strong need for innovation, especially in the field of sustainable development for a strong growing world population (climate change, water use, food) will ensure ample opportunities for investment to be around.

3.5 Conclusion

Chapter 2 described the economic literature on finance and innovation. However, to arrive at issues for policy makers these findings have to be translated to the current situation in the region concerned. This chapter has sketched the broad international developments in the global financial sector and where relevant the specific characteristics of the Dutch case.

Taken together, several areas appear where frictions seem to exist between the financial sector and the real economy. These go beyond the traditional focus group of innovation policy makers of high-tech start-ups.
There are ample indications that managers in large publicly listed companies at least feel that their shareholders demand a focus on the short-term results, even at the expense of long-term value creation. We identified several elements that together could explain this: the cost of getting good long-term estimations of the firm's real value (the availability bias), an agency problem in the investment chain making fund managers to focus on the short-term and corporate managers whose financial incentives are linked to short-term movements in the stock price.
Other issues are the small and decreasing number of banks where Dutch SME's turn to for loan-financing and the already vulnerable market for (early stage) venture capital. A last issue may be that so-called 'patient' private equity funds may be beneficial for innovation and therefore warrant extra stimulation, or at least protection not to become the victim of 'general' regulations imposed on the financial sector in the coming years.

Looking at the coming years, more regulation is to be expected, but global financial markets will prevail. It will be harder for firms to get capital due to the pension savings being used, smaller surpluses in emerging economies and stricter monetary and fiscal policy.
The issues that have been identified here seem not to have been alleviated by the fall out of the crisis. Arguably, many of the tensions described will only be exacerbated by recent developments.
Think of the search for high yield by fund managers in the face of the recent losses, the increased concentration in the banking sector as a result of the 'rescue mergers' and the reduced chances of entry by foreign banks as a result of a strong 'home land'-orientation of banks or the effect on venture capital now that the 'exit' possi-

bilities have been sharply reduced and few new funds enter the sector.
The only thing that does seem to have changed dramatically is the possibility to engage in (highly) leveraged buy-outs as a result of the increased cost of capital.

The increased difficulty for companies to get the means to innovate makes it of ever greater importance that the financial sector optimally facilitates them. The policy options to improve the current situation are the subject of the next chapter.

4 Improving finance for innovation

"Labour market rigidities are often presented as the main impediment to firms' entry, mobility and post-entry growth, whereas financial constraints are considered to be less important. [My own] recent study however provides the opposite picture", Philippe Aghion (2006)

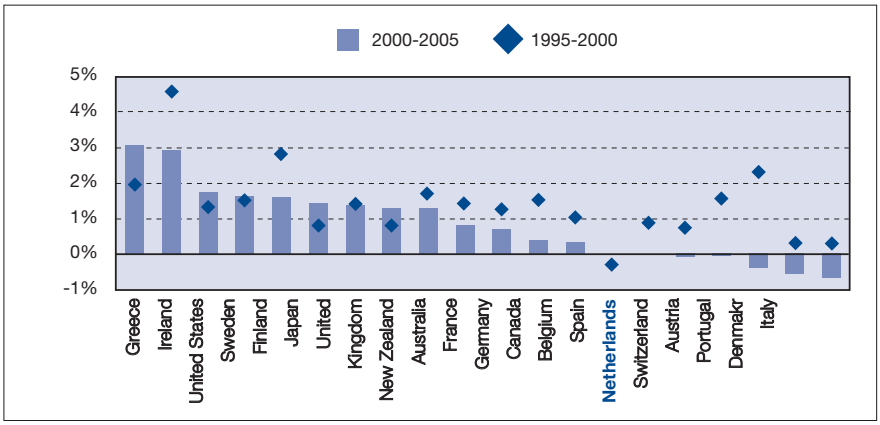
This chapter introduces an innovation agenda for the financial sector. It will discuss possible policy interventions to tackle the issues identified in the preceding chapters. Before we do so, we shortly look at the state of innovation in the developed countries and the recent (innovation) policy discussion.

4.1 The need for innovation

Human progress and economic growth is increasingly dependent on innovation. This is especially the case in countries, like the Netherlands, that already operate at the technological frontier and have relatively low unemployment. Policymakers therefore increasingly take an increase in the innovativeness of the economy as their objective. Notable examples of this are the EU Lisbon Agenda initiated in 2000 and the Dutch Innovation Platform that started in 2003.
However, whereas the Lisbon agenda has succeeded in creating awareness for the need of innovation and policies to support this, it has not yet led to a detectable increase in innovation. The OECD (2007b) concludes: "the last few years have seen an increasing public policy focus on what promotes greater innovation. Nevertheless, many OECD countries have seen little improvement in productivity performance in recent years despite the new opportunities offered by globalisation and by new technologies, especially ICT."
Specifically for the Netherlands, which has set as its target to belong to the top of the EU, the results so far have been dissatisfying. As figure 19 shows, the growth in total factor productivity (a measure of overall innovation) has been markedly lower in the Netherlands after 2000.

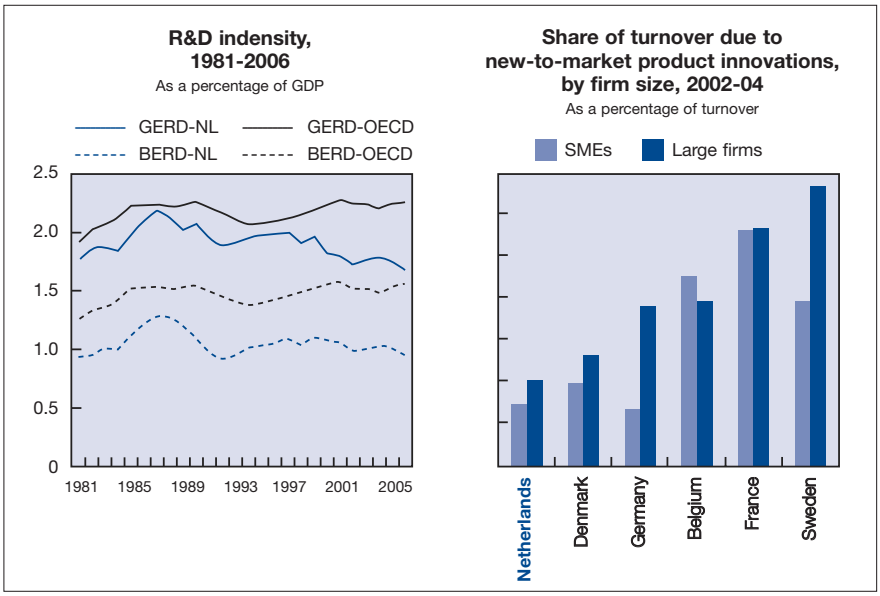
The Netherlands is one of the few OECD countries where R&D has actually declined between 1995 and 2005. Both the total R&D (GERD) and private sector R&D (BERD) have declined in the Netherlands since the late 1980s. Also looking at the innovations (new to the market) Dutch companies, both big and small perform relatively bad (see figure 20).

Figure 19. OECD multifactor productivity growth, 1995-2000 and 2000-2005



Source: OECD Productivity Database

Figure 20. Relative innovative performance of the Netherlands



Source: OECD Science, Technology and Industry Outlook 2008

From these numbers no conclusions can be drawn with regard to the role played by the Dutch financial sector in arriving at these results. However, it is clear that in spite of the attention that innovation has received from Dutch policymakers in recent years, the results so far are disappointing. This should be a reason to pursue areas that are proven to be highly relevant, yet so far have hardly been explored. Improving the performance of the financial sector in driving innovation neatly fits this description.

4.2 Finance as the missing field for innovation policy

Learning from mainstream economists that the financial sector responds in a near perfect fashion to the needs of the real economy, policymakers have traditionally focused mainly on the stability of financial markets.
The core of innovation policy in most countries is the financial contribution towards the private R&D efforts, either through the public funding of basic research or through the co-funding of the private R&D. The legitimation of this type of policy is the existence of spillovers of knowledge creation through R&D.

Innovation policy makers have in the last years increasingly gone beyond the direct financing of R&D, looking beyond the borders of the firm. Taking as their objective not the individual firm but the National Innovation System (Lundvall, 1992; Edquist, 2005) or the Dynamic Innovation System according to the Dutch Ministry of Economic Affairs. Thereby aiming at creating an environment conducive to innovation. This has led to an increase in the attention innovation policy makers are now paying to competition and labour market policy and the university-industry relationship. Indicators in these fields are closely monitored through publications like the OECD's Going for Growth and the European Commission's Innovation Score Board.

However, in these reports, nor in the Dutch policy debate, has the financial sector itself received much attention. An exception being the specific instruments for start-up and innovative high-tech companies, a group that is rightly singled out as being most severely hit by the information asymmetries between the financial institutions and the real economy.
As we saw, a growing body of literature suggests that finance actually is an important determinant of growth and innovation. And that this is not only the case for the specific group of start-up and innovative high-tech companies. Contrary to what has for a long time been the perception amongst scientists and policymakers, financial markets and institutions do not necessarily perform their function in a perfect way. Imperfect markets and institutions do exist and can be persistent, thereby hampering innovation and growth. Government action is, often unintended, an important force in shaping the financial landscape (Becht and Mayer, 2000). To quote Nobel laureate Miller (1986): "the major impulses to successful financial innovations have come from regulations and taxes".

Based on this knowledge, there has recently been a growing interest amongst innovation policy researchers for financial institutions. Hartmann *et al*. (2007) of the ECB conclude that "further financial sector reforms may be a valuable complement to ongoing efforts to reform labour and product markets. (..) measured productivity differentials between Europe and the United States seem to originate particularly in the financial sector and from sectors that are particularly dependent on external financing." In a paper for the Bruegel foundation Aghion (2006) notes that:

"labour market rigidities are often presented as the main impediment to firms' entry, mobility and post-entry growth, whereas financial constraints are considered to be less important." His own recent research however "provides the opposite picture." In a study for the OECD, de Serres *et al*. (2006) conclude that financial regulation does matter for growth and productivity. More recently the expert group on Knowledge for Growth of the European Commission (Foray and van Ark, 2008; O'Sullivan, 2007) referred to "a greater willingness on the part of the US financial markets to fund new sectors and new firms" as the most common explanation for "the differences for Europe's weakness, compared to the US, in the IT sector, and in other relatively new technology –based sectors like biotechnology."

However, so far these papers have not led to concrete policy proposals. What's more, even though the current financial and economic crisis has decisively proven that financial markets do not always work perfect, most financial and economic policymakers are currently too busy taking emergency measures to drive forward the 'innovation agenda for the financial sector'.

Understandable as it may be that financial policymakers currently have more immediate things on their mind. Now is at the same time for several reasons a particular good time to look at the financial sector as an important component of the national innovation system.
First, whatever the outcome of the current crisis, credit will be tighter than it has been in the last years. Government funds will also be tight as a result of current spending to overcome the financial and economic crisis.
All this makes the question whether we can improve the way the financial sector supports the investments needed for innovation the more relevant. It is about looking for policies that will direct more private funds towards profitable investment opportunities in innovation.
Second, with so many fundamental changes taking place at the moment, and the government in such a powerful position (both as owner of financial institutions, and because of the relatively strong level of international co-ordination) this moment also offers an unique opportunity that should not be lost on innovation policy makers.

Hereunder we present a preliminary innovation agenda for the financial sector. Due to the nature of this study the interventions presented here cannot be more than tentative. However, each of the issues addressed deserves closer inspection by policy makers and market participants alike, to decide whether and which action is needed. Improving the fit between the financial sector and the real economy is in the interest of all parties involved, since in the long run it is the real profits that sustain the financial sector.

We will subsequently look at the stock market, the banking sector, venture capital and private equity (mature companies).

4.3 The stock market

The issue: inducing short-term behavior

The stock market is in many respects the source of finance best suited to finance innovation in large established enterprises. Public companies also perform the majority of R&D, both in well established as in new sectors. This is especially true for the Netherlands.

However we saw also that managers of publicly listed companies feel strongly pressed to deliver in the short run, even to the extent that they would cut profitable long-term investments in R&D and innovation. We identified the following elements that contribute to this short-term focus in public companies:

1. the 'availability bias', the fact that short-term indicators like the share price and earnings are readily available, whereas estimations of the theoretically superior total free discounted cash flow or other important business drivers are not;
2. the linking of management pay to these short-term financial indicators;
3. short sighted shareholders that give an excessive weight to current earnings.

We will discuss possible policy interventions along these three lines.

Possible intervention: Better disclosure of non-financial information

Recent research for Dutch listed companies showed that 95% of the key indicators published in their yearly reports are financial, and of the remaining part 4% exclusively deal with the number of employees (Klaassen, 2008). Making information about innovation efforts and other business drivers more readily available will reduce the current 'availability bias' in favour of short-term financial indicators like earnings (Hsieh, Koller, Rajan, 2006; Rappaport, 2005; PWC, 2008). Other authors have focused specifically on the disclosure of the increasingly important intangibles like R&D, patents, brand and organisational capital (Lev 2004; OECD, 2008a; Deutsche Bank, 2005). Following the current crisis many have also advocated more disclosure of information needed to correctly assess risk (Mertens and Blij, 2008).

There is much here that companies can do themselves. Also investors are increasingly demanding the reporting of more non-financial indicators. However, the already long history of this discussion may also indicate that there is a collective action problem, with each company unwilling to be the first and sole publisher of data it deems sensitive for competition.

Possible intervention: Pay for performance in the long run and more direct monitoring

Linking managers pay to the upward benefit of risky investments can be necessary to avoid managers becoming overly risk-averse (Rappaport, 2005; van Praag, 2005). However, we saw that variable pay can become problematic when it is linked to short-term earnings and stock prices that can be manipulated by management, for instance by foregoing the long-term investments needed for innovation.

The direct way to tackle this is through the remuneration policies itself. Best practices being:

- linking performance to the stock market in the long run (=longer than the 3 year average that is common now). Holdena and Lundstrumb (2009) find that the introduction of long-term options increase R&D/sales with around 25%;
- using claw backs for performances that in the longer term turn out to be less advantageous;
- the requirement for management to hold (more) shares in the 'own' company (increasing the 'stock' incentive);
- or to use other (non-financial) indicators for performance, like customer- and employee satisfaction, innovative success etc.

This is in the first place an issue for the direct stakeholders of the company: its management, board, employees and shareholders. Institutional shareholders have stated their desire to become more active in this field (Eumedion, 2006; ISC, 2009) and have increasingly done so.
As a result of the current financial crisis there is strong pressure to incorporate a longer-term perspective in remuneration in the financial sector (Maas, 2009) As the financial sector is often trend setting in remuneration, this might work its way to the real economy.
However, government action may be needed if there is a collective action problem; when no individual company dares to be the first mover. The most recent developments in the financial sector, with bonuses at prominent investment banks expected to match the ones paid just before the financial crisis hit, add credibility to this view.

Apart from 'fixing' the remuneration there is the alternative of monitoring as a way of aligning the interest of financiers and management (Ryan and Wiggens, 2001; Bryan, Nash and Patel, 2006). The growing evidence of perverse effects of variable pay and the weak relation found between variable pay and firm performance (van Praag, 2005) increase the relative attractiveness of monitoring. Especially relevant for innovation is the conclusion of Aghion *et al*. (2009) that what is currently holding managers back is concern for their career when an innovation fails. They therefore argue that it is crucial to have a well-informed board, able to judge whether failure is the result of bad luck or bad management.

However, the engagement from shareholders needed for this kind of dialogue is difficult with the current highly dispersed portfolio's of institutional investors. Where some parts of this dialogue can effectively be outsourced, some argue that both sides could benefit from a more intensive and continuous dialogue. For this a reversal is needed from the trend towards indexation. Having institutional investors taking larger shares in companies (Cools and Winter, 2008). Something that Dutch pension funds might be willing to do (FD, 2009). But some have argued that government could also restrict the number of companies in a portfolio (IPPR-seminar, 2009). The institutional investors in the UK have proposed to improve the dialogue through co-ordination amongst the investors, creating the "critical mass of involvement". For this authorities need to make clear that this kind of collective dialogue is permitted. The main question being the communication of price sensitive information in this kind of dialogue (ISC, 2009).
Another regulatory issue here is that for a dialogue management needs to know who the shareholders are. Unlike in Anglo-Saxon countries, the Netherlands has no common practice of shareholders registering their holdings below 5% (Cools, 2007). This will now be reduced to 3%, leaving it still much higher than in the UK and US.

This stronger monitoring will only lead to stronger innovative performance when shareholders are primarily concerned with long-term value creation. If on the other hand they are short sighted, giving them more influence or having them become more active in monitoring might actually harm long-term investments.

Possible intervention: Discouraging short-termism amongst shareholders
There are essentially two ways of reducing any excessive pressure from short-term shareholders. The first is for individual companies to attract more long-term oriented shareholders. The second is through increasing the share of long-term shareholders in the total population. Recently the Dutch parliament has voted in favour of this (Hamer, 2009; van Geel, 2009).

To start with the individual firm, the literature suggests that managers play an important role in attracting short-term oriented shareholders. According to Bushee (2004) and Hsieh, Koller and Rajan, (2006) companies with active investor relations efforts, like frequent earnings guidance and news beyond legal requirements, attract transient investors. Still, currently only a minority of companies defers from giving guidance (Mauboussin, 2006).

McKinsey on long-term shareholders

In a McKinsey study (Palter and Rehm, 2008) "intrinsic" investors are identified that: "base their decisions on a deep understanding of a company's strategy, its current performance, and its potential to create long-term value. They are also more likely than other investors to support management through short-term volatility." Investors that understand when lower earnings now, will deliver higher overall value creation through higher earnings in later years.
The main tool to reach these investors is through executives spending their time delivering a clearer, more focused message. As proof of this method, the CFO of Garner is cited (Koller and Rehm, 2008), saying: "over the past 18 months, we've had a pretty dramatic shift in our shareholder base. We had, probably, eight or nine very-high-turnover, high-trading investors among our top ten holders. Today, only one is still in the top ten. All the rest are low- or moderate-turnover investors, many of whom have built up pretty significant positions. When we meet with them, we find that they generally tend to buy and hold for years."

Another option for companies is to actively reward shareholders for holding their investment for a longer time through extra dividend and/or voting rights. In France this is actually done. The Dutch law also leaves room for this, as shown in the ruling in the case of DSM, but the company has decided not to further pursue its earlier in 2007 stated intention for a loyalty-dividend. A study into its presumed effects (Cools, 2007) concluded that in practice introducing a loyalty dividend will pose low risks, but will have limited gains as well.

The question is whether there is a case for public intervention here. With regard to the introduction of a reward to long-term investors it may be that there is a collective action problem. DSM decided to withdraw its initial proposal after it found itself standing in court against some of its shareholders.
Public intervention can take the form of putting long-term investor rewards into law. It however also opens up the possibility of using the fiscal instrument to encourage long-term holdings of shares, as was the case in Germany until 2009 and in the UK until 2007. Another fiscal instrument that can be used is a levy on stock exchange trading, as currently discussed in Germany (FT, 2009) and in place in the UK (the so-called 'stamp duty').

Another way of reducing short-termism is through addressing the agency problem between the fund managers and owners. Here the actual owners of the funds, not government, would seem to be the one to act. Davis (2008) proposes to give pensioners more influence in the governance of pension and mutual funds. However, 'financial consumers' have proven to often be far from rational, suffering from several cognitive biases due to which they will probably not feel the incentive and/or be able to sufficiently monitor their financial agents (de Meza, Irlenbusch

and Reyniers, 2008; van Raaij, 2008). Lee (2008) therefore suggests the use of default mandates for pensions that he characterizes as 'long-term low friction'. These would essentially mandate long-term stock holdings. Along this line Stein (2005) and Rappaport (2005) plead for the reduction of the number of open funds (e.g. over 90% of funds in US). Stein: "the gains from being able to undertake longer horizon trades in the closed form outweigh the potential losses that come from being unable to control wayward managers."

4.4 Banking sector

The issue: a lack of competition

In the rankings of the World Economic Forum's Financial development Report (2008) the Netherlands scores top ten positions on 6 of the 7 indicators most relevant to the functioning of the financial system. Only when it comes to banking the Netherlands scores 19, mainly due to the perceived lack of competition. This makes the banking sector an interesting area for innovation policy makers as well. Especially if we take into account that due to the financial crisis the number of banks active in the Dutch market has been even further reduced. With the take-over of Fortis Netherlands (10%) by the largest SME-service provider ABN Amro (35%) the concentration has increased. With most banks at least for now focusing on their home market, the threat of entry has further been reduced as well.

Possible interventions: Stimulating entry and competition

The NMa (2009) recommends both banks and SME's to take measures that would stimulate competition. The OECD (2007a) argues for a more active government role in stimulating entry, through ensuring that regulatory provisions for small financial service providers do not act to discourage entry, e.g. by a bank with only a few branches.

The most far reaching proposal in order to stimulate entry, one that has been gaining some traction as a result of the current crisis, is the co-financing of an investment bank by the government itself, like the Nationale Investeringsbank in the Netherlands (Kamminga, 2009) or the Industrial and Commercial Finance Corporation/3i in the UK (Mayer, 2009).

4.5 Venture capital

The issue: lack of funds

The availability of venture capital in the Netherlands seems to be good compared to other EU countries, yet lagging the European top, and far from the levels in the innovation hotspots like California.

The current downturn makes the outlook particularly bleak, especially for the early stage investments.
Particularly worrisome for the Netherlands is that it's private equity sector is highly dependent on banks, which are expected to reduce their venture capital investments the strongest. In a more structural sense this is worrisome because the most successful venture capitalists are the more entrepreneurial and/or knowledgeable venture capitalist (e.g. first and second generation family funds and university endowments).

More fundamental there seems to be a gap between the value that in innovation policy discussions is attached to venture capital and the low realized returns. These disappointing returns may well further reduce the appetite of institutional investors.

There are several possibilities for government intervention in this field, ranging from direct (co-)funding by the government to creating a favourable environment for venture capital. Amongst venture capital managers the encouragement of stock markets is with only 13% a much less popular policy than favourable tax policies (59%) or direct government support for entrepreneurial activity (50%). Also popular are policies to motivate institutional investors (58%) and endowments and family offices (39%) to invest in venture capital (Deloitte, 2009).

Possible intervention: direct funding

The amount of venture capital available can be increased through direct (co)funding of venture capital. A majority of venture capital managers expects the government to increase its investments over the coming three years. Strong pleads for an increase in government spending have recently been made in other countries with relatively high venture capital /GDP ratios like US and UK (Mott, 2008). In international comparison the Dutch government with on average 2% of the private finances equity funding (NVP, 2009) also a much lower share than the EU average of 8%. Recent research (Da Rin and Penas, 2007) points to the importance of the involvement of the private sector for successful venture capital investment.

When choosing direct funding, there is the question whether or not to aim the funds at specific sectors. Where there is a dual public objective, like stimulating innovation in clean tech or healthcare, this is obviously the case. However, governments are often tempted to aim specifically at emerging fields like ICT, nano- or bio-technology. Since these are already 'hot' fields, there is the danger of 'money chasing deals' (Gompers and Lerner, 2000).

Possible intervention: increasing attractiveness stock markets for small companies

Another option is to focus on creating an environment conducive to venture capital. Da Rin *et al* (2005) found the opening of stock markets targeted at entrepreneurial companies (NY NASDAQ, London AIM and Amsterdam Alternext) the most potent

stimulus for early stage and high-tech venture capital investments. The role of public markets as an exit option for private equity is small and falling in the Netherlands, going from 8% in 2006 to only 1% in 2008 (NVP, 2009).

One way to increase the attractiveness of alternative public markets is a more favourable tax treatment. This may increase the liquidity of these markets, the low current level is seen as an important reason for many investors not to enter these markets. Another way may be to increase the coverage of companies listed on these exchanges.

There are private incentives for both investors and companies to tackle this information problem. Financial markets reward companies for increased disclosure, especially in the case of small listed companies (Barnett, 2003), and the importance of presenting good quality information increases significantly as the level of analyst coverage declines (as is the case now in the aftermath of the financial crisis). However, the OECD (2008) concluded that "specific reporting on intangibles remains relatively limited in practice." The OECD therefore supports initiatives that aim to improve this: "Improved information about intellectual assets and company strategy also improves the ability of firms to secure funding at a lower cost of capital – notably for small listed companies suffering from limited analyst coverage – and to better allocate resources."

Another option of stimulating the attractiveness of the stock markets is through improving the position of minority shareholders. On this indicator the Netherlands scores particularly weakly. In the economic literature it is suggested that this weak protection hurts mainly SME's. The relatively large size of companies listed on the Dutch stock exchange further supports the view that gains can be made here for SME's.

Possible intervention: other environmental variables

Hellman (2000) and Napier (2008) both provide a list of further factors that are important for venture capital:

- investment opportunities (quality of research, industry-academia links, Napier and van den Heuvel (2007) found specifically for the Netherlands that early-stage investors thought the needed complementary government policies to co-investing were lacking, however the seed facility may have mitigated this problem);
- human resources (especially entrepreneurs);
- legal supporting institutions (especially the 'US style contracting' with a downside protection and broader investor involvement, as shown by Kaplan *et al*. 2007 and Bottazzia, Da Rin and Hellmann, 2008);

- government policy other than direct (co-)funding (launching customers, general business regulation);
- regulation of investment by mutual and pension funds.

4.7 Private equity

The issues: stimulating patient capital

Much of the criticism that private equity has drawn over recent years, of overburdening companies with debt, seems less relevant now that the cheap debt that fuelled the leveraged buy-out (LBO) movement after 2000 has dried up.
We saw that private equity has some attractive features with regard to financing innovation. Like the stock market, it offers the possibility to share in the upside of investments, which makes it a good channel for the more risky investments for innovation. The lower liquidity of private equity stakes makes the commitment relatively long-term compared to the stock market. This not only invites a more long-term informed decision when buying an equity stake in a company, it also gives more room for the development of a relationship with the company. A relationship in which tacit knowledge can be exchanged in both ways. There arguments are strongest for the private equity owners who don't want to make an exit within 3-5 years, but have a longer financial commitment to the firm. As most family owned businesses, collectives and employee owned businesses do. And even though their share in total business ownership is substantial, these patient financiers are often overlooked in policy discussions.

Possible intervention: creating a level playing field?

The question is whether patient capital should be promoted from an innovation policy point of view? Step one is to determine how the current fiscal and regulatory environment is geared towards the patient capitalists. But probably just as important is it to safeguard that the rules and regulations that will come do not needlessly burden these financiers who often operate on a smaller scale. With regard to family firms there still seems to be an issue with regard to succession.

References

Abma, R. (2008) Ontwikkelingen in het aandeelhoudersvergaderingenseizoen 2008, Tijdschrift voor Ondernemingsbestuur

Abma, R. and R. Munsters (2007) chapter 8 Handboek Corporate Governance, Eumedion

ABP Vermogensbeheer (2006), Strategisch beleggingsplan ABP 2007 - 2009

Ackermann, C., R. McEnally, and D. Ravenscraft (1999) The performance of hedge funds: Risk, return, and incentives, Journal of Finance, 54-3, pp 833-874

Aghion, P., J. Van Reenen and L. Zingales (2009) Innovation and institutional ownership, NBER Working Paper 14769

Aghion, P. (2006), A primer on innovation and growth, Policybrief, Bruegel

Aghion, P., T. Fally and S. Scarpetta, (2007) Credit constraints as a barrier to the entry and post-entry growth of firms, Economic Policy, 22-52, pp 731-779

Akerlof, G. A. (1970) The Market for "Lemons": Quality Uncertainty and the Market Mechanism, Quarterly Journal of Economics, 84

Allen, F. and D. Gale (2004) Comparative Financial Systems: A Discussion - Credit, Intermediation, and the Macroeconomy, Oxford

Allen, F. and D. Gale (2001) Comparing Financial Systems. MIT Press

Amir, E., B.Lev and T. Sougiannis. (2003) Do financial analysts get intangibles?, European Accounting Review, pp 635-659

Anderson, R. C. and D. M. Reeb (2003) Founding-Family Ownership and Firm Performance: Evidence from the S&P 500, The Journal of Finance, 58-3, pp 1301-1328

Arnold, G.C. (2005) The Handbook of Corporate Finance, FT Prentice Hall

Arnold, G.C. and P.D. Hatzopoulos (2000) The theory-practice gap in capital budgeting: evidence from the United Kingdom, Journal of Business Finance & Accounting, 27-5, pp 603-626

Arrow, K.J. (1962) Economic Welfare and the Allocation of Resources for Innovation, in: Nelson, (editor), The Rate and Direction of Inventive Activity

Auten, G. and R. Carroll (1999), The Effect of Income Taxes on Household Income, The review of economics and statistics, 81-4, pp 681-693

Authers, J (2009) Is it back to the Fifties? In Financial Times, March 24 2009

AXA Private Equity (2008) Annual Report 2007

Banham, J. (2009) Producing decent returns for pensioners in turbulent times, RSA Tomorrow's Investor project

Barberis, N. and R. H. Thaler (2002) A Survey of Behavioral Finance, NBER Working Paper 9222

Barnett, B. (2003) Corporate Disclosure Practices and Stock Price Performance, London Business School

Barth, J.R., G. Caprio and R. Levine (2004) Bank regulation and supervision: what works best?, Journal of Financial Intermediation, 13-2, pp 205-248

Battaggion, M.R. and L. Tajoli (2000) Ownership Structure, Innovation Process and Competitive Performance: The Case of Italy, University Luigi Bocconi, CESPRI working paper 121

Baumol, W. J. (1982) Contestable Markets: An Uprising in the Theory of Industry Structure, The American Economic Review, 72-1, pp 1-15

Becht, M. and C. Mayer (2000) The control of corporate Europe, in: Siebert, H. (ed) The world's new financial landscape: Challenges for economic policies, Springer

Beck, T. and R. Levine (2004) Stock markets, banks, and growth: Panel evidence, Journal of Banking & Finance, 28-3, pp 423-442

Beck, T. and R. Levine (2002) Industry growth and capital allocation: does having a market- or bank-based system matter? Journal of Financial Economics, 64-2, pp 147-180

Benfratelloa, L. F. Schiantarellic and A. Sembenelli (2008) Banks and innovation: Micro econometric evidence on Italian firms, Journal of Financial Economics, 90-2, pp 197-217

Benhabib, J. and M. Spiegel (2000) The Role of Financial Development in Growth and Investment, Journal of Economic Growth, 5-4

Berger, A., A. Saunders, J. Scalise and G. Udell (1998) The Effects of Bank Mergers and Acquisitions on Small Business Lending, Journal of Financial Economics 50, pp 187-230

Berger, A.N. and G.F. Udell (1990) Collateral, loan quality, and bank risk, Journal of Monetary Economics

Bergstresser, D. and T. Philippon (2006) CEO incentives and earnings management, Journal of Financial Economics, 80-3, pp 511-529

Berle, A.A. and G.C. Means (1932) The modern corporation and private property, New York

Besanko, D. and A.V. Thakor (1992) Banking deregulation: Allocational consequences of relaxing entry barriers, Journal of Banking and Finance, 16, pp 909-932

Bloom, N., R. Sadun and J. Van Reenen (2008) Do private equity-owned firms have better management practices? Draft

Bloom, N, S. Dorgan, J. Dowdy and J. van Reenen (2007) Management practice and productivity: why they matter, LSE CEP and McKinsey & Co

Bloom, N. and J. Van Reenen (2002) Patents, real options and firm performance, The Economic Journal, 112-478, pp C97-C116

Blundell-Wignall, A. (2007) The Private Equity Boom: Cause and Policy Issues, OECD 2007

Bogle, J.C. (2006), The battle for the soul of capitalism, Yale University Press

Bolton, P., J. Scheinkman and W. Xiong (2006) Executive compensation and short-termist behaviour in speculative markets, Review of Economic Studies, 73, pp 577-610

Bond, S., D. Harhoff and J. Van Reenen (2003) Investment, R&D and Financial Constraints in Britain and Germany" LSE CEP working paper

Boot, A.W.A. and A.V. Thakor (2000) Can Relationship Banking Survive Competition?, Journal of Finance 55, pp 679-713

Boot, A.W.A. and M. Marinc (2008) The evolving landscape of banking, Industrial and Corporate Change, 17-6, pp 1173-1203

Boot, A.W.A. and A. Schmeits (2005), The competitive challenge in banking, Amsterdam Center for Law & Economics Working Paper 2005-08

Boot, A. W.A. and A. Schmeits (2004), Imperfecties in de vermogensmarkt en overheidsbeleid, in: Jacobs and Theeuwes (eds), Innovatie in Nederland, De markt draalt en de overheid faalt, Koninklijke Vereniging voor de Staathuishoudkunde Preadviezen

Bottazzia, L., M. Da Rin and T. Hellmann (2008) What is the role of legal systems in financial intermediation? Theory and evidence, Journal of Financial Intermediation

Boyd, J.H. and B.D. Smith (1998) The evolution of debt and equity markets in economic development, Journal Economic Theory, 12-3

Brown, J. R., S. M. Fazzari and B.C. Petersen (2009) Financing Innovation and Growth: Cash Flow, External Equity, and the 1990s R&D Boom, Journal of Finance, 64-1, pp 15 -185

Brown, K. C., W. V. Harlow and T. Starks (1996) Of Tournaments and Temptations: An Analysis of Managerial Incentives in the Mutual Fund Industry, The Journal of Finance, 51-1, pp 85-110

Brown, W. (1997) R&D Intensity and Finance: Are Innovative Firms Financially Constrained?, Working Paper

Bruining, H. and M. Wright (2002) Entrepreneurial orientation in management buy-outs and the contribution of venture capital, Venture Capital: An International Journal of Entrepreneurial Finance, 4-2, pp 147-168

Bryan, S.H., R.C. Nash and A. Patel (2006) The structure of executive compensation: international evidence from 1996-2004

Bushee, B.J. (2004) Identifying and Attracting the 'Right' Investors: Evidence on the Behavior of Institutional Investors, Journal of Applied Corporate Finance, 16-4, pp 28-35

Bushee, B. J. (2001) Do Institutional Investors Prefer Near-Term Earnings over Long-Run Value? Contemporary Accounting Research, 18-2, pp 207-246

Bushee, B.J. (1998) The influence of institutional investors on myopic R&D investment behaviour, The accounting review, 73, pp 305-333

Canepa, A. and P. Stoneman (2007) Financial constraints to innovation in the UK: evidence from CIS2 and CIS3, Oxford Economic Papers 2008 60-4, pp 711-730

Capocci, D. and G. Hubner (2004) Analysis of hedge fund performance, Journal of Empirical Finance, 11-1, pp 55-89

Carlin, W. and C. Mayer (2001) Finance, investment and growth, Saıd Business School, University of Oxford, Oxford, Mimeo

Carlyle (2008) Annual Report 2007

Carpenter, R.E. and B.C. Petersen (2002) Capital market imperfections, high-tech investments and new equity financing, The Economic Journal 112

Cetorelli, N. and P. E. Strahan (2006) Finance as a Barrier to Entry: Bank Competition and Industry Structure in Local U.S. Markets, The Journal of Finance, 61-1, pp 437-461

Chen, X., J. Harford and K. Lia (2007) Monitoring: Which institutions matter? Journal of Financial Economics, 86-2, pp 279-305

Chevalier, J. and G. Ellison (1997) Risk Taking by Mutual Funds as a Response to Incentives, Journal of Political Economy, 105-6

Christensen, C.M., S.P. Kaufman and W.C. Shih (2008) Innovation Killers; How financial tools destroy your capacity to do new things, Harvard Business Review

Christensen, J. and B.A. Lundvall (2004) Product innovation, interactive learning and economic performance, Amsterdam, Elsevier

Claessens, S. A. Demirgüç-Kunt and H. Huizinga (2001) How Does Foreign Entry Affect the Domestic Banking Market?, Journal of Banking and Finance, 25-5, pp 891-911

Clearfield, A.M. (2005) "With friends like these, who needs enemies?" The structure of the investment industry and its reluctance to exercise governance oversight, Corporate Governance, 13-2, pp 114-121

Cools, C. and J. Winter (2008) Gezocht: beleggers voor de lange termijn, in: Het Financieele Dagblad

Cools, C. (2007) Loyalty dividend at DSM, draft February 2007

Cools, C. (2005), Controle is goed, vertrouwen nog beter, van Gorcum

Cools, C. (2004) Darwin in aandelen, oratie RUG

Corbett, J. and T. Jenkinson (1997) How is investment financed? A study of Germany, Japan, UK and US, the Manchester School Supplement

Corbett, J. and T. Jenkinson (1996) The financing of industry, 1970-1989: an international comparison, Journal of the Japanese and International Economies

Cornell, B. and A.C. Shapiro (1988) Financing corporate growth, Journal of Applied Corporate Finance 1-2, pp 6-23

Corrado, C. A., C. R. Hulten and D. E. Sichel (2006) Intangible capital and economic growth, NBER Working Paper 11948

Crafts, N. (2008) What Creates Multi-Factor Productivity? presentation ECB congres

Da Rin, M. and M.F. Penas (2007) The effect of venture capital on innovation strategies, NBER Working Paper 13636

Davis, S.J., J. Haltiwanger, J. Lerner and J. Miranda (2008) Private Equity and Employment, U.S. Census Bureau Center for Economic Studies Paper 08-07

Davis, R. B. (2008) Democratizing Pension Funds; Corporate Governance and Accountability

Davis, E.P. (2001) Institutional investors, corporate governance and the performance of the corporate sector, Brunel University

Davis, E. P. and B. Steil. (2001) Institutional Investors, Cambridge, MA, The MIT Press

De Jong, A., D. V. DeJong, G. Mertens and C. E. Wasley (2005) The role of self-regulation in corporate governance: evidence and implications from The Netherlands, Journal of Corporate Finance, 11-3, pp 473-503

De Jong, A., P. Roosenboom, M. Verbeek and P. Verwijmeren (2007), Hedgefondsen en Private Equity in Nederland, Background study for the Dutch Ministry of Finance

Deloitte (2009) Global trends in venture capital

Demirguc-Kunt, A. and H. Huizinga (1999) Determinants of commercial bank interest margins and profitability: some international evidence, World bank economic review, 13

Denisa, D. J., P. Hanounaa and A. Sarin (2006) Is there a dark side to incentive compensation? Journal of Corporate Finance, 12-3, pp 467-488

Deutsche Bank (2005) Value intangibles! Intangible capital can and must be valued –owners and valuers alike will benefit

Djankov, S., R. La Porta, F. Lopez-de-Silanes and A. Shleifer (2006) The law and economics of self-dealing, working paper

Drucker, P. (1999) interview Richard Brem, video on www.peterdrucker.at

Drucker, P. (1986) A crisis of capitalism, in: Wall Street Journal, September 30, pp 30

Duffhues, P. (2003) De financierbaarheid van het MKB: Een analyse van de financiële structuur, Research commissioned by the Raad voor Zelfstandiging Ondernemerschap.

Duijvestein, H.H., I. Noordhoff and W.J. de Ridder (2004) De kracht van het geduldig kapitaal; Besloten vennootschappen voor het voetlicht, SMO

Dumenil, G. and Levy, D. (2004) Capital Resurgent, Cambridge, MA, Harvard University Press

Eberhart A. C., W. F. Maxwell and A.R. Siddique (2004) An Examination of Long-Term Abnormal Stock Returns and Operating Performance Following R&D Increases, Journal of Finance, pp 623-650

ECB (2007) Corporate finance in the euro area

Economist (2007) The three Scrooges, Buttonwood, January 4

Edquist, C. (2005) Systems of innovation, in: The Oxford handbook of innovation, J. Fagerberg, D. C. Mowery, R. R. Nelson (red)

Ees, H. van, G. van der Laan, E.J.P. Engesaeth and C.A.S. Selker (2007) De relatie tussen de bezoldiging van bestuurders van beursgenoteerde ondernemingen en de prestaties van deze ondernemingen, University Groningen and Towers Perrin

Einhorn, J. (2009) Corporate governance without a hint of systemic surveillance, letter to the Financial Times, March 20

Elst, C.F. van der, A. de Jong and M.J.G.C. Raaijmakers (2007) Een overzicht van juridische en economische dimensies van de kwetsbaarheid van Nederlandse beursvennootschappen, Onderzoeksrapport ten behoeve van de SER Commissie Evenwichtig Ondernemingsbestuur

Eng, L.L. and M. Shackell (2001) The implications of long-term performance plans and institutional ownership for firms, Journal of Accounting Auditing and Finance

Engel, D. and M. Keilbach (2007) Firm-level implications of early stage venture capital investment - An empirical investigation, Journal of Empirical Finance, 14-2, pp 150-167

Engelen, E. (2002), Financialisation, Pension Restructuring, and the Logic of Funding

Erasmus University Rotterdam (2007) Corporate governance practices of institutional investors: Substance or symbolism?

Eumedion (2006) Speerpunten jaarverslag en AvA 2007, Schiphol, October 24

European Commission (2005) Eurobarometer: SME Access to Finance, October

Expertgroep KMO (2007) Vermogen om te ondernemen, De Nederlandse finance gap

Fama, E.F. (1970) Efficient Capital Markets: A Review of Theory and Empirical Work, The Journal of Finance, 25-2

FED (2008) Flow of Funds Accounts of the US Second Quarter 2008

Federation of European Stock Exchanges (2008) Share ownership survey 2007

Financial Times (2009) Bickering puts German executive pay bill at risk, March 3

Financieel Dagblad (2009) Crisis dwingt aandeelhouders tot bezinning op eigen positie, March 4

Fisman, R. and I. Love (2007) Financial dependence and growth revisited, Journal of the European Economic Association

Foray, D. and B. van Ark (2008) Overview on Knowledge for Growth: European issues and policy challenges

Francis, J. and A. Smith (1995) Agency costs and innovation some empirical evidence, Journal of Accounting and Economics, 19-2-3, pp 383-409

Franks, J. and C. Mayer (1997) Corporate ownership and control: the UK, Germany and France, Journal of Applied Corporate Finance, 9-4, pp 30-45

Frentrop, P. (2002) A History of Corporate Governance, 1602-2002, Brussels Deminor

Frijns, J.M.G. (2008) De Nederlandse corporate governance code; Beginselen van deugdelijk ondernemingsbestuur en best practice bepalingen, Monitoring Commissie Corporate Governance Code

Froud, J., S. Johal and K. William, 2002. Financialization and the coupon pool, Capital and Class, 78, pp 119-51

Gaspara, J.M., M. Massab and P. Matos (2005) Shareholder investment horizons and the market for corporate control, Journal of Financial Economics, 76-1, pp 135-165

Geel, van P. (2009) Motie 31 371 Nr. 197, June 10

Gillan, S. and L.T. Starks (2003) Corporate Governance, Corporate Ownership, and the Role of Institutional Investors: A Global Perspective, Journal of Applied Finance, 13-2

Goedhart, M. H. B. Russell and Z. D. Williams (2001) Prophets and profits, McKinsey Quarterly October

Gompers, P. A. and J. Lerner (2000), Money Chasing Deals? The Impact of Fund Inflows on Private Equity Valuation, Journal of Financial Economics, 55 (2)

González-Páramo, J.M. (2008), Financial systems, new technologies and productivity growth, speech at the Summer School of the University of Málaga, Ronda,

Graham, J. R. C. R. Harvey and S. Rajgopal (2005), The Economic Implications of Corporate Financial Reporting, Journal of Accounting and Economics, Volume 40, Issues 1-3, pp 3-73

Hall, B.H (2002) The Financing of Research and Development, Oxford Review of Economic Policy, 18, pp 35-51

Hamer, M. (2009) Motie 31 371 Nr. 196, June 10

Harhoff, D., F. Narin, F.M. Scherer and K. Vopel (1999), "Citation Frequency and the Value of Patented Inventions", The Review of Economics and Statistics, 81-3, pp 511-515

Hartmann, P., F. Heider, E. Papaioannou and M. Lo Duca (2007), The Role of Financial Markets and Innovation in Productivity and Growth in Europe, ECB Occasional Paper No. 72

Hayes, RH and WJ Abernathy (1980) Managing our way to economic decline Harvard Business Review

Hellman, T. (2000) Developing a Venture Capital Industry, Comments prepared for the World Development Report Study Conference Villa Boersig, Berlin

Hellmann, T. and M. Puri (2000) The Interaction between Product Market and Financing Strategy: The Role of Venture Capital, Review of Financial Studies, 13-4, pp 959-984

Hellwig, M.F. (1991) Banking, Financial Intermediation and Corporate Finance, in: A. Giovannini and C. Mayer (eds.), European Financial Integration, Cambridge University Press, 35-63

Hewitt Associates and RSM EUR (2009) Relatieve prestatiemeting bij Nederlandse beursfondsen

Himmelberg, C.P. and B.C. Petersen (1994) R & D and internal finance: A panel study of small firms in high-tech industries, The Review of Economics and Statistics, 76-1, pp 38-51

Hippel, E. von (2005) Democratizing Innovation, MIT press

Hitt, M.A., R.E. Hoskisson and H. Kim (1997) International Diversification: Effects on Innovation and Firm Performance in Product-Diversified Firms, The Academy of Management Journal, 40-4, pp 767-798

Holdena, C.W. and L. L. Lundstrumb (2009) Costly trade, managerial myopia, and long-term investment, Journal of Empirical Finance, 16-1, pp 126-135

Holmstrom, B. and S.N. Kaplan (2001) Corporate Governance and Merger Activity in the United States: Making Sense of the 1980s and 1990s, Journal of Economic Perspectives

Hoskisson, R.E. and M.A. Hitt (1988) Strategic Control Systems and Relative R&D Investment in Large Multiproduct Firms, Strategic Management Journal, 9-6, pp 605-621

Hsieh, P., T. Koller, and S.R. Rajan (2006) "The Misguided Practice of Earnings Guidance," The McKinsey Quarterly

Hubbard, R.G. (1998) Capital market imperfections and investment, in: Journal of Economic Literature, 36, pp 193-225

IFSL (2009) Sovereign wealth funds 2009

IPPR (2009) 'Towards an accountable capitalism' 2009, With David Pitt-Watson, Hermes Fund Managers and John Kay, Financial Times, roundtable summary

ISC (2009) Improving institutional investors' role in governance; an institutional shareholders' committee paper (ABI, AIC, IMA, NAPF)

Jenkinson, T. (2009): 'Private Equity', ch. 3 in European Economic Advisory Group, The EEAG Report on the European Economy 2009, CESifo Group, Munich

Jensen, M. C. (2004) The Agency Costs of Overvalued Equity and the Current State of Corporate Finance, European Financial Management, 10-4, pp 549–565

Jensen, M. C., (1989) Eclipse of the Public Corporation, Harvard Business Review. September-October, 62-73, (revised 1997).

Jensen, M. C. and W. H. Meckling (1976) Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure, Journal of Financial Economics, 3-4, pp 305-360.

Jin, L. and L. Kogan (2008), Managerial Career Concern and Mutual Fund Short Termism, Working Paper

Kalff, D. (2006) An Unamerican Business; the rise of the new European enterprise, Kogan Page

Kamien, M.I. and N.L. Schwartz (1978) Self-Financing of an R and D Project, The American Economic Review, 68-3, pp 252-261

Kamminga, J. (2009) in: persbericht Historisch negatieve CPB-cijfers: dramatische exportdaling raakt technologische industrie keihard, FME-CWM Zoetermeer, 16 juni

Kaplan, S.N., F. Martel and P. Strömberg (2007) How do legal differences and experience affect financial contracts?, Journal of Financial Intermediation, 16-3, pp 273-311

Kaplan S. N. and B. A. Minton (2006) How has CEO Turnover Changed? Increasingly Performance Sensitive Boards and Increasingly Uneasy CEOs, Chicago Mimeo

Kaplan, S. and A. Schoar (2005) Private Equity Performance: Returns, Persistence and Capital Flows, in: Journal of Finance

Keynes, J.M. (1936), The General Theory of Employment, Interest and Money, London: Macmillan

Khorana, A. (1996) Top management turnover an empirical investigation of mutual fund managers, Journal of Financial Economics, 40-3, pp 403-427

Klaassen, A. (2008) Prix de Mazars 2008; publieksprijs voor verslaggeving van beursgenoteerde bedrijven, onderzoeksrapport

Klein, P.G. (2007) Are Internal Capital Markets Good for Innovation? University of Missouri, working paper

Knight, F. H. (1921:2002), Risk, Uncertainty and Profit, Washington D.C.: Beard Books

Koller, T. and W. Rehm (2008) Better communications for better investors: An interview with the CFO of Gartner mckinseyquarterly.com, November 2008

Kortum, S., and J. Lerner (2000) Assessing the Contribution of Venture Capital to Innovation, RAND Journal of Economics, 31-4, pp 674-92

La Porta, R., F. Lopez-De-Silanes and A. Shleifer (1999) Corporate Ownership Around the World. In: The Journal of Finance, 54-2, pp 471-517

Lazonick, W. (2008) The Quest for Shareholder Value: Stock Repurchases in the US Economy, University of Massachusetts Lowell

Lazonick, W. and M. O'Sullivan (2000) Maximizing sharholder value: a new ideology for corporate governance, Economy and Society, 29-1, pp 13-35

Lee, P. (2008) Long-term low friction; an investment framework which works for the beneficiaries rather than their agents, RSA working paper Tomorrow's investor

Lerner, J, M. Sorensen and P. Stromberg (2008) Private Equity and Long-Run Investment: The Case of Innovation, Harvard University Department of Economics working paper

Lerner, J., A. Schoar and W. Wong (2005) Smart Institutions, Foolish Choices? The Limited Partner Performance Puzzle, NBER Working Papers 11136

Lev, B., S. Radhakrishnan and M. Ciftci, (2005) The Stock Market Valuation of R&D Leaders, NYU Working Paper No. 2451/27475

Lev B. and S. Radhakrishnan (2004) The valuation of organization capital, in: Corrado, Haltiwanger, Sichel (eds), Measuring capital in the new economy

Levine, R. (2005) Finance and growth: Theory, evidence and mechanisms, in Aghion and Durlauf (eds), The Handbook of economic growth

Levine, R. (2002) Bank-Based or Market-Based Financial Systems: Which is Better? William Davidson Institute Working Paper No. 442

Levine, R., N. Loyaza, and T. Beck (2000a) Financial Intermediation and Growth: Causality and Causes, Journal of Monetary Economics, 46, pp 31-77

Levine, R., Norman L. and T. Beck (2000b) Finance and the Sources of Growth, Journal of Financial Economics, 58, pp 261-300

Levine, R. and S. Zervos (1998) Stock Markets, Banks, and Economic Growth, The American Economic Review, 88-3, pp 537-558

Lindström, T. and Maula, M. (2007) 'Venture Capital Performance Determinants and Differences between Europe and Northern America, Helsinki University of Technology Institute of Strategy and International Business, Working Paper.

Long, W. F. and D. J. Ravenscraft (1993) LBOs, Debt and R&D Intensity, Strategic Management Journal, 14, Special Issue: Corporate Restructuring

Lundvall, B.A. (ed.) (1992) National systems of innovation, towards a theory of innovation and interactive learning, Printer Pub Ltd.

Maas, C. (2009) Adviescommissie Toekomst Banken, Naar herstel van vertrouwen, report commissioned by the Dutch Banking Association

Machado, C.M. and K. Raade (2006) Profitability of Venture Capital Investment in Europe and the United States, European Economy Economic Paper No. 245, March

Mauboussin, M.J. (2008) More Than You Know; Finding Financial Wisdom in Unconventional Places - Updated and Expanded, Columbia Business School Publishing

Mauboussin, M.J. (2006) Long-Term Investing in a Short-Term World; How psychology and incentives shape the investment industry, LMCM

Mayer, C., (2009) The credit strike highlights the need for reform, in Financial Times, 16-2-2009

Mayer, C. (2002) Financing the new economy: financial institutions and corporate governance, Information economics and policy 14, pp 311-326

Mayer, C, (1988) New issues in corporate finance, Elsevier

McConnell, J. and H. Servaes (1990) Additional evidence on equity ownership and corporate value, Journal of Financial Economics 27, pp 595–613

McKinsey & Co (2006) Payment Services in The Netherlands: An Analysis of Revenues and Costs for Banks, final report, July

Mertens, G.M.H. and. I.H.C. Blij (2008) Inzicht in Onzekerheid; Onderzoek naar de risicoparagrafen in de jaarverslagen 2007 van beursfondsen, Eumedion/NIVRA, Juni 2008

Meza, D. de, B. Irlenbusch and D. Reyniers (2008) Financial Capability: A Behavioural Economics Perspective, London School of Economics, prepared for the Financial Services Authority, July 2008

Miller, M. H. (1986) Financial Innovation: The Last Twenty Years and the Next, The Journal of Financial and Quantitative Analysis, 21-4, pp 459-471

Millstein, I. (2008) Directors and Boards amidst Shareholders with ConflictingValues: The Impact of the New Capital Markets, Financial Reporting Council's Charkham Memorial Lecture

Mohnen P., F. C. Palm, S. Schim van der Loeff and A. Tiwari (2008) Financial constraints and other obstacles: are they a threat to innovation activity?, CESIFO Working Paper 2204

Morck R, Schleifer A and Vishny R (1988), "Management ownership and market valuation, an empirical analysis", Journal of Financial Economics, 20, pp 293-315

Mott, D. (2008) Supporting Cleantech Enterprise in the UK: The Role of Incubators, Submission to the Shadow Cabinet, Working Group

Myers, S. C. and N.S. Majiuf (1984) Corporate financing and investment decisions when firms have information the investors do not have, NBER Working Paper 1396

Myners, P. (2001) Institutional Investment in the United Kingdom: A Review, report

Napier, G. (2008) An ICE Study of Risk Capital Policies in Six Countries- Synopsis Report

Napier, G. and J. van den Heuvel (2007) The Dutch Risk Capital Market and the Role of Government Policies, National Policy Report Netherlands

Nederlandse Mededingingsautoriteit (Nma, 2009) Rekening-courantkredietverlening aan het MKB

New York Times (2008) Role China in Credit Crisis

NVP and PWC (2009) Ondernemend vermogen; De Nederlandse private equity-markt in 2008, april

NVP and Ernst & Young (2004) Survey of the Economic and Social Impact of Buyouts in the Netherlands

OECD (2008) Science, Technology and Industry Outlook 2008

OECD (2008) Intellectual assets and value creation; synthesis report, 2008

OECD (2007a) Review of competition in the Dutch retail banking sector, Working Party No. 2 on Competition and Regulation

OECD (2007b) Innovation and growth

OECD (2006) The SME financing gap

OECD (2005) Ageing and Pension System Reform; Implications for financial markets and economic policies

Orhangazi, O. (2008) Financialisation and capital accumulation in the non-financial corporate sector: A theoretical and empirical investigation on the US economy: 1973-2003, Cambridge Journal of Economics 2008, 32, pp 863-886

O 'Sullivan, M. (2007) The EU'S R&D deficit and innovation policy

Palter, R. N. W. Rehm and J. Shih (2008) Communicating with the right investors, in: McKinsey Quarterly, April

Papaioannou, E. (2007), "Finance and growth: A macroeconomic assessment of the evidence from a macroeconomic angle", ECB Working Paper 787.

Parenteau, R.W. (2005) The Late 1990s' US Bubble: Financialization in the Extreme- in: Epstein (red) - Financialization and the world economy, Edward Elgar

Peng, L. and A. Roell (forthcoming) Executive pay and shareholder litigation, Review of Finance

Perez, C. (2004) Finance and technical change: A long-term view, in: H. Hanusch and A. Pyka, eds., The Elgar Companion to Neo-Schumpeterian Economics, Edward Elgar, Cheltenham

Perez, C. (2002) Technological Revolutions and Financial Capital; the Dynamics of Bubbles and Golden Ages, Edward Elgar

Permira (2008) Annual report 2007

Petersen, M.A. and R.G. Rajan (1995) The effect of credit market competition on lending relationships, The Quarterly Journal of Economics, 110-2, pp 407-443

Philippon, T. and A. Reshef (2009) Wages and human capital in the U.S. financial industry:1909-2006 NBER Working paper 14644

Plender, J. (2009) Originative sin; the future of banking in Financial Times

Popov, A. and P. Roosenboom (2008c) Does Private Equity Investment Spur Innovation? Evidence from Europe, working paper

Popov, A. and P. Roosenboom (2008b) On the Real Effects of Private Equity Investment: Evidence from New Business Creation, working paper

Popov, A. and P. Roosenboom (2008a) Venture capital and innovation in the European bio-tech industry, ECB mimeo

Porter, M., 1992, Capital disadvantage: America's failing capital investment system, Harvard Business Review (September–October), pp 65-83

Praag, C. M. van (2005), Relatie beloning van topbestuurders en bedrijfsprestaties, literatuuronderzoek in opdracht van de Monitoring Commissie Corporate Governance Code

PWC (2008) Recasting the reporting model; How to simplify and enhance communications, opportunities for discussion

Raaij, W.F. (2008) Financieel toezicht en de consument, ESB 93

Rajan, R.G. (1992) Insiders and outsiders: The choice between informed and arm's-length debt, Journal of finance, 47-4, pp 1367-1400

Rajan, R.G. and L. Zingales (2001) Financial systems, industrial structure and growth, Oxford review of economic policy, 17-4, pp 467-482

Rajan, R.G. and L. Zingales (1998) Financial dependence and growth, American Economic Review, 1998, 88-3, pp 559-586

Rajan, R.G., H. Servaes and L. Zingales (1997) The Cost of Diversity: The Diversification Discount and Inefficient Investment, The Journal of Finance, 55-1, pp 35-80

Rappaport, A. (2005) The Economics of Short-Term Performance Obsession, in: Financial Analysts Journal, 61-3

Robinson, J. (1952) The Rate of Interest and Other Essays, Macmillan, London

Roll, R. (1986) The hubris theory of corporate takeovers, Journal of Business, 59, pp 197-216

Rooijen-Horsten, M., D. van den Bergen and M. Tanriseven (2008) Intangible capital in the Netherlands: A benchmark, CBS

Ryan, H. and R.A. Wiggins (2001) The influence of firm-and manager-specific characteristics on the structure of executive compensation, Journal of Corporate Finance, 7-2, pp 101-123

Sarkozy, N. (2008) speech Toulon, 26 September

Scharfstein, D.S. and J.C. Stein (2000) The Dark side of Internal Capital markets, Journal of Finance 55

Scharfstein, D.S. and J. C. Stein (1990) Herd Behavior and Investment, The American Economic Review, 80-3, pp 465-479

Schenk (2007) 'Private equity remt onderzoek en ontwikkeling', NRC,10 april

Schmitt, J. and N. Lane (2009) An International Comparison of Small Business Employment, CEPR Working Paper August

Schrage, M, (2008) Is R&D a meaningful measure of innovative capacity? In: Barysch, Tilford and Whyte (eds) The Lisbon scorecard VIII; Is Europe ready for an economic storm?, CER

Schumpeter, J. A. (1911:1961), The Theory of Economic Development, New York: Oxford University Press.

Serres, A. de, S. Kobayakawa, T. Slok and L. Vartia (2006). 'Regulation of financial systems and economic growth', OECD Economics Department Working Papers, No. 506, OECD Publishing

Shackle, G.L.S. (1955:1972), Epistemics and Economics, Cambridge UK: Cambridge University Press

Shiller, R.J. (2003) From efficient markets theory to behavioral finance, in: Journal of Economic Perspectives, 17-1, pp 83-104

Shin, H. and R.M. Stulz (1998) Are Internal Capital Markets Efficient?, The Quarterly Journal of Economics, 113-2, pp 531-552

Shleifer A. and R. Vishny (1997) The limits of arbitrage, Journal of Finance, 52, pp 35-55

Shleifer, A. and R. Vishny (1990) Equilibrium short horizons of investors and firms

Shleifer, A. and R. Vishny (1986) Large shareholders and corporate control, Journal of Political Economy, 94, pp 461-488

Siegel, J. J. (2007) Stocks for the Long Run, McGraw-Hill Companies; 4nd edition

Sirri E. R. and P. Tufano (1998) Costly Search and Mutual Fund Flows, The Journal of Finance, 53-5, pp 1589-1622

Soros, G. (2008). The New Paradigm for Financial Markets. Public Affairs, New York

Stein, J.C. (2009) Sophisticated Investors and Market Efficiency, working paper, 2009 AFA Presidential Address

Stein, J.C. (2005) Why Are Most Funds Open-End? Competition and the Limits of Arbitrage Quarterly Journal of Economics, 120-1, pp 247-272

Stein, J.C. (2003) Agency, information and corporate investment, in: Handbook of the Economics of Finance edited by Constantinides, Harris and Stulz

Stein, J.C. (2002). 'Information production and capital allocation: Decentralized versus hierarchical firms', Journal of Finance, 57-5, pp 1891-921

Stein, J.C. (1989) Efficient capital markets, inefficient firms: A model of myopic corporate behavior, The Quarterly Journal of Economics 104-4, pp 655-669

Stein, J.C. (1988) Takeover threats and managerial myopia, Journal of Political Economy 96-1, pp 61-80

Stiglitz, J.E. (1985) Credit Markets and the Control of Capital, Journal of Money, Credit and Banking, 17-2, pp 133-152

Stiglitz, J.E. and A. Weiss (1981) Credit Rationing in Markets with Imperfect Information, The American Economic Review, 71-3, pp 393-410

Stockhammer, E. (2004) Financialization and the slowdown of accumulation, Cambridge Journal of Economics, 28, pp 719–41

Stultz, R. (2007) Hedge Funds, past, present and future, mimeo

Tabaksblat, M. (2003) De Nederlandse corporate governance code; Beginselen van deugdelijk ondernemingsbestuur en best practice bepalingen Commissie corporate governance, 9 december 2003

Tadesse, M. (2002) Financial Architecture and Economic Performance: International Evidence, Journal of Financial Intermediation, 11-4, pp 429-454

Tobin, J. (1965) Money and economic growth, Econometrica, 33, pp 671–84

Tuckett, D. (2009) Adressing the psychology of financial markets, paper for IPPR Tomorrow's Capitalism project

Tylecote, A. (2007) The role of finance and corporate governance in national systems of innovation, Organization studies 28-10, pp 1461-1481

Wijffels, H. (2008) 'Hypotheekcrisis was roofpartij', Volkskrant, 27 september 2008

World Economic Forum (2008) Financial development report 2008

Wolf, M. (2009) Seeds of its own destruction, in: Financial Times, March 9

Wolf, M. (2007) Capitalism's permanent revolution, in: Financial Times, June

Worldbank (2009) Doing Business

Wright, M., S. Thompson, and K. Robbie (1992) Venture capital and management-led leveraged buy-outs: European Evidence, Journal of Business Venturing, 7-1, pp 47-71

Wurgler, J. (1999) Financial Markets And The Allocation Of Capital, July 1999, Yale ICF Working Paper 99-08

Zahra, S. A. (1995) Corporate entrepreneurship and financial performance: The case of management leveraged buyouts, Journal of Business Venturing, 10-3, pp 225-247

List of interviewees

- Rients Abma, Managing Director Eumedion
- Miqdad Asaria, former credit strategist Deutsche Bank and Bank of America, London
- Michiel Bijlsma, researcher CPB
- Victor Cramer, Financial Counselor, Dutch Embassy Washington DC
- Jan Dexel, Dutch Ministry of Economic Affairs, Entrepreneurship
- Martin Eijgenhuijsen, APG Portfolio Manager Healthcare
- Marco Hengel, Dutch Ministry of Finance, Financial Markets
- Marc Jobling, Association of British Insurers
- Paul Lee, Hermes Investors
- Aalt Klaassen, researcher and consultant capital markets industry
- Dinand Maas, Dutch Ministry of Economic Affairs, Entrepreneurship
- Michael Mauboussin, Legg Mason Capital Management and Columbia University
- Thomas Mayer, European Venture Capital Association
- Joost van Mierlo, London correspondent Financieel Dagblad
- Daniel Mulder, Dutch Private Equity Association (NVP)
- David Paterson, National Association of Pension Funds UK
- Carlota Perez, professor Cambridge, Sussex and Tallinn
- Etienne Pollard, Good Energies London
- Alexander Popov, European Central Bank-Financial Research Division
- Stephan Raes, Head Economic Department, Dutch Embassy Washington DC
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- Sanne Tonneijck, Dutch Ministry of Economic Affairs, Innovation
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