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PUBLIC INTERVENTION IN CAPITAL MARKETS; THE CASE OF THE NETHERLANDS

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by

Arnoud W.A. Boot

Professor of Corporate Finance and Financial Markets
University of Amsterdam

and

Anjolein Schmeits

Doctoral Candidate, Tilburg University

University of Amsterdam
Department of Financial Management
Roetersstraat 11
1018 WB Amsterdam
The Netherlands

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1 Introduction

The involvement of a government in the funding of corporations is part of widespread government activism. Understanding government activism is therefore important. At the most general level, government activism seeks to affect the design of the society at large. For the Netherlands, the driving force has been the ideal of a social welfare state. The activist-government attitude is reflected in a substantial share of government expenditures as percentage of the gross national product. This share currently stands at 53%, after having reached an all time record of approximately 62% in 1983.

The desired specificity of this study does not allow an indepth analysis of government activism in general. We will therefore focus on a narrower interpretation of government activism; i.e. the 'industrial policy' of the Dutch government. We define 'industrial policy' as the set of measures aimed at creating or facilitating an optimal industrial structure, with a broad Anglo-Saksian interpretation of industry (services, manufacturing, trade, etc.). Industrial policy involves generic measures, such as investments in education and infrastructure, but could also involve highly specific and targeted measures such as investment (or tax) credits for research and development in a specific segment of the industry. Government intervention in the capital market, the prime object of this study, could be interpreted as an example of industrial policy. It could similarly be generic, or highly specific and targeted. Another important distinction is whether the government intervention in the capital market *substitutes* for or *complements* other industrial policy measures.

The government intervention in the capital market (in the context of the funding of corporations) could just be a *substitute* for another type of industrial policy measure, or could be 'uniquely' and directly targeted at resolving a friction in the functioning of the capital market. In the latter case, it would *complement* other industrial policy measures. An example that could fall in either one category is a government-guaranteed loan. The government could introduce these to provide subsidized funding for specific industries; this could make it an alternative (substitute) to tax credits[1]. Alternatively, the government may feel that the capital markets do not function well. In that case, some well-deserving investment projects may not obtain funding at reasonable cost unless that government guarantees the

[1] This does not explain why the government might want to subsidize certain activities. One rationale could be that the value of an activity to society (the 'social value') substantially exceeds the value to the entrepreneur (the 'private' value). The government subsidy now compensates the entrepreneur for the favorable externality. While plausible and economically rational, these arguments are dangerous as well. Dutch government involvement in the 70's stretched the applicability of these arguments. Implicitly, the government considered the employment created by existing businesses a (favorable) externality, and thus decided to subsidize 'decaying' industries. See Section 5 and Section 6.

credit. If the problem is a malfunctioning of the capital market solely, government intervention should not impose a loss on the government. The government could charge the borrower a cost-effective fee for the guarantee, and improve investments without subsidy. This makes the guarantee a complementary instrument that directly addresses the (potential) *failure* of capital markets.

In practice we do indeed observe these dual purposes (complement *and* substitute) for government intervention in the capital markets. Often they are even somewhat mixed together. For example, the government may only address the 'failure' of capital markets for those investments that she would like to promote (thus for those that she might be willing to subsidize).

Industrial policy and the potential failure of financial markets therefore often go hand-in-hand in explaining government intervention in capital markets. For that reason, we will look separately at rationales for industrial policy in general, and the functioning of capital markets. In the context of the Netherlands this forces us to focus on the structure and state of the Dutch industry (Section 2) and the functioning of the Dutch financial sector (Section 3). The structure and state of the industry is often a deciding factor for the actual industrial policy. The functioning of the financial sector could potentially point at frictions in the funding of Dutch corporations.

We then move on to theoretical motives for government intervention in the capital market (Section 4). Many arguments on the potential disfunctioning of capital markets can be found in the extensive literature on financial intermediation. These sections provide the foundation for evaluating the actual intervention of the Dutch government in the funding of corporations. An overview of all measures implemented by the Dutch government can be found in Section 5. The evaluation follows in Section 6.

2 A Macro Perspective on the Structure and State of the Dutch Industry

2.1 Introduction

A comparison of the employment and value-added per sector of the economy (see *Tables 2.2 through 2.4*) gives a very consistent picture of the evolution of Dutch industry over the last decades. The importance of the agriculture-sector has steadily declined. Manufacturing and construction peaked in the 60's and are in decline ever since. The service sector is the big winner, and is prospected to continue to grow steadily in the future (see also *Table 2.3*).

The general picture that emerges is quite similar to other (Northern) European countries. Of particular importance for the Netherlands is its performance vis-a-vis Germany. A comparison with Germany learns that manufacturing in the Netherlands has suffered more. Between 1960 and 1990, value added in manufacturing dropped from 33% to 24% of that of the total industry in the Netherlands (see *Table 2.4*), while in Germany 'only' a drop from 42% to 38% occurred. One explanation is that Germany

continues to rely heavily on its car and machinery industries. The Netherlands, on the other hand, lives up to its past as a 'trading empire' rather than a manufacturing country.

	1970	**1975**	**1981**	**1985**	**1990**	**1993**	**1994**	**1995**
Government (Public Deficit) (% of GDP)	1.2	3.2	6.8	6.2	4.6	3.2	1.9	2.0
Unemployment (x 1,000)	55	206	307	482	419	481	547	538
Ratio Inactive/Active (%)	n.a.	n.a.	76.3	83.2	82.1	83.2	82.9	81.6
Real Wages Median Worker (Purchasing power) (% change per year)	5.9	2.5	-4.2	1.5	2.4	0.6	-0.4	0.9
Labor Cost Coefficient* (%)	83.5	93.8	95.4	88.4	80.7	86.5	84.0	84.2
Savings Households (% of GDP)	n.a.	n.a.	10.0	7.4	10.3	8.1	7.9	9.2
Investments Industry (% of GDP)	15.2	11.8	10.5	12.0	13.1	11.7	11.1	11.8
Profits Industry* (%)	<12	<5	<4	<9	12.9	6.1	8.5	8.4
* Measured as a percentage of Value Added Industry. A labor cost coefficient of *x*% means that (100-*x*)% is residual income, which measures profits industry (in %), interest payments and taxes.								

Table 2.1: Some Macro Statistics of the Dutch Economy (Source: CPB, 'Centraal Economisch Plan', various editions)

This account -while accurate- is quite incomplete. Foremost, it ignores the deep crisis and structural adjustments that have taken place in the 70's and 80's. These developments are particularly relevant for this study, because they have shaped the Dutch debate on industrial policy and explain much of the specific measures that had been introduced over those years. Another missing element is that it does not give an assessment of the current strengths and weaknesses of the Dutch economy. These are of importance for the current attitude and initiatives in the area of industrial policy. Both the historic account and the more future oriented assessment of current strengths and weaknesses therefore need further study.

	1849	**1930**	**1965**	**1970**	**1994**

Agriculture	44.1%	20.6%	8.6%	6.1%	5.6%
Manufacturing and Construction - Construction	24.1%	36.4%	41.9%	31.8%	27.5% (8.3%)
Services - Trade/Transport/Distribution - Financial Services - Other Market Sector - Government	31.8%	43.0%	49.5%	62.1%	66.9% (27.2%) (4.0%) (20.5%) (15.1%)
Total	100%	100%	100%	100%	100%

Table 2.2: Distribution Employment per Sector (in %) (Sources: CPB, CBS, various publications)

	1960	**1980**	**1994**	**Growth 94/96** (% per year)
Agriculture	465	279	255	-1.5%
Manufacturing and Construction	1715	1489	1254	-0.3%
Services - Government	1512 (183)	2304 (589)	3049 (689)	+2.5% (+1.3%)
Government (Non-Services)	490	712	676	-1.2%
Total	4182	4784	5323	+1.3%

Table 2.3: Employment per Sector (x 1,000) (Sources: CPB, CBS, various publications)

	1960	**1990***
Agriculture	9.7%	5.5%
Manufacturing	33.4%	23.9%
Energy-Sector (Natural Gas)	6.9%	8.3%
Construction	8.2%	7.1%
Non-Government Services	43.2%	60.0%
Total Market Sector	100%	100%

* Sectors sum up to more than 100% of the market sector, due to a negative interest margin component that is excluded from the individual sector figures.

Table 2.4: Distribution of Value-Added over Sectors (in %) (Source: CPB, 'Centraal Economisch Plan', 1996)

2.2 Crisis and Structural Adjustments 1970-1990

The macro-statistics in *Table 2.1* underscore the severe crisis and period of structural adjustments in the 70's and 80's; from massive unemployment to unprecedented government deficits. A particularly revealing statistic was the labor cost coefficient. It reached unprecedented levels. Note that the complement of this coefficient is the residual income of the industry. In 1981 the labor cost coefficient reached 95.4%, leaving just 4.6% as residual income. With interest expenses and taxes still to be paid, the profits were even lower. As a consequence, the financial strength of corporations deteriorated rapidly. Not surprisingly, investments were sluggish and mainly aimed at reducing labor dependence. Dutch manufacturing and other industry also faced the negative consequences of the relatively strong guilder. This was the artifact of Dutch successes in natural gas exploration (and export)[2].

In the period 1973-1976, the unemployment doubled (from 115,000 to 220,000; not much more than 5% of the work force, by today's standards far from unusual). This then unprecedented increase in unemployment became the number one concern on the government's agenda. By 1976, the government presented its first report on the unemployment crisis, the 'Nota Selectieve Groei' (Report of 'Measured Growth').

The report introduced a 2.5 billion generic investment credit facility (the WIR, 'Wet Investerings-Regeling') and a 1.5 billion labor cost subsidy. Relatively minor facilities were created for sector-specific support. Noteworthy is in this respect that the sector-specific support was delegated to an autonomous institute, the NEHEM ('Nederlandse Herstructureringsmaatschappij'). As is quite common in Dutch society, a tri-partite board (government, employers and workers (labor unions)) directed the operations of NEHEM. The mission of this institute was to strengthen and support the Dutch industry. In practice, it became only involved in fundamentally ill industries and healthy businesses did not want to be associated with this institute. Not surprisingly then, the sector-specific support was 'wasted' on weak companies in mature, if not decaying, sectors rather than being utilized for promising sectors.

By 1979, matters had worsened rather than improved. In the next nota, the 'Sector Nota' of 1979, the government recognized that the facilities were insufficient to overcome the structurally high labor costs (+33% relative to the EU average, +15% vis-a-vis Germany). The Sector Nota augmented the importance of sector-specific support over generic investment credits, but simultaneously recognized the inabilities of NEHEM. In 1980 the next report was published, the WRR report 'De plaats en toekomst van de Nederlandse industrie' ('The State and Future of the Dutch Industry'). This report further emphasized the importance of sector-specific policies, and advocated a professional (non-tripartite) management structure (thus *not* involving NEHEM).

[2] The popular press has dubbed this 'the Dutch disease'. The competitiveness of the Dutch industry suffered as a result of the natural gas 'bonanza'.

This became the 'Maatschappij voor Industriële Projecten' (MIP) (largely owned by the Dutch government). The focus had now (at last) fully been diverted from support for weak companies in dying industries to new promising enterprises[3].

2.3 Strengths and Weaknesses of the Dutch Economy

The Dutch economy today is performing well. Public finances and unemployment are under control; the Netherlands even realized the highest job-growth in Western Europe last year. This is partially a direct artifact of the relatively high growth rate of the economy at this moment. On the dark side however wages are flat, private sector investments are low and -in the European rankings on GDP per capita- the Netherlands ranks only in the middle (after being top-ranked not that long ago).

These statistics reflect the restructuring of the Dutch economy in the last 15 years. For many years now wages have been virtually frozen; as a result labor costs have come down drastically. Real labor costs vis-a-vis Germany have now put the Dutch at a 15% advantage (fully reversing the 15% disadvantage in 1979). This cost-advantage has encouraged growth, and has made the Dutch a price-competitor. On the downside however, it may have reinforced the heavy emphasis of Dutch industry on relatively low value-added activities. Some concern in the government exists about this focus; adequate growth in the future might be hampered.

The structural adjustments have improved the profitability of Dutch industry. Profits have reached satisfactory levels; investments however seem relatively low. The latter is somewhat surprising given the openness of the country and the high saving rates (households and government together produce a record high savings-surplus).

These concerns have induced the government to direct their policies at stimulating investments and tilting the focus of Dutch industry more towards high value-added activities. With respect to the sluggish private sector investments the Dutch government now stays away from generic investment credits (like the WIR, see Section 2.2). Instead she now focuses on the general functioning of markets ('marktwerking'). For example, she may seek to remove rigidities from the labor market, or reduce undue administrative burdens on industry. And indeed, she may also want to optimize the functioning of the capital market.

The concern about the lack (or shortage) of value-added activities might be legitimate, but does not translate easily in government policy. Also in this case government intervention could be directed at the functioning of markets. The Dutch government has gone beyond this, and is actively promoting a more knowledge and technology oriented society. Among other things, this has led to a 'technology-fund' for the funding of high-tech new industrial activities (see Section 5.2 and the Appendix).

[3] In 1991 the MIP merged with a private sector venture capital firm. See Section 5.2 and the Appendix.

3 Financing Patterns: the Financing of the Dutch Financial Sector

A primary function of the financial system is to facilitate the transfer of resources from savers ('surplus units') to those who need funds ('deficit units'). In a well-functioning financial system resources are efficiently allocated and transferred at low cost. In such a system transaction costs are lower, and this should lower the cost of capital. Moreover, frictions in the financial system may not only raise the cost of funding, but could also ration out borrowers. The availability and cost of funding depend therefore on the development of the financial system (see Boot and Thakor [1996] and Rajan and Zingales [1996]). In Section 4 we give a detailed overview of the financial intermediation literature, highlighting the frictions and market failure arguments from a theoretical perspective. In this section we provide an overview of Dutch financing patterns: the sources of funds and their main providers. The *Tables 3.1 through 3.5* summarize these financing patterns for the Netherlands.

The most important suppliers of capital are institutional investors (pension funds and insurance corporations) and commercial banks. During the last decade these accounted for over 80% of the annual net supply of funding (see *Table 3.2*). Both institutional investors and banks mainly participated in domestic bond financing and private placements. The provision of risk capital (equity) was mainly in the hands of venture capital firms (see *Table 3.1*).

From *Table 3.3* furthermore it follows that industrial corporations absorb approximately a quarter of the annual net demand in Dutch capital markets. The leverage ratios of non-financial listed corporations average at about 60% of total assets (in book values), with an even contribution of short-term and long-term debt financing (see *Table 3.4*). The Dutch bond market only plays a very minor role in the provision of debt to non-financial corporations. This market is characterized by 'thin' trade and a very low number of corporate bonds outstanding (only 83 in 1995, with 13 new issues). Some of the very large Dutch corporations are active players in the Eurobond market. The private debt market on the other hand is very well developed. The main funding sources of the non-financial listed Dutch companies are banks and the private debt market. In 1995 these accounted for over 75% of total debt financing (see *Table 3.5*).

With respect to equity financing similar remarks can be made. The Dutch equity market is relatively large by international standards in terms of total market capitalization. At the end of 1995 the total market capitalization was Dfl. 571,473 mln., with a total number of 532 listed stocks. However, only relatively large corporations are able to place new issues in the market. As a source of new financing therefore this market is relatively unimportant.

	Institutional Investors	**Banks**	**Venture Capital**

			Funds[*]
Balance Sheet Total (x billion Dfl.)	929	1,602	4
Composition (in %):			
Bonds			
- Domestic Issue	20.0%	9.9%	
- Foreign Issue	6.2%	-	
Shares (Equity)			
- Domestic Issue	11.8%	1.4%	87.6%[**]
- Foreign Issue	13.4%		
Private Placements	27.5%	24.0%	
Mortgages	7.1%	20.5%	

[*] This includes a somewhat broader set of venture capital sources than the venture capital firms in Section 5.2
[**] Mainly domestic, but not yet fully classified

Table 3.1: Composition of the Balance Sheet of Financial Intermediaries: Asset Holdings of Securities at the end of 1995 (Sources: SEO, CBS, DNB, NVP)

Year	Total	Pension Funds and Insurance Corporations	Banks	Households and Industry
1986	68,739	32,282	25,931	9,655
1987	54,552	31,936	18,361	4,343
1988	67,368	30,289	33,051	3,762
1989	51,335	28,653	18,363	2,744
1990	59,248	29,741	22,116	5,980
1991	62,716	33,205	16,964	10,723
1992	77,657	34,525	26,471	13,743
1993	82,155	33,472	37,744	5,860

Table 3.2: Sources of Annual Net Supply on the Capital Markets (Domestic) (x Dfl. 1 mln) (Source: DNB (Dutch central bank), Annual Report 1994)

Year	Total	Public (Government)	Households	Industry	Banks	Other Financial Institutions
1986	55,422	21,522	9,768	12,111	6,766	2,439
1987	60,115	29,616	10,183	12,886	5,258	- 61
1988	75,643	30,977	11,995	18,624	8,536	2,481
1989	73,956	2,734	15,480	18,827	6,815	6,806
1990	55,686	24,189	11,380	13,870	1,810	1,626
1991	65,861	22,901	10,386	20,224	1,090	7,440
1992	60,852	22,520	15,491	14,783	1,705	3,786
1993	86,879	13,840	24,367	25,749	13,403	7,890

Table 3.3: Sources of Annual Net Demand on the Capital Markets (Domestic) (x Dfl. 1 mln) (Source: DNB (Dutch Central Bank), Annual Report 1994)

Year	**Total Assets** (x Dfl. mln)	**Equity** (% of Assets)	**Debt** (% of Assets)		
			Total Debt	**Long-Term Debt**	**Short-Term Debt**
1977	149,769	33.7%	66.3%	29.8%	36.6%
1978	161,600	33.2%	66.8%	29.9%	36.8%
1979	171,233	31.7%	68.3%	30.1%	38.2%
1980	197,101	31.9%	68.1%	30.6%	37.4%
1981	224,917	33.2%	66.8%	31.2%	35.6%
1982	244,369	33.2%	66.8%	32.6%	34.1%
1983	254,631	33.2%	66.8%	33.9%	33.0%
1984	278,586	35.0%	65.0%	34.1%	30.9%
1985	305,518	36.9%	63.1%	32.1%	31.0%
1986	286,518	37.8%	62.2%	31.4%	30.9%
1987	272,633	37.4%	62.6%	30.1%	32.5%
1988	255,723	38.5%	61.5%	30.7%	30.8%
1989	301,478	38.8%	61.2%	30.0%	31.2%
1990	324,720	37.6%	62.4%	29.4%	33.0%
1991	333,486	35.1%	64.9%	31.0%	33.9%
1992	332,408	35.4%	64.6%	31.0%	33.6%
1993	341,933	35.5%	64.5%	30.4%	34.1%
1994	392,436	38.1%	61.9%	30.0%	31.9%
1995	386,909	39.1%	60.9%	28.7%	32.2%

Table 3.4: Financial Structure of Dutch Corporations (Non-Financial Listed Companies) (Source: CBS, various financial statistics)

Year	Bank Financing (% of ...)			Bond Financing (% of ...)		Other* (% of ...)		
	Short Term Debt	*Long Term Debt*	*Total Debt*	*Long Term Debt*	*Total Debt*	*Short Term Debt*	*Long Term Debt*	*Total Debt*
1984	15.6%	40.1%	23.8%	21.5%	7.2%	47.6%	32.2%	42.4%
1985	12.4%	41.1%	21.7%	26.0%	8.5%	50.5%	26.0%	42.6%
1986	11.0%	33.5%	17.7%	33.4%	10.0%	53.1%	24.4%	44.5%
1987	15.1%	29.1%	19.5%	33.6%	10.7%	51.7%	25.8%	43.4%
1988	12.8%	29.2%	18.1%	35.3%	11.5%	50.9%	22.7%	41.7%
1989	14.5%	25.7%	17.9%	36.0%	11.1%	47.8%	25.0%	40.8%
1990	17.3%	29.9%	21.3%	32.8%	10.5%	46.9%	25.1%	39.8%
1991	15.9%	31.6%	20.9%	32.2%	10.4%	48.6%	24.8%	40.9%
1992	14.6%	29.3%	19.3%	31.1%	9.8%	48.7%	28.7%	42.4%
1993	10.8%	27.8%	16.3%	29.4%	9.4%	51.6%	32.2%	45.4%
1994	9.8%	20.8%	13.2%	29.7%	9.2%	52.8%	35.3%	47.4%
1995	10.8%	23.3%	14.5%	29.6%	8.7%	52.1%	35.3%	47.2%

* This category includes private debt and lease contracts. The categories bank financing, bond financing and other financing add up to approximately 70% of total debt financing. The remaining 30% consists of trade credits, subordinated loans and repayment provisions.

Table 3.5: Funding Sources of Dutch Corporations (Non-Financial Listed Companies) (% of Debt Financing) (Source: CBS, various financial statistics)

4 Capital Market Imperfections and the Theory of Financial Intermediation

4.1 Introduction

Many arguments on the potential disfunctioning of capital markets can be found in the financial intermediation literature. In this section we summarize the main arguments of this literature and describe the consequences for firms raising external capital. We then describe possible solutions for these problems and apply these ideas to the financing of different types of industrial corporations. Finally we will discuss the possibilities and desirability of government intervention in capital markets from this perspective; these observations will guide our evaluation of the Dutch practice in Section 6.

4.2 Asymmetric Information and Market Failure in Debt and Equity Markets

The -in this context- most important consequence of 'market failure' is that well-deserving investment projects may not obtain funding at reasonable cost or may not be financed (and undertaken) at all. Market failure may be caused by *'adverse selection'* and/or *'moral hazard'*-problems (see e.g. Akerlof [1970], Stiglitz and Weiss [1981] and Myers and Majluf [1984]). Adverse selection arises from ex ante information asymmetry between a firm and its financiers with respect to its current operations, the quality of its investment projects and/or its future prospects. If a firm's management has more information about its own quality than outsiders have, outsiders cannot assess the firm's true value and therefore can only assign an average quality (and as a consequence, average terms of financing) to this firm. This may have two possible consequences.

First, it may induce high-quality firms to refrain from external financing and forego investments. This may occur because the terms of financing are unfavorable (higher quality firms 'suffer' too much from the presence of lower quality firms). This then may trigger a mechanism in which only lower quality firms would seek financing, and financiers -rationally anticipating this- negatively adjust their terms of financing, resulting in a total market breakdown.

A second consequence of this ex ante information asymmetry (and the resulting high funding cost) is that it may create moral hazard (or agency) problems. Firms may alter their investment behavior ex post (by e.g. increasing the risk of their investment strategies, underinvesting in (firm-specific) effort and/or by engaging in other types of opportunistic behavior). This in turn will again increase the firm's funding cost, since this behavior will be rationally anticipated by investors, and may result in 'underinvestment'. Note that in general these moral hazard problems occur after contracting due to the existence of ex post information asymmetry, i.e. if a firm's actions are not (completely) observable and/or verifiable by outsiders.

Informational problems therefore may distort the efficient allocation of capital in the economy. Different types of firms differ in the informational problems they pose for their financiers, both in the

initial stage of financing and at the post funding stage. The informational problems may also fluctuate over the life-cycle of the firm. These problems are particularly severe for small (and young) firms with firm-specific assets (e.g. R&D firms), since these are characterized by a lack of a track record and low visibility. These firms also tend to be riskier and (possibly) have a wider scope for discretionary behavior.

4.3 Possible Solutions for Informational Problems

The informational problems which arise in conjunction with external financing are affected by the type of financial contracts (debt, equity or mezzanine financing) and its contract features (e.g. collateral, different types of covenants). Also the type of capital supplier (banks, venture capitalists, or the financial market) is important. Each of these capital suppliers serves a potentially different role in dealing with the informational problems and as a consequence may have an impact on a corporation's cost of funding. In the presence of informational asymmetries therefore financing implies not just a transfer of funds, but also embodies a transfer of control. Corporate governance aspects are therefore important. Below we will describe how each of the two dimensions 'contract type and features' and 'capital supplier' affect the informational problems pointed at in Section 4.2. Our focus is on how contracts and choice of supplier could mitigate the adverse effects of market failure on the allocation of capital in the economy (e.g. by increasing its *availability* and/or lowering its *price*). The *Tables 4.1 through 4.4* give an overview of these arguments and will link them to specific characteristics of the firms seeking (external) financing.

4.3.1 Financial Contracting Solutions

Note first that in order to prevent the adverse effects of 'mispricing' of information-sensitive financial claims (e.g. risky debt and/or equity) in the market, firms may follow a 'pecking order' (or: financing hierarchy) in the funding of their investment projects (see Myers and Majluf [1984]). Firms then prefer to finance their projects internally by retained earnings or other forms of financial slack. If a firm's financing needs cannot completely be satisfied by internal sources of funds and external financing is required, the firm prefers debt to equity, since debt is less informationally sensitive than equity; hence the firm may subsequently issue riskless debt, risky debt, mezzanine financing, and equity only as a last resort[4]. The opportunities for using this financing hierarchy however depend on the stage in a firm's life-cyle and the possibilities to build up financial slack. New and information-problematic start-up firms and

[4] Note however that if the information asymmetry between the firm and its outside financiers is sufficiently high, a firm with a viable projects may decide to forego investment instead of issuing any new securities at a bargain price.

growth firms which generate low cash flows in the beginning of their investment activities (e.g. R&D-firms) will be more restricted in this respect than more mature firms, generating more stable cash flow patterns.

Adverse selection problems in case of debt financing (and 'credit rationing') may be reduced by posting collateral (see e.g. Bester [1985]). The use of collateral reduces the required nominal interest rate set by lenders in competitive markets (note that collateralization therefore may also mitigate moral hazard (see e.g. Boot, Thakor and Udell [1989])). Furthermore, by posting collateral firms may credibly signal their quality to the market. By choosing a secured loan viable borrowers can separate themselves from lemons. The latter would suffer too much from the more likely loss of collateral (secured assets). The possibilities to pledge collateral however depend on the industry and the specificity of a firm's assets. It may not always be possible for borrowers to pledge collateral, especially for start-up firms with intangible assets. Also the (unlimited) liability in sole proprietorships may keep entrepreneurs from investing in projects, which may be viable but bear (relatively) high risks. Furthermore, the liquidation value of the firm's assets may depend on industry conditions, i.e. the price resulting from sale of (collateralized) assets may be lower during industry- and economy-wide recessions (Shleifer and Vishny [1992]).

Another self-selection device which may be applicable is the choice of the loan maturity (see e.g. Diamond [1993]), i.e. viable firms could separate themselves from lower quality firms by choosing (and repaying) shorter maturity loans. Note however that the possibility to use this self-selection device again depends on the cash flow patterns associated with a firm's investment projects.

Finally, firm managers could credibly signal the quality of their firms' assets to less informed outside investors by retaining a (substantial) stake in their own firm (and thereby giving up diversification benefits in their own investment portfolios; see Leland and Pyle [1977]). It should be noted however that a divestment by the firm's initial owners (causing a dilution in their stake in the firm) due to a significant need for external equity financing may -in the context of this signalling mechanism- be interpreted by the market as a symptom that the firm is unprofitable, and as a consequence may frustrate financing at reasonable terms (in the spirit of Jensen and Meckling [1976] furthermore a reduction in the stake of the controlling shareholder will enhance his incentives to behave opportunistically, resulting in more adverse financing terms).

So far we have discussed (potential) solutions to adverse selection problems in financial markets, in which viable firms try to credibly communicate their private information by their choice of contract type and/or contract features. It may however not always be possible (or desirable) for firms to signal this information, e.g. because the revelation of proprietary information may benefit their competitors (see e.g. Bhattacharya and Chiesa [1995] and Yosha [1995]). In these cases information

production by the capital supplier may be necessary to resolve informational problems and prevent market failure. This will be discussed in more detail below (see Section 4.3.2).

Potential agency problems associated with debt financing which impact the real operational activities of the firm are 'underinvestment' in projects and/or managerial effort, excessive risk taking ('risk shifting' or 'asset substitution') and 'empire building' (see Jensen and Meckling [1976], Myers [1977] and Jensen [1986]). Underinvestment arises if a firm is relatively highly levered (has a 'debt overhang'); a corporation which acts in the interests of its existing shareholders may forego favorable investment projects, because the returns generated by these projects would mainly be captured by the lenders. Similarly, high leverage may induce 'risk shifting'; the firm has the incentive to change its investment strategy towards riskier projects (due to the limited liability of corporate equity), thereby undermining the value of its debt.

These agency problems (conflicts of interest between debtholders and stockholders) may be mitigated by the use of collateral and covenants in debt contracts. Both contract features can decrease the borrowing firm's nominal funding rate and as such improve (ex post) incentives. Covenants may be either negative or affirmative. Negative covenants restrain the borrower from certain actions, such as spending more than a specified amount on capital expenditures or dividends, or stipulate that measurable financial variables satisfy certain minimums (e.g. minimum levels of capital). Affirmative covenants require a borrower to meet certain standards such as discharging contractual obligations and providing information at regular intervals (see Carey, Prowse, Rea and Udell [1993]). Note however that although covenants can be value-enhancing in solving the debtholder-shareholder conflict, they may also be value-reducing by preventing the borrower from investing in value-enhancing projects, i.e. covenants may limit a borrower's flexibility in future decision making (see e.g. Berlin and Mester [1992]). Again therefore the possibilities for use of covenants depends on the industry. The constraints in flexibility can be relaxed through implicit and explicit provisions for contract renegotiation (in a dynamic lender-borrower relationship). Information production and renegotiability therefore can mitigate the bad properties of covenants. We will come back to this later.

Investment incentive problems associated with risky debt financing may also be addressed by the use of conversion features and warrants in debt contracts (mezzanine-financing), i.e. by giving the debtholders the option to convert (part of) their debt claim in (newly issued or existing) shares (see e.g Green [1984] and Stein [1992]). These option claims impose a certain structure or 'shape' on the equity holders' residual claim[5], which alters their incentives to take risk (and thus mitigates 'risk shifting' and/or

[5] Note the analogy between equity in a levered firm and a call option, i.e. the equity claim in a levered firm can be interpreted as a European call option on the value of the firm, with an exercise price equal to the face value of the debt outstanding and a maturity equal to the maturity of these debt claims (see e.g. Merton [1977]). The value of this call option increases with an increase in risk.

'overinvestment'). The reason for this is twofold. First, the option premium implicit in the debt contract terms reduces the borrower's effective funding costs, which directly reduces incentives for risk-taking. Second, by using conversion options (as a bonding device) the current shareholders (partly) give away the benefits from risk-taking; if the warrants are exercised debtholders get a fraction of the firm's equity, whereas the (relative) fraction in the hands of the current stockholders decreases. This dilution makes excess risk-taking less attractive. The use of subordinated debt can be rationalized using similar arguments. Furthermore, in an analogous way, the combination of debt and warrants ('state contingent debt payments') can be shown to reduce 'underinvestment' moral hazard (see Chiesa [1992]). It could therefore be expected that corporations that are subject to potentially severe moral hazard problems (due to high lending terms) may prefer mezzanine-financing (or could only be financed through equity-like financial contracts).

Another solution to the abovementioned types of moral hazard finally could be the use of long term loan commitments (see e.g. Boot, Thakor and Udell [1989]), which also contain option characteristics (see Section 4.3.2).

'Empire building' incentives are most prevalent in larger (and more mature) corporations characterized by high free cash flows (financial slack), but few value-enhancing investment opportunities. This conflict of interest between firm management and shareholders arises because the manager may prefer to enlarge his private control benefits by investing in negative NPV projects over paying out these cash flows ('overinvestment'). This problem may be reduced by the use of debt claims. In this case the firm manager commits to repaying debt whenever possible, since he looses his control benefits in case of default; additionally, this may induce the manager to increase his efficiency in managing the firm ('control hypothesis of debt', see Jensen [1986]).

Type of Information Asymmetry and Consequences		**Financial Contracting Solution (Contract Type and Features)**	**Applicability (Type of Corporations)**
'Ex Ante' Information Asymmetry (*'Adverse Selection'*) → May Cause 'Moral Hazard' (see below)	'(Debt) Market Failure' → Credit Rationing	Use of Collateral → Multi-Dimensional Loan Contracts Choice of Maturity Structure Inside Owner's Stake in Firm	Depends on Industry and Asset Specificity - yes: firms with tangible non-specific assets - no: start-up firms with intangible assets in cyclical industry Depends on Cash Flow Pattern Depends on External Financing Needs
	'(Equity) Market Failure' → Underinvestment	Choice of Financing Hierarchy → Least Information Sensitive Claims	Depends on Stage in Lifecycle and Presence of Financial Slack - yes: mature firms with stable cash flow patterns - no: start-up firms with low initial cash flows (R&D, growth firms)
'Ex Post Information Asymmetry' (*'Moral Hazard'*)	*Manager-Shareholder Conflict*		
	* 'Effort Aversion/Underinvestment' * 'Perquisites Consumption' * 'Empire Building/Overinvestment'	Increase Equity Stake Manager (by Debt Financing) Choose Debt Contracts	Depends on External Financing Needs and Degree of Managerial Discretion (mature) firms with large free cash flows
	Stockholder-Debtholder Conflict		
	* 'Underinvestment' ('Debt Overhang') * 'Risk Shifting/Asset Substitution' 'Overinvestment'	Use of Collateral and Covenants Use of Multi-Period Commitments Use of Collateral and Covenants Use of Conversion Features and Warrants in Debt or Subordinated Debt (Mezzanine Financing) Use of Multi-Period Commitments	Depends on Asset Specificity and Flexibility Needs for Decision Making Depends on the Severity of Adverse Selection and Moral Hazard Problems and Managerial Discretion

Table 4.1: Overview of Financial Contracting Solutions to Informational Problems in Capital Markets

The agency costs of equity (e.g. 'perquisites consumption' or 'effort aversion') increase with the fraction of outside equity financing. The investment inefficiencies arising from this conflict of interest can be reduced by increasing the amount of debt financing, or by the original owner-manager committing to behaving in the interest of the shareholders. Furthermore, corporations which suffer from this type of problems may prefer to be monitored by outsiders.

In the exposition of some important insights from (financial) contracting theory given above, we have shown that financial contracts may be designed to mitigate specific agency problems, and hence can reduce a firm's cost of funding and increase the availability of capital (by making market failure less likely). *Table 4.1* briefly summarizes these arguments.

So far the focus has been on the firm's manager trying to either reveal his private information to the market or to commit to the desired behavior ('bonding') in a general sense, i.e. independent of the supplier of capital. The effectiveness of the different solutions described above however crucially depends on the informational role of the supplier of capital. In the next section we will therefore concentrate on this role and dicuss the interactions between firms and their capital suppliers: banks, venture capital firms and the financial market.

4.3.2 Funding Sources/Intermediation

Bank financing

The existence of banks (and other financial intermediaries) can be viewed as an institutional response to the inability of market-mediated mechanisms to efficiently resolve informational problems (see e.g. Bhattacharya and Thakor [1993]). Banks invest in information production to screen prospective borrowers ex ante, and to monitor them ex post (see Leland and Pyle [1977], Diamond [1984] and Ramakrishnan and Thakor [1984]). Banks may perform these activities in a more cost-efficient way than individual investors in the market by preventing wasteful duplication of information production and free-rider problems (which may occur in financial markets). Possible incentive problems that could arise through the delegation of monitoring activities to banks could be solved by banks holding a large and well-diversified portfolio of loans to corporations. The possibilities for diversification for banks however depend on the degree of (technological) uncertainty. Part of this uncertainty is exogenous and can therefore be diversified away. Another part however depends on management performance (and thus may be affected by moral hazard) and is endogenous and may be difficult to monitor. Theory furthermore predicts that relatively new borrowers without well-established reputations have the most to gain from bank monitoring and hence prefer bank loans, while older companies with a good public track record issue debt in financial markets (Diamond [1991]). Furthermore, firms with larger R&D-

expenditures have a wider scope for discretionary behavior. These firms therefore would require the highest degree of loan monitoring needed to prevent risk shifting and/or underinvestment moral hazard. Note finally that the information produced by banks may be reusable, either cross-sectionally or intertemporally.

Another important feature of bank financing is that it may allow for the development of long-term customer relationships and commitments between borrowers and lenders. One consequence of the development of bank-firm relationships may be the ability of the firm and its creditor to intertemporally share surplus (i.e. to smooth interest rates). This may increase a bank's willingness to finance credit-constrained firms (e.g. young or distressed firms), because it is easier for this bank to internalize the benefits from funding the firm (see e.g. Petersen and Rajan [1995]). Firms which generate low actual cash flows, but have a high potential for future cash flows (growth opportunities), may benefit from these long-term interactions. Since the uncertainty about these firms' prospects may be high, investors in the financial market may be forced to charge a high interest rate until this uncertainty is resolved; this could be extremely distortionary to the firms' incentives and hence might result in the firm not receiving credit at all (adverse selection causes moral hazard, which in turn can lead to credit rationing; see Section 4.2).

With borrower-lender relationships the terms of securities can be tailored to some degree to suit the borrower's needs; the advancement of funds can be staggered or delayed and confidentiality concerning the borrower's financial condition and business operations can be maintained, since the borrower may have to disclose proprietary information only to the bank in order to obtain reasonable financing terms (see e.g. Bhattacharya and Chiesa [1995]). Similarly, furthermore it can be shown that banks can credibly offer long term loan commitments (instruments that enable the borrower to pay an initial fee in exchange for the option to borrow up to a certain amount in the future at predetermined terms), which can reduce credit rationing by mitigating moral hazard problems (see e.g. Boot, Thakor and Udell [1987] and Boot, Greenbaum and Thakor [1993]).

The beneficial impact of the development of long-term customer relationships on the provision of funding to viable corporations depends on the extent of concentration and competition in credit markets. Creditors in concentrated markets have an assurance of obtaining future surplus from a firm and consequently may accept lower returns upfront. This enables more firms to be financed and increases the availability of credit in the economy. Credit market competition on the other hand may force banks to break even on a period by period basis and hence may be inimical to the formation of mutually beneficial relationships between firms and specific creditors. During the lending process competition between lenders may be reduced if a lender develops an informational monopoly. This would give the lender the

opportunity to extract rents in a later stage of the bank-firm relationship, but could also distort the ex ante allocation of credit and ex ante incentives on the side of the borrower (see e.g. Sharpe [1990] and Rajan [1992]). Some implications for the firm's funding source choices following from these insights are that borrowers who anticipate a sequence of very profitable future projects would abstain from bank financing due to rent extraction by the bank, whereas borrowers with poorer projects would benefit from monitoring and thus prefer bank loans.

The concentrated nature of bank financing furthermore facilitates renegotiations between banks and borrowers. This may provide flexibility in dealing with the arrival of new information in the post-contracting stage and thus enhance investment efficiency (Berlin and Mester [1992]). Borrowers who are relatively high credit risks -and about whom information is more volatile- therefore take bank loans with stringent covenants because this makes it easier to renegotiate, since banks closely monitor these borrowers and give these borrowers the greatest flexibility (note that the combination of covenants, monitoring and renegotiation may explain which types of borrowers fund in different markets under different contract terms[6]). Although the concentrated nature of bank financing reduces 'free rider' problems and facilitates renegotiation, a drawback may be that it causes 'soft budget constraint' problems; i.e. banks may be forced to refinance their loans during the lending process, in order to (re)capture some of the payoffs from their original loans. This 'time-inconsistency problem' is anticipated by the borrower and may distort ex ante incentives (see e.g. Dewatripont and Tirole [1995]). Decentralization of credit (through financial market funding) may be a solution to this problem which however works at the expense of flexibility. Using this argument Wilson [1992] predicts that the resolution of intrafirm incentive problems in large firms would call for 'harsh budget constraints' in financial market funding, whereas smaller firms would prefer bank financing.

The arguments described above also have implications for the seniority and maturity structure of loan contracts offered by banks. The incentives for information production by banks would be enhanced by the use of more junior claims, whereas the possibilities for timely intervention and efficient renegotiation would speak for senior bank claims. Banks with senior claims are less likely to be subject to 'soft budget constraint' problems (in comparison with junior claims, such as equity) and therefore may impose more credible threats on the borrower to cut off credit (or change the terms of financing). In general, bank loans are relatively short term, possibly collateralized loans, which are heavily restricted

[6] In Carey, Prowse, Rea and Udell [1993] this is denoted as the 'CMR'- or 'Covenants-Monitoring-Renegotiation'-paradigm, based on which the authors present an outline for a theory of specialization of financial intermediaries.

by covenants, or may embody longer-term implicit commitments supported by reputational considerations.

Main (Informational) Features of Bank Financing	**Applicability to Borrower Type**
Cost-Efficient Information Production	
* *Benefit:* Ex Ante Screening and Ex Post Monitoring	New borrowers without credit reputation ('track record'), R&D-firms with scope for discretionary behavior, firms in 'traditional' industries with scope for moral hazard
Development of Long-Term Relationships and Comitments	
* *Benefit:* Possibility to Intertemporally Share Surplus ('Intertemporal Smoothing')	Credit-constrained firms (start-up or distressed firms), firms with high growth opportunities
* *Benefit:* Credibility in Offering Long Term Loan Commitments	Credit-constrained firms which are potentially subject to moral hazard problems
* *Benefit:* Confidentiality	R&D-firms with proprietary information
* *Drawback:* Rent Extraction due to Informational Monopoly at Intermediate Date	Firms with poorer prospects for future profits
Concentrated Nature Bank Financing Facilitates Renegotiation and Refinancing	
* *Benefit:* Flexibility in Dealing with New Information in Post-Contracting Stage and Timely Intervention	Firms with relatively high credit risks (and volatile information), firms with need for flexibility, financially distressed firms, firms with small intra-firm incentive problems
* *Drawback:* 'Soft Budget Constraint' Problem	Firms with small ex ante incentive problems

Table 4.2: Overview of Benefits and Drawbacks of Bank Financing

In summary, bank financing is likely to be preferred when asset substitution moral hazard is great and borrowers do not have sufficient credit reputations, so that bank monitoring is valuable (Diamond [1989] and Rajan [1992]), when long-term financing commitments that banks can make are effective in attenuating underinvestment (Berkovitch and Greenbaum [1990]) and other forms of

moral hazard (Boot, Thakor and Udell [1991]), and when contract renegotiation is likely so that the flexibility offered by bank financing is of value (Berlin and Mester [1992]). On the other hand, capital market financing is preferred when intrafirm incentive problems are severe for the borrowing firm (Wilson [1992]), and when banks are likely to develop monopoly power that could distort allocations (Rajan [1992] and Sharpe [1990]). *Table 4.2* will summarize the benefits and drawbacks of bank financing (and their applicability to specific types of firms).

Financial Market Financing

Financial market financing is generally provided by a large number of widely dispersed (decentralized), competing and anonymous investors, which due to coordination- and free-rider problems neither engage in monitoring activities[7] nor in renegotiation. Financial markets however do provide incentives to gather information, which becomes reflected in the pricing of financial claims. These prices provide signals for the efficient allocation of investment (see Grossman and Stiglitz [1980], Allen [1993] and Boot and Thakor [1996]). Depending on the circumstances therefore, financial markets can play an important feedback role to the real sector. Financial markets in this context can be viewed as a mechanism for aggregating many diverse opinions and hence providing information about optimal decision rules in corporations that may be superior to that attainable through bank funding; the bank provides a single 'check', whereas the market provides repeated evaluations of the firm's behavior. This mechanism works stronger for more information-sensitive securities, such as equity claims. From these arguments it follows that financial markets (stock markets) may be the preferred institution for capital allocation when optimal decision rules are hard to formulate; e.g. when information decays rapidly and new information arrives almost constantly. This would be the case for firms in highly competitive industries with constantly changing market conditions, or firms in industries where technologies evolve at fast pace. Banks on the other hand are desirable institutions for allocating resources in situations where there is consensus on the technology (i.e. in 'traditional industries') and the main problem is monitoring firms.

Issuing external equity in the public market may relieve the financing constraints of borrowers with large financing needs, facing high interest rates or even credit rationing due to informational problems. Firms can furthermore have greater bargaining power vis-a-vis banks by gaining access to the stock market and disseminating information to a generality of investors. This elicits outside competition to their lender and assures a lower cost of capital and/or a larger supply of

[7] Note however that in the Netherlands a number of large institutional investors are active in the financial markets. These may have incentives to overcome free-rider problems and may engage in monitoring activities.

external finance (see e.g. Rajan [1992]). Furthermore the stockmarket provides additional ways to discipline management and as a consequence may decrease agency problems. Note also that shareholders of a public company can use the information reflected in the stock price to design efficient managerial compensation schemes (Holmström and Tirole [1993]). Finally, investors may benefit from the higher liquidity of financial market claims. *Table 4.3* summarizes these arguments.

Main (Informational) Features of Financial Market Financing	**Applicability to Firm Type**
Decentralized Financing; No Renegotiation	Firms with low credit risk, firms which are not subject to 'investment myopia', large firms subject to severe intra-firm incentive problems
No Monitoring (due to Coordination Failure)	Firms with well-established management skills and good credit reputations, firms with good prospects for future profits
Allows Efficient Risk Sharing; High(er) Liquidity	Firms with higher degrees of technological uncertainty
Information Aggregation; Feedback Role of (Stock) Prices to the Real Sector	Firms in highly competitive industries with constantly changing market conditions, technological firms and R&D-firms

Table 4.3: Overview of Benefits and Drawbacks of Financial Market Financing

Venture Capital Financing

Small, new and extremely information-problematic firms that require a prohibitive amount of evaluation and monitoring and have little or no collateral to offer prospective lenders, must either use internally generated funds or obtain outside equity financing, perhaps from venture capital firms. Venture capital firms can be viewed as agents who, acting as insiders, produce information about the prospects of new firms. They design tailored contracts which combine a high measure of control with a risky claim on the success of the firm. As intermediaries, venture capital firms can facilitate the search of good projects (by solving adverse selection and (possible) moral hazard problems) and thereby improve the quality of projects financed in the economy (see Chan [1983] and Chan, Siegel and Thakor [1987])[8]. This can be realized due to scale economies in information production and information reusability. The benefits of this information reusability may however depend on the

[8] Note that in the spirit of Leland and Pyle [1977] the equity stake that the venture capitalist holds may be a signal of the firm's quality.

intertemporal fluctuations in the firm's credit risk; higher fluctuations may make information less durable and may reduce the venture capitalist's incentives for information production. This could decrease the quality of the venture capitalist's assets and thus result in inefficient allocations of capital (see Chan, Greenbaum and Thakor [1986]). Chemmanur and Fulghieri [1994] highlight that a public issue of equity to many shareholders has a large cost due to the duplication of the investor's effort, but entails efficient risk sharing. In contrast, private financing by a single venture capitalist minimizes information production cost, but implies inefficient risk sharing and therefore a larger risk premium. So private financing from a venture capitalist may be efficient for young, little known companies, while the public issue of equity is much more suited to older, well known companies.

Venture capitalists provide both capital and expertise that allow entrepreneurs to convert 'ideas' into commercial ventures. The fact that the venture capitalist combines the role of financier and 'controlling manager' implies that possible agency conflicts between owners and controlling managers are internalized; this may increase the venture capitalist's incentives for information production (and managing effort). In settings where entrepreneurial skill is highly uncertain and the role of a 'backup manager' is potentially significant, venture capitalists therefore may have an advantage over banks in providing financing.

Venture capital contracts involve the combining of a risky claim for the venture capitalist with disproportionate control ('bundling'), and contain explicit covenants permitting passage of control to the venture capitalist following a poor performance by firms (Chan, Siegel and Thakor [1987]). An important feature of venture capital is the staging of commitment of capital in different phases. This will give the venture capitalist the opportunity to exit the project ('abandonment option') after the developmental/initial phase (this decision may also be based on non-verifiable information)[9]. In this respect it could be noted that the presence of an 'inside' investor may also create (investment) inefficiencies; e.g. the inside investor may refrain from providing additional financing in later stages if he only captures part of the returns, or he may exploit an informational monopoly in later financing stages. These incentive problems on the side of the venture capitalist would discourage the use of venture capital. Admati and Pfleiderer [1994] show that these problems could be reduced by using specific financial contracts and rationalize 'fixed fraction' contracts (in which the entrepreneur receives a fixed fraction of the project's payoff and finances that same fraction of any future investment) in multi-stage financing arrangements. These contracts could also be shown to reduce

[9] Note that this feature of venture capital financing may enable 'timely intervention', but on the other hand may also induce 'soft budget constraint'-problems (analogous to bank financing). The ex ante incentive distortions stemming from these problems may however be mitigated by monitoring (and control) by the venture capitalist.

overinvestment incentives on the side of the entrepreneur. Finally, in later stages of the project venture capitalists are furthermore typically involved in obtaining capital from outside investors.

Summarizing, the most inexperienced borrowers, which are unsure of their management skills, are expected to choose venture capital financing, whereas those with better established skills but without a credit reputation approach banks. Larger firms with both skilled management and a reputation for creditworthiness are expected to choose capital market financing (see Bhattacharya and Thakor [1993]). *Table 4.4* sumarizes the main features of venture capital financing.

Main (Informational) Features of Financing with Venture Capital	**Applicability to Firm Type**
Information Production (and Information Reusability) Search for Projects and Monitoring	Small and information-problematic firms without collateral and/or track records, firms with growth opportunities
Combination of Risky Financing and Control (Governance Aspects)	Firms with uncertain entrepreneurial skills which are potentially subject to managerial discretion
Staging of Commitment of Capital (in Phases)	Firms with need for flexibility and firms with scope for managerial discretion

Table 4.4: Overview of Benefits and Drawbacks of Venture Capital Financing

4.4 Applicability of Insights to the Dutch Economy; Bottlenecks

The overview of the financial intermediation (and corporate finance) theories presented above implies that the severity and type of information problems are important determinants of the market (segment) in which a corporation obtains financing, the capital supplier and the types of contracts chosen, and hence on the terms under which capital is available. In particular, one conclusion that could be drawn in this respect is that small, new and information problematic firms, with highly specific assets and in need of risk capital, may face substantial problems in obtaining external financing, and are therefore potentially subject to market failure and underinvestment problems.

The *Tables 4.1 through 4.4* have given a comprehensive overview of the financing alternatives available to different types of firms, which now can be confronted with the Dutch practice of funding industrial corporations. The financing of industrial corporations, and the realization of allocative efficiency in the economy, can only be guaranteed sufficiently if the 'institutional arrangements', i.e. the supply channels of capital (banks, the financial market and venture capital firms), are developed and function at a satisfying level. Although thorough research in this field has been lacking so far, some general remarks can be made in this respect.

First, as a consequence of the relatively high institutional savings by institutional investors (e.g. pension funds), which traditionally have shown highly risk averse investment behavior, the supply of risk capital in the Netherlands was considered to be severely restricted. This may explain the introduction of the 'Garantieregeling Particuliere Participatiemaatschappijen' (GPPM) and the 'Regeling Bijzondere Financiering' (RBF), see Section 5.3.

With respect to the functioning of the financial markets furthermore it can be noted that the Dutch financial sector is characterized by a very active private ('over-the-counter') capital market, but that the public market plays only a very modest role in the funding of corporations. This observation applies both to the extremely 'thin' corporate bond market and to the relatively low number of new equity issues in the IPO market that have taken place. In a sense this reflects the relatively high importance of bank financing in the Netherlands (see Section 2.3). A potential bottleneck could be related to the concentration that recently has occurred in the Dutch banking sector. International research shows that large banks are less willing to finance smaller corporations. This could (partly) explain the introduction of the 'Regeling Borgstelling Midden- en Kleinbedrijf' (BMKB), aimed particularly at the funding of small corporations, see Section 5.3.

The theoretical insights from the financial intermediation literature and also the above suggested inefficiencies in the supply of risk capital in the Netherlands provide some support for government intervention in capital markets.

5 Overview Government Intervention

5.1 Introduction

The measures taken by the Dutch government to intervene in the functioning of capital markets and the financing process of industrial corporations can be classified into three groups: the creation of institutions, the provision of government guarantees and direct funding. These groups will briefly be discussed in Section 5.2. Arrangements that cannot be classified in any of these three groups will be described under the heading 'other arrangements'.

In Section 5.3 we will focus on the -in our opinion- most important ('key') arrangements that have been introduced to stimulate the supply of (risk) capital to industrial corporations: the 'Garantieregeling Particuliere Participatiemaatschappijen' (Loss-Sharing Arrangement for Venture Capitalists, GPPM), the 'Regeling Bijzondere Financiering' (Special Financing Arrangement, RBF) and the 'Regeling Borgstelling Midden- en Kleinbedrijf' (Guarantees for Small and Medium-Size Corporations, BMKB). These arrangements, which directly address the bottlenecks pointed at in Section 4.4, will be discussed and evaluated more extensively. A more detailed description of the *complete* spectrum of arrangements (and an evaluation) is incorporated in the Appendix. *Table 5.1* gives an overview of the arrangements that are still currently in use. *Table A.2* in the Appendix summarizes their main characteristics.

We have left out industrial policy measures that are not aimed at the functioning of the capital market. For that reason, investment credits (the WIR-facility, see Section 2.2) are not discussed here. We also leave out the now deferred NEHEM institution. This institution played an important role during the 70's, but is seen as a prime example of 'where government policy has gone wrong'. Specifically, the NEHEM's tri-partite power structure induced an emphasis on *preserving* jobs, and thus led to an exclusive focus on sick corporations in decaying industries (see Section 2.2).

5.2 Classification of Government Intervention

Institutions

In the course of the last twenty years the Dutch government has created three different institutions aimed at resolving capital market frictions and stimulating the supply of 'risk capital'. These institutional arrangements embody the founding of a bank, the 'Nationale Investeringsbank' (National Investment Bank, NIB), and two types of venture capital suppliers, the 'Maatschappij voor Industriële Projecten' (MIP) and the Regional Development Firms (ROMs). These institutions serve as channels through which funding is provided to the industry.

The NIB was founded in 1963 to provide long-term financing to (industrial) corporations. The NIB specializes in the provision of medium to long term loans to medium-size and large firms and the investment in 'risk capital' (equity/mezzanine financing). The bank operates on its own account but also supports government arrangements, such as the Special Financing Arrangement (see Section 5.3). The objective of the MIP (founded in 1981) was to provide 'risk capital' at commercial terms to (larger) firms with good prospects in industries that promise a high value added. The MIP, which was managed by a 'technocrat' management structure, served as an intermediary between (institutional) investors and capital-seeking firms. In 1991 the MIP merged into a private venture capital firm. The Dutch government furthermore aimed to contribute to the supply of venture capital to smaller and medium-size firms (mainly start-up firms) through regional (decentralized) channels. Between the mid-70's and the beginning of the 80's five Regional Development Firms (ROMs) were founded which provided government guaranteed (subordinated) loans and/or took equity interests. Since the end of the 80's the government does no longer provide direct financing through this channel.

Government Guarantees

The Dutch government facilitates the 'risk financing' to industrial corporations through the provision of government guarantees on the financing provided by different suppliers of capital, such as the NIB, commercial banks and/or private venture capitalists. This resulted in three important arrangements: the GPPM, the RBF and the BMKB, which will be discussed in Section 5.3.

Direct Financing

As a third category of intervention measures the Dutch government could directly provide funding to industrial corporations, either as a single financier or as part of a syndicate consisting of the government and several private capital suppliers. These measures again could embody the provision of risk capital, but could also represent direct government support and subsidies. The arrangements include the 'Technologisch Ontwikkelingskrediet' (Technological Development Credit Facility, TOK) and the 'Programmatische Bedrijfsgerichte Technologiestimulering' (Arrangement for Business-Oriented Technology Programs, PBTS), the 'Stichting Industrieel Garantiefonds' (Industrial Guarantee Fund, IGF), Direct Governmental Support/Subsidies, the 'OE-krediet' (Credit Facility for Middle and Eastern Europe) and the 'Industriefaciliteit' (Industry Facility, IF).

I.	*Foundations of Institutions (Banks and Venture Capital Firms)*
I.1	The 'Herstelbank' 1946

I.2	The 'Nationale Investeringsbank' (National Investment Bank) NIB, 1963
I.3	The 'Maatschappij voor Industriële Projecten' MIP, 1981
I.4	The 'Regionale Ontwikkelingsmaatschappijen' (Regional Development Firms) ROMs, 1974-1983
II.	*Government Guarantees*
II.1	The 'Garantieregeling Participatiemaatschappijen' (Loss-Sharing Arrangement for Venture Capitalists) GPPM, 1981
II.2	The 'Regeling Bijzondere Financiering' (Special Financing Arrangement) RBF, 1971
II.3	The 'Regeling Borgstelling MKB' (Guarantees for Small and Medium-Size Corporations) BMKB
III	*Direct Financing (through Different Channels)*
III.1	The 'Technologisch Ontwikkelingskrediet' (Technological Development Credit Facility) TOK, 1954, and The 'Regeling Programmatische Bedrijfsgerichte Technologiestimulering' (Arrangement for Business-Oriented Technology Programs) PBTS
III.2	The 'Stichting Industrieel Garantiefonds' (Industrial Guarantee Fund) IGF, 1957
III.3	Direct Governmental Support/Subsidies
III.4	The 'OE-krediet' (Credit Facility for Middle and Eastern Europe), 1992
III.5	The 'Industriefaciliteit' (Industry Facility) IF, 1993
IV	*Other*
IV.1	Relaxation of Article 25 of the 'Wet Toezicht Kredietwezen' WTK, 1980
IV.2	The 'Tante Agaath'-Arrangement and the Fiscal Facility for Start-up Firms, 1996
IV.3	The 'Technostartersfondsen' (Technological Startup Funds) TSF, planned 1996

Table 5.1: Overview of Arrangements

The objective of the TOK and the PBTS is to provide risk capital for the financing of projects stimulating technological development. The allocation of credit under these two facilities takes place on a decentralized basis (through SENTER). The IGF was created to provide risky financing on a decentralized basis to small and medium-size firms, by either obtaining minority equity participations or by extending subordinated loans. Due to the development of the venture capital market and the foundation of the ROMs this arrangement has not been drawn upon since 1982. The Direct Governmental Support/Subsidies consisted of loans, (minority) participations and government subsidies. From the mid-70's to the beginning of the 80's the Dutch government has extensively supported individual (industrial) corporations in order to preserve employment, to improve the structure of the Dutch economy and to stimulate innovations. As described in Section 2.2 these funds were largely utilized to support weak corporations in decaying industries. The objective of the 'OE-krediet' is to improve the financial structure of Eastern European corporations by supplying risk capital to joint ventures of Dutch and Eastern European firms. The IF finally was created in 1993 to

increase the availability of medium- to long term risk capital (subordinated debt, convertible debt and/or equity) to medium-size and large firms which cannot obtain direct funding by banks and/or the financial market, but have good future prospects. The risk capital is provided by a permanent syndicate of the Dutch government (represented by the Ministry of Economic Affairs), 8 insurance companies, 14 pension funds, 3 commercial banks and the NIB.

Other Arrangements

A few other arrangements can be mentioned that have been initiated by the government in the context of its policy versus capital markets. These measures are mainly of a legal and fiscal nature. Two of these, the adjustment in the 'Wet Toezicht Kredietwezen' (WTK), the 'Tante Agaath'-Arrangement and the 'Fiscal Facility for Start-up Firms' have been implemented so far, whereas the 'Technostartersfondsen' (Technological Startup Funds, TSF) still need to be set up.

The adjustment in the WTK relaxes the restrictions on banks to provide risk capital, and therefore serves as an indirect measure to stimulate the supply of risky financing. The objective of the 'Tante Agaath'-Arrangement and the Fiscal Facility for Start-up Firms is to stimulate the supply of risk capital by informal investors to (technological) start-up firms by offering tax benefits. The objective of the TSF is to facilitate the (risky) financing to technological start-up firms on a decentralized basis.

5.3 Analysis and Evaluation of Key Arrangements

In this section we subsequently present and evaluate the three types of government guarantees that aim to reduce possible market frictions and to increase the supply of risk capital to (industrial) corporations. An important aspect of some of these arrangements is that they were designed to induce additional (matching) financing by private parties in the market (e.g. commercial banks). This private sector involvement guarantees co-sharing of risk and also introduces (some) market discipline.

The GPPM, 1981-1995

The objective of the GPPM was to increase the supply of risk capital to smaller and medium-size corporations by stimulating the development of private venture capital firms. The arrangement embodied a government guarantee to compensate 50% of the losses made on the financing provided by venture capitalist firms (mainly through equity participations, representing a maximum investment amount of Dfl. 4 mln. per participation).

In the 1980's the number of private venture capital firms increased significantly. In the period 1981-1995 a total amount of Dfl. 925 mln. was invested under this facility. The GPPM was

terminated at the end of 1995. The accumulated losses imposed on the government under this guarantee have reached Dfl. 180 mln. today. The market share of venture capital investments under this arrangement dropped from 65% to 14% of total venture capital funds provided during the last five years. Overall, the market for venture capital has continued to grow. The supply of venture capital now amounts to approximately Dfl. 600 mln. per year.

Evaluation of the GPPM

The GPPM has increased the supply of venture capital enormously; the number of venture capitalists has gone up from virtually zero over hundred in one decade. A main point of criticism in this respect is that the expertise of venture capital firms has not kept equal pace with this high rate of growth. Despite the government guarantees venture capitalists have made substantial losses on their investments in start-up firms. The gross returns on investments in start-up firms was -6% annually over the period 1986-1994. The average gross returns on all venture capital investments were approximately 12% (positive!). In response, the venture capitalists have now reduced the provision of seed-capital to start-up firms substantially. The GPPM therefore has quite a mixed record. It has stimulated venture capitalist activities significantly, but simultaneously has not allowed venture capitalists to invest properly in start-up firms.

A potentially fundamental drawback of the GPPM is that this loss-sharing arrangement may induce moral hazard on the side of the venture capital firm. For example, it may be in the interest of the venture capitalists to engage in 'risk shifting' (or 'asset substitution', see Section 4.2). After all, the downward risk of this investment strategy is partially borne by the government, whereas the venture capitalist completely (i.e. solely) benefits from the upward potential. Similarly, negative Net Present Value projects may become (marginally) attractive to the venture capitalist due to the 'subsidy' which is captured in the GPPM. This may result in 'overinvestment'.

It is difficult to estimate the importance of these distortions in incentives. The (substantial) amount of risk which is (still) borne by the venture capitalist may mitigate distortions. However, it is our impression that the supply of venture capital could have been increased in a more responsible and cost-efficient way by a different design of the loss-sharing arrangement[10].

[10] In this respect one could think of a more 'symmetric' risk sharing agreement (in which the private sector participates in both the gains *and* the losses arising from its investments) instead of the 'asymmetric' loss sharing agreement embodied in the GPPM. This would resemble the risk sharing arrangement incorporated in the RBF and the BMKB, see later.

The RBF, 1971

The objective of the RBF is to resolve capital market frictions in the financing of medium-size and large companies with good future prospects. Under this arrangement the government facilitates the provision of risk capital and hence complements the private supply of (risky) capital in the market. The RBF offers companies, which are not able to obtain either direct financial market financing or bank financing at acceptable terms, the possibility to obtain (partially) government-guaranteed funding in the form of loans, guarantees or (minority) participations. The RBF is executed by the National Investment Bank (NIB); the government guarantees this arrangement.

Currently two financing facilities are available under the RBF arrangement: the 'B-krediet' and the 'AA-krediet'. The 'B-krediet' represents non-subordinated and (possibly) partially secured loans with an average government guarantee of 75% and a maturity between 3 and 12 years. The 'AA-krediet' (Adjusted Subordinated Credit Facility) embodies a subordinated loan under 90% government guarantee, with a maturity between 7.5 and 15 years. An important aspect of the 'AA-krediet' is its credit-generating ability, since this facility is designed to induce complementary bank financing. In the period between 1990-1995 about 90% of the financing arranged under the RBF facility consisted of 'AA-kredieten', whereas the 'B-krediet' amounted to 10%. During the last three years the avarage annual amount of financing under the RBF was equal to Dfl. 300 mln. and both the financing amount per corporation and the participation of commercial banks increased. *Table A.1* in the Appendix briefly summarizes the facilities that have been part of the RBF over the last 25 years with some of their characteristics.

Evaluation of the RBF

Evaluation reports by the Ministry of Finance ('Evaluatienota RBF', June 1996) and by the NIB suggest that the RBF facility has satisfied large financing needs. In particular, the arrangement has generated substantial additional financing. In about 75% of the financing arrangements made between 1990 and 1995 bank credit lines were extended in conjunction with the provision of 'AA-krediet'. The RBF therefore has substantial private sector involvement. This guarantees co-sharing of risk (without the distortions caused by the loss-sharing arrangement under the GPPM) and introduces market discipline, which makes it more likely that positive Net Present Value projects are supported. The arrangement furthermore appears to be cost-efficient, with very small subsidies. It is not clear however to what extent the RBF facility complements the supply of risk capital by venture capital firms. This question still remains to be answered.

The BMKB

The objective of the BMKB is to facilitate the provision of credit to smaller and medium-size firms. Under this arrangement commercial, non-subordinated and (mostly) non-secured loans can be provided by 30 banks under a government guarantee of 90%. The loans are guaranteed due to lack of possibilities for collateralization. Banks need to match the amount of state-guaranteed financing with funding at their own risk on a one by one basis. For start-up firms the government guarantee equals 100% and banks need to supplement the facility only on a 0.5 by 1 basis. The annual government budget supporting the guarantees is Dfl. 700 mln. (Ministry of Economic Affairs).

Evaluation of the BMKB

The BMKB is probably the least controversial financing arrangement and satisfies large financing needs. This is not surprising, since from our overview of the financial intermediation literature it was clear that especially the types of firms targeted by this facility were likely to experience external financing problems. About 2000 firms per year obtain financing under this arrangement. The execution of the BMKB is entirely in the hands of the private sector (the commercial banks). Furthermore the matching of funds provided under this facility with private sector financing ensures co-sharing of risk and introduces market discipline. The costs of this arrangement therefore are very limited.

6 Evaluation of Dutch Practice

The Dutch experience with public intervention in capital markets is diverse and quite instructive. Some general conclusions are summarized in *Table 6.1*. Arrangements have generally failed when policy makers (and sometimes labor unions and employers - the tri-partite structure) were directly involved in the execution of government credit/guarantee facilities. In those cases government supported credits were directed to weak corporations in decaying industries. This explains the (ultimate) demise of the tri-partite managed restructuring bank NEHEM and the negative experiences with Direct Governmental Support/Subsidies. This was the experience (mainly) of the 70's and early 80's.

More recent experiences have largely been favorable. The more successful (and substantial) arrangements, the RBF ((partially) guaranteed credits executed by the NIB), the BMKB (guarantees for small and medium-size corporations) and the GPPM (loss-sharing arrangement for venture capitalists), all have substantial private sector involvement. This has proved to be important. Private sector involvement is present along two dimensions. The first dimension guarantees co-sharing of risk

with the private sector. In the case of the RBF, granting 'AA-krediet' is implicitly conditional on complementary private sector funding. For BMKB private sector matching is mandatory. Similarly, the venture capital loss-sharing arrangements under GPPM are only partial.

The second dimension stipulates private sector management (and often ownership) of the institutions providing the facilities. This further guarantees a hands-off policy of the government, reducing political pressure and augmenting objectivity. This is even true for the NIB, despite the large ownership fraction that is in the hands of the Dutch government. In the case of BMKB and GPPM, commercial banks, respectively, largely privately owned venture capital firms are arranging and executing the transactions.

The Dutch have also attempted to introduce an independent technocrat management structure. A noteworthy example of that structure was the MIP; a government funded venture capital firm managed by 'technocrats'. While independence from the government might have been sufficient, market discipline was absent (no co-sharing of risk by the private sector). Another lesson was that these technocrat-directed initiatives often suffered from excessive ambitions aimed at redesigning the society. These initiatives therefore failed.

The most recent initiatives for government intervention, the IF (Industry Facility, introduced in 1993) and the TSF (Technological Startup Funds) are difficult to interpret. The IF consists of a syndicate of government and private sector parties, aimed at the provision of risk capital to medium- and large size firms. The TSFs are to be joint ventures between the ROMs and private venture capital firms, aimed at the provision of risk capital to start-up firms. It is unclear so far whether these arrangements actually supplement the supply of venture capital present in the market. To the extent that this is not the case government intervention may be undesirable[11] [12].

The experience with the venture capital oriented GPPM arrangement is however not unambiguously positive. This arrangement was terminated recently, and has so far cost the government Dfl. 180 mln (on a total amount of Dfl. 925 mln granted in venture capital under this facility). Given the co-sharing, some of the losses have been imposed on the venture capital firms as

[11] Although market discipline is present in the Industry Facility, this combination may also give rise to conflicts of interest. For example, it is not clear why private sector participants may choose to finance corporations under this arrangement which they would not be willing to finance in the private sector. Furthermore, the arrangement could lead to the occurence of a 'moral hazard in teams' effect within the syndicate (see Holmström [1982]). Finally, it is not clear why the pooling of risk in a syndicate would require the participation of the Dutch government.

[12] To the extent for which the smaller scale of projects may be a distinctive factor in the TSFs, a one-shot government subsidy may cover the 'fixed costs' of private venture capital firms in investing in these start-up firms (without causing additional risk for the government).

well. They have been able to offset the losses with the upside of successful ventures. However, venture capital firms consistently have made losses on participations in starting corporations. This points to another important lesson for government intervention in capital markets. Do not introduce policies (even sensible ones) that cause dramatic shifts. The GPPM arrangement has been successful in stimulating venture capital activities. In the 80's, following the introduction of the GPPM, 100 venture capital firms emerged with virtually no venture capital firm in existence pre GPPM. Losses were inevitable. This government-introduced entrepreneurship was short on expertise. From this perspective, less radical measures to resolve (probably) legitimate concerns about the availability of venture capital might have been better. On the upside, however, the venture capital industry has not retreated after the termination of GPPM. In that sense GPPM might have facilitated a 'structural shift'.

With annually Dfl. 600 mln in venture capital, Dfl. 300 mln in 'AA-kredieten' under the Special Financing Arrangement and Dfl. 700 mln in BMKB guarantees, these measures indeed seem substantial and important. Two questions remain. The first question is a skeptical one: have these facilities really facilitated the activities that they support? In other words, would these activities have been undertaken and funded by the private sector without government intervention? This question is difficult to answer. Our overview of the financial intermediation literature in Section 4 points at the presence of capital market imperfections induced by information asymmetries. We argued that these imperfections were particularly relevant for companies with substantial growth opportunities and relatively small firms. The more successful Dutch arrangements were particularly directed at these types of corporations. Moreover, the evaluation of Dutch financing patterns suggests a somewhat risk-averse supply of funding. Also this observation suggests a possibly affirmative answer to the first question. The arrangements therefore may add value.

Lesson		**Source**
1.	*Do not misuse support (often support goes to weak firms in decaying industries, rather than those in healthy industries).*	Section 2.2
2.	*Market-supported arrangements work best;* *→ co-financing with private sector (or at least co-sharing of risk)*	Sections 2.2 and 5.3
3.	*Arrangements should not be administrated by legislators (this would induce 1), nor by technocrats;* *→ instead the private market could be in charge*	Section 5.2
4.	*Do not introduce policies (even sensible ones) that cause dramatic shifts. Expertise in private sector may be missing, as was the case in the Dutch venture capital industry.*	Section 5.3
5.	*Focus on causes, not symptoms. Government guarantees (or*	Section 2.2

	other support) should not be introduced to offset public sector induced inefficiencies.	
6.	*Separate (views on) industrial policy from correcting market failure.*	Section 1

Table 6.1 Checklist for Public Intervention in Capital Markets

This answer also directs us to a more fundamental question. Does the private initiative of entrepreneurial activity need to be subsidized, and/or partially insured? The answer to the first question suggests an affirmative answer to this question as well. A more fundamental (affirmative) answer is that the risk-absorbing capacity of any individual is less than that of society. From a societal point of view, this would lead to an undersupply of entrepreneurial activity.

The risks that the entrepreneur needs to absorb are just enormous, but for a society at large they would be quite bearable. Government intervention may then try to shift some of the risks away from the individual, and could thus stimulate entrepreneurship. The answer to the second question may then be indeed affirmative. Unless, of course, Keynes' 'animal spirits' are the true trade of mankind.

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APPENDIX: Overview of Measures taken by the Dutch Government to intervene in the Functioning of Capital Markets

The measures taken by the Dutch government to intervene in the functioning of capital markets and the financing process of industrial corporations can be classified into three groups: the creation of institutions, the provision of government guarantees and direct funding. These groups are discussed in the Sections A.1 through A.3. Arrangements that cannot be classified in any of these three groups will be described under the heading 'other arrangements' in Section A.4. *Tables A.1 and A.2* summarize the main characteristics of the arrangements that are still currently in use.

A.1 Institutions

In the course of the last twenty years the Dutch government has created three different institutions aimed at resolving capital market frictions and stimulating the supply of 'risk capital'. These institutional arrangements embody the founding of a bank, the 'Nationale Investeringsbank' (NIB), and two types of venture capital suppliers, the MIP and the Regional Development Firms (ROMs). These institutions serve as channels through which funding is provided to the industry[13]. These will subsequently be discussed below.

The 'Nationale Investeringsbank' (National Investment Bank, NIB), 1963

The NIB was founded in 1963 as a successor of the 'Herstelbank', which was created by the Dutch government in 1946. The original mandate of the 'Herstelbank' was to contribute to the restoration of production facilities after the Second World War and to provide long-term financing to (industrial) corporations. The latter is also the mandate of the NIB. The NIB specializes in the provision of medium to long term loans to medium-size and large firms and the investment in 'risk capital' (equity/mezzanine financing). Since 1995 the latter transactions are executed by its venture capital subsidiary PARNIB.

The amount of financing provided by the NIB varies from Dfl. 2 mln. to Dfl. 200 mln. Per year about 300 transactions with an average size of Dfl. 15 mln. are executed. The NIB operates on its own account but also supports government arrangements, such as the Special Financing Arrangement.

[13] This categorization of arrangements emphasizes the creation of the *channels* through which financing is provided. These channels have also been used by other capital suppliers in the market (e.g. in the case of the 'Nationale Investeringsbank'). This justifies the separate categorization of institutions and direct financing chosen in this paper.

The government owns 50.3% of the shares of the NIB; the rest of the shares are held by institutional investors and their clients.

The 'Maatschappij voor Industriële Projecten' (MIP), 1981

The *objective* of the MIP was to provide 'risk capital' to (larger) firms with good prospects in industries that promise a high value added. Funding was provided at commercial terms with a minimum amount of financing of Dfl. 4 mln. The MIP served as an intermediary between (institutional) investors and capital-seeking firms. This arrangement aimed to generate total investments of Dfl. 4 billion in 3 years.

However, in 1989 the arrangement proved to be unsuccessful in generating sufficiently profitable investments. In 1991 the MIP and the venture capital subsidiary APM of the ABN AMRO Bank merged into Alpinvest, and the government stake reduced from 53% to 30%. Alpinvest has shown increasing returns from its portfolio of over 100 participations today, representing a total value of Dfl. 500 mln. The annual investment capacity amounts to Dfl. 100 mln. (both in the Netherlands and abroad).

The 'Regionale Ontwikkelingsmaatschappijen' (Regional Development Firms, ROMs), 1974-1983

The *objective* of the Dutch government with the foundation of the ROMs was to improve the social-economic structure and to create employment in certain regions of the Netherlands. To achieve this objective the government contributed to the supply of venture capital to smaller and medium-size firms (mainly start-up firms) through regional (decentralized) channels. Between the mid-70's and the beginning of the 80's five ROMs were founded which provided government guaranteed (subordinated) loans and/or took equity interests. The ROMs are also active in the field of development, acquisition and intermediation.

Since the end of the 80's the ROMs operate as 'revolving funds' (i.e. the cash flows generated from investments can be reinvested). In practice this means that the regional authorities have taken over the government guaranteed loans in return for participations in the Regional Development Firms. The government therefore does no longer provide direct financing, but is still indirectly involved in supplying risk capital. Furthermore some banks and insurance firms have obtained minority interests in the ROMs. The total investment capacity available to small and medium-size firms under this arrangement amounts to Dfl. 50 mln. per year. Until the beginning of the 80's the ROMs suffered losses on their investments, later they realized modest positive returns.

A.2 Government Guarantees

The Dutch government facilitates the 'risk financing' to industrial corporations through the provision of government guarantees on the financing provided by different suppliers of capital, such as the NIB, commercial banks and/or private venture capitalists. This resulted in three important arrangements: the 'Regeling Bijzondere Financiering' (RBF), the 'Garantieregeling Particuliere Participatiemaatschappijen' (GPPM) and the 'Regeling Borgstelling Midden- en Kleinbedrijf' (BMKB), which will be discussed below. An important aspect of some of these arrangements is that they were designed to induce additional (matching) financing by private parties in the market (e.g. commercial banks).

The 'Garantieregeling Particuliere Participatiemaatschappijen' (Loss-Sharing Arrangement for Venture Capitalists, GPPM), 1981

The *objective* of the GPPM was to increase the supply of risk capital to smaller and medium-size corporations by stimulating the development of private venture capital firms. The arrangement embodied a government guarantee to compensate 50% of the losses made on the financing provided by venture capitalist firms (mainly through equity participations, representing a maximum investment amount of Dfl. 4 mln. per participation). The GPPM was supervised by the Dutch central bank.

In the 1980's the number of private venture capital firms increased significantly. In the period 1981-1995 a total amount of Dfl. 925 mln. was invested under this facility. This induced the Dutch government to face out the arrangement by the end of 1995; it considered the supply reached in the market for risk capital to be satisfactory. Moreover, government enthusiasm might have been tempered by the accumulated losses under the guarantee; accumulated losses imposed on the government have reached Dfl. 180 mln. today. The market share of venture capital investments under this arrangement dropped from 65% to 14% of total venture capital funds provided during the last five years. Overall, the market for venture capital has continued to grow.

Despite the government guarantees venture capitalists have made substantial losses on their investments in start-up firms. The gross returns on investments in start-up firms was -6% annually over the period 1986-1994. The average gross returns on all venture capital investments were approximately 12% (positive!). In response, the venture capitalists have now reduced the provision of seed-capital to start-up firms substantially. The GPPM therefore had quite a mixed record. It has stimulated venture capitalists enormously; the number of venture capitalist firms has gone up from virtually zero to one hundred in the 1980's. Simultaneously however, it has not allowed venture capitalists to invest properly in start-up firms.

The 'Regeling Bijzondere Financiering' (Special Financing Arrangement, RBF), 1971

The *objective* of the Special Financing Arrangement is to resolve capital market frictions in the financing of medium-size and large companies with good future prospects. Under this arrangement the government facilitates the provision of risk capital and hence complements the private supply of (risky) capital in the market. The RBF offers companies, which are not able to obtain either direct financial market financing or bank financing at acceptable terms, the possibility to obtain (partially) government-guaranteed funding in the form of loans, guarantees or (minority) participations. The RBF is executed by the 'Nationale Investeringsbank' (NIB); the government guarantees this arrangement.

The origin of the RBF dates back to 1946. At that time the Dutch government provided guarantees for medium-term financing in cooperation with the predecessor of the NIB, the 'Herstelbank', to stimulate investments and to generate employment. In the beginning of the 70's the RBF was an important instrument for the government's regional and sectoral industry policy, since years of low (corporate) performance, inflation and economic downturns (recessions) had resulted in a decline in the risk capital present in corporations. Until 1983 the government also provided financing to protect employment and to maintain valuable production facilities (these financing facilities can be considered 'pseudo' (or improper) special financing ('Oneigenlijke Bijzondere Financiering')[14]). Finally, the RBF also captured facilities covered by specific policy issues (under the 'Kaderregelingen'), such as support of the textile industry[15].

In 1971 the individual *'B-krediet'*-facility was introduced. This facility represents non-subordinated and (possibly) partially secured loans. The government guarantees on the 'B-krediet' are determined individually and vary between 50% and 90% (with an average of 75%). The 'B-krediet' has a maturity between 3 and 12 years. If possible, the 'B-krediet' is collateralized. In 1975 the government, aiming to enhance the supply of risk capital, introduced the so-called *'A-krediet'*. This

[14] This type of financing was provided by the NIB on government request and was fully guaranteed.

[15] At the present moment only the 'Bodemsaneringskredieten', which serve an environmental purpose, are available in this class of facilities. This facility provides (possibly subordinated and secured) 3-15 year-funding to medium-size and large firms which cannot obtain direct funding for soil sanitation projects. Financing provided under this arrangement equals to a maximum of 75% of the total financing needs, within a range from fl. 1 mln. to fl. 25 mln. Furthermore the facility is characterized by a specific repayment schedule and commercial interest rate levels. The arrangement, which became effective in the beginning of 1995, has not yet been used.

facility differed from the 'B-krediet' because of its subordinated character[16]. 'A-kredieten' embodied subordinated loans to satisfy the financing needs of companies with good future prospects. In 1980 aditional measures were taken to increase the supply of risk capital (mezzanine- or equity-like capital) and to stimulate investments by creating the *'E-krediet/Kapitaalkrediet'* and by adjusting the 'A-kredieten' to *'AA-kredieten'* (1981). 'E-krediet' was subordinated debt for which the interest payments and repayment schedule depended on generated revenues[17]. Both the 'E-krediet' and the 'pseudo-special financing' were terminated in 1983.

Regeling Bijzondere Financiering ('Proper Use Special Financing Arrangement')			
*	'B-Krediet' (1971)	→	Non-subordinated, (partially) secured loans, 3-12 years, individual government guarantee ranging between 50% and 90%
*	'A-Krediet' (1975-1981)	→	Sub-ordinated loans
*	'AA-Krediet' (1981-now)	→	Sub-ordinated loans, 7.5-15 years, 90% government guarantee
*	'E-/Kapitaalkrediet' (1980-1983)	→	Sub-ordinated debt with interest payments dependent on revenues generated
Oneigenlijke Bijzondere Financiering ('Improper' or 'Pseudo'-Use of Special Financing Arrangement)			
Other Facilities			
*	'Kaderregelingen', e.g. Support Textile Industry		
*	'Bodemsaneringskrediet'		
*	etc.		

Table A.1: Overview and Characteristics of Facilities under Special Financing Arrangement

[16] While it is not subordinated, the 'B-krediet' in a sense also represents risk capital. The facility is complementary to bank/market financing but only with secondary collateral sources.

[17] This characteristic resembles an Income Bond (see e.g. Allen and Winton [1995]).

The 'AA-krediet' (Adjusted Subordinated Credit Facility) represents a subordinated loan under 90% government guarantee, with a maturity between 7.5 and 15 years. An important aspect of the 'AA-krediet' is its credit-generating ability, since this facility is designed to induce complementary bank financing. In about 75% of the financing arrangements made between 1990 and 1995 bank credit lines were extended in conjunction with (or: as a consequence of) the provision of the 'AA-krediet'. The 'AA-krediet' therefore appears effective in substantially stimulating direct and indirect corporate investments and in generating employment. The amount of financing provided under these facilities ranges from Dfl. 2 mln. to Dfl. 50 mln. per corporation. Since 1987 commercial banks are allowed to participate for 40% in 'AA-kredieten' with a notional amount of Dfl. 7.5 mln. or more. Furthermore in 1991 and 1995 interest rate flexibility was incorporated by introducing roll-over facilities in the 'AA-krediet'[18].

Currently two financing facilities are still available under the Special Financing Arrangement: the 'AA-krediet' and the 'B-krediet'. In the period between 1990-1995 about 90% of the financing arranged under the Special Financing Arrangement consisted of 'AA-kredieten', whereas the 'B-krediet' amounted to 10%. During the last three years the avarage annual amount of financing under the Special Financing Arrangement was equal to Dfl. 300 mln. and both the financing amount per corporation and the participation of commercial banks increased. The Special Financing Arrangment therefore still serves an important function in the risky financing of industrial corporations. The government's annual budget in support of this arrangement has been increased from Dfl. 175 mln. to Dfl. 275 mln. (Ministry of Finance). *Table A.1* briefly summarizes the facilities that have been part of the Special Financing Arrangement over the last 25 years with some of its characteristics.

The 'Regeling Borgstelling MKB' (Guarantees for Small and Medium-Size Corporations, BMKB)

The *objective* of the BMKB is to facilitate the provision of credit to smaller and medium-size firms. Under this arrangement commercial, non-subordinated and (mostly) non-secured loans can be provided by 30 banks under a government guarantee of 90%. The loans are guaranteed due to lack of possibilities for collateralization. Banks need to match the amount of state-guaranteed financing with funding at their own risk on a one by one basis. For start-up firms with (guaranteed) financing needs up to a maximum of Dfl. 0.1 mln. the government guarantee equals 100% and banks need to supplement the facility only on a 0.5 by 1 basis. The annual government budget supporting the guarantees is

[18] For 'AA-kredieten' with a maturity of 15 years interest rate adjustments are possible every 5 years. For shorter maturities interest rate adjustments are possible after expiration of half of the maturity. Furthermore, the 'AA-kredieten' can carry variable rates which can be fixed at specific times during the maturity of the loan.

Dfl. 700 mln. (Ministry of Economic Affairs). About 2000 firms per year obtain financing under this arrangement. The financing portfolio under this arrangement currently amounts to approximately Dfl. 2700 mln. Since the beginning of 1996 the maximum amount of financing that can be obtained per firm has been increased from Dfl. 1 mln. to Dfl. 2 mln.

A.3 Direct Financing

As a third category of intervention measures the Dutch government could directly provide funding to industrial corporations, either as a single financier or as part of a syndicate consisting of the government and several private capital suppliers. These measures again could embody the provision of risk capital, but could also represent direct government support and subsidies. The arrangements include the 'Technologisch Ontwikkelingskrediet' (TOK) and the 'Regeling Programmatische Bedrijfsgerichte Technologiestimulering' (PBTS), the 'Stichting Industrieel Garantiefonds' (IGF), Direct Governmental Support/Subsidies, the 'OE-krediet' and the 'Industriefaciliteit' (IF).

The 'Technologisch Ontwikkelingskrediet' (Technological Development Credit Facility, TOK), 1954 and the 'Regeling Programmatische Bedrijfsgerichte Technologiestimulering' (Arrangement for Business-Oriented Technology Programs, PBTS)

The *objective* of the TOK is to provide risk capital for the financing of projects stimulating technological development. This financing facility embodies a ten-year subordinated loan with interest payments based on generated revenues. In case of project failure (either in a technical or in an economic sense) repayments are cancelled. The Technological Development Credit Facility is designed to satisfy 40% of the financing needs of the project. The remaining 60% has to be obtained from other sources. The annual budget for this arrangement equals Dfl. 120 mln. With this amount (development) investments of Dfl. 300 mln. per year can be initiated. The objective of the PBTS is similar. Financing provided under this arrangement has a maximum of 50% of the investment amounts. The budget for this arrangement in 1996 equals Dfl. 21.5 mln. For both arrangements the allocation of credit takes place on a decentralized basis (through SENTER).

The 'Stichting Industrieel Garantiefonds' (Industrial Guarantee Fund, IGF), 1957

The *objective* of the IGF was to provide risky financing to small and medium-size firms, by either obtaining minority equity participations or by extending subordinated loans. The execution of this facility took place on a relatively decentralized basis by two investment entities: the FIGA in Amsterdam (for small participations) and the FIGG in The Hague (for larger participations). All in all 110 participations were made representing a total amount of Dfl. 112 mln. Due to the development of the venture capital market and the foundation of the ROMs this arrangement has not been drawn upon since 1982. In 1987 the FIGA and FIGG were divested to the NIB and the commercial bank NMB (which is currently part of ING).

Direct Governmental Support/Subsidies

From the mid-70's to the beginning of the 80's the Dutch government has extensively supported individual (industrial) corporations. The primary focus was on preserving employment (see also Section 2.2). The subsidies were paid from the so-called 'Werkgelegenheidsgelden' (or 'employment funds') and aimed at restructuring several sectors in the economy (e.g. textile and shipbuilding). As described in Section 2.2 these funds were largely utilized to support weak corporations in decaying industries. They therefore did not improve the structure of the Dutch economy or stimulate innovations. The latter was another explicit goal of direct support as intended by the government. This direct support consisted of loans, (minority) participations and government subsidies. Note that this arrangement differs from the 'improper' use of the Special Financing Arrangement, in that the government itself provided funding to the corporations (*not* the NIB nor the commercial banks).

The 'OE-Krediet' (Credit/Investment Facility for Middle and Eastern Europe), 1992

The *objective* of the 'OE-krediet' is to improve the financial structure of Eastern European corporations by supplying risk capital to joint ventures of Dutch and Eastern European firms, which cannot provide sufficiently in their financing needs through direct market financing and/or bank financing. The facility is executed by the NIB in cooperation with (some) Dutch commercial banks and the FMO (Dutch Investment Fund for Development Countries). The facility embodies the provision of subordinated loans under 90-95% government guarantee ranging between Dfl. 1 mln. and a maximum amount of Dfl. 5 mln. per firm. The facility is designed to generate additional risk capital from Dutch firms; it requires that Dutch firms match 50% of the financing arranged under the 'OE-

krediet' with risk capital at commercial terms. The annual government budget supporting this facility has increased from Dfl. 57 mln. in 1992 to Dfl. 140 mln. in 1995 (Ministry of Economic Affairs).

The 'Industriefaciliteit' (Industry Facility, IF), 1993[19]

The IF was created to increase the availability of medium- to long term risk capital (subordinated debt, convertible debt and/or equity) to medium-size and large firms which cannot obtain direct funding by banks and/or the financial market, but have good future prospects. The risk capital is provided by a permanent syndicate of the Dutch government (represented by the Ministry of Economic Affairs), 8 insurance companies, 14 pension funds, 3 commercial banks and the NIB. The financing ranges between Dfl. 10 mln. and Dfl. 50 mln. at commercial terms and with a fixed sharing rule[20]. The participants are represented in a credit committee which has to decide unanimously on the provision of financing to a corporation. The NIB acts as the executing agent.

The Industry Facility is not an investment fund, but embodies a commitment of each syndicate member to partipate in risk financing arrangements that will actually be made. Participation involves either direct funding or providing guarantees on the funding granted by the 'syndicate'. The facility is designed to complement the possibilities for direct market financing (and may therefore be anti-cyclical). The total amount of financing available under this facility equals Dfl. 892.2 mln.

Since the creation of the IF only two corporations have obtained financing under this arrangement for a total amount of Dfl. 70 mln. The IF has been evaluated in 1996. The main conclusions of the evaluation report are that due to favorable economic conditions the demand for risk capital has decreased since 1993 (due to a higher proportion of internal financing reflecting higher generated cash flows), whereas the supply of risk capital by institutional investors has increased (due to a change in their investment behavior towards more risky investments). As a consequence, there has been no (quantitative) need for risk financing which is complementary to direct financing by the market. This however could change if economic conditions worsen. All participants now have to decide whether this facility is to be continued or not.

It is not clear how we should look at this evaluation. The supply of risk capital may have been severely restricted -under the facility- for corporations with technological investment projects which

[19] Note that it is somewhat ambiguous whether the 'Industriefaciliteit' should be classified in Section A.1. or A.3. We chose to incorporate the facility in Section A.3 since the government participates for 22.4% in *direct* financing in a *syndicate* of capital market parties (no institution is created).

[20] The share of the Dutch government in each financing arrangement equals 22.4%; the commercial banks, the insurance companies, the pension funds and the NIB participate for 22.4%, 22.4%, 22.7% and 10% respectively.

incorporate high levels of risk and/or uncertainty. The little use of the IF could also have been caused by a conflict of interest between the government and the private members of the syndicate about the financing terms of their capital infusions. More specifically, the private participants of the credit committee are also the parties which (possibly) rejected direct bank and/or market financing to the applying firms. It therefore is not clear which firms actually are to be considered candidates for risk financing under this facility, and which firms are excluded. Finally, the financing provided under the arrangement was considered to be relatively 'expensive'.

A.4 Other Arrangements

A few other arrangements can be mentioned that have been initiated by the government in the context of its industrial policy (vis-a-vis the capital markets). These measures are mainly of a legal and fiscal nature. Two of these, the adjustment in the 'Wet Toezicht Kredietwezen' (WTK) and the 'Tante Agaath'-Arrangement have been implemented so far, whereas the 'Technostartersfonds' (TSF) still needs to be set up.

Relaxation/Adjustment of Article 25 of the 'Wet Toezicht Kredietwezen' (WTK), 1980

The adjustment in the WTK allows commercial banks to take a larger than 5% equity (or control) stake in the firms they financed. The 5%-rule was introduced in 1978 to prevent conflicts of interest between investment banking and commercial banking activities. The adjustment of this rule relaxes the restrictions on banks to provide risk capital, and therefore serves as an indirect measure to stimulate the supply of risky financing. Institutional investors (e.g. pension funds, insurance companies) and banks now increasingly invest in risk capital.

The 'Tante Agaath'-Arrangement and the 'Startersfondsen' (Fiscal Facility for Start-up Firms), 1996

The *objective* of this fiscal arrangement is to stimulate the supply of risk capital by informal investors to (technological) start-up firms (or existing firms younger than 8 years). Investors which directly invest up to a maximum amount of Dfl. 50,000,- in these types of corporations will enjoy several tax benefits with respect to interest payments and dividends received and can receive fiscal compensation in case of possible losses on their investments (with a maximum of 60%). The favorable tax treatment of interest and dividends also applies to investors in start-up funds, founded by private venture capital firms, ROMs or others (banks, individual investors, etc.).

The 'Technostartersfondsen', (Technological Start-up Funds, TSF), 1996

The *objective* of the TSF is to facilitate the (risky) financing to technological start-up firms ('techno-starters'), which can neither obtain direct financing by banks and/or the financial markets nor obtain funding by venture capitalists. The purpose of the Ministry of Economic Affairs is to create a (decentralized) infrastructure which focuses on this specific segment of corporations.

This arrangement is not yet in place, but will possibly be set up by the creation of 4-5 regional start-up funds by ROMs and/or private venture capitalists. Risk capital will be provided in amounts of Dfl. 0.1 to Dfl. 0.5 mln. Per TSF the government contributes an amount equal to 25% of the total available funds. After 5 years the TSF should have invested 75% of the total funds made available for investments. An expected amount of Dfl. 60 mln. then could be generated within five years, satisfying the financing needs of approximately 250 start-up firms.

Table A.2: Overview of the Main Characteristics of the Arrangements

Arrangement	Objective	Type of Financing and Contractual Characteristics	Other Relevant Aspects
I.1 The *'Herstelbank'*	- Contribute to restoration production facilities - Provide long-term financing to industrial corporations	See I.2	
I.2 The *NIB*	- Provide medium to long-term risk financing to medium-size and large firms	Debt (Loans) and (minority) equity stakes ('participaties'), amounts ranging from Dfl. 2 to Dfl. 200 mln. See also II.1	
I.3 The *MIP*	- Provide risk capital to large firms to stimulate investment activity and returns	Equity stakes with a minimum amount of financing of Dfl. 4 mln.	In 1991 incorporated in private venture capital supplier Alpinvest
I.4 The *ROMs*	- Improve the social-economic structure and create employment in certain regions of economy - Supply risk capital to small and medium-size firms through regional channels	Venture capital, mainly equity stakes	Total investment capacity Dfl. 50 mln. per year Government was direct supplier of capital, now only indirectly involved through guarantees

II.1	The *RBF*	-	Facilitate provision of risk capital in order to solve capital market frictions in financing of medium-size and large companies	Government guaranteed funding in the form of loans, guarantees and equity participations, ranging between Dfl. 2 and Dfl. 50 mln. Currently in use (see also Table 5.1): * *B-krediet* Non-subordinated, (partially) secured loans, government guarantee between 50% and 90%, maturity 3-12 years * *AA-krediet* Subordinated loan under 90% government guarantee, maturity 7.5-15 years	AA-krediet intended to generate additional bank financing
II.2	The *GPPM*	-	Increase the supply of risk capital to smaller and medium-size companies by stimulating development of private venture capital firms	Government guarantee to compensate 50% of losses made on equity participations up to a maximum of Dfl. 4 mln.	Has been terminated at the end of 1995
II.3	The *BMKB*	-	Facilitate the provision of credit to small and medium-size firms	Commercial, non-subordinated and (mostly) non-secured loans under a 90% government guarantee with a maximum amount of Dfl. 2 mln. per firm	Banks need to match the amount of state-guaranteed financing with funding at their own risk on a one by one basis (for investment amounts > Dfl. 0.1 mln) or a 0.5 by one basis (for investment amounts < Dfl. 0.1 mln.)

III.1	The *TOK* and the *PBTS*	-	Provide risk capital for projects stimulating technological development	TOK: Ten-year subordinated loan with interest payments based on generated revenues	The TOK needs to be matched with other financing sources on a 1.5 by 1 basis
III.2	The *IGF*	-	Provide risk financing to small and medium-size firms	Subordinated loans and/or equity stakes	
III.3	*Direct Governmental Support/Subsidies*	-	Give direct support to individual corporations in order to prevent unemployment and restructure several sectors in the economy	Loans, government and equity stakes	
III.4	The *'OE-krediet'*	-	Improve the financial structure of Eastern European corporations by supplying risk capital to joint ventures of Dutch and Eastern Eurpean firms	Subordinated loans under 90-95% government guarantee ranging between Dfl. 1 mln. ad Dfl. 5 mln.	OE-krediet requires that Dutch firms match capital provided on a 0.5 by 1 basis
III.5	The *IF*	-	Increase the supply of medium to long term risk capital to medium-size and large firms	Subordinated loans, debt with upside potential (e.g. convertible debt) and equity stakes ranging between Dfl. 10 and Dfl. 50 mln at commercial terms	
IV.2	*Fiscal Facilities for Start-up Firms*	-	Stimulate the supply of risk capital by informal investors (or by start-up funds founded by private venture capitalists) to (technological) start-up firms or firms younger than 8 years	Tax benefits and fiscal loss compensation to investors	
IV.3	The *TSF*	-	Facilitate the (risky) financing to technological start-up firms on a decentralized basis	Provide 25% of the amount to be invested by start-up funds created by ROMs or private venture capitalists	Arrangement has not been set up yet