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Financing Small Conventional and Knowledge-based Enterprises

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Preface

This working paper is a revised and extended version of a paper presented at the 29th European Small Business Seminar on the subject "Best Practices and Innovations in SME Financing". The seminar took place in Lisbon, Portugal, 15-17 September 1999. The timespan for the analysis of the financial structure and profitability in manufacturing and knowledge-based enterprises has been extended from 1995 to 1997 to 1995 to 1998. The paper also contains a more detailed analysis of the current liabilities in respect of these two types of enterprises, and an in-depth examination of the financing of small and medium-sized enterprises (SMEs).

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Ove Langeland

Introduction

Over the past decade, small enterprises have become more important in terms of their contribution to GDP and employment growth in most developed economies (Boye and Kinserdal 1992, Storey 1994). However, it is assumed that small enterprises face unique financial problems which place significant constraints on the role they play in the overall performance of the economy. The lack of start-up capital is a financial problem which is especially important for new or small enterprises in the early stages of their development. Several studies indicate that small enterprises are often established on the basis of financial resources from segmented and imperfect financial markets, and that they rely heavily on personal savings and short-term liabilities to finance investments (Walker 1989).

It is often argued that knowledge-based enterprises are more likely than "conventional" small enterprises to face financial constraints. Knowledge-based enterprises are regarded as "high-risk, high-return" businesses. Substantial gaps and inconsistencies in information exchanged between those supplying and seeking finance make this a likely area for market failure. External funding is often required if a company is to cope with changing market conditions and technological developments. Such changes pose important challenges in respect of the management and organisation of all small enterprises. However, financial obstacles are more severe for small knowledge-based enterprises whose product/process may be untested in the market, where rapidly developing new technology makes existing technology obsolete very quickly, and where there is often a relentless process of learning and developing in circumstances of considerable uncertainty (Moore 1994). Accordingly, personal savings remain the most important source of start-up funding (Storey and Strange 1992), whereas internally generated profits and external funding from banks and venture capital enterprises assume much greater significance for more mature small enterprises (Oakey et al. 1994, Hughes and Storey 1994).

This paper takes the following assumptions as its point of departure for discussion and analysis:

1. How are small enterprises financed in Norway?
2. Do small enterprises experience specific financial constraints?
3. Have the profitability and financial structure of small enterprises changed over time?
4. Are small knowledge-based enterprises more profitable than small "conventional" enterprises?

The study is based on data from several sources. First, it uses a database of financial information collected from 1983 to 1992 from 1000 small manufacturing enterprises with fewer than 50 employees, and survey data from the same enterprises in 1993. The data sets are supplementary. The survey shows the percentage of enterprises that made investments from 1990 to 1992 and indicates how the investments were financed.[1] The financial data

[1] Unfortunately, there is no information available about whether the investments were large or small or about the size of the different financial resources used.

covering the period 1983 to 1992 shows the source and application of funds, i.e. the percentage of investments financed by retained earnings, liabilities or external equity.

Second, the study uses financial data collected from 1995 to 1998 from approximately 17 000 small and medium-sized limited companies in a variety of industries. Finally, the study uses data from case studies of 30 small knowledge-based enterprises in 1997. The paper analyses the financial structure and profitability of small enterprises in the Norwegian manufacturing industry (conventional enterprises) and in knowledge-based industries. See appendix I for definitions of conventional and knowledge-based enterprises.

The present paper is organised as follows: Section 2 examines how small enterprises are financed and gives an overview of their financial structure; Section 3 addresses the questions of financial constraints on small enterprises; Section 4 presents empirical evidence on the profitability of small enterprises; and Section 5 concludes the paper by summarising theoretical assumptions and empirical evidence.

How are small enterprises financed?

Enterprises finance their investments through liabilities and/or equity. Retained earnings and surplus liquidity constitute the most important internal financial resources, whereas external financial resources consist of short- and long-term liabilities, together with external equity. In accordance with financial theory, small enterprises would be expected to rely heavily on retained earnings for financing investments. Due to credit rationing, small and newly established enterprises would be expected to experience problems establishing long-term liabilities. As a result, short-term liabilities will be relatively prominent among small enterprises. In the early stages of development when profits are modest, the equity ratio is also expected to be low. Having a high percentage of short-term liabilities is also expected to increase financial costs and the ratio of liabilities to equity.

In their study, Cosh and Hughes (1994) show that the financial structure of small enterprises is consistent with a "pecking order hypothesis" (see Myers and Majluf 1984).[2] Results from several studies also show that financial barriers are greatest in the start-up phase and that the following characteristics are common among small enterprises:

- They rely more heavily than large enterprises on retained earnings and personal savings for financing their investments;
- They have a low percentage of long-term liabilities and external equity from traditional capital markets;
- They often have low profitability and a low equity ratio in the start-up phase.

[2] "Here funds are sought in an order which minimises external interference and ownership dilution by leaving equity till last after retentions and debt have been exhausted....The upshot is that SMEs are characterised by a relatively greater reliance on short-term loans and overdrafts and a much smaller reliance on equity financing than are larger enterprises" (Hughes and Storey 1994:3).

Taking this hypothesis and these results as a point of departure, this study examines whether and to what extent they are in line with Fafo researchers' own findings. First, this study presents empirical evidence of how small manufacturing enterprises were financed from 1983 to 1992, and it presents some results from a case study related to the financing of small knowledge-based enterprises. Second, the paper compares the financial structures of small knowledge-based enterprises with those of small enterprises in the manufacturing industry from 1995 to 1998.

The financing of small manufacturing enterprises

Analyses of financial data from 1983 to 1992 show that small and large manufacturing enterprises both finance their investments mainly by retained earnings. However, the retention rate is markedly higher in small enterprises. From 1983 to 1992, the retention rate in large enterprises was 63 per cent; long-term liabilities constituted approximately 23 per cent whereas external equity accounted for 13 per cent. By comparison, in small enterprises, the retention rate exceeded 90 per cent whereas external equity was negative, cf. Table 1.

Survey results from the same enterprises in 1993 concurred with analyses of company accounts. Half of the enterprises reported that retained earnings were the most common source for financing investments from 1990 to 1992. Mortgages were the predominant form of long-term liability. This probably indicates that entrepreneurs and owners of small firms in the manufacturing sector are often able to obtain financing by furnishing collateral.[3] On the other hand, external equity plays an insignificant role in financing small manufacturing enterprises. Only 3 per cent financed investments using external equity, while 7 per cent used liable loan capital. No investments were financed by debenture debt. Equity from informal investors was also rare or totally lacking.

The way in which small enterprises finance their investments vary slightly by industry, size, geographical region, form of organisation or age. In contrast, public capital transfers vary by size and region. This type of funding is most commonly used by the largest of the small enterprises and by enterprises in northern Norway. The geographical difference is commensurate with regional policy in Norway, while differences by size may be due to problems relating to information or selection.

The financing of small knowledge-based enterprises

The results of the case studies involving knowledge-based enterprises in the Oslo region in 1997 show that personal savings are the primary financial source, followed by retained earnings, whereas loans from banks play a minor role (Aslesen et al. 1999). These results are

[3] Since studies of the financial structure show that, on average, short-term liabilities constitute 50 to 60 per cent of total assets in SMEs, one might have expected short-term loans to be a more important source of financing. However, it is important to keep the stock of capital separate from the flow of capital. A high percentage of short-term liabilities indicates that the daily running of an enterprise depends on short-term financing. It does not, however, say anything about how the firm finances its investments at any given time. Most enterprises probably use long-term funding (retained earnings and mortgages) to finance the majority of their investments in fixed assets. If not, they risk liquidity problems or, at worst, bankruptcy.

commensurate with findings from international studies (Oakey 1994 and 1995). Bank loans are much less important in the early stages for knowledge-based enterprises than for conventional enterprises. A British study shows that bank loans provided only 7 per cent of the finance for high-technology enterprises (Moore 1994), compared with 25 per cent for small enterprises in general (Storey and Strange 1992). A Norwegian study also shows that bank loans were of secondary importance for financing small manufacturing enterprises (Kvinge and Langeland 1995). These results indicate that investments in newly established knowledge-based enterprises are more risky than corresponding investments in conventional enterprises. Banks are more conservative in their investment strategies, and they do not have the skills needed to handle these kinds of investments. Venture capital enterprises normally possess both the risk capital and the skill needed for high risk investments.[4]

The study also reveals interesting differences in funding between different knowledge-based industries. Whereas software producers rely heavily on personal savings and retained earnings, biotechnological enterprises have substantial external financial support. Differences in financial patterns may be explained by differences in production technology. Software producers have smaller investments and an ability to produce early profits from sales, whereas biotech enterprises call for larger investments and R&D investments which continue to increase for years, and it may take quite some time to achieve profits from sales (Oakey 1995).

The financial structures of small knowledge-based and manufacturing enterprises

In this section, the Dun & Bradstreet database is used to examine potential differences in the financial structures of small- and medium-sized manufacturers and knowledge-based enterprises. Enterprises with 1 to 19 employees are termed small, and companies with 20 to 50 employees are considered medium-sized enterprises.[5]

To examine development trends over time, this study has used accounting data for the period from 1995 to 1998. In 1995, 9670 knowledge-based enterprises and 6045 manufacturing enterprises was registered in the database. In 1998, the numbers had increased to 12,290 knowledge-based and 6,561 manufacturing enterprises, respectively.

Analyses show that Norwegian SMEs rely heavily on short-term liabilities to finance their investments. Knowledge-based enterprises, on the other hand, are more dependent than manufacturing enterprises on short-term liabilities. There are also interesting differences

[4] Venture capital plays an important role by bridging the information gap between entrepreneurs and investors, making it possible to link competent risk capital and entrepreneurial talents. Classic venture capital invests in the start-up and early-stage phases of a firm, often in high-technology sectors. Investments in these sectors still predominate, although early-stage investments have gradually been reduced in favour of later-stage, less risky investments. This change in investment strategy has occurred in Norway and internationally (Bygrave and Timmons 1992, Nordic Council of Ministers 1993, Gjerum and Johansen 1995).

[5] The Dun & Bradstreet database also contains enterprises with no employees registered. Among these enterprises, one finds large enterprises lacking data on employment registration and 'sleeping' SMEs with no activity. Including this heterogeneous group of enterprises in the present analysis would make no sense, so they have been excluded from the sample.

between enterprises with regard to size, cf. figures 1 and 2. Medium-sized knowledge-based enterprises are more dependent than small knowledge-based enterprises on short-term liabilities. From 1995 to 1998, 66 to 68 per cent of total assets in medium-sized enterprises were financed by short-term debt, whereas the share of assets small knowledge-based enterprises financed by short-term liabilities declined from 58 to 48 per cent. The share of assets financed by equity in small knowledge-based enterprises climbed steeply from 1995 to 1997, i.e. from 29 to 34 per cent. A year later, in 1998, equity financing was down to 24 per cent. Equity financing for medium-sized know-ledge-based enterprises was lower but more stable during this period - ranging between 17 to 18 per cent from 1996 to 1998.

Figure 1 shows that the equity ratio for small knowledge-based enterprises was almost twice as high as for medium-sized knowledge-based enterprises in 1997. Financing by long-term debt also doubled for small knowledge-based enterprises during the period, increasing from 13 to 27 per cent of the assets. For medium-sized enterprises, the share of investments financed by long-term debt decreased from 18 per cent in 1995 to 14 per cent in 1998.

Short-term liabilities are far and away the most important financial source for manufacturing enterprises, as they are for knowledge-based enterprises, cf. figure 2. However, there are no clear differences in financial structure between manufacturing enterprises on the basis of size. Further, long-term debt plays a more important role in financing investments in the manufacturing industry than in knowledge-based industries. Approximately 25 per cent of the assets of small- and medium-sized manufacturing enterprises are financed by long-term debt. As for the small knowledge-based enterprises, equity financing tends to increase while short-term debt tends to decrease during the period. However, these changes are not as distinct as in knowledge-based enterprises.

Empirical evidence on the financing of Norwegian SMEs from 1995 to 1998 shows that small and medium-sized enterprises in both manufacturing and knowledge-based industries are heavily reliant on short-term liabilities. This is in line with what might be expected. In the manufacturing industry, no clear financial pattern emerged with regard to size, and the changes over time were insignificant. In the knowledge-based industry, however, there were some striking differences between small and medium-sized enterprises. Contrary to what one might expect, medium-sized enterprises are more dependent than small enterprises on short-term liabilities. Equity financing is more important in small than in medium-sized enterprises. Both findings seem to be inconsistent with theoretical assumptions and to deviate from the findings of other empirical studies.[6]

Analyses of asset structures reveal that accounts payable to suppliers represent a very high proportion of aggregate short-term liabilities in small- and medium-sized enterprises in the manufacturing industry, and that this is even more the case in the knowledge-based industry.

[6] In his 1994 study, Hughes (1994) found that SMEs, manufacturing and non-manufacturing alike, are more reliant than large enterprises on short-term liabilities and that equity financing is less important in small enterprises than in large ones. Due to different size categories, these findings are not directly comparable to the present study, but Hughes's findings are consistent with the results of the Kvinge and Langeland study (1995) referred to in this paper.

On the other hand, manufacturing enterprises rely more than knowledge-based enterprises on overdrafts and public duties, cf. figure 3. The heavy reliance on short-term debt, including a high proportion of trade credit and overdrafts, may be ascribable to problems obtaining long-term financing but it may also be rooted in management preferences in small enterprises [7]. Cosh and Hughes argue that this form of debt has the least formal restrictions and could be preferred because it "combines flexibility with an absence of the kind of regular monitoring and repayment of interest that go with fixed term and longer loans" (Cosh and Hughes 1994:32). The problem with this asset structure is that pressure exerted by suppliers and banks may lead to severe problems, especially liquidity problems, during periods of recession. In such enterprises, management will also tend to concentrate more on financial issues than on production matters. Small enterprises, which rely heavily on short-term debt, may therefore be caught in a vicious circle.

Do small enterprises experience financial constraints?

The assumption that small and newly established enterprises experience financial problems is widespread (Hughes and Storey 1994, Storey 1994). Low profitability and market failures are considered the most important financial constraints. Retained earnings are often insufficient and, owing to asymmetric information between lender and borrower, small enterprises may have little or no access to long-term liabilities and external equity. According to the Modigliani-Miller principle (1958), finance does not affect investment. This principle, however, rests on the assumption of a perfect capital market with no taxation and full information. In real capital markets, investments and financing can not be separated and several imperfections, such as expenses related to taxation, bankruptcy and asymmetric information, increase the cost of external financing. These costs could be reduced if retained earnings covered the financing of investments in their entirety, but, due to risk and liquidity barriers, most enterprises need an external source of financing (Carlsen 1991). Small enterprises seem to be particularly hard hit by the cost of external financing, especially in the early stages of their development when profitability and creditability are low (Boye and Kinserdal 1992, Churchill and Lewis 1983, Hansen 1993, Ruhnka and Young 1987, Walker 1989).

According to a Norwegian study about the start-up and development of small enterprises, almost half the enterprises report having financial problems, especially in the early stages of development (Waage et al. 1979). The present paper discusses these findings first by

[7] Cosh and Hughes explain this by referring to the Pecking Order Hypothesis (cf. Myers and Majluf 1984), "of financial structure in which the financing of project s is undertaken by first using internal resources, then debt and, as a final resort, equity". The reason for this order of preferences is that if managers expect the project to give a good return on investment, they then will put the interest of existing shareholders first by using internal resources. If internal resources are insufficient "then debt will be preferred to equity because its payments are less correlated with expected future payoffs, are therefore less risky and do not carry the adverse signalling implications of equity" (Cosh and Hughes 1994:29-30).

presenting survey results from small manufacturing enterprises and second by presenting some empirical evidence from case studies of small knowledge-based enterprises.

No financial problems in small manufacturing enterprises

In a 1993 survey (Kvinge and Langeland 1995), small manufacturing enterprises reported whether and to what extent they have encountered problems financing different types of investments. If so, they were asked to point out the main reasons for these problems. The following results were elicited:

Two-thirds of the enterprises (67%) which made investments from 1990 to 1992 reported having no financial problems. This may seem surprising, given that financial obstacles for small enterprises are almost taken for granted (Storey 1994). To verify these results, it is necessary to examine small enterprises in different industries and over different time periods. The present findings may also be due to the fact that the investments in question were not particularly capital intensive, that the enterprises had access to subsidised capital or that many enterprises had postponed planned investments due to insufficient financial resources. The present analysis is based exclusively on *surviving* enterprises. If the results are valid, they indicate that the financial problems of small enterprises may be exaggerated.

Interestingly, enterprises reporting financial problems showed no significant differences by industry, size, geographical region, form of organisation or age. The lack of equity, low profitability, uncertain market prospects and a lack of public funding were mentioned as the most important reasons for the enterprises' financial problems. There were few complaints about the lack of skill on the part of financial institutions. However, the analysis shows that financial problems are most widespread among enterprises with a low equity ratio and a high percentage of short-term liabilities, cf. table 2. This is in line with what might be expected.

No financial problems in small knowledge-based enterprises

Only 4 of 22 enterprises in the present case study of knowledge-based enterprises (1997) reported facing financial constraints, and all four had problems financing investments during the start-up phase. These findings are commensurate with British studies indicating that innovative enterprises are generally not more exposed to financial constraints than other enterprises (Cosh, Hughes and Wood 1996). The same studies confirm that financial constraints are more likely to exist in the start-up phase. Moore (1994), however, finds some evidence to suggest that fast-growing high-technology manufacturing enterprises are more likely than enterprises that grow more slowly to face severe financial constraints. On the whole, however, financial constraints do not seem to be a decisive obstacle to the growth and development of small enterprises, be they conventional or knowledge-based. The reported lack of financial problems may also reflect the preference of entrepreneurs to follow a risk-averse growth strategy. Most high-technology founders prefer to establish and grow based on minimal external financing so as to retain corporate control. At that point, the costs of growth are not financial but managerial and psychological (Cressy 1996)[8].

[8] In their comment to the financial structure of small UK companies, Cosh and Hughes (1994:58) also

Are small enterprises profitable?

Low profitability is often referred to as the main financial constraint on small enterprises. There are several reasons why small enterprises may experience low profitability, for example, loss of market shares, high input costs, or the lack of managerial skills. If small business owners don't manage their businesses well, the businesses will not perform well. This section begins with a presentation of some main results on profitability from the study of small manufacturing enterprises from 1983 to 1992. Then it moves on to an analysis of profitability, i.e. operating profits and returns on total assets, in small enterprises in the manufacturing industry and in knowledge-based industries from 1995 to 1998.

Profitability in small manufacturing enterprises

Analyses of company accounts show that operating profits vary substantially among small manufacturing enterprises. On average, half of the small manufacturing enterprises generated operating profits of less than 8.5 per cent from 1983 to 1992, and fully one fourth of them earned an operating profit of less than 1.6 per cent. On average, every fifth enterprise incurred negative operating profits in the 1983 to 1992 period, and the figure exceeded 27 per cent in the upper quartiles. These results clearly indicate the heterogeneity of the small enterprise group.

Analyses also show that operating profits as a percentage of operating income decrease in direct proportion to the size of the enterprise. However, the opposite is the case when payroll expenses are compared with operating income. In the present sample of small manufacturing enterprises, roughly 90 per cent of the managers are owners or co-owners. It is not always easy to differentiate between operating profits and payroll expenses in such enterprises since all surplus income usually goes to the same person[9].

In a comparison between small and large enterprises, it was found that operating profits account for a higher percentage of operating income in large enterprises than in small ones. However, the differences were not substantial, and may be due to random variations.

Great variation was also found among small manufacturing enterprises as regards their returns on total assets. On average, the return on total assets was 13.9 per cent for half of the enterprises from 1983 to 1992, ranging from 3.2 per cent for the lowest quartile and approximately 40 per cent for the highest quartile. Not surprisingly, the smallest enterprises have the highest returns. This may be due to the fact that the turnover of operating assets is greater in these enterprises.[10] When comparing small and large enterprises, the large

indicate that restricting growth may be more of a psychological than a financial nature: "The financial structure which characterises SMEs in the UK may reflect the wishes of the entrepreneurs as much as constraints placed upon them by suppliers of finance."

[9] The extent to which working owners are compensated by salaries or profits may depend on several circumstances. For example, if tax laws favour profits, it will be profitable for a firm to pay less in wages and more in returns on assets. In some periods, all cash may be used to finance investments. In this case, there is little left over for salaries and all earnings are counted as operating profits.

[10] When a firm has high turnover to total assets ratio, the return on total assets will also be relatively high.

enterprises often show the highest return on total assets. However, as was the case for operating profits, the differences were modest (Kvinge and Langeland 1995).

Profitability in small manufacturing and knowledge-based enterprises

This section uses the Dun & Bradstreet database to examine profitability in small- and medium-sized manufacturing and knowledge-based enterprises from 1995 to 1998. Profitability is measured in terms of operating profits and returns on total assets. The results are presented to illustrate how profitability varies by size and industry. The enterprises are divided into different categories: those that lose money, those with modest earnings and those earning high profits.

Small knowledge-based enterprises have the highest share of enterprises with negative operating profits, but also the highest share with high operating profits, cf. figure 4. Every fourth small knowledge-based enterprise sustained a negative operating profit, while nearly two of five of these enterprises (38%) had an operating profit of 10 per cent or more in 1998. Profitability also increased from 1995 to 1998 for these enterprises. For medium-sized enterprises in the knowledge-based industry, the picture is slightly different. It remained more stable during the period under review. A smaller share of enterprises earned high profits and, equally, a smaller share earned a negative operating profit. More than half earned an operating profit between 0 and 10 per cent, and 25 per cent earned operating profits in excess of 10 per cent. Again, heterogeneity appears to increase as enterprise size decreases.

The size pattern is very much the same in the manufacturing industry as in the knowledge-based industry, cf. figure 5. A larger proportion of small enterprises had a negative operating profit, but a higher proportion also earned operating profits in excess of 10 per cent. That being said, a far smaller share of small manufacturing enterprises had a margin of 10 per cent or more than what was the case in the knowledge-based industry. More than the half the small manufacturing enterprises and approximately two thirds of the medium-sized manufacturing enterprises earned operating profits of between 0 and 10 per cent.

As a measure of profitability, operating profit figures entail some drawbacks for comparing variations in profitability between different industries. For instance, where the manufacturing industry has higher operating costs as a result of investments in machinery and other fixed assets than the knowledge-based industry, which relies more on investment in intellectual capital, comparisons of operating profits will give a biased view of the profitability of the two industries. Accordingly, the present study also presents the figures for returns on total assets for SMEs in the two industries.

Profitability, as measured by returns on total assets, reveals a pattern similar to that of operating profits, cf. figure 6. A large percentage of small knowledge-based enterprises earned the highest returns on total assets and, correspondingly, there is a large percentage that had negative returns. Medium-sized enterprises do not vary so much in terms of profitability. In 1998, more than one of four (28%) small enterprises had a return on total assets in excess of 30 per cent, while that was the case for only 14 per cent of medium-sized enterprises. Profitability also increased significantly among small knowledge-based enterprises during the period under review. In 1995, approx. 40 per cent of them had a return on total assets of 15 per cent or more, while that proportion had increased to almost 50 per cent three years later.

The profitability picture for the manufacturing industry resembles that for the knowledge-based industry, cf. figure 7. It is among the smallest enterprises one finds the most profitable ones as well as the largest share with a negative return on total assets. Heterogeneity seems to be a common denominator for small enterprises in all industries in most respects. Profitability increased slightly for small- and medium-sized manufacturing enterprises alike. However, the share of enterprises earning a high profit is much larger among knowledge-based enterprises than among manufacturing enterprises in both size categories. Whereas nearly every second small enterprise in the knowledge-based industry had a return on total assets of 15 per cent or more in 1998, 37 per cent of the small enterprises in the manufacturing industry were equally profitable.

To recapitulate briefly: From 1995 to 1998, profitability increased for small- and medium--sized enterprises in the manufacturing industry and in the knowledge-based industry. The improvement in profitability was strongest in the knowledge-based industry, especially for the smallest enterprises. Small manufacturing enterprises also became more profitable during this period. The pattern of differences according to size is fairly similar in both industries, with small enterprises showing the biggest spread in profitability, i.e. having the largest share of enterprises with either negative or high returns. These tendencies are more pronounced in the knowledge-based industry than in the manufacturing industry. In terms of profitability, knowledge-based enterprises are more "high risk and high return" than manufacturing enterprises.

Conclusions

The assumption that small enterprises are subject to severe financial constraints was not confirmed by the present analysis, regardless of whether the enterprises were in manufacturing or the knowledge-based industry. Only a small fraction of enterprises claim to have had trouble financing investments. The study conducted by Kvinge and Langeland (1995) on financing small enterprises in the manufacturing industry showed that financial problems are most widespread among enterprises with low equity ratio and a large share of short-term liabilities. The case study referred to in the present study (Aslesen et al. 1997) indicates that financial obstacles in the knowledge-based industry are strongest during an enterprise's start-up phase.

However, the analysis also revealed that external funding mainly consists of short-term liabilities, and that small enterprises rely heavily on personal savings and retained earnings to finance their investments. Funding from external capital markets is more or less absent, and bank loans seem to be far less important in the knowledge-based industry than in the manufacturing industry. This probably indicates the high-risk feature of knowledge-based enterprises and the conservative lending policy of banks.

The analysis also shows that profitability varies substantially among small enterprises in both the manufacturing and the knowledge-based industry. Small enterprises comprise a very heterogeneous group, and within this group one finds both the most profitable and the most unprofitable enterprises. The profitability gap is wider in the knowledge-based

industry than in the manufacturing industry. Profitability improved for small enterprises from 1995 to 1998, especially for small knowledge-based enterprises. However, a relatively large percentage of small enterprises in both the manufacturing and the knowledge-based industry still suffer from low profitability, a low equity ratio and a large percentage of short-term liabilities. This situation can result in growth restrictions, liquidity problems during recessions, and heavy pressure on management resources.

What are the reasons for this? Are the harsh economic situations of many small enterprises due to market failures or to organisational failures? If the latter is the case, what lessons can be learned by management?

It was difficult to find empirical evidence that "gaps" exist in the financing of small enterprises, even though young and small enterprises may have problems obtaining equity capital and bank financing upon request. And to quote Storey (1994:239): "It is also difficult to distinguish between the instances where the market for finance work well – so that the "good" projects are being accepted and the "bad" projects are being rejected – and where there is a market failure, where either decisions are imperfect and/or insufficient resources are provided to finance the small business sector". On the other hand, several studies show that small enterprises suffer from organisational failures, i.e. poor management, lack of adequate financial information on which to base key decisions, and no clear business strategy (Kvinge and Langeland 1995). Finally then, we draw on Storey (1994) to point out "some lessons for the small business community" to improve the management and performance of small enterprises.

Table 6 outlines the 'dos and don'ts' for small enterprises. The first theme mentioned by Storey is the importance of directors' remuneration in influencing enterprise viability and growth. For an enterprise to survive and grow, the business owner must be prepared invest heavily and not take out too much money in "good years". Second, it is important to maintain a good relationship and a regular dialogue with the bank, and not suddenly request additional finance. Third, small enterprises that get private sector advice from accountants, banks and solicitors improve their chances of survival and growth. Fourth, small enterprises should use current financial data to make key decisions. Fifth, small business owners should be prepared to let in outsiders, because enterprises where equity is shared grow faster than enterprises where equity is controlled exclusively by the owner-manager. Sixth, research evidence shows that enterprises that grow are more likely to survive than enterprises that do not grow. Seventh, key elements to improve corporate growth are product innovation, management team building, personnel policy and marketing. As Storey points out, this is not a complete list and the findings are probably well known. But enterprises that follow these lessons will certainly improve their chances to survive and grow, whereas enterprises that don't may run into trouble.

Appendix I

It is difficult to make clear distinctions between knowledge-based and conventional enterprises. This paper is based on a set of criteria presented in the Oslo Manual (1997) for measuring knowledge and innovation in different industries (see also Aslesen et al. 1997). Appendix I is based on the following three indicators:

1. The level of formal education in the industry;
2. The percentage of innovative enterprises and innovative activity in the industry;
3. The relative cost of R&D in the industry.

Nace code definition of manufacturing and knowledge-based industry

Nace	Manufacturing industry	Knowledge-based industry
15	manufacture of food products and beverage	
16	manufacture of tobacco	
17	manufacture of textiles	
18	manufacture of wearing appeal	
19	tanning and dressing of leather, manufacture of luggage etc	
20	manufacture of wood and cork, except furniture	
21	manufacture of pulp, paper and paperproducts	
22		publishing, printing and reproduction of recorded media
23	manufacture of coke, refined petroleum products	
24	manufacture of chemicals and chemicalproducts	
24.4		manufacture of pharmaceuticals, medicinal chemicals and botanical products
25	manufacture of rubber and plastic products	
26	manufacture of other non metallic mineral products	
27	manufacture of basic metals	
28	manufacture of fabricated metal products	
29	manufacture of machinery and equipement n.e.c	
30		manufacture of office machinery and computers
31	manufacture of electrical machinery and apparatus n.e.c	
32		manufacture of radio, television and communication equipement and apparatus
33		manufacture of medical precisision and optical instruments, watches and clocks
34	manufacture of motorvehicles, trailers and semitrailers	
35	manufacture of other transport equipement	
36	manufacture of furniture	
37	recycling	
51.640		wholesale of office machinery and equipements
52.485		retailsale of computers, officeequipement and telecommunication equipement
64.2		telecommunications
65		financial intermediation, except insurance and pension funding
66		insurance and pension funding, except compulsory social security
72		computer and related activities
73		reasearch and development
74.1		legal, accounting, book keeping and auditing activities etc
74.2		architectial and engineering activities and related technical consultancy
74.3		technical testing and analysis
74.4		advertising

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Figures and tables

Table 1 Source and Application of Funds, Small Enterprises in the Manufacturing Industry

	Total	1984	1985	1986	1987	1988	1989	1990	1991
Supply	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Generated from operation	**92.3**	115.1	79.0	82.8	123.2	86.4	92.6	59.6	100.0
Ext. supplied equity	**-15.6**	-27.8	0.0	-8.2	-44.3	-2.6	-11.6	-24.5	5.9
Long-term liability	**23.3**	12.7	21.0	25.4	21.1	16.2	19.0	64.9	5.5
Use	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Investment in fixed assets	**47.0**	18.0	25.0	108.8	64.0	65.9	51.0	17.6	25.9
Change in working capital	**53.0**	82.0	75.0	-8.8	36.0	34.1	49.0	82.4	74.1
N		130	137	159	166	197	234	258	288

Source: Fafo Annual Accounts 1983 to 1992

Figure 1 Financial structure by size. Knowledge-based industry (1995–98)

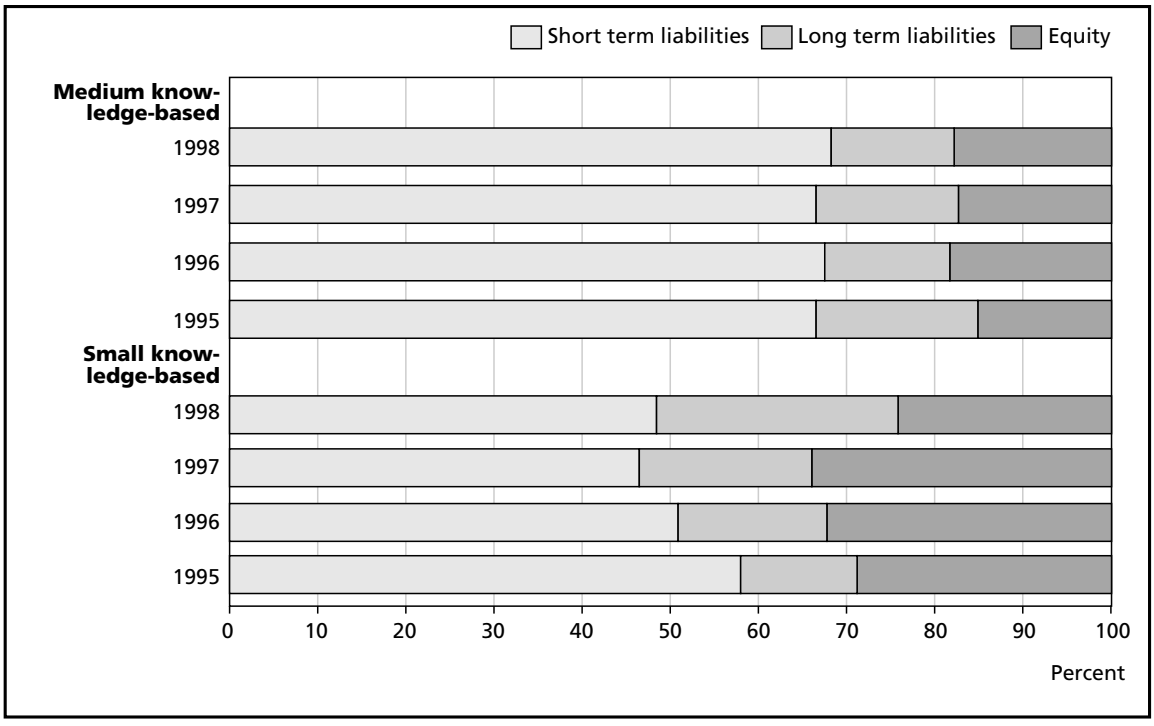

Table 2 Financing Problems and Equity ratios in Small Manufacturing Enterprises

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
No financing problem	20.2	26.9*	19.9	16.5	18.3*	22.9*	13.4*	18.1	7.9*	23.3*
Financing problems	11.7	15.1*	5.0	-0.7	-.09*	0.3*	-6.9*	-10.6*	-12.3*	-9.3*
No response	9.4	32.1	25.0	17.6	22.7	25.6	26.0	15.1	5.2	9.0

Source: Fafo Annual Accounts 1983 to 1992 and Fafo survey 1993

Figure 2 Financial structure by size. Manufacturing industry (1995–98)

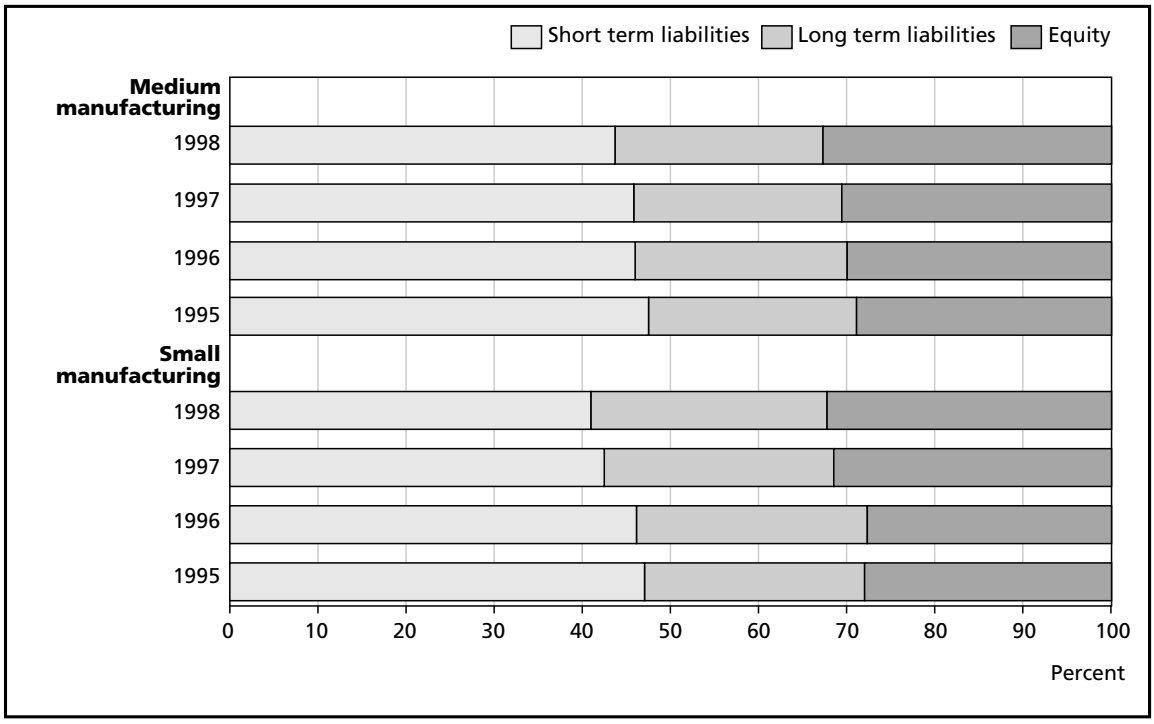

Figure 3 Short term liabilities by industry and size. Percentage 1998

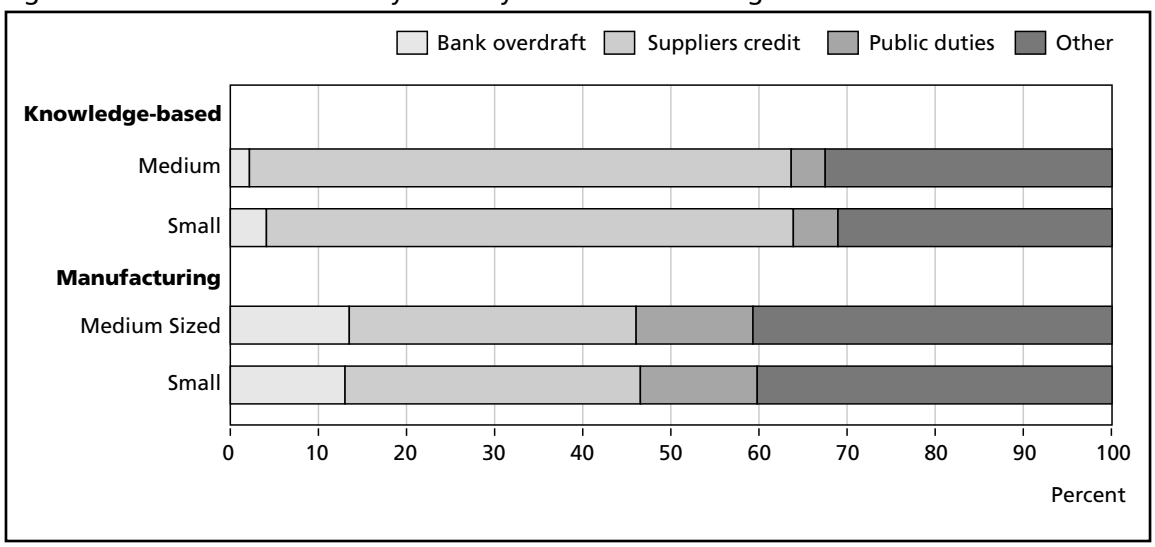

Figure 4 Operating profit by size. Knowledge-based industry (1995–98)

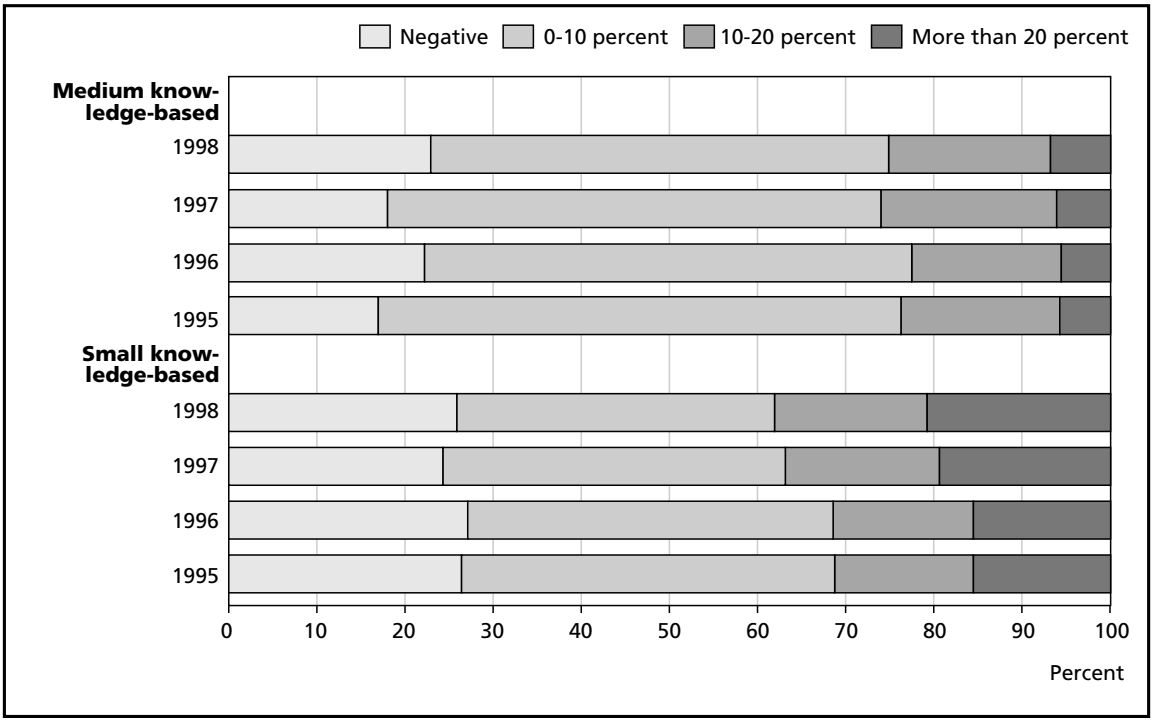

Figure 5 Operating profit by size. Manufacturing industry (1995–98)

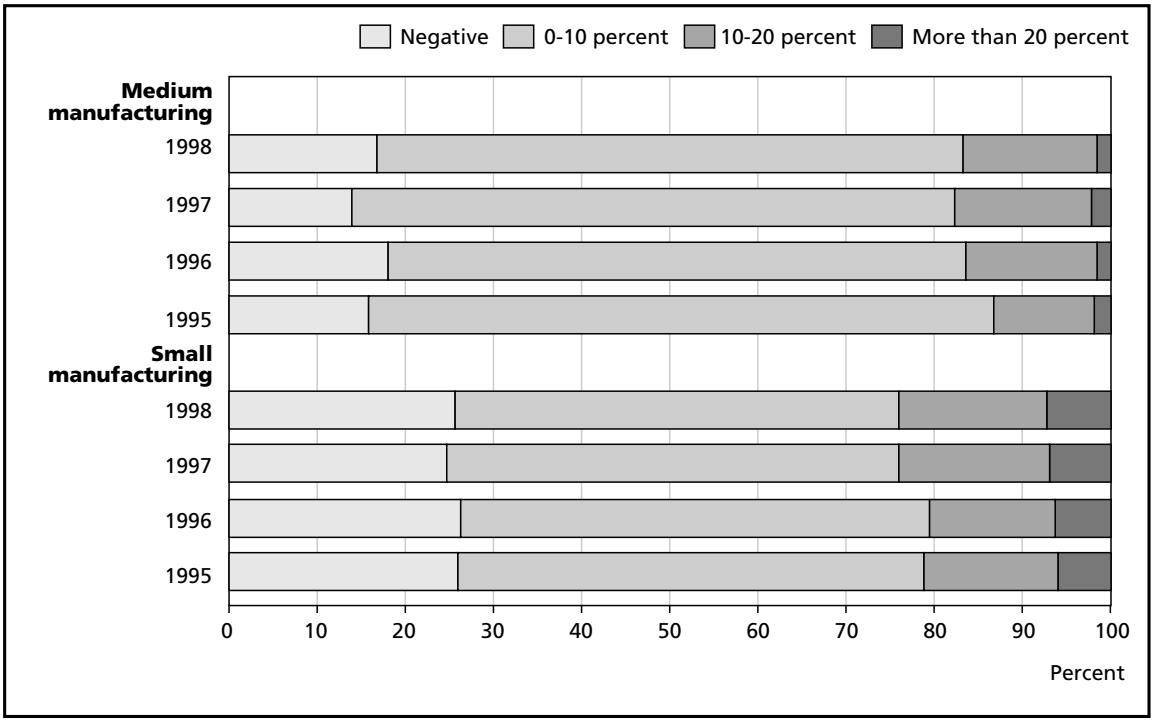

Figure 6 Return on toal assets by size. Knowledgebased industry (1995–98)

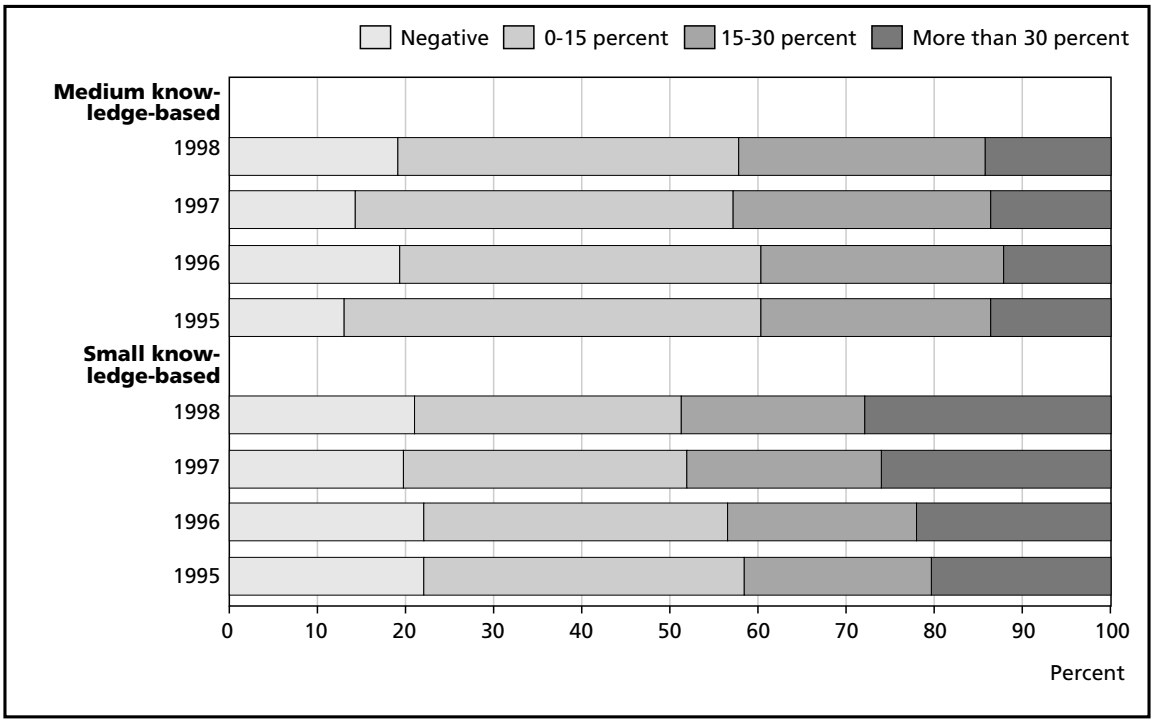

Figure 7 Return on total assets by size. Manufacturing industry (1995–98)

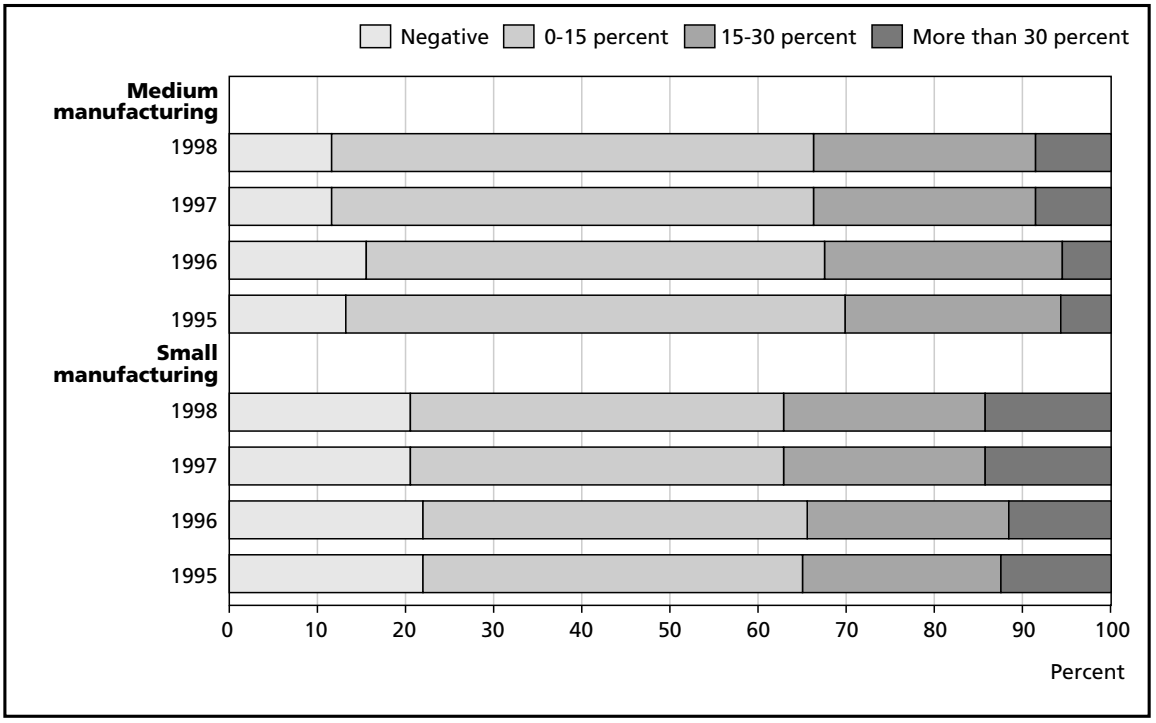

Table 3 Numbers of small- and medium-sized enterprises in figure 1 and 2

	1995	1996	1997	1998
Small manufacturing enterprises	5 064	5 228	5 322	5 502
Medium manufacturing enterprises	981	981	1 005	1 059
Small knowledge-based enterprises	9 111	9 484	10 380	11644
Medium knowledge-based enterprises	559	565	605	646
Number of enterprises	15 715	16 258	17 312	18 851

Table 4 Numbers of small- and medium-sized enterprises in figure 4 and 5

	1995	1996	1997	1998
Small manufacturing enterprises	4 972	5 211	5 249	5 440
Medium manufacturing enterprises	974	981	1 004	1 058
Small knowledge-based enterprises	8 744	9 421	10 068	11 304
Medium knowledge-based enterprises	551	565	602	644
Number of enterprises	15 241	16 178	16923	18 446

Table 5 Numbers of small- and medium-sized enterprises in figure 6 and 7

	1995	1996	1997	1998
Small manufacturing enterprises	4 580	4 746	4 728	4 569
Medium manufacturing enterprises	943	945	952	911
Small knowledge-based enterprises	7 947	8 363	8 346	8 676
Medium knowledge-based enterprises	516	540	555	531
Number of enterprises	13 986	14 594	14 581	14687

Table 6 Dos and don'ts for small firms

Dos	Don'ts
1. Invest in your own company 2. Talk to the bank 3. Get private sector advice 4. Keep and use current financial data to make key decisions 5. Be prepared to consider selling equity 6. Grow if you want to survive 7. If you want to grow, the key elements are: Product innovation Management team building Personnel policy Marketing	1. Don't take out large sums in "good" years 2. Don't "surprise" the bank 3. Don't blame everyone except yourself 4. Don't be greedy

Source: D.J. Storey 1994, table 9.1

Financing Small Conventional and Knowledge-based Enterprises

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