The market for venture capital in Germany

The market for venture capital, which for a long time had developed very slowly in Germany, expanded at a dramatic pace during the past three years. The volume of available venture capital surged and a large number of venture capital investment companies were set up. Nevertheless, venture capital still plays a much smaller role in Germany than in the United States. Moreover, the comparatively large stock of unused funds held by German venture capital investment companies indicates that the very moderate rate of business start-ups over many years was not caused exclusively by shortages of financing but also by shortcomings in the informal market for venture capital and a lack of pioneering spirit. Economic policy makers should therefore continue their efforts to foster an innovation-friendly climate and should seek to develop appropriate investment incentives. If those conditions are met, the German venture capital market's potential to make good lost ground and its importance for structural change and growth appear considerable.

Venture capital and its particular importance

Venture capital as a stimulator of innovation and growth

One of the notable features of economic development in the 1990s was the major growth disparities that emerged between individual industrial countries. Whereas the US

economy grew at an exceptionally dynamic and sustained pace, economic expansion in Germany and a number of other continental European countries was decidedly sluggish. One of the principal reasons cited for these divergent growth paths is the insufficient adjustment and innovation capability of the European economies. In this context attention also focused on the role of investment in high-technology fields and the different structures of individual financial systems. Thus many commentators have suggested that the USA's lead in terms of economic growth and technological advance has been fuelled at least in part by the existence of a flourishing market for venture capital. Many high-tech firms which today are leaders in their field were able to meet their special financing needs, especially in the initial phase, by drawing on venture capital. Against this backdrop, this article shows the structure, development, importance and prospects of the German market for venture capital. It focuses on venture capital investment companies, which are a separate category of financial intermediaries and constitute the institutionalised segment of the venture capital market.

Venture capital in the narrower sense ...

In the narrower sense, venture capital denotes equity holdings in predominantly young, technologically innovative, unlisted small and medium-sized enterprises which, despite low current profitability, are considered to have a sufficiently large growth potential. The equity participation of providers of capital who specialise in such venture finance is intended from the outset to have a limited duration restricted to certain development phases. Their involvement is oriented solely to the long-term increase in value of the beneficiary enterprises, which determines what return they earn when they withdraw their equity. Venture capital investment companies provide the young firms not only with equity capital but also with extensive management expertise and other advisory services. The transfer of entrepreneurial know-how is an integral part of the investment venture; experience shows that it is a key ingredient of success for start-up firms.

... and in the broader sense

This narrow, Anglo-American definition of venture capital – exclusively denoting the financing of early phases in a firm's life-cycle – contrasts with a broader definition that is prevalent in Europe. According to this broader definition, venture capital comprises not only seed and start-up financing (product development, founding of the firm and market introduction) but also equity participations in expansion projects, buy-outs, the preparation of initial public offerings (IPOs) and turnaround projects – which may be summed up under the heading of "later-stage financing" (see glossary on page 17).[1]

Financing problems of innovative firms ...

To understand how venture capital markets operate, it is useful to consider first what specific difficulties are associated with financing business ventures and why the special kind of

1 In the Anglo-American world the term "private equity" tends to be used for this broader concept of venture capital that is prevalent in Europe. In the United States the expression "venture capital" refers only to that part of private equity which does not entail any funding of buy-outs, turnarounds or replacements. These differing definitions need to be borne in mind when making cross-country comparisons of the size of the respective venture capital market.

financial intermediaries known as venture capital investment companies are well suited to overcoming these obstacles. Innovative firms need capital in the early stage of their development in order, for example, to fund the research and development work necessary for nurturing a product idea as well as the subsequent build-up of the enterprise. They are largely reliant on external financing for this because their available own funds tend to be small and because, as a rule, insufficient financial resources are generated from the turnover throughout the starting and expansion phases. At the same time, it is very hard for them to satisfy their financing requirements via conventional external financing channels, such as bank borrowing or the issuance of shares and debt securities.

... can only be solved through the injection of equity capital

Young firms possess few material assets which could be used as loan collateral. Moreover, they need a longer-term injection of capital that is not mitigated by a continuous haemorrhaging of liquidity in the form of interest, dividend or redemption payments. The only form of funding that really fits this bill is liable capital. The providers of such equity have to contend with two serious problems, however: the time-lag until they can collect the anticipated return on their investment, and the very great uncertainty which accompanies such an investment. As a rule, a venture capital investment generates income only at a much later stage – usually when the equity stake in the business is sold after its market value has increased. If the young firm does not develop as expected, the entire sum invested may be lost. On the other hand, if the innovation is a market success,

Definition of financing phases

Seed financing: Financing the development of an idea and its transformation into usable form (up to and including the prototype) on the basis of which a business concept is elaborated for founding an enterprise.

Start-up financing: Foundation financing. The firm in question is in the process of being set up or has been engaged in business only for a short while and has not yet started to sell its products or has not yet started selling them on a sizeable scale.

Expansion financing: The firm in question has reached the break-even point or is already earning a profit. The capital resources provided are used to finance additional production capacity, product diversification or market expansion and/or as extra working capital.

Bridge financing: Financial resources provided to a firm to enable it to finance its IPO, above all with the aim of improving its equity ratio.

MBO: Management buy-out. Take-over of a firm by its existing managers. The managers hold more than 10 % of the firm's share capital.

MBI: Management buy-in. Take-over of a firm by external managers. The managers hold more than 10 % of the firm's share capital.

LBO: Leveraged buy-out. Acquisition of a majority stake in a firm by equity investors. The managers hold less than 10 % of the firm's share capital.

Turnaround financing: Financing a firm which, after overcoming difficulties (e.g. sales problems), is to be put back on a successful course.

Replacement capital: Purchase of a firm's shares by another investor or another shareholder.

Source: Bundesverband deutscher Kapitalbeteiligungsgesellschaften (BVK).

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the rise in the firm's market value may far exceed the original equity investment.

Underfunding due to high risks plus information deficits

The wide range of possible earnings scenarios makes it very hard for a potential provider of capital to value the firm in question. Among the uncertainties are the real market potential of the research programme or of the new product, the response of commercial competitors, the stability of customer preferences and also the entrepreneurial qualities of the firm's managers. To cover these risks the investor, as part of his/her expected return, usually calculates a premium, which tends to push up the cost of capital for young innovative firms. Another problem is that potential investors know too little about the firm's founders. Hence the core problem of the market for "innovation capital" is not confined to the absolute financial risk but lies rather in the combination of high risk and an uneven distribution of information about the "true" quality of a start-up firm, including the capabilities and intentions of its managers. Information asymmetries are always likely to have a negative impact on the supply of capital owing to the well-known mechanisms of adverse selection and moral hazard.

Assumption of risk by specialist investors ...

This special return and risk profile limits the range of potential capital providers to persons or institutions willing and able to bear high risks, to sustain possible capital losses and to forego profit distributions or refrain from cashing in capital gains for a protracted period. Furthermore, by means of specific contractual clauses and their own expertise, the investors have to try to narrow the information gaps and create incentive mechanisms which ensure that all the parties involved help to improve the long-term prospects of success of the start-up firm. It is above all owing to the inherent high risks that traditional institutional investors such as banks, investment funds, pension funds and insurance companies tend to shy away from injecting capital directly into start-up ventures.

... such as venture capital investment companies

Dedicated institutions specialising in venture financing have evolved in order to counter these diverse risks, information deficits and incentive problems. The most important category of such institutions are the venture capital investment companies; these are financial intermediaries which transform funds collected from the conventional institutional investors into venture capital. As they usually invest in several different projects simultaneously, these venture capital investment companies are able to substantially reduce their overall portfolio risk compared with the very high individual risks; in this sense they could be considered a special form of investment fund. But venture capital investment companies do more than just provide financial services. One of their chief characteristics is that they normally have extensive powers of codetermination and control in the portfolio enterprises in which they invest and also perform important advisory functions for these firms. As the managers of venture capital investment companies are themselves often experienced entrepreneurs with detailed knowledge of particular industries, they are better placed to identify promising venture projects and to directly help to enhance the value of their portfolio enterprises.

Special contractual arrangements

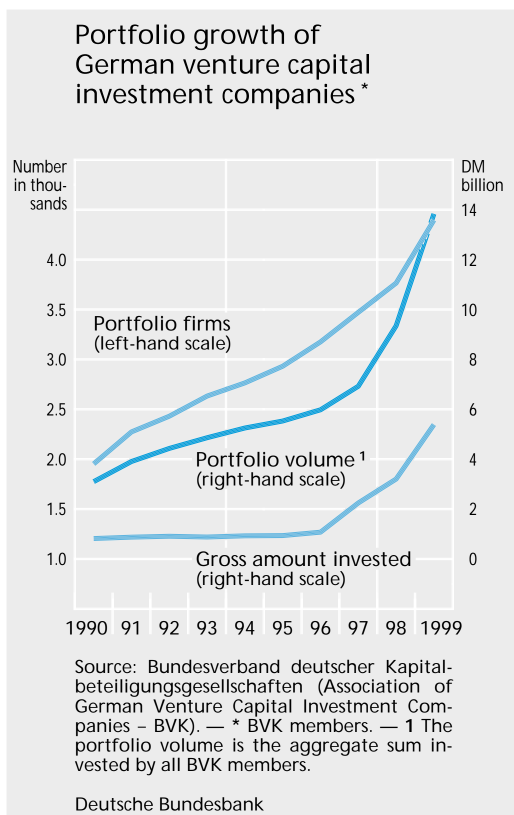
The information and incentive problems associated with venture finance are additionally tackled through special contractual arrangements. These include the staggered injection of capital: new capital is provided to the firms in instalments only after certain pre-agreed performance targets have been reached or other conditions have been met. This strengthens the performance incentives of the firm's managers and limits potential losses in the event of bankruptcy. The incentive structures are also influenced by special remuneration arrangements for the firm's management (such as stock option programmes) aimed at boosting the enterprise's long-term performance. In addition, more and more venture capital investment companies are beginning to finance some of their projects jointly ("syndicated investments" or "co-venturing"). This enables them to further diversify the risk; moreover, it improves the information basis for evaluating the project since the other venture capital investment partner is able to contribute a "second opinion".

"Business angels"

Besides this institutionalised segment of the venture capital market, another informal segment exists which is represented by what are known as business angels. These are wealthy individuals with management experience who provide innovative firms with equity capital, act as advisors and take on management functions. The crux of the relationship is the transfer of entrepreneurial know-how. Business angels are characterised by their concentration on financing very early phases of the firm's life-cycle. In this way business angels also make an important contribution to overcoming the information problem faced by new investors during a later stage of the firm's existence. The capital participation and "insider status" of business angels with a "good name" may be seen as a seal of approval, as it were, for the quality and risk profile of the business enterprise.

Limited duration of venture capital participations

As stated earlier, the equity participation of venture capital investment companies, although conceived as a long-term involvement, is planned to be of limited duration. This makes sense because capital gains can only be realised by withdrawing the funds invested in a successful venture project; the companies can then distribute these capital gains to their investors, who likewise lend their money for a limited period only. What is more, the founders of start-up firms are often prepared to grant extensive powers of codetermination and control to external providers of capital for a temporary period only. For the longer-term success of a venture capital market, therefore, it is extremely important that functioning "exit channels" exist via which the venture capital investment companies can terminate their involvement by selling their shareholding. They can do this in several ways: through an over-the-counter sale to industrial investors (trade sale) or interested financial parties, a repurchase of their shares by the firm's founders (buy-back) or an initial public offering.



Source: Bundesverband deutscher Kapitalbeteiligungsgesellschaften (Association of German Venture Capital Investment Companies – BVK). — * BVK members. — 1 The portfolio volume is the aggregate sum invested by all BVK members.

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Market developments in Germany

The institutionalised market for venture capital

Accelerated growth

The core of the institutionalised market for venture capital in Germany currently comprises around 250 venture capital investment companies. Many of them operate with relatively small investment volumes, have a regional orientation and collaborate with local credit institutions. Although the first venture capital investment company was founded as early as 1965, the German venture capital market remained relatively unimportant until the late 1980s. Thus it was not until 1985 that the portfolio of the German venture capital investment companies reached a volume of DM 1 billion. The market's development in the early 1990s remained rather modest. It was only in the past three years that the German institutionalised venture capital market experienced a rapid acceleration. A boom occurred in the creation of venture capital investment companies, the number of which doubled between 1997 and 1999, and this was accompanied by growing interest on the part of foreign investors. The surge in the number of venture capital investment companies was matched by a rising share of their portfolio volume in relation to GDP (to 0.4 % or almost DM 14 billion), a growing volume of investible funds (by around DM 12 billion to almost DM 27 billion) and an increase in annual gross investment in the venture capital market.[2]

Sources of finance

The sources of finance of the venture capital investment companies reflect the traditional investor structure in Germany, which is dominated by the banking and finance industry. In 1998 half of the funds volume was accounted for by credit institutions and one-seventh each by insurance enterprises and foreign pension funds. However, the influence of the credit institutions is on the wane. Last year the banks contributed not quite 30 % of the new financial resources, as a result of which their share of the available funds declined to 44 %. The share of insurance enterprises concurrently fell to 12 %. By contrast, foreign pension funds and public providers of capital lifted their shares in the total funds volume to 18 % and 7 %, respectively. The amount of equity contributed both by industry and pri-

2 See Statistik des Bundesverbands deutscher Kapitalbeteiligungsgesellschaften.

vate investors grew in line with the overall amount of resources raised.

Financing through co-venturing

Up to 1998 around one-quarter of gross investment in start-ups was syndicated. Last year over one-third of German capital venture investment took the form of "co-venturing", 22 % of which involved the participation of foreign investors. The growing importance of syndicated projects and the role of foreign pension funds point to the increasing international integration in the financing of German venture projects.

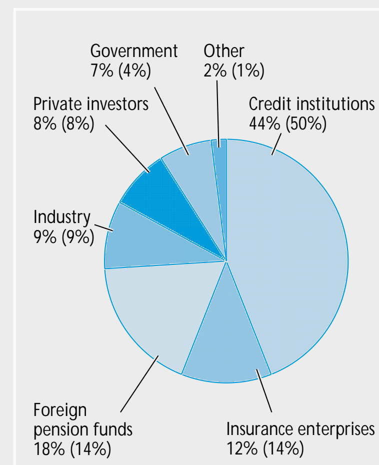
Expansion financing

Broken down into the individual financing phases (see table on page 22), expansion financing accounted for the lion's share of the portfolio volume in 1999 at 41%, though this was less than in 1998 (46 %). Buy-outs accounted for 20 % last year. These usually serve to overcome ownership and management problems. This may take the form of drafting experienced managers into firms which previously were not run very professionally or of replacing retiring owner-managers in family-owned firms. Given the generational change of guard facing many German small and medium-sized enterprises, the solution of the management succession problem through buy-outs might well play a bigger role in future.

Early-stage financing

By contrast, the injection of capital in the initial stages of an enterprise's development (seed and start-up financing) played a relatively modest role in the overall portfolio of venture capital investment companies last year – compared with their significance as a catalyst for innovation and structural

Sources of funds of German venture capital investment companies*



Source: Bundesverband deutscher Kapitalbeteiligungsgesellschaften (BVK).— * Respective shares of the different investor groups in the total funds raised by all BVK members. Figures for 1999 (those for 1998 in brackets).

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change – with a share of 23 %, although this was distinctly higher than in 1998 (17 %). In line with the growing concentration on early stages, German venture capital investment companies invested strongly in small enterprises in 1999: half of the young firms which were added to their portfolios had fewer than 20 employees.

Sectoral breakdown of investment

Up to 1997 the sectoral breakdown of venture capital investment showed a fairly "conventional" pattern – just like the breakdown according to financing phases. Thus the high-tech industries communication, biotechnology and information technology – which are key to achieving innovation – made up no more than 9 % of the venture capital portfolio. However, by 1999 investment in these industries had surged from 18 % to 39 % of

Use of funds by German venture capital investment companies by financing phase *

DM billion

Financing phase	Gross investment 1998	Gross investment 1999	Portfolio volume 1998	Portfolio volume 1999
Seed and start-up	0.83 (25%)	1.80 (33%)	1.56 (17%)	3.16 (23%)
Expansion	1.01 (30%)	1.95 (35%)	4.30 (46%)	5.76 (41%)
Buy-out	0.83 (25%)	0.78 (14%)	2.10 (22%)	2.76 (20%)
Bridge (preparation of an IPO)	0.40 (12%)	0.76 (14%)	0.94 (10%)	1.45 (10%)
Other	0.26 (8%)	0.23 (4%)	0.54 (6%)	0.77 (6%)
Total for all BVK members	3.33 (100%)	5.51 (100%)	9.44 (100%)	13.91 (100%)
Total for overall market	3.84	6.18	10.54	15.44
Share of available funds 1			57%	58%

Source: Bundesverband deutscher Kapitalbeteiligungsgesellschaften (BVK). — * Shares (in brackets) may not add up to 100 % due to rounding. — 1 The available funds comprise the portfolio volume plus investible funds which have not yet been invested.

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all venture capital investment. In the process the share of beneficiary firms in high-tech fields trebled to 26 % of the overall portfolio. The growing importance both of early-stage investment and of investment in high technology was mainly attributable to increased investment in start-up firms in the IT and communication technology fields, which are seen as having a pivotal role for economic growth in the debate about the "New Economy".

Innovation financing by the public sector

Public-sector participation through refinancing facilities and guarantees

With a view to overcoming market imperfections and incentive problems, especially in seed and start-up financing, the public sector has stepped up its involvement in the market for venture capital in recent years. This entailed, for one thing, the provision of refinancing facilities for venture capital investment companies and, for another, the elaboration of guarantee programmes. For example, the risk capital programme of the German development bank *Kreditanstalt für Wiederaufbau* (KfW) guarantees part of the equity participations of venture capital investment companies in small, innovative firms. The bolstering of these firms' level of liable capital reduces the risk. The problem of insufficient collateral is eased, and it is more likely that additional investors will come forward.

Programmes

The public financing programmes are designed to complement the intermediation function of the venture capital investment companies. The KfW's programme "Risk capital for small technology firms" (BTU), which was initiated by the KfW and the Federal Ministry of Economics in 1995, is aimed at indirectly strengthening young technology-oriented enterprises, focusing the demand for capital and building a pool of expertise. The programme provides low-interest loans to innovative firms that are no more than five years old, mostly mediated through venture capital investment companies. The choosing of the individual investment projects is left to the venture capital investment companies. Sectors on which this promotional scheme focused last year were software development and data processing, at 31%, biotechnology, at 20 %, and communication, which received 12 % of the BTU programme's overall lending volume. The programmes operated by the technology investment subsidiary of *Deutsche Ausgleichsbank* and the KfW's ERP Innovation Programme, which it inaugurated in 1999, have a similar design. In terms of participation

financing, the ERP Innovation Programme is intended to refinance venture capital investment companies which invest in the start-up phase of technology-oriented firms. Last year the KfW refinanced almost one-fifth of the portfolio volume in the early-stage segment of the German venture capital market. In terms of credit financing, the programme is aimed at helping established high-tech enterprises.

Public sector involvement is a complement rather than a substitute

The provision of low-interest refinancing facilities by the public sector raises a number of macroeconomic issues, e.g. in relation to competitive neutrality.[3] However, given the danger that the market – if left to its own devices – might otherwise fail to provide the necessary finance for innovative entrepreneurial ideas, it may be plausibly assumed that a limited involvement by the public sector serves as a complement to, rather than a substitute for, private funding. In that case direct government activities would indeed promote the raising of funds in the venture capital market in the longer term.

The informal market for venture capital

Germany lagging in the informal market

As mentioned above, the informal venture capital market, with its financing of the very early phases of a firm's development, is characterised by the activities of the business angels. Compared with the United States, where it is estimated that the informal market comprises three million business angels and has a capitalisation of US$ 60 billion, the German informal venture capital market is still in its infancy, with DM 1 billion of invested capital, around 27,000 active angels and 220,000 potential angels.[4] The problem apparently relates not so much to the availability of the corresponding resources as to a lack of professional entrepreneurial experience. The lead taken by the United States and the United Kingdom – which is the premier European business angel market – is also due to the existence in those countries of a mature culture of regional and cultural networks.

Public promotion of networks

Given the transparency deficits of the German venture capital market, the KfW – in addition to its financing activities – has developed informal platforms together with the German stock exchange operator *Deutsche Börse AG.* These include the equity capital forum *Eigenkapitalforum* and the network organisation *Business-Angels-Netzwerk Deutschland* (BAND), which was set up in 1998. The German venture capital investment market is hoping that the provision of such venture management services will lead to greater transparency and growth impulses. BAND currently embraces 27 local networks and founder forums in which founders can come into contact with business angels. The aim of these networks is to draw up contractual arrangements which safeguard the founder's independence while ensuring that the investor will profit from the firm's growth in value and making it easier for additional business angels to come aboard.

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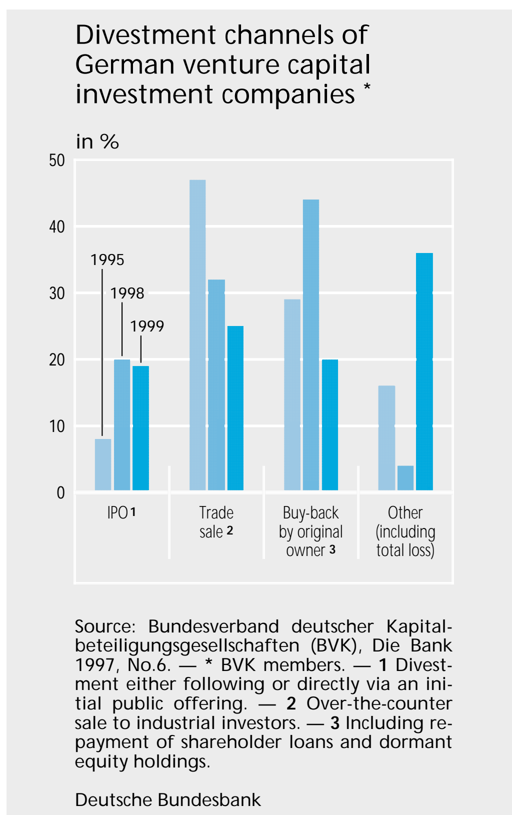
3 See Deutsche Bundesbank, Progress in the adjustment process in eastern Germany and the contribution of economic promotion measures, Monthly Report, July 1995, p. 37 ff.
4 Data for 1998. See Jungen, P.: Zur Bedeutung des informellen Venture-Capital-Markts und seiner Besteuerung, Business-Angels-Netzwerk Deutschland, August 2000.



Source: Bundesverband deutscher Kapitalbeteiligungsgesellschaften (BVK), Die Bank 1997, No.6. — * BVK members. — 1 Divestment either following or directly via an initial public offering. — 2 Over-the-counter sale to industrial investors. — 3 Including repayment of shareholder loans and dormant equity holdings.

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Exit channels and the importance of the stock exchange

Dedicated stock exchange segments as exit channels

The real interface between venture capital financing and the "regular" capital market is formed by dedicated segments of the equity market that are tailored to the special needs of expansion financing for young firms. These markets – such as NASDAQ in the United States and (since 1997) the *Neuer Markt* in Germany – demand stringent listing and disclosure requirements of issuers in order to limit the uncertainties and information asymmetries which are still quite considerable during this phase. Such "open" segments of stock markets are to be seen as complementary to the "closed" venture capital market because, as a rule, they enable the providers of venture capital to make a smooth and profitable exit out of their investments. A precondition for this, however, is that the infrastructure and the general level of public acceptance of this market segment for growth stocks ensure ample primary and secondary market liquidity. This, together with the other preconditions, improves the planning certainty and expected rate of return for the venture capital investment companies, but also for the firm's founders. In keeping with this concept, empirical studies show that a "sound" stock market is a fundamental factor determining the long-term volume of supply and demand in the upstream venture capital market.

Role of the Neuer Markt

For this reason the successful establishment of the *Neuer Markt* doubtless made a significant contribution to the recent surge of venture capital in Germany. It has greatly enhanced the stock exchange's importance as an "exit channel". Whereas in 1995 merely 8 % of venture capital holdings were liquidated through IPOs, almost one-fifth of such equity stakes were offloaded via the stock exchange in both 1998 and 1999. More than half of these IPOs in those two years took place in the *Neuer Markt*, which offered attractive terms to issuers and investors alike.

The modern infrastructure and the quite large secondary market liquidity of the *Neuer Markt* have enabled investors to carry out transactions quickly and cheaply and hence to continuously optimise their portfolios. In addition, the twin advantages of liquidity and transparency ensuing from strict listing, disclosure and information requirements have created an atmosphere of confidence among

Cross-country comparison of investments of venture capital investment companies *

Year	United States 1		Europe (21 countries)		Germany 2	
	US$ billion	Percentage change from previous year	€ billion	Percentage change from previous year	€ billion	Percentage change from previous year
1996	9.90	.	6.79	.	0.70	.
1997	14.00	+ 41	9.66	+ 42	1.33	+ 91
1998	19.20	+ 37	14.46	+ 50	1.96	+ 47
1999	48.30	+ 152	25.10	+ 74	3.16	+ 61
1st half of 2000	49.39	.	–	.	1.62	.

Sources: National Venture Capital Association, European Private Equity and Venture Capital Association, Bundesverband deutscher Kapitalbeteiligungsgesellschaften (BVK). — * Gross investment (i.e. without deducting liquidations of venture capital holdings). — 1 The investment volumes given for the United States do not include the financing of buy-outs, turnarounds or replacements. — 2 Overall market, i.e. including venture capital investment companies that are not members of the BVK.

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investors and stimulated their propensity to make riskier investments.[5] At the same time, the positive demand climate has attracted more issuers for whom a liquid and wide primary market promises favourable financing terms. In this way supply and demand have reinforced one another in the equity market but also in the market for venture capital. Whether this favourable situation persists, however, will also depend to some extent on the share price trend in the *Neuer Markt* and – coupled with that – the market's capacity to absorb new issues.

Other exit channels

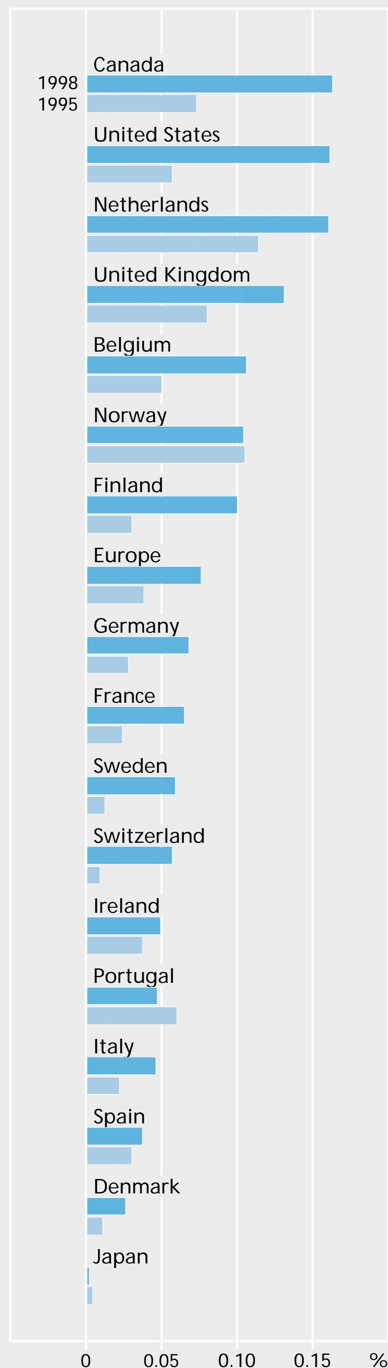
The rising importance of the *Neuer Markt* as an exit channel was accompanied by a sharp decline in the share of (over-the-counter) trade sales in the overall exit volume between 1995 and 1999 from 47 % to 25 %. The weight of buy-backs and other reasons for exits (including depreciation) fluctuated during the past two years; taken together, they accounted for more than half the total exit volume last year.

Market developments in Germany in comparison with other countries

German gross investment accounted for around 13 % of the aggregate investment

5 Thus listed enterprises which, in addition to publishing their accounts in line with the German Commercial Code, also produce a set of accounts drawn up in accordance with IAS or US GAAP tend to have narrower bid-offer spreads. This indicates that the risk premium due to information asymmetry is smaller for such stocks. See Leuz, C. and Verrecchia, R. E.: The Economic Consequences of Increased Disclosure, Johann Wolfgang Goethe-Universität, Working Paper Series: Finance and Accounting, No. 41, July 1999, p. 2.

Cross-country comparison of seed/start-up and expansion financing *



Source: OECD (2000). — * Volume invested by venture capital investment companies as percentage of GDP.

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volume of Europe's venture capital markets in the past few years. Last year Germany occupied second place in the ranking of individual European countries behind the United Kingdom. According to figures from the European Private Equity and Venture Capital Association, the overall European venture capital portfolio grew by 44 % in 1999, which was a little slower than the German portfolio. If gauged by gross investment growth, however, Germany – at 61 % – was slightly below the European average and far behind the US rate of growth of 152 % (see table on page 25).

German venture capital market the second largest in Europe ...

At € 3 billion, the importance of venture capital investment for the German economy as a whole is still small compared with that of the United States, where US$ 48 billion was invested last year in venture capital projects according to the National Venture Capital Association – not counting the financing of buyouts and turnarounds. In Europe as a whole € 25 billion was invested in the venture capital market. Thus Europe is still well behind the United States in this respect.

... but far behind the USA

Until 1995 venture capital was of minor importance in Europe, except in the Anglo-Saxon and Dutch markets. Belgium, Finland, Germany and France have made up lost ground since then in respect of early-stage and expansion financing, which in the main has benefited high-tech sectors. But overall the shares of early-stage and expansion financing in those economies – measured by GDP – are still relatively small. In the United States seed and start-up financing has made a significant contribution to the success of

US lead in seed and start-up finance

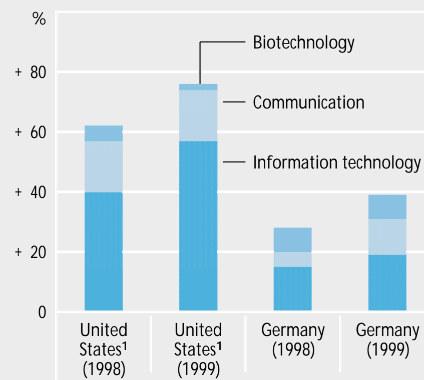
the venture capital investment companies in recent years. Last year US venture capital investment was concentrated even more heavily than in 1998 on information technology. The computer industries, together with the communication sector, accounted for almost three-quarters of US venture capital investment compared with a little over half in the previous year. In the first six months of 2000 the proportion rose to over four-fifths, of which around half was invested in the Internet sector alone.[6]

Macroeconomic importance of the markets for venture capital

Direct and indirect effects

While the financing of young, innovative enterprises by means of venture capital accounts directly for only a fairly small share of total investment and employment in Germany, its indirect effects on the economy as a whole (which occur after a time-lag) are far more significant. This is because young high-tech firms, in particular, expand only some time after they have been set up – once they have had a chance to establish themselves in their market – and are then among the principal generators of growth and employment. Pioneering firms must first reach a certain threshold before their innovations can acquire significance at the macroeconomic level and hence accelerate the necessary process of structural change. Moreover, the intensification of competition which accompanies the growing importance of innovative firms also causes older enterprises to help spread technological progress via product and process in-

Investments in high technology by venture capital investment companies in Germany and the United States*



Sources: National Venture Capital Association, Bundesverband deutscher Kapitalbeteiligungsgesellschaften (BVK). — * Amounts invested in high-tech sectors as a percentage of the total investment volume (gross). — 1 The data on venture capital investments in the United States exclude the financing of buy-outs, turnarounds or replacements.

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novations and themselves to create additional employment potential.

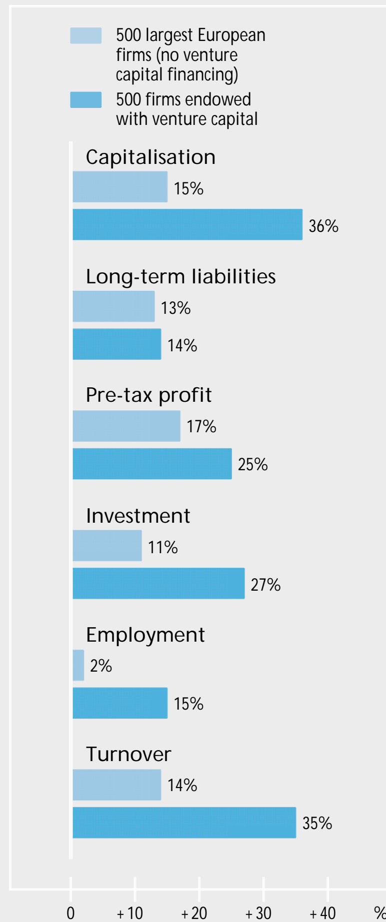
High productivity

Given these secondary effects, it is clear that the importance of venture capital for a country's economic prosperity is not captured fully by the annual or cumulative amount of funds raised or the portfolio investment volume. A more complete picture is obtained if the success of enterprises financed by venture capital is observed over a longer period and is compared with the performance of other firms. An empirical study for Europe, for example, shows that firms assisted by venture capital achieve substantially higher growth rates on average in terms of stock market value, turn-

6 As explained on page 16, the German and US high-tech shares are not directly comparable owing to the different definitions of venture capital.

Comparison of European firms with and without venture capital financing

Average annual growth rates 1991 -1995



Source: European Private Equity and Venture Capital Association, Coopers & Lybrand (1996).

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over and, above all, employment than do old established enterprises.[7] Another analysis for the United States comes to the conclusion that firms with venture capital backing achieve a much higher innovation performance – in terms of the number of patents registered per US dollar invested – than similar enterprises which had no venture capital funding.[8] Thanks to this higher "productivity", venture capital makes a far greater contribution to the national volume of innovation than is implied by merely considering the share of venture capital in private-sector research and development spending.[9]

Prospects and economic policy implications

Need for continuing favourable investment climate and corresponding incentive structures

The supply of venture capital in Germany has improved considerably in the past few years. This is attested not only by the increase in the portfolio volume but also by the boom in setting up new venture capital investment companies. On the other hand, the relatively large stock of unutilised resources indicates that up to now only a limited pool of worthwhile investment projects has existed. Two things are required if this level of utilisation is to improve. The first requirement is to provide a climate conducive to innovation in which high-tech firms can develop successfully. This embraces the core fields of research and development, education and a taxation policy that does not weaken the profitability of young firms. The government is called on in this context to foster a favourable investment climate by creating corresponding underlying conditions. Appropriate incentive structures are likewise needed in both the institutionalised and informal venture capital markets in

7 See Coopers & Lybrand / European Private Equity and Venture Capital Association: The Economic Impact of Venture Capital in Europe, 1996. This study compared the 500 largest enterprises in 12 European countries with 500 start-ups with venture capital backing between 1991 and 1995. Four out of every five of the start-ups said that they would not have been able to exist without venture capital or that they would have grown more slowly.
8 See Kortum, S. and Lerner, J.: Does Venture Capital Spur Innovation? NBER Working Paper 6846, December 1998.
9 Ibid. p. 3.

order to increase the propensity to invest on the part of both the venture capital investment companies and the business angels. This includes a certain degree of involvement by the public sector, especially in early-stage and innovation financing. The risks associated with such investments are offset not only by high rates of return at the microeconomic level but also by macroeconomic gains.

Effects of the tax reform

The tax reform package now approved by the German parliament opens up the prospect of tax-free capital gains from 2002 onwards for venture capital investment companies from the liquidation of their equity holdings, as long as they hold their stake for at least one year. This exemption from taxation is to be welcomed since it means that, in future, venture capital can be channelled better and faster to where it is needed. By contrast, non-corporations having the form of partnerships and sole proprietorships – a category which includes business angels – will have to continue to pay tax on most of their capital gains.

Further development of venture capital depends on interaction of market segments

Another key requirement for the further development of the market for venture capital is the interaction of the informal, institutionalised and also stock exchange market segments, which perform different functions in the different stages of a firm's corporate evolution. Whereas in the initial phase a major role is often played, besides the provision of start-up capital, by the transfer of know-how to the managers (who frequently have little entrepreneurial experience), the focus shifts during later stages of development to the growing need for risk capital and the cost of raising it. The ultimate goal of the investors in the various development stages is to enhance the firm's market value before they exit, e.g. following an IPO. The divestment of their shareholding also frees up financial resources which can then be reinvested in new innovative ventures. Favourable prospects for a profitable exit via the stock market can thus give rise to a mutually reinforcing growth process between the venture capital market and the stock exchange segment for young innovative enterprises. To that extent, the coming-of-age of the *Neuer Markt* has substantially improved the underlying conditions for venture capital in Germany.