Venture capital

Fueling innovation and economic growth

Roland Berger

IEF

BVK

Preface

Venture capital is much more than a funding instrument or an asset class. It is a central tool for fueling enterprise, sparking innovation in future technologies and powering growth – and an elementary factor in our economy's efforts to attract tech firms.

Germany's ability to leverage the potential of the digital economy and to remain an attractive and prosperous place to live and do business depends partly on our ability to mobilize venture capital as well as other nations' economies do. It is no coincidence that the dominance of US and Chinese digital champions is mirrored in the financial endowment of the ecosystems within which they operate: Asia, which was Europe's equal in funding terms in 2012, has since steamed ahead of the European tech ecosystem and – with annual investments approaching EUR 62 billion – has almost caught up with the United States. Clearly, we have no time to lose.

Undeniably, Germany's venture capital market has picked up significantly in recent years thanks in part to the creation of new government incentives and the modification of existing programs. But there is still a long way to go to provide innovative new companies with all the capital they need, especially when they're in the later stage of the startup lifecycle. The availability of sufficient capital plays a large part in determining whether or not today's startups will eventually become the mid-market champions or even the global trailblazers of tomorrow.

The Internet Economy Foundation (IE.F) and the German Private Equity and Venture Capital Association (BVK) shine a light on the German venture capital sector in this study, which was conducted in conjunction with Roland Berger. The study identifies the key barriers to investment and highlights ways of overcoming them. At its heart stands the question of what to do to mobilize more private capital to drive innovation and growth within our economy.

Creating a vibrant venture capital market and building a full-fledged digital economy in Germany will require a bold and determined effort on all sides. Our aim in producing this study is to contribute toward this collective undertaking, and we sincerely invite you, too, to do what you can.

Prof. Dr.
Friedbert Pflüger
Chairman of the
Internet Economy
Foundation

Ulrike Hinrichs
Executive Member
of the BVK Board

WHAT NEEDS TO BE DONE NOW:

Six steps to turn Germany into a venture capital champion

- Create major leverage for later stage investments
- Establish a German “Fund for the Future”
- Actively communicate success stories
- Enable the people to share in venture capital growth
- Have a legal framework in place that drives venture capital mobilization
- Launch a “Science, Startups and Growth” excellence initiative

Contents

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The missing billions: Why Germany must mobilize more venture capital

The seven most valuable companies in the world – Apple, Amazon, Microsoft, Alphabet (Google), Facebook, Alibaba and Tencent – have two key things in common. One: As powerful digital platforms, they control the internet. And two: They would never have come into existence and enjoyed the level of growth they have without venture capital (VC).

> "From an economic perspective, venture capital is more than just an asset class – it is actually the fuel for innovation, growth and jobs."

René Obermann, Warburg Pincus

Germany trails the United States in venture capital funding

It is no coincidence that five of these seven companies are based in the United States, where there is a long tradition of funding startups with venture capital. While it is true that venture capital investments in Europe have more than tripled in the past five years, our continent still invests EUR 48 billion less in VC funding than the United States. In 2017, the US saw venture capital investments of EUR 63.8 billion pour into startups in contrast to Europe's total of just EUR 15.6 billion.

Germany is by no means a special case among European nations. Venture capital companies invested just over EUR 1.1 billion in Germany in 2017. This equals 0.035% of German GDP, whereas the EUR 63.8 billion invested in the US is equivalent to 0.371% of that country's GDP. Asia, too, is catching up in the VC investment stakes, with countries like China pumping huge amounts of government money into new companies working to develop future technologies like artificial intelligence.

"Good German tech firms with an international outlook do find investors – but they are principally from overseas and less likely to be from Germany."

Gert Köhler, Creathor Ventures

"If European nations had blown EUR 60 billion on VC investments but had ended up with a Google, a Facebook and an Amazon, there would be no question over whether or not it had been worthwhile."

Klaus Hommels, Lakestar

"For a business, you need an idea, a founder and capital. You can't replace a lack of capital with a better idea."

Oliver Samwer, Rocket Internet

Particular investment backlog in the later stage

The funding gap is particularly wide in what's known as the later stage, the time when companies are financing their market entry and their growth. This is the phase in which they need a lot of capital to build up a professional organization, to establish distribution structures and to get their product or service known in the market. An American firm benefits on average from almost EUR 10 million more in later stage venture capital than its European counterpart. Germany suffers from a particular lack of funding for later stage startups. The average German growth company in the later stage receives just under EUR 3.3 million from VC firms.

Innovation and growth require venture capital

This dearth of venture capital diminishes the innovation capacity of the German economy as a whole and throws up barriers to the growth of innovative young companies. If Germany is to secure its prosperity long term, the country needs to mobilize more venture capital. Only then will the nation succeed in turning great ideas into great business models and great companies.

Huge amounts of assets lying dormant

There is no lack of suitable assets in Europe and Germany that could be diverted into venture capital funds. Europe's thousand biggest pension funds alone had over EUR 7 trillion in capital in 2017. Taking just 0.7% of these "dormant" private assets and putting them into funding the future through VC would be sufficient to bring Europe up to the level of the United States in the venture capital stakes, adding a whole EUR 48 billion to our continent's VC funding!

Vicious cycles need to be broken

This study shines a light on the German venture capital market and explains why venture capital is elementary to an economy. It analyzes the barriers standing in the way of mobilizing venture capital in Germany, especially later stage VC. One of the study's key findings is that the relative weakness of the German venture capital market compared to the US market in particular can be traced back to a number of interlinked causalities –repeating vicious cycles of insufficient venture capital. The study therefore makes suggestions as to how to overcome the barriers and how the vicious cycles that are currently impeding venture capital can be transformed into virtuous cycles that continually mobilize more venture capital. The study's key messages – and all of the highlighted quotes – are drawn from the numerous interviews we held with VC fund managers, investors and other stakeholders in the venture capital market. Extensive sets of data and other published material were also analyzed for the study.

2

Fueling innovation and growth: The importance of venture capital for the economy

Venture capital falls under the private equity asset class. Corresponding investments are frequently made by venture capital funds. These are funds that aggregate capital from numerous different investors and invest it in newly founded companies displaying strong growth potential. Parties that invest in venture capital funds include institutional investors like banks and insurance companies, operative companies, government funding agencies such as the KfW, and wealthy private individuals. Given the uncertainty over the success of growth companies and the high failure rate among startups, venture capital investments are always relatively high risk – hence the common synonym for venture capital, 'risk capital'. At the same time, the capital gives young companies new chances for development and growth, which is why it is also known in some cultures as 'opportunity capital'.

From seed to exit: The typical phases of venture capital funding

The term venture capital specifically describes the equity and equity-like investments that flow into new companies in the early stage, startup stage and later stage of their development. Companies in the early phase of their lifecycle need seed funding to get their products and services ready for market. Then in the actual startup stage, the point of market entry, companies plan the (mass) production and distribution of their market offering and initiate their marketing activities. In the later stage, venture capital is mainly needed for startups to be able to scale their business model – 'scale' meaning to elevate the quantitative parameters within which the company operates (employee numbers, revenues, customer base and so on) to a new level. It finances the actions the company has to take to get itself established in the market (such as expanding production, distribution and marketing). New business ventures are funded in a number of different rounds. The seed round is followed by the series A and B rounds, when the company is typically in the startup phase. Further funding rounds (from series C onwards) mostly happen in the later stage. It is in this final phase that successful startups normally enter the profit zone, where the risk of failure is low because the business model has already been proven.

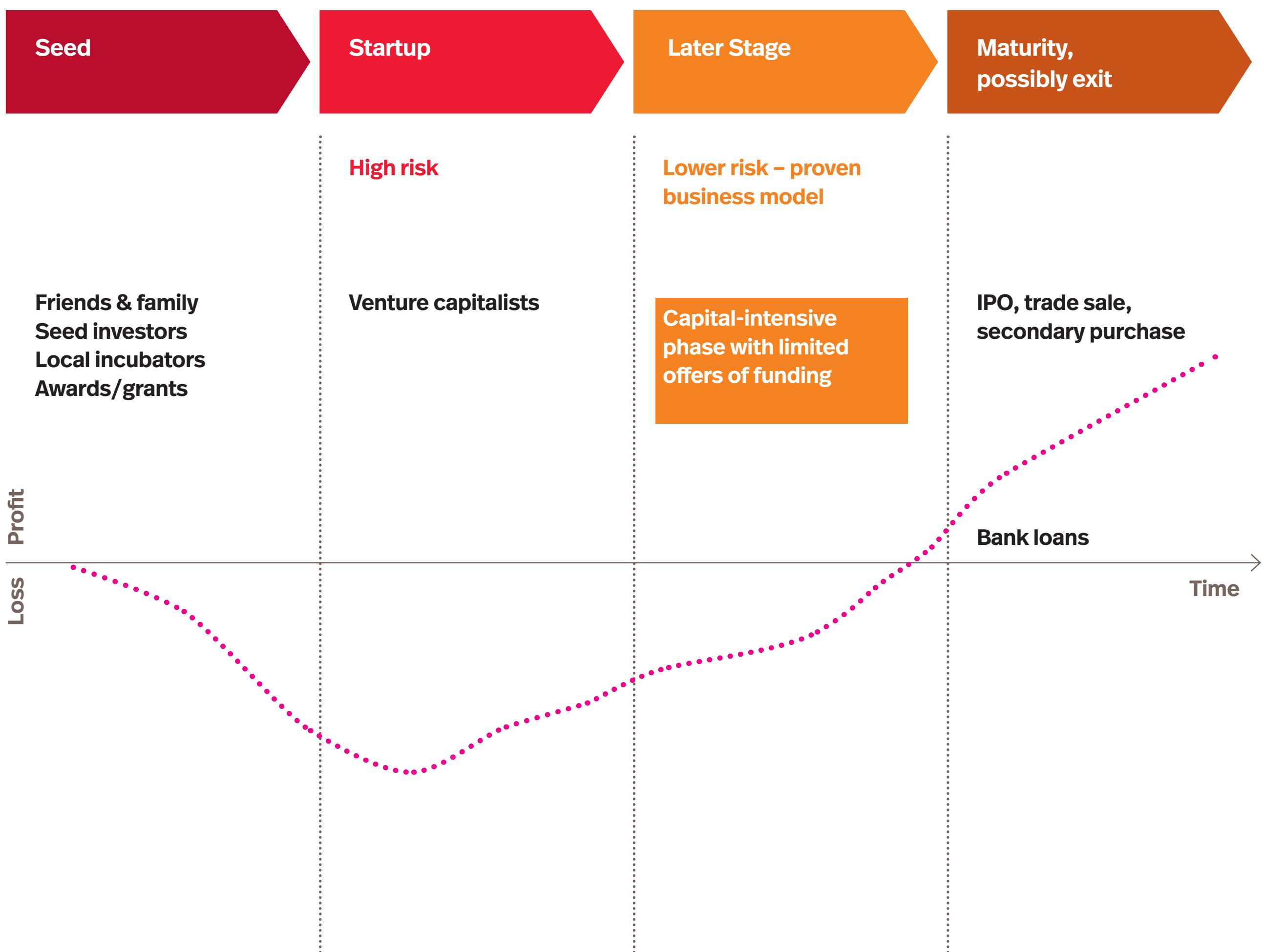
Venture capitalists often divest their holding following successful later stage funding, or sometimes before. Their exit can be effected by means of a trade sale (selling to a strategic investor), an IPO (listing the company on the stock market) or a secondary purchase (selling to another private equity firm). →A

Capital and knowledge: The economic benefits of venture capital

From an economic perspective, venture capital is crucial for the funding of startups. These types of companies can promise investors neither security nor profits, putting debt financing firmly out of reach for most of them – besides the lack of collateral they have to offer, the need to make capital and interest repayments would stretch a startup's liquidity situation beyond breaking point.

A **Years of rapid expansion: New startups go through several phases, each involving different sources of funding**

Phases of startup development and where their funding comes from



Source: BVK, IE.F, Roland Berger

What venture capitalists bring to the table is not just their capital, but their knowledge and also their expertise when it comes to starting a business. They are in a position to advise the founders on strategic aspects of their nascent company, such as the best structure for the organization or how to develop new markets. They can also give founders the benefit of their own experience and networking skills to help them build up distribution networks and acquire cooperation partners.

Innovation and growth: The economic importance of venture capital

Venture capitalists take a considerable risk when they invest in a company that is not yet turning a profit. To ensure that the risk translates into an appropriate return, VC investors must be very careful about selecting which companies to finance. The fact that it is in their own interests to select the startups with the highest potential therefore ensures the efficient allocation of resources: Venture capital flows into startups with the best prospects for growth given limited access to resources. As such, venture capital drives the productivity and competitiveness of the economy as a whole.

Studies have shown that VC-funded companies grow much faster than other comparable firms – and not just in terms of revenues and profits, but in the number of jobs they create, too. Moreover, venture capital principally goes into companies with digital and research-intensive business models. So risk capital is being used to fund innovation and new market development.

According to a study by Stanford University, 17% of all listed companies in the United States were funded by venture capital in the seed stage. What these companies spend on research and development makes up 44% of the total R&D spending of all listed companies in the US, which serves to illustrate that most risk capital is funneled into companies that have innovative business models. These innovations are what open up new opportunities for customers, develop new markets, create future-proof jobs, reinforce competitiveness and safeguard economic prosperity.

Disruption: Venture capital can jump-start the superstars of the internet age

A look at the world's seven most valuable companies by market capitalization proves the point →B: Apple, Amazon, Alphabet (Google), Microsoft, Facebook, Alibaba and Tencent are all digital behemoths that received seed funding from venture capitalists – Facebook alone benefited from over USD 600 million in venture capital in the first five years of its life. The combined market cap of the world's seven most valuable firms is now more than three times higher than that of all DAX-30 companies put together. These seven firms jointly bring in more than EUR 0.5 trillion in revenues and employ over a million people. They have created new markets, services and products (from search engines and smartphones to social networks) and transformed entire industries. And their reach extends not only to certain sectors of the economy but to the whole of society.

B **A worthwhile investment: The world's seven most valuable firms were all funded by venture capital in the seed phase**

Market cap as of May 18, 2018, revenues and employees 2017

Source: Bloomberg, Roland Berger

Sharing the digital dividend: Venture capital-induced growth benefits the many

Numerous groups in society are better off for the advancement of these VC-funded companies. Take consumers – they benefit from new and improved products and services. Then there are broad swathes of the population who get to share in the digital dividend through their pensions: When insurers and pension funds invest some of their customers' assets in VC funds, it is the investors themselves who profit from the yield generated by the venture capital.

Another group of winners are the people who work in the innovative companies and are able to purchase shares in their employer's firm. As a widespread tool for motivating staff and getting employees to identify with the company they work for, this is an incentive employed by many firms, not just startups. The rapid growth and appreciation in value experienced by the tech stars means that those who bought into them early on have seen the value of their investment multiply many times over. Private investors, too, can acquire a stake in innovative young startups via crowdfunding platforms, thereby doing their bit to help society take a bite out of the digital transformation apple.

For startup entrepreneurs without a fortune of their own to spend on a business venture, venture capital enables them to test out their business idea on the market, helping to make our world a bit more of an equal opportunity society. After all, it's not a startup entrepreneur's personal background that determines whether or not VC funding is offered but their specific business idea and its chances of success.

Venture capital investments only pay off when the companies they finance exhibit strong growth potential. Conversely, this means that the companies funded by venture capitalists are often those based on digital business models – because the digital world itself makes business models rapidly scalable and opens up a large pool of potential customers. That is why enabling ordinary people to invest in venture capital through their pension funds and similar arrangements allows large swathes of the population to share in the profits of digitalization. →C

Industrie 4.0: Venture capital supports the economy's digital transformation

The internet superstars and the products they sell are not the only channels through which venture capital impacts our economy's productivity and innovativeness. Just as important as the creation of new products for consumers is the fact that venture capital supports the development of innovative solutions for industry. This is something that is especially relevant to Germany: Industry creates about one quarter of this country's gross value added, a higher proportion than in any other leading Western economy. Among the industrial applications that depend on innovative startups are many in the Internet of Things and in artificial intelligence that are essential for the digital transformation that's powering the fourth industrial revolution.

“There are many examples of German companies that were better than their American counterparts but were overtaken on all sides because they didn’t have the money.”

Hendrik Brandis, Earlybird

From startup to SME: Later stage funding determines a venture’s success or failure

Venture capital is clearly much more than just a funding instrument or one asset class among many. With its capacity to select, fund and strategically develop the innovative companies displaying the strongest potential for growth, venture capital is an important driver of innovation, growth and jobs.

A particularly important aspect for startups is the presence of funding through the later stage. This is the phase in which new companies become established in the market, experience strong growth and are able to offer their product or service to a large customer base. Not all companies that receive funding in the startup phase actually achieve market entry, which is very costly, or ultimately enjoy long-term success. It is crucial for successful startups to have access to sufficient later stage funding – otherwise they will not be the champions of the Mittelstand or even the global frontrunners of tomorrow, but rather underfunded companies with underdeveloped growth potential.

Global competition: Europe must remain an attractive place to do business

The list of the seven most valuable companies in the world also serves to illustrate the geographic distribution of power: Five of the companies are headquartered in the United States and two in China – European players are nowhere to be seen. This is partly a result of the low level of VC investment in Europe. While private venture capital in the US has long played an important role in funding growth companies, countries like China are now pouring government funds into venture capital. This money goes primarily into new companies focused on technologies of the future, such as artificial intelligence. Given the strength of the VC market in the United States and the scale of government-funded venture capital in China, Europe risks being completely eclipsed.

A vibrant venture capital landscape, as well as an active ecosystem of publicly and privately funded research and development are both factors in attracting businesses to set up shop in our country instead of elsewhere in the world. The question of whether Germany and Europe will still be among the best locations in which to do business in the future depends in large part on whether or not we are able to mobilize venture capital on a scale comparable to the United States and China.

C Digitalization for the people: Our ability to share in the digital dividend rests on three pillars

The three pillars model

1

Access to efficient infrastructure

2

Access to a broad spectrum of digital services and applications

3

Sharing in the growth of the digital economy

Source: Roland Berger

3
Growth and investment backlog: The German market for venture capital

VC companies made EUR 1,139 million in venture capital investments in Germany in 2017 in the form of seed, startup and later stage funding. That is a rise of almost seven percent over 2016. The magnitude of VC investments in Germany has in fact doubled since 2012. The figures include investments made in German companies by German and foreign venture capitalists but do not include investments made by business angels, private individuals, operative or holding companies and asset managers. Figure D illustrates the development of venture capital investments in Europe and highlights Europe's three biggest investor nations, the UK, France and Germany. Even though the economies of France and Great Britain are smaller than Germany's, French and British companies receive more venture capital than their German counterparts. Germany clearly has some catching up to do to get its VC market up to the scale of those of other European countries.

Other analyses have produced higher figures, depending on the method employed, by also taking into consideration other funding for startups in Germany besides VC investments. EY's *Startup Barometer for Germany*, for example, shows overall funding of almost EUR 4.3 billion for 2017. But this total includes things like the IPOs of HelloFresh SE and Delivery Hero AG. Once the additional capital mobilized by such stock market listings has been deducted, a total funding volume of just under EUR 3.6 billion emerges. →D

Insufficient investment in the later stage

If we look at German VC investments separately by funding stage, it becomes evident that comparably little venture capital is invested in the later stage – the phase of the startup lifecycle that is so crucial for getting a company established on the market (see Figure E). More venture capital regularly goes into companies in the seed and startup stages than in the later stage (2017: EUR 795 million in seed and startup funding; EUR 344 million in later stage funding). The relatively good funding situation in the seed and startup stages is principally the result of sufficiently well funded and functioning state-backed programs. One example is the High-Tech Gründerfonds (HTGF). Initiated in 2005, this fund for startups has since seen the injection of EUR 886 million in government money and has proved to be a successful catalyst for German tech startups in the seed stage. More than 500 startups have been supported by the HTGF, with external investors pumping more than EUR 1.5 billion in investments into HTGF portfolio companies in follow-on financing rounds. →E

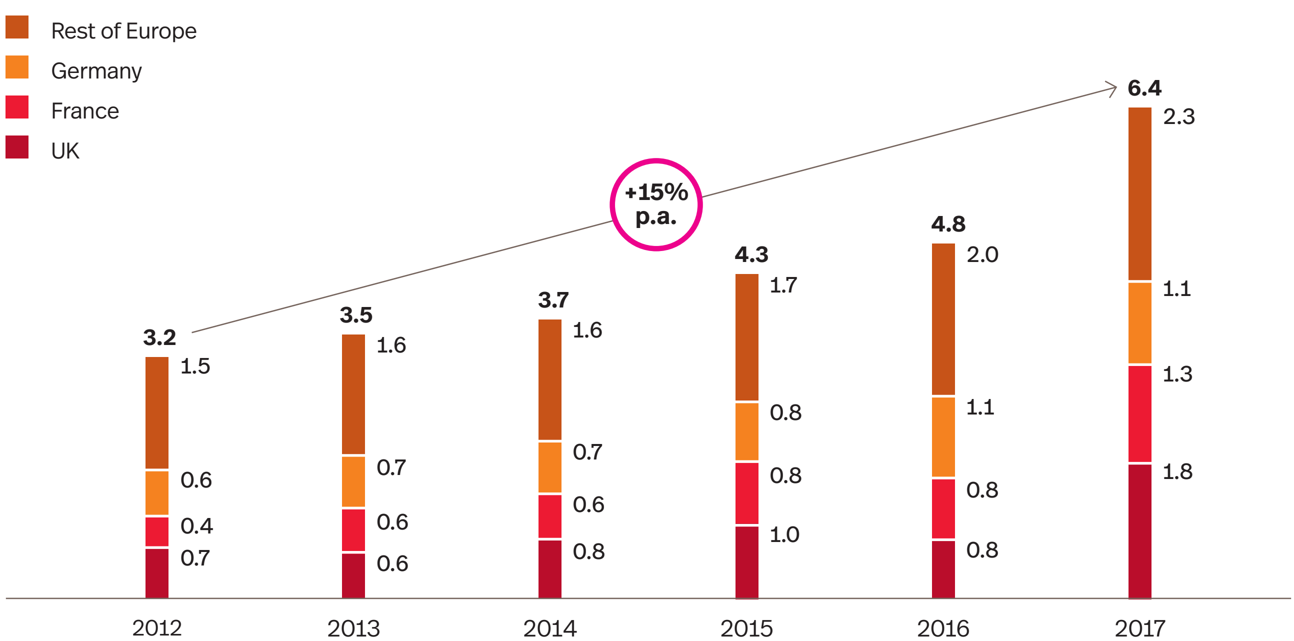
Later stage investments have risen only marginally in the past five years, by contrast. In proportion to the size of the overall German venture capital market, it has even gone down from 36% to 30%. The upshot of this is that companies that actually get themselves to the later stage generally do not have access to sufficient capital to roll out their business model on a larger scale. Even though the average VC investment per later stage startup has risen from just under EUR 1 million to almost EUR 3.3 million in the past five years, EUR 3.3 million is not enough to meet the actual need for capital in the high-growth later stage. Prior to its IPO, food-delivery service Delivery Hero, for example, received EUR 387 million in later stage funding – tellingly, the investor was of South African, not European, origin.

Fund size is too small

For venture capital investments on this scale, the size of Europe's venture funds is simply too small. Germany is no exception here, with the average size of private VC funds over the past ten years being EUR 105 million. With venture funds keen to diversify their risk, they

D Growth path: Private equity firms have increased their VC investments in European companies 15% per year since 2012

Venture capital investments by location of portfolio company [EUR bn]



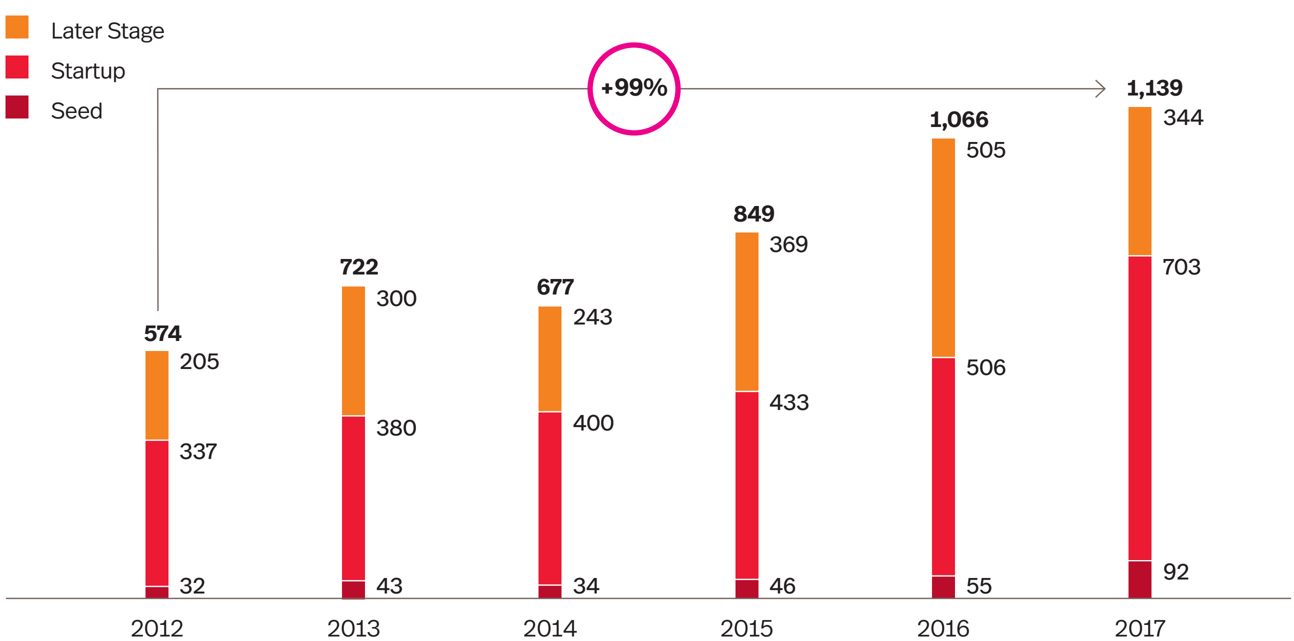
Source: Invest Europe, Roland Berger. Figures have been rounded.

generally do not invest more than ten percent of their fund volume in a single company, which necessarily means that the total investment per company per funding round is directly limited by the size of the fund itself.

The biggest venture capital fund in the United States, Sequoia Capital's Global Growth III fund, had already raised as much as USD 6 billion by the end of April 2018 out of a total target of USD 8 billion. Europe's biggest venture funds, Rocket Internet Capital Partners Fund and the upcoming Lakestar III fund, have each raised approximately USD 1 billion, just one-sixth of that volume. Market experts are at pains to point out that Germany's best growth companies have every risk of falling

E Startup focus: Seed and startup funding for German companies saw stronger growth in the 2012-2017 period than later stage venture capital

Venture capital investments in German companies by stage [EUR m]



Source: Invest Europe, Roland Berger. Figures have been rounded.

"We need more government input to leverage private funds. Because one thing is clear: We have to mobilize more private venture capital."

Bernhard Mohr, Evonik Venture Capital

"The lack of capital has two consequences for us: 1) We will not have such big successful companies, nor so many of them. 2) If we do have them, they will be owned by the Americans or the Chinese."

Oliver Samwer, Rocket Internet

"With interest rates at zero, charitable foundations are having to rethink their investments. Charities need protected investment opportunities if they are going to invest in venture capital."

Felix Oldenburg, Association of German Foundations

"We need a major politician to take ownership. If we don't have that, it will all just peter out."

Klaus Hommels, Lakestar

into American hands in the course of the necessary funding rounds.

Investments lagging on the world stage

Venture capital investments in Germany amount to 0.035% of GDP; the corresponding figure for the United States is 0.371%. So, adjusted for the scale of GDP in each country, the Americans invest some ten times as much venture capital in their startups and young growth companies as we do. Even based on the higher estimate of VC investments in German companies, the EUR 3.6 billion figure, only 0.110% of GDP goes into growth companies. Again adjusted for GDP, that's less than 30% of what US startups get in terms of venture capital investments.

Germany is not alone in trailing the US – Europe does too

On the European scale, 0.042% of GDP is invested in growth companies. Here, too, the figures only include investments made by venture capital firms and therefore represent the lower end of the VC investment volume in Europe. It is thus useful to consider a second source in order to draw global comparisons.

Data from CB Insights indicates that total venture capital investments in Europe almost quadrupled over the past five years (see Figure F). Nevertheless, there still remains an enormous gap of some EUR 48 billion between Europe and the US: The United States saw EUR 63.8 billion of VC invested in 2017 compared to Europe's EUR 15.6 billion. The latter amounts to just 0.102% of European GDP, less than one-third of America's venture capital investments adjusted for GDP. Added to that, Asia, which was on a par with Europe in 2012, has since steamed way ahead and has almost caught up with the US, with total VC investments of EUR 62.8 billion now. That's a growth rate of 1,452%! Clearly, Europe is at risk of missing out on this crucial stimulus for innovation and growth and falling behind in the global economic race. →F

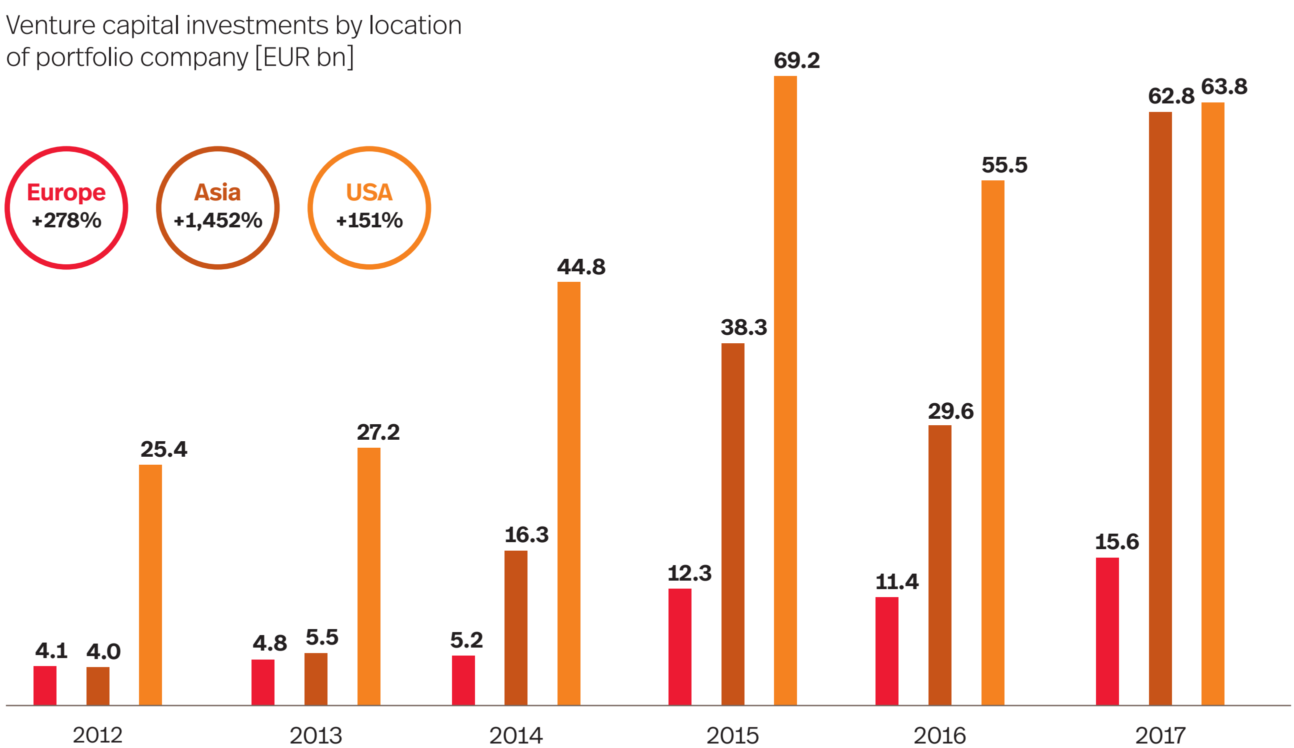
Especially heavy backlog in later stage funding

The funding gap between Europe and the United States is especially wide in the later stage. With EUR 34 billion being invested in later stage startups in the US, more than half of all venture capital in the country goes into this important phase, whereas Europe's corresponding figure of EUR 5.9 billion equates to just 38% (2017) of the total. On average, EUR 24.4 million goes into each later stage startup that gets funded in the US, against EUR 15.1 million in Europe, which is almost EUR 10 million less per company (median figures for Q1 2018). There is an even more marked difference with Asia, where an average of EUR 56.5 million was invested in each later stage startup in the first quarter of 2018. →G

Amount of assets that could be mobilized for venture capital is huge

Europe and Germany have plenty of assets that could potentially be channeled into venture capital investments. Europe's thousand biggest pension funds alone had over EUR 7 trillion in capital in 2017. Taking just under 0.7% of this capital and putting it into funding the future through VC would be sufficient to bring Europe up to the level of the United States in the venture capital stakes, adding a whole EUR 48 billion to our continent's VC funding! Germany's biggest pension

F Almost four times more venture capital now goes into European companies than in 2012 – But the US and Asia are way ahead of Europe

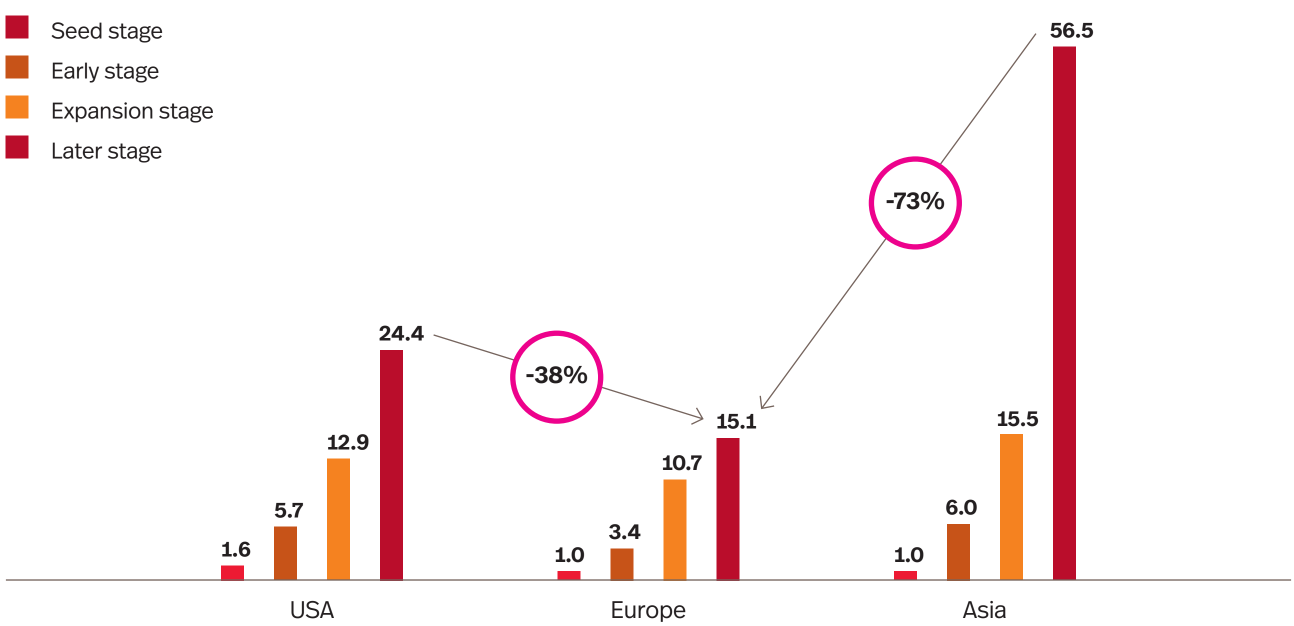


Source: PwC, CB Insights, Roland Berger. Figures have been rounded.

funds account for 8.7% or EUR 612 billion of that EUR 7 trillion. So even despite the fact that our country offers a strong, contributory state pension, there are still sufficient private assets lying dormant in Germany, so that allocating just a fraction of this capital to venture funds could increase the pool of available venture capital many times over. Plus there are the considerable assets held by major institutional investors like banks and insurance companies, family offices and charitable foundations.

G A brake on growth: Particularly in the later stage, European companies get less venture capital investment on average than their US and Asian counterparts

Average venture capital investment per company by phase in the startup lifecycle in Q1 2018 [EUR m]



Source: PwC, CB Insights, Roland Berger. Figures have been rounded.

4
Catch-22: The vicious cycles of insufficient venture capital in Germany

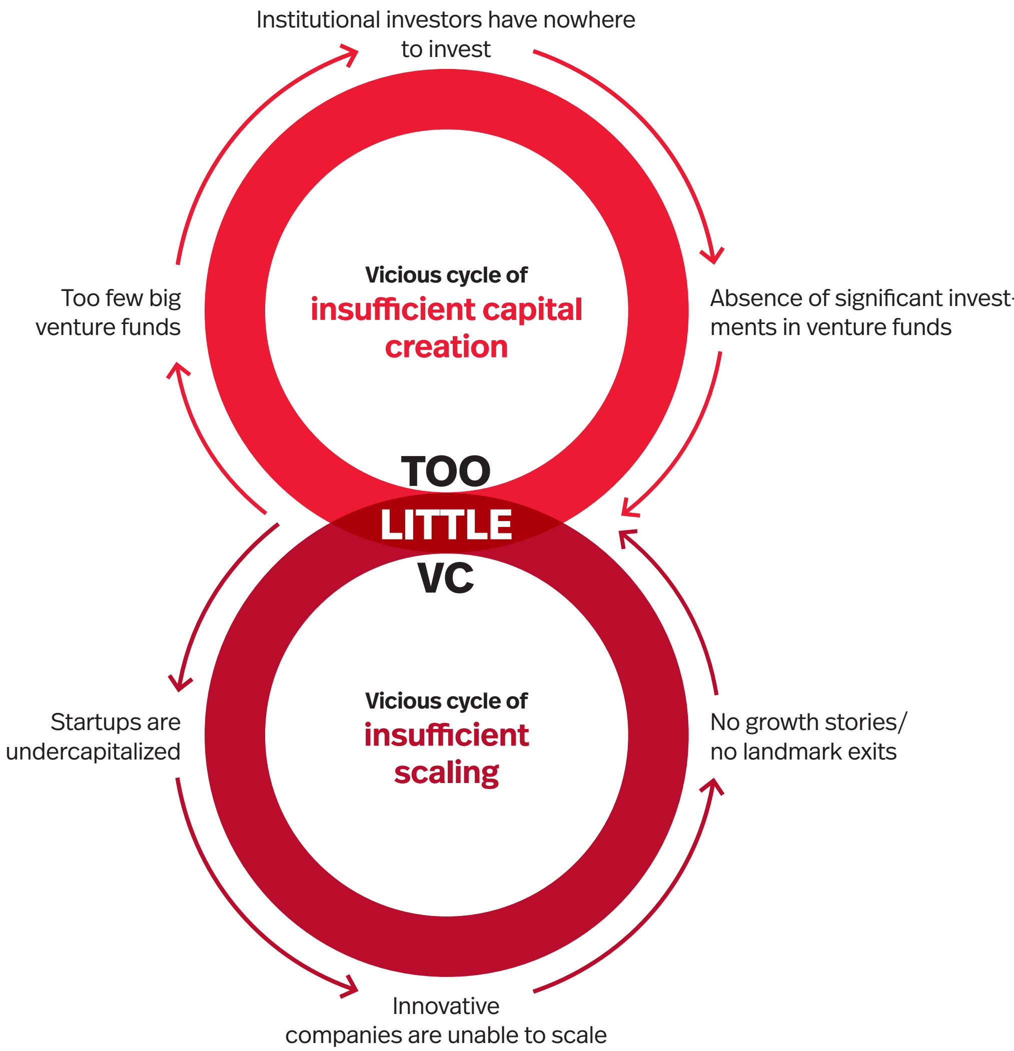
It's worth mentioning that VC investments in startups and young growth companies have great prospects of success, much more so than before – especially compared to the period around the turn of the century when all talk was of the new economy. The value added by technology innovation carries more weight than it did some years ago. Platform models make it significantly easier to scale a business, and there has been a rapid rise in the number of unicorns – startups valued at more than EUR 1 billion. The potential for digital growth is also substantial because the economy is still very far removed from achieving complete digitalization. Added to that, Europe has what it takes to be among the leading players in the digital economy: In their study entitled *The State of European Tech 2017*, VC fund Atomico found that our continent had 5.5 million computer programmers (in 2017, compared to just 4.4 million in the US) and the number of people doing doctorates in STEM subjects (short for science, technology, engineering and mathematics) was also much higher here than across the Atlantic (2014 figures: 59,000 in Europe, 28,000 in the US).

That being said, there are still many barriers to venture capital investments here in Germany. The barriers are interlinked and they form two vicious cycles (see Figure H). Germany does not have enough big venture capital funds, and the small-volume funds do not even come into consideration for a potential investment by institutional investors like pension funds and insurance companies precisely because they are so small. This means that the institutional investors do not invest, which leads to a lack venture capital, which prevents

"Connectivity, the cloud and artificial intelligence will be the crux of startup focus in years to come – that is a huge opportunity for Europe because we have very strong industry partners here."

Tobias Schirmer, JOIN Capital

H Vicious cycles: The reasons behind Germany's weak venture capital market are closely interlinked and mutually reinforcing in the form of two vicious cycles



Source: BVK, IE.F, Roland Berger

what venture funds we do have from being able to grow, which results in there being too few large venture capital funds – and the vicious cycle repeats itself. This is the vicious cycle of insufficient capital creation.

As if that weren't enough, there is another vicious cycle that happens at the company level: the vicious cycle of insufficient scaling. Because there is not enough venture capital circulating, startups find themselves undercapitalized as they try to develop their market, grow their business and become professional. Though our innovative new startups may be able to grow, they fail to reach their full potential and are eclipsed by international rivals. Which means we have no success stories to report of startups that have managed to establish themselves in the market and generate returns for their investors. We have no landmark startups to encourage additional capital to be pumped into other promising startups. And so the vicious cycle begins again.

Both of the vicious cycles are interconnected such that the negative elements are mutually reinforcing. But there is some good news: The seemingly endless loop does offer multiple points at which it is possible to take simultaneous action and thus break the cycle, turning what was once negative reinforcement into permanently positive momentum. →H

Investment barriers for venture capital in Germany

Barriers to tackle in the short to medium term

Too few big venture capital funds. We do not have enough large-volume venture funds in Germany. With the exception of the billion-euro fund held by Rocket Internet and Lakestar's upcoming billion-euro fund, even the biggest German venture funds boast volumes of no more than EUR 300 million to EUR 350 million, making them eight to ten times smaller than the biggest funds from the US and China. German funds are therefore not capable of building global market leaders. The smaller volumes of German venture funds also serve to make this asset class less attractive to institutional investors.

Too little institutional investment. Institutional investors like insurance companies and pension funds invest only minimally in venture capital. Besides the small volumes, the perceived risk presented by this asset class is a key aspect that scares them off. And when they do invest in these kinds of funds, they do so outside of Germany.

Not enough landmark startups. In the business-to-consumer (B2C) segment – especially in retail and services – we have numerous household names that have grown large due to venture capital (e.g. Zalando and Delivery Hero). Successful examples in the business-to-business (B2B) space or among firms manufacturing tech products are much less well known.

"Germany lacks the kind of patient capital you get from pension funds and charitable foundations. In the US, this makes up 2/3 of all the capital in venture funds."

Hendrik Brandis, Earlybird

"Most German venture funds are often too small for the big investors – especially in view of the fact that there is still a dearth of the big investments needed for the main growth phases."

Peter Hielscher, caplantic

"The B2B segment suffers from a lack of visible success stories that capture the interest of venture capitalists."

Patrick Beitel, Digital Plus

"We have few institutional investors in Germany that dedicate any of their money to investing in German venture funds."

Ralph Guenther, Pantheon

No focus on startups as drivers of innovation. Germany has a long tradition of innovation taking place in mid-market companies, large-scale corporations and research institutes. There is too little awareness and promotion of the innovations coming out of university spin-offs or startups.

Too much red tape and too many fiscal restraints. The allocation of grants and funding to help startups grow is carefully controlled. And rightly so. But the necessary checks often take too long. The flow of venture capital is also impeded by fiscal barriers such as VAT on the management fees charged by venture funds and the fact that the tax transparency of venture capital funds is not established by law[1].

Too little opportunity to share in the profits. Germany lacks any straightforward means for the average citizen to share in the economic success of growth companies. There aren't enough offers from institutional investors that would serve to lessen the investment risk through diversification and make venture capital accessible for private investors.

Barriers that can be mitigated in the medium to long term

Risk aversion. Germany is much more risk averse than the English-speaking world. Consequently, debt financing is frequently preferred over equity financing. The startup mentality is also less pronounced over here than in countries like the United States.

Insufficient track record. The shorter history of venture capital in Germany compared to the US necessarily means that many VC firms here (we're talking about companies, not necessarily individual fund managers) have less of a track record.

Limited importance of asset-backed pensions. Asset-backed pension systems, where people regularly pay into their pension pots by investing in the stock market, mobilize capital for investing in future-proof technologies. In Germany, asset-backed pensions are of lesser importance than contributory pensions, which is why there are fewer assets available for investing in growth companies.

1 If a fund is tax transparent, it's not the fund that is taxed but its investors (the fund remains "transparent"). The investors are taxed as if they had invested in the target company directly. In the absence of such tax transparency, the big international investors do not invest in funds because they would then be subject to taxation in Germany rather than in their homeland. The tax transparency of private equity funds (including venture capital funds) is not currently regulated by law; these funds are merely granted tax transparency on the basis of an administrative order by Germany's Finance Ministry.

5
What needs to be done now: Six steps to turn Germany into a venture capital champion

There are many barriers to venture capital investment in Germany which are all interlinked in two vicious cycles, as illustrated in Figure H. So how can we break these vicious cycles and get more capital into the system? One thing is clear: There is no single solution – no quick fix. Rather, we need to tackle numerous aspects at once. The good thing is that if we succeed, we will actually break the vicious cycles quickly and, more importantly, once and for all.

Below we outline six actions which can be taken to mobilize more venture capital for Germany and for the healthy future of our economy.

1. Create major leverage for later stage investments

We need a clear political commitment to the goal of using venture capital to build digital market leaders on the world stage. This will require much larger-scale funding models for the later stage with a mechanism for leveraging between private and public funds. We do have coparion in this later stage, with an important model to leverage co-investment in more mature startups[2]. But its fund volume of EUR 225 million is not big enough to accommodate later stage funding on a larger scale. Startups in the crucial later stage need access to EUR 20 million on average. And some of the investments will need to be even bigger if startups are to be equipped with the capital they need to grow into global market leaders (Facebook, Tesla and Uber had access to USD 5.4 billion on average, through all of their funding rounds).

So how much money are we talking about in order to ensure a sufficient level of funding? With an average funding volume of EUR 20 million per company and an assumed 500 companies[3] to fund, the total comes to EUR 10 billion per year. In order to be effective, funding needs to be in place for at least five years. No less than half of the money would come from private investors, thus keeping the state-funded element below EUR 5 billion. That's less than 1.5% of Germany's federal budget for 2018, an excellent investment in the future! By coupling any government contribution to the decision by private investors on whether or not to invest, it would largely be possible to ensure that no taxpayers' funds were wasted: Only if the private investors opted to get involved would the government do so too and add one euro (at most) to every euro of private money invested.

2. Establish a German "Fund for the Future"

We should set up a German "Fund for the Future" in the form of a fund of funds. This would enable the federal government to establish the big national digital fund with German industry that it laid down as an objective in the 2018 coalition agreement. A fund of funds would have two key benefits. It would lessen the risk for investors and it would create the necessary scale for significant investments by big institutional investors, especially banks, insurance companies, pension funds and charitable foundations.

2 coparion is a German venture capital fund for technology companies that was launched in March 2016 by the KfW development bank and the Federal Ministry for Economic Affairs and Energy (BMWi). coparion will invest in a company only if a private investor provides the same amount of capital.
3 According to a study by Invest Europe, 433 companies in the startup phase of their lifecycle were funded in Germany by venture capital from private equity firms in 2017. These are potential candidates for later stage funding. There are also additional companies in the startup phase that were financed with venture capital from other investors that do not appear in the statistics (e.g. operative companies, holding companies, business angels).

"We need to create incentives to get institutional investors like insurers to invest at least some of their assets in innovative business models in the form of venture capital."

Regina Hodits, Wellington Partners

"The Danish fund-of-funds model shows how it is possible to get even insurance companies to make noteworthy investments in venture capital."

Peter Hielscher, caplantic

"We are an economy that runs on debt. We need to go into the schools and universities and explain why equity is important."

Hubertus Leonhardt, SHS

"The state needs to leverage private capital on a massive scale by contributing at least one-third from the public coffers so that Europe ends up with numerous funds with billions of euros to invest."

Oliver Samwer, Rocket Internet

The risk would be reduced in three ways. First, through diversification as a result of the different venture funds in which the fund of funds would invest. Second, through professional fund management. And third, investors interested in a fixed-rate product would, as in the Danish model of Dansk Vækstkapital, invest not in the fund of funds but mainly in a government bond, which itself would be invested in the fund of funds[4]. For this part of the investment there would be no obligation to have sufficient equity backing in accordance with Solvency II principles. In a bond model of this kind, the state would merely provide a default guarantee (in other words, it would not invest any public money in the fund). In return, the state would get to keep the returns generated on that part of the investment – the difference between the yield promised to bond investors and the yield actually achieved by the fund of funds. The government could therefore earn a profit on the fund of funds model – just as the Danish government has done. Investors that wanted a higher yield would be able to invest in the fund of funds directly or weight their investment differently in terms of the bond and a direct investment.

With a fund of funds, the risk/return profile could be set individually for different institutional investors. That would make it particularly attractive to the generally conservative German investor and enable the fund to attract more capital from Germany. The model would therefore meet the goal formulated in the German government's coalition agreement of financing ideas from Germany with capital from Germany. In order to make it investible for "dormant" sources of capital and to guarantee sustainable investments, the fund of funds would also need to apply modern management principles, including investing responsibly in accordance with ESG standards (ensuring environmental, social and governance compliance). Germany's first state-owned fund, for example, dedicated to nuclear power plant waste disposal and known as the nuclear fund, will invest in alternative investment vehicles (including private equity funds) in line with ESG standards.

The idea of using public funds to encourage private institutional investors to invest additional capital in VC funds is also the principle behind VentureEU, a venture capital fund of funds at the European level. Its launch was recently announced along with its intention to inject a total of EUR 2.1 billion of venture capital into startups.

3. Actively communicate success stories

Americans are successful and they talk about it. Germans, on the other hand, are often overly modest about their successes. If we are going to attract capital, we need to spread the word about our success stories. We particularly need to publicize our champions and our landmark startups in the tech sphere – those examples that

4 Denmark has succeeded in getting institutional investors to invest in the market on a sustainable basis through the Dansk Vækstkapital fund of funds, which applies a guarantee-based bond model to protect its investors. Dansk Vækstkapital I, launched in 2011, managed to raise some EUR 700 million from Danish pension funds, which it will use to fund venture capital and later stage startups, among other things. This group of investors had withdrawn from virtually all tech and growth funds in the domestic investment market as a consequence of the global financial crisis. The second fund of funds was launched in 2015. More information is available on the fund's website: https://www.danskvaekstkapital.dk/

demonstrate that Germany is exactly the right place to build a really big startup with strong technological expertise. And we do have such landmark startups to talk about, as evidenced by the examples of sonnen, tado° and Heliatek.

Landmark tech startups in Germany: Three examples from the energy sector

sonnen

Founded in the Oberallgäu district of southern Germany, sonnen is a startup that makes battery storage devices for private households and small businesses, thereby enabling them to be powered by distributed energy from renewable sources. Billing itself as the market leader in Germany and Europe, sonnen also operates in the US and Australia. Investors include GE Ventures, the venture capital arm of General Electric, and eCapital from Münster. A funding round in October 2016 raised EUR 76 million from investors including China's Envision Energy. A further funding round was held in 2018 and raised EUR 60 million, spearheaded by Shell Ventures.

tado°

Munich-based tado° describes itself as the European market leader in smart air conditioning solutions for private households. It produces smart thermostats and controllers for AC systems, which use the location of the homeowner's smartphone to automatically regulate the temperature in the house. tado° was able to complete two funding rounds through a crowdfunding campaign on Kickstarter, raising about EUR 10 million and EUR 15 million in 2014 and 2015, respectively. Investors included Statkraft Ventures, Target Partners and Shortcut Ventures as well as the venture capital arm of Siemens and of BayBG. In 2016 the company received an injection of EUR 20 million from INVEN Capital, the venture capital fund of Czech energy company, CEZ Group.

Heliatek

Heliatek from Dresden is a spin-off from TU Dresden and Ulm University. A technology leader in the manufacture of organic solar films (flexible, cheap and light photovoltaic cells), the company holds the organic photovoltaic world record in cell efficiency with 12.7%. Organic solar films can be used to fit buildings with active facades, for example, whereby the facade itself generates power. Investors include the High-Tech Gründerfonds, BASF Venture Capital, Robert Bosch, innogy, Wellington Partners and eCapital. Heliatek raised EUR 80 million in a funding round in September 2016.

Beyond our landmark startups, it will be up to the government, industry bodies and other multipliers to make it clear that not only is it almost twenty years since the dotcom bubble burst, but that the lessons have been learned. The market is much more mature as a result, and tech startups are operating on much sounder foundations today – as they tackle the process of digitalization – than they were at the turn of the century.

"Success attracts money."

Uwe Hermann, BVV

4. Have a legal framework in place that drives venture capital mobilization

Let's think big! Germany, with its expertise and its economic power, has what it takes to be a venture capital champion. France's President Emmanuel Macron can serve as a role model with his efforts to make his country a startup nation: "I want France to be a nation that works with and for startups, and a nation that thinks and moves like a startup[5]." The question that needs to be answered is, what kind of legal landscape do we need in order for the legal framework itself to drive the mobilization of venture capital? The right framework will not only need to get rid of red tape and fiscal barriers (such as by abolishing VAT on the management fees charged by VC funds and establishing the tax transparency of venture capital funds in law), but will also have to create tax incentives for venture capital investments, for example by enabling them to be written off to a significant degree or by extending the INVEST grant to cover investments in venture funds.

The right legal framework to mobilize more venture capital will need to establish the kind of one-stop shop for startup entrepreneurs that was laid down as an objective in the government's coalition agreement and create transparency across the full spectrum of funding and support available. It will also need to ensure that the impact on startups and their funding is assessed in respect to each and every new regulation. This kind of

"We are a country with strong industrial expertise. We need to have deep-tech startups that we can celebrate."

Klaus Hommels, Lakestar

5 Discours du Président de la République au salon VivaTech 2017, June 15, 2017. http://www.elysee.fr/declarations/article/discours-du-president-de-la-republique-au-salon-vivatech-201/. Retrieved on May 29, 2018.

"We need more German capital from institutional investors in the system, otherwise the fruits of the digital transformation will be harvested not here but overseas."

Uwe Horstmann, Project A

"We need to get better at marketing our successes and we need to be much more closely connected with strategic investors."

Klaus Stöckemann, Peppermint VenturePartners

"As a leading industrial nation, Germany needs substantially more VC investment in deep tech."

Paul-Josef Patt, eCAPITAL

"The US is leading the way: Through the investments of numerous pension funds, insurers and other institutional investors, large swathes of the population are now able to share in the returns of digitalization."

René Obermann, Warburg Pincus

landscape will give startups and investors alike planning security built on a stable legal framework.

What is important to note is that we will need to work simultaneously toward a common legal framework across Europe. We must not thwart the growth ambitions of startups and investors by forcing them to deal with a different set of laws in each of the EU 28 nations they wish to expand into. Forward-looking competition law will need to be part of this European framework so that the digital world does not end up dominated by an oligopoly of internet platforms that overpower all other players.

5. Enable the people to share in venture capital growth

If the population is to share in the opportunities of digitalization to the full, the people must share in the growth of the digital economy. To enable that to happen, we need economic incentives and economic security.

Facilitating greater sharing in this way can be dovetailed with the gradual modernization of our pension system, an undertaking toward which the German government recently redoubled its efforts by passing a new law strengthening occupational pensions. For purely demographic reasons, if nothing else, Germany needs to expand the asset-backed element of its pensions.

Numerous models could come into consideration here. The state could itself protect contributors against negative yields, but the public sector could also do so in concert with private investors – for example in a model similar to that of the fund involving Barmer GEK, NRW-Bank, Generali, Miele and the Federal Ministry for Economic Affairs, which invests in MedTech startups. Investments in that fund are backed 50/50 by the assets of the European Recovery Program and by the partners of the VC investor Earlybird.

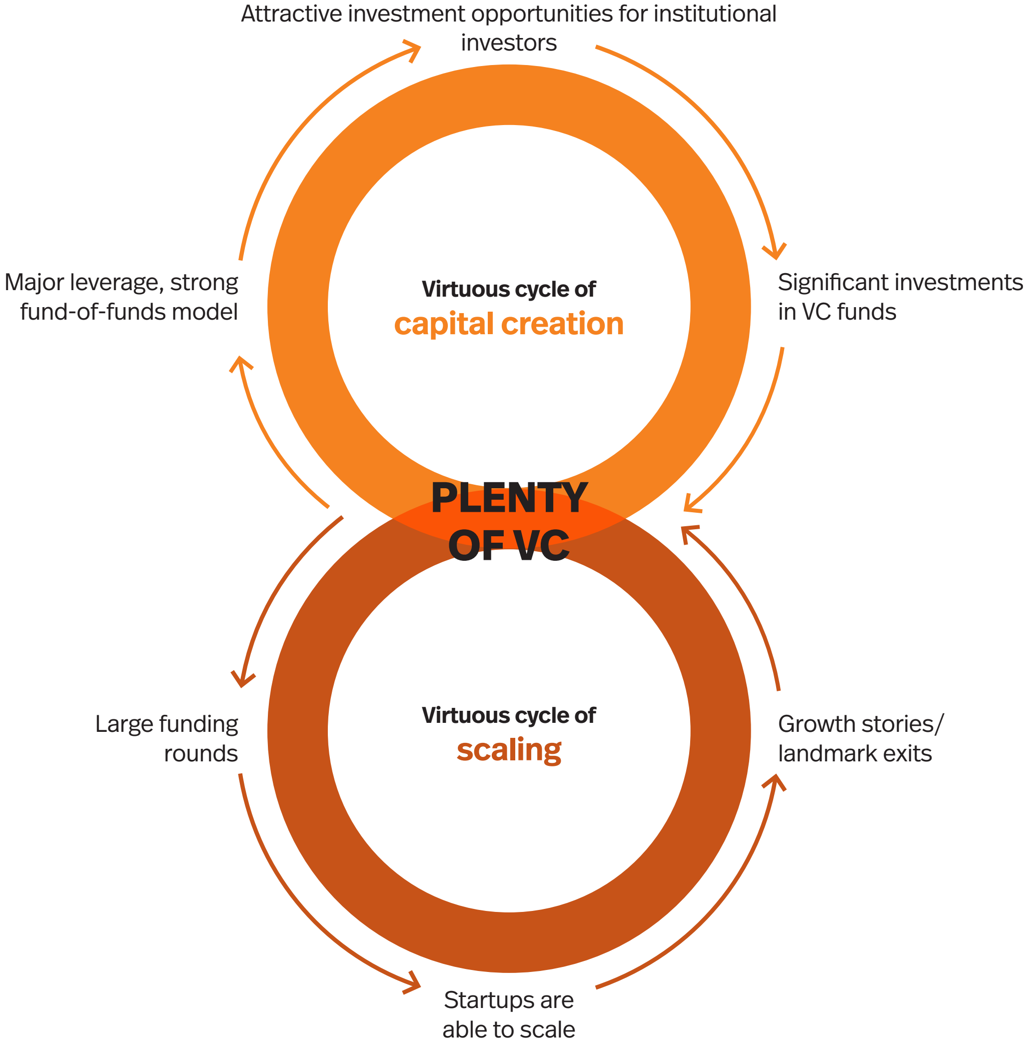
The examples set by pension funds both overseas and in Germany all go to show that asset-backed pension schemes work. The workers profit from the good yields produced, and the startups benefit from more capital with which to finance their growth. The economy is thus in a state of continual renewal.

6. Launch a “Science, Startups and Growth” Excellence Initiative

Venture capital for innovative startups needs the right ecosystem – one that links up innovative academic research and business practice – and it needs attractive investment targets. We already have some good startups. And we could have many more of them if we managed to tap into the knowledge produced in German universities to a much greater degree through innovative startups.

We should launch an Excellence Initiative around science, startups and growth. The German Universities Excellence Initiative (encompassing elite universities, clusters of excellence and postgraduate funding) already supports high-impact research universities. We can build on that and provide funding to universities and research institutes like Fraunhofer that bring their research to market in the form of high-growth startups.

Virtuous cycles: The proposed steps toward more venture capital in Germany can be mutually reinforcing



Source: BVK, IE.F, Roland Berger

The initiative should work toward putting in place everything that academics and students need to turn their innovations into business models and get their startups ready for market. They need suitable spaces and buildings to work in, they need support with finding the right people for their projects and they need help structuring their company and writing business plans, etc.

The education system must be supported as well. Schools need to teach basic business principles to all young people. Universities must offer entrepreneurship as a compulsory subject for all students on business degrees and on courses of study in STEM subjects at the very least, and it should be available to students of other faculties as an elective, too. Successful entrepreneurs and venture capital investors need to be brought on board as lecturers to inspire the students. Graduates should never come out of a course of study asking, “Why do a startup,“ but rather, „Why not?“

The tools are ready and waiting, they just need to be used. All of them at once. Then it will be possible to mobilize more venture capital than before. And the mobilization will be permanent. Because in applying all of the levers at our disposal, not only will we be able to break the vicious cycles of insufficient venture capital in Germany, we will actually be able to turn them around into virtuous cycles that enable more capital formation and help businesses to scale. →|

Glossary

coparion | Venture capital fund that draws on cash from the assets of the European Recovery Program (ERP) – represented by Germany's Federal Ministry for Economic Affairs and the KfW development bank – and works in conjunction with private investors in the form of a co-investment fund to finance tech companies in the startup and later stage.

Crowdfunding and crowd investing | Crowdfunding is a form of financing where numerous investors pool small amounts of cash, usually through an online platform, to jointly fund a project, business idea or product. Crowd investing refers to the funding of companies by large numbers of people in return for a share of the profits.

Dansk Vækstkapital (I and II) | Two Danish funds of funds that have applied a guarantee-based bond model to raise capital from institutional investors, which they invest in the form of venture capital, among other things. The two funds of funds are both managed by Vækstfonden, a state-owned financial institution with professional and politically impartial fund managers.

Deep tech | Breakthrough technologies developed predominantly for the B2B sector. Key areas of focus are the Internet of Things and artificial intelligence.

Early stage | The first phase of the startup lifecycle when companies get their services and products ready for market with the help of -> Seed funding.

Fund of funds | Fund that invests the capital it raises in other funds (known as target funds).

High-Tech Gründerfonds (HTGF) | German venture capital fund with public sector (Federal Ministry for Economic Affairs and KfW) and private sector investors, which funds new tech companies primarily in the seed and -> Startup stage.

Institutional investors | Investors that make investments on a scale large enough to necessitate the establishment of a separate business. They include insurance companies, banks, pension funds and charitable foundations.

INVEST grant | Launched by the German government in 2013, the "INVEST grant for venture capital" aims to support innovative young companies in their search for an investor. The program involves giving private investors – especially business angels – a grant in order to encourage them to make venture capital available to these companies.

Later stage | The growth phase for startups, when venture capital is mainly needed for -> Scaling the business model.

Management fees | Fees for the management of funds, charged to the fund investors by the fund managers.

Private equity | Type of capital used to fund startups and established companies. -> Venture capital is one segment of private equity and refers specifically to the funding of startups and new companies. Private equity is also an asset class for private or institutional investors.

Scaling | Significant expansion of the business model that elevates a company's quantitative parameters, such as employee numbers, revenues and customer base, to a new level.

Secondary purchase | Sale of company shares by one private equity firm to another private equity firm. Usually takes place before the shares in a startup are freely available on the market.

Seed funding | Funding for the development and realization of an idea in the form of usable results or a prototype on the basis of which a business concept can be drawn up for the foundation of a new startup.

Solvency-II | EU Directive pertaining to insurance company supervision, which regulates aspects such as the amount of capital that insurance companies have to hold, risk management provisions and disclosure requirements.

Startup stage | Phase in the startup lifecycle when a startup company enters the market, prepares for (mass) production and distribution and initiates its marketing activities.

Tax transparency | Characteristic of a fund. If a fund is tax transparent, the fund investors are treated as if they had invested in the target company directly.

Ticket size | Amount of capital invested by a venture capital fund per funding round per company. For an institutional investor it is the total amount invested in a single private equity or venture capital fund.

Track record | The successes and experience of an investment firm, company or individual fund manager/entrepreneur.

Trade sale | Sale of a company to a strategic investor, such as an industrial company operating in the same industry as the startup.

Venture capital | Equity invested in startup companies with strong growth potential, also referred to as risk capital, and falling under the -> Private equity asset class.

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BVK
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Residenz am Deutschen Theater
Reinhardtstrasse 29b
10117 Berlin
Ulrike Hinrichs
Executive Member of the BVK Board

Internet Economy Foundation (IE.F)
Uhlandstrasse 175
10719 Berlin
www.ie.foundation
Prof. Dr. Friedbert Pflueger
Chairman

Roland Berger GmbH
Sederanger 1
80538 Munich
www.rolandberger.com
Stefan Schaible
CEO Germany & Central Europe

Authors

BVK
Christoph J. Stresing
stresing@bvkap.de
Martin A. Bolits
bolits@bvkap.de
Attila Dahmann
dahmann@bvkap.de

IE.F
Clark Parsons
c.parsons@ie.foundation
Felix Styma
f.styma@ie.foundation

Roland Berger
Klaus Fuest
klaus.fuest@rolandberger.com
Dr. Christian Krys
christian.krys@rolandberger.com
Dr. David Born
david.born@rolandberger.com

Contacts

BVK
Christoph J. Stresing
Deputy Managing Director
BVK
stresing@bvkap.de
+49 30 30 69 82-17

IE.F
Clark Parsons
Managing Director
Internet Economy Foundation (IE.F)
c.parsons@ie.foundation
+49 30 8877 429-400

Roland Berger
Claudia Russo
Press Officer
Roland Berger GmbH
claudia.russo@rolandberger.com
+49 89 9230-8190

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