THE ECONOMIC FOOTPRINT OF SWEDISH VENTURE CAPITAL AND PRIVATE EQUITY

Swedish Private Equity & Venture Capital Association (SVCA)
November 2022

Swedish Private Equity and Venture Capital: Hard facts

Total Private Equity[1]

Total PE investments increases Swedish GDP by 3.5%-4.7% permanently

SEK 296 bn invested into Swedish companies the last 10 years

Venture and Growth Capital

Venture and growth capital investments alone increase Swedish GDP by around 1.5%, corresponding to around SEK 82 bn

Thereof, SEK 37 bn invested by VC funds into Swedish companies

PE ownership increases profitability (EBITDA) of portfolio companies by 53%

The Swedish PE market is the second largest in the EU, compared to the size of the economy[2]

Note: 1) Includes VC investments 2) Over the past 5 years, i.e., 2017-2021, following Luxembourg

Executive summary
PE and VC provides a significant boost to Swedish GDP

UNIQUE VALUE CREATION OF PE AND VC

Private Equity (PE) and Venture Capital (VC) provide unique ways of developing and scaling high-potential companies. They bring capital to high-risk companies and help scale up innovative ideas; in the very early start-up phase, bringing new ideas to the market and in the later growth phase of a company. At the same time, PE take larger ownership shares of companies than e.g., public equity or investment funds, and deploy active ownership – thereby enhancing productivity in PE and VC owned companies.

The positive impact of PE ownership is documented by our empirical findings. Specifically, we find that on average productivity gradually increases throughout the period of ownership, eventually reaching productivity gains of around 22%. Correspondingly, PE ownership implies an increase the average added value of portfolio companies of around 62% after exit. The higher added value in portfolio companies provides an average increase in operating profit of around 53% after exit.

Looking at VC specifically, we conclude that VC-backed companies often experience significant growth effects; 5 years after the initial investment turnover growth rates are between 13-23% - significantly higher than the 3% we find for an average small-midcap company.

SIGNIFICANT GAINS FOR THE SWEDISH ECONOMY AS A WHOLE

Adding up these productivity gains within individual companies naturally has an overall positive impact on nation-wide economic performance.

First, there is the direct effect for the companies growing and becoming more productive and profitable following the PE and VC investments.

Second, PE investments also have a large indirect effect on the activity throughout the supply chains of their portfolio companies. Additionally, a number of studies show that the increase in productivity and competitiveness of PE-backed companies forces other companies to step up creating economic spill-over effects. Lastly, successful companies and ideas often result in spin-offs and new start-ups.

From a societal perspective, PE and VC investments are particularly important as the bulk of investments are within digitalisation, tech or life science – areas that are becoming increasingly important for productivity growth globally. Even investments within traditional sectors often have a tech element, e.g., investments in the retail sector is within e-commerce, etc.

When we add up the direct and indirect effects of PE as well as the impact of VC, we find a permanent increase of Swedish GDP of around 3.5%-4.7%. Looking at 2021, this means that, because of PE and VC, Swedish GDP was around SEK 190bn higher than it would otherwise have been (lower bound estimate).

STRONG INTERNATIONAL FOCUS - STOCKHOLM AS A HUB FOR RISK-CAPITAL

The Swedish PE sector has a strong international focus, centred around Stockholm.

Measured as a share of GDP, the amount of PE capital raised in Sweden is the second largest in the EU, surpassed only by Luxembourg.

The majority of the PE activity in Sweden is centred around Stockholm. A large share of the Swedish PE funds goes to companies located in other countries. Specifically, Sweden is the second largest European exporter of PE funding, making Stockholm a PE hub supporting high-potential companies in the entire Nordic region and beyond.

A strong ICT and life science sector, having a GVA share close to 9%, and well-developed IPO markets points towards Stockholm as a VC hub, with attractive investment opportunities for VC funds.

Looking at employment, we estimate that the activity of the Swedish PE sector could support around 4,300 jobs, taking into account both direct and indirect effects. At the same time job creation rates among companies backed by Swedish PE are among the highest in Europe at 7% against an average of 3%.

Overview of report

Unique value creation of Venture Capital and Private Equity

- What is private equity (PE) and venture capital (VC)?
- How VC and PE firms can boost productivity

National economic benefits

- How does this benefit the Swedish society as a whole?
- How do PE and VC contribute to economic growth in Sweden?

Stockholm: A natural international hub for risk capital

- How does the Swedish PE market compare to international peers?
- Which benefits are associated with Stockholm being an international hub for risk capital?

1

UNIQUE VALUE CREATION OF PRIVATE EQUITY AND VENTURE CAPITAL

- What is private equity (PE) and venture capital (VC)?
- How PE and VC firms can boost productivity

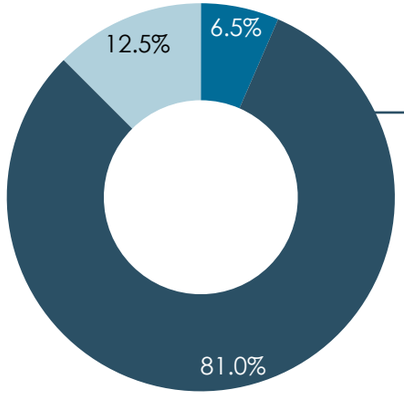
Private equity and venture capital provide unique ways of developing and scaling high-potential companies

PE and VC is a unique way of financing companies

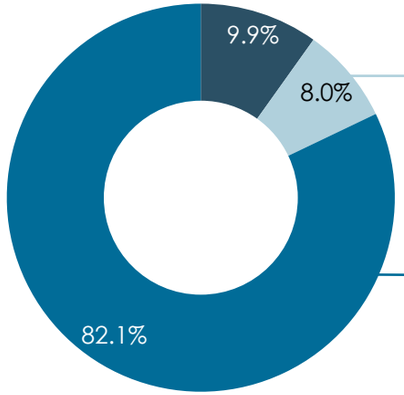
- PE is capital provided to companies not listed on a stock market. Like public equity, it allows investors to buy a share of the business in which they invest. Yet, the two funding sources differ across many dimensions:
  - Private equity funds typically acquire large shares of the companies in which they invest. Thus, the ownership structure is more concentrated than in publicly listed companies which usually have many minority shareholders.
  - The concentration of ownership allows PE investors to take on a more active role in the management of the company. Such active ownership is usually not possible in public companies.
  - Private equity investments are usually riskier but with a large potential upside: typically, smaller companies with a less developed product or older companies with suboptimal business outcomes but with large scale-up/turnaround potential.
- A subset of PE is the so-called venture capital (VC) which invests in companies at yet an earlier stage, helping bringing innovative ideas closer to the market. Another part is growth capital (GC), supporting expansion at maturing businesses.
- This report will focus on both venture capital and private equity.

Share of investments by Swedish PE funds at different investment stages
% of total, 2012-2021

Based on number of companies



Based on investment value



Venture capital

Provides seed funding and funding to start-ups. Later-stage VC can also fund scale-ups (linked to growth capital). The ticket size is typically smaller, and investments reach a larger number of companies.

Growth capital

Targets recently established companies with a scalable product already in place and the potential to grow. Growth capital is the smallest asset class, both in terms of investment value and the number of companies.

Buyout PE

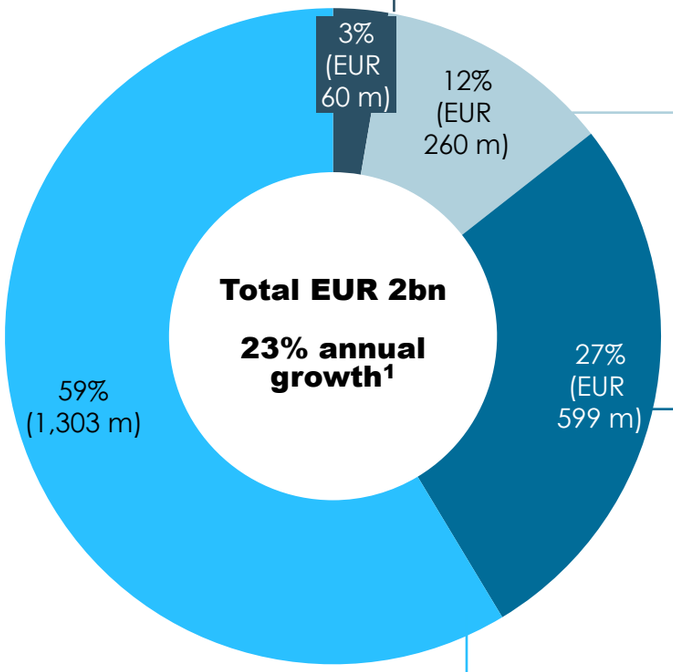
Targets established and larger companies. The focus can either be on scaling up an already proven business model (e.g. to new countries) and/or improve the competitiveness and efficiency of the company. The ticket size is typically large.

Note: Both replacement and rescue/turnaround capital are excluded. The share of these types of investments combined is below 1% of the total.
Source: Invest Europe, industry statistics

Venture and growth capital provide early stage finance and covers four phases of bringing innovative companies to the market

Venture and growth capital investments: four types of funding

Share of VC and GC investments in Sweden, 2021



Seed funds – many investments with small ticket size

Early on, when the company is not yet established or is only an idea or prototype, the entrepreneurs mostly rely on private funds or business angel funding. Seed VC is often the only professional private investor, typically investing between EUR 100.000 € and 4 m.

Start-up VC

Next, once the company has a product to show and possibly some growth in the turnover, start-up VC funds become available, arranged in a number of rounds:

Series A: VC funds invest in the early start-ups, tickets of EUR 4-10 m.
Series B: As company and product develop, VC funds invest larger tickets, EUR 10-25 m.
Series C: Successful companies may make it to the largest round of start-up VC of EUR 25-100 m tickets.

Later stage VC – few but large investments

For newly established companies with high growth during the first years and typically +100 employees, later stage VC become relevant (closely related to Growth capital capital), where the focus is on growing an already proven business concept (e.g. Spotify):
Series D/E: Tickets on +EUR 100 million.

Growth capital

A relatively small but dynamic sector of private equity, supporting expansion at maturing businesses that are typically growing very fast. Targets businesses with a scalable product and a high growth potential.

Source: Invest Europe, funds raised.
Note: 1) last decade (since 2012), share of later stage VC increases, share of start-up VC decreases

From an investor perspective, venture capital is a risky investment with a long-term upside

A large share of VC investments are unsuccessful

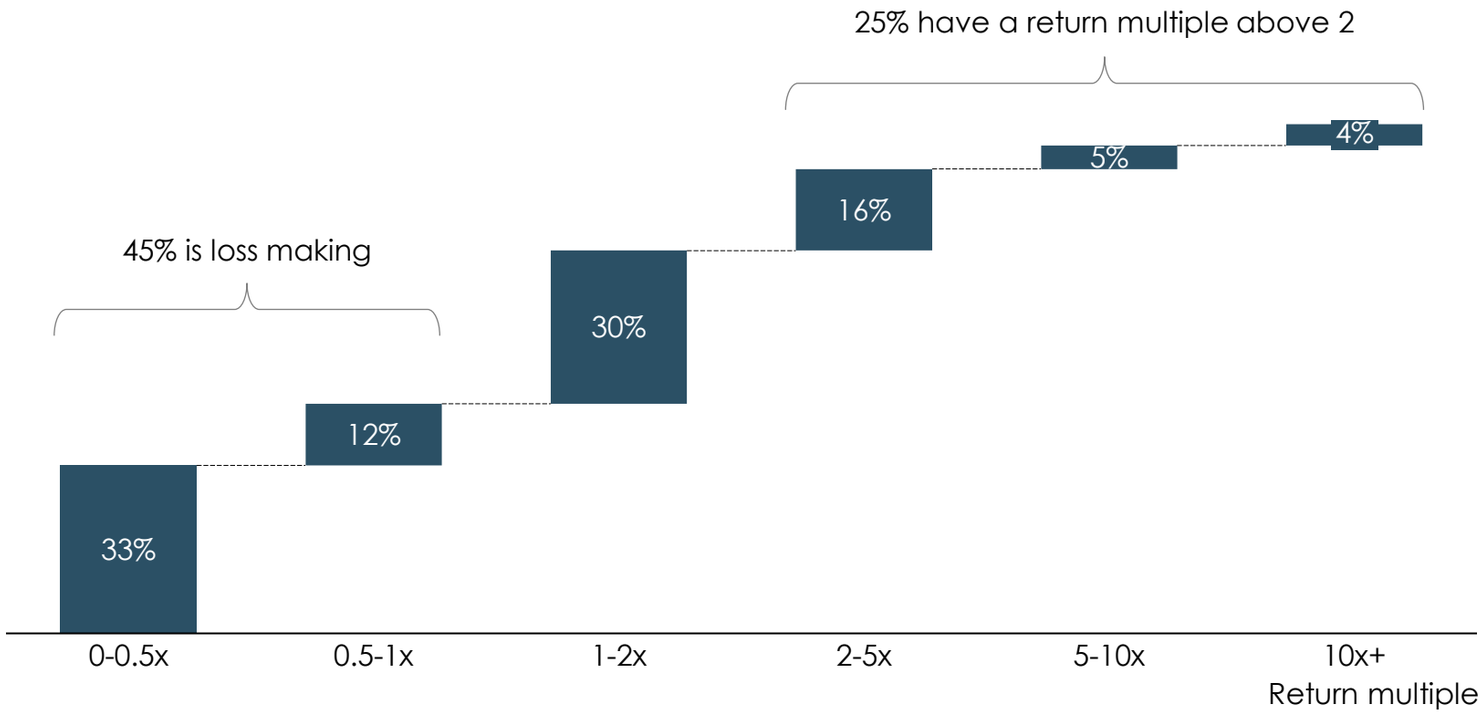
- 45% of all VC investments among major Nordic VC funds generate a loss. But the potential upside is high, for example: 4% has a return ten times the invested amount.
- This provides an average annual return (IRR) of some 23% over the past 10 years.

The high return discrepancy of the individual companies is mitigated through diversification

- A typical holding represents less than 15% of the total fund size.
- Consequently, only 20% of funds older than three years have a return multiple (TVPI) below one.

Distribution of return multiples of companies in major Nordic VC funds

%



Note: Based on the Nordic Venture Capital Index (NVPI), which includes all the major Nordic VC firms. The return multiple is measured as TVPI and is the total value of the funds' cumulative distributions compared to paid in capital.

Source: NVPI

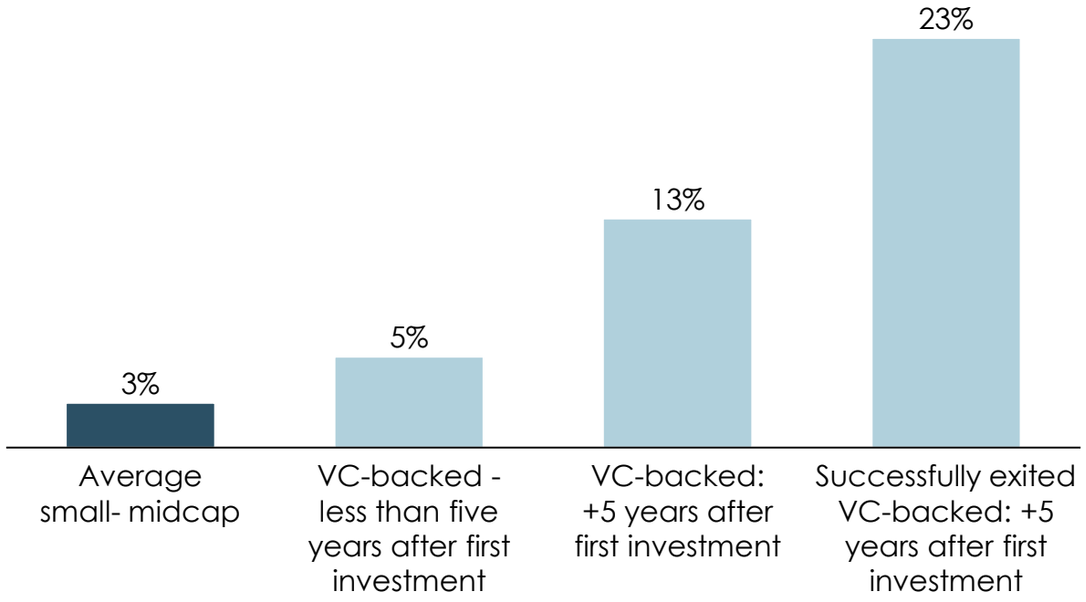
Source: NVPI

Growth in VC-backed companies typically takes off five years after the initial investment

VC has little impact on revenue and employment growth in the first years after the initial VC investments – here the focus is on developing the concept. However, after five years, growth starts to take off and VC-backed companies significantly outperform average small and mid-cap companies.

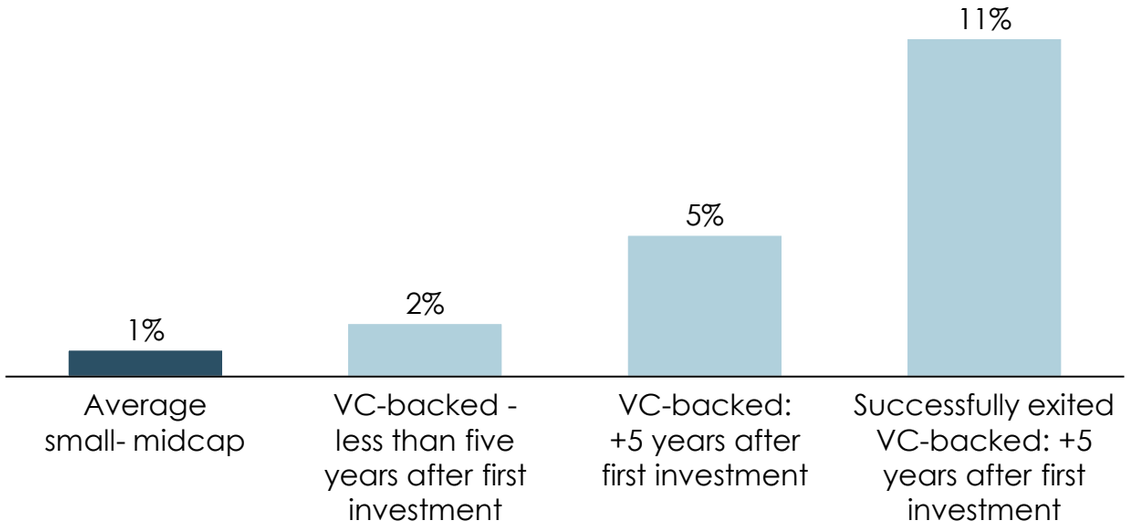
Turnover growth for Swedish companies

Avg. % annual growth, 2006-2015



Employment growth for Swedish companies

Avg. % annual growth, 2006-2015



Note: See appendix for methodology. The estimates are based on 105.923 companies for "Average small-midcap", 358 companies for "VC-backed - less than five years after first investment", 248 companies for VC-backed - more than five years after first investment" and 134 companies for "VC-backed - more than five years after first investment, successful companies" (not covering all years)

Source: Amadeus and SVCA

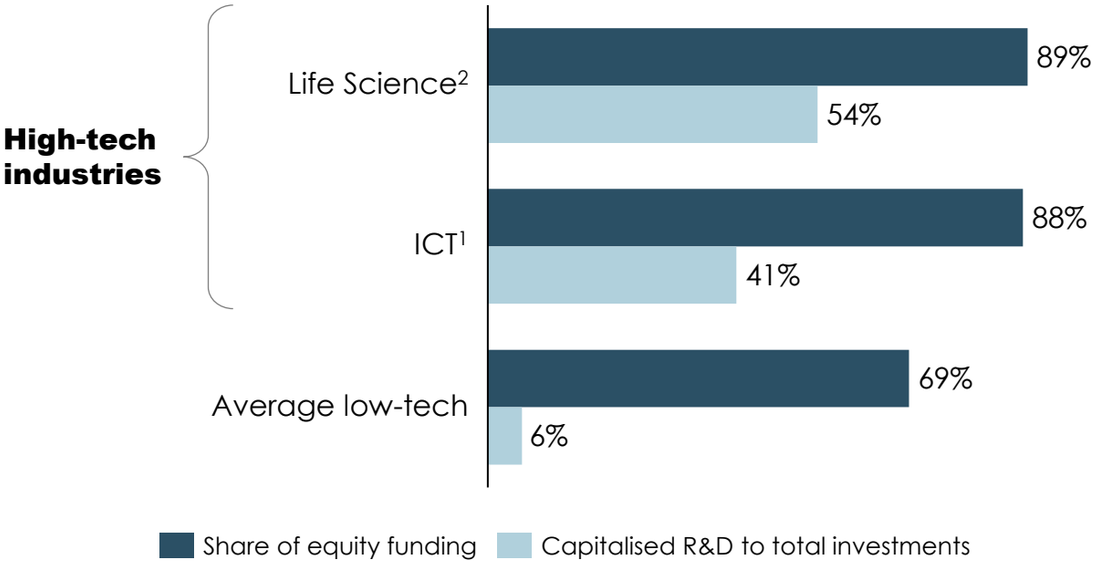
Venture and growth capital funding is particularly crucial for high-tech industries

Innovative high-tech sectors depend on equity finance ...

Companies relying on the outcome of R&D efforts are too risky for standard credit finance and have a high external equity dependence compared to less risky firms

R&D and equity dependence in Europe

% by industry in 2021



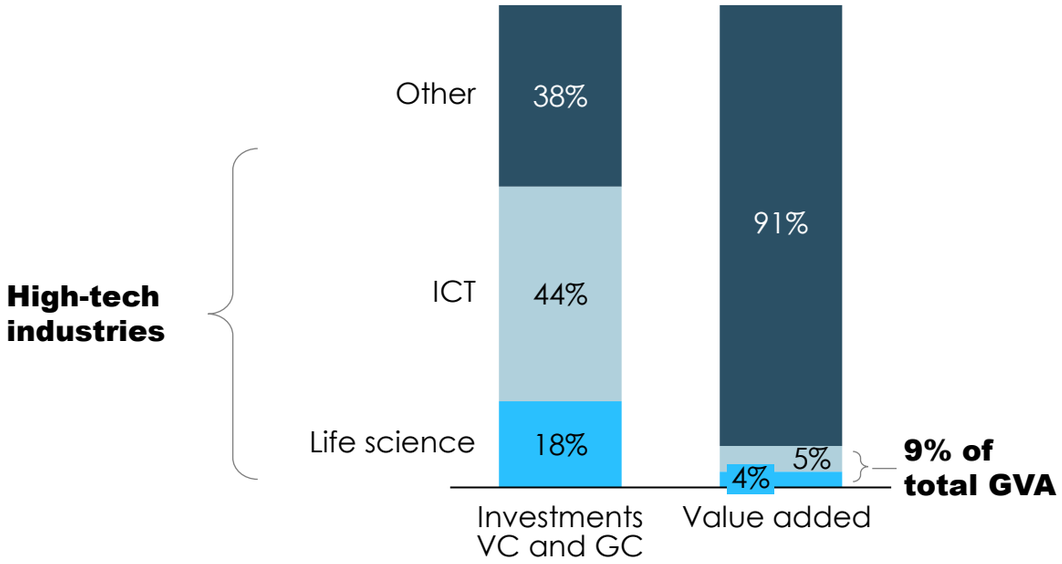
Source: Data set from Aswath Damodaran, see link

... as a result, venture and growth capital focuses on these sectors

ICT and life science account for 70% of VC and GC investments in Sweden, despite these sectors only accounting for almost 9% of the total economy.

Investments[3] by VC and GC and value added[4] in Sweden

% by industry



Source: Invest Europe, market statistics and OECD

Note: 1) Includes the average of the following sectors weighted by the number of firms: cable TV, computer services, computers/peripherals, electronical equipment, electronics, information services, machinery, software, telecom. 2) Includes the average of the following sectors weighted by the number of firms: chemicals, drugs, healthcare products, healthcare support services, healthcare information and technology. 3) Average over 2012-2021. ICT and Life Science is defined by Invest Europe. ICT includes communication, computer and electronics. Life science includes biotech and healthcare. 4) Data is from 2016.

Private equity is growth-focused capital for scale-up of high-potential companies at different stages of maturity

Innovative companies with scalable products offer growth opportunities (Growth Capital)

- It targets businesses with a scalable product and a high (untapped) growth potential.
- Investments are therefore overrepresented in innovative sectors such as ICT, life sciences and financial services.
- Growth capital provides funds needed for investments to scale up new products and to expand to new markets.
- Funds also provide know-how to make the right strategic decisions and to professionalise the business.
- Investments in businesses in the energy and environment sectors have spiked in the past year. The high risk-high reward profile of green technologies makes growth capital an important source of funding for these types of investments.

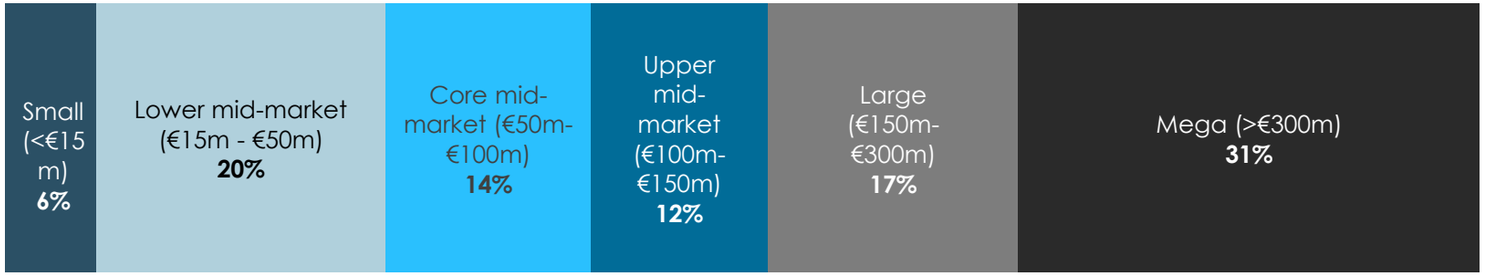
Large and older companies can increase profitability and productivity (Buyout PE)

Compared to growth capital, buyout PE targets larger, long-established companies which do not harness their full potential:

- Increasing productivity and profitability, for instance via investments in digitalisation, new technologies and R&D (buyout PE investments are common in innovative sectors, although less so than growth capital).
- Increasing the competitiveness and efficiency of the company.
- Replacing the management team of ill-managed companies.
- Expansion to other markets to leverage business models proven to be successful domestically.

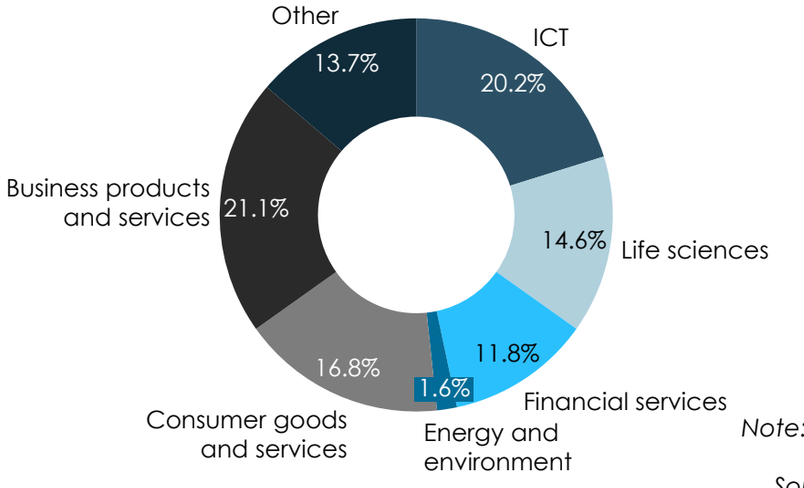
Such changes typically require large investments by the PE fund.

Equity values of buyout PE, 2012-2021
% of total PE investments in Swedish companies



Source: Invest Europe, market statistics.

Buyout PE investments by sector, 2012-2021
% of total PE investments in Swedish companies



Note: Life science companies include the biotech and healthcare sectors.
Source: Invest Europe, market statistics.

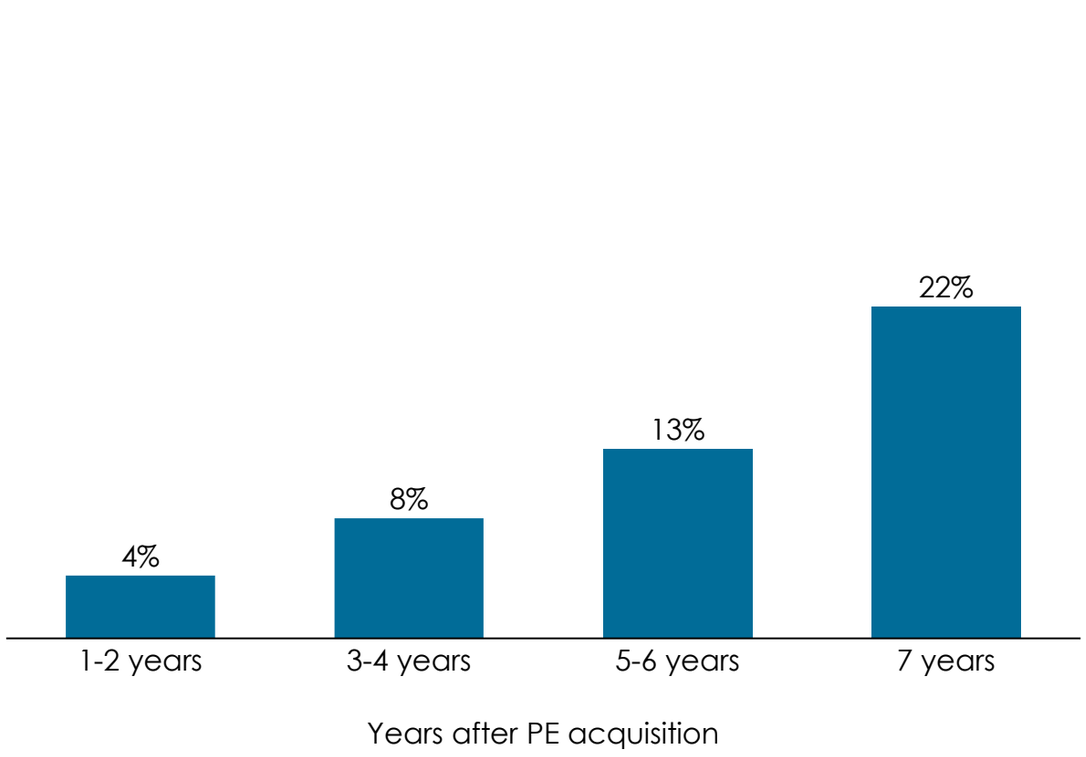
The positive impact of active ownership is confirmed by empirical findings - productivity on average up by 22% after PE ownership

We find that portfolio companies on average gradually increase productivity throughout the period of ownership – eventually providing a boost of some 22%.

We also find a large immediate positive impact on employment, partly due to mergers. After the initial phase, employment grows modestly; some companies scale up further, while others focus on efficiency gains.[1]

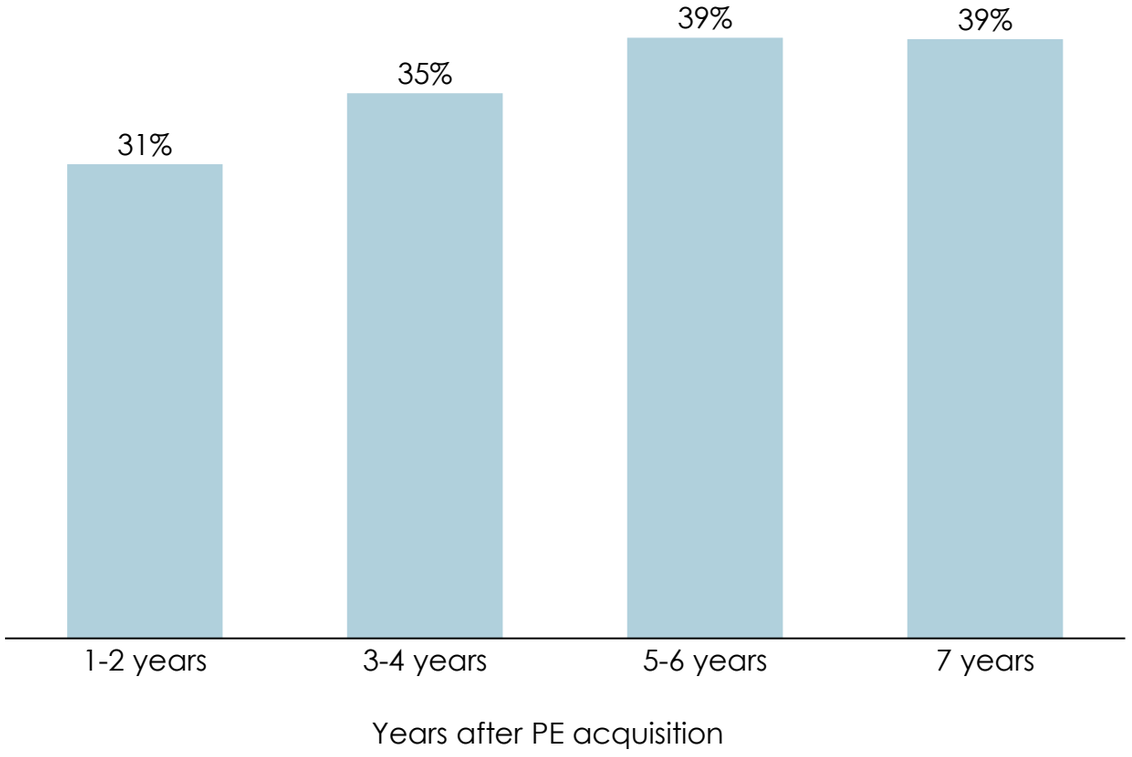
Effect of PE ownership on productivity

Relative increase in value added per employee in %



Effect of PE ownership on the number of employees

Relative increase in number of employees in %



Note: The results are based on fixed effects regressions using accounting information on all Swedish companies from 2007-2019. For productivity, the first two estimates (1-2 years, 3-4 years) were not significant at the 5% level. See appendix for methodology. 1) Invest Europe finds similar impact on job creation for the European PE industry.

Source: SVCA deal data and Retriever company accounting data.

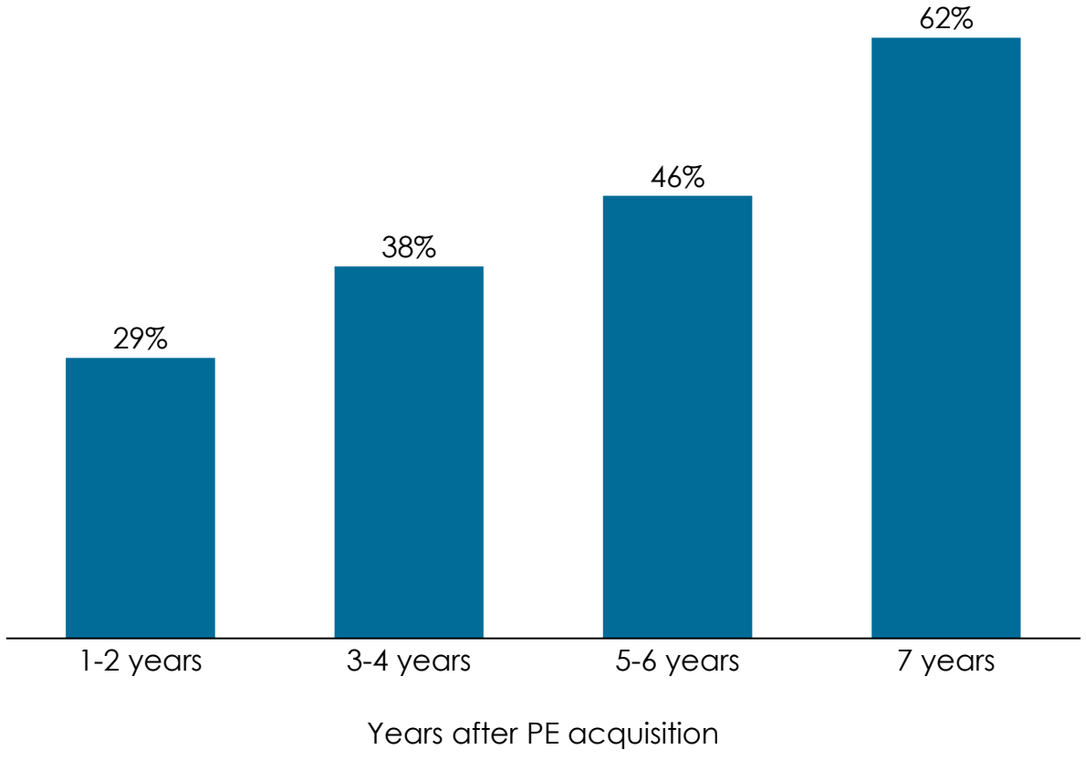
Scale-up of business and efficiency gains increase the profitability of portfolio companies

The higher productivity and employment in portfolio companies are reflected in an average 62% increase in added value after exit (which on average happens 7 years after acquisition).

The higher added value in portfolio companies provides an average increase in operating profit (EBITDA) of 53% 7 years after acquisition. Per employee profit increases by some 11%.

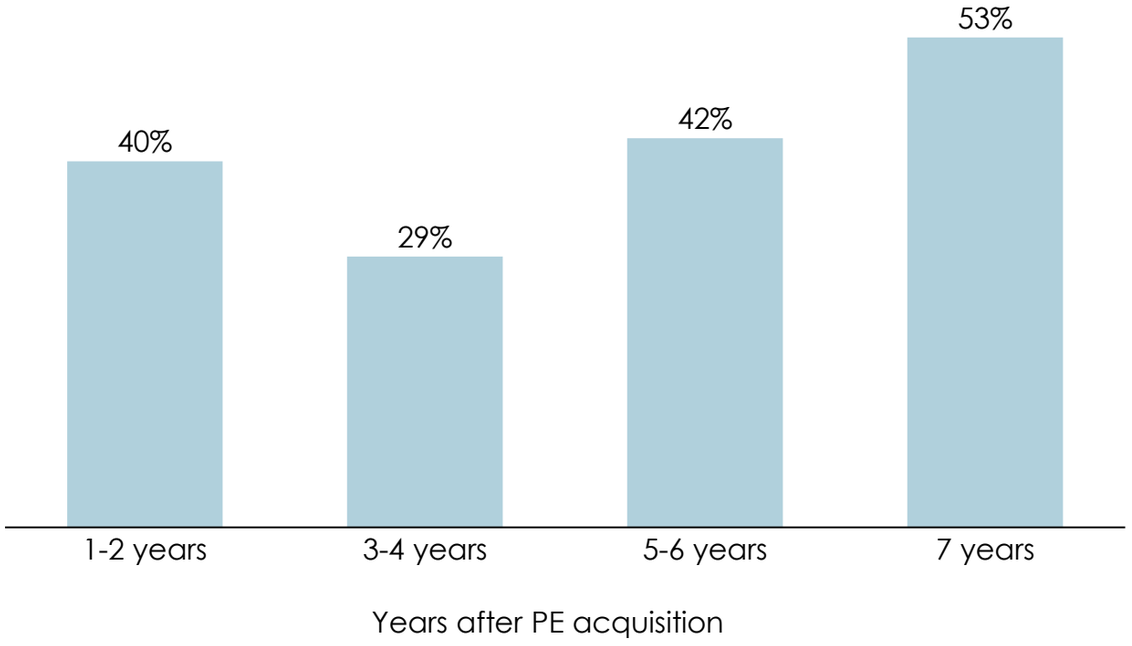
Effect of PE ownership on added value

Difference in added value relative to other companies (%)



Effect of PE ownership on operating profit

Difference in EBITDA relative to other companies (%)

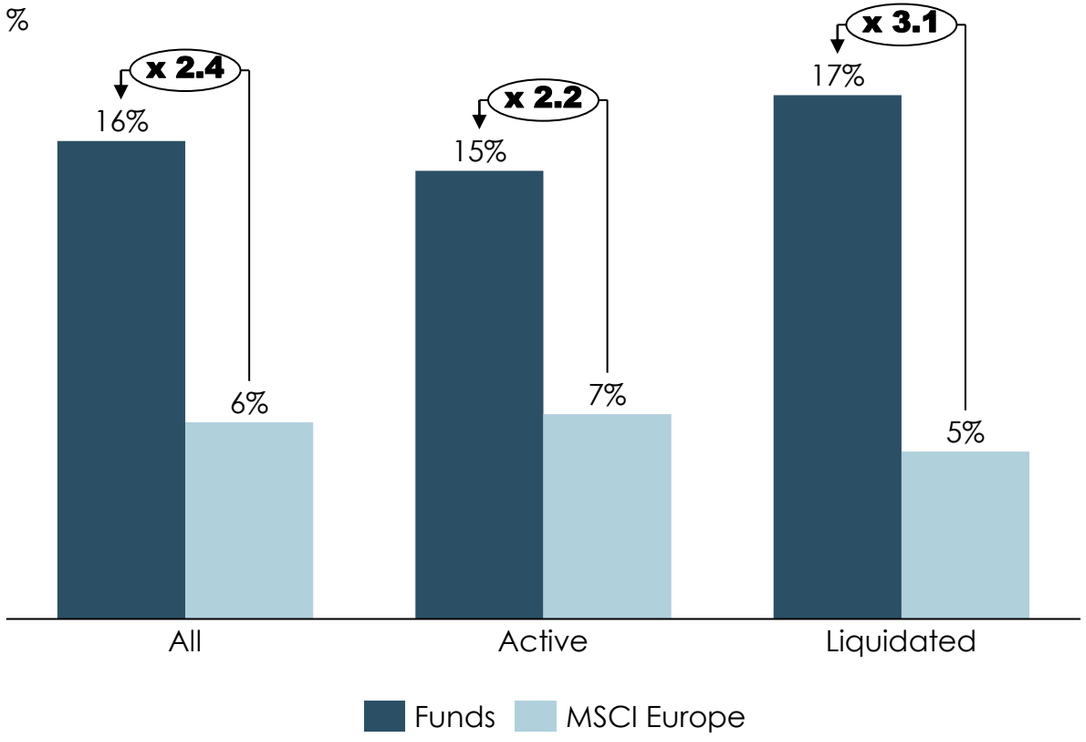


Note: The results are based on fixed effects regressions using accounting information on all Swedish companies from 2007-2019. See appendix for methodology.
Source: SVCA deal data and Retriever company accounting data.

Private equity investments have consistently outperformed comparable investments in public equity

The return of European buyout funds has been almost three times the return of the MSCI Europe index.

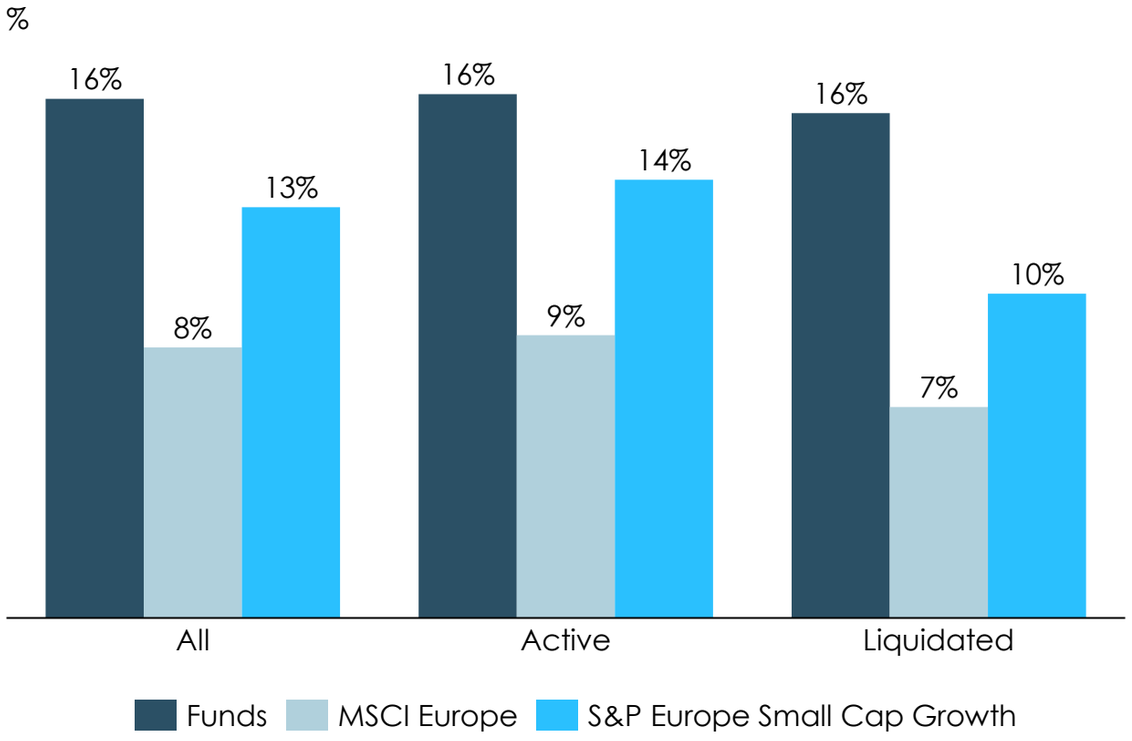
Internal rate of return, European buyout funds, 1987-2020



Source: Invest Europe (2021) - The Performance of European Private Equity.

Growth capital funds also outperform both the MSCI Europe and the more comparable Small Cap Growth index.

Internal rate of return, European growth capital funds, 1994-2020



Source: Invest Europe (2021) - The Performance of European Private Equity.

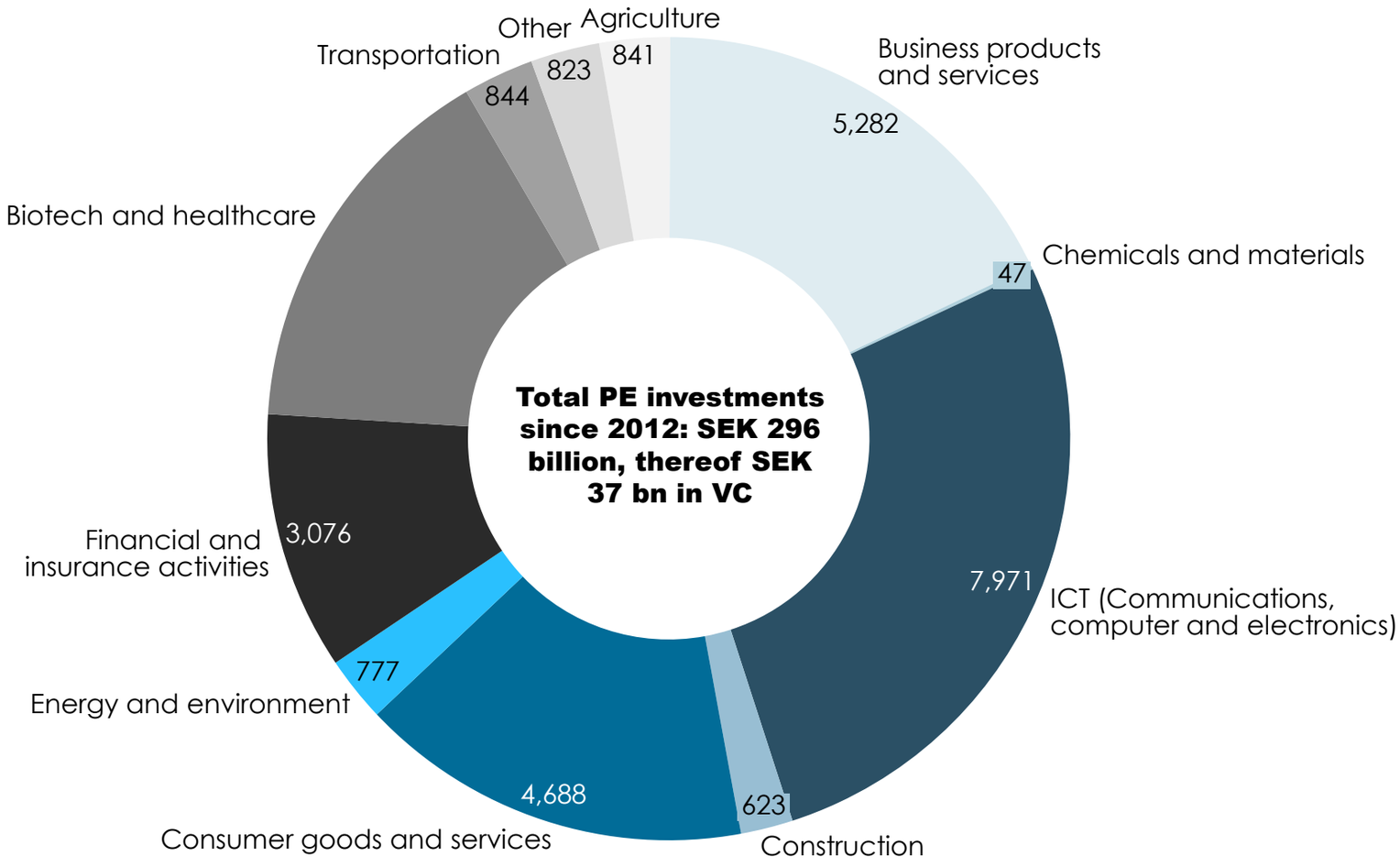
Note: The public market equivalent analysis allows to compare investments in PE funds and investments in indices of listed companies (public equity). The MSCI Europe is an index that tracks the performance of large and mid-cap companies across 15 European countries, with companies covering around 85% of the total market capitalisation of these countries. The S&P Europe Small Cap Growth represents small-cap companies in Europe. Vintage years captured 1987-2020 (buyout PE), 1994-2019 (growth capital).

2
NATIONAL ECONOMIC BENEFITS

In part 1, we showed that PE and VC firms help companies to succeed:
- How does this benefit the Swedish society as a whole?
- How does PE and VC contribute to economic growth in Sweden?

PE investments are largest in life sciences and ICT as well as in consumer and business products and services

Private equity investments in Swedish companies
Average per year, 2012-2021, SEK million

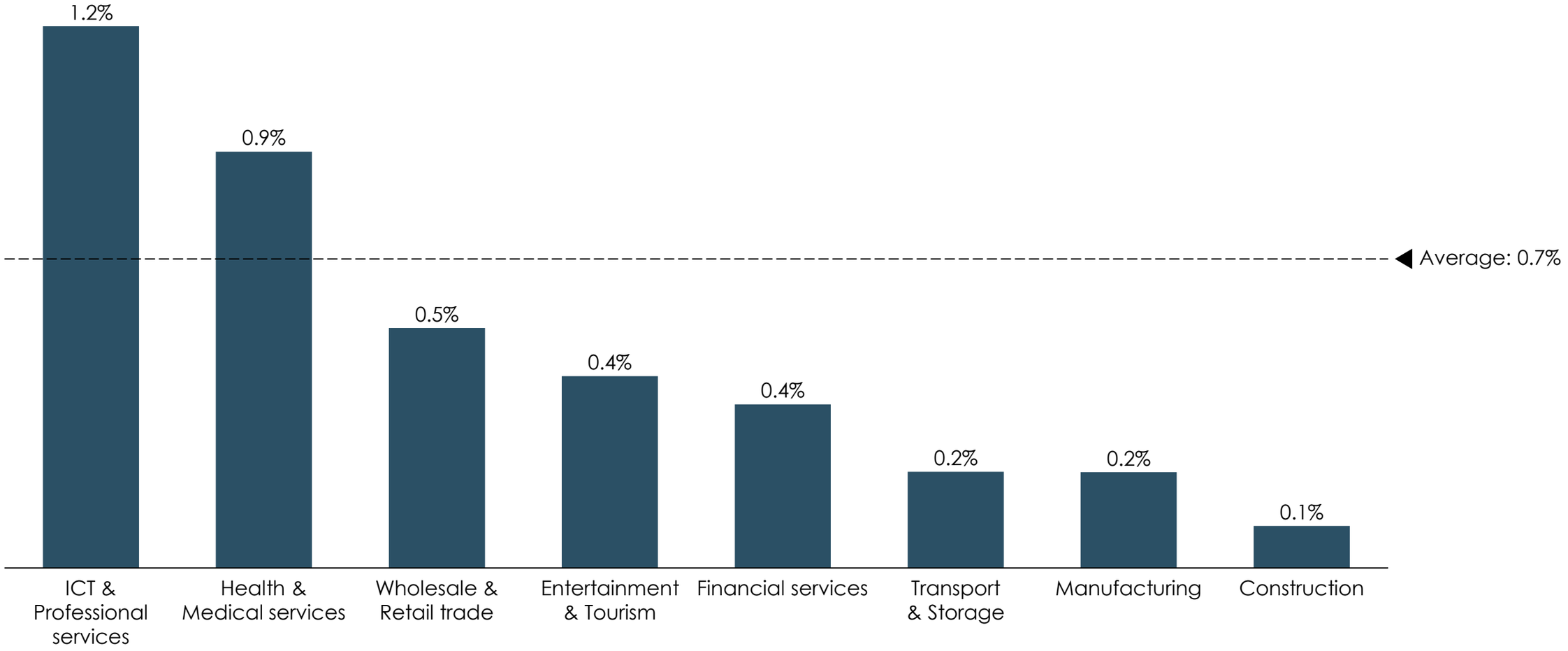


Note: The figure shows the equity values of the investments as opposed to the so-called transaction value which includes external leverage. It is therefore indicative of the money invested by the PE firms and does not show the total size of the deal (which includes external leverage).
Source: Invest Europe, market statistics.

The productivity impact is diverse across sectors, with the highest impact on innovative sectors with growth potential

Estimated average impact of PE ownership on productivity in different sectors

Increase in productivity, 2018



Note: These estimates are based on our microeconometric estimates of the permanent effect of PE ownership on added value and productivity and use the PE ownership share in each sector in 2018 to estimate sector-wide effects. The estimates for the Transport & Storage sector were not significant at a 5% level. The average is calculated as the product of the overall ownership share and the total productivity impact.

Source: Retriever, SVCA.

PE supports highly productive sectors

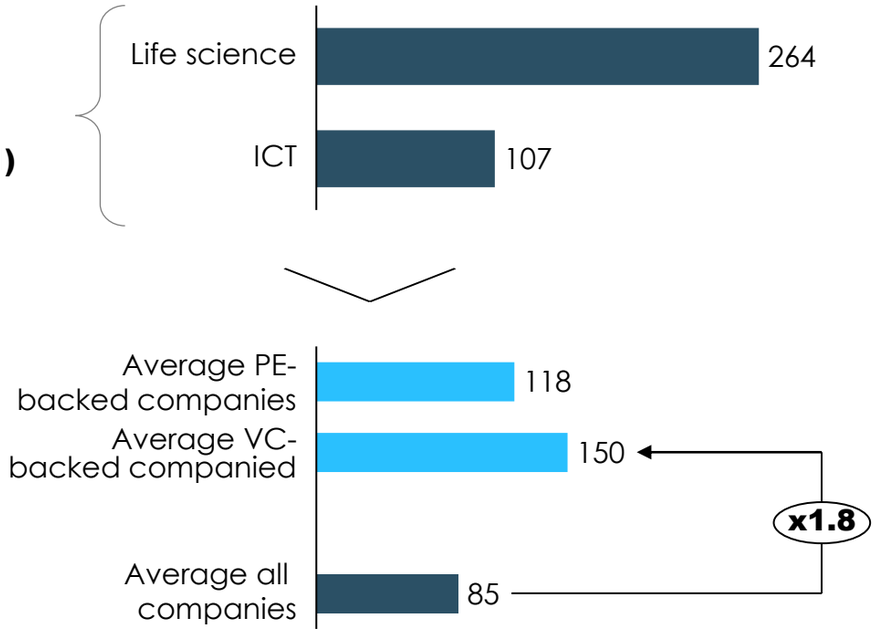
PE and especially VC make up only a small part of the economy, but have a large economic footprint: Their value added is up to 1.8 times the average due to investments in highly productive sectors such as life science and ICT.

Consequently PE-backed companies take up a larger share of the economy than what its share of employment would entail, implying a 5.2% contribution to GVA.

GVA per worker in Sweden in 2018

EUR 1,000

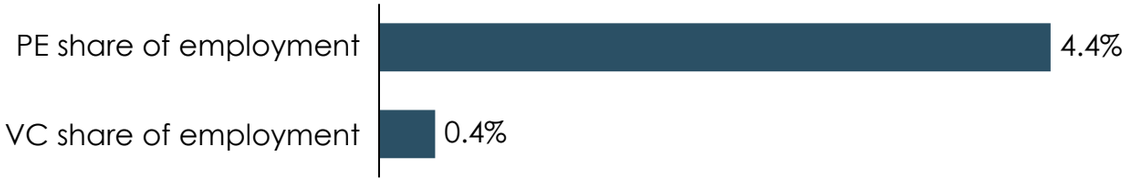
65% of all VC invest-ments go here (2021)



Swedish PE-backed companies employ up to 240,000 people, 20,000 of which are employed in VC companies (in 2020)[1]

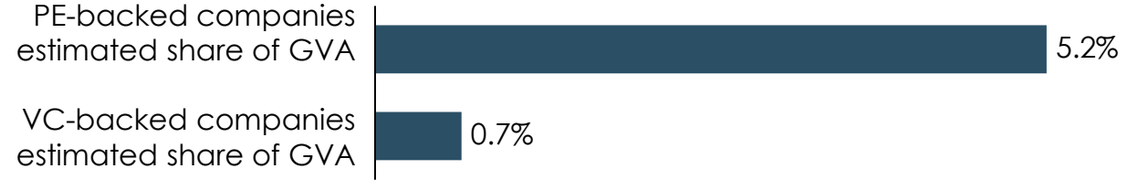
Share of employment in PE and VC in 2020

% of total GVA



Contribution to GVA in 2018

% of total GVA



Source: Invest Europe, market statistics and Eurostat

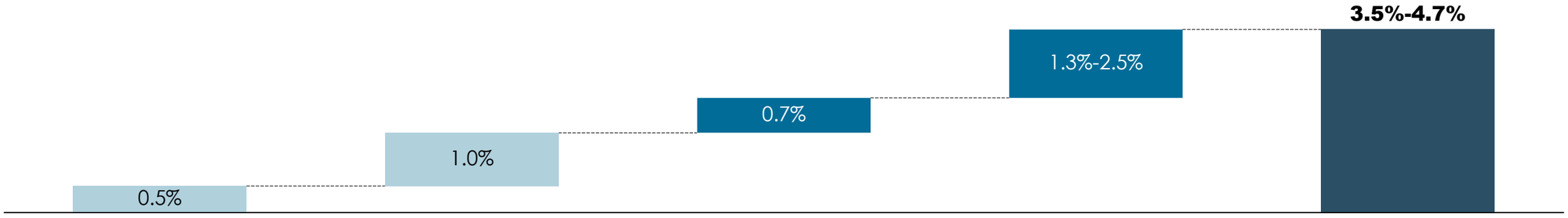
Source: World Bank World Development Indicators, OECD, Invest Europe and Eurostat

Note: 1) Employment numbers are based on Invest Europe data and include all employees in portfolio companies. Note that these numbers are higher than employment numbers used for our GDP estimation which are based on deal data provided by SVCA from a previous study on PE, see link.

PE and VC investments permanently increases Swedish GDP by 3.5%-4.7%

We find that the permanent effect on GDP of PE and VC investments amounts to 3.5%-4-7% (depending on how the indirect effects are estimated). This implies that – each year – Swedish GDP is around 3.5%-4.7% higher than it would otherwise have been.

PE and VC investments estimated impact on Swedish GDP



Venture and growth capital

Direct contribution to innovation as well as indirect contribution via spill overs within sectors and a better adaptation of foreign technologies. The estimate is updated based on our previous report on the economic footprint of VC in Sweden. See appendix for more information.

Private equity

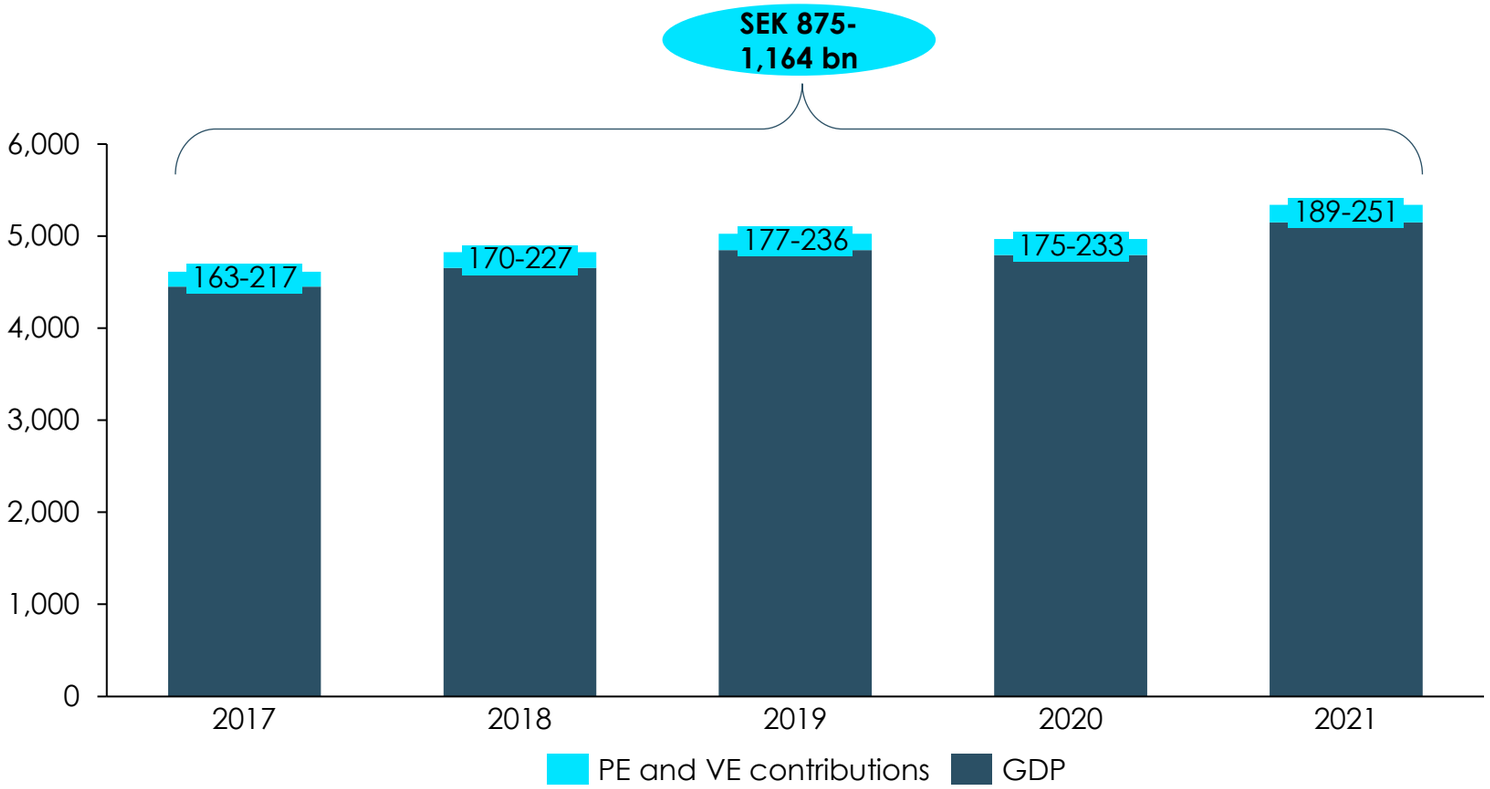
Direct contribution comes from operational, strategic and structural changes as described in chapter 1 (based on a microeconomic estimate of the impact on productivity). Indirect contribution comes from spill-over to the rest of the economy, e.g. through information networks, job changes and informal contacts. See appendix for more information

Note: The direct contribution for private equity uses our microeconometric estimates of the productivity impact of PE ownership of firms together with the employment share in the economy. For venture capital we base our method on Bye et al. (2011). The indirect contribution for both PE and VC is based on a multiplier on 3 of societal return compared to private return, found by several studies. See appendix for more details.
Source: Retriever; SVCA; Invest Europe, market statistics and macroeconomic indicators; Bye et al (2011).

The GDP impact amounts to between SEK 189-250bn in 2021

Our lower bound GDP estimate (3.5%) corresponds to an average yearly contribution in GDP of SEK 175bn from 2017-2021, while our higher bound estimate (4.7%) corresponds to an average yearly contribution in GDP of SEK 233bn. This means that over a five years, GDP was between SEK 875-1,164bn higher than it would otherwise have been.

PE and VC investments estimated impact on Swedish GDP 2017-2021
bn SEK



New methodology for estimating indirect effects

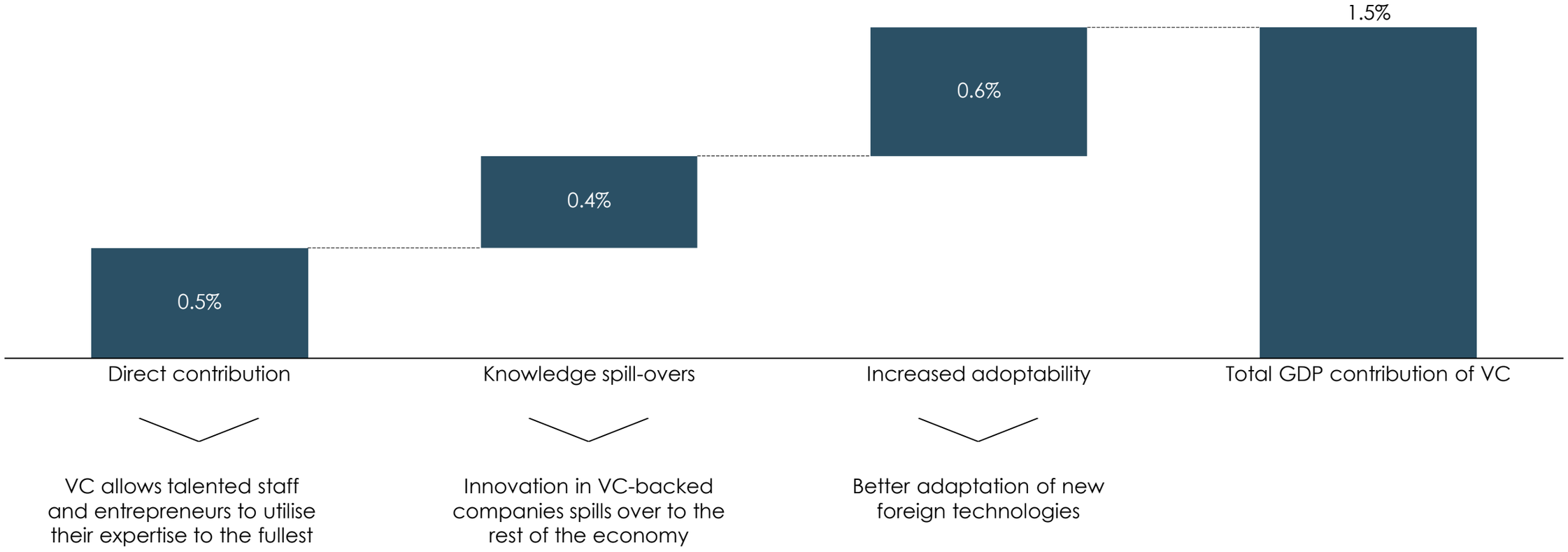
We have included a new methodology of the GDP estimation for indirect effects compared to our previous study:

- With the old method, the indirect effects were based on a micro-econometric study on how PE investments in a sector lifted productivity for the entire sector
- There is a risk that such studies capture other effects on productivity growth, than the pure PE effect, meaning it could be an upper estimate.
- We now therefore conservatively made a lower bound estimate of the indirect effects using a macroeconomic model that captures the relation between R&D investments and spill-over effects (see appendix).
- **The changes reduce our lower bound GDP estimate with some 1.2%-point. With the original methodology, our GDP estimate is 4.7%.**

Note: The direct contribution for private equity uses our microeconometric estimates of the productivity impact of PE ownership of firms together with the employment share in the economy. For venture capital we base our method on Bye et al. (2011). The indirect contribution for both PE and VC is based on a multiplier on 3 of societal return compared to private return, found by several studies. See appendix for more details.
Source: Retriever; SVCA; Invest Europe, market statistics and macroeconomic indicators; Bye et al (2011).

GDP impact of Swedish Venture Capital and Growth Capital

Estimated impact of Venture Capital and Growth Capital on the Swedish GDP level



We estimate that because of venture and growth capital, the level of Swedish GDP is 1.5% higher than it otherwise would have been. Technical details of the estimation are outlined in appendix.

Note: The direct contribution for venture capital is based the method outlined in Bye et al. (2011). The indirect contribution is based on a multiplier on 3 of societal return compared to private return, found by several studies. The split of the indirect effect in knowledge spill-overs and increased adoptability is based on our previous report on the economic footprint of VC in Sweden. See appendix for more details.
Source: Retriever; SVCA; Invest Europe, market statistics and macroeconomic indicators; Bye et al (2011).

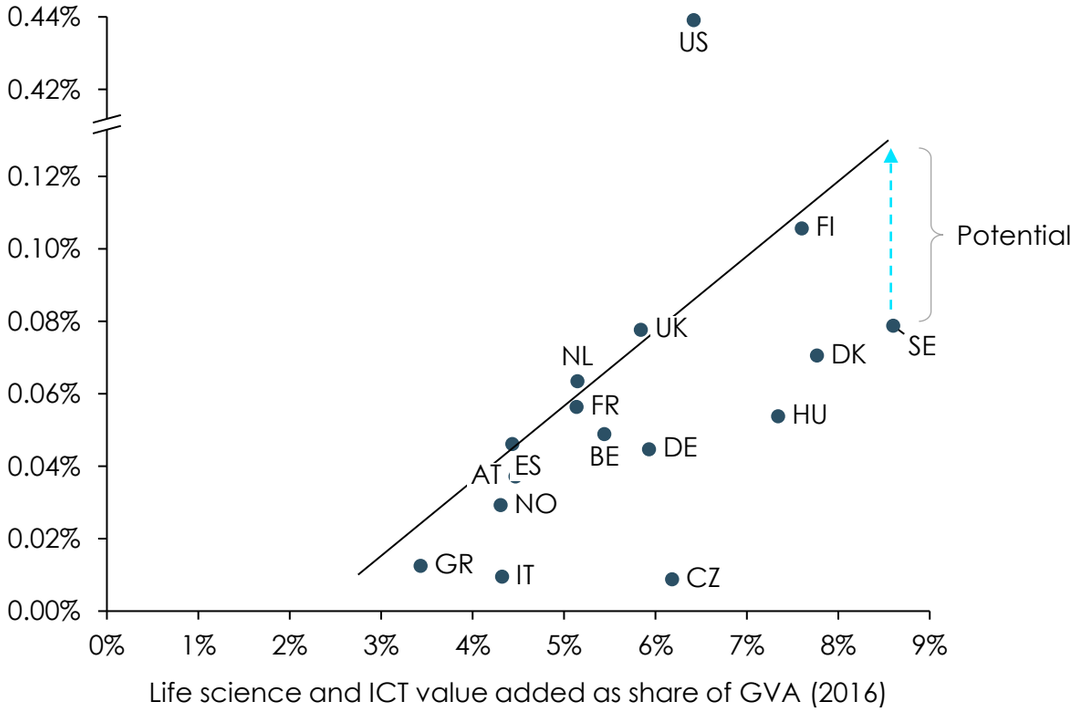
Swedish VC fully utilising its potential would boost its GDP impact by 0.7 percentage points

Countries with large ICT and life science sectors have typically strong VC markets, as is the case in Sweden. Due to a strong growth in VC investments the past five years, from EUR 217m in 2016 to EUR 721m in 2021, Sweden is moving towards its potential.

If Sweden fully utilised its industry potential within ICT and life science, the VC markets could grow further, leading to a permanent increase in GDP of 2%.

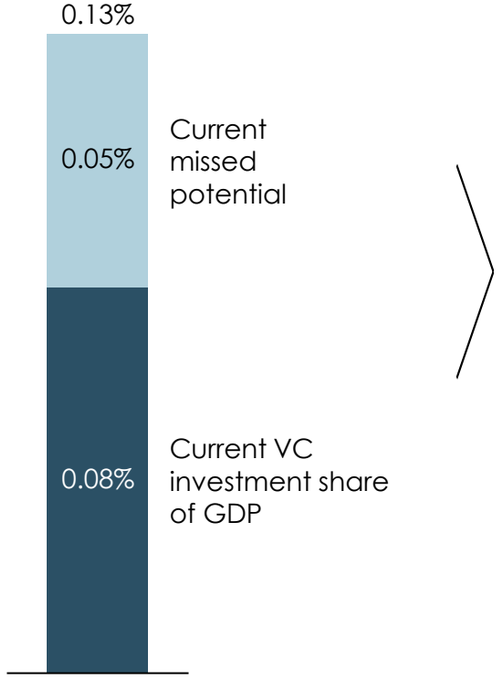
Correlation between GVA of high-tech sectors and VC investments

VC investment share of GDP (2012-2021)



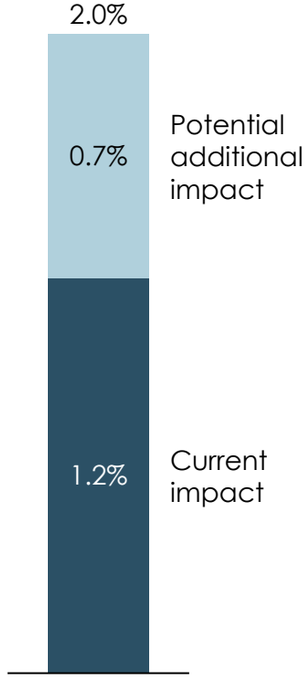
Current and potential VC investments

% share of GDP



Current and potential GDP impact

%



Note: We only have data on share of GVA of life science and ICT for 2016. The current VC impact of 1.2% excludes growth capital. Note that for the US, we use the VC investment share of GDP over the period 2012-2019 due to data limitations. Numbers are rounded.

Source: OECD; Invest Europe, market statistics and macroeconomic indicators.

3
STOCKHOLM: A NATURAL INTERNATIONAL HUB FOR RISK CAPITAL

In part 1 and 2, we examined how PE and VC help companies and the economic benefits this entails. Now we turn our attention to the PE and VC firms administering the funds:

- How does the Swedish PE market compare to international peers?
- Which benefits are associated with Stockholm being an international hub for risk capital?

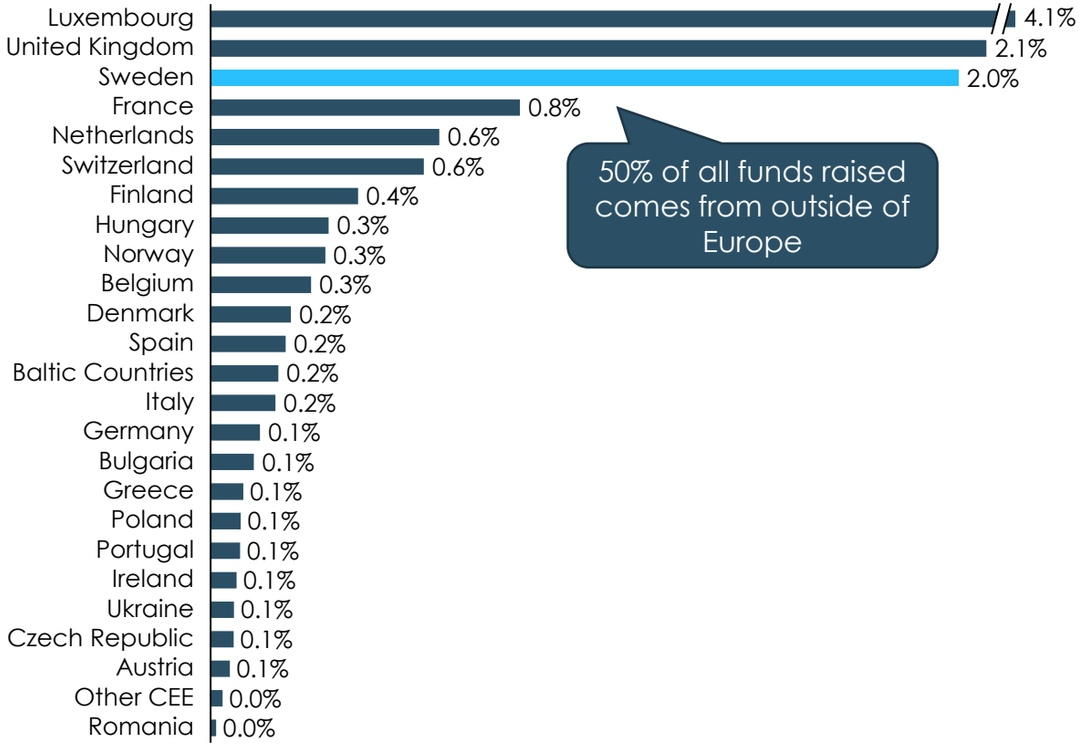
Stockholm is a European hub for risk capital

The Swedish PE market – including VC – is among the largest in the EU (adjusted for GDP).

A large share is being invested outside of Sweden making Stockholm a regional hub for risk capital.

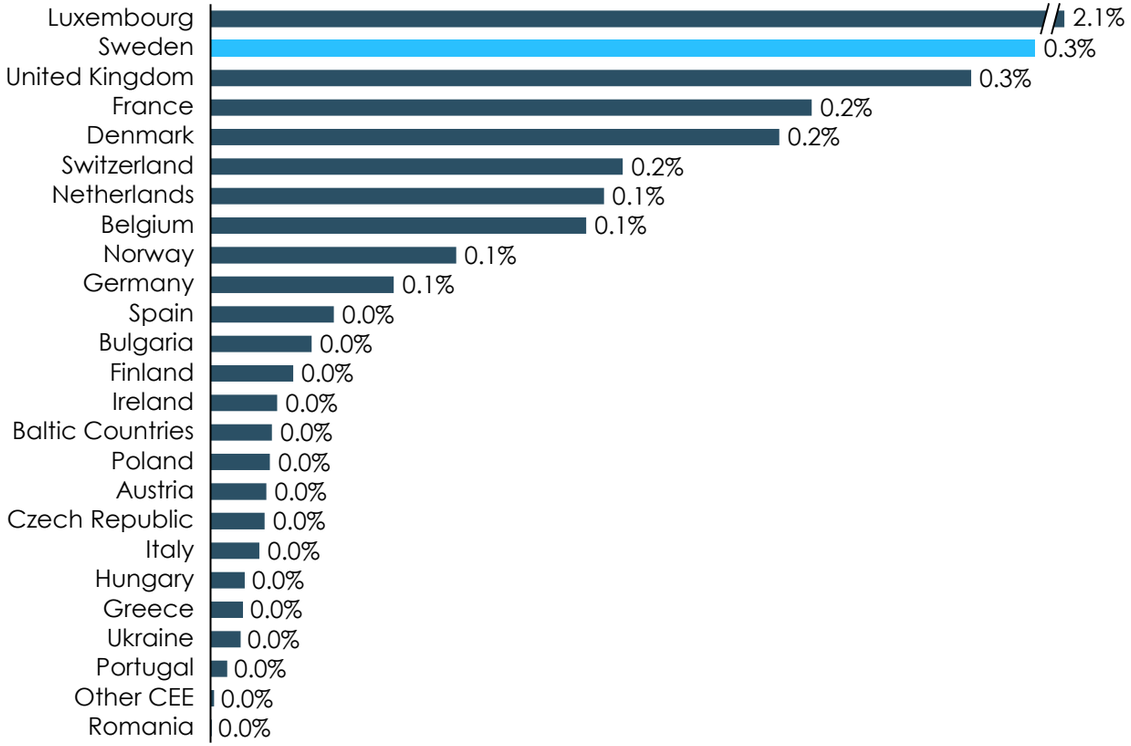
Funds raised by European PE firms

Share of GDP, average of 2017-2021



Exports of European PE firms

Share of GDP, average of 2017-2021



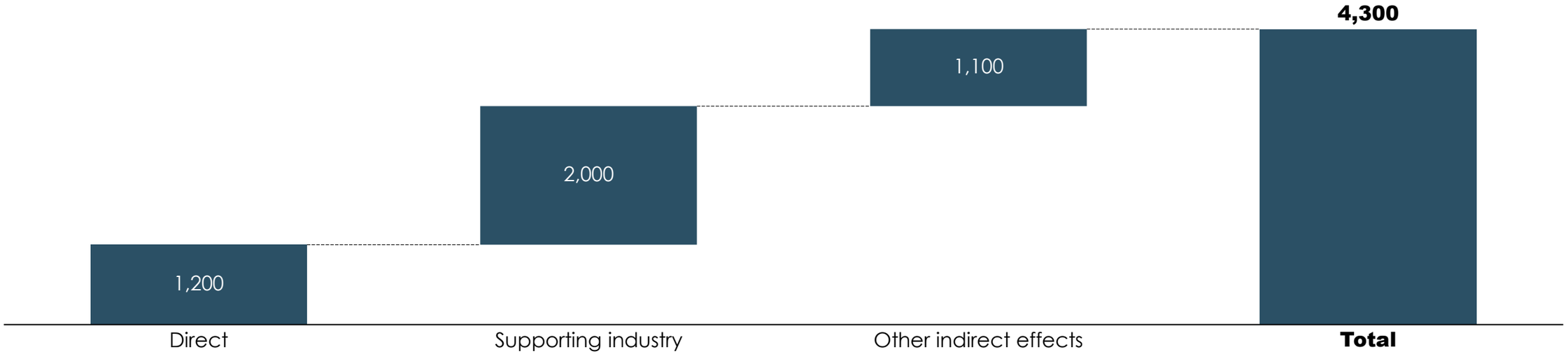
Note: Funds raised in terms of incremental amounts raised during the year; Other CEE covers Croatia, Slovakia and Slovenia. Exports are calculated as foreign investments by local PE firms. Note that Swedish investment and export statistics include some deals that SVCA includes, whereas statistics for the other countries are only based on Invest Europe data.

Source: Invest Europe, funds raised and macroeconomic indicators .

The PE sector - including VC - supports highly specialised jobs in Sweden

We estimate that the activity of the Swedish PE sector could support around 4,300 jobs, taking into account both direct and indirect effects.

Jobs supported by the PE sector
Number of FTE's



We estimate that around 1,200 people are directly employed in Swedish PE firms (based on EQT numbers).

PE firms purchase financial, legal supporting and ICT services etc. We estimate that this indirectly supports around 2,000 jobs.

In addition there are spill-over effects to other sectors and the general economy. We estimate around 1,100 additional jobs are supported.

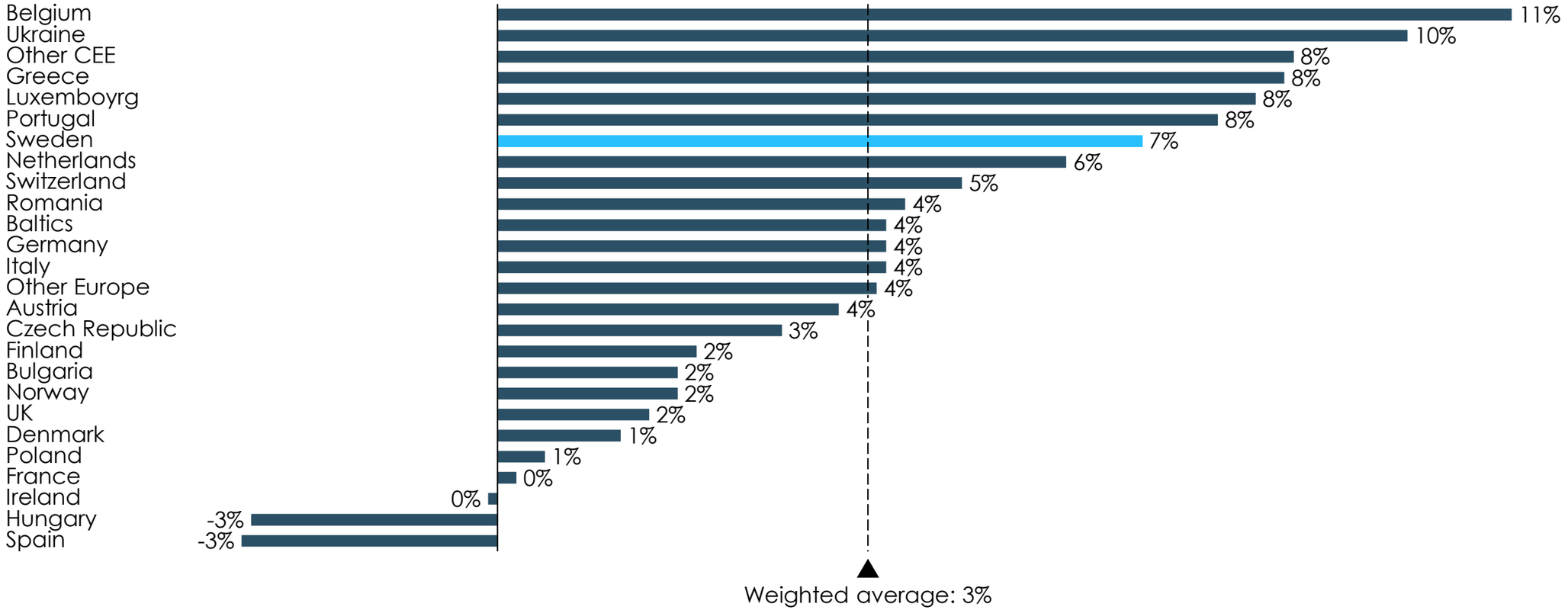
Adding these effects up implies that the Swedish PE sector could support around 4,300 jobs, most of which in Stockholm.

Note: These are rough estimates based on the previous report on the impact of PE on the Swedish economy, and a study analysing the economic contributions of the US private equity sector, see EY(2021), as well as employment numbers of EQT, the largest Swedish PE fund.

Job creation rates in Swedish PE are among the highest in Europe

PE job creation in portfolio companies, 2019-2020

% new jobs created in PE backed companies



Note: Other CEE includes Bosnia-Herzegovina, Croatia, Macedonia, Moldova, Montenegro, Serbia, Slovakia, Slovenia. Other Europe includes Cyprus, Iceland, Liechtenstein, Malta, San Marino, Vatican City. Total employment is taken from the World Bank's World Development Indicators (Labor force, total) excluding the Baltics and other Europe. Average is weighted by the labour force in 2019.

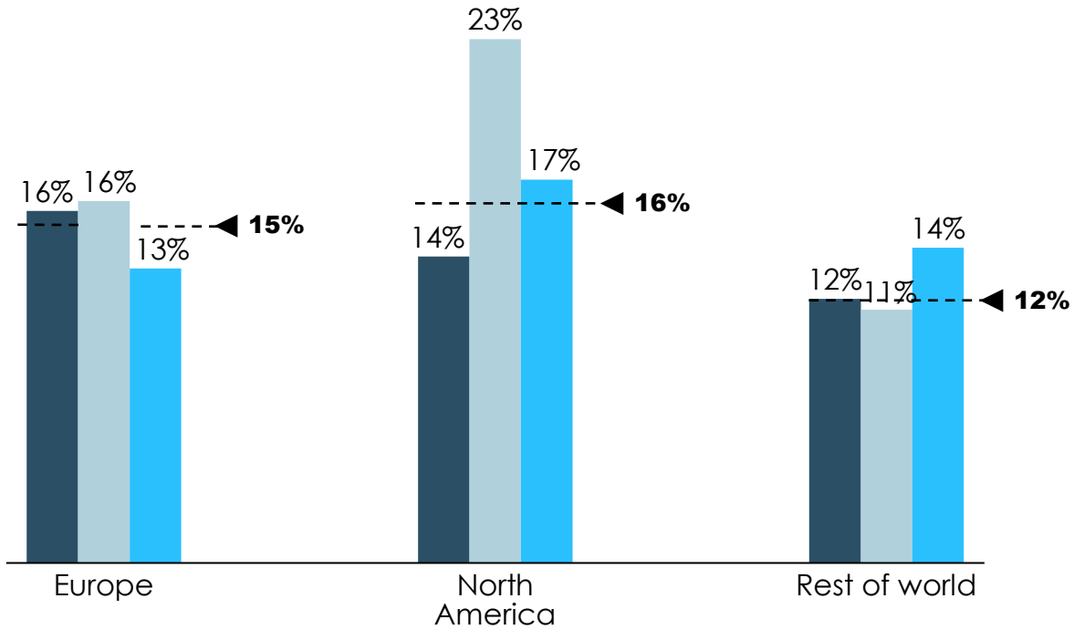
Source: Invest Europe (2022) Private Equity at Work - Employment & job creation across Europe; World Bank World Development Indicators.

European private equity investments can compete with PE investments in other parts of the world

The return of European buyout PE outperforms return of buyout PE in other parts of the world. There is potential to scale up returns of European growth capital and VC.

Internal rate of return

%

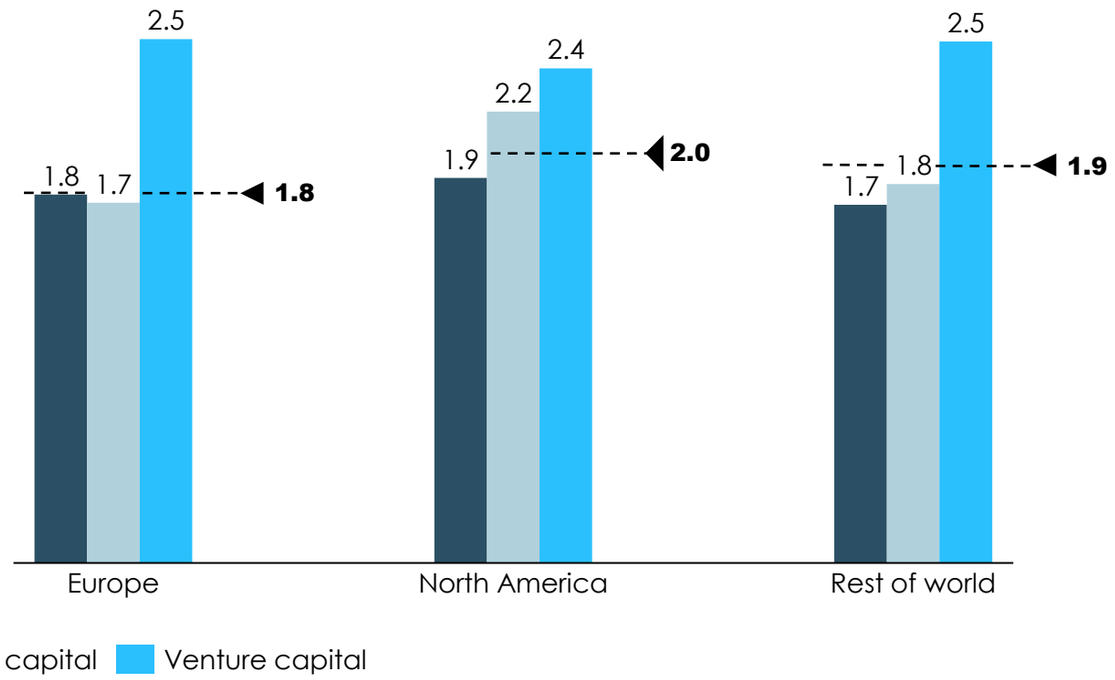


Source: Invest Europe (2021) - The Performance of European Private Equity.

Multiple on invested capital (MOIC) is comparable across regions, with VC achieving the highest MOIC.

Multiple on invested capital

EUR



Source: Invest Europe (2021) - The Performance of European Private Equity.

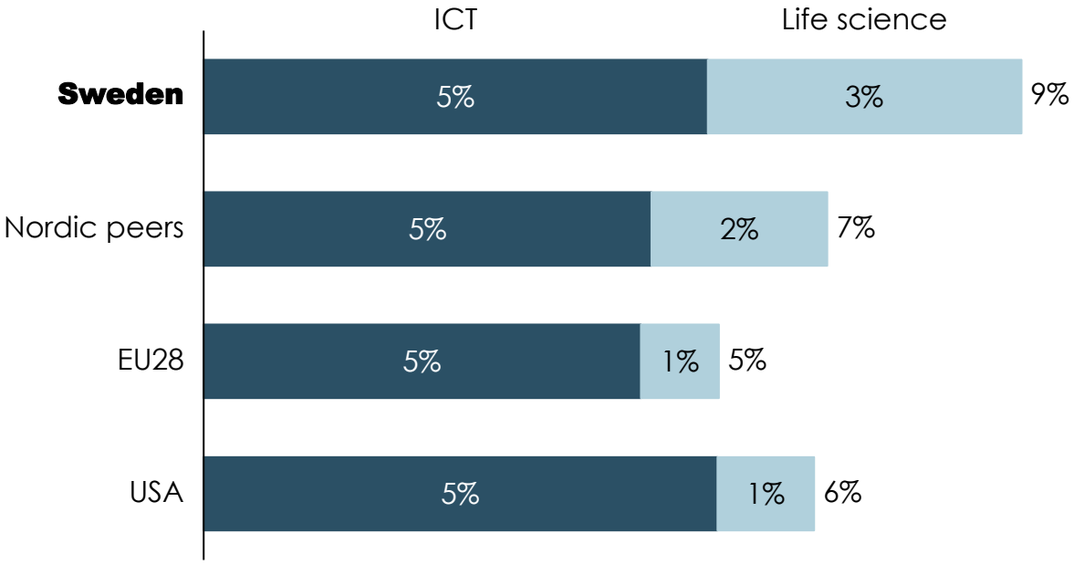
Note: Vintage years captured 1987-2020 (buyout PE), 1994-2020 (growth capital), and 1986-2021 (VC). Averages are weighted by the regional capitalisation of buyout PE, Growth capital and VC. Internal rate of return is based on currency conversion into EUR. Averages are weighted by regional capitalisation.

Strong ICT and life science sectors make Stockholm a natural hub for VC and GC

Large typical VC and GC sectors in Sweden…

…make Stockholm a natural hub for Swedish VC and GC

Value-added as a share of total GVA in 2016



Note: Life science is proxied by manufacture of basic pharmaceutical products and preparations. Sweden and Norway do not report life science separately and for Sweden it is estimated as the same share as in Denmark of total value added from manufacture of pharmaceuticals and chemicals products. Norway is calculated as the sum of oil refining, manufacturing of chemical products and pharmaceutical products due to lack of data.
Source: OECD, Statistics Sweden and Statistics Norway

1. Sweden is in the lead in ICT and life science, with strong academic and research communities. And Sweden is among the most innovative countries in the world.
2. There are good exit opportunities with a well-developed IPO market and a large growth Private Equity sector. This ensures that Swedish VC and GC can take companies through the entire capital food chain.
3. Sweden has the largest and most developed later-stage VC sector in the Nordics: Stockholm could become the Nordic later-stage VC hub – also for companies outside Sweden.
4. VC and GC investments in Sweden have now recovered fully from the financial crisis and have been growing steadily in the recent years despite the Covid-19 pandemic. This should be seen in light of the relatively benign economic environment in Sweden relative to, e.g., many European countries.

To sum it up: From a European and Nordic perspective, Swedish VC and GC is doing well – but has an even higher potential, that what we see utilised by now

APPENDIX

- REFERENCES
- METHODOLOGY
- BACK-UP DOCUMENTATION

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Impact on GDP of Swedish VC (excl. Growth Capital)

How we estimated GDP contribution of VC (excluding growth capital)

Method

A paper describing a macroeconomic model (a so-called general equilibrium model) designed to analyse the impact of R&D investments on economic growth by Bye et al. (2011), finds the following effect (we follow the methodology but with updated numbers):

- The model is calibrated to the Norwegian economy, which shares the same main features as the Swedish; a small open economy in Europe with a floating exchange rate and EU as the main trading partner.
- Based on an experiment the authors found that an increase in R&D capital of 6.9% provides an impact on GDP of 2.4%, i.e. a GDP multiplier of 0.35 from R&D investments (1/3 of this effects is direct impact).
- According to OECD, total R&D investment in Sweden in 2016 amounts to 2.26% of GDP. VC investments are 0.08% of GDP (on average from 2012-2021), i.e. VC investments contributes with a 3.5% increase in R&D investments.
- Using the derived multiplier, VC investments have a GDP impact of some 1.2% of GDP (excluding growth capital).

Assumptions behind estimate

- Without the VC industry, the funds would not have been invested in Sweden, i.e. either invested abroad or consumed. If the funds instead were invested as a typical non-R&D investment, the impact of VC is lower.
- All VC investments can be classified as R&D. To the extent this is not the case, the impact will be lower.
- We assume that VC investments are as productive as all other R&D investments. One study found that VC investments are 2-4 times more productive – if this is the case, the GDP impact would be correspondingly higher.
- Note that we place growth capital as part of VC in the GDP numbers we show on page 19. However, the GDP contribution is estimated similar to the PE GDP contribution. See page 35 for more information.

Alternative method

- Swedish VC investments have a typical TVPI of 1.4. Using the average return profile of VC investments from the European investment fund, we found TVPI of 1.4 corresponds to an IRR of 15%.
- Research (see next slide) shows that the social return of a VC investment is about three times the private return – this means that the total social return of VC investments is 45%.
- In Sweden, annual VC investments are some 0.08% of GDP (based on an average from 2012-2021). This means, every year, VC investments bring about a total social return from VC investments of 45%*0.08% = 0.036% of GDP.
- Using a risk-free interest rate of 3%, this corresponds to a total annual economic impact of VC investments of 0.036%/3%=1.2% of GDP (excluding growth capital).

Innovation created by VC-backed companies creates large spill-overs to the wider economy

Literature on the socioeconomic return on VC investments
Spill-over effects from VC are hard to estimate, but the literature agrees on a multiplicative effect of approximately three

Effect	Paper	Description
The article examines the social return of business R&D, public R&D and VC. They found that **an increase in VC of EUR 1 results in an increase in output growth of EUR 3.33**. This increase is described in the article as the social return.	**Astrid Romain and Bruno van Pottelsberghe (2004) ”The Economic Impact of Venture Capital”**	The article examines the difference between investments made by VC and R&D for 16 OECD countries.
The article finds that the **social return on R&D is about three times greater than the private return.** The article also finds that the effects of R&D and patenting are greater for complex industries and established companies.	**David Colino (2016) "Cumulative Innovation and Dynamic R&D Spillovers"**	The article estimates the effect of dynamic spill-overs on R&D investments and examines both the impact of established businesses and VC-backed start-ups.
The article finds significant spill-over effects from/of VC funding. They find that the VC-funded start-ups have more patents per dollar and that these patents are of a **higher quality.** The article shows that an increase in VC of USD 1 million increases the number of patents in other companies by between 1.89 and 13.11. This figure is **between 2.07 and 3.41 times greater** than the spill-over effects of R&D investments.	**Monika Schnitzer and Martin Watzinger (2017) ”Measuring the Spillovers of Venture Capital”**	The article tries to estimate spill-overs from VC-funded companies in the form of an increase in the number of patents sought in other companies. Examines VC-funded start-ups.
The article estimates that 8 percent of the innovations in American companies in the period 1983-1992 is due to venture capital. Schnitzer and Watzinger (2017) report that this article finds that an **increase in VC of USD 1 at industry level is associated with three times as many patents as USD 1 corporate R&D.**	**Samuel Kortum and Josh Lerner (2000) ”Assesing the Contribution of Venture Capital to Innovation”**	The article examines whether venture capital financing has boosted innovation in US companies.

Methodology for calculating revenue and employment growth for Swedish VC-backed companies

- Revenue and employment growth for Swedish VC-backed companies are calculated based on two data-sources:
  1. The Amadeus database[1], which consist of financial accounting data for more than 21 million companies in Europe with around 600,000 Swedish companies from 2006-2015.
  2. A list of Swedish companies that have received venture capital, provided by SVCA for the years 2006-2015
- Financial accounting data for each Swedish VC-backed company was identified in the Amadeus database. As the Amadeus database does not provide a unique company ID, the two data sources were matched by company names. However, company names may differ slightly between the two databases, resulting in very few exact matches (ex. "Applied Nano Surfaces" and "Applied Nano Surfaces Sweden"). Fuzzy matching was therefore used to find the best non-exact match. A total of 764 matches was found.
- To compare the performance of VC-backed companies with other Swedish companies from the Amadeus database, we removed all companies receiving below EUR 10,000 and with assets above EUR 1,000,000,000.
- The financial performance was calculated for each group
- The category "VC-backed - successful companies" contains VC companies where the VC has a divestment

1) See link

The mechanism: Why VC benefits economic growth and innovation

VC benefits the wider economy through three channels:

1

Direct contribution: Allowing talented staff and entrepreneurs to fully utilise their potential

- VC capital supports companies operating on the edge of the technology frontier, where the productivity is very high, making already talented staff and entrepreneurs utilise their expertise to the fullest.[1]
- Note that most employees working in VC-backed companies are already skilled staff – if they were not working in a VC-backed company, they would most likely be employed elsewhere – perhaps in an established company still providing value-added to the economy – but operating with a lower productivity.

2

Indirect effect: Knowledge spill-over to the rest of the society

The innovation and research taking place in VC-backed spills over to the rest of the economy through, e.g., information networks, job-changes and informal contacts. Thus research in VC companies provide an economy-wide lift in productivity.[2]

3

Indirect effect: Increased adoptability of new technologies from abroad

The increased level of knowledge and technology means that Swedish employees are in a better position to adopt and exploit new technologies from abroad, further increasing productivity in Sweden.[3]

1) Schnitzer (2017) 2) Colino (2016) 3) Bye et al. (2011)

Methodology for estimating the company effects of PE ownership

- The econometric estimates of the effects of PE ownership on profitability, productivity, VA and employment growth were based on two sources:
  - The Retriever database, which consists of financial accounting data for all Swedish private and public limited companies between the years 2007-2019.
  - A list of PE deals provided by the SVCA.[1]
- We have focused our analysis on buyouts as these were the only deals included in our data. In addition, we were only interested in the deals that identified the first time a PE firm entered, and as such only the first observation per company was included from the SVCA data.
- All companies with the word "holding" were removed from the Retriever database in order to avoid matching with a holding company (in many instances the unique company ID number in the SVCA data matched a holding company).
- Financial accounting data for each PE-owned firm was identified in the Retriever database. The data sources were matched at two levels: first by the unique company ID, and second by company names. Due to the different spelling of company names, a method known as "fuzzy matching" was used to find the best non-exact match.
- In order to analyse how the performance of Swedish companies is affected by PE ownership, we applied a microeconometric approach using the matched accounting data on Swedish companies from 2007 to 2019. We set up a firm and time fixed effects modelling framework using dummy variables to identify the timing of PE ownership as well as a range of other company information to isolate the effects of PE ownership on company performance. We also included year dummies to correct for trend effects (e.g. the impact of the financial crisis). In this way we are able to isolate the effects on e.g. productivity from PE investments.

1) Note that employment numbers differ from Invest Europe data

Methodology for estimating the GDP impact of PE activity (incl. Growth Capital)

Productivity impact of PE ownership of Swedish companies:

Overall, the GDP contribution arising from PE ownership of Swedish companies comes from the increased productivity effect in the relevant companies, as described in the previous slide.

- We find the overall microeconometric estimate of the effect of PE ownership on productivity to be 22% after 7 years. Typical holding period of PE firms is 5-7 years. Productivity increases during the holding period, and is typically quite low in the first years. Concretely, we assume an exponentially increasing productivity function.
- After the PE firm have exited the portfolio company, we assume a yearly depreciation rate for productivity on 7% (standard depreciation rate for the business sector).
- We assume modern PE investments started back in 1980, implying we count productivity increases due to PE ownership of Swedish companies back to this date.

Estimating the direct GDP impact:

- We estimate the permanent GDP impact of PE ownership of Swedish firms, based on the PE ownership share of Swedish companies in a given year (which we base on employment) together with productivity increases for that year.
- The employment share of PE owned companies is based on deal data from SVCA from a previous CE study. Here we found the average employment share to be around 3% in 2018. We extrapolate employment share to the following years by the annual growth in PE investments. Looking back in time (before 2007) we assume a declining employment share of PE owned companies – concretely by 2% per year.
- We find the direct GDP contribution to be around 0.8%.

Estimating the indirect GDP impact:

- We assume the same indirect impact of PE investments as for VC investments, given the somewhat similar nature of the investments. For VC investments, several studies (see previous slide) find a multiplier around 3, implying the total GDP contribution would be around 3 times as large as the direct one.
- Thus, we find the total GDP contribution of PE investments to be around 0.8%*3=2.3% (including growth capital), implying the indirect effect amounts to 1.5%.

The total GDP effect is the sum of the direct and indirect effects on GDP.

Note that the GDP contribution from growth capital is estimated according as described above, but visually presented as part of VC on slide 19. Growth capital is part of the estimate for PE ownership share of Swedish companies, based on data which is not granular enough to be segmented out.

1) Note that the ownership shares depicted on slide 18 are different from these ownership shares as they show the average ownership share between 2007 and 2018 and assume a holding period of six years.

How PE firms operate

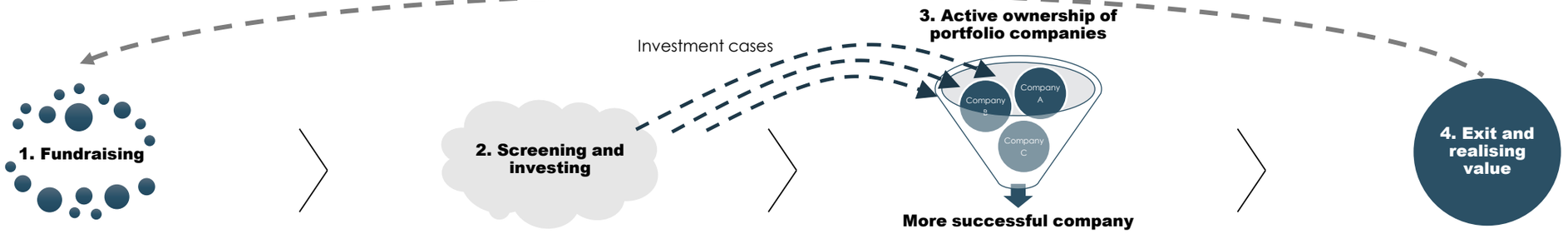
Private equity (PE) firms raise capital from investors and invest it in selected so-called portfolio companies to generate a return for their investors.

PE firms invest the capital through individual funds which typically have a lifespan of 10+ years and a specific investment focus.

The PE funds are managed by so-called general partners (GPs), who represent the interests of investors in the funds, called limited partners (LPs). GPs are remunerated based on the performance of the fund. LPs own a part of the company through their investments. Both parties therefore have a strong incentive to boost the performance of the business.

The lifespan of PE funds

Successful exits often followed by new investments – success breeds success.



As a first step, a PE fund needs to find investors (LPs). Since equity investments are risky, the reputation and past performance of the fund managers are important. Institutional investors provide most of the capital.

Over the next typically five years, the fund managers screen a large number of companies to identify investment opportunities. The selection of the "right" companies to invest in is a crucial step in the PE lifespan.

PE funds carry out active ownership in the portfolio companies using their experience and specialised knowledge. Often, this results in a change in the business strategy and/or management of the portfolio company.

When the business strategy of the PE fund has been imple-mented and the company's performance and value have been optimised, the fund managers will look for potential buyers. The exit generates a return for the investors.

The unique value creation of PE firms: Active ownership

PE ownership typically involves the PE firm taking an active role in its portfolio company. This means that if a PE firm invests in a company, they do not just own (parts) of the company but also change it to make it more profitable before the PE firm exits the investment. Active ownership is carried out through mainly three channels:

Financial optimisation

PE firms optimise the financial structures of their portfolio companies and thereby equip them for necessary future investments.

Operational management

PE firms often implement changes at the management level of their portfolio companies and introduce new incentive structures.

- **A new board of directors**, if often established, which bundles relevant knowledge to improve the companies' performance. In some cases, PE firms also appoint a new management altogether. Due to their good network, they have access to the right talent for the job.
- **Management incentive plans** aim at alleviating principal-agent problems between management and owners.

Corporate governance

- **Local sector knowledge:**
  PE firms usually have in-depth knowledge about the sectors and markets of their portfolio companies. This allows them to design appropriate business plans and to optimise the business.
- **Concentrated ownership:**
  PE funds typically acquire larger stakes in the companies. This allows them to implement necessary changes to the business structure and strategy in a timely manner.

How VC firms operate

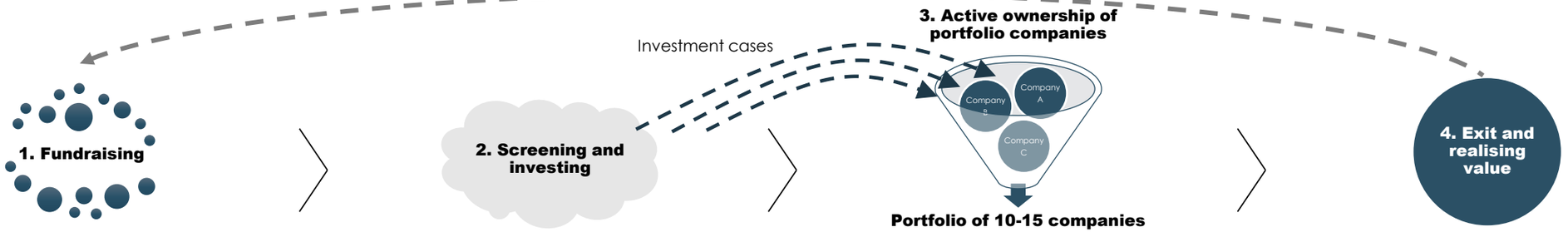
The Venture Capital (VC) model is about identifying high-growth – and high-risk – companies, bringing them to the market and developing scale. Mostly in knowledge-intensive sectors, such as ICT and life science, often as spin-outs from previous successful start-ups.

Due to the high-risk/high-return profile, these types of companies are unlikely to receive bank credit.

They therefore crucially depend on venture capital.

Four tasks of venture capital firms

Successful exits often followed by new investments – success breeds more success.



As a first step, a new VC fund needs to find investors (limited partner, LPs).
VC is risky and therefore the reputation and past performance of fund managers are important.

Over the next 2-4 years, the fund managers search through a large number of companies to identify investment cases.
Focus is on companies with large growth potential.

VC funds carry out active ownership in the portfolio companies, using their highly specialised knowledge, network and syndication with other VC funds to increase the chance of success.

When the company has matured, the VC fund will start looking for potential buyers in other types of equity markets. The realised potential and experience are often canalised into new start-ups.

Active ownership: VC is “smart” capital

An important part of the societal contribution from VC firms is the knowledge and mentorship that comes along the capital.

Two factors enable VC firms to give their portfolio companies indispensable guidance in bringing them to success:

> Learning from earlier crises, we find it important to have a fully planed financial structure in place from the start, i.e. through all expected stages until we reach potentially break even, or reach a cash-flow positive. Nevertheless, the plans can and will often change along the way.
>
> - Björn Odlander, managing partner of HealthCap

Previous experience in the field and in start-up

Investment professionals and staff working at VC firms are often previous successful entrepreneurs – this is crucial in transforming a good idea to a commercial success: One study finds that previous successful entrepreneurs have 67% higher sales compared to entrepreneurs without previous experience.[1]

VC personnel has specialist knowledge:

Staff working in VC have very specialised knowledge – in life science often with links to academia. Also, tech investors are former entrepreneurs investing in business models or technology they have specialist knowledge in. This enables VC firms to provide concrete feedback on a product level.

According to our sector interviews VC firms help their portfolio companies with:

- Finding the right strategy from the start, e.g. that the scientific strategy matches a sound financial plan.
- Minimising product risks and bringing the product to market, e.g. by providing access to global markets.
- Networking and bringing in the right talent, e.g. support in setting the right board, CEO etc.
- Getting access to other sources of finance.
- Helping with standard start-up compliance.
- Choosing the best exit strategy, e.g. M&A, IPO or private equity – and executing it.

1) Shaw (2017)

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01-06-2022