

Exploring the impact of private equity on economic growth in Europe

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Executive Summary

Given the backdrop of a challenging macroeconomic environment and efforts by the European Union and national governments to create sustainable growth in Europe, the European Private Equity and Venture Capital Association (EVCA) has commissioned this study in order to evaluate the contribution of private equity to economic growth.

This study explores research evidence produced over the last ten years in order to identify links between the private equity industry and economic growth.

Our comprehensive review of recent research has enabled us to quantify the impact of private equity activity on key factors contributing to Europe's economic future, as defined by the European Union's *Europe 2020* growth strategy.

We have identified areas that require further investigation, using primary research, to definitively establish the economic impact of private equity. This report represents, therefore, the beginning of a potentially significant research agenda, which could support the private equity industry's aim to improve understanding of its contribution to growth.

A network of channels

This study uses a comprehensive framework that identifies and describes the most relevant dimensions of the activities, outcomes and impacts associated with private equity that explain the way such investment activity influences economic growth. This framework has led us to focus on three key channels which are strategic priorities identified in the Europe 2020 growth strategy, namely, innovation, productivity and competitiveness.

There are clear linkages between these impacts: innovation supports improvements in productivity, which in turn improves competitiveness. All of these impacts are key drivers of economic growth in Europe: innovation leads to new products and processes that enable more efficient use of resources through higher productivity. Improved competitiveness allows European businesses to flourish in the global economy. See chapter 2 for details.

Innovation

Our review of existing research finds that private equity involvement in portfolio companies increases the efficiency of innovation efforts. Private equity-backed companies are more focussed in their innovation efforts and deploy better management of innovation processes than their peers, on average:

- Private equity-backed companies account for less than 6% of total private sector employment in Europe, yet they account for up to 12% of all industrial innovation, while their spending on research and development (R&D) accounts for 8% of all industrial spending on R&D.¹

See section 4.1.2 on page 26 for further details.

- Our estimate based on existing academic evidence suggests that the **total economic value of patents granted to private equity-backed companies in Europe over five years to 2011 is up to €350bn.**
- Patents granted to private equity-backed companies tend to be more economically significant than patents on average: evidence from the US suggests that private equity participation **increases the number of citations for a patent by up to 25%.** The number of citations for a patent is used to measure its technological significance and market value.

See section 4.1.3 on page 27 for further details.

¹ Private sector employment data sourced from Eurostat, employment in private equity

- In some industries, R&D expenditure by private equity-backed companies appears particularly effective. For example, it is estimated that in biotechnology, R&D expenditure by private equity-backed companies can be up to **nine times more likely** to lead to patent creation than non-private equity financing of research and development.

See section 4.1.2 on page 26 for further details.

Productivity

In addition to the improved productivity that arises from higher levels of innovation, private equity contributes to creating an enabling environment to enhance the levels of productivity in the economy as a whole. It does this by increasing the finance available for capital investments, supporting companies through periods of commercial or financial distress, and by increasing the operating performance of portfolio companies.

Evidence reviewed for this study supports the following sources of economy-wide productivity enhancement:

- Private equity has attracted **an estimated incremental €50b** in investable funds to Europe in 2007–2012.

See section 5.1 on page 34 for further details.

- Private equity-backed companies are at least **as resilient as other companies**. Indeed, some evidence points to private equity companies being less likely to fail than companies on average, with **some studies suggesting that private equity-backed companies are up to 50% less likely to fail** than non-private equity-backed companies with similar characteristics.

See section 5.4 on page 41 for further details.

- Private equity backing **improved the operating performance of portfolio companies by 4.5% to 8.5% during the first three years after investment**.

See section 5.3 on page 40 for further details.

- Private equity participation leads to **improved productivity as measured by earnings before tax, depreciation and amortisation (EBITDA) per employee of 6.9% on average**.

See section 5.2 on page 38 for further details.

- Private equity participation can lead to **more sustainable employment**.

See section 5.5 on page 43 for details.

Competitiveness

Improvements in productivity either through innovation or other productivity enhancing measures at an individual company level translate directly into increased competitiveness at a macroeconomic level. Moreover, private equity has a direct impact on competitiveness through making funding available for risky but potentially lucrative new business opportunities.

Studies have shown that:

- Private equity-backed companies are more focussed on internationalisation.
- Private equity contributes to the creation of up to **5,600 new businesses** in Europe each year.

See section 6.2.1 on page 47 for further details.

Key sources

This study is based on extensive canvassing of existing academic and professional literature. The full bibliography of studies that were reviewed is provided in Annex 1. The key sources for the estimates presented in the Executive Summary are set out below.

The base data for the estimates is sourced from Eurostat, the World Intellectual Property Organisation, the European Central Bank and the European Private Equity and Venture Capital Association (EVCA).

Authors	Coverage	Findings
Popov and Roosenboom, 2009	European private equity investments and patents 1991–2004	A 1% increase in private equity investment increases USPTO patents by between 0.04%–0.05%. Private equity accounts for 8% of aggregate industrial spending, and 12% of industrial innovation. Private equity financing can be up to nine times more effective than non-private equity financing in delivering innovations.
Gambardella et al., 2008	The value of European patents	The estimated mean-value of European patents is about €3m. Based on a survey of 9,000 patents. These are patents with priority date 1993–1997, granted by the European Patent Office, and such that the address of the first inventor listed in the patent is in Denmark, France, Germany, Hungary, Italy, the Netherlands, Spain or the UK.
Lerner et al., 2011	495 LBOs worldwide, 1980–2005	Patents applied for by firms in private equity transactions are more cited (a proxy for economic importance), show no significant shifts in the fundamental nature of the research, and are more concentrated in the most important and prominent areas of companies' innovative portfolios.
Ernst & Young, 2012	European exits in seven years to 2011	Examines exited investments and finds that private equity participation improves productivity by 6.9% (as measured by EBITDA per employee).
Bank for International Settlements, 2008	650 private equity-backed companies worldwide, 1981–2007	Default rate for private equity-backed companies is 5% lower than for matched public companies.
Kaplan and Strömberg, 2009	17,171 private equity-backed companies worldwide, 1970–2007	Private equity-backed companies have 25% lower default rates than non-private equity-backed companies.
Samila and Sorenson, 2011	US, 1993–2002	Private equity positively affects firm starts, with up to 10 further companies being created directly as a result of the creation of a new private equity-backed company.
Popov and Roosenboom, 2009	21 European countries, 1998–2008	Private equity investment has a positive effect on the rate of new business creation.

1. Introduction

Since the financial and economic crises that started in 2008, growth has been at the centre of the public policy agenda worldwide. According to the IMF's World Economic Outlook latest update, the economic recovery in Europe is predicted to be slow.²

Many companies need to transform the way they operate and expand the markets they operate in to achieve a step-change in performance. They need access to finance, industry know-how, and managerial expertise. Ultimately, they need to adapt to a changing macroeconomic environment and market conditions, becoming more productive and enhancing their competitiveness.

Private equity is a form of equity investment into private companies that are not publicly traded on a stock exchange, usually via a closed-end, ten-year fund. Private equity managers actively engage with the fund's investee companies, working alongside company management in order to deliver operational improvements.

In this challenging environment for Europe's companies, it is therefore pertinent to investigate the impact that private equity investment has, and could have, on growth and recovery.

Private equity has been the subject of a significant number of professional and academic studies. However, the heterogeneous nature of these studies' areas of focus has made it difficult for observers to gain a clear picture of the role and impact of private equity in influencing economic growth.

This report attempts to enhance our understanding of the role and economic impact of the private equity industry in Europe, by looking at the subject in a comprehensive way and by attempting to identify and assess the impact of the industry on economic growth in Europe:

This exploratory study differs in nature and focus from the main body of existing research on private equity. Existing academic and professional studies examine specific performance aspects of the industry. These include the returns to investors; profitability and productivity and their drivers; the impact on employment and wages; growth and investment strategies; the extent to which leverage is associated with company failure; the generation of gains from asset disposals ('asset stripping'); the reselling of assets within short periods of time ('asset flipping'); and whether effects on portfolio companies persist after private equity firms have exited. These studies may focus on specific countries, sectors or periods of time.

This study represents a departure from previous studies as few analyses have attempted to draw together existing evidence in order to review the impact of the industry on economic growth by considering the multiple channels in which private equity investments can influence entrepreneurs, companies, sectors and the economy as a whole.

² See *International Monetary Fund (2013)*

1.1 Focus of the study

This study explores the contribution of the private equity industry to economic growth in Europe.

In particular, the study identifies the different channels whereby private equity activity and associated outcomes support three of the key factors that contribute to economic growth in Europe and which are strategic priorities as identified in the European Commission's *Europe 2020 Strategy*, namely, innovation, productivity and competitiveness.³

The analysis in this study is based on a comprehensive review of over sixty recent academic and professional studies. These studies were selected on the basis that they provide the most up-to-date research and insight on the topics covered by this study, namely innovation, productivity and competitiveness.⁴

Where possible, the report triangulates these sources with publicly available data from Eurostat, the OECD, and other organisations to produce quantitative estimates and findings. These estimates focus on the top twelve destinations of private equity investment in Europe, as detailed in the box overleaf.

The study focussed on three key components of economic growth where there is significant evidence that the activities of private equity have a demonstrable impact:

- The **impetus the private equity industry provides to innovation** and its support to bringing new products and processes to market;
- How private equity **enhances economy-wide productivity** through attracting incremental investable funds, building more resilient companies and raising the operating profitability of portfolio companies; and
- The contribution of private equity in **improving competitiveness at a macroeconomic level**, directly through making funding available for risky but potentially lucrative new business opportunities and focusing portfolio companies on internationalisation; as well as indirectly by contributing to the creation of new businesses.

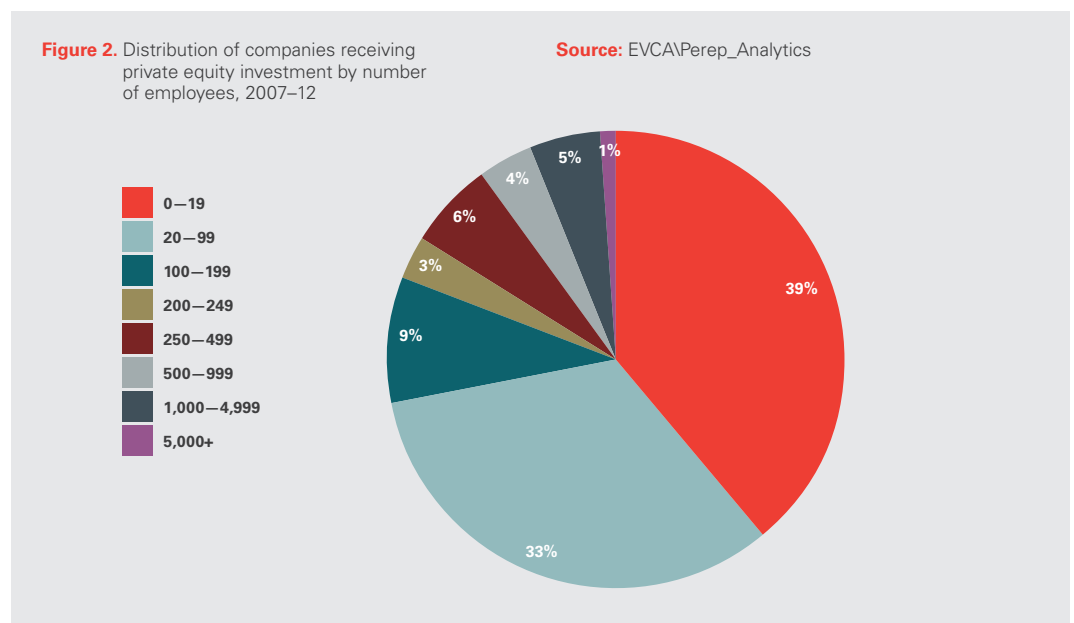
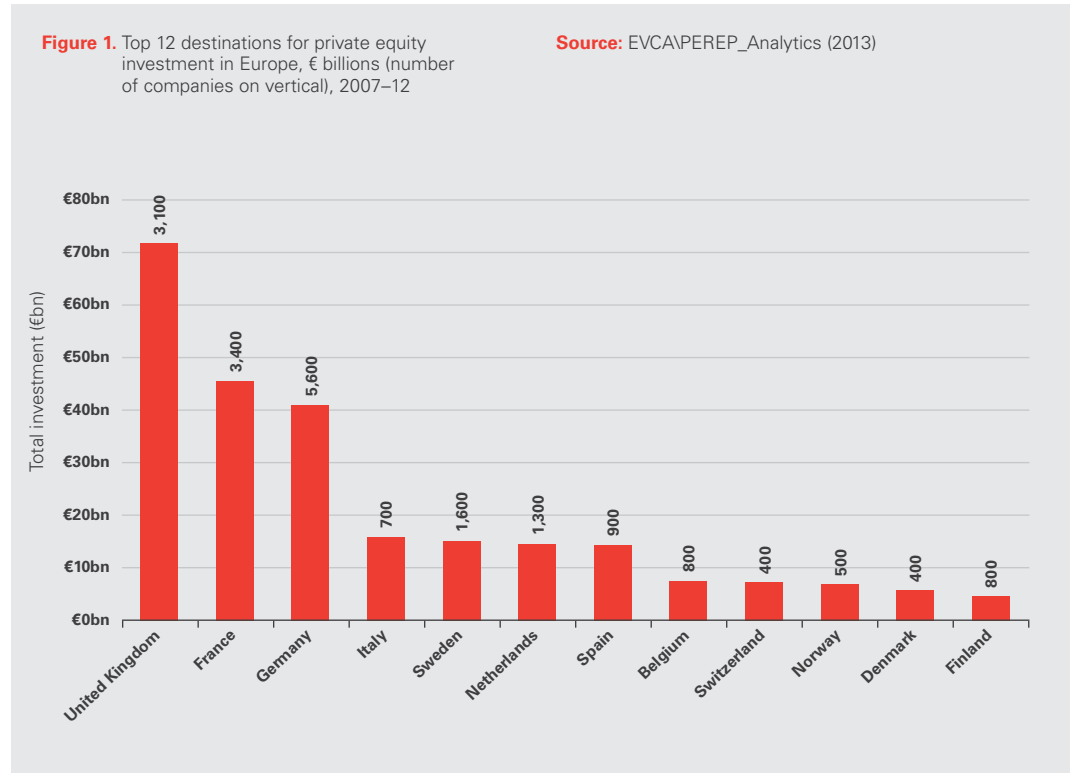
³ See *European Commission, 2013*

⁴ Full list of sources is set out in the bibliography (see page 52 onwards).

Where does private equity invest in Europe?

Figure 1 below shows the top twelve destinations of private equity by value of investments in Europe in 2007–12.

The distribution of the companies that received private equity investment, by size of the company, is shown in **Figure 2**. As the figure shows, over 80% of companies that received private equity investment had less than 250 employees.



1.2 Areas for further research

Our review of existing research to gauge the private equity industry's contribution to economic growth in Europe has demonstrated that extant research is fragmented.

In several areas the available insight, data and evidence are limited. We therefore highlight areas where further attention could improve the understanding of the impact of private equity on growth. Examples include:

- Impact of private equity on innovation: does private equity foster innovation or is it predominantly the most innovative sectors of the economy in which private equity invests? *(See Box on page 27)*
- Long-term impact of private equity on innovation *(See Box on page 31)*
- Impact of private equity on capital formation and company productivity, with a view of how private equity participation influences investee companies' capital expenditure programmes *(See Box on 36)*
- Impact of private equity on sector productivity: what is the incremental impact of private equity participation on the overall productivity of a sector? *(See Box on page 37)*
- Impact of private equity on export performance to assist in measuring private equity's influence on the internationalisation of companies *(See Box on page 46)*

Other topics for potential consideration

This study focuses on those private equity activities which can be determined, from existing evidence, to have an impact on economic growth via the transmission channels described in the next chapter. There are two areas of particular interest regarding private equity that therefore do not fall within the scope of this report.

Taxation: this area cannot be covered by this report due to a lack of academic evidence on the existence or the magnitude of the impact of company specific taxation levels on economic growth and the inaccessibility of data on the tax positions of individual private equity firms, general partners, limited partners and private equity-backed portfolio companies.

Returns: the returns delivered to investors by private equity investments are covered extensively in existing industry reports but as yet a body of academic evidence does not exist whereby a link can be made with economic growth. Given the multi-jurisdictional nature of the investors who form the main beneficiaries of the returns delivered by private equity investment, a clear link would appear difficult to establish.

Although these topics currently sit outside the analytical framework of this report, they may require further consideration elsewhere.

1.3 Contents of this report

Following this introduction, the remainder of this report is set out as follows:

- **Chapter 2** describes the analytical framework used in the report to identify and explain the transmission channels that link private equity and economic growth using a comprehensive approach based on the well-established economic impact assessment methodology;
- **Chapter 3** describes the effects of innovation, productivity and competitiveness on economic growth to set the context for the rest of the chapters;
- **Chapter 4** discusses the evidence of the role of private equity on innovation;
- **Chapter 5** explores the evidence linking private equity with productivity; and
- **Chapter 6** explores the evidence linking private equity with competitiveness.
- **Chapter 7** concludes the report with an overall summary.

2. Linking private equity and economic growth

This section describes the methodology and the analytical framework we use to identify the main transmission channels linking private equity and economic growth.

Economic growth models⁵

Economic growth is the increase in the amount of goods and services produced by an economy over time.

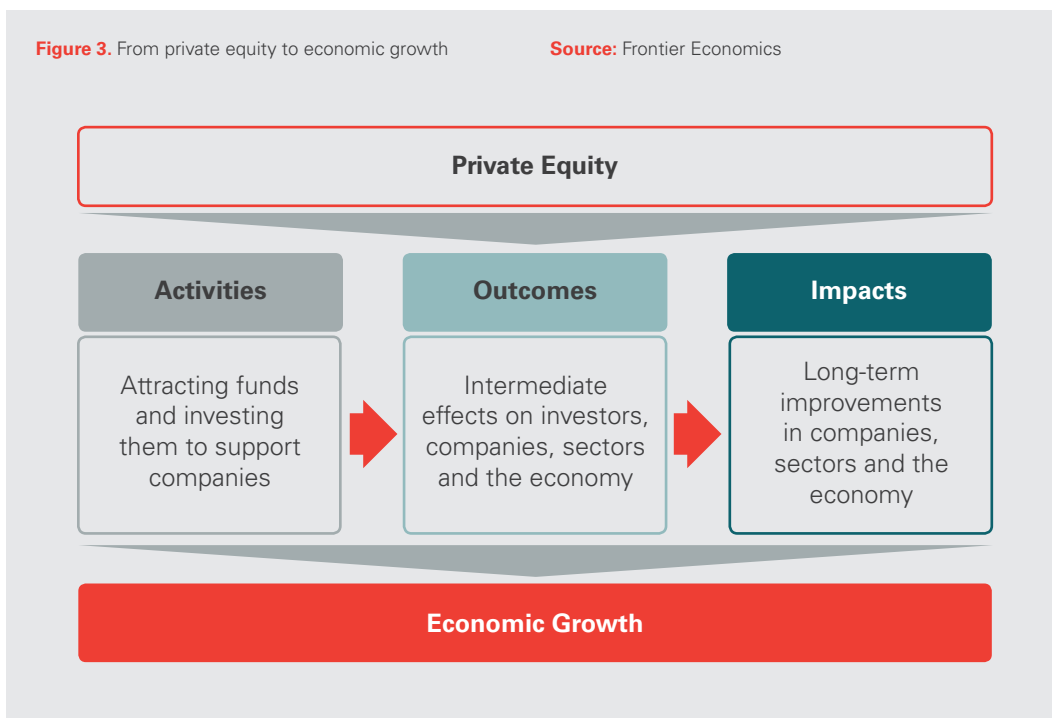
Over the past sixty years, two classes of economic models that seek to explain economic growth have evolved: growth models based on capital accumulation and growth models where innovation has a direct impact on growth (endogenous growth models).

All of these models link economic growth with the amount and productivity of capital and labour, and the changes to productivity that arises from technological change.

Therefore, any examination of either productivity itself, or factors that shape it – such as competitiveness and innovation – are important and valuable in understanding economic growth.

2.1 Methodology

The methodology used to build the analytical framework and identify the links between private equity and economic growth is based on that used in economic policy assessment and evaluation models.⁶ This methodology is summarised in **Figure 3** below.



⁵ For detailed discussion of economic growth models see, for example, Aghion (2012)

⁶ See, for example, OECD (2010)

The methodology is based on three concepts or “building blocks” in the underlying causation chain which runs from private equity to economic growth:

Activities: this concept captures the combination of human, material and financial resources (*inputs* in economic jargon) which the private equity industry uses to attract investable funds, offering investors alternative investment opportunities, and investing those funds in private companies to support their start up, recovery, or growth.

Outcomes: this concept encompasses the intermediate effects caused by private equity activities on investors (e.g. portfolio diversification); companies (e.g. increased capital); sectors (e.g. new companies, new employment) and the economy (e.g. greater product innovation).

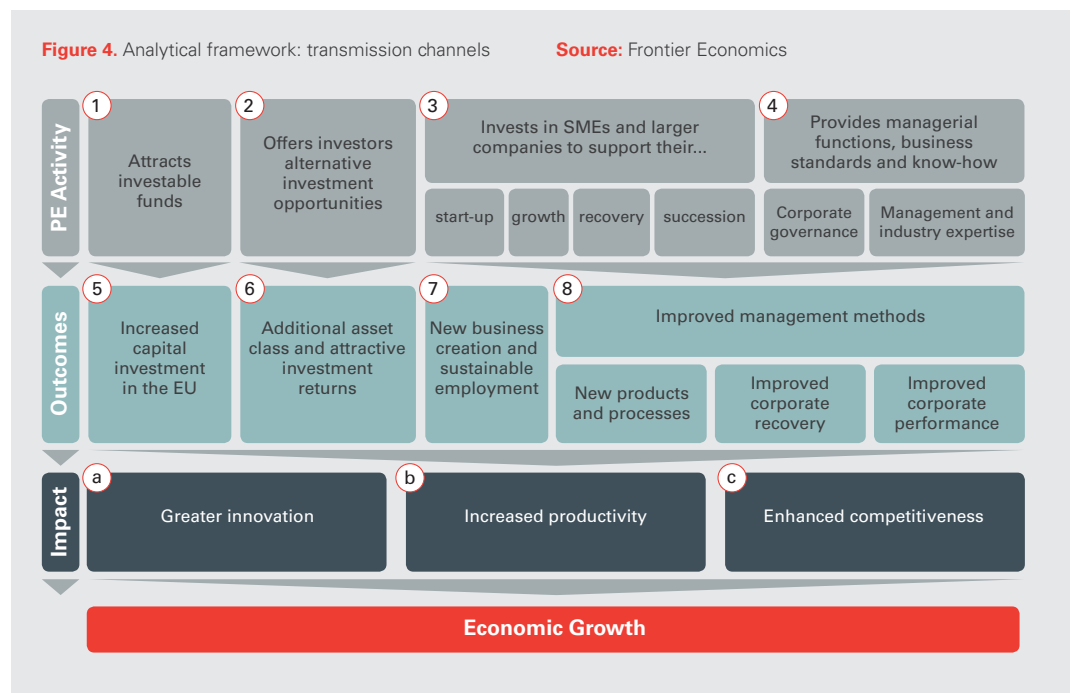
Impacts: this concept captures the more long-term effects that private equity activities – and associated outcomes – can have on companies, sectors and the economy as a whole. These include factors that contribute to economic growth such as innovation, increased productivity or enhanced competitiveness.

2.2 Analytical framework

Using the *activities / outcomes / impacts* methodological approach described above, it is possible to design the analytical framework summarised in Figure 4 below.

This approach provides a useful vehicle to identify and describe in detail the dimensions that matter most in improving our understanding of the role of private equity in the economy. The analytical framework identifies the most relevant dimensions in each of the three building blocks. These main dimensions are described next.

Whilst for ease of description the transmission channels are explained sequentially, in reality the private equity industry works through all the transmission channels simultaneously. Private equity firms are busy managing their investee companies, raising funds or closely following the markets in search of the next investment opportunity.



2.2.1 Private equity activities

Relevant dimensions of private equity activity include the following:

- 1. Attracting investable funds –**
The first step for any private equity activity to take place is the successful attraction of investable funds. Private equity firms attract funds that are invested in companies across the economy.
- 2. Offering investors alternative investment opportunities –** In attracting investable funds private equity offers a vehicle that allows investors to invest in a relatively sophisticated, longer-term, patient equity investment.⁷ Investors allocating funds to private equity include, among many others, pension funds, private individuals, sovereign wealth funds, banks, corporate investors, funds of funds, government agencies and insurance companies.
- 3. Investing in small, medium and large companies –** Private equity firms provide capital to companies of different sizes and at different stages of their growth cycle. These companies include start-ups, SMEs in need of capital to expand or access new markets, companies that are close to bankruptcy and thus require funding and expertise in corporate recovery or family-owned companies that require succession planning in a way that ensures the sustainability of the business.
- 4. Providing managerial functions –** Private equity firms bring managerial expertise and specialised industry know-how to the companies they invest in. They can improve the management information systems and enhance the corporate governance of investee companies and introduce performance-based incentives. Private equity managers tend to have a more hands-on management approach providing extensive value-added post-investment support.

⁷ The median duration of controlling equity commitments of private equity funds is around 4.5 years, whereas the median duration of holding in a listed company is around 30 days. Even larger shareholders (those holding more than 5% of outstanding shares) have a median duration of their holdings that is significantly shorter than that of private equity funds. For further detail, please see, for example, Gottschalg (2007).

2.2.2 Private equity outcomes

Relevant dimensions of private equity outcomes include the following:

5. Increased capital investment –

A logical outcome that derives from the attraction of investable funds is the increased capital investments that private equity firms carry out. Private equity (including venture capital) funds attracted more than €265bn in Europe in 2007–12.⁸ Given that in market-based economies the private sector is the main engine of growth, private equity contributes to economic growth by facilitating increased private sector investment into investee companies.

6. Additional asset class and returns –

Key outcomes that derive from the funds invested by the private equity industry are (i) it provides many investors, including long-term contractual saving investors such as pension and insurance funds, an additional asset class; and (ii) potentially attractive investment returns over the long term.

7. New business creation and sustainable employment –

Another important outcome from the amounts invested by the private equity industry is the creation of new businesses and new jobs. Private equity promotes the creation of new businesses, providing new capital and mentoring start-ups, for example. Private equity activities can contribute to job preservation. Private equity can also be a source of ‘positive externalities’ – i.e. benefits enjoyed by unrelated third parties – across the economy by promoting entrepreneurship and knowledge transfer across sectors. New businesses facilitate the creation of new jobs.

8. Improved management methods –

An important outcome of private equity activity is the effect of improved management methods on the investee companies. Private equity management can have a positive impact on the operating performance of investee companies in terms of profitability and/or growth. In addition, private equity management can help companies in distress to implement restructuring measures to enhance their productivity and thus help them to survive. Also, private equity can help businesses faced with the challenges associated with succession planning and company growth.

⁸Data sourced from the EVCA.

2.2.3 Private equity impacts on factors contributing to economic growth

The private equity activities and outcomes identified above can *impact* a set of factors which contribute to economic growth.

This study focuses on three of those factors which are directly relevant for Europe's growth prospects:

- a. Greater innovation** – A positive outcome of private equity activity derives from the influence that improved management has on promoting greater innovation. Private equity firms foster innovation – by allocating more funds to research and development for new products and processes in investee companies – and indirectly by supporting young firms, which tend to be more innovative than the average firm.
- b. Increased productivity** – Improvements in productivity are directly associated with economic growth: more efficient production allows more efficient use of resources. To the extent that private equity can increase the productivity of investee companies with improved management and/or better resource utilisation, it contributes to increases in business productivity and thus economic growth. For example, the accumulation of physical capital through fixed investments in plants, buildings and equipment can increase labour productivity. To the extent that private equity provides capital to firms allowing them to invest in physical capital, it contributes to long term economic growth. Likewise, private equity activity can create employment by promoting new business creation. This may be particularly the case in companies at the venture capital stage. New employment that is sustainable contributes to economic growth through standard expenditure multiplier effects.
- c. Enhanced competitiveness** – Enhancements in productivity at the investee company level can translate into increased competitiveness for the economy as a whole if they contribute to making companies more competitive at domestic and international levels. The enhanced competitiveness of an economy is a condition for economic growth. Private equity activity can contribute to economic growth via enhanced competitiveness by making investee companies more productive. Likewise, in open, market-oriented economies, growth and trade exports go hand-in-hand. Private equity activity can contribute to economic growth through external trade by supporting export-oriented businesses or supporting the expansion of established local businesses into foreign markets.

2.3 Summary

We have identified and briefly described in this chapter the main dimensions of private equity activities, outcomes and impacts which create a network of transmission channels linking private equity and economic growth.

In the next chapter, we explore in detail the impact of private equity on the three main interrelated factors contributing to economic growth, namely innovation, productivity and competitiveness. In doing so, we describe their role in promoting economic growth and assess the impact of private equity on these factors.

3. The effects of innovation, productivity and competitiveness on economic growth

Knowledge and innovation, greater resource efficiency and improved competitiveness are all vital ingredients for long-term economic growth. These are also areas listed by European Commission's *Europe 2020* strategy⁹, as priority goals to be achieved by the end of the decade. This chapter introduces and describes the impact of each of these three factors on economic growth. This sets the basis for the analysis in the subsequent chapters that present the conclusions on these relationships based on existing academic and professional research.

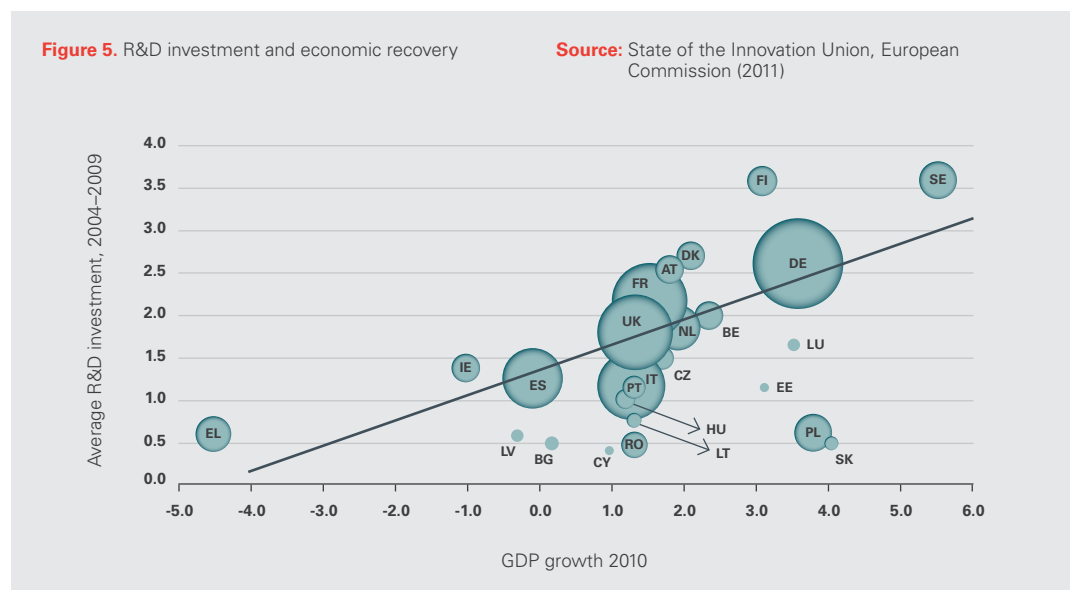
3.1 The role of innovation in economic growth

Innovation, i.e. the discovery of new or improved technologies, processes, products and services is a key driver of economic growth. In more advanced economies, where growth opportunities from capital accumulation are more difficult to exploit, innovation plays a key role in fostering economic development. This is because innovation enables economies to make more out of their existing resources. Innovation improves productivity and competitiveness, and boosts economic growth.

The European Commission has identified innovation as one of its flagship initiatives for 2020:

*"At a time of public budget constraints, major demographic changes and increasing global competition, Europe's competitiveness, our capacity to create millions of new jobs to replace those lost in the crisis and, overall, our future standard of living depends on our ability to drive innovation in products, services, business and social processes and models. This is why innovation has been placed at the heart of the Europe 2020 strategy."*¹⁰

According to the European Commission, countries that traditionally invest more in research, development and education weathered the recent economic turmoil better. For example, as **Figure 5** below shows, Germany (DE) and Sweden (SE) had higher levels of research and development investment between 2004 and 2008 and experienced higher GDP growth in 2010, whereas Greece (EL) and Latvia (LV) had lower levels of research and development investment in the same period and experienced lower GDP growth.¹¹



⁹ See European Commission (2013)

¹⁰ See European Commission (2010)

¹¹ European Commission, 2011. *State of the Innovation Union 2011. Progress report issued by the European Commission. Brussels: European Commission.* Available at http://ec.europa.eu/research/innovation-union/index_en.cfm?pg=keydocs

At the same time, Europe's research and innovation performance has declined in recent years, widening the already sizeable innovation gap that exists with the US and Japan.¹² Furthermore, China, India and Brazil have started to rapidly catch up with Europe by improving their innovation performance – 7%, 3% and 1% faster than the European average year-on-year over the last five years.¹³

3.2 Innovation improves productivity

New and improved processes allow companies to extract more out of the same inputs, increasing productivity. These benefits are not restricted to the innovating company or the innovated process or product.

As ideas spread, they allow other companies to adopt technological advances and build on them to their benefit.

Estimates for several OECD countries show that firms now invest as much in assets related to innovation (R&D, software, skills, organisational know-how and branding) as they do in traditional capital such as machinery, equipment and buildings.¹⁴ Such investment in intangible assets accounted for up to one percentage point, or around one-quarter, of labour productivity growth in countries like Austria, Finland, Sweden, the United Kingdom and the United States between 1995 and 2006, as shown in **Figure 6** (next page).

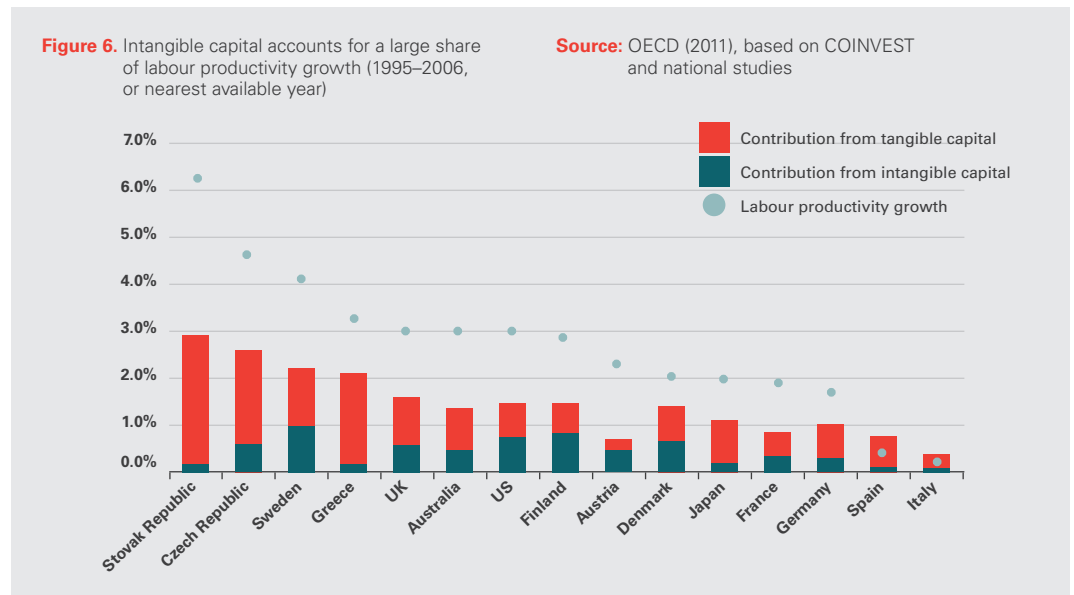
Moreover, multifactor productivity growth – the joint productivity of capital and labour – results from innovation and improvements in efficiency. Collectively, estimates suggest that investment in intangible assets such as patents, R&D, or software and multifactor productivity growth accounted for between two-thirds and three-quarters of labour productivity growth in countries featured in the OECD's report on innovation strategy.¹⁵ This means that innovation and productivity growth are the two main drivers of economic growth in Europe.

¹² European Commission, 2011. *Innovation Union Scoreboard and the Innovation Union Competitiveness Report 2011*. Brussels: European Commission. Available at: http://ec.europa.eu/research/innovation-union/index_en.cfm?section=competitiveness-report&year=2011. The innovation metric of the Innovation Union Scoreboard is a composite index measuring the degree and pace of innovation across countries in the EU and across ten global competitors. "Average performance is measured using a composite indicator building on data for 24 indicators going from a lowest possible performance of 0 to a maximum possible performance of 1. The tool is meant to help monitor the implementation of the Europe 2020 Innovation Union flagship by providing a comparative assessment of the innovation performance of the EU27 Member States and the relative strengths and weaknesses of their research and innovation systems." http://ec.europa.eu/enterprise/policies/innovation/facts-figures-analysis/innovation-scoreboard/index_en.htm

¹³ Innovation performance is measured by the composite indicator used by the Innovation Union Scoreboard.

¹⁴ OECD, 2010. *Ministerial report on the OECD innovation strategy. Key findings*. Paris: OECD. Available at: <http://www.oecd.org/sti/45326349.pdf>

¹⁵ OECD, 2010. *Ministerial report on the OECD innovation strategy. Key findings*. Paris: OECD. Available at: <http://www.oecd.org/sti/45326349.pdf>

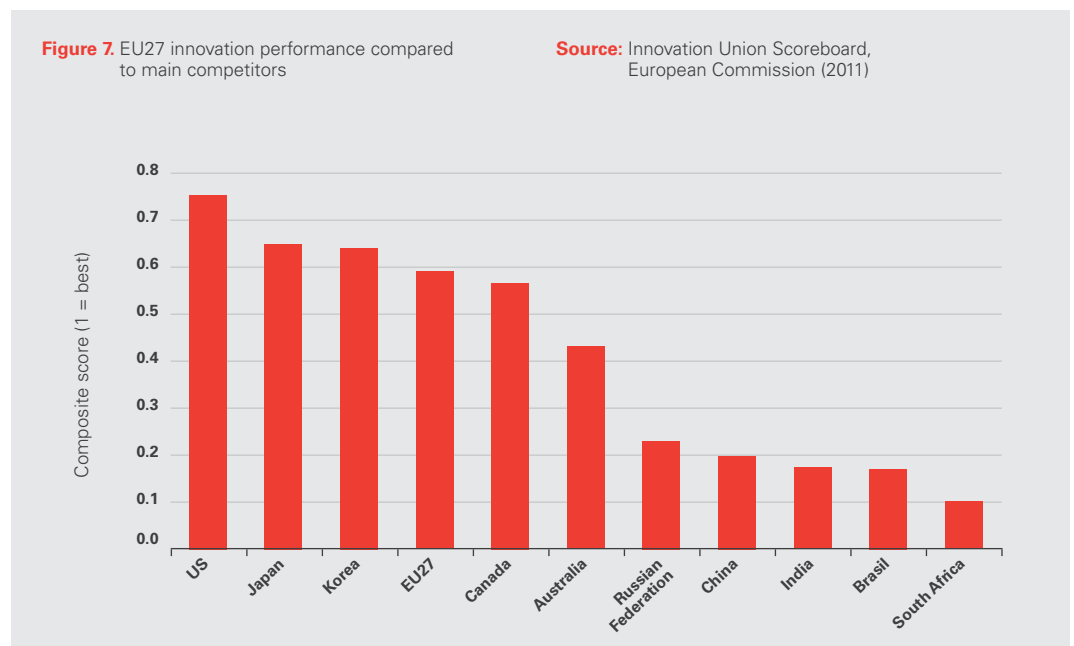


3.3 Innovation improves competitiveness

Innovation activity varies significantly between countries and regions. Half of R&D in the OECD area is performed by ten per cent of its constituent countries.¹⁶

As shown in **Figure 7**, European innovation performance lags behind that of the United States, Japan and Korea with significant

variation between member states. Differences in innovation levels between countries and regions have an impact on the differences in productivity between countries. This, in turn has an impact on international competitiveness, making the development of innovation in Europe vital to improving the international competitiveness of the region.



¹⁶ See OECD (2010) for details.

3.4 Increased productivity leads to economic growth

Differences in productivity account for much of the gap in growth between advanced and emerging countries. In particular, the OECD¹⁷ finds that growth in labour productivity accounted on average for around 89% of growth in per capita GDP between 2001 and 2007 and for 105%¹⁸ of growth in per capita GDP between 2009 and 2010.

Productivity growth has therefore been given a priority status by the European Commission – *“Europe’s average growth rate has been structurally lower than that of our main economic partners, largely due to a productivity gap that has widened over the last decade.”*¹⁹

3.5 Improved productivity promotes sustainable employment

Bearing in mind the importance of productivity as a driver of economic growth, an indicator of the economic value that an industry creates is to assess the impact that productivity improvements have on employment.

Over 80% of private equity investee companies in Europe are small and medium sized companies. Since SMEs generate more than two-thirds of private sector employment in Europe²⁰ and grow more quickly than larger firms, private equity investment provides a source of new jobs,²¹ and potential growth.

In addition, productivity improvements leading to increased company performance and survival mean that employment in private equity-backed firms can be more sustainable.

¹⁷ OECD, 2011. *Science, technology and industry scoreboard 2011. Sources of growth*. Paris: OECD. Available at: http://www.oecd-ilibrary.org/science-and-technology/oecd-science-technology-and-industry-scoreboard-2011_sti_scoreboard-2011-en

¹⁸ Total hours worked per capita is the second factor that is used to explain GDP per capita. This has been increasing in some countries but decreasing in others, explaining why growth in labour productivity is more than 100% of growth in GDP per capita between 2009 and 2010.

¹⁹ European Commission, 2010. *Europe 2020. A strategy for smart, sustainable and inclusive growth*. Pp. 8. Brussels: European Commission.

²⁰ European Commission: http://ec.europa.eu/enterprise/magazine/articles/smes-entrepreneurship/article_11039_en.htm

²¹ EIM Business & Policy Research, 2011, with financial support from the European Communities, under the Competitiveness and Innovation Programme 2007–2013. *Do SMEs create more and better jobs?* Available at: http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/performance-review/files/supporting-documents/2012/do-smes-create-more-and-better-jobs_en.pdf

3.6 Competitiveness fuels growth

Enhanced competitiveness of the European economy as whole, at a domestic and international level, is a condition for economic growth.

“The EU has prospered through trade, exporting round the world and importing inputs as well as finished goods. Faced with intense pressure on export markets and for a growing range of inputs we must improve our competitiveness vis-à-vis our main trading partners through higher productivity. We will need to address relative competitiveness inside the Euro area and in the wider EU.”²²

Private equity activity can promote the competitiveness of economies both directly and indirectly. It does so directly by supporting export-oriented businesses and providing funding for riskier ventures (see chapter 5) or supporting the expansion of established local businesses into foreign markets. And it does so indirectly through impacting innovation and productivity (see chapters 4 and 5).

3.7 Summary

The three key factors influencing economic growth are interrelated: innovation makes companies more productive, which in turn enhance their competitiveness.

Increased innovation, improved productivity and enhanced competitiveness drive the economy as whole, at a domestic and international level, and are thus pre-conditions for economic growth. It is therefore instructive to explore the links between private equity and these three factors.

The following chapters set out our findings on the impact of private equity on these factors:

- Chapter 4 sets out the findings on private equity and innovation;
- Chapter 5 sets out the findings on private equity and productivity, including employment; and
- Chapter 6 sets out the findings on private equity and competitiveness.

²² European Commission, 2010. *Europe 2020. A strategy for smart, sustainable and inclusive growth*. Pp. 14. Brussels: European Commission.

4. Private equity and innovation

Key findings

- We estimate that the patents granted to private equity-backed firms in 12 key European countries,²³ over five years to 2011, have a market value of up to €350bn, or nearly 1.5 times the total amount of private equity investment during the same period.
- Research evidence from 495 worldwide LBO transactions between 1980 to 2005 finds that private equity-backed firms deliver economically more important patents as measured by citations for these patents.
- Research evidence finds that for some sectors €1 of private equity finance can be up to 9 times more effective in promoting innovation (as measured by the number of patents granted) than €1 of non-private equity finance.

This chapter contains more details including sources and the calculations used to arrive at these key findings.

4.1 Private equity supports innovation

Given the importance of innovation as a driver of European economic growth, our analysis sets out to determine the impact of private equity on innovation, and to quantify what impact this produces for economic growth.

Our review of existing literature demonstrates that private equity supports innovation in the businesses that it backs. In addition to providing funding for R&D, it also helps firms prioritise their innovation efforts, for example by concentrating them in areas of strength. These activities reduce financial risks, improve discovery rate, and increase the relevance of the innovation to the economy – for example, by ensuring that the new product is relevant to the market.

In the following sections, we describe the evidence showing the impact of private equity on innovation.

In particular, we cover the following:

- sectors of the economy with private equity investment generate more patents;
- private equity-backed firms deliver greater innovation than comparable non-private equity-backed firms;
- private equity-backed firms deliver more relevant innovation than comparable non-private equity-backed firms; and
- private equity investments and patent activity are highly correlated across European countries.

In the findings that follow, there is an important methodological issue around attribution in studying the impact of different factors on the drivers of innovation. However, we look at a number of ways in which private equity and innovation are correlated.

While we cannot be definitive about the direction of causality, we can start to draw broad conclusions based on related pieces of available evidence which indicates that there is a strong correlation between innovation and private equity activity.

²³ Belgium, Denmark, Finland, France, Germany, Italy, Netherlands, Norway, Spain, Sweden, Switzerland and the UK. Together, these countries account for 92% of all private equity investments made in Europe between 2007 and 2011.

4.1.1 Sectors of the economy with private equity investment generate more patents

As shown in Figure 8 below, four of the five top sectors supported by private equity investments appear in the list of top ten innovative sectors (as measured by patents granted).

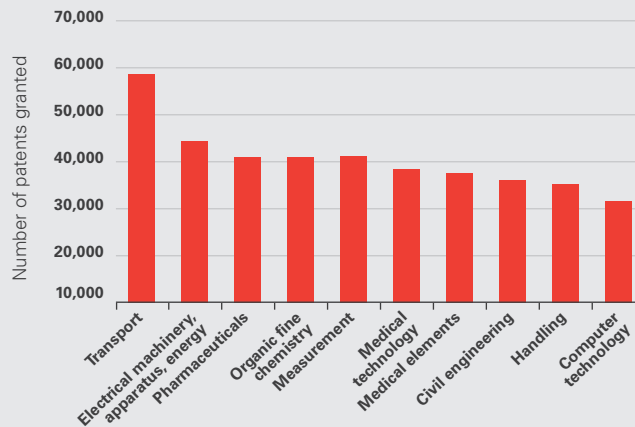
These include:

- Life sciences (pharmaceuticals, medical technology, organic fine chemistry);
- Business and industrial services (handling of goods, civil engineering);
- Communications (computer technology, electrical machinery); and
- Business and industrial products (mechanical elements, computer technology).

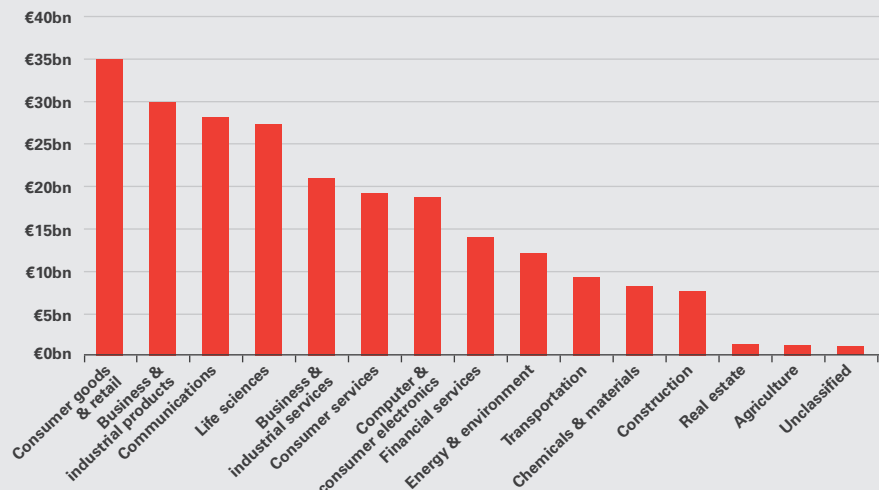
Figure 8. Top ten sectors for patents granted and private equity investment in 2007–2011

Source: World Intellectual Property Organisation, Eurostat, EVCA

Top ten sectors for granted patents



Private equity investment by sector



4.1.2 Private equity-backed firms deliver greater innovation

Private equity involvement leads to greater innovation by portfolio companies.²⁴ Typically, innovation is measured by the number of patents granted to companies.

The relationship between patents and economic growth is not clear cut, and patent regimes are not a primary determinant of growth. However, the vast majority of new product innovation gets patented, making patents an effective proxy of innovation activity.

For the purposes of this study, we have triangulated research that highlights the number of patents that can be attributed to private equity-backed companies – and therefore their ability to stimulate such innovation activity – with other sources that highlight the value of these patents.

We have sought to triangulate findings related to the volume of patents, with figures that highlight what European patents are estimated to be worth on average, and compelling data that illustrates that patents granted to private equity-backed companies are more valuable than those granted to other companies on average.

The basis for this quantification is a study by Popov and Roosenboom (2009), which looks at private equity investments across Europe between 1991 and 2004. This finds that whilst private equity investment accounts for 8% of aggregate industrial spending, private equity-backed companies account for as much as 12% of industrial innovation.

This is explained by Popov and Roosenboom's finding that R&D investment by private equity-backed firms is more effective than R&D investment by non-private equity-backed firms. Their estimates show that €1 of private equity finance can be up to nine times more effective than €1 of non-private equity finance in delivering innovations as measured by patents granted. The magnitude of this impact varies by sector, with biotechnology exhibiting the strongest impact.

The key conclusion of Popov and Roosenboom is supported by Mollica and Zingales (2007). They explore the direction of causality using data from 23,565 private equity-backed businesses in the US. Their findings confirm that private equity investment (in particular venture capital investment) results in increased innovation, rather than the other way round (namely the argument that private equity selects more innovative firms). Arguably, in times when firms have difficulties accessing finance, even if private equity were just picking more innovative firms, the provision of funds to support such efforts is a valuable contribution to innovation.

²⁴ See, for example, Popov and Roosenboom (2009) for European results and Mollica and Zingales (2007) for US results.

Quantifying the impact of private equity investment on patenting

Triangulating various elements of academic research, we estimate that patents granted to private equity-backed firms over five years to 2011 are worth up to €350bn, or nearly 1.5 times the total amount of private equity investment during the same period. We arrive at this estimate by combining the following findings:

- Popov and Roosenboom (2009) finds that 12% of total European industrial innovation (i.e. innovation by private sector companies as opposed to public sector institutions such as universities) is attributable to private equity, using data on private equity investments and patenting activity from 21 European countries covering the period of 1977–2004.
- According to the World Intellectual Property Organisation's (WIPO) database, there were 973,410 patents granted to European companies between 2007 and 2011.
- Applying Popov and Roosenboom's estimate to this suggests that 116,000 patents are attributable to private equity-backed companies.
- Gambardella et al. (2008) find that the average value of a patent held by a European company is €3m.²⁵ Applying this to the estimated 116,000 patents that are attributable to private equity-backed companies suggests a total value of €350bn over five years.

4.1.3 Private equity-backed firms deliver more relevant innovation

Other research indicates that innovations delivered by private equity-backed firms are economically more significant.

For example, Lerner et al. (2011), examining 495 LBO transactions across the world between 1980 and 2005, find that patents filed in the US and which are created by private equity-backed companies tend to be economically more relevant, as measured by the number of citations for these patents.²⁶

They find that on average, the citations for patents increase from an average of 1.99 times before private equity participation to 2.49 after private equity participation.

Further research: impact of private equity on patent activity

It is important to improve our understanding of the impact of private equity on innovation and growth. Further research in Europe could potentially examine what happens to the number of patents and their citations in a selection of firms *after* a private equity fund invests in them, trying to control for "endogeneity" concerns (i.e. whether private equity fosters innovation, or whether the most innovative sectors of the economy are those in which private equity invests anyway), as in Mollica and Zingales (2007) who use data from the US. New research on this topic at company and sector levels would be highly relevant, given that Europe is currently lagging behind the US, for example, in terms of innovation.

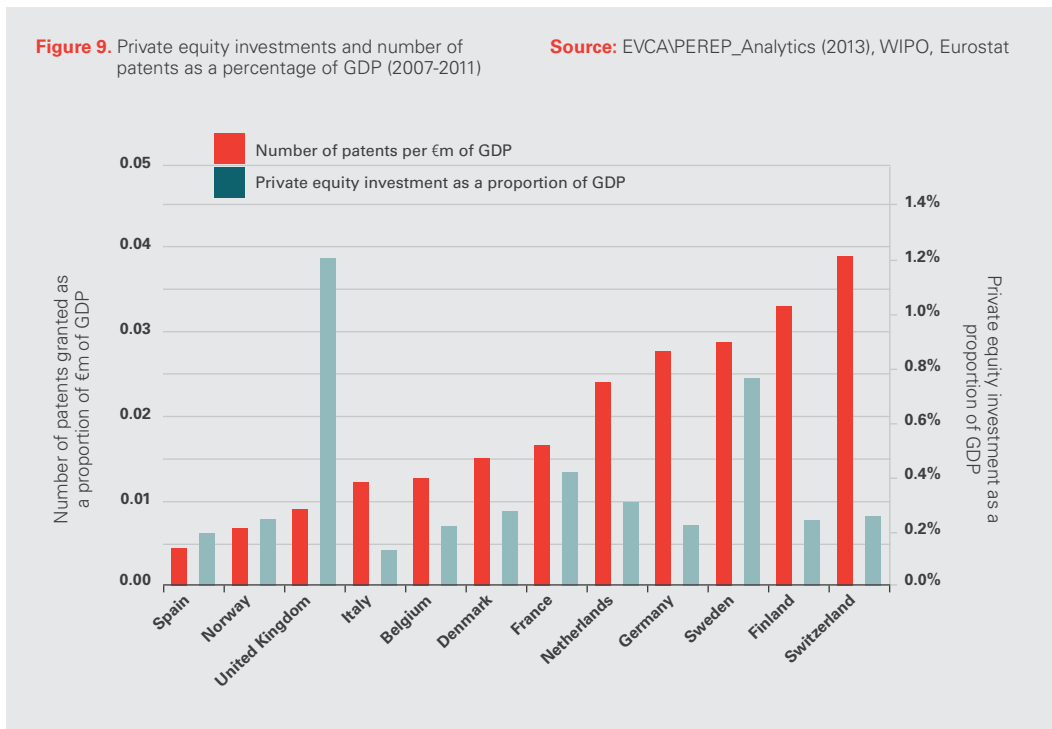
²⁵ These most recent estimates of the average value of a patent are in line with the previous estimates by, for example, Harhoff et al. (1999), who use data on German and British firms for 1985–1994.

²⁶ The number of citations for a patent is a proxy measure for its economic value. For further discussion, please refer to the authoritative review by Griliches (1990).

4.1.4 Countries with more private equity investment deliver more patents

The correlation between private equity investment and number of patents, across countries, supports these findings.

As **Figure 9** below shows, countries with more private equity investments generally deliver more patents.



4.2 How does private equity support effective innovation?

Recent available research offers the following explanations for the reasons that private equity helps increase innovation:

- Increasing efficiency through focusing innovation effort and improving the management of innovation processes and systems;
- Supporting young firms; and
- Fostering a positive environment for innovation in the wider economy.

We discuss each of these below.

4.2.1 Improving the efficiency of innovation effort

A number of recent studies highlight the fact that private equity firms help portfolio companies to focus their innovation efforts by introducing criteria such as probability of success and economic value of the potential innovation.

For example, in their 2011 study, Lerner, Sorensen and Stromberg looked at 495 LBOs globally between 1980 and 2005, and found that after private equity investment, patents concentrate on the most important and prominent areas of companies' innovation portfolio.

This is important because it means that the initial investment in R&D and innovation by private equity is more likely to yield positive outcomes, generate a return and economic value. Therefore, private equity appears to be associated with a beneficial refocusing of firms' efforts to deliver increased innovation.

Private equity investors also provide corporate governance support and business expertise to improve firms' innovation efforts. A number of studies point to the impact of private equity on improved corporate governance, for example systemisation of innovation efforts and improvements to the management of the innovation process. These include Bloom et al. (2009) which used evidence from 4,000 medium-sized manufacturing firms across Asia, Europe and the US. Bruining et al. (2013) which used survey evidence from 108 buy-outs in the Netherlands. Acharya et al. (2013) which used qualitative evidence from 20 CEO interviews in the UK, and Meuleman et al (2009) which used evidence from 238 private equity-backed buyouts in the UK.

4.2.2 Supporting young firms

Young firms tend to be more innovative than older companies with similar characteristics.

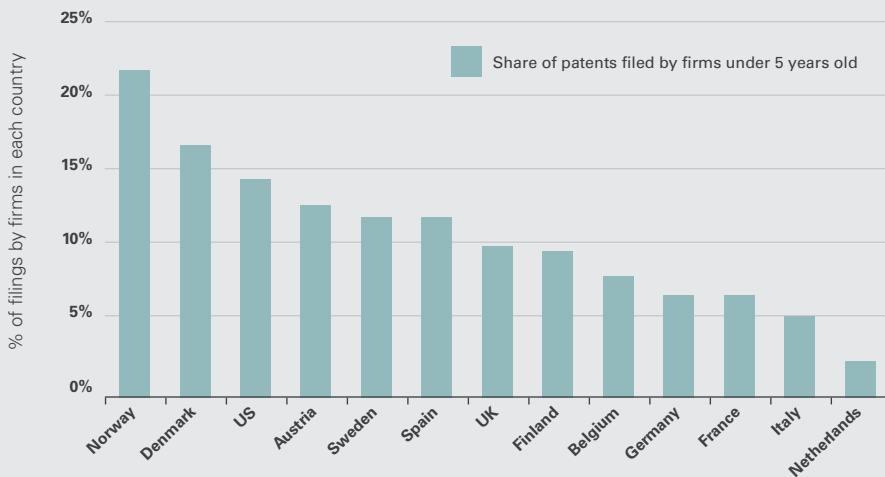
OECD research finds that patents filed by young firms account for a high share of total patents filed by firms in a country: approximately 7% in Germany, 10% in the UK, 16% in Denmark and 21% in Norway, as shown in **Figure 10** below.

It is our hypothesis that private equity firms indirectly promote innovation by supporting such young firms since these tend to be more innovative than their peers.

This is supported by the OECD evidence shown below, as well as the fact that private equity investment – as measured by the number of portfolio companies – is most concentrated in younger firms.

Figure 10. Patent filing by young firms (2005–2007)

Source: OECD (2010), *Measuring Innovation: A New Perspective*, based on HAN database, October 2009 and Bureau Van Dijk Electronic Publishing, August 2008



4.2.3 Fostering a positive environment for innovation in the wider economy

These cumulative innovation efforts, as discussed above, will be further boosted by externality effects – the multiplication of innovation as new ideas tend to spread and new technologies are adopted.

Innovation tends to be viral. Where firms see a competitor introduce an innovation that improves efficiency, they try to replicate its approach if possible. Innovation tends to spread also among individuals as new ideas are discussed and people learn from observing each other.²⁷

Further research: long-term impact of private equity on innovation

In order to build a fuller understanding of the long term impact of private equity on innovation and growth at industry level in Europe, future research could focus on (i) looking at a selection of European countries and industries where private equity has been particularly active over a period of time (metrics of “activity” would need to be designed); (ii) examining the volume and quality of patent production in that industry *afterwards*; (iii) comparing this with the volume and quality of patent production in industries where private equity has not been particularly active.

This type of research should attempt to take into account not only the effects at the firm level but also the innovative spill-over effects across the industry and European economies as a whole.

4.3 Summary

This chapter has described the channels through which private equity contributes to boosting innovation, which is essential for promoting growth across Europe.

In the following chapter, we present available evidence on how private equity contributes to making portfolio companies more productive, supporting aggregate economic growth.

²⁷ For a discussion of these effects, see Samila and Sorensen (2009), who use data from the US for 1993–2002.

5. Private equity and productivity

Key findings

- Private equity invested nearly €250bn in the top twelve countries for private equity investment in Europe in 2007–12, with a net inflow of around €50 billion from outside Europe.
- Three of the top five sectors benefiting from private equity investments are sectors that tend to be capital intensive.
- Private equity participation leads to improved productivity (as measured by earnings before interest, tax, depreciation and amortisation per employee) of 6.9%, on average.
- Operating profitability of private equity-backed buyouts was 4.5% higher than comparable non-buyout companies over the first three years after the investment. The evidence on the persistence of this effect over the longer term, however, is less conclusive.
- Improvements in the strategic and operational performance of portfolio companies contributes nearly twice the effect of leverage to the returns generated by private equity investments in companies that had an enterprise value in excess of €150m at the time of investment.

This chapter contains more details, including sources and the calculations used to arrive at these key findings.

Productivity is the efficiency with which inputs, such as capital, labour, land, and materials are turned into outputs.

Increased productivity allows firms to deliver more goods from the same level of inputs. For example, a better practice for carrying out a procedure may mean that this is performed in less time.

At an individual company level, productivity improvements can manifest themselves in a number of ways. Typical company level indicators include company growth and operational performance. Similarly, a company's ability to seize new business opportunities is an indicator of productivity improvements. At a wider economy level, productivity improvements manifest themselves with improved productivity of capital and labour. This can be due to innovation, fixed capital formation or improved skill levels in the labour force.

The impact of leverage in portfolio company acquisitions on productivity is raised by some, including a recent paper by Gregory (2013). He hypothesises that higher debt levels could make companies less likely to undertake long-term investment if that investment is crowded out by the costs of servicing debt.

Lower investment affects the productive capacity of the economy and could therefore have an indirect effect on the financial system via lower long-term corporate profitability. However, as Gregory points out, the extant evidence on the impact of leveraged buy-outs on investment is inconclusive, and the complete picture on the successes or failures of companies bought out at the peak of the leveraged lending boom might not become clear for many years.

This chapter reviews the extant evidence on the role of private equity in improving productivity through key indicators of productivity growth: fixed capital formation at the level of the economy, company growth and formation, and improvements in the operational performance of companies at the individual company level.

5.1 Improving productivity by investing in physical capital

The magnitude of the recent decline in private investment in Europe is unprecedented. Private investment, i.e. investment by private companies and households, in the EU-27 during 2007–2011 plunged by €354 billion – 20 times the fall in private consumption and four times the fall in real GDP.²⁸

Nevertheless, in this environment, private equity continues to invest in each of the 12 countries studied.²⁹ As shown in Table 1 below, nearly 20,000 companies have received private equity investment totalling €250bn between 2007 and 2012.

Rank	Country	No. of companies	Total investment
1	United Kingdom	3,146	€71.2bn
2	France	3,356	€45.7bn
3	Germany	5,614	€41.1bn
4	Italy	652	€15.9bn
5	Sweden	1,627	€15.1bn
6	Netherlands	1,316	€14.6bn
7	Spain	905	€14.3bn
8	Belgium	757	€7.6bn
9	Switzerland	411	€7.3bn
10	Norway	519	€6.8bn
11	Denmark	364	€5.6bn
12	Finland	757	€4.4bn
Total		19,424	€249.7bn

²⁸ See McKinsey (2012) for details

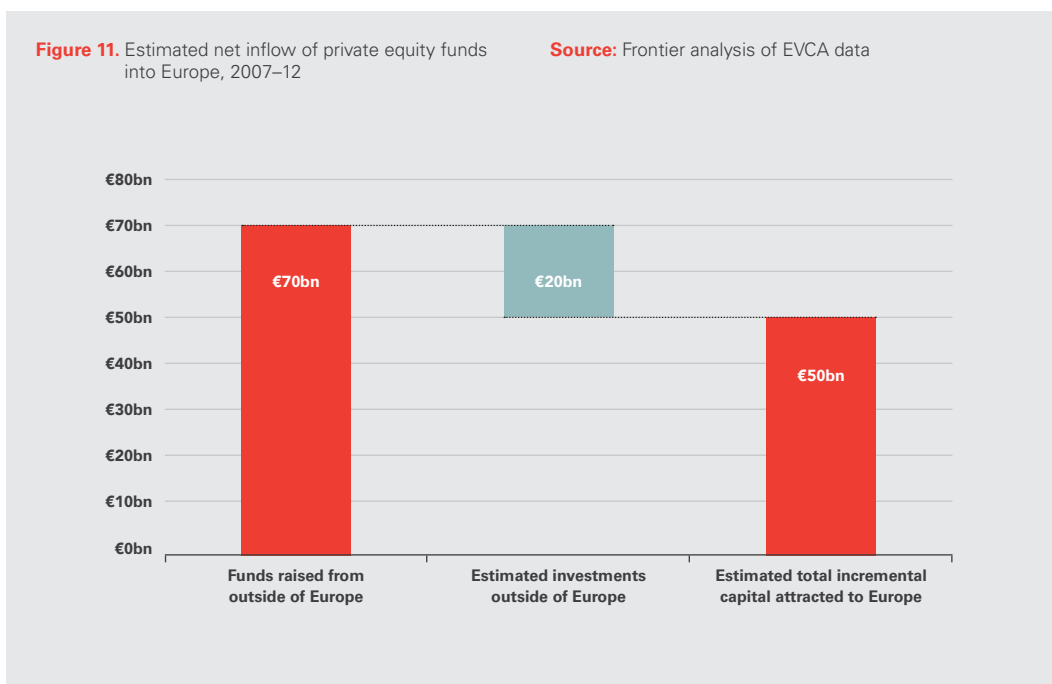
²⁹ The 12 countries were shortlisted based on the level of private equity investment levels and account for 92% of the total private equity investment in Europe between 2007 and 2011.

³⁰ Note: Average investment size varies significantly between countries from the average of €3.3m in Finland to average of €19.2m in Italy. This variation is due to variation in the types of investments: in Finland, nearly 14% of all private equity investments (by value) are venture capital investments, while in Italy less than 3% of all private equity investment is made up of venture capital.

Based on data collected by the EVCA, European private equity funds raised approximately €265bn in 2007–12.

EVCA's bespoke analysis of fundraising and investments made out of the 2007–12 vintage funds suggests that around €70bn came from institutional investors from outside Europe and around 10% of the investments that had been made from those funds were outside Europe.

Figure 11 below shows our estimate of €50bn in total incremental capital attracted to Europe by private equity, accounting for over two per cent of all foreign direct investment into Europe over the same period.³¹ This assumes that the currently observed investment pattern remains constant until all of the 2007–12 vintage funds have been invested.



However, there are practical difficulties in accurately tracking the way in which private equity investment is used in the portfolio companies it invests in, making it difficult to draw a clear linkage between private equity investment and improved productivity through investments in physical capital.³²

An alternative approach that we have adopted for the purposes of this exercise is to explore whether the presence of private equity investment is accompanied from higher levels of physical capital formation.

We have done this at two levels: sector level and country level and found that the inflows of private equity investment tend to be accompanied by greater levels of physical capital in each case.

³¹ According to Eurostat, total foreign direct investment from countries outside Europe amounted to approximately €2,000bn in 2007–12.

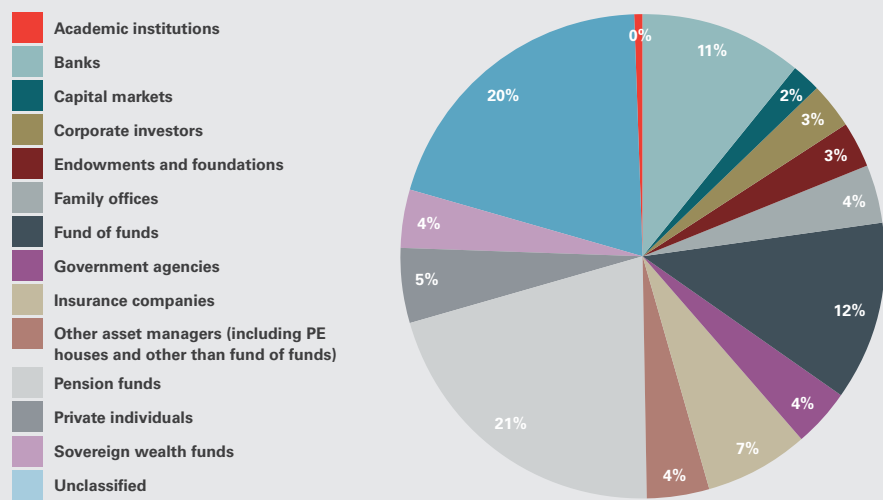
³² This is due to the nature of such investments being less readily available than the reporting within public listed companies, and also because of the way in which funds distribute capital amongst portfolio companies.

Private equity investors

Private equity attracts a range of different investors, as it offers them the possibility to diversify their portfolios, earn attractive returns and reach investment opportunities which may not be available to them otherwise, such as investing in young and fast-growing firms.

Figure 12. Distribution of private equity investments by type of investor, 2007–12

Source: EVCA\PEREP_Analytics (2013)



As shown in the figure above, 30% of funds raised by the private equity industry between 2007 and 2012 came from institutional investors (i.e. pension funds, insurance companies, academic institutions, and endowments and foundations).

Private equity provides these institutions with investment opportunities that they may not be able to pursue otherwise, thus improving the diversification of their portfolios.

Private equity firms are able to do this because:

- they have the expertise to closely assess and invest in specific companies which an institutional investor may not have the expertise to do; and
- they are involved in the management of the portfolio companies and are therefore able to influence the running of their investments. Many institutional investors are unable to undertake this role.

Diversification allows investors to reduce risk by investing in a variety of assets whose risk is not correlated.

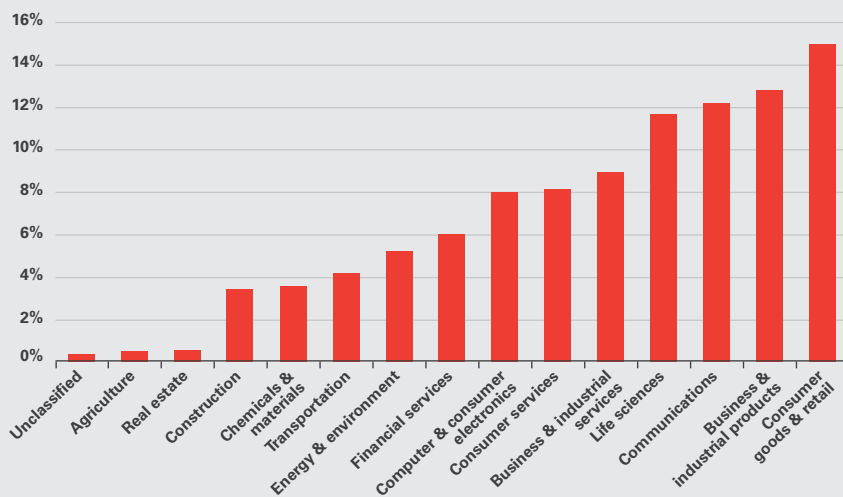
Figure 13 below shows total private equity investments by sector in Europe between 2007 and 2012. As shown in the figure, three of the top five sectors benefiting from private equity investments (business and industrial products, life sciences, and communications) are sectors that tend to be capital intensive. These three sectors account for more than 36% of total private equity investment in Europe.

Moreover, these more capital intensive industries received more than 60% of total investment made by the private equity industry during this period.

Given the higher proportion of private equity investment in those sectors of the economy that are more capital intensive, we can infer that private equity investments play a role in improving productivity through increased investment in physical capital – machinery, equipment and buildings.

Figure 13. Distribution of private equity investments by sector in Europe, 2007–2012

Source: EVCA\PEREP_Analytics (2013)



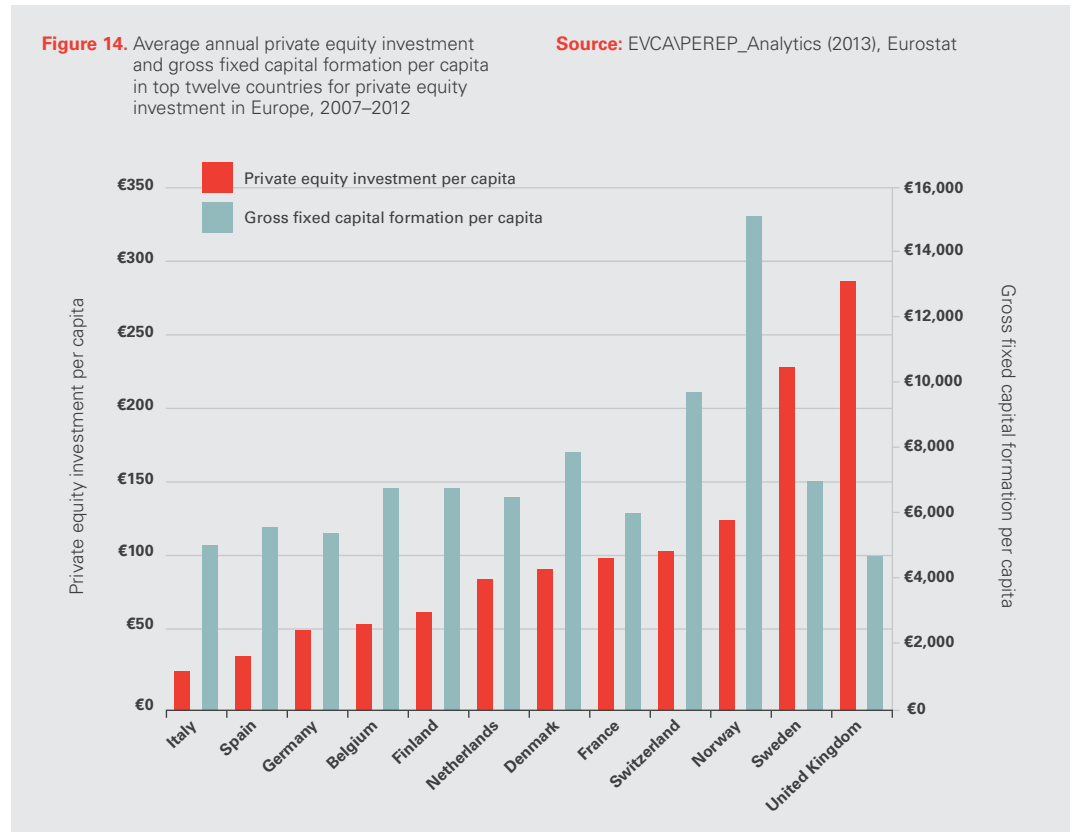
Further research: impact of private equity on capital formation and company productivity

We do not yet know enough about the incremental impact of private equity on fixed capital formation in the economy and the associated change in company productivity.

This is partly explained by the difficulty in accessing company-level data. It would be useful to more closely examine this relationship.

This could be done by looking at the amount and type of investment in physical capital (or capital expenditure in general) *before* and *after* a private equity fund has invested in a firm or a selection of firms in a given sector. The approach to this type of research could be based on in-depth case studies.

Similarly, as shown in **Figure 14** below, countries that receive proportionately higher levels of private equity investments tend to be countries that experience proportionately the highest levels of gross fixed capital formation.³³



Although this analysis cannot control for causality, the combination of these pieces of evidence from various sources suggests that there may be a link between private equity investment and greater levels of productivity.

Further research: impact of private equity on sector productivity

It would be important to gain a better understanding of the incremental impact of private equity on the productivity of European economies in certain sectors.

This could be done by comparing (i) investment in capital expenditure in firms and sectors with private equity backing (or firms that had ever had private equity backing) with capital expenditure in firms matched by industry and size but without backing; (ii) the operational performance across both types of sectors. This research would require access to portfolio company data.

³³ Gross fixed capital formation is the national accounts measure of increases in fixed assets.

5.2 Improving productivity by helping companies improve performance

In today's globalised, competitive marketplace, utilising every opportunity to improve productivity is critical.

Firms can achieve this by making management and strategic improvements. This can involve exploiting economies of scale and providing better incentives to staff to promote the efficient use of time. They can also improve efficiency by innovating – discovering new processes or products that help them find improved ways to combine inputs.

In addition to innovation (covered in Chapter 4) and investment in physical capital (covered in section 5.1 above), private equity influences productivity through helping portfolio companies to seize new business opportunities, as well as more efficiently exploiting existing ones.

5.2.1 Improving company performance

There are several ways to measure company performance. For the purposes of gauging the relationship between company performance and productivity, the most relevant measures relate to the company's operational performance. As such, the typical measure used in research is the company's operating profit per employee.

The performance of private equity-supported companies has been researched widely. The majority of the research finds a positive relationship between private equity participation and company performance, showing a clear relationship between private equity involvement and company profits, growth and survival. This includes studies such as Cressy et al. (2007), using data on 122 buyouts in the UK and Kaplan and Strömberg (2009), using data on 17,171 private equity-backed business across the world over 1970–2007.

A study by Ernst & Young (2012) looking at 473 exited private equity investments in Europe between 2005 and 2011, finds that private equity participation leads to increases in the average per employee earnings before interest, taxes, depreciation and amortisation by 6.9%. Additionally, Davis et al. (2009), looking at US firms between 1980 and 2005, find that during periods of credit crunch, the differential in productivity growth between private equity-targeted firms and non-private equity firms is higher by up to 5.2% two years after the private equity investment.

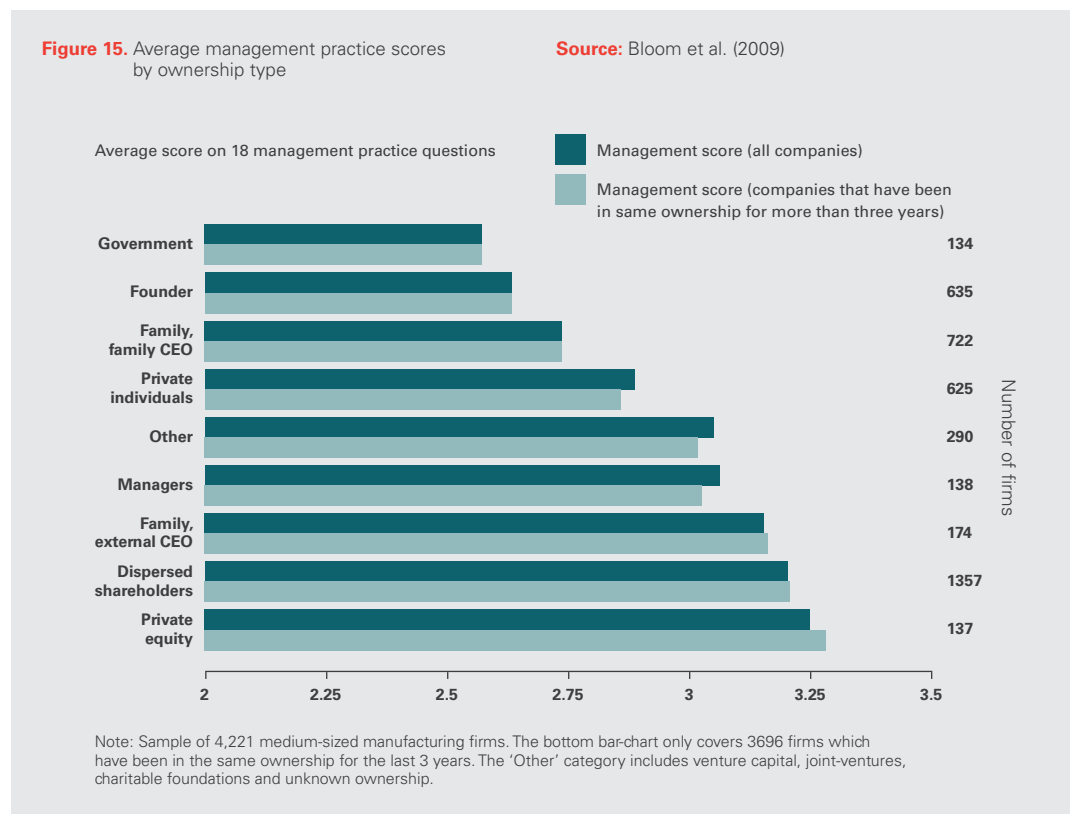
There is an important debate regarding the contribution of leverage to increased performance, since the use of debt is a significant feature of the acquisition of larger companies sponsored by private equity investors.

Kaserer (2011) conducted a review of 322 European mid-market private equity investments between 1991 and 2007, deconstructing the returns driven by earnings enhancement, multiple enhancement and the effect of leverage. The study found that about two-thirds of overall returns originated from strategic and operational activities that increased earnings at the portfolio company, with sales growth being statistically significant. It found the leverage effect to be inconclusive. While Kaserer found that one third of returns could be attributed to the effect of paying down acquisition-related debt through the life of the investment, the study did not find robust evidence that investment returns are effectively increased by the leverage.

Ernst & Young (2012) examines private equity-backed companies that had an enterprise value in excess of €150m at the time of private equity investment and that were divested in Europe between 2005 and 2011. They find that improvements in the strategic and operational performance of portfolio companies contribute nearly twice the effect of leverage in the capital structure to the returns generated by private equity investments. The same study finds that private equity participation improved portfolio companies' long-term prospects and value under their period of ownership, by growing profitability, productivity and employment. The study establishes that the increase in these measures is 1.6 times higher for private equity-backed companies than comparable public market companies.

Bloom et al. (2009), looking at a sample of 4,221 medium-sized EU, Asian and US manufacturing firms through an internally validated survey carried out in 2008, find that private equity-owned firms are particularly strong in operations management practices, such as the adoption of modern lean manufacturing practices and a comprehensive performance documentation process.

Their results reveal that private equity-backed firms received the highest management scores on average. The difference is particularly significant when compared to government or family owned firms as shown in **Figure 15** below.



This is supported by Kaplan and Strömberg (2009) who show, using data on 17,171 private equity-backed business during 1970–2007, that private equity firms use strong performance-based financial incentives for their management, which align their interests with those of the portfolio companies.

5.3 Company profitability and growth

Private equity participation can lead to improved operating profitability in portfolio companies. Cressy et al. (2007) for example, who examine 122 leveraged buyouts in the UK over the period 1995–2000, find that the operating profitability of private equity-backed buyouts was 4.5% higher than comparable non-buyout companies during the first three years after the investment. They found this differential to be 8.5% in cases where the private equity firm was specialised in the industry area of the portfolio company. Studies looking at leveraged buyouts in the UK,³⁴ the US³⁵ and France³⁶ find similar estimates for profitability uplift in private equity-backed companies.

There is some debate on the persistence of the profitability and growth improvements delivered by private equity backing. An often aired criticism of private equity is that much of its improvement is short term and comes from stripping out costs and imposing tight financial controls, rather than delivering long-term organic growth. The evidence on this is mixed, with some studies, such as Leslie and Oyer (2008) using data from the US, suggesting that the positive effect of private equity on company performance disappears within a few years after the portfolio company is divested through an initial public offering. To our knowledge, no comprehensive academic work on the persistence of the impact of private equity backing that uses European data currently exists at the moment.

Importantly, the observed outperformance of private equity supported companies that is evident in much of the research arises largely from improved efficiency in operations and sales activities. Kaserer (2011) quantified efficiency gains attributable to different sources, finding that up to three quarters of the returns to private equity investments are attributable to earnings-enhancing activities such as sales growth and margin improvements.

Studies such as that done by Bernstein et al., (2010) found that industries where private equity funds have been active in the past five years grow more rapidly than other sectors, whether measured using total production, value added, total wages or employment. The authors examine private equity investments across 20 industries and 26 countries between 1991 and 2007, and find that this result holds for continental Europe, as well as in the other geographies examined.

³⁴ See Wilson et al. (2012) using evidence from a UK population of firms during the period 1995–2010.

³⁵ See Hotchkiss et al. (2011) using data on US companies that took out leveraged finance between 1997 and 2010.

³⁶ Boucly et al. (2011), using data from LBO transactions in France during 1994–2004.

Improving management practices

Many of the improvements that are observed in private equity supported companies are improvements in the portfolio company's operations, financial performance and people management.

As set out in section 5.2.1, private equity-supported businesses tend to follow less entrenched business practices than family-owned, privately owned or widely owned public companies. Similarly, private equity supported businesses are found to be significantly better managed than government, family and privately owned firms. This is true even after controlling for a range of other firm characteristics such as country, industry, size and employee skills.

Private equity-supported firms also undertake wider improvements. They are particularly strong at operations management practices, such as the

adoption of modern lean manufacturing practices and of a comprehensive performance documentation process.

Evidently, improvements in management will lead to improved company performance. However, research into the impact of management of companies on performance has found that many companies are not aware of the state of their management practices.

For example, Bloom et al. (2009) found that the majority of firms are making no attempt to compare their own management behaviour with accepted practices or even with that of other firms in their sector. Consequently, many organisations are probably missing out on an opportunity for significant improvement because they simply do not recognise that their own management practices are inadequate or much less effective than they could be.

5.4 Company survival

Underperforming firms are more likely to fail, making company survival rate another measure of overall company performance.

The effect of private equity investment on company survival has been a cause of debate, particularly in relation to whether the use of debt in the acquisition of larger companies could have a negative effect on their survival rates.

In general, regardless of the ownership structure of a business, the greater the use of debt financing, the greater the probability of default. However, rather than explore the role of leverage (which is available to companies in any type of ownership) in company survival, the contribution of private equity on company survival is typically explored by comparing companies in private equity ownership against companies in other forms of ownership with similar leverage characteristics.

Recent academic research, including a study by Tykvová and Mariela (2012) that uses data on 1,842 buy-outs across fifteen EU member states between 2000 and 2008, concludes that private equity participation does not make companies any more likely to default on their debt obligations when compared to non-private equity-backed companies with similar leverage characteristics.

In fact, some studies find that private equity support leads to substantial improvements in corporate recovery and survival. However, the estimates of the impact of private equity on company survival vary depending on industry, country and type of private equity investment. For example, research by the Bank for International Settlements (2008), looking at leveraged buyouts globally between 1997 and 2001, suggests that the failure rate for private equity-backed companies is at least 5% lower than similar publicly owned companies. Recent research focusing on buy-out companies by Thomas (2010) suggests that the failure rate for private equity-backed companies is up to 50% lower than comparable, non-private equity-backed companies.

A study by Kaplan and Strömberg (2009) based on 3,200 businesses in Europe finds that private equity-backed companies' default rate is 25% lower than that of public companies on average.

Research conducted by Hotchkiss et al. (2011), looking at 2,156 private equity-backed firms globally between 1997–2010, found that private equity-backed firms tended to have a higher annual default rate than other firms. However, once the effect of leverage is accounted for, private equity backing is found to have no impact on default rates. Moreover, those companies that did default spent less time in financial distress and were more likely to survive as an independent, reorganised company rather than being sold to a strategic buyer or liquidated.

Overall, the evidence points to private equity having a positive impact on company survival when comparing private equity-backed companies against other companies with similar characteristics. Regarding the effect of leverage, Gregory (2013) argues that an increase in indebtedness following acquisition could make companies more susceptible to default, exposing their lenders to potential losses. This risk is compounded by the need for a cluster of private equity-backed companies to refinance their debt, which will be maturing over the next few years, in an environment of tighter credit conditions. However, Gregory also points out that there is no clear evidence of a higher default rate among those private equity owned companies, which have undergone refinancing during the credit 'crunch'.

Quantifying the reduction in company failures

Table 2 below shows that, given the number of private equity companies in Europe, and the estimates from academic papers, a range of between 80 and 400 companies per year have avoided failure as a result of private equity backing. This means that, over the five years to 2012, up to 2,000 additional businesses might have failed if they were not supported by private equity investment.

Table 2. Incremental company survival due to private equity participation

Source: Portfolio company data from EVCA, company failure rate data from Eurostat, impacts from BIS (2008), Kaplan and Stromberg (2009), Thomas (2010). Note that estimates by Thomas apply to buy-out investments only.

	BIS (2008)	Kaplan and Stromberg (2009)	Thomas (2010)
Number of private equity portfolio companies	21,000	21,000	7000
Average company failure rate	7.5% (1,575 companies)	7.5% (1,575 companies)	7.5% (525 companies)
Private equity impact on company failure	5% lower	25% lower	50% lower
Estimated number of annual company failures avoided due to private equity participation	80	400	260

5.5 Private equity and employment

The question of whether private equity firms help create or reduce employment has generated considerable debate.

As set out below, the most recent evidence suggests that private equity participation can lead to more sustainable employment.

The European Commission funded VICO project³⁷ that uses both in-depth case studies and quantitative analyses, has found that private equity investments in a country are negatively correlated with the unemployment rate. Ernst & Young's study of private equity divestments, looking at 473 private equity-backed European businesses with an enterprise value in excess of €150m at the time of acquisition from 2005 onwards, reports that employment in private equity supported companies grew by an average of 2.2% per annum.³⁸

In comparison, the annual employment growth across EU27 has fluctuated between negative 1.8% and 1.8% between 2007 and 2011.³⁹

In terms of employee satisfaction, private equity participation appears to be associated with higher levels of employee satisfaction. Gospel et al. (2010) carried out qualitative analyses of private equity funds' impact on restructuring practices and employment levels in seven European countries, with in-depth case studies on 24 companies.

While they conclude that the evidence is mixed and call for further research, their evidence points to there being an emphasis on securing improvements in efficiency in working practices following private equity participation.

This is achieved, for example, through increased training. Gospel et al. also point out that "the advent of a fund does not seem to have negative effects on union recognition and membership and the dealings between funds and their workforces has overall been cooperative."

These findings are supported by survey evidence from the UK and the Netherlands. Bacon et al. (2008) use survey evidence from the UK and the Netherlands to explore the effect of buy-outs on employee relations. They find that, overall, buy-outs positively affect HR practices with increases in training, employee involvement, the number of employees and pay levels.

Amess and Wright (2007) use data from 1,350 buy-outs in the UK over the period 1999–2004, and find that while management buy-ins do not create new employment opportunities, management buy-outs tend to lead to greater employment growth.

Amess et al. (2008) use the *UK Workplace Employee Relations Survey* and find that management buy-outs lead to reducing hierarchical tiers and the number of supervisory staff, which increase employees' span of control and their discretion.

³⁷ VICO project, 2011, funded by the European Commission. <http://www.vicoproject.org/>

³⁸ Ernst&Young, 2011. *Branching out: How do private equity investors create value? A study of European exits.* Available at: [http://www.ey.com/Publication/vwLUAssets/Private-equity-creates-value-in-Europe/\\$FILE/Euro_PE_Study_2012.pdf](http://www.ey.com/Publication/vwLUAssets/Private-equity-creates-value-in-Europe/$FILE/Euro_PE_Study_2012.pdf)

³⁹ Employment growth statistics sourced from Eurostat.

Impact on employment

As set out in section 3.4 and 5.5, private equity participation tends to improve sustainability of employment.

However, the impact of private equity on employment levels is always controversial. There is substantial public debate surrounding private equity's role in the economy and how it relates to the effect private equity has on employment.

In general, a private equity investment in an established (rather than young) company would be unlikely to occur if the pre-buy-out firm was performing optimally, as there would be few performance gains to be obtained from restructuring. Given that private equity-backed companies pre-buyout have lower productivity than their counterparts, for example, productivity gains may require some job losses.

But it is important to consider the long-run impact of the industry on employment levels in the economy as a whole, and to include within this not only buy-outs but also growth and venture capital too. This is an area where further research would be useful.

5.6 Summary

This chapter has described recent available evidence of the impact of private equity on various dimensions related to market and company operating performance and productivity including increased physical investment, new business creation, company survival and employment.

6. Private equity and competitiveness

Key findings

- Available evidence shows that private equity supports the necessary pre-conditions that enable companies to internationalise effectively: the development of knowledge-based resources, increased risk appetite, promoting export behaviour, and effective resource management.
- Private equity contributes to the creation of up to 5,600 new businesses in Europe each year.

Enhancements in productivity at the investee company level – whether through innovation or other productivity improvements – further translate into economic growth through their impact on other aspects of economic performance such as on the competitiveness of economies.

Enhancing the competitiveness of an economy as whole, at a domestic and international level, is a condition for economic growth.

International competitiveness pertains to the ability of an economy to sell and supply goods in a given market in relation to other economies competing in the same market. The linkage of competitiveness and economic growth is articulated by the World Economic Forum (WEF) as the set of institutions, policies, and factors that determine the level of productivity of a country.

In this section, we explore the impact of private equity on two dimensions of competitiveness, to understand their effect on economic growth. We examine international competitiveness and the availability of funding for risky ventures.

The role of private equity investments in boosting the competitiveness of individual economies has not been studied explicitly. However, it is possible to triangulate the impact of private equity on competitiveness through two indirect measures.

Firstly, as competitiveness manifests itself in the ability to export, a positive impact on exports is consistent with international competitiveness. Secondly, following WEF's definition, the availability of financing for riskier ventures is an indicator that is commonly used as one measure of competitiveness. We discuss each of these below.

6.1 Helping firms internationalise

There is extensive academic evidence emphasising that smaller and newer firms may face problems in internationalising due to lack of human capital or funding.⁴⁰

Private equity firms can play a significant role in helping investee companies to overcome these hurdles in two key respects. Firstly, private equity firms' active participation in the management of investee companies can provide both strategic and operational guidance on entering foreign markets. Secondly, they provide additional funding for internationalisation efforts.

Given the importance of internationalisation in a globalised economy, it is perhaps surprising that limited attention has been directed towards private equity investors' role in the internationalisation efforts of portfolio companies to date. However, a selection of studies and evidence points to a number of impacts that private equity has on businesses in introducing pre-conditions that are fundamental to internationalise effectively.

In their 2008 study, Lockett et al. explore the way in which private equity firms influence portfolio companies' internationalisation efforts. Based on survey data from 340 companies across Europe that was collected in 2000–02, they find that value-added activities (such as developing new strategies, acting as a sounding board, interfacing with the investor group) are most effective in promoting export behaviour in early-stage ventures. For late-stage ventures, monitoring activities provided by private equity firms are found to be most effective in influencing internationalisation success.

Zahra et al. (2007), in a study of 384 SMEs in the US, find that private equity participation is positively associated with the development of knowledge-based resources, such as human capital assets and proprietary assets that are necessary for internationalisation.

George et al. (2005), use survey data on 889 Swedish SMEs, and find that internal owners (CEOs and other senior executives) tend to be risk averse and have a lower appetite and scope of internationalisation than external owners, such as private equity firms.

Lutz and George (2012), use in-depth case studies of 18 young European companies to explore how certain resource attributes may influence managerial strategies to internationally grow new ventures. They find that heterogeneous managerial and strategic resources provided by private equity investors are shown to positively influence the scale of internationalisation in new ventures.

Further research: impact of private equity on export performance

Economic growth in European economies depends on enhanced competitiveness which translates into improved export performance.

We do not yet know enough about the impact of private equity on the competitiveness of the economy as a whole. This could be examined more thoroughly with a detailed study comparing the export performance over time of private equity-backed firms with firms without private equity backing.

Key metrics could be the percentage of their revenue flows associated with exports to different European countries or exports outside Europe.

⁴⁰ See, for example, Westhead et al. (2001).

6.2 Availability of financing for riskier ventures

The World Economic Forum (WEF) publishes each year the Global Competitiveness Report, which ranks countries on their level of international competitiveness.

The overall index used for the ranking is obtained by aggregating several sub-indices which capture a country's competitiveness in various areas of economic performance. These range from the existence of key institutions, the nature of infrastructure, health and education services and measures of efficiency.

One of the measures that the WEF uses for assessing competitiveness is the availability of venture capital funding. This is based on the notion that increases in the availability of funding allow for new business creation. In particular, private equity funding (in the form of venture capital funding) supports companies that have risky, but innovative projects.

6.2.1 New business creation

As set out in section 4.2.2, new businesses tend to be more innovative than older businesses. These innovations, as discussed in section 3.2, are productivity enhancing.

Additionally, new businesses tend to introduce new processes and technologies that intensify competition in the market, motivating companies to make productivity improvements. Markets with reduced competition tend to be less productive, as firms have fewer incentives to cut inefficiencies and innovate.⁴¹

A substantial proportion of private equity investment in Europe (around 10% of total private equity investments in terms of value in the 12 countries covered in this study between 2007 and 2012) are venture capital investments into new or young businesses. These investments lead directly to the creation of new businesses – each year, up to 2,800 companies in the twelve countries explored in this study receive venture capital investments.⁴²

In addition, recent academic research has suggested that private equity investment leads to further new company creation through effects that go beyond the direct investment that these companies receive. For example, Samila and Sorenson (2011), looking at a panel of U.S. firms between 1993 and 2002 – from Thomson Reuters' VentureXpert database, find that investing in one additional firm stimulates the entry of between 1 to 11 new establishments in the same metropolitan area - in other words, more new firms than those actually funded.

⁴¹ For discussion, see Pilat (1996).

⁴² Based on data from EVCA Yearbook 2013.

This means that the indirect effect of venture capital on the creation of new business, at least in the US, ranges from 100% to 1100%. They attribute these effects to two main indirect impacts of venture capital investments:

- Would-be entrepreneurs anticipate the availability of venture capital and are therefore more likely to invest in their business ideas; and
- Spin-offs, or employees in incumbent firms leaving to start their own companies after having seen someone else doing it.

Other reasons which explain this effect include the following: firstly, seeing others engage in entrepreneurship encourages would-be entrepreneurs to also start firms. Secondly, prior experience in small (private equity supported) companies allows would-be entrepreneurs to acquire tacit knowledge on how to start, design and manage effective entrepreneurial ventures.

These results are corroborated by the findings of Popov and Roosenboom (2009), who used data on over three million firms across 21 European countries to examine the effect of private equity investment (specifically, venture capital investment) on new business creation. They find that private equity has a stronger positive impact on new business creation in industries where there are generally a large number of new businesses created, and that this business creation impact is even stronger in industries that are R&D intensive.

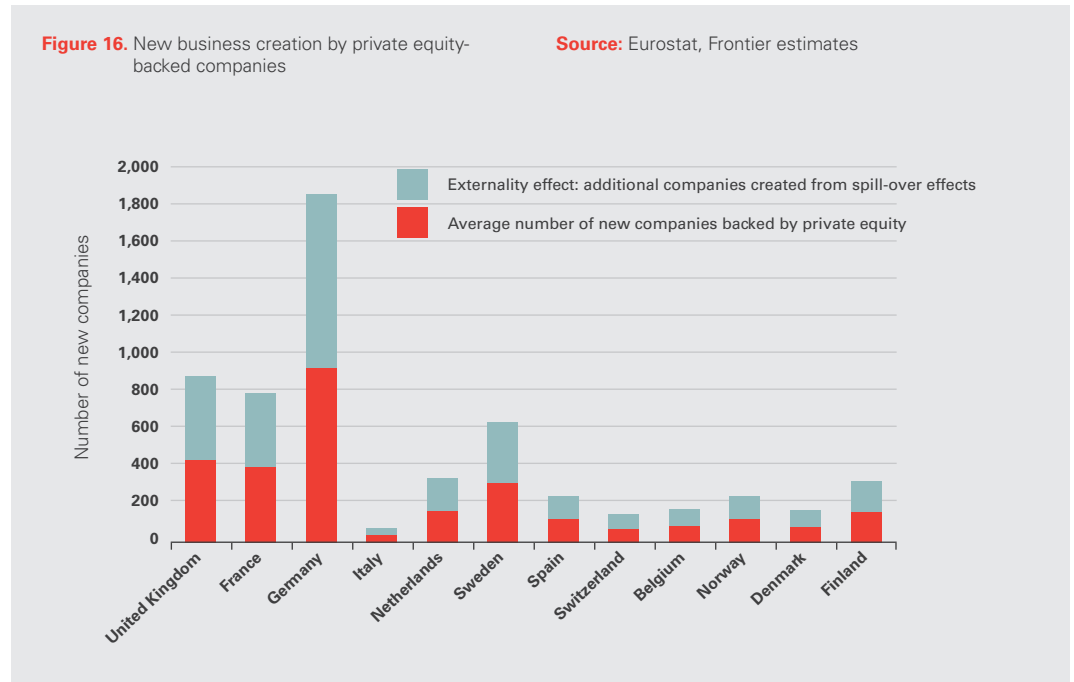
Whilst clearly in evidence, there is a significant range in terms of the spillover effect that Samila and Sorensen identify in their study, with the creation of between one and 11 new business ventures attributable to this impact, depending on the characteristics of individual US municipalities covered by their data. For the purposes of this study, we have opted to use the lower estimate.

Building on the findings that indicate private equity – through venture capital – directly supports more than 2,800 firms in Europe each year on average, and taking the lower estimate from Samila and Sorensen – combined with the fact that this same phenomenon is highlighted in other studies – we would suggest that this ‘spill over’ impact can be applied to the creation of an additional 2,800 firms each year, at a conservative estimate.⁴³

Therefore, we estimate that in total up to 5,600 firms are likely to be created as a result of private equity activity in Europe each year.

⁴³ Data sourced from EVCA Yearbook 2013.

Figure 16 below shows Samila and Sorenson’s low-end estimate of direct and indirect impacts of private equity on new business creation in different countries, with Germany seeing the highest level of new business creation as a result of private equity support.



Apart from promoting productivity, as described above, new businesses creation also has spill-over effects on the growth of associated industries. For example, each new company promotes the sales and growth of its suppliers, which in turn promotes the growth of the suppliers’ business partners.

In conclusion, existing evidence paints a useful picture of the impact of private equity on enhancing international competitiveness in two respects – internationalisation and funding risky ventures:

- Although the direct evidence exploring the impact of private equity on internationalisation and increasing export intensity is limited, strong evidence exists to demonstrate the positive impact of private equity ownership on the pre-conditions of effective internationalisation. This suggests that private equity can play a positive role in improving businesses’ ability to internationalise their operations – although more research to specifically explore this relationship is required
- The availability of evidence around the ‘spillover effect’ of private equity – and particularly venture capital investment – on funding innovative and risky ventures suggests the establishment of 5,600 new companies per year can be attributed to private equity investment.

7. Overall summary

We have combined a review of a wide range of academic and professional literature to provide the basis for an initial exploratory analysis of the links between private equity and economic growth. As a result, we have developed a unique framework which identifies activities, outcomes and impacts of private equity investment and how this affects economic growth.

In contrast to previous examinations of the economic impact of private equity, we have established the impact of private equity on three key components of economic growth: innovation, productivity and competitiveness.

7.1 Private equity and innovation

In relation to the first of these, a positive outcome of private equity activity derives from the influence that improved management has on promoting greater innovation.

Private equity firms foster innovation and successful patenting: directly, by allocating more funds to research and development for new products and processes in the investee companies, and indirectly, by supporting start-up young firms, which tend to be more innovative than the average firm. These activities lead to significant uplift in European innovation:

- Estimates show that, in some sectors, €1 of private equity finance can be up to nine times more effective in patent production than €1 of non-private equity finance on patent production.
- The patents granted to private equity-backed firms over five years to 2011 are worth up to €350bn, or twice the total amount of private equity investment during the same period.
- It is estimated that private equity-backed enterprises account for up to 12% (ca. 116,000) of total patents across 12 European countries. And it is estimated that the average economic value of a patent is €3m.

7.2 Private equity and productivity

In terms of the second key finding, the study demonstrates the extent that private equity can increase the productivity of their investee companies. Such improvements in productivity are directly associated with economic growth.

Private equity is associated with improved management and better resource utilisation, and therefore contributes to increase business productivity and thus economic growth. Improvements in productivity are directly associated with economic growth. To the extent that private equity promotes improved management, better resource utilisation and provides capital to firms allowing them to invest in physical capital, it contributes to long term economic growth.

Likewise, private equity activity can create greenfield employment by promoting the outcome of new business creation. This may be particularly the case in companies at their venture capital stage. New employment that is sustainable contributes to economic growth through standard expenditure multiplier effects. The incremental impact on productivity from private equity activities in Europe includes:

- Nearly €250bn in investments in companies in the twelve countries explored in this study in six years to 2012.
- Private equity contributes to the creation of up to 5,600 new businesses in Europe each year, which directly leads to new job creation.
- It is estimated that private equity participation leads to improved productivity (as measured by EBITDA per employee) of 6.9%, on average, in private equity funded companies.

7.3 Private equity and competitiveness

Enhancements in productivity at the investee company level can translate into increased competitiveness for the economy as a whole if it contributes to making companies more competitive at domestic and international levels. Enhanced competitiveness of the economy is a condition for economic growth.

Private equity activity can contribute to economic growth via enhanced competitiveness by making the investee companies more productive. Likewise, in open market-oriented economies, growth and trade exports go hand in hand. Private equity activity can contribute to economic growth via external trade by supporting export-oriented businesses or supporting the expansion of established local businesses into foreign markets.

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Literature review methodology

The report draws from over sixty studies published in peer-reviewed journals or working papers authored by widely published academics. We have prioritised papers with a European focus. We have selected these papers as the most comprehensive, detailed and robust available in examining the relationship between private equity and the factors of innovation, productivity and competitiveness.

Where the key evidence is from outside Europe, we have ensured that finding is supported within Europe. Additionally, the papers used in the report do not rely on outlier years, such as those during the financial crisis.

The literature was checked to determine whether each impact of private equity, as discussed in the report, was applicable to all types of private equity or only a sub-segment of private equity investments such as venture capital investment. Where the impact is only applicable to a sub-segment, this is made explicit in the report.

Each of the studies was qualified against a robust set of criteria for inclusion in our analytical framework. Each had to satisfy the following conditions:

- **Timeliness and date relevance** – the majority of studies included are not older than five years
- **Appropriate time periods** that are covered by the findings, stretching across a suitable timeframe to stretch over short-term fluctuation in economic cycles
- **Data that is representative of abroad spread of sectors and categories of business** at the company-level, drawing on
- **Research that depends on a robust and credible methodology**, and recognised as such in peer reviews as far as possible
- Data that primarily covers **European geographies**
- Findings that are predicated on **causal relationships** between private equity and the drivers of growth, rather than being a function of correlation.

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