

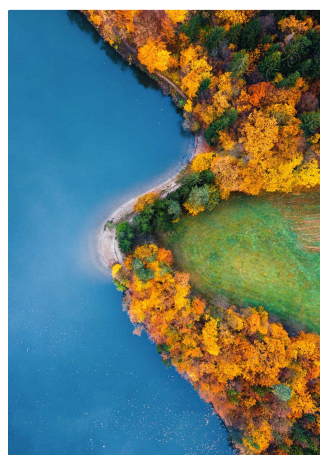
Protecting European innovation: Private equity's role in European Intellectual Property Rights

The positive relationship between private equity, venture capital
and intellectual property rights at private companies



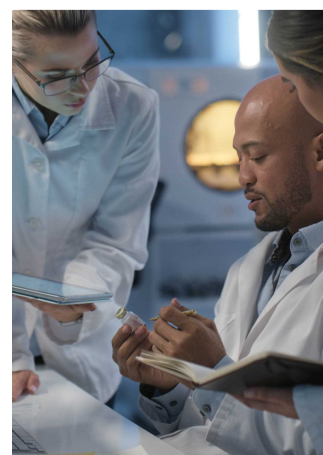
Contents

Foreword	3
Executive summary	4
Literature review	9
Data and methodology	12
IPR and financing	15
Country	16
Company sector	19
Investment stage	22
Fund stage focus	24
Results	26
IPR filings and amounts raised	27
Amounts invested and odds of IPR filings	31
Amounts invested and subsequent IPR stocks	33
Conclusion	37
References	39
Appendix	40
About Invest Europe	41
About the EUIPO	42



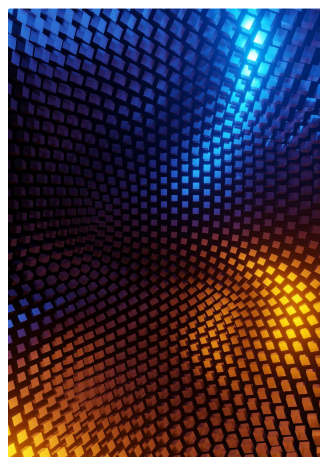
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Executive summary



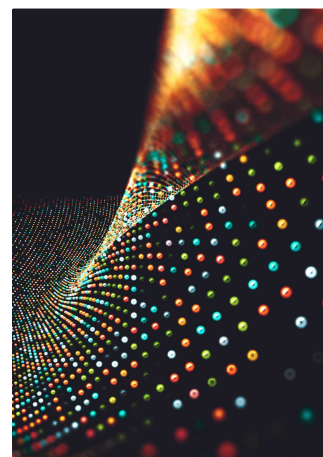
9

Literature review



15

IPR and financing



27

Results

Foreword



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€809bn

invested in companies of the European Union¹ between 2007 and the first half of 2023

Innovation lies at the heart of successful companies, and by extension is the lifeblood of growing economies. Innovation starts with creativity and bright ideas, but it also requires new products or services to be useful. They must be viable, fulfil a need, and ultimately have a commercial goal.

Intellectual property in its various forms serves both to protect innovations, ideas and creativity as well as to protect and to promote prestige and commercial goodwill, leading the innovation path that goes from ideas to products available to the public and back again, ensuring remuneration for the creators.

For centuries, Europe was the global leader in innovation, driven by a thirst for discovery. Today, many of the greatest innovations are being born and developed elsewhere. In fields including artificial intelligence, software development, quantum computing, or biotechnology, Europe is often outpaced by the U.S. and China. Yet, many of the characteristics that made Europe great in the past still exist today - world-class universities and research institutions, global businesses that are market leaders in their fields, and highly-educated people combining skills and unquenchable curiosity. What the continent needs is more investment to release its potential.

Private Equity and Venture Capital offer a key to unlock many of the challenges Europe faces. European venture capital funds actively seek out and back innovation, nurturing start-ups and financing scale-ups. They provide not only capital but also expertise, often from teams who have already tasted success. European private equity - including buyouts and growth capital - comes with the investment and tools to take companies to the next level. Firms work with management teams to enter new markets and address new customer needs, building better businesses that are more resilient and sustainable for the long term. Private equity's ability to help develop and commercialise innovation is what makes it an Ideas Factory.

Private equity's role in innovation can be measured by the relationship between investments in private companies and the creation of intellectual property rights. The registration of patents and trade marks are tangible results that demonstrate innovation and entrepreneurship in action. Patents illustrate innovative developments that have a use, while trade marks point to products and services that have a market.

This study shows the positive relationship between private equity investments and intellectual property rights in the companies that funding backs. Those markers of innovation are present in every sector - from tech and biotech to agriculture and chemicals. Moreover, they are evident in every country across the continent where private equity and venture capital firms are building better businesses.

1. European Union as of November 2024; U.K. excluded over entire period.

Executive summary

Intellectual property (IP) plays a crucial role in protecting technical, marketing, and organisational innovations. It facilitates the commercialisation of new products and services and helps consumers identify and distinguish them.

A robust IP protection strategy can enhance a company's ability to attract investors, thereby securing financial resources to further invest in innovation and its protection.

This study aims to elucidate the relationship between IP and private equity investments, focusing on how Private Equity (PE) and Venture Capital (VC) investments in Europe correlate with trade mark and patent filings of the recipient firms. Investment data is sourced from Invest Europe's comprehensive records on PE and VC across Europe, while IP data is retrieved from the EUIPO EU-TM Register and EPO's PATSTAT.

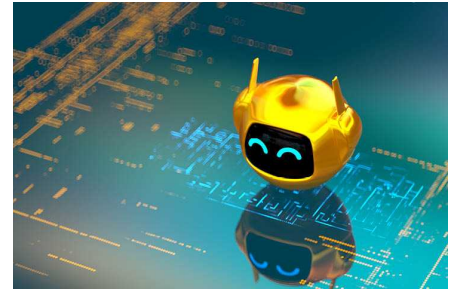
A brief word on innovation

Innovation involves not only introducing new inventions and approaches to the market but also transforming existing ones into practical products or processes with real-world utility. This process is inherently economic, aiming to recover investments and retain competitive monetary benefits. Thus, the success of innovation hinges on effective investment and the ability to secure these financial returns².

Sustaining innovation enhances a product or service to better meet the needs of existing customers and attract new ones. Leading companies pursue sustaining innovations to stay on top of the game. The result can be new patents for new product advances, as well as trade marks for new goods and services that emerge.

Disruptive innovation is when start-ups and small businesses devise and develop new products to challenge those of established companies. There is low-end disruption when start-ups claim a new segment within existing markets, and new-market disruption when they create a brand-new market untouched by the incumbents.

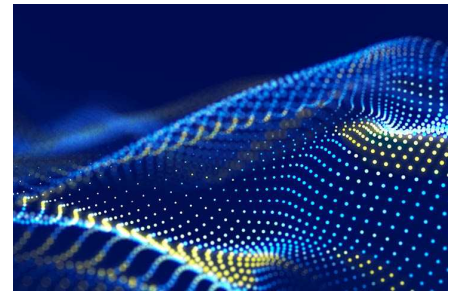
2. What is known in economics as “appropriability mechanism”.



Intellectual property

Various forms of intellectual property – such as patents, utility models, designs, copyrights, trade secrets, and plant varieties – specifically protect the inventive phase of innovation. Trade marks, certification marks, and geographical indications safeguard the marketing phase, market positioning, and product differentiation. Complex protection strategies may involve using trade marks to protect innovations, particularly non-patentable ones like services, or complementing patents post-expiration. Designs can also function as marketing signs. The most successful innovators leverage multiple forms of IP to protect and capitalise on their innovations (EUIPO, 2019).

The significance of a trade mark is multifaceted. Firstly, it contributes to the recognisability of the company. A strong trade mark helps consumers recognise and remember a company's products or services, which is crucial in a competitive market. Secondly, it creates an emotional connection with customers, who are more likely to choose a trade mark they trust. Thirdly, it adds value to the company. In all cases, IP protection helps secure investments in associated products and services and maintain competitive advantage, highlighting its symbiotic relationship with investment.



Private Equity and Venture Capital investments

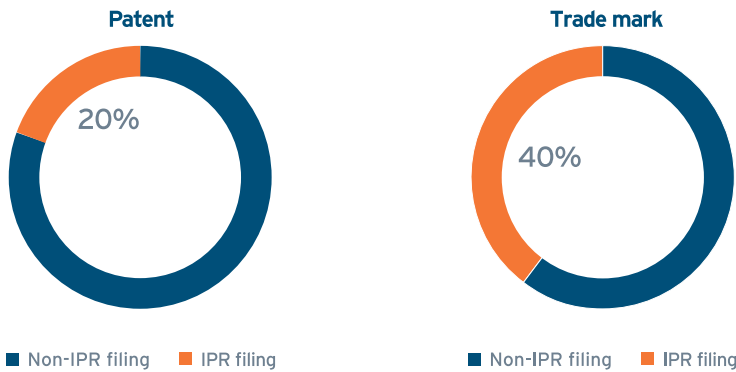
Between 2007 and the first half of 2023, the European private equity and venture capital industry invested €809 billion in 56,042 companies of the European Union³. Of this, 20% went to companies with existing patents, 40% to those with trade marks, and 15% to firms with both forms of IP protection.

3. European Union as of November 2024; U.K. excluded over entire period.

 €809bn

invested in companies of the European Union³ between 2007 and the first half of 2023

Figure 1: Distribution of amounts invested in IPR filing companies vs Non-IPR filing companies



 €156.5bn

invested in patents IPR-filing companies

 €319.5bn

invested in trade marks by IPR-filing companies

Note: Total investment is €809 billion in EU27 companies in the sample between 2007 and the first half of 2023. The chart above represents the amounts invested in companies with patents and trade marks filed vs. companies with none filed.

The relationship between Private Equity investment and Intellectual Property

The EPO/EUIPO (2023) found that startups with patent or trade mark activity are more likely to obtain PE or VC financing than those without IPR protection. This study adds evidence of a symbiotic relationship between investment amounts and the registration of intellectual property rights in firms receiving PE or VC financing.

Intellectual Property right portfolio before investment

Companies with pre-existing trade marks received significantly higher investments: 55% more at the venture stage, 45% at the growth stage, and 68% at the buyout stage.

Variations in funds raised from companies with previous trade marks, in different stages of development.

+55%

Venture

+45%

Growth

+68%

Buyout

Firms with patents also received higher investments, particularly at the buyout stage.

A 10% increase in the trade mark stock correlates with a 3.4% increase in finance raised.



Intellectual Property right portfolio after investment

PE and VC financing also helps firms secure IP protection for their innovations. Firms receiving higher investments are more likely to expand their IPR portfolio, with a 100% increase in investment potentially increasing the odds of subsequent patent or trade mark filings by approximately 10%, after controlling for previous IPR activity.

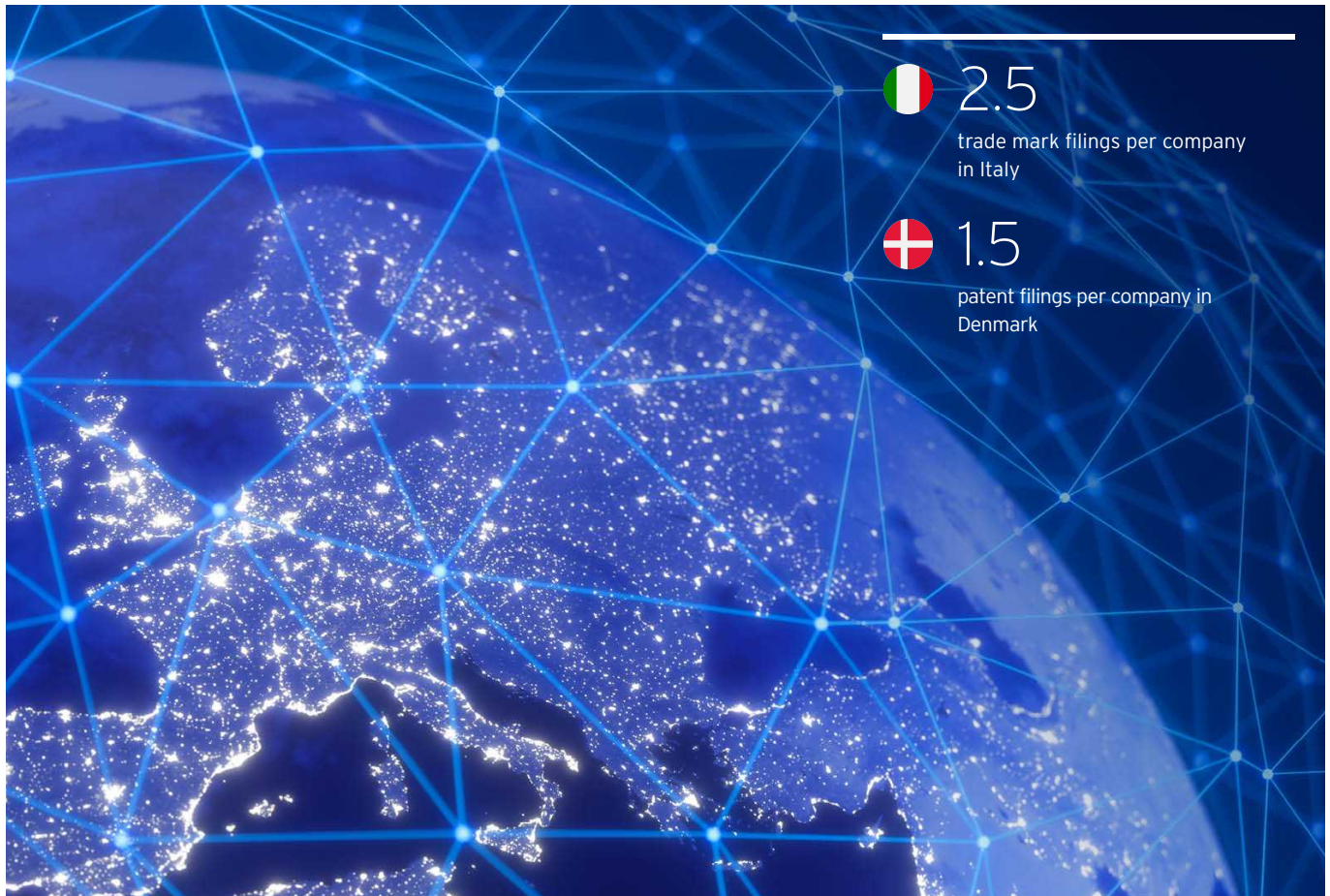
Evidence supports a correlation between IPR portfolios and obtaining PE and VC funding, both before and after investment. The type of IPR and the development stage influence this relationship. The study's findings and available data allow for future expansion, addressing methodological limitations, and achieving greater precision in conclusions.

Intellectual Property filings across Europe

Intellectual property rights are recognised and protected across the EU27. France and Germany have the highest number of companies with intellectual property filings, reflecting the scale of their private equity and venture capital ecosystems. But size is not everything. Countries from Austria and Slovakia to Estonia and Finland show dynamism in creating and protecting their innovations.

Italy averaged 2.5 trade mark filings per company, highlighting a strong culture of brand protection. Denmark averaged over 1.5 patent filings per company, showcasing its research and development prowess.

For more information, see section [Literature review](#)



Intellectual Property power in every sector

In every sector in which private equity and venture capital invests, companies protect their intellectual property with patents and trade marks. Information and Communication Technologies (ICT) has a high proportion of companies with trade mark filings, but fewer patents, showing how private equity and venture capital backed companies use brand names to protect software and other technology. Meanwhile, in the agriculture sector, companies averaged more than one trade mark filing, reflecting the importance of protecting intangible value even in the most traditional of industries.

Biotech and Healthcare have in excess of 2 patent filings per company, demonstrating the high levels of discovery taking place at companies at the leading edge of life saving and enhancing treatments.

Consumer goods averaged over 1.5 trade mark filings per company, reflecting the power and value in the brands that Europeans consume every day.

For more information, see section [Literature review](#)

ICT

1



Trade mark filing
per company



Biotech and Healthcare

2



patent filings per
company



Consumer Goods

1.5



Trade mark filing
per company



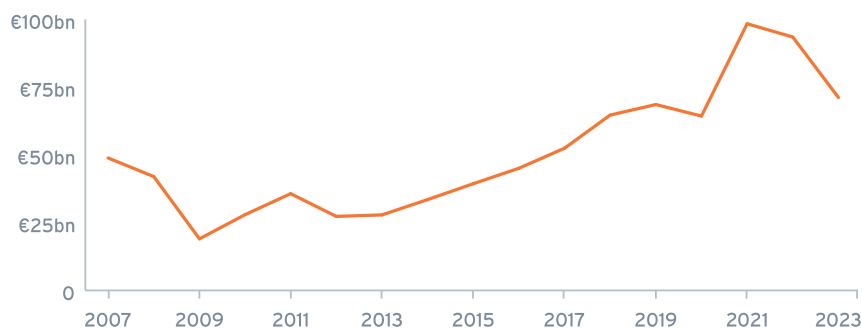
Literature review

The relationship between private equity and venture capital financing and intellectual property rights (IPRs) in European companies is a crucial area of research, given its significant implications for innovation, economic growth, and the green and digital transitions.

This review synthesises findings from various studies that explore how private equity and venture capital investments influence IPR activities, particularly patents and trade marks, in European private companies.

This study builds on the findings of the EUIPO/EPO (2023) study, “Patents, Trade Marks, and Startup Finance,” which analysed the role of intellectual property rights (IPRs), specifically patents and trade marks, in facilitating access to finance for European startups. The EUIPO/EPO study explored the links between IPR filings by startups and their success in raising venture capital (VC), as well as the signalling power of patents and trade marks as predictors of successful exit strategies for investors.

Figure 2: Private Equity and Venture Capital Euros invested in EU27 companies, 2007-2023



Note: Private Equity and Venture Capital investments in EU27 companies between 2007 and 2023. The chart above exhibits Invest Europe's latest data, which differs from that used in this study.



€859bn

invested by Private Equity and Venture Capital in EU27 companies between 2007 and 2023

The growing role of Private Equity in European economic growth

As companies grow, their need for financing often increases, met by private equity and venture capital firms. The expansion of private equity in Europe has been notable (see: Figure 2; Invest Europe, 2024), particularly in enhancing productivity and economic growth. Raposo and Lehmann (2019) highlighted the growing role of private equity in European capital markets, emphasising its impact on corporate governance reforms and operational efficiencies. Batrancea et al. (2022) stressed that access to private equity is vital for small and medium-sized enterprises (SMEs), which constitute a significant portion of the European economy.

Their study underscored that private equity, along with other financial supports, is instrumental in driving economic growth across the EU. Berezinets et al. (2022) found that the presence of private equity investors positively impacts the financial performance of target companies, especially those that are financially distressed, by improving their market stability and growth prospects. Startups with intellectual property rights (patents and trade marks) show better survival rates as these factors provide financial stability and market protection (Cegiełka, 2020).

The impact of Intellectual Property on venture capital access

Startups often seek venture capital to secure the initial funds needed for growth. Securing IP rights transforms intellectual property into valuable assets, signalling high quality to investors, thereby facilitating access to VC. Previous literature indicates a positive effect of trade mark and patent applications on VC access. Engel et al. (2007) found that VC-backed companies have a higher number of patent applications than non-VC-backed companies. Furthermore, these applications are typically filed before VC investment, demonstrating that investors prefer companies with a history of innovative output; post-investment, the number of patent applications does not significantly differ. Block et al. (2014) identified a positive relationship between the presence and number of trade marks and VC valuation, suggesting an inverted U-shaped relationship where the value of trade mark applications decreases in later funding rounds. Zhou et al. (2016) further examined the role of IP rights in VC funding, finding that startups with both patents and trade marks secure higher funding amounts, especially in early VC rounds.



The influence of Private Equity on innovation and governance

Amess, Stiebale, and Wright (2020) suggested that private equity investment leads to an increase in both the number and quality of patents, indicating that such investments can positively influence innovative activities within companies. Li et al. (2014) argued that private equity investments lead to clearer property rights, standardised incentive systems, and improved decision-making mechanisms, which are essential for enhancing the financial performance and governance of the investee companies. In the context of leveraged buyouts (LBOs), Amess, Stiebale, and Wright (2016) found a positive causal effect of LBOs on patent stock and quality-adjusted patent stock. Lerner, Sorensen, and Stromberg (2011) found no evidence that LBOs were associated with a decrease in innovation activities.

Strategic importance of intellectual property rights

The strategic importance of intellectual property rights was explored by Orsi and Coriat (2006), who discussed the evolving role of IPRs, particularly patents and trade marks, in the knowledge economy. They argue that IPRs have become critical assets that enhance corporate value and offer competitive advantages. Gill and Heller (2019) support this view, demonstrating that companies with substantial patent portfolios can use these assets as collateral to ease debt financing restrictions. Their research shows that larger and more valuable patent stocks lead to higher debt ratios, particularly in tech-oriented and research-intensive companies, underscoring the financial capacity that robust IPR portfolios provide to innovative companies. IPRs, particularly patents and trade marks, enhance a company's ability to attract venture capital, improve survival rates, and facilitate higher funding amounts. Private equity investments further bolster innovation, corporate governance, and financial performance, in all stages of the company's life. The synergy between private equity and intellectual property rights plays a critical role in driving economic growth and corporate success in Europe.



Data and methodology

The purpose of this study is to investigate the relationship between the filing of IP rights by European private capital backed companies and the investment activities of the funds that finance them.

To this end, data on patent and trade mark applications are combined with data on private equity and venture capital funds at the European level. The relationship between IPR and private equity and venture capital financing is explored through econometric analysis. This section explains and describes the data sources and the methodology used.



EUIPO data

European Union trade mark (EUTM) data from the EUIPO and patent data from PATSTAT were used.

Only applicants from the European Union were selected since the matching algorithms used is optimised for them. Due to lack of detailed data on applicants, IPRs applied for in national IP offices are not part of the final dataset.

Thus, the data from Invest Europe, the EUIPO and the EPO were matched by an algorithm developed for years by the different economic studies of the EUIPO, which uses the name of the firm and the country of its address, with standardised names and legal forms. This algorithm is able to find a maximum of matches with a very low number of false negatives. Later, part of the data was manually reviewed.

The information provided is the application for each of the EUTM and European patent applications.

In total, 18,786 companies were identified, with 57,918 EUTMs, and 80,465 European patents, which represents an important sample of data.

 18,786
firms identified

 57,918
EUTMs

 80,465
European patents

Invest Europe (EDC) data

Invest Europe, in collaboration with its national association partners, collects data pertaining to the private equity and venture capital industries across Europe. This data is collected through the European Data Cooperative (EDC), which is the most comprehensive database of European private equity and venture capital statistics. The EDC serves as a single data entry point for members of private equity and venture capital associations and other contributors across the continent, including entities associated with Invest Europe and the national associations.

The data encompasses a range of information, including data on fundraising, investments, and divestments, as well as on economic impact and Environmental, Social and Governance (ESG). Audit efforts are conducted in close coordination with data contributors and partnering national associations with the objective of ensuring the best coverage and consistent application of methodology. Invest Europe processes all available information at the time of the data collection cut-off to produce its annual statistics. Data collection is conducted throughout the year, contingent upon the schedule of Invest Europe's publications. The primary activity statistics are gathered from November until mid-March, with auditing occurring prior to the publication in May. For the purposes of this study, audited data from 2007 to the first half of 2023 was used.



Methodology

Matching

To develop a comprehensive database, a matching exercise was conducted between the dataset of the EUIPO, PATSTAT and Invest Europe in two stages. First, all reporting profiles included in the EDC platform were matched with the IPR dataset from EUIPO and PATSTAT (see [Appendix](#)). Second, this matched dataset was integrated with Invest Europe's investment data. The main variables used from the investment dataset for this study include the year of investment, the sector in which the investment was made, the fund stage focus, and the investment stage.

The resulting database exhibits the full Invest Europe investment database between 2007 and H1 2023, and comprises observations of IPR activity of 56,042 portfolio companies before and after each round of investment by the private equity and venture capital funds, and 103,131 filings between patents and trade marks. The key variables of interest in this study are the portfolio company's records of patent and trade mark applications before and after the investment round, identified by the quarter of the year in which the investment took place, and the amounts invested by the funds during the quarter.

To understand how the relationship between private equity and venture capital investing and IPR activity is shaped, the database was also broken down by the investment stages of the company, resulting in chunks made of venture capital⁴, growth, and buyout companies.

Models

The resulting database contains information not only about the number of IPR applications filed by the portfolio company before and after each round of investment but also about the amounts invested by the respective private equity and venture capital funds in each period. Linear regression models and logit regression models are run to investigate the relationship between investment amounts deployed by private equity funds and the IPR activity of the backed portfolio companies. Logarithmic transformations⁵ were performed to normalise some data and improve the model fit. Consequently, the coefficients of the linear regression models are interpreted as elasticities and semi-elasticities⁶, reflecting the effects of percentage changes rather than unit changes.

Control variables

Several control variables were considered, including the sector in which the company operates, the country where it is based, and its current stage of investment.



56,042

portfolio companies



103,131

filings between patents and trade marks

4. The Venture sub-database is comprised of the following investment stages: Seed, Start-up, and Later Stage Venture.

5. A logarithmic transformation involves applying the natural logarithm to each data point. This transformation is used to normalise data, making skewed distributions more symmetric.

6. Elasticity measures the percentage change in the dependent variable resulting from a one percent change in an independent variable. For example, if a coefficient is 0.5, a 10% increase in the independent variable is associated with a 5% increase in the dependent variable. Semi-elasticities occur in the case of a dummy variable and it measures the percentage change in the dependent variable when the dummy independent variable occurs. For example, if a coefficient is 0.1, the occurrence of an independent dummy variable corresponds to a 10% change in the dependent variable.

IPR and financing

This section presents statistics on the filing of European companies' Intellectual Property Rights (IPR) applications, along with investment-related characteristics of the portfolio companies represented in the study.

In the entire sample, 27% of companies applied for a patent or a trade mark at some point, with 23% having filed trade mark applications, 11% having filed patent applications, and 7% having filed both patent and trade mark applications.

Country	16
Company sector	19
Investment stage	22
Fund stage focus	24

Country

Italian companies led on trade mark applications with an average of over 2.5 filings per company. That indicates a strong culture of brand protection.

Danish companies led on patent applications with an average of over 1.5 filings per company. That indicates a strong focus on research and technological development.

Figure 3 presents the distribution of patents and trade marks filed across countries. Variations are significant across European countries. Companies based in Italy, Denmark, and Finland were more likely than average to have such applications.



Key statistics



15%

of Italian PE/VC backed companies have filed for at least 1 patent and 1 trade mark between 2007 and the first half of 2023



22%

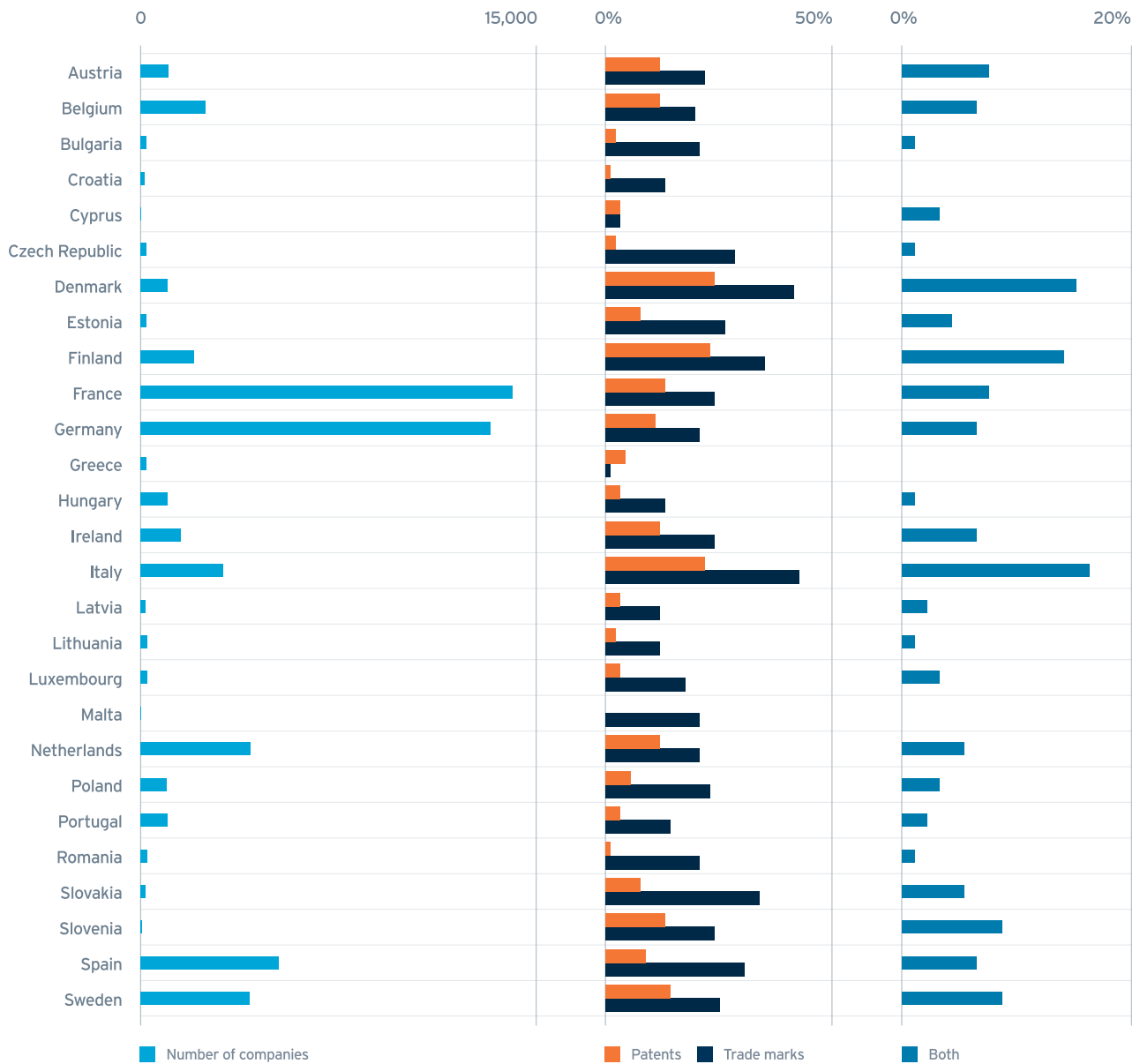
of Danish PE/VC backed companies have filed for at least 1 patent between 2007 and the first half of 2023



32%

of Finnish PE/VC backed companies have filed for at least 1 trade mark between 2007 and the first half of 2023

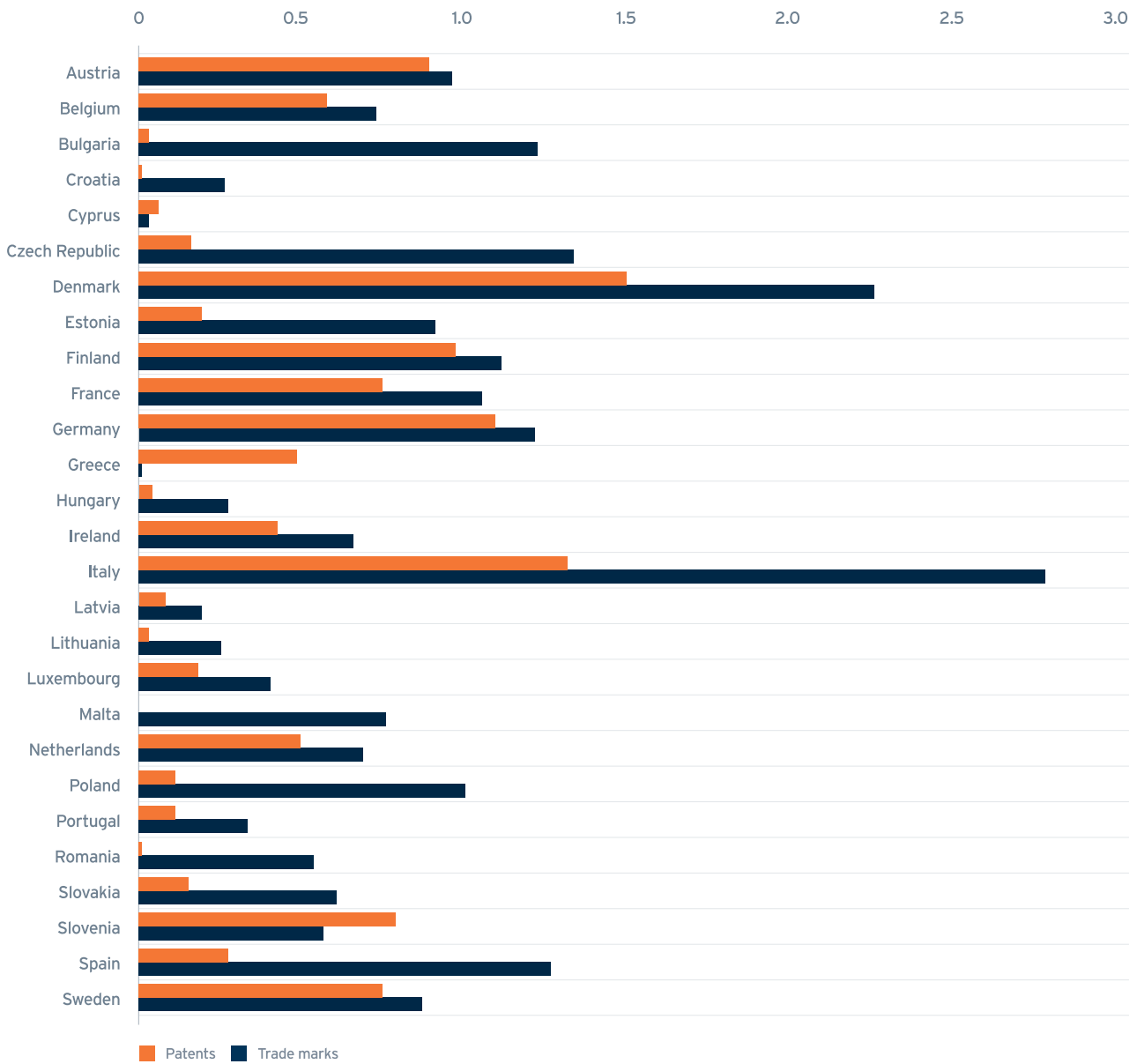
Figure 3: Number of companies and share of companies filing for IP rights, by country



Note: Total number of EU27 companies in the sample is 56,042 between 2007 and the first half of 2023. The chart above represents the number of companies filing for IP rights per country, and then the share of companies having at least one patent filing, trade mark filing, or both.

As evidenced in Figure 4, Italy led both in trade mark filings, with companies averaging over 2.5 applications per company, and in holding both patents and trade marks, suggesting a strong brand protection culture. Denmark led in patent filings, with companies averaging almost 1.5 applications per company, indicating a robust emphasis on innovation and technological advancement.

Figure 4: Average IPR filings per company, by country



Note: Total number of EU27 companies in the sample is 56,042 between 2007 and the first half of 2023. The chart above represents the average number of IPR filings per company, by country.

Company sector

Biotech and Healthcare is the leading sector for both patents and trade marks. European biotech and pharma groups are developing and patenting ground-breaking treatments for serious illnesses and conditions. Some of those can become trade-marked drugs and products that can save lives, or improve the quality of life of millions of people around the world.



Consumer Goods and Services businesses have on average over 1.5 trade marks per company, the highest level of any sector. That illustrates the importance of strong and recognisable trade marks to consumers, and the value of protecting those trade marks for their respective owning companies. The sectoral distribution outlined in Figure 5 reveals that Information and Communication Technology (ICT), Business Products and Services, and Consumer Goods and Services had the highest number of companies in the sample. Biotech and Healthcare led in terms of companies filing for IPRs, both patents and trade marks. This sector also showed the highest percentage of companies filing for both types of IPRs.

While ICT has a high percentage of trade mark filings, it has relatively fewer patent filings. This trend reflects the uncertainty over whether software is eligible for patenting under the European Patent Convention (EPC), which excludes "programs for computers" from patentable inventions (Article 52) and sets a high bar for proving the inventive step necessary for patenting software (Article 56). Unlike the USPTO, the EPC allows patenting of software only when it is embedded in a device, resulting in the patenting of the device itself, such as a smart module for a fridge, rather than the software alone. Consequently, ICT companies focus more on brand protection through trade marks while relying on copyright (CR) for software protection.

Key statistics



28%

of biotech PE/VC backed companies have filed for at least 1 patent between 2007 and the first half of 2023



27%

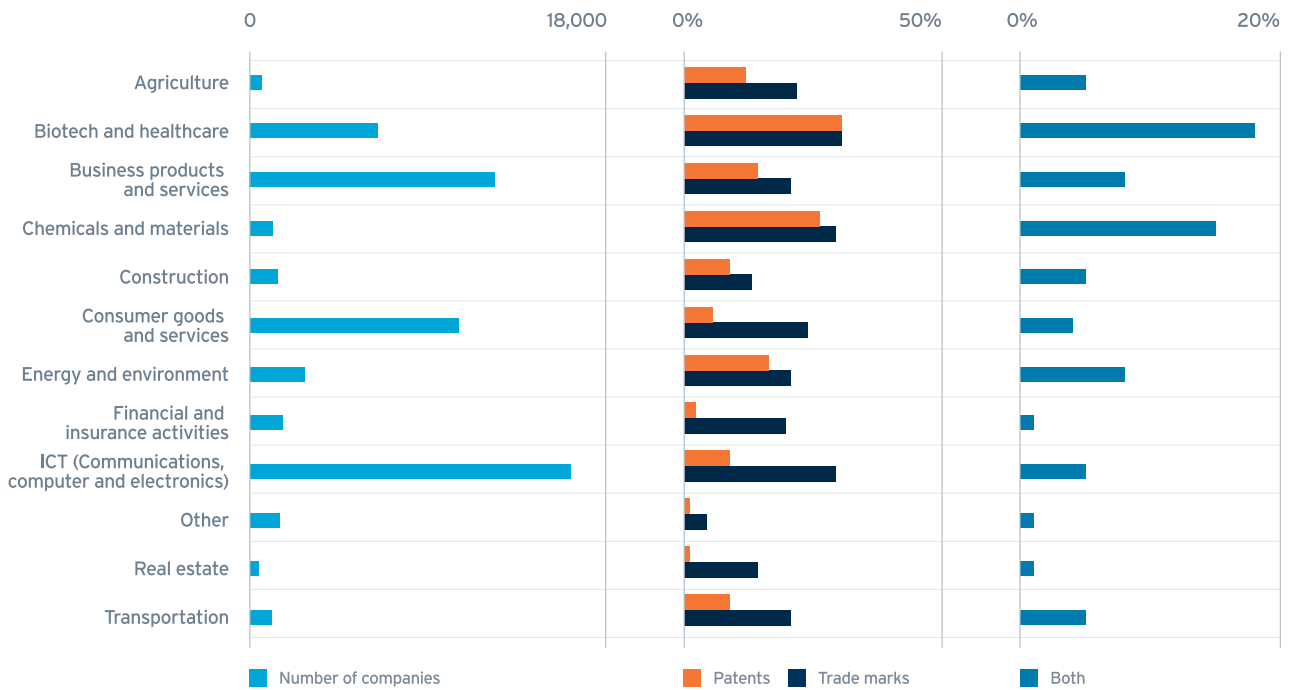
of ICT PE/VC backed companies have filed for at least 1 trade mark between 2007 and the first half of 2023



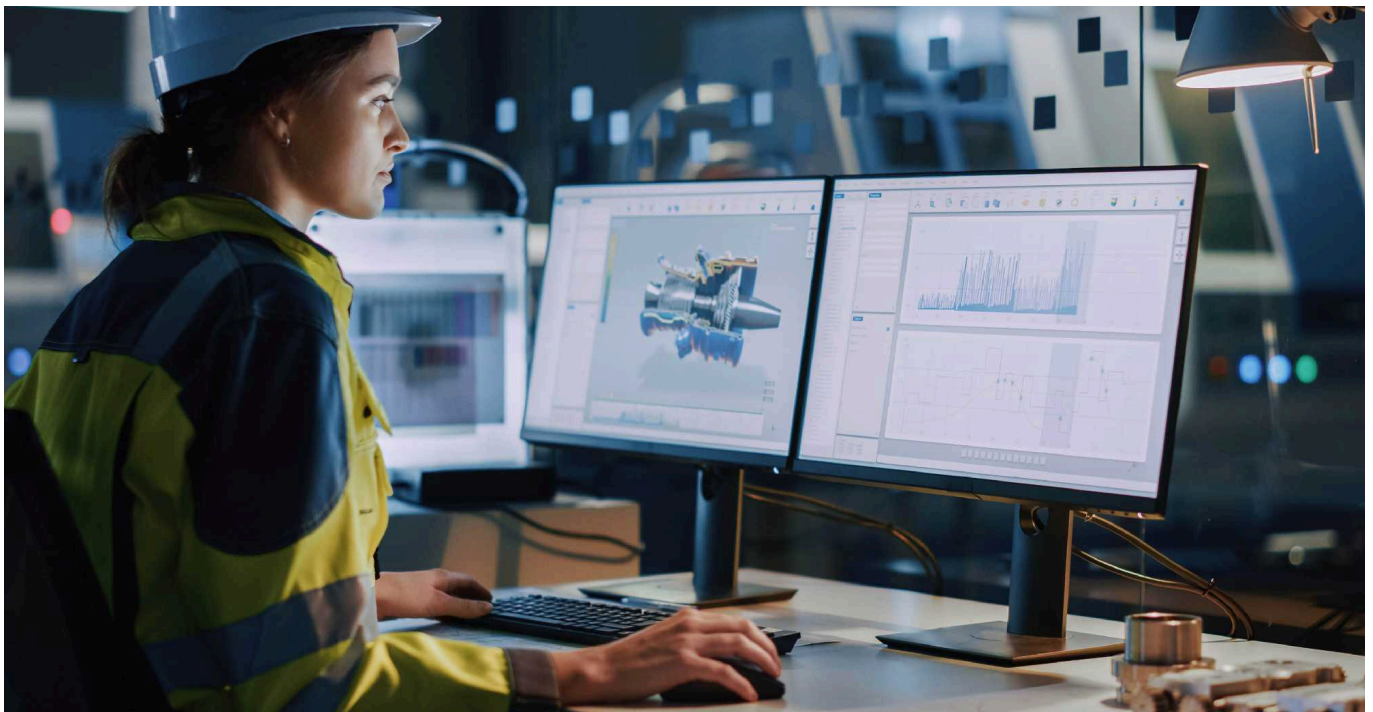
1.65

trade mark applications for the average PE/VC backed consumer goods and services company between 2007 and the first half of 2023

Figure 5: Number of companies and share of companies filing for IP rights, by company sector

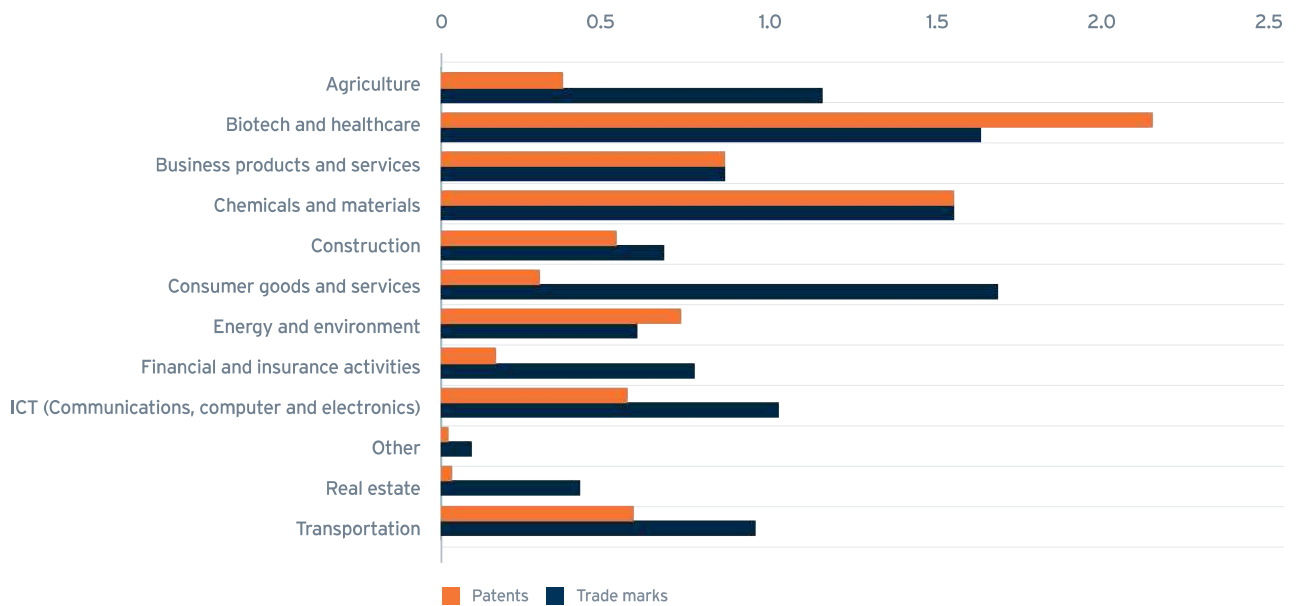


Note: Total number of EU27 companies in the sample is 56,042 between 2007 and the first half of 2023. The chart above represents the number of companies filing for IP rights per company sector, and then the share of companies having at least one patent filing, trade mark filing, or both.



As represented in Figure 6, the Biotech and Healthcare sector leads in terms of number of patents per company, followed by Chemicals and Materials. The Consumer Goods and Services sector led in terms of trade marks per company, followed by Biotech and Healthcare, and Chemicals and Materials. Interestingly, although not particularly intense in terms of patenting activity, the Agriculture sector exhibited, on average, more than one trade mark filing per company.

Figure 6: Average IPR filings per company, by company sector



Note: Total number of EU27 companies in the sample is 56,042 between 2007 and the first half of 2023. The chart above represents the average number of IPR filings per company, by company sector.



Investment stage

It takes just one bright idea to start a business. Seed stage companies have the highest number of patent filings, illustrating their crucial role in the transition to bigger and better things.

Buyout stage companies are hotbeds of innovation, always on the look-out for new ideas and products that can connect with both existing and new customers. Their scale makes them creative engines and ideas factories, developing new products and services, whose brands and logos can be trade marked.

Figure 7 shows the companies having filed for intellectual property rights, split by their investment stage. The distribution is homogenously distributed across all investment stages, with the seed stage exhibiting the highest percentage of companies filing for patents, and the buyout stage having the highest percentage of companies filing for trade marks. Interestingly, the replacement capital stage showed the highest percentage of companies having filed for at least one patent and one trade mark. Investors targeting replacement capital and buyout stages may find substantial opportunities in companies with comprehensive IPR strategies, indicating strong potential for business growth and market expansion.



Key statistics



14%

seed stage PE/VC-backed companies have filed for at least 1 patent between 2007 and the first half of 2023



26%

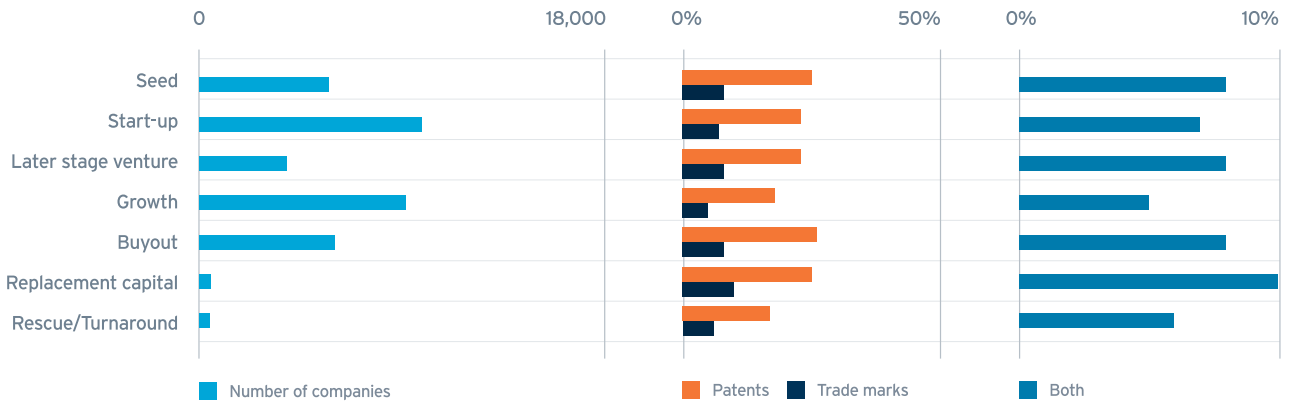
buyout stage PE/VC-backed companies have filed for at least 1 trade mark between 2007 and the first half of 2023



2.95

trade mark applications for the average PE/VC-backed replacement capital stage company between 2007 and the first half of 2023

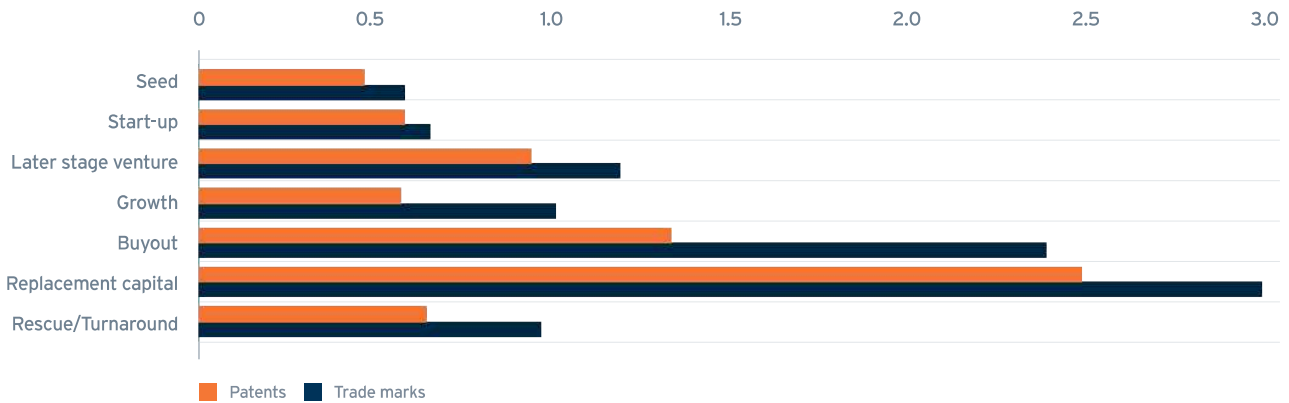
Figure 7: Number of companies and Share of companies filing for IP rights, by investment stage



Note: Total number of EU27 companies in the sample is 56,042 between 2007 and the first half of 2023. The chart above represents the number of companies filing for IP rights per investment stage, and then the share of companies having at least one patent filing, trade mark filing, or both.

As represented in Figure 8, replacement capital and buyout are the investment stages with companies having the highest number of filings both in terms of patents and trade marks. This difference in IPR activity across investment stages may be related to the age of the companies; later stages of investment typically target more mature firms that have more developed products and a more mature IPR strategy, resulting in a higher number of IPRs overall.

Figure 8: Average IPR filings per company, by investment stage



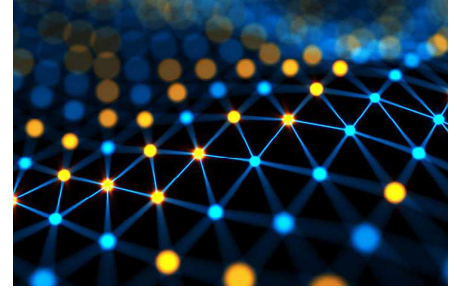
Note: Total number of EU27 companies in the sample is 56,042 between 2007 and the first half of 2023. The chart above represents the average number of IPR filings per company, by the investment stage of the company.

Fund stage focus

Rescue and turnaround funds hunt for signs of potential in struggling companies. Patents and trade marks can represent unrecognised value that can be developed into something bigger and better.

Figure 9 takes the perspective of Private Equity funds, showing the amounts invested to companies having filed for intellectual property rights, split by the stage focus of the fund providing the most capital to each company in each quarter. Buyout-focused funds lead with almost €500 billion invested in EU27 companies from 2007 to the first half of 2023.

The European private equity and venture capital industry invested 20% of its capital in companies with patents, 40% in companies with trade marks, and 15% in companies with both types of IPRs. Rescue/Turnaround-focused funds invested the highest percentage of their funds in companies filing for patents and trade marks, showing how these IPRs can signal valuable turnaround opportunities that can be developed for company recovery and growth.

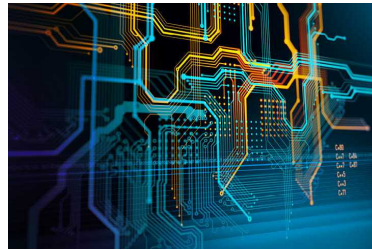


Key statistics



€500bn

invested in EU27 companies from 2007 to the first half of 2023 by Buyout-focused funds



20%

of the capital invested in companies with patents

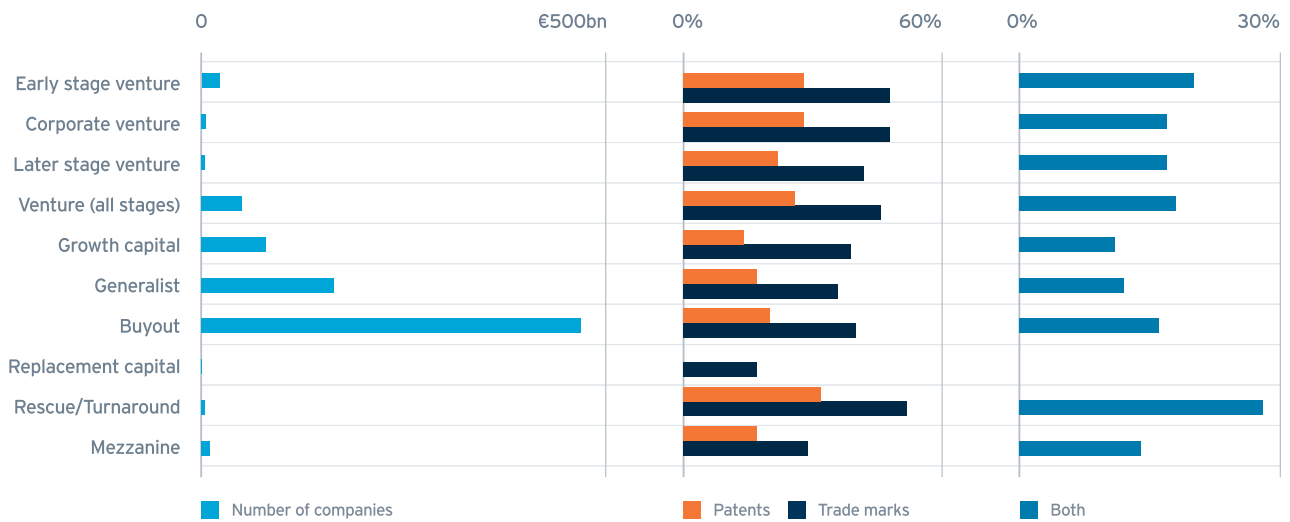


40%

of the capital invested in companies with trade marks



Figure 9: Amounts invested and Share of amounts invested in companies filing for IP rights, by Fund stage focus providing the highest amount in the quarter



Note: Total investment is EUR 809 billion on EU27 companies in the sample between 2007 and the first half of 2023. The chart above represents the amounts invested according to the fund stage focus providing the highest amounts over the quarter, and then the share of amounts invested to companies having at least one patent filing, trade mark filing, or both.

Results

This section examines how private equity and venture capital investment activities impact the IPR profiles of portfolio companies, as demonstrated by their patent and trade mark application filings.

This section is structured as follows. The 'IPR filings and amounts raised' section examines how IPR activities influence the funding raised by portfolio companies. The 'Amounts invested and odds of IPR filings' and 'Amounts invested and subsequent IPR stocks' sections reverse the perspective, examining the relationship between private equity and venture capital fund investments and the subsequent Intellectual Property Rights (IPR) activities of the companies they support. Specifically, the 'Amounts invested and odds of IPR filings' section assesses the likelihood of these companies engaging in such activities, while the 'Amounts invested and subsequent IPR stocks' section explores the scale of IPR activities resulting from investments.

IPR filings and amounts raised	27
Amounts invested and odds of IPR filings	31
Amounts invested and subsequent IPR stocks	33

IPR filings and amounts raised

There is a virtuous cycle between private equity and venture capital investment and the creation of intellectual property rights. Companies that have patents and trade marks often raise more funding from private equity and venture capital. And higher levels of private equity and venture capital investment can lead to higher numbers of new patents and trade marks.

Companies that develop and protect patents and trade marks early on are more likely to continue to create patents and trade marks. They understand that protecting their innovations also means protecting their businesses.

Table 1 quantifies the relationship between pre-funding trade marking and patenting activity, and the subsequent amounts received from private equity and venture capital firms, expressed as the result of the log-log linear model seeing amount invested by funds (in thousands of euros) as the dependent variable. The key independent variables of interest were the logarithm of pre-funding trade marking activity ('Previous trade mark stock (logged)') and the logarithm of pre-funding patenting activity ('Previous patent stock (logged)'). Control variables are related to investment stage (i.e. the life stage of the company), company sector, and country of applicant origin to isolate the effect of IP activity on funding amounts.

When interpreting those models, it is worth emphasising that only firms that received any private equity or venture capital investment are included in the sample. As shown in previous EUIPO/EPO report (EUIPO/EPO, 2023), prior IPR activity significantly increases startups' odds of receiving venture capital funding. Here, the focus is rather on examining the relationship between previous IPR activity and amount invested by private equity and venture capital, conditional on having received such investment previously.

The coefficients prove to be positive and statistically significant at the 1% level. Trade mark activity before funding indicates that a 10% increase in the pre-funding trade mark activity is associated with a 3.41% increase in the funding amount, holding other variables constant. Patenting activity before funding suggests that a 10% increase in the pre-funding patent activity corresponds to a 0.64% increase in the funding amount, all else being equal. Though the impact is smaller than that of trade marking, patenting activity still plays an important role in predicting funding.

These models underscore the importance for firms seeking funding to focus on building strong IP portfolios, as such activities may signal value and innovation potential to potential investors, thereby attracting larger amounts of funding.

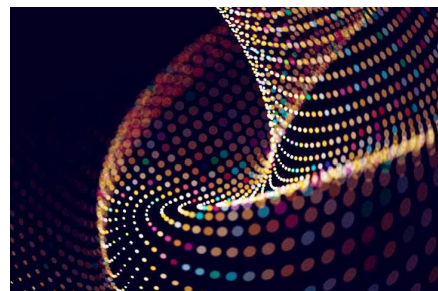


Table 1

Summary of Linear Models

		Dependent variable: Amounts invested (logged)
Previous trade mark stock (logged)		0.341***
		(0.010)
Previous patent stock (logged)		0.064***
		(0.010)
<i>Controls: company sector and country</i>		
Observations		115,086
R ²		0.930
Adjusted R ²		0.930
Residual Std. Error		1.781 (df = 115040)
F Statistic		33,410.530*** (df = 46; 115040)

Note: *p**p***p<0.01

An additional step was taken by exploring log-linear models having amounts invested by private equity and venture capital funds (in thousands of euros) as the dependent variable, and boolean values of trade marking and patenting activity before investment. Table 1.1 presents the results.

Table 1.1

Summary of Linear Models, dummies

		Dependent variable: Amounts invested (logged)
Previous trade mark (dummy)		0.472***
		(0.014)
Previous patent (dummy)		0.002
		(0.016)
<i>Controls: company sector and country</i>		
Observations		115,086
R ²		0.930
Adjusted R ²		0.930
Residual Std. Error		1.783 (df = 115040)
F Statistic		33,321.080*** (df = 46; 115040)

To interpret the coefficients, we use the algebraic properties of the exponential and logarithmic functions, allowing a better estimate of the percentage change in our dependent variable (in thousands of euros) consequential to a unit change as:

$$\% \Delta y = 100[e^{\beta} - 1]$$

The coefficient for trade mark activity before investment is associated with approximately $e^{0.472} - 1 \approx 60.3\%$, while the coefficient for patenting activity before investment resulted to be not significant, indicating a non-meaningful impact of this IP right on the amounts invested by private equity and venture capital funds.

Another step was taken by breaking the sample and analysing the same models over three investment stages: venture, growth, and buyout. The results are presented in Table 1.2.

Venture investment encompasses three stages: (i) seed, where companies have not yet started mass production or distribution and are focused on completing research, product definition, or design, including market tests and prototype creation; (ii) start-up, where the product or service is fully developed, and the goal is to begin mass production or distribution and cover initial marketing efforts. These companies may still be in the process of being set up or have been in business for a short time but have not yet sold their product commercially; (iii) later stage venture, involving operating companies that may or may not be profitable and are likely already financed by venture capitalists. Growth capital refers to relatively mature companies seeking primary capital to expand and improve operations or enter new markets to accelerate business growth. Buyout is the stage involving mature companies where investments typically involve purchasing majority or controlling stakes.

Table 1.2

Summary of Linear Models, dummies

	AmountInvested_000EUR_log		
	Venture stage	Growth stage	Buyout stage
Previous trade mark (dummy)	0.441***	0.371***	0.520***
	(0.015)	(0.029)	(0.045)
Previous patent (dummy)	0.012	-0.228***	0.258***
	(0.018)	(0.038)	(0.060)
<i>Controls: company sector and country</i>			
Observations	65,703	30,362	16,134
R ²	0.932	0.928	0.942
Adjusted R ²	0.931	0.928	0.942
Residual Std. Error	1.563 (df = 65661)	1.873 (df = 30322)	2.131 (df = 16094)
F Statistic	21,273.300*** (df = 42; 65661)	9,793.289*** (df = 40; 30322)	6,511.728*** (df = 40; 16094)

Note: ***p<0.01

For companies in the venture stage, the coefficient for trade mark activity before investment was 0.441, significant at the 1% level. This indicates that having trade mark activity before investment is associated with approximately $e^{0.441}-1 \approx 55.4\%$ higher investment amounts. The coefficient for patent activity before investment is 0.012, which is not statistically significant. This suggests, as for the full sample, that there is no meaningful impact on the amount invested by private equity funds in venture stage companies whether they have engaged in patent activity or not.

For companies in the growth stage, the coefficient for trade mark activity before investment was 0.371, significant at the 1% level. This indicates that having engaged in trade marking activity before investment is associated with approximately $e^{0.371}-1 \approx 44.9\%$ higher investment amounts.

For companies in the buyout stage, the coefficient for trade mark activity before investment is 0.520, which is significant at the 1% level. This indicates that having trade marked before investment is associated with approximately $e^{0.520} - 1 \approx 68.1\%$ higher investment amounts. The coefficient for patent activity before investment is 0.258, significant at the 1% level. This suggests that having patent activity before investment is associated with approximately $e^{0.258} - 1 \approx 29.4\%$ higher investment amounts. This positive impact indicates that, at the buyout stage, patents are viewed as valuable assets that enhance the company's attractiveness to investors.

A summary of the results is presented in Table 1.3.

Table 1.3

Interpreted Coefficients for Different Stages of Company Development

Variable	Venture stage	Growth stage	Buyout stage
Previous trade mark (dummy)	55.4% increase	44.9% increase	68.1% increase
Previous patent (dummy)	No significant impact	20.4% decrease	29.4% increase

Overall, the results indicate that trade mark activity before investment consistently shows a significant positive impact on the amount invested across all company stages, with the highest impact observed in buyout stage companies. Specifically, trade mark activity is associated with approximately 55.4%, 44.9%, and 68.1% higher investment amounts in venture, growth, and buyout stages, respectively. On the other hand, the impact of patent activity varies by stage. In the venture stage, patent activity does not significantly affect investment amounts. In the growth stage, patent activity is associated with a 20.4% decrease in investment, suggesting that investors might perceive it as less beneficial or potentially risky. However, in the buyout stage, patent activity is positively associated with investment amounts, leading to a 29.4% increase, indicating that patents are considered valuable assets by investors at this stage.

Amounts invested and odds of IPR filings

There is a strongly positive relationship between private equity and venture capital investment and intellectual property filings, with increased investment associated with increased likelihood of both patenting and trade marking activities.

Companies with a history of filing patents and trade marks are substantially more likely to continue these activities post-investment. Private equity and venture capital recognises the hallmarks of innovation and helps companies to become more competitive by enhancing their intellectual property portfolios.

This section presents the results of two logistic regression models that evaluate the likelihood of patenting and trade marking activities following private equity and venture capital investments. The dependent variables are binary indicators representing whether a company has a patent application or a trade mark application post-investment. The primary independent variables are the logarithm of the amount invested by PE firms (in thousands of euros) and the binary indicators for prior patenting and trade marking activities. Table 2 presents the results of the models.

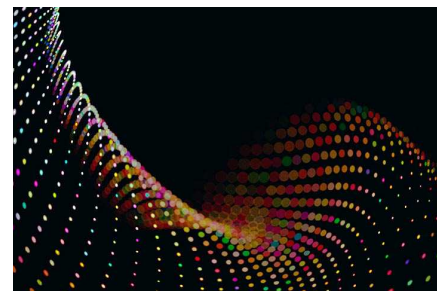


Table 2

Summary of Propensity Models

	Dependent variable:	
	Subsequent patent activity (dummy)	Subsequent trade mark activity (dummy)
Amounts invested (logged)	0.102*** (0.007)	0.122*** (0.005)
Previous patent activity (dummy)	2.233*** (0.025)	
Previous trade mark activity (dummy)		1.723*** (0.017)
<i>Controls: company sector and country</i>		
Observations	115,086	115,086
Log Likelihood	-25,761.790	-46,276.890
Akaike Inf. Crit.	51,615.590	92,645.780

Note: ***p<0.01

To interpret the coefficients, we transform log-odds into odds ratios, which represent the probability of the event occurring divided by the probability of the event not occurring. The odds ratio is obtained by exponentiating the coefficient (e^{β}). Specifically:

- If the odds ratio is greater than 1, the odds of the outcome occurring increase as the predictor increases.
- If the odds ratio is less than 1, the odds of the outcome occurring decrease as the predictor increases.
- If the odds ratio is equal to 1, the predictor has no effect on the odds of the outcome occurring.

For patenting, the coefficient of amounts invested is 0.102, statistically significant at the 1% level, indicating that a 10% increase in the amount invested is associated with approximately a 1.02% increase in the odds of having a patent application post-investment.

The coefficient for prior patenting activity is 2.233, statistically significant at the 1% level. Exponentiating this coefficient, $e^{2.233} \approx 9.33$, shows that companies with prior patenting activity have about 9.33 times higher odds to have a patent application post-investment compared to those without prior patenting activity.

For trade marking, the coefficient of amounts invested is 0.122, statistically significant at the 1% level, suggesting that a 10% increase in the amount invested is associated with approximately a 1.22% increase in the odds of having a trade mark application post-investment. The coefficient for prior trade marking activity is 1.723, statistically significant at the 1% level. Exponentiating this coefficient, $e^{1.723} \approx 5.60$, indicates that companies with prior trade marking activity have about 5.60 times higher odds to have a trade mark application post-investment compared to those without prior trade marking activity.

The logit regression results demonstrate a strong positive relationship between the amounts invested by private equity and venture capital firms and the subsequent likelihood of patenting and trade marking activities by their portfolio companies. Specifically, increased investment is associated with higher odds of both patenting and trade marking activities. Moreover, companies with a history of IPR activity are substantially more likely to continue these activities post-investment.

Amounts invested and subsequent IPR stocks

+10% pre-investment patenting = 3.57% increase in post-investment patenting

+10% pre-investment trade marking = 3.97% increase in post-investment trade marking

Financial resources are critical in fostering innovation and brand protection. Larger investments provide the necessary capital for companies to pursue extensive IP protection, facilitating the development and safeguarding of new technologies and brands.

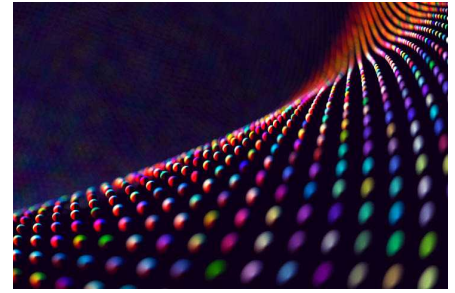
Table 3 presents the results of the linear regression model reflecting how private equity's financial backing at various stages of a company's development influences its engagement in securing IP rights, which are crucial for competitive advantage and market positioning. The dependent variable is the natural logarithm of the number of intellectual property rights filed by private equity and venture capital portfolio companies, these being either patents or trade marks. The main independent variables are the natural logarithm of the amounts invested by firms into the portfolio companies, and the prior patenting activity of the portfolio companies before investment. Control variables are used for the companies' respective countries and sectors (the corresponding coefficients have no intrinsic interest and are therefore omitted in the tables).

The coefficients in Table 3 can be interpreted as the elasticity of IPR activity under private equity and venture capital, representing the percentage change in IPR activity resulting from a 1% change in the independent variables. The first column shows that an increase in the amount invested was associated with a significant rise in patenting. Specifically, a 10% increase in investment, (in thousands of euros), correlated with a 0.09% increase in post-investment patenting activity. This relationship was found to be statistically significant at the 1% level, affirming the role that investment plays in stimulating patenting activity.

Additionally, prior patenting activity, measured by 'Previous Patent stock (logged)', had a significant positive effect on post-investment patenting. A 10% increase in pre-investment patenting activity led to an estimated 3.57% increase in post-investment patenting, reinforcing the notion that companies already actively patenting before investment are more likely to continue or increase their patenting efforts afterward.

The second column focuses on the impact of investment on trade marking activity ('Subsequent trade mark stock (logged)'). Here, a 10% increase in the amount invested resulted in a 0.20% increase in post-investment trade marking activity. This coefficient was statistically significant at the 1% level, highlighting that investment is a driver of trade marking as well.

Furthermore, historical trade marking activity ('Previous trade mark stock (logged)') exhibited a significant positive relationship with post-investment trade marking. A 10% increase in pre-investment trade marking activity predicted a 3.97% rise in post-investment trade marking. This finding demonstrates that companies with established trade mark portfolios before investment tend to expand those portfolios after receiving investment.



 3.57%

+10% pre-investment patenting = 3.57% increase in post-investment patenting

 3.97%

+10% pre-investment trade marking = 3.97% increase in post-investment trade marking

Both models suggest that companies that receive more significant investments tend to increase their patenting and trade marking activities. Furthermore, those with a history of actively managing their intellectual property portfolios are more likely to continue these activities following additional investment, emphasising the cumulative nature of intellectual property management.

The relationship between the amount invested and subsequent IPR activity underscores the importance of financial resources in fostering innovation and brand protection. Larger investments provide the necessary capital for companies to pursue extensive IP protection, facilitating the development and safeguarding of new technologies and brands. This dynamic illustrates how financial backing from private equity and venture capital can directly enhance a company's competitive positioning by enabling a more robust and proactive approach to intellectual property management.

Table 3

Summary of Linear Models

	Dependent variable:	
	Subsequent patent stock (logged)	Subsequent trade mark stock (logged)
Amounts invested (logged)	0.009*** (0.001)	0.020*** (0.001)
Previous patent stock (logged)	0.357*** (0.002)	
Previous trade mark stock (logged)		0.397*** (0.003)
<i>Controls: company sector and country</i>		
Observations	115,086	115,086
R ²	0.304	0.32
Adjusted R ²	0.304	0.319
Residual Std. Error (df = 115040)	0.399	0.49
F Statistic (df = 46; 115040)	1,092.288***	1,174.445***

Note: *p**p***p<0.01

Zooming in on the results related to venture-stage companies only, a 10% increase in investment amounts correlated with a 0.14% increase in post-investment patenting activity, significant at the 1% level. Prior patenting activity proved to significantly influence post-investment patenting, with a 10% increase in pre-investment patenting activity leading to an estimated 3.41% increase in post-investment, reinforcing the notion that even at the earliest stage of companies' lives, companies already actively patenting before investment are more likely to continue or increase their patenting efforts afterwards.

When it comes to trade marking, a 10% increase in the amounts invested by private equity and venture capital funds resulted in a 0.29% increase in post-investment trade marking activity, significant at the 1% level. Historical trade marking activity predicted a 2.91% rise in post-investment trade marking following a 10% increase in investment.

Table 3.1

Summary of Linear Models, venture

	Dependent variable:	
	Subsequent patent stock (logged)	Subsequent trade mark stock (logged)
Amounts invested (logged)	0.014*** (0.001)	0.029*** (0.001)
Previous patent stock (logged)	0.341*** (0.003)	
Previous trade mark stock (logged)		0.291*** (0.004)
<i>Controls: company sector and country</i>		
Observations	65,703	65,703
R ²	0.295	0.251
Adjusted R ²	0.294	0.25
Residual Std. Error (df = 65661)	0.439	0.481
F Statistic (df = 42; 65661)	653.113***	523.662***

Note: ***p<0.01

For growth stage companies, a 10% increase in pre-investment patenting predicts a 3.76% rise in post-investment patenting. Similarly, a 10% increase in pre-investment trade marking predicts a 4.48% rise in post-investment trade marking. The relationship between amounts invested proves to be positive and significant, although not to the extent exhibited by the whole sample of companies.

Table 3.2

Summary of Linear Models, growth

	Dependent variable:	
	Subsequent patent stock (logged)	Subsequent trade mark stock (logged)
Amounts invested (logged)	0.003*** (0.001)	0.010*** (0.001)
Previous patent stock (logged)	0.376*** (0.004)	
Previous trade mark stock (logged)		0.448*** (0.004)
<i>Controls: company sector and country</i>		
Observations	30,362	30,362
R ²	0.332	0.378
Adjusted R ²	0.331	0.377
Residual Std. Error (df = 30322)	0.338	0.472
F Statistic (df = 40; 30322)	377.149***	459.838***

Note: ***p<0.01

At the buyout stage, historical patenting and trade marking activities are strong predictors of post-investment IP filings. A 10% increase in pre-investment patenting predicts a 3.59% rise in post-investment patenting. Similarly, a 10% increase in pre-investment trade marking predicts a 4.96% rise in post-investment trade marking. The coefficient of the increase in investment is not statistically significant for determining any change in patenting activity, while it proves to increase trade marking activity by 1.3%, on average.

Table 3.3

Summary of Linear Models, buyout

	Dependent variable:	
	Subsequent patent stock (logged)	Subsequent trade mark stock (logged)
Amounts invested (logged)	0.002 (0.001)	0.013*** (0.002)
Previous patent stock (logged)	0.359*** (0.005)	
Previous trade mark stock (logged)		0.496*** (0.006)
<i>Controls: company sector and country</i>		
Observations	16,134	16,134
R ²	0.326	0.441
Adjusted R ²	0.324	0.439
Residual Std. Error (df = 16094)	0.320	0.535
F Statistic (df = 40; 16094)	194.575***	317.226***

Note: *p<0.1 **p<0.05 ***p<0.01

The sample reveals a positive correlation between the amounts invested by private equity and venture capital firms and the subsequent increase in patenting and trade marking activities of their portfolio companies. This relationship holds across various stages of company development, from venture to buyout stages. Historical IP activity is also a significant predictor of future IP filings, emphasising the importance of prior IP management in maximising the innovation creation of new investments.

Conclusion

European private equity and venture capital is a thriving investment ecosystem managing €1.15 trillion in capital for long-term investors (Invest Europe, 2024). Just as important as the capital that private equity and venture capital brings to companies is the expertise and skills. This combination of long-term investment and active management are the key to transforming companies and making them stronger and more sustainable.

The filing for intellectual property rights protection - specifically patents and trade marks - is an important marker of innovation at companies, and a signal of better businesses that have the potential to be more competitive and valuable over the long term. This report highlights how private capital firms identify valuable intellectual property and help companies to enhance their IP portfolios.

There appears to be a positive correlation between private equity and venture capital investments and intellectual property (IP) filings, suggesting those investments help companies secure patents and trade marks that protect their innovations and competitive positioning. Evidence suggests that private equity investments could increase the likelihood of companies engaging in IP activity, potentially enhancing the volume of patent and trade mark filings and encouraging the adoption of comprehensive IP strategies. Companies with a history of intellectual property protection may be more likely to continue and even expand these activities post-investment, suggesting a cumulative nature of IP management and a reinforcing effect of initial IP investments on subsequent filings.

This research also provides valuable insights into the distribution of intellectual property filings by private equity and venture capital-backed companies across Europe. It sheds light on the sectors where new patents and trade marks are being created and enhances understanding of the relationship between IP and investment at different stages, as well as the focus areas of different types of private equity and venture capital funds.

Innovation is crucial to the development of a more competitive and environmentally sustainable Europe. This importance is recognised and prioritised within the European Union's agenda. It is also a core component of the private equity and venture capital industry. By fostering the creation and protection of patents and trade marks, the industry may enhance companies' competitive edge, potentially aiding them in innovating and growing more effectively on a global scale. Therefore, private equity and venture capital investments appear to be aligned with European goals and may play a significant role in renewing Europe's leadership in innovation for a better future.



€1.15tn

European private equity and venture capital is a thriving investment ecosystem managing €1.15 trillion in capital for long-term investors

Limitations and future research

The data in question comes from the truncated sample. Participation in the sample is conditional on getting equity financing from private equity and venture which causes the sample to be non-random. Therefore, the findings from this study are valid for this particular subsample of companies that got equity financing from private equity and venture capital and cannot be extrapolated into wider group of companies.

The available data presented has further limitations, lacking potentially important control variables, such as founders' previous experience, education, or specific skills. These characteristics may correlate with a firm's propensity to protect intellectual property assets and secure financing. Future studies could improve estimations by incorporating these founder-related variables.

Additionally, the data only included European-level filings, excluding national filings, which are often a popular method for early-stage and smaller companies to protect their intellectual property. Other studies have shown that young and smaller firms tend to use national trade marks rather than European Union Trade Marks (EUTMs)⁷. The lack of information on national trade mark activity may introduce some bias into the results.

This study spans 16 years of company activity in Europe, a period marked by fluctuations in private company activity, acquisitions, and initial public offerings (IPOs). Private equity and venture capital funding and favourable exit terms may be more accessible to companies during periods of economic growth than during recessions. Additionally, various policy programmes have been established in recent decades to incentivise private company activity in different European countries. Accounting for these economic conditions and policy initiatives could enable future research to better capture the relationship between IPR applications and the likelihood of receiving private financing.

The results obtained open various avenues for further research. For instance, investigating the reasons behind the differences in the relationship between previous IPR activity and the amount invested at different stages of financing could provide valuable insights. The models used in this study present results for the 'average' firm, potentially obscuring interesting variations in the effect of previous IPR activity across the entire distribution of financial events. Alternative methods, such as quantile regression, may be better suited to disentangle these complex relationships. Additionally, future research could explore the connections between intellectual property activity and various investment domains. This could include a deeper analysis of the types of investors supporting companies and the divestment methods employed to sell acquired companies.

7. The preference of SMEs for IPRs from national offices over European ones can be seen on table 4 'IPR ownership by firm size' of the study 'Intellectual property rights and firm performance in the European Union, Firm-level analysis, February 2021' EPO/EUIPO.



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Appendix

The matching exercise was performed between the Invest Europe data versus the EUIPO dataset, as well as between the Invest Europe data versus the PATSTAT dataset. The matching was based on two fields: the name and the country of origin of the applicant. The workflow applied to normalise the name of the applicant is described below:

1. Remove empty or/and Not a Number (NaN) names.
2. Transliterate (translate strings written in Greek or Cyrillic alphabet) the names.
3. Remove symbols beyond simple letters or numbers.
4. Translate accented to simple letters.
5. Detect whether a legal form (based on the origin of country) exists and extract it.

The outcome of the above algorithm was the normalised name of the applicant, the legal form if it existed and its standardised form (e.g. for Netherlands, legal form "BV" and standardised form "Limited").

Next, an absolute matching was executed based on the normalised applicant name and the country. As a final step, an approximate matching was performed using the two aforementioned fields and employing the Jaro-Winkler string metric (Jaro, 1989) as the similarity measure.

About Invest Europe



Invest Europe is the voice of the private equity, venture capital and infrastructure industries in Europe. We are a non-profit organisation with 31 employees based in Brussels, Belgium.

Our members invest in privately held companies, from start-ups to established firms, injecting not only capital but also dynamism, innovation and expertise.

We are the guardian of our industry's professional standards, demanding accountability, good governance and transparency from our members.

Through our research, we aim to play a constructive role in Europe's prosperity and policymaking, providing authoritative data on trends and developments in the industry, and communicating our members' role in the economy.



10.9m

employees worked in private equity-backed European companies in 2022

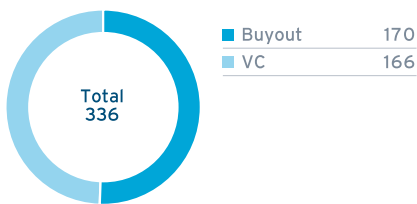


27,645

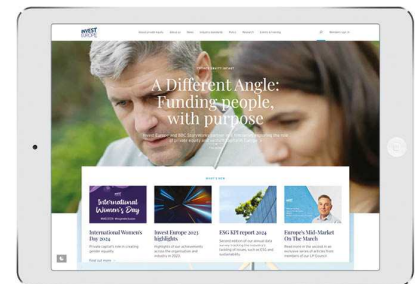
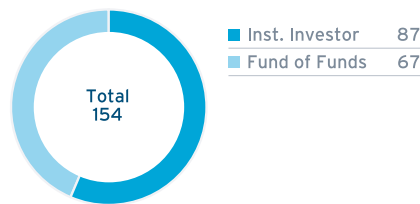
companies in Europe backed by private equity in 2022 across all industry sectors and all regions

Our members⁷

GP Members



LP Members



For more information

Please visit www.investeurope.eu

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7. As at 14 December 2023

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About the EUIPO



The European Union Intellectual Property Office (EUIPO) is the European Union (EU) agency responsible for managing the EU trade marks (EUTMs), the registered Community design (RCDs), the Geographical Indications (GIs) for craft and industrial products and the European and international cooperation in the field of intellectual property (IP), as well as the European Observatory on Infringements of Intellectual Property Rights.

The EUIPO acts as a key facilitator of the European Union Intellectual Property Network (EUIPN) and is involved in an increasing number of EU-funded projects operated under contribution agreements with the European Commission. The Observatory aims to raise public awareness, deliver training, develop systems, and provide evidence-based data on IP protection and enforcement.

It is also responsible for establishing and managing the EU orphan works database and the public single online portal for the out-of-commerce works. The Office's work at EU level extends to the harmonisation of registration practices and the development of common tools in cooperation with its partners from national and regional IP offices throughout the EU, users, and other institutional partners. All decisions adversely affecting a party to a proceeding can be appealed to the Office's Boards of Appeal.

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