

Trade marks and registered designs: Evidence on the links to innovation and business performance

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Applications for trade marks and registered designs have risen sharply in recent years with the application numbers for trade marks in 2017 being more than double what they were in 1995, and the application numbers for registered designs in 2016 reaching their highest point since 1995. In light of this, what does the evidence suggest about the relationship between trade marks/registered designs and innovation output?

Compared to that of patents, the literature examining trade marks and registered designs and the links to innovation is more limited with much of the empirical evidence largely confined to the examination of firms' private returns. The empirical evidence, in general, suggests a positive relationship between trade marking activity/registered design activity and innovation/firm performance.

Background

Firm success, in the form of growth or performance, often derives from innovation. Not all innovating firms, however, are able to exploit knowledge and capture the profits generated by their innovation (Teece, 1986; Levin et al., 1987). When a firm is unable to limit others from imitating its innovations, the appropriability problem arises (Arrow, 1962). Consequently, a firm may fail to appropriate returns from its own innovations (Ceccagnoli and Rothaermel, 2008) and be unable to gain and sustain a competitive advantage (Laursen et al., 2013). To overcome the appropriability problem, firms may use intellectual property rights (IPRs) as a policy tool to limit imitation and enhance their ability to appropriate economic returns (Laursen and Salter, 2005; Greenhalgh and Rogers, 2007). Two such IPRs are trade marks and registered designs.

- **Trade marks**

A trade mark is defined as "...a sign used to identify goods and services from others in the market place. A trade mark sign may include, for example, words, logos, colours or a combination of these" (IPO, 2018). Drawing on the economic theories of information and reputation (Economides, 1988; Landes and Posner, 1987), trade marks are designed to signal to consumers the distinctiveness and quality of a product, addressing the presence of asymmetric information between buyers and sellers. They are

designed to differentiate products from those provided by other firms, so that they have a significant role in the marketing of innovations. Being strongly connected to brands, trade marks are relatively close to the commercialisation process and cover a broad range of activities in both the manufacturing and services sectors. Once registered, a trade mark lasts for 10 years. After this time, it must be renewed every 10 years for it to remain in force. Trade marks have no final time limit and can be renewed indefinitely (IPO, 2018).

- **Registered designs**

The industrial design of a product is what makes it attractive and visually appealing to consumers. A design registration "...protects the visual appearance of a product, part of a product, or its ornamentation" (IPO, 2018). Design protection lasts for five years and can be renewed every five years, for up to 25 years (IPO, 2018).

What does the evidence suggest about the relationship between these two IPRs – trade marks and registered designs – and innovation and firm performance?

Evidence

In theory, it is expected that firms' use of trade marks and registered designs promotes innovation and growth. In contrast to the extensive literature which exists on the link between patenting and innovation, literature examining registered designs and trade marks as a determinant of innovation is more limited; empirical studies are largely confined to the examination of private returns. Authors adopt the notion that successful firm innovation yields considerable benefits for the innovating firm: higher profits, increased market value and improved credit ratings, for example (Geroski et al., 1993; Hall, 2000; Czarnitzki and Kraft, 2004), and examine how trade mark and registered design use impacts upon performance measures other than innovation. Some studies that explicitly deal with innovation examine the use of trade mark and registered design data as an indicator of, or proxy for, innovation in much the same way that R&D and patent data have been used previously.

Typically, studies use data on trade marks and registered designs obtained from surveys (the Community Innovation Survey, for example) or databases held by national intellectual property offices (the UK Intellectual Property Office – IPO, for example) and other research centres (the Oxford Intellectual Property Research Centre – OIPRC, for example). Across studies, the measure of innovation and performance differs. Turnover, profits (for example, the annual rate of profitability of shareholders' investments), return on assets (ROA) and return on sales (ROS), gross value added, Tobin's q and stock returns are just some of the measures used.

Trade marks

- **Performance**

Many of the empirical findings support the existence of a positive relationship between trade marking activity and firm performance (Table 1). With the focus on panel and longitudinal data, authors use panel estimation techniques, with value-added production functions being particularly common amongst studies. The studies examined here focus on trade mark and performance data in the UK, the US, Australia, Italy, Spain and Portugal.

The evidence suggests that trade marking firms have a higher productivity level (as much as 21 per cent higher) and higher turnover growth (some 6 per cent higher) than non-trade marking firms. With regard to other performance measures, the use of trade marks positively affects cash flows, Tobin's q, stock returns, ROA and sales and reduces the variability of future cash flows. Trade mark stocks are strongly associated with annual profits, with the positive effect diminishing as firm age increases, whereas trade mark intensity matters most for value added. The age of a firm's trade marks has an insignificant effect on firm profits.

The evidence suggests that the size of the beneficial effect linked to trade mark use differs across industrial sectors and firm sizebands.

- **Industrial sector**

The positive performance effects in the service sector are greater than those in the manufacturing sector – there is a larger, positive impact on financial markets and a larger, positive association with productivity growth. Trade marks are also found to be particularly important for low-technology sectors.

- **Firm size**

Studies examining different sizebands find trade mark use to have a positive effect on the performance of small firms but not that of medium firms. When firms engage in open innovation, trade marks have a moderating effect on the performance of medium firms but not that of small firms. The evidence also suggests that trade mark intensity is associated with higher productivity in younger and smaller firms and leads to a 10 to 30 per cent higher value-added premium in large firms. There is also evidence that the joint use of patents, registered designs and trade marks in small and medium-sized enterprises (SMEs) positively affects performance.

- **Innovation**

The evidence suggests that trade marks are a useful proxy for innovation, and are complementary to the more traditional measures of innovative activity (R&D expenditure and patents, for example); the evidence shows trade mark use to be more highly correlated with innovation than the more traditional proxies for innovation. Sectoral differences emerge from the evidence with correlations between innovation and trade marks being greater for manufacturing firms.

In terms of the determinants of successful innovation, the empirical evidence suggests that trade mark use has a positive effect on a firm's innovation success, with the strongest impact occurring in knowledge-intensive firms.

Registered designs

- **Performance**

There are relatively few studies that provide quantitative evidence on the benefits to firms of registered designs with much of the evidence being primarily descriptive in nature. Panel-estimation techniques, linear regression, data matching and between-group comparisons are used in the evidence examined (Table 2). The studies focus on registered designs and performance measures in the UK, Australia, Italy and Spain.

The evidence suggests that registered designs are positively related to firm performance and commercial success. In one study, a 17 per cent performance benefit is associated with registered design use in the UK during the late 1990s and early 2000s.

- **Firm size**

On examination of different sizebands, it is apparent that registered designs have a positive effect on the performance of SMEs and medium firms but not on that of small and large firms. The positive performance effect is stronger for SMEs in medium high-technology and medium low-technology manufacturing industries than for firms in general. There is also evidence that the joint use of patents, registered designs and trade marks in SMEs positively affects performance.

- **Innovation**

The evidence suggests that effective design protection is important for design innovation. Attitudes towards registered designs together with attitudes towards enforcement have a significant effect on a firm's motivation to create.

Evidence shows the correlation between innovation and registered designs to be insignificant. On examination of different types of innovation, correlations are both negative and significant for process and organisational innovation.

Summary and evidence gaps

There is consistent evidence on the benefits of trade marks and registered designs for firm innovation and performance, with firm size and industrial sector influencing the size of these positive effects. To date, evidence on the innovation benefits of trade marks and registered designs is more limited.

Trade marks can be a signal of quality, and their presence reduces customer-search costs. As a result, a trade mark holder may be able to charge higher prices and positively influence profits (Landes and Posner, 1987). The prospect of earning higher profits provides a trade mark holder with an incentive to increase investment into improving the quality of its products. For this reason, trade marks have been viewed as a proxy for innovative effort (Mendonca et al., 2004). In addition, the mere registration of a trade mark partially reflects the introduction of something new by a firm and represents an attempt by the trade mark holder to convince consumers to move away from existing supplies towards the newly introduced product.

A successful design adds commercial value to a product and increases its marketability. The protection of an industrial design helps to ensure that the right holder receives a fair return on any design investment made. Thus, exclusive rights over industrial designs not only protect innovative designs but also encourage further creativity. An increase in non-technological innovation of this kind represents the first steps towards future product innovation.

Previous literature has shown that trade mark activity correlates with various measures of innovation at the firm level, but a more detailed exploration of the link between trade marks and registered designs and new products launched into the market, or the share of sales generated by new products, as a measure of a firm's innovation is required. Using longitudinal or panel data to implement the necessary lags, it may be possible to determine a cause-and-effect relationship between trade marks or registered designs and innovation success – reflecting a study by Hussinger (2006) which examines the relationship between patents and innovation. In addition, more detailed information about trade marks and registered design data (for example, Nice (1957) trade mark

classes) would allow an investigation beyond IPR count data enabling links between particular IPR characteristics and innovation to be investigated.

Table 1: Trade marks and performance

Study	Data	Trade mark measure	Output measure	Principal results
Schmock (2003)	Survey data for German firms collected by the Centre of European Economic Research Correlation between trade marks and innovation performed by a multi-variate analysis	Use of trade marks	Share of turnover with new products and services	Highly significant correlation between innovation and trade marks, in the manufacturing sector. Considerable differences between sectors for service trade marks in the case of knowledge-intensive services.
Seethamraju (2003)	237 US firms 5 different industries	Stock of trade marks at end of period	Sales	Trade mark stock has a positive effect on sales.
Mendonça et al. (2004)	724 Portuguese firms	Stock of trade marks	Correlations with patent use Pairwise comparisons of trade mark use across industries	Positive correlation between the use of patents and the use of trade marks – registered trade marks are a complementary indicator of innovation. High-technology firms use more trade marks than low-technology firms. Information-intensive services (e.g. banking) use more trade marks than less information-intensive services.
Greenhalgh and Longland (2005)	740 large British firms with principal products in a wide range of industrial sectors	Stock of trade marks Trade mark intensity	Firm net output (value added)	Positive relationship between trade marks and value added. Firms that register patents and trade marks and undertake R&D are more productive. Immediate productivity benefits tend to be short-lived. Returns to acquiring IPRs are more significant for low-technology firms.
Griffiths et al. (2005)	300 Australian-located public and private companies, trusts, associations, cooperatives and partnerships	Trade mark stock (registered and pending) Trade mark interaction variables	Profits (the annual rate of profitability of shareholders' investments)	Trade mark stocks are strongly associated with higher annual profits. Trade mark age has no significant effect. The positive impact on profits diminishes as

				the firm ages. Trade mark stocks have a smaller, positive effect on profits than patents and registered designs.
Jenson and Webster (2009)	1,400 firms Innovation measures taken from the Melbourne Institute Business Surveys, IP data from IP Australia matched with firms listed on IBISWorld	Trade mark applications	Survey-based measure of innovation	Trade marks have a higher level of correlation with all innovations than R&D, patents or registered designs. They also have higher correlations with process, product and marketing innovations. Correlations are greater for manufacturing firms and for firms undertaking product innovations.
Krasnikov et al. (2009)	108 US manufacturing and Service firms	Trade mark stock Trade mark intensity	Cash flow, ROA, Tobin's q, stock returns	Trade marks positively affect cash flows, Tobin's Q, ROA and stock returns and reduce the variability of future cash flows.
Munari and Santoni (2010)	425 Italian manufacturing SMEs	Trade mark indicator (0/1)	Performance (ROA, ROS)	Firms that jointly use patents, trade marks and registered designs experience higher performance levels than firms that do not use any protection methods.
Greenhalgh et al. (2011)	2,645 UK firms from the joint Community Innovation Survey-Annual Respondent Database dataset	Trade mark indicator (0/1) Trade mark intensity	Gross value added Turnover growth	Trade marking firms have a 21% higher productivity level. Higher trade mark intensity is associated with improved productivity performance for younger and smaller firms. Pooled OLS: Trade marking firms see turnover grow 6 per cent faster than non-trade marking firms. Fixed effects models: Much weaker association between trade mark intensity and turnover.
Sandner and Block (2011)	1,216 publicly traded firms from multiple countries	Trade mark stock	Tobin's q	Trade mark registration has a positive effect on a firm's financial-market

				value.
Götch and Hipp (2012)	German CIS data	Trade mark indicator (0/1)	Innovation success (share of turnover from new products and services)	The use of trade marks has a positive and significant effect on innovation success. Strongest effects in knowledge-intensive firms.
Greenhalgh and Rogers (2012)	1,600 large UK manufacturing and service firms	Trade mark indicator (0/1) Trade mark intensity	Stock market valuation ratio Value added	Trade marking firms show a significantly higher value-added premium than non-trade marking firms (by between 10% and 30% across all firms). Results are weaker for the impact of trade mark intensity. Trade mark activity can proxy for innovation and raise productivity and economic performance.
Agostini et al. (2016)	Italian SMEs 203 firms from mechanical industry 170 firms from the fashion industry	Trade mark Stock	ROA Average sales growth	Trade marks have a positive effect on sales growth and ROA of SMEs in the fashion industry but no effect in the mechanical industry.
Brem et al. (2017)	2,873 Spanish Manufacturing and service firms	Trade mark indicator (0/1)	Turnover	Trade mark protection is positively related to firm performance for small firms but not for medium firms. High trade mark use strengthens the relationship between open innovation and firm performance in medium firms but not in small firms. The relationship between trade mark protection and firm performance is stronger for SMEs in less knowledge-intensive service industries than for firms in general.

Table 2: Registered designs and performance

Study	Data	Registered design measure	Output measure	Principal results
Griffiths et al. (2005)	300 Australian-located public and private companies, trusts, associations, cooperatives and partnerships	Registered design stock (registered and pending) Registered design interaction variables	Profits (the annual rate of profitability of shareholders' investments)	Results for designs are erratic and hard to interpret. The main consistent finding is a clear rise in the value of designs over time.
Jenson and Webster (2009)	1,400 firms Innovation measures taken from the Melbourne Institute Business Surveys, IP data from IP Australia matched with firms listed on IBISWorld	Registered design applications	Survey-based measure of innovation	The correlation between the survey measure of innovation and registered designs is insignificant. Correlations between different types of innovation and registered designs are negative – negative and significant for process and organisational innovation.
Munari and Santoni (2010)	425 Italian manufacturing SMEs	Registered design indicator (0/1)	Performance (ROA, ROS)	Firms that jointly use patents, trade marks and registered designs experience higher performance levels than firms that do not use any protection methods.
Bascavusoglu-Moreu and Tether (2011)	UK firms from design-intensive sectors	Registered design indicator (0/1)	Sales per employee	UK registered designs are positively linked with productivity up to 2006 (plus 17 per cent average), but not later. European designs have no significant impact on productivity.
Moultrie and Livesey (2011)	Cross-sectoral sample of 32 UK firms and 10 design agencies	Single-question measures relating to design from a questionnaire exploring the role and value of registered designs.	Answers to single-question measures.	A very strong feeling amongst all respondents that the design of a product helps to differentiate against competitors, and that design registrations can affect commercial success.
Ahmetoglu and Chamorro-Premuzic (2012)	63 UK firms (designers and businesses that profit from design)	Attitudes towards registered designs compiled from online psychometric survey	Behaviour measures related to innovation (motivation to create).	Attitudes toward design rights are related to firms' design innovation activities – including design-related innovation. Attitudes towards enforcement are found to be significantly related to a firm's motivation to create. Attitudes towards design registration and knowledge are

Brem et al. (2017)	2,873 Spanish Manufacturing and service firms	Registered design indicator (0/1)	Turnover	insignificant. Registered designs are positively related to SME firm performance. The positive effect is significant for medium firms but not for small and large firms. Support is stronger for SMEs in medium-high and medium-low technology manufacturing industries than for firms in general. High use of registered designs in SMEs does not strengthen the relationship between open innovation and firm performance.
Yoshioka-Kobayashi et al. (2018)	Industrial designs for which registration had been filed between January 2011 and August 2016 in Japan, Korea and the US 150 products that received at least one of the selected design awards in 2015	Registered designs	Good product design (a product-design award)	Firms frequently use industrial design protections for the protection of award-winning design products. Results suggest the eligibility of industrial design registrations as a design-innovation measure.

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