

## Innovation, open innovation and intellectual property rights: firm size differences

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With growing interaction among firms in the innovation process, the need for efficient protection of intellectual property rights (IPR) also increases. The high costs and lengthy processes associated with patenting call for firms to use other methods of protecting their intellectual property (IP). The low costs and high revenues associated with the use of trademarks entice the adoption of this measure.

For SMEs however, recent evidence questions the long-term benefits of trademarks, and suggests that industrial designs may be a more efficient form of IP protection. There is little evidence for or against using copyright, possibly due to difficulties in measuring this IPR. As product cycles are shortening, firms increasingly protect IP through speed-to-market and secrecy. However, more research is needed as to how secrecy relates to more formal methods of IP protection.

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### Background

IP describes unique creations of the human intellect which add value (Kalanje, 2006, p. 1). From a regulatory perspective, the purpose of IPR is to foster investments in innovation through enabling firms to capture value generated by their innovative activity (West, 2006). The appropriate type of IPR partly depends on the characteristics of the innovation. While patents protect the innovation as such, industrial designs define the appearance of the product. Trademarks protect a brand name or logotype, and copyright is valid for cultural, artistic, or literary work including software. Firms may also rely on trade secrets, e.g. to protect manufacturing processes or customer information (Jaiya, 2004). The cost and time frame for acquiring the IPR is also a relevant factor. The patenting process can be lengthy and cumbersome, while relying on copyrights requires no registration.

As firms increasingly engage in open innovation, with the purposive management of knowledge flows across firm boundaries (Chesbrough & Bogers, 2014), the question of who profits from innovation is becoming more and more complex. Firms therefore need to lend additional attention to the thorough management of IPR (Laursen & Salter, 2014). IPR management now means analysing the available regimes of appropriability with reference to the innovation ecosystem in which the firm is embedded. While sharing knowledge is positive for innovation, firms want to protect themselves against unwanted knowledge leaks by using IPR. The IPR costs to be considered include those of the acquisition process, but also possible costs for defending such rights in juridical disputes.

IPR management poses a particular challenge for small and medium-sized enterprises (SMEs) due to a lack of financial resources and enforcement abilities (Jensen & Webster, 2006). SMEs are defined as companies with less than 250 employees, and either less than 50 million Euros annual turnover, or total assets worth maximum 43 million Euros (European Union, 2015). As SMEs make up more than 99% of all businesses in the European Union, the safeguarding of their IP is a key question for policy makers in Europe.

## Evidence

Patents have long been a prominent form of IPR (Table 1). Recent research shows that other forms of IPR may be more appropriate for certain firms (Brem et al., 2017). We therefore present the current evidence for each type of IPR and categorized as applying to firms in general, to SMEs or to large firms.

**Table 1: IPR through patents**

	Findings		Study
	Firms in general	SMEs	
Most commonly used IPR	Often neglected		Thomä & Bizer (2013)
	Costly process cancels out positive effects		Kalanje (2006) Eppinger & Vladova (2013)
	Only patent innovations likely to be successful	Patent all innovations	Spithoven et al. (2013)
		Strategic tool	Hanel (2006)
Positively related to commercialization of success of innovation	Positive impact on innovation and financial performance		Andries & Faems (2013)
Positively related to firm performance			Ernst (2001)
	Negatively related to turnover for firms engaging in open innovation	Not related to turnover	Brem et al. (2017)

Industrial designs are less common than patents, but are often appropriate for SMEs, since the registration process is less arduous. Depending on the characteristics of the innovation, this IPR may come close to the protection given by a patent, as it protects design aspects of the product at hand (Table 2).

**Table 2: IPR through industrial designs**

Findings			Study
Firms in general	SMEs	Large firms	
Less used than patents			Hanel (2006)
	Twice as many industrial designs per employee as large firms		Jensen & Webster (2006)
	Ideal IPR for SMEs		Burrone (2005)
	Positively related to turnover for firms engaging in open innovation	Negatively related to turnover for firms engaging in open innovation	Brem et al. (2017)

The low cost associated with trademarks make them especially popular among SMEs (Table 3). However, since only the brand is protected, the IPR is more advantageous for big brands and large firms.

**Table 3: IPR through trademarks**

Findings			Study
Firms in general	SMEs	Large firms	
Low cost, high revenues			Doern (1999)
	High adoption		Blackburn (1998) Millot (2011)
	Short-term positive effects counterbalanced by negative effects in a longer term	Positively related to turnover	Brem et al. (2017)

There is little evidence regarding the impact of copyrights on innovation or firm performance (Table 4). Since copyrights are not registered, little data exists regarding the extent to which firms use copyrights as a part of the strategic management of IPRs. In an earlier study, we found no relationship between the use of copyrights and firm turnover.

**Table 4: IPR through copyrights**

Findings			Study
Firms in general	SMEs	Large firms	
Efficient during the invention stage			Seo et al. (2015)
	Most commonly used IPR		Thomä & Bizer (2013)
Not related to turnover	Little strategic use		Brem et al. (2017)

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## Overview and evidence gaps

Recent evidence suggests that firms of different sizes should follow IPR strategies that are adapted to their available resources. SMEs need to consider whether they have the means to patent efficiently, or if they should opt for alternative IPRs. Industrial designs are more recommendable, if the characteristics of the innovation permit protection by this IPR. Trademarks and copyrights may be tempting to SMEs due to the low costs, but the potential costs for enforcing such IPRs should also be considered when devising an IPR strategy. Larger, financially strong firms are not only able to assume such legal costs, but the threat of legal battles may deter infractions.

For policy makers, the increasing importance of SMEs for innovation combined with their struggle to use IPRs, means that streamlining patenting and trademark processes would foment innovation in general, and open innovation in particular. Possible policy initiatives could include directed support for SMEs and differentiated fees depending on firm size.

Evidence gaps regarding IPR and innovation are particularly salient regarding the use of copyright, and under which circumstances firms can rely on this form of protection. Further research is also needed regarding when and how SMEs use trade secrets (Almeling, 2012) and speed to market (Leiponen & Byma, 2009), in order to avoid imitations by others.

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