Fraunhofer Institut System- und Innovationsforschung

KMU FORSCHUNG AUSTRIA
Austrian Institute for SME Research

Summary of Main Results

The Economic Relevance of Intellectual Property and its Protection - a study focusing on the German "Mittelstand" (SMEs)

This overview summarizes the main results of the study “The Economic Relevance of Intellectual Property and its Protection - a study focusing on the German "Mittelstand" written in 2008 and commissioned by the German Federal Ministry of Economics and Technology. The research was carried out by Fraunhofer Institute for System and Innovation Research with support from the Department for Innovation Economics at Technische Universität Berlin as well as the Austrian Institute for SME Research.

Main Questions, Research Approach, and Methodology

The key questions of this report can be summarized in three blocks:

The initial purpose of the study was to analyse the importance of intellectual property compared to traditional tangible assets in the German economy and its relative development over time. A growing relevance of intangible assets increases the need to protect innovation using formal property rights like patents and trademarks or informal, strategic methods like technical copyright protection, trade secrecy or fast realization of innovations (lead advantage). The analysis of German companies’ IPR protection strategies was an integral part of the study.

A further point for analysis in this study was the growing threat of illegal imitation in emerging markets like China, but also in Germany and in other industrialized countries. The range of counterfeiting concerning proprietary technologies and design imitation as well as the resulting damages were studied. This includes financial impacts as well as employment losses and the distortion of strategic business decisions.

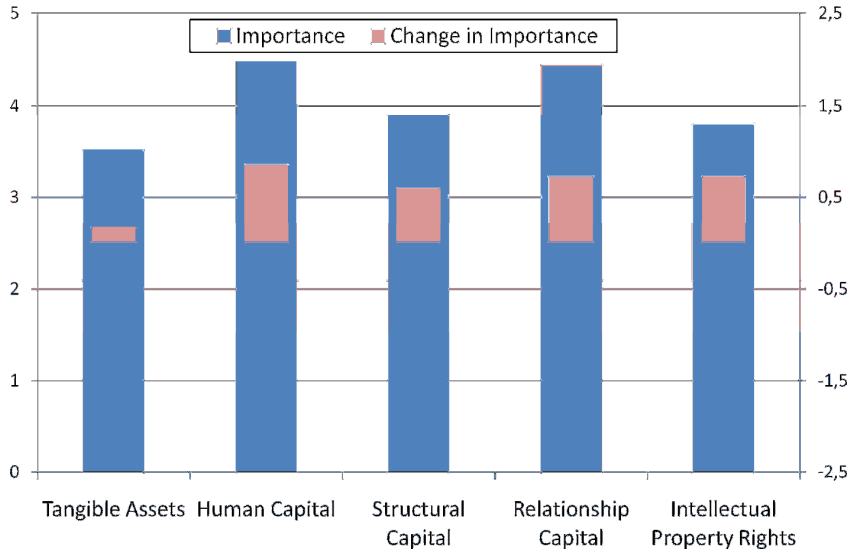
A third goal was to evaluate a possible need for further economic policy actions. It is reasonable to assume that especially R&D-intensive SME are at disadvantage when it comes to protecting innovation through the patent system and face challenges exploiting their own IP efficiently. There are a number of activities intending to facilitate the entrance of SMEs into the IP system. From this study insights can be gained for support programs on the use of IPR, effective IP enforcement and its economic exploitation of innovation. Based on a detailed analysis of IP support programs, this study was to provide recommendations for improvements and to point out inefficiencies or loopholes in existing SME support programs.

The methodology of this study was manifold. In a first step, the relevant literature was reviewed and important insights from scientific research and other projects were gathered. Second, existing data was examined in detail, especially to obtain indicators for the value of IPR. In addition, a survey among 3000 patent active companies of varying sizes and industries was set up. Furthermore, semi-structured interviews were conducted with industry representatives as well as experts from the IP and patent community, innovation consultants and organization responsible for IP support programs. For a detailed assessment of relevant support programs the Austrian Institute for SME Research analyzed a number of individual supporting programs. These serve as a basis for devising policy implications.

Main Results

The importance of IPR compared to tangible assets, as pointed out in numerous studies, is validated by the paper & pencil survey. A direct assessment of the importance of tangible assets compared to intangible property (human capital, structural capital, relationship capital, IP) delivers a clear picture: all intangible assets are rated more important for the success of the company. This does not mean that companies does not need production centres or factory and office equipment, but rather that they are apparently falling behind in relative importance. This is evident from the developments during the last five years which substantially higher growth in the importance of intangible goods as compared to tangible assets (Figure 1).

Figure 1: Importance of tangible and intangible values and the respective change



Survey of 295 German companies: Assessment of the importance on a scale from 1 (“low) to 5 (“high”) / Change in Importance from -2 (strongly decreased) to +2 (strongly increased)\

Quantifying these findings into monetary values proves difficult because of the valuation problem of intangible assets. As an indicator the total economic investments in intangible assets as registered in the National Accounts (NA) can be used. According to the German Federal Statistics Office, intangible asset values doubled during the 1990s, and increased by more than 30% between 2000 and 2006. Tangible assets on the other hand increased by some 17%; total gross investments stagnated and even declined inflation-adjusted.

Another indicator for the quantitatively relevant dimension of intangible goods can be developed using a cost-based approach to intangible goods. Applying broad measures that are also used in other country studies, total expenditures for intangible goods in Germany add up to about Euro 154 billion in 2004. This is around 7% of German GDP. According to the method applied here, more than 143 billion Euro of all spending on intangibles would count as an investment. Including these intangible goods into the system of National Accounts would increase investments in Germany by some 70%.

A further indicator for the increased importance of intellectual property can be seen in the rising number of patents, utility models and trademarks in Germany. This development is partly a consequence of the increasing importance of IP, but is also founded in the strategic use of IPR. The survey shows that use of IPR as a internal control tool or as a bargaining chips in standardizing and cross-licensing processes is of relevance - especially in large multinationals

Regarding the question of damages of IPR infringement on the company and economy-wide level, we systematically analyzed existing studies in this field. The most relevant studies for the Germany by the German Engineering Federation (VDMA) and The Action Group against Product and Trademark Counterfeiting (APM e.V.) come to similar conclusions like this present study: the dimension of unauthorized imitations of German companies' legally protected know-how is rather large: More than two thirds of the surveyed companies indicated that they were affected by illegal imitation of protected know-how. This share is around 64% for patent infringement and about 50% for unauthorized trademark use. This difference can be attributed to the fact that for this survey companies that are active in patents were oversampled. Furthermore, participants are based in the manufacturing industries (especially metalworking industries, mechanical engineering and electrical

engineering), which limits the generalization of these results to the German economy.

Regarding company size, the impact becomes more severe with size, caused by their increased activity in foreign markets and a therefore higher exposure to potential imitators in countries with weak IP regimes. Furthermore, utilization of formal rights among large enterprises is more established and supervision of relevant IPR is common. Nevertheless, the concern is substantial also for SMEs because just one single instance of IPR infringement can have a sweeping impact among small firms. Regarding the reported damage from product piracy, 12.1% indicated sales losses of more than 10%; the majority of companies reported losses of less than 5%. Another question was the amount of monetary expenditures companies had to dedicate for dealing with piracy-related problems. This includes additional costs of enforcing IP or a more intensive screening of markets and technical protection. The estimates of the expenditure based on this survey amount to approximately 6.2% of company revenue in 2007. Extrapolating to the manufacturing sector, which includes most of the surveyed companies, this would imply piracy costs of up to Euro 50 billion, approximately matching the estimates of the VDMA study of only 7 billion Euro (covering only engineering companies).

Figure 2 Frequency of patent and trademark infringements within and outside the European Union.

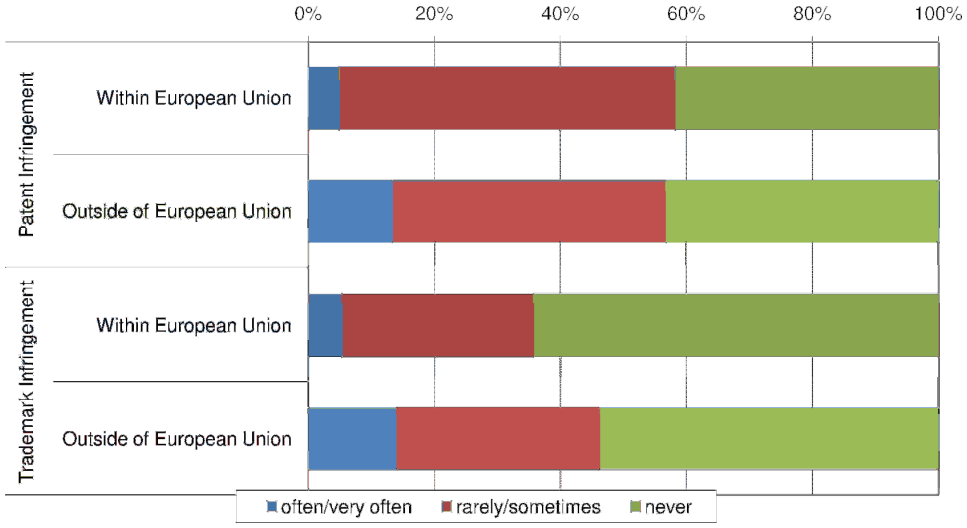
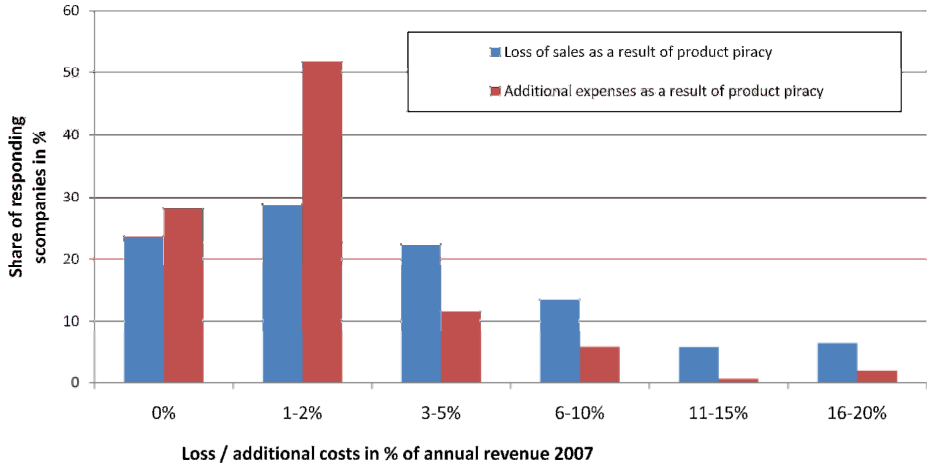


Figure 3 Loss in revenue and additional expenses as a result of product piracy



In addition to monetary damages of product piracy, this study analyzed the qualitative implications at the management level that can be expected as reactions to piracy problems. Companies with more than 500 employees report an increased utilization of formal protection like patents and signal increased efforts in enforcement of these rights. Because this cannot be expected from smaller companies, this opens another potential gap in patent usage between companies of different size. This becomes apparent when comparing companies that are directly affected with companies that are not. Larger enterprises directly affected by own IPR's infringement are much more in favour of the increased utilization and enforcement of patents. Small companies – even when directly affected – are generally not able to this or do not regard this as efficient or feasible.

Implications for SME Support Policies in the Intellectual Property Area

After analyzing both main research areas we turn to the assessment of SME support programs dealing with intellectual property. This analysis includes the demand side (the companies) as well as the supply side (relevant institutions). Regarding the demand side a corresponding modul was integrated in the company survey and substantiated with expert interviews. Regarding the supply side related programs like the German SIGNO program and the patent information centers were identified and analyzed with respect to their usefulness, effectiveness, efficiency, and room for improvement. The lack of information about relevant support programs in many companies was most apparent, many of them simply do not know

about available institutions. Furthermore, it was found that the identified group of support programs is rather focused on IP protection via the patent system. The emphasis of these activities is on the early stages of the innovation life cycle, i.e. patent filing and the research stage. Within this focus – and apart from details in implementation – the support system is assessed by and large as complete and useful.

The actual definition of most program objectives is not limited to increasing patent filings (at least at the most important support programs), which is positive. It can be assumed that those programs focusing on consulting as part of their service also offer alternatives to patenting (depending on the individual and experience of the consultant). There is agreement, however, that the Intellectual Property Management idea is not sufficiently considered and that a too strong focus on patents dominates. A further development with stronger implementation on IP Management aspects should be considered. The area of IP Management is important because it can be counter-productive for a company to file a patent, especially in areas where patent enforcement is complicated. Alternatives for such cases should be taken into account, e.g. the consistent use of trade secrecies and defensive publication, which could keep the competition from re-engineering the inventions and patenting them in their own name (thus pushing the original company out of the market). Of importance is furthermore the interrelation of different IPR, e.g. patents with trademarks. This makes it necessary to take into account the specific company's situation and the business strategies. Choosing the optimal combination of different formal and informal protection rights in the context of a well defined business model, without favoring an individual instrument *a priori* is key.

For the highly complex area of IP, expertise and long-time experience that covers technical, legal and business aspects is necessary. The demand for these kinds of experts in the labour market clearly exceeds the supply side. Thus academic education especially at technical universities should put a stronger focus on IP management to close this gap. Also, public support programs could focus on communicating relevant know-how, e.g. through consulting and special training for employees in SME active in innovation management. Education of multipliers (*Train the Trainer* concepts) like the IP4Inno program on the European level could prove successful.

Apart from the shortcomings in public perception, which implies the need for a more effective communication strategy for these programs, a better

coordination of different governmental IPR support programs is needed. At the moment there is a number of programs with differing type and quality. The first step should establish a high level of transparency of the support possibilities through a central contact institution. A coordination with regard to the respective program contents should follow, possibly led by a nationally established and active institution, like the German Patent and Trademark Office.

Regarding infringement of IPR in foreign countries, one of the main demands of the surveyed companies was the continuation and a possible increase of political pressure on countries with a high level of piracy. On the operative level, programs like the Austrian Innovation Protection Program (IPP) are useful to support SMEs in the filing and prosecution of patents. For effective enforcement of patents in Europe the establishment a community patent as well as a single European patent jurisdiction is needed.

In closing, the necessity of stronger evaluation of all programs in the innovation protection area is advised. Only by routinely assessing the achievement of objectives the efficiency of utilized instruments can be increased. An evaluation must not be one-dimensional – like the number of patents filed – but has to deliver multiple conclusions about enhancements in the entire innovation and IP management of participants. Moreover, an explicit signal in the political agenda setting could be the establishment of a federally appointed *„Coordinator of Intellectual Property Rights Enforcement*" possibly modelled after the American example.

The full report – in German – can be obtained from the authors and will be published by the Federal Ministry of Economics and Technology.

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