ARE PATENT BROKERS A POSSIBLE FIRST BEST?

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Abstract

Licensing and reassignment of patents occur either directly or with the assistance of a patent broker. Building forth on previous research on the topic, we investigate under which conditions patent brokers can be a first best. First, we discuss structural reasons that can make patent brokers a preferable option in extracting value from patents. Second, we argue that patent brokers do have specific competences that make their presence necessary. By discussing most relevant managerial theories, we formulate specific hypotheses to be tested empirically. We also offer thoughts on a possible research design as to investigate patent brokers.

Introduction

Everyday economic life suggests that several transactions would not occur or would be more difficult if brokers were not present. In this paper, we explore the role of brokers in markets for technology (Arora, Fosfuri, & Gambardella, 2001). Brokers are conceived of as specialized agents that make transaction possible in several industries. By connecting supply and demand they make exchange possible between previously unconnected parties and reduce search and transaction costs for both sellers and buyers. Throughout this paper we examine the role of brokers in markets for technology with exclusive attention to patent brokers. Our main assumption is that patent brokers are endowed with competences and structural benefits that explain their existence when turned into empirically testable hypotheses.

Patent brokers neither carry out R&D activities, nor do they patent any invention. However, there is evidence that patent brokers play a key role in making the market for technology possible (Benassi & Di Minin, 2008). By leveraging their structural position in an industry and-or in a specific domain, they might identify a good match between a company willing to reassign or license its patents and a company desirous of acquiring new technologies. Parties involved in a transaction might lack information needed to exchange and trade patents and knowledge needed to understand who might be interested in acquiring their patents. The significance of patent brokers in markets for technology is manifold. They do more than just connecting previously unconnected actors, they add value to the transactions by providing a wide portfolio of services. Brokers might assess patents from a technological and business perspective

and consult companies on how to use their portfolio of patents. Moreover, they might search the markets for valuable assets and shield companies that prefer to move in the shadow. In scenario's of this type, brokers might also identify and develop a business out of a patent by collecting needed resources.

Taking into account the broker features outlined above, one can state that brokers play in between by carrying out complex transactions and taking entrepreneurial risks. Patent brokers are market makers (Benassi & Di Minin, 2008). Recognizing the growing importance of brokers in the market for technology, scholars have started to be interested in the brokerage phenomenon with reference to innovation (Hargadon, 1998; Hoppe & Ozdenoren, 2005; Winch & Courtney, 2008;), knowledge transfer (Hargadon, 1998) and networks (Marsden, 1982; Morgan & Crawford, 1996; Oke, Idiagbon-Oke, & Walumbwa, 2007; Ryall, & Sorenson, 2007). Studies on patent brokerage have covered pharmaceutical industry (Gassmann & Reepmeyer, 2005), consulting (Hargadon, 1998), product design industry (Hargadon & Sutton, 1997), staffing sector (Fernandez-Mateo, 2006), construction sector (Winch & Courtney, 2007) and electronic commerce (Bailey & Bakos, 1997).

With these analyses in mind, little doubt exists whether brokers are a viable solution for extracting value from patents. However, it must be noted that brokers are not the only alternative. Companies might use internal, specialized units to search, negotiate and close a deal, rather than relying on an external actor. Although companies may use both modes, a comparative analysis of their strengths and weaknesses might shed light on the market for patents. This aspect has often been neglected in existing literature. In this paper we explore and discuss specific reasons that

can make patent brokers valuable for companies. We partition these reasons into structural and competence-based ones. A structural perspective refers to institutional and market conditions that make brokers necessary to the economic exchange. Transaction cost economics and structural holes theory provide indirect explanation for the existence and role of brokers according to this perspective (Bailey & Bakos, 1997; Burt, 1992a, 2002 and 2004; Williamson, 1985). A competence-based perspective focuses on the brokers' distinctive competencies and know-how. This second perspective explains under which conditions brokers might be a first best solution for companies. A competence-based perspective might also elucidate aspects of what it takes to be an effective broker. In other words, successful brokers deploy their specific competences to address needs of companies willing to trade patents. This paper also explores how they add value to transactions. We offer propositions on patent brokers that are to be tested in future analysis and discuss possible policy implications. The paper is organized as follows. In the first section, we briefly discuss general and specific reasons that are giving momentum to the market of patents. In the second we explore the different modes for extracting value from patents, while in the third we formulate specific hypotheses for explaining the existence of patent brokers according to a structural perspective. In the fourth we describe competence based reasons that could explain the make or buy decisions by firms. Section five includes some suggestions for research design. In the concluding remarks we outline implications for further research on the issues explored during this paper.

1. Market for patents

Intellectual-based assets have become an important source of a firm's competitive advantage and a key component for formulating corporate strategy (Teece, 2005; Motohashi, 2008). Intellectual property (IP) can be defined as all the intellectual assets for which the law grants individuals or a company exclusive rights and protection against improper use by third parties (Rivette & Kline, 2000).

Intellectual property occurs through patents, trademarks, copyrights, and trade secrets. Every IP variant rests on a discrete judicial meaning and creates distinct market conditions. Patents provide incentives to innovate by excluding others from producing and commercializing similar items. Patents balance high risks of innovative companies with a temporary monopoly. Companies patenting their innovations disclose valuable information to possible competitors. However, in return patenting companies do acquire a specific right. This right may be used for different purposes. Companies can use their patents to discourage illegal competitors, thus safeguarding prior investments. Scholars have observed that companies may use patents not only for protecting their innovative products and services (Hall, 2005). Companies use patents for a wider set of goals. Companies could decide to accumulate patents for defensive reasons. In this manner patents offer companies a powerful tool to prevent possible entry of new competitors. Moreover, patents also discourage existing competitors as they represent a threat against possible innovation. That is, patenting prevents rivals from patenting related inventions and discourage patent violation lawsuit.

Patents can benefit companies not only for strategic reasons (Ziedonis, 2004). Patents may offer companies a more favorable access to external technologies, for example in the case of cross-licensing agreements where a large amount of patents gets exchanged between companies. Generally, patenting in a specific industry or technology might be useful to negotiate with owners of patents in other industries.

A company can benefit from patents in two different, but not opposite, ways. First, a company might use patents to protect its products and proprietary technologies. Patents exclude others from doing. Patents grant a company an exclusive right for a limited time in exchange of a full disclosure of information. It is outlined that patents help a company to protect their innovations and set barriers to entry in a specific industry. This is specifically the case for a company that uses a nested set of patents bounded together to avoid reverse engineering and imitation.

Secondly, a company might also decide to extract value from its patents directly. A company might license or reassign its patents in secondary markets (Arora et al., 2001; Svensson, 2007). In secondary markets, patents might get separated from products. Licensing and reassignment of patents occur when a company prefers to extract value from patents by relinquishing its rights on an innovative product. Extracting the value of patents directly might be a first best solution under different circumstances. This is the case when a company has patented a promising innovation but does not control complementary assets that are fundamental for succeeding in a business. Along the same vein, licensing and reassignment might be a first best option when a company does not have enough resources. For example, when a company has

to acquire costly downstream assets to leverage its patents, it might be considered less risky to license or reassign them. Licensing and reassignment reduce the risk of developing and introducing a new product in the market (Gambardella & Giarratana, 2006). This is the case for high-tech industries where the time to market a new product might take several years. For example, in biotech industries, small, innovative companies regularly license or reassign their patents to large pharmaceutical companies, that are better equipped to face long term risks, have more resources and can leverage their complementary assets (Kollmer & Dowling, 2004).

Clearly, companies must carefully weight pro's and con's in deciding to use patents for protection of products and proprietary technologies versus licensing and reassigning their patents. For example, internal use may offer a solid base for developing new products, but licensing might offer more opportunities for getting bigger in a shorter time. On the other hand, licensing offers a promising revenue base but might benefit new competitors. Beside strategic reasons, decisions on internal use versus licensing and reassignment depend upon industry and market specific features. For example, Motohashi (2008) observed in Japanese patent markets that due to rent dissipation effects of licensing, small-medium firms may have a lower propensity to licensing their technology.

Licensing has been estimated as one of the most important economic activity with a value of more than $100 billion worldwide (Economist, 2005). The act of licensing is not restricted to non-core technologies. Several companies are using licensing as a key pillar in their overall strategy. Licensing offers a stable flow of revenue, a more rapid growth and requires less integration. Moreover, licensing offers the advantage of switching to new technologies without

being trapped or locked in previous technologies (Wei, 2006). In case an innovation is far from the core strategy of the firm, licensing could be an effective solution. Likewise, licensing can be used to limit new entries into a market, control de facto standards -particularly in electronics and software industry- and maintain monopoly prices (Arora & Mergers, 2001).

Companies license their technology if this does not damage their competitive position, for example when the licensee is in a totally different business (Gambardella & Giarratana, 2006). Companies license their technology when they lack complementary assets, such as manufacturing and marketing capabilities. This is typically the case of high-tech start-ups that are focused on R&D and use licensing to speed up their growth (Gans & Stern, 2003). According to Wei (2006), decisions of licensing a technology might depend on its explicitness and compatibility. That is, the greater the technology explicitness, the lower the transfer costs and the greater the benefits for a firm. The higher the compatibility between the new and the old technology, the easier it is to rely on licensing.

Licensing offers several advantages, but also some possible disadvantages (Atuahene-Gima & Patterson, 1992). Licensing allows licensors a faster product development, offers a stable revenue stream and supports fast growth strategies. Licensees in turn access critical information about the product and its technology, get support in complementary activities and possibly a geographical monopoly when licensing is accompanied by a patent.

On the other hand, licensing a technology bears some disadvantage as well. For a licensor, licensing implies a trade-off between higher short term revenue and future direct sales. In addition, licensing creates possible new competitors. Competitors might compete on price,

thus reducing profit margins of the licensor (Van Triest & Vis, 2007). Licensing has a revenue effect, but also a rent dissipation effect (Arora et al., 2001). For a licensee, it implies the licensor being in control of the technology and its future steps. It also means accepting possible grant-back provisions, as well as transferring improvements in the licensed technology back to the licensor free of charge. Licensing involves several costs: besides royalties and possible lump sum, a licensee should consider negotiation and transaction costs. A licensee might esteem costs, but value and applicability of the licensed technology may remain highly uncertain.

Reassignment of patents is a possible alternative to licensing. Where licensing comes down to a technology transfer mechanism that is contractual, reassignment entails a shift of entire patent ownership rights. Consequently, for involved parties the implications of patent reassignment are different than with a licensing agreement. As one of the most apparent differences to licensing, reassignment concerns the transfer of the right to exclude others from commercializing the patented technology. In the case of reassignment, decisions on revenue sharing or other payment terms among the involved parties are of a different nature since they concern the transfer of ownership rights. In addition, there is a commitment to goodwill of the business connected with legal rights that plays a distinctive part in reassignment deals on patent markets.

From the broker perspective reassignment implies different and overlapping circumstances compared with licensing. However, licensing and reassignment transactions follow an initial stage of valuating the patent or patents involved. Once agreement on the value

of a patent is reached, the subsequent steps towards a deal could rest on more standardized procedures.

Valuing patent is a measure of the reward that the patent system provides inventors. Valuing patents accounts for the value of a technology and helps assessing productivity and quality of internal R&D of a company (Bessen, 2008). Value of patents is difficult to assess. Licensing fee and royalty income, competitive advantage resulting from the patent and the patent maintenance costs are the three main variables used to assess the value of a patent (Van Triest & Vis, 2007). Similarly, the value of a patent depends on its quality which can be defined along two dimensions: the technological (economic) quality produced by a patent's underlying invention, and the legal quality created by a patent's reliability as an enforceable property right (Burke & Reitzig, 2007).

The economic value of intellectual property is highly context specific (Teece, 1986). Patents might span several industries but their actual applicability is often unknown beforehand. Possible licensees or buyers are often unknown in advance, thus limiting ex-ante solutions (Ziedonis, 2004). Value of a patent might also depend upon innovations being developed by other companies. Moreover, companies developing an innovation might be unaware they are violating patents being granted. They might also be unaware that patents with specific claims they are violating were previously granted to unknown competitors. Compelling patent blindness makes value assessment of patents a very difficult task (Benassi & Di Minin, 2008).

2. Different modes for extracting value from patents

Companies approach and enter a market for patents either from a supply or a demand side. From a supply side, companies might want to extract value from patents resulting from internal R&D activities. From a demand side, companies might want to complement their existing portfolio with patents developed by other companies. Markets for patents concern short and long term licensing as well as reassignment of property rights on innovative products and technologies.

We are interested in exploring different modes for extracting value from patents. In this study we focus on market for patents among companies. We recognize individuals might be a key player in the market for patents. History of technology offers several narratives of individuals developing creative products and highly relevant technologies (Colombo & Grilli, 2005). This was especially true when innovation did not require relevant financial resources and cumulative efforts. Individuals patenting new ideas are common also nowadays, although their impact and relevant percentage over patents yearly granted is steadily declining in all western countries (Gambardella, Giuri & Luzzi, 2007). In the case of individuals, this choice is severely limited. Due to the lack of time, competences and resources, individuals have to rely on others to extract value from their patents.

In contrast, companies generally have three options. They might extract value directly, indirectly or through a combination of these two modes. Direct extraction occurs when companies rely on a specialized internal unit to cover all the possible activities, such as value and partner assessment, price (of licensing or reassignment) definition, contract negotiation and revision, enforcement. Degree of formalization and size of these units may vary: large companies are likely to have internal offices with different specialization and a considerable amount of

resources. Small companies are likely to have one or a few key players focused on patents, as in the case of entrepreneurs patenting an innovation and starting a new company. Division of labor, specialization and degree of formalization between small and large companies are different. Extracting value directly from patents occurs when a company "makes" instead of "buys": all the activities in the markets for patents are carried out inside.

Companies willing to enter the market for patents – both from the supply and the demand side—have another option. They can "buy" services by relying on a broker. Brokers intermediate between two or more parties (Burt, 1992b and 2000; Simmel, 1950). They "facilitate transactions between actors lacking access to or trust in one other" (Marsden, 1982: 202). Brokers exist because imperfections in the economic life are a rule, not an exception. This is especially true in the market for patents. Brokers can help in reducing uncertainty surrounding "real" value of patents, thus facilitating their trade (Arora & Mergers, 2001; Winch & Courtney, 2007; Teece, 2005). By means of these competences, brokers may be fundamental in allowing companies to trade their property rights. In the market for patents, brokers are third parties. Patent brokers perform a huge variety of tasks. Patent brokers increase the chance for the seller to find a buyer (Rubisten & Wolinsky, 1987). For the same token, patent brokers may assist buyers in scouting the market to find promising patents (Benassi & Di Minin, 2008). Patent brokers provide fresh knowledge and information to assess whether and under which conditions a patented technology might be successful. They learn from their activity and from establishing a wide inter-industry portfolio of relationships with both customers and suppliers. Patent brokers develop the capabilities to recognize high potential technology from low ones. Especially, through supplier firms brokers acquire knowledge on the final markets, which could be represented both by organizations and final customers. This way, patent brokers can lower information asymmetry

between companies. All in all, brokerage is quite a heterogeneous activity. Broker may add value in different ways and might have different strategies: they might be specialized in a specific industry or work across different industries (Hargandon & Sutton, 1997; Rosenkopf & Tushman, 1998).

Brokers in the market for technology have received little attention in the past, but scholars are increasingly acknowledging the importance of their role (Verona et al., 2006). Hargadon (1998) argued that brokers are fundamental as they gain access to a wide range of industries, learn the knowledge that resides within these different industries, and link past knowledge to solutions of current problems. They implement these new solutions in the form of new products or processes and learn by getting exposed to different problems. Brokers are beneficial if they offer a unique path for connecting companies or economize on connecting several actors. Brokers are beneficial if they add value to companies (Ryall & Soreson, 2007). Benassi and Di Minin (2008) analyzed different typologies of brokers according to the activities performed: consulting in licensing, patent portfolio builder, transaction and licensing services, IP consulting, licensing in-licensing out, assisting buyer and sellers, business development from patents and technology promotion.

To sum up, companies may extract value from patents either directly, indirectly or through a combination of these two modes. These latter two modes require a broker as pointed out by several theories that have addressed the patent brokerage phenomenon so far.

3. Brokerage in the literature

Transaction cost economics (TCE) is no doubt the most popular theory used for investigating what makes governance modes efficient in performing transactions (Williamson, 1975). TCE recognized that beside markets and hierarchies other different governance modes might emerge. This is for instance the case of trilateral governance modes. TCE has pointed out that hybrid governance modes are also possible as an efficient alternative (Williamson, 1985). Beside hierarchies and markets, other different governance modes might emerge. This is, for instance, the case for trilateral governance modes. Trilateral governance occurs when a third party takes part in the exchange, thus making it possible. According to TCE, trilateral governance is possible when transactions are occasional and of mixed and highly specific nature. Third parties reinforce the institutional setting that is needed to make transactions take place. As the cost of contracting, enforcing the contract, and dealing with unforeseen circumstances varies significantly (Bailey & Bakos, 1997), third parties might play an important role. This happens as high levels of proprietary technological knowledge increase the uncertainty and asset specificity of transactions.

Patent brokers are an example of third parties that rely on trilateral governance modes. TCE offers a parsimonious explanation of why brokers exist. Patent brokers can help carrying out risky transactions by providing specific expertise in intermediation. Moreover, patent brokers may reduce the information asymmetry between buyer and seller. Patent brokers can also match buyers and sellers, therefore reducing the costs of searching. The existence of patent brokers is explained with reference to specific features of transactions that cannot be governed through

polar modes. TCE explanation of why patent brokers exist is compatible with the one offered by industrial organization (Tirole, 1988). As specialized agents, patent brokers reduce operative costs. Patent brokers can benefit from economies of scale and scope.

TCE and industrial organization provide indirect support to explore under which circumstances patent brokers might be a first best. Existing research on patent brokers suggests that licensing-reassignment of patents requires specialization. Specialization is possible if there is a minimum size. To license and reassign, a company must perform several activities. It must collect and process information, specialize managers and workers, deal with several business, legal and administrative issues and set up an internal process to make decisions. Therefore, we can assume that a firm must reach a certain scale before it can economically internalize these activities. This assumption is supported by existing research and case studies on IP (Tansey, Neal, & Carroll, 2005). Large companies like IBM, Dow Chemical, Qualcom – to name a few – have created internal units to manage licensing and reassignment of their patent portfolio.

On the other hand, small and medium-sized companies do not typically have the scale of activity to justify the creation of an internal IP licensing function. As a consequence, we can hypothesize that:

Hypothesis 1. While large companies will internalize the IP licensing function, small and medium sized firms will not, due to the presence (or lack) of economies of scale.

According to H1, patents licensed by intermediaries would be owned by small and medium-sized firms. Thus, TCE and classic industrial organization provide a first simple explanation of the reason why brokers exist and what makes them brokers. Economies of scale and specialization can help explaining why patent brokers do exist and why they can be a first best. Patent brokers do exist as a specialized actor when the market for patents reaches a minimum size, thus allowing for further division of labour. This, in turn, makes patent brokers a preferable option when transactions are infrequent.

TCE and classic industrial organization have more to say about patent brokers when it comes to explaining their existence. Licensing and reassigning patents is a complex activity. First of all, there is a significant technical complexity. Patent brokers must assess whether patents are valuable from a technical point of view. This is a rather complex issue, as patents refer to new products and processes, whose technical advantage over existing solutions require lengthy exploration and several due diligences. Secondly, there is a legal complexity. To assess the "real" value of a patent, brokers must search for prior art, analyze and compare a new patent with previous patents. They must also work out all possible contractual issues and find out acceptable solutions for buyers and sellers. Grasping the particular benefit of a patent transaction often entails a considerable calculation of future risks. Third, there is an economic and market complexity. Assessing the economic value of a patent is only a first, although difficult, step. Patent brokers must sometimes provide financial assistance to the buyer and seller and often bear part of the economic and market risk of complex transactions.

Working through complex issues when licensing and reassigning patents suggests that there may be a substantial learning by doing involved. Managing and accomplishing more often technical, legal and market complex tasks in the market for patents might provide substantial benefits. Learning by doing helps explaining why patent brokers might be a preferable solution. Hence a second hypothesis:

Hypothesis 2. Brokers with more experience in licensing patents are more effective in their jobs than companies.

Beside TCE, structural holes theory offers a parsimonious explanation of why patent brokers might exist (Ahuja, 2000; Burt, 1992a; Hargadon and Sutton, 1997). Structural holes are "gaps in the flow of information between subgroups in a network" (Burt, 1992a: 717). A structural hole exists when two people or groups are unaware of available value if they were to coordinate. Actors in a network rich of structural holes will be able to access novel information from remote parts of the networks and exploit this information to their advantage. By getting access to this information, brokers play the role of boundary spanners, who transfer knowledge from one domain to another (Allen, 1977; Tushman, 1977). Brokerage is the act of creating value by filling in the hole between two separate domains.

Scholars have investigated the role and contribution of brokers in the development of new technologies. Hargadon and Sutton (1997) showed how technology brokers are able to access diverse sources of knowledge. Technology brokers add value to the whole process by

transferring information and technology among several organizations. Recombination of existing resources is an act of innovation because "while social word is typically viewed as a seamless web, it is fragmented into many small domains in ways that make it difficult to disentangle and recombine the resources from one domain into another" (Hargadon, 2002: 44). A new combination of resources is crucial for value generation by patent brokers. By bridging disconnected domains, brokers benefit by moving resources from one group to another (Burt, 1992b).

Working in a wide array of domains might be crucial when dealing with patents. Working in different domains provides a good opportunity for transferring and recombining knowledge embedded in a patent. Patents that are patented in a specific domain might have a great impact in other industries. This is particularly crucial when products get more and more complex. A rough measure of product complexity might be its number of different sub-systems, each realized with different technologies. Patents patented to protect a specific technology might have a great impact in different subsystems and eventually be of great interest for different products. That is, patents specifically developed for an industry might also be interesting for others. Patents having a "horizontal" impact on several products and industries are likely to have a larger market and a higher value. Along the same vein, patents that have a negligible value in a market might become interesting in another.

Companies and brokers working in only one industry are not very well positioned to catch the potential value of patents in other domains. A focused business model offers several economic benefits, but has also drawbacks. Focused companies and brokers might be "locked in"

their context, and trapped in their network, therefore being unable to leverage the potential value of patents in other domains. This is particularly relevant for brokers. Brokers might be very knowledgeable about one industry: they might know all the most important companies, understand their technologies, and also have experience and reputation in the field. These features are highly beneficial when brokers broker patents inside their industry. On the other hand, their focus acts as a barrier when marketing a patent outside that industry. Hence it is important to distinguish brokers brokering patents in the same or in different industries:

Hypothesis 3. Patent brokers brokering patents in several industries perform better than companies and brokers working in only one industry because of their greater interconnectedness.

Working in several industries may be beneficial, as it opens up new opportunities for brokers. This is especially the case when a technology can be used in several industries. Patent brokers, however, can add value to a patent by deploying it for new uses and new products. Pre-existing knowledge and old products can get recombined through advancement in an adjacent industry. Research on innovation recognizes that recombination through combinative capabilities can be crucial (Swan, Goussevskaia, Newell, Robertson, Bresnen, & Obembe, 2007). For example, the recent 'iPill', designed to treat gastrointestinal disorders, contains a tiny computer, a wireless transmitter, and a series of sensors. Recombination does not come without a price, however. To be able to recombine, a patent brokers must be knowledgeable about other industries and technologies. Higher degrees of interconnectedness may limit specialization, that

in turn can be highly beneficial. Brokers can be specialized by industry, technology, or both. Brokers are specialized by industry when they do business in only one industry. Specialization by industry grants an in-depth knowledge of the competitive arena. It also grants a profound understanding of the strategic options companies have in that industry. Specialization by industry also creates visibility of a broker and makes social connections with key players easier. Brokers are specialized by technology when they focus on a specific technological pattern. This might be the case of a technology that penetrates different industries. An example is micro-processors technology, that gets used in several products and covers multiple uses. Specialization by technology may allow brokers to be on the edge and to capture the full potential of patents.

Brokers can also be not specialized. Degree of specialization is low or negligible when brokers serve several industries at the same time, work on different technologies and offer various kinds of services, if need be. Not specialized brokers are not in the best possible condition to exploit the market for patents. While not specialized brokers enjoy high flexibility and possibly exploit time advantages in addressing market needs, they lack core competences that can make their services valuable for a company. Hence we can hypothesize:

Hypothesis 4. Patent brokers specialized by industry, technology or both do perform better than not specialized patent brokers.

TCE, industrial organization and structural holes theory focus on structural conditions surrounding a transaction to explain the existence of brokers and to suggest under which conditions “making” is better than “buying”. These theories help understanding why brokers do exist, however there might be other reasons. That is, we might assume that patent brokers exist

because they are fundamental in making the exchange possible. Brokers have specific competences that none of the involved parties has.

4. Investigating patent brokers competences

A competence-based framework might offer a good anchor to understand under which conditions brokers may be a first best solution. Core competence literature argues that organizational competitiveness relies on organizational core competences (Drejer, 2000; Hamel, 1994; Prahalad & Hamel, 1990). The literature conceives of core competences as specific capabilities of an organization. Core competences grant access to several markets, highly affect customer perception and are difficult to imitate by competitors and clients (Gilgeous & Parveen, 2001).

A competence-based perspective might offer a convincing explanation of different performances by companies and brokers in the market for patents. First, it may explain why performances differ. Performances might differ between companies and brokers, but also among brokers. Patent brokers might outperform companies (and vice-versa) because they have specific competences needed to make the deal successful. Similarly, performances of brokers may differ because their competences differ. For instance, a broker with high technical skills and weak marketing skills will be of little help and produces moderate results if the deal requires continuous scanning and searching. Second, a competence-based perspective can explain what makes patent brokers crucial for completing specific transactions. More than arranged around a

polar dichotomy between “make” or “buy”, market for patents is probably organized around a mixed mode. Companies may lack specific competences a broker has. For instance, a company may be fully knowledgeable about the economic and competitive potential of a patent in its specific market, but know little or nothing about its impact in other markets. Third, investigating brokers’ competences may clarify whether patent brokers are a transitional or a permanent form. Should their competences be low or moderate, and their performances inferior or similar to companies, mainly market imperfections would explain their existence. Consequently, as the market for patents gets more mature, patent brokers will be likely to disappear.

Patent brokers can have component or architectural competences. Component competences of a broker are specific and can either be technological, marketing, commercial, financial and juridical. A broker has *technological competences* when he is engaged in the assessment of patent applications, and in its quality. This means understanding the technical features of a patent, its distinguishing features, its potential utilizations and changes that should be applied in order to fit best market requirements. A broker has *commercial and marketing competences* when he assists in evaluating the commercial value of inventions and offers additional services. For instance, brokers search for and select firms willing to develop the patented invention. Commercial and marketing competences may include selecting a target market, contacting potential customers and promoting the patent. A broker has *juridical competences* once he provides support for administrative, contractual and legal issues. Support may cover consultancy in the case of patent infringements, assistance regarding the broker renewal system and assistance in deal making. A broker has *financial competences* if he is in the

position of evaluating the best modality of financing a possible deal. It includes the assessment of capital required in different stages, choice of the most suitable format of financing and selection of the most appropriate institutions, including venture capitalists, banks and private funds.

Apart from component competences, brokers may have architectural competences as well. Architectural competences are high-level competences (Henderson & Cockburn, 1994). Brokers with architectural competences are able to integrate heterogeneous competences. This is easier said than done, however. Integrating heterogeneous competences does not simply mean a broker is able to offer competences that differ from a component viewpoint. Brokers can offer a huge combination of technological, commercial, financial and juridical competences. Offering different component competences requires some kind of integration. However, architectural competent broker go well beyond integrating different component competences. Architectural brokers can provide full assistance to the patenting company as well as to the prospective licensee or buyer. Brokers with architectural competences not only understand technical, commercial, marketing, juridical and financial issues. They provide companies extra value by disclosing the full potential of a patent. This may happen in different ways. For instance, an architectural broker might help developing a new business out of a patent, collect and coordinate complementary assets so as to move from a patent to marketing a product.

Distinguishing between component and architectural competent brokers seem to fit existing research on brokers. Exploring patent brokers in Silicon Valley, Benassi and Di Minin (2008) argued that brokers act as consultants, shields, enforcers, evaluators, promoters, deal-

makers and aggregators. The first four groups mainly offer component competences. For example, consultants and shields may offer technical advice about a patent, enforcers protect inventors who patented their inventions against possible infringements through legal assistance. The last two groups resemble architectural competent brokers. For example, deal-makers support patents with various services. They might carry out preliminary scientific, technical and business investigations to assess the potential of a patent. Patent aggregators buy patents and build huge portfolios to be reassigned or licensed through "packets" of patents. They offer a comprehensive platform of intellectual capital to companies. Finally, evaluators and promoters lay somehow in between as they act on behalf of companies that are either interested in acquiring patents or are trying to capitalize on some of their unexploited patents.

Component competent brokers and architectural brokers play a different role in the market for patents. Component competent brokers complement a company's capabilities by offering specific services. Level of expertise in a specific domain depends on prior experience, but it is not only a function of past history. Level of expertise depends upon specific skills a broker can offer at the right time. Skills and capabilities of a broker are stepping stones for penetrating the market for patents and for enlarging its customer base. The higher the capabilities and skills of a component broker, the more it will be recognizable and visible by possible customers, thus possibly enhancing its reputation. A higher reputation will have a positive impact on the deal flow of the broker and on its performance as companies might consider outsourcing a good alternative.

Thus we can hypothesize:

Hypothesis 5. Patent brokerage productivity and performance are an increasing function of a broker's component competences in specific areas.

To a patent broker, achieving greater expertise in a specific component represents a viable solution for different reasons. First, brokering patents involves complex issues. Mastering complex issues requires in turn considerable investments and a critical mass to reach combined scope economies. Focusing on a specific component limits risks. Second, a large proportion of patent brokers seems to leverage prior personal experience of founders and their learning in past positions at big companies. It therefore seems reasonable to follow the same track, as totally different learning does not come without a price. Third, designing and managing the internal organizational structure of a patent broker appear to be rather simple as it centers around the same domain and does not require cross fertilization among different experts. Fourth, by offering component competences a broker can cooperate with a company. This is precisely the case when both the broker and the company have significant expertise, so that the company would have reasons to both "make" and "buy". Concurrent source may in turn enhance learning and leverage tacit knowledge (Parmigiani, 2007).

Architectural competent brokers bear higher risk, as they must be knowledgeable in different domains, be open to invest in new areas of knowledge and recruit more professionals. Architectural brokers also face complex organizational issues, as they must warrant autonomy to their professionals and at the same time achieve coordination through mutual adjustment.

Architectural brokers can mobilize external competences, as in the case of experts participating to due diligence. However, an architectural broker must have a minimum size to be fully competitive. Higher risks and investments can be balanced by greater opportunities and higher returns. By offering companies a turn-key service, architectural brokers can get full access to more potentially profitable patents and extract more value from the deal.

In order to do so, architectural brokers must do more than offering a comprehensive portfolio of (component) competences. Architectural brokers should act as market makers, by adding value and creating a business out of the patent. More than making several and different competences available, architectural brokers have to act in a proactive way. This implies, for instance, sharing risk with companies that patented the invention and possibly invest to buy patents temporarily. Restated, these arguments suggest the next hypothesis:

Hypothesis 6. Architectural patent brokers facing higher levels of risks and acting in an entrepreneurial way will have more satisfactory results.

5. Issues in research design

The context for this study involves make or buy decisions about licensing and reassignment of patents by small and large companies. The study aims at covering both the demand and the supply side. From a demand side perspective, it aims at investigating under which conditions patent brokers are called into action (H1) and what makes them possibly

preferable compared to internal solutions (H2). From a supply side perspective, the study aims at exploring what contributes to make patent brokers possibly beneficial ((H3 and H4) and what distinguishes component competent and architectural competent brokers (H5 and H6).

The type and amount of data that is to be gathered determines the analysis of conditions in which patent brokers appear to be a first best solution. The methodology is served by both qualitative and quantitative sources, as well as a combination of the two. In the study of Benassi and Di Minin (2008) several characteristic difficulties have been listed when it comes to gathering qualitative data about patent brokerage. For instance, the concentration of certain business models near high-tech companies hinders extrapolation of research results, or the willingness to share financial data may entail problems for evaluating the utility of certain competences. Other problems could relate to access, time availability, or sensitivity of company information. When it comes to data gathering one may rely on 'snowballing sampling' to make use of existing networks, 'cluster sampling' to select out experts on a specific competence, or 'semi-structured interviewing' to explore specific competences or new competences in more detail.

Whereas archival and technical information about patents are omnipresent, information on economic use of patents is scarce. There is not a public archive or database of patents that gets licensed and reassigned among companies. Statistical available information allow for limited analyses by recording specific data until the patent is granted. No databases on subsequent stages of patents on the market exist. Designing and setting up a database with required information is difficult, but not impossible, provided that preliminary issues get solved.

Two preliminary issues seem to be critical. First issue concerns the magnitude of the research both in terms of countries and industries. A comparative study covering several countries and industries will not only be statistically more representative, but possible conclusions are more robust as they might be complemented with qualitative analyses. An example of such a complementary approach consists of investigating institutional and regulatory differences among countries. For the same token, a study covering several industries would possibly offer more insights and allow for a better refinement of future research. Availability of resources for setting up an international research team is obviously the independent variable. The existence of quantitative sources will influence the type of possible measurements. Research that rests on quantitative sources faces different challenges, like research that uses existent datasets on innovation in a certain industry (Motohashi, 2008) or country (Svensson, 2007). One of these challenges may be to solve incompatibility issues resulting from differences between database categories and specific patent broker competences. In the case of using databases or promising company information assets, the issue of access may be a significant factor. Consequently, government studies on innovation may be used when resources are limited. Finally, it is possible to combine measures of competences derived from fieldwork with large scale statistical sources on competition. The combination of these different scales of analysis may give a better understanding of the primary data obtained as well as the utility of using competences in explaining brokerage performance. In this case it also becomes interesting to compare the predictive value of different hypotheses or variables by means of a meta-analysis. That is, comparing the predictive value of variables or hypotheses may tell which ones are most decisive

for a broker to appear as a first best solution from a company perspective. Second issue concerns the methodologies and mix of sources needed to get the required information. Traditional sampling techniques may have only limited validity. Snow-balling through several waves may be helpful to extract relevant information, still it would require more time. Several sources are needed in order to make the information as much reliable as possible. Companies that licensed or reassigned their patents and patent brokers are the two main sources. Getting access to both, solving confidentiality issues and collecting in a reasonable time the required information is easier said than done. Clearly, this involves solving delicate research design issues like the most appropriate unit of analyses, as large companies might have thousands of patents each. Operationalization represents another possible challenge for some variables. For instance, throughout this paper we have introduced the variables 'experience', 'interconnectedness', 'effectiveness', 'specialization' and 'performance'. All of which have meanings that are to be decided upon once the situation of the investigated brokers is chosen. That is, the variables 'specialization', 'performance' and 'effectiveness' have a higher degree of adaptability when it comes to operationalizing them. A useful side-effect of turning these variables in measureable units is the creation of testable null-hypotheses.

6. Concluding Remarks

Market for technology and market for patents are getting momentum, as intellectual capital represents one of the main competitive tools in the modern economy. Due to the increasing importance of intellectual capital, companies must reconsider the way in which they may benefit from patented R&D efforts. Companies can to use patents in several different ways. First and more common, companies use patents to shield their products and to achieve a competitive advantage over competitors. However, companies can use patents as a source of revenue. Companies can become serial patents generator, thus making licensing and reassignment their core business. Conversely, companies may want to license or to buy patents. This may occur for different reasons like incorporating new technology, complement the existing offer, and so on.

In the market for patents, specialized agents are at work. Patent brokers do perform several roles: they don't do classical R&D. Nor they patent new inventions. Patent brokers provide services by connecting supply and demand and by offering extra value in several ways. In this paper, we have explored possible conditions that make patent brokers a preferable alternatives. In extracting value from patents, three main alternatives are possible. First, a company may decide to do everything with internal resources. We have hypothesized that this is probably the case of large companies that have internal, specialized staff. Use of broker is rather occasional or not existent. Second, a company can decide to use a component competent broker in addition to internal units. This means that whichever the service the component broker is offering, it gets complemented by internal capabilities. For example, a firm may be able to assess the technical and market features of a patent. Still, it may lack legal competences, therefore relying on a

component broker. Third, a company may decide to contract out or reassign the patent to an architectural competent broker. This is for instance the case when companies face possible bankruptcy or when there is a need for direct value extraction. Decision among the three alternatives depends upon several aspects and cannot be made once for all. In deciding what is best, a company must carefully consider its strategic position, the link between a product and a patent, and so on. For the same token, performances and results a company can get from a patent can be heavily influenced by various contingencies.

In this paper, we investigate when companies are likely to rely on brokers and which features of a broker do affect patents' possible outcome. By complementing existing managerial literature with preliminary evidence on patent brokers, we first hypothesized that expertise, specialization and scope of a broker have an impact on results. Finally, we hypothesized that patent brokers productivity is a function of specific component competence, and that architectural brokers with entrepreneurial capabilities will other things being equal, perform better.

Although the research is still in its preliminary stages, we believe that our approach offers several contributions. First, by using existing theories, we propose to control what makes presence and use of patent brokers more likely. We argue that existing theories, namely transaction cost economics and industrial organization have something to say about patent brokers. However, we also want to explore some patent brokers more beneficial than others and we argued that learning and specialization of patent brokers can make a difference. Finally, following existing literature, we have suggested that brokers might have component or

architectural competences. Expertise in a specific component, from one hand, and entrepreneurial content, from another, do affect possible results.

A competence-based perspective has not yet been applied in the study of patent brokerage phenomenon. Yet, it might help explaining different performances in the market for patents. It might also help companies making better decisions when deciding to use patent brokers. Disentangling brokers' competences may shed light on their future survival. Patent brokers might be a transient form. Or they might become a key actor in the market for technology.

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