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***IP Backed Financing for enhancing access to credit: an
analysis of US patents' securitization agreements***

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Summary

Introduction	4
Chapter 1. IP Backed Finance as a financing option for companies with promising IP portfolio.....	6
1.1 Intellectual Property as collateral in financing for innovative firms	6
1.1.1 <i>Can IP meet the need for financing?</i>	6
1.1.2 <i>The development of IP backed finance through the years</i>	7
1.1.3 <i>Re-thinking and defining intellectual property as collateral</i>	9
1.2 Advantages and challenges of IP backed financing.....	13
1.2.1 <i>Advantages of IP backed financing</i>	13
1.2.2 <i>Challenges of IP backed financing</i>	16
1.3 Policies to improve the market efficiency for IP-backed financial instruments.....	19
1.3.1 <i>Toward a reliable marketplace for IPRs</i>	19
1.3.2 <i>The need for standards in recording and valuating IP backed transactions</i>	20
Chapter 2. Suitable assets and models for raising capital through IP-backed financing	23
2.1 Choosing among IP portfolio assets as collateral: from patents to less traditional form of intellectual property	23
2.1.1 <i>Patents' collateralization</i>	23
2.1.2 <i>Trademarks' collateralization</i>	28
2.1.3 <i>Copyrights' collateralization</i>	30
2.1.4 <i>Outlook for the collateralization of non-traditional IP</i>	30
2.2 IP backed structures for companies willing to waive the IP ownership.	33
2.2.1 <i>IP true sale structure</i>	33
2.2.2 <i>IP sale and lease back structures</i>	34
2.3 Financial transactions for IP indirect collateralization	37
2.3.1 <i>Basic IP royalties structure</i>	37
2.3.2 <i>Conditional assignment structure</i>	39
2.3.3 <i>Secured IP loan structure</i>	40
2.4 Determining elements for a successful IP-backed financing strategy	40
Chapter 3. Exploratory analysis of U.S. patent-backed activity	43
3.1 Introduction to the analysis.....	43
3.2 Data source, methodology and scope	46
3.3 Findings	47
3.3.1 <i>Number of patents pledged per month</i>	47
3.3.2 <i>Lenders' perspective</i>	48
3.3.3 <i>Borrowers' perspective</i>	52
3.3.4 <i>Contractual scheme: release and termination</i>	59
Conclusions and Future Perspectives	62
References	65

Introduction

When it comes to financing nowadays many companies are understanding the essential role of Intellectual Property rights for any firms intended to gain and maintain a sustainable competitive advantage over their competitors. An effective IPRs' management means indeed bearing in mind their strategic potential in a knowledge-driven economy.

While traditional literature has deeply focused on how to extrapolate revenue directly from these intangible assets, we looked at it in another way. Patent's and trademark's exploitation means not only signing licensing agreements and not only gaining revenue streams from patent litigations. In order to unlock the hidden power of these intangible assets scholars have, recently, emphasised a different approach to capture value from a firm's IP portfolio. Modern literature has focused on the ability to use them as collateral to attract capital from banks and VCs rather than directly marketing them.

Therefore, firms need to handle strategic intellectual assets in order to face the problem of access to credit. IP portfolio should be seen no more and not only as a group of legal instruments. But competent managers should understand they are not just a form of protection and consider their nature as financial tools.

Hence, the paper is structured as follows. We will start framing the key role of IP as a source of revenue for technology-based companies. The main problem related to acquire external capital will be pointed out. Thus, IP-Backed financing will be illustrated as a possible financial alternative. It follows the evaluation of the IP collateralization taking into account its strengths and weakness and the right steps to frame a standardized IP Backed financing market.

Once the context is built, the analysis will keep on explaining the instrument used and the structure of the financial transactions. The paper will analyse the most common ways through which Intellectual Property Rights can be seen as business tools finalized

to offer a valuable collateral. Now the following section is aimed at giving an answer to this crucial question: “How the IP backed financing can work effectively enhancing the probability to obtain a loan as well as its performance?”. The answer will be illustrated in the last part of the second chapter and it will be basically focused on the elements generally leading either to the success or failure of IP backed financing transactions. Finally, a database from the United States Patents and Trademarks office will be the basis to analyse in detail 296 patents securitization agreements mainly focusing on the categories of borrowers and the lenders and the key characteristics of the organizations (banks, private firms etc.) involved.

In conclusion, the very crucial point of my essay is to understand if IP backed financing can really have a positive impact on financing, to what extent a well-managed IP portfolio do enhance firms’ financial strategy and in which circumstances.

Chapter 1. IP Backed Finance as a financing option for companies with promising IP portfolio

1.1 Intellectual Property as collateral in financing for innovative firms

If the idea that innovation should be embodied in the firm's DNA seems obviously true, when it comes to financing strategies to invest in technology this clarity seems to disappear.

It is frequently argued that R&D as well as inbound innovation strategies are commonly seen as effective measures for the firm itself, but how to finance these investments? We identified IP Backed financing a possible answer to the previous question.

Accordingly, in this chapter intangible asset's collateralization will be analysed in detail emphasizing why it should be considered a valuable alternative and what could determine its failure.

Finally, we will investigate how to improve the existing market for IP-backed agreements.

1.1.1 Can IP meet the need for financing?

When the issue is the existence of a financing gap due to the investors' troubles in assessing the firm's credit reputation, the model of IP collateralization represents a valuable strategy to attract external resources.

As a matter of fact, the attempt to find a link between financing R&D and the evolving IP rights legal frame, results in alternative mechanisms to monetize IP. Equally important to the traditional options such as licensing agreements and sale, non-traditional assets' collateralization is growing in popularity. Consequently, firms with valuable technology and patent portfolio have an eased access to innovative monetizing options to finance R&D (Nithyanda, 2012).

The great importance of monetizing knowledge seems easy to understand if we consider that technology-based firms are particularly likely to experience several issues when it

comes to innovation's funds. The reasons lie in the nature of R&D investment because uncertainty shapes firms' struggle in accessing to credit.

The absence of a complete predictability is associated with the lack of a direct relationship between the capital borrowed and the output of the investments.

What comes from R&D and the acquisition of external knowledge is significantly influenced by a multitude of variables. These unpredictable elements shape, in practice, the outcomes of investments in innovation that often tend to diverge from the initial and predefined plans. Accordingly, not only the size of the investment affects the returns for the lenders, but factors that cannot be totally controlled have a consistent effect on the final output.

What is more is that from 2000s uncertainty has been boosted. Let's just think about giant companies such as Google, Yahoo, eBay and Facebook. It cannot be denied that they experience huge returns, however there is an uncountable list of entrants which didn't even arrive at the right size or fail. Accordingly to the majority of the scholars who analysed the question, their default is partly due to the informational dilemma (Hall, 2009).

Hence, leveraging their intangible assets companies can hopefully ease the access to equity financing and debt. The reason behind this trend lies in the diffusion of the use of IP as a financing tool, more than just a legal instrument. As a matter of fact, companies, are given the possibility to make the most of their intangible assets either pledging IP as collateral or making them available to the lender if the company fails (Organisation for Economic Co-operation and Development, 2015; Munari & Oriani, 2011).

1.1.2 The development of IP backed finance through the years

Overall, IP collateralization has now days found its major application leading to a significant improvement of loan securitization. An important thing to note is that its appliance has experienced a particular evolution. While technology-based companies have been used IP as a tool to protect the knowledge acquired for decades, the diffusion of IP based finance has spread out only in recent times. The increase in diffusion is mainly related to two circumstances. Firstly, the expanding role of unregulated entities

sources of credit such as finance companies, insurance firms, investment banks and institutional investors. These lenders were willing to offer resources to troubled companies leveraging residual collaterals (e.g. intangibles) ignored by commercial banks. Secondly and increase in the liquidity of IP market coupled with sophisticated valuation's methods cause lender's decision to grant loans secured with intangible. (Lumioti, 2011)

However there are few example of IP collateralization before it became popular such as case of Thomas Edison who in the late 19th century made use of his patent on incandescent electric bulb to secure financing for his General Electric¹.

Afterwards, its use increased in popularity as the knowledge economy spread out. In fact, in the early 2000s both the economic downturn and low interest rate result in lender's contraction of profit in the corporate loan market. Consequently, accepting non-traditional assets as collateral they increase the supply of credit to companies and enjoy higher returns. If it is true that IP backed financing market experienced a contraction after the economic crisis of 2008, it stepped up again as soon as the society was moving toward a more intellectual economy.

Nevertheless, even if many sectors which made large use of IP were profoundly affected by the crisis, it seems interesting to point out that the market size for IP-backed instruments was not so limited as it might be expected. Thanks to their theoretically perpetual value, these legal instruments tend to maintain their value even in a period of crisis (Jacobs, 2011).

Moreover, the exploitation of intellectual property for loan's securitization is radically changing its role. Firstly, IP rights are starting to be accepted as second-lien, mezzanine debt and refinancing facilities. Secondly, if in earlier times they were considered as and additional collaterals, today they are used alone to provide insurance to the capital borrowed by banks and financial institutions (Nithyanda, 2012).

¹ For further information about Thomas Edison's business strategy read: Millard, A, 1990. Edison and the Theory and Practice of innovation. Business and economic hystory. 1991-1999.

This new role as a stand-alone asset class results in an uncertain secondary market and, consequently, in a late entrance in the patent lending scenario for the traditional financing institutions.

Further, creditors are starting to feel the pressure to diversify their debt portfolio. As a consequence, not only niche or speciality investors are becoming willing to accept as collateral non-traditional assets such as IP, but also major commercial financing companies are following this tendency as well (D'souza, 2014; Bienias, et al., 2014)

1.1.3 Re-thinking and defining intellectual property as collateral

In order to analyse IP collateralization more in detail, it seems appropriate to provide a definition. It consists of the company's pledge of one of the assets it owns such as future revenue from IP assets or rights associated to IP. This procedure is aimed at securing the loan in case of default. (Burton, et al., 2014).

Accordingly, in this category of financing model the IP rights provide security for the lender because, as we said before, intangible assets might either be the only form of collateral or just an additional asset. Moreover, the exchange of funds between the company borrower and the commercial lending institution might occur directly or through intermediaries.

The main difference between this model and the traditional bank's loans lies in the financier's focus on the target company's IP portfolio value, rather than evaluating the receivable accounts and tangible assets. In fact, while in traditional asset-based loans the assets exploited are real estate and equipment, in IP-backed financing the borrower pledges its patents, copyrights and trademarks so that the collateral pool is more valuable and, therefore he might unlock the possibility to obtain a loan bigger in size (Millien & Laurie, 2007; Leone, 2005).

In addition, companies generally follow a standard path when they collateralize their intangible assets. We provided the scheme below for the purpose of a clear representation of the general IP collateralization framework:

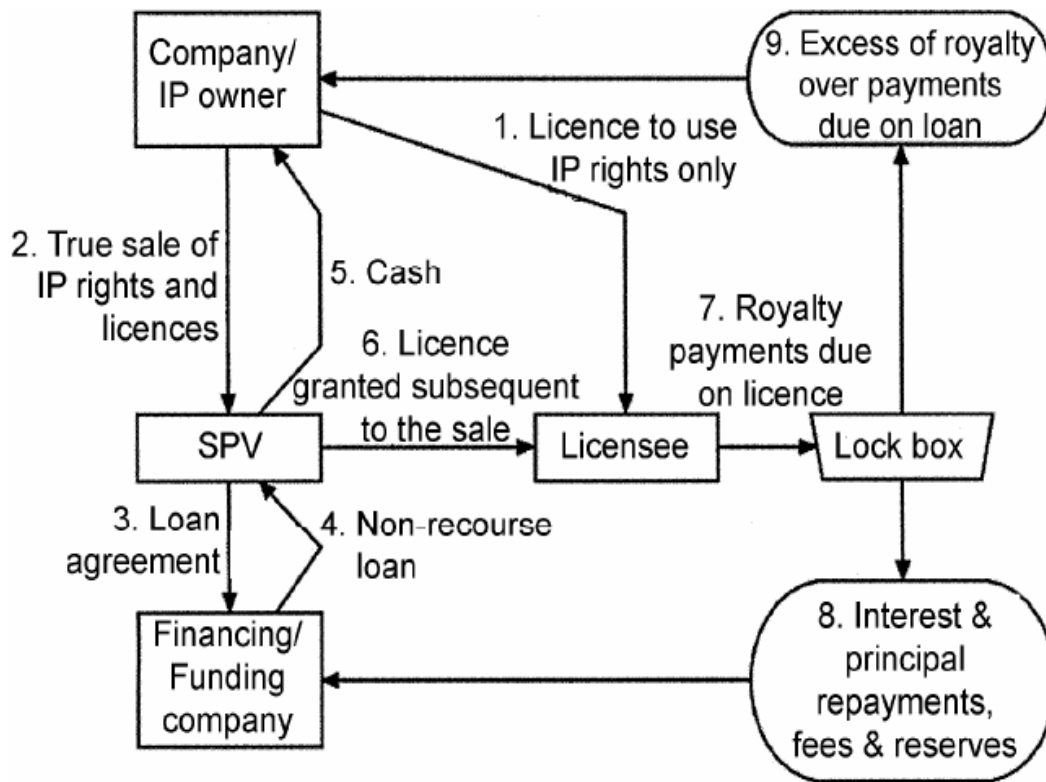


Figure 1 General IP Collateralization framework

Source: Nithyanda, K. V., 2012. *Alchemy and IPR - Monetizing Intellectual Property Rights*. *Journal of Intellectual Property Rights*, Volume 17: p. 411

According to the map, the IP owner can either license the right to use the IP (1) or sell it (2). In the latter case, the common route includes the transfer of the IP to a Special Purpose Vehicle (SPV)² in order to reduce the risk of a true sell. The SPV can negotiate actively with other companies (3) to obtain the loan and the proceeds will be given back to the IP owner. However, the intermediary can also sign licensing agreements in return for royalty payments into a lock box (6-7). The first claim on the funds of the lock box

² For additional information about the SPVs see: Skarabot, J. (2002). *Securitisation and Special Purpose Vehicle Structures*. Working Paper, Haas School of Business, University of California at Berkeley, 29th April.

is owned by the financing institution (8). Later on, if there are still funds available they could be redirected to the IP owner directly or through the SPV (9) (Nithyanda, 2012).

In addition, not every IP assets might take part of securization transactions. As the table below (figure 2) shows, there are at least four requirements that knowledg-based capital should meet to be collateralized.

Firstly, the cash-flow track should have been recorded for at least 3-5 years.

Secondly, some assets particularly expoused to volatility such as the ones related with fast-moving sectors need to be diversified to mitigate this weakness.

Another requirement is a good level of protection against thirs-parties' uses.

Lastly, IP assets are pretended to have a strong market position. (Kirsch, 2005)

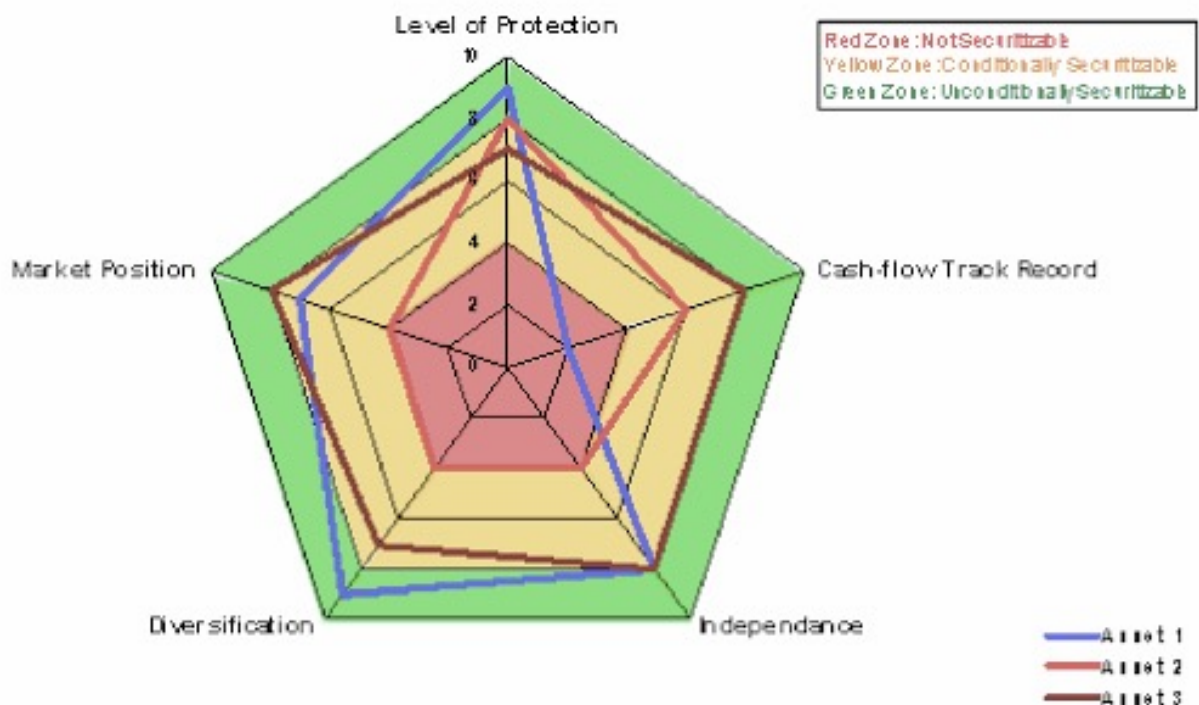


Figure 2: When intangible assets are eligible for IP backed financing?

Source: Kirsch, A., 2005. *Securitization of Intellectual Property as a Funding Alternative*: p.76

Finally, it should be taken into account how the securitization market works and the role played by credit enhancements. These are financial tools meant to reduce the risk inherent to asset-backed securities. The credit enhancements mechanisms are usually divided into two categories: internal and external. On one hand, the internal methods are used to improve the credit-rating of the IP backed securities. On the other hand, in the external mechanism the market player exposed to the risk is external to the securitization transaction. The external methods deal with the problems, we discussed before, of moral hazard and information gap between the originator, the insurer and the element of risk involved in the IP right. Thus, banks or insurance companies provide guarantees or insure the risk inherent to the IP backed asset. Consequently, what generally emerge are difficulties in placing value in these assets because they are treated only as credit enhancements following the logic described just before, rather than the main asset of the collateral pool (Solomon & Bitton, 2014; Leone, 2005).

Until now we took for granted that a company with a valuable IP portfolio should have a high credit reputation. But, why this correlation is highly likely? The answer should consider that the strong value of IP in innovation financing has been related to its exploitation as a signal of the borrower reputation because it can be easily available for external stakeholders and IP rights are generally hard to obtain for low quality companies. As a matter of fact, applying for a patent requires a large expenditure of internal resources and capabilities. Considering that, only companies with high tech capabilities can be willing to give away such amount of resources. In other words, the collateralization of intangible assets works basically as a way to deal with the issues in financing innovation proving the quality of the borrowers to the investors. Thus, IP backed finance eases the adverse selection associated with information asymmetry and moral hazard (Lumioti, 2011).

Moreover, patents, copyrights and trademarks may be treated as an economic resource because- while protecting the company from imitation- they preserve the company's profitability. In addition, in case of failure of the firm IP rights can be sold separately, giving the lender an assure stream of revenue. (Mann & Sager, 2007)

Pointed out the main features of the use of intellectual property rights to secure financing and shown what is intended for intangible asset collateralization, in the following paragraph we proceed with the evaluation of IP backed financing. As might be expected even if there are several reasons why this strategy can definitely work effectively, there are also some limitations that will be underlined.

1.2 Advantages and challenges of IP backed financing

As we said before the analysis will continue evaluating the IP backed financing trying to understand if it could be considered a valid rising funds alternative for companies with promising IP portfolio.

1.2.1 Advantages of IP backed financing

The dominant management's and scholar's line of thinking argue that intangible assets are not enough to secure efficiently loans. However, literature has carried out several researches to check the feasibility of IP backed finance and the findings are actually interesting. It looks like the exploitation of intellectual property rights as collaterals can be claimed to experience a positive correlation with the reduction of borrower constraint, loan performance and firm's innovation and growth.

We would like to analyse the relationship underlined above, discussing the effects on the loan's availability. In order to prove this correlation investigations have been carried out on sample of loans³ collateralized by intangible assets. What is impressive is that thanks to the collateralization of intangible assets lenders appear to improve screening and monitoring abilities. Therefore, the costs associated to borrower companies' selection are significantly reduced because adverse selection is alleviated due to intangible characteristics. As a matter of fact, patents, copyrights and trademarks are

³ See Lumioti, M. (2011). For the purpose of the research data were obtained by Reuters Loan Pricing Corporations DealScan and the final sample consisted of 361 loans collateralized by intangible assets.

key elements not only representing the actual value of firms' portfolio and consequently of its market value. Scholars have also found correlation between companies' knowledge value at the moment of the valuation and future performance (Decarolis & Deeds, 1999).

Hence, compared to traditional assets they can be considered as indicators of firm's capacity of generate value in the future. Accordingly, the ability to pledge collateral reflects a positive connection with the firm's investment strategy and estimated growth. Finally, it seems to be evident that the collateralization of intellectual property- leading to borrower's disclosure- contributes to alleviate the difficulties of firms in financial distress. Therefore, IP collateralization appears to be a key mechanism for decreasing credit rationing for technology-based companies because intellectual property portfolio acts like a signal of firm's quality. Scholars have also analysed the benefits of patent securitization on the originator's credit rating. On one hand, he seems to increase the profit achieving and higher credit rating. On the other hand, he succeed in moving toward a better rating without any consistent expenses because he leverages credit enhancement tools through IP securitization (Lumioti, 2011; Odasso, 2010) Consequently, thanks to IP backed financing firms are given the opportunity to attract external resources easily because it can unlock the access to non-banks credit. Accordingly, firms looking for financing can avoid bank loans, which are subject to a strict regulation broadening the variety of financing sources available (Solomon & Bitton, 2014).

We continue the discussion assessing the benefits that IP backed financing can bring to loan performance. The variables that are taken into account are the size of the loan granted, the interest applied and the payments accorded. The use of IP as a financial tool results in profitable loan pricing and unlocks the availability of credits' amount that otherwise would have been denied. Further, the level of interest demanded by the lender for asset-backed loans derives from the quality and characteristics of IP rights opening the opportunity to raise capital cheaply. Looking at the funding terms, scholars have

found evidence that the average duration⁴ of these mechanisms is longer if compared to traditional corporate bonds (Solomon & Bitton, 2014; Calderini & Odasso, 2008)

Moreover, according to the accounting principles a credit obtained through IP-backed securitization is an off-balance-sheet way of financing. Thus, while asset backed loans should be mentioned in the balance-sheet, IP backed securitization doesn't negatively affect the credit reputation of the borrower because it doesn't increase the debt-to-equity ratio. On the contrary leveraging on the IP portfolio the return on equity could be increased.

Finally, from the investment community's point of view, IP securitization provides a different investment tool, increases the welfare of the capital market because it increases the diversification in the funding sources (Solomon & Bitton, 2014; Calderini & Odasso, 2008).

Consequently, its widespread diffusion should be desired in relation to improvements in the market efficiency. In fact, on one hand intangibles backed deals can actually have a role in reducing information asymmetries since IP portfolio is a signal of the firm's quality and potential expansion. On the other hand, a strong IP portfolio can minimizing the riskiness of the investor because it is possible to pledge it in case of failure. In conclusion, the inner potential value for these asset lies in the possibility to bypass the issue scholars associate to innovation financing (Harhoff, 2009).

In conclusion, according to other studies IP backed financing turned out to have a positive effect for firm's innovation and growth. Accordingly, patents as collateral increase the leverage effect of R&D boosting the effect on innovation's returns. Therefore, not only this practice deal with the issue of credit shortage, but it would encourage firms with promising technologies to grow (Amable, et al., 2010).

⁴ For further information about the average duration of IP securization see: Kirsh A. 2005. Securitization of Intellectual Property as a Funding Alternativ. Master Thesis.

1.2.2 Challenges of IP backed financing

What are now the main challenges of companies that have to deal with IP backed financing transactions? Despite the beneficial effects discussed above, there are a number of obstacles that may prevent the complete exploitation of IP backed instruments.

First of all, the subjects of the transactions are difficult to redeploy because in most of the cases IP are coupled with complementary assets like particular employees or valuable know-how.

When operating with small-medium enterprises the amount of the fixed risk-assessment costs could be extremely high if compared to the size of the loan granted. Hence, in this context IP collateralization doesn't appear as an effective financing strategy. Further problems arise, once again, considering SMEs because intangible assets are not always well-managed and they tend not to protect their value with registration. As it was reported by The Organisation for Economic Co-operation and Development small-medium enterprises make plenty use of forms of protection that don't involve legal liability, reserving applications for IPRs only for short terms needs. (OECD, 2011b)

Moreover, IP-backed transactions would work effectively if the lender can easily dispose of the IP right. If a company would pledge a patent, for instance, the lender should be able to sell it through the secondary market.

However, the secondary market for IP appears to be still immature to resell patents quickly and easily. Consequently, from the lender perspective, who is granting extra resources, the illiquidity of intangible assets should be taken into account. The issue of underdeveloped secondary markets is strictly linked with problems in assessing the right value for patents, trademarks and copyright. When the market value is not easy to identify, the measures for IP's evaluation are in part arbitrary, based on valuation systems that are highly likely to differ among the economic entities. This problem arises because every day IP are evaluated for several different reasons such as purchases, licensing agreements, transfer tax considerations, merger acquisition and due diligence.

This process implies endless variations in the valuation approach chosen by the single litigation specialist or consulting firm.

Therefore, since financial markets need transparency and consistency because investors cannot take decisions in darkness, uncertainty about the IP's value.

(OECD, 2015; Jarboe & Ellis, 2010)

The uncertainty of the liquidation value seems to be partly due both to low redeployability and information asymmetry. Consequently, if asset liquidity is low, the probability of pledging this new asset class as collateral is low too. (Lumioti, 2011)

Further the limited size of the market plays a critical role in increasing the risk. Lack of detailed regulation turns in absence of right information and fear of default. When investments are in part question marks, lenders tend to amplify the risk of default of loans securitized and collateralized by IP. Overestimating the risk, investors could become blind when it comes to evaluating the future cash flows resulting in incorrect assessment of the potential revenue. However, we should notice that an high volatility can affect the revenue stream deriving from intangible assets. Hence, this unpredictability results in additional complexity and risk related to IP transactions. There is an additional reason why intangible assets-backed securitizations so arduous and troublesome: infringement detection and enforcement. Accordingly, the financial worth result affected and is subject to significant fluctuations (Jarboe & Ellis, 2010; Solomon & Bitton, 2014).

Uncertainty arises also due to lack of total transparency because there are still complications when recognizing the assets for accounting reasons. As a matter of fact, intangibles are included in the balance sheet only in the case of external acquisition. Hence, according to the generally accepted accounting practices, if a trademark is purchased it will be mentioned on the financial book, otherwise it will be excluded. However, the uncertainty surrounding IP based markets appears to be multifaceted because it is related to lack of unambiguous measures to assess the “quality” of IP rights. For instance, sometimes patents are lacking in the originality requirement or, when registered, they are not sufficiently clearly described. (OECD, 2015)

In addition to transferability, other issues are represented by problems inherent in the nature of intellectual property. The troubles are due to the fact that even if it is commonly known that intellectual property can be separated for the firms itself, in practice this seems not to be completely true because the two parties often sign side agreements on the transfer of the knowledge to be added to the simple licensing agreement. Therefore, the transfer to the lender is not totally headed and straightforward due to the imperfect risk decoupling. As a matter of fact, if the company's distress could still influence the investor financial position, his situation could be critical (Jarboe & Ellis, 2010; Kirsch, 2005).

Moreover, IP exploration in financing strategies can be also challenging when the parties involved in the agreement belong to different countries. If we took into account, the case of U.S. the scenario is even worst. Because of the federal and state law, IP are subject to a variety of different norms. Even if the countries joining TRIPS agreement tried to adopt a standard legislation for the members, in practices divergences from the common arrangement are still consistent (Solomon & Bitton, 2014).

Finally, for corporates there are disadvantages associated with the break-even size because if the volume of knowledge-based capital is not enough, the feasibility of IP backed financing is compromised.

Taking into account the investment community's perspective banks could undergo a decrease in the number of loans required because they result to be often still neglecting the use of only IP as collaterals.

In summary, IP backed finance involves a number of obstacles which includes also the complexity of structuring the deal. It could be really tricky and time-consuming and causing firms' unwillingness to exercise (Kirsch, 2005).

These challenges can affect its feasibility. Hence, for the purpose of its efficiency, the main steps toward an IP backed finance reference framework are outlined in the next paragraph.

1.3 Policies to improve the market efficiency for IP-backed financial instruments

According to published reports, IP-based deals have increased substantially in recent years. However, the markets appear to be still immature being unable to build up a stable financial environment where technology and government policies meet the requirements demanded by changes in the industry.

What should policy makers do for the purpose of turning IP-backed financing from a complex transaction to a routine mechanism? As the paper goes on, we will put effort in evaluating the different available alternative.

1.3.1 Toward a reliable marketplace for IPRs

If the business environment where the transactions take place is underdeveloped, countries' governments should reinforce the markets for IP basically in three ways: improving transparency and reliability; building new IP infrastructures and, finally creating sovereign patent funds.

Lack of transparency and reliability both affect these markets due to asymmetric information between the investors and the IP owners regarding the value of firm's know-how. Measures to enhance patent transparency rules have been implemented for remedying such problems. For instance, the head of the United States Patent and Trademark Office is planning to establish rules requiring regular updates about patents' ownership⁵ making its publicity available (OECD, 2015).

Moreover, an efficient patent market should meet the following some requirements such as the presence of reliable patent rating systems and know-how contracts so that enterprises can easily monetize their IP in an open and secure infrastructure. Accordingly, some countries are following their route toward the improvement of

⁵ For additional information about USPTO's initiatives: <https://www.uspto.gov/patent/initiatives/attributable-ownership>

existing markets or the creation of new ones. For example, in UK thanks to “The Copyright Hub”⁶ the IP owner can simply sale some type of licenses right online.

Finally, creating sovereign patent funds means according additional aggregation and defensive services. This is the case of France where the government has announced in its intention to create a new sovereign patent fund available by 2023⁷.

As we pointed out above, one of the obstacles connected with the use of IP to raise financing is linked to its high risk that results in greater cost per IP-backed deal. Therefore, another way to improve financing for IP-intensive firms is to formalize the collateralization of IP for loans. Consequently, the value of the patents should be assessed accurately; otherwise company might opt for the registration of low-quality knowledge for the purpose of financing.

1.3.2 The need for standards in recording and valuating IP backed transactions

In addition, if the main issue is how to enhance transparency, increasing information and improving confidence in intangible asset-backed deals appear the right aim to pursue. Therefore, governments are asked to invest in educational resources, training tools and seminars in order to form a competent IP management. Now, how to build trust about IP backed transactions? Each category of valuation providers has its method. Hence, the EU is putting effort to create a centralised organization dependent on EU institutions. Further, in Italy the government aims at building a standardised IP valuation framework. Hence, the Italian Patent and Trademark Office⁸ is implementing an IP promoting policy to standardize economic valuation and raise awareness in the system for protecting the know-how internally developed (OECD, 2015).

⁶ To know more about UK’s Copyright Hub: <http://www.copyrighthub.org/technology/>

⁷ For extra information about the French New sovereign patent fund see: <http://www.gevers.eu/en/download/france-new-sovereign-patent-fund>

⁸ For further information see: <http://www UIBM.gov.it/index.php/i-marchi-50/media-e-comunicazione-dirigen/spot-audio-video-dirigen/2007082-our-mission>

Moreover, corporate reporting of IP assets appears fragmentary and often without any logic. Even if reporting on knowledge-based capital is not mandatory, however firms tend to disclose the assessment of their intellectual property. Since there is not a common frame to refer when it comes to corporate reporting, companies rich in IP rights usually describe their intangible assets through the so-called narrative reporting that is attached to the financial statement. What policymakers should do is to provide an official guideline that might derive from the collaboration with international organizations like the World Intellectual Capital Initiative (WICI) and the International Integrated Reporting Committee (IIRC) (OECD, 2015).

Overall, governments have a key role to standardize and streamline the IP collateralization process. However, not every country has already implemented this process. In USA there are still underwriting surrounding this theme and the SBA should include in its process a specific IP-backed lending program. Probably the definition of a specific lending process without the action of intermediaries is the necessary move to jump start IP collateralization (Jarboe & Ellis, 2010).

Moreover, what is also lacking in a standard definition is IP valuation. Since the actors involved in the deal's transactions are various, the methods used are countless. Consequently, international organizations are trying to make moves to uniform the assessment of intangible assets. The International Valuation Standard Committee, for instance, put some effort on it writing the Guidance Note No. 4, called "Valuation of Intangible Assets". According to document, the GN4 provides a deeper exemplification of the intangible asset valuation process, than the previous valuation Guidance published.

As it is reported in the GN4 the methods that should be applied for the valuations are the cost approach; the income capitalisation approach and the market sales approach. The first refers to the cost to recreate; the second consist in the present value of anticipated benefits; the third compares similar assets that have been sold in the open market. Ultimately, the final value should take into account either "*the definition of the value, and all relevant information as the valuation date necessary in view of the scope of the assignment*" (International Valuation Standards, 2003: p. 257).

Far from being complex, intangible assets financial processes make use of traditional mechanisms recombined in new ways and potentially growth stimulating.

Unfortunately, policymakers appear overall critic about their use to attract external resources. Even if IP is used implicitly as financial tools in several transactions, they are not standardized and specifically regulated, therefore not always taken into account when it comes to financing.

Therefore, there are reasons to believe that the market will be increasing in the next years only if policymakers will put some more effort in order to coordinate and international regulation process. Still it has not been developed a commonly accepted framework regarding a unique guideline to implement IP markets. Since independent markets does not exist, international organization should probably do the most of the work. Accordingly, national regulation as single country is a damaging waste of funds and competencies, however if the action results in a coordinated and collective process among the different national organizations, it could be actually beneficial. Finally, it seems true that internal governments could take considerable advantages standardizing IP backed financing procedure. In fact, if firms are convinced it is a routine way to attract external investors, rather than an exotic mean, companies in general will try to make their IP portfolio attractive from the investors community perspective. Consequently, for the purpose of strengthening their intellectual property rights, firms will be highly likely to play out smart strategies to collect extra knowledge-based capital. To summarize, maybe what policymakers should move toward is a general registration system to secure the deals and provide legal certainty for the investors.

In conclusion, in the first chapter we shown how to harness the potential of IP in financing and the main issues affecting this theme, in the next chapter we will get closer to these financing tools explaining the different forms and how intangible assets-backed deals can work effectively.

Chapter 2. Suitable assets and models for raising capital through IP-backed financing

2.1 Choosing among IP portfolio assets as collateral: from patents to less traditional form of intellectual property

As we discussed in the previous chapter, innovative companies must not be blind to IP's importance when it comes to financing strategies. For this reason, when firms take the first steps to align their idiosyncratic knowledge-based capital with firm's financing strategies, it should not be forgotten the substantial differences between the contrasting forms of knowledge's protection.

At this point of the analysis, we would like to shed light on how differently these deliver value to the companies considering the IP-backed financing perspective. Hence, the paper will continue showing the main fund-raising models for IP collateralization to take place and finally, with a discussion about the factors for achieving success collateralizing intellectual property rights.

2.1.1 Patents' collateralization

Given the increasing value assigned to intangibles, the use of patent to unlock external resources is becoming more common not only as an additional security but also as a stand-alone collateral. Assumed that a funding gap does exist because innovation investments' decisions are made under high degree of unpredictability, scholars found out that patents act as a signal of the company's potential growth (Harhoff, 2009).

However, not all patents can successfully be securitized because two issues might negatively influence the foreseen cash flows. In fact, product liability and regulatory burden could affect the revenues. The latter is evident especially in pharmaceuticals sector where government's institution might withdraw from the market specific ingredients that policymakers for some reasons such as public health might be unwilling to spread. Consequently, the problem arises when assets has been pledged because in

case of financial distress investor might have a claim over that right. However, their risk exposure could get immensely worse if a key element of the new product has been withdrawn from the market (Kirsch, 2005).

The following table (figure 3) tracks the development of USA's patent collateralization over a 30-years period (1980-2010) and outlines a general expansion in its diffusion.

Despite this, its spread doesn't appear to follow a smooth path, but it experienced declines in the middle of the 2000s and again after the year 2011.

Therefore, the table clearly underlines a direct correlation between the number of patent pledged as collateral and economics business cycles. That is to say the more economy is thriving, the most number of intangible assets will be pledged. The less applicability of patent backed strategies in case of financial distress is mainly caused by difficulties concerning its implementation if compared to other asset classes. In fact, scholars argue without a shadow of doubt that pledging traditional collateral, rather than intellectual property, is obviously of straightforward enforceability because of the expanded market already built around these transactions.

However, even if the route might be tortuous, companies with patents as collaterals have experienced increases in the size of the loan granted and increments in the long-term debt availability on average in the percentage of 2.86% of the company's total assets (Mann & Sager, 2007).

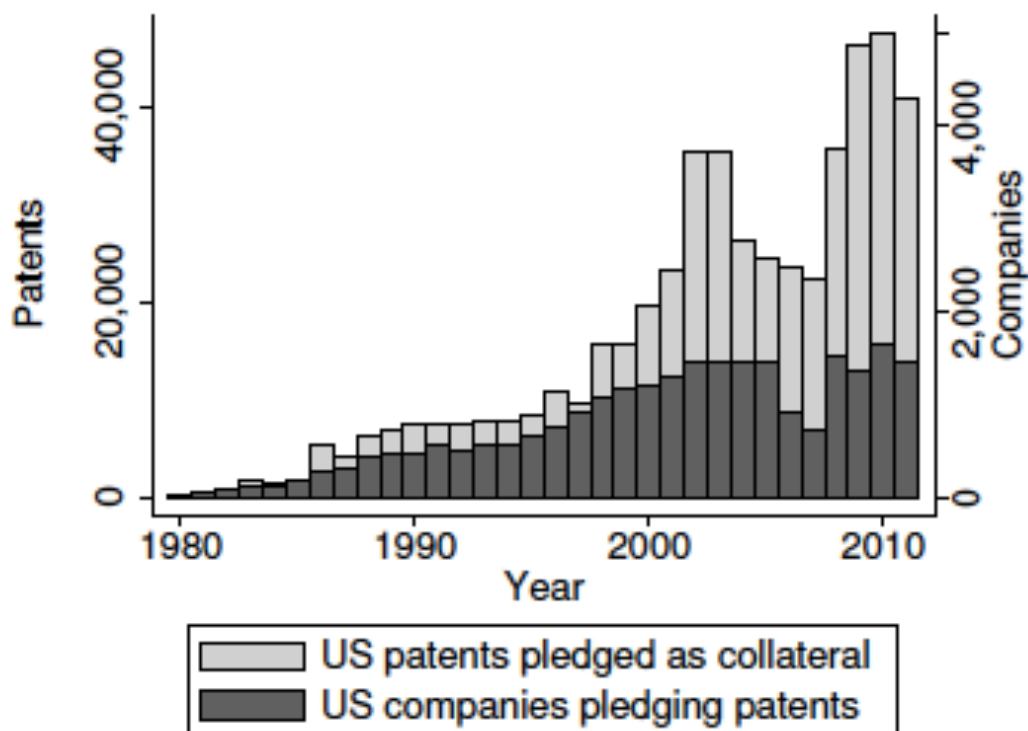


Figure 3: Number of US patents pledged as collateral per year, 1980-2011

Source: Mann, R. & Sager, T. W., 2007. Patents, venture capital, and software start-ups. Research Policy, Issue 36, pp. 193-208.

Scholars have also found evidence of a positive relationship between patent's pledge and the loan availability. According to them creditor rights strengthen by pledging these intangibles results in a major investor's willingness to grant credit.

Even, if these are advantages had been already discussed in the paragraph 1.2 for intellectual property rights in general, the findings concerning patents are particularly interesting thanks to their widespread diffusion if compared to trademark and copyrights whose use in IP-backed deals occurred in more recent years. Therefore, the evidences about the specific benefits inherent to them, have been already proved and technology-based companies might have advantages when it comes to put into practice these strategies.

Not only the analysis of patent collateralization, has allowed to have a proof of the advantages on loan performance, but also on the impact on R&D. (Mann & Sager, 2007).

Therefore, patent-backed financing results in a positive shift in the innovation output as it clearly appears in the graph below.

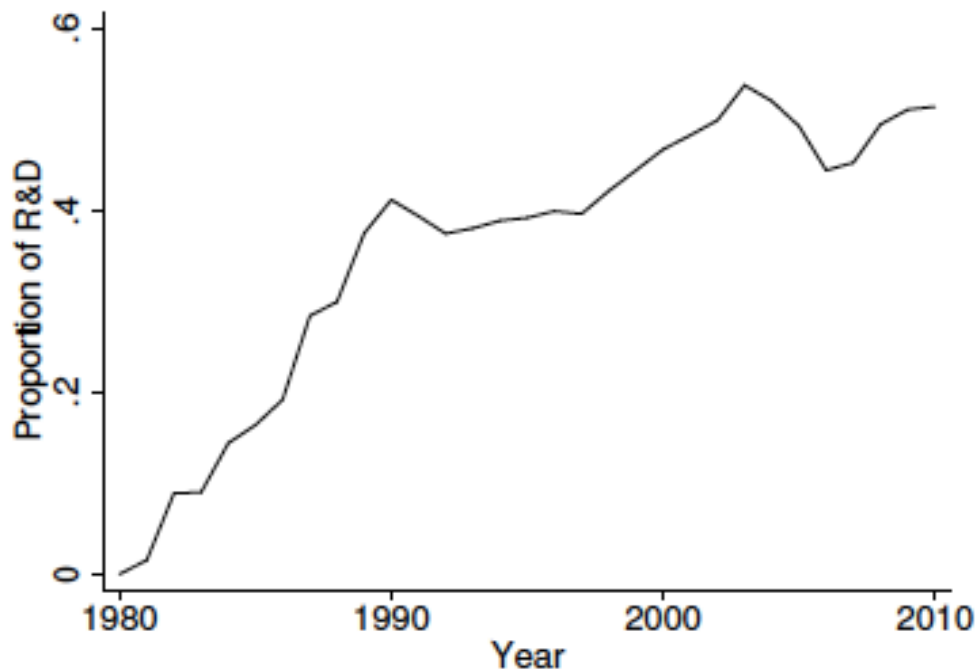


Figure 4: Fraction of Compustat R&D performed by companies that have pledged patents as collateral

Source: Mann, R. & Sager, T. W., 2007. Patents, venture capital, and software start-ups. Research Policy, Issue 36, pp. 193-208.

In summary, thought securitization, patents bring value to the owner in a different way compared to their traditional legal role. More than a protection of originator's invention, patenting results is a dynamic signal of firms' R&D activities. None of this to say that some scholars have linked the increasing phenomenon to the informational effect of patent's pledge. According to them the main reason underpinning the decision not to use traditional asset for financing can be associated to patent's inner potential. As a matter of fact they can actually work as an open book about firm's technology orientation and foreseen revenue (Asay, 2015).

The choice about the most interesting asset to pledge should not disregard their specific feature. One aspect that make patents different from trademarks and copyrights is the duration: since patents offer protection over a 20 years-period, pledging them is an available option only if the payback term doesn't exceed this time length. However, the maximum bank loan term is about up to a 10 years. Consequently, patent-backed deals appear not to have problems with timing if the agreements take place in the first year after the patent's entry in force. In fact, only SBA loans could have a term up to 25 years⁹. Generally speaking, these problems would arise in the case that the loan the company is looking for has a higher duration than the length of the patent legal protection.

Now if it looks like firms are more likely to be involved in patent-backed deals if the asset's disclosure power is high, how to boost the informational effect of patent pledge? At the first sight, this answer can be associated to the pressing need to standardize patent's legal framework, especially for what concerns registration. In fact, the main difficulties that have been pointed out by scholars and practitioners are related to difficulties with determination of the value and the risks inherent to these transactions. Moreover, there are a number of additional factors that make patent securitization so critical because they might be associated with specialized assets or they could be either litigated or infringed. These issues are especially alarming if we consider that in U.S.A. the cases of patent infringement in 2016 were 4,624¹⁰. (Munari & Oriani, 2011)

However, a second analysis might not be so certain about the feasibility of a standardization of patent backed financial instruments. Patents' singularity and uniqueness make the regulator's job even harder due to the need to design a legal framework that should include rights belonging to heterogeneous sectors.

⁹ We considered the common business loan terms available at:
<https://www.mulliganfunding.com/blog/understanding-common-small-business-loan-terms>

¹⁰ Statistics about the number of patent infringements in 2016 come from Bloomberg Law and they are available at:
<https://www.bna.com/patent-copyright-lawsuit-n73014449878/>

2.1.2 Trademarks' collateralization

Although patent's collateralization has been developed before, this is not the only asset class which is increasing in reliability as a financial tool. Trademark's pledge is indeed growing, in fact as the graph below shows the number of trademarks used for loan's collateralization has significantly increased.

However, the development, throughout the years 1975-2010 was not straightforward because the number of brands involved decreases in 2008 corresponding to the financial crisis. Overall if the trademarks were approximately 5,700 in 1985, the number came to 79,000 by 2012. That is to say that these data include only the trademarks recorded with the USPTO, while it is important to outline that the registration is not mandatory. (USTPO, 2016)

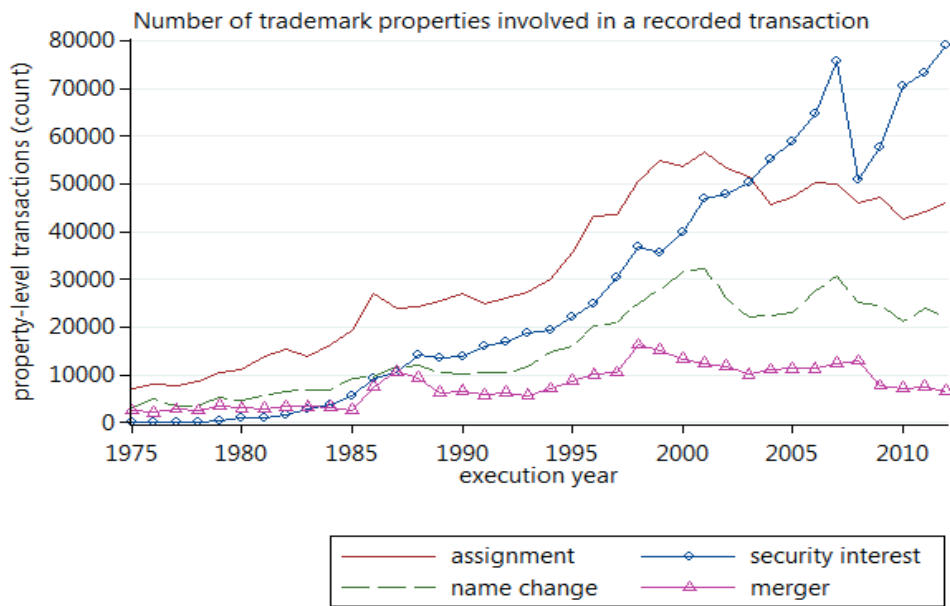


Figure 5: Number of trademarks properties involved in a recorded transaction

Source: USTPO Trademark Assignment Database¹¹

¹¹ Available at: <https://www.uspto.gov/learning-and-resources/ip-policy/economic-research/trademarks-are-increasingly-used-collateral>

What it is widely agreed is that trademark-based collateralization has an enormous potential. However not every registered brand is easily marketable because the nature of them as intangible assets is generally idiosyncratic by definition

The key concept here to focus on is portability. If this characteristic is low, the failure is almost given for sure. For the portability to be appropriate, brands should be simply and quickly assessed. Troubles are more likely to arise with corporate trademarks, while if the brands refer to a specific product, the comparison with similar ones is possible and, therefore, understanding the right value doesn't imply many difficulties.

However even if an asset has positively passed this very first step related to its portability, the following stage is not automatically predictable. In fact, companies might have different choices about the brands' property right.

Firms willing to waive the ownership might opt for an assignment, which is associated to a license agreement for the borrower to use the trademark on a regular basis otherwise he would not be able to exploit it for commercial purposes.

In the case that the companies' interest is to maintain the legal ownership, pledging the intellectual property right is probably the best alternative.

As long as the IP right can be easily acquired by a third party the trademark as considered suitable to be pledged. For a brand to be proper for an IP-backed deal, transferability is the main requirement it should meet. In fact, external market players should not find complications associated with changes in the ownership. This relationship should be seen taking into account differences in brand legal coverage. There are some corporate trademarks such as P&G that are not recognized by consumers at a glance and, therefore they appear to be less portable. On the contrary, product brands like Pampers have gained through the years an unquestioned trust in client's eyes, hence, they are likely to be the subject of profitable deals.

Another key thing that should be pointed out is related to the legal framework for trademark registration. Firstly, even if there are international organizations as the World Intellectual Property Organization only the national law has the final say about this

matter. Registration have some effects on IP backed financing to the extent to third parties should take into account the obligation to bring some certification evidence of the brand recently acquired. (Matthes, 2012)

If we slightly change the focus, it is important to keep in mind that community trademarks are subject to registration. As a matter of fact, according to EU Regulation 207/2009, art. 23(1) the effects on third parties are legally recognized only after the registration (The Council of the European Union, 2009).

2.1.3 Copyrights' collateralization

Finally, when it comes to copyright-backed financing it should be said that these asset used to be associated to the entertaining sector. However copyrights have lately started to deliver value for commercial enterprises belonging mainly to the design, gaming, entertaining industry. When companies might collateralize copyrights instead of the more traditional patents and trademarks? There are two essential prerequisite that the specific IPR should possess. Firstly, it should be marketable because pledging it without the actual possibility to be easily acquired is a contradiction. Secondly the security interest in the specific asset should be capable of adequate perfection (St.John's Review, 2013).

2.1.4 Outlook for the collateralization of non-traditional IP

So far we took into account only traditional categories of intellectual property. As a matter of fact, patents, copyrights and trademarks are subject to some strict requirements to be approved and to comply with the types scheduled by the legislator. However, some technology-based companies, pushed by the need for additional source of capital went beyond and have recently started to look at trade secrets and non-traditional means for knowledge protection. Intuitively, it seems clear that they could somehow retain value in commercial secured transactions. However, pursuing the strategy to use these IPRs is not a slippery slope leading to collateralization.

For instance, if we consider the case of trade secrets, their nature suggests that an – even slight- disclosure might affect and potentially destroy their value as collateral. Scholars suggest that there are ways to overcome these issues such as providing a general and vague description of the trade secrets at the stage of the conclusion of the deal or keeping a writing held as a guarantee for the investors.

Generally speaking, we understand that intangibles' collateralization could be in place if the specific country legal framework recognizes and protects these secrets.

Moreover, now that 66 countries signed and constitute the WIPO's Hague Agreement Union, even the owner of industrial designs can obtain legal protection, hence they might be considered potentially suitable to be used as collaterals¹². Also in USA, even if this country is not a contracting party of the agreement above, industrial design is protected through the copyright, therefore they could be incorporated and be added in the asset pool among the other general intangibles provided as guarantee.

What is more, the financial power hidden in intangible assets such as websites cannot be ignored especially if we consider that in the first quarter of 2017 over 330.6 millions of registered domain were counted and as at August 2017 the websites estimated were 1.24 billion¹³. To be precise, they are not assets but they are commonly managed as a set or assemblage of valuable asset. Accordingly, their possibilities as financing tool are immense. Let's only think about the astronomical sum of \$2.19 Billion which represent the value of Google.com, it seems senseless that websites and domains' name even if they don't fall within the legal category of intellectual property rights couldn't be suitable to act as collateral for loans. Moreover, this option is not totally to be excluded because websites and internet domain are subject to the management of the ICANN (Internet Corporation for Assigned Name Numbers) (Stevens, 2017).

Finally, on the contrary of one might think consumer databases can be collateralized to secure capital given by lenders. In this case the economic right coming from the asset is generally accounted as belonging to general intangible right category.

¹² For further information about the WIPO protection of industrial design see: <http://www.wipo.int/hague/en/>

¹³ Statistics available at : <https://hostingfacts.com/internet-facts-stats-2016/>

Having showed the main reasons why non-traditional forms of intangible assets could be pledged in abstract because they are subject to some regulations, we should point out that for firms intended to pledge non-traditional intangibles, the outcome might be uncertain. None or little research has been carried out over their trade secrets impact on companies' performance. Hence, we might add still a question mark upon its feasibility. In fact, in practice, problems may arise in the case that they are generally collateralized as intangibles without distinction between the specific characteristics of each revenue-generating asset and because still, in the age of the Internet of Things these types of assets are not subject to a detailed description in public documents (Dunn & Seiler, 2007).

2.2 IP backed structures for companies willing to waive the IP ownership.

Since – as we illustrated in paragraph 1.2- IP backed transactions are lacking of standard and optimized models, they might unfortunately still be seen almost like exotic instruments, rather than routine financing. Therefore, for knowledge-based capital to be used as collateral, several financial mechanisms could come into play. For explanatory purposes, these models can be grouped into two heterogeneous macro-areas: direct and indirect structures.

This paragraph is focused on the first section which involves the transfer of the asset that is moved to a SPV and it generally requires a licensee or franchisee agreement by side. These transactions are called direct because the ownership of the intangible asset moves from the originator. However, in order to allow the initial firm make use of the right, it tends to sign another agreement which allows the patent or brand exploitation for business purposes (Kirsch, 2005).

2.2.1 IP true sale structure

As the name suggests through the true sale structure the asset is reassigned from the originator to a special bankruptcy remote purpose vehicle. However, from the buyer's perspective there might be some issues in the purchasing process since the transfer of trademarks', copyright's and patents' ownerships are subject to several different national legal frame works.

Having said that, it seems an obvious intuition that the firm that internally developed the knowledge-based capital can no more make an ordinary use of the specific right. Therefore, the intangible assets eligible of securitization through the true sale structure should not be part of the core activity of the originator enterprise. Moreover, if we focus on the reasons behind the developer company decision to sell what it invested for, we should consider that in most cases these transactions involve innovative products that the originator is not able to manufacture at the lowest market price probably due to its business model or logistic and organizational structure. (Nithyanda, 2012)

Thinking about the intellectual property rights suitable for a true sale, despite it might appear redundant, it is important to specify that the IP object of the purchasing process should be potentially cash flow generating, otherwise no player in the market could have any interest in its ownership (Kirsch, 2005).

However, we might claim the adaptability as the key feature of IP rights for the purpose of selling it. No enterprise would ever be interested in a patent that could not overlap its value proposition. Therefore, innovation completely firm-specific are an enormous factor that could obstacle an IP true sale.

2.2.2 IP sale and lease back structures

The reasons which lead to sale and lease back structures might be found in the companies' need for funds to combine the technologies they developed with their business model. Firms often tend to experience capital shortage because the cash flow coming from licensing agreements results too low if compared to the high cost of development. Hence, it could take decades to pay back the investments made (Walker, 2007).

The sale and lease back model, even if it seems very similar to the one described just few lines above, is usually accompanied by a license-back agreement with the purchaser, which is a Special Purpose Vehicle in most of the cases for purpose of and effective risk management.

The inherent dynamism of IP sale and lease back transactions starts with the action of lessor's purchasing of a single IP right or a pool of them from a company seller which will take the part of the lessee. Consequently, the specialized agency, now holding the commercial right of the asset, would license it back to the initial owner, now licensee. In fact, the originator shall pay a royalty fee to use the assets that were under its ownership just before the sale to the SPV. In other words, as we can see below (figure 6) the seller should make lease payments in return for the exclusive right to exploit the asset for commercial purposes.

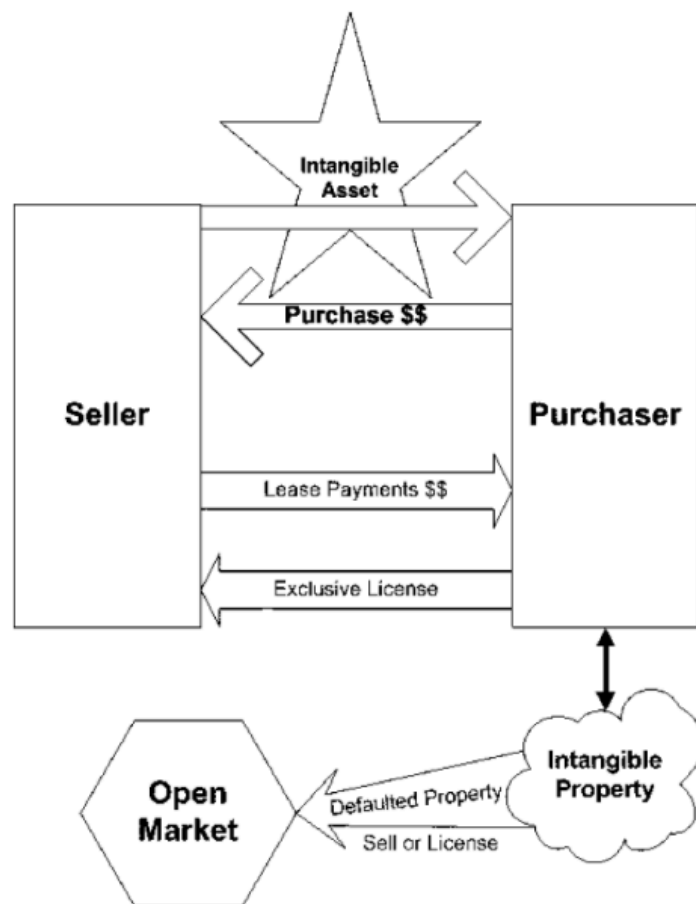


Figure 6: Patent sale and lease back structure

Source: Walker, P. B., 2007. Intangible Property Transaction and Leaseback Business Method. USA, Patent n. 11/381,682.

A key thing to remember is that even if the originator will continue to use the right, the transfer will constitute a true sale with the direct and mutual exchange of assets against cash proceeds. Therefore, the asset could be used for commercial purposes on a regular basis by the originator because even if it loses the legal ownership, the use has not been denied in the meaning of the licensing agreement. In this model, there is not a complete dissociation between the intellectual property right and the risk of default associated to the firm's business activity. Given that, the company's credit reputation definitely acquires importance. As a consequence, the counterparty risk in this model might be so severe to make potential investors withdraw. Now, how to reduce this risk?

Diversification via further licensing agreements coupled with contracts of exclusivity

could be the right way to mitigate the risk related to the firm's failure (Kirsch, 2005; Nithyanda, 2012).

As it is stated in the United States Patent Application No. US 2007/0260549 A1 from the seller prospective IP sale and lease back allows to *realize the true market value of the asset as opposed to its nominal book value [...] while retaining the rights conferred by it for as long as the terms of the royalty agreement are maintained* (Walker, 2007: No. US 2007/0260549).

Concluding a deal through the sale and lease back structure bring some benefits to the originator, instead of earning only the proceedings coming from licensees, selling the asset itself he could immediately receive a lump sum. If we focus of the potential of this immediate cash-in flow, we can easily understand that it might be converted in extra financing for additional internal R&D or in order to bring in, thorough in-licensing, knowledge-based capital developed by other market players.

Moreover, it is not unusual that external factors might increase the originator's desire to purchase, in turn, the patent, copyright or the trademark. In that case things are aided if a buyback clause is present already in the contract. Hence they are often added to the basic agreement.

In addition, through sale and lease back structures informational obstacles such as the ones about the ongoing value of IP assets might be disclosed. In fact, the special purpose vehicle handles external circumstances that could affect the floating value of patent and trademarks used to secure loans. Moreover, the bank's position is reinforced due to the fact that the intellectual right is incorporate in the SPV. Consequently, an eventual financial distress of the selling enterprise cannot somehow affect the bank's recovery that is at this stage taken for granted. In fact, the debt is highly likely to be paid rapidly since if the lessor's revenues increment, the payments to the SVP will be upturned as well (Robinson, 2016).

To conclude, one of the first patent sale and lease back to be recorded was the case of Aberlyn Capital Management¹⁴ and Rho Med, a biotechnology company in 1993. It was a somewhat procedure for that time and the agreement included Aberlyn's purchasing of RhoMed's patent and leasing deal to allow the biotechnological company a commercial use for at least three years (Munari & Oriani, 2011).

2.3 Financial transactions for IP indirect collateralization

The indirect IP collateralization models is probably what firms aimed at maintaining the asset's ownership should look at. In fact, it doesn't include a change in the asset's ownership but the only element transferred is the right associated to the cash flow coming from the intangible asset.

2.3.1 Basic IP royalties structure

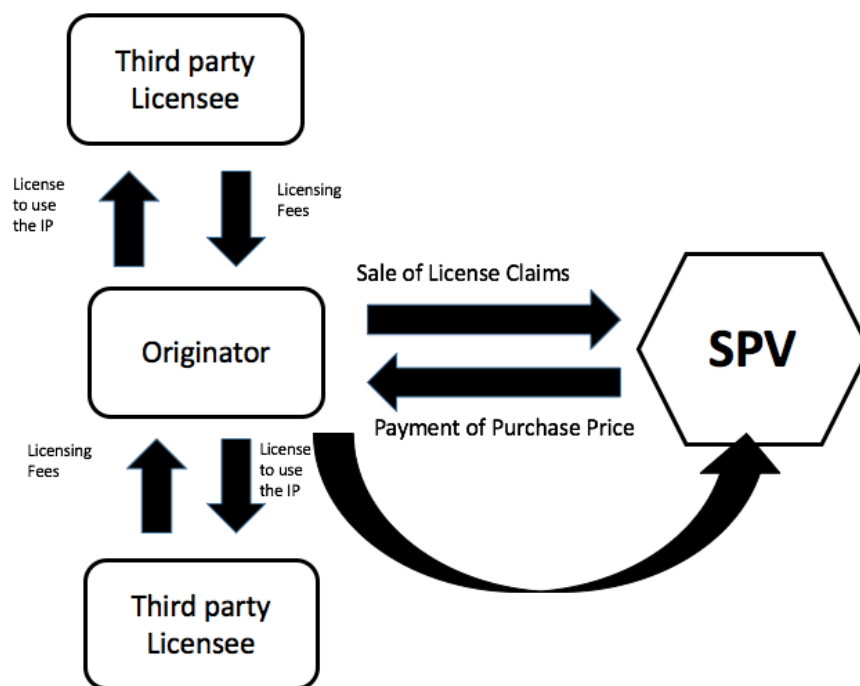


Figure 7: Basic IP Royalty Structure

Source: Adapted from Kirsch, A., 2005. Securitization of Intellectual Property as a Funding Alternative. s.l.:s.n.

¹⁴ Lerner Josh & Tufano Peter. 1997. Aberlyn Capital Management: July 1993. Harvard Business cases, Case No9-294-089, p.8-9

IP royalty transactions include the immediate exchange between foreseen cash flows coming from the asset and a lump-sum that is the purchase price illustrated in figure 7. The SPV usually acquire the financial proceeds because the originator sale the license claims against the payment of a specific price. The market player who purchases the IP right can, therefore, exploit the asset. However, the downside lies in the fact that the licensee - not having totally free hand over the rights – cannot do what he wants with the purchased asset. Once again the business risk is not perfectly dissociated from the intangible right. Hence, a way to minimize it could be to expand the collateral pool with additional elements. Furthermore, we would like to point out again that even if the investor is potentially espoused to a double risk: the one associated to the asset and the one related to the counterparty, he might alleviate his financial position because in most of cases the royalties' payments include a fixed part. Hence, they are partly independent from adverse financial outcomes.

Moreover, looking at IP royalty structure from the originator's perspective he results immune to the risk that has been transferred to the counterparty earning the cash-flows generated by the asset. For that reason, part of the royalty streams cannot be affected by adverse enterprise's condition. Following that, assets should be as independent as possible from the borrower's performance, otherwise it is difficult to stimulate investor's appetite. For the sake of completeness, it should be mentioned that for the originator, the possibility to sign licensing agreements with third parties is not prevented (Kirsch, 2005).

A distinguished case of IP royalty securitization is provided by Sears, the American chain of department stores, that transferred in 2007 the ownership of three of its brands (Kenmore, Craftsman, and DieHard) to an IP SVP. In order to pay the sums charged as interests on the bonds, the bankruptcy-remote agency obtained the Sear's royalty payments to license the three brands (Burton, et al., 2014).

2.3.2 Conditional assignment structure

Given the troubles associated with the structure of basic royalties described above (figure 7) mainly due to the borrower performance, the conditional assignment model might be a compelling alternative to deal with these problems.

In fact, it is a contract fitted with particular clauses that allow the asset's full exploitation in defined circumstances. That is to say the intellectual property right is not generating enough revenue to pay back the debt and the case of borrower's default coupled with the asset's transfer to a third subject (see figure 8). Therefore, the way the IP right can be exploited is strictly dependent on the lessee financial condition. However, there are different country legal frameworks that make the conditional assignment feasible or not (Kirsch, 2005).

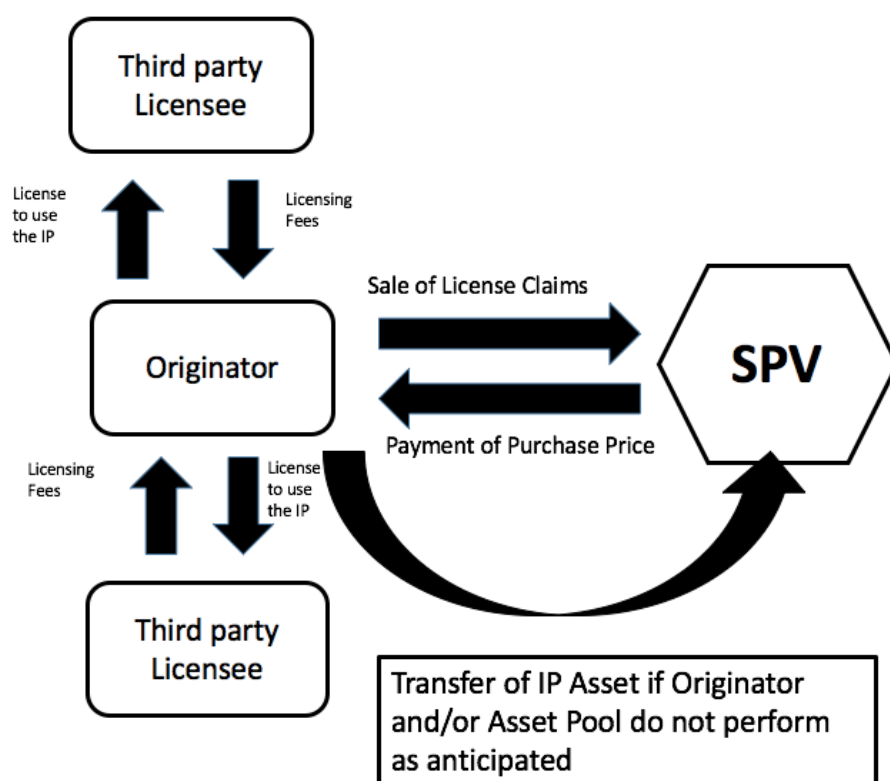


Figure 8: Conditional Assignment Structure

Source: adapted from Kirsch, A., 2005. Securitization of Intellectual Property as a Funding Alternative. s.l.:s.n

2.3.3 Secured IP loan structure

Secured IP loan is a hybrid category because it could be either direct (if the collateral is the asset) or indirect (if the security is given by the proceeds from it). In this case the resources come not from the capital market, but from banks. However, this solution doesn't really provide extra value, therefore it appears the last resort for enterprises in not optimal conditions (Kirsch, 2005).

Moreover, we would like to underline that main variances we found with IP royalty structure: while in IP loans an organization is lending capital to an external company, the royalty securitization agreement involve the sale of the right to perceive the future payments (Burton, et al., 2014).

As scholars pointed out, the size loans secured by patents usually is from 50 to 400 million dollars for banks loans and 50 million dollars for the second lien solutions. For instance, many corporations pledged their IP rights to raise capital. In particular, the American multinational Dow Chemical in 1994 obtained \$100 million collateralizing its patent portfolio (Munari & Oriani, 2011).

2.4 Determining elements for a successful IP-backed financing strategy

In the previous paragraphs we discussed IP backed financing mainly from a practical prospective. For a company willing to make use of its assets to attract external resources, the first step it is represented by choosing about assets of IP portfolio. Hence, once that this stage is over, the following thing is related to the definition of a recognized financial transaction aimed at exploiting the hidden value of intellectual property rights for funding.

However, moving on from the structures analysed just few lines above, it seems essential understand the key role played by the business environment and the conditions in which the financial transactions take place.

Following the arguments presented above, we know that IP backed loans might work appropriately for companies' resistant to equity financing at the end of their development stage when they are reluctant to give away capital's shares.

However, have IP backed deals often a good probability of success or are there particular contexts that might determine their feasibility?

In an attempt to point out the main factors affecting these transactions we should take into account that the more the corporate risk is independent from the credit quality of its assets, the most the deal is attractive from the lender's perspective. Therefore, as long as the two financial and economic performances are decoupled, IP backed financing may be a fruitful and attractive investment (Kirsch, 2005).

Secondly, scholars have found evidence of a positive correlation between IP backed financing efficiency and the size of capital, object of the deal. Larger transactions appear to lead to successful outcomes because IP backed financing implies obviously major technical judgment and ability that results in increased payments to law or accountant's firms. In addition, the use of intangibles entails considerable and expensive costs due to the several set of risks that should be taken into account, especially if compared to other asset securitizations like mortgages or credit cards. However, while mortgagees' payments are in general, fixed at least in part, loans secured by intangibles assets are generally dependent on cash flow's movements. There are several other factors that influence the cost of closing an IP backed deal such as unpredictability of future revenues, disputes among different valuation techniques, the role played by know-how, confidential information and adverse infringement actions in assessing intellectual property right's value (Kumar, 2006).

Hence considerable costs are usually associated with IP backed financing, owning a strong patent portfolio doesn't necessarily mean a good probability to profit from IP backed securitization. Consequently, if at first sight universities or SME equipped with relevant knowledge-based capital might seem to be proper organization to exploit intellectual property as a source of finance, scholars have doubts on its practical applicability in these context. Due to the high costs mentioned before one could guess that large corporations can make an effective use of IP backed financing because of

increased resources available. Despite this, there is still a minority of big enterprises involved in the world of IP-backed assets probably because of the variety of possible financing alternatives potentially open to firms of this size and the still undeveloped market for IPRs if compared to traditional assets (Munari & Oriani, 2011; Odasso, 2010).

Moreover, the probability of a successful outcome of an IP-backed financing strategy varies considerably with the firm's IP portfolio size. In particular, William Mann carried out a cross-analysis taking into account the dimension of firms' patent portfolio and the collateral value of their assets. Hence, the probability to pledging patents grows of just above four percentage points for the firms with a portfolio size near to 20 patents. In addition, companies don't perform the same in each context given. For instance, if it is claimed that even companies with less than 20 patents experienced a decrease in debt issuance and financial covenants, they showed a decrease in patenting output. What is more is that small-portfolio companies, collateralizing IPRs in an industry with large portfolio other firms experience a negative effect on patenting output due to a crowding-out effect. On the other hand, small portfolio enterprises without large competitors exploit the benefits of the strengthened creditor rights. That is to say, generally speaking IP backed loans are more likely to experience a positive effect on the performance, to the detriment of small enterprises. To conclude companies whose dimension of IP portfolio is bigger can advantageously make use of intangible assets as collateral (Mann & Sager, 2007).

Drawing conclusions, so far we theoretically discussed the inherent potentiality of IP in regards to financing. We started integrating IP assets as a financing option for innovative enterprises, evaluating its pros and cons and analysed in detail how this system work.

As the paper goes on, another perspective will be adopted, getting closer to the transactions concluded in the first months of 2017 and pointing out the main features of companies involved in the IP backed deals, through USTPO patent security agreement database.

Chapter 3. Exploratory analysis of U.S. patent-backed activity

3.1 Introduction to the analysis

In the previous chapters we described how companies capable of managing strategically intellectual property could beat the competitors, unlocking the access to external funds that might perhaps be denied without a consistent collateral pool.

Not only IPRs can customize buyers creating emotional and impactful brands, not only they acquire legal importance when it comes to litigations and infringements, but IPRs have the inherent power to ease the offer of reliable guarantees.

There is a considerable concern among scholars and practitioners about the market players involved in IP backed financing, their features, IP portfolio strength and the asset chosen.

However, this theme implies several questions we would like to explore deeper. These queries include: what type of organizations are the ones looking for funds, are they public or private? What are the principal traits of the borrowers, are they mainly young firms with consistent portfolio size or, on the contrary, 50-years-old corporations?

Our data analysis is aimed at addressing to these questions, in fact we carried out an evidence-based analysis for the purpose of showing what is hidden behind the transactions recorded over the United State Trademarks and Patent Organization's "security agreements" definition.

The investigation we carried out is focused on patents security agreements. However, it should be taken into account that trademarks are also included in USPTO's filings.

Therefore, for the sake of completeness we would like to report briefly the development of security agreement during the period of our research.

Therefore, we provided a pie chart comparing the number of patents and trademarks pledged during the time period considered. Contrary to what scholars have traditionally focused more in academic papers, we could support that the quantity of trademarks involved exceeds largely the one of patents.

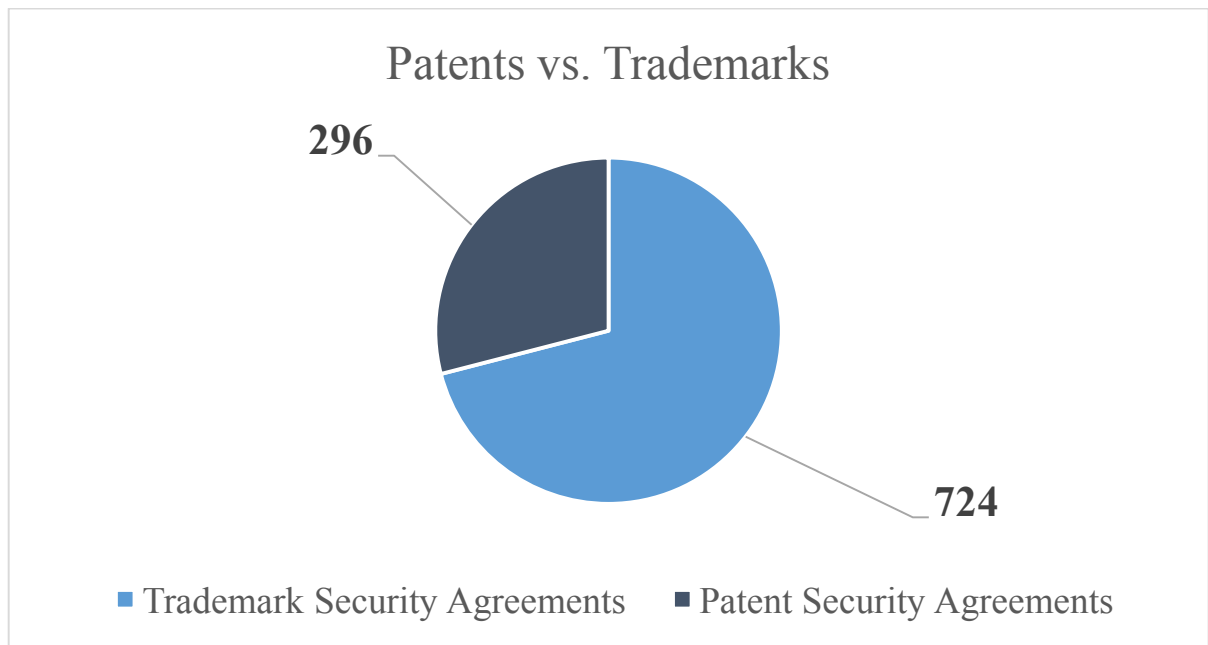


Figure 9: Patents vs. Trademarks

Source: USTPO Dataset

On one hand this tendency might be considered a turning point since scholars that investigated the power of intellectual property as a source of financing have rarely engaged in the endeavour to explore trademarks' collateralization. This gap is particularly evident when compared to the wide availability of academic papers on patent's pledge, especially if compared to the substantial absence of a consistent literature on trademarks' collateralization.

On the other hand, this should be linked to worldwide increase in the use of trademarks as a weapon against financial distress.

Inspired by this new trend, a recent article published by the World Trademark Review stands against general academic literature focus, investigating China's recent increase in

trademark-backed lending. In fact, in 2016 trademarks' pledged reach the value of RMB65 billion, that is double than what was calculated in 2015. (Little, 2017)

The following section is structured as follows. In the first instance we planned to explain briefly what the dataset consists of and the methodology used to analyse the agreements; afterwards the prominent findings will be highlighted and the last paragraph will be focused on the final conclusions.

3.2 Data source, methodology and scope

The report outlines the key findings from the analysis of U.S. patents securitization agreements recorded by the United States Trademarks and Patents Organization dataset. We collected the primary sample looking for “Security Agreement” and we gathered 296 Patents Security Agreements, 53 Release and Terminations and Trademarks Security Agreements. The deals are organized in chronological order and the period considered is 01.01.2017-23.06.2017.

The main focus of our inquiry are patents security agreements, however we will show the essential findings about the deals including trademarks.

As we said before the dataset is partly consisting of release and terminations, hence we had the opportunity to find out other characteristics about the loans’ terms.

To start, the first part of the discussion is aimed at pointing out what the United States Trademarks and Patents Organization intends for “security interest agreement”. They basically refer to patents being used as collateral for debt. The exchange between the two parties comes into existence when the lender is given the patents as a guarantee for the capital.

From the moment the agreement is confirmed, the security interest produces legal effects between the two signatories, however the transactions are subject to registration if lender and borrower want to make them have effects to third parties. This means that from the moment the security agreement is finalised, the creditors have a privileged right over the asset in the case of a third party’s claim. The agreements’ dataset contains basic details about each deal; each of them is provided of a uniquely identified reference number and reel-frame, but the key information are the ones about the date of the agreement, the assignor, the assignee and conveyance (Marco, et al., 2015).

The results are a combination of information available from USTPO dataset and additional material from Bloomberg’s private company information.

On one hand the quantitative data have been divided into groups (e.g. the category 1-10 in figure 16) in order to allow easy interpretation of the findings. On the other hand, qualitative data such as the industry sectors to which the enterprises belong have been

simplified (e.g. the general term “software” for companies in different fields of software development).

It is interest of our analysis to highlight the main findings about patent-backed financing. In fact, we will consider the structure exploited by the market players, the assets pledged and we planned to go through the insight of lenders and borrowers to understand which category of entities might have access to this financial option at the moment.

3.3 Findings

The research is structured over different levels: a preliminary overview of the dataset’s content; a section dedicated to the assets involved and the final two sections dedicated to the complementary part of each deal, considering the main implications from the borrowers’ and lenders’ perspectives.

3.3.1 Number of patents pledged per month

We are now moving into the core section of the paper that is aimed at giving a reference framework to understand the statistical inquiries provided below.

Firstly, we would like to provide very basic reviews and tendencies from the database of security agreements in order to give an overview of the file’s content in general. It includes 296 Patent Security Agreements involving 10294 patents, 53 Releases and Terminations and 724 Trademarks Security Agreements.

Getting the analysis started means making available to the reader the dimensions of the sample. The average number of patents pledged per month is 53,4 and the graph below shows that the number of patents used are not equally distributed.

As a matter of fact, the number of these assets used to secure a loan in May are about twice the ones in January. The general trend from January to June reflects a steady increase, reaching the peak in April and felling from 73 to 65 patent pledged in May.

The changeable development of assets collateralization might be considered an indicator that contrasting and external factors could affect intangibles' exploitation to acquire external resources. Not steady in the probability to be finalised, IP backed deals are influenced- as every floating variable- by several elements that are difficult to determine because of the changeable evolution.

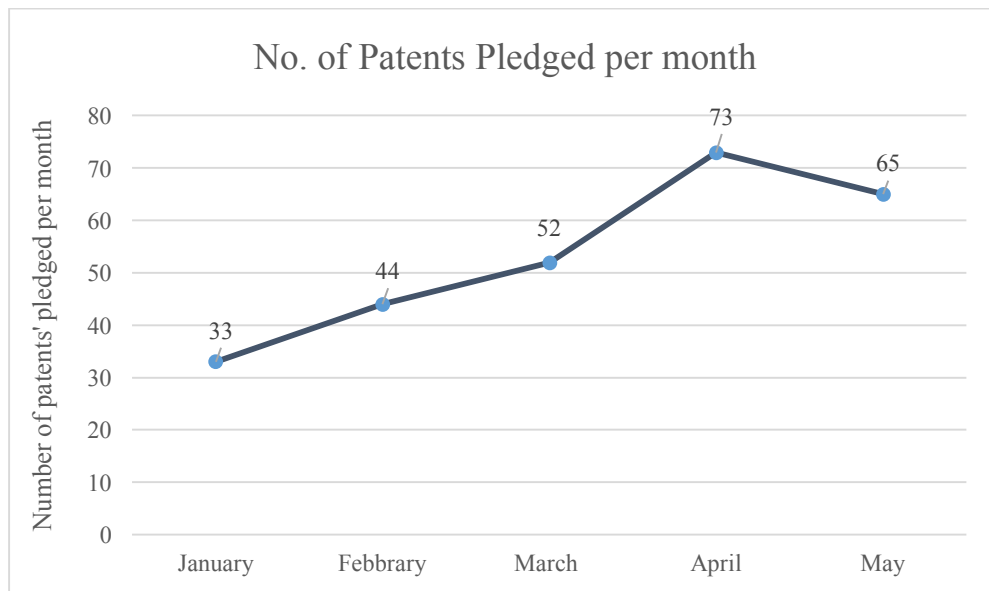


Figure 10: No. of patents Pledged per month

Source: USTPO Dataset

3.3.2 Lenders' perspective

Approaching to security agreements it could be interesting to have more details about who are the entities supporting the risks inherent to intangibles' collateralization. The outset for this section would be discovering the nature of the investors.

Scholars have traditionally argued that banks might be reluctant to non-traditional forms of financing because of the key issue related to the value's assessment.

However, our findings seem to follow a different path, revealing a slight shift from common expectations. Banks' lending, indeed, overcome the ones granted by financing companies by about thirty cases.

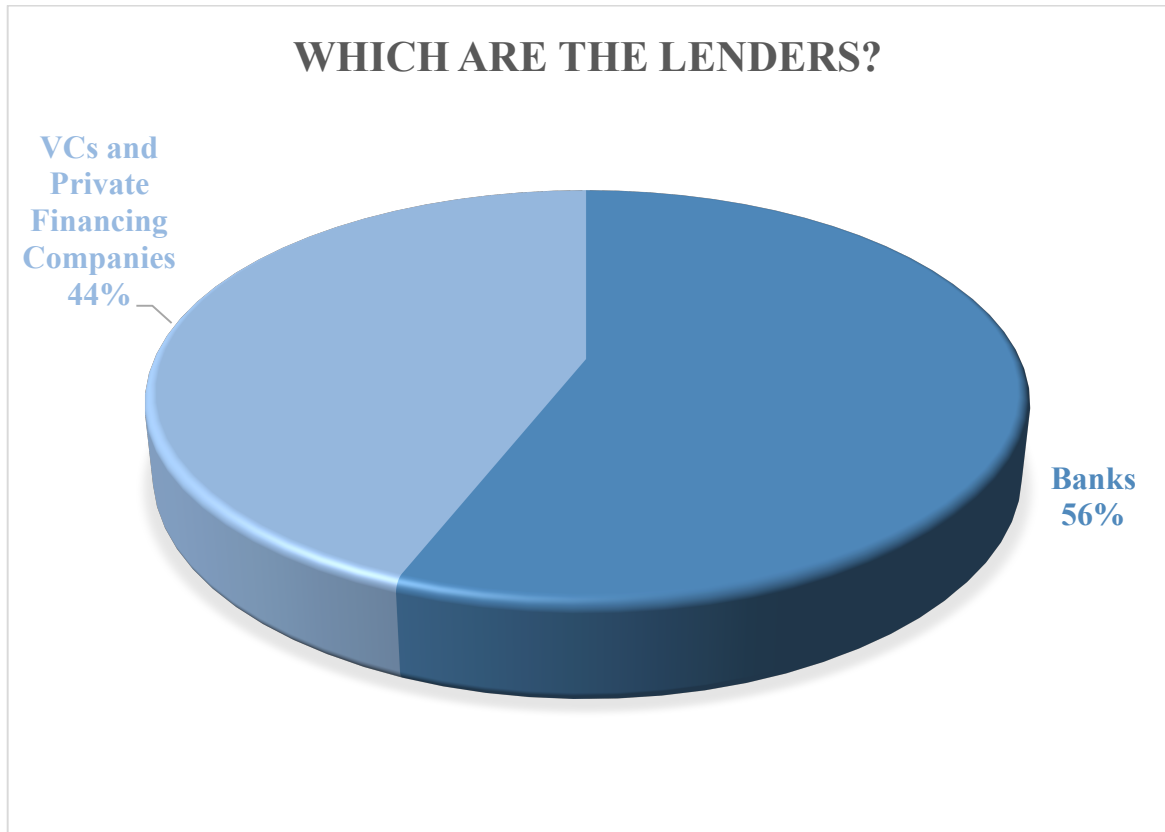


Figure 11: Which are the lenders?

Source: USTPO Dataset

The next step is investigating who actually are the investors, therefore, we identified the main lenders banks and financing firms.

The bar chart below (figure 12) illustrates the top 5 bank lenders, ranked on the bases of the number of security agreements signed. It can be seen that the Bank of America is ranked at the first place, followed by JP Morgan Chase and Morgan Stanley. The number of security agreements signed by the Bank of America in the period considered are 29 and it appears really to stand out from the other financing entities.

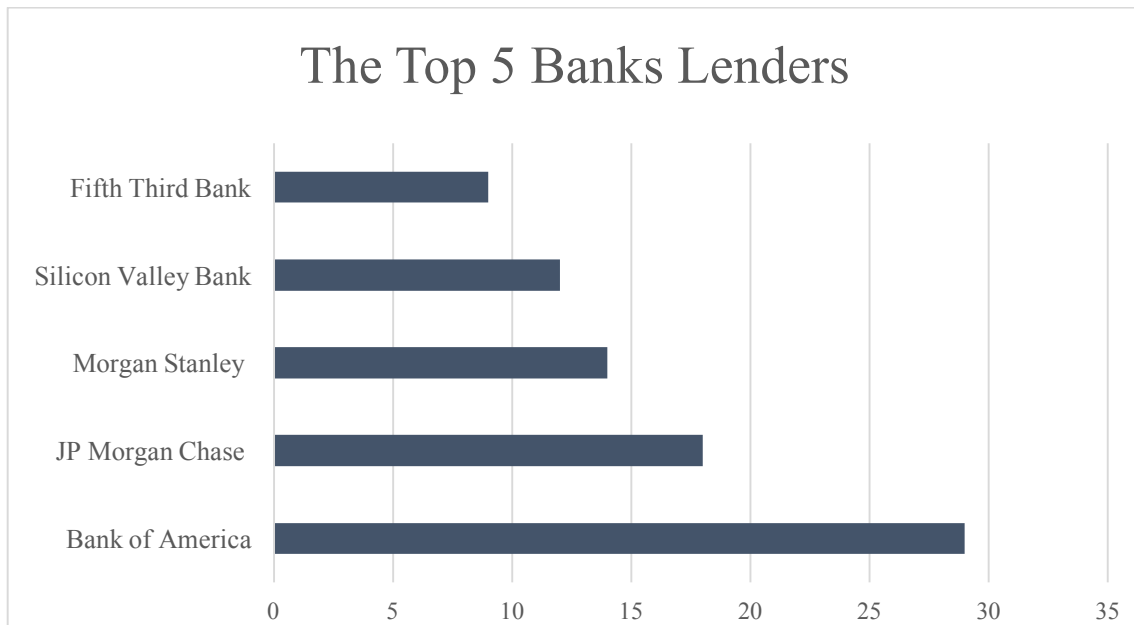


Figure 12: The Top Banks Lenders

Source: USTPO Dataset

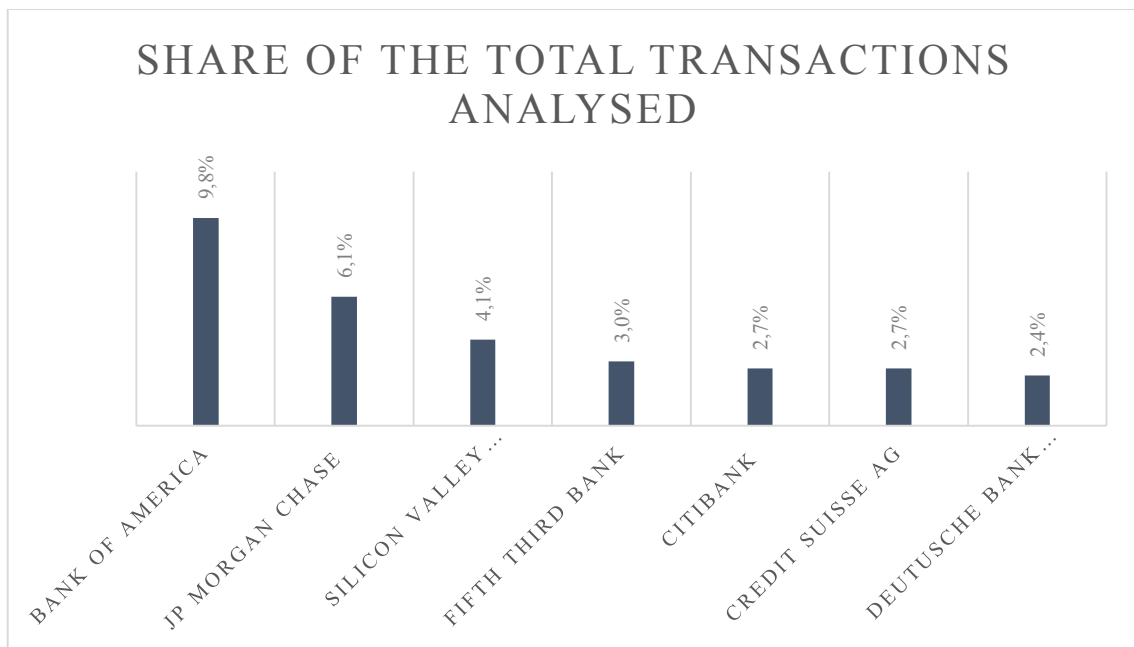
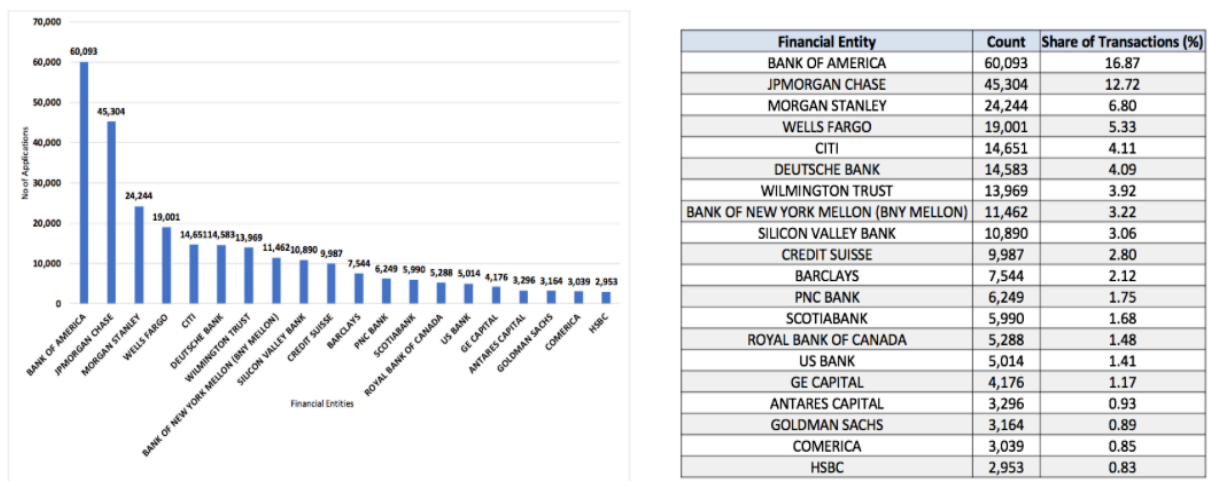


Figure 13:Share of the total transactions analysed

Source: USTPO dataset

The results about the top 3 lenders are not surprising because they confirm the findings from a research carried out by Relecura, a platform providing results and insights from their researches¹⁵. According to the study, mentioned above and dated May 2015, the top three financing entities are the same we found out analysing USTPO's filings for the first months of 2017, and the ranking follows a similar order.

Top Financing Entities – giving IP Backed Loans between 2011-2016



- Total number of transactions between 2011 to 2016 are 947,907 transactions comprising of 356,287 applications

Figure 14: Top Financing Entities- giving IP Backed Loans between 2011-2016

Source: Relecura IP Intelligence, 2015. IP Backed Financing , s.l.: Relecura, Inc..

In fact, JP Morgan Chase, Bank of America, Citigroup, Wells, Fargo, Wilmington Trust, and Deutsche Bank were assessed from Relecura as the major financing entities concluding IP backed deals (Relecura IP Intelligence, 2015)

Moreover, even the Silicon Valley Bank, despite it was not ranked within the top five investors by the Relecura's study, was classified among the major lenders. This could be explained giving some background information. In fact, Silicon Valley Bank is implementing its financing strategy in regard to banking services to start-ups as well as

¹⁵ Further information about the research activity carried out by Relecura are available at : <https://relecura.com/team/>

contributing to established businesses' growth leading through financial support their expansion¹⁶ (ECB, 2014).

Finally, considering the main financing ventures, the ranking company Jeffries Finance is absolutely the organization with a greater presence among the sample with 34 patents security agreements signed.

3.3.3 Borrowers' perspective

The ring chart illustrates the differences in firms' ownership distinguishing between private and public enterprises.

It definitely shows that the majority of companies involved in IP backed deals are private. As it can clearly be seen, the percentage of private enterprises pledging patents is about four times the number of publicly- held companies. In fact, the formers represent a very large majority of the entire borrowers' companies.

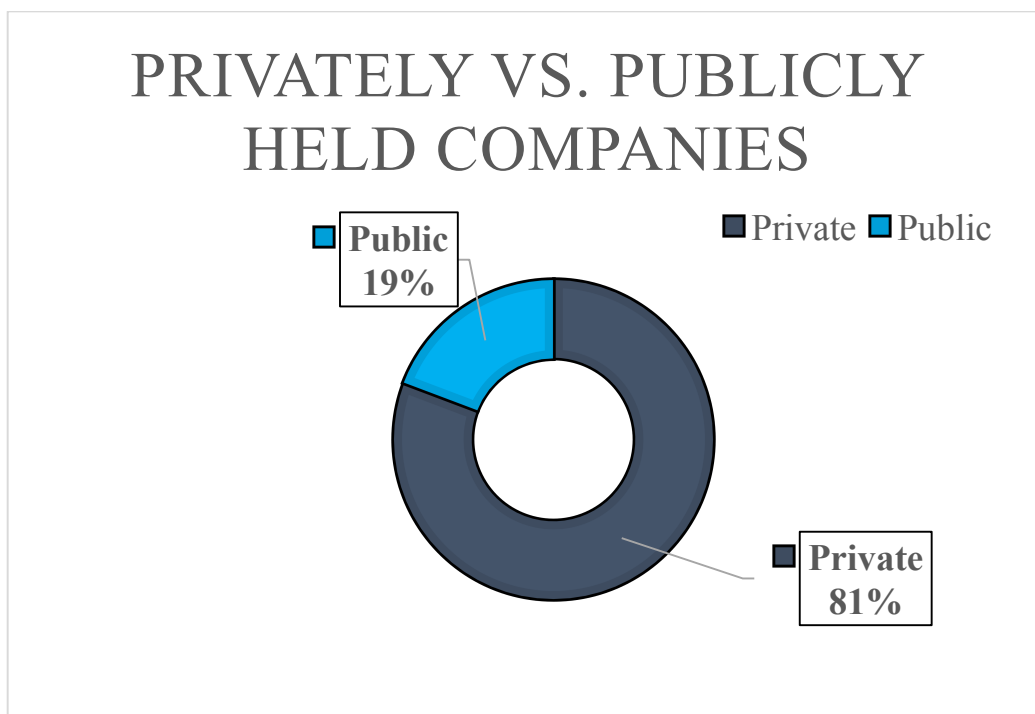


Figure 15: Privately vs. Publicly Held Companies

Source: USTPO Dataset

¹⁶ Additional details about Silicon Valley Bank's policies are available at: <https://www.svb.com/uk/>

For explanatory purposes we would like to make a few comments on the reasons underpinning this picture of the situation. We can guess that there might be a number of motives leading to this observable discrepancy in companies which differ basically in the ownership.

First of all, private companies might be in possession of a major number of patents, that causes enlarged number of assets suitable to be pledged. In fact, studies have been carried out that demonstrates that privately-held companies appear to be more innovative than public ones (West & Lu, 2009).

What is given is that privately held enterprises need to be competitive in the market, but how to sustain their advantage?

As the American professor of Strategic Management, Jay Barney pointed out, in order to stay competitive in the marketplace the resources inherent to the companies should be Valuable, Rare, Imperfectly Imitable, Non-substitutable (Barney, 1991). Hence, enterprises privately-held should generate resources that cannot be imitated and this require level of protection is guaranteed by the patent registration. We could easily guess that the need to safeguard cash-flow generating assets is more frequent when the competition level in the business environment is high and firms receive an acute pressure that culminate in boosting innovation. On the other side, reduced competition game typical of the public sector might have a deterrent effect on R&D. That means public enterprises might be lacking of stimulus to produce some degree of novelty through the business process.

Moreover, public companies have different possibilities to obtain funds and maybe pledging their IP may not be the most suitable. This obstacle can be tied up to possibilities to opt for less expensive financial alternatives (West & Lu, 2009).

At this point, we would like to analyse deeper borrowers' insights, focusing on the size of the organization asking for funds. As indicator of companies' dimensions we took into account the number of employees currently retained by the single borrower entity. For the sake of completeness, as we explained in the section about our methodology, we carried out a cross-analysis with the information about the number of employees per firm coming from Bloomberg.

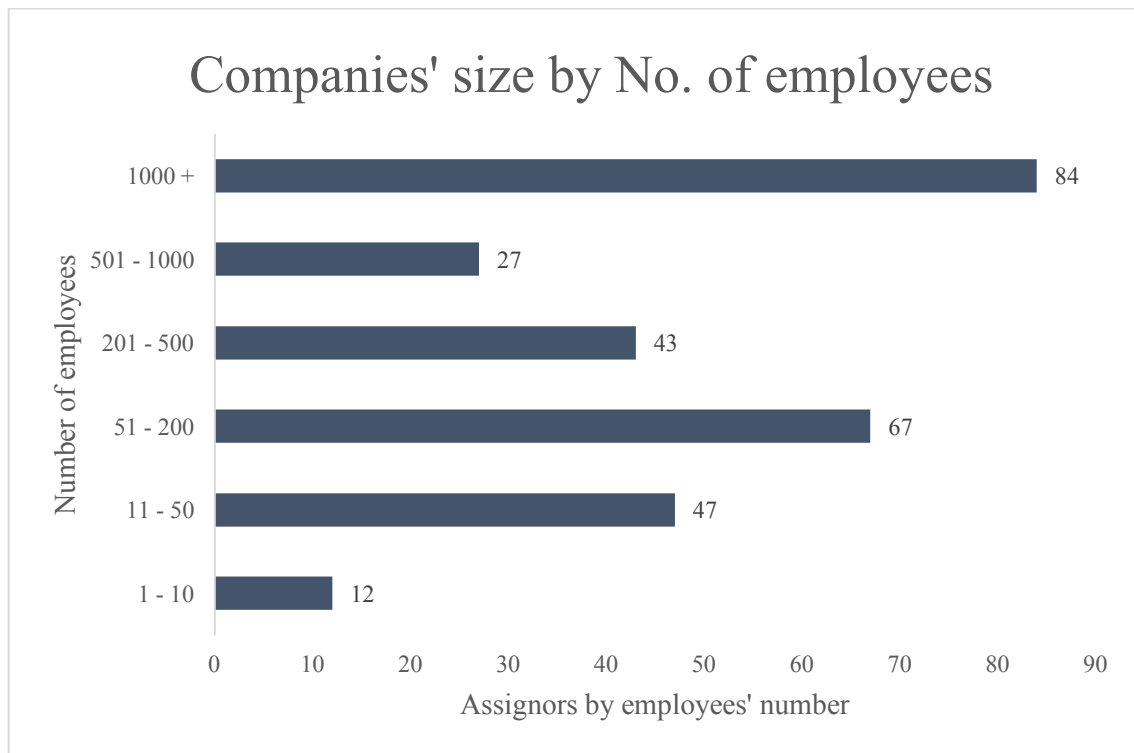


Figure 16: Companies' size by No. of employees

Source: USTPO Dataset

The bar chart above shows the enterprises dimensions in six distinct groups on the basis of the number of employees. The 1000+ category represents the one with the highest number employees, while the band 1-10 refers to the smallest number of enterprises. This outlines that the average possibility to benefit from IP backed transactions might arise as the enterprise's size grows.

Changing the subject and focusing on the age of companies looking for extra resources, for the sake of clarity we propose the following pie graph which shows the number of companies in the database per group of age.

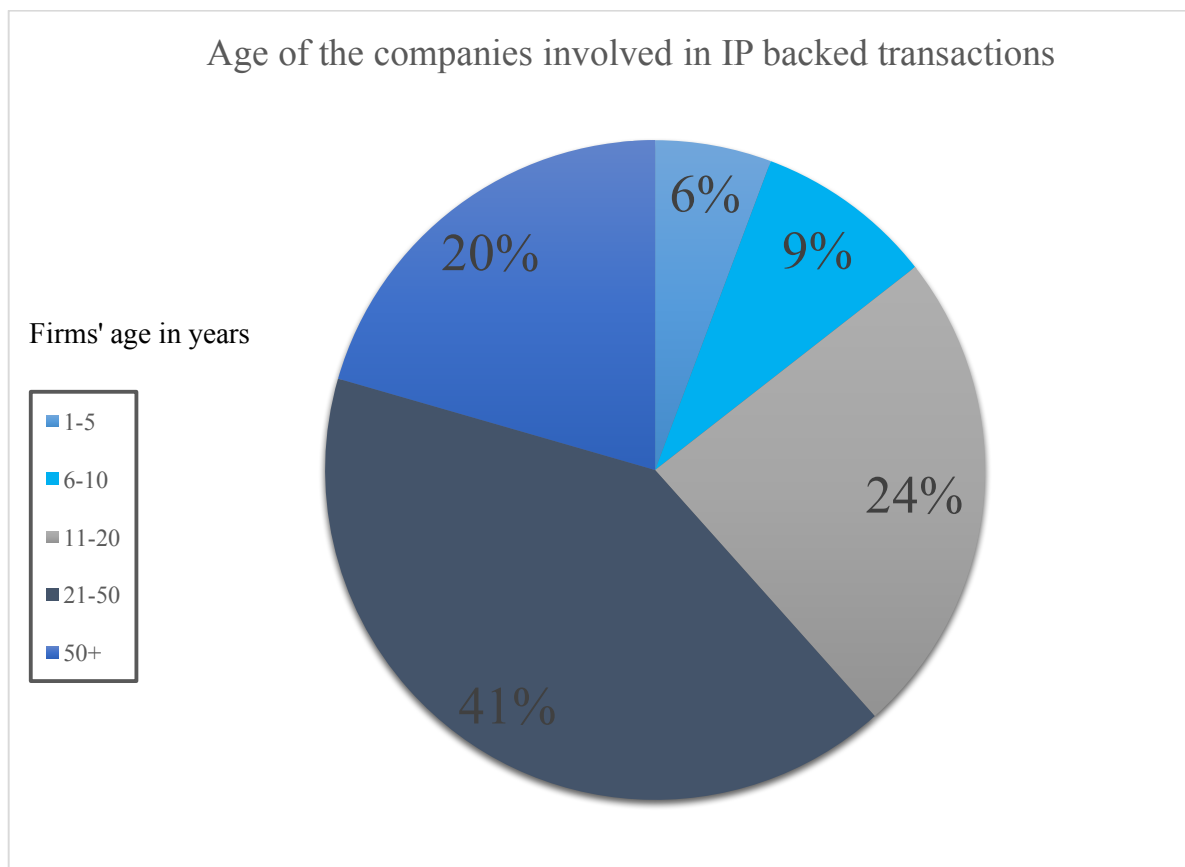


Figure 17: Age of the companies involved in IP backed transactions

Source: USTPO Dataset

We can see from the chart how the relative majority of enterprises came into existence between 21 and 50 years ago. Only a really small minority of enterprises have an age lower than five years.

As we can see from the graph 85% of the firms among the has an age exceeding eleven years. In fact, only 6% of the sample includes enterprises relatively young at the time of the deal. The issues facing managers at this stage might be related to troubles in leading the enterprise away from the risk of failure.

There is, in fact, 50% of probability of failure for companies in the first five years of existence and that means that a young company might disappear 5 times out of 10¹⁷. Moreover, the more a firm is young, the most is difficult for lenders to foresee their future performance and assess their probability to payback adequately the additional infusion of capital. Therefore, in general is possible to say that there is only minor quantity of companies belonging to the USTPO security agreements' dataset and that might be considered a downside. In fact, in practice for young start-ups IP backed financing doesn't result a widespread financing option. That trend turns out to be a really damaging drawback because new-born companies struggling to get the capital needed to unlock the access toward the next financing rounds (Nowotarski, 2012).

Another explanation for the under-representation of young companies in IP backed finance might be related to their scarce patenting activity if compared to older enterprises that might have more optimized and standardized technological update process.

In order to strengthen this last possible gateway, let's think that the top applicants for patents to the European Patent Application (EPO) in 2016 were Philips, Huawei and Samsung, large companies with respectively 104.380, 180.000, 308.745¹⁸ employees. Hence, huge sizes companies are highly likely to apply for patents more frequently.

Finally, we would like to explore the sectors to whom the borrowers of the three main banks belong to. Hence we investigated, the field of each companies which asked for loans to the following financing entities: Bank of America, Morgan Chase, JP Morgan.

¹⁷ Study carried out by Gallup Business Journal available at: <http://www.gallup.com/businessjournal/178787/why-new-companies-fail-during-first-five-years.aspx>

¹⁸ Data available at: <https://www.forbes.com/companies/philips/>; <http://www.huawei.com/en/about-huawei>; <https://news.samsung.com/global/fast-facts>

The bar chart shows the main business areas we found among the USTPO Security Agreements’ filings. We identified seven sectors, but the majority of the companies belong to the Industrial Machinery sector and Services field, followed by the ones of the Software industry.

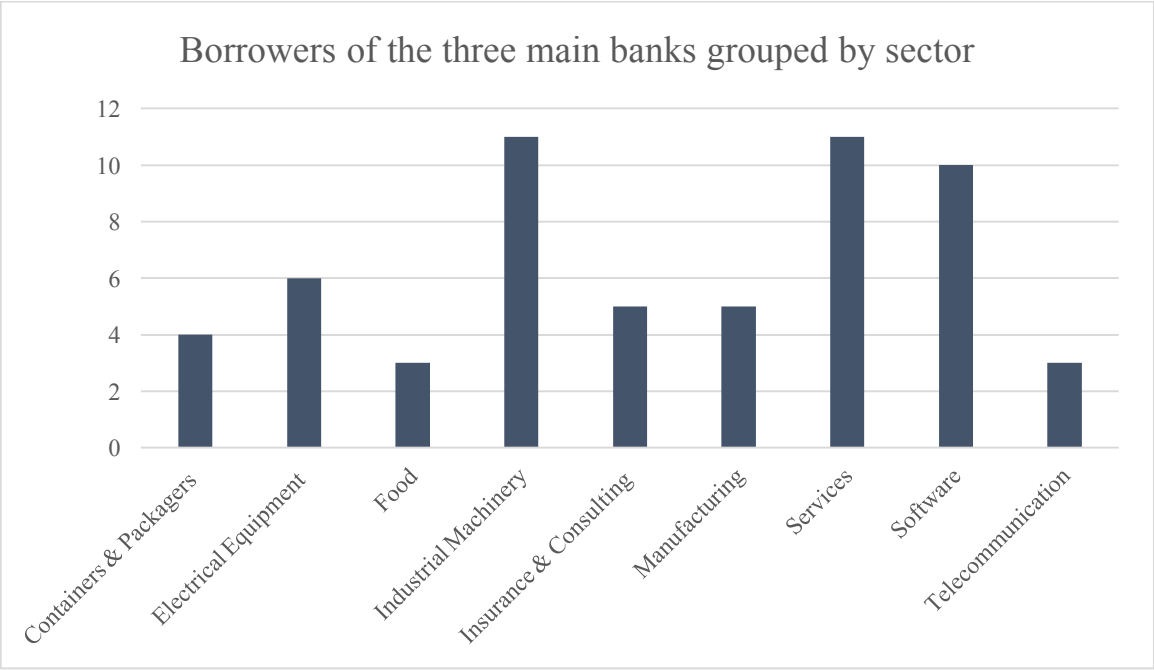


Figure 18: Borrowers of the three main banks grouped by sector

Source: USTPO database

At this point, we would like to analyse the size of patents’ portfolio which each borrower included among the eligible collateral pool when dealing with investors.

Hence, the bar chart below shows number of patents pledged per borrower. It can clearly be seen that the majority of the security agreements involves less than ten individual assets.

Consequently, it is evident that in order to secure IP based loans a large IP portfolio is not required. Perhaps, what investors tend to value more than the number of patents suitable to be pledged, is the reliability of the patent legal protection such as if the asset

has a low probability to be involved in litigations and infringements. For instance, if we just consider the case of an IP portfolio containing at least 100 assets, it is highly likely that some of them might be subject to litigations between the originator and external market players.

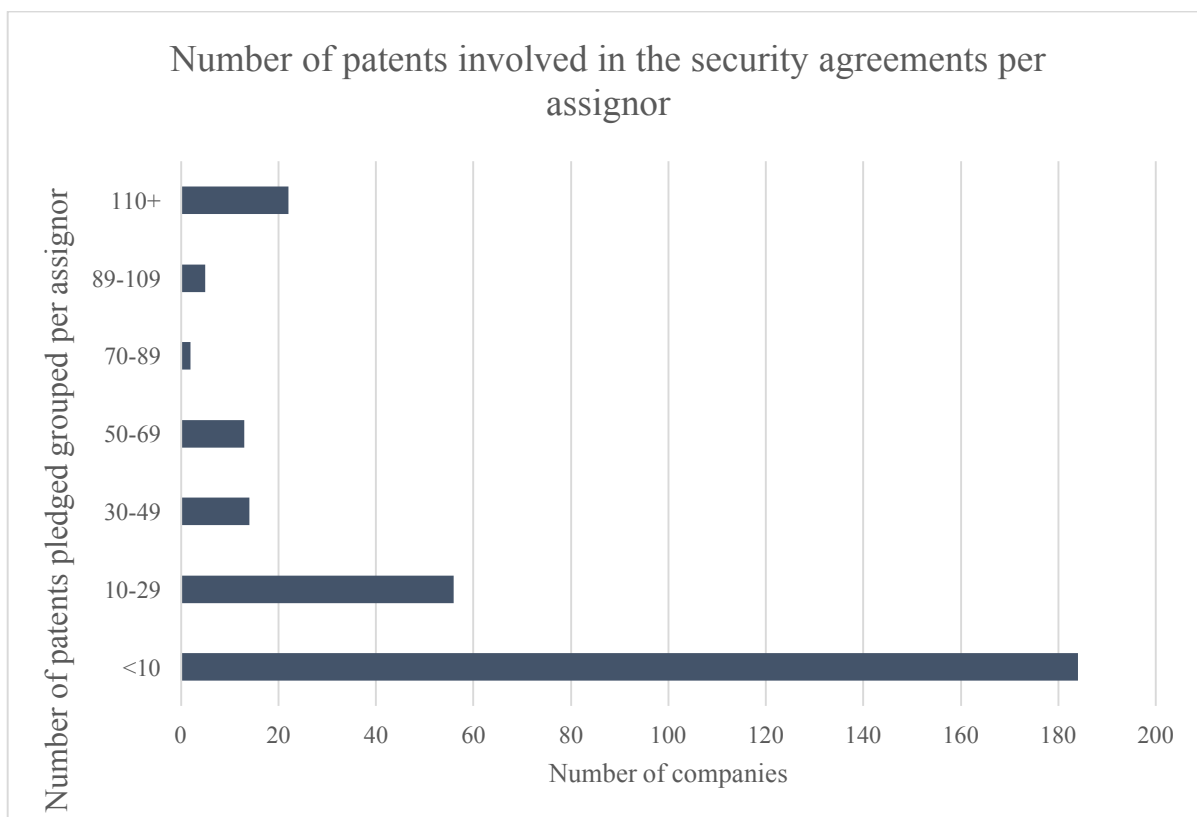


Figure 19: Number of patents pledged per assignor

Source: USPTO Database

3.3.4 Contractual scheme: release and termination

We would like now to report the main findings from the analysis of releases and terminations available on the USTPO's database. They involve recordings of granted loan that have been paid back.

As a consequence, the lender that could be either a bank, a venture capital or the financing firm, discharge the security agreement and the complete ownership is reassigned to the originator. (Nowotarski, 2012) The graph below (figure 16) gives information about the years to repay the loan granted. Hence, for each time length it is provided the number of enterprises belonging to that category.

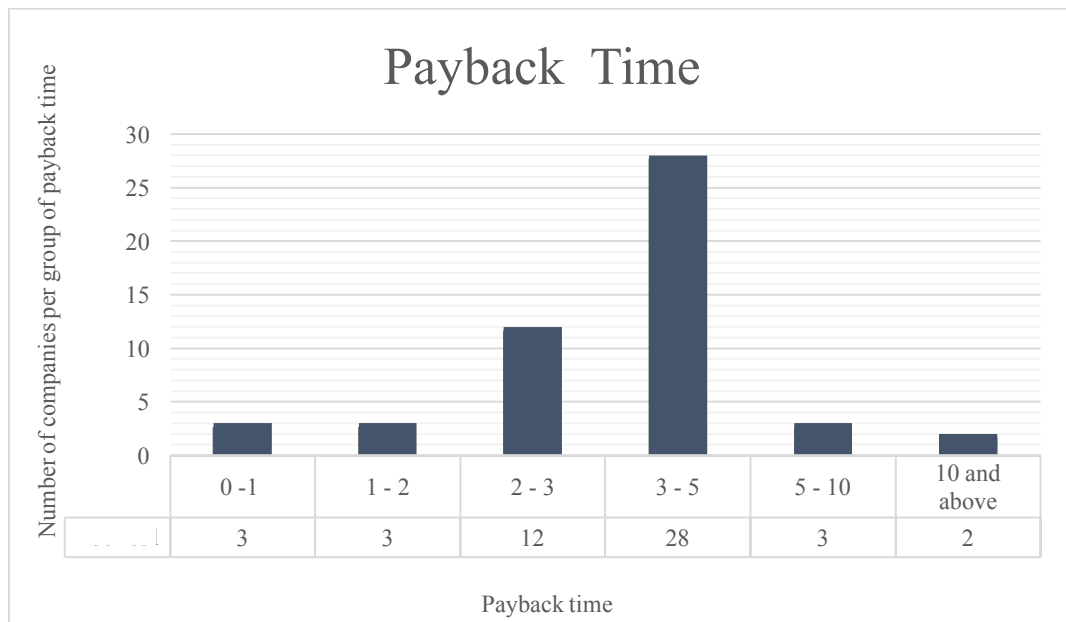


Figure 20: Payback Time

Source: USTPO Database

In particular, the bar chart outlines the number of firms per payback time which is expressed through years' range.

The number of companies able to pay the money between two and five years are 40 out of 54 and they represent about the 74,04%. The findings are not a source of novelty,

since traditional term loans have on average a duration anywhere between 1 and 5 years (Kiisel, 2015).

Just two firms among the sample succeed in granting a loan with the term identified with 10 or above and generally speaking this last option is preferable since the capital to be paid back is distended over a longer period, contracting the incidence of each instalment on the firm’s liquidity.

However, unfortunately, IP backed collaterals appear not to ease the access to longer term credit and therefore firms might opt to that strategy if their financial condition is compatible with a payback time not exceeding 5 years.

We also explored deeply the financing entities for release and terminations throughout the bar chart provided just below. It is illustrated that the main organizations infusing capital are Silicon Valley Bank, Jeffies Finance LLC and Credit Suisse AG. Hence, they might be considered the strongest in terms of punctual repayments. Taking into account what we outlined before about the large credit approval policies of Silicon Valley Bank, we might argue that their strategy has to some extent proofs of success because it is the major entity to be paid back.

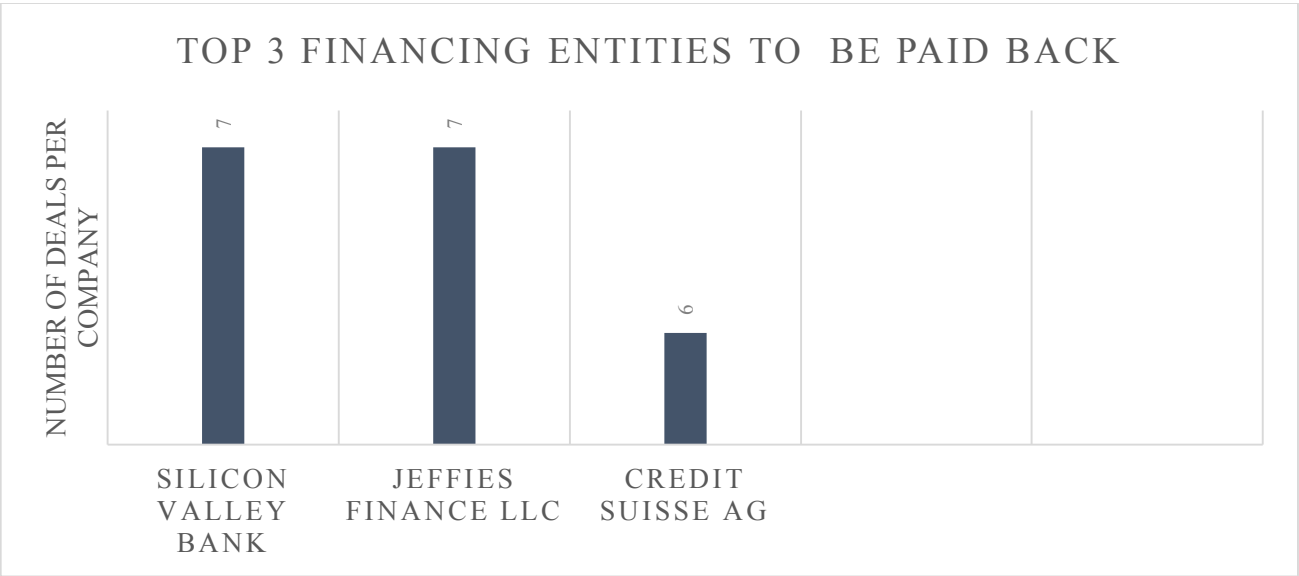


Figure 21: Top 3 Financing Entities

Source: USTPO Database

Outlined the most relevant facts deriving from the explanatory analysis of U.S. patent-backed activity, the following section is aimed at retracing the relevant points of the discussion in the light of the findings from USTPO's database.

Conclusions and Future Perspectives

The scope of this thesis was to shed light on the strategic management of intellectual property as financing tool. In particular, we displaced the inherent potential of IP backed financing and we pictured the current scenario for patent-backed collateralization.

For this purpose, we firstly carried out a theoretical literature review about the possibilities for intellectual property rights to reduce funding constraints experienced by innovative firms.

We accomplished a critical evaluation of IP backed financing, considering, on one hand the potential of intangibles and, on the other hand, proving that markets might be immature for IP securitization to become a routine transaction. In the last chapter, we studied at close U.S. patents security agreements, mainly exploring the market players involved.

Even if far from being a routine transaction, IP backed financing is literally boosting as a tool to ease access to credit. It is evident that the growing contribution of intellectual property to firms' financial position is primarily driven by a new economy, focused on intangibles and, among them, IP is assessed at the first place.

Despite the evolution toward intellectual property based business models, there are reasons to believe that the present scenario appears not totally ready to accept the radical change toward non-traditional forms of asset backed securitization.

Consequently, in my view part of the potential of IP backed financing remains still unrealised. It is difficult to make estimates and forecasts about the future development because forthcoming perspectives are partly consequences of the current situation which is not as rosy as one might wish. The lack of an international framework for IP registration, coupled with inconsistencies in valuations have been pressing concerns. The concern is rooted in identifying the measures to overcome obstacles when it comes to standardise IP backed transactions.

In the light of the findings of U.S. patent backed activity and expanding the context we would like to draw some implications.

Firstly, we pointed out the presence of consistent fluctuations in the number of patent pledged per month. However, the external variables affecting the number of asset collateralized are difficult to be uniquely identified. That means that unpredictable factors lie in the reasons underpinning patents' movements making regulators' job harder. This remark leads to larger scale implications. Ignoring what are the elements influencing increments and decreases in the quantity of asset used to grant loans, how might policymakers establish the steps toward a valuable exploitation of intellectual property for securitization. Perhaps, clarifying the circumstances contributing to a larger use of IP backed financing scholars might influence governments to implement policies capable of building a favourable environment around IP's security agreements.

Secondly, what does the increasing use of trademarks suggest? In the previous chapter, we pictured a general framework that outlines a growing diffusion in the trademark's exploitation as collaterals. If, until recently, the concept of pledging intangible assets might have been labelled as exotic, trademark backed transactions would have been tagged as nothing but totally anomalous and bizarre. That is to say scholars carried out little or basic research about brand securitization. However, with more than 700 agreements in approximately six months, it's obvious that the economic value of trademark's collateralization can no more be ignored. Hence, it is highly likely that in the next years' firms will experience and scholars – as some already did for patents' collateralization- will critically evaluate the beneficial effects of trademarks' pledge.

To conclude IP backed financing might have a great potential to favour young ventures from their very first financial rounds. However, we found out that most of the enterprises involved are largely established companies with an age between 21 and 50 years. Unfortunately, patent's backed loans are still lacking of a reliable marketplace suitable to build awareness and trust around this practice, and thus, enabling young enterprises to opt for this financing option.

Perhaps, building an interconnected trading platform for IP backed transaction along the lines of what already exists for stock exchange would ease its use, especially if it will be conceived a stock index based on patents.

In consideration of the literature review provided, coupled with the analysis we carried out and the deriving implications, we can argue that constant and periodical relationships between enterprises with strong IP portfolio and financing entities will act as enhancements for the creation of a transparent market place for IP backed financing over time. Nevertheless, the main issue to deal with is about the word “when”. In fact, visibility and value understanding for intangibles has been reinforced but there will be time for implemented policies to have an effect.

Innovative firms have lots of possibilities to thrive in the market for technology ‘s landscape and IP backed financing is one of them. However, in practice the cost of realizing it remains high, market efficiency should be improved and difficulties arise integrating the different demands of the market players. All we can do is to leave a number of questions open about future perspectives and the necessary time for IP backed financing to become totally conventional and utterly ordinary as transaction.

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