Using intellectual property to raise finance for innovation

Intellectual property (IP) assets such as patents, copyrights, or trademarks can help innovative firms gain access to financing by acting as collateral or security for loans and signaling the quality of a venture to investors. This policy brief identifies policy options to encourage a greater use of IP assets to channel financing into innovation. They include increasing the levels of awareness and use of IP by innovative firms and financiers and reducing transaction costs in IP finance markets.

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The rising importance of innovation-related intangible assets

Intangible assets are assets in a firm like software, new knowledge and ideas resulting from research and development [R&D], branding, and know-how about how to organize a business which are not embodied physically in machinery or plant, or financially in stock shares and land titles (Corrado et al. 2009). There is an increasing recognition that these intangible or ‘intellectual’ assets are deeply linked to innovation: They generate an economic return by allowing firms to develop new products and services, improve their productive efficiency, and differentiate themselves from their competitors (OECD 2013).

Between 1997 and 2005, intangible assets contributed around 23 percent to labor productivity growth in the European Union and 32 percent in the United States (Corrado et al. 2013). They have also driven job creation. Between 2001 and 2011, young firms whose assets were largely intangible (intangible-asset intensive firms) generated 47 percent of all new jobs in Organisation for Economic Co-operation and Development (OECD) countries (OECD 2013).

Intangible assets have gained importance as knowledge-intensive innovation activities have become the central drivers of competitive advantage in modern economies. They now count more toward a firm’s market value than tangible assets (Lev and Daum 2004), and in such countries as Sweden, the United Kingdom, and the United States, investments in them have overtaken those in tangible assets (OECD 2013).
Barriers to financing for firms focused on intangible assets

Innovative firms are often young and have limited track records, which makes them risky prospects for creditors because little is known about them (Hall and Lerner 2009). To mitigate this situation of “information asymmetry,” creditors will seek to take collateral that can be liquidated if lenders fail to fulfill their obligations. Most innovative firms are, however, poor in tangible assets like hardware or property, and rich in intangible assets not well suited to being used as collateral because they are illiquid. The difficulty of measuring and separating them from other assets in a firm limits their salvage value in a situation of distress.

Equity financiers such as business angels and venture capitalists have more incentives to factor intangible assets into their investment decisions because they share the benefits when firms driven by those assets perform well (Sameen and Quested, forthcoming). Information asymmetries between them and innovative firms regarding the value of those assets, however, can still hinder firm valuation and investment.

The role of IP assets in the financing of innovation

Intellectual property (IP) rights are the institutional solution to a market failure stemming from the fact that new knowledge is a public good—and thus non-excludable, meaning there is no way to prevent its use by others—which may lead to its undersupply (Arrow 1962). They address the problem by providing owners with temporally defined monopolies over the outputs of their investments in such innovation-related intangible assets as new knowledge (through patents), branding (through trademarks), creative and artistic works (through copyrights) and industrial designs (through design rights; OECD 2007). Having protected their innovations, these firms can then exploit them directly or license their use to other participants in IP markets (Arora and Gambardella 2010). The resulting IP assets can help innovative firms that are rich in intangible assets to gain access to financing from lenders and investors (WIPO 2008).

IP assets and access to debt finance

Figure 1 illustrates several mechanisms through which innovative firms can use their IP assets to gain access to financing.
Using IP to mitigate risk: Interviews with bank lenders commissioned by the UK Intellectual Property Office in 2012 show that the IP assets of a firm looking for credit give lenders some assurance of the manager’s or entrepreneur’s commitment to the business (Brassell and King 2013). IP is also considered a driver of cash flow, which makes debt easier to service. Although the lenders interviewed did not in general see IP as an asset that could be used as collateral, they would still take it into account in their lending decisions and would seek some control over it, making it part of the “security net” for the loan.

IP-backed loans: IP assets can be directly pledged as collateral for a bank loan (Calderini and Odasso 2008, Edwards, 2001). Most examples of this involve large firms such as Dow Chemical, which in 1994 raised US$100 million against a portfolio of its patents (Munari et al. 2011). Similarly, publishing companies have pledged their copyrights as collateral to secure loans (OECD 2013).

IP sale and lease back: An IP asset—for example a patent or portfolio of patents—can also be acquired by a lessor from another firm (the lessee) over a period of time and licensed back in
exchange for leasing fees. At the end of the period, the lessee usually has the option to repurchase the asset (De Vries 2012). In some instances, the IP asset being leased back acts as security for a loan, as was the case with the first recorded patent sale and lease-back deal between Aberlyn Capital Management and the biotechnology company RhoMed, described by Munari and others (2011).

**IP-backed securities:** In the case of IP-backed securities, what are being transacted are the rights over the income from the exploitation of a given IP asset, such as the royalties from a patent or copyright. The structure of IP-based securities can be quite complex. In general, they involve placing an IP asset, or claims over the income it generates, in a special purpose vehicle (SPV) that issues securities backed by the asset’s future income. These securities, separated in theory from firm risks (and, therefore, subject to a favorable risk rating), are then issued in capital markets (Munari et al. 2011).

In 2007–8, royalty-based financing was estimated to be worth US$3.3 billion in the United States (OECD 2013). A famous example of IP-backed securities is that provided by the US$55 million “Bowie bonds” issued in 1997, backed by income from the future sales of David Bowie’s music albums (WIPO 2008). Royalties from other copyrighted materials, as well as brands such as Dunkin’ Brands, have been used in a similar way.

Pharmaceutical sciences are particularly attractive for securitization, given the relative stability of their royalty streams compared to those of other sectors (Calderini and Odasso 2008). Several funds, such as Royalty Pharma, DRI Capital, Cowen Healthcare, and Royalty Partners, specialize in the acquisition by their investors—very often university research centers—of the royalty streams from pharmaceutical products (Yanagisawa and Guellec 2009).

**IP assets and access to equity finance**

Figure 2 illustrates the two main ways in which IP assets help innovative firms gain access to equity financing: through signaling and by generating income opportunities through licensing and litigation.
**Figure 2: The Role of IP Assets in Equity Financing of Innovation**

*IP as a signal for venture capitalists:* The presence of IP assets can give venture capitalists assessing an investment prospect valuable signals about hard-to-measure characteristics of its management team, its technological capabilities, its freedom to operate unencumbered, and its ability to exclude competitors from the market and generate superior profits, all of which will increase the prospect’s attractiveness, not least by making it an appealing target for acquisition by larger companies (Levitas and McFadyen 2009). The existence of IP (generally in the form of
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patents) is used as a litmus test to determine whether a firm is screened out of a venture capital (VC) deal pipeline, or if it proceeds to the next stage (Munari et al. 2011).

Although research supports the idea that patents help firms secure VC funding across a range of industries (Helmers and Rogers 2011), their importance varies across sectors. For example, Sichelman and Graham (2010) find patenting more important for getting access to financing in biotechnology and medical services than in software (see also Mann 2005). Other studies underscore the importance of patent quality. Two proxy indicators of economic value are whether a patent has been cited by other patent documents or whether it has been opposed by others; Häussler and others (2008) show that owning these kinds of patents is a strong predictor of VC financing. Patents can also help quantify the value of a venture. Hsu and Ziedonis (2008) find patent filings have a large effect on investor estimates of firm value, and larger patent application stocks increase the likelihood that a firm will undergo an IPO (initial public offering).

**IP as a source of royalty and litigation income:** Another group of investors in IP-rich firms is primarily motivated not by the prospect of a lucrative exit payout but by the licensing and litigation opportunities that come from owning IP (Yanagisawa and Guellec 2009). This group includes patent aggregators, such as Intellectual Ventures, who acquire valuable patents from inventors, which they then license (Kerstetter and Lowensohn 2012). Altitude Partners, a private equity fund manager, supports the IP commercialization activities of the firms it invests in, including through licensing and litigation for IP infringement (Yanagisawa and Guellec 2009).

The operation of some of these entities is controversial. They have been accused of behaving like “patent trolls,” (entities who enforce patent rights in order to collect licensing fees, rather than producing the patented product or service) and of creating “patent thickets” that tax and hold up the activities of bona fide innovative firms (Kerstetter and Lowensohn 2012; OECD 2013). Their response is that they provide funds to individuals and small firms that lack the capability to commercialize their inventions, and by identifying valuable patents and aggregating them into large portfolios, they lower transaction costs in IP markets (Myhrvold 2010). The concluding section briefly revisits some of these issues.

### Obstacles to IP-based financing of innovation

Despite its potential for channeling capital into innovative firms, IP-based financing remains a minority activity. IP assets are still rarely accepted as collateral for lending (Brassell and King 2013), and those types of IP-based debt financing that are gaining traction—such as IP-based securitization—are relevant mostly for larger corporations that already enjoy a wide range of credit options, and less so for younger, entrepreneurial firms facing graver financing constraints (Munari et al. 2011). This section identifies the principal obstacles preventing more IP-based financing of innovation, while the next focuses on policy options to remove them (see Table 1 for a summary).

Note that these sections do not look at institutional framework conditions—such as respect for property rights or a well-functioning legal system—that could constrain the use of IP for gaining
access to financing, especially in some developing countries. It is important to recognize that the existence of “a minimum level of IP enforcement, institutional development, and market sophistication is needed to fuel patent commercialization” (Ghafele and Gibert 2012, 26).

The structure of both sections draws on Ghafele (2005).

### Table 1: Obstacles and Policy Options for IP-based Financing of Innovation

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**Obstacles to IP-based financing on the capital demand side**

The capital demand side refers to innovative firms that are rich in intangible assets but poor in cash. The key question here is, do they have IP assets that could help them get access to financing?
If these firms do not protect the intangible outputs of their innovation investments with IP rights, then by definition they will not be able to use the resulting assets to gain access to financing. Evidence from European innovation surveys suggests many innovative firms do not patent their innovations and instead rely on secrecy or first-mover advantages to generate economic returns from them (Arundel 2001). Only 6 percent of UK small and medium-sized enterprises (SMEs) engaged in R&E, and 12.9 percent of large firms, said patents were important for them, along the same lines as other IP rights such as copyrights, trademarks, and design rights (Hughes and Mina 2010).

These low levels of use of the IP system by innovators and small firms have been linked to insufficient awareness of IP law and its potential benefits, lack of business capacity to manage IP strategically, and the high costs of filing and renewing patents (Hargreaves 2011). According to a 2010 survey by the UK Intellectual Property Office, only 14 percent of microenterprises (and, strikingly, only 29 percent of firms with more than 250 employees) were aware that publishing before filing invalidates a UK patent (IPO 2011). An OECD review of IP in UK SMEs points out that less than a third are capable of managing their IP, and only 10 percent have IP strategies. Only a quarter of Nordic firms provide any IP training to their staffs (OECD 2011).

**Market obstacles to IP-based financing**

Market obstacles refer to transaction costs that reduce the scope for financing deals using IP. They are linked to the characteristics of the IP assets being traded and of their markets.

The principal market obstacle to IP-based financing stems from the difficulty of valuing IP assets. By comparison to other physical assets, such as machinery, patents and copyrights vary greatly in their value; a few are very valuable, but the majority are not worth much (Hall and Harhoff 2012). Establishing which is which ex ante is not a trivial task. Moreover, IP valuations rely on predictions of future cash flows that are difficult to make in fast-moving markets where changes in technologies or tastes can render a patent worthless. Uncertainty and information asymmetries about patent value have been made worse by a recent boom in dubious filings that has eroded patent quality (OECD 2013).

The value of a patent also depends on its scope, sector, and enforceability (for example, patents on products are easier to enforce than patents on processes) and is correlated with a firm’s human resources as well as its performance (that is, if an IP-rich firm goes bankrupt, this indicates that the IP on which it had based its business was not very valuable). Few “hard-and-fast” valuation rules or standards apply to all patents (ICC 2012), yet having none would make trading IPs in a transparent manner hard.

The final result of all of these measurement problems is an increase in the costs of IP-based financing deals. Lenders need to acquire expensive expertise to assess the value of IP and insure against risks related to potential changes in the value of IP assets.
All of these market obstacles to IP-based financing are compounded in developing countries by the absence of the financial and legal institutions needed for “fostering security and certainty for IP owners willing to license their technologies” (Ghafele and Gibert 2012).

**Obstacles to IP-based financing on the capital supply side**

The capital supply side in this market refers to financiers’ considering IP assets in their lending and investment decisions.

Partly for the reasons described above, lenders have not shown much appetite for IP assets when lending. This reticence has also been linked to lack of expertise and systems to incorporate IP assets into credit assessment processes and offer pipelines (Munari et al. 2011), to assess the innovative business models of innovative, IP-rich firms, and to evaluate the risks of complex IP-backed securities. These deficiencies contrast with the capabilities of equity investors who have developed due diligence and valuation processes allowing them to deal with IP, not least because they stand to benefit from IP-driven growth in their investee firms.

**Policy options**

This section describes policy options to remove the obstacles to IP-based financing outlined above. It does not consider substantive IP reform requiring international cooperation, but instead focuses on discrete programs and initiatives to make IP assets more integral to the financing of innovation within the current IP system. Like the obstacles, these policy options are classified into the capital demand side, the market side, and the capital supply side (Table 1 summarizes them).

**Capital demand side: Policies to raise awareness and use of IP systems**

Leaving aside wider policies to encourage higher levels of innovation that may generate new IP (such as fiscal incentives for R&D, prototype development funds, investments in the commercialization of university research, and so forth), some policies are specifically aimed at removing bottlenecks to the use of the IP system by innovative firms, and therefore to IP-based financing. They are the following.

*Subsidize the use of the IP system:* Some countries have implemented direct subsidies to lower the costs of patent applications and renewals. In China, as a response to the National Intellectual Property Strategy and the National Patent Development Plan, local governments at most levels have put in place subsidies for patenting. These include reimbursements of patenting costs and fees, postponement of application and renewal fees, and prizes for awarded patents (Lei et al. 2013).

*Build up IP awareness and business capacity in innovative firms:* The rationale here is to make innovative firms (primarily SMEs) more aware of the benefits of protecting their innovations through IP rights, and to equip them with the capabilities to do so. For example, in 2012, the UK Intellectual Property Office announced plans to raise the visibility of the IP system among SMEs...
with seminars and with IP training for advisors in other government business support programs (IPO 2012). They have also developed a web tool, the IP Health Check, which allows SMEs to assess the value of their IP. The European Patent Office (EPO) offers IP training services to innovative firms through free web courses and onsite training sessions charged at cost (Rigby and Ramlogan 2012). In their assessment of IP monetization strategies in developing countries, Ghafele and Gibert (2012) highlight the importance of balancing IP ownership (a prerequisite for its use in gaining access to financing) with its exploitation. In that regard, they call for policymakers in these countries to raise awareness about IP monetization strategies among their innovative firms.

**Improve access to IP services:** In this case, the public sector directly provides IP services to innovative firms or subsidizes private sector provision with the goal of lowering barriers to access to the IP system. In Japan, the National Center for Industrial Property Information and Training (INPIT) offers IP expertise to support the patent licensing activities of firms, universities, and research institutes (Yanagisawa and Guellec 2009). In the UK, the Intellectual Property Office has worked with the British Standard Institution to set up a specification for the provision of IP commercialization services aimed at improving standards in the market for IP expertise (BSI 2011).

**Insure innovative firms against IP risks:** Protecting innovations from infringement can involve substantial costs, particularly when several international jurisdictions are involved, and this can lower the incentives to use the IP system. To address this, the government of the Republic of Korea provides SMEs with legal support when they are investigating infringement risks in export markets and pays 70 percent or more of the premium for their IP insurance (Ghafele and Gibert 2012). The Danish Patent and Trademark office has supported the development of PatentEnforcer, a private sector firm offering patent litigation insurance for SMEs [http://old.innovaccess.eu/ecs9_paying_it.html](http://old.innovaccess.eu/ecs9_paying_it.html). Policymakers—particularly those in developing countries—could benefit by participating in established technology transfer networks such as AUTM (Association of University Technology Managers) and IFTTO (International Federation of Technology Transfer Officers) to share experiences in encouraging IP monetization across international borders (Ghafele and Gibert 2012).

**Market side: Policies to lower transaction costs in IP-based financing markets**

Market obstacles to IP-based financing stem from the difficulty of valuing IP assets and concerns about liquidity in the markets for these assets. This section considers the following policy options to address these issues.

**Improve the measurement and reporting of intangible and IP assets:** As has been highlighted here, intangible assets are tightly linked to IP assets, so any improvements in the precision and timeliness with which the former are measured and reported should increase the usefulness of the latter for the financing of innovation.
The OECD (2013) notes that although few policymakers have advocated better measurement and reporting of intangible assets, a number of private sector solutions have emerged, including the Intangible Asset Monitor (Sveiby 1997) and the World Intellectual Capital Initiative (http://www.wici-global.com/). The OECD has recently called upon policymakers to encourage further firm measurement and reporting of intangible assets by establishing guidelines, increasing standardization (including backing private sector initiatives), establishing consistent asset classifications, supporting younger firms and SMEs in their reporting, and developing frameworks for auditors.

**Standardize the valuation of IP assets, such as patents:** Several attempts have been made to standardize patent valuation to increase transparency in technology markets and make IP assets more suitable for gaining access to financing. In 2007, the German Institute for Standardization published “General Principles for Proper Patent Valuation” to help with assessments of the quality of patent valuation reports and expert appraisals (ICC 2012). It also initiated an International Organisation for Standardization (ISO) project on patent valuation, although this has faced opposition from several countries (Harrison 2008), and has issued a standard on brand valuation (ISO 10668:2010). In Italy in 2008, the Ministry of Economic Development, the Confederation of Italian Industry, the Association of Italian Banks, and the Conference of Italian University Rectors signed memoranda of understanding to develop a common methodology for assessing patent value (Munari et al. 2011).

**Improve access to information about IP assets:** Detailed information about the status of an IP asset removes uncertainty about who owns it, a critical consideration for financiers. It also allows investors to assess its economic value more accurately (for example, by making it possible to look at its citations, or whether it has been opposed by other parties). In recent years, national patent offices around the world have greatly increased the levels of information about registered IP assets (primarily patents) available on their websites (Yanagisawa and Guellec 2009) and have added search functions that enable investors to obtain information about many important characteristics of patents, including their legal status and ownership, their citations, and possibly, in the future, their economic value (see Rigby and Ramlogan [2012] for a summary of the online services available from the European Patent Office).

**Remove uncertainties about patent quality:** Doubts about the quality of an IP asset increase information asymmetries between IP-rich firms and financiers. This means the erosion in patent quality brought about by the recent “patent explosion” can hinder IP-based financing. Increasing the quality of patent applications has become a priority for IP agencies across the world (OECD 2012). The U.S. Patent and Trademark Office, for example, has opened up the patent review process to citizen experts and professionals through its peer-to-patent pilot program and found that these groups are in some cases able to direct patent examiners to relevant prior art (information related to the potential previous existence of elements of the patent) that would not have been discovered otherwise (Peer to Patent 2012). Other patent offices across the world—including those in Australia, Korea, Japan, and the UK—have put in place pilots inspired by this model.
Create marketplaces to make IP assets more liquid: Robust marketplaces increase the liquidity of IP assets and may give financiers more confidence about the possibility of salvaging IP assets in case of distress or firm bankruptcy. A dense ecosystem of intermediaries and marketplaces supports patent transactions (Yanagisawa and Guellec 2009; Hagiu and Yoffie 2011), and private and public digital copyright exchanges are increasing in number. The UK government, for example, has supported the development of a “copyright hub” that will automate the high volume of low-value transactions between rights owners and smaller users of copyright (Hooper and Lynch 2012).

Capital supply side: Policies to raise awareness and use of IP by financiers

Lack of expertise and the perceived risks of IP-based lending make banks and financial institutions averse to factoring IP into their credit processes. The following are policy options to remove these obstacles to capital supply:

Accept IP as collateral for lending by development banks and government guarantee schemes: The Thai SME Bank, the Development Bank of Japan, and the Beijing branch of the Chinese Bank of Communications are examples of publicly backed banks that accept IP assets as collateral for loans (Ghafle 2005; Munari et al. 2011). BNDES (the Federal Development Bank of Brazil) bases 50 percent of its final rating for a loan on an evaluation of the firm’s intangible assets (OECD 2013). Another way to improve access to financing for IP-rich firms is through government-backed guarantee schemes for firms that lack track records or collateral but are otherwise attractive to lenders; an example is the UK’s Enterprise Finance Guarantee scheme (BIS 2013).

Develop a culture and systems that allow banks to incorporate IP assets into their lending decisions: The goal here is to increase private banks’ willingness to consider IP-based financing and provide them with skills and standards to do it effectively. Banks have recently been called upon to develop new standardized systems to incorporate IP into their credit assessment procedures, potentially drawing on the due diligence processes used by equity investors (Brassell and King 2013), but what the role of policy would be in encouraging these changes is not yet clear. The Initiative Finanzstandort Deutschland (IFD: Initiative for Germany as a Financial Center), which brings together the German financial services and insurance industry, has sought to increase the recognition of patents as potential collateral by banks and to develop credible patent valuation methodologies (Munari et al. 2011).

Create incentives for banks to consider IP as collateral for loans: Another option to increase IP-based lending would be to allow banks to count IP assets pledged as collateral toward their capital requirements, as set out by Basel III rules (which determine acceptable levels of capital and bank leverage). Several U.S. banks have started exploring this option with the U.S. Federal Reserve (Masters 2012).
Conclusions

This discussion has highlighted how IP assets can help innovative firms get access to debt and equity financing, the obstacles that may prevent them from doing so, and the policy options available to remove these obstacles. To conclude, it is important to note some significant interdependencies among the policy options identified above. For example, while lowering barriers to patenting or subsidizing patenting activity is likely to produce an increase in the quantity of patents, it may also lead to a decrease in their quality that intensifies information asymmetries about their value, making them less suitable for IP-based financing. Investing in the public provision of IP services can crowd out the private sector from these markets (Rigby and Ramlogan 2012).

Policymakers need to consider the policy interactions within this complex system, thinking systemically when they design the policy mixture to improve IP-based financing across areas as diverse as business support, IP regulation, and banking regulation. Attention to detail in institutional design—including the business models of intellectual property agencies and patent offices—is also very important (Hall and Harhoff 2012).

Critically, policymakers also need to be aware of some of the potential negative side effects from an undue focus on strengthening IP rights, which may create barriers to entry in the market and increase regulatory uncertainty for innovative firms experimenting with new business models (Hargreaves 2011). Balancing these tradeoffs will be increasingly important as intangible and IP assets become even more vital for economic growth in the years to come.

References


