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Property
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Intellectual Property Office is an
operating name of the Patent Office



USING INTELLECTUAL PROPERTY TO ACCESS GROWTH FUNDING

2018

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FOREWORD



TIM MOSS,
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Innovation will always be a driver of economic growth. Harnessing that for the benefit of businesses is key to the Government's vision for a more prosperous Britain through its Industrial Strategy and making the UK 'the most innovative country in the world'.

Key to this success, in a modern and rapidly evolving global economy, is making the most from your intangible assets including your intellectual property ('IP'). Businesses that are IP rich increasingly rely on these assets to access and secure funding in order to grow. But for many this has become a barrier too difficult to break through. This is stifling growth and having a negative impact on our economy.

That is why the work of the Intellectual Property Office and British Business Bank is so timely and important. Together we have explored the challenges faced by the financial sector and businesses in using IP as collateral for lending and set a direction to help break down these barriers.

This paper sets out the current market position and the work already done to identify the key issues. It does not provide answers to what is a complex situation with no easy solutions. It does, however, set out a range of actions that go some way to overcoming the challenges that businesses face.

This work represents a significant step forward, improving understanding and use of IP assets as a fundamental driver of economic growth and helping to realise the Government's vision.

FOREWORD



KEITH MORGAN,
CEO, BRITISH BUSINESS BANK

The British Business Bank's ambition is that, no matter where in the UK a smaller business is located, or at what stage of development they are, they should be able to access sufficient amounts of the right finance, at the right time, to achieve their ambitions.

The UK is a world leader in entrepreneurship and innovation. However, some of our most ambitious small businesses with high growth potential still face challenges in accessing the finance they need to achieve their growth plans. Likewise, cutting edge companies rich in intellectual property can struggle to find the right sort of finance when compared to companies with more traditional assets. Unlocking the potential within these ideas and companies is essential if our economy is to thrive.

Building on the work done in the Patient Capital Review, our own experiences with partners across the private sector, and working with our colleagues

at the Intellectual Property Office, this paper explores some of the opportunities and challenges facing IP-based growth funding. The British Business Bank recently launched British Patient Capital, which has been given resources of £2.5 billion to deliver a new investment programme to invest in high-growth innovative firms and crowd in private investment. This will increase the provision of equity investment, including to IP-rich firms.

As Tim has said, there are no easy solutions to the remaining challenges. However, we are excited to be taking decisive steps towards addressing the issues at the heart of high growth smaller company finance.

CONTEXT

In November 2016, the Prime Minister announced that HM Treasury ('HMT') would lead a Patient Capital Review into how the Government could improve access to long term finance for growing firms. HMT published a consultation, building on themes developed by an industry panel chaired by Sir Damon Buffini, to seek views on how to increase the supply of capital for innovative firms. Following the consultation, which took place over August and September 2017, the industry panel provided its formal recommendations. At the Autumn Budget 2017, the Chancellor unveiled a series of measures to help UK firms commercialise their ideas, including a proposal to:

*'Promote successful investment in all parts of the economy by... working with businesses, lenders, insurers, the British Business Bank and the Intellectual Property Office [will seek] to overcome the barriers to high growth, IP-rich firms, such as those in the creative and digital sector, using their intellectual property to access growth funding.'*¹

This paper outlines the obstacles to and potential for using IP to access finance. It considers the role of Intellectual Property ('IP') as collateral for growth debt finance, rather than in supporting other forms of finance (i.e. equity). The purpose of the British Business Bank ('BBB') is to make SME finance markets work better, and as such, the issues around IP and its potential relevance for accessing finance are of long-term interest to the BBB. Following the recommendations of the Patient Capital Review, in June 2018 the BBB launched British Patient Capital ('BPC'). BPC manages an investment programme designed to support UK companies with high growth potential to access the long-term financing they need to scale up. The BBB also recently launched a Managed Funds programme to catalyse patient investment into high potential businesses, and the National Security Strategic Investment Fund, to support the development of advanced technologies which have both commercial and national security applications.

INTRODUCTION

The UK has a world class IP system. The Intellectual Property Office ('IPO'), within their Strategy 2018, is committed to ensuring that the whole IP environment – from the legal and policy framework, to the level of IP knowledge, and the ability to protect rights – is world leading, and provides incentives to be creative and innovative. A key element of this strategy is to ensure that IP is part of business planning, supporting high growth, and that IP's value is properly recognised as an asset, unlocking investment.

Historically, tangible assets have been the primary input into economic value creation. For example: land could be built on or a source of raw materials, property could house people or machines, while machines could be used to extract raw materials and transform them into goods, and vehicles to transport them. Finance was thus designed to support the economy around such assets, allowing people to borrow against them (because there were established ways of determining their value), and to realise that value should it be required to repay the loan. As a result, firms seeking to grow by investing in hard operational assets can more easily find the funding that they need.

Over time, however, intangible assets such as intellectual property, know-how, brand and creative output have become increasingly important as they allow other forms of value to be generated. For example: research and development brought new goods and services to market, expertise resulted in the production of enhanced goods and services, reputation provided reassurance around their quality or reliability, and design improved the user experience. Although such assets are increasingly prevalent and important for creating market-leading products and services, finance has not yet caught up, leaving firms that rely primarily on them for growth with fewer options.

The end result is a market for finance that is incrementally less effective as the national economy makes a secular shift from tangible to intangible assets, and from a manufacturing/service economy to a knowledge-based economy.

DEFINITIONS

The assets of a company are potential sources of income generation or increased efficiency. These assets can be physical, financial or intangible.

Physical assets, such as real estate and machinery, and financial assets, such as shares and bonds, are more easily valued and their use as security for bank loans is well-established.

Intangible assets, on the other hand, are much less well-understood and defined, encompassing a wide variety of assets including research and development, reputation and branding, networks and relationships, expertise and experience, software and databases, and design. These are much harder to assess and value but are nevertheless critical to the commercial success of a firm. This paper uses the taxonomy of intangible assets adopted by the Office for National Statistics as set out in the table below.²

The ownership of an intangible asset is often challenging to establish. However, for certain types of intangible assets known as intellectual property ('IP'), ownership may be asserted using intellectual property rights ('IPR') like patents, copyrights, unregistered designs (or design rights) and registered designs or trade marks. Within the taxonomy above, organisational capital and firm-specific training cannot be protected using IPR. However, they may still be protected contractually – e.g. non-compete clauses in employment contracts, non-disclosure agreements – or by laws against industrial espionage.

IPRs are territorial rights and may be registered or unregistered (different countries have different regimes but most will comply with international laws). In the UK, patents, registered designs and trade marks, for example, need to be registered with the Intellectual Property Office ('IPO') to have legal effect. In contrast, the copyright on an artistic work does not require registration – the rights exist automatically at the point of creation; the same is true for an unregistered design or design right which protects a design for 10 years after it was first sold or 15 years after it was created – whichever is earliest.

While an IPR typically confers the holder monopoly rights over the use of the IP, this is only for a limited period in most cases – i.e. the ownership implied by an IPR is not normally in perpetuity. For example, in the UK:

- The copyright on an artistic work expires 70 years after the death of the artist;
- A registered design may be maintained up to 25 years (with five-yearly renewal periods);
- A trade mark registration lasts for 10 years (indefinitely renewable); and,
- A patent may be maintained for up to 20 years after the initial filing (renewed on a yearly basis), while pharmaceutical products may have an additional 5 years protection subject to application for a Supplementary Protection Certificate.

Although all forms of IP are important, we are most interested in how IP and finance can interact. So, for the purposes of this paper, we focus on those to which ownership may be asserted; realistically these are the most likely to form the basis for any kind of financial and legal collateral.

Broad category	Type of intangible asset	Description
Computerised Information	Software and databases	This includes knowledge embedded in computer programmes and computerised databases
Innovative Property	Research and development	This includes knowledge acquired through scientific research and development, product development and non-scientific inventive and creative activities
	Mineral exploration and evaluation	
	Entertainment, literary and artistic originals	
	Design	
Economic Competencies	Financial product innovation	This includes knowledge embedded in firm-specific human and structural resources, including brand names
	Branding	
	Organisational capital	
	Firm-specific training	

IMPORTANCE OF INTELLECTUAL PROPERTY TO COMPANIES AND THE ECONOMY

Most advanced economies today are heavily service-based, and many are seeing some transition to so-called knowledge-based economies.³ The concurrent shift from tangible to intangible asset investment can be seen as early as the 1970s, as noted by Dr Margaret Blair (in the UK) and Ocean Tomo (in the US). More recent authors such as Haskell, Corrado, Westlake and others have also highlighted this slow but steady trend and its impact.

The most recent data shows a trend over the medium-term of intangible investment growing faster than tangible investment - in absolute terms: 3.5% CAGR and 2.9% respectively. Investment in intangible assets was higher than in tangible assets across the period 2001 to 2014, although the growth of intangible investment has slowed somewhat since 2009.

As a proportion of nominal GDP both tangible and intangible investment declined slightly between 1997 and 2015. Tangible investment declined at twice the rate of intangible investment (-1.1% per annum for the former, -0.5% per annum for the latter).

The following charts shows the levels of investment in tangible and intangible assets by the UK market sector, in both absolute current market prices and relative to nominal GDP.

Of the investment in intangible assets, a recent estimate of the breakdown is shown in figure 3 on the next page.

FIG 1
INVESTMENT IN TANGIBLE AND INTANGIBLE ASSETS IN THE UK
1997-2015, £ BILLIONS (CURRENT MARKET PRICES)⁴

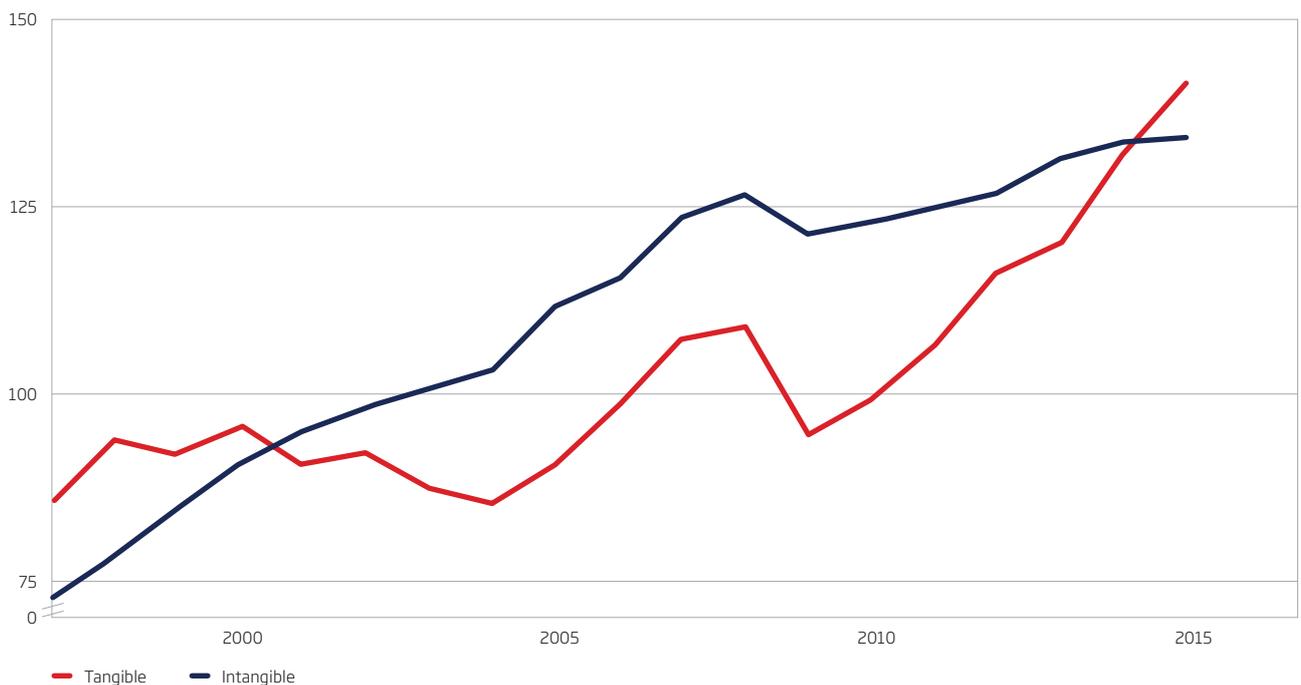


FIG 2
 INVESTMENT IN TANGIBLE AND INTANGIBLE ASSETS IN THE UK
 1997-2015, % OF NOMINAL GDP⁵

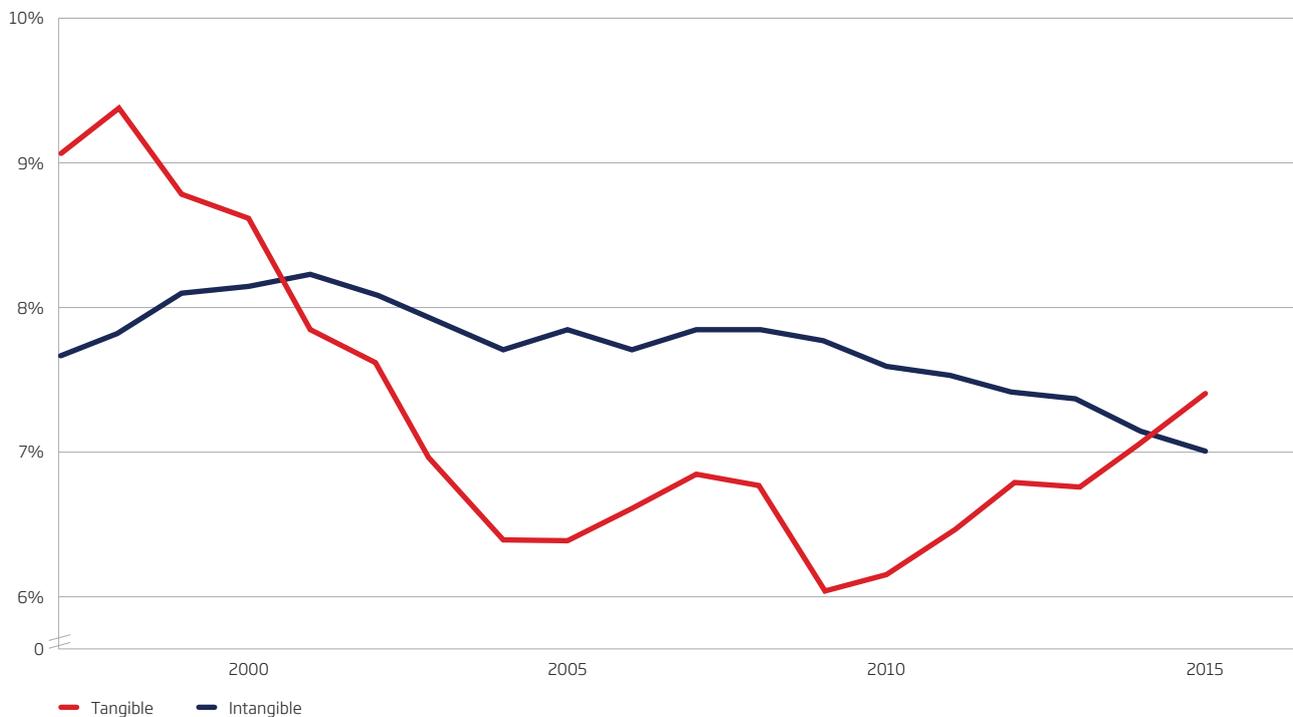
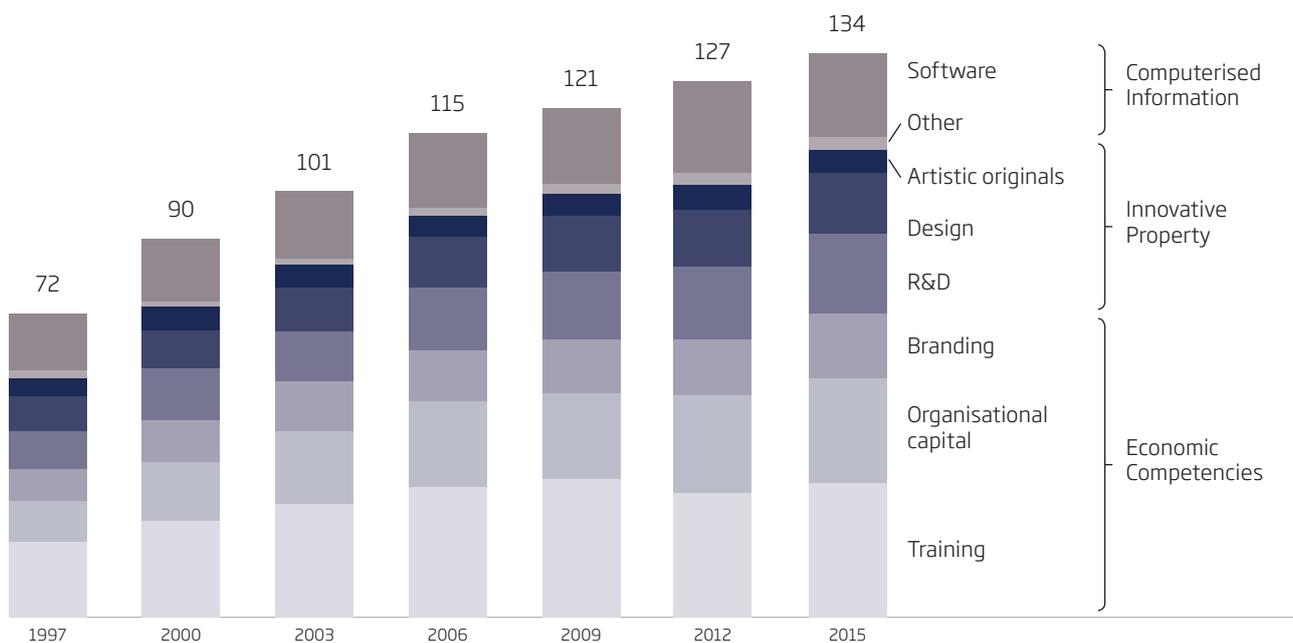


FIG 3
 INVESTMENT IN INTANGIBLE ASSETS BY TYPE IN THE UK
 1997-2015, £ BILLIONS (CURRENT MARKET PRICES)⁶



As noted above, not all of these intangible assets are IP (i.e. legally protectable). Of the IP developed, an estimate of the proportion that is protected by some form of IPR is given in the following table:⁷

Asset	Registered IPR			Unregistered IPR		Total % protected by IPR
	Patents	Trade marks	Design Registration	Copyright	Unregistered Design Rights	
Software	-	-	-	100%	-	100%
Scientific R&D	38%	-	3%	-	-	41%
Design	2%	-	11%	-	87%	100%
Branding	-	100%	-	-	-	100%
Artistic originals	-	-	-	100%	-	100%

Intangible assets can be growth promoting, with two properties having particularly positive implications for growth.⁸ First, investments in many forms of intangible assets result in knowledge that can spill over to other parts of the economy. Second, IP can spur growth because the initial cost incurred in developing some types of knowledge does not need to be incurred again when that knowledge is used again in production.

The UK currently suffers from relatively poor productivity, which has stalled since the financial crisis in 2008. Output per hour has risen just 0.2% a year in the last decade, compared to an average of 2.1% a year over the preceding 35 years. Actions which unlock IP as a source of collateral for finance and increase the ability of IP-rich, firms to make productivity-enhancing investments could therefore be very positive for the UK economy.

RELEVANCE OF INTELLECTUAL PROPERTY-BASED FINANCE FOR SMES

UK companies of all sizes can and do invest in IP. However, larger companies are generally more likely to protect their IP through formal registration as they have greater resources. Conversely, we know that larger companies are also more likely to easily secure mainstream finance as they often have a critical mass of tangible assets.

We believe, therefore, that it is among smaller IP-rich businesses that problems arise.

Companies could own a range of different types of IP, some of which may be protected through IPR. The penetration rates of four types of IPR owned by UK companies are given in the following table:⁹

# Employees	0-9	10-49	50-249	250+	All Firms
Patents	9%	16%	28%	31%	10%
Trade marks	24%	48%	65%	81%	28%
Copyright	60%	48%	47%	63%	59%
Database rights	14%	21%	25%	29%	15%

Where an application needs to be made to register the IPR (e.g. patents), the number of registrations is likely to lag the count of IP that could potentially be so protected. This is particularly the case for smaller firms, where the cost of registration could be a potential deterrent unless there is a clear advantage or benefit to doing so. In the context of IP-based finance the registration of IP is especially important as it establishes the legal ownership of the IP to be lent against. Therefore, SMEs may need encouragement or support to register their IP if this form of lending is to function effectively.

This is particularly relevant as smaller companies tend to have greater difficulty securing any form of finance to invest in growth. Therefore, it is among smaller IP-rich firms that a potential IP-backed loan product could have the greatest economic impact.

There are a range of firms and situations where IP-based debt finance could be relevant. The following table shows the segments for which such finance would be helpful:

Type of firm	Access to credit	Relevance of IP-based finance	Notes	Focus
IP-rich firms	Cannot access (sufficient) debt using tangible assets as collateral	Access (more) debt	<ul style="list-style-type: none"> Current / potential user of the BBB Enterprise Finance Guarantee ('EFG' - see Box 1) for smaller ticket sizes IP-based finance could increase ticket size and reduce the need for government support (through EFG) in the long term 	✓✓ (a)
		Not yet candidates for standard debt finance	<ul style="list-style-type: none"> Current / potential user of Start Up Loans or Innovation Loans Likely to require subsidies 	-
	Can access sufficient debt without using tangible assets as collateral	Lower cost of borrowing	<ul style="list-style-type: none"> Current / potential user of cashflow lending or venture / growth debt IP-based finance could broaden range of providers 	✓ (b)
IP-poor firms	Cannot access sufficient debt	Finance acquisition of IP or IP-rich firm	<ul style="list-style-type: none"> Use acquired IP (potentially of target firm) as collateral for financing the acquisition Likely to be a small segment 	-
	Can access sufficient debt	Not relevant	<ul style="list-style-type: none"> Not relevant 	-

We have chosen to focus on segments (a) and (b) above for the purposes of this paper because they represent the areas where an IP-backed loan product would most likely have the greatest impact and could be commercially sustainable in the long term. The potential additionality of (a) would likely be higher as this segment is unable to currently access sufficient finance.

Taking the creative industries as an example of a sector with many IP-rich firms, smaller firms in the sector are more likely to be declined when seeking finance,

compared to smaller firms in general.¹⁰ This is the case for both new applications and renewals. A majority of these firms feel that their sector struggles more than others to get funding and that lenders find their sector harder to understand. It is likely that the greater reliance of the sector on IP makes it more challenging for lenders to assess their creditworthiness.

A number of other countries have explored the potential for IP-backed finance, with mixed results. Short summaries of their experience are included in Annex 1.

THE BRITISH BUSINESS BANK'S ENTERPRISE FINANCE GUARANTEE

The Enterprise Finance Guarantee ('EFG') is a national debt guarantee scheme that allows viable small businesses that do not have sufficient physical collateral to access conventional loans. It has supported over £3 billion of loans since its inception in 2009. About 17% of these loans by value (12% of the loans by volume) are to companies with at least one IPR (i.e. patents, trade marks and / or registered design rights).

For more information see: www.british-business-bank.co.uk/ourpartners/supporting-business-loans-enterprise-finance-guarantee/efg-for-advisors-smes



**ENTERPRISE FINANCE
GUARANTEE**

THE FINANCE GAP FOR IP-BACKED LOANS

Although investment into intangible assets is a large and growing phenomenon, the BBB believes that only a portion of it is both facing market failures and addressable with regards to a new finance-based solution. Given the likely complexity of any potential policy action, the relative and absolute size of this addressable gap is relevant to policymakers when considering policy trade-offs.

To estimate the finance gap for IP-backed loans in segment (a), we built on our previous work estimating the gap for growth loans.¹¹ Our research into growth loans found a gap of £170m-870m p.a. As c.17% of all EFG-backed loans by value were to companies with at least one IPR, we can expect at least that proportion of the growth loans finance gap to be relevant for IP-backed loans, which would be £29m-147m p.a. We estimate that there is likely some latent demand that is unmet by the EFG programme of c.20%, which brings the finance gap for segment (a) up to £34m-177m p.a.

However, this likely underestimates the full finance gap for segment (a) because the proportion of companies with IPR taking EFG-backed loans increases with loan size, with c.32% of the largest EFG-backed loans to companies with at least one IPR. This suggests that the finance gap could be up to twice the size estimated - i.e. £68m-354m p.a.

Including companies with IPR that can already access conventional debt - segment (b) - would probably not materially increase the size of the gap as these firms can already access the finance they need. While an IP-backed loan product would likely lower their cost of borrowing, the economic impact is lower as they are already able to access finance.

While an important and growing issue, we believe it is currently a somewhat small opportunity. Nevertheless, if relatively simple solutions can be found, there is clearly an opportunity to improve the functioning of financial markets for SMEs.

RBS LOMBARD'S SOFTWARE LICENCE SOLUTION

The Software Licence Solution is an asset finance product that lends against software development within a business, releasing the value locked within internally developed and owned software, thereby allowing firms to reinvest their capital.

The software is valued by Lombard using a mix of revenue streams, research and development expenditure, and market assessment. It is then sold to Lombard at value, and the SME licences the use of the software back for an agreed term (usually 3-5 years).

At the end of the agreement the SME can either continue using the software via an ongoing nominal licence fee, introduce an independent third party to buy the software, or have all rights and interest in the IP assigned back to the SME.

www.lombard.co.uk/lombard/products-services/types-of-asset-finance/software-licence-solution.html



ANALYSIS OF ENTERPRISE FINANCE GUARANTEE LOAN DEFAULT RATES AND LOSSES FOR COMPANIES WITH INTELLECTUAL PROPERTY

The underlying problem is that IP-rich smaller companies with few or no tangible assets find it hard to get finance to invest in their growth. An investment that enables smaller companies to get loans backed by their IPR assets is therefore one potential solution. The above diagnosis of key issues suggests lines of enquiry that the BBB and the IPO will continue to explore.

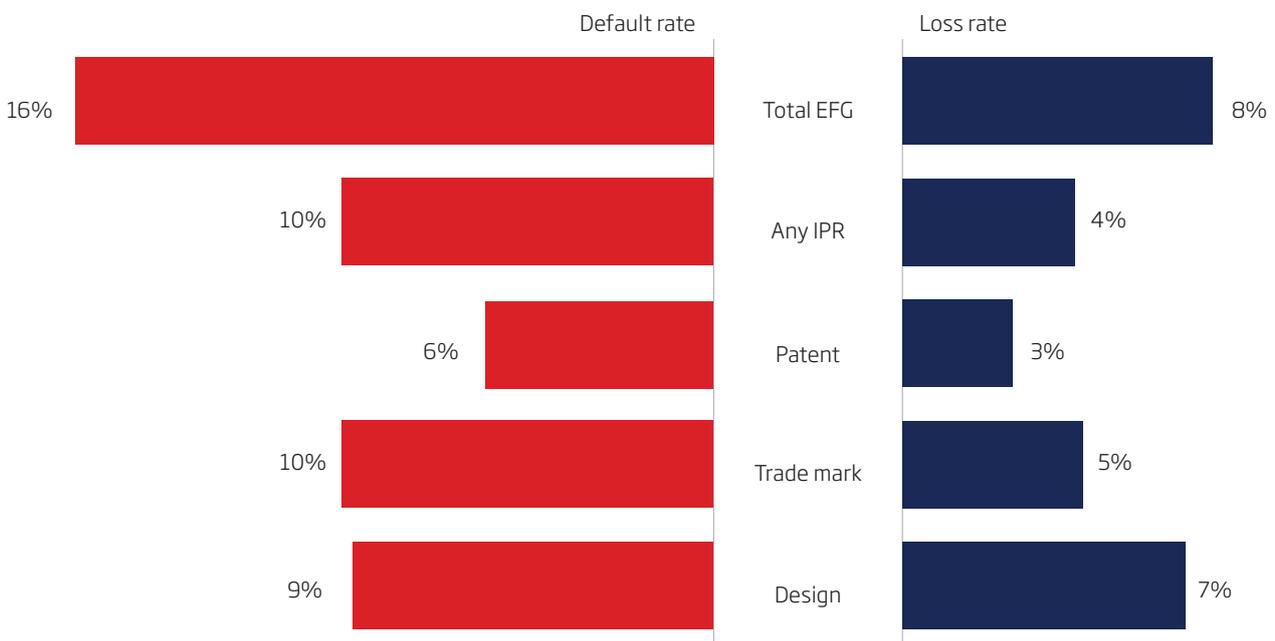
However, there may be another, simpler and faster way to help IP-rich smaller companies: BBB analysis of their EFG programme suggests that IP-rich companies have lower than average credit risk, hence BBB and IPO could work with finance providers to help them reflect this in their models. By working with the mainstream banks to incorporate consideration of IPR within their credit risk models, it follows that banks should choose to lend, as well as lend more, to such companies, because data proves that companies with IPR have a lower likelihood of defaulting.

One of the potential target segments for IP-backed loans would be current users of the BBB’s EFG scheme. EFG allows viable small businesses that may not have the security otherwise needed for conventional bank lending to borrow from a bank.

EFG borrower data was matched with IPO’s IPR database to identify those companies with patents, trade marks and registered designs. The default rates and losses for EFG-backed loans to such firms were calculated and compared with those of the EFG portfolio overall. This analysis showed that companies with IPR are less likely to default and the resulting losses to the banks from these defaults is also lower. The following chart summarises the findings:

The lower rates of defaults and losses broadly hold across vintages, lenders, industrial sectors, firm size (by turnover), age of business, ticket size and tenor. This suggests that, even in the absence of a specific IP-backed loan product, at least for loans smaller than £1.2m,¹² all else being equal, lenders should find that loans to companies with IPR result in lower losses than those to companies without.

FIG 4
**DEFAULT AND LOSS RATES ON EFG-BACKED LOANS
 ALL LOANS VS. LOANS TO FIRMS WITH IPR, APRIL 2009-MARCH 2016**



IMPLICATION FOR BANKS

The average net profit margin of the SME segment for a UK bank typically ranges from 30% to 50%. Provisions and impairments (for bad loans) are typically around 2% to 10% as a proportion of revenues. Given that the loss rate for EFG-backed loans to firms with IPR is around half of that for EFG-backed loans to firms without, and that the average cost of unsecured SME debt is around 9% to 10%, banks could potentially reduce the cost of their loans to firms with IPR by up to 10-50 basis points without impacting their profit margins.

In addition to improved success rate for loan applications discussed above, lowering the cost of debt to companies with IPR would create an incentive for IP-rich firms to register and value their IP, and increase the demand for loans by IP-rich firms. This would allow the development of a database of IP valuations and loan performance.

The BBB has shared these findings with some lenders. The IPO is happy to work with banks to run similar analyses on their proprietary inhouse data samples. We may also seek to work with our peers in other countries to seek verification of the relationship.

BARRIERS TO ACCESSING FINANCE USING INTELLECTUAL PROPERTY

Any policymaker or commercial body considering actions or products to address this potential market of IP-backed lending should carefully consider the factors currenting stymieing existing products from meeting needs.

The BBB and the IPO conducted several roundtables of experts with supporting desk research. We found, in summary, that the main obstacles to using IP as loan collateral are:

- Banking regulation
- Legal enforceability
- Valuation
- Liquidity

BANKING REGULATION

Banks are required to hold capital for the risks they take. The standards for the calculation of regulatory capital in banking are based on the international rules set out in Basel III, which in Europe are enshrined in the Capital Requirements Regulation and the Capital Requirements Directive. These standards define the eligibility criteria for the use of physical and financial assets as collateral when making loans. Loans secured by eligible collateral typically result in lower levels of losses when they default and thus require less capital. The particular characteristics of intangible assets mean that IP does not meet these criteria. Since banks cannot derive any capital benefit for the use of IP as security for loans, it is more challenging for IP-rich firms to obtain bank loans.

It is unlikely that, without changes to regulations, banks will be able reduce the amount of capital they need to hold for a loan secured by IP. Of course, a bank may still take IP as collateral should it choose to do so but the loan would be treated as having zero security value for the calculation of regulatory capital. This means that the bank will have to price the loan as if it were unsecured to achieve an acceptable return on equity, in which case the IP would not reduce the cost of credit for the borrower.

Making changes to banking regulations is a slow process as it requires international consensus. Moreover, banking regulators are unlikely to update the rules until the other challenges around the use of IP as eligible collateral are resolved. This means that it is highly unlikely that banks will be allowed to hold less capital when they take IP as collateral for the foreseeable future.

However, there is the possibility that insurers could take a different view on IP-related risks. The European regulatory framework for determining the amount of capital that Insurers need to hold is defined by the Solvency II Directive. Solvency II allows insurers to take a more economic view on such risks, which means that transferring some of these risks from a banking balance sheet to an insurance balance sheet could make it possible for banks to originate IP-backed loans at a lower capital cost. We are therefore exploring the potential for banks and insurers to work together to structure an approach to IP-backed loans. While theoretically possible, there remain many serious legal and operational complexities (such as those detailed below) that need to be overcome to make this a reality. We have convened an initial set of conversations among the relevant stakeholders to better understand these obstacles.

LEGAL ENFORCEABILITY

While the ownership of IP may be asserted through IPR, the enforcement of those rights may still be expensive and time-consuming; potentially these costs could be mitigated by IP insurance, specifically “Before the Event Legal Expenses Insurance”.

Furthermore, as IP and other intangible assets are often embedded within the firm that developed them, separating them from the firm may not be easy or straightforward. This makes the ability of lenders to exercise claims on those assets potentially difficult. It could be part of the tacit knowledge and operating practices within teams, or a part of a broader set of IP assets working together to create value.

If a lender is unable to take possession of the IP in the event of a default, the lender would not then be able to sell the IP to recover its losses. Insolvency practitioners working in the specialist field of intangible asset valuation and recovery are also much harder to find. This makes IP less attractive as collateral.

That said, UK courts, relative to other European courts, benefit from IP-related and financial case law. These legal precedents provide comfort to lenders, creating the legal environment where a potential IP-backed finance product is more likely to take root. Consequently, a sustainable solution could establish the UK as a leading centre for such loans, increasing its attractiveness as a destination for investment.

VALUATION

IP and other intangible assets can be difficult to value, especially if they are innovative and therefore untested. Moreover, the value of such assets is often context-specific in that they may only be valuable within the firm where they are developed due to the way that they interact with other firm assets and thus may not be as valuable outside of that firm. Unsurprisingly, a 2010 survey showed that only 3-4% of SMEs had ever tried to assess the value of their IP.¹³

In any case, there is no single market-wide or agreed methodology for valuing IP.¹⁴ Without a consensus approach, it is difficult to independently verify the value attributed to a piece of IP, which is further exacerbated by the lack of transaction data. The complexity of IP valuation also means that specialist expertise is needed. Indeed, it is estimated that only about 600 people work in this field in the UK.¹⁵ This scarcity creates a cost for determining the value of IP and, in the absence of a scalable process, limits growth.

The uncertainty of IP values makes it harder for a lender to know how much it could recover in the event of default. As a result, lenders would impose a significant haircut (price discount) on the valuation. Ultimately, if a firm defaults because it is unable to commercialise its IP, that IP is unlikely to have commercial value elsewhere. While it is possible that in a different context or at a later stage the IP could have value, the lender would have to seek out those opportunities. This creates further administrative costs, further reducing the valuation of the IP.

A first step would be to ensure that companies recognise the importance of registering and valuing their IP, particularly when they may have significant value, to provide reassurance to lenders. As there is a cost and time associated with doing so - both of which SMEs tend to lack - some support may be needed to provide encouragement, especially for smaller firms. The IPO is exploring the possibility of providing such support in respect of valuation.

LIQUIDITY

No established liquid secondary markets for IP currently exist, making it challenging not only for price discovery but also for asset disposal. Lenders taking IP as collateral thus risk being saddled with an asset that they are unable to sell and therefore has no immediate liquid cash value.

Transactions involving intangible assets are infrequent and not publicly recorded. The limited frequency of intangible asset transactions may in part be due to a lack of mature supporting infrastructure such as valuers, agents and value logs.

If government support is provided for IP valuation (e.g. as proposed in paragraph 52 above), data on any eventual sale or transaction for value realisation could be recorded and made available through a public database. This would allow the market to build up their understanding of IP-related financial risks.

CONCLUSION

Smaller firms with intangible assets find it harder to access finance than it should be, given information asymmetries common to SME finance markets, but also due to the challenges in recognising the value of intangible assets, even when registered. Yet even today, firms with IP have lower rates of default and loss than those without. Solving these market failures would benefit smaller companies, innovative companies, and lenders.

Although there remain significant challenges to the development of a sustainable commercial IP-backed loan product, the lower rates of default and loss amongst IP-rich firms suggests lenders could at least lower the cost of lending to IP-rich firms, stimulating demand for debt in this segment. Likewise there are opportunities to stimulate the supply of finance by supporting the use of intangible assets as collateral.

The IPO and BBB could further support banks and firms by:

- Working with banks to analyse their loan portfolios to see if firms with IPR are less likely to default and have lower levels of losses due to default;
- If analysis confirms the above: work with banks to build consideration of IP (including valuation) into their credit risk models; and,
- Providing subsidies and support to firms for valuing and registering their IP.

We will also continue our engagement with the market to determine the feasibility of an IP-backed loan product.

ANNEX 1: COUNTRY CASE STUDIES



SINGAPORE

Singapore is widely recognised as a world leader in innovation and IP development.¹⁶ The Singaporean government and Intellectual Property Office of Singapore (IPOS) developed a 10-year IP Hub Master Plan in 2013, made up of 14 different IP initiatives,¹⁷ one of which was dedicated to financing IP-rich companies, the IP Financing Scheme (IPFS). This supports Singapore based IP-rich companies to monetise their IP for growth via access to a loan from an authorised bank using their IP as collateral. The IPFS offers the bank a guarantee of 80% of the IP value, subject to a cap, and companies can reclaim 50% of the valuation cost once the loan has been fully drawn. The IP Financing Scheme (IPFS) was rolled out in 2014, with a total guarantee facility of SGD 100 million (~£48m-56m), and ended in March 2018.¹⁸ It faced limited take-up by the banks, with the first loan only made in 2016,¹⁹ and ultimately only three loans were made, all of less than SGD 12 million.

The scheme was administered by the ValueLab (part of the Singaporean IP office), in collaboration with the Singapore Accounting Commission.²⁰ One of the main goals of this organisation has been to address the valuation challenge by conducting research to advance best practices in IP valuation. The ValueLab looks to:

- research and exchange IP thought leadership, including guidelines and methodologies to be used for IP valuation, ensuring consistency across the market
- build a curriculum to train and develop accredited valuers, and
- develop an IP database of transactions to benchmark future IP valuation

In 2017, IPOS completed a year-long consultation with the market and is planning to deliver a number of new initiatives based on these recommendations. IPOS believes increased IP transactions and improved IP management from delivering these recommendations will add SGD 1.5 billion to the Singaporean economy in the coming five years.²¹

Now the scheme has closed, the IPOS has since released a brief assessment of its outcomes. They noted the high upfront valuation costs for intangible assets was a deterrent to application, and the risk-reward balance of traditional debt financing may also not have been a suitable vehicle for IP-based lending.

The IPOS is now exploring other modes of financing, such as moving away from the current debt-based financing with banks to an equity-based financing with PE and VC players, and exploring the feasibility of introducing IP insurance in Singapore.²²

CHINA

In 2008, China raised IP to the national agenda through a National IP Strategy (NIPS) and laid out specific strategies to promote IP, including support for finance to IP-rich companies. The strategy has focused on patents, trade marks and copyright in a number of specific sectors, including: agriculture, national defence, central enterprises, science and technology and media. The State Intellectual Property Office (SIPO) acts as the central registry of IP financing pledges, and sets the parameters for IP pledge loans from various banks. In 2015, an estimated RMB 60 billion had been reportedly lent against IP as collateral.

In 2014, the State Council reviewed its measures and issued new targets for 2020 to further strengthen the IP system. The plan aims to;

- Increase the number of invention patents owned per 10,000 habitants from four in 2013 to 14 in 2020
- Increase the number of registered copyrights of works from 845,000 in 2013 to 1 million in 2020
- Increase the annual amount of IP rights pledge financing by 2020 to RMB 180 billion (USD 29.3 billion)
- Increase the transaction value of technology contracts registered on the national technology market to RMB 2 trillion (USD 325 billion)²³

The majority of measures are through commercial lenders, which offer generous government guarantees for up to 100% coverage for net losses when lending against IP. Government has also supported interest rate discounts for end borrowers, currently set at 50% of the prevailing rate²⁴.

SIPO has grown its collaboration internationally and established a comprehensive strategic partnership with the European Patent Office, signing 52 bilateral and multilateral

agreements in 2017. As well as increasing IP's importance at the local government level within China; supporting 13 provinces and 14 cities to roll out IP development plans.

Public data showing rising patent registrations appear to corroborate the governments' efforts and China in 2016 has the highest absolute number of patent registrations by residents, and the growth in patents has been far higher than any of the other top 15 patent registered countries according to WIPO (see table on page 21), increasing by 24% CAGR from 2011 to 2016.

On 13 January 2017 the State Council launched a National IP Strategic Plan to improve the protection and enforcement of IP in the coming 5 years. Building on China's world-leading IP rankings, the Plan identifies the following main challenges: unbalanced quantity and quality of IPRs; unbalanced regional development; insufficient protection; and insufficiently refined systems for patents, well-known trademarks and copyright law.²⁵

Regarding supportive finance for IP, the Plan reiterates previous commitments to explore the securitisation of IPRs, proposes further work on patent valuation, and encourages the set up of SME risk compensation funds.



KOREA

Korea reported the highest number of locally-filed patent registrations per capita in the world in 2016, at c. 3,200, and has the fourth highest record of absolute patent registrations for the same period.

The government of Korea supports a wide array of programmes for IP development, protection and IP related financing. The Korea Development Bank (KDB) has advanced c. USD 100 million to c. 80 IP-rich companies in collateralised loans as well as developing a fund to collect and dispose of distressed IP. The bank also runs a Pioneer fund that receives income from licencing IP.

Korea runs numerous risk sharing programmes, including cost sharing for IP disputes and commercial IP insurance, bearing 70% of the risk for companies. Credit is also offered through guarantees from the Korea Credit Guarantee Fund (KODIT), one of the oldest funds in Korea. Established in 1976, KODIT had a capital fund of USD 4.7 billion and an aggregate outstanding balance of USD 40 billion, from which it provided a range of

credit guarantees. The valuation activity is subsidised by the Korean Intellectual Property Office (KIPO), and the valuation work itself is done by others such as the Korea Invention Promotion Association (KIPA).

Korea also developed the first IP SWF investment company in Asia, Intellectual Discovery. To date, the fund has reported making over 5000 transactions in patents, with assets under management of USD 500 million.





CANADA

In April 2018 Canada launched a formal IP strategy backed by a commitment of CAD 85.3 million over 5 years from 2017-2022 with a three-pronged approach.²⁶

1. Legislation: the creation of an independent oversight body for the granting of registered IPRs and amendments to existing IP law. Including shortening the time taken for the patent granting process to 24 months. Reduce the turnaround time from application to registration for trade marks to 18 months, and improve the turnaround time for Copyright and Industrial Design to 8 months.²⁷
2. Literacy and advice: A suite of programmes and training for federal employees to be able to better serve the needs of IP rich companies.
3. Tools: to improve literacy for entrepreneurs so that they can develop an IP strategy for their business.

The CAD 85.3 million has been divided across the following areas

- CAD 30 million in 2019-20 for establishment of a pilot “Patent Collective”. The collective will work with Canadian entrepreneurs to pool patents, so that small and medium sized firms will have better access to critical IP they need to grow in early stages without fear of infringing on a patent. The budget refers to this program as providing these businesses with the “freedom to operate”.
- CAD 21.5 million over five years starting in 2018-19 for improving access to IP expertise and legal advice.
- CAD 33.8 million over five years starting in 2018-19, for strategic IP tools, including CAD 4.5 million directly

for establishing an “intellectual property marketplace”. The marketplace will be a one-stop, online listing of public sector-owned intellectual property available for licensing or sale to reduce transaction costs for businesses and researchers.

- CAD 2 million over three years to be granted to Statistics Canada for conducting an intellectual property awareness and use survey of Canadians.
- CAD 1 million over five years to enable representatives of Canada’s Indigenous Peoples to participate in discussions with the World Intellectual Property Organization.

Canada’s National IP strategy plan looks to strengthen a number of IP related provisions, although no specific programme looking to fund IP rich firms has been unveiled. Government policy has so far highlight existing loan programmes available from the Business Development Bank of Canada.

In particular the BDC Xpansion loans are designed to support businesses who wish to pursue new projects without putting their cashflow at risk. And criteria for accessing funds include:

- applying for a patent, trademark, industrial design, or copyright to protect your intellectual property
- purchasing licences, patents, trademarks, industrial designs, or copyrights

The loans limit personal risk and come with options to postpone capital repayments at the beginning of the loan.

ABSOLUTE PATENT REGISTRATIONS BY RESIDENTS

Country Name	2011	2012	2013	2014	2015	2016	5-year CAGR
China	415,829	535,313	704,936	801,135	968,252	1,204,981	24%
USA	247,750	268,782	287,831	285,096	288,335	295,327	4%
Japan	287,580	287,013	271,731	265,959	258,839	260,244	-2%
Korea	138,034	148,136	159,978	164,073	167,275	163,424	3%
Germany	46,986	46,620	47,353	48,154	47,384	48,480	1%
Russia	26,495	28,701	28,765	24,072	29,269	26,795	0%
Iran	11,529	10,622	11,305	13,683	Missing	14,930	5%
France	14,655	14,540	14,690	14,500	14,306	14,206	-1%
UK	15,343	15,370	14,972	15,196	14,867	13,876	-2%
India	8,841	9,553	10,669	12,040	12,579	13,199	8%
Italy	8,794	8,439	8,307	8,601	Missing	8,848	0%
Turkey	3,885	4,434	4,392	4,766	5,352	6,230	10%
Brazil	4,695	4,798	4,959	4,659	4,641	5,200	2%
Poland	3,879	4,410	4,237	3,941	4,676	4,261	2%
Canada	4,754	4,709	4,567	4,198	4,277	4,078	-3%

PATENT REGISTRATION PER MILLION POPULATION

Country Name	2011	2012	2013	2014	2015	2016	5-year CAGR
Korea	2,764	2,951	3,172	3,233	3,279	3,189	3%
Japan	2,250	2,249	2,132	2,090	2,036	2,049	-2%
United States	795	856	910	895	899	914	3%
China	309	396	519	587	706	874	23%
Germany	585	580	587	595	580	588	0%
Singapore	204	203	212	238	265	286	7%
Denmark	283	251	239	244	257	271	-1%
Luxembourg	164	205	208	230	225	246	8%
Austria	257	268	255	245	255	238	-2%
Norway	227	201	217	215	222	234	1%
Finland	306	314	293	260	235	229	-6%
New Zealand	342	323	363	363	258	229	-8%
France	224	221	223	219	215	212	-1%
UK	243	241	233	235	228	212	-3%
Sweden	212	240	243	205	208	205	-1%

ANNEX 2: STATISTICAL ANALYSIS OF EFG LOAN DEFAULTS

Two statistical analyses were conducted on EFG loans matched with IPRs

1. Chi-Squared testing establishes whether default rates are dependent on holding IP such as registered design, patent or trademark.

The initial analysis revealed that the default rates are lower when a business holds an IPR. The Chi-squared test results support the view that at the 95% significance level the probability of defaulting is conditional on holding IP. This establishes there is a statistical dependence between defaulting and holding IP. However, the Chi squared test cannot tell us the strength of the relationship between holding IP and defaulting. Furthermore this analysis did not control for other factors which can affect the probability of defaulting. To analyse this, a logistic regression was conducted.

2. Logistic regression analysis investigates the relationship between defaulting (dependent variable) and a group of explanatory variables including holding IP, business characteristics and loan characteristics. These variables were tested at the 95% significance level for their contribution towards defaulting.

Business characteristics

IP registration (patent, trademark, design, at least one IPR, no IPR)

Industry (major SIC groups)

Age of business (in years)

Revenue of business (in GBP)

Loan characteristics

Phase (accounting year of loan issuance/vintage)

Lender

Loan size (in GBP)

Loan term (in years)

The analysis supported the view that the likelihood of defaulting on an EFG loan is lower when a business owns at least one registered IP, while controlling for the characteristics in the tables above. Holding only a patent has the strongest effect, followed by only holding a trademark. By holding both a patent and a trademark, a business's likelihood of default is lower than holding either a patent or a trademark alone. The sample size of owning a registered design was not sufficient to assess its impact in isolation.

A number of other characteristics contribute towards lowering the likelihood of defaulting:

- Older businesses (older than 5 years)
- More recent vintages of EFG loans
- Higher loan values
- Shorter term loans (between 2-4 years)

Some characteristics were found not to be statistically significant, such as the industry of the SME or business turnover.

ENDNOTES

1. <https://www.gov.uk/government/consultations/financing-growth-in-innovative-firms> (p. 3)
2. <https://www.ons.gov.uk/economy/economicoutputandproductivity/productivitymeasures/articles/experimentalestimatesofinvestmentintangibleassetsintheuk2015/2018-02-07>
3. See, for example, OECD, *The Knowledge-based Economy*, 1996
4. <https://www.ons.gov.uk/economy/economicoutputandproductivity/productivitymeasures/articles/experimentalestimatesofinvestmentintangibleassetsintheuk2015/2018-02-07>
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7. <https://www.gov.uk/government/publications/uk-intangible-investment-and-growth> (p. 28)
8. <https://www.oecd.org/sti/inno/knowledge-based-capital-synthesis.pdf>
9. <https://www.gov.uk/government/publications/banking-on-ip> (p. 112)
10. Creative Industries Council, *Access to Finance*, 2018, pp. 12-13
11. <https://www.british-business-bank.co.uk/research/analysis-of-the-uk-smaller-business-growth-loans-market/>
12. Upper limit of loans that can be supported through the EFG programme
13. <https://www.gov.uk/government/publications/banking-on-ip> (p. 114)
14. While there are three commonly agreed and recognised approaches (market, income and cost), their interpretation varies across practitioners
15. <https://www.gov.uk/government/publications/hidden-value-a-study-of-the-uk-ip-valuation-market> (p. 83)
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27. https://www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/h_wr04283.html

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