

# Effects of the Growth of Intangible Capital Value on Firms

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**How to cite this paper:** Pan, S. (2022). Effects of the Growth of Intangible Capital Value on Firms. *American Journal of Industrial and Business Management*, 12, 1552-1563.  
<https://doi.org/10.4236/ajibm.2022.1210085>

**Received:** August 18, 2022

**Accepted:** October 24, 2022

**Published:** October 27, 2022

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## Abstract

This paper discusses the effects of the growth of intangible capital value on firms after a thorough synthesis of over 20 sources. It begins by noting how the increased importance and prevalence of intangible assets and intellectual property, such as patents, trademarks, and copyrights, in the world economy over the past few decades has influenced various business activities and corporate decisions. These impacts range from changes in the competitive landscape within sectors to how firms borrow and choose targets for acquisition. From these impacts, it is hypothesized that the burgeoning growth of intangible capital will affect firms' ability to borrow, how and why they decide to merge or produce new products, and international trade deals. With these changes, it is imperative that there will be further policies enacted to cover intangible capital and intellectual property usage during international trade agreements due to their heightened importance, changes within anticompetitive and antitrust legislation that take intangible capital into greater account, and a furthering of new legislation that pushes back against anticompetitive intellectual property rights and patent trolls. Lastly, this paper concludes by highlighting the disparate influence of intangible capital on two unique industries: fashion and technology, along with suggestions on how to better protect intangible assets in the future.

## Keywords

Intangible Capital, Intellectual Property

## 1. Introduction & Background

Intangible capital is defined as an asset that is not physical in nature but adds monetary value to companies' worth because it represents potential future revenue. While it lacks a physical presence, it provides businesses with a competitive

advantage and is an important indicator of their long-term success or failure. Although intangible capital only accounted for 17% of the S&P 500's total assets in 1975, it has increased in significance over the past few decades due to intensified global competition, new business models, and advancements in technology. As a result, intangible capital accounted for 90% of the S&P 500's total assets in 2020 (Ali, 2020). A few examples of intangible assets include brand equity, goodwill, and intellectual property.

Intellectual property is one of the most important types of intangible capital. It is able to generate revenue for companies and increase shareholders' value while protecting research and development (R&D) activities. Intellectual property refers to legal property rights given to individuals who have created original work in order to protect their creative ideas and encourage them to develop new ones. Its ultimate purpose is to allow owners to receive full benefits from their creations by forbidding others to copy and exploit them without permission for a period of time. According to studies referenced by the World Intellectual Property Organization (WIPO), it accounts for as much as 80% - 90% of businesses' potential value. The vast majority of these property rights traditionally fall into three categories: patents, trademarks, and copyrights.

Patents give individuals and entities the exclusive right to make, use, sell, and import particular inventions for 20 years from the patent application date. In the United States, they are granted by the **United States Patent and Trademark Office** (USPTO) after an individual or entity has filed an application for designing a unique and well-developed invention in exchange for full disclosure of the product or process in order for the technical information to be published and made accessible to the general public. However, the protection US patents provide is only enforceable in the United States, and those who wish to have their inventions protected in other countries must file a separate application in each country or regional office.

Trademarks help identify and differentiate individuals, companies, organizations, and commodities from all others similar to their kind through the use of recognizable words, phrases, symbols, and designs for 10 years from the date of registration but could be renewed and last forever. Along with protecting brand identity and reputation, they are effective in preventing competitors and copycats from deceiving consumers with counterfeit products and services in the marketplace. Like patents, trademarks in the United States are registered by the USPTO, and the protection they provide is not applicable in foreign countries. As a result, they must be individually filed for international protection.

Copyrights provide authors the exclusive right to reproduce, adapt, publish, perform, and display their authentic work for 70 years after their death. It promotes creativity by preventing unauthorized copying and distribution of original work of authorship. Unlike other areas of intellectual property, it is optional to officially register for copyright protection in the United States because it auto-

matically exists from the moment the work is created. However, individual words, short phrases, common knowledge, and other general information are not protected since they must show some amount of original expression. Like patents and trademarks, US copyright protection is not valid in other countries, as each country has its own laws and standards.

The modern concept of intellectual property first originated in the 17th and 18th centuries. As stated by the [Association of Research Libraries \(ARL\)](#), the Copyright Act was established in the United States in 1790. It specifically gave American authors, artists, and scientists the exclusive right to reproduce and distribute their work for 14 years, along with allowing them to extend the protection of their work for an additional 14 years after the initial term was over. For countries in the European Union, the Berne Convention adopted in 1886 implemented a uniform copyright law to eliminate the need for separate registration in each country. In 1908, the agreement was revised for the first time and set the duration of copyright to 50 years after the owner's death and expanded the limitations to include other kinds of work.

According to the WIPO, the need for international protection of patents and trademarks initially arose in Vienna, Austria in 1873 after several foreign exhibitors refused to attend and display their work at the International Exhibition of Inventions because they were afraid of having their ideas stolen and exploited for commercial use in foreign countries. As a result, the Paris Convention for the Protection of Industrial Property was signed and enforced internationally to give individuals the opportunity to have temporary protection for their work in other countries. These organizations formed the basis of intellectual property law that stands to this day by serving as the first few major efforts taken to help creators guarantee their work is protected.

This paper will discuss the impacts of the rise of intangible capital value on firms. It will begin by examining the valuation and legal changes of intangible assets and intellectual property in the United States and Europe over time as well as its influence on the global economy. It will then describe how the increase in value of intangible capital has affected corporate decision-making and pushed the buying and selling of patents to become more common. It will conclude by exploring the impacts of patents, trademarks, and copyrights in two highly competitive industries that have seen significant changes over the last few decades: fashion and technology.

## **2. Changes in Intangible Capital & Intellectual Property over Time**

Intangible capital has become increasingly important to the world economy in recent years. While it only comprised around 20% of most companies' valuation in 1975, with tangible capital comprising the remaining 80%, the ratio has since flipped. Many large companies now attribute more than 80% of their value to intangible assets ([Steinberg, 2019](#)). In the United States alone, the amount of in-

tangible capital embedded in the market value of S&P 500 firms has risen from \$122 billion in 1975 to \$21.03 trillion in 2018 (Ali, 2020).

The growth in intangible capital has not been restricted to the United States but has featured in other countries across the globe as well. Nearly all Organization for Economic Co-operation and Development (OECD) countries saw increases in intangible capital relative to gross domestic product (GDP) from 1995 to 2014, though there were strong variations across countries in the importance of intangible assets like software, innovative property, and business competencies. Countries like Sweden, Ireland, and the United States maintained ratios of intangible assets to GDP over twice that of countries like Italy, Spain, and Greece (Demmou et al., 2019).

The increasing value of intangible capital extends beyond firm value and into the products they produce as well. Looking across global manufactured products, the share of intangible capital averaged 30.4% of the total value of all products manufactured and sold worldwide from 2000 to 2014, which was almost double the share of tangible capital. Furthermore, it was reported that the total overall income generated by intangible assets in 19 manufacturing value chains increased by 75% from 2000 to 2014 and amounted to \$5.9 trillion in 2014 (WIPO, 2017).

Firms' mix of intangible and tangible capital investment has also shifted towards intangible assets over the past 25 years, encompassing elements like intellectual property, computerized information, and economic competencies. During this period, there has been a 63% growth in gross value added (GVA) in Austria, Denmark, Finland, France, Germany, Italy, the Netherlands, Spain, Sweden, the United Kingdom, and the United States. This shift has driven a 29% rise in the total investment share of intangible capital as defined by the INTAN-Invest database as well as a 13% decline in the total investment share of tangible capital (Hazan et al., 2021).

While stock markets have clearly placed tremendous value on intangible capital, this rise in intangible value can also be seen more directly in the increasing price of intellectual property in the marketplace. Partly driving this shift has been a trend towards increased legal protection for this key component of intangible assets. Over the past few years, the legal environment has tilted towards patent holders, allowing them to extract large royalty payments from other firms for infringing on their patents. Lawsuits with patent owners winning have become substantially more common, and damages have become much larger as well.

One notable case was that of Idenix Pharmaceuticals, LLC v. Gilead Sciences, Inc. Idenix successfully sued Gilead in 2016 for \$2.54 billion in damages as compensation for infringing its patent on a drug that treated Hepatitis C. Similarly, in the case of Intel Corporation v. VLSI Technology, LLC, Intel was sued by VLSI for infringement on its eight patents regarding chip-making technology. VLSI was successful in its lawsuit as well, obtaining damages worth over \$2 bil-

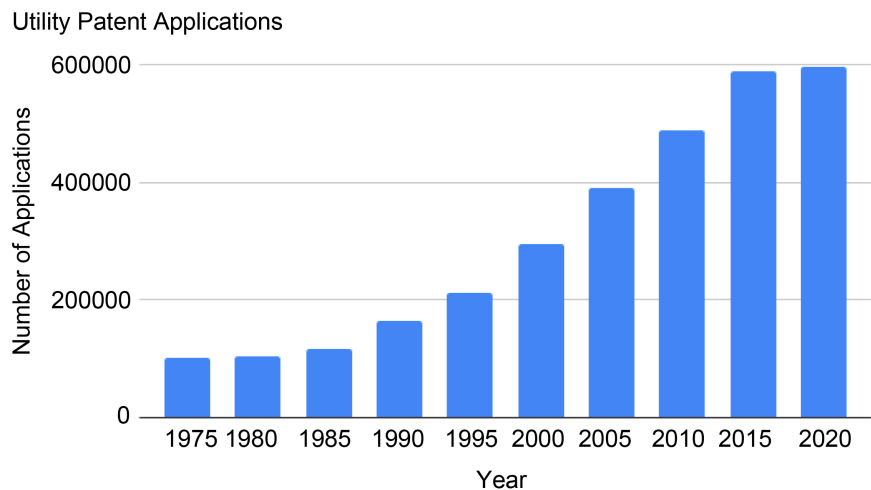
lion (Singh, 2022).

Alongside the growth in the monetization of patents has been a growth in the industry to value them. There are three methods commonly used to assign monetary value to patents: market-based, cost-based, and income-based. The market-based approach compares the patented invention to other similar ones that have been recently sold in the market. The cost-based approach utilizes a methodical approach to calculating how expensive it would be to recreate the invention or accomplish what the inventor has patented in a different and non-infringing way. The income-based approach uses estimates of the amount of revenue the inventor would receive in the future as a result of their patent (Pandey, 2006).

As patents have become more protected and valuable, there has been a corresponding increase in the number of patent applications filed and patents granted in the United States. **Figure 1** displays the number of applications filed for utility patents from 1975 to 2020 with the USPTO, noting almost a 500% increase in applications over the past 45 years.

While patenting was becoming a more significant aspect of the global financial system and international trade, the enforceability of patents was still generally restricted to the country in which they were issued. Each country typically had its own set of rules and regulations governing the exclusive legal rights granted to patent holders. As a result, individuals and entities that wished to have their products or processes protected in international countries needed to obtain a patent in each of those countries.

As it was apparent the principle of territoriality and differences in national legislation were obstacles to global protection, international treaties began to be adopted in an attempt to facilitate internationalization and align national legislation. As intellectual property has grown in importance in world trade, so too has it grown in importance within international trade treaty negotiations. There are currently 208 international treaties regulating matters regarding intellectual



**Figure 1.** Patent applications to the USPTO by period (USPTO, 2020).

property, and 160 of them were adopted after 1970 (Cabral, 2021).

The importance of intellectual property within international trade frameworks has been retained in recent years. The Trans-Pacific Partnership (TPP) was a proposed trade agreement between 12 countries signed in 2016 that was set to become the world's biggest free trade deal, covering nearly 40% of global GDP and about 33% of all world trade. However, the agreement nearly collapsed due to provisions regarding intellectual property. In particular, a leaked draft of the chapter on intellectual property was heavily criticized because it included restrictive requirements that created obligations for many countries to make significant changes to their copyright laws and potentially cede sovereignty to international courts or arbitrators.

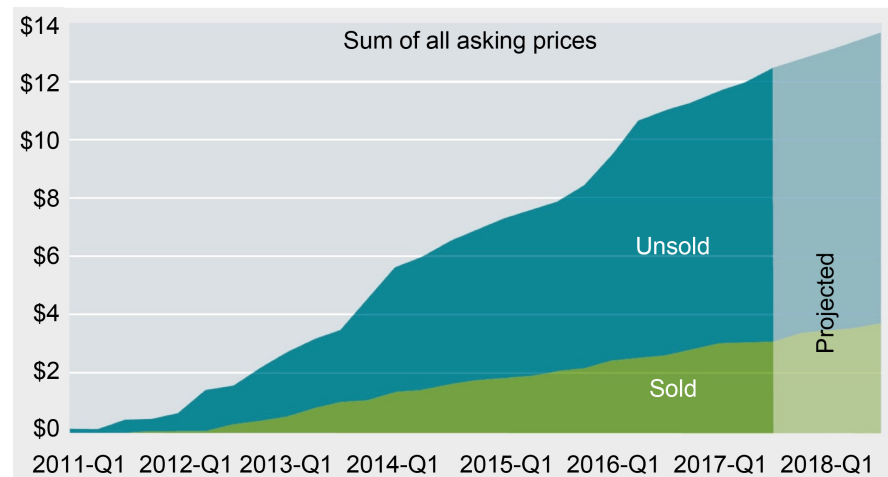
According to the [Electronic Frontier Foundation](#), the TPP would have extended restrictive intellectual property laws globally and rewritten international rules on its implementation by expanding copyright terms, escalating protection for digital rights management (DRM), creating new threats for journalists and whistleblowers, restricting fair use, placing greater liability on internet intermediaries, and adopting heavy criminal sanctions. Additionally, it would have extended controversial aspects of copyright law in the United States, such as the Digital Millennium Copyright Act (DMCA), to other countries.

### 3. Intangible Capital, Intellectual Property, & Corporate Decision-Making

The increase in importance of intangible capital and intellectual property for companies has had immense impacts not only on businesses' value but also on corporate decision-making and performance. Firms with greater investment in intangible assets tend to be those with higher revenue per employee, better overall multifactor productivity, and lower inventory levels, all of which lead to higher long-term economic growth (Crouzet & Eberly, 2018). These relationships hold both over time and in the cross-section, and these efficiency gains have resulted in more concentration and consolidation in the industry.

Much of the theoretical literature in corporate finance regarding intangible capital, such as Hart and Moore (1994) and Holmstrom and Tirole (1997), suggests that intangible assets are harder to use for borrowing because they are difficult to convert into cash and, thus, less desirable to lenders as collateral. Consequently, these theories predict lower levels of leverage among intangible-heavy corporations, as firms, all else equal, will tend to tilt towards tangible capital due to these collateral limits. In historical data, this prediction has found empirical support.

However, recent trends in intellectual property have enhanced its role as collateral due to increases in both its value and tradability. There is currently a lively market in intellectual property and patents. Cumulative asking prices of patents over time are displayed in [Figure 2](#), growing from virtually nothing in 2011 to over \$12 billion in 2017. While it is still not often explicitly collateralized,



**Figure 2.** Cumulative sum of patent asking prices (\$ Billion) (Oliver, 2018).

levels of leverage among intangible-heavy firms now approach those of tangible-heavy firms when both secured and unsecured debts are included.

The growth in value of intellectual property in the United States has also led to an increase in mergers and acquisitions (M&A) activity centered around buying and selling intellectual property and patents. In fact, research has shown that firms with higher R&D activity are more likely to become M&A targets since they tend to have higher quality innovations and greater potential for future growth (Cotei & Farhat, 2016).

While there has often been a great deal of emphasis placed on the significance of patented innovations in the United States, unpatented innovations and intangible capital are also important components of merger value creation that have been frequently overlooked. A recent study has detailed the importance of unpatented technology and demonstrated how standard approaches that solely depend on R&D expenditures and patents commonly result in misclassifying merger types as well as underestimating the impact of innovation in value creation. Furthermore, evidence suggests that unpatented innovations account for a larger percentage of synergies than patented innovations (Beneish et al., 2020).

## 4. Industry Highlights

### 4.1. Fashion Industry

The fashion industry is one of the largest industries in the world. Data indicates that the apparel and textile industry is currently the fourth largest sector and generates over \$3 trillion per year, corresponding to 2% of the world's GDP (Vi-laça, 2022). In recent years, intellectual property has become a core asset in the fashion industry, as fashion brands come up with new ideas and fashion trends evolve. In the United States, copyrights and trademarks, rather than patents, are the main sources of protection for designs of fashion brands.

The fashion industry is unique because the vast majority of products produced by fashion brands, such as shirts, pants, and dresses, are considered commodities

and do not qualify for copyright, trademark, or patent protection in the United States. However, the surface of these useful articles and the materials they are composed of may demonstrate amounts of originality and creativity that could potentially be protected under US copyright law, similar in principle to the ability to copyright art and sculpture.

While intellectual property within the fashion industry dates back hundreds of years, many of its details in the industry relevant to firm decision-making are still in flux due to the creation of new laws as well as shifting interpretations of existing ones. This uncertainty over the strength and scope of intellectual property protection has been a major source of frustration for many fashion brands in the United States. Additionally, it remains a source of legal tensions between clothing designers and manufacturers due to legal uncertainty about the copyrightability of their aesthetic designs on the surface of useful articles.

For instance, in the case of *Star Athletica, LLC v. Varsity Brands, Inc.*, Varsity Brands sued Star Athletica for copyright infringement of its designs on the surface of cheerleader uniforms. Star Athletica argued its clothing designs were uncopyrightable because they depended too heavily on their utilitarian purposes as uniforms. This case centered on the conceptual separability doctrine, a prerequisite for useful articles to be protected by copyright law in the United States, and states that their artistic features can only be copyrighted if they are able to be conceptually separated from their utilitarian aspects. In this case, the court ruled in favor of Varsity Brands.

Because consumers in the fashion industry are often brand-driven, trademarks play a pivotal role in the growth of many fashion brands. They are the most useful method in guiding consumers when making purchase decisions, helping them associate goods from certain brands with a particular style, price, and quality. Since having a recognizable trademark is essential to building a strong brand identity and establishing a loyal customer base, it has gained greater popularity in the fashion industry. This legal restriction has pushed many fashion producers towards certain styles of images, logos, and prints that can be protected and allow them to stand out from other brands in the marketplace.

While most clothing and fashion products are not protected by patents, design patents are one particular type of patent for products that possess distinct configurations or surface ornamentations. Such products include jewelry, handbags, and other decorative items with unique visual qualities. Although they are effective in legally enforcing ornamental and decorative aspects of items to help companies build their brands, attract new consumers, and increase competition, they are expensive and difficult to obtain. As a result, they are not as widely used in the fashion industry compared to copyrights and trademarks.

Alongside the growth of the highly competitive fashion industry has been a growth in counterfeit products in the marketplace. Unlike other industries, fashion products are much easier for forgers to replicate and fake. As a result, items like clothing, watches, and handbags manufactured by both existing and new luxury fashion brands are among the most counterfeited products in the



world, causing challenges and financial losses for these brands. The Global Brand Counterfeiting Report 2018 stated that this growing problem in the luxury goods industry was estimated to have cost high-end brands \$98 billion in 2017 (Driver, 2018).

Such counterfeit products have been found to increase unemployment, steal sales, damage reputations, stifle innovations, and overall negatively affect buyers and sellers (Wight, 2022). However, some researchers have found that these replicas may also have offsetting positive effects by acting as advertisements for their products rather than substitutions. Research has shown that the advertising effect from counterfeit items is most pronounced for luxury fashion brands and actually dominates the substitution effect for high-end authentic-product sales. Over 40% of consumers who purchased counterfeit handbags eventually bought the real version as well. These replicas may also be especially beneficial for new luxury fashion brands that are not yet well-known by allowing them to gain additional brand recognition (Qian, 2011).

## 4.2. Technology Industry

The technology industry has come a long way within the past few decades, especially in the United States. The US alone accounted for 35% of the worldwide technology market value, and technology firms made up over 10% of the total US GDP in 2020 (Flynn, 2022). While most intellectual property rights owned by technology firms protect R&D intensive hardware, some protect software products as well, which may be easy for competing companies to steal if they are not legally protected. As a result, intellectual property is among the most valuable assets for the growth of technology firms, allowing them to bring innovative products and services to the market while reducing the possibility of having them stolen by competitors in the industry.

The prevalence of intellectual property activity among technology firms has eclipsed that of other industries. The top 10 companies in terms of the quantity of issued patents in the United States in 2021 were all in the technology industry (Harrity & Harrity, 2022). Partly as a side effect, the growth of patent litigations has also been driven primarily by technology firms. Eight of the top 10 US patent infringement cases with the largest damages involved technology companies (Singh, 2022).

The rise in significance of intellectual property in the technology industry has also led to the growth of a new type of firm: the patent troll. Patent trolls refer to companies that purchase other companies' patents for the sole purpose of using them to file lawsuits against claimed infringers in an attempt to make quick cash, often from a settlement by the defendants to avoid a lengthy and uncertain court case. Patent troll litigations have been on the rise, and the number of unique defendants in patent troll lawsuits reached nearly 5000 in 2011. Research has shown that these litigations cost firms \$29 billion in direct out-of-pocket costs per year and, in total, destroy over \$60 billion in wealth each year (Bessen, 2014).

In addition to the monetary costs, patent trolls also have negative impacts on innovation, as firms that perform more R&D are also more likely to be sued for patent infringement. As a result, large firms that were hit by extensive lawsuits spent 48% less on R&D, and small firms that were hit by extensive lawsuits spent 19% less on R&D and operating expenditures (Bessen, 2014). This practice by patent trolls has also caused more uncertainty among firms in general about their own developments. Hence, it has forced them to respond to the potential for patent lawsuits by getting additional insurance, changing business practices, reducing venture investing, and employing various strategies to limit their exposure to patent trolls.

As a result of the growing problem of patent trolls in the United States, potential legal remedies to halt bad faith patent infringement assertions have been enacted in two-thirds of US states. If patents obtained by firms are not being used for productive purposes, they go against the intention of the intellectual property system in general and could be invalidated in court. Furthermore, the US Supreme Court issued two important rulings in 2017 that limited patent rights as well as patent trolls to improve the innovation environment for firms in rapidly shifting industries and enable consumers to obtain easier access to merchandise from companies.

## 5. Conclusion

Intangible capital is an incredibly important component of many firms, having grown to make up the majority of their total assets over the past half-century. Along with increasing companies' value, it helps businesses develop strong brand identities and establish loyal customer bases, both of which contribute to long-term success and economic growth. Intangible assets encompass aspects like organizational capital and play a crucial role in corporate decision-making, such as both levels and types of borrowing as well as driving potential for M&A activity. Research has found strong evidence across sectors that firms with greater shares of investment in intangible capital experience higher growth.

Intellectual property is one of the most significant types of intangible capital and is an essential part of fostering new product innovations. Patents, trademarks, and copyrights grant companies the exclusive right to their work and give them the opportunity to protect various business activities, R&D activities, and innovations from competing firms in their industry. Although intellectual property is important, its impacts widely vary depending on the industry. For instance, the fashion and technology industries base many of their corporate decisions and strategies around intangible assets in highly distinct ways using very different tools.

In regards to the fashion industry, the law is still not the most effective way to define and detect plagiarism and safeguard the interests of designers since plagiarism in the legal sense has a relatively lower threshold than plagiarism in the industry consensus. Individual brands seeking legal channels to deal with them

have very limited effects on changing the overall status quo of the industry, except for possible compensation. To better protect intellectual property, especially for some independent designers, the fashion industry could establish a plagiarism group, which would set a unified standard for brands as well as supervise the industry and the entire organization within it. Since the fashion industry is a sector that spans the globe, it should not solely be protected under copyright law in the United States, but under international trade agreements as well.

In regards to the technology industry, there are many small technology businesses that have limited resources and knowledge to avoid potential risks and, consequently, are at the demise of patent trolls. To protect themselves from patent troll litigations, it is essential for these firms to hire intellectual property lawyers for early consultations, which would help them avoid potential risks. In addition to small businesses, products in the technology sector should be under protection at every stage of the patent application process. Since patent trolls are a detriment to innovation, it is integral for related legislation to be issued to provide a healthier environment for the creation of new ideas and products.

### Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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