



International Chamber of Commerce
The world business organization

Intellectual Property: Powerhouse for Innovation and Economic Growth



In Partnership with
ICC Commission on Intellectual Property

An ICC initiative
BASCAP
Business Action to Stop
Counterfeiting and Piracy

ICC works to promote a balanced and sustainable system for the protection of intellectual property. It believes that intellectual property protection encourages innovation and the development of knowledge-based industries, stimulates international trade, and creates a favorable climate for foreign direct investment and technology transfer. This publication is a collaborative effort between ICC's Commission on Intellectual Property and ICC's BASCAP Initiative – Business Action to Stop Counterfeiting and Piracy.

About the ICC Commission on Intellectual Property

ICC's intellectual property policy is formulated by its Commission on Intellectual Property, which gathers over 300 business executives and private practitioners from 50 countries. The ICC Commission on Intellectual Property contributes world business views to governmental and intergovernmental debates on key intellectual property issues facing the international business community. It also works to raise awareness of intellectual property by initiatives such as its annual Roadmap on Current and Emerging IP Issues for Business and other publications. Visit ICC IP Commission on the web at: <http://www.iccwbo.org/policy/ip/id3060/index.html>

About BASCAP

Counterfeiting and piracy have become a global epidemic, leading to a significant drain on businesses and the global economy, jeopardizing investments in creativity and innovation, undermining recognized brands and creating consumer health and safety risks. A disorder of this magnitude undermines economic development, a sound market economy system and open international trade and investment.

In response, the ICC launched Business Action to Stop Counterfeiting and Piracy (BASCAP), to connect and mobilize businesses across industries, sectors and national borders in the fight against counterfeiting and piracy; amplify the voice and views of business to governments, public and media – increasing both awareness and understanding of counterfeiting and piracy activities and the associated economic and social harm; compel government action and the allocation of resources towards strengthened intellectual property rights enforcement; and create a culture change to ensure intellectual property is respected and protected.

Visit BASCAP on the web at: www.iccwbo.org/bascap

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Governments all over the world are looking for ways to improve their economies, help their citizens and build national capabilities in many areas of technology, information and culture. Private-sector companies and industries likewise are looking for ever-more competitive ways to succeed, by developing and incorporating creative and useful innovations into products and services that we all benefit from and enjoy in virtually every area of life. This paper explores and explains the benefits of intellectual property (IP) protection in helping to achieve these important goals.

Intellectual property rights (IPR)—the copyrights, patents, trademarks and similar rights upon which the lion's share of creative and innovative products and services rely—have a vital role in growing the economies of developed and developing countries all over the world, in spurring innovation, in giving large and small firms a range of tools to help drive their success, and in benefitting consumers and society through a continuous stream of innovative, competitive products and services and an expansion of society's overall state of knowledge. This paper reviews how IPR works in five main areas:

- 1. Intellectual property protection benefits the economy.** Sectors that rely on IPR represent a significant part of developed and developing economies, in terms of GDP, employment, tax revenues and strategic importance. IPR also promotes foreign direct investment (FDI) and technology transfers in developed and developing countries.
- 2. Intellectual property protection promotes innovation.** Effective IPR increases funding for research and development and other innovation, including by helping firms realize more value from innovations that are protected by IPR than those that are not. IPR underpins development of cultural expression and diversity, and promotes broader dissemination of innovations through publication and licensing.
- 3. Intellectual property protection helps firms monetize their innovations and grow.** Firms use IPR in diverse ways to help them develop, trade in, and secure income from their innovative products and services. Firms that use IPR generally succeed better and have a higher market value than those that do not.
- 4. Intellectual property protection helps small and medium enterprises.** SMEs use IPR more extensively in many cases than large companies. SMEs that use IPR report higher growth, income and employment than those that do not.
- 5. Intellectual property protection benefits consumers and society.** IPR helps provide consumers with innovative products and services in virtually every area of life, and helps protect consumers from counterfeit and pirated products. IPR encourages competition among diverse product, function and quality offerings, giving consumers a greater choice among the goods and services they want and need. IPR also provides important mechanisms to help address many of society's most important needs, from clean energy and reduced carbon emissions to health care and a truly 'digital economy'.

As the 'knowledge economy' advances, more and more of the value that firms and the overall economy achieve will come from high value-added intangibles—including IP in inventions, brands and works. In many companies even now, 80% or more of their market value is attributable to intangibles, including IP. In some small companies, the only value is the intellectual property they own in an exciting new innovation that they have developed. IPR has truly become an 'intellectual currency' helping to promote economic growth, company competitiveness and innovation world-wide.

The business sectors that depend on intellectual property protection represent an important and growing part of every modern economy, particularly as these economies advance from dependence on agricultural, mineral and low value-added manufacturing to higher-value products and services. Intellectual-property based sectors in both developed and developing countries are substantial drivers of GDP and employment growth.

a. Sectors that rely on IPR protection are substantial contributors to the economy.

Innovation is the key to growth and prosperity. Measures to effectively protect intellectual property rights are particularly vital... This topic is, as we have seen, becoming ever more important to the emerging economies as well. There is thus increasingly a common interest in promoting the protection of intellectual property rights and innovation.¹

*Dr. Angela Merkel, Chancellor,
Federal Republic of Germany*

Particularly as governments work to stabilise their economies and stimulate economic growth, the GDP contribution, employment and trade benefits of robust IP-based sectors are more important than ever. The World Intellectual Property Organization (WIPO), the European Union and several individual countries have undertaken measurements of the contribution that IP-based industries make to various national and regional economies, which can be summarized as follows:

- **In the G8 countries, copyright-based industries and interdependent sectors alone account for approximately 4-11% of Gross Domestic Product**—3.4% in Japan, 4.7% in Canada, 6.06% in Russia, 6.9% in the EU, and 11.09% in the US.² (See Fig. 1.)

These sectors also produce a substantial number of jobs—approximately 3-8% of all employment within the

G8—3.0% of all domestic employment in Japan, 5.4% in Canada, 6.5% in the EU, 7.3% in Russia, and 8.53% in the US.³

These estimates are based on statistics from nine core copyright sectors that are wholly engaged in development, manufacturing, and/or sales or other dissemination of copyright-related material. These include the sectors of press and literature; music, theatrical productions, and operas; film and video; radio and television; photography; software and databases; visual and graphic arts; advertising services; and copyright collective management societies.

These core copyright sectors generate economic activity and jobs in other sectors as well, so these statistics also include the relevant contributions of those related industries, including those that provide ‘interdependent’ upstream or downstream supplies and services to the core copyright sectors or that are

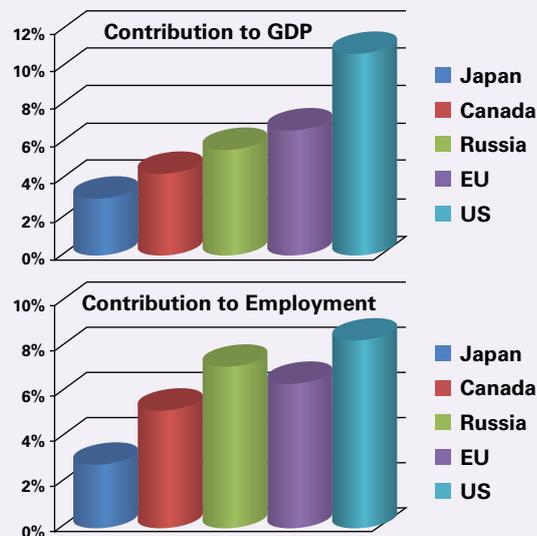


Figure 1. GDP and Employment Contribution of Copyright-Related Industries in G8 Countries.

partially engaged in copyright-related activities. The methodologies for these studies were developed by Dr. Stephen Siwek and a group of other economists and have been adopted and distributed by WIPO for use by any country wishing to make similar measurements.⁴

• **Patent-dependent sectors play a similarly important role in the overall economy.** Less research seems to have been done to date in estimating the economic contribution of patent-, trademark- and other IP-reliant sectors to the overall domestic or regional economy. Preliminary research done in the UK, however, provides evidence for the intuitively reasonable assumption that these sectors also account for significant GDP, employment and related contributions.

Raymond (1996)⁵ building on the earlier work of Silberston (1987)⁶, studied the five 'patent intensive industries' of pharmaceuticals, chemicals, aerospace, motor vehicles and electrical engineering in the UK. These sectors alone were found to contribute a conservative £25.2 billion of Gross Value Added (4.23% of the UK's GDP), and to employ nearly one million people or 3.72% of the total UK workforce. If patent-intensive industries are ranked not according to those making the most patent filings but rather by those that make the largest contribution to the economy, the figures are even more striking: Raymond (1996) showed that Gross Value Added of the top 10 patent-intensive industries so defined represented 7.8% of GDP, and 36.7% of all industrial output in the UK. (Note that a recent US study of both patent and copyright dependent sectors similarly found that these two sectors together accounted for \$1.9 trillion or 17.3% of the US GDP.⁷)

• **Branded goods industries reliant on trademarks likewise represent a substantial portion of many countries' manufacturing sectors.** Research in Germany has found, for example, that the branded goods sectors represent 22% of the domestic manufacturing industry, 20% of the country's exports, and 7% of the overall economy. The figures for Spain are similar: Brands industries account for approximately 74 billion or 6.8% of GDP.⁸ UK industry estimates that brand manufacturing accounts for 14% of all UK manufacturing and over £50 billion of gross output.⁹

• **Many sectors that rely on IP protection show disproportionate growth despite trends of declining prices, and are strategically important in the economy.** It should be noted that the economic benefits generated by sectors reliant on IPR such as information and communication technology (ICT) are even higher when adjusted to constant dollars, given that the prices for such IPR-based goods and services tend to decline over time. As explained in a recent US study (Siwek, 2005):

"For example, the overall price index for the U.S. GDP rose from 100.000 in 2000 to 108.237 [+8.2%] in 2004. By contrast, the price index for the ICT industry component of the convergence industries fell from 100.000 in 2000 to 79.752 [-20.2%] in 2004. If price levels consistently fall and real quantities remain unchanged, the real value added by the producers of those goods consistently increases. Since the IP industries have reduced real prices over time, their real output - net of intermediate purchases or, in other words, value added, has correspondingly increased over the same period."¹⁰

Moreover, many IP-based sectors not only make substantial economic contributions but are important as a strategic matter to their economies. As Professor Raymond noted in his 1996 report: "[Our own conclusion would be that, of all traditional manufacturing industries, the [IP] intensive ones are those upon

which Britain's industrial future depends. They have been the ones that continued to grow and prosper in times of adversely changing industrial structure."¹¹

b. IPR generates substantial economic activity, employment and growth in developing as well as developed countries.

"To protect intellectual property rights serves the interest of all countries and complies with China's efforts of opening wider to the outside world, improving investment environment and enhancing innovation ability."¹²

*President Hu Jintao,
People's Republic of China*

Various aspects of the intellectual property system can be and are debated from time to time,¹³ but a wide range of studies and statistics have demonstrated that not only developed countries but also developing countries can benefit from the GDP, employment and other economic gains that derive from intellectual property protection and the creative and innovative sectors that IP supports.

Studies done to date have shown, for example, that copyright-related industries can make economic contributions in developing countries similar in relative importance to their contribution in developed countries. Domestic companies in developing countries are also regular—and, in some countries, substantial—users of the trademark and patent systems both

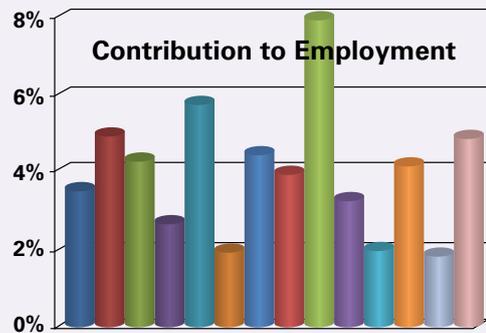
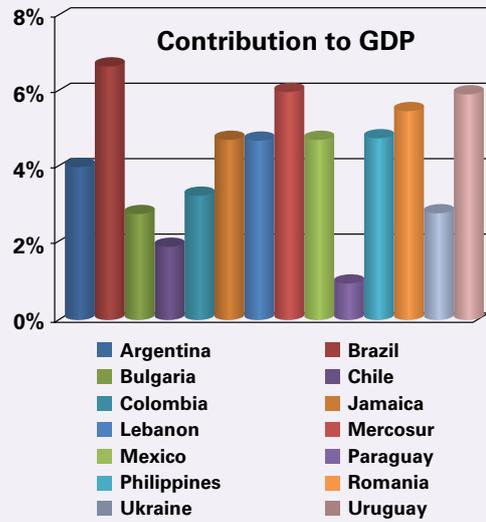
domestically and abroad. In addition, foreign investment and technology transfers in developing countries depend directly on the adequate recognition and protection of intellectual property.

• Copyright-related industries generate substantial GDP and employment contributions and export opportunities in developing countries: 2-6% of GDP and 3-11% of employment in fourteen countries/regions studied. WIPO and other organizations and economists have done several studies on the economic contribution of copyright-related industries in developing countries, as defined by the World Bank as low- and middle-income countries with gross national income per capita of \$6,000 or less in 1987 prices (\$12,195 in 2009 prices).¹⁴

Using the same or similar methodologies described above, the economic contribution of copyright industries in these developing countries has been found to be on the same order of magnitude as that found in developed countries: GDP contributions of between approximately 2 and 6 percent and employment contributions of between 3 and 11 percent of total employment in the developing countries studied.¹⁵ (See Fig. 2.)

Figure 2. GDP and Employment Contribution of Copyright-Related Industries in Selected Developing Countries.

	Copyright Sector	
	GDP	Employment
Argentina	4.1%	3.5%
Brazil	6.7%	5.0%
Bulgaria	2.8%	4.3%
Chile	2.0%	2.7%
Colombia	3.3%	5.8%
Jamaica	4.8%	2.0%
Lebanon	4.8%	4.5%
Mercosur	6.0%	4.0%
Mexico	4.8%	11.0%
Paraguay	1.0%	3.3%
Philippines	4.8%	2.0%
Romania	5.6%	4.2%
Ukraine	2.9%	1.9%
Uruguay	6.0%	4.9%



- **IP-based material developed in developing countries also has ‘substantial export potential’.** Copyright-related exports have already reached 1-2% of all exports in Mercosur and Chile. The WIPO studies in the Mercosur region and Chile also found that between one and two percent of the regions’ exports were from copyright-related sectors. Such exports had reached more than \$863 million by 1998.¹⁶

In reviewing these and other copyright-sector related data with respect to its Mercosur and Chile studies, WIPO concluded that the economic effects and potential of such IP-based industries in developing countries were significant:

“The economic authorities should start to see the ensemble of copyright-related activities as an important economic sector that generates value added and jobs and has substantial export potential, taking into account the growth in global and regional trade in such products....

“The characteristics of copyright-related economic activities are based on detailed knowledge, with multiple links upstream and downstream, but they also have an intrinsic cultural value. These are important elements for developing countries inasmuch as they place value on the work involved in creation rather than on capital invested. In this context, enhancing the value of cultural production should be given increasing emphasis, both from the perspective of strategy (preservation of cultural identities and values – including assets) and the generation of employment.”¹⁷

• **Companies and inventors in developing countries increasingly are looking to protect their inventions by patents.** Domestic innovators in developing countries, which often include individuals and small and medium enterprises, themselves see the patent system of their own and other countries as beneficial for protecting and monetizing their inventions. In the patent offices of the BRIC countries alone (Brazil, Russia, India and China), for example, patent applications from domestically resident inventors and companies constitute a substantial and growing percentage of all applications filed. The percentage of resident patent applications reached 15.8% in Brazil, 18.4% in India, 62.4% in China, and 69.7% in Russia in 2007.¹⁸

Individual inventors in these countries constitute a healthy percentage of all those that are electing to make use of the patent system. In Brazil, for example, 42.2% of all patent applications are filed by individual applicants.¹⁹ The number of resident patent filings in China, Russia and Brazil relative to each country's Gross Domestic Product and domestic R&D expenditure is also reasonably high. China, Russia and Brazil rank 4th, 9th, and 43rd world-wide respectively in terms of domestic patent filings per GDP (with India ranked 47th), and 9th, 11th and 33rd world-wide respectively in terms of domestic patent filings per domestic R&D²⁰—which again indicates the relative importance of the patent system for domestic innovators in these countries.

It is small wonder that the patent offices in each of the BRIC countries have grown to be among the world's major players. As of 2006, Brazil's patent office had experienced a 10.8% average annual growth rate since 2003, was the 12th largest patent office world-wide in terms of applications, and had the highest number of patents granted (2,465) among selected emerging countries reviewed by WIPO. As of 2007, Russia had the 8th and India had the 9th most patent filings of any country. China's patent office is the third largest patent office world-wide in terms of patent filings, having experienced the greatest growth in patent filings (23.5% annually) of all countries between 2003 and 2007.²¹

Inventors from the BRIC countries also regularly use the patent system of other countries to protect their own inventions. Brazil-resident inventors filed approximately 1,000 patent applications in 32 other countries in 2006. Russian inventors filed more than 1,100 patent applications in 33 other countries in 2007. Indian inventors filed more than 3,500 patent applications in 43 other countries in 2006. Chinese inventors filed more than 7,400 patent applications in 39 other countries in 2007.²² The fact of the matter is that indigenous inventors in these and many other developing countries increasingly rely on the patent system—both at home and abroad—to secure and realize the value of their inventions.

• **Domestic companies in developing countries also rely substantially on the trademark system to protect their brands at home and abroad.** As with patents, the use of trademarks is on the rise in developing countries. Domestic companies constitute a substantial part of the users of these trademark systems, and even in comparison to developed countries there is a high rate of use of the trademark system in developing countries relative to GDP.

The use of trademarks in developing countries like Brazil and China in particular is on the rise. According to WIPO, Brazil was largely responsible for the world-wide increase in the growth of trademark registrations in 2007. In Brazil, trademark applications grew by approximately 2.5% annually and trademark registrations grew by a staggering 86.9% between 2003 and 2007. Similarly in China, trademark applications grew by approximately 11.1% and registrations by 1.6% annually during the same period. Although total annual trademark registrations dropped slightly in Russia, applications overall increased by 13.1% annually in that country during the same period. The total number of trademark applications in India – 103,419 in 2006 – was roughly at the same level as in Brazil. When measured by total number of trademark applications, China has the largest trademark office in the world, with Brazil at number 5, Mexico at number 9, and Russia at number 16.²³

Domestic companies are major users of their own countries' trademark systems in developing countries. Resident applicants for trademarks represent 88.8% of all applications in China, 81.2% in Brazil, and 54.9% in Russia, for example.²⁴

Moreover, companies resident in such developing countries regularly use the trademark systems in other countries to protect their brands and marks. In 2008, Brazilian residents filed nearly 22,000 trademark applications in 100 other countries. Russian residents filed more than 27,000 applications in 110 other countries. China residents filed a staggering 78,000 applications in 124 countries in that year.²⁵

The use of trademarks in developing countries, measured in terms of the number of domestic trademark applications filed by resident companies, is higher relative to GDP than the world-wide average. Many emerging countries are in the top 20 countries for resident trademark applications per GDP. The intensity of domestic trademark use measured in this way (applications filed) is higher in Brazil, China and nearly 20 other developing countries than the world-wide average, providing "further evidence of the intensive use of trademarks for protecting IP rights by residents of emerging countries."²⁶

c. IPR attracts foreign direct investment and promotes R&D and technology transfer in developing countries, driving development and economic growth.

"Our focus remains on instituting policies of high growth aimed at encouraging investment flows and expanding trade. We are currently receiving about \$6 billion annually as foreign investment. We need several times this amount. We have to strengthen investor confidence and have done so by putting in place a new Intellectual Property Rights regime..."²⁷

Prime Minister Dr. Manmohan Singh, India

- **Effective protection of intellectual property rights attracts inward foreign direct investment (FDI) in developed, developing and least-developed countries.** The OECD has conducted an extensive data survey²⁸ of a range of 120 countries classified as developed, developing or least-developed, covering the fifteen-year period 1990-2005. The study involved a regression analysis of the relationship between various measures of technology transfer and a set of indexes that quantify the strength of IPRs, whilst controlling for other factors. The results of the study showed a positive correlation between the strength of IPRs—patents in particular—and FDI.



In the words of the OECD study, “The index for patent rights tends to be positively associated with inward FDI ... holding other factors constant. This relationship holds for all groups of countries – developed, developing and least developed – though quantitatively the association is strongest in developed countries.”²⁹

A more recent study by the OECD has further quantified the benefits of IP protection for foreign direct investment, not just with respect to patent protection but also copyright and trademark. A 1% increase in the strength of patent protection (defined and measured by indices developed by Park and Lippoldt (2004, 2008)) correlates to a 2.8% increase in FDI. A similar increase of trademark and copyright protections correlates to a 3.8% and a 6.8% increase in FDI, respectively.³⁰

The mechanism by which IPR in developing countries drives FDI from developed countries is an interesting—and self-reinforcing—one:

“IPR reform in the South leads to increased FDI from the North, as Northern firms shift production to Southern affiliates. This FDI accelerates Southern industrial development. The South’s share of global manufacturing and the pace at which production of recently invented goods shifts to the South both increase. Additionally, the model also predicts that as production shifts to the South, Northern resources will be reallocated to R&D, driving an increase in the global rate of innovation.”³¹ (Branstetter et al., 2007)

These findings confirm a series of other studies showing that IPR protection influences FDI:³²

- Weak IPRs are significant barriers to international technology licensing. (OECD, 1987)
- Weak IPRs reduce direct investment in the computer software sector. (UNCTNC, 1989)
- Weak IPRs reduce investment in the pharmaceutical sector. (UNCTNC, 1990)
- At least 25% of American, German, and Japanese high-tech firms refused to invest directly or through joint ventures in developing countries with weak IPRs. (Mansfield, 1995; Lee and Mansfield, 1996)
- Multinational firms are more likely to export, increase sales from existing foreign operations, increase investment, and transfer technology directly in response to stronger IPRs, as an important complement to market liberalization, technology development and competition policies. (Maskus, 2000)

In short, effective IP protections directly correlate with “precisely the kind of technology-intensive, organizational know-how diffusing activities ... which are most desired by the up-and-coming business enterprises in the developing and transitioning countries”.³³

• **The IP system offers a wide range of tools for countries in different stages of economic development and with different cultural and socioeconomic contexts.** For example, some countries such as Peru and Thailand, which have large rural communities, have been looking into using certification or collective trademarks for their local handicrafts and other products.³⁴ Ethiopia has been working on the branding of Ethiopian coffee to extract more value from its international sales than could be realized whilst this remained an unbranded commodity item. Nigeria has been concentrating on the benefits of music and film copyright for local producers and artists. Some Latin American countries have been focussing on patents as a way of promoting their growing biotech sector.³⁵ Depending on their

particular circumstances, different countries can and do rely on different aspects of the IPR system to promote development.

d. IPR is an important component of the overall health of an economy.

Intellectual property “is a means of consumer protection, transfer of technology, investment and hence economic development. Failure to protect intellectual property rights stifles innovation and creation and hampers economic growth and investment”³⁶

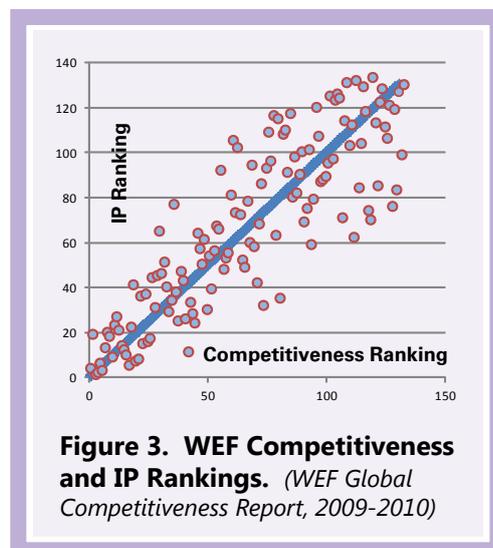
*Prime Minister Yusuf Raza Gilani,
Pakistan*

Extensive World Economic Forum (WEF) surveys confirm that a country’s intellectual property protection is linked with its economic ‘competitiveness’. For 30 years, the World Economic Forum has conducted detailed assessments of the productive potential of countries world-wide. WEF’s Global Competitiveness Report, a survey of 133 countries, is designed as a “contribution to enhancing the understanding of the key factors determining economic growth and to explaining why some countries are more successful than others in raising income levels and opportunities for their respective populations; hence it offers policymakers and business leaders an important tool in the formulation of improved economic policies and institutional reforms.”³⁷

Intellectual property protection is identified in the WEF surveys as one of the key national ‘institutions’ within which individuals, companies and governments interact to generate income and wealth in the economy. As ICC has noted in the past, the countries that are perceived as having the strongest intellectual property protection are routinely found to be among the most economically competitive countries in the WEF surveys. Those perceived as having the weakest IPR systems tend to rank among the bottom for growth and competitiveness.³⁸ In the 2009-2010 WEF survey, there was again a high degree of correlation ($r=0.86$) between a country’s intellectual property ranking and its overall competitiveness ranking for all 133 surveyed countries. (See Fig. 3.)

In the words of the WEF:

“The quality of institutions [which include intellectual property] has a strong bearing on competitiveness and growth. It influences investment decisions and the organization of production and plays a central role in the ways in which societies distribute the benefits and bear the costs of development strategies and policies. For example, owners of land, corporate shares, or intellectual property are unwilling to invest in the improvement and upkeep of their property if their rights as owners are insecure.”³⁹



• **IP is not the sole driver of a successful economy, but one of the significant policy complements that drive economic success.** Macroeconomic stability, quality of governance, rule of law, business environment, education and productivity of the labour force, and the quality of infrastructure are also vital contributors to economic growth. IP protection does feature, however, as one of the significant determinants of the health of an economy. Indeed, the benefits of IPR are amplified as these other drivers in the economy improve. As the OECD has described this effect in a recent study of the interplay of these factors, “A strengthened IPR framework can create spillovers, incentivise innovation, increase trade and trade-related investment, and boost intellectual property-intensive economic activity.... The existence of policy complements appears to be one dimension that influences the effectiveness of IPR reform and the economic outcomes.”⁴⁰

Intellectual property protection, backed by government understanding, recognition and policy support, thus plays an important part of countries’ efforts to make the fundamental shift to a ‘knowledge-based economy’ based on value-added innovation and creativity.⁴¹ It is small wonder that in recent years countries like Singapore and the Republic of Korea and more recently South Africa, Cuba and China, increasingly have embraced IPR as an engine of domestic economic development.⁴² In the words of China’s National Intellectual Property Strategy, which emphasizes the importance of IPR for achieving these goals,

“Implementing the national intellectual property strategy to greatly promote China’s capacity in creation, utilization, protection and administration of intellectual property will help improve China’s capacity for independent innovation and aid in efforts to make China an innovative country.... It will also increase the market competitiveness of Chinese enterprises and strengthen the core competitiveness of the country.”⁴³

2. Intellectual Property Promotes Innovation

The different forms of intellectual property—patent, copyright, trademark and various other similar legal rights—traditionally were viewed as state favours or protections of natural or moral rights. Today, however, IP rights are recognized as an important economic mechanism, an ‘intellectual currency’ of sorts, that encourages research and development (R&D), creation and innovation in several significant ways.⁴⁴

IPR promotes innovation by providing the legal and economic framework for market-based incentives and rewards that:

- pay for research and development,
- support the promotion and distribution of the innovations that are thus developed, in the form of products, services and processes in the market,
- promote cultural expression and diversity,
- make technologies more widely available through the mechanism of licensing,
- increase society’s overall state of knowledge through the information disclosed in patent applications and publications,
- promote technology transfers, and
- broaden the dissemination of government-funded R&D.

a. Effective IP protection increases research and development and innovation.

One of the most fundamental reasons for making sure that innovations get legal protection in the form of IPR is the negative effect that free-riding otherwise has on innovation. Economists have understood since the 1960s that there is a built-in tendency for industry to under-invest in R&D from the standpoint of society’s needs, due to the problem that firms have in appropriating the economic benefits of their innovations.⁴⁵

Inventions, creative works, brands and other such valuable intangibles are what economists call ‘non-rival’ and ‘non-excludable’—that is, if these are not protected by legal rights, they could and would be used fairly easily by market competitors (or anyone else for that matter) and could not be easily defended against imitators. Without IPR, for example, a small technology developer in India could not prevent its multinational competitors from simply expropriating and free-riding on its innovations.

In simplest terms, firms that are not sufficiently rewarded as a result of such free-riding do not have much incentive to engage in R&D and other innovative and creative activity. Depending on how little income and profit a firm is able to derive from its innovative activity, it may not only be unable to fund R&D, it may not be able to stay in business at all.

IPR gives innovative firms and individuals needed economic incentives to produce socially desirable new innovations.⁴⁷ It does this through the mechanism of a set of legal rights given to authors, inventors, brand owners and others to determine whether and how their innovative works, inventions, brands and other intangible innovations are used.

Empirical studies, both ‘micro’ surveys of firm behavior and ‘macro’ studies of the behavior of markets following the strengthening of IP rights, demonstrate that IPR is positively linked with increased R&D and innovation—substantially more so in some industries. Arora et al. (2003) found that patents had a positive

impact on R&D spend in most industries, especially pharmaceutical products. Without patents, they found, firm R&D would decrease by 25-35% in the US.⁴⁸ Duguet and Lelarge (2005) found similar linkages between product patents and R&D in France.⁴⁹ Numerous other studies have shown the correlation between patent strength and technological performance, GDP growth and the stimulation of innovation.⁵⁰

At a more intuitive level, trademark protection for brands also tends to support investment in innovation. As a recent UK report explained, “Brands encourage innovation in part because consumers expect them to continue to deliver their promise in a world where technology and competitive responses continually change.” The brand helps to align a firm’s internal investments, “notably in research and development, innovation, process engineering, product quality, and consumer understanding.”

b. Firms can earn substantially more from innovations that are protected by IPR.

One of the important ways in which IPR provides incentives for innovation is that it increases the value of the innovations themselves. Professor Arora and his colleagues analyzed what they called the ‘patent premium’, the observation that firms on average can expect to earn substantially more from an invention if it is patented rather than left unpatented.

The extent of such benefits seems to vary somewhat between industries and is affected by the strength or quality of the patent—regularly cited patents seem to increase the ‘patent premium’ substantially, for example. Analyzing data from the 1994 Carnegie Mellon survey of industrial R&D, Arora et al. found that on average the ‘patent premium’ for patented versus unpatented inventions was between 180% and 240%, depending on the industry. In other words, patents on average double the value of an invention.⁵² They also found that the more valuable a patent, the more R&D that takes place: A 10% increase in the patent premium leads to a 6% increase in business R&D expenditure.

c. IPR attracts venture-capital investment for R&D and for the commercialization of innovative products and services.

IPR also can be an important drawing card for innovative start-up firms to get access to funding from investors such as venture capitalists (VCs). Once a start-up reaches a certain stage of development, the fact that it has turned its R&D into a patented asset, for example, seems to signal good management and demonstrate that the firm has defined and carved out a market niche. There is a strong positive relationship between venture capital funding, patenting and innovation.⁵³

Studies have shown that patent ownership at early-stage high-technology companies has a positive impact on the timing and value of venture financing received, and on the likelihood of attracting a prominent capital investor.⁵⁴ Haeussler et al. (2009), who surveyed 190 VC-seeking biotechnology companies founded after 1989 in Germany or the UK, found that the firms’ patenting activities had ‘consistent and cogent effects’ on the timing of VC financing. Having at least one filed patent application reduced the time to the first VC investment by 76%. The study concluded that “patents do indeed constitute an attractive instrument which helps young ventures to overcome the liabilities of newness and, in turn, facilitates market entry while at the same time providing incentives for innovation.”⁵⁵



Similarly, Cao and Hsu (2010) found, in an empirical analysis of more than 10,000 VC-funded US start-up companies in various sectors, that start-ups which successfully file patents before receiving investment from VCs receive substantially more VC funding, attract a larger number of more prominent VCs, and are more likely to complete initial public offerings (IPOs). The study suggested that patents provide an important signalling function as to an enterprise's performance.⁵⁶

d. IPR promotes cultural expression and diversity.

Creators in both developed and developing countries rely heavily on copyright to produce new and diverse cultural and scientific content—books and other publications, music, film, photographs and even software—and earn their living from these endeavors. Exact measurement of the function of copyright in promoting the on-going development of such content is difficult, given for example that copyright is an unregistered right in most countries and thus that the copyright 'stock' is indeterminate. The effect of copyright is intuitively important, however, given that in the absence of effective copyright or enforcement mechanisms entire works can be taken and used without remuneration to the creator—again, reducing the incentives for creators to develop such works and undermining the licensing and other tools for making works available with due remuneration to their creators.

Likewise, the traditional knowledge and genetic resources of developing nations and indigenous societies may be protected and commercialized as appropriate by their owners under various systems including trademark protection, designations of origin, registered designs or in certain cases patents. Such rights can provide benefits for the owners and custodians of such resources, in accordance with the Convention on Biological Diversity. Similarly, traditional cultural expressions (folklore) can be protected in many cases by copyright.

Indonesia is an interesting case in point, where there is a "wealth of cultural interests, particularly in music, and a growing base of intermediate skills".⁵⁷ A 2003 survey reported by Luthria and Maskus found that of all the local copyright sectors in Indonesia, recorded music had seemed to suffer the most damage from inadequate copyright laws and enforcement. The local firms in the sector were few in number and size for an economy of Indonesia's size, and the system yielded revenues only for a very small number of musicians. The local firms all reported that they would grow if there were improvement in the IP and enforcement situation. The two large firms, all 11 of the medium-sized firms, and 9 of the 11 small firms said they would expand, either modestly or significantly. Ten of the small firms and all the medium-size firms would invest more in developing new songwriters and recording artists. The local music firms themselves were seeking improvements to copyright and enforcement in support of this expression of local culture and content.⁵⁸

As the survey's authors described, "From the standpoint of economic development, the main reasons for a developing country to adopt and enforce stronger copyright laws are to encourage creative activity by local artists and firms and to support the transformation of that activity into products for the domestic and export markets."⁵⁹

e. IPR promotes the dissemination of new technologies, through publication and licensing.

IPR helps make innovation and creativity more widely available in industry and society, rather than just being kept secret for the creator's own advantage, in two related ways: (1) promoting the dissemination of information on new technologies through patent disclosure, and (2) providing incentives for new innovations to be licensed to others in the market.

• **Patent disclosure** is a fundamental part of the bargain whereby inventors get patent protection in the first place. As WIPO has explained:

"All patent owners are obliged, in return for patent protection, to publicly disclose information on their invention in order to enrich the total body of technical knowledge in the world. Such an ever-increasing body of public knowledge promotes further creativity and innovation in others. In this way, patents provide not only protection for the owner but valuable information and inspiration for future generations of researchers and inventors."⁶⁰

A study by Magazzini et al. (2009), for example, showed how patent disclosures affect the course of R&D in the pharmaceutical sector. The study surveyed about 2,000 drug candidate-patent pairs using information from two large data sets of pharmaceutical and biotechnology patents and R&D projects over a 25-year period, with particular attention to whether patented compounds ultimately made it to market or were discontinued. Measuring subsequent patent citations to 'successful' or 'failed' patented compounds, the authors found that market competitors pursued an R&D 'race' informed by each other's failures as well as successes, as disclosed in the patents. "The increase in knowledge further stimulates R&D efforts, both in terms of new patents and new firms entering the research arena, therefore stimulating competition within the industry, and fostering research," the authors noted. "The information disclosed through patents leads to an expansion of the knowledge frontier."⁶¹

• **Licensing** also is another important mechanism for the dissemination of new innovations and works, which is encouraged through the guarantees that IPR provides so that firms can realize market-based remuneration and other benefits from such activity. Guellec and van Pottelsberghe (2007) have well summarized the incentives that firms have both to license in and license out their innovations. (These are listed in brief in Fig. 4.) An average of 11% of all patents held by firms in OECD countries were subject to licences in 2003—reaching 15% in the US, 11% in the EU and 8% in Japan. Licensing is more developed in the information technology, biotechnology and chemical industries, and is even more prevalent among small firms and universities than larger firms.⁶²

Figure 4. Incentives for IP Licensing. (Guellec & van Pottelsberghe, 2007)

Licensing out

- Obtain licensing revenues
- Reduce production costs
- Reduce risks for consumers
- Gain access to other markets
- Expand product range
- Gain access to other technology
- Standard setting

Licensing in

- Save on R&D expenditures
- Accelerate the innovation process
- Expand product range
- Avoid litigation
- Gain access to a standard

f. IPR promotes development, including through technology transfers.

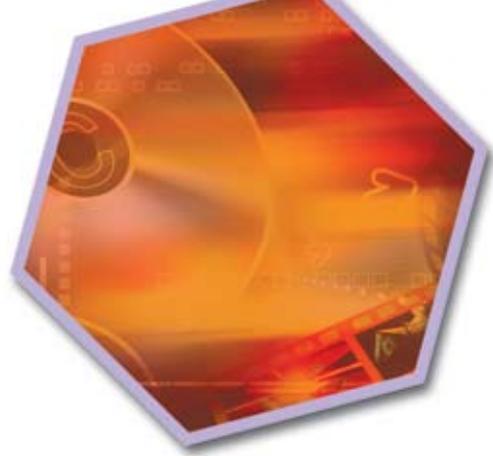
The general benefits of IPR in promoting development through increased foreign direct investment (FDI) have already been discussed above. IP also promotes innovation in developing countries in particular through the confidence that it gives foreign firms to conduct technology and know-how transfers to local companies. The OECD study mentioned above confirmed this intuitive reality in three different ways:

- **“R&D in developing countries is enhanced by stronger patent rights.”** Not only can an effective IPR system help to attract foreign direct investment, it also attracts advanced-technology product, equipment and services imports that can help raise the technology base of a developing country. As Park and Lippoldt (2008) found in their study for the OECD, the strength of a country’s patent rights tends to be positively associated with merchandise and service imports. Such imports include tangible goods, like equipment, machinery, and materials, for conducting R&D. This provides a “source of knowledge spillovers as well as a source of inputs with which to conduct innovation (such as laboratory equipment).”⁶³
- **Better domestic patent protection increases patenting activity by resident companies,** again, with the help of increased imports from abroad. “Imports of equipment and materials may help to stimulate R&D, and to the extent that increased R&D results in increased innovative outputs for which local residents file for patent protection, increased resident patenting will be positively associated with merchandise imports.”⁶⁴
- **Non-resident patenting also rises with better IP protection, indicating that foreign firms are bringing in valuable technologies.** In the words of the OECD, “If nonresidents did not bring a significant amount of new technologies to these markets, they would not pursue patent applications in the host markets.”⁶⁵

Recent economic research for the OECD has quantified further the benefits of improved IPR protection for research and development, estimating that a 1% increase in the strength of patent protection in developing countries correlates to nearly a 1% increase in domestic R&D (0.7% on average). A similar increase of trademark and copyright protection correlates to a 1.4% and a 3.3% increase in domestic R&D, respectively.⁶⁶

g. Governments themselves increasingly look to IPR to help fund and disseminate innovative R&D.

Incentives for firms or research organizations to innovate in various fields are sometimes provided in ways other than through the private sector via the IPR system. Direct government research funding and subsidies do promote R&D in some fields, particularly for basic research, and such funding can be made subject to a range of different terms and conditions as to the subsequent use of the technologies developed. This is not mutually exclusive with private-sector IPR incentives, of course, and particularly in the current economic climate it is improbable that government funding ever could support the scale and breadth of innovation that is needed and otherwise funded in the market through the mechanisms of the IPR system.



In fact, governments in both developed and developing countries are increasingly looking to the IPR system itself to help to pay for and disseminate new innovation and products which follow on from basic research that was initially publicly funded. The US Bayh-Dole Act of 1980⁶⁷ permits academic institutions and business contractors to retain the intellectual property in inventions they develop under government-funded research programmes, whilst defining the government's own rights of use and implementing a uniform IP management policy for government departments. The benefit of such an IPR-based system for innovation is that it provides incentives to develop and commercialize further the basic research that has been publicly funded, such that new products, firms and even industries based on these technologies can emerge.⁶⁸

Statistics bear out that this is precisely what is happening: The US Association of University Licensing Managers reports that in 2008 alone the Bayh-Dole system led to the grant of 3,280 new patents, 5,039 new licences and options, the creation of 595 new companies (with a total of 3,381 start-up companies still in operation), and the release of 648 new products based on technologies originally developed in academia with public funding⁶⁹. Similar laws and programmes have been adopted more than 13 other developed countries.⁷⁰ More recently, developing countries increasingly have adopted (e.g. South Africa⁷¹, China, Brazil,⁷² and the Philippines⁷³) or begun to consider (India⁷⁴) Bayh-Dole type systems to promote innovation in this way.

3. Intellectual Property Protection Helps Firms Monetize Their Innovations and Grow

“Because European competitiveness builds on the innovation and value added to products by high levels of creativity, the protection and enforcement of intellectual property go to the heart of the EU’s ability to compete in the global economy.”⁷⁵

European Commission

a. Firms use IPR to help develop, value, conduct trade in and benefit from their works, brands and inventions.

IP’s function as an ‘intellectual currency’—a mechanism for valuing and trading otherwise intangible inventions, works and brands—gives firms many more possibilities to realize value from their innovations. As the World Intellectual Property Organization has so eloquently put it: “The bricks and mortar economy is ... being replaced with the economy of ideas in which IP has become one of the major currencies. In the new economy, wealth is generated through creating and capturing the value of knowledge. Throughout the history of human

civilization, wealth was based on the possession of physical assets. Today, however, the paradigm has changed, and knowledge has become the new wealth.”⁷⁶

The mechanism of ‘intellectual currency’ gives IP rights a value in themselves, which can be quantified, traded and otherwise taken into account in various ways in investment decisions, market capitalization and sales and licensing revenues.

- **Securing investment and market value.** A firm’s ownership of IP rights helps to reassure investors that they should put money into the company. As described further below, IP can increase the market value of firms that own them, whether in the stock market or in an acquisition. The use of IP in encouraging investment is not only important for established firms already reliant on patents, trademarks and copyrights—protecting their value, innovation and reputation—but especially for new firms seeking to establish a secure stream of investment and innovation. This is of particular relevance in sectors as divergent as pharmaceuticals, biotech, film, music and publishing where only a small percentage of the products, services or works developed may succeed in the market place.⁷⁷
- **Developing new markets.** IP rights do not need to sit in a firm’s safe under lock and key, but can be and are actively used by innovative firms in various strategic ways to develop new and profitable markets, products, services and processes. IP-based products and services thus generate income for the firm.
- **Collaborating.** Firms also can use their IP to collaborate in many ways—such as to license other firms to manufacture or use the IP, to set up franchises, to cross-license the technologies of others and to establish strategic alliances.⁷⁸ The whole concept of ‘open innovation’ in fact depends on intellectual property rights—as firms seek to supplement their internal development capabilities with those of other firms having particular specialities and strengths, and as firms seek to license innovations to other firms better able to manufacture, distribute or otherwise use the innovations they have developed.

b. Firms that rely on IP generally succeed better than those that do not.

- **Patent and trademark ownership are positively linked with firms’ market value.** Separate research studies in the UK and elsewhere have demonstrated this effect. Bloom and Van Reenen (2002)

sampled 236 UK firms that between 1968 and 1996 had registered patents in the US. By each of the measures of the patent variable used in the study, patents were found to affect market value positively. Patents were also found to have a statistically significant impact on the firms' productivity, although this is realized more slowly than market value gains. The study found that doubling a firm's citation-weighted (i.e. robust) stock of patents 'increases total factor productivity by 3%'.⁷⁹

Similar research by Greenhalgh and Rogers (2006) demonstrated that, while there were some differences among industry sectors, "on average, higher ... EPO patenting and UK trade marking (relative to firm size) all tend to increase market value."⁸⁰ With respect to trademarks in particular, Greenhalgh and Rogers (2007) found that not only were UK and EU Community trademarks positively associated with higher market values for UK firms that owned them, but also higher productivity (between 10% and 30% across all firms)—with bigger gains for both seen among firms in the services sector.⁸¹

c. Trademarks and other intangible IP assets can enhance a firm's market value substantially.

- Strong trademarks can contribute substantially to a firm's intangible assets and market value.** An innovative firm's value in the market or in an acquisition does not just lie in its physical assets—cash, securities, plant, property, equipment, raw materials or finished goods—but also in the firm's 'intangible assets' (sometimes lumped together with 'goodwill'). These include the value of such items as the firm's 'going concern' value, its customer lists and expectation of future economic benefits, and also the value of the firm's intellectual property, including its brands. 'Intangible assets' and goodwill often represent a much bigger part of an innovative firm's market value than its current and physical assets, and the intellectual-property component of intangible assets is growing.⁸²

With respect to trademarks in particular, the 2010 Interbrand survey found that the value of the IP in the brand alone for each of the top 10 brands world-wide exceeded US\$25 billion.⁸³ (See Table 5.) Whilst such valuations are estimates, based on a set of assumptions and a methodology used consistently year-on-year, they do illustrate the potential magnitude of a firm's intangible assets that can be embodied in merely one component—the trademark—of a firm's overall intellectual property.⁸⁴

Table 5. Value of Top 10 Global Brands, in US\$ millions. (Interbrand, 2010)

1. Coca-Cola	70,452	6. McDonald's	33,578
2. IBM	64,727	7. Intel	32,015
3. Microsoft	60,895	8. Nokia	29,495
4. Google	43,557	9. Disney	28,731
5. GE	42,808	10. Hewlett-Packard	26,867

4. Intellectual Property Protection Helps Small and Medium Enterprises

“The key to innovation at times of crisis is incentivisation. Lack of IPR [intellectual property rights] can be fatal to SMEs, who are the main drivers of our economy and who, according to many studies, outperform larger firms in terms of technological importance of their innovations.”⁸⁵

*Deputy Prime Minister
Alexandr Vondra, Czech Republic*

a. SMEs are important contributors to innovation and creativity.

• **SMEs’ contribution to innovation in many fields is significant and growing.** Traditional economic theory and empirical studies have demonstrated how large companies are a major source of innovation, given that they may have greater funding than small firms to devote to research and development (R&D), greater ability to take the risks associated with innovative activity, better economies of scale, and thereby a lower marginal cost of innovation.⁸⁶ The overall share of economic activity attributable to SMEs has grown in most OECD countries in recent years, however. And although large firms do undertake considerably more R&D in raw terms, SMEs enjoy particular advantages of their own with respect to

innovation and in some cases can contribute innovations of particular types or in particular ways in relatively greater proportions than their large-firm counterparts.

Some of the particular ways in which SMEs are important for innovation, as identified by economic and other studies, are as follows:⁸⁷

- **Research and development among SMEs is on the rise.** SME investment in R&D in the US grew by nearly 300% in between 1985 and 1995, whilst large firm R&D expenditure grew by only about 20%.⁸⁸
- **SMEs’ return on R&D investment often exceeds that of large firms.** The R&D-to-sales ratio of SMEs in the United States in the late 1990s stood at 3.9%, compared to 3.1% for the largest companies, and had improved substantially over the previous 10 years.⁸⁹
- **Small firms can account for a disproportionate share of new product innovation.** This is due in part to the very fact that SMEs can or must keep their R&D expenditures low. Using a variety of measures of innovation, SMEs in the US and other countries have been found to contribute approximately 2.4 times more innovations per employee than do large firms.⁹⁰
- **SMEs have organizational and economic advantages in developing innovations in particular sectors.** In some particularly fast-paced and innovative industries, which include process control equipment and information technology, capital intensity is a less important constraint. An SME may be more easily able to focus on a narrow range of specific inventions. Organizational differences—such as a less bureaucratic, more innovation-focussed management structure or more direct incentives to succeed—may also give SMEs a relative advantage over their larger counterparts in developing innovations.

It is therefore no surprise that, in the words of the OECD, “The contribution of small firms to innovation-led growth and job creation has been of renewed interest in recent years. A large body of evidence shows that

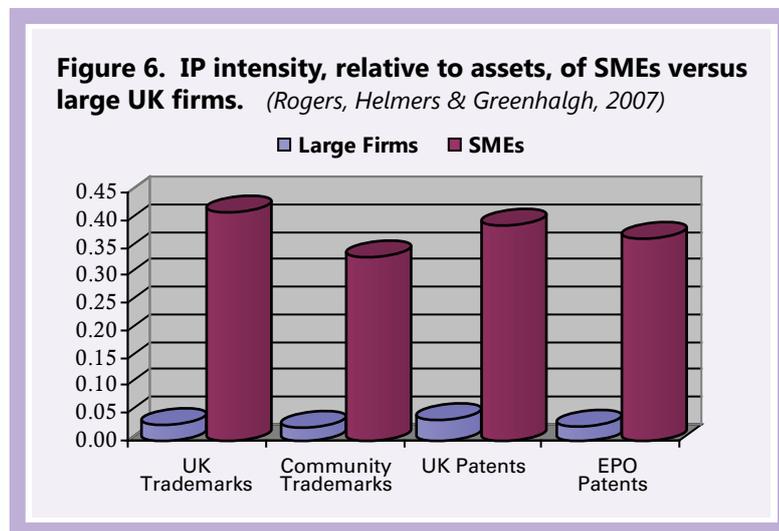
SMEs, especially young firms, contribute greatly and increasingly to the innovation system by introducing new products and adapting existing products to the needs of customers."⁹¹

b. SMEs use IPR more extensively in many cases than large companies.

- **Early assumptions about SMEs' disinclination to use IP were misplaced.** The factors that led economists initially to think that large firms would necessarily be more innovative than SMEs also drove similar assumptions that SMEs would be less likely to use and benefit from the intellectual property system. Because IP rights can be costly to acquire and to enforce, the argument ran, SMEs were assumed to be at a disadvantage to large firms in their ability to use IP rights to appropriate returns from their innovative efforts.⁹² A simple analysis in the EU showed, for example, that small European firms did have a lower propensity to patent their innovations than large firms.⁹³ SMEs' use of IP has turned out to be more extensive and varied than originally assumed, however.

- **In fact, "SMEs are more likely to apply for patents, trademarks and designs given their innovative potential than large enterprises."**⁹⁴ In an extensive analysis of intellectual property applications in Australia from 1989-2001, Jensen and Webster (2006) found that on average SMEs filed 19% more patent applications, 49% more trademark applications, and 109% more design-right applications per employee than their large-firm counterparts.⁹⁵

The results did vary by industry—for example, the manufacturing sector was found more likely to use IP rights than other industries; the road transport industry less likely than mining firms to use patents, but more likely to use trademarks; and small firms more likely to use IP rights in the publishing industry than in the broadcast and film sectors. The reasons for SME preferences to use IPRs could not be determined from the data, but the authors suggested three possible explanations: The SME sector may actually have a higher rate of innovation intensity than large firms. SMEs may also have greater incentives than large firms to obtain IP protection. The third option was simply that the claimed disadvantages for SMEs of using the IP system may in fact apply equally to large firms.⁹⁶



A similar study of published trademark and patent applications in the UK from 2001 to 2005 (Rogers et al., 2007) found a similar pattern: SMEs filed more than 10 times more trademark and patent applications relative to their assets than their large-firm counterparts. "In proportion to their asset base," the authors noted, "SME and micro firms are more IP intensive than large firms."⁹⁷ (See Fig. 6.)

c. SMEs that use IPR report higher growth, income and employment than those that do not.

- **European SMEs in the technology sector report at least 10% greater turnover, market share and employment growth when they use IPR.** A study carried out by the International Data Corporation (IDC) for the European Commission in 2008⁹⁸ involved an extensive survey of SMEs in the information and communication technology (ICT) sector to see what sorts of IP rights they acquired, how these IP rights were being used, and how such use affected the success of these SMEs. The results were remarkable:

- **SMEs rely on the whole gamut of IP rights, and report that IPR is important to their business model.** The IDC surveyed 683 ICT SMEs in eight EU Member States (AT, DE, ES, FR, IE, IT, PL, UK), 89% of which reported that they used one or more intellectual property rights, and the remainder of which did not (although 4% of these reported that they did plan to use IPR in future). A significant majority of the surveyed SMEs (75%) reported that IPR was ‘important’ for their business model, with 34% reporting that it was ‘very important’.⁹⁹

The surveyed SMEs reported that they used or planned to use one or more types of rights across the range of formal and informal types of IPR, including utility models (16%), registered designs (19%), technical protection measures (27%), patents (32%), trademarks (40%), copyright (46%), and confidentiality agreements (i.e. trade secrets) (72%).¹⁰⁰

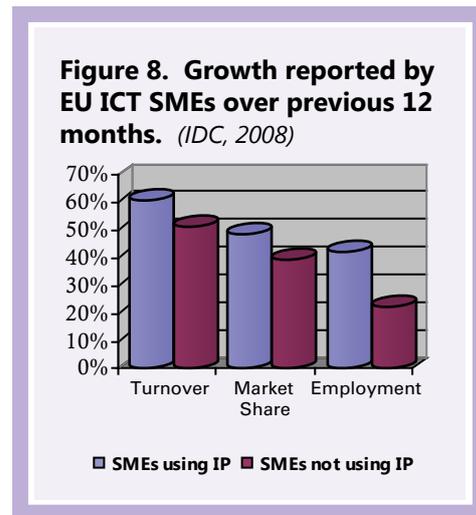
- **SMEs use IP rights not only to protect their inventions and markets, but also to generate investment funding, collaborate, and license out their technologies.** The surveyed ICT SMEs reported that they are using IPR to protect their research investments and defend their competitiveness in global supply chains, but they also seemed to be progressing towards more sophisticated use of IPR in attracting investment, implementing innovation, and licensing and cross-licensing their inventions collaboratively. In fact, ‘blocking competitors’ was one of the surveyed SME firms’ less frequently mentioned goals for using IPR. The SMEs’ reported use of their IPR is summarized in Table 7.¹⁰¹

Table 7. ICT SMEs’ reported goals for using IPR. (IDC, 2008)

	Patents	Copyright	Trademarks	Registered Designs	Utility Models
Launch new products and services, exploit new innovations	69%	81%	71%	67%	63%
Exchange, license, collaborate	10%-46%	21%	19%	23%	18%
Gain access to funding	34%	27%	18%	26%	16%
Block competitors	32%	23%	12%	16%	14%

- SMEs that use IP rights report that they are more successful than SMEs that do not use IPR.** In the words of the IDC, "there is a link between IPR use and business performance.... The likeliness to show turnover and profit growth increases with the size of the IPR portfolio, since a higher percentage of ICT SMEs in the group of advanced IPR users are growing (77%), compared to the group of low profile IPR users (where 56% are growing). From the point of view of the composition of the IPR portfolio, firms with patents are more likely to grow, while firms with informal IPR [i.e. relying on confidentiality and trade secrets] are even less likely to grow than firms without IPR."¹⁰²

Indeed, at least 10% more of the surveyed SMEs that used IPR reported growth during the previous 12 months in each of the areas of turnover, market share and employment than those that had not used IPR. 61% of firms that had used IPR reported turnover growth versus 51% among firms that had not used IPR. The comparisons for market share growth were 49% versus 39%, and for employment growth 42% versus 22%, among IPR user and non-user SMEs respectively.¹⁰³ (See Fig. 8.)



5. Intellectual Property Protection Benefits Consumers and Society

“The importance of intellectual property in ensuring the sustainable development of all economies and the health and safety of their citizens will only grow in the knowledge economy of the 21st century.”¹⁰⁴

*H. E. Mr. Masakatsu Koike
Vice-Minister for Foreign Affairs
of Japan*

Consumers and society benefit from the IPR system,

through the vast array of products and services in virtually every area of human activity that have been developed on the basis of IP protection. Some of society’s most pressing needs—from health care and the environment to better interaction with the government and with each other in the ‘digital economy’—rely substantially on IP for innovative solutions. IPR not only helps to deliver such solutions, but also—in the case of trademarked brands—helps to provide better ‘signals’ between seller and buyer so consumers have better information as to what they are getting, thus helping to align business and consumer needs more closely.¹⁰⁵ Protection of IP also helps to protect consumers from poor quality and even dangerous counterfeits, and against consumer job losses and wider damage to the economy.

a. IPR supports development of a continuous stream of innovative, competitive products and services that benefit consumers.

Intellectual property protection does not exist for its own sake, of course. The ultimate aim of IPR is to deliver innovative, competitive products and services that consumers want and need. In virtually every sector, the number and variety of IP-dependent products and services is vast.

- **Copyright** underlies the continuous stream of new music and films, ever-improving business and games software, books, magazines, newspapers and other published material, photography, and many other related activities including publishing, performing, broadcasting and other media for developing and delivering all of these to consumers.¹⁰⁶
- **Patents** underlie many of the products and services that society relies on for health, energy, communication, transportation and many other human and commercial needs. Products and processes that depend on patents are developed in such diverse industries as the aerospace, automotive, energy, biotechnology, pharmaceutical, chemical, and information and communication technology sectors, and related transportation and distribution sectors.¹⁰⁷
- **Trademarks** support an even wider array of products and services that consumers want and depend on, from clothing and computers to foods and footwear, educational and entertainment products, services, scientific products and even sporting activities.¹⁰⁸ Beside their quality and consumer-protection functions described below, trademarks also have been shown to be useful complements to other forms of IP protection,¹⁰⁹ and positively linked with innovative activity and growth in firms that use them.¹¹⁰

IPR requires inventors, creators and brand owners to differentiate their products and services based on their own inventions, creativity and other criteria, and then let consumers decide which ones they want. IPR supports development of and competition among not only new products and services, but also among various business models for delivering them. This diversity and competition encourages localization,

specialization, quality improvement and a wide choice among an extensive range of IP-based products and services—all to the benefit of consumers.

b. IPR promotes consumer trust and protection against counterfeit and pirated goods.

“Consumers benefit from IP not only from the stream of innovative products and inventions and creativity that would not otherwise be created by firms,” noted the UK’s extensive Gowers Review of Intellectual Property in 2006, “but also from the rights that protect the identities of well-known goods and services. Trade marks act as signposts of quality, preventing other firms passing off one make of good as being the same as another.”¹¹¹

This function of trademark protects consumers in two related ways: promoting consumer trust and satisfaction, and helping to protect consumers against injury and other harm. One of the principal functions of trademarks is to provide information to the market. Trademarks help consumers distinguish easily between products, and help consumers to identify those products that they trust and want to buy.¹¹² Trademarks also give the firms that own them as well as governments a useful tool for removing counterfeited and pirated goods from commerce. Counterfeits of many types of trademarked medicine, automotive, food and drink, electrical, chemical, household and other products can pose risks of harm—sometimes severe injury or even death—to consumers.¹¹³

c. IPR is helping to address many of society’s most important needs, from clean energy to health care to a truly ‘digital economy’.

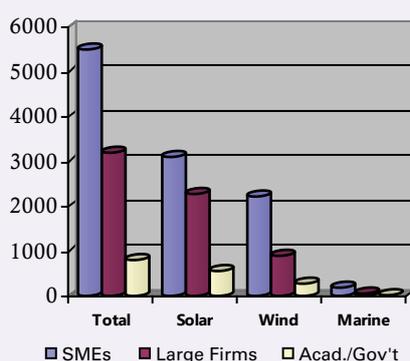
High on many governments’ agendas are several issues including climate change and energy savings, health care, and various ‘digital agenda’ goals that are and will continue to be promoted substantially through intellectual-property based innovations and activities.

- As to **climate change and energy goals**, an estimated 2,500 billion will need to be invested over the next 25-30 years to research, develop, demonstrate and deploy the necessary new clean technology and energy efficiency measures for EU to meet its greenhouse gas emission targets.¹¹⁴

The patent system is one of the framework conditions that are spurring this investment and innovation in the ‘green’ technology area, in the EU in particular. A recent survey of a world-wide collection of 12,000 patented inventions in the areas of wind, solar and marine energy (Cullen 2009) demonstrated how IPR use is already supporting ‘lively and competitive’ R&D that should continue to work well in producing new carbon abatement and other green technologies, particularly given that:

- green technology needs are diverse and competing,
- many countries and a large number of firms are innovating in this area, and
- SMEs, large firms and academic and government organizations are all among the broad group of those innovating and securing IP protection in this area. Indeed, SMEs are leading the way, receiving more patents in this area than large firms or academic and government organizations.¹¹⁵ (See Fig. 9.)

Figure 9. Patent trends in 'green technology' areas (number of patents by applicant type).
(Cullen 2009)



- Similarly **health care**, one of the highest priorities for most countries, depends heavily on IPR to support innovation and other public interests in such areas as medicines and biotechnology. The pharmaceutical and biotech industries that provide so many of society's medical advances bear exceptionally high costs of development, long development times, uncertain success, and 'appropriability' problems—i.e. such inventions are hard to develop but easy to replicate. Recent estimates put the average cost per 'new chemical entity' at approximately \$500 million; requirements for extended testing and for capitalizing of out-of-pocket costs can

increase this to a real capitalized cost of \$800 million to \$1.3 billion.¹¹⁶ Whilst governments can and do fairly explore such specific issues as the affordability of health care, particularly for diseases that are rampant in or unique to the poorest countries, the incentives and rewards of IPR overall provide crucial support for the lion's share of investment and innovation in many areas of health care world-wide.¹¹⁷

- **Digital economy.** Another high priority for many governments is to continue their economy's transition to an 'information society', whereby information, government services, and cultural and entertainment are available widely to their citizens on-line. IPR not only underlies most of the communications and computer technologies that work together as the 'infrastructure' of the information society, it is also the driver for the music, films, television and event broadcasts, publications and other creative content that consumers want to use these technologies to access. As the European Commission has noted, "The creative effort which provides a basis for investment in new services are only worthwhile and will only be made if works and other matter are adequately protected by copyright and related rights in the digital environment."¹¹⁸

d. Poor IPR protections or enforcement, resulting in counterfeiting and piracy, simply undermine the economic and societal benefits of IPR.

Just as adequate IP protection and enforcement mechanisms support the numerous societal, consumer and economic benefits described in this paper, inadequate IP protection and inadequate enforcement against IPR violations in the form of counterfeiting and piracy have the opposite effect. This is a substantial problem in many countries. The OECD estimated in 2009, for example, that world-wide cross-border trade in physical counterfeits alone represented a US\$ 250 billion problem.¹¹⁹ Not included in this OECD figure were in-country counterfeiting and piracy, on-line infringements, and the indirect costs to governments that result from all forms of counterfeiting and piracy—all of which add substantially to the overall economic impact.

Research done by Frontier Economics for ICC's Business Against Counterfeiting and Piracy (BASCAP) group showed that the G20 governments alone incur an additional 100 billion in indirect costs from counterfeiting and piracy: in lost tax revenues, higher welfare spending, health and other costs of sickness and death caused by unsafe counterfeit products, and economic and other costs of IP crime. Employment is also affected. The study estimated that among the G20 nations, jobs lost due to counterfeiting and piracy overall approach 2.5 million.¹²⁰ It perhaps goes without saying that the economic benefits to a country—GDP growth, employment and tax revenues, not to mention indirect savings and gains—can thus be substantial if counterfeiting and piracy are reduced.¹²¹

The OECD's summary of the economic effects of counterfeiting and piracy¹²²—which simply represents the natural result of inadequate IP protection or enforcement—reads like a checklist of problems that governments emphatically want to avoid in their economy and society (*see Fig. 10*). If IP protection and enforcement are inadequate, the inventors, creators and brand owners do not receive the revenues they are due. The funds that innovative and creative firms can generate in order to carry out R&D, hire talented employees, innovate new products and services, and otherwise contribute to the economy and society are thus severely limited. This is a scenario that plays out in every country and industry, large and small, international and domestic, where the 'intellectual currency' of IP is inadequate.

Figure 10. OECD: Potential effects of counterfeiting and piracy (i.e. from inadequate IP protection or enforcement). (OECD 2008)

- Reduction in incentives to innovate.
- Adverse implications for R&D and other creative activities.
- Reduced firm-level investment.
- Shift of employment from rights holders to infringing firms, where working conditions are often poorer.
- Negative effects on levels of foreign direct investment flows.
- Increased risk of going out of business.
- Increased flow of financial resources to criminal networks.
- Substandard products carry health and safety risks.
- Substandard infringing products can have negative environmental effects.
- Lower tax and related payments (such as social charges).
- Increased enforcement costs for government.

This study is a collaboration between the ICC BASCAP initiative and the ICC Commission on Intellectual Property. ICC (International Chamber of Commerce) is the voice of world business championing the global economy as a force for economic growth, job creation and prosperity. <http://www.iccwbo.org>.

The Business Action to Stop Counterfeiting and Piracy is a business initiative, created, led and funded by the world business community, specifically brand owners, and organized by the International Chamber of Commerce, to raise public and political awareness about counterfeiting and piracy, encourage government action and promote respect for intellectual property. For more information about this topic or about BASCAP, visit www.iccwbo.org/bascap.

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¹⁰⁸ WIPO, Global Financial Crisis Hits International Trademark Filings in 2009 (18 Mar. 2010) (describing profile of goods and services for which trademarks were registered in 2009), http://www.wipo.int/pressroom/en/articles/2010/article_0006.html.

¹⁰⁹ Schwiebacher, F. and Müller, E., How Companies Use Different Forms of IPR Protection: Are Patents and Trademarks Complements or Substitutes?, DRUID-DIME Academy Winter 2010 PhD Conference (Nov. 2009), <http://www2.druid.dk/conferences/viewpaper.php?id=500648&cf=44>.

¹¹⁰ Sandro Mendonça, Tiago Santos Pereira and Manuel Mira Godinho, Trademarks as an Indicator of Innovation and Industrial Change, DRUID Summer Conference 2004 on Industrial Dynamics, Innovation and Development (May 2004), http://www.druid.dk/uploads/tx_picturedb/ds2004-1406.pdf; Smith, P. and Amos, J., Brands, Innovation and Growth: Evidence on the contribution from branded consumer businesses to economic growth (Apr. 2004), http://www.aim.be/Documents/Insight%20&%20innovation/growth/PIMS_brands_innovation&%20growth_2004.pdf; Clayton, T. and Turner, G., Brands, Innovation and Growth: The Role of Brands in Innovation and Growth for Consumer Businesses, in Tid, J. (ed.), From Knowledge Management to Strategic Competence: Measuring Technological, Market and organizational Innovation (2006).

¹¹¹ Gowers Review of Intellectual Property, p. 16 (Dec. 2006), <http://www.official-documents.gov.uk/document/other/0118404830/0118404830.pdf>.

¹¹² WIPO, Making a Mark: An Introduction to Trademarks for Small and Medium-sized Enterprises, p. 4 (2006), http://www.wipo.int/freepublications/en/sme/900/wipo_pub_900.pdf.

¹¹³ See, e.g., European Commission, Conference on Counterfeiting and Piracy: Frequently Asked Questions (FAQs) (13 May 2008), <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/08/299&format=HTML&aged=0&language=EN&guiLanguage=en> :

"While some consumers are looking for what they believe to be bargains, knowingly buying counterfeit and pirated products, others may purchase counterfeit and pirated products believing they have purchased genuine articles. In both cases, products are often sub-standard and carry health and safety risks that range from mild to life threatening. Sectors where health and safety effects tend to occur include: car parts (brake pads, hydraulic hoses, engine and chassis parts, suspension and steering components, airbags, spark plugs, filters), electrical components (circuit breakers, fuses, switches, batteries), food and drink (tea, rice, vodka, raw spirits, baby formula), chemicals, toiletry, household products and tobacco products."

¹¹⁴ Jervelund, C., Jespersen, S.T. and Winiarczyk, M., Copenhagen Economics, Clean Technology and European Jobs, pp. 1, 8 (Oct. 2009) (citing IEA estimates), <http://www.thecied.org/NRrdon-lyresesyxt37gmfw4siedbh6tjtaxai6gy4bzipzrtpv5g5bhwq2xh-sye6k6h7da7yz2jkz46rhotgjilyvo7oikkpptsge42e/CleanTechandEuro-JobsFullReportFINAL.pdf>.

¹¹⁵ Cullen, S.E., Alternative Energy Powers Up: Staking Out the Patent Landscape for Energy from Wind, Sun and Waves (2009), <http://ip.thomsonreuters.com/media/pdfs/altenergy.pdf>; see also Jervelund et al. (2009), supra note 114, p. 17.

¹¹⁶ Maskus (2000), supra note 32, pp. 52-56; Grabowski et al., supra note 77; DiMasi, J., and Grabowski, H., The Cost of Biopharmaceutical R&D: Is Biotech Different?, Managerial and Decision Economics, 28:4-5, pp. 469-479 (2007), <http://onlinelibrary.wiley.com/doi/10.1002/mde.1360/abstract>.

¹¹⁷ See, e.g., Biotechnology Industry Organization, Comments to the US Patent and Trademark Office Proposed Rulemaking Concerning Continuation Practice and Claims Limitation (2 May 2006) ("Perhaps no other industry is as dependent upon patents as is the biotechnology industry."), <http://www.bio.org/ip/letters/20060502.pdf>.

¹¹⁸ European Commission, Green Paper on Copyright and Related Rights in the Information Society, COM(95) 382 final, p. 3 (19 Jul. 1995), http://ec.europa.eu/internal_market/copyright/docs/docs/com-95-382_en.pdf; see also Guellec, D., Madiès, T., and Prager, J.-C., Les marchés de brevets dans l'économie de la connaissance, Conseil d'Analyse Économique (28 Jul. 2010) (Patent markets are likely to have increasing importance in the allocation of technology. Affirmative participation in these markets will be a prerequisite for access to knowledge and markets globally.), <http://www.cae.gouv.fr/spip.php?breve19>.

¹¹⁹ OECD, Magnitude of Counterfeiting and Piracy of Tangible Products: An Update (Nov. 2009), http://www.oecd.org/document/2/3/0,3343,en_2649_34173_44088983_1_1_1_1,00.html.

¹²⁰ Frontier Economics, The Impact of Counterfeiting on Governments and Consumers (May 2009), <http://www.iccwbo.org/bascap/index.html?id=30506>.

¹²¹ See, e.g., IDC/BSA, The Economic Benefits of Reducing PC Software Piracy (Sept. 2010) (estimate that a 10-percentage point reduction in business software piracy would generate \$142 billion in economic growth, 500,000 jobs, and \$43 billion in additional taxes world-wide over 4 years), www.bsa.org/idcstudy.

¹²² OECD, The Economic Impact of Counterfeiting and Piracy (2008), p. 134, <http://www.oecd.org/document/4/0,3>

The International Chamber of Commerce

ICC is the world business organization, a representative body that speaks with authority on behalf of enterprises from all sectors in every part of the world.

The fundamental mission of ICC is to promote trade and investment across frontiers and help business corporations meet the challenges and opportunities of globalization. Its conviction that trade is a powerful force for peace and prosperity dates from the organization's origins early in the last century. The small group of far-sighted business leaders who founded ICC called themselves "the merchants of peace".

ICC has three main activities: rules-setting, dispute resolution and policy. Because its member companies and associations are themselves engaged in international business, ICC has unrivalled authority in making rules that govern the conduct of business across borders. Although these rules are voluntary, they are observed in countless thousands of transactions every day and have become part of the fabric of international trade.

ICC also provides essential services, foremost among them the ICC International Court of Arbitration, the world's leading arbitral institution. Another service is the World Chambers Federation, ICC's worldwide network of chambers of commerce, fostering interaction and exchange of chamber best practice.

Business leaders and experts drawn from the ICC membership establish the business stance on broad issues of trade and investment policy as well as on vital technical and sectoral subjects. These include financial services, information technologies, telecommunications, marketing ethics, the environment, transportation, competition law and intellectual property, among others.

ICC enjoys a close working relationship with the United Nations and other intergovernmental organizations, including the World Trade Organization and the G8.

ICC was founded in 1919. Today it groups hundreds of thousands of member companies and associations from over 120 countries. National committees work with their members to address the concerns of business in their countries and convey to their governments the business views formulated by ICC.

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