



INDIA:

International Outlier on IP



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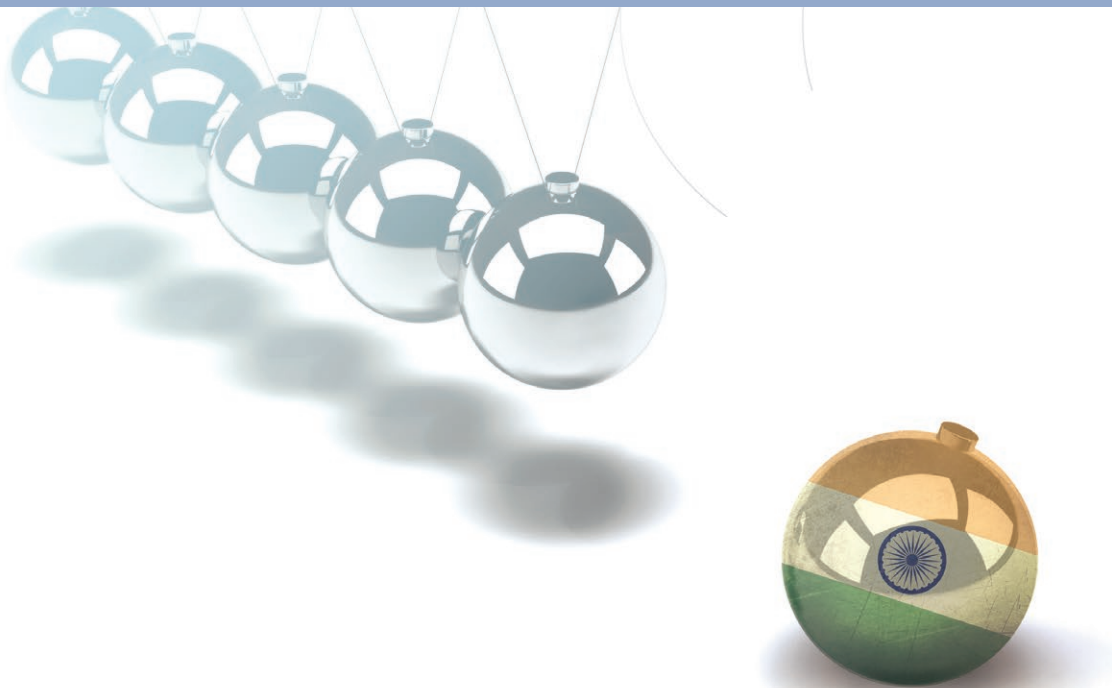


The U.S. Chamber of Commerce's Global Intellectual Property Center (www.theglobalipcenter.com) is working around the world to champion intellectual property rights as vital to creating jobs, saving lives, advancing global economic growth, and generating breakthrough solutions to global challenges.

The U.S. Chamber of Commerce is the world's largest business federation representing the interests of more than 3 million businesses of all sizes, sectors, and regions, as well as state and local chambers and industry associations.



This report was conducted by Pugatch Consilium (www.pugatch-consilium.com), a boutique consultancy that provides evidence-based research, analysis, and intelligence on the fastest growing sectors of the knowledge economy. Authors of this report are Meir Pugatch and David Torstensson.



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A Review of India's Relationship with Intellectual Property Rights and Its Economic Consequences

July 2013

Foreword

In 2010, the then-President of India declared the next 10 years to be India's "Decade of Innovation." Promoting innovation means protecting domestic innovators and creators, attracting world-class research and development, and creating and sustaining high-quality future jobs through a robust intellectual property (IP) system.

However, recent policy, regulatory, and legal decisions have deteriorated IP rights in the country, making India an outlier in the international community. The purpose of the following review is to provide a succinct and evidence-based analysis of the consequences of India's poor IP environment.

Since its founding in 2007, the U.S. Chamber of Commerce's Global Intellectual Property Center (GIPC) strives to highlight intellectual property (IP) as a critical driver of trade, jobs, competitiveness, investment, and overall economic growth. We work both domestically and internationally to ensure that the right rules and policies are in place to protect IP, and that those rules and policies are being enforced.

In December 2012, the GIPC released an International IP Index, *Measuring Momentum*, which compared IP environments across the globe. The study found that India consistently ranked last, behind Brazil, China, and Russia, in nearly every indicator used in the study. From the revocation of patents to the staggering rates of piracy, India stands alone as an international outlier in IP policies.

Building on the empirical literature of the positive links between a strong IP environment and increased innovation and economic activities, the review compares India's performance with that of other emerging economies on a broad number of economic indicators and measures of innovation.

The briefing concludes that India's failure to develop and adhere to international best practices in the field of IP rights has held back its economic development. The positive relationship found by the Organization for Economic Co-operation and Development (OECD) and others between the strength of a country's IP environment and foreign direct investment (FDI) inflows, and the evidence presented in this briefing, strongly suggest that if India adopts a stronger IP rights framework and policies, it will see significant increases in FDI. Increased FDI would help accelerate growth, innovation, and the building and strengthening of IP-dependent sectors of the Indian economy, as well as close the gap between India and comparator countries.

Introduction

The April 2013 ruling by the Indian Supreme Court regarding the cancer drug Glivec delivered a significant blow to multinational pharmaceutical companies, as two sitting judges denied the granting of patent protection sought by Novartis AG. The ruling also reaffirmed India's long-running suspicion and contradictory view of the importance of protecting intellectual property (IP).

Purpose and methodology

The purpose of this briefing document is to provide a succinct and evidence-based analysis of the consequences of India's failure to develop and adhere to international best practices in the field of IP rights.

Building on the empirical literature on the positive links between the strengthening of IP rights and increased innovation and economic activity (summarized below), this briefing compares India's performance with that of other emerging economies on a number of key economic indicators and measures of innovation. These include foreign direct investment (FDI), biomedical FDI as measured by clinical trials, receipts for the use of IP assets, patents in force, patents granted, and research and development (R&D) expenditure. As far as possible, countries benchmarked for comparison are emerging economies and have been chosen on the basis of having an economic trajectory and a national IP rights environment similar to India's. The methodology omits historically high-income countries as comparators.

This briefing also examines in more detail the relationship between FDI and a country's IP rights environment, specifically with regard to India. FDI is perhaps the most important indicator of all those mentioned above, and the relationship between FDI levels and level of IP protection is also one of the most intensely studied by economists.

Together the indicators on economic activity and innovation included in this briefing provide a relatively detailed overview of how the Indian economy and its national IP rights environment have performed and developed over time vis-à-vis other economies.

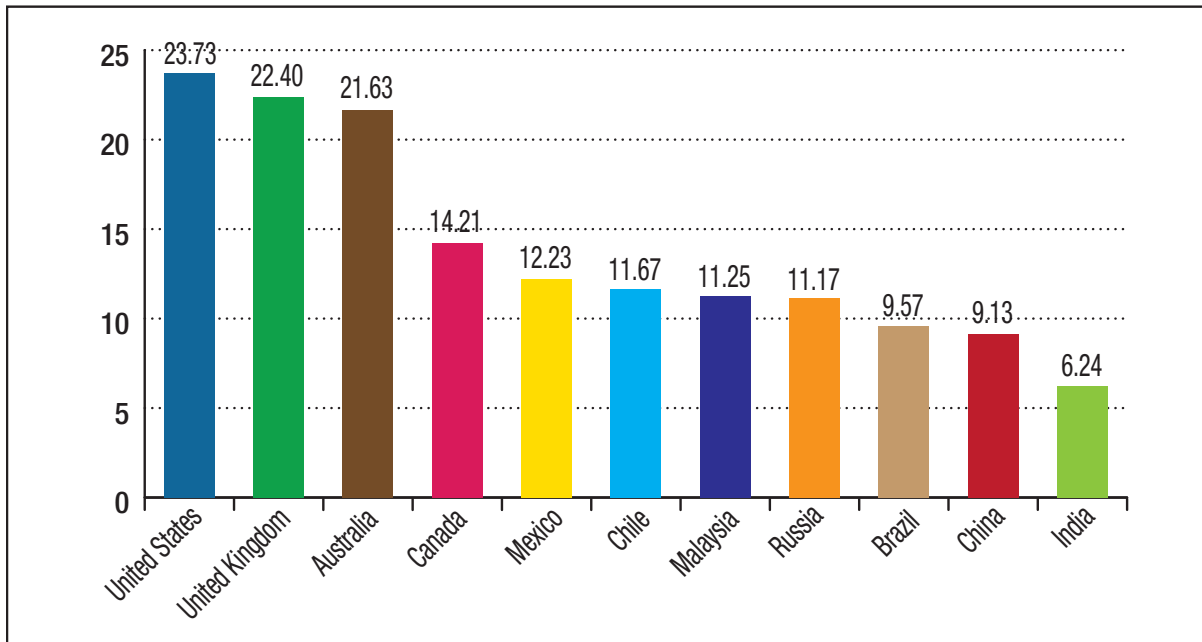
India: the international outlier on IP

Since 2005, India has been obliged to improve patent protection and a host of other IP rights as part of its membership in the World Trade Organization (WTO). However, after an initial period of reform and implementation of important aspects of the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS), India's national IP environment has deteriorated markedly since the late 2000s. A number of policy, regulatory, and legal decisions have significantly weakened the progress made by the implementation of TRIPS, making India an outlier in the international community.¹ These decisions have had a negative impact on the Indian economy and a vast number of IP-based industries (including consumer goods, biopharmaceuticals, information and communication technology (ICT) etc.) and even decreased the potential tax revenue of the Indian state through piracy and counterfeiting.² Indeed, compared with many other emerging markets, India's IP environment is underdeveloped, with significant weaknesses in both the availability of IP protection as well as enforcement through administrative and judicial redress. This trend has been documented in a number of international measures.

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For example, in the Global Intellectual Property Center (GIPC) Index, India ranked last out of 11 countries benchmarked with a total score of only 6.24 out of a possible 25.³ India ranked at or near the bottom in all categories measured in the index. It did noticeably worse than all of its fellow BRIC (Brazil, Russia, India, and China) economies as well as the other middle-income countries benchmarked, including Mexico, Chile, and Malaysia. In fact, the latter three achieved scores nearly double that of India. Figure 1 summarizes the score for all countries measured in the index.

Figure 1: 2012 GIPC International IP Index Overall Country Scores⁴



In many categories covered by the index, India stood alone as an international outlier. For instance, India was the only country measured in the GIPC Index that was not a signatory to any of the international IP treaties included, such as the Patent Law Treaty or the World Intellectual Property Organization (WIPO) Internet Treaties.

On other widely used measures of IP protection, India also underperforms compared with other countries. For example, as measured by the Patent Rights Index (PRI), India's average score between 1960 and 1990 was 1.03 out of 5.⁵ Over the same time period, Singapore and Taiwan had scores of 1.64 and 1.26, respectively, that is, almost on par with India's. By 2000, the latter two scores had increased to 4.01 and 3.29, respectively, while India's reached only 2.27. Although the subsequent full implementation of TRIPS in 2005 lifted India's score considerably to 3.67, the decade since TRIPS implementation has seen an increased erosion of patent rights (as well as other IP rights) in India. Since the late 2000s, a number of policy, regulatory, and legal decisions have significantly weakened the progress made by the implementation of important aspects of the TRIPS agreement. The PRI scores have not been updated since 2005; if they were, it is doubtful that India would retain its high 2005 score.

India has also for many years been on the United States Trade Representative's (USTR) Special 301 Report Priority Watch List for notorious markets for IP infringement. The most recent 2013 Special 301 Report criticized India's IP environment. Specifically, the report cited India's weak legal framework and enforcement system for IP

rights, the large patent backlog, the recent compulsory licensing decisions, and the absence of protections to prevent unfair commercial use as the primary reasons for listing India as a Priority Watch List Country.⁶

Economic development, innovation and IP rights

Over the past few decades, substantial empirical literature has been built on the effects of IP rights on economic development, innovation, technology transfer, and international trade. Much of this economic, econometric, and survey analysis suggests a strong and positive correlation between IP rights, FDI, trade, and economic development.⁷ The exact impact of IP rights depends on a country's stage of development, income level, and technical capabilities. Overall, the relationship is positive.

Similarly, with regard to innovation, economic analysis of patent rates, licensing activity, and technology transfer in countries that have strengthened their IP rights environment suggest a positive correlation between higher levels of innovation and stronger protection of IP. However, it should also be noted that IP rights do not work in a vacuum. Much of the literature describes how stronger IP protection is more likely to positively affect rates of innovation when combined with other policies and development (e.g., improved infrastructure, education and human capital, technical R&D capability, and absorptive capacity) at both the macro and micro levels.

Section 1: Indicators Examined

This section examines six key indicators in areas of economic activity closely linked to levels of IP protection. These indicators are:

1. FDI;
2. Biomedical FDI as measured by clinical trials;
3. Receipts for the use of IP assets;
4. Number of patents granted;
5. Number of patents in force; and
6. R&D expenditure.

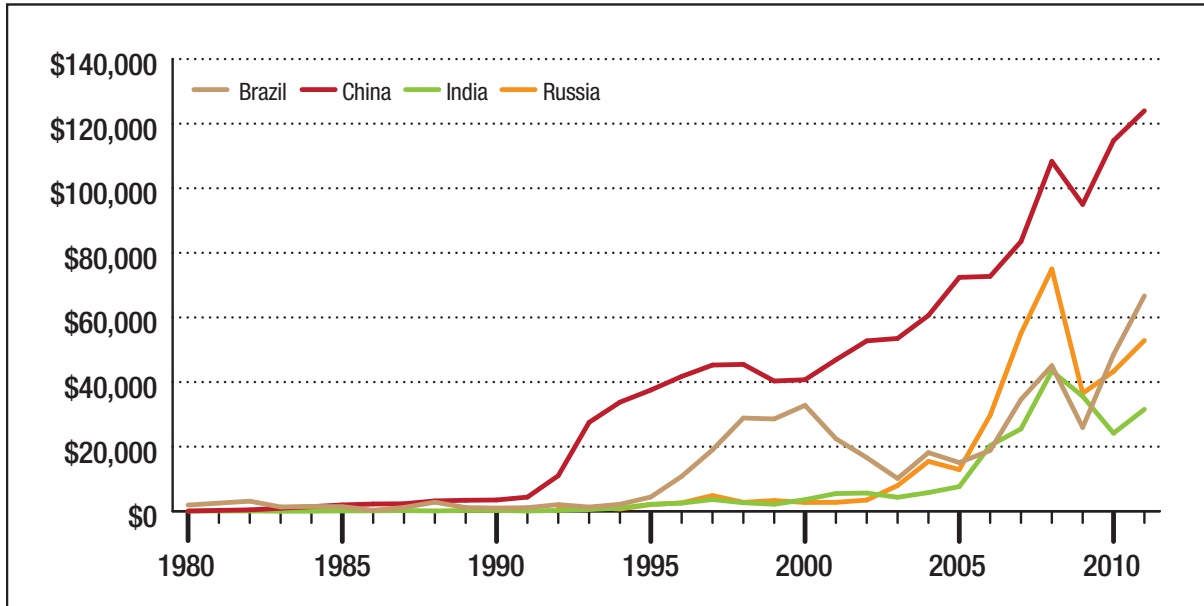
Foreign direct investment

As part of the BRIC quartet—and being the second largest market in the world by population—India has seen significant annual inflow of FDI in the past 40 years, increasing from less than \$45 million in 1970 to more than \$31 billion in 2011.⁸ During the same time period, total FDI stock (the accumulated foreign investment) grew to more than \$200 billion.⁹

FDI is an important broad measure of a country's attractiveness for investing and doing business. In its most narrow sense (especially for the purpose of statistical analysis and accounting), the term FDI is applied when foreign investors own at least 10 percent of the voting power in the enterprise in which they have invested.

FDI into emerging economies has increased significantly since the 1980s as globalization, technological, and financial advances have allowed investment capital to move much more freely around the world. As mentioned, annual inflows of FDI to India have increased significantly since the early 1980s, but it still lags other countries. Figure 2 shows the inward flows of FDI for the four BRIC economies since 1980.

Figure 2: Inward flow of FDI, BRICs, USD at current prices and current exchange rates in millions, 1980-2011¹⁰



Although there is no single reason for India’s low FDI—a myriad of factors affects each country’s intrinsic and relative attractiveness to investment—it is worth noting that while still relatively weak compared with the overall benchmark of 25, Brazil, China, and Russia all performed better in the GIPC Index than India.

Examining India’s level of FDI as a percentage of its GDP also reveals a similar trend. Figure 3 compares inflows of FDI into the BRIC economies in 2011 as a percentage of their respective GDP.

Figure 3: Foreign direct investment, net inflows (% of GDP), 2011¹¹

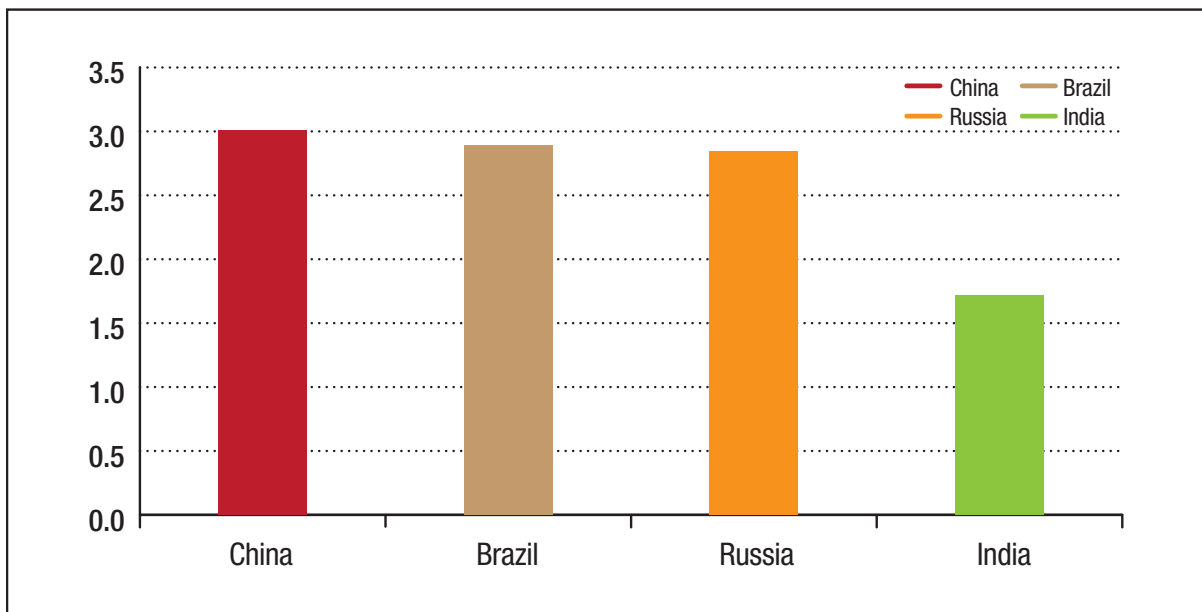


Figure 3 echoes the evidence presented in Figure 2: India is far behind its peer countries when it comes to attracting flows of FDI and almost a full percentage point behind China, Brazil, and Russia.

With regard to level of IP protection, FDI is an important proxy for technology transfer and a country's IP rights environment. There is a significant body of econometric literature on the close and strong relationship between levels of FDI and the strength of a national IP environment. As will be outlined in more detail in section 2, an OECD report found that a strengthening of a national IP environment was associated with significant increases in FDI inflows.¹²

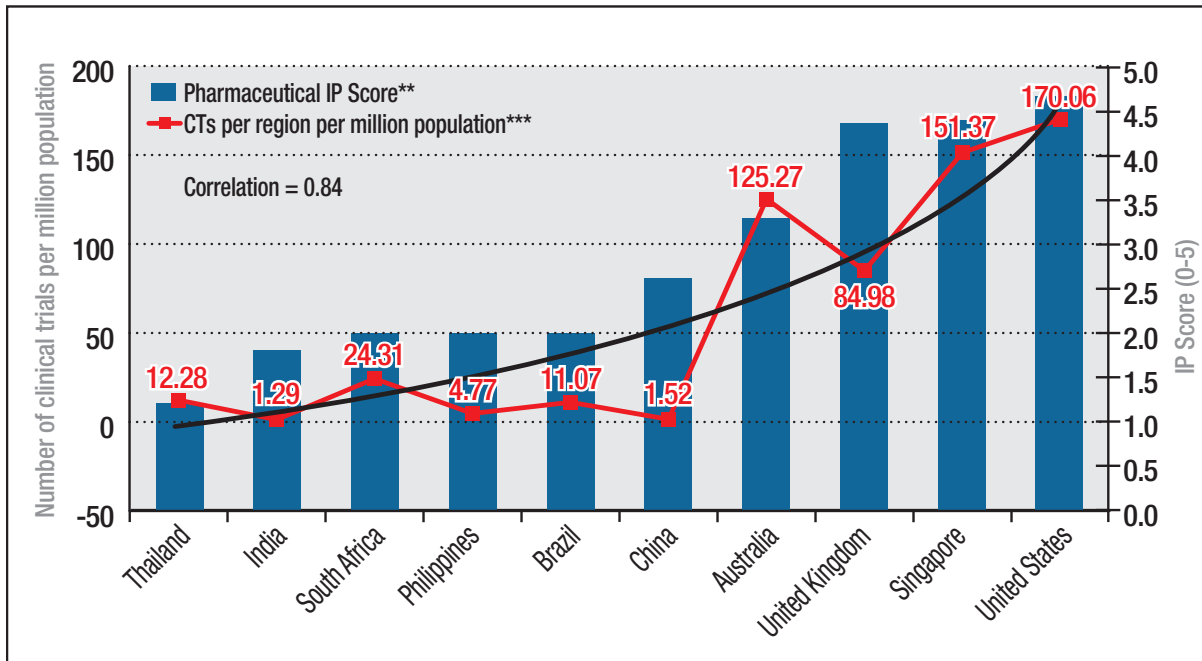
Biomedical FDI as measured by clinical trials

Apart from examining general levels of FDI, it is also possible to study inflows of investment in specific sectors or industries that rely heavily on the availability and strength of IP rights. Isolating these types of FDI from broader investment flows provides more detailed and more sector-specific insight into a national IP environment and whether a country has the IP rights framework in place to attract particular types of investment.

A good case study of this is the biopharmaceutical industry. First, the availability and strength of IP rights are central to the industry's business model. Second, the industry is very R&D-intensive and relies on large long-term investments in clinical research and development.

Pugatch and Chu (2011) investigated the correlation between stronger national IP environments and levels of biopharmaceutical FDI by looking at investments in the clinical development of biopharmaceutical products versus a country's score on a statistical measure of the availability and scope of biopharmaceutical-related IP rights, the Pharmaceutical IP Index.¹³ Overall, they found that countries with a more robust level of biopharmaceutical IP protection, including emerging economies, tend to enjoy a greater level of clinical trial activity by multinational research-based companies. In other words, by improving their level of protection of pharmaceutical IP rights (together with other factors), countries may also be exposed to higher levels of biomedical FDI. Figure 4 summarizes their results.

Figure 4: Strength of pharmaceutical IP rights vis-à-vis foreign direct investment in clinical research¹⁴



It is clear that India’s level of clinical trials is very low both absolutely and compared with the other countries mapped. It also has one of the weakest scores of all countries on the Pharmaceutical IP Index. At face value, India should be an attractive host for clinical trials. It has a diverse “drug-naïve” population, a pool of facilities, trained research personnel, relatively low costs of operation, and a large potential market. Although increasing, clinical trial activity remains untapped: 1,539 total trials occurred in 2011 (when data were last collected), which amounts to 1.29 trials per 1 million population. Yet as documented by the Pharmaceutical IP Index, significant gaps remain in its biopharmaceutical IP rights environment. It should also be noted that given the recent deterioration in the IP environment related to biopharmaceuticals described above, it is likely that more recent clinical trials data would show an even lower level of activity in India.

Receipts for the use of IP assets

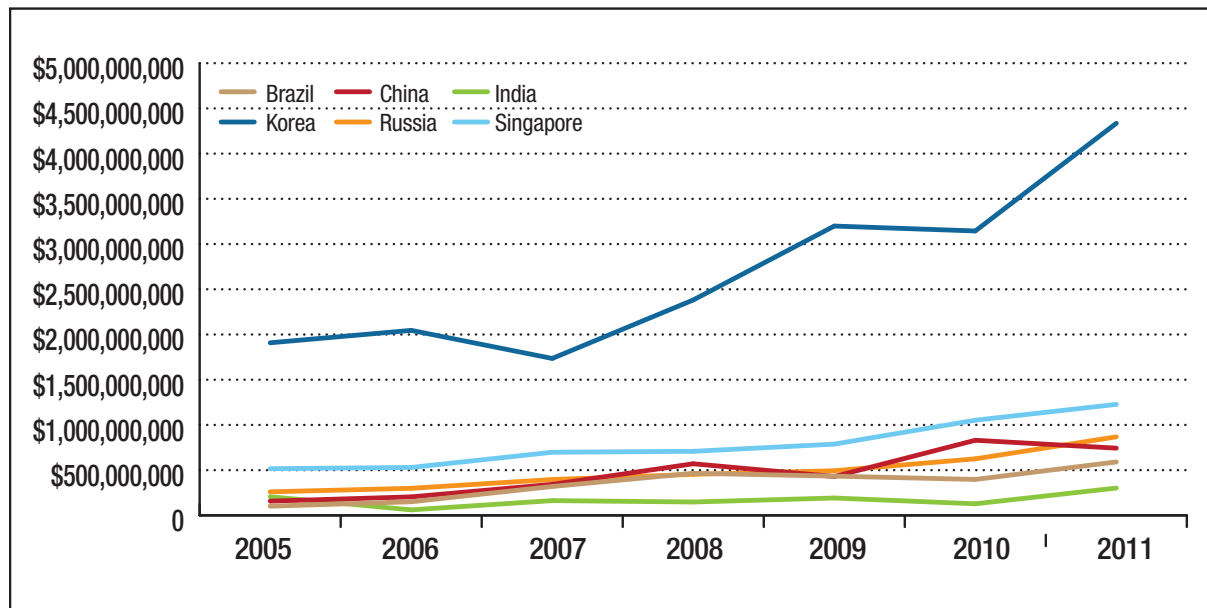
Charges and receipts for the use of intellectual property are defined by the World Bank as “payments and receipts between residents and nonresidents for the authorized use of proprietary rights...and for the use, through licensing agreements, of produced originals or prototypes...and related rights.”¹⁵ These rights and related rights include patents, trademarks, copyrights, industrial designs, use of prototypes, and satellite broadcasts.¹⁶ The amount of payments received by residents in a given economy is a broader reflection of the amount of IP assets generated and stored in an economy. This number of IP assets is in turn linked to the type of protection afforded to such assets and the incentives in place to create IP-based assets and commercialize them.

In 2011, payments to Indian residents for the use of IP assets amounted to just over \$300 million.¹⁷ This is quite low in comparison to both the other BRIC economies (which ranged between \$600 million to more than \$1 billion) as well as other emerging markets. Furthermore, India has not seen the same growth trajectory as other similar

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countries. While starting from different levels, comparable countries have all seen their receipts for the use of IP assets double or more. Figure 5 shows this growth trajectory between 2005 and 2011.

Figure 5: Charges for the use of intellectual property, receipts, current USD, 2005–2011¹⁸



As the figure illustrates, in contrast to these comparable economies, India's total receipts have barely grown by one-third in six years. In this indicator, India thus shows both a relative and absolute weakness in its ability to produce and commercialize IP assets.

Number of patents granted and in force

The importance of patenting as a proxy for innovation is illustrated by their frequent use in economic analysis and country comparisons of rates of innovation. For instance, increased levels of patenting suggest that individuals and companies see a clear value in their research and wish to protect and disseminate it. As described in the Introduction, a number of studies have found that there is often a positive impact of introducing IP rights (such as patents) on domestic innovation. Frequently, this exceeds the short-term gains that local companies may have from the ability to freely imitate foreign technologies, particularly in emerging economies.¹⁹

Patenting rates can be measured by a number of indicators. Most common is to examine the number of patent applications filed in a given jurisdiction through the Patent Cooperation Treaty (PCT) and national phase entry. Measuring patenting by the number of applications gives a good indication of the relative inventiveness of a country's residents and their propensity to innovate. However, the number of patent applications does not necessarily capture the actual outcomes or practical outputs of the patenting process. Analyzing rates of patent grants and the number of patents in force gives more insight into a country's policy environment and mindset, and the actual ability of inventors to obtain protection for their intellectual property. Figures 6 and 7 show the number of patents granted and in force in India since 1980 and the mid-2000s, respectively.

Figure 6: Total patent grants (direct and PCT national phase entries), India, 1980–2011²⁰

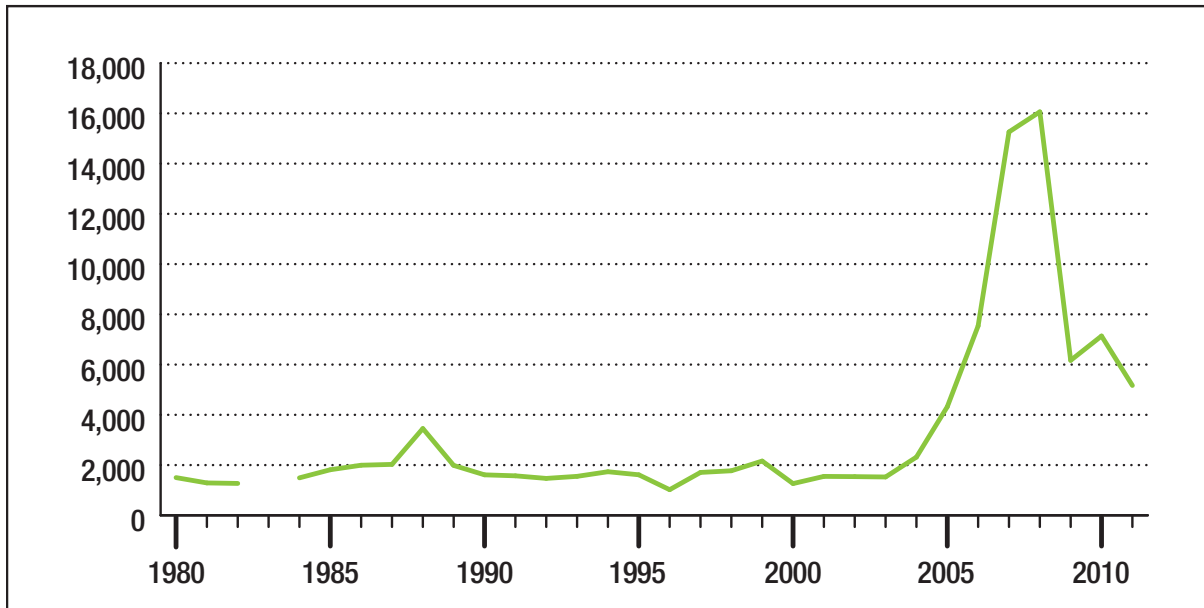
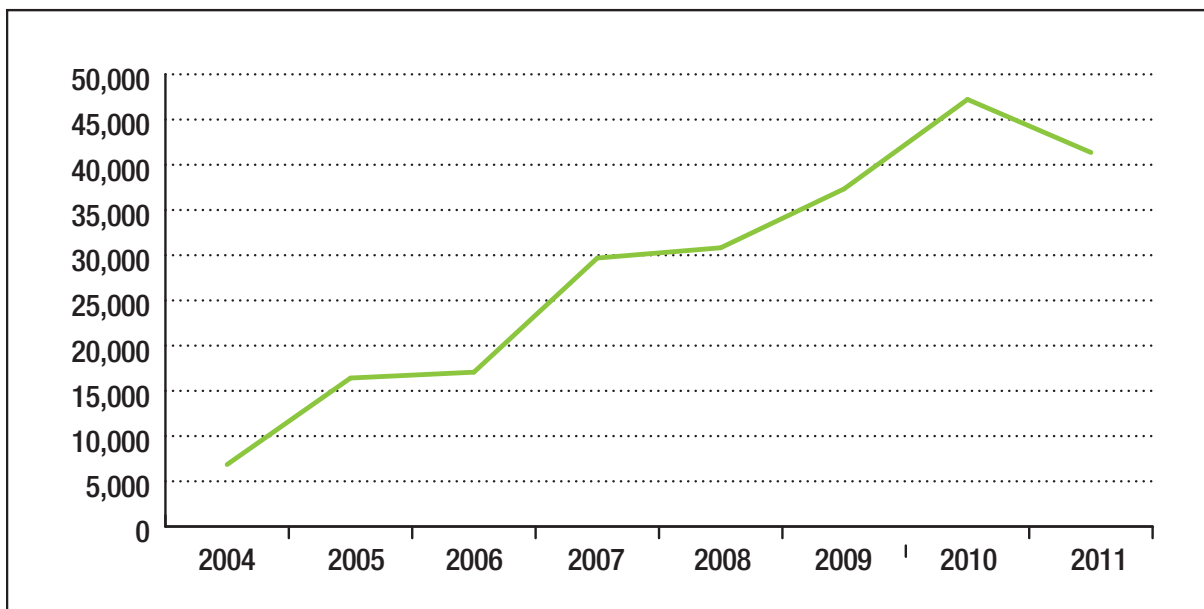


Figure 7: Total number of patents in force, India, 2004–2011²¹



Together, the two figures show a significant increase in the number of patents granted and in force since the implementation of the TRIPS agreement in 2005, but a strong and pronounced fall since the late 2000s. Worth noting is that this fall coincides with the wider weakening of India's IP environment as it relates to patents through, for instance, the increased use of compulsory licenses and patent revocations. It also occurs while total patent applications in India through both direct and PCT national phase entries remain relatively constant and even

increase.²² The steep fall in patents granted has affected residents and non-residents equally, hurting both domestic as well as international inventors. For example, patents granted to Indian residents fell from 2,541 in 2008 to 776 in 2011.²³

Although some other countries and clusters of economies show a similar drop following the 2007–08 financial crisis and subsequent economic recession, there is no universal pattern or uniform drop. For instance, patent grants measured globally did not fall at all after 2007. Instead, patents granted worldwide increased from 770,700 in 2007 to 996,800 in 2011.²⁴ Similarly, in China, Mexico, and Korea, patents in force continued to grow throughout the years after 2007.²⁵

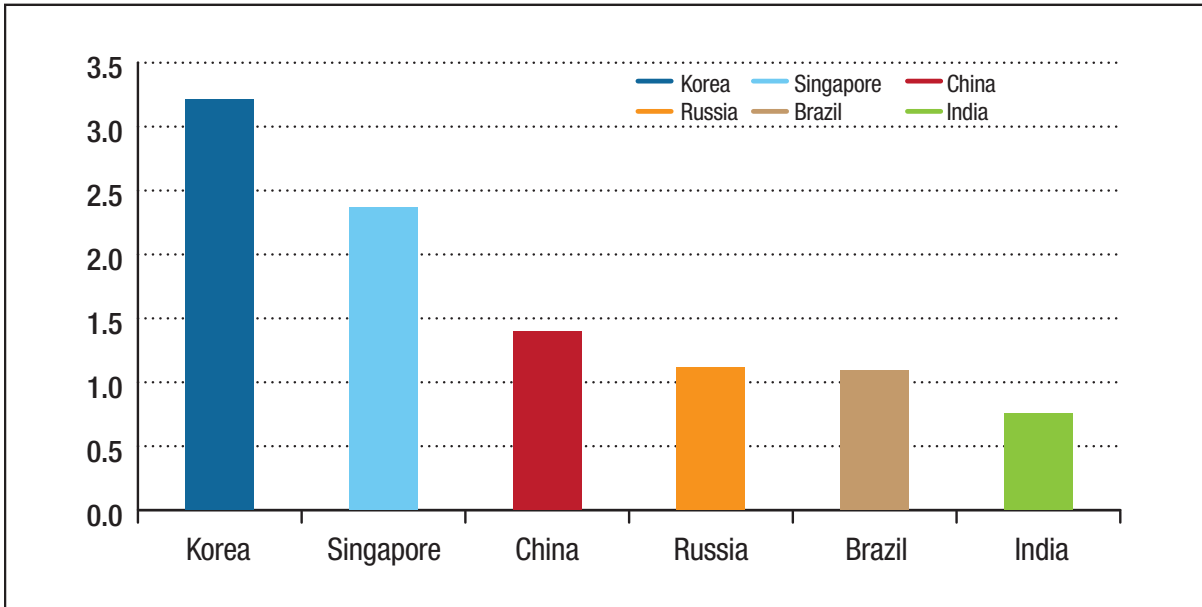
Research & development expenditure

R&D expenditure measures the total amount of spending on research and development in a given country. Measured as a percentage of GDP, this indicator reflects an economy's public and private investment level and commitment to innovation and R&D-based activities. R&D spending has a closely documented relationship with the protection of IP and provision of strong IP rights. As mentioned above, a positive change in the strength of a national IP environment is associated with an increase in domestic R&D.²⁶

More broadly, R&D spending correlates quite strongly with rates of innovation as measured, for instance, by INSEAD's annual Global Innovation Index. The top 10 ranked countries in the 2012 INSEAD Index spent an average of 2.46% of GDP on R&D.²⁷ India was ranked 64th, just behind Ukraine and Costa Rica, and behind all other BRIC economies.

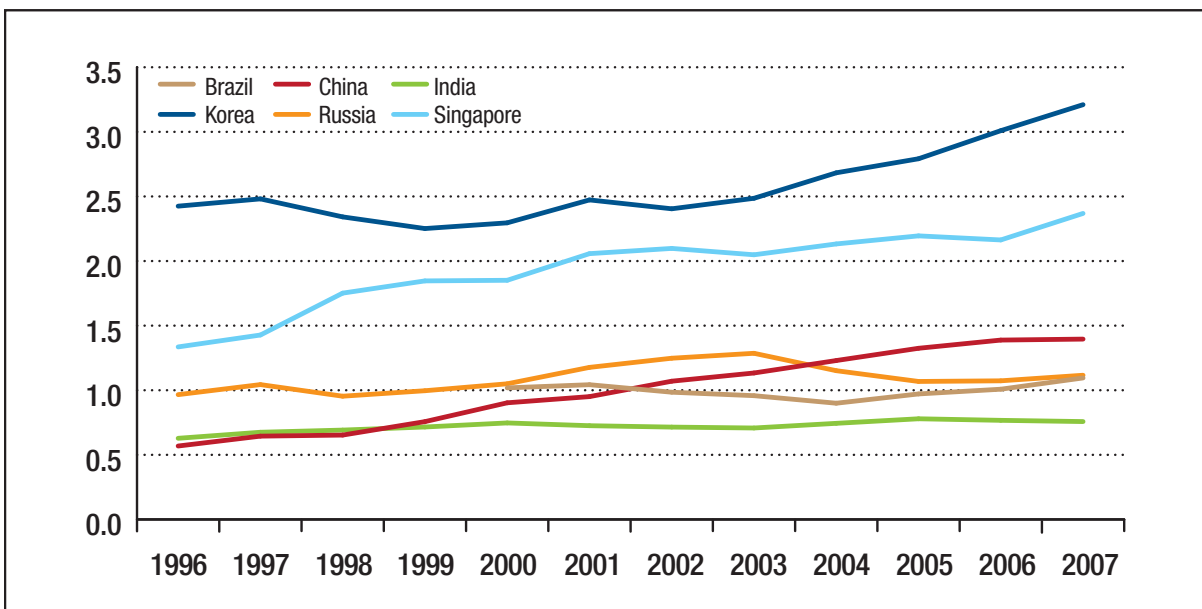
Overall, Indian R&D spending lags significantly behind fellow BRIC economies as well as other emerging countries such as Singapore and Korea. Figure 8 shows R&D spending as a percentage of GDP for a number of countries in 2007, the latest year for which data are available for India.

Figure 8: Research and development expenditure (% of GDP), select countries, 2007²⁸



Unlike in other countries, R&D spending in India has not increased markedly since the mid-1990s. In the 10-year period between 1996 and 2007, Indian R&D spending was practically flat, growing from 0.63% of GDP to 0.76%. During the same time period, R&D spending in comparable emerging economies grew considerably. In China, for example, R&D spending grew from 0.6% of GDP to 1.4%.²⁹ Figure 9 shows this trend.

Figure 9: Research and development expenditure (% of GDP), select countries, 2007³⁰



India's low absolute and relative levels of R&D spending in part reflect its weaker national IP environment compared with other countries. As the literature described above indicates, the strengthening of a national IP environment is likely to have a strong and positive impact on rates of domestic R&D.

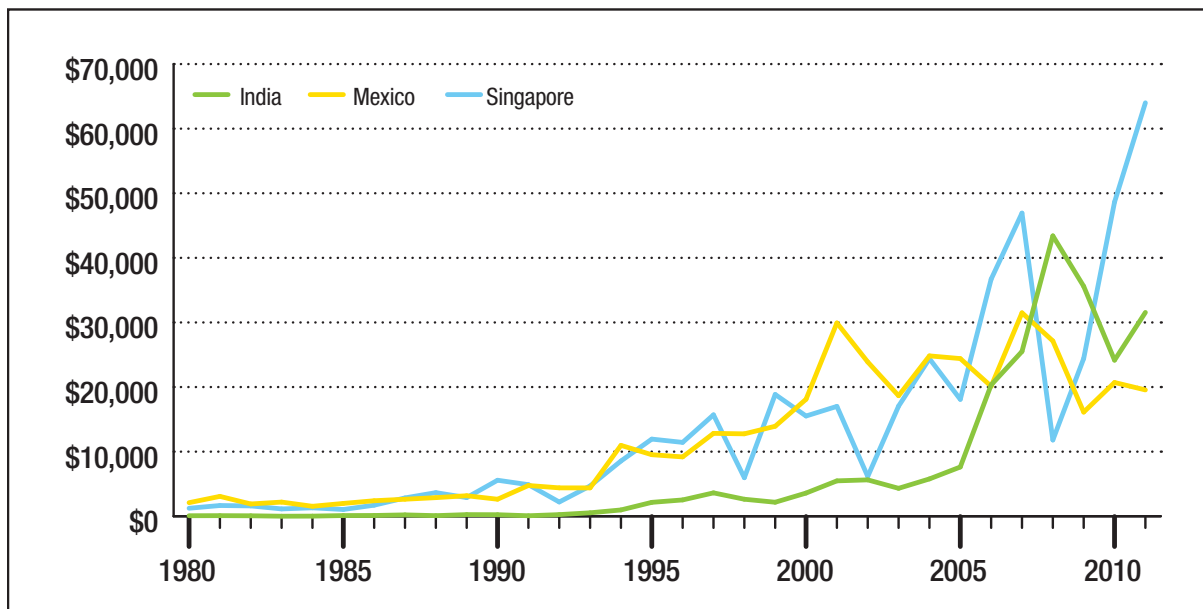
Section 2: FDI and IP Rights

As explained in the introduction, a substantial amount of empirical literature has been built on the effects of IP rights on economic development, innovation, technology transfer, and international trade.³¹ Much of this literature suggests that there is a strong and positive correlation between IP rights, FDI, trade, and economic development. The exact impact of IP rights depends on a country's stage of development, income level, and technical capabilities. But overall the relationship is positive, particularly with regard to FDI.

The purpose of this section is to discuss this relationship in more detail with regard to India and the potential India has to increase its annual inflows of FDI if it strengthens its IP rights environment. The evidence suggests that flows of FDI into India could increase significantly if its national IP rights environment improves.

Section 1 showed how India has been less able to attract FDI than its BRIC peers since the 1980s. It is also noticeably weaker than other emerging economies such as Mexico and Singapore, which started off at similarly low levels of investment in 1980 and had similar IP rights environments to India's. Figure 10 compares the inward flows of FDI for India, Singapore, and Mexico.

Figure 10: Inward flows of FDI for India, Singapore, and Mexico, USD at current prices and current exchange rates in millions, 1980–2011³²

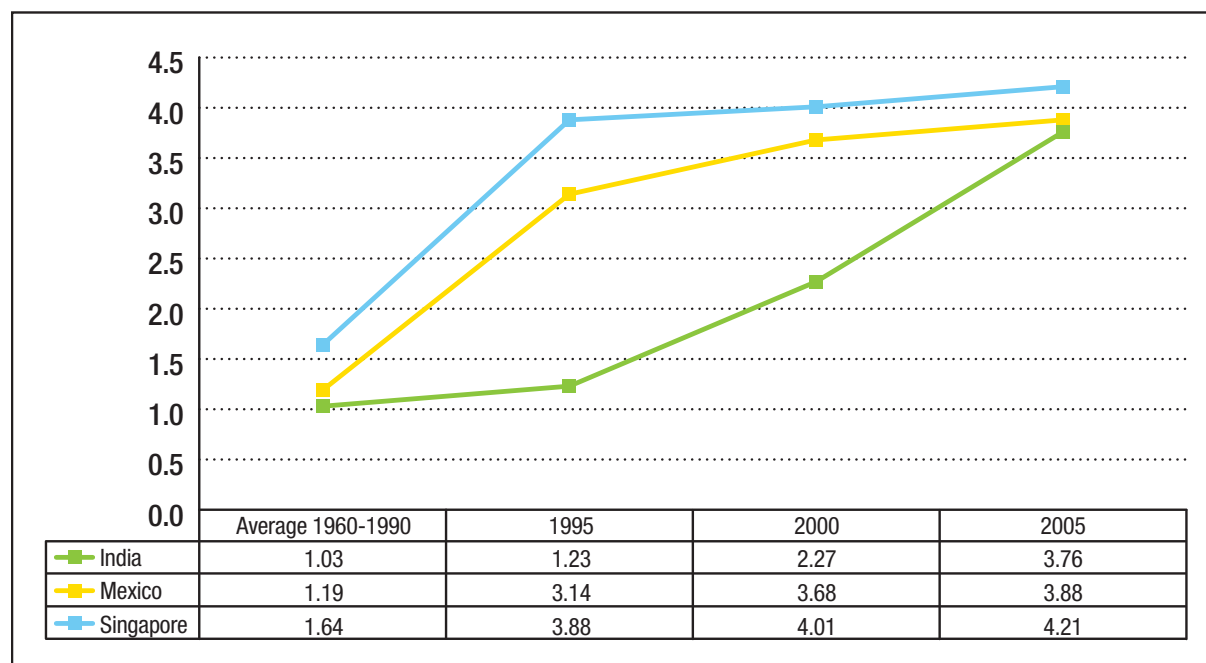


All three countries started off from a relatively low base and have seen gradual growth and increases. However, the gap between India and Mexico and Singapore began to increase significantly from the mid-1990s up until 2005, when Indian inward FDI increased dramatically and almost tripled in size in one year, from \$7.7 billion to more than \$20 billion. Crucially, this was also the same year India implemented TRIPS reforms.

Worth noting is that the rate of FDI in these three countries closely mirrors their relative improvement on the PRI Index, that is, the relative strength of their patenting environments.³³

Up until 1990, all three countries had quite similar scores on the Patent Rights Index (PRI). However, from 1995 to 2005, India began to diverge with Singapore and Mexico, which dramatically improved their PRI scores while India continued to lag behind. During the same period, flows of FDI increased in both Mexico and Singapore, but grew at a much more subdued pace in India. When India implemented the TRIPS agreement in 2005, FDI increased dramatically. Table 1 shows the changes in the PRI score for the three countries from 1960 to 2005.

Table1: Patent Rights Index, select countries, 1960–2005³⁴



Both Table 1 and Figure 10 suggest a correlation between the lower level of annual FDI and India's weaker IP rights environment.

This correlation has been documented and researched in a number of studies. For example, in a 2010 study, the OECD built three separate models measuring the relationship between IP rights and other economic variables and measures of innovation such as FDI, domestic R&D, and services imports.³⁵ Using the PRI, the OECD found that a 1% change in the strength in a country's IP rights environment is associated with a 2.8% increase in FDI inflows. The other models (focusing on copyright and trademarks) also show a similar relationship between the protection of these IP rights and increased FDI.

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As explained above, an entity's decision to invest in a given economy is dependent on a myriad of factors, which together shape an economy's intrinsic and relative attractiveness to FDI. Isolating and viewing only one single factor is both difficult and potentially misleading. Nevertheless, given the strength and breadth of the empirical literature on the link between FDI and national IP environment, it is clear that IP rights is a significant component in attracting FDI. It is also clear from the above data and country comparisons that India lags behind its peers with regard to both the protection of IP and attracting FDI.

As previously described, the 2012 GIPC Index benchmarked 11 countries, of which 7 were middle-income countries. These include the BRIC economies and Mexico, Malaysia, and Chile. Table 2 illustrates just how far behind these countries India is on the GIPC Index. The table shows (as a percentage) the extent to which India's IP rights environment would need to improve to reach the levels of these comparator countries as measured by the index.

Table 2: Comparing India and its peers on the GIPC Index

	GIPC Index score	Percentage increase on GIPC Index
India	6.24	-
Average BRIC score excluding India	9.96	14.88%
Average middle income score, non-BRIC	11.72	21.92%

The average score of the BRICs (excluding India) on the GIPC Index was 9.96 out of 25. To reach this, India would need to strengthen its IP rights environment by just under 15% and increase its score by 3.72. The average score for the remaining middle-income countries (Malaysia, Mexico, and Chile) measured by the index was 11.72. To achieve this score, India would have to improve its IP rights environment by 21.92% and increase its score by 5.48.

Applying the relationship established by the OECD, of how the strengthening of a national IP environment will lead to significant increases of FDI (using the PRI the OECD found the ratio to be 1:2.8), it is highly likely that if India improves its IP rights environment to the average level of the BRICs or other middle-income countries, it would see a positive and significant increase in inward flows of FDI. Currently, these inflows are significantly less than those of its BRIC peers and on a per capita basis much lower than Mexico, Chile, and Malaysia. For example, with a population of fewer than 20 million, Chile attracted \$26.4 billion in FDI. This is only \$1 billion less than India, with a population of more than 1.2 billion, which attracted \$27.3 billion in 2012 as per the United Nations Conference on Trade and Development's latest estimates.³⁶ Using the OECD ratio as a guide, a strengthening of India's national IP environment is likely to lead to double-digit increases in inflows of FDI.

Conclusion

This briefing document has examined the IP rights framework in India and sought to provide an overview of the effect of India's relatively weak national IP environment on investment and innovation. Having examined a selection of economic and innovation indicators influenced by the level of IP protection offered in a country, it is clear that the Indian economy has performed below that of comparable countries that have a stronger national IP environment. On rates of FDI, biomedical FDI, receipts from IP-based assets, patenting, and R&D expenditure, India performed worse than most comparable countries.

For example, with regard to annual FDI inflows, India has consistently lagged behind its BRIC peers and other middle-income countries. Similarly, in 2011, payments to Indian residents for the use of IP assets amounted to just over \$300 million. This is less than half of the BRIC average or that of other emerging markets. At the same time, as measured by both the PRI and GIPC Index, India's IP rights environment has been markedly weaker than comparator countries.

In conclusion, India's failure to develop and adhere to international best practices in the field of IP rights has hindered its economic development. The positive relationship found by the OECD and others between the strength of a country's IP rights environment and FDI inflows, and the evidence presented in this briefing, clearly suggest that if India adopted a stronger IP rights framework and policies, FDI would increase significantly. Increased FDI would help accelerate growth, innovation, and the building and strengthening of IP-dependent sectors of the Indian economy, and close the gap between India and comparator countries.

Endnotes

- 1 This deterioration has been particularly pronounced for IP rights relating to biopharmaceutical products and technologies, which have since the mid- to late 2000s seen a marked increase in the number of compulsory licenses (CLs) issued and pharmaceutical patents revoked. Since 2006, India has been involved in almost half of all major international CL disputes. In 2012, Bayer was instructed by the Indian patent office to agree to have Bayer's cancer drug, Nexavar, duplicated by a local generic company through a CL. In addition to the issuing of compulsory licenses outside the essential facilities doctrine, biopharmaceutical patents have increasingly been challenged and protection revoked by the Indian authorities. Roche in 2012 had its patent for the hepatitis C drug Pegasys retracted by the Intellectual Property Appellate Board of India due to a simple design that could be copied rather easily by competitors. Similarly, the Delhi Patent Office also revoked the patent for the drug Sutent in 2012. This revocation was in response to a post-grant opposition and based on an alleged lack of inventive step. The drug is currently under patent in the United States. Finally, section 3(D) of the Indian Patent Act, which imposes a different threshold of inventive step (that is not recognized or used internationally) during the patent examination process, has limited the availability of patent protection for a number of internationally patented products and technologies. See: IMS (2013), *Securing IP and Access to Medicine: Is Oncology the Next HIV?* IMS Consulting Group, London, p. 2.
- 2 For the general link between decreased tax revenues and a weak IPRs environment see R. Radhakrishnan and S. Balasubramanian (2008), *Intellectual Property Rights: Text and Cases*, Delhi, p. 17
- 3 See: Pugatch, M.P., Chu, R., Torstensson, D. (2012), *Measuring Momentum GIPC International IP Index* (first edition), U.S. Chamber of Commerce.
- 4 Ibid.
- 5 Park, W.G. (2008), "International Patent Protection: 1960–2005," *Research Policy*, 2008.
- 6 Office of the United States Trade Representative, (2013), *2013 Special 301 Report*, Washington DC.
- 7 For a few examples of this literature, see the following: Park, W.G. and Lippoldt, D. (2003), *The Impact of Trade-Related Intellectual Property Rights on Trade and Foreign Direct Investment in Developing Countries*, OECD Publishing; Cavazos, R. et al. (2010), *Policy Complements to the Strengthening of IP RIGHTS in Developing Countries*, OECD Trade Policy Working Paper No. 104, OECD Publishing; Léger, A. (2006), "Intellectual Property Rights and Innovation in Developing Countries: Evidence from Panel Data," Proceedings of the German Development Economics Conference, Berlin; Pham, N.D. (2011), *Employment and Gross Output of Intellectual Property Companies in the United States*, GIPC, Washington, DC; Economics and Statistics Administration & United States Patent and Trademark Office (2012), *Intellectual Property and the U.S. Economy: Industries in Focus*, U.S. Department of Commerce; Pugatch, M.P. and Chu, R. (2011), "The Strength of Pharmaceutical IP Rights vis-à-vis Foreign Direct Investment in Clinical Research: Preliminary Findings," *Journal of Commercial Biotechnology*, Vol. 14, No. 4, pp. 308–318; European Patent Office, and International Centre for Trade and Sustainable Development (2010), *Patents and Clean Energy: Bridging the Gap between Evidence and Policy*, Geneva.
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 (1) Extent of coverage;
 (2) Membership in international patent agreements;
 (3) Provisions for loss of protection;
 (4) Enforcement provisions; and
 (5) Duration of protection.
 It is one of the most widely used standards for measuring the cross-national strength of IP rights. See: Ginarte, C. and Park, W.G. (1997), "Determinants of Patent Rights: A Cross-National Study," *Research Policy*, Vol. 26, pp. 283–301; and Park (2008).
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Notes:



Global Intellectual Property Center
1615 H Street, NW
Washington, DC 20062
www.theglobalipcenter.com