

Executive Summary

Intellectual property protection has a positive effect on all four economic indicators: gross domestic product (GDP), trade, foreign direct investments (FDI) and the level of innovation. The confidence it gives investors leads to inflows of foreign capital that promote technology competition, which in turn fosters innovation. As a result, higher quality goods and service are produced within the country more efficiently. This would increase the competitive advantage of the country in terms of exports and positively impact its GDP growth.

This paper presents the state of Intellectual Property Rights (IPR) protection in ASEAN using the Global Intellectual Property Center (GIPC) Index and ascertains why some countries have been more successful in safeguarding IPR compared with others. The GIPC Index evaluates the level of IP protection in a country based on 30 indicators. In ASEAN, countries have significantly varied performances with countries like Singapore and Malaysia performing well, while Thailand and Vietnam perform poorly.

This paper finds that IP protection has a significant impact on the number of patent and trademark applications, which is reflected by a country's IP ratio. Singapore has the most trademarks registered per application and consistently maintained its high ratio. Malaysia and the Philippines have improved its IP ratio whereas Indonesia, Thailand and Vietnam seem to be stagnant or deteriorating.

Overall, cooperation between ASEAN countries in the IP field has resulted in improvements to the IP landscape in the region which in turn has increased the efficiency of trademark and patent applications. This has improved the economic performance of the countries discussed. This paper concludes with recommendations of several initiatives that involve greater cooperation, harmonisation of rules and stronger enforcement mechanisms for IP protection within the region.

Introduction

Intellectual property rights (IPR) are a set of laws that protect creative and innovative products through legal rights called patents, copyrights, and trademarks (for definitions of these terms, see Appendix I). The IPR allows the creators or owners of intellectual property (IP) to reap the financial rewards for developing unique products or services.

IPR is important for three reasons. First, it rewards and encourages hard work and protects against those who freeload. Second, secure IPR protection encourages the commitment of additional resources, i.e. savings and investments, for further innovation in the future. Third, IPR is crucial as it fosters economic growth and creates new jobs and industries (Lybecker, 2014). These benefits have prompted ASEAN governments to recognise the importance of IP and resulted in various policies and frameworks to safeguard IPR, albeit with varying levels of commitment in enforcement and success.

The Global Intellectual Property Center (GIPC)¹ Index is a study that helps governments and businesses better understand the concrete benefits that robust IP systems provide. The 2015 edition maps the IP regimes of 80 countries including 5 ASEAN nations, namely Indonesia, Malaysia, Singapore, Thailand and Vietnam.

The purpose of this paper is to present the state of IPR protection in ASEAN and to ascertain why some countries have been more successful in safeguarding IPR compared with others. We start by providing an overview of IPR protection in ASEAN countries and present the ASEAN level IP initiatives. This is followed by an analysis of the impact of IP protection on ASEAN countries performance in processing trademark and patent applications as well as their economic performance. The paper concludes with some policy recommendations.



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¹The Global Intellectual Property Center (GIPC) is an affiliate of the United States Chamber of Commerce. It leads a worldwide effort to champion intellectual property rights as vital to creating jobs, saving lives, advancing global economic growth, and generating breakthrough solutions to global challenges.

An overview of ASEAN's performance in the GIPC Index

The GIPC Index evaluates the level of IP protection in a country based on 30 indicators that cover the legal framework, enforcement and the ratification of international treaties (please refer to Appendix 2 to see all indicators and the scores for each indicator for five ASEAN countries). The highest score for the index is therefore 30. The higher the score, the better the protection of IP the country has.

In 2015, ASEAN countries had significantly varied performance in the GIPC Index. Singapore is the highest ranked followed by Malaysia, Indonesia, Vietnam, and Thailand. Singapore is ranked 5th in the world while Vietnam and Thailand are at the bottom three of the 30 countries sampled (see Table 1).

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Table 1: Performance of five ASEAN countries in the 2015 GIPC Index

	Indonesia	Malaysia	Singapore	Thailand	Vietnam
Rank	28	12	5	31	30
Total Score	8.61	14.62	25.38	7.1	7.84
Patent, Related Rights, and Limitations	1.5	2.75	6.5	1.5	1.75
Copy Rights Related Rights, and Limitations	1.77	3.78	5.24	1.53	1.03
Trademark Related Rights, and Limitations	2.75	3.25	4	2.75	3.25
Trade secrets and Market Access	0.25	1.5	2	0.25	0.5
Enforcement	1.34	2.43	4.64	1.07	1.31
Membership and Ratification of International Treaties	1	1	3	0	0

Source: The 2015 GIPC Index

Singapore leads in all categories. Its score in patent protection is almost perfect (6.5 over 7.0). The reason for this performance is because Singapore has three key areas that are yet to be practised in other ASEAN countries. First, Singapore has a strong pharmaceutical-related patent enforcement and resolution mechanism. The country introduced a system of patent linkage following its trade agreement with the United States (Singapore-US FTA). All applicants for drug approval must submit a patent declaration form to the Singapore market registration authority and the Health Sciences Authority. Second, unlike other ASEAN countries in this study, Singapore also offers patent term restoration² for pharmaceutical products. Under Section 36A of the Patents Act, a five-year term of patent term restoration is allowed for pharmaceutical products. Third, the application and enforcement of Singapore's legislation on the use of compulsory licensing of patented products and technologies is consistent with the legislative conditions set by the GIPC.³

An area where Singapore has improved (which should be emulated by other ASEAN countries) is in the availability of frameworks that promote cooperative action against piracy. This provides greater protection for the IP of the direct rights holder. Compared with Thailand where the requirement to take down infringing content related to knowledge is based on a court order, Singapore provide rights holders with an avenue to apply directly to the High Court for an injunction “requiring the network service provider to take reasonable steps to disable access to the flagrantly infringing online location (Singapore Copyright Act)”.

On average, ASEAN countries scored 12.71 in 2015 compared with 12.54 in 2014 (see Table 2). This implies an improvement in the overall IP environment of ASEAN countries. The average score also indicates that collectively, ASEAN is only a middle-tier performer in developing its IP protection system compared with other regional groupings such as the EU. ASEAN countries in general do not have clear rules and standards for the expeditious removal of trademark infringing material by online service providers. The region also has high physical counterfeiting rates and weaker frameworks that do not effectively promote action against online sales of counterfeit goods.

Singapore leads the GIPC Index due to:



Strong pharmaceutical-related patent enforcement.



Patent restoration for pharmaceutical products.



Legislation is consistent with GIPC conditions.

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²Based on GIPC's definition, this protection aims at restoring a portion of the patent term granted to innovative pharmaceutical products that is lost due to the prolonged research, development, and regulatory approval periods of such products. This category does not include other forms of patent term restoration adjustment that are granted on the basis of prolonged examination periods (Patent Term Extensions for Pharmaceutical Patents in Singapore. (n.d.). Retrieved February 08, 2016, from <https://www.cantab-ip.com/articles/patent-term-extensions/>).

³Those conditions are: (1) the issuing should exclude any requirement for domestic manufacturing; (2) the issuing should not apply to patented innovations that have not yet reached the market; (3) in the case of biopharmaceutical products, the use of compulsory licensing under the framework of TRIPS provisions on public health should not be for commercial purposes, such as for price negotiations or in support of domestic industries; and (4) adequate and well-defined recourse mechanisms should be in place for parties affected by the issuing of the license. (Unlimited Potential - Global Intellectual Property Center Singapore. (n.d.). Retrieved February 08, 2016, from http://www.theglobalipcenter.com/wp-content/themes/gipc/map-index/assets/pdf/Index_Map_Singapore.pdf).

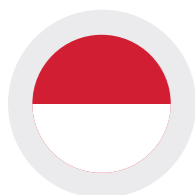
Table 2: The GIPC Index Score for ASEAN countries in 2014 and 2015

	Indonesia	Malaysia	Singapore	Thailand	Vietnam	ASEAN Average
2015	8.61	14.62	25.38	7.1	7.84	12.71
2014	8.09	14.36	25.12	7.34	7.8	12.54

Source: The GIPC Index 2014 and 2015

As seen in Table 2, all five ASEAN countries with the exception of Thailand have improved. Amendments to IP-related laws and better enforcement of current laws appear to be the factors that contribute to this improvement. The section below describes the latest IP developments in each country and provides a better picture of the potential factors contributing to improvements in IP protection.

Indonesia



The improvement in Indonesia's score may be the result of the introduction of a New Copyright Act (Undang-Undang No 28 tentang Hak Cipta) in September 2014. The Act introduced a new ministerial notification system which allows the government to block copyright-infringing websites. This is a major step towards mitigating the online privacy problem in Indonesia. This Act protects against the circumvention of technological protection measures (TPMs).⁴

In the same year, Indonesia amended the Trademarks Act (Undang-Undang nomor 15 tahun 2001 tentang Merek). Concerns were raised over the amendments as trademark applications require a three-month publication period to allow third parties who objects to a trademark application to file an opposition. Once the publication period ends, the trademark application will be subjected to a substantive examination period. This provides a small window of opportunity for trademark owners to oppose any third party's application and could result in less rigorous scrutiny of the registration process. The amendment will also introduce higher fines to deter trademark infringements.

Indonesia can improve its IP protection framework by participating in and ratifying international treaties such as the Patent Law treaty or any other free trade agreements (FTAs) with substantial IP provisions.

Malaysia



Malaysia improved its score in the Copyrights, Related Rights, and Limitations category from 3.58 (in 2014) to 3.78 (in 2015). Since the amendment of the 2012 Copyright Act, enforcement has been ongoing and has gathered momentum with raids on suspected operators of pirated online materials and websites such as jiwang.org and syok.org. In addition, the launch of "Ops Semak Tulen", an anti-software piracy campaign, has enabled monitoring and enforcement of copyright laws for over 20,000 businesses.

⁴ TPM is a term that covers many different types of technologies used to control access to copyright content, or to prevent users from copying protected content. Content that is protected by a copy protection technology could include movies, games, software, CDs or digital music files, or even content stored in a protected area on a website, in which users have to pay or enter a password to access the content.

Vietnam



Vietnam has many administrative and policy weaknesses. Ineffective enforcement means lack of serious penalties imposed on operators of infringing websites. Delays in filing and granting of pharmaceutical patents (some patents took over four years) also contribute to its low scores. Additionally, while the Vietnamese Criminal Code imposes penalties for IP infringement, it does not criminalise all acts of infringement. Only "copyright piracy on a commercial scale" is considered an offense (IIPA, 2014). These penalties are an ineffective deterrent as Vietnam consistently has high levels of counterfeiting.

Singapore



Singapore improved its overall score in 2015. Its highly advanced national IP framework emphasises strong protection for pharmaceutical patents, computer-implemented inventions and copyrights. Singapore's IP Framework includes strong legal measures that prevent infringement of copyrights on a broad range of areas including webhosting and streaming of websites as well as effective border measures that grant customs officials the power to seize goods suspected of copyright infringement.

Overall, Singapore has done a good job of protecting IPR across industries (IPOS, 2016). IPR in Singapore is dynamic and new amendments are frequently introduced to strengthen its overall IP framework. For example, the Copyright Act was amended in 2014 allow rights holders to apply directly to the High Court for an injunction to disable access to infringing online accounts. This has curbed online piracy.

Singapore's remaining weakness is its illicit trade in counterfeiting goods (WCO, 2014). Improvements in this area will depend on the ability of Singaporean authorities to improve enforcement and to further empower border officers to detain goods suspected of IPR infringements.

Thailand



Thailand is the only ASEAN country with a decrease in its overall GIPC index score from 7.34 to 7.00 in 2014 and 2015 respectively. The reasons for this regression are local laws that set limits on the extent to which copyrighted material, including books, can be duplicated. Book piracy and unauthorised distribution (especially in educational institutions) are factors that contribute to its deteriorating IP scores. Reforms in Thai patent requirements are impeded by a lack of technology for implementation and administrative backlogs. Thailand's GIPC index score is also impeded by its unfair policies in patent protection. In Thailand, a patent protection involves an inventive step, where patent submissions are evaluated by the extent to which the new invention sets itself apart from previous inventions. Since Thailand is not bound by the national treatment principle, the inventive step **does not** apply to Thai citizens, but is still enforced against foreign competitors.

The amendment to the 1994 Copyright Act also falls short of international "notice and takedown" standards. The "notice and takedown" is a process whereby online service providers remove or disable access to their contents due to alleged illegality. At present, Internet service providers (ISPs) are obliged to remove copyright infringing content via a court order and not by direct rights holder notice.

Another glaring weakness is Thailand's complete lack of participation and ratification of international treaties. Like Indonesia, Thailand has not signed any post-TRIPS FTAs that include substantial provisions on IP rights.

ASEAN Level IP Protection Framework

As mentioned in the previous section, the overall GIPC score for the five ASEAN countries evaluated in 2015 has improved. While the improvement may be attributed to individual country efforts to improve its IP protection regime, the ASEAN-level effort may have contributed to this improvement as well.

ASEAN as a group started to formally collaborate on IP related matters in 1994 with the establishment of the ASEAN Working Group on Intellectual Property Cooperation. The group drafted a framework agreement for intellectual property protection in line with the Trade-related Aspects of Intellectual Property Rights (TRIPS). On 15th December 1995, an agreement known as the ASEAN Framework Agreement on Intellectual Property Cooperation was later signed by ASEAN economic ministers at the 5th ASEAN Summit.

The agreement was aimed at strengthening and promoting cooperation in the field of IP among government agencies, the private sector and professional bodies of ASEAN to facilitate the growth of regional and global trade liberalisation. Various initiatives were explored such as the ASEAN Patent and ASEAN Trademark Office to promote region-wide protection of patents and trademarks in tandem with the developments of regional and international IP protection standards. The scope of cooperation broadly includes fields of copyright and related rights, setting of patents and trademarks systems, industrial designs, geographical indications, undisclosed information, and layout designs of integrated circuits.

One outcome of the 1995 ASEAN Framework Agreement on Intellectual Property Cooperation is the establishment of the ASEAN Working Group on Intellectual Property Cooperation (AWGIPC), a collective group of AMS IP offices responsible for developing, coordinating and implementing all IPR related regional programmes and activities in ASEAN.

Circa 1997, in the midst of the Asian Financial Crisis, a series of action plans were drawn up during the Second ASEAN Informal Summit to address the economic crisis in the region. The Hanoi Action Plan (HPA) was the first in the series of plans. One initiative under the HPA was the ASEAN IPR Action Plan 2004-2010 with the AWGIPC playing a role in implementing the IPR action plans.

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The ASEAN IPR Action Plan 2004-2010 laid the foundations for fostering IP asset creation in ASEAN. It also aimed at creating a framework for simplification, harmonisation, registration and protection of IPR besides promoting greater public awareness as well as capacity building of human resources and institutions relating to IP and IPRs in ASEAN. This involves a multipartite collaboration between business associations, universities, Science and Technology (S&T) and Research and Development (R&D) institutions and enforcement agencies. Finally, the plan aimed to enhance cooperative Business Development Services (BDS) activities by ASEAN National IP Offices.

The acceleration of the establishment of the ASEAN Community in 2015 (the initial target was 2020) has since prompted the ASEAN Working Group on Intellectual Property Cooperation (AWGIPC) to prepare a new plan that complements the IP goals highlighted ASEAN Economic Community Blueprint (AEC Blueprint). A new ASEAN IPR Action Plan 2011-2015 was created as a result.

The new ASEAN IPR Action Plan is designed to transform the ASEAN region into an active, innovative and competitive player in the international IP community. The previous plan only focused on a single set of law and policies, but the new action plan is more expansive and aims to build a balanced IPR system that accommodates differences in the capacity and level of development of members states.

In conjunction with World IP Day, the ASEAN IP Portal (www.aseanip.org) was launched in 2013. The portal functions as a one-stop hub that connects the region's IP knowledge network and enables interested parties to access information, news, registration process and procedures efficiently. It accumulates information on ASEAN IP systems, provides an IP database and several web links of ASEAN IP offices. The portal also provides an electronic application form for patent applications.

Cooperation between ASEAN countries in the IP field has improved the IP landscape in the region. The Action Plan in particular, as will be shown later in this paper, has helped improved the patent and trademark application in ASEAN countries.

Despite this progress, ASEAN countries still need to improve their capacity in the region in order to integrate into the Global IP system such as the Madrid Protocol, Patent Cooperation Treaty (PCT) and The Hague Agreement Concerning the International Registration of Industrial Designs.

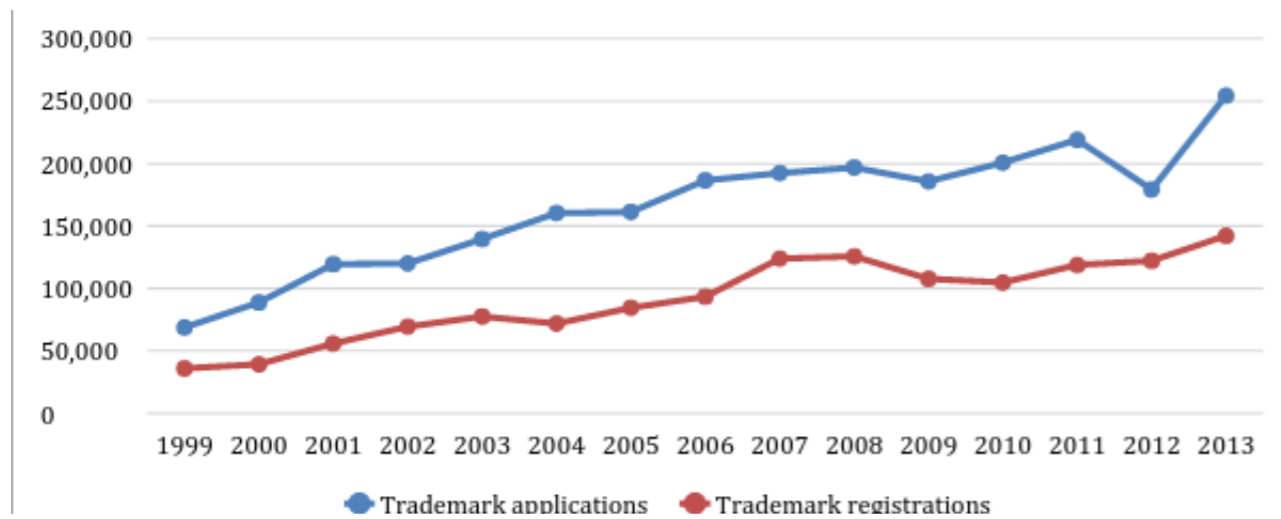
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Impact of IP Protection on IP Performance

Improvements in IP protection significantly impacts the number of patent and trademark applications. In ASEAN, patent applications have increased by 40 percent from 25,608 in 1999 to 45,103 applications in 2013. Trademark applications have more than tripled from 68,868 in 1999 to 254,317 applications in 2013 (See Figure 1 and 2).

Figure 1: Trademark application and registration in ASEAN from 1999-2013

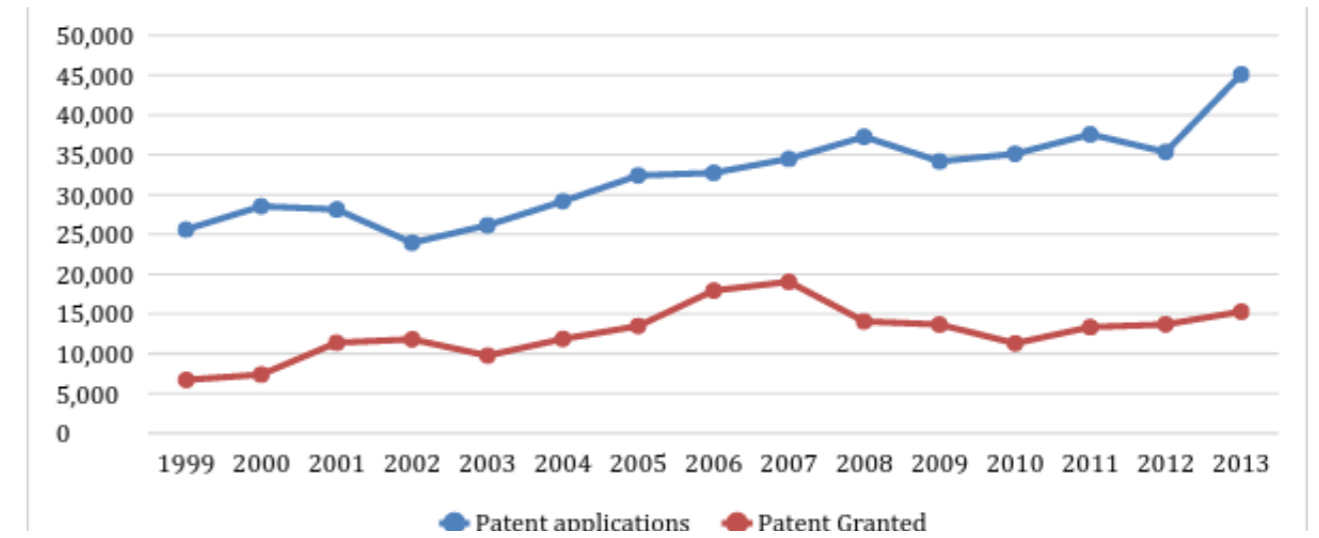


This paper uses the terms Patent ratio and Trademark Ratio (hereafter as IP ratios). The IP ratios take into account the the number of applications made with the number of successful patents or trademarks.⁵

IP ratios shows how effective a country is in processing patent and trademark applications. Countries with stronger IP protection will have better IP ratios because they have put in place rules and institution to process applications efficiently. IP ratios therefore gives a better picture of the IP performance of a country.

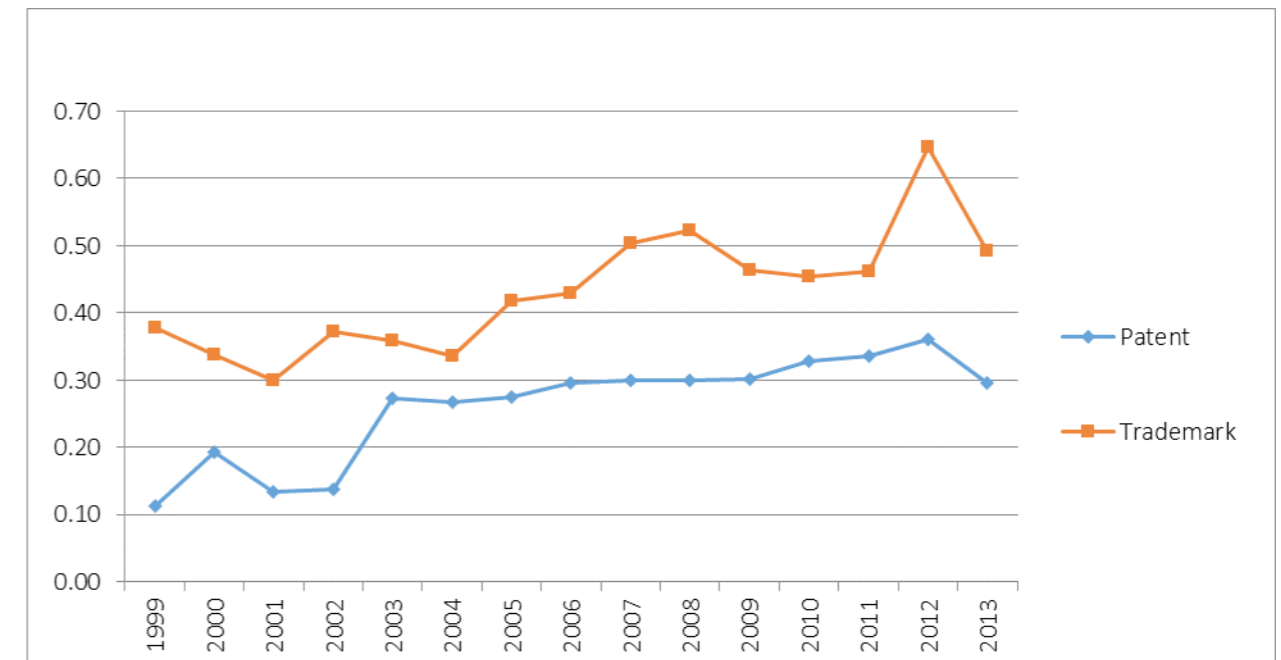
⁵ Patent ratio = (Patent Grants/Patent Application) or Trademark ratio = (Trademark Registration/Trademark Application). If the value is near to 1, it represents high patent or trademark applications. We acknowledge that patent and trademark applications may take more than one year to be granted or registered. Hence the indicator is not an absolute measure of patent/trademark application's success rate. The ratio implies an increase in the success rate of approvals relative to the number of i) pending cases or ii) applications. The ratio also represents institutional presence and efficiency because a country that has a high focus on IP protection, it will have strong institutions that will process trademark and patent applications efficiently.

Figure 2: Patent application and success rates in ASEAN from 1999-2013



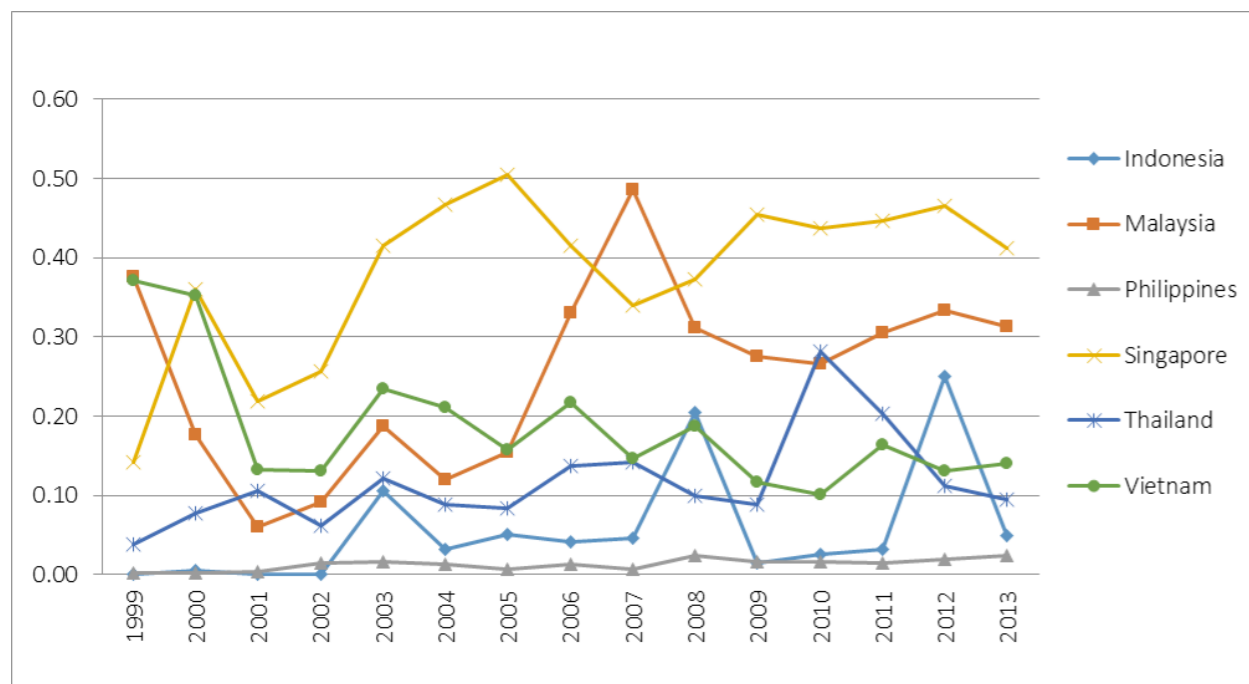
Using the World Intellectual Property Organisation's (WIPO) database, we calculate the Patent Ratio and the Trademark Ratio of the ASEAN region as well as the individual ASEAN countries. The calculation shows that the patent and trademark ratio of ASEAN in general has improved (see Figure 3).

Figure 3: Patent and Trademark Ratio (IP Ratio) in ASEAN



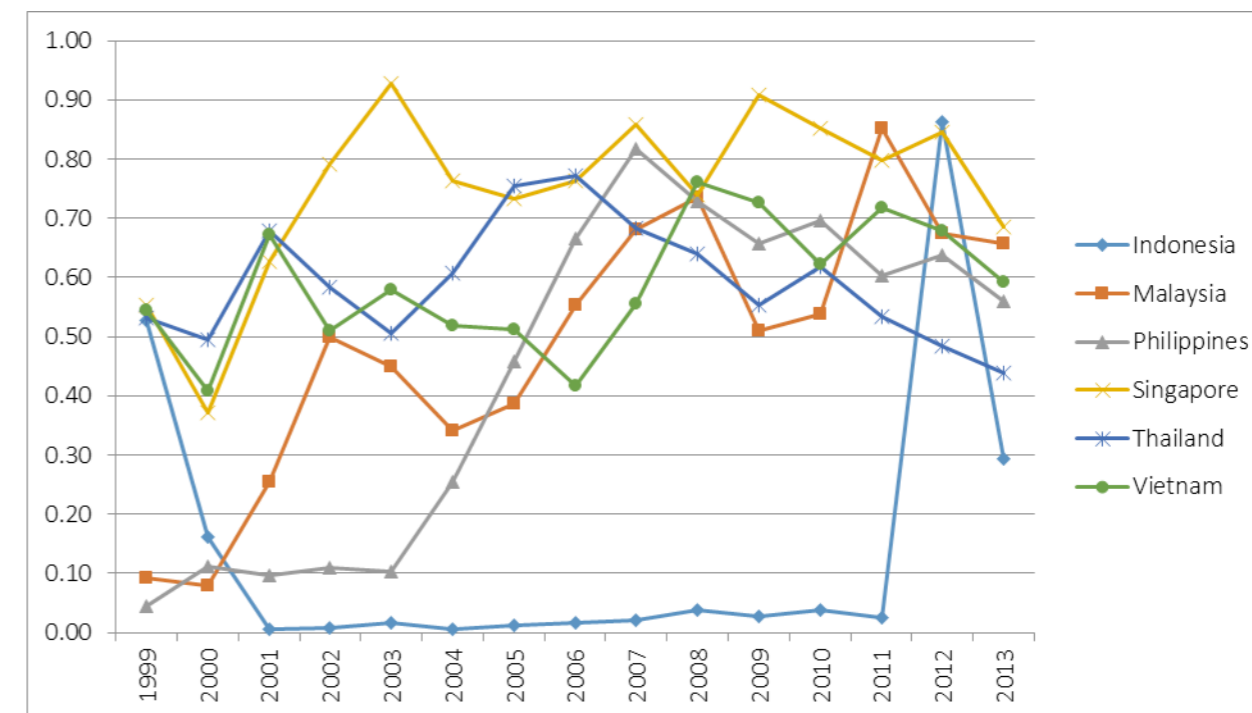
However, if we look closely at each country, performances vary. Singapore has the highest patent ratio followed by Malaysia. Both countries have been on an upward trajectory since 2001 compared with other ASEAN countries such as Thailand and Vietnam, which have a seemingly stagnant patent ratio. The Philippines is the worst performer with little or no improvement in patents granted per application (see Figure 4).

Figure 4: Patent Ratio of six ASEAN countries from 1999-2013



As for the trademark ratio, Singapore has the most trademarks registered per application and consistently maintained its high ratio (See Figure 5). Malaysia and the Philippines have improved while the performance of three other countries (Indonesia, Thailand and Vietnam) seem to be stagnant or deteriorating. It is worth noting that unlike its performance in patent ratios, the Philippines had the sharpest increase in successful trademark applications from 2003 to 2007. This is most likely attributed to the introduction of the Optical Media Act 2003 (ratified in 2004) which “regulates the manufacture, mastering, replication, importation, and exportation of optical media”. This act reduced piracy of movies, video games and software and hence increased the applications for trademarks in the Philippines.

Figure 5: Trademark ratio of six ASEAN countries from 1999 to 2013



We have also separated the timeline to analyse the period before and during the implementation of the ASEAN IPR Action Plan 2004-2010 (AP I). The table suggests that patent and trademark ratios have increased during this period, implying the importance of policy planning and institutionalisation of IPR action in ASEAN.

Table 3: Growth in Average Patent and Trademark ratio Pre- and during ASEAN IPR Action Plan 2004-2010 (%)

Patent	Average ratio			Trademark	Average ratio		
	1999-2003	2004-2010	Growth %		1999-2003	2004-2010	Growth %
Indonesia	0.02	0.06	167.2	Indonesia	0.14	0.02	-84.4
Malaysia	0.18	0.28	55.6	Malaysia	0.27	0.53	94.5
Philippines	0.01	0.01	81.3	Philippines	0.09	0.61	559.3
Singapore	0.28	0.43	53.3	Singapore	0.65	0.80	22.7
Thailand	0.08	0.13	62.1	Thailand	0.56	0.66	18.4
Vietnam	0.24	0.16	-33.3	Vietnam	0.54	0.59	8.1
ASEAN	0.17	0.30	73.7	ASEAN	0.35	0.45	27.9

Source: Author's calculation using WIPO statistics Database

With strong IP frameworks in place via the implementation of API, Singapore experienced the largest absolute gain in patent application ratio, followed by Malaysia. Vietnam had a regression in patent growth in part due to its backlog of unexamined patent applications at many patent offices. As reported in the 2010 National Office of Intellectual Property (NOIP) of Vietnam, 70 per cent of total filed applications in Vietnam are pending and unexamined. Philippines and Malaysia experienced the highest growth in trademark ratio owing to reforms in national IP policies (Optical Media Act 2003 for the Philippines and Trade marks (Amendment) Act 2002 for Malaysia).

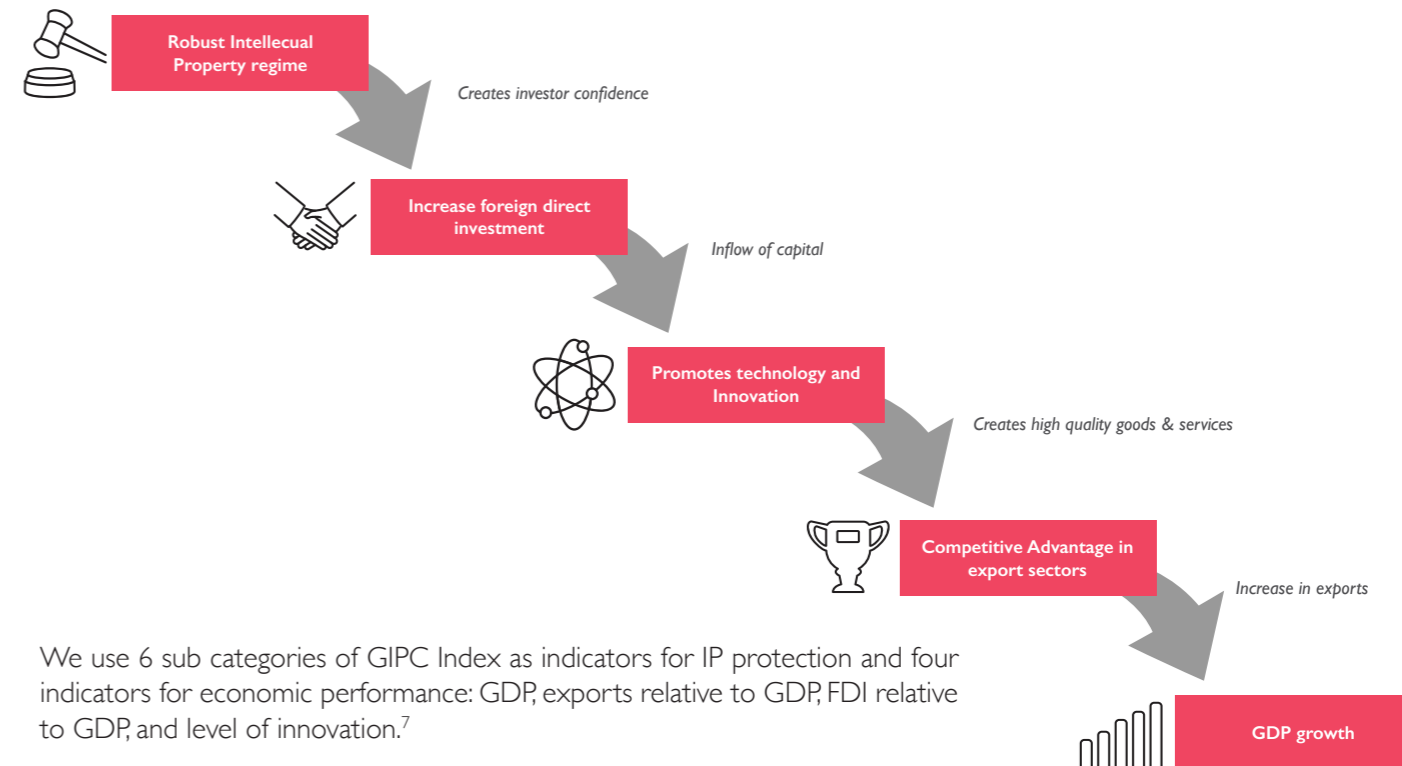
Variations in the performances of ASEAN countries in terms of processing and granting patents and trademarks appear to relate to the level of IP protection. As explained in the previous section, based on the GIPC Index, Singapore has strong IP protections as reflected in its score (25.12 in 2014 and 25.38 in 2015) as well as its patent and trademark ratio. The IP protection in Indonesia on the other hand is weak (as reflected in its overall score of 8.09 in 2014 and 8.61 in 2015) and its performance in trademark and patent ratios.

Impact of IP Protection on Macro-Economic Performance

This section examines the relationship between IP protection and the economic performance of ASEAN countries using correlations analysis.⁶

Economic theories would predict that IP protection affects all four economic indicators: gross domestic product (GDP), trade, foreign direct investments (FDI) and the level of innovation positively. A robust Intellectual Property regime will attract Foreign Direct Investment because investors and businesses have greater confidence to operate within countries that effectively protect the technology and trade advantages of private firms and individuals in the market. This inflow of foreign capital will promote technology competition, which fosters innovation. As a result, higher quality goods and services are produced within the country more efficiently. This will increase the competitive advantage of exports. Since exports are part of a country's national income, IP protection may also promote GDP growth.

Diagram 1: How robust IP regime affects economic performance



We use 6 sub categories of GIPC Index as indicators for IP protection and four indicators for economic performance: GDP, exports relative to GDP, FDI relative to GDP, and level of innovation.⁷

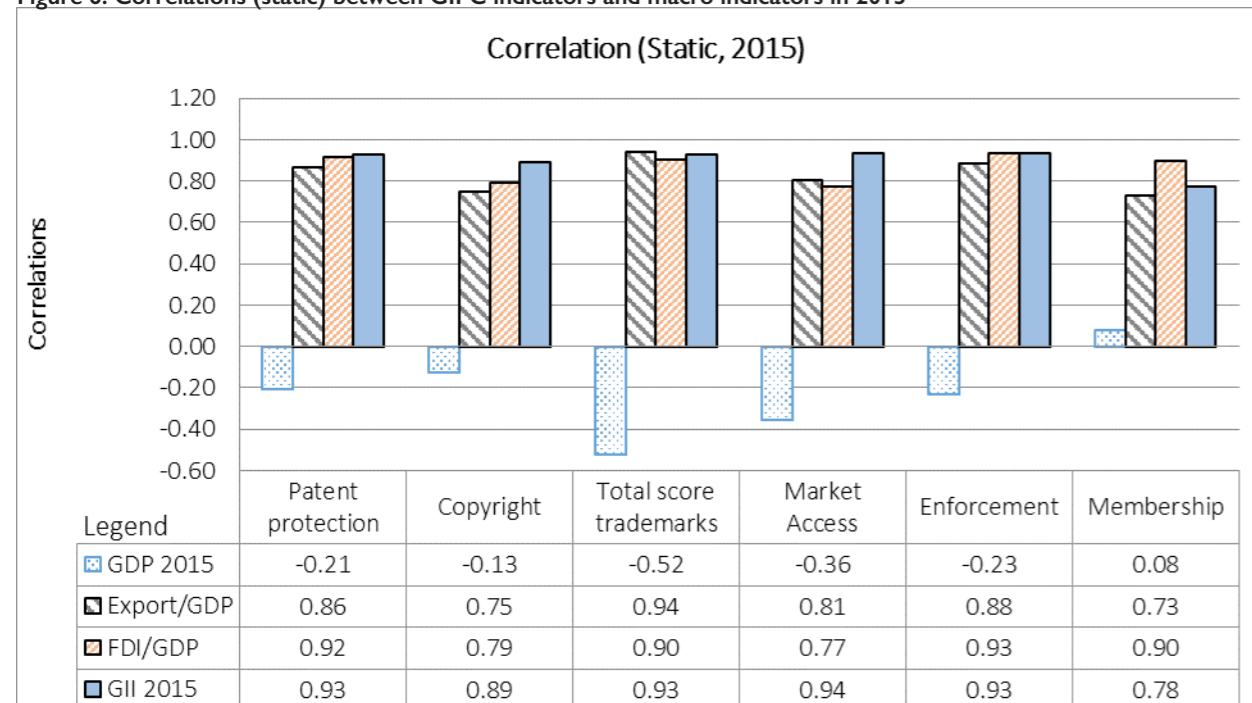
⁶ A caveat is that the correlations only identify the direction of relationships between variables and not the causality of the relationships. Therefore, interpretation of the results should be exercised with caution. A positive correlation between X and Y only infer a positive relationship without claiming X causes Y or vice versa. However through correlational analysis we can imply that X may have caused Y (without discounting the possibility that Y may also have caused X)

⁷ We use the 2015 GIPC Index result for static correlation analysis and the 2014 and 2015 GIPC Index for dynamic correlations. In terms of dynamic correlations, we only use three categories, "overall country IP", "copyright" and "enforcement" since these are the only categories that have grown/changed from 2014 to 2015. As for economic performance, we use data from the World Bank's World Development Indicators for GDP (WDI, 2015), FDI, and exports, while for level of innovation, we use the data from the Global Innovation Index Growth (GI) (Dutta et al, 2014 and Dutaa et al, 2015). The GI is an annual composite indicator that ranks economies in terms of how conducive they are to innovation and innovation outputs.

Static relationship between GIPC indicator and macro indicators in 2015

Figure 6, which demonstrates the static relationship between GIPC indicators and macro indicators shows that high patent protection index scores correlates positively with exports, FDI and innovation. The correlation is strongest between IP protection and innovation. This means that patents, copyright, market access and enforcement of IP protection are factors that catalyse innovation-based economies. Trademark protection specifically has the highest impact on exports. This is expected because the price of a good is often associated with the quality represented by its brand name and trademark (e.g. people are willing to pay a lot of money for BMW cars because they trust the brand's quality). Trademark protection also facilitates the creation of an exclusive and commercially profitable niche market in trade.

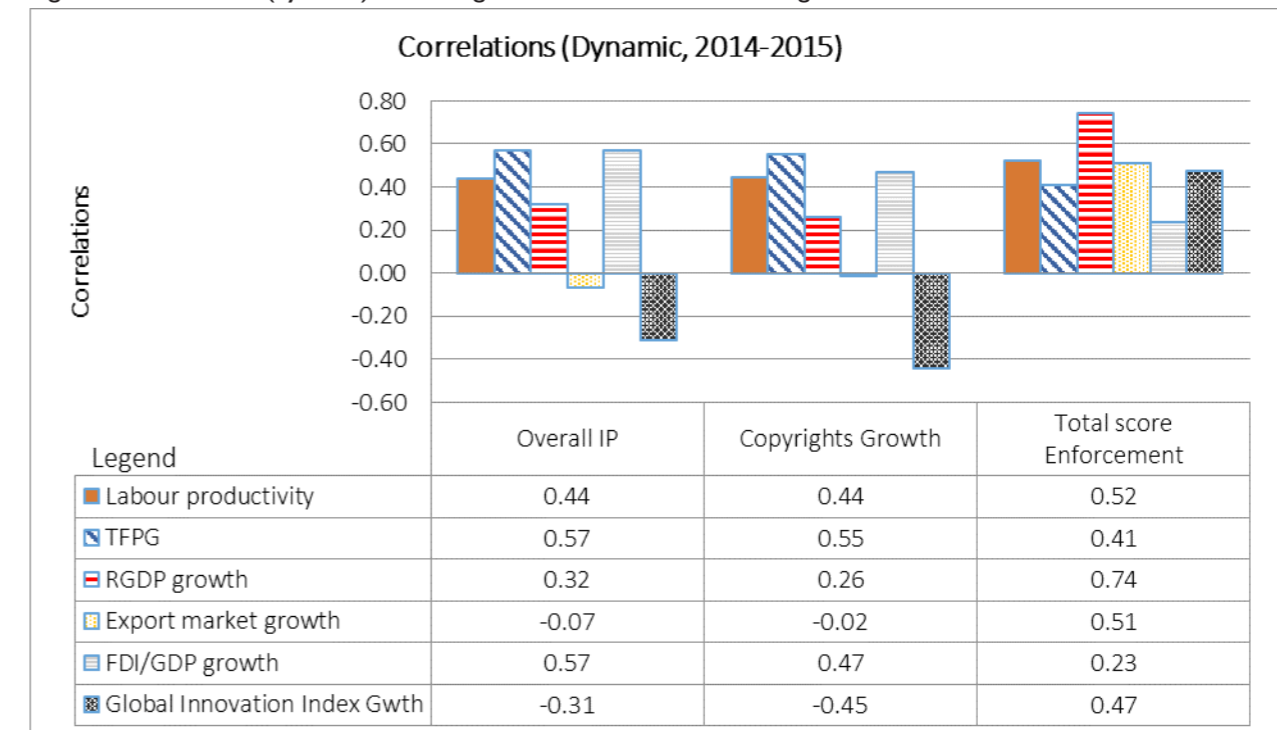
Figure 6: Correlations (static) between GIPC indicators and macro indicators in 2015



Dynamic relationship between GIPC indicator and macro indicators from 2014 to 2015

Dynamic relationship shows the same positive relationships between IP protection and economic performance (see below).

Figure 7: Correlations (dynamic) between growth in GIPC indicators and growth in macro indicators from 2014 to 2015



It also captures the impact of better IP protection on economic growth (represented by GDP). Out of all indicators under the GIPC index, the variable with the strongest positive correlation on economic growth is better protection particularly in terms of enforcement.

It is interesting to note that most of the challenges in IP protection in ASEAN are related to enforcement. Some ASEAN countries for example do not have adequate control over physical counterfeiting activities and software piracy. Their current legal procedures are not stringent and does not sufficiently empower customs officials in the region to carry out border controls and inspections. It can be inferred from this result that economic growth in the region will potentially increase by improving the enforcement of IP regulations.

Furthermore, we add two other indicators to represent human capital and production efficiency in this analysis, they are: labour productivity growth and Total Factor Productivity Growth (TFPG). The result shows that enforcement of IP protection plays an important role in enhancing labour productivity. An explanation for this can be that an increase in intellectual property capital in a country provides opportunities for workers to learn and to be exposed to new technologies, hence empowering them with new knowledge. The workers then apply this knowledge, resulting in improved work efficiency. The result of correlation analysis also shows that improved IP protection has a positive impact on total factor productivity.

Conclusion

This paper uses the GIPC index to explore the level of IP protection in ASEAN countries and its relations to efficiency in handling patent and trademark applications. Finally, the paper examined the correlational relation between higher levels of IP protection and economic growth.

From our analysis, it is clear that the higher levels of IP protection positively impacts the efficiency of handling trademark and patent applications along with the country's economic performance. The paper makes a clear case that if countries in ASEAN want to improve their economic performance and productivity, they have to improve IP protection laws and the enforcement of those laws.

The paper also discusses the development of ASEAN level cooperation in IP protection. It shows that despite significant disparities in the quality of their IP regimes, ASEAN countries have improved and these improvements are primarily a result of greater economic integration facilitated by the AEC and the ASEAN IPR Action Plans.

The paper concludes with recommendations on how to improve IP protection at the national level and specifically at ASEAN level that is to:

- 01 **Adopt a comprehensive IP protection framework.**
- 02 **Introduce a regional IP protection system**
- 03 **Create a single application IP registration system**
- 04 **Align IP laws with Global IP landscape**
- 05 **Capacity building for human resources**

Recommendations

National level policy recommendations

The of ASEAN IPR Action Plans (2004 – 2010 and 2011-2015) facilitated the improvements to copyrights protection issues through various legislation tools mentioned in the previous section. However, there are still gaps between proposed initiatives and actual implementation of patent, trademark and enforcement of IPR protection. As for individual prescriptions, the paper will not discuss or propose legislative changes as some of the above mentioned laws are currently being amended at the time of writing this paper.

The purpose of this section is to raise awareness on the potential areas for improvements in individual ASEAN countries.

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| <h3>01 Patent Protection and Related Rights and Limitations</h3> <ul style="list-style-type: none"> Indonesia and Vietnam have yet to introduce legislation that explicitly allows for the patentability of computer-implemented inventions (i.e. web client on mobile phones). Indonesia, Malaysia, Thailand and Vietnam are still lagging behind Singapore in areas such as pharmaceutical-related patent enforcement resolution mechanisms, and patent term restoration for pharmaceuticals. Research on IP protection in the pharmaceutical industry should be further enhanced through industry cost-benefit analysis. Another area of policy focus for these four countries is on the use of compulsory licensing of patented products and technologies. Indonesia and Thailand also need to identify the optimal desired term of exclusivity for new biopharmaceutical products containing new active ingredients | <h3>02 Copyrights, Related Rights, and Limitations</h3> <ul style="list-style-type: none"> Thailand and Vietnam need to forge stronger inter-agency collaboration to promote cooperative action against online piracy. Thailand needs to specifically address the control of printed materials in educational institutions. Vietnam needs to enforce policy and guidelines for the exclusive use of licensed software within government systems. | <h3>04 Trade Secrets and Market Access</h3> <ul style="list-style-type: none"> There is a need to rectify IP-based barriers⁹ for investors trying to access the Indonesian and Thai market. |
| | <h3>03 Trademarks, Related Rights, and Limitations</h3> <ul style="list-style-type: none"> Indonesia should address its “bad-faith” application issue which refers to applications sometimes filed to prevent other applicants from being granted the trademark. All ASEAN member countries should address the high level of piracy rates, counterfeiting rates and enforcement problems. | <h3>05 Enforcement</h3> <ul style="list-style-type: none"> Indonesia and Thailand need to strengthen mechanisms that determine the amount of damages generated by infringement. In Indonesia, while measures such as injunctions, seizures, and damages are available, they are not applied or enforced consistently enough. |
| | | <h3>06 Membership and Ratification of International Treaties</h3> <ul style="list-style-type: none"> Some ASEAN member states have yet to obtain membership and ratify various international treaties. IPR protection in countries like Thailand and Vietnam still operate within a local framework.¹⁰ Free trade agreements that have strong IP clauses incentivise a country to improve its IP regime. |

⁹ IP-based barriers present when countries pass laws and regulations or set practices that can prevent investors to access their market. Example of such barriers is the disclosure of IP and know-how to a local/domestic entity. For example, the Indonesian Ministry of Health Decree 1010/MENKES/PER/ XI/2008 requires foreign pharma companies to license their intellectual property to an existing firm with a local manufacturing capacity. In Thailand, health authorities or generic drug applicants are not prohibited from using data to approve generic versions of the original product.

¹⁰ Vietnam and Thailand are not in party to the WIPO internet treaties (which consists of WIPO Copyright Treaty and WIPO Performances and Phonograms Treaty). Along with Malaysia and Indonesia, these countries are also not part of the Singapore Treaty on the Law of Trademarks. The selected ASEAN countries in this study are also not parties to the Patent Law Treaty.

ASEAN level policy recommendations

01 Adopt a comprehensive IP protection framework.

To attract FDI, IP policies in ASEAN countries should embed a comprehensive IP protection framework (encapsulating the six categories in GIPC) in their negotiation policies. In the long term, this comprehensive framework will not only spur technology transfers but also reduce dependency on foreign technology through country level improvements in total factor productivity.

02 Introduce a regional IP protection system

ASEAN should introduce a regional IP protection system in its regional development plans (the two ASEAN IPR Action Plan 2004 – 2010 and 2011-2015). As the formation of ASEAN Economic Community (AEC) facilitates the free movement of goods and services, it is imperative to introduce harmonised standards in trademark registrations, designs and patents, and documentation of copyright records.

03 Create a single application IP registration system

At present, an IP rights holder has to register separately in different countries to protect their IP. To reduce time and costs, a 'single application' for IP registration should be implemented.

04 Align IP laws with Global IP landscape

It is also important to align laws across the countries and integrate regional IP systems into the global IP landscape. ASEAN's move to integrate into these global initiatives should be its highest priority. To mitigate the problems associated with the enforcement of IPR, a set of harmonised procedures for the examination of IP laws in the region is necessary. This will facilitate crosschecking of applications and the process of granting IPR.

05 Capacity building for human resources

Apart from enhancing regional cooperation through initiatives such as ASEAN Patent Examination Cooperation (ASPEC), the training of patent, trademark and design examiners should be enhanced to ensure a uniform quality of assessors. Capacity building of human capital in this area should also be one of the development goals for ASEAN.

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Appendix I: Definition of IP related terms based on WIPO statistics database

Application	The formal request for IP rights at an IP office, which examines the application and decides whether to grant or refuse protection in the jurisdiction concerned. Application also refers to a set of documents submitted to an office by the applicant.
Grant	Exclusive IP rights conferred to an applicant by an IP office. For example, patents are granted to applicants (assignees) to make use of and exploit an invention for a limited period of time. The holder of the rights can prevent unauthorized use of the invention.
Patent	A set of exclusive rights granted by law to applicants for inventions that are new, non-obvious and commercially applicable. It is valid for a limited period of time (generally 20 years), during which patent holders can commercially exploit their inventions on an exclusive basis. In return, applicants are obliged to disclose their inventions to the public in a manner that enables others, skilled in the art, to replicate the invention. The patent system is designed to encourage innovation by providing innovators with time-limited exclusive legal rights, thus enabling innovators to reap the benefits of their innovative activity.
Registration	Exclusive rights, notably for trademarks and industrial designs, issued to an applicant by an IP office. Registrations are issued to applicants to make use of and exploit trademarks or industrial designs for a limited period of time and, in some cases, particularly in the case of trademarks, can be renewed indefinitely.
Trademark	A trademark is a distinctive sign, which distinguishes certain goods or services of one undertaking from those produced or provided by other undertakings. The holder of a registered trademark has the legal right to exclusive use of the mark in relation to the products or services for which it is registered. The owner can prevent unauthorized use of the trademark, or a confusingly similar mark, used for goods or services that are identical or similar to the goods and services for which the mark is registered. Unlike patents, trademark registrations can potentially be maintained indefinitely, as long as the trademark holder pays the renewal fees and actually uses the trademark. The procedures for registering trademarks are governed by the rules and regulations of national and regional IP offices. Trademark rights are limited to the jurisdiction of the authority that issues the trademark. Trademarks can be registered by filing an application with the relevant national or regional IP office(s), or by filing an international application through the Madrid system.

Appendix 2: ASEAN level IP Initiatives

Year	Agreement	Why was it signed/adopted	What are its main provisions/contributions?	What are the effects?
1995	ASEAN Framework Agreement on Intellectual Property Cooperation	<ul style="list-style-type: none"> The lack of uniform standards and protection in the treatment of intellectual property has limited ASEAN in obtaining technology transfers from FDI To strengthen and promote cooperation in the field of IP among government agencies, private sector and professional bodies of ASEAN Facilitate growth of regional and global trade liberalization 	<ul style="list-style-type: none"> Alternative Dispute Resolution (ADR), Copyright and Related Rights (Neighbouring Rights), Enforcement of IP and Related Laws, Geographical Indications, Industrial Designs, Layout Designs of Integrated Circuits, Patents (Inventions), Trademarks, Undisclosed Information (Trade Secrets). 	<ul style="list-style-type: none"> Establishment of the ASEAN Working Group on Intellectual Property Cooperation (AWGIPC), a collective group of AMS IP offices responsible in developing, coordinating and implementing all IPR related regional programmes and activities in ASEAN.
1996	ASEAN Working Group on Intellectual Property Cooperation (AWGIPC)	<ul style="list-style-type: none"> Transform ASEAN into an innovative and competitive region through the use of IP so that the region remains an active player in the international IP community. 	<ul style="list-style-type: none"> A collective unit of ASEAN Member States IP offices responsible in developing, coordinating and implementing all IPR related regional programmes and activities. 	<ul style="list-style-type: none"> Improved regional framework of policies and institutions relating to intellectual property. Revamped the ASEAN IP Portal which provides access to the ASEAN TMview, an online database of trademarks registered in IP offices throughout ASEAN. Work also continues towards an online platform for ASEAN Patent Examination Co-operation (ASPEC) services.
2004	ASEAN IPR Action Plan 2004-2010 2011-2015	<ul style="list-style-type: none"> To develop an ASEAN IP System that takes into account the different levels of capacity of the Member States, balances access to IP and protection of IPRs, and responds to the current needs and anticipates future demands of the global IP system. 	<ul style="list-style-type: none"> The ASEAN IPR Action Plan 2011-2015 is designed to meet the goals of the AEC by transforming ASEAN into an innovative and competitive region through the use of IP for their nationals and ensuring that the region remains an active player in the international IP community. Focuses more on building a balanced IPR system that encapsulates the variation in development levels and capacity differences in IPR services of Member States. 	<ul style="list-style-type: none"> The inaugural ASEAN IPR Action Plan 2004-2010 laid the foundations in fostering IP asset creation in ASEAN. Promoted greater public awareness and the building up of human resources and institutions relating to IP and IPRs in ASEAN such as multipartite collaboration between business associations, universities, S&T and R&D institutions, and enforcement agencies. Enhanced cooperation in Business Development Services (BDS) activities by ASEAN National IP Offices IPR Action Plan 2004-2010, centring the use of IP in transforming the region into an active, innovative and competitive player in the international IP community.

Appendix 3: Performance of ASEAN Countries in GIPC Index 2014 and 2015

№		2014	2015	2014	2015	2014	2015	2014	2015	2014	2015
		Indonesia	Malaysia	Singapore	Thailand	Vietnam					
Category 1: Patents, Related Rights, and Limitations											
1	Patent term of protection	1	1	1	1	1	1	1	1	1	1
2	Patentability requirements	0.5	0.5	1	1	1	1	0.25	0.25	0.25	0.25
3	Patentability of computer-implemented inventions	0	0	0.25	0.25	1	1	0.25	0.25	0	0
4	Pharmaceutical-related patent enforcement and resolution mechanism	0	0	0	0	1	1	0	0	0	0
5	Legislative criteria and use of compulsory licensing of patented products and technologies	0	0	0	0	1	1	0	0	0	0
6	Patent term restoration for pharmaceutical products	0	0	0	0	1	1	0	0	0	0
7	Regulatory data protection term	0	0	0.5	0.5	0.5	0.5	0	0	0.5	0.5
Total score Patents (out of 7)		1.5	1.5	2.75	2.75	6.5	6.5	1.5	1.5	1.75	1.75
Category 2: Copyrights, Related Rights, and Limitations											
8	Copyrights (and related rights) term of protection	0.52	0.52	0.53	0.53	0.74	0.74	0.53	0.53	0.53	0.53
9	Legal measures that provide necessary exclusive rights that prevent infringement of copyrights and related rights (including Web hosting, streaming, and linking)	0.25	0.25	0.5	0.75	0.75	0.75	0.25	0.25	0.25	0.25
10	Availability of frameworks that promote cooperative action against online piracy	0	0.25	0.75	0.75	0.75	1	0	0	0	0
11	Scope of limitations and exceptions to copyrights and related rights	0.25	0.25	0.5	0.5	1	1	0.5	0.25	0	0
12	Digital rights management legislation	0	0.25	0.75	0.75	0.75	0.75	0	0	0.25	0.25
13	Clear implementation of policies and guidelines requiring proprietary software used on government information and communication technology (ICT) systems to be licensed software	0.25	0.25	0.5	0.5	1	1	0.5	0.5	0	0
Total Score Copyrights (out of 6)		1.27	1.77	3.53	3.78	4.99	5.24	1.78	1.53	1.03	1.03
Category 3: Trademarks, Related Rights, and Limitations											
	Trademarks term of protection (renewal periods)	1	1	1	1	1	1	1	1	1	1
	Non-discrimination/non-restrictions on the use of brands in packaging of different products	1	1	1	1	1	1	1	1	1	1
	Ability of trademark owners to protect their trademarks: requisites for protection	0.25	0.25	0.5	0.5	1	1	0.25	0.25	0.25	0.25
	Legal measures available that provide necessary exclusive rights to redress unauthorised uses of trademarks	0.25	0.25	0.5	0.5	0.75	0.75	0.25	0.25	0.5	0.5
	Availability of frameworks that promote action against online sale of counterfeit goods	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.5	0.5
Total score trademarks (out of 5)		2.75	2.75	3.25	3.25	4	4	2.75	2.75	3.25	3.25



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