Assessing the Role of IPR Legislations for Technology, Innovation and Economic Growth in Indonesia

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Abstract - The World Intellectual Property Organization (WIPO) suggests adherence to international norms and legislations for protection of Intellectual Property Rights (IPR) and ensuring the technology, enhancement, innovation and economic growth of Indonesia. World Trade Organization (WTO), too, provides enough evidence that protection of IPR is directly linked with smooth technology transfer, innovation and economic growth. Indonesia has a great potential to innovate as both WTO and WIPO have allowed Indonesia to acquire high value-added goods through international trade from developed countries. This study examined how strongly IPR legislations in Indonesia have offered incentives to firms to undertake foreign investments and export goods to WTO member countries. Doubts were raised by respondents of the study over the role of IPRs and a few individual export firms. This study therefore aimed at investigating the impact of stronger IPR legislations on inward FDIs as well as on exports and to determine how this led to economic growth, innovation and technology transfer. The empirical evidence was collected and statistically analyzed through closed ended questionnaires from 120 export firms in Bandung and Jakarta. The findings revealed a positive relationship between IPR legislations and exports leading to innovation and economic growth; however, they failed to state any significant relationship with technology transfer, in spite of the fact that Indonesia has developed strong technical knowhow and robust IPR legislations, reducing the risk of copyright violations of patents and trademarks.

Keywords – Economic growth, IPR Laws, patents and copyrights, technology

1. INTRODUCTION

When Indonesia joined WTO in 1995 and agreed to the implementation of the TRIPS agreement, several doubts were raised about its impact on the nation’s economy. It was difficult to claim that the new economic scenario after signing the agreement will enhance the economic growth or at least accelerate the economic development processes. One of the reasons for such apprehension was that a few variables including economic sustainability, market openness, technological infrastructure and a skilled human capital were deemed to be prerequisites for such an economic growth. The IPR legislations, too, needs to be fair and transparent in order to play a positive role in the nation’s economic growth. Indonesia’s economic growth is also due to her demographic and geographical advantages as well as the abundant natural resources (Aghion and Zilibotti, 2006; World Bank, 2008; Abiodun, 2014; Sabri
The increased technological innovation and knowledge creation has undoubtedly promoted Intellectual property, which further led to the design of several legal and trade structures at international level. The WTO membership and the TRIPS Agreement also provided Indonesia a defense mechanism for its intellectual property such as copyrights, patents and trademarks. It also provided a dispute resolution mechanism against any breach of these norms. Indonesia entered in many bilateral, regional and international trade agreements and fully relied on these IPR legislations (World Bank, 2008). Indonesia's IPR legislations gradually expanded with other laws and regulations related to trade secrets, patents, industrial designs and industry lay-outs. The existing laws on these items were harmonized according to the requirements of the TRIPs Agreement as a result, the Indonesian government could make optimum use of technology for improving its industrial products (Pavitt, 1999; OECD, 2004; Grossman, and Helpman, 1991; Yosephine, 2015; Maurice, 2013; Chidoko and Mashavira, 2014; Yuliansyah, 2015; Kadasala, et.al. 2016; Owusu-Antwi, et.al. 2017; Ahmed, et.al. 2018).

There is a critical debate upon accepting the relationship between IPR legislations and a nation’s economic growth, and creating favorable circumstance for technological transfer and Innovations, particularly in a developing economy like Indonesia’s. This debate reaches new dimensions and gets more complex when these are looked at with the international perspectives, the human rights, international law and socio-economic aspects have also always challenged the IPR legislations framed by many developing countries, when they are try to decipher the dichotomy between positive or negative. However, economists are hesitant in accepting this dichotomy and believe that the relationship between IPR legislations and economic growth depends on multiple variables. They also regard that the evidence submitted to this effect are “fragmented and contradictory”, because these variables have never been measured. According to many thinkers, IPR legislations can both increase or restrict the economic growth (Nze, et.al. 2016; Hang, et.al. 2016; Hallunovi and Berdo, 2018; Forgha, et.al. 2018).

Amid this complexity and controversy, this study aimed at investigating the moderating impact of IPR legislations on economic growth, innovation and technology transfer in Indonesia. Empirical evidence collected not only hinted at the moderating influence of IPR legislations on all these variables but also regarded IPR legislations as intangible asset to put the Indonesian economy ahead in global competition. In this study, therefore, the authors have focused on examining how IPR legislations in Indonesia have affected the economic growth, innovation and technology transfer.

2. Literature Review

A plethora of studies was produced on benefits of Intellectual Property Rights (IPRs) post TRIPS Agreement, focusing on economic growth and technology transfer in developing countries (Mansfield, 2003; Yosephine, 2015; Acemoglu and Linn, 2006; Aghion, and Howitt, 2009; Maskus, 2000). New evidences were brought out to show the linkages between IPR legislation and technology, innovation and economic growth. There is also the evidence stating the incentives granted to WTO members and signatories of the TRIPS Agreement and help them gain a maximize benefits to enhance their economy (Commission on Intellectual Property Rights, 2002). The Indonesian IPR legislations have also been subjected to repeated revisions in order to make them compatible to the regional and international IPR standards (WIPO, 2009). This became imperative also because Indonesia has also signed several WIPO treaties, including the Paris Convention,
the WIPO Performances and Phonograms Treaty (WPPT), the WIPO Copyright Treaty (WCT) and the Trademark Law Treaty. These treaties compel Indonesia to maintain the compatibility with their norms and standards.

As a result, Indonesia enacted, modified and adopted new laws such as Protection of New Plants (Law # 29), Trade Secrets (Law # 30), Industrial Designs (Law # 31), and Layout Designs Of Integrated Circuits (Law # 32). Laws were also promulgated on trademarks (Law #15) and patents (Law #14) and copyright (Law # 19) (WIPO, 2009). A new Customs Act and Legislations for Patent Attorney Profession were also issued. The Indonesian Government also decided to review all its IPR laws, in consultation with all its stakeholders (OECD, 2004; UNCTAD, 2004; WIPO, 2009).

i. Economic Growth,

Maskus (2000) asserts that IPR legislations can either enhance or retard the economic growth of a nation. The economic growth depends on factors such as market stability, openness and flexibility along with a strong technological infrastructure and robust human capital. The IPR legislations therefore have no potential to bring technological change or innovation. Similarly, Falvey, Foster and Greenaway (2004) consider that the relationship between IPR legislation and economic growth is determined by the internal circumstances of a country (Azam, Haseeb, binti Samsi, & Raji, 2016; Azam, Haseeb, & Samsudin, 2016; Haseeb, 2018; Haseeb & Azam, 2015).

IPR legislations allow mainly two types of economic initiatives namely, promoting investments in the business of knowledge creation; and extending rights of the usage of newly developed technologies in the form of goods and services. The second initiative that protects the economy is promoting innovations by encouraging patent or IPR holders to introduce their inventions and ideas in the market. The legal experts link it with the Right to Information (RTI) enjoyed by all citizen of a country. Information, according to them, is for the public interest and therefore must be accessible to all. Economically too it is profitable to grant accessibility of the new technologies to general public for the purpose of mass production and deriving social benefits. (Maskus, 2000; Maskus, Saggi and Puttitanun, 2004).

ii. Creativity and Innovation

Indonesian economy is often termed as a “creative economy” due to several innovative practices that it adopted including transparency and predictability (Yosephine, 2015). Many US investors were attracted owing to this quality. The US investment in Indonesian creative economy projects amount to approx. $65 billion with another $61 billion projected in the next five years, largest in ASEAN. Besides, President Joko Widodo signed investment agreements worth $20 billion during his visit to the US and agreed to provide IPR legislative protection to all these investments. There are such provisions in these legislations that prohibit the misuse of the IPR products and services. This would also help to check the IPR piracy and breach which poses a challenge to the Indonesian creative economy (Abidin, Bakar, & Haseeb, 2014; Abidin & Haseeb, 2015; Haseeb, Hartani, Bakar, Azam, & Hassan, 2014; Haseeb, Hassan, & Azam, 2017).

Unlike many developing nations, Indonesia has the Indonesian Creative Economy Agency (ICEA) which is responsible to look into the country’s creative economy (OECD, 2015). The ICEA has an ambitious plan to create a member base of about 13 million and give 12 percent contribution to GDP by 2019. In order to accomplish this target, the agency has set up an optimization strategy comprising SiKreaSI (Creation), ProtekSI (Protection) and KommersialisasiSI (Commercialization). Under this strategy, such resources will be created that deal with public awareness on IPR; licenses will be issued to protect the rights of the lawful investors against illegal and fake IP
schemes; and a commercialization process in fields such as film and music shall be initiated with the help of Indonesian Financial Services Authority (OJK). Microsoft Indonesia has also taken initiatives to protect creators under IPR legislations and ensuring its compliance of the Indonesian Copyright Law (Arundel, and Kabla, 2008; Graber, and Burri-Nenova, 2008; Arora, 2005; Cheng, et.al. 2018).

iii. Technology Transfer

A major advantage gained by Indonesia by adhering to TRIPS Agreement and complying with WTO provisions was to attract a greater inflow of technology in the form of FDIs or international trade or contractual licensing of technologies. This was achieved through multinational companies, subsidiaries, and joint ventures. Such technology also needed a strong IPR legislation with both internal and external supports. For instance, the Indonesian law protected patents and copyrights considering them as technological inventions. The law defines a technological invention as an innovative step towards industrial and economic growth. Similarly, Indonesia also built up its imports of goods and services in order to improve its technology as there is a correlation between imports of capital goods and technology; wherein the latter has a direct impact on reduction of production costs and increase of productivity (Branstetter, Fisman and Foley, 2006). An example was cited in a study (Arora, Fosfuri and Gambardella, 2001) which discovered that every one percent increase in technology imports from OECD countries raised productivity up to 0.3 percentage points.

As a result, import licensing considered as insecure compared to FDIs in high-technology sectors was redefined in the light of these new findings. The MNCs preferred to transact through FDIs as it provided them greater intellectual property protection. Moreover, it was much more convenient for firms to undertake business operations through FDI rather than licensing if they owned a sophisticated technology, or produced differentiated products. FDIs also helped them to avoid high licensing costs (Horstmann and Markusen, 1986). Adopting FDI practices also helped the firms to earn the cost of technology transfer. It also enabled the multinational firms to develop direct relationships with suppliers and distributors.

Developing nations and importers of technology like Indonesia have now realized the need to consolidate their IPR legislations systems in order to pave a path for learning and innovation. The first and foremost step that they should take is to redesign their import licensing system and their cost and issuance policies. A proper import licensing system will ensure the foreign investors against any possible misuse of proprietary technology. The number of trademark and invention patents would boost up and establish a new era in the technology transfer through import licensing system rather than depending upon FDIs.

iv. IPR Legislations

Another variable of this study is the IPR legislations. One of the constraints that Indonesia has faced is nonexistence of an intellectual property regime since it has never been developed here but in the western countries with vested economic interests and diverse cultural norms. Indonesia only adopted their IPR legislations and norms. Secondly, the IPR legislations in Indonesia are not compatible with Adat, the local system of customary norms in Indonesia. The Adat does not recognize any sort of proprietorship for intellectual property, inventions or patents (Henley and Davidson, 2007). Thirdly, Indonesia lacks a strong enforcement mechanism for compliance of IPR legislations which makes it difficult to maintain ethical business practices. Finally, the Indonesian IPR laws are also inappropriate and
incompatible to support the fast developing Indonesian economy (General Directorate of Laws, 2017).

Thus, it was right to raise this important question in this study whether IPR legislations could be affected by technology transfer, innovation and economic growth. In such a scenario, the following hypotheses were developed for this study.

**H₁:** Economic growth is positively and significantly influenced by IPR legislations.

**H₂:** Creativity and Innovation are positively related to IPR legislations.

**H₃:** Technology transfer is positively related to IPR legislations.

### 3. Research Methodology

This study adopted the survey method to collect data through an on-line questionnaire. An online questionnaire is the cheapest and fastest method to cover widely scattered populations (Ronald, 2002). The items in the questionnaire echoed the findings of the prior studies.

#### i. Research Objectives

The first objective of this study was to find out how export firms contributed to economic growth in spite of the restriction laid down by IPR regulations. The second objective was to investigate how creativity and innovation were related to IPR regulations. The third and final objective was to analyze the factors that contributed to technology transfer into the product/service.

#### ii. Sampling Method

The study chose the owner/managers of Indonesian export firms in Bandung and Jakarta as repondents of this study. In this study, only those export firms were chosen that had at least assets IDR10 billion with total sales of at least IDR 50 billion per year. The data about these firms was made available by WIPO website (WIPO, 2009) that carried databases and stores information about all export houses shortlisted for this study. Most of data sources were also confirmed from the data available with the Indonesian Ministry of Export and Import. Finally 120 export firms constituted the sampling frame for this study. All firms respondent to the questionnaire and therefore the response rate was 100%.

### 4. Analysis and Discussion

In order to analyse and evaluate the data and report the findings in PLS-SEM, two-steps were used as recommended by Henseler, Ringle and Sinkovics (2009). The adopted process comprised the following:

1. the assessment through the measurement
2. the assessment through a structural model,

### 5. Measurement Model Assessment

As suggested by Hair et al. (2012) and Henseler et al. (2009), the measurement model required the familiarity with individual item reliability, internal consistency reliability, content validity, convergent validity and discriminant validity.

#### i. Individual Item Reliability

First, the outer loadings of each construct’s measure was examined as recommended by (Hair et al., 2012) to ensure that the retained items with loadings were normal for a model, with the benchmark (between .40 and .70) (Hair et al., 2014), it was revealed that all the retained items in this study is more than the minimum requirement of loadings of 0.40. Thus, the loadings are found between 0.542 and 0.978. hence, individual item reliability was determined.

#### ii. Internal Consistency Reliability
Internal consistency reliability is determined by the concept similarity measured by items on a particular construct (Sun et al., 2007). However, studies recommend that internal consistency reliability of an adapted instrument in research can best be estimated through Cronbach’s alpha coefficient and composite reliability coefficient (McCrae, Kurtz, Yamagata, & Terracciano, 2011). The current study chose the composite reliability coefficient model to determine the internal consistency reliability of measures mainly for two reasons: Firstly, composite reliability coefficient provided a lesser biased estimate of reliability than Cronbach’s alpha. This happens because the latter did not take into consideration the actual contribution of any individual item loadings and accepted all items having equal contribution to their construct (Gotz, Liehr-Gobbers, & Krafft, 2010). The table below (Table 1) explains the Cronbach’s Alpha, Composite Reliability and Average Variance Extracted.

### Convergent Validity

Convergent validity means the extent to which items represent each latent variable or the construct and correlate with other measures of the same latent construct (Hair et al., 2006). However, in order to determine the convergent validity in this study, the researchers assessed it by examining the Average Variance Extracted (AVE) of each construct (Fornell and Larcker, 1981). In order to achieve convergent validity, Chin (1998) suggests that the Average Variance Extracted of each construct should be in the region of at least .50 or more. In line with this suggestion, Chin (1998), the AVE values in this study had high loadings of AVE as displayed above (> .50) on their respective constructs, which shows adequate convergent validity.

### Discriminant Validity

Duarte and Raposo (2010) describes discriminant validity as the extent to which a particular latent construct differs from other constructs. In this study, we ascertained discriminant validity by using AVE, as recommended by Fornell and Larcker (1981). Thus, this was achieved by matching the correlations among the constructs with square roots of AVE (Fornell & Larcker, 1981). The table below (Table 2) shows the discriminant validity of the latent constructs.

Furthermore, as said earlier that discriminant validity can be best ascertained by comparing the indicator loadings with cross-loadings (Chin, 2010), and that all the indicator loadings should be more than the cross-loadings. It was found that all indicator loadings were more than the cross loadings, indicating adequate discriminant validity for advance analysis (Table 2).

### Assessment of Significance of Structural Model

Next, an assessment of the structural model was made in this study. In order to assess the structural model and estimate the significance of the path coefficients, adequate bootstrapping procedure was applied (Hair et al., 2012; Henseler et al., 2009). Table 4 therefore illustrates the assessment of the structural model.

### Discussion

At the outset, it was postulated that hypothesis 1 predicted that economic growth was positively and significantly influenced by IPR legislations. Result in Table 4 revealed a significant positive relationship between economic growth and IPR legislations ($\beta = -0.737$, $t = 5.383$, $p < 0.000$), supporting Hypothesis 1. This indicates that when there is economic growth, it would be a result of better IPR legislations. Thus, this finding is in congruent with the study of M Haseeb and M Azam (2015) and T Suryanto and AR Abdul Hadi (2015) who derived similar results in their studies.

Secondly, hypothesis 2 predicted that Creativity and Innovation are positively related to IPR legislations. Result in Table 4 shows that Creativity and Innovation had
a positive significant relationship IPR legislations ($\beta = -0.024, t = 0.113, p < 0.910$), supporting Hypothesis 2. This means that Creativity and Innovation has tendency to be highly useful and facilitating the IPR legislations to take place, The more the level of creativity and innovation, the higher will be the successful enforcement of IPR legislations. This finding is similar to the earlier finding by Yosephine, (2015), Acemoglu, and Linn (2006) and Arundel, and Kabla (2008).

Thirdly , hypothesis 3 predicted that Technology transfer is positively related to IPR legislations. Result in Table 4 shows that Technology transfer had a negative relationship with IPR legislations ($\beta = -0.024, t = 0.113, p < 0.910$), not supporting Hypothesis 3. This means that Technology transfer is not influenced by IPR legislations as it seems not to be connected with its legal structure. This finding is similar to the earlier finding by Mansfield, (2003), Maskus, (2000) and Arora, Fosfuri and Gambardella (2001).

The findings of this study have revealed the interconnection between long-term impacts of IPR legislations in the form of patent and copyright reforms or by even enacting new laws on variables of this study such as technology transfer, innovation and economic growth. However, the results also hinted at the requirement of additional analysis as the market volatility and other factors change considerably thus affecting the economic growth. However, the findings in the current form are refined in conclusions and robust enough to conclude that IPR legislations have a significant and positive impact on all variables of this study. These results are however pertinent to only the developing countries like Indonesia which have immense capacity for technology transfer and innovation. The evidence presented in this study also suggests that IPR legislations if enhanced can attract greater international economic activity, bigger creativity and innovation operations.

8. Conclusion

To sum up, IPR legislations can play a vital role in bringing together technology, innovation and economic growth. It is true that IPR legislations in developing countries like Indonesia encourage information dissemination and knowledge transfer through low-cost imitation of foreign goods and technology transfer instead of making changes in their own system. This study has concluded that Indonesian policies and domestic laws related to Intellectual Property are not sufficient for domestic economic growth, creativity and innovation and technological enhancement. In fact, evidence prove that inadequate IPR legislations have created hurdles in bringing a technological change much required for the economic growth. The study also found out that the grim situation is also because all creations, inventions and product innovations are planned according to the market needs, protecting only the domestic patents, models, and trade secrets. Often, what is termed as innovation is just a minor adaptation of existing technologies and products. Such small inventions and patents could prove detrimental to the economic growth. It is recommended that in order to become competitive, Indonesian IP law must expand and adopt new systems and techniques for IPR protection of both domestic and foreign innovators.

References


consumption, economic growth, and CO2 emissions using STRIPAT model for BRICS countries. *Environmental Progress & Sustainable Energy*, 36(2), 523-531.


Table 1  Composite Reliability and Average Variance Extracted

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Cronbach’s Alpha</th>
<th>Composite Reliability</th>
<th>Average Variance Extracted (AVE)</th>
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<tr>
<td>Economic Growth</td>
<td>0.907</td>
<td>0.914</td>
<td>0.519</td>
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<tr>
<td>Creativity and Innovation</td>
<td>0.844</td>
<td>0.890</td>
<td>0.622</td>
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<tr>
<td>Technology Transfer</td>
<td>0.724</td>
<td>0.755</td>
<td>0.625</td>
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Table 2  Discriminant Validity

<table>
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<th>Creativity and Innovation</th>
<th>Technology Transfer</th>
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</thead>
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<tr>
<td>Economic Growth</td>
<td>0.720</td>
<td>0.766</td>
<td>0.776</td>
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<tr>
<td>Creativity and Innovation</td>
<td>0.725</td>
<td>0.788</td>
<td>0.766</td>
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<td>Technology Transfer</td>
<td>0.336</td>
<td>0.489</td>
<td>0.791</td>
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Table 3  Table of Significance

<table>
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<th>Standard Deviation</th>
<th>T Statistics</th>
<th>P Values</th>
<th>Decision</th>
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<td>0.707</td>
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<td>0.270</td>
<td>0.113</td>
<td>0.910</td>
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<td>0.125</td>
<td>0.145</td>
<td>0.910</td>
<td>Not Supported</td>
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