

# Shortcomings Technology Transfer In Indonesia: A Critical Appraisal

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## Abstract

This study aimed to analyse shortcomings technology transfer in Indonesia. As we have indicated, that government have failed to create technology transfer for Indonesia. Even though the transfer of technology is strongly campaigned as a principal means of relieving world poverty, there is no reliable and credible evidence that shows a significant correlation between technology transfer under the patent regime and the collective mastery of a nation to access information, knowledge and technology (INT) effectively in order to improve the quality of people's lives.

*Key Words: Patent System, Technology Transfer.*

## 1. Introduction

The year 2011 marked the 50th anniversary of the technology transfer (hereinafter TT) debates at the international level. TT was first tabled as an international issue in 1961, with a request to the United Nations Secretary General by some developing countries (hereinafter DCs) that studies be commissioned to ascertain the role of international treaties in promoting intellectual property rights (hereinafter IPRs) protection in DCs. With time, the debate has grown in proportion and permeated different processes and institutions. Looking back, the subject has increasingly gained prominence because DCs felt both the need to revise international treaties dealing with intellectual property (hereinafter IP), and to ensure that there is a specific framework on TT that promoted their access to existing technologies. Targeted efforts to achieve these ends failed to materialize by the mid-1980s. Despite the failure of those efforts, the fundamental issues raised fifty years ago still remain relevant today and continue to influence and polarize international debates<sup>1</sup>.

In the span of these fifty years, many developments have occurred in the international political economy of TT negotiations. At the same time, our understanding of the processes and institutions that influence technological change has evolved. From a situation where we had little understanding of technological change and how it occurs<sup>2</sup>, immense progress has been made over the past five decades to highlight its determinants within and amongst countries at different stages of development. Not only do we have a better understanding of technology and its sources of origin, but we have also moved towards deciphering the critical relationship between technology, innovation and development, both in terms of empirical evidence and policy-making.

What we know up until now can be summarized as a set of stylized facts. First, technology – particularly access to existing technology – plays a central role in catch-up growth: a process of closing the gap between those countries that produce new knowledge (industrial countries) and others that are learning to create products and processes that are new to their contexts but not necessarily to the world at large<sup>3</sup>. Second, technological change of this kind is often not about innovating at the frontier, but rather about how the structure of production can be changed to achieve higher levels of productivity. This makes technological change a fundamental component of capital accumulation and structural change within countries. Third, despite the fact that a large amount of technology is already available in the public domain, accessing these technologies and channeling them into processes of

knowledge accumulation and innovation within countries is neither automatic nor costless<sup>4</sup>. Using already available technology in the public domain requires the existence of technological capacity amongst actors.

Despite these insights on the important role of technological change for development, the world has been witnessing the emergence of a widening technological divide not only between the technologically developed and the developing world, but also among the DCs themselves. Technological divergence among DCs is increasing with time, especially now that several DCs are well on their way to catching up<sup>5, 6</sup>. While some countries have been relatively successful, there are still many DCs for whom technological marginalization is a recurrent reality.

At the international level, ways to address these issues have long since been coded in terms of TT from the technologically advanced countries in the industrialized world to the technologically disadvantaged countries of the South. Since its debut in the 1960s, transboundary TT has been constantly an issue of increasing importance in negotiations between countries. Beginning with several key negotiations, including the UN Convention on the Law of the Sea, the discussions and deliberations reached a peak in the 1980s with the UNCTAD negotiations on an International Code of Conduct on the TT.

## **2. Indonesian (INA) Patents Act No. 14 of 2001**

Among many factors to assist in providing an appropriate level of TT as indicated above, there are in general two ways of getting foreign technology transferred to developing countries: its sale to local enterprises by licensing (patented and unpatented know-how) and its transfer by means of direct investment.

### **2.1 Licenses of Rights**

A system of license of right has been evolved in the patent laws of some countries to overcome the inherent deficiencies in the system of compulsory licensing. This system is also known as automatic licensing system. System of licenses of right is a voluntary as well as non-voluntary restriction, on the exclusive monopoly of the patentee's right, in the public interest. Voluntary in the sense that under this system a patentee may safeguard his patent from a compulsory license application or revocation for non-working by voluntarily applying to the patent office at any time after grant of patent to have the patent endorsed with the word "licenses of right". It is non-voluntary in the sense that after the lapse of particular period (generally it is three years) from the date of grant of patent, the government can apply to the Controller to have a patent endorsed with the word "licenses of right". Additionally there is also third type of this system where the endorsement of a class of patents with the words "license of right" is made by statute itself.

Further, with regard to license the patentee shall be entitled to give it to another person pursuant to a license agreement<sup>7</sup>. The conditions of the license including the amount of remuneration payable to the patentee (sometimes it is called royalties), is determined in the absence of agreement, by an authority designated by the law for this purpose. Moreover, unless otherwise agreed, a patent holder may continue to perform by himself or give a license to any other third parties to perform the acts referred to in Article 16 of the INA Patents, which shall be effective during the term of the license.

This system may be specially attractive to DCs because once a patent is thrown open to license of right, it will no longer depend on the will of the owner of the patent whether the patent will be exploited in the country, anybody can obtain a license and on the basis of that license work the patented invention in the country. But this system has also been criticized by saying that, "the disadvantage of this system is that prospective licensees hesitate to obtain such a non-exclusive license since competitors can obtain the same at any time<sup>8</sup>. A license may be express, implied or statutory, it may exclusive, non-exclusive or limited. An exclusive license is defined under Article 70 of INA Patents. Such a license excludes all other persons including the patentee from the right to use the invention. In a limited license the limitation may arise as to persons, place, time, use, manufacture and sale. An express license is one in which the permission to use the patent is given in explicit terms.

Certain presumptions as to term are provided in Article 69 (2). The license must presumably be in writing and to be effective must be registered<sup>9</sup>.

The agreement between the parties concerned must be reduced to the form of a document embodying all the terms and conditions governing their rights and obligations. An application for registration of such document must be registered to the Directorate General of Intellectual Property Rights which shall be recorded and announced, with the payment of a fee. Where a licensing agreement is not recorded, said licensing agreement will not have legal effects on a third party. Furthermore, under Article 71 however, excludes certain clauses<sup>10</sup> from such licenses, declaring them to be invalid. The two sorts of clauses are: (i) provision which is directly or indirectly detrimental to the Indonesian economy, and (ii) certain limitations obstructing the capability of the Indonesian people to master and develop the technology generally connected with the patented invention, and particularly the invention for which the patent has been granted. As far as regulations system on the TT in Indonesia is concerned, apart from INA Patents as indicated above, under Articles 11 and 12 Investment Law, No. 25 of 2007 mentioned that:

*“Enterprises with foreign capital are obliged to arrange and/or to provide facilities for training and education at home or abroad for Indonesian nationals in an organized way and with a set purpose in order that the alien employees may gradually be substituted by Indonesian ones”.*

In addition, the activity program may be organized by the employers or third-party services may be utilized<sup>11</sup>. The non performance of this obligation results in employers employing foreign worker(s) to pay a compulsory educational and training contribution. Such contributions will be used to fund the Government’s manpower education and training<sup>12</sup>. Beside it, in the oil and gas sector, contractors of oil and gas production sharing contracts are required to provide an educational and training program for all Indonesian employees<sup>13</sup>. On this subject the Elucidation of the Oil and Gas Law No. 22 of 2001 does not give further explanation.

## **2.2 Foreign Direct Investment (FDI)**

It should be noted however, that the General Policy towards the skill problem of Indonesian national manpower is, that efforts should be made to enhance knowledge, improve skill, augment the ability to organize and manage. In pursuance of this General Policy we may emphasize that within the framework of mineral oil and gas mining, the above mentioned efforts should also be made by the Government. On the one hand, these laws were intended to invite private foreign capital to be invested in projects which will contribute to the healthy development of Indonesia’s economy. Pursuant to the law on industrial affairs, selection and transfer of foreign industrial technology which is strategic in nature and needed for the development of domestic industry. On the other hand, as indicated above that the embodying all the terms and conditions governing their rights and obligations, hence such document must be registered to the Directorate General of Intellectual Property Rights which shall be recorded and announced, with the payment of a fee. Where a licensing agreement is not recorded, said licensing agreement will not have legal effects on a third party. Otherwise, further provisions concerning licensing agreements shall be regulated by a Government Regulation<sup>14</sup>. In this context, in fact, unfortunately, at present, such Government Regulation is not enacted yet. Its mean, in this regard that the basic philosophy of the contractual arrangements.

## **3. The Role of Indonesian Government for TT**

The primary objective of a licensee in entering into a technology license agreement includes the acquisition of a developed and tested industrial process without having to bear the risks, delay and expense of its development. For licensees in developing countries, the unavailability of facilities or resources for R and D often renders the licensing of foreign technology rights the only means of obtaining them. Even if the licensee were to embark upon the necessary research, the risk of failure is compounded by the risk that a rival enterprise may be able to obtain industrial property protection in relation to the relevant technology. ‘Licensing in’ may assist a licensee after a profitable exploitation

period, under the name or mark of the licensor, to aggregate the financial, technical and commercial<sup>15</sup> means necessary to initiate its own research programme.

In Indonesia a major 'unpackaged' (non-equity) mode of technology transfer from advanced country firms to Indonesian firms has been technical licensing agreements (TLAs). Although no quantitative data are available on the number of these TLAs, circumstantial evidence indicates that these TLAs often involve the transfer of older and mature technologies that do not offer the recipient country a long-term competitive advantage in the global<sup>16</sup> market<sup>17</sup>. However, for a late-industrializing economy like Indonesia, acquiring and mastering these older technologies first is a good way to develop the important basic industrial technological capabilities (ITCs), namely the production, investment and adaptive capabilities. In this regard Marks, viewed as follows: "Unlike the other three ASEAN countries, Malaysia, the Philippines, and Thailand, Indonesia does not have data on the number of technology licensing agreements signed by Indonesian firms (including both domestic firms without foreign equity ownership and joint ventures with foreign investors) with their foreign licensors. Nor is there a single satisfactory definition of technology inflows, especially concerning the transfer of human capital resources. But as an approximation one can use data on royalty and licensing payments to the major technology suppliers in the Asia-Pacific region, namely the U.S. and Japan<sup>18</sup>. For instance, in a publication of Japan's Agency of Industrial Science and Technology published in 1992 it was mentioned that out of Japan's total technology exports of yen 339.4 billion during fiscal 1990, 5.8 per cent of this total amount (yen 19.7 billion) went to Indonesia"<sup>19</sup>.

Imports of capital goods provide another way of acquiring the means of production without the transactional costs involved in FDI or TLAs. Capital goods imports are actually embodied technology flows entering a country. They introduce into the production processes new machinery, other capital equipment and components that incorporate technologies which do not necessarily incorporate high or frontier technologies<sup>20</sup>, but are nevertheless new to the recipient firm.

These imported capital goods can be a cheap way of developing local ITCs if they can be used as models for reverse engineering to produce the machines locally. However, Indonesian firms have in general not engaged in 'reverse engineering' on a large scale to develop their ITCs. However, capital goods imports also contain a significant disembodied element, as the foreign suppliers of these capital goods, specifically machinery, often send technical experts to Indonesian firms to train the workers of these firms how to operate, maintain and repair the imported machinery. This kind of technology and skill transfer by technical experts from foreign firms to Indonesian employees has been quite significant for most foreign machinery suppliers. This training is crucial as the mere imports of capital goods do not automatically lead to an enhancement of local ITCs, if local employees do not know how to operate, maintain or repair the imported machinery. However, if the imports of capital goods are accompanied by the effective training of local workers on how to operate, maintain and repair the imported machinery, these imports will lead to the development of the basic production (operational) capabilities of the firms and over time also to the development of adaptive capabilities, specifically to carry out minor process adaptations<sup>21</sup>.

In this regard, as far as TT in Indonesia is concerned pointed out: A thorough examination of the extent to which technology transfers actually take place presupposes a clarification of terminology. In the most general sense of the word, 'technology' is a system of production in which inputs are transformed into outputs. It includes specifications of inputs, outputs and organizational arrangements. Productive activities may be of three types: operations, improvement and innovation<sup>22</sup>. The latter two can refer to both processes and products. Taken together they convey technical change and especially important form of improvement is adaptation to local conditions. Not all imported technologies are equally suited for implementation in a developing country such as Indonesia. Therefore, this study implicitly also addresses the question whether technologies transferred through Japanese investment are indeed the most appropriate ones for Indonesia. Transfers of technology may prove ineffective precisely because not the right kind of technology was chosen in the first place or because local absorptive capacities were inadequate<sup>22</sup>.

The success of an international TT is measured by the extent to which Indonesian nationals have achieved technological capability so that they can use imported or transferred technology efficiently. It is useful to distinguish between four types of industrial technological mastery<sup>23</sup>:

- (1) Acquisitive capability, i.e. knowledge and skills required to search, assess, negotiate and procure relevant foreign technologies as well as to install and start up the newly set-up production facilities.
- (2) Operational capability, i.e. knowledge and skills required for an efficient operation of the production process, including maintenance and repair of the machinery.
- (3) Adaptive capability, i.e. knowledge and skills required to carry out minor modifications of processes and/or products.
- (4) Innovative capability, i.e. knowledge and skills needed to carry out research and development (R&D) in order to make major changes in process and/or product technologies”.

The effectiveness of technology transfers is measured by scores on the development of each of these capabilities. Much of the literature applies a rather narrow conception of TT stressing the actual transmission of skills from one individual to another. This is accomplished through training, both formal and non-formal, as well as through participation and observation while working in a foreign-controlled firm. Chief channels for such transfers are FDI and technical assistance programs under the auspices of official aid. Such a narrow conception of TT has an important shortcoming as it leaves out the absorption of foreign technologies through technical licensing or use of imported machinery and equipment. In either case, there need not be any foreign equity participation or direct foreign involvement with the firm in question. A broader conception of TT should incorporate also the absorption on the level of the individual firm and the diffusion of imported technology throughout industries. Both in turn are highly dependent on conditions in the receiving country, especially with regard to economic incentives and human resource development.

Japanese firms made use of their comparative advantage when making a major contribution towards building up the manufacturing sector in Indonesia during the New Order period. Yet complaints persisted that Japanese firms in Indonesia applied only outdated, labour-intensive production techniques not in vogue any more at home and that they were even less willing than Western firms to share their advanced technologies with local partners<sup>24</sup>. Technological capabilities were shown to have improved more in local firms operating under technical licensing agreements (i.e. without Japanese equity participation) than in foreign controlled firms. A possible explanation is that a greater effort to master new technology was required in the former case<sup>25</sup>.

More recent research has produced some new insights. The idea that Japanese firms are unwilling to part with their knowledge is refuted by empirical evidence on the numerous opportunities for training of Indonesian personnel offered by Japanese firms<sup>26</sup>. The higher productivity in manufacturing branches with a strong foreign presence was taken as an indication of technological spillovers from foreign-controlled to domestic firms within the same line of production<sup>27</sup>. There was an evidence of successful but limited transfers of technology in export-oriented firms in a number of industries such as textiles, garments and electronics. Operational capabilities in particular had by and large been acquired by domestic firms whereas innovative capabilities still remained beyond reach<sup>28</sup>. An in-depth study of the implementation of Toyota's production system (TPS), in the assembly lines of Toyota-Astra in Jakarta showed that operational and adaptive capabilities, including some process design, had been successfully transferred to the Indonesian personnel<sup>29</sup>. The need to improve the image of Japanese firms as motors of Indonesian industrialization even surfaced in the daily press, for instance in 1997 when a Sumitomo-NEC combination announced plans for investment in a semiconductor plant in Bekasi near Jakarta while pledging to contribute to technological progress<sup>30</sup>. Such public statements underscore the relevance of a study as the present one.

#### **4. The Role of International Dimension for TT**

Even though the TT is strongly campaigned as a principal means of relieving world poverty<sup>31</sup> there is no reliable and credible evidence that shows a significant correlation between TT under the patent regime and the collective mastery of a nation to access information, knowledge and technology (INT) effectively<sup>32</sup> in order to improve the quality of people's lives. Public interest, worldwide, has been aroused by the health crisis in the developing countries due to the exorbitant prices of drug treatments.

Medicines and drug treatments are a high-profile example<sup>33, 39</sup>. There are more than 14 million deaths each year, because of poverty and lack of access to health services. Basically, affordable medicines could help them. Efficient and affordable medicines could cut down the death toll if people had access to such drugs. The Economist pointed out that a conflict between the South African government and multinational corporations arose over the government's plan to loosen IPRs' restrictions in order to reduce the price for medication needed for 5 million infected people in the country. Clearly, this non-affordability correlates to interests of companies to control the price of patented medicines and to block competition from other firms and other products. Prices of patented medicines are very much linked to the monopolies enjoyed by pharmaceutical companies, protected and maintained by patent rights<sup>34</sup>.

This fact requires social responsibility from corporate to fulfill fundamental rights through disseminating INT in the essential fields. Ideally, industrialized and DCs should improve cooperation in narrowing the deep gap in utilizing INT. Unfortunately, the disparity is increasingly deeper. It is indicated by the domination of industrialized countries that control more than 90% of global research and development. Now the gap is more strongly formatted by various international rules and bilateral agreements (TRIPs Agreement, FTAA, TRIPs Plus, etc.) with the potential to restrict the dissemination of INT. Some scholars show that the TRIPs exacerbate the gap by increasing the cost of knowledge-rich goods imported by DCs. Royalties and license fees paid by DCs to patent holders in the industrialized<sup>2, 3, 35</sup> worlds have been climbing rapidly since the mid-1980s. So far, the IP regime is subject to adjustment of economic circumstance and lacks the characteristic of fundamental rights. In practice, it has been used as the main instrument to accumulate power in exploiting information, knowledge and technology<sup>36</sup>.

In this connection, pointed out: The industrial development of DCs, including Indonesia, is highly affected by the demands of transnational companies which seek to protect the technology they have brought in with the capital they invest in the developing country. In order to legitimize these demands, they propose the theory that IPR protection can potentially stimulate economic growth of a country through investment and TT programs. This theory has been accepted by followers of the modernization school of thought in DCs, including Indonesia. Unfortunately, there is no significant evidence in any empirical study to date to prove that IP Laws bring any positive impacts with regards to economic growth and social development for DCs. Just the opposite has been the case, with funds of DCs flowing to industrialized countries in the form of royalty payments. Even today, several years following the implementation of the IPR regime, Indonesia is still in a difficult economic situation. While it is true that this difficulty has been caused by various factors, it is obvious that the IPR system implemented has not been able to significantly contribute to reduce<sup>37</sup> the economic difficulties being faced today.

Coming back to the theory that IPR protection can stimulate the economic growth of a DC through investment and TT programs, proposed by supporters of IPR, it rather appears to have a tendency towards protecting their economic interests. When IPR owners sell products to DCs, they want to make sure that their technological creation accompanying these products is not imitated by DCs. They want monopoly over invention, design, trade mark, and other IPRs. IPR is the perfect means for creating this monopoly<sup>38</sup>.

## 5. Conclusion

As we have seen above, nor INA patents system, nor the role of government, neither international dimension effective for the TT in Indonesia. At present, as far as TT is concerned, no specific regulations on the TT have been issued. Beside itthere is still relatively little pressure on industrial firms to invest in technological activity. Trade and ownership restrictions, backed by market power in the hands of large domestic conglomerates, hold back technological activity, not just by the firms that enjoy privileges but also by those that are relatively deprived. Some policies conflict with each other. Some are geared to meeting the needs of special sections of industry, while others are deficient in addressing the needs they are supposed to meet. Responsibility for policies is spread over different agencies, with little effective coordination, and sometimes active rivalry.

“The pattern of inward technology flows for Indonesia seems to be dominated by the use of FDI as the main channel for technology acquisition. In some sense this has been the country’s implicit ‘technology policy’, and the favourable attitude of the government towards FDI has been based to a large extent on the promise of technology that will be brought in as part of the investment package. The government has attempted to use some performance requirements in its foreign investment regulations to affect more rapid transfers of technology. The regulations have been weak or have not enforced, and no specific incentives have been given to encourage FDI that will upgrade local technological capabilities”.

The analysis in this paper shows that the international discourse on TT has been permeated since its inception by the North-South dichotomy. From our analysis in previous sections, one could list out several reasons for this. Of the many, it would not seem wrong to conclude that IPRs protection has been one of the most important factors. The gradual but definite emphasis on the global protection of IPRs has been accompanied by divergent political aspirations of countries on the issue of technology protection and technology access. A closer look at the evolution of TT negotiations suggests that DCs’ claim for better access and TT has perhaps been a reaction to developed countries’ emphasis on stricter standards of protection and enforcement of IPRs.

Against the new realities, both empirical (as what we now know of the links between trade, technological change and development opportunities) and policy oriented, the issue of TT has certainly acquired new dimensions. In this newer dimension, TT is not simply a political rhetoric voiced in return for IPR protection, but a real concern to narrowing policy space in DCs to promote opportunities for economic catch-up.

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