

Innovation, trade and IPRs: Implications for trade negotiations

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Innovation is often considered the cornerstone of modern economic growth. In the same vein, international trade has traditionally been characterized as the handmaiden of growth. Yet, the relationship between innovation and trade is a complex one. This paper discusses how innovation-leaders (e.g., the USA), innovation-followers (e.g., Brazil), and globalizers (e.g., Vietnam) see the role of trade policies in affecting their innovation strategies. Attention is devoted in particular to the “marriage of convenience” between trade and intellectual property rights (IPRs) laws as negotiated in the context of trade agreements. The experiences of negotiating IPRs protection via multilateral (e.g., TRIPS/WTO) and preferential (e.g., TPP) agreements will be contrasted and the argument will be made that even among like-minded countries these negotiations are inevitably characterized by significant controversy. The paper also discusses to what extent the increased emphasis on innovation in terms of growth strategies is making the goal of promoting higher standards of IPRs protection easier to advance via trade agreements.

Introduction

Innovation is not easy. As Machievelli once noted:

“Innovation makes enemies of all those who prospered under the old regime, and only lukewarm support is forthcoming from those who would prosper under the new. Their support is indifferent partly from fear and partly because they are generally incredulous, never really trusting new things unless they have tested them by experience.”²

As described in Ashton (2015), the process of creation and innovation has many links and the incentives that drive these activities are complex and multifaceted. In an era of accelerating technological change the search for the right policies to promote innovation has become an important goal for policy makers around the world.³ As I and other colleagues have noted the “unique nature of innovative activity and the growing interconnectedness of the world economy call for ... greater attention to the interplay of openness and technological innovation not only in OECD countries, but also in developing economies.”⁴

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² Machievelli, 1992, p. 17.

³ There is an ongoing spirited debate about the socio-economic impact of the ongoing ICT-driven revolution between those that find it less impactful than earlier technological revolutions (e.g., Gordon, 2014) and those that think otherwise (e.g., Mokyr, 2014). As discussed in Dobbs, Manyika, and Woetzel (2015, p. 33), however, it is clear that “the period between historic [technological] breakthroughs has been decreasing by orders of magnitude.”

⁴ See Chandra, Eröcal, Padoan and Primo Braga, 2009, p. 12.

Innovation is typically defined as “the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations.”⁵ This broad definition underscores the fact that from an economic perspective the focus is not only on R&D-related “new to the world” goods and services, but also about the introduction of new products/processes in the context of a country or a firm.

Some analysts would rather differentiate innovation in terms of its role in promoting “horizontal (or extensive) progress” versus “vertical (or intensive) progress.” Thiel and Masters (2014), for example, characterize horizontal progress as a synonymous for “globalization,” that is progress that focuses on copying/replicating things that are available in the frontier economies. Vertical progress, in turn, is characterized as “doing something nobody else has ever done. From this perspective, if you take one typewriter and build 100, you have made horizontal progress. If you have a typewriter and build a word processor, you have made vertical progress.”⁶ That is to say, vertical progress is driven by entirely novel breakthroughs.

In this paper, we adopt the broader definition of innovation mentioned above, but we find Thiel’s approach useful in helping establish a taxonomy of economies along a continuum that runs from globalizers (e.g., Bangladesh, Vietnam), to innovation-followers (e.g., Brazil, China), to innovation-leaders (e.g., Switzerland and the USA). This taxonomy is just a device to tentatively classify where different countries position themselves in their innovation journey. It helps nonetheless in framing the debate about trade and innovation.

In analyzing this interaction, this paper adopts a simple framework to capture the main drivers of innovation:

$$\text{Innovation} = f(\text{passion, knowledge, incentives})$$

In other words, innovative activities are influenced by individual passion (to solve problems, to create works of art, etc.), the ability to access existing knowledge and to invest in new knowledge (R&D), and the impact of incentives in promoting or impairing innovation. Trade activities and trade policies are, particularly, relevant in impacting the knowledge channel and in framing incentives for innovation. The same can be said about intellectual property rights (IPRs) protection. In what follows, the paper briefly describes the relationship between trade, IPRs and innovation. This is followed by an

⁵ See OECD and Eurostat, 2005, p. 46.

⁶ See Thiel and Masters, 2014, p. 7.

analysis of the “marriage of convenience” between trade and IPRs laws in the context of trade agreements at multilateral and preferential levels. The paper concludes with a discussion of areas for future research.

Trade and IPRs policies: the relevance for innovation

The relationship between trade and innovation “is a two-way process. On the one hand, trade liberalization and investment flows contribute to technology diffusion and innovation. As Romer (1994) argues, trade restrictions reduce the supply of intermediate goods to an economy, hampering productivity and technology diffusion. Needless to say, absorptive capacity in the recipient country also plays a key role in this process. On the other hand, strengthening national innovation capabilities improves a country’s ability to engage in and benefit from the international trading system.”⁷

There are, however, different perspectives on the role of trade and competition in terms of their impact on innovation and productivity growth. As I discussed elsewhere, for “those that believe that markets operate efficiently and economic agents have limited market power, static efficiency should guide resource allocation. In this view of the world, trade liberalization will improve productivity, fostering economic growth... A different perspective, however, can be derived from a view of the world that emphasizes learning-by-doing and the importance of market imperfections.”⁸ From this perspective, the scope for inward-looking development strategies (and government intervention) seems more attractive and the emphasis is on dynamic gains that could be fostered by the related rents associated with knowledge capture by domestic actors.

These different strategies and related set of policies will impact innovation via different channels. In countries that follow an outward-oriented development strategy – not to be confounded with a “laissez-faire” strategy – access to knowledge embedded in capital goods imports will be facilitated and incentives for investment in R&D will increase as competitive pressures will encourage investment in innovation as a strategic response to escape competition from new entrants in the industry.

At the same time, it is important to recognize that these results are context-dependent.⁹ Accordingly, more competition may also deter investments in innovation by domestic firms when such firms are far away from the international technological frontier. Moreover, it can hinder the development of domestic markets, as argued by those that believe on the benefits of import-

⁷ See Primo Braga and Meléndez-Ortiz, 2013.

⁸ See Primo Braga, 2010, pp. 127-8.

⁹ For further details on neo-Schumpeterian growth theory see Howitt (2009).

substitution industrialization and the potential of government-led industrial policy in advancing effective development strategies. All these arguments have also to be evaluated with respect to the quality of the institutions managing such interventions in any given country. Not surprisingly, as discussed in Krueger (1974), in countries with weak institutions, government interventions can easily be abused for rent-seeking and directly-unproductive activities. Moreover, most empirical analyses underscore the importance of trade openness for sustained productivity growth.¹⁰ In other words, market openness not only increases the options in terms of price/quality for key inputs for innovation (e.g., capital goods), but also expand markets from the perspective of innovators by counteracting the anti-export bias of trade restrictions.

The protection of IPRs, in turn, is often presented as a key lever for innovation in market economies. The history of the evolution of IPRs protection around the world, however, is quite convoluted and the origins of these instruments were not always driven by innovation considerations. Actually, patents were originally used in Venice in the middle-ages to “manage” technology transfers, while copyright law was a mechanism to control the publishing industry at its origins.¹¹ The rationalization of the protection of IPRs as an incentive for innovation is a more recent development.

As described in Primo Braga and Fink (1996), the modern economic rationale *“for the protection of IPRs is often framed in terms of Arrow's seminal work concerning the incomplete “appropriability” of knowledge.¹² IPRs can be understood as second-best solutions to the problems created by the “public good” nature of knowledge. To the extent that they enhance “appropriability,” IPRs are expected to foster investment in research and development (“R&D”) and knowledge creation. They create, however, a static distortion as they constrain the current consumption of knowledge, by enhancing the market power of title holders. In short, IPRs involve a “bargain” between the producers of knowledge and society, which is mediated by the government.¹³*

The above rationale is typically used to explain the economics of patent and copyright laws. With respect to trademarks and industrial designs, the basis for protection is more often framed in terms of incentives for investments in reputation (quality) rather than innovation per se. Trade secrets, in turn, are rationalized as a necessary supplement to the patent system. Their main positive role is to foster innovations that do not comply with the strict requirements for “patentability” of products and processes.”

¹⁰ See, for example, De Long and Summers (1991), Romer (1994), and Keller (2009).

¹¹ See Primo Braga, Fink and Sepulveda (2000).

¹² See Arrow (1962).

¹³ See Machlup (1958).

The long-term trend with respect to IPRs protection in developed economies has been in the direction of the strengthening of these rights. There is, however, no clear theoretical presumption that a movement towards stronger standards of protection will always be welfare enhancing.¹⁴ Moreover, as some analysts argue, there is no conclusive evidence that strengthening, for example, patent regimes will lead to more innovation. Some analyst would even argue that the only consistent result found in the literature is that “strengthening the patent regime increases patenting!”¹⁵ Needless to say, there are other analyses that dispute this perspective and underscore the importance of IP rights in terms of innovation incentives and outcomes.¹⁶

The political economy of this process is driven by interest groups associated with industries interested in increasing their temporary “monopoly rents.” In terms of industries, for example, pharma and chemicals are typically among the sectors that are more dependent on IPRs protection. The argument being that the high fixed costs of development of new drugs/compounds requires strong IPRs protection for adequate *ex ante* R&D investments.

At the level of countries, not surprisingly, support for stronger protection of IPRs is typically higher among countries that are innovation leaders – although some “pockets” of heterodox thinking may thrive as illustrated, for example, by the open-source movement in the software industry. The relationship between development and levels of protection to IPRs, however, is not monotonic in the sense that, as discussed in Primo Braga (1990), once an economy reaches a certain level of development the pressure from local entrepreneurs to gain access to foreign technology often translates into a weakening of the standards of IP protection (e.g., acceptance of broader use of compulsory licensing) and expansion of imitation activities that will be characterized as “piracy” by foreign IP holders.

Hence, there is a tension between the development strategies followed by different countries over time in terms of their attitude to market-led development (and willingness to integrate with the global economy via an outward-oriented trade policy) and their approach to IPRs protection. In a simplified manner, one could characterize the interaction between trade and IPRs protection in terms of a 2x2 matrix that captures different combinations of the policies in question – see Table 1.

¹⁴ Even among countries that are characterized as innovation leaders, there is recognition that IP rights could be abused in detriment of fair competition and consumers’ interests. This is illustrated by the case of standard-essential patents (SEPs) where holders of such patents try to abuse their market power by constraining willing licensees with injunctions. See, for example, European Commission (2014).

¹⁵ For a review of these issues see Boldrin and Levine (2013).

¹⁶ See, for example, WIPO (2015).

A description of the journey of countries in terms of their development strategies and IPRs protection can be summarized as follows: (1) in early stages of industrial development, countries typically embrace outward-oriented policies (relying, for example, on exports of natural resources) and have weak protection of IPRs – stage A in Table 1;¹⁷ (2) as development proceeds and local manufacturing evolves, the demand for trade protection tends to increase and often countries begin to adopt import-substitution industrialization (ISI) policies, amid a weak IPRs environment – stage B; (3) depending on the size of the domestic market, the role of FDI in the economy, the level of distortions associated with the anti-export bias of the ISI-phase, and the pressure of external economic partners (e.g., innovation leaders such as the USA and the EU countries), countries gradually migrate either to stage C (embracing modern globalization) or stage D (in which greater protection to IPRs is provided, but the focus of the economy remains on the domestic market).

Table 1

| Trade/Strength of IPR protection | Weak | Strong |
|----------------------------------|------|--------|
| Outward-oriented | A | C |
| Inward-oriented | B | D |

It is important to recognize that the schematic description summarized above is becoming less typical in a world in which global value chains are increasingly influential and the benefits of specialization more evident. This is particularly the case for smaller economies. In this context, the journey can be more direct from A to C with the emphasis remaining always on the external market.

The “Marriage of Convenience”

Why should trade agreements, which typically focus on the rules for progressive trade liberalization, address the protection of IPRs? Actually, there is a distinguished group of trade economists that have consistently argued against the incorporation of trade-related aspects of IPRs in trade agreements.¹⁸ It remains true, however, that IPRs do affect trade flows and, as a consequence, IPRs-holders do have an interest in constraining “piracy” at international level.

¹⁷ It is worth noting that countries at this stage often display strong IPRs laws on their “books,” reflecting colonial “inheritances,” but have no capacity to implement/enforce the laws. See Primo Braga, Fink, and Sepulveda (2000).

¹⁸ See, for example, Bhagwati (2002) and Panagariya (1999).

In a nutshell, the argument for the relevance of IPRs for international trade can be presented as follows: firms/innovators may be deterred from exporting their products/services into a foreign market if “pirates” can diminish the profitability of the exporting activities via imitation. It is important, however, to recognize that the impact of strengthening IPRs in terms of bilateral trade flows between an innovation-leader and a hypothetical developing (imitation-prone) country is in the end an empirical question. After all, such a policy change will have both a market expansion (by displacing “pirates”) and a market contraction effect (in view of the enhanced market power of the innovator).¹⁹

The Multilateral Front

The history of the “marriage of convenience” between trade policies and IPRs protection has been analyzed extensively in the literature. IPRs are territorial (i.e., the rights are awarded and enforced at national level) by nature and attempts to promote harmonization and coordination across countries can be traced back to the XIX century. International conventions (e.g., the Paris Convention, 1883; the Berne Convention, 1886...) in this area typically adopted national treatment provisions as the basic standard for international harmonization. As international trade in knowledge products and foreign direct investment flows expanded significantly in the post-World War II era, conflicts between innovators (at the level of countries and enterprises) and imitators began to increase.

Already in the 1970s, the United States began to push for the adoption of an Anti-Counterfeiting Code at the level of the GATT. This effort – that was launched at the final stages of the Tokyo Round (1973-79) of multilateral trade negotiations – was driven by the lobbying of trademark-holding companies, which were trying to limit counterfeited products in international trade. This attempt did not succeed, but it signaled the way of the future for innovation-leading nations – in particular, the USA.

When the 8th round of multilateral trade negotiations (the Uruguay Round) under the GATT started in 1986, the strategy was refined to go beyond anti-counterfeiting with a view to establish minimum standards of protection and enforcement across a broad array of IPRs instruments. The appeal of this approach was to connect the strengthening of IPRs protection to the broader trade agenda and to provide access to the dispute settlement mechanism of the multilateral trade system. Most developing countries, in turn, preferred the World Intellectual Property Organization (WIPO) as the institutional locus for IPRs’ discussions. The lack of effective enforcement powers in the WIPO

¹⁹ See Fink and Primo Braga (2005) for an econometric analysis of the impact of IPRs on trade flows.

conventions, however, is often presented as the reason behind the U.S. efforts in favor of a GATT-related solution.²⁰

This time the strategy succeeded leading to the Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement. In a nutshell, the creation of the WTO was made possible by a bargain that involved the inclusion of two new agreements under the multilateral system of trade governance (GATS and TRIPS), a priority for industrialized nation negotiators, in exchange for new disciplines for agricultural trade and the dismantling of the system of quotas that governed textile and clothing trade (the MFA), priorities for most developing countries.

The relative success of those advocating stronger protection of IPRs at global level via the negotiation of trade agreements, however, did create reactions from affected trade partners. This was particularly the case with respect to the impact of TRIPS on access to medicines amid public health crises, as underscored by the HIV/AIDS epidemic. This reaction, in turn, led to some adjustments at multilateral level as illustrated by the Doha Ministerial Declaration (2001), the related Declaration on the TRIPS agreement and public health, and subsequent decisions/waivers on compulsory licensing with special emphasis on the needs of least developed countries.

Preferential Trade Agreements (PTAs) and IPRs

Industry groups from innovation-led countries, however, continued to lobby for the inclusion of IPRs chapters in trade agreements, focusing on preferential trade negotiations. As discussed in detail by Fink (2012), the new generation of PTAs negotiated by the USA – starting with NAFTA – typically included “TRIPS plus” provisions. The EU also followed a similar track. Moreover, IPRs provisions became standard in bilateral investment treaties entered both by the US and the EU with other nations.

The latest major development in this area is the Trans-Pacific Partnership (TPP) agreement recently negotiated – but not yet ratified – by 12 countries in the Pacific Rim. Although one could argue that the TPP reflects mainly a geopolitical move by the USA to complement the Obama’s administration strategic “pivot to Asia” and to counteract the growing economic influence of China in the region, there is no doubt that the agreement has significant global economic implications, encompassing nations that account for roughly 40 per cent of world GDP.²¹

²⁰ See Kastenmeier and Beier (1989), Primo Braga (1990) and Primo Braga (1996).

²¹ For a discussion of the role of geopolitics in influencing trade strategies, see Dieter (2014) and Primo Braga (2015).

The TPP agreement heralds a new era in terms of trade governance. It can be argued, for example, that at least in the medium-term, the mega-regionals are eroding the relevance of the multilateral trade system and the WTO. TPP may also have a significant impact on the organization of global value chains (GVCs), as it will introduce more liberal rules-of-origin (the “accumulation of origin” concept) facilitating the operation of GVCs across its members.

Not surprisingly one of the most controversial chapters of the agreement concerns its IPRs provisions. The USA put emphasis on longer terms of copyright protection, regulatory changes that would effectively translate into longer patent terms and constrain the entry of generic drugs into these markets, as well as additional rules for biologic medicines (pharmaceutical products developed from living organisms), including minimum standards for data protection.

The final terms of the TPP agreement did not deliver on all the demands of the USA negotiators. Still, several of these “TRIPS plus” measures were adopted. Some noteworthy measures adopted in the TPP agreement include: trademark terms of protection of no less than 10 years (TRIPS requirement is of 7 years) and the removal of barriers for the protection of sound marks; a minimum copyright term of protection of at least 70 years (TRIPS minimum standard is 50 years) and stronger copyright enforcement (including the possibility of criminal prosecution against acts of removal of rights management information and the requirement that TPP countries be signatories of WIPO “Internet treaties”); requirement of enforceable legal means for the protection of trade secrets (TRIPS does not specify these means); protection of undisclosed test data submitted for marketing approvals (at least 10 years in the case of agricultural chemicals and 5 to 8 years in the case of pharmaceuticals; TRIPS does not have such a requirement); the TPP is the first trade agreement to explicitly protect new pharmaceutical products that are or contain a biologic;²² and adjustment for patent office delays in the granting of patents that will promote harmonization of patent granting practices among TPP Parties.

It is worth noting that some of these provisions go beyond the “TRIPS plus” aspects that the USA had already negotiated on a bilateral basis in the context of its FTA treaties with countries such as Australia, Chile, and Peru. In short, TPP – once ratified – will provide for higher standards of IPRs protection that better

²² In the US, a biological product is defined as a “virus, therapeutic serum, toxin, antitoxin, vaccine, blood, blood component or derivative, allergenic product, protein (except any chemically synthesized polypeptide), or analogous product, or arsphenamine or derivative of arsphenamine (or any other trivalent organic arsenic compound), applicable to the prevention, treatment, or cure of a disease or condition of human beings.” See Bio (2013) for further details.

reflect existing USA law.²³ Inevitably, some of these provisions have generated significant controversy even among like-minded countries.

Implications for a new research agenda

- (1) TPP – the most concrete example of the new mega-regionals – has adopted several “TRIPS plus” provisions. From the USA perspective these are the new “gold standard” for the promotion of innovation via stronger protection of IPRs. Will these measures deliver a higher level of innovation among TPP members or will they simply translate into an exercise of rent transfer in favor of American firms that already dominate the global innovation ecosystem?
- (2) How best to measure the innovation impact of TPP on its members? Should one focus on input indicators (e.g., levels of R&D), output indicators (e.g., expansion of IP-intensive sectors in terms of production and exports) or ancillary activities (e.g., FDI in knowledge-intensive sectors...)?
- (3) The TPP offers opportunities for controlled experiments contrasting groups of countries with similar levels of development and ecosystems of innovation inside and outside the “club.” Will the TPP path drive innovation in a much more effective manner in countries like Chile, Mexico, and Peru vis-à-vis Argentina and Brazil; or in Malaysia and Vietnam vis-à-vis Indonesia, the Philippines, and Thailand? Or will it “export” to other countries the flaws of the US IPRs system with its emphasis on litigation (as illustrated by the growing role of non-practicing entities, NPEs – i.e., entities that focus on licensing and litigation of IPRs rather than production and innovation) and strategic behavior to block the introduction of generic drugs?²⁴
- (4) Will the TPP model with its emphasis on outward-orientation and stronger protection for IPRs impact the political economy of strategies for development? In other words, will countries transition from A to C (see Table 1) in a much faster pace than was the case in the past in an attempt to qualify as eventual new members of mega-regionals?

²³ One major exception – reflecting resistance from other TPP parties – was the term of regulatory data protection for biologics. In the US, this term is of at least 12 years from the date of approval. Article 18.52 of the TPP provides only for an eight-year term of protection. For further details see ITAC-15 (2015).

²⁴ For an excellent discussion of NPEs and strategic manipulation to delay the introduction of generic drugs in the US, see Feldman (2016).

- (5) Will TPP developing members become more attractive not only for the location of nodes of GVCs (i.e., integrating into GVCs), but also in terms of upgrading opportunities over time? Upgrading can involve enhancing domestic value-added (i.e., increasing the “thickness” of the domestic economic links of the node), capturing more nodes of the GVC network (i.e., upgrading within GVCs), and diversifying the number/sophistication of GVCs operating in the country (i.e., upgrading across GVCs). Firms participating in these process benefit from adopting higher international production standards, engaging in process upgrading (e.g., by managing support services required for the GVC operation and the preservation of brands, including the adoption of best practices in CSR), and functional upgrading (e.g., by performing more sophisticated engineering and R&D functions). In other words, will TPP rules – including new standards of protection for IPRs – prove to be more effective/relevant for the current phase of economic globalization than existing multilateral disciplines?
- (6) Will the TPP further contribute to the erosion of the relevance of the WTO with respect to debate of new trade agenda issues (GVCs, innovation, digital economy, the relationship between trade and investment,...)? Will it, for example, impact the relevance of the “juridical branch” of the WTO (its dispute settlement procedures) vis-à-vis new trade issues?
- (7) Will TPP standards increasingly influence multilateral rules or is TPP going to open a new chapter of fragmentation in terms of international trade rules with significant discrimination against outsiders? What will be the role of the IP-related chapter in this process (for example, by explicitly stating that state-owned enterprises cannot be excluded from IP enforcement rules does it create a barrier to entry for countries such as China to join the TPP in the future?)?
- (8) Will TPP rules dominate the terms of the debate in framing the IPRs chapter of the ongoing negotiations between the US and the European Union on the Transatlantic Trade and Investment Partnership (TTIP)? Or will the debate be re-opened in areas like protection of undisclosed test data or with respect to the TPP-style rules implications for data privacy standards (a potential rerun of the debate on the Anti-Counterfeiting Trade Agreement that was rejected by the European Parliament)?

Concluding remarks

Evolving trade rules both at the multilateral and preferential “fronts” can have a significant impact on the incentives for innovation at national and global levels.

They are introducing new disciplines for the implementation of national innovation policies. Concerns about their impact in terms of policy space for developing countries have dominated the debate in the multilateral arena -- e.g., how these disciplines will affect policies that support “national champions.” At the same time, new rules being developed in the context of mega-preferentials are introducing higher standards of IPRs protection consistent with American practices.

The effectiveness of these new rules and their implications for the health of the multilateral trade system are important issues not only for the role of innovation in the world economy, but also in terms of the future of globalization. This paper identifies a few themes – focusing on the implications of the TPP agreement – that merit additional investigation.

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