TPP is leading the way to mega-regional trade liberalisation, with the potential to boost returns from innovation

Reform of intellectual property rights will better protect intangibles, while increased market openness offers scale

Innovative businesses will find substantial new opportunities, but will face increased competition

New opportunities through trade
The Trans-Pacific Partnership (TPP) is a new mega-regional trade accord and the most ambitious international trade deal for 20 years. Although it still has to be ratified, once in place we expect it to lead to substantial improvements in intellectual property protection and market openness, which will both act as catalysts for increased innovation. A larger market can lead to bigger returns and can incentivise R&D expenditure as businesses strive to make new products for the expanded market.

All this could transform the performance of companies in an area representing almost 40% of global GDP and more than 25% of global trade. The 12 TPP partners include a mix of advanced and emerging economies: Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, United States & Vietnam.

TPP – protecting intangible assets
Under TPP, reinforced intellectual property rights will improve the availability of legal protection for innovative ideas, helping to protect intangible assets like trade secrets from abuse. TPP will bolster markets for intellectual property, such as patents, and products that incorporate protected innovation, such as electronics. TPP also clarifies what constitutes fair use of intellectual property. These enhancements can benefit firms, whether they use proprietary models (like filmmakers) or open architecture strategies (like open source software developers). In time, TPP provisions addressing these areas could act as a template for other proposed mega-regional agreements.

National building blocks for economic development
We think TPP changes the rules of the game for trade and innovation. Developing countries like Chile, Malaysia, Peru or Vietnam gain access to a large pool of innovation via open markets, promoting technology transfer. Developed countries like the US and Japan will be able to market each innovative product to more customers.

This report reviews the trade and innovation nexus in the context of the proposed rule-based trade reforms under TPP. It highlights opportunities this represents at firm level and for national-level economic development.
The TPP could promote waves of innovation

1. The TPP – a trade and innovation accord

The Trans-Pacific Partnership (TPP) will change the rules of the game, liberalising international trade and trade-related investment across an area encompassing almost 40% of global GDP. It will promote innovation by delivering improved alignment of standards for the recognition and protection of innovative content and processes, and it will open markets for the associated trade and investment. This will facilitate market-driven technology development and transfer, reinforcing the dynamic effects of trade liberalisation. This matters for the economic performance of innovative firms and it matters for economic development.

TPP members released the full draft text of the agreement on 5 November 2015. The on-going signature and ratification process could take another year or more. The agreement requires ratification by at least 6 countries representing 85% of the GDP of the region before it can enter into force. Preliminary estimates indicate that the agreement is in the economic interests of each of the members (e.g., see Petri et al, 2014). While success is not guaranteed, we anticipate that the TPP will be completed and deliver meaningful trade liberalisation in the medium term.

With the release of the full text of the draft TPP agreement, we have a better idea of the scope and depth of potential liberalisation under the accord. This paper takes stock of the anticipated liberalisation and its implications for trade and innovation. In doing so, it provides insights relevant to business, governments and other stakeholders. It underscores that lessons from the TPP may also have application in other proposed mega-regional agreements such as the Regional Comprehensive Economic Partnership (RCEP) and the Trans-Atlantic Trade and Investment Partnership (TTIP). As the relationship between trade and innovation is complex, the paper points to issues for further research where additional policy refinements may be feasible (see Box 1).

What is the TPP and what does it do for innovation?

The Trans-Pacific Partnership is a trade agreement among 12 countries including Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, the United States and Vietnam (see Map 1, below). If the ratification process is successful, the agreement will be the most ambitious trade package over the last 20 years in terms of the scope and depth of the anticipated liberalisation. Through improvements in the availability of legal protection for innovative ideas and practices and increased market openness to international trade among the 12 economies, the TPP agreement is expected to bolster the pace of innovation and its diffusion (Annex Table 1 presents an overview of key provisions in this regard).

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1 RCEP engages the 10 ASEAN countries and six ASEAN partners in preferential trade agreements including China and India. TTIP includes the European Union and United States.
Spanning 30 chapters, the TPP rulebook will liberalise trade in industrial goods, agricultural products, services and trade-related investment. While deeply reducing traditional trade barriers such as tariffs, TPP goes further and addresses behind-the-border issues like standards, regulations, and protection of intellectual property rights. Although membership does not yet include some big economies in the region, such as China or India, the TPP members have stressed that the TPP is a living agreement open to new members and capable of addressing new and emerging issues in future.

Map 1. TPP members

Source: HSBC. Note: The 12 partners include a diverse mix of advanced and emerging economies: Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, United States and Vietnam.

2. Intellectual property rights and the TPP?

Innovation can be viewed as a new idea or practice that delivers value through its application in products or processes. But, it can be difficult for innovators to find ways to benefit from the fruits of their labour. Whether the innovation is a new film or a technology upgrade for a smartphone, a recipe for a secret sauce or a catchy logo for a new brand, it remains vulnerable to competitors.

Property rights are a fundamental element for the functioning of markets. Yet, in the case of ideas, practices or other intangible assets this can pose a problem (Demsetz, 1967). Being virtual, these innovative assets can be used by many users simultaneously (i.e., they are non-rivalrous) and may be relatively easy to duplicate (Maskus, 2000). Consequently, it can be difficult for innovators to appropriate a portion of the economic gains from the use of such assets or other compensation (e.g., social recognition). Weakness in the ability to reap benefits from an innovation may reduce the incentive to develop such assets. And, innovators may face further challenges in distributing their products internationally if the destination markets are further constrained by trade barriers or different rules of operation.

Fortunately, governments have moved to address this challenge via the global trading system. Treaties administered by the World Trade Organization (WTO) and World Intellectual Property
Organisation (WIPO) spell out rights and protections for innovators and subsequent rights holders. Subject to certain legal requirements\(^2\), an innovation may be considered as property and its owner as having intellectual property rights (IPRs). With respect to trade, the key treaty is the WTO’s Agreement on Trade-Related Intellectual Property Rights (TRIPS). It defines key types of intellectual property as including copyright and related rights, trademarks, geographical indications\(^3\), industrial designs, patents, layout-designs of integrated circuits, and undisclosed information (trade secrets)\(^4\). Still, the requirements under TRIPS and related agreements are not of a uniformly high standard applicable in all markets. The strength of protection varies somewhat from market to market. Weakness in the available protection for one or more types of intellectual property in a market may make it difficult, if not impossible, for a rights-holder to do business there.

**TPP – Taking IPR protection to a higher level**

As can be seen in Table 1, changes with respect to IPRs in the TPP are incremental, building on the WTO TRIPS Agreement. In some cases, the incremental change is quite substantial. Among the various IPR reforms mandated by the TPP, most concern refinement of protection for types of intellectual property that already benefit from comparatively effective minimum standards in the TRIPS Agreement.

However, TPP goes beyond TRIPS to close a very important gap with respect to trade secrets, an area that was not effectively protected under TRIPS. The TPP specifies a minimum standard of protection that requires availability of a legal means for rights holders to protect trade secrets and mandates provision of criminal procedures and penalties for certain acts. A further related and economically important benefit will come from institution of minimum protection for undisclosed test data submitted to authorities in satisfaction of requirements for marketing approvals for agricultural chemicals (10 years minimum) and pharmaceutical products (5 to 8 years minimum, depending on the nature of the drug).

Trade secrets represent a tremendous store of value for businesses. Covering confidential information in any area ranging from recipes, to manufacturing techniques, from business plans to technical specifications and beyond, many businesses utilise trade secrets as a first line of defence for their innovations. Trade secrets protection is generally available without registration. This is especially important for small businesses that may not have the resources to pursue patent registration or for businesses that have non-public innovation of a nature such that it is not covered by patent protection (e.g., specially annotated customer lists). Due to the requirement of secrecy, it is not feasible to give a precise estimate of the size of these assets, but in view of their known heavy utilisation, it cannot be ruled out that there is more value in trade secrets than in patents.\(^5\) Thus, in light of the gap between TPP developed and developing country provisions on trade secrets (see Annex 1), it is possible that TPP will have a meaningful innovation and economic effect in several countries on this issue (e.g., Malaysia, Mexico, Mexico).

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\(^2\) These vary depending on the type of intellectual property. For example, in some cases, registration is required (e.g., for patent protection of an invention), while in others, special requirements must be met (e.g., for a trade secret, the concept must be secret, reasonable efforts must be made to keep it secret, and it must have value as a consequence of being secret).

\(^3\) Geographical indications are names or signs that indicate the origin of a product. Examples from the TPP countries include Tequila from Mexico or Idaho potatoes from the United States.

\(^4\) The treatment of trade secrets varies by country. In some cases, they are recognised as property, in others as objects that entail rights and duties on the part of interested parties.

\(^5\) In most countries, reasonable efforts to protect secrecy constitute the main advance action required for availability of trade secrets protection. Similarly, copyright protection is automatic and no mandatory registry is maintained (though in some countries copyright owners may voluntarily register their copyrights with customs authorities for purposes of screening for unauthorised imports).
Vietnam or Peru).6 Being able to protect trade secrets, businesses may be encouraged to develop more.

In other areas of IPR protection, the TPP introduces potentially important requirements that go beyond TRIPS as well. Copyright protection will see significant improvements. On the one hand, minimum copyright protection will be increased to at least 70 years (under TRIPS the minimum is 50 years). There also will be a possibility of criminal prosecution for removal of rights management information from products or camcording of movies for purposes of commercial abuse; protection will be extended to items in the digital environment.7 On the other hand, TPP clarifies areas of fair use for copyright protected material (e.g., research8) or trademarks. It also offers safe harbours to internet service providers from liability for infringing items posted by third-parties, provided they have procedures and make every effort to block or remove such items once they are identified. Thus, an effort to ensure balance is embodied in the agreement.

Under the TPP, countries will need to align their patent systems with the standards in the agreement. Essentially, that means addressing weaknesses and bringing systems up to the standards of the United States and Japan. For example, in some cases, countries will need to take steps to ensure patents applications are published after 18 months. In the event the patent is actually granted, this will enable rights holders to claim reasonable royalties should another party begin to utilise the invention in the interim. Also, they will need to ensure the availability of patent term extensions in the event of delays in review during the application process. Although the gaps in patent protection among TPP partners are more modest than in the case of trade secrets (see Annex 1), some reforms will be needed in view of the TPP patent requirements. Countries such as Malaysia, Mexico, Peru, Vietnam or even some developed participants such as New Zealand may need to reinforce their available protection.9

Two other areas for IPR reform include trademarks and overall procedures. For trademarks, TPP will ensure they are granted a minimum 10 year term of protection (whereas under TRIPS it is 7 years). And, with respect to procedures, the TPP aims to ensure consultation of interested parties in the formation of regulation and public availability of the procedures for registration or recognition of intellectual property and the resource available in cases of abuse.

**IPRs in TPP – Summing Up**

In most of the requirements discussed above, TPP will go beyond the requirements of the WTO TRIPS Agreement (Table 1). TPP will address gaps and mis-alignment in IPR provisions among the TPP members and it will open markets and promote complementary policies (e.g., transparency and consultation in trade-related regulatory policies) that may well contribute to improved innovation performance and diffusion.10 This can be part of a coherent trade policy package that encourages businesses and others to invest in intangible assets, and provides the rights-holders with an improved means to engage in market-based technology transfer and commerce across the TPP area. As noted, the leading innovators in the TPP area have a vast stock of technological innovation that can be accessed.

In addition, establishment of an improved policy framework for IPR is associated with improved domestic innovation performance, including in developing countries. Thus, innovators in

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7 TPP requires accession to the WIPO internet treaties including protection against circumvention of technological measures, coverage of internet abuse.
8 The TPP specifically mentions fair use as including: criticism; comment; news reporting; teaching, scholarship, research, and other similar purposes; and facilitating access to published works for persons who are blind, visually impaired or otherwise print disabled.
10 See Cavazos and Lippoldt (2010) for more on the economic importance of such policy complements to IPR reforms.
emerging markets are also expected to benefit. Yet, it should be kept in mind that IPR reform is not a standalone silver bullet solution. It works best where complementary policies help to support technological capacity; such policies go beyond trade to address rule of law, good governance practices and human capital development, among other issues.

Table 1. Key TPP provisions to enhance IPR protection

<table>
<thead>
<tr>
<th>Issue</th>
<th>Action under TPP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insufficient transparency in national systems</td>
<td>Improves transparency in IPR regimes via the availability of information on the internet and standardised procedures; requires authorities to provide written responses to applicants in certain cases (goes beyond TRIPS in use of internet and information requirements vis-à-vis the public)</td>
</tr>
<tr>
<td>Technical inadequacies and process delays</td>
<td>Includes provisions for on-going technical co-operation among the national IPR agencies (TRIPS only requires availability of mutually agreed technical co-operation)</td>
</tr>
<tr>
<td>Shortness in duration of trademark terms</td>
<td>Offers terms of protection of no less than 10 years (under TRIPS the minimum is 7 years)</td>
</tr>
<tr>
<td>Patent delays may disrupt earnings potential</td>
<td>Requires publication of a patent application after 18 months (i.e., this enables rights-holders to collect reasonable royalties, if the patent is then granted) (no such requirement exists under TRIPS)</td>
</tr>
<tr>
<td>Undisclosed test data submitted to authorities may be revealed to competitors</td>
<td>Undisclosed test data submitted for marketing approvals will be protected for agricultural chemicals for at least 5 to 8 years (TRIPS does not specify the required term of such protection)</td>
</tr>
<tr>
<td>Copyright protection duration varies significantly, by country</td>
<td>Sets a minimum copyright term at not less than 70 years (in TRIPS the minimum is 50 years)</td>
</tr>
<tr>
<td>Weak copyright enforcement can lead to abuses</td>
<td>Requires possible criminal prosecution for removal of rights management information or camcording movies; requires accession to the WIPO &quot;Internet treaties&quot; dealing with protection against circumvention of technological measures and coverage of internet abuse; requires availability of preliminary injunctions, injunctions at border (TRIPS does not address the technology issues nor the relevant WIPO treaties; and it is less specific in injunctive relief requirements)</td>
</tr>
<tr>
<td>Copyright and trademarks: boundaries for fair use and liability are not consistent across the region</td>
<td>Clarifies and protects fair use of copyright and trademark materials; clarifies obligations on internet service providers with respect to third-party posting of infringing material, as well as providing limitations on their liability and safe harbours (TRIPS treats fair use provisions as optional and is less specific, does not address internet service issues)</td>
</tr>
<tr>
<td>Trade secrets protection varies widely and is not subject to clear enforceable minimum standard</td>
<td>Requires enforceable trade secrets protection, though details may be specified drawing on a list of options set out under the TPP; requires some availability of criminal penalties (TRIPS defines undisclosed information and mandates protection, but does not specify the requirements for such protection)</td>
</tr>
<tr>
<td>Members differ in high standards IPR regime</td>
<td>Tailored transition periods are established to permit each country time to prepare and adjust, as necessary (the TRIPS Agreement used a similar approach)</td>
</tr>
</tbody>
</table>

Source: HSBC, with reference to the TPP Full Text (US Trade Representative, 2015, on-line) and the TRIPS Agreement (WTO, 1995, on-line).

3. Can changes in IPR stringency affect real world economic performance?

What has been the experience with IPR reform? Can the types of changes in TPP make a difference? In the years since the advent of the WTO TRIPS Agreement (1995), countries around the world have engaged in reform of their intellectual property systems. In some cases, such as in Singapore or the United States, they have gone beyond the minimum requirements of TRIPS either unilaterally or in the context of bilateral or regional free trade agreements or
accession to WTO or OECD. Some of these reforms touch on issues addressed in TPP, like protection of undisclosed test data.

Two recent studies have considered the impacts of increasing stringency of IPR protection. These aimed to test the hypothetically positive association of IPR strength with economic performance in the period since 1990. This was done using a regression analysis controlling for other factors such as GDP size, endowments and other policies. Charts 1 and 2 present the positive results with respect to patent rights and protection of trade secrets.

Patents are an important indicator of technological progress because by definition they must involve an inventive step, be non-obvious and have industrial application. Not all inventions are patented, but patents represent new technological ideas that have been reviewed by experts and accepted as meeting certain minimum standards. They also require the public disclosure of the basic functioning of the invention, which can lead to further innovation by others (e.g., to build upon the idea or to invent around it).

Chart 1 highlights the positive responses in key national-level indicators to the strengthening of patent rights in developing countries. Patent rights are associated with increased innovation as measured by expenditure on research and development (R&D), increased technology transfer via foreign direct investment (FDI), and increased availability of technology from abroad through increased imports of goods and services. Thus, other factors being equal, TPP countries like Chile, Malaysia or Mexico (and subsequently, Vietnam) that improved their protection of patent rights were made better off for it. On average, such countries had better performance with respect to the indicators shown than would have otherwise been the case.

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11 OECD is an international organisation of primarily advanced economies, promoting trade and growth.
12 While US legal protections for domestic intellectual property have their foundation in the US Constitution of 1787, critics sometimes note that the United States and economies in the 1800s did not extend intellectual property protection to non-domestic innovation. However, the environment at the time was much different. In the 21st Century, the world is a more open place and the rules-based international trade system is much more developed providing access to innovation via market-based approaches.
13 However, it should be kept in mind that these studies apply to a certain range of reforms and a particular period. In many cases, the reforms helped countries move from weak systems to more effective systems. The studies do not provide a basis to argue that ever increasing IPR stringency will lead to similar returns.
14 In the United States, patents may be re-examined. However, the quality of granted patents is such that most survive. They meet the test of novelty, inventive step and industrial application. Yet, occasionally there are rejections. E.g., such was the fate of a patent for making a crustless peanut butter and jelly sandwich in 2005 (http://ipfrontline.com/2007/03/reexamination-of-the-peanut-butter-and-jelly-sandwich/).
15 In a disaggregation, not shown here, the positive responses were confirmed separately for middle-income and least-developed countries.
Chart 1. Economic responses in developing countries to a 1% change in the Patent Rights Index, 1990–2005

Source: Lippoldt (2011).

Note: Based on a global sample of 91 developing countries. The coefficients are drawn from a regression assessment of the association of change in the index to changes in economic indicators, controlling for other factors. All coefficients shown are significant at the 95% level, except real services imports at 90%.

Chart 2 presents similar results for a global sample of developed and developing countries with respect to the strengthening of trade secrets protection. As with patent rights, TPP countries that improved the protection of trade secrets such as New Zealand, Singapore and Japan (and to a more modest extent Peru or Vietnam), might be expected to be better off than they would have been, other factors being equal.

Chart 2. Economic responses to a 1% change in the Trade Secrets Protection Index, for a diverse global sample of countries, 1990–2010

Source: Lippoldt and Schultz (2014)

Note: Based on a global sample of 37 countries at all stages of development. The coefficients are drawn from a regression assessment of the association of change in the index to changes in economic indicators, controlling for other factors. All coefficients shown are significant at the 95% level or better. The TSPI is lagged (-1) for the R&D run.

So, IPRs and market openness can be important… but do they matter in TPP?

By aligning IPR regimes and opening markets, the TPP will help to provide improved opportunities for members to tap into a pooled library of existing and future innovation. This matters because just a few countries in the world account for much of the available technology. Openness to trade and investment is essential for countries that wish to promote technology transfer and development (Keller, 2009). As of 2011, the top seven countries in the world with

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16 NB, the regression approaches shown for trade secrets are not strictly comparable, as the methods were varied in order to test robustness.
respect to R&D expenditure accounted for just over 75% of the global total (Table 2). Two of the three biggest were TPP countries: the United States and Japan.

Yet, technology transfer alone is not sufficient for catch up and sustainable advantage. Local technology creation and related innovation (e.g., building brand and reputation), as well as absorptive capacity, also have a role to play. These dimensions, as well, may be potentially influenced by the types of reforms envisaged in the proposed mega-regional trade accords. Where successful, such reform efforts can support business efforts at product differentiation enabling firms to reap increased margins and develop "moats" vis-à-vis global competition.

**Patently successful**

Why does this matter? It matters because there are huge flows of new patented innovation in the United States and Japan (Chart 3, below). Yet, as can be seen in the chart, there are also patent flows in the other countries. With improved access to the larger TPP market, each country will gain improved access to the overall pool of patented TPP innovation and thus increase their stock of potential technologies to utilise locally. The availability of improved technology is an important element in boosting total factor productivity (TFP) and economic development. Among the TPP developing countries, TFP is only about two-thirds that of the United States.\(^{17}\) While this represents an increase of a few percentage points since 1990, it is still far short of their potential.

By aligning patent systems, the smaller TPP economies will improve their opportunities for technology transfer. The alignment may encourage rights holders of US or Japanese patents to patent their technologies in the other TPP members. This is often a first step in entering the markets with new, innovative technologies. Technology transfer may then take place via sales of products by the foreign rights holders, by direct investment and local production by the foreign rights holder (or as part of joint ventures with locals), or by licensing the technology to local firms.

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\(^{17}\) TFP data cited here are drawn from the Penn World Tables, available here: http://rwpwt.webhosting.rug.nl/Dmn/AggregateXs/PivotShow#
The effects of progress in strengthening IPR regimes can be boosted by complementary policies to ensure rule of law, ease of doing business, and availability of human capital. For example, IPR reform has been an integral part of Singapore's development strategy in conjunction with such complementary policies and it appears to be one factor contributing to productivity growth. TFP has grown more rapidly in Singapore than in the United States: between 1990 and 2010, Singapore's TFP score grew to a point where it led the United States by about 10 percent.

Chart 3. Annual patent grants in the TPP area

Source: Aistemos; HSBC
Note: Data are not available for Chile, Brunei and Peru and are not available for Singapore, Malaysia and Vietnam in 2003.

Yes, but do firms use it?

To answer this question, one can look at patents. Via the patent process, technological inventions are registered and publicly notified, hence available to track. Moreover, while applications can be submitted via WIPO or regional authorities, the patent grants are national and the geographic distribution can be followed using these national-level data. Thus, patents can provide some useful insights. (However, they are not necessarily representative of all types of innovation.)

Much technological innovation is concentrated in the leading R&D countries and private sector enterprises hold a substantial share of this through their own innovation or via acquisition. Thus, it is important that the IPR system facilitate technology transfer via market-mechanisms. Firms will often register patents in anticipation of entry into a market via trade or investment, so that their innovations are protected in the new market.

Chart 4 presents the case of Toyota (the motor vehicle company based in Japan), highlighting the stock of patent grants in force for the company as of 2014. Overall, the company held more than 52,000 patent grants including some 34,000 in Japan. But, it is interesting to note that the remaining 18,000 patents were widely distributed across Asia and Europe. Some of these may represent local innovation or acquisition in the countries concerned, but some of this will also represent international transfer of technology for trade or investment purposes. From these data, it appears that the IPR system has incentivised a significant amount of successful R&D at the firm (i.e., patents are reviewed for feasibility by experts) and also encouraged its diffusion.

Gradually, in the period since TRIPS, developing country firms are improving their innovation performance. While there remains a significant gap with leading world innovators, it is

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18 Hall and Jones (1999) provide a useful discussion on the key drivers of productivity growth.
19 The company data cited in this section are from Aistemos (https://aistemos.com/).
encouraging to see that there is uptake of opportunities by some developing country competitors as well. For example, Chart 5 highlights the case of Cemex, a Mexican supplier of cement and other building supplies. The company has built or acquired a portfolio of 29 patents. These grants are primarily in the United States and EU member states, but there are several grants in Asia or elsewhere in the world. Thus, the company appears to be leveraging or defending its patented innovation across a number of markets.

These cases illustrate successful firm-level innovation, its formal recognition as property under the IPR system, and the leveraging of the rights for temporary market exclusivity in selected economies around the world. The accordance of these rights will facilitate the ability of these firms to sell, trade or license the intellectual property, or to exploit it directly in products or processes via trade or investment.

**Chart 4. Patent grants for Toyota Motor Corporation (Japan)**
4. Market openness and the TPP

Seen from an innovation perspective, the TPP will support market openness in a number of areas that will complement the enhanced IPR environment. These include reductions in tariffs, market access in many services, use of clear and least-trade-restrictive regulation and standard setting, assurances for trade-related investment and requirements for trade facilitation, among other benefits. Moreover, in most areas, TPP provides for national treatment in order to reduce potential discrimination vis-à-vis the host country stakeholders.

Annex Table 1, below, provides more details of the key TPP reforms. Some of these changes are quite significant. For example, according to our estimates roughly one-third of trade among TPP partners is burdened by tariffs that can be quite high in some cases (e.g., 70% for imported cars in Vietnam). About 85% of this burdened trade will benefit from reduced or eliminated tariffs upon the entry into force of the TPP. However, not all TPP liberalisation will enter into force immediately upon ratification; transition periods are built in to provide time for necessary preparations and adjustment. Thus, in the case of tariffs, tariffs on an additional 5% of the burdened trade will be liberalised within 7 years of the entry into force.

Market openness to trade can influence the pace of innovation in part by providing access to a broader range of inputs than would otherwise be available domestically. Imported inputs can be in some cases more competitive than domestic products in terms of price, quality or functionality. On the other hand, market openness means that innovators have larger markets to sell into. This can mean opportunities to specialise and target niche markets, where economies of scale may not be adequate to justify exclusively domestic production. It can also mean opportunities for innovators to leverage their innovation by transferring technology internationally through sale, partnership, licensing or direct investments.
Building a moat for one’s business castle?

The TPP reform package for IPR fits well with the so-called new-new trade theory developed by economists in recent years to examine differentiation among firms in the globalised economy.\(^{20}\) They find that that successful firms tend to be innovative, able to capitalise on market openness and exploit potential economies of scale and specialisation. This type of strategy can fuel productivity improvements and growth. Domestic firms that find it difficult to compete can potentially up their game by co-operating with innovative international firms through engagement in global value chains.\(^{21}\) At the same time, firms that fail to provide competitive value propositions risk to be pushed aside. Most firms do not trade internationally and their lack of exposure to external opportunities and competition can result in their falling behind and becoming vulnerable to disruption going forward.

Product differentiation through innovation in technology, content, design and branding can help firms to compete internationally, with myriad examples ranging from Apple to Uber, Shiseido to Billabong, News Corporation to Sony. Relevant innovation may focus on incremental technological change in serving existing clients, serving neglected market segments or displacing existing technologies and business models, among other possibilities.\(^{22}\) Often businesses will strive to secure a measure of market exclusivity by protecting their intangible assets using some form of intellectual property protection. As noted above, this can help them leverage the fruits of their investments in innovation, enabling them to appropriate a portion of the societal gains from their innovation.

It should be noted that the reinforcement of IPRs can be compatible with open innovation models. In some cases, innovators choose to invoke intellectual property protection to prevent others from claiming exclusive rights. This is the approach, for example, of the Creative Commons initiative that provides a framework for protecting creations and offering non-exclusive licenses that provide access for others to the content.\(^{23}\) Also, availability of IPR protection does not preclude the use of competitive strategies that forego recourse to IPR protection. For example, exploitation of rapid innovation and first-mover mover advantage in entering markets may provide enough differentiation to enable a firm to out-compete rivals (e.g., see Boldrin and Levine, 2007). In some cases, firms may make some of their innovations freely available (as in the case of open-source software) and then build their business models on provision of complementary proprietary products and services.

5. Conclusions

The TPP offers a tantalizing prospect of liberalisation in two areas that can catalyse increased innovation: intellectual property protection and market openness. Steps toward liberal reform in both areas have been undertaken at the global, regional and national level. Yet, under the main international legal instrument promoting IPR protection in global trade, the WTO TRIPS Agreement, there remain some important gaps and uncertainties for market participants. The TPP will to address some of these gaps and uncertainties, while delivering substantial improvements in market openness among its members.

A larger market can provide opportunities for bigger returns as well as exposure to more competition and can thereby incentivise R&D expenditure as businesses strive to produce new products for the expanded market. By removing barriers and aligning regulatory regimes and

\(^{20}\) E.g., see Melitz and Trefler (2012).

\(^{21}\) E.g., see Keller (2009).

\(^{22}\) There is a large literature on this. See, for example, Christensen et al (2015) and Christensen (2003).

\(^{23}\) For more information, see: creativecommons.org.
standards, TPP can expedite the transit of goods and services and also create opportunities to specialise and serve small markets that were previously fragmented but now have sufficient scale to be attractive (e.g., to develop pharmaceutical products for a rare disease).

Market opening can also permit firms to source new and competitive inputs from a larger pool of potential suppliers. This can stimulate innovation as businesses will have greater freedom to combine diverse inputs with their own innovations to create new products. In some cases, liberalisation of trade and investment may permit development of new collaborative approaches. Thus, trade liberalisation can affect both the production process and distribution of the products. Together with improved market openness, the IPR solutions embodied in the TPP should offer businesses improved opportunities to leverage investments in innovation.

Will TPP generate waves of innovation? Its provisions are indeed likely to be conducive to creation and diffusion of innovation. This may be expected to release waves across the TPP region, and further dynamic gains as it leads to improved productivity and new approaches to doing business. But, also, to the extent that the lessons from TPP are picked up and incorporated into other regional accords, the TPP may serve as a template for further reforms. If that is the case, we may see subsequent expansion of the opportunities for innovation, perhaps even going global (e.g., Baldwin, 2014). Thus, the economic gains from reform could then compound.

Finally, there remain open questions in some areas of the relationship between trade and innovation, and the implications of increased stringency in protection of IPRs (see Box 1, below). Examples include: finding the appropriate balance between protection of IPRs and a healthy competition policy, identification of effective policies to build technological capacities in developing countries, and elaboration of strategies for IPR protection while promoting digital trade and the free data flows. Examination of such areas may provide further insights for use in further refining the approaches to reform of trade and innovation policies.
Per Cherif and Hasanov (2015) found that in a 40 year period to 2010, only 9 developing countries succeeded in joining the ranks of the high-income countries. Clearly, there are issues where policy makers would benefit from further insights as to what works under which conditions, including with respect to mega-regional trade agreements and IPR reform:

**Box 1. IPRs and mega-regional agreements: an agenda for further research**

Catching up with the developed countries is not an easy task and there does not appear to be a one-size-fits-all solution. Cherif and Hasanov (2015) found that in a 40 year period to 2010, only 9 developing countries succeeded in joining the ranks of the high-income countries. Clearly, there are issues where policy makers would benefit from further insights as to what works under which conditions, including with respect to mega-regional trade agreements and IPR reform:

**Competition and IPRs** - IPRs afford rights-holders a measure of market exclusivity, but not a timeless monopoly. They remain vulnerable to competitive pressures. Patents and copyright protection expire. Trade secrets can be overturned if competitors can independently and fairly discover the insights that underpin them. A healthy competition regime can help to ensure that an appropriate balance is achieved between innovators and potential rivals. There is a growing literature from economic and legal scholars. The TRIPS Agreement raises some relevant issues such as IPR abuse in the case of licensing and technology transfer and the TPP includes a chapter on competition. But, is the appropriate balance between competition and market exclusivity achieved in TPP and the other pending mega-regional trade accords in order to drive rights-holders to continue innovating and new entrants to challenge them with alternatives?

**IPRs and price effects** - A related issue under mega-regional accords concerns price effects of increased stringency of IPR standards. What can we say about price effects of IPRs in such agreements? There is some literature, for example, on pharmaceuticals with respect to the TRIPS Agreement. But, the TPP and other mega-regionals go beyond the TRIPS Agreement. With stricter IPR standards and market opening under TPP, for example, will increased international competition from alternative varieties moderate the price effects of market exclusivity for products with patent protection? What will be the price effects in countries beyond the TPP members?

**Alternative business models that rely less on IPR protection** - In an open regional competitive landscape, firms may opt for alternative approaches to the formal IPR processes, which take time and can be costly (e.g., patent registration and litigation take years to reach conclusion). Alternatives to patents, for example, may include accelerated innovation processes and exploitation of first mover advantages. To what extent is this actually the case? What factors drive firms’ strategic decisions? How does this vary by sector? To what extent do firms compete via such alternative means and use IPR protection simply for defensive purposes (e.g., to have patents that could be offered for cross-licensing in the event of an infringement lawsuit).

**IPR stringency and barriers to international trade** - Regional trade agreements span increasingly diverse countries in terms of levels of development and approaches to legal system. Does increased IPR stringency translate well across the various systems? Can the requirements under mega-regional accords be equitably implemented across such diverse environments without opening opportunities for abuse or overly constraining trade (e.g., overly strict controls could lead to delays at the border in some countries but not others)?

**IPR protection and digital trade** - Intangible assets are virtual and can easily be traded across borders in digital format. Are current protections adequate and can they be put in place without constraining digital trade and free flow of information? Will the existing TPP provisions be robust in the face of technological change? What would be the optimal enforcement strategy consistent with market openness objectives?

**Inclusive trade, technical co-operation and absorptive capacity** - Are the support provisions of TPP and the other mega-regional accords adequate to ensure that the developing partners have a chance to benefit from the potential incentives for innovation and technology transfer?

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24 Per Cherif and Hasanov, the successful economies include: Cyprus, Czech Republic, Greece, Ireland, Korea, Malta, Portugal, Slovenia and Taiwan.
Annex 1. Measuring the strength of intellectual property rights

With the advent of the WTO in 1995, came into force the TRIPS Agreement. TRIPS built on earlier international agreements to establish global minimum standards for protection for the key forms of intellectual property, whereby WTO members have recourse to WTO enforcement provisions for dispute settlement.\(^{26}\) The TRIPS agreement was a compromise, however, and left some issues unresolved such as the specific requirements for protection of undisclosed test data (e.g., for pharmaceutical products) or trade secrets.\(^{27}\) In addition, the TRIPS Agreement was subject to a number of exemptions, transition periods for developing countries (now expired), and subsequent waivers for UN-recognised least developed countries from key patent obligations for pharmaceutical products. Due to transition periods, implementation continued through 2005. The effect of TRIPS continues to expand via its application as countries join the WTO (e.g., Vietnam in 2007). The TRIPS Agreement also called for increased technology transfer and for technical co-operation in support of developing countries in building up their innovation capacity.

A number of – primarily, developed – countries have engaged in international efforts to close the gaps left by the TRIPS Agreement (e.g., with respect to trade secrets protection), to update the global standards in light of 21\(^{st}\)-century challenges (e.g., related to the Internet) and to clarify the limits of the requirements to protect intellectual property (e.g., to protect some areas for fair use of copyright-protected materials or to limit liability for internet service providers who make good-faith efforts to block or remove copyright-infringing materials). In the face of resistance at the WTO, these IPR reform efforts have advanced via WIPO treaties and regional and bilateral accords (which in some cases require accession to the recent WIPO treaties).\(^{28}\)

How has IPR protection changed?

The cumulative effect of the implementation of IPR reforms can be seen in empirical indicators of the strength of protection. Annex Charts 1 and 2 highlight the evolution of the strength of available protection for patent rights and for trade secrets over a 20 year period from 1990. This is a critical period for IPR reform, covering a time when many of the trade and IPR agreements referenced above came into force.

Annex Chart 1 highlights the global strengthening for patent rights, as well as a gap between the average scores for TPP developed and developing countries. TPP will to better align some aspects of patent protection, but the gap is smaller than in the case of trade secrets.

Annex Chart 2 reveals a continued gap in the availability and application of protection for trade secrets as measured by a tailored index.\(^{29}\) (This index includes coverage of the sensitive issue of protection for undisclosed test data submitted in satisfaction of regulatory requirements for pharmaceutical products and agricultural chemicals.) Despite some improvement, the average score remains comparatively weak with respect to the maximum potential stringency.

\(^{26}\) The TRIPS Agreement covers copyright and related rights, trademarks, geographical indications, industrial designs, patents, layout-designs of integrated circuits and protection of undisclosed information.

\(^{27}\) The TRIPS Agreement references Paris Convention (1967) provisions on the availability of protection for undisclosed information from abuse through unfair competition, defines undisclosed information, and requires there be the possibility for protection, but without giving full and specific requirements for effective protection of trade secrets.

\(^{28}\) E.g., TPP requires accession to WIPO’s so-called Internet treaties that aim to improve copyright protection for digital materials.

\(^{29}\) Per the WTO TRIPS Agreement (Art. 39), undisclosed information (trade secrets) includes commercial or technological information that: is secret, has economic value as a result, and benefits from reasonable efforts to protect secrecy, e.g.: industrial processes, blueprints, formulae, customer lists, recipes, financial info, business plans.
In view of the weak provisions in the TRIPS Agreement and earlier WIPO agreements (e.g., the Paris Convention), as well as limited treatment of this issue in many regional or bilateral agreements, many countries have felt little incentive to move to increase the effectiveness of trade secrets protection. Moreover, the chart highlights a persistent gap between TPP developed and developing members. Thus, it would seem that the relatively strong requirements of the TPP will have an opportunity to boost protection for trade secrets and better align provisions among countries using divergent approaches for such protection.

Comparable indicators are available for copyright and trademark protection for the years 1990-2005 (e.g., see Cavazos and Lippoldt, 2010). They highlight patterns similar to those for patents, though with a persistent gap between developed and developing countries. This is particularly evident in the case of copyright, as many developing countries failed to implement the updated WIPO-accords that updated the TRIPS agreement (e.g., associated with protection of copyrighted material in the digital environment and internet).

Annex Chart 1. Patent Rights Index

Source: W. G. Park (2008); HSBC
Notes: the TPP developing country average does not include Brunei due to data limitations. The global average includes 122 countries. The index scores patent rights on a scale from 0 (weak) to 5 (strong) based on objective criteria for membership in key international treaties, patentable subject areas (coverage), restrictions on patent rights, enforcement, and duration of protection.

Annex Chart 2. Trade Secrets Protection Index

Source: Lippoldt and Schultz (2014); HSBC. The global average includes a sample of 37 countries around the world. The TPP developing countries covered include Malaysia, Mexico and Peru. Vietnam is not included in the chart due to lack of coverage in the early years. In 2005 and 2010, its score was 3.01. Brunei and Chile are not covered due to data limitations. The index scores the strength of protection on a scale from 0 (weak) to 5 (strong). The scores are based primarily on objective criteria for: definition of trade secrets and coverage; duties and misappropriation; remedies and restrictions on liability; enforcement, investigation and discovery; data exclusivity; system functioning and related regulation.
### Annex Table 1. An illustrative overview of key TPP provisions for innovation and its diffusion

<table>
<thead>
<tr>
<th>Intellectual property rights (IPRs)</th>
<th>Trade in services</th>
<th>Financial services</th>
<th>Market access for goods</th>
<th>Trade facilitation</th>
<th>Technical barriers to trade</th>
<th>Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>National treatment</strong></td>
<td>National treatment and most-favoured nation treatment</td>
<td>National treatment and most-favoured nation treatment for TPP providers of financial services</td>
<td>National treatment</td>
<td>Customs laws, regulations &amp; procedures to be published online &amp; in English; contact points</td>
<td>Release of goods within 48 hours, though customs determination may be still pending</td>
<td>National treatment and most-favoured nation treatment, in like circumstances, for TPP investors</td>
</tr>
<tr>
<td><strong>Transparency in IPR regime via information on Internet, standardised procedures; technical co-operation among TPP members</strong></td>
<td>No quantitative restrictions on supply of services or number of suppliers</td>
<td>No restrictions on numbers or value of financial service providers, assets or transactions</td>
<td>Eliminates most customs duties on qualifying goods from TPP region (with transition periods and exceptions notably in sensitive agricultural products)</td>
<td>Mutual recognition of TPP conformity assessment bodies; tests/certification will be valid for TPP area</td>
<td>Minimum standards of treatment with access to police protection &amp; justice system; expropriation only for public purpose, with due process &amp; prompt, adequate, transferrable compensation</td>
<td></td>
</tr>
<tr>
<td><strong>Covers all main types, e.g.: TM: offers terms &gt; 10 years; patents: publication after 18 months; protects undisclosed test data; for eg: chems 10yrs, pharma 5 - 8 yrs; copyright: life of author + 70 yrs; possible criminal prosecution for removal of rights management information or camcording</strong></td>
<td>Transparency provisions, notification and consultation on new requirements; system shall be fair and reasonable manner of operation</td>
<td>No requirement to establish locally, but to permit oversight, may require registration or authorization for cross-border trade</td>
<td>Requires accession to WTO’s Information Technology Agreement (duty free treatment for selected electronics products)</td>
<td>Availability of advance rulings, within 150 days of request and valid for at least 3 years</td>
<td>New rules to be published in advance; stakeholders and interested parties will have opportunities to participate in setting of the rules</td>
<td>TPP investors will have right to pursue neutral, international arbitration in event of an alleged violation by a TPP member of commitments under the chapter, subject to transparency, time limits, protection against frivolous cases</td>
</tr>
<tr>
<td><strong>Requires availability of enforceable trade secrets protection, including criminal penalties in some cases</strong></td>
<td>Retains right to regulate, license, establish credentials; some non-conforming measures remain</td>
<td>Specifically permits cross-border transfer of information for data processing in ordinary course of doing business</td>
<td>Prohibits import licensing that requires export performance or use of domestic distributors</td>
<td>TPP preferences are subject to rules of origin</td>
<td>Annexes protect proprietary information; permit reasonable regulation of ICT or food and beverage products</td>
<td>Ban on performance requirements, including local content, technology transfer or localisation, exports</td>
</tr>
<tr>
<td><strong>Requires access to the WIPO Internet treaties including protection against circumvention of technological measures, coverage of Internet abuse</strong></td>
<td>No requirement to establish locally; free flow of funds transferred in relation to services (exceptions apply)</td>
<td>Minimum standard of treatment under the agreement, but also some non-conforming measures accepted</td>
<td>Requires publication of the rules, procedures, rates; transparency export licensing procedures and measures concerning biotechnology trade</td>
<td>Express shipments shall be expedited, with duty free treatment if below the national threshold in weight or value</td>
<td>Requires due process &amp; scientific basis for cosmetics, medical devices &amp; pharmaceutical regs</td>
<td>Freedom to transfer funds, though subject to possible limitations to manage volatile capital flows</td>
</tr>
<tr>
<td><strong>Availability of preliminary injunctions, injunctions at border, protection of fair use of copyright &amp; TM materials; ISP liability safe harbours</strong></td>
<td>Liberalisation applies to all services except for those specifically exempted</td>
<td>Elimination of agricultural export subsidies for TPP trade and limits on any agricultural export restrictions to 6 months with due notification to partners</td>
<td>Co-operation among customs authorities</td>
<td>Members must ensure a reasonable implementation period for new rules</td>
<td>TPP investors are to be able to appoint senior managers without regard to nationality</td>
<td>Right to regulate in public interest, e.g., for public health, safety, financial stability, the environment</td>
</tr>
<tr>
<td><strong>Transition periods: established for each country</strong></td>
<td>No new non-conforming measures allowed</td>
<td>Ability to trade remanufactured goods without discriminatory restrictions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: USTR (2015), TPP Full text, Office of the US Trade Representative; HSBC. Note: National treatment means subject to the same rules as nationals of the country concerned. ISP = internet service provider.
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Notes
Notes
Disclosure appendix

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