

A New Agenda for Research in International Trade and Intellectual Property Rights

Una nueva agenda para la investigación en comercio internacional y en derechos de propiedad intelectual

KEITH E. MASKUS
University of Colorado, Boulder¹

Summary

Despite major global increases in the legal protection of intellectual property rights, the evidence of any increase in innovation remains inconclusive, though there has been a rise in technology transfers to emerging countries. Beyond these statements economists know little about other potential impacts of stronger patents. This article sets out an agenda for additional research that economic and legal scholars should undertake to shed light on several important issues. Examples include policy complementarities between free trade agreements and IPRs, the channels through which stronger patents may affect productivity and trade, how IPRs interact with supply chains, and impacts of protection on inequality.

Keywords

Patents / Trade policy / Productivity / Inequality.

Resumen

A pesar de las importantes mejoras a nivel global en la protección legal de los derechos de propiedad intelectual, la evidencia de cualquier aumento en la innovación sigue siendo poco concluyente; aunque, cabe decir, ha habido un aumento en las transferencias de tecnología a los países emergentes. Más allá de estas afirmaciones, poco saben los economistas sobre otros potenciales impactos que ocurren al fortalecer las patentes. Este artículo establece una agenda para investigaciones adicionales que deberían comprometer a académicos en economía y derecho para arrojar luz sobre varios temas importantes. Los ejemplos usados incluyen: las complementariedades entre los acuerdos de libre comercio y los derechos de propiedad intelectual (DPI); los canales en los que las patentes más fuertes pueden afectar a la productividad y al comercio; la interacción entre DPI con las cadenas de suministro; y los impactos que tiene la protección para evitar la desigualdad.

Palabras clave

Patentes / Política comercial / Productividad / Desigualdad.

1. Introduction

There has never been a greater need for sound economic analysis of how international trade and investment interact with intellectual property rights (IPRs). The policy imperative arises largely from the massive increase and partial convergence of IPRs standards around the world in recent decades². In large part this change is associated with both the Agreement on Trade-Related

¹ Keith E. Maskus is Arts and Sciences Professor of Distinction in Economics at the University of Colorado, Boulder CO 80309. E-mail: keith.maskus@colorado.edu

² See Maskus (2012, pp. 25-33).



Aspects of Intellectual Property Rights (TRIPS) at the World Trade Organization (WTO)³ and negotiating preferences of the United States and the European Union for partner countries in regional trade agreements to adopt even-stronger standards for protecting intellectual property (Maskus, 2012, pp. 120-132). These and related changes have engineered the largest increase in IPRs globalization in history.

Such a large change in a key component of business and information regulation may be expected to have significant impacts on international commerce, including via trade, foreign direct investment, and licensing of high-technology goods and services. Indeed, international economists have made progress in studying the most basic questions about reforms in patent laws and their impacts on broad measures of innovation and cross-border technology flows⁴. To me this evidence indicates that reforms that have strengthened national regulation of IPRs in emerging economies have increased inward flows of advanced technologies, whether through trade, investment, or licensing. This finding is of considerable importance in global policy terms.

However, such conclusions must be approached with caution. These impacts appear to depend on the recipient countries having reached certain thresholds in education, competition, and governance. Further, there is to date no systematic evidence of such gains in the poorest and smallest economies. Moreover, much of the analysis to date has focused on aggregate or industry-level trade and FDI data. Such studies inevitably raise concerns that their results are driven by omitted variables and measurement problems that could be more usefully addressed with more detailed data covering more countries, industries, and reform episodes. Finally, there is only limited evidence from firm-level, microeconomic studies, more of which are strongly needed.

Virtually all of the prior studies use measures of patent laws and reforms, primarily because there are measures of such changes⁵ and there is no shortage of data covering international trade and patenting. It would be interesting, therefore, to move beyond patent analysis and investigate how policy differences in trademarks, plant variety rights, geographical indications, and copyrights may affect global trade and investment. Further, even the econometric studies of patent reforms leave aside huge questions regarding exactly how it is that stronger laws may attract technology transfer. To date, we have virtually no evidence from which to draw conclusions about these basic questions, leaving the policy field open for speculation and argument by anecdote.

In writing the current paper, my basic purpose is to encourage colleagues in international economics and law, especially those in emerging economies where these issues are so vital, to help close these knowledge gaps. Economists and lawyers need to ask additional and broader questions about the underlying economic channels that affect the relationships among intellectual property, technology, and trade. In the remaining sections I offer brief discussion of several important areas in which research on the international economics and law of intellectual property rights could be extended. Scholars who look into such areas will discover many unanswered questions worth deep exploration and thinking. Indeed, it is virtually uncharted territory.

³ World Trade Organization, *Agreement on Trade-Related Aspects of Intellectual Property Rights, Annex 1C of the Marrakesh Agreement Establishing the World Trade Organization, 1994*.

⁴ This short paper is not the place for an extensive review of this work. For relevant reviews, see Maskus (2012, pp. 64-81) and Park (2008, pp. 289-324).

⁵ See, for example, Ginarte and Park (1997, pp. 283-301).

2. Policy Complementarities

It is important to understand that the dramatic expansion of IPRs around the globe has been accompanied by trade liberalization and the proliferation of regional trade agreements (RTAs), international investment agreements (IIAs), and bilateral investment treaties (BITs). This joint trend is almost inevitable because a primary goal of recent RTAs and BITs, especially those involving the United States or the European Union, is to establish stronger and more comprehensive protection for IPRs⁶. For example, recent US agreements with Peru, Australia, and the Republic of Korea have systematically raised requirements for protecting intellectual property. The strongest examples to date would have been established by successful implementation of the Trans-Pacific Partnership (TPP), now on hold, and the Trans-Atlantic Trade and Investment Partnership (TTIP), still under negotiation⁷. While they vary in details, both agreements contain far stronger rules than TRIPS in such critical areas as pharmaceuticals, biotechnology, and digital products and services traded online. For their part, IIAs and BITs now commonly state that IPRs are protected as investment capital and potentially the subject of lawsuits under investor-state dispute settlement procedures.

To be sure, RTAs cover many more areas than intellectual property, with the primary goal of cutting trade barriers and reducing the costs of trade among partner countries. International economists have focused analytical attention on this issue, studying the trade-expanding or trade-diverting effects of RTAs and predicting the impacts of tariff cuts on cross-border economic activity and welfare⁸. Almost uniformly this analysis pays little attention to accompanying changes in regulatory policy, such as technical product standards and IPRs. This is understandable since there are extensive databases on industry or commodity tariffs that may be directly related to detailed output and trade, but measuring these regulatory matters at a detailed level is nearly impossible. For their part, statistical studies to date of the trade effects of intellectual property rules have proceeded entirely without reference to RTAs, despite the fact that those rules are often the result of participation in trade agreements.

This separation in the analysis of trade policy from IPRs reforms means that substantively important questions are being ignored. Tariff cuts, liberalization of investment barriers, services deregulation and IPRs policies almost surely have joint rather than single effects on markets. To illustrate, if tariff cuts invite in more high-technology trade in developing countries, foreign exporting firms are likely to demand stronger patent and trade secret rules. This situation would mean trade liberalization and stronger IPRs are complements in policy terms. Alternatively, greater trade openness might encourage governments to protect their domestic firms through a relaxation of intellectual property standards, meaning that they are substitute policies. No political economist has yet made a statistical connection between them in order to determine the direction of this relationship, or what it depends on⁹. Neither is there much legal scholarship on this fundamental issue. There are no empirical studies of how the extent of tariff cuts, investment liberalization, rules of origin, or other forms of trade regulation interact with policy reforms in IPRs. This is a remarkable shortcoming in the international trade literature and the opportunities to push this area forward are virtually limitless. The following paragraphs outline three suggested areas of research, which are by no means exhaustive.

First, it would be valuable to incorporate measures of intellectual property protection directly into both reduced-form and structural equations linking trade liberalization to trade

⁶ See Maskus and Ridley (2016).

⁷ The TPP has been set aside by the United States because of a change in attitude toward trade policy in the Trump administration. A similar fate may await the TTIP.

⁸ See, for example, Romalis (2004, pp. 67-97), and Anderson, van der Mensbrugge, and Martin (2006).

⁹ Initial theoretical perspectives linking “optimal” patent rights to tariff cuts is offered in Saggi (2016).

and FDI flows. One could interact variables capturing patent laws with membership in RTAs or BITs to see if there are complementary effects and whether these vary by type of agreement and sector. More comprehensive studies could link IPRs to the costs of engaging in bilateral trade in a structural gravity equation¹⁰. Here questions could be asked about what factors driven by IPRs may reduce or even increase such costs. It may just be that the costs of acquiring IPRs in partner countries are so large that they deter trade or investment, suggesting that the implementation of an FTA with harmonized and efficient patent rules may operate on both margins. An even more basic question is whether increases in the strength of patent laws or effective regulatory convergence matter more in driving trade and investment flows. Those differences, if measured properly, could be informative about the extent to which these impacts interact with tariff cuts and other forms of regulatory reforms. Trade economists often shy away from this kind of work because of the limited statistical information available on regulatory rules. This makes it all the more important for analysts, including legal scholars, to think carefully about how new measures of regulatory convergence could help identify various policy complementarities.

Second, it would be particularly useful to analyze how policy changes regarding trade and investment may affect local innovation as measured by detailed intellectual property statistics, particularly patents, and whether the extent of such impacts depends on the scope of IPRs. Indeed, there could be significant joint effects of trade and investment policies and IPRs reforms that would alter international patenting decisions across borders. The idea that trade in commodities and patents could be linked in a comprehensive and generalized analysis of tariff cuts, RTA formation, and IPRs reforms has not been discussed in the trade literature, though doing so could pay great returns in knowledge. Thus, collaboration between innovation economists, empirical trade specialists, and intellectual property legal scholars could offer particular insights about how trade policies affect market entry and information diffusion.

Third, the ideas that trade policy and IPRs interact as complements or substitutes, and that these channels may be different across RTAs of various types, has attracted little theoretical attention and no empirical work. This possibility likely varies considerably by industry and opens up new questions about the potential effects of RTAs on trade and investment creation and diversion¹¹. It would also be valuable to study whether the fact that some countries are members of multiple RTAs, with potentially inconsistent and conflicting intellectual property standards, may limit their efficiency gains from trade. This question in particular should occupy legal scholars of trade and intellectual property. One might ask, for example, how a conflict between PTAs that a country signs with the United States versus the European Union, regarding, say the primacy of trademarks or geographical indications, is liable to be resolved.

3. Channels of Induced Technological Change in Emerging Countries

One clear limitation of prior economic studies is that they generally do not go beyond the basic question of identifying the direct impacts of patent laws on trade and FDI¹². It may well be that patent reforms stimulate high-technology imports and even exports. However, from existing analysis we cannot determine why or the channels that really matter for facilitating these responses. Thus, available studies miss some obvious questions. Following are two ideas that could offer a path forward.

¹⁰ The gravity equation is a common tool by which economists study the determinants of bilateral trade among countries. For details see Head and Mayer (2014, pp. 131-195).

¹¹ An initial attempt at answering such questions empirically is in Maskus and Ridley (2016). The authors find that membership of emerging countries in PTAs with strong IPRs chapters tends to stimulate trade in high-technology goods by a margin over and above that of the PTAs themselves and of the TRIPS Agreement.

¹² See the review in Maskus (2012).

One idea stems from the fact that many emerging economies seem to become more export-oriented in high-technology goods some years after importing significant flows of new technology¹³. It may be that changes in IPRs have lagged impacts that eventually spur such exports, as suggested by micro-level studies of U.S. affiliates (Branstetter, Fisman, Foley, and Saggi, 2011, pp. 27-36). However, other than certain threshold effects associated with education levels, effective governance and other broad factors, we know virtually nothing about the socioeconomic characteristics of countries that would support such a response. There again may be dynamic complementarities between trade policies, such as tariff cuts and RTAs, and the impacts of patent reforms on subsequent technology specialization. This is but one of many issues could be investigated in that context.

Second, it is critically important to determine if there are systematic channels of technology transfer that interact with patent rights to support productivity growth and technical transformation. The literature so far has essentially just found a contemporaneous or lagged correlation or causation from patent law reforms to imports. This finding fails to answer the more fundamental question of what such reforms actually accomplished that would incentivize investments in R&D and innovation. Studying this issue could be as simple as including interaction effects between lagged patent laws and channels of inward technology transfer, such as intermediate inputs trade within multinational enterprises and non-resident patent applications. However, deeper analytical approaches could explore how inward technology and investment flows affect investments in R&D and how that varies by country and industry.

4. Heterogeneous Firms and IPRs

Our understanding of international trade competition and dynamics has been greatly improved by studying the behavior of individual firms that differ in size, productivity, costs, and reliance on high-technology intermediate imports¹⁴. The general expectation is that the highest-productivity firms become exporters or multinational enterprises because they can afford to pay the fixed costs of entering foreign markets.

One important—and largely unstudied—possibility is that regulatory institutions may be central in determining such investments and their ability to cut entry costs. Certainly it is worth studying IPRs as a mechanism for affecting those costs and encouraging or deterring entry into particular markets. The basic idea is that patents and other IPRs offer incentives for innovation and building markets. The resulting development of lower-cost technologies, higher-productivity intermediate goods, and new product varieties can strongly reduce the fixed costs of organizing production and entry. As important as this idea is, it has not been tested systematically and deserves far more analysis.

Another possibility is that patents and IPRs do not directly spur productivity gains but instead are important indirect means of covering entry costs. This could be the case, for example, if owning a patent is a signal to financial investors that a firm has proprietary rights over a technology or product that could penetrate foreign markets if the firm had the time and resources to develop it. In this context, financial markets and IPRs could operate in a complementary fashion¹⁵. Microeconomic studies of financial development and trade could be extended to include interactions between financial markets and IPRs in order to see whether they are mutually reinforcing in encouraging local R&D.

¹³ See data in He and Maskus (2012, pp. 281-304).

¹⁴ See Bernard, Redding, and Schott (2007, pp. 31-66); Das, Roberts, and Tybout (2007, pp. 837-873).

¹⁵ Indirect evidence is in Maskus, Neumann, and Seidel (2012, pp. 72-83).

5. Offshoring and Production Networks

One of the primary areas of current international trade research is the development and economic effects of global production networks, particularly within vertical supply chains (Baldwin, 2011). There are many reasons why such chains have evolved but virtually unexplored in this context is the role of intellectual property rights. These should matter for a number of reasons. First, vertical specialization involves asset acquisition and information sharing across borders with incomplete contracts. Contract enforcement affects the boundaries between offshoring within vertically owned supply chains and basic outsourcing to unaffiliated firms (Antras, 2005, pp. 1054-1073). How such decisions are made depends on industry characteristics and national socioeconomic factors. For example, high-technology firms tend more toward technology transactions within their vertical boundaries. However, better-enforced contracts about secrecy and technology protection, which may come from stronger patent rights, shifts incentives toward greater outsourcing. A simple example is that international firms operating in China tend to segment the use of technologies across locations in order to avoid fully disclosing them to multiple local rivals (Maskus, 2012). This practice is receding in the wake of stronger patent rights in that country.

Second, decisions between outsourcing and producing inputs in house depend on the bargaining power of parent and partner firms. Here, the role of IPRs reforms can be to shift that power markedly between partners, with potentially important impacts on competitive outcomes (Yang and Maskus, 2009, pp. 232-236). Again, no systematic evidence exists on this fundamental question.

A third important consideration is that multinational firms need to ensure the reliability of inputs and outputs throughout a global supply chain. Parts suppliers must be trusted to comply with technical standards and quality expectations. Failure of one supplier to do so can threaten the reputation of an entire global firm. While this issue is as yet unstudied, it seems likely that the quality of local contract institutions, including as IPRs are enforced, is critical in this process.

6. Linking IPRs to International Labor Markets and Inequality

A last set of observations have to do with IPRs, labor markets, and the potential effects on national and global inequality. International trade economists have made great strides in understanding the implications of trade policies for labor and capital markets within and across countries¹⁶. But no serious attention has yet been paid to the role IPRs may play in determining these impacts. Much attention is paid in the popular media to the notion that weak protection for patents, trade secrets and trademarks in China and elsewhere costs “millions” of American or European jobs. The argument is that weak IPRs encourage stealing of technologies and transfer production abroad, even of higher-technology goods.

Such losses are plausible and likely place difficult pressures on medium-skilled workers in developed economies. The question deserves far more analysis, however, ranging from theoretical models to statistical studies with impacts broken down by sectors and broad skill classes. One approach would be to modify wage-price econometric equations for the possibility that differences in patent laws or enforcement could affect the elasticity of labor demand at national or regional levels.

An entirely different question about inequality is whether stronger global IPRs have reduced the well-being of consumers in poorer countries, who may face higher prices associated with patents. At the same time, IPRs may be expected to increase the range of choices among

¹⁶ Primary examples are Autor, Dorn, and Hanson (2013, pp. 2121-2168), and Milanovic (2016).

high-quality branded products, raising utility for richer consumers. In this regard, the last 20 years of IPRs reforms may be exacerbating both within-country and across-country inequality, especially in the developing world. At this point this claim will have to remain as speculation, waiting for clever scholars to figure out how to determine how true it is.

7. Concluding Remarks

The immense scope of global reforms in IPRs policies in recent decades has generated considerable upward harmonization of regulatory standards, though countries retain some flexibilities. Trade economists have paid some attention to these changes and performed a number of reduced-form statistical studies of their potential impacts on trade, FDI and other forms of technology diffusion. These effects have been significant, though more research would be valuable.

While important, the studies to date have just scratched the surface of the structural questions we would like to have evidence on. Thus, in this article I have posed an entirely new set of questions, hoping to set the stage for an ambitious research agenda. Answering them will take real imagination and effort, particularly in measuring the necessary policy interventions. In my view, however, the effort will be well worth it, both for the sake of knowledge generation and for policymakers thinking about the next stages of policy reforms. At this point in time we do not even know whether tariff cuts, membership in RTAs, and patent reforms are mutually supportive or offsetting in their market effects. Neither do we know how IPRs are influencing the distribution of incomes within or across countries. The time is ripe for legal scholars and economists to study these difficult, but nevertheless critical, issues.

Bibliographic references

- Anderson, K., van der Mensbrugge, D., and Martin, W. (2006). Market and Welfare Implications of Doha Reform Scenarios. In K. Anderson and W. Martin (eds.), *Agricultural Trade Reform and the Doha Development Agenda* (pp. 333-399). Washington: World Bank.
- Antras, P. (2005). Incomplete Contracts and the Product Cycle. *American Economic Review*, 95, 1054-1073. <https://doi.org/10.3386/w9945>
- Autor, D. H., Dorn, D., and Hanson, G. H. (2013). The China Syndrome: Local Labor Market Effects of Import Competition in the United States. *American Economic Review*, 103, 2121-2168. <https://doi.org/10.2139/ssrn.2050144>
- Baldwin, R. (2011). *Trade and Industrialization after Globalization's 2nd Unbundling: How Building and Joining a Supply Chain Are Different and Why It Matters*. Cambridge MA: NBER Working Paper No. 17716. <https://doi.org/10.7208/chicago/9780226030890.003.0006>
- Bernard, A., Redding, S., and Schott, P. (2007). Comparative Advantage and Heterogeneous Firms. *Review of Economic Studies*, 74, 31-66. <https://doi.org/10.3386/w10668>
- Branstetter, L., Fisman, R., Foley, C. F., and Saggi, K. (2011). Does Intellectual Property Rights Reform Spur Industrial Development? *Journal of International Economics*, 83, 27-36. <https://doi.org/10.1016/j.jinteco.2010.09.001>
- Das, S., Roberts, M. J., and Tybout, J. R. (2007). Market Entry Costs, Producer Heterogeneity, and Export Dynamics. *Econometrica*, 75, 837-873. <https://doi.org/10.3386/w8629>
- Ginarte, J. C. and Park, W. G. (1997). Determinants of Patent Rights: A Cross-National Study. *Research Policy*, 26, 283-301. [https://doi.org/10.1016/s0048-7333\(97\)00022-x](https://doi.org/10.1016/s0048-7333(97)00022-x)
- He, Y. and Maskus, K. E. (2012). Southern Innovation and Reverse Knowledge Spillovers:

- A Dynamic FDI Model. *International Economic Review*, 53, 281-304. <https://doi.org/10.1111/j.1468-2354.2011.00680.x>
- Head, K. and Mayer, T. (2014). Gravity Equations: Workhorse, Toolkit, Cookbook. In G. Gopinath, E. Helpman and K. Rogoff (eds.), *Handbook of International Economics*. Vol. 4 (pp. 131-195). Amsterdam: Elsevier-North Holland. <https://doi.org/10.1016/b978-0-444-54314-1.00003-3>
- Maskus, K. E., (2012). *Private Rights and Public Problems: The Economics of Intellectual Property in the 21st Century*. Washington DC: Peterson Institute for International Economics.
- Maskus, K. E., Neumann, R., and Seidel, T. (2012). How National and International Financial Development Affect Industrial R&D. *European Economic Review*, 56, 72-83. <https://doi.org/10.1016/j.euroecorev.2011.06.002>
- Maskus, K. E. and Ridley, W. (2016). *Intellectual-Property Related Preferential Trade Agreements and the Composition of Trade*. University of Colorado. Manuscript.
- Milanovic, B. (2016). *Global Inequality: A New Approach for the Age of Globalization*. Cambridge: Harvard University Press.
- Park, W. G. (2008). Intellectual Property Rights and International Innovation. In K.E. Maskus (ed.), *Intellectual Property, Growth and Trade: Frontiers of Economics and Globalization* (pp. 289-324). Amsterdam: Elsevier-North Holland.
- Romalis, J. (2004). Factor Proportions and the Structure of Commodity Trade. *American Economic Review*, 94, 67-97. <https://doi.org/10.1257/000282804322970715>
- Saggi, K. (2016). Trade, Intellectual Property Rights and the World Trade Organization. In Bagwell, K. and Staiger, R. W. (eds.). *Handbook of Commercial Policy* (pp. 433-512). Amsterdam: Elsevier-North Holland. <https://doi.org/10.1016/bs.hescop.2016.04.012>
- Yang, L. and Maskus, K. E. (2009). Intellectual Property Rights, Technology Transfer and Exports in Developing Countries. *Journal of Development Economics*, 90, 232-236. <https://doi.org/10.1016/j.jdeveco.2008.11.003>

Agreements

- WTO (1994). *Agreement on Trade-Related Aspects of Intellectual Property Rights* (TRIPS Agreement). Adopted on April 15, 1994 at Marrakesh.