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THE INTERNATIONAL GOVERNANCE OF KNOWLEDGE CREATION AND DIFFUSION

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1) Introduction

Knowledge creation and diffusion processes play an increasingly crucial role in fostering the progress of societies. They are associated to varying degrees with market and non-market mechanisms, which are influenced by regulatory institutions at the national and international – bilateral, regional or multilateral – levels.

Some knowledge-related policies are specifically designed at the national level to promote the competitiveness of domestic producers, enhance economic growth and improve the quality of life. On the other hand a number of initiatives impinge on knowledge at the supranational level, aiming to coordinate actions undertaken in different countries and to spread the costs of public intervention across different partners.

The purpose of this brief is to discuss the main policy options concerning the multi-level international governance of knowledge-related activities and policies. The next section presents the main results of a recently conducted survey of the most important institutions affecting knowledge creation processes (education, research and innovation) and its international diffusion (knowledge-related cooperation, foreign direct investment, trade in goods and services, migration, and the open flow of ideas)¹. Section 3, building on the definition of knowledge as a global public good, discusses the theoretical case for international cooperation in knowledge policies. Since this cooperation actually occurs at different institutional levels (bilateral, regional and multilateral), section 4 addresses the issue of what should be the most appropriate level, considering not only existing practices, but also the coordination problems created by policy externalities. Concluding remarks, presented in section 5, focus in particular on the perceived trade-off between creating the right incentives to knowledge creation and facilitating its international diffusion.

* The author is the sole responsible for the expressed opinions, which are not to be considered necessarily as the view of ICE.

1. H. Hveem and L. Iapadre (eds.), The International regulation of knowledge. A survey. Work prepared in the context of GARNET JERP 5.3.6 and submitted to the publications board at Routledge, 2010.

2) Institutions and norms regulating knowledge creation and its international diffusion

Institutions and regulations in the field of education, research and innovation are the main structures that affect the **production of new knowledge**.

Education represents a fundamental process, as a better educated population is more likely to generate new ideas (and to diffuse them). While primary and secondary education is mostly regulated at the national and sub-national level, supranational intervention focuses especially on higher education, that also tends to be more internationalised. In fact, large flows of students spend part of their academic studies abroad, there is a growing mobility of teachers, and a rising number of universities are opening foreign affiliates.

International institutions focus on common principles and standards (quality assurance and accreditation) to facilitate these processes and enhance convergence among national systems. For example, bilateral agreements promote student mobility, facilitate exchange of information and set up the mutual recognition of qualifications. At the regional level, the depth and scope of the European integration process within the Bologna framework is unmatched by any other initiative.

Bilateral or regional preferential trade agreements (PTAs) may deal with issues related to the provision of higher education services, including the movement of people.

At the multilateral level, attempts to liberalize the international provision of educational services have been made in the World Trade Organization (WTO), through the General Agreement on Trade in Services (GATS). Other international institutions, such as the Organization for Economic Cooperation and Development (OECD), the United Nations Education Science and Culture Organization (UNESCO) and the World Bank, promote efficiency in the education sector by setting standards or facilitating the diffusion of best practices.

Research is considered here mainly as a knowledge creation process carried out by universities or similar institutions, and therefore predominantly related to non-market activities. National policies and regulations play a fundamental role in this field, providing financial resources and shaping incentives and constraints for the behaviour of researchers. International agreements concerning research are mostly at the bilateral level and are intended to facilitate joint research projects, the exchange of scientific results and the mobility of researchers, as well as for protecting intellectual property.

At the regional level a prominent example is the European Union (EU), which has adopted one of the most developed international regulatory frameworks to build a European Research Area (ERA), recognizing the importance of scale economies in research activities. For similar reasons, a host of multilateral international organizations finance or carry out large research projects. One important domain of multilateral cooperation is the production and dissemination of comparable statistics, which is a fundamental input for many research activities. Access to existing knowledge can be limited or promoted by the intellectual property regime, which is influenced also by multilateral institutions, such as the World Intellectual Property Organization (WIPO) and the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).

Innovation is understood as new knowledge incorporated in products, processes and services within the business sector, resulting from market-driven research and other activities, including organizational change. Innovative processes are also spurred by the interaction among different firms and institutions within industrial districts and global production networks, facilitated by information and communication technologies (ICT). There is increasing attention on policies directed at fostering innovation, considered as a driver of competitive advantage and a major engine of growth. On the one hand, national policy-makers offer a wide range of measures, such as grants, subsidised credits, or tax incentives, aimed at supporting innovation. On the other hand, national regulations affect incentives to innovate by conferring and enforcing intellectual property rights (IPRs). Their protection is considered important to induce firms to undertake otherwise risky investments in innovative activities. Moreover, the patent regime can be seen as a regulated system to disclose knowledge in exchange of the exclusive rights granted. At the same time, intellectual property protection may limit the circulation of new ideas and even the creation of new knowledge, particularly in sectors in which the innovation process has a cumulative and sequential character.

This trade-off between protecting intellectual property and promoting knowledge diffusion pertains also to the domain of competition policies. The selection process characterising a well-functioning competitive environment may be conducive to more innovation. However, monopoly profits are sometimes considered as an important incentive for firms to undertake risky investment in innovative activities. Hence the importance of striking a proper balance between intellectual property protection and open competition. This issue is even more complex when other social goals are at stake. The most important example is given by compulsory licenses on pharmaceutical patents, which are issued not only to diffuse innovation through enhanced competition, but mainly to provide a better access to essential medicines.

Innovation support policies are designed primarily at the national level, the EU so far being the only example of a comprehensive regional policy, while multilateral intervention is limited to preventing possible distortions due to the international spillovers of national subsidies. Conversely, efforts to harmonize procedural and substantive aspects of IPRs are undertaken at different institutional levels.

The World Intellectual Property Organisation (WIPO) with its framework of treaties, the WTO TRIPS agreement, and the International Union for the Protection of New Varieties of Plants (UPOV) are the main multilateral structures pursuing the coordination and harmonization of the intellectual property regime. Regulations introduced by regional patent offices, or included in PTAs addressing “beyond-the-border” issues, narrow the policy space left by multilateral institutions.

Channels of **international knowledge diffusion** include cooperation, foreign direct investment, trade of goods and services, international movement of people and activities related to the open flow of ideas. The channels may serve commercial purposes and/or social and redistributive goals.

The diffusion of knowledge is often the result of spontaneous, decentralised **cooperation** among different agents involved in education, research and innovation. This “knowledge-related co-operation” takes place in different forms, with variable degrees of integration among participating agents (schools, universities,

research centres, and firms). In addition, spill-over effects, typical of knowledge creation processes, can extend the benefits of cooperation even beyond the group of agents directly involved.

Policy-makers participate in the process, which gives rise to “systems of innovation” at local and national level, consisting of networks of institutions, research centres and firms, where intense relationships lead to the diffusion of knowledge, both domestically and across national borders.

In this context, particular attention is being given in many countries to initiatives aimed at facilitating knowledge transfers between firms and research centres, for example the Bayh-Dole Act in the United States (US), a legislative framework to integrate universities and publicly-funded research centres into the national innovation system, that has been adopted as a model by several countries. Bilateral initiatives have been undertaken to create integrated “knowledge economies” covering cross-border areas (e.g. Denmark- Sweden, Austria-Italy-Slovenia).

Knowledge-related cooperation, with an active role played by public institutions, is also explicitly covered by bilateral initiatives in favour of developing countries. Moreover, international investment agreements may contain provisions promoting “research and development” (R&D) collaboration.

Regional cooperation activities are well developed in this field too. For example, the EU finances several projects in the educational sector, R&D activities, as well as collaborative research between universities and businesses (e.g. the “Responsible Partnering Initiative”). Similar objectives are pursued by other regional integration bodies, like the Association of South-East Asian Nations (ASEAN) and the Common Market of Eastern and Southern Africa (COMESA).

The rapidly growing flow of **foreign direct investment** (FDI) is commonly considered an important vehicle of international knowledge transfer, which can promote growth in host countries by spreading more advanced technologies and managerial skills. The effectiveness of this process depends crucially on the absorption capacity of the host economy, which is determined by a complex set of political, structural and institutional variables (competition policies, protection of intellectual property, quality of the education system, among others).

Regardless of persistent controversies over the effects of FDI on home and host countries, there is an intense competition among policy-makers, in both developed and developing countries, to attract transnational corporations by granting real and financial incentives, with a global tendency towards more liberal regulations on foreign investment.

In the absence of a comprehensive multilateral FDI regime, bilateral investment treaties (BITs) represent the predominant source of supranational regulation. Protection of the investor, which is at their core, is one of the fundamental conditions that determine the location of transnational corporations. At the regional level, the number of agreements covering FDI is rather limited, tending often either to reproduce the approach of bilateral treaties, or to include some general principles of FDI liberalisation in the context of more general integration agreements, prominent exceptions being the EU and the North America Free Trade Agreement (NAFTA). Attempts to reach a multilateral agreement covering FDI in all sectors have failed so far, but general principles of non- discrimination

in the service sector have been set by the GATS, where FDI appears as one of the four modes of international supply of services. However, so far the degree of liberalisation actually achieved by specific market access and national treatment commitments is relatively limited. Outside the trade regime, existing plurilateral instruments are limited to voluntary codes of conduct, aimed at spreading good practices (OECD, World Bank).

International **trade of goods and services** represents another important market channel of knowledge diffusion for firms and individuals. Firms may absorb innovations from the technology they import by reverse engineering, and learning processes take place when firms participate in global production networks. Trade in services is particularly favourable to the diffusion of knowledge, due to the close contacts it implies between domestic and foreign partners (e.g. in business and professional services). All institutions and regulations facilitating commerce, therefore, can make an important contribution to enhancing international knowledge flows and technology transfers, particularly when they stimulate trade in capital goods, intermediate products and services.

This general statement can be applied to trade liberalisation and promotion policies at the national level, to bilateral and regional PTAs, as well as to the various WTO agreements aimed at removing tariff and non-tariff barriers to trade.

Rapidly increasing North-South and South-South PTAs aim to overcome the consensus-building problems of WTO negotiations and achieve a deeper degree of integration. This process is challenging the multilateral framework under many aspects, as PTAs feature considerable differences in regulatory approaches, sometimes evolving and improving upon each other. Most of them have been promoted by the EU or the US, which raises the issue of possible abuses of their hegemonic position in international relations.

The **international movement of people** consists of temporary and permanent migration flows that enable skilled people to transfer their knowledge to other countries, often complementing the previously described transmission mechanisms (for example in the case of technical assistance provided for exported goods). Moreover, less skilled individuals acquire knowledge by studying abroad, taking on-the-job training or work experience. The most debated problem here concerns the potentially negative “brain drain” effects of migrations on sending nations (mainly developing countries), which may be eventually balanced by positive effects in case of return (“brain gain”), as the acquired skills may contribute to the development of the origin country. The international movement of people is regulated by a fragmented system, with the prevalence of national policies, and is characterised by the divergent interests of receiving countries, which often aim to attract highly-skilled people, and of the sending countries, trying to push their excess labour force overseas. Bilateral coordination efforts take the form of specific labour migration agreements or are reflected in PTAs, the latter generally regulating only the temporary movement of skilled persons (business persons, people engaged in the provision of services or in activities related to FDI). The same applies to regional integration agreements, where only a few prominent exceptions in Europe allow full mobility among Members States. So far, the GATS represents the only binding multilateral agreement, though its scope is very narrow. Despite efforts of some global organisations, such as the International Organization for Migration (IOM) and the UN International Labour Organization (ILO), nation-states remain reluctant to relinquish significant regulatory powers to a supra-national institution, and even to agree on principles that go beyond fairly generic declaratory understandings.

Knowledge is transmitted not only through the interaction among firms and institutions, or when it is embedded in goods, services or people crossing national borders, but also when it is still at the stage of ideas. Several regulations affect the **open flow of ideas** by controlling people's ability to access knowledge.

At the national level, the diffusion of ideas may be limited in different ways, including the regulation of mass-media, design and enforcement of intellectual property laws, ICT policies and infrastructures, as well as the degree to which civil liberties are guaranteed and protected. As barriers to the free circulation of knowledge are stronger across countries than domestically, a fundamental role is played by the communication system, including the technological infrastructure and the institutions regulating access to the system. International standards in this domain can ease communication by reducing transaction costs. This is a field of intervention for bilateral and regional agreements, as well as for regional and multilateral standard-setting organisations. Moreover, as digitalisation and the World Wide Web have opened great opportunities for the flow of ideas, suggesting the existence of a "knowledge commons" and posing challenging questions on what are the appropriate regulations, it is worth mentioning the diffusion of several non-state, cross-national initiatives, often promoted by universities, that are concerned with the open access to knowledge (e.g. the Berlin Declaration on Open Access to Knowledge in Science and Humanities, the Open Archives Initiative and so on).

3) The case for international co-operation in knowledge policies

The host of international agreements and institutions mentioned in the previous section shows that the need for coordination of knowledge-related policies has long been recognized by national authorities. Here we question if this need has a solid theoretical underpinning.

The case for an international coordination of knowledge-related policies stems from the fact that knowledge can be considered a (quasi) "global public good". Public goods are defined as goods that are "non-rival" in consumption (someone's use does not affect another person's use) and "non-excludable" (it is difficult to exclude others from using it). According to this definition, knowledge can be considered an "impure public good", being mainly "non-rival" in consumption but in part "excludable": it is possible to exclude others from many forms of knowledge (at least for a certain time) through instruments such as intellectual property rights, which aim to ensure that knowledge is not an underprovided good in respect to the socially desirable level. For example, knowledge embodied in a capital good, in a research tool, in a plant variety, or even in a business method or software can be made "excludable" by granting a patent right. Similarly, knowledge contained in articles or in books can be protected by copyright and its provision, for example in digital form, conditioned upon payment of a fee or a royalty.

A useful distinction can be made between "potential" and "de facto" (global) public goods, as any good with non-rival or non-excludable properties is "de facto" a public good only if its availability is actually not limited. This implies that, over time, the same goods can become private or public as a result of a deliberate policy intervention (intellectual property laws, competition policy) or of technological findings. Several authors

warn indeed that knowledge is increasingly withdrawn from the public domain due to the evolving intellectual property regime (see for instance the debate on patenting research tools and on the related “research exemption” policy), but also as a consequence of new technologies which progressively “enclose” both the scientific and the non-academic “knowledge commons”.

In principle, public goods are “global” if their benefits can be enjoyed by all populations, without geographic restrictions. In practice, this wording is used more loosely for any kind of transnational public goods, even if the actual geographic reach of their benefits is less than global (e.g. regional public goods). One important feature of global public goods is that their regulation at the national level induces spill-over effects on other countries, people and generations. As a result of the growing international interdependence among societies, national and local institutions increasingly affect other countries’ knowledge-related activities, and may thus generate positive or negative spillovers. In particular, negative effects may occur when domestic provisions address global needs in an inefficient way, regardless of their cross-border externalities.

One prominent case in which externalities influence knowledge creation processes is related to the design of intellectual property regimes. The US example shows clearly that managing the patent system is a complex issue, and that the role of patent offices and judging courts is important for domestic and foreign innovative activities. Patents of a poor quality (or even hampering innovative activities) issued at national level can be diffused by means of international agreements recognizing the validity of proprietary rights across different countries, with negative effects on innovation processes not only at home but also in the rest of the world.

Externalities can also be found in the other knowledge creation areas. Research can be fostered by direct incentives or other policies supporting innovative activities at the national level, with possible beneficial effects on other countries as well, particularly if support tools are not reserved to domestic centres or are explicitly targeted at promoting international cooperation. Moreover, national policies determine the quality of domestic education systems, but their effects are perceived also beyond national borders due not only to the increasing international mobility of students and teachers, but also to the imitation of best practices.

Knowledge diffusion processes, on the other side, may be influenced not only by any policy capable of affecting the amount of knowledge which is created in any country (the more knowledge is created anywhere, the more knowledge can potentially circulate world-wide), but more specifically by policies concerning the international channels of knowledge transmission. As mentioned in section 2, they include national migration policies, entailing brain-drain or brain-gain effects, depending on how they are designed, and measures addressing cross-border cooperation among firms and institutions, for example to facilitate R&D activities. Moreover, a host of different national policies may influence the location of FDI. They range from measures to develop infrastructure, to improve the education system, to protect investments, or restrictions affecting the establishment of foreign affiliates and the related temporary movement of people. Similarly, a number of domestic regulations (such as customs regulations, technical or sanitary standards, government procurement systems, rules on visas for the movement of business persons, professional certifications etc.) may represent discriminatory barriers to trade in goods and services. Finally, the diffusion of ideas may be restricted by

policies affecting infrastructure and Internet access, intellectual property laws, restrictions on civil liberties, among others.

Externalities of knowledge-related activities and policies are not the only argument justifying international coordination in this field. In many cases the technical size of research projects is so large that cooperation among countries proves the only practical way to effectively exploit increasing returns to scale. Knowledge creation processes are characterised by scale economies not only related to large fixed costs, but also of an informational nature, due to the positive relationship between the number of agents participating in knowledge networks and the emergence of new ideas. So, in many cases, the under-provision of knowledge at the national level, due to its public good properties, makes room for international cooperation in order to exploit scale economies and internalise positive spillover effects of knowledge-related activities.

In addition, international coordination may be useful to manage cases in which national knowledge policies exert a negative influence on the rest of the world, due to their possible 'beggar-thy-neighbour' nature. For example the mercantilist use of intellectual property protection, as a tool to promote exports or restrain imports, may create trade frictions and limit knowledge diffusion. Similarly, national competition policies may be used strategically to protect the monopoly power of so-called 'national champions', in the name of its alleged positive role for investment in innovation, but regardless of its negative effects on the rest of the world (and on domestic consumers). Even more often, innovation support policies provide domestic producers with competitive advantages, which may distort international competition, and policies aimed at attracting foreign capital may translate into a 'race to the bottom' in social and environmental regulations, or in tax rates.

In conclusion, the case for international cooperation in knowledge-related policies appears well grounded. However, this argument, as usual, does not necessarily imply the need to relinquish national sovereignty to existing or new supra-national institutions. In principle, international agreements or less formal coordination mechanisms among national policy makers could be enough to achieve the desired outcome, and in many cases empirical evidence supports this assumption. Nevertheless, many are concerned that international agreements should be legitimate, that is not only be effective in facilitating cooperation, but do so according to proper procedures and with due respect for sovereignty. Moreover, the widespread belief that the global public good of knowledge is hugely undersupplied points to the possible ineffectiveness of the collective action mechanism underlying international cooperation in this field.

As in other problems of global governance, voluntary cooperation among states may prove difficult, as its would-be beneficiaries encompass many different societies, characterized by diverse cultures and different stages of economic development. Since interests and policy priorities differ widely, cooperation to address global market failures is not easy to achieve. Asymmetric power and competing distributional interests among the diverse actors, along with relatively weak multilateral organisations, make it hard to reach a balanced system of institutional incentives sustaining international cooperation in knowledge-related policies. Arguably, this is one of the areas in which effective global governance would be considered as a public good in itself, given the fundamental contribution it could give to societal progress.

4) The geographic scope of international co-operation in knowledge activities: regional and multilateral institutions

The desirability of international cooperation in knowledge-related policies does not necessarily imply that there is a need for global institutions. As mentioned in the previous section, even the definition of knowledge as a global public good is imprecise, inasmuch as the geographic reach of many knowledge-related activities is limited to the local level, or to a small number of neighbouring countries.

A simple application of the subsidiarity principle leads to the conclusion that in many cases the informational advantages of national and local policy makers are so strong that they more than offset the possible loss of economies of scale. Even when arguments based on cross-border externalities generated by national policies (or the lack thereof) strongly suggest some form of international coordination, the optimal intervention level could still be less than global. Actually, the current regime, briefly described in section 2, is characterised by a multiplicity of often-overlapping international agreements and institutions at different levels.

In the absence of a comprehensive and binding multilateral framework, a geographically limited coordination is likely to represent a way to progressively diffuse agreed norms and practices, and facilitate knowledge creation and diffusion processes. Regional integration can solve some of the coordination problems which arise when knowledge policies are kept at the national level. For example, in the case of intellectual property protection, it has been shown that a single Community patent scheme could be a welfare-improving alternative with respect to the current fragmented regime. A Community patent would reduce the cost and increase the attractiveness of European patents, while increasing revenues for the European Patent Office (EPO). Yet, even this progress is difficult to achieve because of the resistance of vested-interest groups that enjoy the rents generated by the fragmentation of the current regime. Overcoming these problems would be even more difficult at the multilateral level, but regional integration in this field could pave the way for a larger agreement by reducing the number of negotiating actors.

In fact, over the past years multilateral rules were often derived from regional-plurilateral schemes. For example, the OECD played a role in developing a consensus on model rules (e.g. for the GATS) and some NAFTA rules on intellectual property were incorporated in the TRIPS agreement.

The recent increase in the number of bilateral agreements has raised concern, however. These often take the form of North-South free trade agreements (FTAs) or 'hub-and-spoke' systems in which the most powerful actors, such as the EU and the US, can more easily exert their hegemonic role in international relations. The trend toward bilateralism represents a challenge not only for multilateral institutions, but also for the process of regional integration. Many are concerned that it could impact negatively on the legitimacy of international cooperation in general.

As mentioned in section 2, the role of bilateral agreements is not the same across the various types of knowledge-related activities. In the case of migration, for example, bilateral labour agreements seem to guarantee cooperation among sending and receiving countries, as they are based on effective labour market needs. Moreover, given the strong local bases of several knowledge-related activities, bilateral agreements

may be effective also for international cooperation, facilitating cross-border interactions among local agents and innovation systems. Conversely, the proliferation of bilateral investment treaties (BITs), or the inclusion of FDI in more general bilateral trade agreements are more controversial, because their benefits are obscured by the resulting fragmentation of the international regime.

More generally, it should be noted that the externalities justifying international coordination are generated not only by national knowledge-related activities and policies, but also by international agreements, inasmuch as they fail to comply with the principle of non-discrimination. Hence, bilateral, regional and plurilateral integration, while influencing knowledge creation and its circulation among participating countries, can at the same time have spill-over effects - both positive and negative - in other countries or regional groupings.. For instance, bilateral agreements triggering the diffusion of stronger intellectual property standards impinge on knowledge creation processes in other countries; agreements in the education sector can facilitate the mutual recognition of qualifications, benefiting some countries and excluding others. The same occurs for trade and investment agreements between two or more countries which may, depending on their terms, divert or create trade and investment flows and thereby influence knowledge transfers.

In principle, the coordination problems created by multiple preferential agreements could be considered as a reasonable cost to bear, if they succeed in facilitating a wider adoption of agreed rules. In reality, this progress may be jeopardised by divergent objectives and tensions that can emerge between the regulatory levels, which might slow down or even impede the advancement of regional (and multilateral) processes. For example, as mentioned in section 2, countries are reluctant to relinquish regulatory powers on the international movement of people to a supra-national institution, mainly because labour migration represents a politically sensitive issue, and even regional intervention is weak. As a result, the only binding multilateral instrument (GATS) has a very limited scope and meets obstacles due to its interplay with national migratory policies. Another example is education, where some tension exists between European integration, with the explicit social dimension embedded in the Bologna Process, and the market-driven approach of the GATS aimed at eliminating barriers to trade in higher educational services. Similarly, the GATS framework seems to clash with national policies aimed at cultural or political goals, which are perceived by some countries as easier to achieve by retaining distinct national policies.

Even in areas where a comprehensive framework of multilateral rules is already in place, as for trade and innovation, the increasing interplay between different regulatory levels raises important questions of multi-level governance. One of the most debated issues is whether norms that are agreed at bilateral and regional level, are consistent with the multilateral framework, or might even improve upon it. Considering trade in goods and services, in some cases PTAs have actually gone beyond global rules, offering examples of deeper integration and of WTO-plus rules that can enhance trade, and therefore knowledge diffusion. For instance, some PTAs include provisions on government procurement liberalisation, prohibit explicitly forms of trade related investment measures not prohibited under the WTO TRIMs agreement, facilitate the use of e-commerce, or are more far reaching in terms of scheduled commitments for trade in services, all areas that impact considerably on knowledge flows.

On the other side, PTAs have created overlapping norms and procedures of growing complexity, raising administrative costs and undermining their effectiveness. For example, the coexistence of different “rules of origin” has trade distorting effects, particularly on intermediate goods, and thus impacts the related knowledge flows. Some PTAs have recognised the need to streamline these overlapping systems (e.g. by adopting cumulation criteria to mitigate the restrictiveness of origin rules), but so far there is no multilateral solution. Similarly, the adoption of different technical norms, standards and conformity assessment procedures represents not only a barrier to trade but also an obstacle to the transfer of technology. More international coordination would be needed here as well, going beyond the existing bilateral Mutual Recognition Agreements and some cooperation at regional level (EU, NAFTA).

In the area of innovation policies, complex governance issues concern the international coordination of IPR protection, which appears to be regulated by two inter-twined multi-level systems: on one side institutions at national, regional and multilateral level (respectively national patent offices, regional organisations like EPO, and WIPO) regulate the grant and enforcement of patents and of some other intellectual property rights. On the other, a host of bilateral and regional PTAs include regulations on IPRs, often containing very detailed provisions, sometimes going further than the WTO TRIPS agreement.

These two systems are not always coherent, and in this respect the European region features a specific governance issue, as the EU intellectual property legislation and EPO (based on a treaty where both EU and EFTA states take part) have divergent approaches on some issues. Both multi-level systems aim to streamline procedural and substantive aspects of IPRs, following a general trend towards a stronger intellectual property regime. Because harmonization in the field of intellectual property (particularly patents) is not progressing at multilateral level, efforts to agree on TRIPS-plus rules have shifted to the bilateral level, particularly in North-South PTAs. The hope is that this will pave the way for subsequent plurilateral (or multilateral) adoption of higher protection standards.

The question of whether regional or bilateral regulations concerning IPRs – which often include more restrictive protection – are consistent with the multilateral system is closely related to the debate over the role of IPRs in stimulating innovation. Opinions differ widely on this issue: supporters of a stronger intellectual property regime at the international level claim that effective IPR protection is necessary to promote innovation, by ensuring its profitability through the grant of a temporary monopoly, and to create a market for knowledge transfers. On the other side, critics argue that strengthening intellectual property laws (particularly in the case of patents) by lengthening the duration of protection, broadening its scope and subject matter coverage, improving enforcement etc., may not be the most effective means of promoting innovation, especially in the case of cumulative technology or complex products. In these industries a trade-off might be present not only between the grant of a temporary monopoly in exchange for information disclosure, but also between the breadth of the protection granted (especially on path-breaking discoveries) and appropriate incentives for subsequent innovators.

However, empirical evidence about the effects of intellectual property laws on innovation seems not conclusive, and some observers argue that their role as an incentive is rather limited. Because IPRs seem to

be effective only for a few sectors, firms often rely on different mechanisms to protect innovation and frequently apply for a patent more to enhance their market power than for other purposes.

A related issue is whether the increasing regulatory activity at bilateral-regional level can be made complementary with a global system aiming to enhance knowledge processes, and how. One obvious solution would be the progressive enlargement of PTAs. Forms of “open regionalism” are advocated by some observers. Establishing a few large blocks with harmonised regulations, they argue, would eventually facilitate the adoption of one global set of norms. However, recent developments indicate that there is a preference for bilateral deals that are actively contributing to the diffusion of a few regulatory models (mainly promoted by the EU and the US) in several knowledge-related areas.

Whether this sort of “regulatory competition” among bilateral/regional groupings can lead to the diffusion of an optimal set of norms, which might eventually converge at the multilateral level, or whether it merely creates diverging models and impedes further global advancements, remains an unresolved question. There is however some evidence of convergence. Agreements have improved upon each other, creating “hybrid” approaches. Furthermore, it is interesting to note that some bilateral PTAs include more open provisions that can enhance knowledge flows. As an example, PTAs regulating trade in services often adopt an “open” most favoured nation (MFN) clause, implying that members have to extend the same treatment to any of their trading partners, even if they are not part of the treaty. Moreover, relatively liberal rules of origin for FDI in services and in some BITs permit firms of non-member countries to operate on the territory of the signatories, under certain conditions.

It is also worth mentioning that in the case of innovation policies, the “multilateralisation” of norms adopted by PTAs to regulate intellectual property occurs as a direct consequence of the fact that the TRIPS agreement has no provision similar to GATT Art. XXIV and GATS Art. V, which exempt PTAs from the operation of the MFN rule. Therefore, a country is automatically obliged to extend to the other WTO members concessions included in any PTA. This so-called “global intellectual property ratchet” means that the increasing number of PTAs create new and higher standards of intellectual property protection at the multilateral level. However, the question as to whether these norms are beneficial to knowledge-related activities remains open.

Setting up an effective mechanism to monitor the compatibility of preferential agreements with the WTO framework and the effects of their possible “multilateralisation” would represent an important way to enhance the multi-level governance of knowledge-related policies. This issue, so far, has been solved only partially. Notably, the WTO has the mandate to assess the “consistency” of PTAs with WTO rules dealing with goods and services. However evaluation has proven to be difficult to achieve for several reasons, and the Doha Development Agenda negotiations have led so far only to a “Transparency Mechanism”, which should provide more accurate information for the surveillance process. Conversely, as mentioned, no examination and monitoring is specifically required for PTAs encompassing intellectual property regulations, which should however be scrutinised more systematically to assess their compatibility with the multilateral discipline (in particular with TRIPS Art.1.1 and Art. 7), and how they impact on knowledge. The WIPO and the WTO should

cooperate to take up this role because they are both engaged in “development agendas” underlining the need to combine the benefits of international integration with the specific needs of countries at different levels of development.

5) Concluding remarks: A variable geometry approach to the international governance of knowledge policies

The preceding sections have tried to argue that international cooperation is essential to provide human societies with a larger and better supply of the global public good of knowledge, and have discussed the complexity and the limitations of the current regime. In order to offer a comprehensive picture of the socio-economic processes leading to the creation and diffusion of knowledge, we have considered a very wide range of activities and policies, including education, research, innovation, cooperation among knowledge agents, migration, FDI, trade and the open flow of ideas.

It is obvious that, notwithstanding some similarities, no meaningful general conclusion can be drawn across so many different domains. However, for most of them, it seems reasonable to argue that a general agreement at the global level, replacing the increasingly complex network of bilateral and regional institutions, is neither feasible nor desirable. Different levels of international regulation are the result of different equilibriums in the political economy of relations among countries with dissimilar levels of development and power. Moreover, different institutional levels correspond to the specific needs of international coordination in the production of public goods whose benefits, although being shared by societies across national borders, do not necessarily have a global reach. Yet, the current status of multi-level governance in the knowledge system is far from representing a stable equilibrium in international relations and an optimal allocation of competences across different levels. Even when multilateral institutions play a prominent role, such as for intellectual property and trade, their legitimacy, accountability and effectiveness are still questioned, and the number of regional and bilateral agreements is still growing. In addition to traditional concerns about the compatibility between different overlapping regimes, this trend generates new tensions in international relations.

We take here the case of intellectual property protection, whose regime is crucial for most of the activities we have discussed so far and is at the core of an intense debate in the international community. Controversies concern not only its role in the promotion of knowledge creation, but also the limitations it may generate in its international circulation, in the context of asymmetric relations between developed and developing countries. Major developed countries, which are interested in opening foreign markets and strengthening intellectual property protection, are the main promoters of the current wave of bilateral trade agreements where they can more easily exploit their stronger bargaining power without facing the fatigue of multilateral dialogues. Stronger protection of IPRs is sometimes obtained from weaker partners, in exchange for preferential market access for their products. On the other hand, developing countries’ governments, even while signing such bilateral deals, continue to feel the need to defend their policy space on intellectual property protection. In order to do so, they target multilateral institutions, such as the World Health Organisation (WHO), where their interests can be defended more easily with the support of social

organisations, in the name of universal health and other global public goods, widely appreciated by the public opinion. Besides injecting strains across various negotiation tables, these trends do not help improve competence allocation among different institutional levels.

The theoretical debate about intellectual property protection seems to suggest the existence of a trade-off between the incentives to innovation, especially in the frontier areas where costly and risky investment is more important, and the diffusion of knowledge, particularly towards disadvantaged people and developing countries. In some cases this may prove to be a false problem: an excessive degree of intellectual property protection can be detrimental not only to knowledge diffusion, but also to its creation, particularly when incremental innovation is important and IPR holders abuse their dominant position. In other cases the trade-off really exists, so that policy-makers face difficult problems in selecting and achieving an equilibrium among conflicting targets. In any case, international governance of the system could be improved by streamlining the allocation of competences among different institutional levels, while granting national governments a higher degree of flexibility.

Given the economic and technological differences among countries, a balanced and welfare-enhancing “one-size-fits-all” IPR regime would be difficult to conceive and implement. The aim of harmonising intellectual property regimes on a global scale, motivated by the increasing interdependence among national markets, must be balanced against the interest of individual countries in maintaining policy space in order to tailor knowledge regulation to their particular level of development, taking into account the possible distributional effects of the IPR regime. While the TRIPS agreement leaves some policy room to national systems, preferential agreements promoted by the EU and the US tend to reduce it in a way which could be detrimental to some developing countries.

Preventing this risk is not an easy task because the growth of bilateralism reflects important changes in the political economy of international relations and seems difficult to stop. Yet, given that its limitations are increasingly evident governments might see the benefits of building a different institutional equilibrium. As mentioned, the key ingredient of the new regime might be a higher degree of flexibility in the international governance of intellectual property protection. Flexibility here refers to at least two issues. One, each country, and particularly developing countries, should be left free to choose the optimal level of substantive protection of IPRs, while harmonising formal procedures as much as possible. Two, countries seeking deeper forms of integration should be left able to do so. The international instrument could be a plurilateral agreement among interested countries, not necessarily on a regional basis, establishing higher levels of IPR harmonisation even on substantive issues. Such an agreement should remain open to any third country which might become interested in signing it. However, contrary to the WTO “single undertaking” approach, non-signatory countries would remain full members of existing multilateral institutions, maintaining all their duties and rights.

This “variable geometry” approach to the intellectual property regime might provide more general benefits to international governance of knowledge-related policies. For example, it could be applied also to FDI, where the current multitude of BITs could be more efficiently replaced by an open plurilateral

agreement, striking a flexible balance between investor protection and the policy space left to host countries. Similar arguments might be developed for competition policies, which are particularly important in order to check the market power of IPR holders, ensuring that their protection does not unduly restrict the competitive stimulus to innovation. Both FDI and competition policies were originally included in the WTO Doha Development Agenda, but have been removed from the negotiations in order to facilitate consensus building on traditional trade issues. Unfortunately, this decision has not enabled completion of the round as yet. Even from a development perspective, flexible plurilateral instruments on FDI and competition policies would be very useful as possible insurance against the risks of asymmetric bilateral deals with more powerful partners. This would not amount to imposing inappropriate disciplines on developing countries. On the contrary, participation in these experiments of deeper integration should remain completely voluntary. However, even the simple opening of plurilateral negotiations in these areas might be enough to stimulate at least a search for consistency in the increasing multiplicity of national policies and bilateral agreements. With time, unsuccessful experiments will be abandoned without creating excessive problems. On the other hand, agreements which prove their effectiveness might attract other signatory countries, evolving gradually towards global membership and legitimacy.

This plurilateral approach to international relations is not new, and could even be dangerous in areas like trade, where the strength of the multilateral regime stems partly from its lack of flexibility (the single undertaking approach). However, the same argument would be much weaker in other fields, like most of the knowledge-related policies considered here, where the current status of international relations does not legitimate the ambition of comprehensive multilateral agreements. In any case, although it entails difficult challenges, protecting the delicate social engine which drives knowledge creation while ensuring its diffusion to different people is crucial for human progress.

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