

**International Commitments on Intellectual Property Protection: when countries  
decide to take them on board.**

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# **INTERNATIONAL COMMITMENTS ON INTELLECTUAL PROPERTY PROTECTION: WHEN COUNTRIES DECIDE TO TAKE THEM ON BOARD.\***

Bernardita Escobar A.<sup>§</sup>

## **ABSTRACT**

This essay analyses the path taken by countries in committing themselves to protecting Intellectual Property (IP) internationally from late 19th century until December 2008. The aim is to unveil economic rationales behind such decisions and the relative role played by Latin-American countries. The analysis is based on an index built herein of country level decisions of membership to international treaties regarding IP protection. 68 Treaties and 189 countries are studied throughout the 1884-2008 period. Data shows that Latin-American countries played a significant role in such process. Before the big depression, countries from the Americas, particularly Latin-American ones, and Europe led the process. After a drought period around WWII, International commitments on IP gained momentum by late 1950s with countries of other regions of the world featuring increasing leadership. Nonetheless, data shows that Latin American countries have shown sustained long-term eagerness to protect IP. Yet, the statistical analysis indicates that countries have pursued international IP protection increasingly, the richer they are. Also, countries perform a path dependent trajectory in international IP protection; the more engaged a country has been in IP protection internationally, the more likely it is for that country to continue undertaking such international commitments. This path dependence appears directly linked to countries' level of economic development.

## **1 INTRODUCTION**

Economics literature reveals intellectual and political controversies regarding the need and extent of Intellectual Property (IP) protection, at least since the second half of the 19<sup>th</sup> century in the western world.<sup>1</sup> Despite these controversies, the international IP protection system began to develop at the dusk of the 19<sup>th</sup> century, since the enactment of the Paris and Berne Conventions. Such systems continued evolving towards a system of harmonised global IP protection, particularly through the enactment of the WTO-TRIPs agreement. Ongoing controversies arising over the convenience of having or increasing countries' IP protection, lead to questioning what the underlying rationales have been for countries deciding to establish IP protection standards internationally. This essay analyses the path taken by countries in committing themselves to protecting IP at an international level, from the inception of an international system in the late 19<sup>th</sup> century, through the enactments of the Paris and Berne Conventions, until December 2008. The aim of this essay is to explore the factors underlying the decisions of countries when making international commitments in a long-term and comparative perspective, by focusing on plurilateral agreements regarding IP protection. The aim is to identify rationales and forces guiding countries' choices in this regard and in

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<sup>1</sup> Some reports of such controversy can be found in Plant (1934) -N° 25-, Machlup and Penrose (1950), Machlup (1958) - part II-and Boyle (2003) - chapter 2-.

particular, to examine the extent to which these factors might vary at different stages of the economic development of countries.

Controversies originally centred on whether IP protection was desirable for one country in particular, without the insight of the effects of IP protection from a global or international perspective (among others, see for instance reports by Macfie (1863), Plant (1934), Machlup and Penrose (1950), Machlup (1958), Boyle (2003)). Some theoretical views examining the desirability of having IP protection arrive at unvarying conclusions that disregard the economic development considerations of countries. Such studies have generally analysed the effects of IP protection on economic performance within a closed economy framework. Therefore, IP protection has been understood as either desirable and welfare enhancing (as argued by, *inter alia*, Smith (1776, 1993), Bentham (1825), Mill (1848, 1994), Nordhaus (1967), North (1981)) or as welfare reducing and therefore undesirable (as argued by, *inter alia*, Macfie (1863), Taussig (1915) and more recently Boldrin and Levine (2005)).

It was perhaps, since Penrose (1951) and Penrose (1973) that economists started focusing on identifying differences in relative incentives and the convenience of having an IP protection system for countries of different levels of economic development. Formal analysis of these differences have flourished since the 1980s after the Uruguay Round formally discussed whether minimum IP protection should be compulsory for every country trading internationally. Some sceptical views regarding the convenience of developing countries harmonising IP protection with the North's standards are those of Deardorff (1992), Helpman (1993), Lai (1998), Lai and Qiu (2003), Grossman and Lai (2004), Grossman and Lai (2006). Among advocates of developing countries increasing IP protection standards to meet those of the North are Rapp and Rozek (1990), Diwan and Rodrik (1991), Taylor (1993), Kwan and Lai (2003), Gancia and Bonfiglioli (2008)). Yet, tensions between countries of different degrees of development regarding the need, scope and extent of minimum IP protection standards, became ubiquitous after the Uruguay Round aimed at including such provisions at the multilateral level (see for example reports by Sell (2003), Sell (2003), Singh (2006)).

A relationship between economic development and IP protection standards became apparent once economists attempted to measure the extent of IP protection standards across countries in a comparative fashion, although the causal relationship between these variables has been the grounds for disagreement in the literature. Rapp and Rozek (1990) (hereinafter –RR-) reported a positive relationship between their index of patent protection with eight different economic development variables for 1984 in a 159 country analysis.<sup>2</sup> Relying on an improved RR index, Maskus and Penubarti (1995) analysed and confirmed a positive, yet opposite causal relationship between IP protection and development (income per capita). Maskus (1998) explored the latter hypothesis further, confirming a quadratic relationship between such variables. Ginarte and Park (1997) (hereinafter –GP-) build a more multifaceted index of patent protection for 107 countries over the 1960-1990 period. They evaluated the impact that development (GDP per capita) had in the extent of IP protection. In a one-to-one analysis they found a strong relationship. However, this relationship vanished after controlling for economic development variables (R&D, market freedom and openness). Using GP data, Chen and Puttitanun (2005) found a U-shape relationship between IP

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<sup>2</sup> Their working paper provides the annexes with the detailed information. Neither paper provides statistical disclosure of the relationship uncovered.

protection and the development of countries (GDP per capita). Kanwar and Evenson (2009) found only weak evidence of such relationship.

The empirical literature analysing the relationship between IP protection and economic growth shows that controversies over the welfare effects of IP protection replicate in such sphere of enquiry. It has become apparent that the economic development level of countries matters for deriving consensual conclusions. On the one hand, Gould and Gruben (1996) found that 1960-1988 average economic growth responded positively to the level of IP protection (as measured by RR index) for a cross section of 65 countries. Nonetheless, Park and Ginarte (1997) found no such statistical relationship for a similar period (1960-1990) and sample size (60 countries). However, they concluded that IP protection (as measured by the GP index) indirectly affected economic growth, since they found a positive relationship between IP protection and physical and R&D capital accumulation. Thompson and Rushing (1995) found that IP protection (with an RR similar index of patent protection), was not significant in explaining economic growth for their full sample of 112 countries in the 1970-1985 period. However, it appeared significant and positive for the higher income countries.<sup>3</sup> Such results are in a similar vein as findings of a recent 79-countries-panel study that uncovers a positive statistically significant effect of IP protection on economic growth. However, such effect depends on the level of economic development of the economy: while IP protection has no effect for mid-income countries, it has a positive effect for both low and high income countries (Falvey, Foster et al. (2006)).

As becomes apparent, the time span of most of the extant empirical studies is nonetheless too brief to warrant long term explanations for the path followed by the international IP protection system. An exception is the careful study carried out by Lerner (2002) who analysed the patent policies of 60 1997- top-income countries' for the 1850-1999 period. He found that countries' patent policies were responsive to political institutions, relative wealth and type of legal systems: countries with democratic parliaments, higher income per capita and with a French legal tradition had a higher probability of having patent systems in place. He did not report discontinuities arising from different levels of development.

The above studies reinforce doubts regarding the path and rationales followed by countries of different levels of economic development in shaping an international IP protection system tending towards harmonization over time. This work seeks to unveil the features and characteristics of the set of countries participating of this endeavour under a long term perspective and explore the rationales and explanations driving the behaviour of countries in this field.

Achieving this aim entails addressing the need for an IP protection index comparable across countries and over time, available for the 1880-2008 period. Indexes used in literature are arbitrary and subjective, since they measure what their architects believed to be relevant features of an IP system.<sup>4</sup> They are also limited in that they mostly refer

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<sup>3</sup> A similar pattern emerges from Thompson and Rushing (1999) studying a reduced list of 55 countries for the same period, looking at factor productivity growth.

<sup>4</sup> For instance, the RR index is based on the US Chamber of Commerce survey. The authors disclose that such research was funded by Phrma, the US pharmaceutical trade association. The GP index builds on the RR index. Lee and Mansfield (1996) survey the perceptions of managers of US firms concerning the IP protection of countries.

to patent protection only. Moreover, except for Lerner (2002), the time span they cover is limited, covering the 1960-1990 period, at best. Therefore, such indexes are not properly equipped for accounting for the history of the international IP protection system.

This essay addresses the problems inherent in building an IP protection index comparable across countries and on such a long term basis, by using a variable which is comparable across countries by nature and has a long term framework: the subscription of or accession to international treaties concerning IP protection. Indeed, subscription of treaties can prove useful for making indexes measuring countries' eagerness to achieve IP protection, because, apart from referring directly to IP protection, treaties tend to have symmetrical effects for their members.<sup>5</sup> Thus, treaty subscription provides a means for comparing standards of IP protection across countries in a rather neat and simple fashion.

The index constructed in this essay is based on the yearly decision made by countries to adhere to an IP protection treaty. Examining the subscription of International Treaties seeking IP protection provides a means of grasping the volume of activity, both at country and global levels, in the development and diffusion of IP protection standards worldwide. It also provides a means for identifying the set of countries leading, following and ignoring developments on this field, at different moments in time, both in a global perspective and from a country's own point of view.

This paper studies the multilateral activity related to the subscription, ratification, and coming into force of 68 International Treaties on Intellectual Property Protection covering any Intellectual Property category (i.e. copyright, related rights, patents, models, industrial designs and distinctive signs—trademarks and geographical indications). The treaties covered in this study constitute a near-universe of plurilateral treaties of a binding nature with regard to IP protection subscribed in modern times.<sup>6</sup> Similarly, the countries included are part of the set of nation states that have appeared since the beginning of the 20<sup>th</sup> century.

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<sup>5</sup> Apparent exceptions to this are the reservations and compliance to Treaty standards. On the one hand, reservations being made by countries, exempting them from complying with such specific aspects of the Accord of which reservations were made. Nonetheless, the ability to express reservations is usually symmetrical across countries, which reinforces the overall symmetrical nature of Treaties. On the other hand, another source for divergence of symmetry across countries of Treaty membership is the degree of compliance to Treaty standards. This *de facto* difference across countries' eagerness to protect IP internationally is believed to be related to the ability to enforce Treaties internationally, which in the end becomes a symmetrical feature that Treaties have across members.

<sup>6</sup> The study excludes cooperation agreements concerning IP protection, as they are not binding in nature. It also excludes bilateral agreements addressing IP protection, as access to unbiased sources of information is limited. From WTO members' reports to the Secretariat, Fiorentino, Crawford et al. (2009) show there were 386 regional agreements in 2007 and 197 of them are in force. Yet, according to Hoekman and Winters (2009), only those signed by the US included binding IP protection provisions. Consistently, Kawai and Wignaraja (2009) show that despite the fact that the majority of regional Asian trade agreements include IP centred provisions, they are of a cooperative nature, and thus non-binding. Still, the likelihood of such bilateral agreements having arisen in the past 120 years is high, whereas the chances of recording them are slim. Herein lie the foundations for excluding such agreements from the scope of this study, in addition to the high research costs. The US bilateral treaties including IP protection are studied in the next two essays.

The essay is organised as follows: section 2 describes the data set; section three contains the econometric analysis and the conclusions are outlined in the fourth section.

## **2 DATA AND DESCRIPTIVE STATISTICS**

The key data gathered for this essay consists of the dates on which countries subscribed IP protection Treaties. The information is extracted from international agencies in charge of the Treaties. These agencies are World Intellectual Property Organization (WIPO), United Nations Educational and Scientific organization (UNESCO), Organization of American States (OAS), Union for the Protection of New Varieties of Plants (UPOV), European Patent Organisation (EPO), African Regional Intellectual Property Organization (ARIPO).<sup>7</sup>

### **2.1 TYPES OF LEGAL COMMITMENTS MADE BY COUNTRIES IN TREATIES**

The data concerning the treaties included in this work corresponds to valid legal acts. Membership dates correspond to the actual level of international commitment made by a country in relation to an International Treaty. They can either be dates of subscription, accession, ratification or entering into force of the Treaty for countries.<sup>8</sup>

It should be noted that with regard to the formality of the commitment made by countries, there are cases where the information published by the agency in charge of the treaty does not include information regarding the coming into force of such agreement. For some agencies, this does not mean that the Treaty in question has not come into force for the respective country, but only that such information is not available. This is the case of Treaties under the scope of OAS and UNESCO. On the other hand, there are treaties that have been ratified by a country and all legal requirements for compliance have been met, but the treaty has not yet come into force for some reason beyond the control of the country in question. This is the case for some treaties under the tutelage of the WIPO that require a minimum number of subscriptions for coming into force. Consequently, ratification and accession status may have different legal meanings in some cases, depending on the agency providing the information regarding the type of commitment made by countries with respect to treaties. In general, WIPO ratification and accession labels tend to mean that some fact external to the country in question is preventing the treaty from entering into force, whereas UNESCO and OAS, ratification and accession labels seem to reflect that the country has complied with all the legal procedures needed for the treaty to come into force, and that it has in fact come into force in the proximity of the date provided.

The constructed data base uses the same degree of international commitment published by the agency in charge of the treaty, except for the treaties under the scope of OAS and UNESCO, for which published dates labelling ‘accession’ or ‘ratification’ have been paralleled in this essay to the ‘entry into force’ labels used by WIPO. Finally, it must be noted that for each country-treaty relationship, only the highest and usually the latest

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<sup>7</sup> There are a few treaties that are not under the umbrella of either of these agencies, such as the 1888-South-American treaties enacted in Montevideo for copyright, trademarks and patents, the Mercosur Treaty for IP protection, and the Andean and Central American treaties for IP protection. For these treaties, no reliable information could be gathered regarding dates and status of country’s membership. For this reason, these Treaties are not included in the analysis.

<sup>8</sup> Some Treaties may have been superseded by others, and a few have been subsequently denounced by a member state.

commitment formality made by a country has been considered in this work (as of October 2008).<sup>9</sup>

Table N°1 shows the list of 2,827 binding international agreements concerning IP protection since the enactment of Paris and Berne Conventions. Most of them are commitments of the highest legally binding nature (82% are in force). However, this figure is followed by the lowest possible degree of legal commitment by countries (14% are mere subscriptions). Details of these figures across the different treaties are presented in Table N°9 in the appendix.

**TABLE N°1 TYPES OF COMMITMENTS MADE BY COUNTRIES IN IP TREATIES**

<b>Status of Legal Commitment made</b>	<b>Frequency</b>
Accession	<b>50</b>
In Force	<b>2315</b>
Notification of succession	<b>19</b>
Ratification	<b>48</b>
Subscription	<b>395</b>
<b>Total</b>	<b>2827</b>

## 2.2 THE TREATIES IN THE DATA: ACTS AS TREATIES

This essay deals with Treaty Acts as a unit. The reasons for doing so are two-fold. First of all, to take into account the legal standpoint: the international commitments of countries regarding a Treaty are those contained in the Act they are signatories of, regardless of the Treaty Acts third countries might be signatories of and bound to. So, two signatory countries of a treaty may be bound to each other by the latest Treaty Act, while having different legal commitments regarding third countries depending on the Acts they have in common. One of the two countries could be a long-standing member, having adhered to every former Act of the Treaty, and thus being committed to some countries on the grounds of a former Treaty Act they have in common. The second country may have no commitment whatsoever regarding a third country which only committed itself to the latest Treaty Act to which the second country did not. Secondly, dealing with each Treaty Act as a separate Treaty allows capturing differences in international participation regarding IP protection across countries and the timing of these decisions over the years. A country signing 5 subsequent Acts of a Treaty would have 5 different actions taken in time in relation to IP protection, whereas a country acceding to the latest version of a such Treaty would have acted only once in the multilateral arena.

Table N°2 lists the different Acts of Treaties considered in this study. It also shows the IP categories they deal with (copyright -CR-, related rights -ReR-, patents, models or Industrial Designs -PMD- and Trade Marks -M- for treaties referring to trademarks and/or Geographical Indications) and the year in which they were first subscribed, ratified or made valid (year 0) by a country.

**TABLE N°2 INTERNATIONAL IP PROTECTION TREATIES INCLUDED IN THE STUDY**

<sup>9</sup> The lowest degree of international commitment is the signature of an agreement. The next higher step of international commitment is the completion of the Constitutional procedure of accession or ratification of the Treaty. This is followed by carrying out the needed formalities to validate such ratification or accession before the agency in charge of the Treaty, a procedure that usually precedes the coming into force of the agreement.

TREATY	YEAR	IP CATEGORY					Total
		0	CR	ReR	PMD	M	
1 Paris Convention	1884				X		1
2 Berne Convention (assumed as 1886 Act)	1887	X					1
3 Madrid Agreement (Indications of Source)	1892				X		1
4 Madrid Agreement (Marks)	1892				X		1
5 Convention On Literary And Artistic Copyrights -Mexico 1902	1902	X					1
6 Treaty on Patents of Invention, Industrial drawings, Models and Trade-marks - Mexico 1902	1902				X	X	2
7 Convention on Patents of Invention, drawings, and Industrial Models and Literary and Artistic Property –Rio de Janeiro 1906	1906	X			X	X	3
8 Convention On Literary And Artistic Copyright-Bs Aires 1910	1910	X					1
9 Convention on the Protection of Trademarks- Bs Aires 1910	1910				X		1
10 Convention for the Protection of Commercial, Industrial, and Agricultural Trade Marks And Commercial Names -Stgo 1923	1923					X	1
11 Paris Convention- Stockholm Act (1967)	1925					X	1
12 Hague Agreement	1928				X		1
13 Madrid Agreement (I. Source The Hague Act (1925))	1928					X	1
14 Revision Of The Convention Of Buenos Aires On The protection Of Literary And Artistic Copyright -La Habana 1928	1928	X					1
15 Inter-American Convention for Trademarks (1929)	1929					X	1
16 Protocol on the Inter-American Registration of Trade Marks- Washington 1929	1929					X	1
17 Hague Agreement - London Act (1934)	1939				X		1
18 Madrid Agreement (I. Source London Act (1934))	1942					X	1
19 Inter-American Convention On The Rights Of The Author In Literary, Scientific And Artistic Works - Washington 1946	1946	X					1
20 Paris Convention- London Act (1934)	1946					X	1
21 Berne Convention- Rome Act (1928)	1947	X					1
22 Berne Convention - Brussels Act (1948)	1951	X					1
23 Paris Convention -The Hague Act (1925)	1951					X	1
24 Universal Convention On Copyright 1952	1952	X					1
25 Lisbon Agreement Stockholm Act (1967)	1958					X	1
26 Madrid Agreement (I. Source Lisbon Act (1958))	1958					X	1
27 Hague Agreement - Hague Act (1960)	1960				X		1
28 Nice Agreement	1961					X	1
29 Rome Convention	1961		X				1
30 Convention Benelux -Trademarks	1962					X	1
31 Libreville Agreement	1962				X		1
32 Paris Convention- Lisbon Act (1958)	1963					X	1
33 Convention Benelux - Designs	1966				X		1
34 Lisbon Agreement -assumed eldest version-	1966					X	1
35 Hague Agreement Complementary Act of Stockholm (1967)	1967				X		1
36 Madrid Agreement (I. Source, Additional Act of Stockholm -1967)	1967					X	1
37 Locarno Agreement	1968				X		1
38 UPOV 1961 Act	1968				X		1
39 UPOV 1991 Act	1968				X		1
40 Berne Convention - Stockholm Act (1967)	1970	X					1
41 PCT- Patent Cooperation Treaty	1970				X		1
42 WIPO Convention	1970	X	X	X	X	X	4
43 Berne Convention - Paris Act (1971)	1971	X					1
44 Phonograms Convention	1971		X				1
45 Strasbourg Agreement	1971				X		1
46 UPOV 1978 Act	1971				X		1



47 Vienna Agreement	1973				X	1
48 Brussels Convention	1974	X				1
49 Lusaka Agreement	1976			X	X	2
50 UPOV 1972 Act	1976			X		1
51 Budapest Treaty	1977			X		1
52 Convention Bangui	1977			X	X	2
53 European patent Convention	1977			X		1
54 Nairobi Treaty	1981				X	1
55 The Harare Protocol	1984			X		1
56 Film Register Treaty	1989	X				1
57 Madrid Protocol	1989				X	1
58 Washington Treaty	1989			X		1
59 Eurasian Patent Convention	1994			X		1
60 TLT – Trademark Law Treaty	1994				X	1
61 TRIPS Agreement	1995	X	X	X	X	4
62 WCT - WIPO Copyright Treaty	1996	X				1
63 WPPT- WIPO Performers and Phonograms Treaty	1996		X			1
64 Banjul Protocol	1997				X	1
65 Hague Agreement- Geneva Act (1999)	1999			X		1
66 PLT – Patent Law Treaty	2000			X		1
67 Singapore Treaty – Trademarks-	2006				X	1
68 Convention Benelux – Intellectual Property	2007			X	X	2
<b>Total</b>		<b>15</b>	<b>6</b>	<b>27</b>	<b>32</b>	<b>80</b>

The Table shows that out of the 68 treaties considered, only 7 cover more than one category of IP; thus, the vast majority are single category Treaties. The table also shows that Treaties more frequently concern Industrial Property categories with 32 Treaties dealing with Distinctive signs (trademarks and Geographical Indications) and 27 dealing with patent, industrial models and industrial designs categories. At the other end of the spectrum, Related Rights appears as the least frequent category covered in Treaties (6 treaties), while copyright is tackled more than twice the number of times as the latter, but half the number of times as Distinctive signs. The timing of the emergence of these treaties, depicted in aggregate terms in Table N°3, shows that the 1960-1990 period accounts for the emergence of nearly half of the treaties considered in this essay (approximately one new treaty per year in the period). On average, there was one new treaty signed or adhered to by countries every two years during the 1884-2007 period.

There are some treaties that are regional and whose members belong to a restricted geographical zone, while others have members from different points of the globe. Grouping treaties of different territorial reach in a single set, obeys the fact that ex-post territorial scope of treaties cannot be unequivocally foreseen ex-ante. Some multilateral treaties started with limited geographical scope, but they became popular and were adhered to by countries of different geographical zones later in time.<sup>10</sup> Similarly, some treaties started with ambitious global aims and few countries adhered to them in the end, thus having a reduced geographical scope. Therefore, it appears more appropriate to deal with treaties only on grounds of their subject matter, and not on temporal geographical scope.

<sup>10</sup> An such example is set by the Montevideo Treaties of South American countries which were later adopted by more States in the first Pan-American Conference.

### 2.3 MEMBERSHIP DATA

Treaties with several Acts, usually those with a long history, are characterised by having incomplete information regarding membership times. Generally, data sources specify the Acts which countries subscribed. However, for original and older member states, information may be incomplete, particularly regarding intermediate Acts of a Treaty. Some of these cases do not specify the Act a country first adhered to. For these cases, in due consideration of countries' membership timing, it was assumed that the original Act of the treaty in question was subscribed.

Table N°10 and Illustration N°1 show an increasing degree of activity of treaties subscription since the Paris Convention was enacted in 1884. In the 46 year period before and after World War I (1884-1930), 245 commitments of IP protection were made by countries. In the next 30 years, before and after World World II (1930-1960), the activity dropped to nearly half the level of the previous 46-year period (145 international commitments). The following 30 year period (1960-1990) shows a notable expansion of activity in IP international commitments made by countries regarding IP protection, with an increase of 600% in relation to the previous 30 year period (934 commitments). The level of international activity explodes in the following 18 years (1990-2008) by the emergence of an additional 1,508 new IP commitments made by countries. This path confirms the depiction by Drahos (1997) of globalization of IP protection since the conclusion of the WTO-TRIPs agreement.

Table N°3 and Illustration N°2 show some basic information of the dynamics of subscription of IP protection treaties in the 120 year period (disaggregated data is contained in Table N°10 in the annexes). It shows that subscription of treaties increased over time, although at a different pace according to geographical region. Before the 1960s, three decade-level temporary peaks in treaty membership stand out: one in the first decade of the 1900s; and two periods following the World Wars (1920s and 1950s). These peaks are explained largely by countries from the Americas<sup>11</sup> and Europe<sup>12</sup>. Treaty subscription of the first two local peaks corresponds mostly to countries from the Americas (90% and 66%). The third local peak (1950s) is more evenly explained by countries from the Americas, Europe and the rest of the world. In fact, independent Countries from the Americas account for 19% of total subscription of treaties for the whole 1884-2008 period. The rest of the world increasingly participates in treaty subscription after the 1940s, which is partly explained by the emergence of new independent countries from the former colonial past. Since the 1960s, subscription to IP protection treaties greatly and systematically increased from the decade-levels seen before to more than twice the highest previous levels, both in absolute and average terms.

**TABLE N°3     DYNAMICS OF TREATIES AND THEIR MEMBERSHIP**

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<sup>11</sup> Americas include Argentina, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panamá, Paraguay, Peru, Puerto Rico, United States, Uruguay and Venezuela.

<sup>12</sup> Europe includes Austria, Belgium, Bosnia-Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Holy See, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russia, San Marino, Serbia, San Marino, Slovakia, Slovenia, Spain, Sweden, and Switzerland.

	DECADES														Total
	1880-1930				1930-1960				1960-1990				1990-2008		
New Treaties	16				11				31				10		<b>68</b>
%	24				16				46				15		<b>100</b>
Treaty Membership	245				140				934				1508		<b>2827</b>
%	9				5				33				53		<b>100</b>
Average Membership	15				13				30				151		<b>42</b>
	1880s	1890s	1900s	1910s	1920s	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s	Total	
New Treaties	2	2	5	0	7	1	4	6	15	11	5	8	2	<b>68</b>	
%	3	3	7	0	10	1	6	9	22	16	7	12	3	<b>100</b>	
Treaty Membership	24	18	70	41	92	31	37	72	211	448	275	927	581	<b>2827</b>	
%	1	1	2	1	3	1	1	3	7	16	10	33	21	<b>100</b>	
Americas %	13	6	90	71	66	55	43	25	12	12	17	12	13	<b>19</b>	
Europe %	79	78	10	20	21	35	5	42	47	41	28	38	30	<b>35</b>	
Rest %	8	17	0	10	13	10	51	33	40	48	54	50	57	<b>46</b>	
Average Membership	12	9	14		13	31	9	12	14	41	55	116	291	<b>42</b>	

From the 1990s, average membership increased radically relative to earlier levels. Six treaties had over 100 members, and therefore the average membership, excluding the latter, is equivalent to 34 members per treaty. The most ‘populated’ treaties, in terms of their number of member countries, are the WIPO convention, with 184 members, the Paris Convention (Stockholm Act of 1967), with 171 members, the Berne Convention (Paris Act 1971) with 159 members, the TRIPs agreement with 153 members, The Patent Cooperation Treaty (PCT) with 142 members, and the Universal Copyright Convention of 1952 with 100 members.

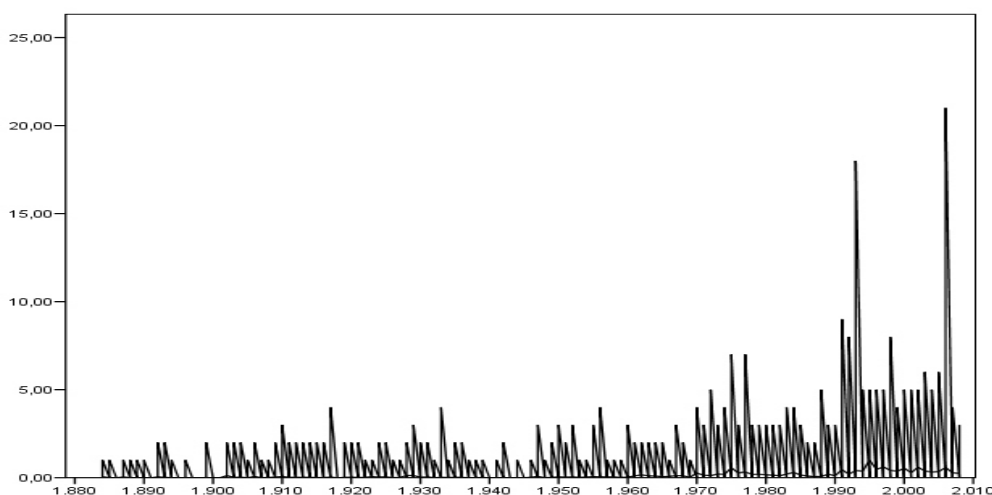
From these figures, it becomes apparent that countries involved in IP protection agreements have been diverse in terms of wealth, technological edge, and economic development in general. In particular, countries from the Americas became engaged in regional efforts, devising an appropriate framework of IP protection since the 1880s.

The explanation of this path seems to be partly rooted in US foreign policy towards countries from the Americas and partly in the desire of new countries to attain modern legal institutions that limit the extent of conflict across nations. During most of the 19th century, the US expanded its almost monopolist influence on the western hemisphere, invoking and finding legitimacy in its *Monroe Doctrine*<sup>13</sup>, which other western powers did little to challenge (Hobsbawm (2009)). The Monroe Doctrine gained momentum during the 19th century as the US achieved more economic and military power. The original scope of the Monroe Doctrine was substantially expanded by the so-called ‘Roosevelt Corollary’ of 1904, which claimed the right of the United States to intervene in Latin America in cases of “flagrant and chronic wrongdoing by a Latin American Nation” (Roosevelt (1904)). *Pan Americanism* is one manifestation of these doctrines (Serra-Moret (2009)), which led to the conclusion of several Treaties tackling IP protection.

<sup>13</sup> The Monroe doctrine, 1823, stated that further efforts by European governments to colonize land or interfere with states in the Americas would be viewed by the United States of America as acts of aggression requiring US intervention. The doctrine was invoked several times since then to justify the intervention and influence of the US in the western hemisphere.

Nonetheless, it is necessary to point out that the first international effort to protect IP internationally in the Americas predated the first Pan-American-US-driven conferences in the 1900s. Such first experience took place in Montevideo in 1888 and convened countries from South America exclusively.<sup>14</sup> The conference concluded with treaties on trademarks, patents and copyright. These treaties were later recommended for adoption by the first Pan-American Conference (Alfonso (1890), Ladas (1928)), organised by the US in Washington (Balmaceda (1889)) with more participant countries.

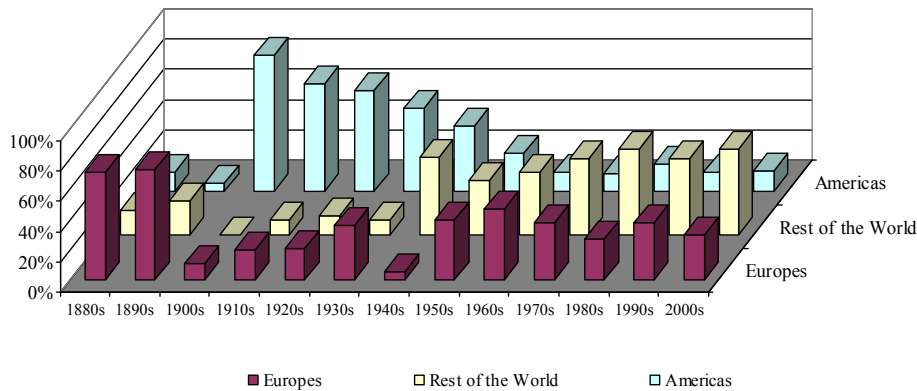
**ILLUSTRATION N°1** NUMBER OF COUNTRIES THAT ARE MEMBERS OF TREATIES. (COUNTRY SIGNATURES, RATIFICATIONS, ACCESSIONS OR ENTRY INTO FORCE OF AGREEMENTS)



**ILLUSTRATION N°2** DISTRIBUTION OF COUNTRY MEMBERSHIP OF IP PROTECTION TREATIES BY GEOGRAPHIC REGION

**Eliminado:** BY GEOGRAPHIC REGION

<sup>14</sup> The Ministerial invitation to attend the Montevideo Conference addressing the Foreign Affairs Ministers of South American Republics (Costa and Lagos (1888)) expressed the importance of agreeing on issues where real legal conflicts emerge that damage the free development of reciprocal relationships between States. Ministers concurred that it was the duty of governments to strive to unify the laws of different countries that give rise to such conflicts, and establish a sole international law to solve it. The Chilean Foreign Affairs Minister (Lastarria (1888)) expressed the government's agreement with such views when accepting the invitation to attend the Conference. The original Spanish 2<sup>nd</sup> and 4<sup>th</sup> paragraphs of the invitation letter read "No escapará a la penetración de V. E. la importancia que tendría la realización de un acuerdo sobre puntos que provocan verdaderos conflictos de legislación, perjudicando el libre desenvolvimiento de las relaciones recíprocas de los Estados." (..) "pero es deber de los gobiernos pugnar por realizar en lo posible la unidad entre las diversas legislaciones que dan origen al conflicto, estableciendo en todo caso la lei única internacional destinada a dirimirlo."(Costa and García-Lagos (1888)).

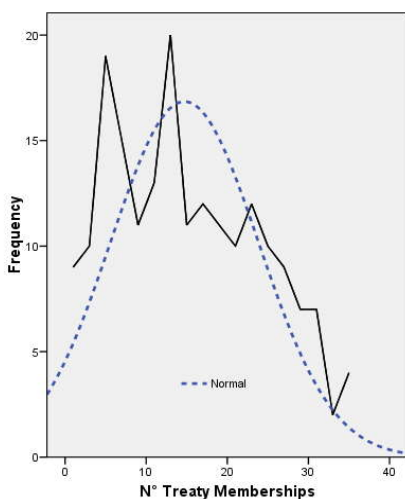


## 2.4 MEMBERSHIP OF TREATIES

The timing of international commitments at country level is detailed in Table N°11 in the appendix.<sup>15</sup> There are 189 countries and 3 entities becoming members of the 68 treaties mentioned earlier.<sup>16</sup> On average, countries have become members of 15 different International IP Treaties since 1884, while the median treaty membership is 13 per country. The distribution function of countries' treaty membership was tested against normality (see Table N°4). The Z- Kolmogorov-Smirnov test reveals non significance, therefore rejecting the null hypothesis of normal distribution.

**TABLE N°4 TEST FOR NORMALITY**

Distribution Parameters and Estimator		Total
N		192
Normal parameters	Media	14,72
	Standard Deviation	9,092
Extreme Differences	Absolute	0,080
	Positive	0,080
	Negative	-0,066
<b>Z de Kolmogorov-Smirnov</b>		<b>1,114</b>
<b>Asymptotic Significance (bilateral)</b>		<b>0,167</b>



Median countries, i.e. countries with an aggregate of 13 treaty memberships

: members of IP Treaties are varied; independence. With regard to independent a, are the dates of independence of : acknowledging commitments made t (prior to independence). ie European Patent Office and the ades Chinese Taipei (Taiwan) even

(such as Bahrain, Bosnia, Congo, Holy See, India) rank in the 19%-24% range of the cumulative distribution of country membership of Treaties. Consequently, half of the countries engaging in IP protection treaties hold just 24% of the total network of legal commitments on IP protection made since the 1880s. Countries having the average N° of treaty memberships (15) (Gabon, Ghana, N. Zealand among others) rank in the 28-30% range of the above cumulative distribution. Countries located in the 50% range of the cumulative distribution of membership of treaties (Chile, Ecuador, El Salvador, Kenya and Macedonia) have 21 memberships, although they are in the 72% percentile of countries with memberships of IP protection treaties. On the other end of the distribution, the upper 20% of the cumulative distribution of total country memberships correspond to those held by 20 countries, i.e. 10% of the countries. They each have 28 to 36 memberships of treaties. These countries are mostly European (original and new members of EU and Switzerland) with France as the one having the biggest number of treaty memberships. Other countries of this lot belong to the Americas (US, Mexico, Cuba and Uruguay).

Aggregates of Treaty memberships allow picturing gross differences among countries in terms of their overall *enthusiasm* towards IP protection, since the 1880s up to the 2000s. However, this by itself does not provide enough information to learn about possible long term country patterns regarding IP Protection over time. To do so, an index of country level persistence in IP protection was built using a Borda rule. The index, contained in Table N°5 and Table N°12, is the Borda ranking of the aggregate share of the cumulative distribution of treaty memberships for each decade (or near decade). Thus, the highest rank is given to the country having the highest average share of the decade's treaty memberships among the 12 periods presented in Table N°11. The benefit of this index is that it avoids eventual biases produced by 'seasonal' levels of activity in the field of IP property protection, across different decades. Recent decades, which have had levels of high globe activity in the field of IP, would tend to flatten aggregates between countries being relatively active in decades with low aggregate activity, to countries relatively inactive in decades of high activity.

**TABLE N°5 TOP-20 COUNTRIES RANKED BY N° OF MEMBERSHIPS OF IP PROTECTION**

Country	TREATIES		
	Country Ranking by N° of Treaty Memberships	Average over	Share of Decade's new Membership of Treaties
	Aggregate	Decades	Average over Decades
1 United States of America	10	1	2,8%
2 Brazil	21	2	2,6%
3 Dominican Republic	30	3	2,6%
4 Liechtenstein	16	4	2,4%
5 Nicaragua	35	5	2,3%
6 Costa Rica	30	6	2,2%
7 Haiti	68	7	2,2%
8 Switzerland	3	8	2,2%
9 France	1	9	2,2%
10 Ecuador	52	10	2,2%
11 Honduras	43	11	2,1%
12 Cuba	7	12	2,0%
13 Colombia	40	13	2,0%
14 Paraguay	57	14	2,0%
15 Portugal	10	15	2,0%
16 Mexico	5	16	2,0%

Eliminado: to

17	Peru	43	17	1,9%
18	Germany	5	18	1,9%
19	Uruguay	16	19	1,9%
20	Guatemala	43	20	1,9%

The Borda index puts the US in first place. Thus, The US appears as the most consistent country pursuing IP protection over time since the dawn of the 19<sup>th</sup> century, by showing a systematically higher proportion of the adherences to treaties in different decades. The US, therefore has committed internationally to protect IP in a more significant manner than the rest of the countries of the world. On average, the US had 2,8% of new membership to treaties at decade level.

It is interesting to note, however, that index criterion places 14 Latin American countries (highlighted in blue) among the top-20 ranked countries. The other 5 countries are European (Liechtenstein, Switzerland, France, Portugal and Germany). In general, 9 of these 20 top ranked countries, apart from showing a high average share of decade new membership of IP protection treaties, they also happen to be part of the top 20 countries with the highest aggregate number of memberships. As mentioned earlier, three of these are from the Latin American region.

The data shows a gross divide of top ranked countries using both criteria. While Latin American countries (highlighted in blue and yellow) and the US appear to have been long term advocates for IP protection after the Paris Convention was enacted, together with a few European countries, most European countries show lower long-term enthusiasm for IP protection compared to most Latin American countries. In particular, European countries appear to have been keener on IP protection only more recently.

The top pro-IP protection countries appear to be part of a group having acutely different economic features under current standards, making the aforementioned divide between Latin-American and European + US, elusive or negligible. This poses a question mark over the factors explaining the similar long-term patterns of behaviour of countries having different economic backgrounds in terms of their seeking IP protection. The next section attempts to address the understanding of these patterns of behaviour.

### **3 EXPLAINING MEMBERSHIP OF IP PROTECTION TREATIES**

#### **3.1 THEORETICAL BACKGROUND**

Proponents of new institutional economics state that institutions shape the incentive structure influencing individuals' decision making (North (1981), North (1990)). Under this view, Institutions determine economic outcomes. Rationally, they would therefore work at two levels: a short term one, where institutions are taken as given, and another one consistent with long term analysis, where institutions are no longer considered given, and are decided upon. Consequently, under this last framework, the scope for institutional policy design appears to be ample.

On the other hand, old institutionalism frames the economic problem slightly differently. It recognises a more reduced space for individuals to make choices, because, in its view, too many structures determining people's behaviour are structural and not subject to much change derived from the acts of individuals (such as Veblen (1898)'s 'instinct of workmanship' or the 'idle curiosity' of individuals Veblen (1906), Veblen

(1918)). While both schools agree that institutions matter, and that they are behind economic performance, they seem to disagree over the role of policy design for many relevant economic institutions.

In a long-term perspective, and at a country level analysis, the institutional framework is the decision variable that countries ultimately decide upon, to maximise their preferences, or rather, their wellbeing. Under this framework, current economic variables condition institutional choices. For the domain of proprietary science, IP protection standards are decided on grounds of current economic standards. These would, in the long term, respond to the institutional decisions made earlier.

It is very frequent to observe innovative societies, particularly those grounded on proprietary science doctrine, i.e. having neat and strong incentives for private innovation, advocating for strong and widespread standards for IP protection. In this case, institutional change would be driven by supply side considerations. Equally, economies with poorer economic performance in terms of technological change and domestic innovation would benefit from lowering the costs of access to new technological developments. This would equate to lowering IP protection levels, and thus, in this case, institutional change would be driven by demand side considerations. However, in either case, it is ultimately economic performance that reinforces and drives institutional change, and again, the final decision variables are institutional features.

### **3.2 ECONOMETRIC MODELLING**

This section contains the model and the econometric results of estimating the effect of different variables over countries' choices regarding IP protection standards. This work estimates determinants of a changing scenario on IP protection, taking into account differences among countries over time. To do so, it relies on a variable that reflects the willingness of countries to commit internationally to protecting IP. This willingness is measured by actual decisions to become part of IP protection treaties. The number of treaties being adhered to by one country at any point in time can be used as a measure of their interest in having IP protection standards and therefore signals the extent and depth of their domestic IP protection system at that point in time.<sup>17</sup> Since treaties form a unique set identical for any country, adherence to these treaties becomes a comparable benchmark.

This is so assuming countries are willing to make international commitments when: i) domestic legislation accommodates such commitments or would do so in the near future and ii) countries believe it is a beneficial endeavour, to some extent, to do so. This assumption makes sense on a rational decision-making framework. If there is no relationship between the willingness of countries to make international commitments and their interest or ex-ante expected capability of complying with them, it presupposes either an irrational strategy on the part of countries<sup>18</sup> or unforeseen difficulties in achieving desired goals.

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<sup>17</sup> A similar method of counting investment projects is used to measure the extent of Foreign Direct Investment response to IP protection standards in Nicholson (2007).

<sup>18</sup> In such a case, countries would prefer to behave in bad faith in the long term against other countries by untruthfully committing to something they knowingly will not comply with, as opposed to not adhering to the treaty. If a country is uninterested in IP standards and/or is not able or willing to establish IP standards through its law and yet, systematically adheres to IP protection treaties, it reflects a strategy that would



The assumption that the number of treaties being adhered to reflects the differences of countries' interest in IP standards, is not affected by the fact that a treaty on IP standards usually accommodates different IP protection systems among its members. Members of particular treaties can have differences among their domestic standards of IP protection which are acceptable and consistent under treaty principles. Therefore, countries with similar memberships may differ regarding domestic IP protection standards, but this difference is probably smaller than the one they have relative to countries having different treaty membership levels.

Decisions framing the number of treaties a country adheres to at one time, would be rational if countries made a cost-benefit analysis before deciding to become part of those treaties.<sup>19</sup> The first consideration made by a rational country concerning a treaty subject to its adherence, is the content of the treaty and the country's intrinsic opinion about it. Secondly, the country would consider the level of acceptance of those principles shown by other countries. It would do so, because the ultimate aim of treaties is to create a network of commitments of rights and obligations among countries in different fields. Consequently one would expect that, other things being equal, the benefits of a treaty increase with its network size (measured at any moment in time by the number of members of a treaty).

A different aspect of the treaty to consider before deciding to become a member is the relative age/novelty of the treaty subject to adhesion. An old treaty has the benefit of being well-known and proven by others. Also, old treaties run the risk of becoming obsolete after a while and replaced by others. The definite effect of a treaty's age is theoretically unclear and therefore, ultimately, an empirical issue.

The relationship existing between the relative wealth of a country and the interest in IP protection standards is a key one which needs to be clarified empirically. Countries may change their preferences towards IP protection standards depending on their wealth. This possibility would imply that countries would show little interest in IP standards while they are at the poor end of wealth distribution. First, this relationship would make sense for poor countries because low IP protection standards would facilitate and reduce the cost for the import of technology and innovative products if they are produced by foreign (richer) countries. Second, even if the latter does not apply, poverty would tend to drive the country's agenda in the international arena to other more urgent fields (nutrition, health, housing, etc.).

The model estimated is the following:

$$Q_{kt} = F \left( I_{PPP_{kt}}, S_{Q_{kt}}, A_{Q_{kt}}, \underline{Q}_{kt-1}, \underline{S}_{Q_{kt}}, \underline{A}_{Q_{kt}}, I_{PPP_{kt}}^2, A_{Q_{kt}}^2, S_{Q_{kt}}^2, I_{PPP_{kt}} S_{Q_{kt}}, I_{PPP_{kt}} A_{Q_{kt}}, t, D_d, T_l \right)$$

$Q_{kt}$  : N° of Treaties adhered to by country  $k$  in year  $t$ ,

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make sense only if it always pays off 'to cheat' relative to the alternative option of not becoming part of the treaty. But as treaty membership is a voluntary act, and countries are engaged with each other in a long-term 'repeated game' framework, it is hard to find the rationality or payoffs for such behaviour.

<sup>19</sup> Interested countries would usually have been active beforehand determining the content of the treaty on the drafting negotiation process.

$Ippp_{kt}$	:	Income per capita-purchasing-power-parity-adjusted (PPP) of country $k$ in year $t$ ,
$S_{Qtk}$	:	Size of the network of the Q Treaties adhered to by country $k$ in year $t$ ,
$A_{Qtk}$	:	Age (sum of ages) of the Q Treaties adhered to by country $k$ in year $t$ since they were first adhered to by any other country,
$Q_{kt-1}$	:	Quantity of Treaties not adhered to by country $k$ in year $t-1$ ,
$S_{Qtk}$	:	Size of the network of available Treaties <b>not</b> adhered to by country $k$ by year $t$ ,
$A_{Qtk}$	:	Age (sum of ages) of available Treaties <b>not</b> adhered to by country $k$ by year $t$ ,
$Ippp^2_{kt}$	:	Square of Income per capita-purchasing-power-parity-adjusted (PPP) of country $k$ in year $t$ ,
$S^2_{Qtk}$	:	Square of the size of the network of available Treaties <b>not</b> adhered to by country $k$ by year $t$ ,
$A^2_{Qtk}$	:	Square of the Age (sum of ages) of available Treaties <b>not</b> adhered to by country $k$ by year $t$ ,
$IpppS_{Qtk}$	:	Interactive variable of per capita GDP ( $Ippp$ ) with network size of treaties outside the scope of country $k$ in year $t$ ( $S_{Qtk}$ ), relative to the complete set of available treaties in $t$ ( $S_t$ ), (i.e. $\underline{S}_{kt} = S_{Qtk} / S_t$ ),
$IpppA_{Qtk}$	:	Interactive variable of per capita GDP ( $Ippp$ ) and age of treaties outside the scope of country $k$ in year $t$ ( $A_{Qtk}$ ), relative to complete set of available treaties in $t$ ( $A_t$ ), (i.e. $\underline{A}_{kt} = A_{Qtk} / A_t$ ),
$t$	:	year $t$ ,
$T_l$	:	Dummies for Treaty-1's IP categories ( $l = CR, ReR, PMD, DS$ ),
$D_d$	:	Dummies for decades ( $d = \text{pre-1910, 1920, 1930, 1940, 1950, 1960, 1970, 1980, 1990, 2000}$ )

Variables ( $A_{Qtk}$ ,  $S_{Qtk}$ ) reflect the attributes (age and network size) of the treaties being adhered to by one country at one point in time.

Variables concerning the set of treaties available at one moment in time, not yet adhered to by a country ( $Q_{tk}$ ,  $A_{Qtk}$ ,  $S_{Qtk}$ ,  $A^2_{Qtk}$ ,  $S^2_{Qtk}$ ) help to reflect overall closeness of countries to international IP protection. Illustration N°3 shows possible negative relations between the numbers of treaties a country adheres to at one point in time, with the number of treaties and their features (age, network size) it rejects or postpones adhering to at that time. A negative relationship would imply that the more distant a country stays from the international accords on standards, the less likely it would be for that country to reduce the gap in this field. By the same token, countries up to date on international standards would be very likely to engage strongly in new international commitments. Linear relationships would imply that  $A^2_{Qtk}$ ,  $S^2_{Qtk}$  are not significant, while curves imply the opposite.<sup>20</sup>

Per capita GDP used for estimation, corresponds to the historical series produced by Angus Maddison.<sup>21</sup> This series was preferred to others in attention to the time span

<sup>20</sup> A positive relationship would imply that countries staying away from international treaties would be more likely to reduce the gap with up to date countries on the state of the art on IP standards. This is a contradictory state in the long term.

<sup>21</sup> Taken from <http://www.ggd.net/maddison/>, version updated in October 2008.

covered in his work combined with the number of countries contained in the series.<sup>22</sup> Table N°6 shows a brief description of the series. The number of countries with GDP per capita data increases with time, and significantly from the 1950s. The countries including per capita GDP for the first half of the 20<sup>th</sup> century were the countries with higher income levels compared to those entering the sample since the 1950s. The sample of countries gets closer to the universe of countries committing internationally on IP protection as time progresses, although a few of the smallest countries are excluded entirely from the series (mostly from Polynesia). Many of them have not become member of any of the IP protection Treaties under study.

**TABLE N°6 DESCRIPTION OF MADDISON'S DATA**

Period	N° Countries	GDP per capita PPP	
		Average	Median
1880-1889	24,6	2116,0	2101,1
1890-1899	26,7	2229,5	2282,5
1900-1909	32,0	2382,7	2310,7
1910-1919	37,7	2444,0	2265,7
1920-1929	46,1	2535,2	2076,3
1930-1939	51,2	2655,2	2094,1
<b>1940-1949</b>	<b>47,7</b>	<b>3144,0</b>	<b>2322,2</b>
<b>1950-1959</b>	<b>141,0</b>	<b>2772,0</b>	<b>1431,6</b>
1960-1969	141,0	3548,1	1767,0
1970-1979	142,5	4708,3	2597,4
1980-1989	141,0	5079,3	3063,3
1990-1999	165,0	5635,1	3486,0
2000-2006	165,0	6959,9	3916,4

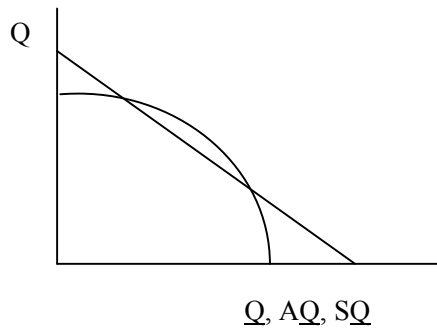
The square of Ippp, is aimed at evaluating whether there is a linear or a non linear relationship between per capita GDP and IP protection standards. In particular, to determine if wealthier countries have an increasing preference towards IP protection standards at an increasing or decreasing rate of wealth levels.

Interactive variables of income and the attributes of treaties (network size and age of the treaty) are aimed at finding out whether wealthier countries are more likely to have been closer to IP protection than poorer countries. The variable increases with GDP per capita and relative to the distance a country shows to IP protection standards. By construction, the variable takes positive values for countries every time, regardless of whether a country adheres to an IP treaty at any one time or not.

### ILLUSTRATION N°3

<sup>22</sup> IMF data covers only the 1980-2008 periods. World Bank data goes back only to the 1960s. The Pennsylvania series goes back to 1950, while Maddison presents data on per capita GDP back to the 1880s for many countries.

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### 3.3 ESTIMATE RESULTS

Panel estimations are obtained by relying on several econometric modelling techniques (random effects models through General Least Squares (GLS) and Maximum Likelihood (ML) procedures, fixed effect model and ordered probit regression). The count nature of the dependent variable (number of treaties being adhered to by one country in one year) makes it advisable to consider estimation using an ordered-probit regression. Additionally, regressions are run using data for the 1884-2007 (Table N°7) and 1950-2007 (Table N°8) periods to account for the attrition in data regarding GDP per capita before 1950, as explained in Table N°6.

In general terms, results using different time spans produce estimates for the parameters of similar attributes within each modelling technique, in terms of their sign and significance. Within each time span, criterion estimates across modelling techniques are also of a similar nature in terms of sign and significance. Parameter estimates are almost identical for both random effect models within each time-span-data-set. The 1950-2007 estimations lower the significance of one variable in particular, regardless of the modelling technique. Similarly, the ordered probit regression estimates produce few non significant parameter values which appeared significant using other econometric techniques.

The parameters for the GDP per capita variable appear positive and significant for the linear and negative and significant for the square variable. This implies that the wealthier the countries are, the greater the interest in protecting IP internationally, and as wealth increases, countries exhibit a decreasing interest for protecting IP through international treaties. This result is consistent with the empirical literature reviewed earlier that finds that IP protection standards are linked to economic development of countries.

The relative age of treaties matters in different dimensions. On the one hand, a significant positive  $A_{Qtk}$  parameter indicates that countries positively value age in a treaty in their decision to join it; the more time has passed since it was first adhered to by other countries, the greater the chances of adhering to it. On the other hand the significant negative parameters for the  $A_{Qtk}/A_{Qtk}$  variable reveal that the newer the treaties from the available treaties' pool are, the more likely it is for countries to adhere to those treaties.

The opposite stands out from the relative network or size of a treaty,  $S_{Qtk}$ . A significant negative parameter reflects that the bigger the network size of treaties being adhered to at one time, the smaller the number of treaties a country is willing to adhere to at that time. Countries appear to trade-off the quantum of treaties with the number of members such treaties have at the time. At the same time, a significant positive parameter for variable  $S_{Qtk}/S_{Qtk}$  indicates that from a pool of treaties subject to being adhered to by a country, the bigger the network of those adhered to, the bigger the likelihood of becoming member of such treaties.

TABLE N°7 ESTIMATED RESULTS FOR THE 1884-2007 PERIOD

Variable	Random-effects Regressions			Maximum Likelihood-ML-			Fixed-effects (within) regression			Ordered-Probit		
	Gen. Least Squares -GLS-			Maximum Likelihood-ML-								
	Std.			Std.			Std.			Std.		
	Coef.	Err.	P>z	Coef.	Err.	P>z	Coef.	Err.	P>z	Coef.	Err.	P>z
Year t	0,00242	0,00069	0,000**	0,00242	0,00079	0,002**	0,00248	0,00089	0,005**	0,05097	0,00910	0,000**
I <sub>ppp</sub>	0,00001	0,00000	0,000**	0,00001	0,00000	0,000**	0,00001	0,00000	0,000**	0,00009	0,00002	0,000**
D <sub>1910</sub>	0,00514	0,06419	0,936	0,00514	0,07806	0,947	0,02006	0,06415	0,755	1,14556	0,89645	0,201
D <sub>1920</sub>	0,00155	0,05330	0,977	0,00155	0,06696	0,982	0,01457	0,05449	0,789	1,19636	0,79835	0,134
D <sub>1930</sub>	0,01304	0,04942	0,792	0,01304	0,05966	0,827	0,02381	0,05107	0,641	1,49174	0,68484	0,029**
D <sub>1940</sub>	-0,02517	0,04291	0,557	-0,02517	0,05250	0,632	-0,01802	0,04461	0,686	0,66008	0,61166	0,281
D <sub>1950</sub>	-0,03171	0,03826	0,407	-0,03171	0,04474	0,478	-0,02823	0,04014	0,482	0,37170	0,51135	0,467
D <sub>1960</sub>	-0,03223	0,03436	0,348	-0,03223	0,03776	0,393	-0,03191	0,03630	0,379	0,23139	0,41938	0,581
D <sub>1970</sub>	-0,04343	0,03174	0,171	-0,04343	0,03182	0,172	-0,04977	0,03322	0,134	0,19611	0,33141	0,554
D <sub>1980</sub>	-0,01495	0,03066	0,626	-0,01495	0,02861	0,601	-0,03164	0,03144	0,314	0,29974	0,26972	0,266
D <sub>1990</sub>	-0,03247	0,02265	0,152	-0,03247	0,02082	0,119	-0,04183	0,02316	0,071*	0,07372	0,18878	0,696
D <sub>2000</sub>	-0,05860	0,01725	0,001**	-0,05860	0,01347	0,000**	-0,06598	0,01771	0,000**	-0,26122	0,10979	0,017**
Q <sub>t-1</sub>	0,00359	0,00151	0,017**	0,00359	0,00153	0,018**	0,00536	0,00169	0,002**	0,01965	0,01371	0,152
A <sub>Qtk</sub>	0,01676	0,00090	0,000**	0,01676	0,00023	0,000**	0,01660	0,00090	0,000**	0,03558	0,00150	0,000**
S <sub>Qtk</sub>	-0,00081	0,00047	0,082*	-0,00081	0,00013	0,000**	-0,00090	0,00044	0,042**	-0,00323	0,00069	0,000**
A <sub>Qtk</sub> /A <sub>Qtk</sub>	-2,52506	0,47662	0,000**	-2,52506	0,09793	0,000**	-2,54632	0,48119	0,000**	-3,41819	0,50088	0,000**
S <sub>Qtk</sub> /S <sub>Qtk</sub>	3,75342	0,40894	0,000**	3,75342	0,08237	0,000**	3,77888	0,41485	0,000**	7,46176	0,49299	0,000**
A <sub>Qtk</sub>	-0,00017	0,00007	0,013*	-0,00017	0,00006	0,007**	-0,00016	0,00009	0,074*	-0,00148	0,00055	0,007**
S <sub>Qtk</sub>	-0,00023	0,00009	0,011**	-0,00023	0,00008	0,003**	-0,00033	0,00010	0,002**	-0,00267	0,00071	0,000**
T <sub>CR</sub>	0,13439	0,05082	0,008**	0,13439	0,01579	0,000**	0,13986	0,04989	0,005**	1,07391	0,08348	0,000**
T <sub>ReR</sub>	0,29844	0,04159	0,000**	0,29844	0,01638	0,000**	0,29949	0,04140	0,000**	0,58795	0,08364	0,000**
T <sub>PMD</sub>	0,48552	0,02879	0,000**	0,48552	0,01192	0,000**	0,48367	0,02822	0,000**	1,60020	0,06626	0,000**
T <sub>M</sub>	0,27334	0,03510	0,000**	0,27334	0,01194	0,000**	0,27786	0,03449	0,000**	1,30393	0,06459	0,000**
S <sub>Qtk2</sub>	0,00000	0,00000	0,000**	0,00000	0,00000	0,000**	0,00000	0,00000	0,044*	-0,00000	0,00000	0,076*
A <sub>Qtk2</sub>	0,00000	0,00000	0,000**	0,00000	0,00000	0,000**	-0,00000	0,00000	0,010**	0,00000	0,00000	0,197
A <sub>Qtk</sub> S <sub>Qtk</sub>	-0,00000	0,00000	0,001**	-0,00000	0,00000	0,000**	-0,00000	0,00000	0,110	0,00000	0,00000	0,143
I <sub>ppp2</sub>	-0,00000	0,00000	0,002**	-0,00000	0,00000	0,000**	-0,00000	0,00000	0,020**	-0,00000	0,00000	0,000**
I <sub>ppp</sub> A <sub>Qtk</sub>	-0,00000	0,00000	0,000**	-0,00000	0,00000	0,000**	-0,00000	0,00000	0,000**	-0,00000	0,00000	0,001**
I <sub>ppp</sub> S <sub>Qtk</sub>	0,00000	0,00000	0,001**	0,00000	0,00000	0,000**	0,00000	0,00000	0,001**	0,00000	0,00000	0,016**
C <sub>0</sub>	-4,64236	1,36263	0,001**	-4,64236	1,56298	0,002**	-4,77034	1,73072	0,006**			
Log likelihood							-67,349					
R <sup>2</sup>							R <sup>2</sup>			Pseudo R <sup>2</sup> 0,6656		
within							within			0,8731		
between							between			0,9959		
overall							overall			0,8834		
Random effects u <sub>i</sub> ~ Gaussian							Random effects u <sub>i</sub> ~ Gaussian					
Wald chi2(27)	7877,71						LR chi2(28)			22624,1		
							F(29,10330)			255,01		
							LR chi2(29)			7598,86		

Pr. > chi<sup>2</sup>      0                      Pr. > chi<sup>2</sup>      0                      Pr. > F              0                      Pr. > chi<sup>2</sup>      0

\*\* Significant at 5%  
\* Significant at 10%

Parameters of variables  $A_{Qtk}$ ,  $S_{Qtk}$  appear as significantly negative, while  $A_{Qtk}^2$ ,  $S_{Qtk}^2$  appear as positive parameters and  $A_{Qtk}S_{Qtk}$  marginally negative.<sup>23</sup> These results reflect that countries that have shown little interest in IP protection (high values for  $A_Q$  and  $S_Q$  and the interactive variable of the latter), other things equal, would be less likely to engage in international IP protection through membership of IP treaties. Also, the further away from IP protection treaties countries have been, the further away they are likely to remain in the future. These results reflect some path dependence of countries on the likelihood of committing to protecting IP internationally.

**TABLE N°8 ESTIMATED RESULTS FOR THE 1950-2007 PERIOD**

Variable	Random-effects Regressions						Fixed-effects			Ordered-Probit		
	Gen. Least Squares			Maximum Likelihood-ML-			(within) regression					
	-GLS-			Std.			Std.			Std.		
	Coef.	Err.	P>z	Coef.	Err.	P>z	Coef.	Err.	P>z	Coef.	Err.	P>z
Year t	0,00272	0,00099	0,006**	0,00272	0,00116	0,019**	0,00720	0,00240	0,003**	0,03991	0,01007	0,000**
I <sub>ppp</sub>	0,00001	0,00000	0,000**	0,00001	0,00000	0,000**	0,00001	0,00000	0,017**	0,00009	0,00002	0,000**
D <sub>1950</sub>	0,01364	0,04880	0,780	0,01364	0,06137	0,824	0,02927	0,04802	0,542	-0,10604	0,59208	0,858
D <sub>1960</sub>	0,00437	0,04364	0,920	0,00437	0,05184	0,933	0,01764	0,04310	0,682	-0,06011	0,45575	0,895
D <sub>1970</sub>	-0,00676	0,03785	0,858	-0,00676	0,04170	0,871	-0,00595	0,03797	0,875	-0,00711	0,35562	0,984
D <sub>1980</sub>	-0,00031	0,03461	0,993	-0,00031	0,03493	0,993	-0,02479	0,03482	0,477	0,10412	0,28252	0,712
D <sub>1990</sub>	-0,02153	0,02487	0,387	-0,02153	0,02472	0,384	-0,02584	0,02626	0,325	-0,02773	0,19635	0,888
D <sub>2000</sub>	-0,05732	0,01781	0,001**	-0,05732	0,01517	0,000**	-0,05741	0,01939	0,003**	-0,29055	0,11188	0,009**
Q <sub>t-1</sub>	0,00330	0,00172	0,055*	0,00330	0,00180	0,067*	0,00681	0,00185	0,000**	0,01975	0,01443	0,171
A <sub>Qtk</sub>	0,02090	0,00136	0,000**	0,02090	0,00042	0,000**	0,02063	0,00134	0,000**	0,04303	0,00242	0,000**
S <sub>Qtk</sub>	-0,00340	0,00051	0,000**	-0,00340	0,00018	0,000**	-0,00348	0,00049	0,000**	-0,00617	0,00092	0,000**
A <sub>Qtk</sub> /A <sub>Qtk</sub>	-11,05207	1,67850	0,000**	-11,05207	0,50023	0,000**	-11,01935	1,63970	0,000**	-15,95179	2,52598	0,000**
S <sub>Qtk</sub> /S <sub>Qtk</sub>	6,38328	0,50543	0,000**	6,38328	0,13786	0,000**	6,44504	0,50518	0,000**	10,86444	0,81044	0,000**
A <sub>Qtk</sub>	-0,00026	0,00007	0,000**	-0,00026	0,00007	0,000**	-0,00065	0,00018	0,000**	-0,00180	0,00056	0,001**
S <sub>Qtk</sub>	-0,00008	0,00009	0,395	-0,00008	0,00009	0,379	0,00007	0,00013	0,592	-0,00195	0,00071	0,006**
T <sub>CR</sub>	0,10140	0,05204	0,051*	0,10140	0,01924	0,000**	0,10412	0,05127	0,042**	0,87894	0,09426	0,000**
T <sub>ReR</sub>	0,28475	0,04079	0,000**	0,28475	0,01784	0,000**	0,28554	0,04071	0,000**	0,63993	0,08509	0,000**
T <sub>PMD</sub>	0,50203	0,02787	0,000**	0,50203	0,01292	0,000**	0,49844	0,02732	0,000**	1,59884	0,06758	0,000**
T <sub>M</sub>	0,28441	0,03345	0,000**	0,28441	0,01354	0,000**	0,28418	0,03285	0,000**	1,16392	0,06707	0,000**
S <sub>Qtk</sub> <sup>2</sup>	0,00000	0,00000	0,016**	0,00000	0,00000	0,003**	0,00000	0,00000	0,211	-0,00000	0,00000	0,134
A <sub>Qtk</sub> <sup>2</sup>	0,00000	0,00000	0,000**	0,00000	0,00000	0,000**	0,00000	0,00000	0,000**	0,00000	0,00000	0,066**
A <sub>Qtk</sub> S <sub>Qtk</sub>	-0,00000	0,00000	0,009**	-0,00000	0,00000	0,001**	-0,00000	0,00000	0,035**	0,00000	0,00000	0,351
I <sub>ppp</sub> <sup>2</sup>	-0,00000	0,00000	0,002**	-0,00000	0,00000	0,000**	-0,00000	0,00000	0,117	-0,00000	0,00000	0,001**
I <sub>ppp</sub> A <sub>Qtk</sub>	-0,00000	0,00000	0,000**	-0,00000	0,00000	0,000**	-0,00000	0,00000	0,000**	-0,00000	0,00000	0,001**
I <sub>ppp</sub> S <sub>Qtk</sub>	0,00000	0,00000	0,001**	0,00000	0,00000	0,000**	0,00000	0,00000	0,000**	0,00000	0,00000	0,019**
C <sub>0</sub>	-5,24117	1,97229	0,008**	-5,24117	2,30288	0,023**	-13,88980	4,64195	0,003**			
Likelihood	Likelihood -532,96									Likelihood -1743,8		
R <sup>2</sup>							R <sup>2</sup>			Pseudo R <sup>2</sup> 0,653		
	within		0,8828				within		0,8831			
	between		0,9952				between		0,9903			
	overall		0,8932				overall		0,8916			
	Random effects u <sub>i</sub> ~ Gaussian						Random effects u <sub>i</sub> ~ Gaussian					
Wald	7975,85				LR		18221,1		F(25,7961)		314,81	
					LR		6571,51					

<sup>23</sup> The ordered probit regression estimate for  $S_Q^2$  appears negative.

chi2(23)	chi2(24)	chi2(25)
Pr. > chi <sup>2</sup> 0	Pr. > chi <sup>2</sup> 0	Pr. > F 0
Pr. > chi <sup>2</sup> 0		Pr. > chi <sup>2</sup> 0

\*\* Significant at 5%  
\* Significant at 10%

The estimates of parameters for the interactive variables of GDP per capita and measures of disconnection to international IP standards (age and network size of treaties not yet adhered to by a country) have positive mixed signs and are statistically significant. Results show that the likelihood of adhering to IP protection treaties increases with income and increases the less connected the country has been to the international IP protection system. Moreover, results indicate that for richer countries, the effects of older treaties that they are not members of tend to reduce the treaties they are prepare to adhere to, whereas the bigger the network of countries adhering to treaties that richer countries have not adhered to, the more they tend to be willing to adhere to more treaties. These effects suggest that richer countries are more likely to sign younger treaties, disregarding network externalities. In this sense, richer countries appear to behave as agenda setters or leaders in the international arena regarding IP protection, while poorer countries appear to behave as followers.

#### 4 CONCLUDING REMARKS

This essay has gathered some information regarding the participation of countries in international IP protection since the late 19<sup>th</sup> century. It has shown that membership of treaties has been increasing in time, particularly since the 1960s, and largely since the 1990s. There have been waves, however, during the 20<sup>th</sup> century, responsive to international economic critical periods, such as the world wars and the 1930s depression. A significant degree of engagement by developing countries from the Americas in international IP protection stands out in early stages of the formation of the international IP protection system. This fact is intriguing; it appears to be a manifestation of the 19<sup>th</sup> century US ‘Monroe doctrine as a means of exerting geopolitical and economic influence over emerging countries from the Americas.

The statistical analysis indicates that countries have pursued international IP protection increasingly, the richer they are. This result is consistent with recent literature that finds that the extent of IP protection is linked to the level of economic development. The analysis in this essay also shows that countries perform a path dependent trajectory in international IP protection; the more engaged a country has been in IP protection internationally, the more likely it is for that country to continue undertaking such commitments internationally. The more disconnected a country has been from IP protection, the more difficult it appears to be for that country to show interest in undertaking IP protection standards. This path dependence appears to be directly linked to the level of economic development of countries. The poorer a country is, the less likely it is to engage in international IP protection, and because of this, the less likely it is to establish international IP protection in the future.

Other than the significant importance of the degree of economic development in explaining the extent of international IP protection of countries, countries positively consider the network attributes of the treaties they are considering adhering to. The bigger the network of member countries of a treaty, the more likely non-member countries will be to consider becoming a member of such Treaty. Similarly, the age of

treaties also appears to be an attribute taken into account when countries consider whether to adhere to a treaty or not.

Also, the estimates suggest that richer countries behave as agenda setters, with poorer countries behaving as agenda takers. Richer countries appear to be first in undertaking commitments through treaties, relatively disregarding the network effect of the treaties they adhere to.

Considering that the statistical results show that the extent of international IP protection of countries has positively depended on their level of economic development, it is paradoxical that this evolutionary equilibrium path will no longer be allowed to take place since the enactment of the TRIPs agreement. This fact will negatively affect developing countries that will not be able to enjoy a degree of flexibility to adapt their institutions as much as developed countries were able to in the past. In this sense, this study provides some evidence to support claims of opportunistic behaviour on the part of developed countries; they have been ‘kicking away the ladder’ (Chang (2002)) of economic development of developing countries, behaving as ‘bad Samaritans’ Chang (2008) in this regard.

## 5 APPENDIX

**TABLE N°9 TYPES OF COMMITMENTS MADE BY COUNTRIES IN RELATION TO IP**

TREATY	TREATIES						Total
	Status/Type of Commitment Made by Countries on IP Protection						
	Accession	In Force	Notification of succession	Ratification	Signature		
Banjul Protocol	0	8	0	0	0	<b>8</b>	
Berne Convention (assumed as 1886 Act)	0	52	0	0	0	<b>52</b>	
Berne Convention - Brussels Act (1948)	0	6	0	0	0	<b>6</b>	
Berne Convention - Paris Act (1971)	0	158	0	0	1	<b>159</b>	
Berne Convention- Rome Act (1928)	0	6	0	0	0	<b>6</b>	
Berne Convention - Stockholm Act (1967)	0	3	0	0	0	<b>3</b>	
Brussels Convention	0	33	0	0	10	<b>43</b>	
Budapest Treaty	0	70	0	0	2	<b>72</b>	
Convention on the Protection of Trademarks- Bs Aires 1910	0	14	0	0	6	<b>20</b>	
Convention On Literary And Artistic Copyright-Bs Aires 1910	0	18	0	0	3	<b>21</b>	
Convention On Literary And Artistic Copyrights -Mexico 1902	0	0	0	0	17	<b>17</b>	
Treaty on Patents of Invention, Industrial drawings, Models and Trade-marks - Mexico 1902	0	8	0	1	8	<b>17</b>	
Convention on Patents of Invention, drawings, and Industrial Models and Literary and Artistic Property –Rio de Janeiro 1906	0	9	0	0	10	<b>19</b>	
Universal Convention On	45	0	19	36	0	<b>100</b>	



Copyright 1952						
Inter-American Convention On The Rights Of The Author In Literary, Scientific And Artistic Works - Washington 1946	0	16	0	0	5	<b>21</b>
Convention Bangui	0	16	0	0	0	<b>16</b>
Convention Benelux - Designs	0	3	0	0	0	<b>3</b>
Convention Benelux -Trademarks	0	3	0	0	0	<b>3</b>
Convention Benelux – Intellectual Property	0	3	0	0	0	<b>3</b>
Convention for the Protection of Commercial, Industrial, and Agricultural Trade Marks And Commercial Names -Stgo 1923	0	2	0	0	16	<b>18</b>
Eurasian Patent Convention	0	9	0	0	2	<b>11</b>
European patent Convention	0	34	0	0	0	<b>34</b>
Film Register Treaty	0	13	0	0	9	<b>22</b>
Hague Agreement - Hague Act (1960)	0	32	0	0	1	<b>33</b>
Hague Agreement - London Act (1934)	0	13	0	0	0	<b>13</b>
Hague Agreement	0	12	0	0	0	<b>12</b>
Hague Agreement Complementary Act of Stockholm (1967)	0	33	0	0	2	<b>35</b>
Hague Agreement- Geneva Act (1999)	0	30	0	0	8	<b>38</b>
Inter-American Convention for Trademarks (1929)	0	10	0	0	9	<b>19</b>
Libreville Agreement	0	0	0	0	12	<b>12</b>
Lisbon Agreement -assumed eldest version-	0	4	0	0	0	<b>4</b>
Lisbon Agreement Stockholm Act (1967)	0	26	0	0	2	<b>28</b>
Locarno Agreement	0	49	0	0	8	<b>57</b>
Lusaka Agreement	0	0	0	0	15	<b>15</b>
Madrid Agreement (I. Source, Additional Act of Stockholm - 1967)	0	24	0	0	4	<b>28</b>
Madrid Agreement (I. Source Lisbon Act (1958))	0	25	0	0	3	<b>28</b>
Madrid Agreement (I. Source London Act (1934))	0	7	0	0	0	<b>7</b>
Madrid Agreement (I. Source The Hague Act (1925))	0	3	0	0	0	<b>3</b>
Madrid Agreement (Indications of Source)	0	24	0	0	0	<b>24</b>
Madrid Agreement (Marks)	0	56	0	0	0	<b>56</b>
Madrid Protocol	0	77	0	0	2	<b>79</b>
Nairobi Treaty	0	46	0	0	18	<b>64</b>
Nice Agreement	0	83	0	0	0	<b>83</b>
Paris Convention	0	71	0	0	0	<b>71</b>
Paris Convention- Lisbon Act (1958)	0	7	0	0	0	<b>7</b>
Paris Convention- London Act (1934)	0	3	0	0	0	<b>3</b>
Paris Convention- Stockholm Act (1967)	0	171	0	0	0	<b>171</b>

Paris Convention -The Hague Act (1925)	0	1	0	0	0	1
PCT- Patent Cooperation Treaty	0	139	0	0	3	142
Phonograms Convention	0	76	0	0	3	79
PLT – Patent Law Treaty	0	18	0	0	42	60
Protocol on the Inter-American Registration of Trade Marks- Washington 1929	0	6	0	0	10	16
Revision Of The Convention Of Buenos Aires On The protection Of Literary And Artistic Copyright -La Habana 1928	0	5	0	1	14	20
Rome Convention	0	86	0	0	3	89
Singapore Treaty –Trademarks-	1	0	0	7	47	55
Strasbourg Agreement	0	58	0	0	4	62
The Harare Protocol	0	15	0	0	0	15
TLT –Trademark Law Treaty	2	42	0	2	25	71
TRIPS Agreement	0	153	0	0	0	153
UPOV 1961 Act	0	5	0	0	0	5
UPOV 1972 Act	0	3	0	0	0	3
UPOV 1978 Act	0	35	0	0	0	35
UPOV 1991 Act	0	41	0	0	0	41
Vienna Agreement	0	25	0	0	12	37
Washington Treaty	2	0	0	1	7	10
WCT - WIPO Copyright Treaty	0	67	0	0	26	93
WIPO Convention	0	184	0	0	0	184
WPPT- WIPO Performers and Phonograms Treaty	0	66	0	0	26	92
<b>Total</b>	<b>50</b>	<b>2.315</b>	<b>19</b>	<b>48</b>	<b>395</b>	<b>2.827</b>

**TABLE N°10 TREATY MEMBERSHIP IN DIFFERENT PERIODS**

	Period				Total
	1880-1930	1931-1960	1961-1990	1991-2008	
Banjul Protocol	0	0	0	8	8
Berne Convention (assumed as 1886 Act)	30	7	15	0	52
Berne Convention - Brussels Act (1948)	0	1	5	0	6
Berne Convention - Paris Act (1971)	0	0	62	97	159
Berne Convention- Rome Act (1928)	0	4	2	0	6
Berne Convention - Stockholm Act (1967)	0	0	3	0	3
Brussels Convention	0	0	22	21	43
Budapest Treaty	0	0	24	48	72
Convention on the Protection of Trademarks- Bs Aires 1910	20	0	0	0	20
Convention On Literary And Artistic Copyright-Bs Aires 1910	17	3	1	0	21
Convention On Literary And Artistic Copyrights -Mexico 1902	17	0	0	0	17
Treaty on Patents of Invention, Industrial drawings, Models and Trade-marks - Mexico 1902	17	0	0	0	17
Convention on Patents of Invention, drawings, and Industrial Models and Literary and Artistic Property –Rio de Janeiro 1906	19	0	0	0	19
Universal Convention On Copyright 1952	0	34	47	19	100
Inter-American Convention On The Rights Of The Author In Literary, Scientific And Artistic Works - Washington 1946	0	19	2	0	21
Convention Bangui	0	0	16	0	16
Convention Benelux - Designs	0	0	3	0	3
Convention Benelux -Trademarks	0	0	3	0	3
Convention Benelux – Intellectual Property	0	0	0	3	3

Convention for the Protection of Commercial, Industrial, and Agricultural Trade Marks And Commercial Names -Stgo 1923	18	0	0	0	<b>18</b>
Eurasian Patent Convention	0	0	0	11	<b>11</b>
European patent Convention	0	0	14	20	<b>34</b>
Film Register Treaty	0	0	9	13	<b>22</b>
Hague Agreement - Hague Act (1960)	0	1	12	20	<b>33</b>
Hague Agreement - London Act (1934)	0	9	3	1	<b>13</b>
Hague Agreement	6	1	3	2	<b>12</b>
Hague Agreement Complementary Act of Stockholm (1967)	0	0	15	20	<b>35</b>
Hague Agreement- Geneva Act (1999)	0	0	0	38	<b>38</b>
Inter-American Convention for Trademarks (1929)	12	7	0	0	<b>19</b>
Libreville Agreement	0	0	12	0	<b>12</b>
Lisbon Agreement -assumed eldest version-	0	0	4	0	<b>4</b>
Lisbon Agreement Stockholm Act (1967)	0	2	15	11	<b>28</b>
Locarno Agreement	0	0	22	35	<b>57</b>
Lusaka Agreement	0	0	15	0	<b>15</b>
Madrid Agreement (I. Source, Additional Act of Stockholm - 1967)	0	0	21	7	<b>28</b>
Madrid Agreement (I. Source Lisbon Act (1958))	0	3	18	7	<b>28</b>
Madrid Agreement (I. Source London Act (1934))	0	7	0	0	<b>7</b>
Madrid Agreement (I. Source The Hague Act (1925))	2	1	0	0	<b>3</b>
Madrid Agreement (Indications of Source)	14	10	0	0	<b>24</b>
Madrid Agreement (Marks)	13	5	8	30	<b>56</b>
Madrid Protocol	0	0	2	77	<b>79</b>
Nairobi Treaty	0	0	50	14	<b>64</b>
Nice Agreement	0	0	31	52	<b>83</b>
Paris Convention	33	12	23	3	<b>71</b>
Paris Convention- Lisbon Act (1958)	0	0	7	0	<b>7</b>
Paris Convention- London Act (1934)	0	3	0	0	<b>3</b>
Paris Convention- Stockholm Act (1967)	1	0	91	79	<b>171</b>
Paris Convention -The Hague Act (1925)	0	1	0	0	<b>1</b>
PCT- Patent Cooperation Treaty	0	0	48	94	<b>142</b>
Phonograms Convention	0	0	45	34	<b>79</b>
PLT – Patent Law Treaty	0	0	0	60	<b>60</b>
Protocol on the Inter-American Registration of Trade Marks- Washington 1929	11	5	0	0	<b>16</b>
Revision Of The Convention Of Buenos Aires On The protection Of Literary And Artistic Copyright -La Habana 1928	15	5	0	0	<b>20</b>
Rome Convention	0	0	37	52	<b>89</b>
Singapore Treaty –Trademarks-	0	0	0	55	<b>55</b>
Strasbourg Agreement	0	0	29	33	<b>62</b>
The Harare Protocol	0	0	15	0	<b>15</b>
TLT –Trademark Law Treaty	0	0	0	71	<b>71</b>
TRIPS Agreement	0	0	0	153	<b>153</b>
UPOV 1961 Act	0	0	5	0	<b>5</b>
UPOV 1972 Act	0	0	3	0	<b>3</b>
UPOV 1978 Act	0	0	13	22	<b>35</b>
UPOV 1991 Act	0	0	11	30	<b>41</b>
Vienna Agreement	0	0	17	20	<b>37</b>
Washington Treaty	0	0	8	2	<b>10</b>
WCT - WIPO Copyright Treaty	0	0	0	93	<b>93</b>
WIPO Convention	0	0	123	61	<b>184</b>
WPPT- WIPO Performers and Phonograms Treaty	0	0	0	92	<b>92</b>
<b>Total</b>	<b>245</b>	<b>140</b>	<b>934</b>	<b>1.508</b>	<b>2.827</b>

**TABLE N°11 TIMING OF MEMBERSHIP OF IP PROTECTION TREATIES BY COUNTRIES**

	1880-1900	1901-1910	1911-1920	1921-1930	1931-1940	1941-1950	1951-1960	1961-1970	1971-1980	1981-1990	1991-2000	2001-2008	Total
1 Afghanistan	0	0	0	0	0	0	0	0	0	0	0	1	1
2 African Intellectual Property Organization (OAPI)	0	0	0	0	0	0	0	0	0	0	0	1	1
3 Albania	0	0	0	0	0	0	0	0	0	0	7	12	19
4 Algeria	0	0	0	0	0	0	0	2	9	1	3	1	16
5 Andorra	0	0	0	0	0	0	1	0	0	0	1	3	5
6 Angola	0	0	0	0	0	0	0	0	0	1	1	2	4
7 Antigua and Barbuda	0	0	0	0	0	0	0	0	0	0	6	0	6
8 Argentina	0	4	0	2	0	1	2	3	4	1	5	4	26
9 Armenia	0	0	0	0	0	0	0	0	0	0	8	11	19
10 Australia	0	0	0	2	0	0	0	2	5	3	4	4	20
11 Austria	0	2	1	0	0	0	1	1	6	6	9	2	28
12 Azerbaijan	0	0	0	0	0	0	0	0	0	0	7	10	17
13 Bahamas	0	0	0	0	0	0	0	0	6	0	0	0	6
14 Bahrain	0	0	0	0	0	0	0	0	0	0	4	9	13
15 Bangladesh	0	0	0	0	0	0	1	0	0	1	3	0	5
16 Barbados	0	0	0	0	0	0	0	0	1	8	1	0	10
17 Belarus	0	0	0	0	0	0	0	1	0	0	11	7	19
18 Belgium	3	0	0	0	0	0	1	3	9	3	6	6	31
19 Belize	0	0	0	0	0	0	0	0	0	1	5	2	8
20 Benin	0	0	0	0	0	0	0	3	5	5	1	2	16
21 Bhutan	0	0	0	0	0	0	0	0	0	0	4	1	5
22 Bolivia	0	3	1	3	0	1	0	0	0	2	8	0	18
23 Bosnia and Herzegovina	0	0	0	0	0	0	0	0	0	0	9	4	13
24 Botswana	0	0	0	0	0	0	0	0	1	1	5	5	12
25 Brazil	2	0	3	6	0	1	1	1	8	1	4	0	27
26 Brunei Darussalam	0	0	0	0	0	0	0	0	0	0	2	1	3
27 Bulgaria	0	0	0	2	0	0	0	2	6	3	6	10	29
28 Burkina Faso	0	0	0	0	0	0	0	3	5	3	3	4	18
29 Burundi	0	0	0	0	0	0	0	0	2	0	2	0	4
30 Cambodia	0	0	0	0	0	0	1	1	0	0	2	1	5
31 Cameroon	0	0	0	0	0	0	0	3	6	0	1	1	11
32 Canada	0	0	0	2	0	0	0	3	1	2	8	1	17
33 Cape Verde	0	0	0	0	0	0	0	0	0	0	3	1	4
34 Central African Republic	0	0	0	0	0	0	0	2	5	0	1	1	9
35 Chad	0	0	0	0	0	0	0	4	4	0	1	0	9
36 Chile	0	4	0	3	0	0	3	0	4	1	4	2	21
37 China	0	0	0	0	0	0	0	0	1	3	11	4	19
38 Chinese Taipei	0	0	0	0	0	0	0	0	0	0	0	1	1
39 Colombia	0	4	0	2	3	0	0	0	4	2	5	3	23
40 Comoros	0	0	0	0	0	0	0	0	0	0	0	4	4
41 Congo	0	0	0	0	0	0	0	4	6	1	1	1	13
42 Costa Rica	0	3	2	3	1	1	1	0	2	2	5	5	25
43 Côte d'Ivoire	0	0	0	0	0	0	0	3	5	1	8	0	17

44	Croatia	0	0	0	0	0	0	0	0	0	14	13	27	
45	Cuba	0	5	1	4	0	0	2	2	4	2	11	0	31
46	Cyprus	0	0	0	0	0	0	0	2	1	5	5	4	17
47	Czech Republic	0	0	0	0	0	0	0	0	0	1	22	4	27
48	Democratic People's Republic of Korea	0	0	0	0	0	0	0	0	4	1	6	5	16
49	Democratic Republic of the Congo	0	0	0	0	0	0	0	1	4	0	1	1	7
50	Denmark	1	1	0	0	0	0	0	7	6	2	5	3	25
51	Djibouti	0	0	0	0	0	0	0	0	0	0	1	3	4
52	Dominica	0	0	0	0	0	0	0	0	0	0	7	0	7
53	Dominican Republic	1	3	2	3	1	1	2	0	0	2	4	6	25
54	Ecuador	0	3	2	3	1	1	1	1	1	1	4	3	21
55	Egypt	0	0	0	0	0	0	4	0	7	4	2	3	20
56	El Salvador	0	5	0	2	0	1	0	0	4	1	3	5	21
57	Equatorial Guinea	0	0	0	0	0	0	0	0	1	1	3	1	6
58	Eritrea	0	0	0	0	0	0	0	0	0	0	1	0	1
59	Estonia	0	0	0	0	0	0	0	0	0	0	16	6	22
60	Ethiopia	0	0	0	0	0	0	0	0	0	1	1	0	2
61	European Community	0	0	0	0	0	0	0	0	0	0	4	3	7
62	European Patent Organisation	0	0	0	0	0	0	0	0	0	0	0	1	1
63	Fiji	0	0	0	0	0	0	0	0	6	0	1	0	7
64	Finland	0	0	0	2	0	0	0	3	5	3	8	2	23
65	France	4	0	0	1	1	0	1	2	15	3	6	3	36
66	Gabon	0	0	0	0	0	0	0	3	6	0	2	4	15
67	Gambia	0	0	0	0	0	0	0	0	2	1	5	0	8
68	Georgia	0	0	0	0	0	0	0	0	0	0	7	9	16
69	Germany	1	1	0	3	1	0	1	8	8	3	5	2	33
70	Ghana	0	0	0	0	0	0	0	1	2	3	5	4	15
71	Greece	0	0	1	1	0	0	0	1	3	4	16	0	26
72	Grenada	0	0	0	0	0	0	0	0	0	0	5	0	5
73	Guatemala	0	3	2	2	1	0	1	1	2	3	3	4	22
74	Guinea-Bissau	0	0	0	0	0	0	0	0	1	2	3	0	6
75	Guinea	0	0	0	0	0	0	0	0	3	3	7	3	16
76	Guyana	0	0	0	0	0	0	0	0	0	0	4	0	4
77	Haiti	0	2	2	2	2	0	3	1	0	2	3	1	18
78	Holy See	0	0	0	0	1	0	3	4	5	0	0	0	13
79	Honduras	0	3	2	3	1	1	0	0	0	4	2	6	22
80	Hong Kong	0	0	0	0	0	0	0	0	0	0	1	0	1
81	Hungary	0	2	0	1	1	0	0	7	7	5	5	6	34
82	Iceland	0	0	0	0	0	1	1	1	0	2	8	4	17
83	India	0	0	0	1	0	0	1	1	2	4	3	1	13
84	Indonesia	0	0	0	0	0	2	0	0	2	1	4	2	11
85	Iran (Islamic Republic of)	0	0	0	0	0	0	1	2	2	0	1	6	12
86	Iraq	0	0	0	0	0	0	0	0	2	0	0	0	2
87	Ireland	0	0	0	3	0	0	1	5	3	1	7	3	23

88 Israel	0	0	0	0	0	3	1	5	6	1	7	2	<b>25</b>
89 Italy	3	0	0	0	0	0	2	3	13	6	7	1	<b>35</b>
90 Jamaica	0	0	0	0	0	0	0	0	1	1	6	4	<b>12</b>
91 Japan	2	0	0	0	0	0	2	1	8	4	3	2	<b>22</b>
92 Jordan	0	0	0	0	0	0	0	0	2	0	2	6	<b>10</b>
93 Kazakhstan	0	0	0	0	0	0	0	0	0	0	7	8	<b>15</b>
94 Kenya	0	0	0	0	0	0	0	3	5	2	10	1	<b>21</b>
95 Kuwait	0	0	0	0	0	0	0	0	0	0	2	0	<b>2</b>
96 Kyrgyzstan	0	0	0	0	0	0	0	0	0	0	12	13	<b>25</b>
97 Lao People's Democratic Republic	0	0	0	0	0	0	1	0	0	0	2	1	<b>4</b>
98 Latvia	0	0	0	0	0	0	0	0	0	0	14	8	<b>22</b>
99 Lebanon	0	0	0	2	0	3	1	1	2	2	2	1	<b>14</b>
100 Lesotho	0	0	0	0	0	0	0	0	1	5	5	0	<b>11</b>
101 Liberia	0	0	0	0	0	0	1	0	0	3	4	1	<b>9</b>
102 Libyan Arab Jamahiriya	0	0	0	0	0	0	0	0	3	0	0	1	<b>4</b>
103 Liechtenstei n	0	0	0	0	5	0	2	2	8	2	6	3	<b>28</b>
104 Lithuania	0	0	0	0	0	0	0	0	0	0	10	7	<b>17</b>
105 Luxembour g	1	0	0	2	0	0	1	3	12	2	6	2	<b>29</b>
106 Macao	0	0	0	0	0	0	0	0	0	0	1	0	<b>1</b>
107 Madagascar	0	0	0	0	0	0	0	3	2	2	2	2	<b>11</b>
108 Malawi	0	0	0	0	0	0	0	4	2	1	7	0	<b>14</b>
109 Malaysia	0	0	0	0	0	0	0	0	0	3	1	3	<b>7</b>
110 Maldives	0	0	0	0	0	0	0	0	0	0	1	1	<b>2</b>
111 Mali	0	0	0	0	0	0	0	1	2	3	1	5	<b>12</b>
112 Malta	0	0	0	0	0	0	0	3	3	0	2	2	<b>10</b>
113 Mauritania	0	0	0	0	0	0	0	2	5	1	1	1	<b>10</b>
114 Mauritius	0	0	0	0	0	0	0	1	2	1	1	0	<b>5</b>
115 Mexico	0	5	0	3	0	1	1	4	5	1	5	8	<b>33</b>
116 Micronesia (Federated States of)	0	0	0	0	0	0	0	0	0	0	0	1	<b>1</b>
117 Monaco	1	0	0	0	0	0	5	3	9	2	8	0	<b>28</b>
118 Mongolia	0	0	0	0	0	0	0	0	1	2	5	8	<b>16</b>
119 Montenegro	0	0	0	0	0	0	0	0	0	0	0	22	<b>22</b>
120 Morocco	0	0	4	1	0	1	0	3	3	2	7	1	<b>22</b>
121 Mozambiqu e	0	0	0	0	0	0	0	0	1	1	6	1	<b>9</b>
122 Myanmar	0	0	0	0	0	0	0	0	0	0	1	1	<b>2</b>
123 Namibia	0	0	0	0	0	0	0	0	1	2	6	5	<b>14</b>
124 Nepal	0	0	0	0	0	0	0	0	0	0	1	3	<b>4</b>
125 Netherlands	2	0	1	0	0	0	0	6	8	3	8	2	<b>30</b>
126 New Zealand	0	0	0	0	2	3	1	1	1	4	2	1	<b>15</b>
127 Nicaragua	0	3	2	2	2	1	0	1	1	1	5	6	<b>24</b>
128 Niger	0	0	0	0	0	0	0	4	4	1	2	2	<b>13</b>
129 Nigeria	0	0	0	0	0	0	0	2	0	0	6	2	<b>10</b>
130 Norway	2	0	0	0	0	0	0	2	8	1	4	1	<b>18</b>
131 Oman	0	0	0	0	0	0	0	0	0	1	4	8	<b>13</b>
132 Pakistan	0	0	0	0	0	1	1	1	1	0	1	1	<b>6</b>
133 Panama	0	0	3	2	2	0	0	1	1	4	4	2	<b>19</b>
134 Papua New Guinea	0	0	0	0	0	0	0	0	0	0	3	2	<b>5</b>

135 Paraguay	0	3	2	3	0	2	0	2	1	1	4	2	<b>20</b>
136 Peru	0	3	1	3	1	1	0	1	1	5	3	3	<b>22</b>
137 Philippines	0	0	0	0	0	0	1	1	3	3	2	3	<b>13</b>
138 Poland	0	0	2	1	0	0	1	1	3	4	12	3	<b>27</b>
139 Portugal	3	0	1	0	0	1	2	4	5	1	11	2	<b>30</b>
140 Qatar	0	0	0	0	0	0	0	0	1	1	3	2	<b>7</b>
141 Republic of Korea	0	0	0	0	0	0	0	0	2	4	4	4	<b>14</b>
142 Republic of Moldova	0	0	0	0	0	0	0	0	0	0	20	10	<b>30</b>
143 Romania	0	0	2	1	0	0	1	2	1	0	13	8	<b>28</b>
144 Russian Federation	0	0	0	0	0	0	0	3	6	3	6	2	<b>20</b>
145 Rwanda	0	0	0	0	0	0	0	0	0	4	1	1	<b>6</b>
146 Saint Kitts and Nevis	0	0	0	0	0	0	0	0	0	0	4	2	<b>6</b>
147 Saint Lucia	0	0	0	0	0	0	0	0	0	0	7	5	<b>12</b>
148 Saint Vincent and the Grenadines	0	0	0	0	0	0	0	0	0	1	4	1	<b>6</b>
149 Samoa	0	0	0	0	0	0	0	0	0	0	1	1	<b>2</b>
150 San Marino	0	0	0	0	0	0	3	0	1	1	5	2	<b>12</b>
151 Sao Tome and Principe	0	0	0	0	0	0	0	0	0	0	3	3	<b>6</b>
152 Saudi Arabia	0	0	0	0	0	0	0	0	0	1	1	3	<b>5</b>
153 Senegal	0	0	0	0	0	0	0	5	6	5	3	3	<b>22</b>
154 Serbia	0	0	0	0	0	0	0	0	2	2	18	5	<b>27</b>
155 Seychelles	0	0	0	0	0	0	0	0	0	0	1	2	<b>3</b>
156 Sierra Leone	0	0	0	0	0	0	0	0	1	2	5	0	<b>8</b>
157 Singapore	0	0	0	0	0	0	0	0	0	1	7	6	<b>14</b>
158 Slovakia	0	0	0	0	0	0	0	0	0	0	20	4	<b>24</b>
159 Slovenia	0	0	0	0	0	0	0	0	0	0	17	7	<b>24</b>
160 Solomon Islands	0	0	0	0	0	0	0	0	0	0	1	0	<b>1</b>
161 Somalia	0	0	0	0	0	0	0	0	1	1	0	0	<b>2</b>
162 South Africa	0	0	0	1	0	1	1	0	5	0	6	0	<b>14</b>
163 Spain	4	0	0	1	0	0	2	2	9	4	7	2	<b>31</b>
164 Sri Lanka	0	0	0	0	0	0	3	0	2	3	2	1	<b>11</b>
165 Sudan	0	0	0	0	0	0	0	0	2	4	2	0	<b>8</b>
166 Suriname	0	0	0	0	0	0	0	0	6	2	1	0	<b>9</b>
167 Swaziland	0	0	0	0	0	0	0	0	1	2	9	0	<b>12</b>
168 Sweden	1	1	0	0	1	0	0	7	8	2	5	1	<b>26</b>
169 Switzerland	4	0	0	1	1	0	1	5	7	3	7	5	<b>34</b>
170 Syrian Arab Republic	0	0	0	2	0	1	0	0	0	1	0	9	<b>13</b>
171 Tajikistan	0	0	0	0	0	0	0	0	0	0	12	1	<b>13</b>
172 Thailand	0	0	0	0	1	0	0	0	0	1	2	1	<b>5</b>
173 Former Yugoslav Republic of Macedonia	0	0	0	0	0	0	0	0	0	0	13	8	<b>21</b>
174 Togo	0	0	0	0	0	0	0	1	6	1	3	7	<b>18</b>
175 Tonga	0	0	0	0	0	0	0	0	0	0	0	4	<b>4</b>
176 Trinidad and Tobago	0	0	0	0	0	0	0	1	0	6	10	2	<b>19</b>
177 Tunisia	3	0	0	1	0	2	0	4	4	2	1	3	<b>20</b>

178 Turkey	0	0	0	2	0	0	2	0	2	0	11	7	24
179 Turkmenistan	0	0	0	0	0	0	0	0	0	0	5	4	9
180 Uganda	0	0	0	0	0	0	0	1	3	2	4	0	10
181 Ukraine	0	0	0	0	0	0	0	1	0	0	14	9	24
182 United Arab Emirates	0	0	0	0	0	0	0	0	1	0	3	4	8
183 United Kingdom	3	0	0	0	0	0	1	8	5	1	5	3	26
184 United Republic of Tanzania	0	0	0	0	0	0	0	1	1	3	5	0	10
185 United States of America	1	2	2	2	2	1	1	2	5	5	3	4	30
186 Uruguay	0	3	2	3	0	1	0	2	4	2	9	2	28
187 Uzbekistan	0	0	0	0	0	0	0	0	0	0	4	9	13
188 Venezuela	0	2	0	3	0	1	0	1	0	3	5	0	15
189 Viet Nam	0	0	0	0	0	2	0	0	2	0	1	7	12
190 Yemen	0	0	0	0	0	0	0	0	1	0	0	2	3
191 Zambia	0	0	0	0	0	0	0	2	3	3	3	2	13
192 Zimbabwe	0	0	0	0	0	0	0	0	3	4	3	0	10
<b>Total</b>	<b>42</b>	<b>70</b>	<b>41</b>	<b>92</b>	<b>31</b>	<b>37</b>	<b>72</b>	<b>211</b>	<b>448</b>	<b>275</b>	<b>927</b>	<b>581</b>	<b>2.827</b>

**TABLE N°12 COUNTRIES RANKED BY THE NUMBER OF IP PROTECTION TREATIES THEY ARE MEMBERS OF**

Country	Country Ranking by N° of Treaty Memberships		Share of Decade new Membership of Treaties	
	Aggregate	Average over Decades	Average over Decades	Average over Decades
<b>1</b> United States of America	<b>10</b>	<b>1</b>	<b>2,8%</b>	
<b>2</b> Brazil	21	2	2,6%	
<b>3</b> Dominican Republic	30	3	2,6%	
<b>4</b> Liechtenstein	16	4	2,4%	
<b>5</b> Nicaragua	35	5	2,3%	
<b>6</b> Costa Rica	30	6	2,2%	
<b>7</b> Haiti	68	7	2,2%	
<b>8</b> Switzerland	3	8	2,2%	
<b>9</b> France	1	9	2,2%	
<b>10</b> Ecuador	52	10	2,2%	
<b>11</b> Honduras	43	11	2,1%	
<b>12</b> Cuba	7	12	2,0%	
<b>13</b> Colombia	40	13	2,0%	
<b>14</b> Paraguay	57	14	2,0%	
<b>15</b> Portugal	10	15	2,0%	
<b>16</b> Mexico	5	16	2,0%	
<b>17</b> Peru	43	17	1,9%	
<b>18</b> Germany	5	18	1,9%	
<b>19</b> Uruguay	16	19	1,9%	
<b>20</b> Guatemala	43	20	1,9%	
<b>21</b> Spain	7	21	1,9%	
<b>22</b> Panama	62	22	1,9%	
<b>23</b> New Zealand	85	23	1,8%	
<b>24</b> Tunisia	57	24	1,8%	
<b>25</b> Italy	2	25	1,7%	
<b>26</b> Morocco	43	26	1,7%	



27	Argentina	26	27	1,7%
28	Hungary	3	28	1,5%
29	Chile	52	29	1,5%
30	United Kingdom	26	30	1,5%
31	Belgium	7	31	1,5%
32	Israel	30	32	1,5%
33	El Salvador	52	33	1,4%
34	Monaco	16	34	1,4%
35	Bolivia	68	35	1,4%
36	Netherlands	10	36	1,4%
37	Lebanon	90	37	1,4%
38	Sweden	26	38	1,4%
39	Austria	16	39	1,2%
40	Japan	43	40	1,2%
41	Luxembourg	14	41	1,2%
42	Poland	21	42	1,2%
43	Romania	16	43	1,1%
44	Venezuela	85	44	1,1%
45	Holy See	96	45	1,0%
46	Denmark	30	46	1,0%
47	Ireland	40	47	0,9%
48	Egypt	57	48	0,9%
49	Norway	68	49	0,8%
50	Bulgaria	14	50	0,8%
51	Greece	26	51	0,8%
52	Turkey	35	52	0,8%
53	Viet Nam	108	53	0,7%
54	Finland	40	54	0,7%
55	Indonesia	116	55	0,7%
56	South Africa	90	56	0,7%
57	Iceland	73	57	0,7%
58	Syrian Arab Republic	96	58	0,7%
59	Australia	57	59	0,6%
60	Senegal	43	60	0,6%
61	Sri Lanka	116	61	0,6%
62	San Marino	108	62	0,6%
63	Canada	73	63	0,6%
64	India	96	64	0,5%
65	Pakistan	146	65	0,5%
66	Russian Federation	57	66	0,5%
67	Benin	79	67	0,5%
68	Burkina Faso	68	68	0,5%
69	Kenya	52	69	0,5%
70	Philippines	96	70	0,4%
71	Cyprus	73	71	0,4%
72	Trinidad and Tobago	62	72	0,4%
73	Thailand	155	73	0,4%
74	Serbia	21	74	0,4%
75	Iran (Islamic Republic of)	108	75	0,4%
76	Republic of Moldova	10	76	0,4%
77	Congo	96	77	0,4%
78	Algeria	79	78	0,4%
79	Montenegro	43	79	0,4%
80	Côte d'Ivoire	73	80	0,4%

81	Croatia	21	81	0,4%
82	Niger	96	82	0,4%
83	Togo	68	83	0,4%
84	Gabon	85	84	0,4%
85	Ukraine	35	85	0,4%
86	Kyrgyzstan	30	86	0,4%
87	Malawi	90	87	0,3%
88	Czech Republic	21	88	0,3%
89	Zambia	96	89	0,3%
90	Barbados	121	90	0,3%
91	Ghana	85	91	0,3%
92	China	62	92	0,3%
93	Madagascar	116	93	0,3%
94	Liberia	129	94	0,3%
95	Cameroon	116	95	0,3%
96	Slovenia	35	96	0,3%
97	Guinea	79	97	0,3%
98	Republic of Korea	90	98	0,3%
99	Mali	108	99	0,3%
100	Chad	129	100	0,3%
101	Latvia	43	101	0,3%
102	Mongolia	79	102	0,3%
103	Belarus	62	103	0,3%
104	Slovakia	35	104	0,3%
105	Albania	62	105	0,3%
106	The former Yugoslav Republic of Macedonia Democratic People's Republic of Korea	52	106	0,3%
107	Estonia	43	107	0,3%
108	Armenia	62	108	0,3%
109	Mauritania	121	109	0,3%
110	Malta	121	110	0,3%
111	Lesotho	116	111	0,3%
112	Azerbaijan	73	112	0,3%
113	Namibia	90	113	0,2%
114	Zimbabwe	121	114	0,2%
115	Central African Republic	129	115	0,2%
116	United Republic of Tanzania	121	116	0,2%
117	Georgia	79	117	0,2%
118	Uganda	121	118	0,2%
119	Lithuania	73	119	0,2%
120	Cambodia	155	120	0,2%
121	Suriname	129	121	0,2%
122	Oman	96	122	0,2%
123	Singapore	90	123	0,2%
124	Kazakhstan	85	124	0,2%
125	Sudan	135	125	0,2%
126	Bangladesh	155	126	0,2%
127	Andorra	155	127	0,2%
128	Botswana	108	128	0,2%
129	Bahrain	96	129	0,2%
130	Uzbekistan	96	130	0,2%
131	Nigeria	121	131	0,2%
132	Jamaica	108	132	0,2%
133			133	0,2%

134	Swaziland	108	134	0,2%
135	Lao People's Democratic Republic	164	135	0,2%
136	Rwanda	146	136	0,2%
137	Malaysia	140	137	0,2%
138	Jordan	121	138	0,2%
139	Bosnia and Herzegovina Democratic Republic of the	96	139	0,2%
140	Congo	140	140	0,2%
141	Saint Lucia	108	141	0,2%
142	Sierra Leone	135	142	0,1%
143	Tajikistan	96	143	0,1%
144	Fiji	140	144	0,1%
145	Mozambique	129	145	0,1%
146	Mauritius	155	146	0,1%
147	Gambia	135	147	0,1%
148	Bahamas	146	148	0,1%
149	Guinea-Bissau	146	149	0,1%
150	Qatar	140	150	0,1%
151	Belize	135	151	0,1%
152	United Arab Emirates	135	152	0,1%
153	Turkmenistan	129	153	0,1%
154	Equatorial Guinea	146	154	0,1%
155	Saudi Arabia	155	155	0,1%
156	Saint Vincent and the Grenadines	146	156	0,1%
157	European Community	140	157	0,1%
158	Libyan Arab Jamahiriya	164	158	0,1%
159	Sao Tome and Principe	146	159	0,1%
160	Angola	164	160	0,1%
161	Saint Kitts and Nevis	146	161	0,1%
162	Dominica	140	162	0,1%
163	Comoros	164	163	0,1%
164	Tonga	164	163	0,1%
165	Papua New Guinea	155	165	0,1%
166	Burundi	164	166	0,1%
167	Antigua and Barbuda	146	167	0,1%
168	Djibouti	164	168	0,1%
169	Nepal	164	168	0,1%
170	Bhutan	155	170	0,1%
171	Somalia	177	171	0,1%
172	Yemen	174	172	0,1%
173	Grenada	155	173	0,1%
174	Cape Verde	164	174	0,0%
175	Ethiopia	177	175	0,0%
176	Seychelles	174	176	0,0%
177	Iraq	177	177	0,0%
178	Guyana	164	178	0,0%
179	Brunei Darussalam	174	179	0,0%
180	Maldives	177	180	0,0%
181	Myanmar	177	180	0,0%
182	Samoa	177	180	0,0%
183	Kuwait	177	183	0,0%
184	Afghanistan	184	184	0,0%
185	African Intellectual Property Organization (OAPI)	184	184	0,0%

186	Chinese Taipei	184	184	0,0%
187	European Patent Organisation Micronesia (Federated States of)	184	184	0,0%
188	Eritrea	184	189	0,0%
189	Hong Kong	184	189	0,0%
190	Macao	184	189	0,0%
191	Solomon Islands	184	189	0,0%

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