

Exploiting Treaty Ambiguity: Public Health Exceptions in the WTO TRIPS Agreement

Web Appendix

Abstract

This web appendix contains supplementary materials and is organized as follows. Section 1 gives detailed instructions on how to obtain the sample from the licensed dataset for replication studies. Section 2 presents the main results, using different measurements, control variables and empirical models. Lastly, the titles of national IP laws on compulsory licensing are fully listed for future reference.

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1 Data Generating Processes

1.1 Data Sources

WTO member states' legislation of public health exceptions in TRIPS, compulsory licensing, is identified from [the WIPO Database on Flexibilities in the Intellectual Property System](#). From the database, we make use of a meta-data indicating whether each country's national IP law provides compulsory licensing for specific purposes to construct our dependent variables.

To construct our independent variables, we identified the degree of public access to medicines on HIV/AIDS as well as physiological conditions and demographic information with regard to HIV/AIDS, such as the number of people living with HIV/AIDS as well as others used in the robustness check, from [the Global Health Observatory \(GHO\)](#), run by the WHO. Other proxies for the exercise of power by multinational pharmaceuticals are measured using a licensed database, [the Cortellis Competitive Intelligence™](#), managed and licensed by Clarivate™.

For control variables, political regime types come from the Polity IV project ([Marshall, Jaggers, and Gurr, 2002](#)), the Boix-Miller-Rosato (BMR) dichotomous coding of democracy ([Boix, Miller, and Rosato, 2013](#)), and the Democracy and Dictatorship (DD) index ([Cheibub, Gandhi, and Vreeland, 2010](#)). Population, GDP per capita, and the annual expenditures in health came from [the Global Health Expenditure Database](#), managed by the World Health Organization (WHO). Trade import flows (v4.0) ([Barbieri, Keshk, and Pollins, 2009](#)) and inter-state militarized disputes (v5.0) ([Jones, Bremer, and Singer, 1996](#)) are available in the Correlates of War (COW) database. We found FDI inflows as a percentage of GDP and R&D expenditures from the World Development Indicators (WDI) ([Bank, 1993](#)), developed by the World Bank. We also identified other medical treatments and social mitigation campaigns for HIV/AIDS from [the Creditor Reporting System \(CRS\)](#), administered by the OECD.

1.2 Active Patents and Patent Classification of HIV/AIDS Drugs

The number of patented drugs for HIV/AIDS active in each country and their patent classification are coded by using a privately-owned database, [the Cortellis Competitive Intelligence™](#), which is licensed one of the authors. The samples used for empirical analysis are not allowed to be redistributed for the intellectual property (IP) restrictions. Therefore, we offer detailed instructions on how other researchers can obtain the samples for replication purposes.

After logging-in from the main webpage, one can navigate to “View All > Firms > Download > Document Type (Results : Microsoft Excel) > Document Format (Customized Results : Add All) > Download Files” to check information about pharmaceuticals around the globe between 1980 and 2022. For detailed information on patented medicines for HIV/AIDS therapies, one can navigate to “Advanced Search > Patents > Select > Indications (Immune disorder - Immune deficiency - Combined immune deficiency - Acquired immune deficiency syndrome - AIDS related complex)”. As of February 2022, there were 239,680 drug companies observable under the database. As of May 2022, there were also 363 patented medicines classified as therapeutics for HIV/AIDS.

Then, combining the firm-level and product-level datasets, one can identify nationalities of pharmaceutical companies who own these drugs by matching “Company Name” with “Owner Companies” from each dataset. Also, from the product-level dataset, one could also check the term of patent protection for each of these HIV/AIDS medicines, using the columns “First Priority Year” and “Earliest Expiry Date”. Also, using the variable “IPC Codes”, one could also calculate the number of unique international patent classification (IPC) codes assigned to each of these patented drugs.

2 Robustness Check

2.1 Control Variables

Table 1: Using the Democracy-Dictatorship (DD) index

	Legislation of Compulsory Licensing (Public)	
	(1)	(2)
HIV therapies (all, % of HIV infection) × Democracy (DD)	−0.030*** (0.009)	
HIV therapies (all, % of population) × Democracy (DD)		−0.623*** (0.216)
HIV therapies (all, % of HIV infection)	0.021*** (0.007)	
HIV therapies (all, % of population)		0.244*** (0.076)
Democracy (BMR)	1.141*** (0.222)	1.001*** (0.200)
Population (log)	0.405** (0.164)	0.416** (0.163)
GDP per capita (log)	0.075 (0.341)	0.095 (0.337)
Health expenditure (log)	0.202 (0.284)	0.215 (0.274)
Trade (imports, log)	−0.350* (0.181)	−0.343* (0.181)
FDI (net inflow, % of GDP)	−0.021 (0.016)	−0.024 (0.016)
R&D expenditure (log)	−0.653 (0.403)	−1.174*** (0.381)
HIV/AIDS medical control	0.0001 (0.003)	−0.002 (0.003)
HIV/AIDS social mitigation	−0.213 (0.169)	−0.377* (0.214)
People living with HIV (in millions)	−0.188 (0.171)	−0.107 (0.162)
Observations	477	477

Note: Robust standard errors are shown in parentheses. *p<0.1; **p<0.05; ***p<0.01
The DD index is downloaded from [Cheibub, Gandhi, and Vreeland \(2010\)](#).

Table 2: Controlling for other political and demographic variables

	Legislation of Compulsory Licensing (Public)			
	(1)	(2)	(3)	(4)
HIV therapies (all, % of HIV infection)	−0.001***	−0.001***	−0.001***	−0.001***
× Democracy (polity)	(0.0004)	(0.0004)	(0.0004)	(0.0004)
HIV therapies (all, % of HIV infection)	0.011**	0.012***	0.012***	0.012***
	(0.005)	(0.004)	(0.004)	(0.004)
polity	0.062***	0.064***	0.064***	0.064***
	(0.014)	(0.014)	(0.014)	(0.014)
Population (log)	0.192*	0.173	0.178	0.174
	(0.117)	(0.115)	(0.115)	(0.115)
GDP per capita (log)	−0.574**	−0.577**	−0.593**	−0.580**
	(0.244)	(0.245)	(0.246)	(0.245)
Health expenditure (log)	0.464**	0.453**	0.450**	0.455**
	(0.199)	(0.198)	(0.199)	(0.199)
Trade (imports, log)	−0.038	−0.027	−0.040	−0.026
	(0.133)	(0.132)	(0.134)	(0.132)
FDI (net inflow, % of GDP)	−0.006	−0.006	−0.006	−0.006
	(0.009)	(0.009)	(0.009)	(0.009)
R&D expenditure (log)	−0.210	−0.238	−0.206	−0.219
	(0.273)	(0.290)	(0.274)	(0.273)
HIV/AIDS medical control	0.002	0.002	0.002	0.002
	(0.002)	(0.002)	(0.002)	(0.002)
HIV/AIDS social mitigation	−0.380***	−0.376***	−0.375**	−0.376***
	(0.142)	(0.143)	(0.146)	(0.143)
People living with HIV (in millions)	−0.207	−0.220	−0.206	−0.225
	(0.145)	(0.146)	(0.147)	(0.161)
Militarized Disputes	−0.058			
	(0.070)			
Voluntary licensing on HIV		0.002		
		(0.011)		
Adult Mortality			−0.001	
			(0.001)	
New infections of HIV (per 1000 uninfected)				0.002
				(0.065)
Observations	682	682	682	682

Note: Robust standard errors are shown in parentheses. *p<0.1; **p<0.05; ***p<0.01

Table 3: Controlling for the status and the TRIPS grace periods

	Legislation of Compulsory Licensing (Public)	
	(1)	(2)
HIV therapies (all, % of HIV infection)	−0.002***	
× Democracy (polity)	(0.0005)	
HIV therapies (all, % of population)		−0.023**
× Democracy (polity)	(0.012)	
HIV therapies (all, % of HIV infection)	0.018***	
	(0.005)	
HIV therapies (all, % of population)		0.073
		(0.099)
Democracy (polity)	0.154***	0.114***
	(0.018)	(0.014)
Population (log)	0.253**	0.188
	(0.126)	(0.119)
GDP per capita (log)	−0.452*	−0.378
	(0.268)	(0.261)
Health expenditure (log)	0.321	0.279
	(0.208)	(0.197)
Trade (imports, log)	−0.112	−0.051
	(0.143)	(0.138)
FDI (net inflow, % of GDP)	−0.005	−0.010
	(0.009)	(0.009)
R&D expenditure (log)	0.396	0.099
	(0.297)	(0.302)
HIV/AIDS medical control	0.003	0.002
	(0.002)	(0.002)
HIV/AIDS social mitigation	−0.395***	−0.320**
	(0.153)	(0.146)
People living with HIV (in millions)	−0.505***	−0.396**
	(0.157)	(0.157)
Factor (developing)	0.472**	0.574***
	(0.192)	(0.192)
Factor (least developed)	0.207	0.345
	(0.303)	(0.319)
Observations	682	683

Note: Robust standard errors are shown in parentheses. *p<0.1; **p<0.05; ***p<0.01
The development status of each country is downloaded from UNCTAD.

Table 4: Sub-sample analysis (developed vs. less developing countries)

	Legislation of Compulsory Licensing (Public)			
	(1)	(2)	(3)	(4)
HIV therapies (all, % of HIV infection) × Democracy (polity)	0.004 (0.011)	−0.003*** (0.001)		
HIV therapies (all, % of population) × Democracy (polity)			−0.095 (0.452)	−0.030** (0.013)
HIV therapies (all, % of HIV infection)	−0.066 (0.101)	0.021*** (0.006)		
HIV therapies (all, % of population)			0.623 (4.328)	0.079 (0.101)
Democracy (polity)	0.208 (0.189)	0.151*** (0.019)	0.290 (0.185)	0.109*** (0.015)
Population (log)	−0.224 (0.495)	0.088 (0.133)	−0.648 (0.461)	0.082 (0.126)
GDP per capita (log)	1.267 (0.850)	−0.953*** (0.318)	0.599 (0.818)	−0.705** (0.303)
Health expenditure (log)	−0.877 (0.717)	0.603** (0.254)	−0.656 (0.673)	0.521** (0.221)
Trade (imports, log)	0.131 (0.494)	0.134 (0.151)	0.329 (0.477)	0.113 (0.148)
FDI (net inflow, % of GDP)	−0.004 (0.015)	0.002 (0.015)	−0.006 (0.015)	−0.009 (0.015)
R&D expenditure (log)	−0.742 (0.638)	0.256 (0.389)	−0.856 (0.665)	−0.015 (0.400)
HIV/AIDS medical control	−0.026 (0.018)	0.003 (0.002)	−0.030 (0.025)	0.002 (0.003)
HIV/AIDS social mitigation	−0.205 (2.914)	−0.372** (0.150)	0.157 (3.215)	−0.261* (0.142)
People living with HIV (in millions)	10.814** (4.255)	−0.597*** (0.163)	15.968*** (4.918)	−0.472*** (0.161)
Observations	204	478	204	479

Note: Robust s.e. are shown in parentheses. *p<0.1; **p<0.05; ***p<0.01.

Odd(even)-numbered are the results with developed (less developing) countries.

The development status of each country is identified from UNCTAD.

Table 5: Sub-sample analysis (developed vs. developing democracies)

	Legislation of Compulsory Licensing (Public)	
	(1)	(2)
HIV therapies (all, % of population)	−0.200 (0.249)	−0.405*** (0.155)
Population (log)	−0.723 (0.461)	0.197 (0.154)
GDP per capita (log)	0.403 (0.787)	−0.965** (0.393)
Health expenditure (log)	−0.407 (0.599)	0.926*** (0.279)
Trade (imports, log)	0.440 (0.473)	−0.056 (0.186)
FDI (net inflow, % of GDP)	−0.011 (0.015)	0.002 (0.019)
R&D expenditure (log)	−1.056 (0.646)	−0.106 (0.518)
HIV/AIDS medical control	−0.033** (0.016)	0.005* (0.003)
HIV/AIDS social mitigation	0.889 (2.824)	−0.240 (0.225)
People living with HIV (in millions)	13.909*** (4.302)	−0.454** (0.185)
Observations	191	285

Note: Robust standard errors are shown in parentheses. *p<0.1; **p<0.05; ***p<0.01
Odd(even)-numbered are the results with developed (developing) democracies.
The development status of each country is downloaded from UNCTAD.
Democracies are selected, based on their polity IV score (≥ 0).

Table 6: Controlling for the rule of law: the 1st hypothesis

	Legislation of CL (Public Interests)			
	(1)	(2)	(3)	(4)
HIV therapies (all, % of HIV infection)	−0.016**	−0.030***	−0.015*	−0.018**
× Democracy (BMR)	(0.008)	(0.009)	(0.008)	(0.008)
HIV therapies (all, % of HIV infection)	0.019***	0.030***	0.022***	0.021***
	(0.007)	(0.008)	(0.007)	(0.007)
Democracy (BMR)	0.976***	0.429*	1.070***	0.978***
	(0.194)	(0.231)	(0.192)	(0.194)
Population (log)	0.149	0.160	0.082	0.189
	(0.130)	(0.129)	(0.132)	(0.135)
GDP per capita (log)	−0.556**	−0.537**	−0.461*	−0.513**
	(0.253)	(0.256)	(0.256)	(0.248)
Health expenditure (log)	0.236	0.091	0.133	0.225
	(0.222)	(0.217)	(0.225)	(0.221)
Trade (imports, log)	0.036	0.049	0.065	−0.024
	(0.141)	(0.139)	(0.143)	(0.145)
FDI (net inflow, % of GDP)	−0.008	−0.008	−0.006	−0.008
	(0.009)	(0.009)	(0.008)	(0.009)
R&D expenditure (log)	−0.659**	−0.438	−0.280	−0.322
	(0.305)	(0.270)	(0.288)	(0.266)
HIV/AIDS medical control	0.001	−0.0003	0.001	0.001
	(0.002)	(0.002)	(0.002)	(0.002)
HIV/AIDS social mitigation	−0.347**	−0.299**	−0.356**	−0.350**
	(0.144)	(0.141)	(0.147)	(0.144)
People living with HIV (in millions)	−0.227	−0.333**	−0.181	−0.197
	(0.152)	(0.156)	(0.151)	(0.148)
Rule of law	0.395***			
	(0.124)			
Voice and accountability		0.807***		
		(0.165)		
Government effectiveness			0.137	
			(0.143)	
Regulatory quality				0.357***
				(0.131)
Observations	583	583	583	583

Note:

*p<0.1; **p<0.05; ***p<0.01
Standard errors are shown in parentheses.

Table 7: Controlling for the differences in national legal systems: the 1st hypothesis

	Legislation of CL (Public Interests)	
	(1)	(2)
Access to HIV therapies (% of population, total)	−0.302***	−0.366***
× Democracy (BMR)	(0.112)	(0.109)
Access to HIV therapies (% of population, total)	0.186**	0.262***
	(0.091)	(0.087)
Democracy (BMR)	1.263***	1.235***
	(0.157)	(0.159)
Population (log)	0.106	0.198*
	(0.117)	(0.114)
GDP per capita (log)	−0.374	−0.094
	(0.257)	(0.238)
Health expenditure (log)	0.351	0.042
	(0.214)	(0.191)
Trade (imports, log)	−0.028	−0.012
	(0.133)	(0.132)
FDI (net inflow, % of GDP)	−0.008	−0.007
	(0.009)	(0.009)
R&D expenditure (log)	−0.424	−0.146
	(0.267)	(0.265)
HIV/AIDS medical control	0.001	−0.0004
	(0.002)	(0.003)
HIV/AIDS social mitigation	−0.350**	−0.258*
	(0.143)	(0.140)
People living with HIV (in millions)	−0.154	−0.159
	(0.135)	(0.143)
National legal system (common law)	−0.981***	
	(0.328)	
National legal system (mixed)	0.215	
	(0.174)	
National legal system (muslim)	1.626***	
	(0.382)	
Tranposition of int'l treaties (monist)		0.656***
		(0.112)
Observations	693	673

Note:

*p<0.1; **p<0.05; ***p<0.01
Standard errors are shown in parentheses.

Table 8: Controlling for the legislative constraints: the 1st hypothesis

	Legislation of CL (Public Interests)		
	(1)	(2)	(3)
Access to HIV therapies (% of population, total)	-0.337***	-0.349***	-0.321***
× Democracy (BMR)	(0.118)	(0.120)	(0.117)
Access to HIV therapies (% of population, total)	0.176*	0.170*	0.185**
	(0.091)	(0.092)	(0.092)
Democracy (BMR)	1.032***	1.019***	1.142***
	(0.171)	(0.175)	(0.153)
Population (log)	0.148	0.169	0.139
	(0.114)	(0.117)	(0.114)
GDP per capita (log)	-0.292	-0.273	-0.338
	(0.237)	(0.237)	(0.233)
Health expenditure (log)	0.220	0.222	0.237
	(0.187)	(0.186)	(0.185)
Trade (imports, log)	-0.020	-0.041	0.013
	(0.129)	(0.132)	(0.130)
FDI (net inflow, % of GDP)	-0.008	-0.008	-0.007
	(0.009)	(0.009)	(0.009)
R&D expenditure (log)	-0.416	-0.497*	-0.365
	(0.254)	(0.268)	(0.250)
HIV/AIDS medical control	0.001	0.001	0.0001
	(0.003)	(0.003)	(0.003)
HIV/AIDS social mitigation	-0.310**	-0.306**	-0.283**
	(0.142)	(0.141)	(0.140)
People living with HIV (in millions)	-0.180	-0.189	-0.159
	(0.140)	(0.142)	(0.138)
Number of veto players (POLCON III)	0.517		
	(0.345)		
Number of veto players (POLCON V)		0.409	
		(0.274)	
Number of chambers			-0.142
			(0.115)
Observations	693	693	693

Note:

*p<0.1; **p<0.05; ***p<0.01
Standard errors are shown in parentheses.

Table 9: Controlling for the rule of law: the 2nd hypothesis

	Legislation of CL (Non-working Patents)			
	(1)	(2)	(3)	(4)
Number of active patents for HIV	-0.289***	-0.290***	-0.265***	-0.289***
	(0.074)	(0.074)	(0.073)	(0.073)
Democracy (polity)	0.037***	0.025	0.044***	0.035***
	(0.012)	(0.022)	(0.012)	(0.013)
Population (log)	0.168	0.150	0.108	0.179
	(0.106)	(0.105)	(0.111)	(0.109)
GDP per capita (log)	0.524**	0.512**	0.606***	0.521**
	(0.233)	(0.234)	(0.230)	(0.232)
Health expenditure (log)	-0.488***	-0.507***	-0.549***	-0.484***
	(0.176)	(0.173)	(0.176)	(0.176)
Trade (imports, log)	-0.087	-0.065	-0.033	-0.099
	(0.123)	(0.124)	(0.129)	(0.125)
FDI (net inflow, % of GDP)	-0.007	-0.008	-0.006	-0.007
	(0.009)	(0.009)	(0.008)	(0.009)
R&D expenditure (log)	0.395	0.400	0.573**	0.425*
	(0.277)	(0.261)	(0.267)	(0.254)
HIV/AIDS medical control	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)
HIV/AIDS social mitigation	-0.016	-0.015	-0.007	-0.019
	(0.068)	(0.068)	(0.068)	(0.068)
People living with HIV (in millions)	0.007	0.004	0.015	0.012
	(0.112)	(0.112)	(0.112)	(0.111)
Rule of law	0.057			
	(0.114)			
Voice and accountability		0.132		
		(0.178)		
Government effectiveness			-0.162	
			(0.135)	
Regulatory quality				0.077
				(0.120)
Observations	612	612	612	612

Note:

*p<0.1; **p<0.05; ***p<0.01

Standard errors are shown in parentheses.

Table 10: Controlling for the differences in national legal systems: the 2nd hypothesis

	Legislation of CL (Non-working Patents)	
	(1)	(2)
Number of active patents for HIV	−0.226*** (0.071)	−0.193** (0.079)
Democracy (polity)	0.049*** (0.011)	0.041*** (0.011)
Population (log)	0.165 (0.103)	0.203** (0.103)
GDP per capita (log)	0.577** (0.239)	0.765*** (0.221)
Health expenditure (log)	−0.450** (0.192)	−0.582*** (0.172)
Trade (imports, log)	−0.142 (0.122)	−0.118 (0.121)
FDI (net inflow, % of GDP)	−0.006 (0.008)	−0.007 (0.009)
R&D expenditure (log)	0.212 (0.266)	0.040 (0.250)
HIV/AIDS medical control	0.002 (0.001)	0.002 (0.001)
HIV/AIDS social mitigation	−0.024 (0.071)	0.003 (0.070)
People living with HIV (in millions)	−0.024 (0.107)	0.002 (0.109)
National legal system (common law)	−0.111 (0.225)	
National legal system (mixed)	0.076 (0.151)	
National legal system (muslim)	1.119*** (0.392)	
Tranposition of int'l treaties (monist)		0.499*** (0.110)
Observations	726	706

Note:

*p<0.1; **p<0.05; ***p<0.01

Standard errors are shown in parentheses.

Table 11: Controlling for the legislative constraints: the 2nd hypothesis

	Legislation of CL (Non-working Patents)		
	(1)	(2)	(3)
Number of active patents for HIV	−0.216*** (0.070)	−0.227*** (0.070)	−0.229*** (0.070)
Democracy (polity)	0.052*** (0.013)	0.045*** (0.014)	0.039*** (0.010)
Population (log)	0.160 (0.100)	0.165 (0.100)	0.161 (0.100)
GDP per capita (log)	0.590*** (0.219)	0.614*** (0.220)	0.643*** (0.218)
Health expenditure (log)	−0.477*** (0.167)	−0.486*** (0.168)	−0.500*** (0.167)
Trade (imports, log)	−0.123 (0.118)	−0.129 (0.118)	−0.150 (0.118)
FDI (net inflow, % of GDP)	−0.008 (0.009)	−0.007 (0.008)	−0.007 (0.008)
R&D expenditure (log)	0.227 (0.245)	0.217 (0.256)	0.169 (0.244)
HIV/AIDS medical control	0.002 (0.001)	0.002 (0.001)	0.002 (0.001)
HIV/AIDS social mitigation	−0.009 (0.070)	−0.015 (0.070)	−0.017 (0.071)
People living with HIV (in millions)	−0.021 (0.108)	−0.017 (0.107)	−0.032 (0.109)
Number of veto players (POLCON III)	−0.577* (0.348)		
Number of veto players (POLCON V)		−0.141 (0.281)	
Number of chambers			0.174 (0.108)
Observations	726	726	726

Note:

*p<0.1; **p<0.05; ***p<0.01

Standard errors are shown in parentheses.

Table 12: Controlling for the rule of law: the 3rd hypothesis

	Legislation of CL (Dependent Patents)			
	(1)	(2)	(3)	(4)
Number of unique IPC on active patents	0.810** (0.341)	0.829** (0.366)	0.747** (0.328)	0.826** (0.356)
Number of active patents on HIV	-0.015 (0.074)	-0.017 (0.066)	-0.026 (0.114)	-0.017 (0.068)
Democracy (polity)	18.486* (9.789)	21.276** (9.669)	16.097 (9.963)	21.248** (9.312)
Population (log)	-1.927* (1.112)	-1.590 (1.110)	-2.184* (1.114)	-1.663 (1.113)
GDP per capita (log)	-0.583 (4.541)	-0.111 (4.575)	-1.017 (4.363)	0.038 (4.546)
Health expenditure (log)	-5.060 (4.351)	-5.842 (4.326)	-4.147 (4.305)	-5.890 (4.263)
Trade (imports, log)	1.260 (1.112)	1.043 (1.094)	1.164 (1.077)	1.102 (1.116)
FDI (net inflow, % of GDP)	-0.044 (0.038)	-0.047 (0.041)	-0.029 (0.036)	-0.048 (0.040)
R&D expenditure	6.635*** (1.986)	6.261*** (1.875)	8.588*** (2.652)	6.292*** (1.892)
HIV/AIDS medical control	-0.002 (0.010)	0.0003 (0.010)	0.003 (0.010)	0.00005 (0.010)
HIV/AIDS social mitigation	-0.332 (0.399)	-0.316 (0.397)	-0.405 (0.409)	-0.310 (0.394)
I(1e-06 *People living with HIV (in millions)	1.287 (2.231)	1.700 (2.220)	0.813 (2.172)	1.743 (2.192)
Rule of law	-1.619 (1.916)			
Voice and accountability		-0.382 (2.479)		
Government effectiveness			-3.207 (1.997)	
Regulatory quality				-0.447 (1.517)
Observations	86	86	86	86

Note:

*p<0.1; **p<0.05; ***p<0.01
Standard errors are shown in parentheses.

Table 13: Controlling for the differences in national legal systems: the 3rd hypothesis

	Legislation of CL (Dependent Patents)	
	(1)	(2)
Number of unique IPC on active patents	1.428** (0.639)	1.301** (0.526)
Number of active patents for HIV	−0.008 (0.097)	−0.042 (0.092)
Democracy (polity)	10.526 (11.361)	−0.819 (14.991)
Population (log)	1.577 (2.241)	−1.422 (1.178)
GDP per capita (log)	1.095 (4.697)	−1.210 (4.691)
Health expenditure (log)	−4.024 (4.492)	−3.178 (4.629)
Trade (imports, log)	−1.750 (2.124)	0.892 (1.326)
FDI (net inflow, % of GDP)	−0.032 (0.037)	−0.032 (0.042)
R&D expenditure (log)	6.411*** (2.474)	10.756** (4.321)
HIV/AIDS medical control	0.001 (0.010)	−0.001 (0.010)
HIV/AIDS social mitigation	−0.374 (0.397)	−0.456 (0.431)
People living with HIV (in millions)	−0.887 (2.786)	−1.786 (2.968)
National legal system (common law)	−2.434 (1.879)	
National legal system (mixed)	−3.158 (2.253)	
Tranposition of int'l treaties (monist)		4.355 (2.662)
Observations	93	80

Note:

*p<0.1; **p<0.05; ***p<0.01
Standard errors are shown in parentheses.

Table 14: Controlling for the legislative constraints: the 3rd hypothesis

	Legislation of CL (Dependent Patents)		
	(1)	(2)	(3)
Number of unique IPC on active patents	0.948** (0.376)	0.918** (0.400)	0.786** (0.363)
Number of active patents for HIV	−0.009 (0.089)	−0.019 (0.067)	−0.017 (0.098)
Democracy (polity)	24.887*** (9.556)	21.807** (9.376)	21.887** (9.582)
Population (log)	−2.770** (1.382)	−1.481 (0.994)	−2.241* (1.184)
GDP per capita (log)	0.703 (4.467)	−0.653 (4.753)	−2.095 (4.792)
Health expenditure (log)	−8.516* (4.533)	−5.576 (4.399)	−5.257 (4.285)
Trade (imports, log)	2.203 (1.412)	0.941 (1.079)	0.953 (1.083)
FDI (net inflow, % of GDP)	−0.064 (0.044)	−0.047 (0.041)	−0.063 (0.045)
R&D expenditure (log)	8.241*** (2.508)	6.739*** (2.128)	8.365*** (2.658)
HIV/AIDS medical control	0.001 (0.010)	0.001 (0.010)	0.002 (0.010)
HIV/AIDS social mitigation	−0.450 (0.416)	−0.309 (0.393)	−0.310 (0.393)
People living with HIV (in millions)	2.124 (2.129)	1.668 (2.235)	1.445 (2.174)
Number of veto players (POLCON III)	−5.001 (3.580)		
Number of veto players (POLCON V)		2.396 (4.721)	
Number of chambers			2.066 (1.635)
Observations	93	93	93

Note:

*p<0.1; **p<0.05; ***p<0.01
Standard errors are shown in parentheses.

Table 15: Controlling for other health systems-related factors: the 1st hypothesis

	Legislation of CL (Public Interests)	
	1	
	(1)	(2)
Access to HIV therapies (% of population, total)	−0.020***	−0.022***
× Democracy (BMR)	(0.007)	(0.008)
Access to HIV therapies (% of population, total)	0.019***	0.029***
	(0.007)	(0.008)
Democracy (BMR)	1.237***	1.441***
	(0.182)	(0.237)
Population (log)	0.178	0.375***
	(0.120)	(0.137)
GDP per capita (log)	−0.367	−0.359
	(0.245)	(0.303)
Health expenditure (log)	0.240	0.140
	(0.213)	(0.234)
Trade (imports, log)	−0.062	−0.300*
	(0.137)	(0.165)
FDI (net inflow, % of GDP)	−0.005	0.0001
	(0.009)	(0.009)
R&D expenditure (log)	−0.147	0.292
	(0.268)	(0.329)
HIV/AIDS medical control	0.002	−0.001
	(0.002)	(0.004)
HIV/AIDS social mitigation	−0.375**	−0.248
	(0.149)	(0.262)
People living with HIV (in millions)	−0.238*	−0.378**
	(0.141)	(0.174)
Universal health coverage index (log)	0.137	
	(0.350)	
Number of int'l patent application for HIV (log)		0.033
		(0.096)
Observations	692	548

Note:

*p<0.1; **p<0.05; ***p<0.01
Standard errors are shown in parentheses.

Table 16: Controlling for other health systems-related factors: the 2nd hypothesis

	Legislation of CL (Non-working Patents)	
	1	
	(1)	(2)
Number of active patents for HIV	−0.231*** (0.070)	−0.197** (0.077)
Democracy (polity)	0.038*** (0.011)	0.029** (0.012)
Population (log)	0.122 (0.107)	0.379*** (0.129)
GDP per capita (log)	0.526** (0.230)	1.159*** (0.314)
Health expenditure (log)	−0.363* (0.193)	−0.804*** (0.215)
Trade (imports, log)	−0.070 (0.127)	−0.392** (0.153)
FDI (net inflow, % of GDP)	−0.007 (0.008)	0.003 (0.009)
R&D expenditure (log)	0.078 (0.256)	0.579* (0.321)
HIV/AIDS medical control	0.002 (0.001)	0.0005 (0.001)
HIV/AIDS social mitigation	−0.021 (0.070)	0.016 (0.081)
People living with HIV (in millions)	−0.023 (0.107)	0.062 (0.127)
Universal health coverage index	−0.435 (0.339)	
Number of int'l patent application for HIV (log)		−0.053 (0.095)
Observations	716	572

Note:

*p<0.1; **p<0.05; ***p<0.01

Standard errors are shown in parentheses.

Table 17: Controlling for other health systems-related factors: the 3rd hypothesis

	Legislation of CL (Dependent Patents)	
	1	
	(1)	(2)
Number of unique IPC on active patents	0.842** (0.380)	0.857** (0.361)
Number of active patents for HIV	−0.017 (0.067)	−0.022 (0.071)
polity2	21.741** (9.566)	21.772** (9.195)
Population (log)	−1.509 (1.007)	−1.639 (1.095)
GDP per capita (log)	−0.080 (5.417)	0.154 (4.635)
Health expenditure (log)	−5.941 (4.670)	−6.076 (4.312)
Trade (imports, log)	1.002 (1.163)	0.873 (1.167)
FDI (net inflow, % of GDP)	−0.049 (0.041)	−0.047 (0.040)
R&D expenditure (log)	6.249*** (1.957)	5.683** (2.781)
HIV/AIDS medical control	0.0004 (0.010)	0.0004 (0.010)
HIV/AIDS social mitigation	−0.310 (0.394)	−0.324 (0.397)
People living with HIV (in millions)	1.741 (2.312)	1.837 (2.226)
Universal health coverage (log)	0.020 (3.990)	
Number of int'l patent application for HIV (log)		0.319 (1.177)
Observations	93	93

Note:

*p<0.1; **p<0.05; ***p<0.01
Standard errors are shown in parentheses.

2.2 Measurement Error

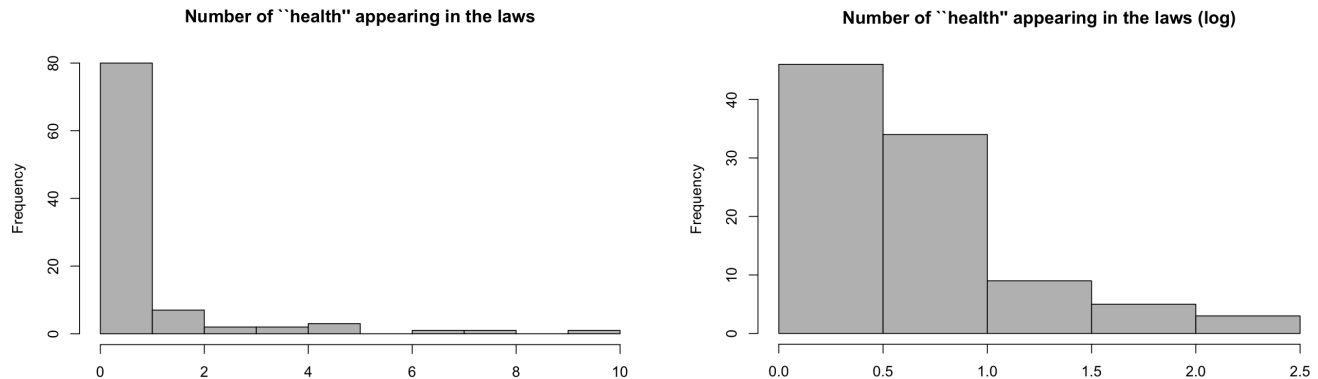


Figure 1: Empirical distribution of “health” appearing in each national IP law

To tease out the public policy objective of compulsory licensing provisions more accurately from each national IP law, public health, we apply a dictionary approach similar to (Pelc and Busch, 2019) and (Gastinger and Schmidtke, 2022). Specifically, instead of using identifiers available from the meta data, we check how many times the word “health” appears in each national IP law. We repeated this process across all countries whenever their legal texts are translated into English and available in the WIPO Lex database. Out of 115 countries who provide the full texts of their patent laws on compulsory licensing, 97 countries also offer their English version in the WIPO website.

The empirical distribution is illustrated in the above figure, which remains skewed to the right even after logarithmic transformation. It suggests that states vary significantly in terms of how much they put emphasis on public “health” as a ground for their use of compulsory licensing in their jurisdiction. The 1st hypothesis using this alternative measure is summarized in the following table, which reaffirms our key argument that the more limited public access to patented drugs for HIV/AIDS, states are more likely to seek explicit public health protection through compulsory licensing. Notice that linear regression is used with country and year fixed effects in this case, instead of the Cox proportional hazard model.

Table 18: The results using a dictionary approach

	Legislation of Compulsory Licensing (Health)			
	(1)	(2)	(3)	(4)
HIV therapies (all, % of HIV infection)	−0.002*	−0.001**		
Democracy (polity)	(0.001)	(0.0003)		
HIV therapies (all, % of HIV infection)			−0.022**	−0.010***
Democracy (BMR)			(0.010)	(0.004)
HIV therapies (all, % of HIV infection)	0.014	0.005	0.021*	0.008**
	(0.009)	(0.003)	(0.011)	(0.004)
Democracy (polity)	0.056**	0.023***		
	(0.024)	(0.008)		
Democracy (BMR)			0.264	0.088
			(0.231)	(0.082)
Population (log)	−0.633	−0.703*	−0.704	−0.732**
	(1.046)	(0.368)	(1.044)	(0.371)
GDP per capita (log)	−0.269	−0.121	−0.283	−0.115
	(0.392)	(0.138)	(0.380)	(0.135)
Health expenditure (log)	0.039	−0.014	−0.032	−0.067
	(0.347)	(0.122)	(0.344)	(0.122)
Trade (imports, log)	−0.781***	−0.268***	−0.718***	−0.246***
	(0.211)	(0.074)	(0.206)	(0.073)
FDI (net inflow, % of GDP)	0.008	0.004*	0.008	0.004*
	(0.007)	(0.002)	(0.006)	(0.002)
R&D expenditure (log)	−0.735	0.033	−0.772*	−0.006
	(0.456)	(0.160)	(0.451)	(0.160)
HIV/AIDS medical control	0.005***	0.002***	0.005***	0.002***
	(0.001)	(0.0004)	(0.001)	(0.0004)
HIV/AIDS social mitigation	−0.008	−0.005	−0.005	−0.004
	(0.053)	(0.019)	(0.053)	(0.019)
People living with HIV (in millions)	−2.286***	−0.796***	−2.236***	−0.773***
	(0.329)	(0.116)	(0.329)	(0.117)
Country FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	682	682	692	692

Note: Robust standard errors are shown in parentheses. *p<0.1; **p<0.05; ***p<0.01
(1) and (3): the frequency of “health”, (2) and (4): the log-frequency of “health”

2.3 Selection Bias

Table 19: The results controlling for the selection bias

	Legislation of Compulsory Licensing (Dependent)	
	Outcome (Dependent)	Selection (All)
	(1)	(2)
Number of unique IPC on active patents	0.170*** (0.054)	
Democracy (polity)		0.658 (0.437)
Population (log)	0.058 (0.232)	−0.871* (0.485)
GDP per capita (log)	−0.395 (1.235)	6.498*** (1.850)
Health expenditure (log)	0.030 (0.954)	−3.862*** (1.399)
Trade (imports, log)	0.011 (0.358)	1.951*** (0.584)
FDI (net inflow, % of GDP)	−0.009* (0.005)	−0.016 (0.016)
R&D expenditure (log)	0.769* (0.427)	0.743 (0.996)
HIV/AIDS medical control	0.004 (0.003)	
HIV/AIDS social mitigation	−0.134 (0.113)	
People living with HIV (in millions)	−0.486 (0.419)	4.008*** (0.769)
Constant	2.636 (7.566)	
Observations		288
Adjusted R ²		0.259

Note: Robust standard errors are shown in parentheses. *p<0.1; **p<0.05; ***p<0.01

3 List of Countries in the Sample

Country	HIV therapy coverage (%)	Country	HIV therapy coverage (%)
Afghanistan	0	Mali	7
Azerbaijan	0	Tunisia	7
Benin	0	Jamaica	8
Comoros	0	Uganda	8
Qatar	0	Belarus	9
Senegal	0	Kenya	9
South Sudan	0	Lao People's Democratic Republic	9
Sudan	0	Morocco	9
Yemen	0	Zambia	9
Armenia	1	Burkina Faso	10
Bhutan	1	Estonia	10
Guinea-Bissau	1	Fiji	10
Iran (Islamic Republic of)	1	Nigeria	10
Mongolia	1	Peru	10
Pakistan	1	Eswatini (Swaziland)	11
Sierra Leone	1	Malaysia	11
Somalia	1	Singapore	11
Angola	2	Albania	12
Central African Republic	2	Gabon	12
Gambia (the)	2	Suriname	12
Ghana	2	Cabo Verde	13
India	2	Colombia	13
Indonesia	2	Belize	14
Liberia	2	Guatemala	16
Madagascar	2	Libya	16
Nepal	2	Namibia	16
Republic of Moldova	2	Rwanda	16
Sri Lanka	2	Honduras	17
Timor-Leste	2	Jordan	18
Ukraine	2	Montenegro	18
Democratic Republic of the Congo	3	Trinidad and Tobago	18
Equatorial Guinea	3	Georgia	19
Kazakhstan	3	Lebanon	19
Kyrgyzstan	3	Panama	19
Mauritius	3	Thailand	19
Tajikistan	3	Mexico	20
Bolivia (Plurinational State of)	4	Venezuela (Bolivarian Republic of)	21
Congo	4	Algeria	22
Djibouti	4	Cambodia	22
Mozambique	4	El Salvador	22
Niger	4	Cuba	23
Philippines	4	Botswana	25
South Africa	4	Costa Rica	26
Uzbekistan	4	Guyana	28
Viet Nam	4	Uruguay	28
Chad	5	Chile	31
Ivory Coast	5	Slovenia	32
Dominican Republic	5	Bahamas	33
Nicaragua	5	Argentina	35
Papua New Guinea	5	Croatia	37
Paraguay	5	Portugal	40
Syrian Arab Republic	5	Greece	45
United Republic of Tanzania	5	Brazil	47
Zimbabwe	5	Romania	49
Cameroon	6	New Zealand	50
Eritrea	6	Australia	53
Guinea	6	Serbia	53
Malawi	6	Netherlands	54
Mauritania	6	Denmark	55
Togo	6	Germany	55
Burundi	7	Italy	55
Ecuador	7	Spain	55
Egypt	7	Iceland	56
Ethiopia	7	Ireland	62
Haiti	7	Norway	70
Lesotho	7	Saudi Arabia	71

4 National Laws on Public Health Exceptions (TRIPS)

Andorra : “Article 34 of the Patent Act of 10/06/1999”

Antigua and Barbuda : “Sections 13-14 of the Patent Act No. 23 of 2003”

Argentina : “Articles 42-50 of the Patents Act No. 24.481 of 1996 as amended by Law 24.572 T.O”

Armenia : “Articles 69-71 of the Patent Law of 10/06/2008”

Australia : “Sections 133-135 and 163-170 of the Patents Act no. 83 of 30/10/1990 as last amended by Law No. 106 of 2006”

Austria : “Sections 36-42 of the Patents Law 1970, BGBl. No. 259/1970 as last amended in 2001 (Consolidated version of 2010 not available in English)”

Barbados : “Articles 49 and 50 of the Patents Act no. 18 of 26/07/2001”

Belarus : “Article 38 of the Law no. 160-Z of 16/12/2002”

Belgium : “Articles 31-38 of the Patents Act of 28/03/1984, consolidation of 01/01/2010”

Belize : “Articles 38 and 39 of the Patents Act, Chapter 253, of 21/06/2000”

Bhutan : “Section 15 of the Industrial Property Act of 2001”

Botswana : “Sections 31 of the Industrial Property Act no.14 of 1996”

Brazil : “Articles 68-74 of the Industrial Property Law No. 9.279 of 14/05/1996 as last amended by Law No. 10.196 of 14/02/2001”

Brunei Darussalam : “Sections 55-65 of the Patents Order S42/99”

Bulgaria : “Articles 32, 32a, 66, 74c of the Patents Act No. 27/2 of 1993 as last amended by Law No. 59/20 of July 2007”

Canada : “Sections 19, 21 and 65 of the Patents Act (R.S., 1985, c. P-4) (Act current to 21/01/2010)”

Central African Republic Chile : “Articles 51 – 51 bis D of the Industrial Property Law No. 19.039 of 24/01/1991 as last revised in 2005”

China : “Articles 48-58 of the Patents Law of 12/03/1984 as last amended on 27/12/2008 and State Intellectual Property Office Order 37 of November 2005”

Costa Rica : “Articles 18-20 of the Law No.6867 of 25/04/1983 as last amended on 12/10/2000”

Croatia : “Articles 67a- 69h of the Patents Law No. 173/2003 as last amended by Act No. 76/2007”

Cuba : “Articles 69-73 of the Law No. 68 of 14/05/ 1983”

Cyprus : “Articles 49-56 of the Patent Law No. 16(1)of 01/04/1998 (consolidate version of 2006 not available in English)”

Czech Republic : “Section 20 of the Law on Inventions, Industrial Designs and Rationalization Proposals No. 527 of 27/11/1990 as last amended by Act No. 207/2000 Coll. and by Act No. 378/2007”

Denmark : “Sections 45-50 of the Consolidate Patent Act No. 91 of 28/01/2009”

Djibouti : “Sections 35, 38 and 39 of the Patent Act No. 8 of 7/10/1999”

Dominican Republic : “Articles 39-48 of the Law No. 20-00 on Industrial Property of 18/04/2000”

Egypt : “Articles 23 and 24 of the Law No. 82 of 2002”

El Salvador : “Articles 133 and 134 of the Intellectual Property Legislative Decree No. 604 of 15/07/1993 as last amended by the Intellectual Property Legislative Decree Amendment No. 912 of 14/12/2005”

Estonia : “Section 47 of the Patent Act of 16/03/1994 as last amended on 10/03/2004”

Ethiopia : “Sections 29-33 of the Proclamation of the Industrial Property Law No. 123 of the 10/05/1995”

Finland : “Sections 45-50 of the Patents Act No. 550 of 15/12/1967 as last amended by Act 684/2006”

France : “Articles L. 613-11 – L. 613-20 of the Intellectual Property Code, Law No. 92- 597 of 01/07/1992 as last amended by Law No. 2007-1540 and sections R613-4 to R613-42of the Regulation part”

Georgia : “Sections 61-62 of the Patent Law of 05/02/1999”

Germany : “Sections 13, 24 and 81-85a of the Patent Law of 16/12/1980 (as last amended in 2009)”

Ghana : “Sections 45- 52 of the Patents Law No. 305A of 30/12/1992”

Greece : “Articles 13- 14 of the Law on “Technology transfer, inventions and technological innovation” No. 1733 of 1987”

Grenada : “Sections 14 and 14 A of the Industrial Property Bill of 2002”

Guatemala : “Articles 134- 138 of the Industrial Property Law No. 57 of 18/09/2000 and sections 78-79 of the Government Decision No. 89- 2002, Regulations under the Industrial Property Law”

Honduras : “Articles 65-71 of the Industrial Property Law, Decree Law No. 12-99-E of 30/12/1999”

Hungary : “Articles 31-33A and 83A-83H of the Law on the Protection of Inventions by Patents No. XXXIII of 1995, (Consolidated text of 01.10.2009)”

Iceland : “Articles 45-50 of the Patent Act No. 17 of 1991, as last amended by Act No. 167/2007”

India : “Sections 82-94 and 99-103 of the Patent Act No. 39 of 1970 as last amended in 2005”

Indonesia : “Articles 74 – 87 and 99-103 of the Patent Law No. 14 of 01/08/2001”

Iraq : “Articles 27-30b of the Patent, Industrial Design, Undisclosed Information, Integrated Circuits and Plant Variety Law No. 65 of 1970”

Ireland : “Sections 70-78 of the Patent Act No. 1 of 27/02/1992 as last amended by law No. 31 of 2006”

Israel : “Sections 104-111 and 116-128 of the Patent Law No. 5727 of 08/08/1967”

Italy : “Articles 70- 73, 115 and 119 of the Industrial Property Code, Legislative Decree no. 30 of 15/02/2005”

Japan : “Articles 79-93 of the Patent Law No. 121 of 13/04/1959 as last amended by Act No. 109 of 2006”

Jordan : “Articles 22-26 of the Law on Patents No. 32 of 1999 as last amended by Law No. 71 of 2001”

Kazakhstan : “Article 4 (4-5) and Article 14(6) of the Patent Law no.427 of 16/07/1999”

Kenya : “Sections 72- 78 and 80 of the Industrial Property Act No. 3 of 27/07/2001”

Kyrgyzstan : “Article 12 of the Patent Law of 14/01/1998 as last amended in 2003”

Lao People’s Democratic Republic : “Sections 53 and 54 of the Intellectual Property Law of 14/01/2008”

Latvia : “Section 54 of the Patent Law of 15/02/2007”

Lebanon : “Articles 32-39 of the Patents Law No. 240 of 07/08/2000”

Libya : “Articles 23, 28, 29 and 30 of the Law on Patents and Industrial Designs and Models No. 8 of 1959”

Lithuania : “Articles 38-39 of the Patent Law No. I- 372 of 18/01/1994 as last amended by Law No. X-1119 of 10/05/2007”

Luxembourg : “Articles 59-60 and 62-63 bis of the Patent Act of 20/07/1992”

Madagascar : “Sections 64-73 of the Decree No. 92-993 and sections no. 64- 73 of the Decree No. 92-993”

Malaysia : “Sections 49-54 and 84 of the Patents Act No. 291 of 1983 as last amended in 2006”

Malta : “Articles 39-40 of the Patents and Designs Act, Chapter 417, of 01/06/2002 as amended by Acts IX of 2003 and XVIII of 2005”

Mauritius : “Sections 23-24 of the Patents, Industrial Designs and Trademarks Act No. 25 of 2002”

Mexico : “Articles 70-77 of the Industrial Property Law of 25/06/1991, consolidated version of 2005”

Mongolia : “Article 20 of the Patent Law of 25/06/1993, as last amended in 1997”

Morocco : “Articles 25-39 of the Law No. 17-97 concerning Protection of Industrial Property as implemented by the Decree No. 2-00- 368 of 07/06/2004”

Mozambique : “Articles 83, 85-88 of the Industrial Property Code, Decree No.4 of 12/04/2006”

Namibia : “Section 19 of the Industrial Property Bill of 1999”

Netherlands : “Articles 57-60 and 80 of the Patents Act of 15/12/1995(Text as it applies on 03/06/2009) and Policy Rules on issuing compulsory licenses pursuant to WTO decision WT/L/540, of 23/12/2004”

New Zealand : “Sections 46, 48 and 54-58C of the Patents Act No 64 of 1953 (as at 01/08/2008)”

Nicaragua : “Sections 51- 56 of the Industrial Property Law No. 354 of 19/09/2000”

Nigeria : “Section 11 of the Industrial Property Act (Chapter 344) No. 60 of 1970 (version of 1990 not available)”

Norway : “Sections 45-50a of the Patents Acts No. 9 of December 15, 1967 and Sections 107-108 of the Patent Regulations No. 1162 of 20/12/1996(as last amended by Act No.80 of 29/06/2007)”

Oman : “Sections 1 and 15-20 of the Royal Decree No. 82/2000 Promulgating the Patent Law”

Pakistan : “Sections 58 and 59 of the Patents Ordinance No. LXI of 02/12/2000 as amended in 2002 and Section 44 of the Patents Rules of 31/12/2003”

Papua New Guinea : “Sections 32-36 of the Industrial Property Act no. 30 of 19/07/2000 and Section 27 of the Patents and Industrial Designs Regulation No. 5 of 2002”

Paraguay : “Articles 42- 50 of the Patents Law No. 1630 of 29/11/2000 and 27-31 of the Decree No. 14.201 regulating Law No. 1630/00 on Patents of inventions”

Philippines : “Sections 93-102 of the Intellectual Property Code, Act No. 8293 of 06/06/1997 as last amended by Act No. 9502 of 2008”

Poland : “Articles 82-88 of the Industrial Property Law of 30/06/2000, as amended by act of 23/01/2004 and act of 29/06/2007”

Portugal : “Articles 106-112 of the Industrial Property Code (approved by Decree-Law No. 36 of 05/03/2003 as last amended by Law No. 16 of 01/04/2008”

Republic of Korea : “Articles 107- 114 and 138 of the Patent Act promulgated on by Military Act No. 950 on 28/11/1949, as last amended by Act No. 9381 of 30/01/2009”

Republic of Moldova : “Articles 28-30 of the Law on the protection of Inventions No. 50- XVI of 07/03/ 2008”

Romania : “Articles 46-50 of the Patent Law no. 64/1991 as republished in the OJ, No. 456/18.VI.2008”

Russian Federation : “Articles 1360 and 1362 of the Patent Act (Chapter 72)”

Saint Lucia : “Sections 51-61 of the Patents Act No. 16 of 27/08/2001”

Saudi Arabia : “Articles 24- 30 of the Law of Patents, Layout-Designs of Integrated Circuits, Plant Varieties, and Industrial Designs, 2004 and Sections 47-48 of the Implementing Regulations of the Law of Patents, Layout-Designs of Integrated Circuits, Plant Varieties, and Industrial Designs, 2004”

Serbia : “Articles 63-68 of the Patents law No. 15 of 02/07/2004”

Singapore : “Sections 55-62 and 97 of the Patents Act No. 21 of 25/11/1994 as of 01/12/2008”

Slovakia : “Articles 27-28 of the Act No. 435/2001 Coll. on Patents, Supplementary Protection Certificates as last amended by Act No. 517/2007 Coll.”

Slovenia : “Articles 125-127 of the Industrial Property Act of 23/05/2001 as last amended on 06/02/2006”

South Africa : “Sections 55-56 of the Patents Act No. 57 of 1978 as last amended by Act No. 58 of 2002”

Spain : “Articles 83-107 of the Law about Patents of Invention and Utility Models No. 11 of 20/03/1986 as last amended by Law No. 10 of 29/04/2002”

Sri Lanka : “Section 86 of the Intellectual property Act No. 36 of 2003”

Eswatini (Swaziland) : “Section 12 paragraph 6 of the Patents, Utility Models and Industrial Designs Act No. 6 of 1997”

Sweden : “Sections 44-50 of the Patents Act no. 837 of 01/12/1967 as last amended by Law No. 159 of 01/04/2004”

Switzerland : “Articles 36-40e of the Federal Patents Law of 25/06/1954 as last amended on 01/07 2009 and sections 111- 111c of the Patents Regulation of 19 October 1977, as last amended on 01/09/2008”

Thailand : “Sections 45-52 and 74 of the Patent Act B.E. 2522 of 11/03/1979 as amended by the Patent Act (No.2) B.E 2535 and the Patent Act (No.3) B.E. 2542”

North Macedonia (The former Yugoslav Republic of Macedonia) : “Articles 97-115 of the Law on Industrial Property No. 07- 1006/1 of 12/02/2009”

Tonga : “Sections 13 and 15 of the Industrial Property Act No. 19 of 09/11/1994”

Trinidad and Tobago : “Sections 46-48 of the Patents Act No. 21 of 1996”

Tunisia : “Articles 69- 81 of the Patents Law No. 2000-84 of 24/08/2000”

Turkey : “Articles 79, 93 and 96-120 of the Decree-Law No. 551 of 27/06/1995 on the Protection of Patent Rights and Sections 39, 40 and 43 of the Implementing Regulations under Decree-Law No. 551 pertaining to the Protection of Patent Rights, including Amended Regulation of 06/12/ 1998”

Turkmenistan : “Article 38 of the Patent Act No. 867- XII of 1710/1993”

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Ukraine : “Article 30 of the Law on the Protection of Rights to Inventions and Utility Models No. 3687-XII of 15/12/1993 as last amended in 2003”

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United Republic of Tanzania : “Sections 52-59 and 61 of the Patents Act No. 1 of 1987

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Viet Nam : “Articles 132, 133, 135, 136,137 and 145-147 of the Law on Intellectual Property No. 50/2005/QH11 of 29/11/2005”

Zambia : “Sections 37-41 of the Patent Act of 1958 (Chapter 400) as last amended by Act No. 26 of 28/12/1987”

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