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Enterprise Creation & Anti-commons in Developing Economies:

Evidence from World Bank Doing Business Data

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Abstract: This paper looks at the tragedy of anti-commons and its implications on enterprise creation in developing economies. The most important features of the anti-commons are captured under a simplified theoretical economic model. The empirical part uses the data from "Doing Business" of the World Bank, to test for the high costs implied by scattered and fragmented decisions related to enterprise creation in developing economies. The attained results show the prevalence of anti-commons in relation to the development of new enterprises in developing economies relative to more developed countries. This points out how anti-commons can limit development and market economies through reducing business and enterprise creation and expansion. Awareness and development of appropriate remedies to anti-commons are among the means to ensure higher economic and social achievements.

Keywords: Anti-commons, Enterprise Creation, Licensing and Costs

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INTRODUCTION

Economics, as other sciences, has also been referring to the pool of knowledge and expertise scattered among different poorly connected decision making public and private agents. This is the situation of "anti-commons" with resources utilized in a sub-optimal and inefficient way. As a result, development policies and private business promotion can fail to gather all the necessary information, knowledge, resources, and capital. This diminishes the chances of success, leading to the tragedy of anti-commons and thus to the failure to contribute to the promotion of new economic and social opportunities (Heller 1998; Kelly & Michelman 1980, Buchanan & Yoon, 2000).While in commons pool open access resources, no actor has the right to exclude another until full depletion of the resource, the anti-commons is the reverse as too many have the right to exclude (Aoki 1998) creating thus the tragedy of anti-commons that is total under-use of the resource with the prevalence of higher access prices and higher costs of entry.

Economic and social policies in the developing world are today increasingly required to benefit optimally from coordinated actions in all areas and sectors. This includes also the bilateral and world relations besides the development of businesses and enterprise creation.

The needed policies necessitate the collaboration of an overlapping web of government bodies and private partners that control the relevant knowledge and expertise relative to each policy dimension. Besides that, new and diversified sets of inputs that are informational, technological and institutional are continuously needed. The outcomes of policies and actions in developing countries are expected to be penalized by the scattering of expertise, more than it would be in the case of the developed world.

The general literature shows that these failures can be related to factors such as bureaucracy, institutional rigidity, and weak coordination channels besides the limited levels of transparency and lack of updated knowledge. The economic literature emphasizes that the tasks of gathering the required inputs are time consuming leading most of the time to higher number of transactions and thus to higher individual and social costs.

The objective of this paper is to show how anti-commons can be revealed to contribute implicitly to blocking economic and social development through limiting enterprise creation. A focus is placed on the first step leading to enterprise creation and business development in the context of developing economies.

This is achieved in four major steps. The first one is a literature review while the second focuses on a simplified theoretical model that is used as the basis for the empirical tests. The third section is empirical and based on analyzing "Doing Business World Bank data" in relation to enterprise creation. The last section is a discussion of the results attained.

I.   LITERATURE REVIEW

This review is intended to showing how anti-commons are pervasive and do affect the performance of economic and social projects.

The tragedy of commons as a concept made popular by the Hardin (1968). The tragedy he refers to emerges upon the overuse of an open access and use of a common resource. Other publications on commons were by Ostrom (1990) with the introduction of series of cases. In these studies, communities have developed many institutional arrangements to durably manage common pool resources with more or less success in preventing resource exhaustion. These findings have shown the complexities of real world commons. Furthermore, issues related to specificities of some commons as introduced in Ostrom (1990) and explained in Bergstrom (2010). The link with private ownership and exclusion are also developed (Ostrom & Schlager, 2010).

But, the symmetrical image of commons developed by Heller (1998) as the tragedy of anti-commons with resource underused and exclusion rights added to usage rights. Thus, an anti-common situation occurs when more than one user of a resource are endowed with the right to exclude others from its usage, with none of them having a full privilege of use unless authorized by all the others. The result is the suboptimal utilization of the resource and or even its idleness in extreme cases. All the agents in this case are said to act under individualistic competition and exclusion rights. Veto powers are likely to be exercised even when the use of the resource by one agent can yield a generalized social benefit (Coelho et. al, 2009). Buchanan & Yoon (2000) suggest that the tragedy of anti-commons be measured in terms of the non-realized economic value due the under-use of the resource and that the size of such forgone opportunity is proportional to the number of exclusion right-holders involved. The keyword here is obviously the inefficiency imposed by each exclusion right holder on the others and thus on society in general. Accordingly, commons and anti-commons are symmetrical in the sense that for both situations, agents reduce each others rents (including themselves) with resource depletion on the long run (tragedy of the commons) or with maintaining the resource idle (tragedy of anti-commons) (Buchanan & Yoon, 2000).

Parisi and Schultz (2003) explain that understanding the working of either commons or anti-commons requires a departure from the intuitive comparison with unified property as in commons and anti-commons with unclear limits between rights of use and rights of exclusion. In the case of commons, the right of use is more emphasized than the right to exclude. In the case of anti-commons however, the right to use is eclipsed by the exclusion rights held by all other co-owners. Moreover, both commons and anti-commons situations imply some extent of forgone synergies between the co-owners. That is how the authors reach the conclusion that commons and anti-commons are characterized by a discrepancy between usage and exclusion rights and that the final result is a misalignment between private and social incentives of the various owners.

Parisi and Schultz (2003) go further in their explanation of anti-commons by underlining that the latter induce static and dynamic externalities. The static externalities result from the current exercise of a right of exclusion by one owner which nullifies the value of the similar rights held

by others. Dynamic externalities occur throughout time and are due to the under-use of the productive assets in the present, implying future penalties.

An insightful parallelism can be drawn between Parisi and Schultz (2003) in relation to the distinction between sequential and simultaneous anti-commons and the distinction between hierarchical and polyarchical types of decision-making architectures. Such convergence between the economics of property and the economics of decision-making helps broadening the understanding of how the tragedy of anti-commons can emerge in spheres other than physical property. It is exactly the logic followed by Buchanan and Yoon (2000) who extend the concept to stand for an analytical framework applied to the study of the disparate and overlapping institutional structures. In this sense, the authors state that the tragedy of anti-commons captures the inefficiencies of overlapping bureaucracies. For instance, an entrepreneur has often to overcome series of obstacles embodied in different permits issued by different authorities that hold specific veto and hence, exclusion rights. The fragmented resource is here the authority and executive power held by multiple agencies and fragmented following an anti-common model.

Depoorter and Vanneste (2004) referred to the risks related to the excessive propertization in the context of "anti-commons" property regimes. The authors looked at the deadweight losses in relation to the complementarily between ownership and fragmentation.

After the elicitation of anti-commons problems by Heller (1998), many cases related mainly to patenting started rising from both developed and developing countries. For example, Velho (2004) underlines that cooperation is vital for developing countries to access technology and research. This is due to the control that developed countries have on the technology and research in the crucial fields of heath and agriculture. Following the Bayh-Dole act in 1980[2], a massive patenting campaign, issued by US universities and non-profit institutions, has taken place. A study by Graff et al. (2003) emphasizes that 2.5% of patents in all fields of technology, are owned by the US public sector. In the agricultural field, this percentage is 25%. In the health sector, Kapczynski et al. (2003) state that major patents needed for HIV treatment are held by Yale University, University of Minnesota, Emory University and Duke University. This patenting wave from Bayh-Dole, has helped clarify the ownership of intellectual properties and technologies. However its implementation has been raising issues of fragmentation with risks of tragedies of anti-commons.

Economic and social development problems require coordination of the contributions of many scattered operators from public, private, national and international economies. But, most of the time, transactions costs are high with further restriction of information implying limited implementation. Anti-commons with scattered operators and fragmented sources of information have difficulty providing timely knowledge to potential users. Under this situation, private and public actions can be blocked because of lack of information and the higher cost of project realization.

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[2] See : Bayh-Dole Act, Pub.L. No. 96-517, 98 Stat. 3015 (1980) (The Patent and Trademark Act of 1980) (amendments included in Pub.L. No. 98-620, 98 Stat. 3335 (1984)).

While information is diffused and used rapidly in the context of developed economies, it is not often the case in developing economies, as further steps are needed to spread the knowledge and have different economic agents and households access it and implement it. This information gap increases with the degree of integration characterizing the piece of knowledge. The health issues in relation to the effects of nutrition on non communicable diseases have not all the time been considered in a large number of developing economies. While obesity is an issue for developing economies, it is not yet perceived as such in most of these countries. The need for both larger domestic and foreign investments has not been coupled with health and environmental standards. In these circumstances, private firms are still and have been expanding in areas of fast food, sweeties and related products. This shows that both the enlargement of investments and of consumer choices is progressively becoming harmful illusions in the developing world.

Besides the above evidence, there are other immaterial examples leading also to economic and social failures. The creation of new enterprises goes through a licensing and series of authorizations that relate to the different stages needed for launching a business. The initial can be crucial in case of largely fragmented authorizing agencies.

The most important contribution in this area is provided by Qianwei and Guangnan (2007). In this paper, the authors investigate how the fragmentation of licensing rights affects the occurrence of the tragedy of anti-commons in the enterprise licensing procedures. It is also shown that the impacts of the tragedy of the anti-commons are more emphasized with the high extent of fragmentation. This situation alters the evolution of the entrepreneurial initiatives and creates considerable challenges for the victims of the anti-commons (enterprise creation).

Dethier and al., (2008) survey the recent literature which examines the impact of the business climate on productivity and growth in developing countries using enterprise surveys. Various infrastructure, finance, security, competition, and regulation variables have been shown to have a significant impact on enterprise performance.

Scharff (2006) in condemning the anti-commons found that economic development of land may be suboptimal where multiple parties have the legal right to exclude use of the property in question.

But some authors referred to the links between bureaucracy, corruption and economic performance before the pioneering works on anti-commons. These include Quah (1982). This latter author provides some examples such as import-export licenses and the underassessment of income tax.

The empirical evidence introduced here concern respectively the general trends taking place in both technological, institutional innovations and the related economic policies pursued by series of developing countries. While economies should develop further awareness about the negative effects of anti-commons and related tragedies, they are invited to the strengthening of the knowledge base and the economic foundations that sustain different policy shifts and reforms, especially when accounting for access to promising technologies.

II.   A THEORETICAL ECONOMIC MODEL OF ANTI-COMMONS

Following the simplified model developed by Canavese (2004), and in order to account for anti-commons, different market structures are attempted under the hypothesis of a linear aggregate inverse demand function for the good or service (Y) where p and Y refer respectively to price and quantity. The inverse demand schedule is given by $p = \alpha - \beta Y$ where α is the intercept and β a positive coefficient. Profit maximization is also assumed under zero costs of production. The first order conditions for profit maximization are necessary and sufficient (given by π'=0) under this simplified model, lead to optimal prices p* and quantities Y* that solve the profit maximization problem under each market structure. This is undertaken respectively for perfectly competitive, monopolist, duopolist and oligopolist markets with focus on anti-commons (large number of agents). The reason for considering different market structures with an increasing number of agents resides in the willingness to set a theoretical basis to show that anti-commons lead to lower quantities with higher prices. The sub-indices 1, 2, 3… used in the formulation of the model refer respectively to the number of agents included at each market stage.

Perfectly competitive market	$p = \alpha - \beta Y \; ; \; \pi = pY \; ; \; \pi^{'} = p = 0 \, ; \; p^{*} = 0 \;$ And $\; Y^{*} = \dfrac{\alpha}{\beta}$
Under monopoly (sole agent):	$\pi = pY \; ; \; \pi = (\alpha - \beta Y \,)Y \; ; \; \pi = \alpha Y - \beta Y^{2} \, ; \pi^{'} = \alpha - 2\beta Y = 0 \, ;$ $Y^{*} = \dfrac{\alpha}{2\beta}$ and $p^{*} = {\alpha}/{2}$
Duopoly (2 agents):	$p = \alpha - \beta (Y_{1} + Y_{2}) \, ; \; \pi_{1} = pY_{1} = \left[\alpha - \beta (Y_{1} + Y_{2}) \right] Y_{1}$ $\pi_{2} = pY_{2} = \left[\alpha - \beta (Y_{1} + Y_{2}) \right] Y_{2} \, ; \; \pi_{1}^{'} = \alpha - 2\beta Y_{1} - \beta Y_{2} = 0$ $\pi_{2}^{'} = \alpha - \beta Y_{1} - 2\beta Y_{2} = 0 \, ;$ the reaction functions are: $Y_{1} = \dfrac{\alpha}{2\beta} - \dfrac{Y_{2}}{2} \, ; Y_{2} = \dfrac{\alpha}{2\beta} - \dfrac{Y_{1}}{2} \, ; (Y_{1} + Y_{2})^{*} = \dfrac{2\alpha}{3\beta} \;$ And $\; p^{*} = {\alpha}/{3}$
Three agents:	$p = \alpha - \beta (Y_{1} + Y_{2} + Y_{3}) \, ; \; \pi_{1} = pY_{1} = \left[\alpha - \beta (Y_{1} + Y_{2} + Y_{3}) \right] Y_{1} \, ;$ $\pi_{2} = pY_{2} = \left[\alpha - \beta (Y_{1} + Y_{2} + Y_{3}) \right] Y_{2} \, ;$ $\pi_{3} = pY_{3} = \left[\alpha - \beta (Y_{1} + Y_{2} + Y_{3}) \right] Y_{3} \, ;$ $\pi_{1}^{'} = \alpha - 2\beta Y_{1} - \beta Y_{2} - \beta Y_{3} = 0 \, ;$ $\pi_{2}^{'} = \alpha - \beta Y_{1} - 2\beta Y_{2} - \beta Y_{3} = 0 \, ; \pi_{3}^{'} = \alpha - \beta Y_{1} - \beta Y_{2} - 2\beta Y_{3} = 0$

	The reaction functions are then: $Y_1 = \dfrac{\alpha}{2\beta} - \dfrac{Y_2}{2} - \dfrac{Y_3}{2}$; $Y_2 = \dfrac{\alpha}{2\beta} - \dfrac{Y_1}{2} - \dfrac{Y_3}{2}$; $Y_3 = \dfrac{\alpha}{2\beta} - \dfrac{Y_1}{2} - \dfrac{Y_2}{2}$; $(Y_1 + Y_2 + Y_3) = \dfrac{3\alpha}{2\beta} - (Y_1 + Y_2 + Y_3)$; So, $(Y_1 + Y_2 + Y_3)^* = \dfrac{3\alpha}{4\beta}$ and $p^* = \alpha/4$
Anti-commons with n agents:	$\displaystyle\sum_{i=1}^{n} p_i = \alpha - \beta Y$; $Y = \dfrac{\alpha}{\beta} - \dfrac{1}{\beta}\displaystyle\sum_{i=1}^{n} p_i$; given that $\displaystyle\sum_{i=1}^{n} p_i = \bar{p}$, then $Y = \dfrac{\alpha}{\beta} - \dfrac{1}{\beta}\bar{p}$; $\pi_i = p_i Y = p_i\left(\dfrac{\alpha}{\beta} - \dfrac{1}{\beta}\bar{p}\right)$; $\pi_i' = \dfrac{\alpha}{\beta} - \dfrac{2}{\beta}p_i - \dfrac{1}{\beta}(p_1 + p_2 + p_3 + ... + p_n) = 0$ $\pi_i' = \dfrac{\alpha}{\beta} - \dfrac{1}{\beta}p_i - \dfrac{1}{\beta}(p_1 + p_2 + ... + p_i + ... + p_n) = 0$ $\alpha - p_i - \bar{p} = 0$; $p_i = \alpha - \bar{p}$; $\displaystyle\sum_{i=1}^{n} p_i = n\alpha - n\bar{p} = \bar{p}$ $\bar{p} = \dfrac{n\alpha}{(1+n)}$ and $Y^* = \dfrac{\alpha}{(1+n)\beta}$; when $n \to \infty$, then $\bar{p} \to \alpha$ and $Y \to 0$.

The above simplified model shows the expected outcomes from anti-commons (case with n operators). As shown in the last row of the above table, there is an under-use of resources with higher costs or prices when the number of operators becomes very large.

The following empirical section is suggested for testing whether the process of enterprise creation in developing economies can be revealed to be under more fragmentation relative to the one pursuing by developed countries. This is achieved on the basis of the analysis of "doing business data". The hypothesis to be tested is that under anti-commons, costs are expected to be higher and the outcomes (enterprise creation) lower.

III. EMPIRICAL EVIDENCE OF ANTI-COMMONS IN DEVELOPING ECONOMIES THROUGH ENTERPRISE CREATION

The process of enterprise creation requires compliance with series of laws and regulations that are most of the time specific to every country and locations. Enterprise and business creation is thus subject to sets of authorizations and lengthy procedures. It is generally governed by an array of institutions that are likely to issue all the licenses needed for enterprise creation. These procedures usually reveal the existence of fragmented and scattered decision makers. Anti-commons are likely to exist and may lead to the limitation of the number of enterprise to be created.

The above features and hypotheses are tested in this section of this paper using the quantitative information provided by "Doing Business Data" and mainly the component that relates to starting a business.

1. Variables, Data and Observations

Three sources of data are used. They include "Doing Business Report" (DBR), Transparency International and United Nations Development Program. These sources have provided respectively business data, corruption data and information on human development index. All these data pertain to 2010.

Three variables are extracted from DBR. The first one relates to the number of procedures needed for enterprise creation. The second variable is "time" for the completion of the above procedures. The cost related to the creation of enterprises as a percentage of the country's income per capita is the last variable.

The corruption perception index (CPI) of 2010 is also used in this analysis. The human development index (HDI) [3] of 2010 has been useful in characterizing the level of development of countries (countries with larger HDI are more developed than the ones with lower HDI).

The overall sample includes 154 countries that have data on starting a business, CPI and HDI. (See Appendix).

2. Descriptive Statistics

As shown in the 2010 DBR, the average number of procedures, time and cost are higher for different groups of developing countries in comparison with the data of the OECD economies (table 1).

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[3] The HDI is an initiative of the United Nations Development Program launched in 1990. The HDI ranking is classifying countries into high and low development countries based on a HDI statistic. The latter is composed of life expectancy, education and standard of living data collected at the national level. In 2010, the methodology was changed slightly to include as usual the three dimensions: a long and healthy life style through Life Expectancy Index (at birth), Access to knowledge with an index including the Mean Years of Schooling Index and the Expected Years of Schooling Index, and a decent standard of living with the Income Index (a transformation of the Gross National Income) (United Nations Development Program, 2010)

Table 1: Number of Procedures, Time and Cost to Start a Business by Region (source: DBR, 2010)

	Procedures (number)	Time (days)	Cost (% of income per capita)
Latin America & Caribbean	9.3	56.7	36.2
Sub-Saharan Africa	8.9	45.2	95.4
Middle East & North Africa	8.1	20	38
East Asia & Pacific	7.8	39	27.1
South Asia	7.1	24.6	24.5
Eastern Europe & Central Asia	6.3	16.3	8.5
OECD	5.6	13.8	5.3

The above observations are confirmed through the overall descriptive analysis of the detailed data. Tables 2, 3 and 4 below show the summary statistics for the variables "procedures", "time", and "cost" for the starting of business topic. These tables are based on the overall data (table 2) with the division of the overall sample in two equal size groups where developed countries have the highest HDI (table 3) and developing economies with the lowest HDI. (table 4). The following graph introduces a box-plot representation of the overall observations by variable. It provides information about the mean and the presence of outliers.

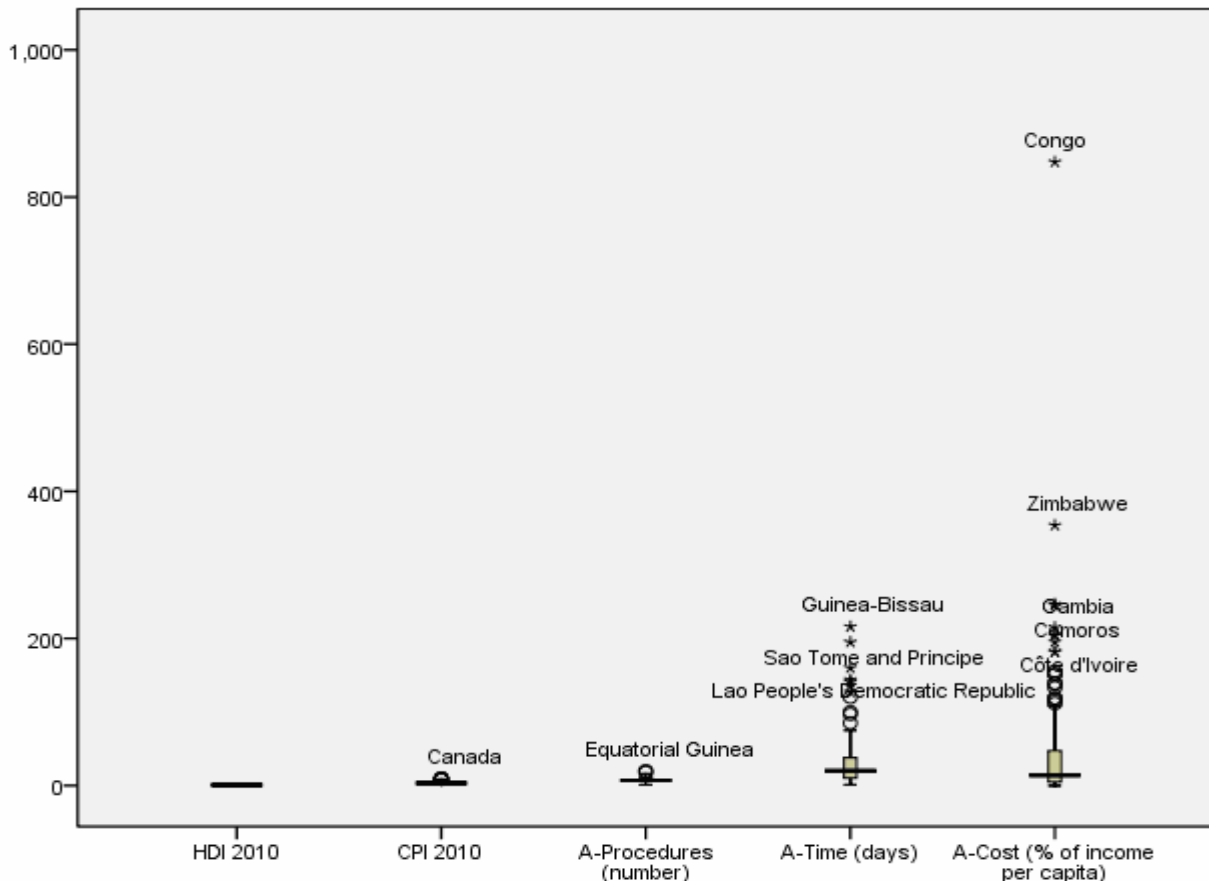**Graph: Box-Plot representation of Data**

Table 2: Descriptive statistics of Starting Business variables for all the countries

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
HDI 2010	154	.14	.9375	.6305	.1893
CPI 2010	154	1.4	9.3	4.038	2.1304
Procedures (number)	154	1	20	7.97	3.576
Time (days)	154	1	216	31.98	35.671
Cost (% of income per capita)	154	.0	847.6	44.451	88.7243

Table 3: Descriptive statistics of Starting Business variables for High HDI countries

	Procedures	Time	Cost
Mean	6.58	19.50	5.58
Standard Deviation	3.09	20.83	4.15
Minimum	1	1	0
Maximum	18.00	120.00	14.70

Table 4: Descriptive statistics of Starting Business variables for Low HDI countries

	Procedures	Time	Cost
Mean	9.17	50.36	77.67
Standard Deviation	3.30	78.05	97.43
Minimum	4	5	15
Maximum	20.00	694.00	847.60

When accounting for both the means and the standard deviations related to each variable and under a t-statistics test, high and low HDI countries exhibit statistically significant differences as shown in table 5. This implies that high HDI or developed countries exhibit statistically significant differences in the number of procedures, in time and costs relative to lower HDI or developing countries. Given the direction of these t-statistics values, developing economies show higher number of procedures, time and costs for enterprise creation.

Table 5: t-tests of the 3 Variables between High and Low HDI Countries

	Procedures	Time	Cost
t-test	3.54	7.95	18.86

3. Regression analysis

Regression analysis is conducted using the cost of enterprise creation as dependent variable. The independent variables are the number of procedures, the time required for business creation, the Corruption Perception Index (CPI) and HDI. All the variables are under their logarithmic forms with the regression run on the overall available data and variables. Under this regression, a statistically non significance estimated coefficient for time is exhibited. Procedures and time have shown significant correlation (procedures=0.804+0.385*time with R^2=0.541 and t-stat respectively of 8.869 and13.390). This has motivated the non inclusion of time in the final regression.

The results of this regression are introduced in table 6. This table accounts also for multicollinearity tests through showing the values of the level of tolerance (tolerance) and the variance inflation factor (VIF) as in O'Brien (2007).

Table 6 shows that with R^2 = 0.669 and an overall high level of the F test, the statistically significant coefficients (or elasticities) at the 1% level are those for HDI 2010 (-2.831) and Procedures (1.140) while CPI 2010 (-0.593) has a statistically significance only at 5 %. No multicollinearity is observed as the tolerance is between 0.4 and 0.5 and VIF between 1.27 and 2.20 (tolerance less than 0.20 or 0.10 and/or VIF of 5 or 10 and above for the existence of multicollinearity (O'Brien, 2007).

Table 6: Regression results from the stage of "Creating a Business"

R-Square	0.669
R-Square Adj	0.662
Standard Error of Estimate	1.069
F-test	101.1

	Coefficient	Std Error	t Ratio	Prob>|t|	Tolerance	VIF
Intercept	-0.431	0.693	-0.622	0.534		
HDI 2010	-2.831	0.335	-8.431	0.001	0.533	1.876
CPI 2010	-0.593	0.269	-2.204	0.029	0.450	2.198
Procedures	1.140	0.190	5.978	0.001	0.787	1.270

These results show that the costs of creating enterprises are sensitive to HDI, to the number of procedures and to CPI. The higher (respectively lower) is HDI, the lower (respectively higher) is the cost of enterprise creation. This implies that developed countries benefit from lower costs relative to developing economies that have higher costs. A 1 % increase (respectively decrease) in HDI generates 2.831 % cost decrease (respectively increase). Besides that, a 1 % increase (decrease) in procedures generates a 1.140 % increase (decrease) in costs. Besides that, a 1 % decrease (increase) in CPI implies a 0.593 % increase (decrease) in costs of enterprise creation.

Furthermore, when comparing the coefficients of HDI and procedures (t-test=-1587.86), the driving power of HDI appears to be higher. This confirms the role of development in the determining the costs.

The higher costs in developing countries are indications of the existence of more fragmentation and that the probability of existence of anti-commons is higher in these countries in comparison with developed economies. This might be a signal of blockage of the creation of larger numbers of enterprises in the developing world. The access to market economies is thus lowered by the likely existence of anti-commons in less developed economies.

IV.   DISCUSSION OF RESULTS

Based on the outputs of these regressions, the number of procedures and the level of development represented by the human development index (HDI) appear to have significant effects on the costs of the enterprise creation. As higher HDI refers to higher level of development with lower values exhibited by developing economies, higher costs of enterprise creation are definitely expressed by developing countries. The higher values of procedures, time and costs are experienced in developing economies. This shows how large numbers of procedures besides the time required are important signals for fragmentation and scattered decision makers. Fragmentation and high costs are consequently leading to the lowering of the probabilities of enterprise creation in less developed economies. A different situation is observed in developed countries where the costs are lower in relation to lower levels of fragmentation, meaning that lower probabilities of enterprise creation failure are expected relative to economies with higher costs. Fewer enterprises are consequently created in the less developed world as the consequence of the anti-commons related to the processes of authorizations and licensing. As private enterprises as major players in market economies, open market development is also under the effect of anti-commons. This is another difficulty that adds to the initial process of licensing and accessing to business ideas and technologies and also to the required patenting processes.

The results of this paper are in conformity with those attained in previous studies. The paper on the business environment in Portugal by Silva et al. (2011) shows that the high number of institutions, the overlap of rights and the lack of coordination reduce the effectiveness of enterprise creation programs. The study by Djankov et al. (2002) finds other facets of rights fragmentation with regard to procedures and costs and those countries with high regulations and procedures have higher corruption and unofficial economies. This makes the costs even higher and limits enterprise creation.

The implications from these results require that developing economies have to push further awareness about anti-commons besides issuing the needed remedies to reduce the negative effects of new technologies and institutional reforms. Some countries have accelerated the development of instruments devoted to the reduction of the negative impacts of the tragedy of anti-commons. China has focused on the administrative and institutional reforms as a step to consolidate government bodies with overlapping functions and coordinating their roles (Gao and Wang, 2008).

CONCLUSION

As this paper looked to the anti-commons problem from the stand point of developing economies, an important emphasis has been placed first on showing how different authors have dealt with this question. Furthermore, cases have been used to underline the impacts of anti-common on economic and social development. A special focus has been placed on the situation of developing economies, mainly in relation to the new issues raised by privatization, market development and enterprise expansion in the developing world. A simplified theoretical model has been used to underline the major features of anti-commons. It has retained that anti-commons, as described in the literature, are characterized by the under use and the high price of the resource. The "Doing Business" data have been used to test empirically for the effects of anti-commons on enterprise creation. The results show that, in developing countries, as the number of procedures and also the required time for enterprise creation increase the related costs. The attained results confirm the validity of the theoretical model used but also the likelihood of the effects of anti-commons on market expansion in developing economies.

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APPENDIX

Country	HDI 2010	CPI 2010	Procedures	Time	Cost
Norway	0.93756098	8.6	5	7	1.9
Australia	0.93731495	8.7	2	2	0.8
New Zealand	0.90683008	9.3	1	1	0.4
United States	0.90164638	7.1	6	6	0.7
Ireland	0.89464218	8	4	13	0.3
Netherlands	0.89020782	8.8	6	8	5.6
Canada	0.88834718	8.9	1	5	0.4
Sweden	0.88490513	9.2	3	15	0.6
Germany	0.88489154	7.9	9	18	4.7
Japan	0.88401773	7.8	8	23	7.5
Korea (Republic of)	0.87716288	5.4	8	14	14.7
Switzerland	0.87448954	8.7	6	20	2
France	0.87239533	6.8	5	7	0.9
Israel	0.87236108	6.1	5	34	4.2
Finland	0.87086884	9.2	3	14	0.9
Iceland	0.86859601	8.5	5	5	3
Belgium	0.866787	7.1	3	4	5.3
Denmark	0.86577208	9.3	4	6	0
Spain	0.86344213	6.1	10	47	15
Hong Kong, China (SAR)	0.86195195	8.4	3	6	1.8
Greece	0.85491369	3.5	15	19	20.2
Italy	0.85426524	3.9	6	10	17.9
Luxembourg	0.85207224	8.5	6	24	1.8
Austria	0.8510206	7.9	8	28	5.1
United Kingdom	0.8489688	7.6	6	13	0.7
Singapore	0.84610742	9.3	3	3	0.7
Czech Republic	0.84145969	4.6	9	20	9.2
Slovenia	0.82795668	6.4	3	6	0
Slovakia	0.81844472	4.3	6	16	2
United Arab Emirates	0.8152614	6.3	8	15	6.2
Estonia	0.81189428	6.5	5	7	1.7
Cyprus	0.81032291	6.3	6	8	11.7
Hungary	0.80494561	4.7	4	4	8
Qatar	0.80277523	7.7	6	6	7.1
Bahrain	0.80090754	4.9	7	9	0.5
Portugal	0.79489739	6	6	6	6.4
Poland	0.79481787	5.3	6	32	17.9

Lithuania	0.78326858	5	7	26	2.4
Chile	0.78278685	7.2	9	27	6.9
Argentina	0.77544643	2.9	14	26	11
Kuwait	0.77075883	4.5	13	35	1
Latvia	0.76902262	4.3	5	16	2.1
Montenegro	0.7686754	3.7	11	12	2.6
Romania	0.76720951	3.7	6	10	2.9
Croatia	0.76718421	4.1	7	22	8.4
Uruguay	0.76543179	6.9	11	65	40
Panama	0.75464179	3.6	6	12	10.3
Saudi Arabia	0.7518336	4.7	4	5	7.7
Mexico	0.75045017	3.1	8	13	11.7
Malaysia	0.74388373	4.4	10	18	15.6
Bulgaria	0.74320663	3.6	4	18	1.7
Trinidad and Tobago	0.73557181	3.6	9	43	0.7
Serbia	0.73521256	3.5	7	13	7.1
Belarus	0.73200907	2.5	5	6	1.7
Costa Rica	0.72495446	5.3	12	60	10.5
Peru	0.72267996	3.5	9	41	17.2
Albania	0.71871753	3.3	5	5	17
Russian Federation	0.7186459	2.1	9	30	2.7
Kazakhstan	0.71390432	2.9	7	20	4.8
Azerbaijan	0.71289342	2.4	6	10	2.9
Bosnia and Herzegovina	0.71038029	3.2	12	60	15.8
Ukraine	0.70993365	2.4	10	27	5.8
Iran (Islamic Republic of)	0.70219756	2.2	7	9	3.9
Macedonia, FYR	0.70120001	4.1	4	4	2.5
Mauritius	0.70067684	5.4	5	6	4.1
Brazil	0.69855934	3.7	16	120	6.9
Georgia	0.6977196	3.8	3	3	3.7
Venezuela (Bolivarian Republic of)	0.69641804	2	16	141	24
Armenia	0.69504847	2.6	6	15	2.6
Ecuador	0.69501721	2.5	13	64	35.1
Colombia	0.68884842	3.5	9	20	13.1
Jamaica	0.68837504	3.3	6	8	5.3
Tunisia	0.68252167	4.3	10	11	5.7
Jordan	0.68085574	4.7	8	13	49.5
Turkey	0.67866382	4.4	6	6	14.2
Algeria	0.67709223	2.9	14	24	12.1
Tonga	0.67663219	3	4	25	8.2
Dominican Republic	0.66342845	3	8	19	17.3

China	0.6633773	3.5	14	38	4.9
El Salvador	0.65939401	3.6	8	17	38.7
Sri Lanka	0.65819326	3.2	4	38	5.9
Thailand	0.65413152	3.5	7	32	6.3
Gabon	0.6480172	2.8	9	58	17.8
Bolivia	0.6426439	2.8	15	50	99.2
Paraguay	0.63983757	2.2	7	35	56.7
Philippines	0.63812958	2.4	16	53	28.7
Botswana	0.6333996	5.8	10	61	2.1
Moldova (Republic of)	0.62337802	2.9	8	10	7
Mongolia	0.62198757	2.7	7	13	3
Egypt	0.6197849	3.1	6	7	16.1
Uzbekistan	0.61745856	1.6	7	15	11.2
Guyana	0.61113201	2.7	8	34	18.6
Namibia	0.60619857	4.4	10	66	20.4
Honduras	0.60415904	2.4	13	14	47.3
Indonesia	0.59992869	2.8	9	60	26
Kyrgyzstan	0.59838474	2	3	11	5.2
South Africa	0.59744047	4.5	6	22	5.9
Syrian Arab Republic	0.5889619	2.5	7	15	27.8
Tajikistan	0.57974909	2.1	12	38	24.3
Viet Nam	0.57198959	2.7	11	50	13.3
Morocco	0.56665912	3.4	6	12	16.1
Nicaragua	0.56515746	2.5	6	39	111.7
Guatemala	0.56004394	3.2	12	37	47.8
Equatorial Guinea	0.53807711	1.9	20	136	100.4
Cape Verde	0.53381169	5.1	9	24	17
India	0.51913857	3.3	13	30	66.1
Swaziland	0.49794002	3.2	12	60	33.9
Lao People's Democratic Republic	0.49681968	2.1	7	100	12.3
Solomon Islands	0.49419705	2.8	7	57	52.7
Cambodia	0.49374351	2.1	9	85	138.4
Pakistan	0.49028472	2.3	10	21	5.8
Congo	0.48892062	2.1	10	160	86.5
Sao Tome and Principe	0.48764851	3	10	144	81.7
Kenya	0.47009393	2.1	12	34	36.5
Bangladesh	0.46925518	2.4	7	44	36.2
Ghana	0.46719727	4.1	7	12	24.8
Cameroon	0.45977278	2.2	10	35	115
Yemen	0.43946881	2.2	6	12	83
Benin	0.43529881	2.8	7	31	155.5

Madagascar	0.43472753	2.6	2	7	6.2
Mauritania	0.43348152	2.3	9	19	34.7
Papua New Guinea	0.43143452	2.1	6	51	18.9
Nepal	0.42845613	2.2	7	31	53.6
Togo	0.42814256	2.4	7	75	205
Comoros	0.42760621	2.1	11	24	182.1
Lesotho	0.42714913	3.5	7	40	27
Nigeria	0.42269848	2.4	8	31	76.7
Uganda	0.42157619	2.5	18	25	84.4
Senegal	0.41110506	2.9	4	8	63.7
Haiti	0.40404657	2.2	13	195	204
Angola	0.40308219	1.9	8	68	151.1
Djibouti	0.40199581	3.2	11	37	195.1
Tanzania (United Republic of)	0.39825364	2.7	12	29	36.8
Côte d'Ivoire	0.39684391	2.2	10	40	133.3
Zambia	0.39487866	3	6	18	28.4
Gambia	0.39013264	3.2	8	27	215.1
Rwanda	0.38540038	4	2	3	10.1
Malawi	0.38472155	3.4	10	39	108
Sudan	0.37873261	1.6	10	36	36
Afghanistan	0.34924878	1.4	4	7	30.2
Guinea	0.34017239	2	13	41	139.2
Ethiopia	0.32822107	2.7	5	9	18.9
Sierra Leone	0.31747491	2.4	6	12	118.8
Central African Republic	0.31509695	2.1	8	22	244.9
Mali	0.30939489	2.7	6	8	86.9
Burkina Faso	0.30506259	3.1	4	14	50.3
Liberia	0.29992748	3.3	5	20	52.9
Chad	0.29480582	1.7	13	75	246.4
Guinea-Bissau	0.28872206	2.1	16	216	181.5
Mozambique	0.28431741	2.7	10	26	19.3
Burundi	0.28150355	1.8	11	32	151.6
Niger	0.26135128	2.6	9	17	118.7
Congo (Democratic Republic of the)	0.23909499	2	14	127	847.6
Zimbabwe	0.14007917	2.4	9	97	353.8