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Van, Germinal G.

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Property rights and economic freedom: An econometric analysis

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Germinal G. Van

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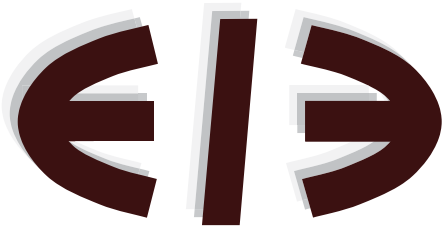

EERI
Economics and Econometrics Research Institute
Avenue Louise
1050 Brussels
Belgium

Tel: +32 2271 9482
Fax: +32 2271 9480
www.eeri.eu

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Property Rights and Economic Freedom

An Econometric Analysis

by

Germinal G. Van

Germinalvan27@gwmail.gwu.edu
The George Washington University
2121 I Street NW
Washington, D.C. 20052
(202)730.5913

Property Rights and Economic Freedom: An Econometric Analysis

Germinal G. Van

Abstract:

The purpose of this paper is to establish a positive correlation between property rights and economic freedom. It seeks to demonstrate that property rights lead to economic freedom. From a purely theoretical perspective, it has been assumed that greater access to property rights leads to economic freedom, consequently to a sustainable economic growth. To establish this correlation in the case of Africa, we applied the use of statistical tools to substantiate the validity of our economic theory. We mainly used a simple linear regression to ascertain our hypothesis.

Keywords: economic freedom, property rights, econometrics, macroeconomics, development economics, economic growth

INTRODUCTION

It is generally said that a country is developed when it has reached a substantial level of economic self-sufficiency. The United States, the United Kingdom, Germany, Australia, Russia, China, Canada, Brazil, and Argentina prime examples of countries that we considered to be developed because they have all attained a substantive level of economic self-sufficiency. There are many factors that determine the economic self-sufficiency of a country such as the degree of human, the level of consumption, the level of debt-to-GDP, the liberalization of the market, or even the low unemployment rate. In our analysis, we are interested in the concept of property rights, we seek to understand and evaluate how property rights lead to a higher degree of economic freedom.

The hypothesis that property rights lead to economic freedom has been formulated by Adam Smith in his magnum opus and path-breaking book *The Wealth of Nations* (1776). Smith's theories on property rights have contributed to the economic development of many of the countries listed in the aforementioned paragraph. On purely theoretical grounds, the concept of property rights commences with the notion of voluntary interaction. In a working paper published in 2002 published by the Mercatus Center at George Mason University, Professor Powell argued that the freedom to exchange allows individuals to make trades that both parties believe will make them better off.[1] Private property provides the incentives for individuals to economize on resource use because the user bears the cost of their actions.[2] When private property is combined with market exchange, the price system that results provides the information and incentives for the many anonymous individuals in society to coordinate their activities to channel available resources to

[1] Powell, Benjamin. (2002) "Private Property Rights, Economic Freedom and Well Being." *Working Paper 19.* pp.1-17. Mercatus Center, George Washington University.
[2] Ibid. p. 1

the people with the most urgent demand for them.[3] Professor Powell furthered his argument by asseverating that without private ownership, the use of resources by one individual imposes a cost on all the other members of society.[4] The arguments of Professor Powell are surely compelling and the logical reasoning which supports the coherence of the premises may lead to the logical conclusion that property rights do indeed lead to economic freedom but they, of course, need to be fully tested in order to authenticate their validity.

According to the 2020 Index of Economic Freedom, the factors which clearly contribute to economic freedom within a society are the rule of law, the size of government, regulatory efficiency, and market openness.[5] We determine the rule of law by the metrics of property rights, judicial effectiveness, and government integrity.[6] Government size is determined by the metrics of tax burden, government spending, and fiscal health.[7] Regulatory efficiency is determined by the metrics of business freedom, labor freedom, and monetary freedom.[8] Finally, market openness is determined by the metrics of trade freedom, investment freedom, and financial freedom.[9] In our analysis, we decided to use some of these metrics to assess the level of economic freedom in Africa. We particularly chose to focus on the metrics of property rights to determine economic freedom because property rights are the basic unit of economic freedom. It is generally said that one of the reasons why Africa remains economically a poor place is that the lack of the rule of law impedes the level of access property to property rights. However, the most economically advanced countries in Africa such as South Africa, Egypt, Kenya, or Mauritius, are the ones that have a

[3] Ibid. p. 1
[4] Ibid. p. 1
[5] 2020 Index of Economic Freedom, *Heritage Foundation.* (2020). Data.
[6] Ibid.
[7] Ibid.
[8] Ibid.
[9] Ibid.

significant level of economic freedom, and their level of economic freedom is correlated by the level of access that the African layman has to property rights. Consequently, we seek to thoroughly understand the role that property rights play in the economic development of African countries.

In order to determine whether the right to property plays a considerable role in the economic development of African states, we sought to test our hypothesis with a set of empirical data to give empirical content to our theory. We seek to use a simple linear regression model to determine the validity of our assumption.

METHODOLOGY

The framework of our analysis consists of creating a set of empirical data that will allow us to test our hypothesis. We then sought to create the first set of data that will give us the average of the property rights metrics and another set of data that will give us the average of economic freedom metrics. To build these two sets of data, we decided to evaluate the raw empirical data of fifteen African countries over a nine-year period to determine the average of their property rights index and economic freedom index. The average of the index of both metrics (property rights index and economic freedom index) will be the metrics of the data that we will use to test our hypothesis.

DATA

The first set of data that we are assessing is the data that gives us the average of property rights index of the fifteen African states. To build this data, we used the International Property Rights Index. The second set of data we are assessing is the data that gives us the average economic freedom index of the fifteen African states. To build this data, we used the 2020 Index of Economic Freedom of the Heritage Foundation.

Data 1: The Average of Property Rights Index

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	Average
Rwanda	5.5	5.6	6	6.2	5.9	6.2	6.5	6.5	6.6	6.04
Ghana	5.2	5.6	5.5	5.5	5.8	5.6	5.46	5.65	5.64	5.55
Botswana	6	6.3	6.3	6.3	6.3	5.93	5.93	6.12	6	6.13
Nigeria	3.8	3.9	3.9	3.9	3.7	3.38	3.57	4	4	3.79
Côte d'Ivoire	3.11	3.7	3.8	3.9	4.1	4.22	4.73	4.59	4.79	4.10
South Africa	6.83	6.6	6.7	6.8	6.7	6.59	6.59	7	6.35	6.68
Kenya	4.31	4.4	4.5	4.6	4.6	4.53	4.61	4.86	4.99	4.6
Tanzania	4.57	5.1	5	4.9	5.1	4.61	4.58	5.06	5.18	4.9
Cameroon	3.82	4.2	4.3	4.3	4.3	3.9	4.05	4.3	4.32	4.17
Algeria	3.73	4.3	4	3.7	4.1	4.08	4.11	4.16	4.14	4.03
Egypt	5.02	5.2	5.1	4.8	4.6	4.14	4.34	4.33	5.06	4.73
Morocco	5.08	5.3	5.3	5.3	5.2	5.15	5.29	5.5	5.64	5.31
Senegal	4.21	4.7	4.6	4.5	4.7	4.57	4.8	4.94	5	4.67
Mauritius	6.4	7.2	7.1	7.1	7.13	6.86	6.85	7.2	7.09	6.99
Gabon	5.1	5.25	5.3	5.2	5	4.43	4.66	4.69	4.91	4.95

Table 1. Source: International Property Rights Index, Author's computation

Data 2: The Average of Economic Freedom Index

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	Average
Rwanda	59.1	62.7	64.9	64.1	64.7	64.8	63.1	67.6	69.1	64.45
Ghana	60.2	59.4	60.7	61.3	64.2	63	63.5	56.2	56	67.64
Botswana	70.3	68.8	69.6	70.6	72	69.8	71.1	70.1	69.9	70.24
Nigeria	56.8	56.7	56.3	55.1	54.6	55.6	57.5	57.1	58.5	56.5
Côte d'Ivoire	54.1	55.4	54.3	54.1	57.7	58.5	60	63	62	57.68
South Africa	62.8	62.7	62.7	61.8	62.5	62.6	61.9	62.3	63	62.47
Kenya	57.5	57.4	57.5	55.9	57.1	55.6	57.5	53.5	54.7	56.3
Tanzania	58.3	57	57	57.9	57.8	57.5	58.5	58.6	59.9	58.05
Cameroon	52.3	51.8	51.8	52.3	52.6	51.9	54.2	51.8	51.9	52.28
Algeria	56.9	52.4	51	49.6	50.8	48.9	50.1	46.5	44.7	50.1
Egypt	59	59.1	57.9	54.8	52.9	55.2	56	52.6	53.4	55.66
Morocco	59.2	59.6	60.2	59.6	58.3	60.1	61.3	61.5	61.9	60.18
Senegal	54.6	55.7	55.4	55.5	55.45	57.8	58.1	55.9	55.7	56.01
Mauritius	76.3	76.2	77	76.9	76.5	74.7	74.7	74.9	75.1	75.81
Gabon	55.4	56.7	56.4	57.8	57.8	58.3	59	58.6	58	57.59

Table 2: Source: 2020 Index of Economic Freedom, Author's computation

Data 3: Correlation between Property Rights and Economic Freedom

Country	Property Rights Index (X)	Economic Freedom Index (Y)
Rwanda	6.04	64.45
Ghana	5.55	67.64
Botswana	6.13	70.24
Nigeria	3.79	56.5
Côte d'Ivoire	4.10	57.68
South Africa	6.68	62.47
Kenya	4.6	56.3
Tanzania	4.9	58.05
Cameroon	4.17	52.28
Algeria	4.03	50.1
Egypt	4.73	55.66
Morocco	5.31	60.18
Senegal	4.67	56.01
Mauritius	6.99	75.81
Gabon	4.95	57.59
Means	$\overline{X} = 5.11$	$\overline{Y} = 60.06$

Table 3. Source: Author's computation

$\overline{X} = 5.11$
$\overline{Y} = 60.06$

MODEL

As was aforementioned in the introduction of this analysis, we asserted that we were going to use a linear regression analysis to test our hypothesis. Therefore, our equation is the following:

$$Y = \beta_0 + \beta_1 X + \varepsilon$$

Where (Y), which is the dependent variable, represents the economic freedom index; (β_0) is the intercept variable; ($\beta_1 X$), which is the independent variable and the slope, represents the property rights index; and (ε) represents the error term.

Country	PRI (X)	EFI (Y)	$(X-\overline{X})$	$(Y-\overline{Y})$	$(X-\overline{X})^2$	$(Y-\overline{Y})^2$	$(X-\overline{X})(Y-\overline{Y})$
Rwanda	6.04	64.45	0.93	4.39	0.86	19.27	4.08
Ghana	5.55	67.64	0.44	7.58	0.19	57.46	3.34
Botswana	6.13	70.24	1.02	10.18	1.04	103.63	10.38
Nigeria	3.79	56.5	-1.32	-3.56	1.74	12.67	4.70
Côte d'Ivoire	4.10	57.68	-1.01	-2.38	1.02	5.66	2.4
South Africa	6.68	62.47	1.57	2.41	2.46	5.81	3.78
Kenya	4.6	56.3	-0.51	-3.76	0.26	14.14	1.92
Tanzania	4.9	58.05	-0.21	-2.01	0.04	4.04	0.42
Cameroon	4.17	52.28	-0.94	-7.78	0.88	60.53	7.31
Algeria	4.03	50.1	-1.08	-9.96	1.16	99.20	10.76
Egypt	4.73	55.66	-0.38	-4.4	0.14	19.36	1.67
Morocco	5.31	60.18	0.2	0.12	0.04	0.01	0.024
Senegal	4.67	56.01	-0.44	-4.05	0.11	16.40	1.78
Mauritius	6.99	75.81	1.88	15.75	3.53	248.06	29.61
Gabon	4.95	57.59	-0.16	-2.47	0.26	6.11	0.4
	$\overline{X}$=5.11	$\overline{Y}$=60.06	$\sum = 0.01$	$\sum = -4.76$	$\sum$ =13.81	$\sum = 672.35$	$\sum = 82.57$

Table 4. Source: Author's computation

Let us first the value of the slope:

We know that: $$\beta_1 = \frac{\sum(x-\overline{x})(y-\overline{y})}{\sum(x-x)2}$$

$$\beta_1 = \frac{82.57}{13.81}$$

$\beta_1 = 5.98$

Now that we found the value of the slope, let us find the value of the intercept variable (β_0):

$$\beta_0 = \overline{Y} - b\overline{X}$$

$$\beta_0 = 60.06 - 5.98\ (5.11)$$

$\beta_0 = 29.5$

Therefore:

$$Y = 29.5 + 5.98X + \varepsilon$$

Now that we have calculated the intercept variable and the independent variable, let us not forget that our model is not perfect., which means that it contains errors. That being said, the goal here is the minimize the error term. The standard error formula is:

$$\sigma = \frac{s}{\sqrt{n}}$$

We know however that the formula of the Residual Standard Deviation is:

$$S_{res} = \sqrt{\frac{\sum(Y-Y)2}{N}}$$

This formula will help us find the standard error of our data. Let us now replace the variables of this formula with the actual number:

$$S_{res} = \frac{\sqrt{672.35}}{\sqrt{15}}$$

$$S_{res} = 13.18$$

Now that we found the residual standard deviation, let us calculate the standard error:

$$\sigma = \frac{13.18}{\sqrt{15}}$$

$$\sigma = 3.40$$

EMPIRICAL RESULTS & DISCUSSION

The empirical results from our analysis validate our hypothesis. As we could observe in the following figure, we could indeed see that there is a positive correlation between property rights and economic growth. For each incrementation of economic freedom, property rights increase by a 5.98-points index. Moreover, there is a 3.40 standard error between each observation point and the regression line.

Figure 1.

Our analysis shows that access to property rights plays a significant role in the economic development of African states. Countries like Mauritius, Rwanda, South Africa, Ghana, and Botswana have a high property rights index as well as a high economic freedom index. The reason that establishes this correlation is the impact that the legal and political environment has on access to property rights.

According to the International Property Rights Index, a country is considered to be prosperous in terms of property rights when it has an index higher than 4.[10] Similarly, the Index of Economic Freedom assesses that a country is considered to be free if it has an index superior to 60 percent.[11] If we take a close look at Mauritius for example, we can see that Mauritius has the highest property rights index (6.99) as well as the highest economic freedom index (75.81%) within the last nine years (2010-2018). Based on the metrics of the International Property Rights Index and that of the Index of Economic Freedom, Mauritius is the freest country and most prosperous country in Africa. Figure 2 shows the relation between the overall index of property rights and the legal and political environment index in Mauritius.

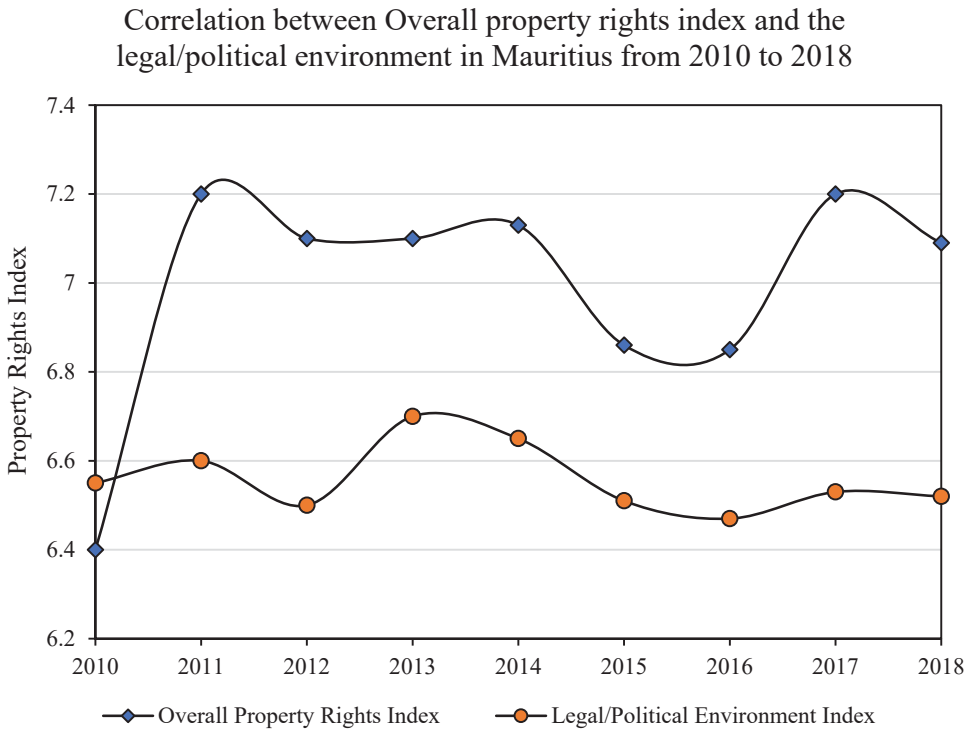

Figure 2. Source: International Property Rights Index

[10] *International Property Rights Index*. (2020).
[11] Index of Economic Freedom, *The Heritage Foundation.* (2020).

By observing the graph, we can see that the overall index of property rights is manifestly higher than the legal and political index of property rights. That tells us that the Mauritius government has made of the expansion of access to property rights one of its high economic priorities. Furthermore, the expanded access to property rights entails that Mauritius has a strong legal system that secures the protection of private property. As was aforementioned earlier in our analysis, one of the main impediments to the economic development of Africa is its lack of an established rule of law as the basic unit of societal standard. Mauritius and the other African states that have a high property rights index and a high economic freedom index all follow the same patterns. These states' governments loosened the restrictions upon the access to property rights which enable the layman to own property and to generate wealth. The more wealth is created within a society, the higher is the economic freedom of that society because people have the tools to create new wealth from which everyone will benefit. And the right to private property is the first element that contributes to the creation of wealth and economic development.

It is important to comprehend that the form of property rights in Africa—and their absence, in many cases—is the root source of its poverty, which creates both good and bad news.[12] The good news is that Africa is not doomed to poverty; if its poverty rights institutions can be improved. African will continue to grow and its people's living standards will subsequently improve.[13] The bad news is there are not been any substantial policies to improve property rights. Worse, many of the problems with property rights in Africa stem from problems with politics and political institutions.[14] Corruption and the lack of the rule of law perpetrate poverty within the continent.[15]

[12] Robinson, James, "Property Rights and African Poverty" *Hoover Institution.* (2010). Article.
[13] Ibid.
[14] Ibid,
[15] Ibid.

The findings of our model show that substantial progress was made throughout those nine years even though there is still much more work to do to improve the access to property rights to the layman. Mauritius, Botswana, Ghana, and South Africa are good examples that demonstrate that economic freedom can surely take place if the right measures are implemented adequately.

PREDICTIONS

Our regression model shows that there is a positive correlation between property rights and economic freedom. Our model indicates that the economic freedom of a country will increment by about a 6-points index of its property rights. That being said, our model enables us to predict that if a set of policies favoring an increase of access to property rights are implemented, the economic freedom that country will consequently surge, and that surge of economic freedom will stimulate its growth. Property rights are clearly a reliable indicator in which we can determine the level of economic freedom and growth of a country.

CONCLUSION

The main objective of our analysis was to empirically demonstrate that access to the right to property rights leads to economic freedom. To test our hypothesis, we used a simple linear regression model to validate our theory. The results showed indeed that our theory is valid since the linear regression model we used, demonstrated that there is a positive correlation between property rights and economic freedom.

As we have explained through our analysis, property rights are the basic unit to determine the creation of wealth and therefore the expansion of economic freedom. The ability to own property is a chief step toward the creation of economic value. Africa is a place endowed in natural

resources and human capital. For the actors of African economies to create economic value within the continent, they must be able to own property and use that property to create exchange. It is the exchange that takes place under the concept of property rights that increases a country's economic freedom.

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