HOW DOES ECONOMIC FREEDOM INFLUENCE THE RELATIONSHIP BETWEEN GOVERNMENT SIZE AND CONVERGENCE?

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Abstract: *In this paper we present some empirical results about absolute and conditional convergence of real GDP within 121 countries using cross-country data. We assume that there is an inverted U-shaped curve, which describes the relationship between economic growth and government spending. It is mainly because the institutional conditions of productivity do not exist at lower levels of government spending. At higher levels, the government needs to levy higher taxes to finance its expenditures, which hinders growth. So there can be somewhere an optimal government redistribution level that maximizes growth. This optimal level depends on institutional factors that can be grabbed by certain Economic Freedom and Worldwide Governance Indicators. It was not our aim necessarily to determine exactly the level of optimal government redistribution, it would be difficult because of the heterogeneity of the countries, only to make a comparison between free and less free countries, and draw some conclusions about how this level depends on these institutional variables. Summing up we can say that our aim was to compare free and less free, legally "good" and "bad", as well as corrupt and less corrupt countries from the aspect of government redistribution level. If we divide countries into free and less free countries and assume that both groups have an inverted U-shaped curve, the optimal level of government spending share is larger in the richer countries because of their better institutional system. These results do not contradict those findings that declare positive or negative relationship between government spending and economic growth. One part of the literature presumes that there is only one optimal level of government spending, we point out that there can be at least two optimal levels, and they depend on the institutional quality.*

Keywords: Economic growth; convergence; government spending; cross-country analysis

JEL classification: O40; O47; H50

1. Introduction

Various authors have examined the relationship between government size and economic growth. Some of the researchers found a positive link, like Myrdal (1960) and Easterlin (1974), but some of them found it negative, for example Rubinson (1977), Cameron (1982), Landau (1983) and Marlow (1986). The most recent ones also found it negative, like Romero-Avila and Strauch (2008), Afonso and Furceri (2010) among many other authors. They used mainly cross-country and panel data to illustrate it. All in all, there is no general convincing empirical evidence about the sign of this relationship, but some other variables will help to understand the problem.

A naive conclusion from the general framework of Solow (1956) model leads to the finding that poorer countries are growing with a faster speed than the richer ones because of the decreasing marginal product of capital. So theoretically, poorer countries can catch up (Solow, 1956, 1957).

On the contrary, according to Barro (1990), we know that there is no absolute convergence within the countries of the world. Absolute convergence occurs only within more homogeneous groups like European Union or Europe and Asia together. African countries for example seem to lag behind and it is mainly due to institutional differences. If the less

developed countries had the same institution quality, they would be able to converge to the developed countries. Summing up, absolute convergence is not true due to institutional differences, but there can be a conditional convergence. If the government spending is near the optimal level in a given country, this country can grow faster. As we mentioned, too high and too low redistribution hinders growth. We assume that richer economies have a higher optimal level, and the institutionally underdeveloped countries have a lower optimal government size. According to Tanzi (2005) the optimal level of government spending is 30 percent. We do not suppose that there is only one optimal level. We assume that there is at least two optimal levels, and it depends on institutional variables. These variables are measured by Economic Freedom, Legal System & Property Rights, and Control of Corruption.

In Chapter 2 we examine 121 countries. Most of the data come from the World Development Indicators (WDI, 2014). At first we provide some descriptive statistics to ascertain whether it is an absolute convergence among all of the countries, than we divided the sample into groups according to the abovementioned there institutional variables: Economic Freedom, Legal System and Property Rights, and finally Control of Corruption. If freer economies are richer, but grow slower than the others, less free ones can catch up. We will see that it is not true.

Freer countries are much wealthier and grow faster at the same time, so less developed countries do have a chance under these circumstances to approach them. The result is similar in the other two situations. So one dividing variable is enough to run regressions. In Chapter 3 we run three regression, the first is for all countries, but these countries are very heterogeneous, so the fit is not so good. After that we run the same on only the free countries, than only on less free countries. Of course, we know that freer economies are also wealthier, and have better legal institutions. According to our results freer countries have a higher optimal government redistribution level than less free, less developed, so those countries that have worse legal system.

2. Variables, sample and data

In the next Chapter, from the tables we can see three categorizations of 121 countries. We examined an 18-year period between 1995 and 2012. We took into account the initial real GDP per capita *RGDP1995*, the average real growth rate of the period, indicated by *grr*, and the structure of government spending. *Gtot* variable means the total government spending as a percentage of GDP. This expense means cash payments for operating activities of the government in providing goods and services. It includes compensation of employees (such as wages and salaries), interest and subsidies, grants, social benefits, and other expenses such as rents and dividends (WDI, 2014). *Gcon* variable means the government consumption also as a percentage of GDP, more exactly the final government expenditure including all government current expenditures for purchases of goods and services and compensation of employees (WDI, 2014). *Ghea*, *Gedu* and *Gmil* variables simply mean the government expenditure spent on Health, Education and Military as a percentage of government expenditure.

I also used some important variables to divide the data into two groups: The Economic Freedom of the World Index, indicated by *EFW* (EFW, 2012), Legal System & Property Rights, indicated by *Legal* (EFW, 2012), which is a component of Economic Freedom, and finally the Control of Corruption, indicated by *CC,* also in 2012, which is a very important component of The Worldwide Government Indicators (WGI 2014).

3. Descriptive statistics

Let's see at first some descriptive statistics by dividing the sample into groups. The first categorization is according to Economic Freedom of the World Index, which is annually published by the Canadian Fraser Institute. **Table 1** shows that there are 64 units in the sample, where EFW>7, and 57, where EFW<7. Countries above 7 are supposed to be free, below 7 are less free. We can see from **Table 1** that free economies had more than five times larger real GDP in 1995, and since then free economies are growing with faster pace than the others. So less free countries will never catch up, because their institutional system does not allow growing more rapidly. Free countries have larger government redistribution, because they are richer and they can afford it. According to Wagner's law, the demand on public goods is growing in the developed countries (Ram, 1987). If we carefully examine the differences in the structure of the expenditures, we can see that money spent on health is larger, but spent on education and military are lower in the developed countries than in the less developed ones on the percentage of total government expenditures.

Table 1: Divergence among free and less free countries

	EFW	N	Mean	Std. Error Mean
RGDP1995	>= 7,00	64	14747,84	1892,79
	< 7,00	57	2737,82	627,83
grr	>= 7,00	64	2,66	0,21
	< 7,00	57	2,36	0,25
Gtot	>= 7,00	64	29,17	1,45
	< 7,00	57	21,12	1,13
Gcon	>= 7,00	64	16,52	0,64
	< 7,00	57	14,39	0,68
Ghea	>= 7,00	64	12,50	0,44
	< 7,00	57	9,91	0,40
Gedu	>= 7,00	64	13,32	0,43
	< 7,00	57	15,73	0,61
Gmil	>= 7,00	64	8,01	0,85
	< 7,00	57	10,14	0,80

Source of data: EFW (2014), WDI (2014)

The second division is according to the quality of Legal System & Property Rights (EFW, 2014). If the quality measure of the legal system and property rights (Legal) is more than 5.5, the given country is considered to be legally "good", or if it is under 5.5, we call it legally "bad". We can clearly see from **Table 2** that legally "good" countries were more than fivefold richer than legally "bad" ones, and the growth rate (grr) was also significantly larger, so this difference is continuously increasing. We can also clearly see that legally "good" governments spend a larger share of their GDP than the others. Of course we do not know the causal relationship, but we can guess that the legally "good" economies are also richer, so they can afford to have a bigger redistribution.

Table 2: Divergence among legally "good" and "bad" countries

	Legal	N	Mean	Std. Error Mean
RGDP1995	>= 5.5	60	15506,13	1968,87
	< 5.5	61	2779,51	625,12
grr	>= 5.5	60	2,76	0,25
	< 5.5	61	2,27	0,21
Gtot	>= 5.5	60	30,38	1,46
	< 5.5	61	20,45	1,04
Gcon	>= 5.5	60	17,57	0,59
	< 5.5	61	13,50	0,64
Ghea	>= 5.5	60	12,31	0,44
	< 5.5	61	10,26	0,44
Gedu	>= 5.5	60	13,84	0,47
	< 5.5	61	15,06	0,59
Gmil	>= 5.5	60	7,96	0,92
	< 5.5	61	10,05	0,73

Source of data: EFW (2014), WDI (2014)

I also divided the sample into two groups with respect to the control of corruption index from 2012. I found that the median value was about at -0.25. The difference is bigger than by the earlier two cases. Countries that are less corrupt, had 9 times larger real GDP in 1995 than the corrupt ones, and the growth rate of these two groups were roughly the same, so there is only a slight catch up between these two groups.

Table 3: No significant convergence among "corrupt" and "less corrupt" countries

	CC	N	Mean	Std. Error Mean
RGDP1995	>= -.2500	59	16678,46	1950,81
	< -.2500	62	1869,18	324,75
grr	>= -.2500	59	2,44	0,19
	< -.2500	62	2,59	0,26
Gtot	>= -.2500	59	31,52	1,43
	< -.2500	62	19,53	0,92
Gcon	>= -.2500	59	18,48	0,57
	< -.2500	62	12,70	0,54
Ghea	>= -.2500	59	12,18	0,48
	< -.2500	62	10,42	0,41
Gedu	>= -.2500	59	14,08	0,56
	< -.2500	62	14,81	0,52
Gmil	>= -.2500	59	7,29	0,89
	< -.2500	62	10,65	0,74

Source of data: WGI (2014), WDI (2014)

These descriptive statistics do not contain new results, but these findings coincide with some of well-known facts (Barro 1990, Czeglédi 2007). It proves that this dataset is reliable, so we can run further tests with them. It is clear that every categorization provided almost the same result, so hereafter only one variable will be enough to divide the sample.

4. Results of the regressions

As we assumed, there must be an inverted U-shaped relationship between government spending and economic growth, because too high and too low government spending does not foster growth. So a simple regression model was used, in which we put the *Gtot* and also the square of the *Gtot* as explaining variables. Our regression model was the following:

$$grr = \beta_0 + \beta_1 \ln RGDP1995 + \beta_2 Gtot + \beta_3 Gtot^2 \quad (1)$$

This framework is according to Mankiw at al. (1992). We omitted some variables, which can cause a little bias, but the order of these levels are good. In this case we can estimate the *Gtot* level that maximizes growth according to the following formula:

$$Gtot^* = -\frac{\beta_2}{2\beta_3} \quad (2)$$

Of course, we know that these estimations are not exact, because there can be some omitted variable distortions, we only want to use it in comparing these levels among free and less free countries.

Table 4 shows the coefficients for the whole sample, it contains 121 countries. Of course I took the initial *lnRGDP1995* as well, where *ln* means the natural logarithm. Theoretically if we get negative coefficient for the *Gtot2* and positive for *Gtot*, it refers to an inverted U-shape as we assumed, where *Gtot2* means the square of variable *Gtot*. In addition, if we get negative coefficient for the initial GDP, it refers to convergence. The optimal value of *Gtot* can be calculated from the coefficients, which maximizes growth. For the whole sample, it is 35 percent. Of course we cannot take it seriously, because of the omitted variables, but I will use this number only to compare it to the other cases. The Adjusted R Square is very low, it means that the model fit leaves much to be desired. We do not want to draw conclusions from this case. As we will see later (**Table 5** and **Table 6**), the optimal size is 49 percent for the developed countries and 27 for the less developed countries. Sadly these numbers are not exact because of the distortions, they do not show magnitudes, we can only compare them, for which it is larger.

Table 4: Coefficients of the first regression (Adjusted R Square=0,04)

Model	Unstandardized Coefficients		t	Sig.
	B	Std. Error		
(Constant)	3,898	,873	4,468	,000
lnGDP1995	-,447	,122	-3,657	,000
Gtot	,140	,053	2,622	,010
Gtot2	-,002	,001	-2,439	,016

Source of data: WGI (2014), WDI (2014)

Table 5 contains only those countries where the EFW index is larger than 7. As we saw from descriptive statistics, these are mainly the richer, the developed countries. We can conclude convergence from the coefficient of the initial GDP, and inverted U-shape from the *Gtot2*. The optimal *Gtot* level would be 49 percent, so bigger than in the others. In this case, the Adjusted R Square is very much higher than in the precious case, partly because the sample is more heterogeneous.

Table 5: Coefficients of the second regression (Adjusted R Square=0,429)

	Unstandardized Coefficients			
Model (EFW>7)	B	Std. Error	t	Sig.
(Constant)	8,431	1,048	8,044	,000
lnGDP1995	-,843	,137	-6,161	,000
Gtot	,098	,056	1,756	,084
Gtot2	-,001	,001	-1,748	,085

Source of data: WGI (2014), WDI (2014)

From **Table 6** it is clear that there is also a convergence within less free countries, but here the negative coefficient is statistically not significant. Despite this, it seems that there is an inverted U-shaped curve. The optimal *Gtot* level for these probably less developed countries that maximizes growth is 27 percent. Of course, this regression result does not mean that it is exactly the optimal level, but it is quite sure that lower than in the richer economies. According to some researchers, the relationship between growth and government size is inverted U-shaped (Tanzi 2005, Armey 1995, Peden 2005, Sheehy 1995). In all these cases, the coefficient of the Gtot2 is negative, which refers to the inverted U-shape. The coefficient of lnGDP1995 is negative for the developed countries, it means there is a significant convergence among them. It is a little bit surprising that the coefficient of lnGDP1995 is negative for the whole sample, which at first glance seems to contradict to Barro (1990), but we must remark that the whole sample is not the whole world. Finally, there is no convergence between the less developed countries, because the coefficient of lnGDP1995 is not significant, but it seems that there is a U-shape relationship between the investigated variables, the coefficient of Gtot2 is even significant.

Table 6: Coefficients of the third regression (Adjusted R Square=0,053)

	Unstandardized Coefficients			
Model (EFW<7)	B	Std. Error	t	Sig.
(Constant)	,477	1,966	,243	,809
lnGDP1995	-,295	,223	-1,327	,190
Gtot	,324	,143	2,262	,028
Gtot2	-,006	,003	-2,010	,050

Source of data: WGI (2014), WDI (2014)

5. Concluding remarks

From the descriptive statistics we can see the well-known fact, that the freer, "legally" better and the less corrupt countries are also wealthier. And there is a divergence among these countries, but at least does not seem to be any significant convergence between them. So it seems that the freer, legally better and less corrupt countries are not only richer, but grow faster. But why do the poorer countries lag behind, and do not catch up? We can explain it with institutional differences. If the poor countries had the same quality of institutional system, they would be able to take the advantage of higher marginal product of capital and attract much more investment. But these countries are not so free, the quality of legal system is worse, and the corruption is bigger.

We assumed according to Armey (1995) and Tanzi (2005), that there is an inverted U-shaped relationship between government spending and economic growth. If we take the institutional quality into account, we can assume that the developed countries have a U-shaped curve, and the less developed have another. By the developed countries, the government spending level that maximizes growth is larger than by the less developed ones. We can see it from **Table 5** and **Table 6,** that free countries have a larger optimal level. It was not our aim necessarily to determine the exact level of government spending level, this regression method does not make it possible because of the omitted variable distortions, but we can conclude that in the free countries the optimal redistribution is higher. The government spending share is higher in the developed countries, because they have a higher quality of legal system, which is more efficient and enables a higher productivity.

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