Economic Geography and International Inequality: A Reappraisal

The Role of Institutions

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Abstract

This paper replicates Redding and Venables (2004) series for Market Access for 1994 in order to re-estimate the GDP equation with alternative socio-institutional measures. Using the newly created series together with more standard socio-institutional indicators allows testing where does cross-country variation in the performance of the Market Access index arise from. The results show that the Redding and Venables (2004) results are not unconditional. Poor institutional quality undermines the positive benefits of geographical location. Only when a country enjoys high enough institutional quality can it effectively benefit from accessibility to markets.

1. Introduction

Under increasing world economic integration, why firms do not move more production to low wage countries? Some factors previously studies are natural endowments or technology related arguments. Redding and Venables (2004) try to answer this question by incorporating geographical location into the analysis.

The mechanism in which they focus is distance to markets. Both distance to inputs (capital and intermediate goods) and distance to output (final production) markets are considered. Under given technology and internationally set prices (except wages), firms located further away from markets bear extra costs to trade that force wages downwards in order to remain competitive. This mechanism would explain why there are not more firms moving to low-wage countries.

Geographic location determines wages. Redding and Venables (2004) find statistically significant effects of geographical location on per capita income, after controlling for primary resource endowments, and a number of institutional characteristics. The magnitude of these effects is important. Halving a country's distance to markets would result in about a 25 percent increase in per capita income (Redding and Venables, 2004:77). But, can one generalise this result? Moving countries that are very far away from the main world markets into a central location can result into much larger income effects. For instance, performing the experiment of hypothetically moving Zimbabwe to central Europe results into an almost 80 percent rise in Zimbabwe's GDP per capita (Redding and Venables, 2004:77). But, can one really move any country in the world to Europe and make it work?

This paper explores the insights of the Redding and Venables (2004) results, and shows that they are non-robust and particularly sensitive to the institutional setup. An institutional quality threshold is established below which no matter where we are in the world the hypothetical rise in GDP per capita is not going to happen. Section 2 of the paper exhibits the theoretical model. Section 3 moves from theory to econometric specification. Section 4 replicates the Market Access index with some alternative data. Section 5 performs some robustness tests with alternative socio-institutional variables. Section 6 explores what is leading the results with the help of some partition regressions. Section 7 performs some country-case experiments. Finally, section 8 concludes.

2. Model

The theoretical framework used by Redding and Venables (2004) follows the general equilibrium model exposed in Fujita, Krugman, and Venables (1999), chapter 14 on international specialisation. This model allows for international specialisation with intermediate goods. The final manufactured good is also used as an input in the production function, thus, acting as well as an intermediate capital good. Production also requires an immobile (non-tradable) factor of production, which can be interpreted as labour.

In the exposition of the model, we follow Fujita, Krugman, and Venables (1999), and introduce some notation changes to match Redding and Venables (2004) application. For instance, we allow for i = 1,…, R countries instead of two in the original Fujita, Krugman, and Venables (1999).

Prices of production factors are w_i for labour and G_i for the intermediate good. When the latter is sold directly to the consumer its price is p_i. These define the indirect production function

$$p_i = w_i^{1-\alpha} G_i^{\alpha}, \qquad 0< \alpha <1 \qquad (1),$$

which is Cobb-Douglas with intermediate manufactured good share α. Equation 1 illustrates the fact that firms set price equal to marginal cost.

In each country i, there are n firms producing n differentiated manufactured products. Therefore, n_i is the number of varieties of the manufactured good produced in country i. The manufactured good enjoys a constant elasticity of substitution (CES) amongst all its varieties. The CES function is

$$G_i = [\sum_{j=1}^{R} n_j (p_j T_{ji})^{1-\sigma}]^{\frac{1}{1-\sigma}}, \qquad \sigma >1 \quad (2),$$

where T_{ji} stands for the transportation costs from country j to country i. Firms chose to buy all varieties available to produce at internal price G_i, and the more varieties the better. Equally, consumers get best utility by purchasing all varieties available, and the more the better. Their CES utility function is

$$U_j = [\sum_{i=1}^{R} n_i x_{ij}^{\frac{\sigma-1}{\sigma}}]^{\frac{\sigma}{\sigma-1}} \qquad (3),$$

where x_{ij} is the amount of the manufactured good produced in country i which is demanded by county j. In other words, x_{ij} represents the level of exports from i to j, and the level of internal demand in the case of j = i. Aggregating across importing countries we have

$$\sum_{j=1}^{R} x_{ij} = x_i \qquad (4),$$

where x_i is the aggregate level of production for a given firm-variety in country i.

How much is the expenditure of country i on manufactured goods? If we define Y_i as income in country i and μ as the share of manufactures that go to final consumption, then total expenditure of country i on manufactured goods, E_i is equal to the sum of consumers' demand plus intermediate good's demand on behalf of producers.

$$E_i = \mu Y_i + \alpha n_i p_i x_i \qquad (5)$$

In equation 5, μY_i is the proportion of income that goes to direct consumption of manufactures and $\alpha n_i p_i x_i$ is the proportion of total production that is devoted to the purchase of intermediate goods. Notice that α is the Cobb-Douglass share of the tradable input and x_i represents the equilibrium level of production. Therefore, $n_i p_i x_i$ is the value of production of country i, which we can denote by X_i. So,

$$E_i = \mu Y_i + \alpha X_i \qquad (6)$$

X_{ij} is the value of exports from country i to country j. We will later focus on this variable –value of exports–.

Now, we want to know the number of varieties n_i. In order to simplify the model, we follow Fujita, Krugman, and Venables (1999) by setting an arbitrary breakeven point of sales ($\bar{x}$)[1]. The breakeven point of sales is the same for every country because they enjoy the same technology. Then, this breakeven point determines the salaries.

$$\bar{x} = \frac{1}{1-\alpha} \qquad (7),$$

Choosing the breakeven point equal to $\frac{1}{1-\alpha}$ simplifies the calculation. Equation 7 implies that

[1] Fujita, Krugman, and Venables (1999) use a different notation for $\bar{x}$. They use q* for the level of sales at the zero-profit equilibrium instead (see Fujita, Krugman, and Venables, 1999:242). Here we choose $\bar{x}$ notation in order to make it match with that of Redding and Venables (2004).

$$(1-\alpha)n_i p_i \left(\frac{1}{1-\alpha}\right) = w_i \lambda_i \qquad (8)$$

so

$$n_i p_i = w_i \lambda_i \qquad (9)$$

and, therefore,

$$n_i = \frac{w_i}{p_i} \lambda_i \qquad (10)$$

So, the number of varieties in every country is proportional to the real wage. The higher the real wage, the larger the number of industrial varieties. Likewise, the larger the share of the labour force in manufactures, the larger the number of industrial varieties.

In order to obtain price equations for the intermediate good, we incorporate n_j and p_j into G_i equation. First, we incorporate the resulting equation for n_j, equation 10, into G_i, equation 2;

$$G_i = [\sum_{j=1}^{R} \frac{w_j}{p_j} \lambda_j (p_j T_{ji})^{1-\sigma}]^{\frac{1}{1-\sigma}} \qquad (11)$$

and, then, we incorporate the indirect production function, equation 1, determining the price of the consumption good, p_j, as a function of the prices of inputs, w_j and G_j.

$$G_i = [\sum_{j=1}^{R} \frac{w_j}{w_j^{1-\alpha} G_j^{\alpha}} \lambda_j (w_j^{1-\alpha} G_j^{\alpha} T_{ji})^{1-\sigma}]^{\frac{1}{1-\sigma}} \qquad (12)$$

Rearranging it renders

$$G_i^{1-\sigma} = \sum_{j=1}^{R} \lambda_j w_j^{1-\sigma(1-\alpha)} G_j^{-\alpha\sigma} T_{ji}^{1-\sigma} \qquad (13)$$

which is the price equation for country i.

The structure of the price equation is the same as in Fujita, Krugman, and Venables (1999) and Redding and Venables (2004), but, unlike them, we initially allow for a higher number of countries, R. The referred previous models consisted of a world of two countries only.

On the producers' side, firms follow a profit maximising behaviour. Profits are as follows:

$$\pi_i = p_i x_i - w_i (F + c x_i) \qquad (14)$$

where F represents the fixed costs of production and c the variable costs, being the latter proportional to the quantity produced, q_i. Production is given by the demand function.

Firms take the price of the intermediate input imported from another country, G_j, as given. x_i is equal to the proportion of total sales that go to final consumption. This amount is given by equation 15.

$$x_i = \mu \sum_{i=1}^{R} Y_i (p_i T_{ij})^{-\sigma} G_i^{\sigma-1} T_{ij} \qquad (15)$$

Under a perfectly competitive environment, firms set price equal to marginal cost. This zero-profit condition gives rise to the optimal production choice for the firm, $\overline{x}$. Therefore, rearranging terms, the demand function is

$$\overline{x} = \mu \sum_{i=1}^{R} Y_i p_i^{-\sigma} T_{ij}^{1-\sigma} G_i^{\sigma-1} \qquad (16)$$

Now we can isolate the price of the consumption good, p_i.

$$p_i^{\sigma} = \frac{\mu}{\overline{x}} \sum_{i=1}^{R} Y_i T_{ij}^{1-\sigma} G_i^{\sigma-1} \qquad (17)$$

Elasticity of demand is σ.

$$p_i (1 - \frac{1}{\sigma}) = cw_i \qquad (18)$$

or

$$p_i = cw_i \left(\frac{\sigma}{\sigma - 1} \right) \qquad (19)$$

Equation 19 is the pricing rule. The demand function and the pricing rule give rise to the wage equations. The next step is finding the wage equations. Applying the pricing rule to the inverse demand function found in equation 17 renders

$$cw_i \left(\frac{\sigma}{\sigma - 1} \right) = \left(\frac{\mu}{\overline{x}} \sum_{j=1}^{R} Y_j T_{ij}^{1-\sigma} G_j^{\sigma-1} \right)^{\frac{1}{\sigma}} \qquad (20)$$

Thus, the initial wage equation is as follows:

$$w_i = \frac{\sigma - 1}{c\sigma} \left(\frac{\mu}{\overline{x}} \sum_{j=1}^{R} Y_j T_{ij}^{1-\sigma} G_j^{\sigma-1} \right)^{\frac{1}{\sigma}} \qquad (21)$$

Equation 21 gives the wage at which firms in country i break even.

In order to simplify the calculations, we can do the following normalisations, without loss of generality:

$$F \equiv \frac{\mu}{\sigma} \qquad (22)$$

and

$$c = \frac{\sigma - 1}{\sigma} \equiv \rho \qquad (23)$$

By setting the fixed and variable costs of manufacturing production equal to certain parameters of our interest, we will be able to simplify the pricing rule and the wage equations. Thanks to the normalisation in equation 22, the pricing rule in equation 19 becomes

$$p_i = w_i \qquad (24)$$

and the wage equations in 21 become

$$w_i = \left(\sum_{j=1}^{R} Y_j T_{ij}^{1-\sigma} G_j^{\sigma-1} \right)^{\frac{1}{\sigma}} \qquad (25)$$

In equilibrium, the supply capacity of country i, s_i is

$$s_i = n_i p_i^{1-\sigma} \qquad (26)$$

If we weight the internal price by the iceberg transportation costs from country i to country j, the resulting expression will be expressed in terms of the price of domestically produced goods placed at the foreign market j. Adding up over all countries we get the resulting supplier access of country j.

$$SA_j = \sum_{i=1}^{R} n_i (p_i T_{ij})^{\sigma-1} \qquad (27)$$

Moving to the exports' market, the market capacity of country j, m_j, is defined as

$$m_j = E_j G_j^{\sigma-1} \qquad (28)$$

and the corresponding market access of country i, MA_i, is defined as the sum of all market accesses across countries, expressed in terms of the price once the good is placed in country j. i.e. weighted by the iceberg transportation cost from country i to country j.

$$MA_i = \sum_{j=1}^{R} E_j (G_j T_{ij})^{\sigma-1} \qquad (29)$$

X_{ij} is defined as the value of exports from county i to country j.

$$X_{ij} = n_i p_i x_{ij} \qquad (30)$$

Then, the value of exports gives rise to the following trade equation:

$$n_i p_i x_{ij} = n_i p_i^{1-\sigma} T_{ij}^{1-\sigma} E_j G_j^{\sigma-1} \qquad (31)$$

which, in terms of the above definitions, can be written as

$$X_{ij} = s_i T_{ij}^{1-\sigma} m_j \qquad (32)$$

3. Econometric specifications

This section goes from the theoretical model to econometric specifications; it deals with the issue of how to approach econometric specification for empirical estimation of the Market Access and Supplier Access indicators.

First, we take logarithms at both sides of the trade equation.

$$\ln X_{ij} = \ln s_i + (1-\sigma) \ln T_{ij} + \ln m_j \qquad (33)$$

Following Redding and Venables (2004), the supply capacity of the exporting country is estimated with exporting country characteristics (cty_i). The importing partner market capacity is estimated with importing country characteristics (ptn_j). The transportations costs between the two countries are estimated with the distance between capitals ($dist_{ij}$) and a common border dummy ($bord_{ij}$).

$$\ln X_{ij} = \theta + \mu_i cty_i + \lambda_j ptn_j + \delta_1 \ln dist_{ij} + \delta_2 bord_{ij} + u_{ij} \qquad (34)$$

In equation 34, all explanatory variables are dummy variables but distance between capitals; u_{ij} is the error term. Considering that, by nature, trade data are censored at 0, we prefer a Tobit estimation over ordinary least squares.

The Market Access and Supplier Access indicators are defined as follows:

$$MA_i \equiv \sum_{j=1}^{R} m_j T_{ij}^{1-\sigma} \qquad (35)$$

$$SA_j \equiv \sum_{i=1}^{R} T_{ij}^{1-\sigma} s_i \qquad (36)$$

and, according to the econometric specification in equation 34, they are calculated as

$$\ln \hat{MA}_i = \sum_{j=1}^{R} (\hat{\lambda}_j ptn_j + \hat{\delta}_1 \ln dist_{ij} + \hat{\delta}_2 bord_{ij}) \qquad (37)$$

$$\ln \hat{SA}_j = \sum_{i=1}^{R} (\hat{\mu}_i cty_i + \hat{\delta}_1 \ln dist_{ij} + \hat{\delta}_2 bord_{ij}) \qquad (38)$$

Now, the following step is to calculate the market and supplier access indicators empirically.

4. Empirical data estimation

The NBER-UN International Trade Data on-line archive provides bilateral trade data for a given year since 1962 and until 2000. All bilateral trade data available for 1994 were extracted. This on-line archive is an updated version of the Canadian Statistics trade data archive. There is a change of approach in the new version. The latter compile information primarily from the importer side instead of from the exporter side, since this is supposed to be more reliable (Feenstra et al. 2005).

The Redding and Venables (2004) market access indicators for 1994 were replicated using their method[2]. Full series of foreign and domestic market access and supplier access were generated for a cross section of countries around the world. Total market access is calculated by adding up foreign and domestic market access. Given that the interest of this paper is to account for the effects of access to markets, the focus of the rest of this paper is on market access rather than supplier access.

Redding and Venables (2004), actually, did not use the NBER-UN trade database in their calculations, but an adapted version of these data, cleaned up by the CEP. The next step was to get hold of the CEP database they actually used. The CEP World Trade Database incorporates some changes described in detail in Stewart (2001). These lead to the existence of two alternative datasets: on the one hand, the original UN international trade dataset as the NBER presents it and, on the other hand, the CEP revised version. Although calculations are done for the two alternative databases to check robustness, the CEP cleaned up version of the bilateral trade data is preferred, because of the refinements it incorporates and because it is the one used in the Redding and Venables' study. The appendix contains the full new series created and the differences between the two alternative sources listed country by country. The world distribution of foreign market access generated by the two alternative datasets can be found in the final maps. Because the final impact in the results is not considerable, it is preferable to operate with just one database, the CEP one, for the reasons outlined above. However, some results using the NBER database can be found in the appendix.

The rest of the paper will make use of the market access series derived from the CEP database. GDP series are taken from the Penn World Table version 6.1 for consistency with Redding and Venables (2004), and geography related control variables are taken from their same source for the same reason.

[2] Thanks to Stephen Redding, who passed me the original STATA code employed in Redding and Venables (2004).

5. Robustness tests with more standard socio-institutional variables

In this section, the robustness of the effect of access to markets on GDP is explored. This is done by means of replicating the results with alternative socio-institutional control variables.

Regression (1) in table 1 corresponds to Redding and Venables (2004); regression (2) is my replica[3]. The results go in the same direction, although there are some observed discrepancies of unknown nature. These are the baseline equations. The rest of the equations in the table illustrate how changes in the choice of socio-institutional variables alter the sign of the key variable (access to markets). The sign of foreign market access changes depending on whether we run the regression on risk of expropriation (re in regression 2), or property rights (pr in regression 3). These two

Table 1– Log current price GDP pc 1996, and foreign market access (CEP)

lcgdp	(1)	(2)	(3)	(4)	(5)	(6)
Obs	91	91	58	91	25	91
Year	1996	1996	1996	1996	1996	1996
lfmaCEP	.215**	.1281	-.0200	.0985	-.0023	.0083
	(.063)	(.0835)	(.1655)	(.0683)	(.0570)	(.0665)
Lhcpc	.019	.0402***	.0405**	.0543***	.0042	.0518***
	(.015)	(.0150)	(.0193)	(.0142)	(.0125)	(.0128)
Land	-.050	-.0462	-.0870	-.0446	-.0581	-.0495
	(.066)	(.0500)	(.0705)	(.0432)	(.0348)	(.0430)
nminerals	.016**	.0051	.0053	.0061	.0019	.0053
	(.008)	(.0108)	(.0122)	(.0109)	(.0120)	(.0083)
Tropicar	-.057	-.1901	-.4083**	-.3150	.1375	.1196
	(.239)	(.2131)	(.1870)	(.2017)	(.2954)	(.1660)
malfal94	-1.107**	-1.159***	-1.315***	-.7670***	-2.152***	-1.044***
	(.282)	(.2135)	(.2401)	(.2226)	(.2555)	(.1835)
Pr	-.445**	-.4517***	-	-	-	-.1508*
	(.091)	(.0824)				(.0829)
Re	-	-	.2078***	-	-	-
			(.0511)			
Free	-	-	-	-.8216***	-.7680***	-
				(.1387)	(.1690)	
Socialst	-.210	-.0995	-.0419	.0097	(dropped)	-
	(.191)	(.1739)	(.2690)	(.1980)		
Wardum	-.052	-.0183	-.0336	-.0768	(dropped)	-
	(.169)	(.1614)	(.1485)	(.1737)		
Trustkk	-	-	-	-	.0171***	-
					(.0058)	
Effec	-	-	-	-	-	.5307***
						(.0839)
Estimation	OLS	OLS	OLS	OLS	OLS	OLS
R^2	.766	.7702	.7119	.7920	.9298	.8402
F(.)	47.77	40.62	20.79	42.11	76.59	55.96
Prob>F	.000	.0000	.0000	.0000	.0000	.0000

Constant not shown. Heteroskedasticity corrected White-robust standard errors in parentheses. *Statistically significant at the 90% level. **Statistically significant at the 95% level. ***Statistically significant at the 99% level.

[3] I show 4 significative ciphers throughout, independently of the number of decimals. This is why, in some cases, equation (1) shows only 3 ciphers while the rest of equations tend to show 4 ciphers.

variables are conceptually opposed and therefore, should be capturing the same effect, although with reversed sign. The fact is that including one or the other reverses the sign of the key variable (foreign market access). The sample is much smaller under "risk of expropriation", so the phenomenon could be due to sample selection bias (studied in the next section). "Property rights" seems to be the one Redding and Venables (2004) actually used, because of the sample size exact coincidence. It has a wider sample than "risk of expropriation". However, the latter covers the same concept and enjoys a much more detailed scale, so it could be considered preferable if there were no sample size restrictions. Because of the wider sample size "property rights" is preferred.

Regressions (4) and (5) substitute the risk of expropriation and property rights variables by the Index of Economic Freedom (free), which is a wider concept that includes the former. This index gives strongly significant coefficients, but the sign of foreign market access still depends on which other socio-institutional control variables do we include. At this respect, regression (5) incorporates the concept of social capital into the regressions. This is done through the variable "trust" as it appears in Knack and Keefer (1997), ―hence it is labelled trustkk―. It measures the general feeling of trust amongst people in a certain country. The variable trustkk is not included further down in the paper despite its significance and high explanatory power due to the shortness in sample size.

The truth is that the variables "socialist rule" (socialst) and the war dummy (wardum) return non-significant coefficients in all instances. So, what happens if we run the same regression with more standard socio-institutional variables? Incorporating the Index of Economic Freedom and trust, shows that the latter are strongly significant and makes the variables "socialist rule" and the war dummy be automatically dropped from the regression. At the same time, the r-squared is drastically increased[4]. More interestingly, the foreign market access coefficient is reversed. So the sign of the coefficient is also sensitive to the selection of socio-institutional variables. Again, this could be due to a sample selection bias; so it needs further exploration.

Finally, including the Governance Matters V variables, reverses again the sign of the foreign market access coefficient. These indicators include: voice and accountability (voice), political stability (polsta), government effectiveness (effec), regulatory quality (reg), rule of law (RoL), and control of corruption (contrl)[5]. When all of these variables are included simultaneously in the regression, substituting the poor performing "socialist rule" and war dummy, the sign of foreign and total market access is positive (not shown in the table). It is worth noticing that only one of the Governance Matters variables remains statistically significant throughout: government effectiveness. This is why the effect of this variable as institutional control is analysed in a separate regression (specification 6 in Table 1). Government effectiveness turns out to be strongly significant and produces an only slightly positive foreign market access coefficient. Intriguingly enough, if we run the same regression with total market access instead of foreign market access the sign of market access turns negative[6]. The effects of

[4] The same is true for total market access (including domestic market as well as foreign), not shown in the table.

[5] Data and detailed explanation of each variable can be obtained from the World Bank (Kaufmann, Kraay and Mastruzzi, 2006).

[6] Table 1b in the appendix reproduces the same results as in Table 1, –except regression 1 in Table 1, which corresponds to Redding and Venables' published results–, but this time using the original NBER-

individual Governance Matters variables on total market access (which incorporates the domestic market as well as foreign) are presented in Table 2.

Table 2– Log of current price real GDP pc 1996 (PWT 6.1), Market Access (CEP), and Governance Matters V

lcgdp	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Obs	45	45	45	45	45	44	44
Year	1996	1996	1996	1996	1996	1996	1996
lma_cCEP	.0204	-.0066	-.0131	.0539	.0068	.0186	.0944
	(.1138)	(.1198)	(.1208)	(.1195)	(.1200)	(.1377)	(.1209)
Lhcpc	.0829***	.0804***	.0750***	.0781***	.0750***	.0722***	.0631**
	(.0231)	(.0236)	(.0220)	(.0232)	(.0247)	(.0233)	(.0291)
Land	-.0848	-.1229	-.0830	-.0621	-.0866	-.0483	.0565
	(.1013)	(.1068)	(.1154)	(.1108)	(.1094)	(.1433)	(.1238)
nminerals	-.0088	.0006	-.0034	-.0061	-.0066	.0007	-.0029
	(.0181)	(.0180)	(.0162)	(.0200)	(.0191)	(.0176)	(.0186)
Tropicar	-.2743	-.3233	-.0488	-.2969	-.3033	-.1221	.0716
	(.2552)	(.2855)	(.2778)	(.2797)	(.2675)	(.2728)	(.3211)
malfal94	-.9439***	-.9820***	-.9677***	-.8030***	-1.007***	-1.067***	-1.052***
	(.2448)	(.2628)	(.2493)	(.2676)	(.2524)	(.2704)	(.3140)
Pr	-.3603***	-.3858***	-.2498*	-.2979**	-.4557***	-.3168**	-.1023
	(.1182)	(.0953)	(.1243)	(.1285)	(.1194)	(.1302)	(.1508)
Voice	.2594***	-	-	-	-	-	.1192
	(.0901)						(.2972)
Polsta	-	.1890**	-	-	-	-	.0129
		(.0856)					(.1279)
Effec	-	-	.3955***	-	-	-	.5216**
			(.1401)				(.2124)
Reg	-	-	-	.3569*	-	-	.1920
				(.1771)			(.2575)
RoL	-	-	-	-	.1036	-	-.2146
					(.1253)		(.1750)
Contrl	-	-	-	-	-	.2496**	-.1082
						(.1193)	(.2393)
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS
R^2	.8285	.8253	.8433	.8299	.8145	.8253	.8599
F(.)	37.41	35.98	48.94	40.28	30.53	37.76	44.00
Prob>F	.0000	.0000	.0000	.0000	.0000	.0000	.0000

Constant not shown. Heteroskedasticity corrected White-robust standard errors in parentheses.
*Statistically significant at the 90% level. **Statistically significant at the 95% level. ***Statistically significant at the 99% level.

The effect of the Governance Matters indicators deserves a deeper exploration. Table 2 shows the individual effect of Governance Matters variables into total market access. Including the Governance Matters indicators one by one in the regressions produces switching signs of total market too. The sign of access to markets alternates depending on the choice of institutional variable. For voice and accountability, regulatory quality, rule of law, and control of corruption, the effect of access to markets into GDP is positive. For political stability and government effectiveness (the most statistically significant by far when all are included simultaneously), the effect of access to markets

UN data. It produces similar results on the market access coefficient except for the regression incorporating the trust variable, which switches the sign of the market access coefficient once more. This may be due to the small sample available for this particular specification.

into GDP is negative[7]. The problem of working with total instead of foreign market access is that the number of observations is reduced drastically to almost only half the sample size. This is why foreign market access is the preferred market access indicator.

So, overall, the evidence shows that Redding and Venables' results about the impact of the market access indicator are not robust. The original NBER database does not help to replicate their results, nor does the use of more standard institutional quality measures. The regressions above show how sensitive the direction of the effect of access to markets into GDP is. Then, what is the real sign of the effect of access to markets? Given the impact and relevance of the paper by Redding and Venables (2004) introducing the market access indicators, it seems worth exploring what is driving the sensitivity of the results. The next section explores this issue with the aid of partition regressions.

6. What leads the results? Partition regressions

Why are the Redding and Venables (2004) results so sensitive? What is the real effect of access to markets? This paper has shown how standard socio-institutional controls produce switching signs of the market access indicator, which turns out to be not so robust. In other words, the Redding and Venables result on the relevance of the market access indicator is not unconditional. In this section, the paper explores the varying degrees of intensity and direction of the effect of government effectiveness on foreign market access.

Government effectiveness, taken from the Governance Matters V indicators, encloses some valuable information to be added to the analysis of access to markets. Limao and Venables (2001) point out that infrastructure is an important element of the costs of transportation, and it takes special relevance in the inland African countries. Their analysis of bilateral trade flows in African countries reveals that their poor volumes of trade are due to poor infrastructures (Limao and Venables, 2001:467). Other authors had already focused on the infrastructural component of high transportation costs and pointed out at inappropriate policies (Amjadi and Yeats, 1995). Inappropriate transport policies or the lack of effectiveness in implementing them cause poorer infrastructures for facilitating transport and trade. So, it seems reasonable to suggest that government effectiveness can play a role in explaining trade volumes.

Government effectiveness is the institutional variable that shows more robustness of all Governance Matters indicators. Recall, it is the only one that remains statistically significant when simultaneously regressing on all 6 of them. Overall, it has a positive effect on GDP per capita. Surprisingly, it produces a negative market access coefficient in both cases, foreign and total market access. A negative market access coefficient means that the more accessibility to markets a country has the poorer it is. This is the contrary of what one would have expected (Redding and Venables 2004 obtain a

[7] Table 2b in the appendix repeats all the regressions in Table 2 using the original NBER-UN data instead. Once more, the sign of the market access coefficient switches from positive to negative in two occasions (both when we choose "voice" and when we choose "political stability" as controls) and from negative to positive when we include all the Governance Matters indicators simultaneously in the regression.

positive association between access to markets and GDP using alternative institutional variables); and, furthermore, it is counterintuitive. Therefore, it seems interesting to explore what is driving this result. Recall that other variables like political stability, risk of expropriation, or Index of Economic Freedom together with the variable "trust" also return negative market access coefficients. So, it is not an isolated phenomenon. This section focuses on the effect of one representative institutional variable (government effectiveness) into foreign market access.

Now, the question is the following: Is there an institutional quality threshold that countries need to reach before benefiting from good access to foreign markets?

There are a total of 181 observations for government effectiveness. The total sample of countries has been divided into several sub-samples according to their government effectiveness. Then, regressions (1) and (6) in Table 1 are run for each one of these sub-samples, corresponding to Redding and Venables' preferred specification with property rights protection, socialist and war dummies as institutional variables; and the author's preferred specification with property rights and government effectiveness, respectively. For extra robustness checks, both foreign and total market access have been tested, and both for NBER and CEP databases. A summary of results is presented in Table 3.

Table 3 – Exploring the government effectiveness threshold with several sub-samples: Is Market Access significant?

SAMPLE	10%	5%	1%	also CEP
19/163 (all but upper and lower 10%)	×	×	×	No
1/45 (lower 25%)	×	×	×	No
1/135 (lower 75%)	×	×	×	No
46/181 (upper 75%)	✓	✓	×	No
1/90 (lower 50%)	✓	✓	×	No
91/181 (upper 50%)	✓	✓	×	No
136/181 (upper 25%)	✓	✓	✓	Occasionally
1/162 (all but upper 10%)	×	×	×	No

There is a total of 181 observations for government effectiveness. Columns represent 10, 5, and 1 percent significant levels respectively. Results hold for both foreign and total market access. Last column means "Also using the CEP database?", which has a narrower sample. "Occasionally" means "Yes" for Foreign Market Access at 10% only.

Table 3 displays the significance of the results using Redding and Venables' preferred institutional controls (property rights protection, socialist past, and recent war dummy) as in Table 1, equation (1)[8].

It derives from the table that the upper quartile of the observations enjoys the most significant effect of geographical access to markets, while the lower 75% of the sample never gets a significant coefficient when analysed separately. Therefore, the whole sample of countries has been partitioned into 2 groups: those scoring highest in the government effectiveness indicator (upper quartile of the observations), which

[8] If I use my preferred institutional variables (property rights and government effectiveness), as in Table 1, equation (6), I get non-significance throughout. This means that the market access coefficient is not significant, except for Redding and Venables' choice of institutional variables.

corresponds to .50 or above in the government effectiveness index, ranging from -2.5 to 2.5 approximately (Kaufman, Kraay, and Mastruzzi, 2006); and the rest (lower 3 quartiles). The division between the two groups of observations according to the government effectiveness ranking has been made effective through the creation of a dummy variable operating in the upper quartile of the sample. Then, an interaction term between market access and the government effectiveness dummy has been introduced in order to account for the distinctive nature of the upper sub-sample. This interaction term operates as a slope dummy on the market access coefficient.

Table 4– Log of current price real GDP pc 1996 (PWT 6.1), Foreign Market Access (CEP), and partitioned government effectiveness

lcgdp	(1)	(2)	(3)	(4)
Obs	92	92	92	92
Year	1996	1996	1996	1996
lfmaCEP	.1323	.0337	.0114	.0035
	(.0839)	(.0663)	(.0666)	(.0639)
lfmaCefhighest	-	.0795***	-	.0505***
		(.0104)		(.0146)
Lhcpc	.0415***	.0543***	.0529***	.0561***
	(.0150)	(.0126)	(.0128)	(.0118)
Land	-.0446	-.0481	-.0481	-.0483
	(.0502)	(.0388)	(.0432)	(.0399)
Nminerals	.0060	-.0063	.0060	-.0015
	(.0107)	(.0087)	(.0083)	(.0086)
Tropicar	-.1802	.1499	.1291	.1963
	(.2113)	(.1614)	(.1645)	(.1485)
Malfal94	-1.184***	-1.240***	-1.065***	-1.144***
	(.2072)	(.1758)	(.1793)	(.1641)
pr	-.4490***	-.2253***	-.1472*	-.1376*
	(.0823)	(.0773)	(.0828)	(.0795)
socialst	-.0984	.0077	-	-
	(.1748)	(.1761)		
wardum	-.0126	-.0768	-	-
	(.1599)	(.1187)		
effec	-	-	.5322***	.2996***
			(.0837)	(.1108)
Estimation	OLS	OLS	OLS	OLS
R^2	.7753	.8487	.8437	.8605
F(.)	42.41	61.26	59.32	63.26
Prob>F	.0000	.0000	.0000	.0000

Constant not shown. Heteroskedasticity corrected White-robust standard errors in parentheses. *Statistically significant at the 90% level. **Statistically significant at the 95% level. ***Statistically significant at the 99% level.

Table 4 shows the baseline regressions, (1) and (3), augmented with the market access-government effectiveness interaction term, in (2) and (4), respectively[9] . Notice that foreign market access has a small and non-significant coefficient, while the interaction term (lfmaCefhighest) enjoys a positive and highly significant coefficient of the

[9] Running the regressions with Foreign Market Access calculated with the NBER-UN data instead of with the CEP data adds a few more observations to the effective sample. Regressions have also been run for total market access (NBER-UN data) and results are again similar. Detailed results are available from the author upon request.

magnitude of .05 to .08. Recall the interaction term is the result of multiplying the foreign market access index by the government effectiveness dummy operating in the upper quartile of the observations, and should be interpreted as extra slope for those observations within the upper 25 percent sub-sample. Therefore, most of the effect captured by foreign market access overall is due to those observations concentrated on the upper government effectiveness quartile. So, institutional quality matters and there seems to be a threshold below which a country is not able to effectively enjoy the benefits of good location.

7. Empirical counterfactuals: changes in country characteristics

We know from last section that if one would perform the hypothetical experiment of moving Zimbabwe to Europe its potential 80 percent rise in GDP per capita would not be effective, because Zimbabwe is not a high government effectiveness country.

In this section, Market Access has been computed based on specific country characteristics instead of country dummies, so that one can evaluate the effect of a specific characteristic (for instance, what is the isolated effect of distance to markets?). I did this for foreign and domestic market access, foreign and domestic supplier access, and all of them using the two alternative datasets UN and CEP (the latter shown in tables, for consistency with Redding and Venables, 2004). The table is based on the preferred control variables specified by Redding and Venables, with the intention of getting comparable results[10].

Table 5 displays the percentage changes in predicted GDP levels when one does the experiment of hypothetically moving a given country to central Europe. Four countries have been selected for this experiment: Zaire, Sri Lanka, Zimbabwe, and New Zealand; ordered according to their government effectiveness indicator. Zaire and New Zealand represent one very low and one very high government effectiveness observations, respectively. The 2 middle-ranged countries are case studies by Redding and Venables (2004). Regressions using country characteristics where used to compute the changes in predicted GDP, which give a slightly negative (but not significant) coefficient to foreign market access[11]. This is why the GDP changes with no slope dummy are slightly negative. Columns (1) and (2) show the potential rise in GDP, as calculated by Redding and Venables (2004: Table 7). This methodology does not make a difference between good and bad institutions' countries. Potential increases in GDP are very high, often above 100 percent with respect to predicted GDP with actual distances and common borders. Columns (3) and (4) take into account institutional handicaps. Poor and middle-range government effectiveness countries below the 75 percent threshold practically do not change their GDP even after endowing them with European borders and distances. Even slight falls in per capita GDP are predicted because of the slightly negative (though not significant) coefficient of the market access coefficient in the regressions by country characteristics (not shown). Columns (4) and (6) show the percentage rise (or fall) in GDP per capita after endowing a given country with high- (or low-) quality government effectiveness. Among all the 4 countries studied only New

[10] Redding and Venables (2004:76) demonstrated that the use of alternative parameters for intermediate goods share (α) and elasticity of substitution (σ) produces very small changes in predictions.
[11] The set of estimations with specific country characteristics is not displayed, but can be made available upon request.

Zealand belongs to the upper government effectiveness quartile. This is reflected in the drastic fall in GDP (above 88 percent fall) when its privileged institutional quality is experimentally removed[12].

Table 5- Percentage changes in predicted *levels* of GDP per capita 1996

countries, from less to more government effectiveness	(1) Distance only of Central Europe	(2) Distance &common borders of central Europe	(3) Distance only of Central Europe), Instit. threshold considered	(4) Distance only to Central Europe, Instit. threshold considered → Instit. change	(5) Distance &common borders of central Europe, Instit. threshold considered	(6) Distance &common borders of central Europe, Instit. thresthold considered → Instit. change
Zaire	81.59	100.51	-2.80	105.35	-2.50	103.89
Sri Lanka	103.33	132.63	-3.30	107.72	-3.39	108.15
Zimbabwe	96.91	108.96	-3.28	104.94	-2.82	102.73
New Zealand	131.22	146.02	20.83	-88.67	19.42	-88.37

Notes: Specification as suggested by Redding and Venables 2004 (Table 5, column 3), including Foreign Market and Supplier Access and control variables, with no constant and parameters constraint as in their equation (21), α =0.5, σ=10. Market and Supplier access calculated using country characteristics instead of country dummies in order to allow for specific feature effects. Calculations based on CEP database. Distance to central and Central Europe consist of imputing the distances (and common borders when specified) corresponding to Hungary. The institutional change in columns (4) and (5) consists of giving value 1 when the government effectiveness dummy is 0, and giving it value 0 when it is 1 (the latter only for New Zealand).

Overall, these four country cases illustrate how the possibility of a potential rise in GDP per capita when moving closer to markets being actually realised is very sensitive to institutional quality (in particular, to government effectiveness).

8. Conclusions

This paper shows that the effect of access to markets on GDP per capita is less robust than what we initially thought. The original Redding and Venables (2004) results cannot be replicated with the NBER database, nor can they with alternative control institutional measures. The income regressions produce a switching sign of the coefficient depending on which institutional variables does one choose as controls.

Partition regressions show that the benefits of geographical access to markets operate with varying degrees of intensity, and sometimes negatively. So, the Redding and

[12] Changes in distances and borders have been performed both from the exporter and the importer perspectives. If changes as an exporter only are considered, the magnitudes of the change in GDP per capita are much more moderate. For instance, Table 5, column (2), Zimbabwe would be 34.73 and New Zealand 45.52. Nevertheless, I understand changing a given country characteristics should be performed at both ends: both from the exporter and the importers' perspective.

Venables (2004) results cannot be generalised. The institutional setup of a country is not neutral, and can operate as to enhance or deprive a country from the benefits of a good geographical positioning. Countries with low government effectiveness do not show an ability to benefit from a good geographical location, while countries with high government effectiveness (above the .50 threshold on a -2.5 to 2.5 scale) are more sensitive to good access to markets.

List of variables appearing in the tables

Self constructed

lfma ln of foreign market access 1994, constructed from the NBER-UN database on bilateral trade and the STATA code from Redding and Venables (2004)[13].
lma_c ln of total market access 1994, calculated as the logarithm of the sum of domestic plus foreign market access[14].
lfmaCEP ln of foreign market access using the CEP cleaned up version of the NBER-UN database
lma_cCEP ln of total market access using the CEP cleaned up version of the NBER-UN database.
lfmaccCEP ln of foreign market access calculated using country characteristics instead of country dummies (CEP database).
lfsaccCEP ln of foreign supply access calculated using country characteristics instead of country dummies (CEP database).

Partition variables: dummy and interaction term

From data sources

lcgdp ln of current price real GDP per capita in 1996, from the Penn World Tables 6.1
land Arable land area per capita (ln is used in the regressions)
lhcpc Hydrocarbons per capita (ln is used in the regressions)
nminerals Number of minerals
tropicar Fraction of land in the geographical tropics
malfal Prevalence of malaria
re Risk of expropriation index. 0 to 10 scale (real numbers).
pr Property rights 1996, from the Index of Economic Freedom. 1 to 5 scale (natural numbers).
free Score for Index of Economic Freedom 1996.
socialst Socialist rule during 1950-1995
wardum External war 1960-1985
voice voice and accountability 1996, from the World Bank "Governance Matters V" database.
polsta political stability 1996, from the World Bank "Governance Matters V" database.
effec government effectiveness 1996, from the World Bank "Governance Matters V" database.
reg regulatory quality 1996, from the World Bank "Governance Matters V" database.
RoL rule of law 1996, from the World Bank "Governance Matters V" database.
contrl control of corruption 1996, from the World Bank "Governance Matters V" database.
trustkk Trust (several years) as in Knack and Keefer (1997)

[14] For domestic market access, MA(3) as in Redding and Venables (2004) is used; this is, the outcome to the TOBIT specification which contemplates the truncated nature of the bilateral trade data.

List of countries and territories

In alphabetical order according to the ISO3 World Bank classification code:

iso3	name of country/territory
ABW	ARUBA
AFG	AFGHANISTAN
AGO	ANGOLA
AIA	ANGUILLA
ALB	ALBANIA
AND	ANDORRA
ANT	NETHERLANDS ANTILLES
ARE	UNITED ARAB E.
ARG	ARGENTINA
ARM	ARMENIA
ASM	AMERICAN SAMOA
ATF	FRENCH SOUTHERN TERRITORIES
ATG	ANTIGUA AND BARBUDA
AUS	AUSTRALIA
AUT	AUSTRIA
AZE	AZERBAIJAN
BDI	BURUNDI
BEL	BELGIUM
BEN	BENIN
BFA	BURKINA FASO
BGD	BANGLADESH
BGR	BULGARIA
BHR	BAHRAIN
BHS	BAHAMAS
BIH	BOSNIA AND HERZEGOVINA
BLR	BELARUS
BLX	BELGIUM (INCLUDES LUXEMBURG)
BLZ	BELIZE
BMU	BERMUDA
BOL	BOLIVIA
BRA	BRAZIL
BRB	BARBADOS
BRN	BRUNEI
BTN	BHUTAN
BWA	BOTSWANA
CAF	CENTRAL AFR.R.
CAN	CANADA
CCK	COCOS (KEELING) ISLANDS
CHA	CHANNEL ISLANDS
CHE	SWITZERLAND
CHL	CHILE
CHN	CHINA
CIV	IVORY COAST
CMR	CAMEROON
COG	CONGO

COK COOK ISLANDS
COL COLOMBIA
COM COMOROS
CPV CAPE VERDE IS.
CRI COSTA RICA
CUB CUBA
CXR CHRISTMAS ISLAND
CYM CAYMAN ISLANDS
CYP CYPRUS
CZE CZECH REPUBLIC
CZS CZECHOSLOVAKIA
DDR GERMAN DEMOCRATIC REPUBLIC
DEU GERMANY, WEST
DJI DJIBOUTI
DKF DENMARK (INCLUDES FAEROE ISLANDS)
DMA DOMINICA
DNK DENMARK
DOM DOMINICAN REP.
DRG GERMANY, EAST
DZA ALGERIA
ECU ECUADOR
EGY EGYPT
ERI ERITREA
ESH WESTERN SAHARA
ESP SPAIN
EST ESTONIA
ETF ETHIOPIA (INCLUDES ERITREA)
ETH ETHIOPIA
FIN FINLAND
FJI FIJI
FLK FALKLAND ISLANDS (MALVINAS)
FRA FRANCE
FRO FAEROE ISLANDS
FSM MICRONESIA
GAB GABON
GBC GUINEA-BISSAU (INCLUDES CAPE VERDE)
GBR U.K.
GEO GEORGIA
GER GERMANY
GHA GHANA
GIB GIBRALTAR
GIN GUINEA
GLP GUADELOUPE
GMB GAMBIA
GNB GUINEA-BISS
GNQ EQUATORIAL GUINEA
GPM GUADELOUPE (INCLUDES MARTINIQUE)
GRC GREECE
GRD GRENADA
GRL GREENLAND

GTM GUATEMALA
GUF FRENCH GUIANA
GUM GUAM
GUY GUYANA
HKG HONG KONG
HND HONDURAS
HRV CROATIA
HTI HAITI
HUN HUNGARY
IDM INDONESIA (INCLUDES MACAU)
IDN INDONESIA
IND INDIA
IOM ISLE OF MAN
IOT BRITISH INDIAN OCEAN TERRITORY
IRL IRELAND
IRN IRAN
IRQ IRAQ
ISL ICELAND
ISR ISRAEL
ITA ITALY
JAM JAMAICA
JOR JORDAN
JPN JAPAN
KAZ KAZAKHSTAN
KEN KENYA
KGZ KYRGYZSTAN
KHM CAMBODIA
KIR KIRIBATI
KIZ KIRIBATI (INCLUDES SOLOMON ISLANDS, TONGA, TUVALU)
KNA ST.KITTS&NEVIS
KOR KOREA, REP.
KWT KUWAIT
LAO LAOS
LBN LEBANON
LBR LIBERIA
LBY LIBYA
LCA ST.LUCIA
LIE LIECHTENSTEIN
LKA SRI LANKA
LSO LESOTHO
LTU LITHUANIA
LUX LUXEMBOURG
LVA LATVIA
LWI KOSOVO
MAC MACAO
MAR MOROCCO
MAY MAYOTTE
MCO MONACO
MDA MOLDOVA
MDG MADAGASCAR

MDV MALDIVES
MEX MEXICO
MHL MARSHALL ISLANDS
MKD MACEDONIA
MLI MALI
MLT MALTA
MMR MYANMAR
MNG MONGOLIA
MNP NORTHERN MARIANA ISLANDS
MOZ MOZAMBIQUE
MRT MAURITANIA
MSR MONTSERRAT
MTQ MARTINIQUE
MUS MAURITIUS
MWI MALAWI
MYS MALAYSIA
NAM NAMIBIA
NCL NEW CALEDONIA
NCZ NEW CALEDONIA (INDLUDES FRENCH POLYNESIA, VANUATU)
NER NIGER
NFK NORFOLK ISLAND
NGA NIGERIA
NIC NICARAGUA
NIU NIUE
NLD NETHERLANDS
NOR NORWAY
NPL NEPAL
NRU NAURU
NZL NEW ZEALAND
OMN OMAN
PAK PAKISTAN
PAL PALESTINE
PAN PANAMA
PCI TRUST TERRITORY OF THE PACIFIC ISLANDS
PCN PITCAIRN
PER PERU
PHL PHILIPPINES
PLW PALAU
PNG PAPUA N.GUINEA
POL POLAND
PRI PUERTO RICO
PRK KOREA, DEM. REP.
PRT PORTUGAL
PRY PARAGUAY
PYF FRENCH POLYNESIA
QAT QATAR
REU REUNION
ROM ROMANIA
RUS U.S.S.R.
RWA RWANDA

SAU SAUDI ARABIA
SCG SERBIA AND MONTENEGRO
SDN SUDAN
SEN SENEGAL
SER SERBIA
SGP SINGAPORE
SHN SAINT HELENA
SLB SOLOMON IS.
SLE SIERRA LEONE
SLV EL SALVADOR
SMR SAN MARINO
SOM SOMALIA
SPM SAINT PIERRE AND MIQUELON
STP SAO TOME AND PRINCIPE
SUR SURINAME
SVK SLOVAK REPUBLIC
SVN SLOVENIA
SWE SWEDEN
SWZ SWAZILAND
SYC SEYCHELLES
SYR SYRIA
TCA TURKS AND CAICOS ISLANDS
TCD CHAD
TGO TOGO
THA THAILAND
TJK TAJIKISTAN
TKL TOKELAU
TKM TURKMENISTAN
TMP TIMOR-LESTE
TON TONGA
TTO TRINIDAD&TOBAGO
TUN TUNISIA
TUR TURKEY
TUV TUVALU
TWN TAIWAN
TZA TANZANIA
UGA UGANDA
UKR UKRAINE
URY URUGUAY
USA U.S.A.
UZB UZBEKISTAN
VCT ST.VINCENT&GRE
VEN VENEZUELA
VGB BRITISH VIRGIN ISLANDS
VIR VIRGIN ISLANDS (U.S.)
VNM VIET NAM
VUT VANUATU
WBG WEST BANK AND GAZA
WLF WALLIS AND FORTUNA
WSM WESTERN SAMOA

YEM YEMEN
YUG YUGOSLAVIA
ZAF SOUTH AFRICA
ZAR ZAIRE
ZMB ZAMBIA
ZWE ZIMBABWE
ZZZ OTHER TERRITORIES

The Index:
Market Access for NBER-UN data, CEP cleaned data, and differences between the two, for Foreign and Total MA

Note: All according to author's calculations.

iso3	lfma	lfmaCEP	lfmadiff	lma_c	lma_cCEP	lma_cdiff
ABW						
AFG	10.92687	12.70241	-1.775538	10.92688		
AGO	10.61205	12.29209	-1.680041	10.61211	12.29273	-1.680621
AIA						
ALB	11.7613	13.94615	-2.18485	11.7613		
AND						
ANT	11.37954	12.84214	-1.462605	11.37978		
ARE		12.63313				
ARG	10.80476	12.06789	-1.263128	10.80567	12.08916	-1.283495
ARM	11.06971			11.06973		
ASM						
ATF						
ATG						
AUS	11.73402	11.70886	.0251608	11.73443	11.88861	-.1541796
AUT	12.95176	14.7533	-1.801544	12.952		
AZE	11.13636			11.13638		
BDI	10.5927	12.32525	-1.732546	10.59272		
BEL	13.13616			13.13719		
BEN	12.27053	12.60167	-.3311434	12.27054		
BFA	10.94449	12.73861	-1.794117	10.9445	12.73879	-1.794286
BGD	10.73561	12.53782	-1.802205	10.73587		
BGR	11.79131	13.82025	-2.028942	11.79137		
BHR	10.92934	12.71264	-1.783298	10.92987		
BHS	11.81229	13.45044	-1.638154	11.81233		
BIH	11.89577			11.89577		
BLR	11.84734			11.84735		
BLZ	11.36939	12.95891	-1.589516	11.3694		
BMU	11.96973	13.64246	-1.672725	11.96981		
BOL	12.36913	12.2695	.0996265	12.36914	12.27155	.0975904
BRA	12.0497	12.21497	-.165267	12.05019	12.38024	-.3300476
BRB	11.21726	12.80563	-1.588374	11.21733		
BRN		12.43417				
BTN		12.58744				
BWA						
CAF	10.754	12.508	-1.753999	10.75401	12.50819	-1.754185
CAN	14.59193	14.66013	-.068203	14.59198	14.69869	-.1067133
CCK						
CHA						
CHE	12.83898	14.89994	-2.060956	12.83933		
CHL	10.6108	11.99745	-1.386645	10.61206	12.04725	-1.43519

CHN	10.8827	12.89465	-2.011949	10.88456		
CIV	12.2545	12.60474	-.350235	12.25451	12.60547	-.3509607
CMR	10.81836	12.52495	-1.706594	10.81839	12.52552	-1.707134
COG	10.87641	12.51897	-1.642563	10.87642	12.51941	-1.642993
COK						
COL	11.19403	12.62869	-1.434659	11.1944	12.68947	-1.495066
COM		12.15223				
CPV						
CRI	11.19631	12.74146	-1.545153	11.19641	12.74522	-1.548815
CUB	11.6581	13.27917	-1.62107	11.65814		
CXR						
CYM		13.09797				
CYP	11.34669	13.18747	-1.840782	11.34688		
CZE	13.46057			13.46062		
CZS						
DEU	13.29686	14.17893	-.8820686	13.29845		
DJI	10.69567	12.48666	-1.790988	10.69569		
DMA						
DNK	13.24579			13.24592		
DOM	11.46252	13.06056	-1.598043	11.46267		
DRG						
DZA	11.6134	13.8666	-2.253201	11.61352	13.86784	-2.254324
ECU	11.03385	12.51607	-1.482217	11.03407		
EGY	11.22385	13.0612	-1.837349	11.22419		
ERI						
ESH		13.1382				
ESP	11.76147	13.8642	-2.102734	11.76346	14.18791	-2.424454
EST	11.86952			11.86954		
ETH	10.73281			10.73286		
FIN	11.79811	13.81215	-2.014038	11.79846		
FJI	10.2542	11.83836	-1.584155	10.2543		
FLK	10.16824	11.8189	-1.650663	10.16827		
FRA	12.8661	14.94962	-2.083522	12.86751		
FRO						
FSM						
GAB	10.74876	12.46144	-1.712676	10.74878	12.46205	-1.713266
GBR	12.18779	14.74051	-2.552724	12.19096		
GEO	11.21549			11.2155		
GER						
GHA	10.85579	12.57991	-1.72412	10.85591	12.58106	-1.725147
GIB	11.67117	13.93524	-2.264069	11.67128		
GIN	10.90962	12.65454	-1.744924	10.90964		
GLP	11.34454			11.34465		
GMB	10.95797	12.73349	-1.775516	10.95798	12.73388	-1.775901
GNB	10.92402			10.92404		
GNQ	10.7486	12.53068	-1.782083	10.74861		
GRC	11.57968	13.55934	-1.979657	11.58012	13.61973	-2.039608
GRD						

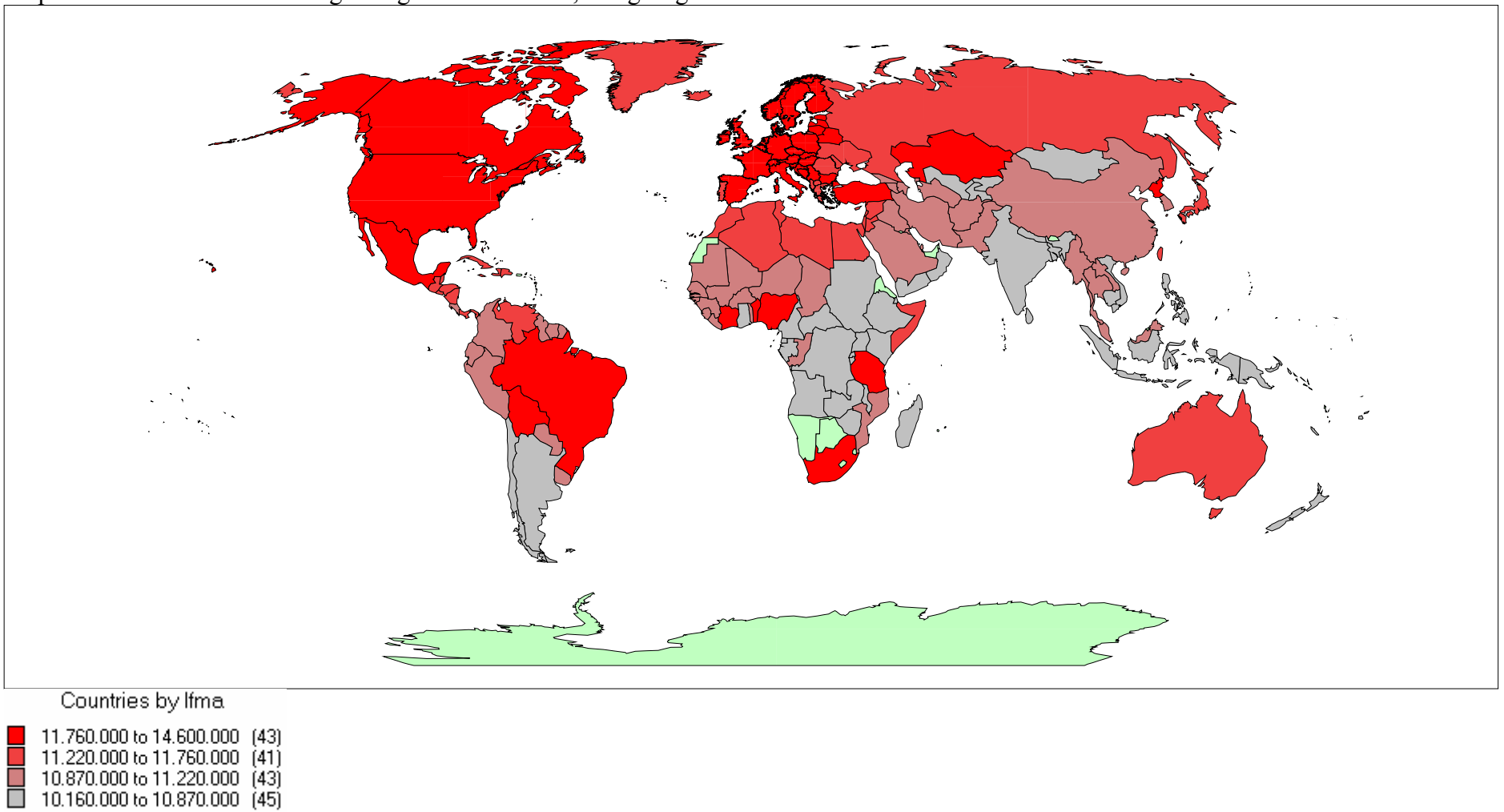
GRL	11.40795	13.19176	-1.783808	11.40795		
GTM	11.2898	12.86519	-1.575388	11.28989		
GUF	11.12081	12.59141	-1.470603	11.12083		
GUM						
GUY	11.18442	12.65275	-1.468333	11.18443	12.65317	-1.46874
HKG	10.78958	12.64708	-1.857503	10.80151		
HND	11.28652	12.85688	-1.570356	11.28656	12.85914	-1.572576
HRV	12.14728			12.14731		
HTI	11.48472	13.08072	-1.596001	11.48473		
HUN	12.20224	14.31514	-2.112901	12.20236		
IDN	10.57436			10.57639		
IND	10.76897	12.53146	-1.762486	10.77053		
IOM						
IRL	12.12178	14.65382	-2.532039	12.12202	14.65783	-2.535809
IRN	11.06576	12.8364	-1.770643	11.0661		
IRQ	11.1881	12.9175	-1.729396	11.18811	12.91779	-1.729682
ISL	11.46594	13.43672	-1.970782	11.46595	13.43717	-1.97122
ISR	11.26141	13.11451	-1.8531	11.26247		
ITA	11.89144	13.91959	-2.028152	11.89473		
JAM	11.51107	13.05661	-1.545544	11.51127		
JOR	11.41446	13.09698	-1.682525	11.4146		
JPN	11.69118	12.18736	-.4961824	11.69888		
KAZ	12.36169			12.3617		
KEN	10.64161	12.318	-1.676394	10.64174		
KGZ	10.82855			10.82856		
KHM	10.86807	12.74024	-1.872171	10.86809		
KIR	10.40151			10.40168		
KNA	11.46868			11.46886		
KOR	10.91002	13.25953	-2.349512	10.91801		
KWT	11.01587	12.79063	-1.774759	11.0165		
LAO	10.92898	12.78518	-1.856197	10.92899		
LBN	11.35554	13.12798	-1.772443	11.35582		
LBR	10.87482	12.58871	-1.71389	10.87488	12.58914	-1.714255
LBY	11.43336	13.54424	-2.110876	11.4334		
LCA						
LIE						
LKA	10.52985	12.28573	-1.75588	10.53053		
LSO						
LTU	11.95556			11.95557		
LUX						
LVA	11.93348			11.93349		
LWI						
MAC	11.41266			11.41286		
MAR	11.44248	13.67485	-2.232371	11.44268		
MAY						
MCO						
MDA	11.66217			11.66218		
MDG	10.42993	12.05689	-1.626957	10.42996	12.05836	-1.628395

MDV		12.25012				
MEX	11.83305	13.10162	-1.268569	11.83351	13.16524	-1.331732
MHL						
MKD	11.72715			11.72717		
MLI	10.95108	12.73672	-1.78564	10.95109	12.73691	-1.785825
MLT	11.56837	13.75479	-2.186421	11.56854		
MLW						
MMR	10.91571	12.59485	-1.679141	10.91574		
MNG	10.84987	12.80749	-1.957623	10.84987		
MNP						
MON						
MOZ	10.97524	12.23495	-1.259712	10.97527	12.23582	-1.260551
MRT	11.0275	12.84421	-1.816709	11.02751	12.84437	-1.816859
MSR						
MTQ						
MUS	10.3582	12.01287	-1.65467	10.35884		
MWI	10.56675	12.17356	-1.606812	10.56678		
MYS	10.87343	12.65537	-1.781936	10.87561		
MYT						
NAM						
NCL	10.2797			10.27986		
NER	10.97907	12.77126	-1.792194	10.97907	12.77145	-1.792385
NFK						
NGA	12.24962	12.6514	-.4017792	12.24966		
NIC	11.2346	12.80171	-1.567115	11.23462		
NIU						
NLD	13.04114	15.21627	-2.175131	13.04219		
NOR	12.02434	14.15012	-2.125783	12.02463		
NPL	10.83029	12.61409	-1.783802	10.83032		
NRU						
NZL	10.32643	11.67102	-1.34459	10.32807	11.72566	-1.397592
OMN	10.81451	12.57247	-1.757959	10.81468	12.5751	-1.760425
PAK	10.97896	12.69486	-1.715897	10.97933		
PAL						
PAN	11.24057	12.74373	-1.503161	11.24086		
PCI						
PCN						
PER	10.93254	12.28582	-1.353281	10.93282	12.29933	-1.36651
PHL	10.63678	12.58625	-1.949471	10.63818		
PLW						
PNG	10.32308	12.0422	-1.71912	10.32314		
POL	12.86983	14.58429	-1.714458	12.86994		
PRI						
PRK	11.78188	13.81335	-2.031473	11.78189		
PRT	11.6721	13.93228	-2.260183	11.67311		
PRY	11.01853	12.17458	-1.156051	11.0186	12.17672	-1.158123
PYF						
QAT	10.94535	12.69722	-1.751869	10.9456		

REU		12.02674				
ROM	11.70901	13.73736	-2.028354	11.70915		
RUS	11.52187			11.52187		
RWA	10.62775	12.34495	-1.717203	10.62777		
SAU	10.92458	12.69764	-1.773064	10.92515	12.70957	-1.78442
SCG						
SDN	10.86438	12.65637	-1.791991	10.86441	12.65699	-1.792575
SEN	10.99368	12.75354	-1.759863	10.99371	12.75407	-1.760365
SER						
SGP		12.50743				
SHN	10.20569	12.20731	-2.00162			
SLB		11.98649				
SLE	10.89609	12.6338	-1.737715	10.89611	12.63416	-1.738047
SLV	11.25638	12.83569	-1.579309	11.2565		
SMR						
SOM	10.5766	12.31911	-1.742514	10.57661	12.3194	-1.742791
SPM	11.71207	13.43259	-1.720519	11.71208		
STP						
SUR	11.15769	12.62008	-1.462393	11.1577		
SVK	12.52838			12.52843		
SVN	12.32803			12.32812		
SWE	12.00781	14.04592	-2.038113	12.00822		
SWZ						
SYC	10.46652	12.18255	-1.716034	10.46659		
SYR	11.37383	13.11629	-1.742463	11.37393	13.11715	-1.743223
TCA		13.20487				
TCD	10.88901	12.70004	-1.811026	10.88901	12.70013	-1.811122
TGO	10.88152	12.59838	-1.716863	10.88155	12.59903	-1.717478
THA	10.89578	12.46493	-1.569152	10.89865		
TJK	10.85012			10.85013		
TKL						
TKM	10.94835			10.94837		
TMP						
TON						
TTO	11.21688	12.75312	-1.536237	11.21698		
TUN	11.64996	13.89795	-2.247993	11.65008	13.90055	-2.250475
TUR	12.75589	13.33066	-.5747747	12.75602	13.34418	-.5881653
TUV						
TWN	11.38744	12.87773	-1.49029	11.39028		
TZA	11.99295	12.22974	-.2367935	11.99297	12.23081	-.2378435
UGA	10.6757	12.36708	-1.691376	10.67572		
UKR	11.69847			11.69851		
URY	11.05504	12.16742	-1.11238	11.05518	12.17246	-1.117279
USA	13.68232	12.61167	1.070646	13.68343	14.56713	-.8837032
UZB	10.86407			10.86415		
VCT						
VEN	11.28287	12.78408	-1.501207	11.28305	12.79014	-1.507095
VGB						

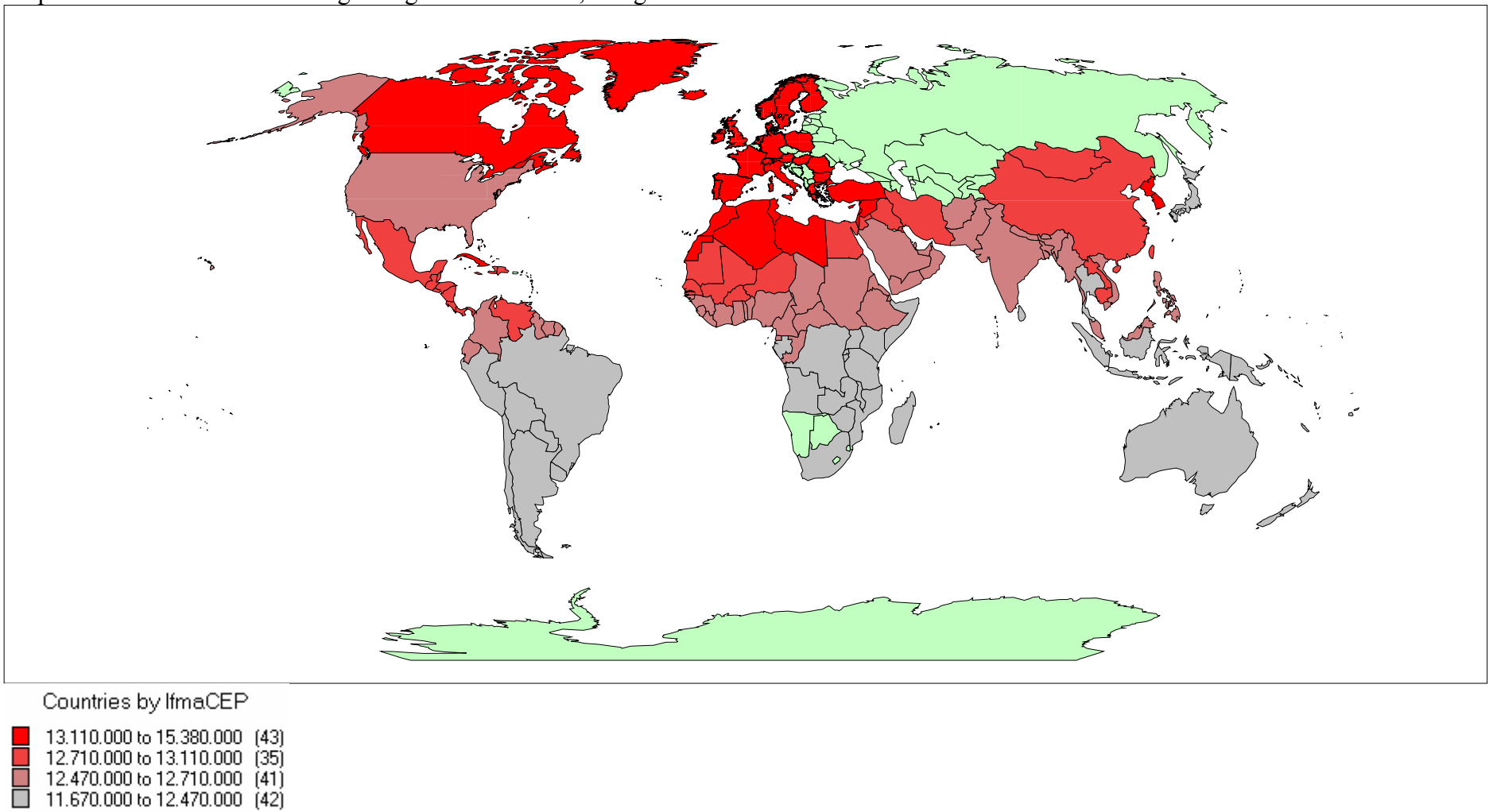
VIR						
VNM	10.78299	12.67976	-1.896773	10.78318		
VUT						
WBG						
WLF						
WSM	10.1847			10.18476		
YEM	10.75912	12.55343	-1.794313	10.75924	12.5545	-1.795259
YUG	11.91305			11.91306		
ZAF	12.09932	12.01539	.0839338	12.0996	12.10493	-.0053253
ZAR	10.76668	12.36002	-1.593338	10.7667	12.36072	-1.594023
ZMB	10.58752	12.18745	-1.599928	10.58752	12.18806	-1.600536
ZWE	10.73343	12.18886	-1.455426	10.73343	12.19394	-1.460508
BLX		15.37085				
CSK		15.23483				
DDR						
DKF		14.97782				
ETF		12.47414				
GBC		12.69857				
GPM		12.90348				
IDM		12.29992				
IOT		12.11676				
KIZ		12.05044				
KNZ		12.95705				
NCZ		11.84712				
SUN		13.43833				
YUF		14.16557				
ZZZ						

Map 1- World distribution of log foreign market access, using original NBER-UN database



Note: Equal count criterion in choosing the range.

Map 2 – World distribution of log foreign market access, using CEP database.



Note: Equal count criterion in choosing the range. Attention: 1990 borders in lfmaCEP, now renamed lfmabord90.

Tables robustness checks

Table 1b– Log current price GDP pc 1996, and foreign market access (NBER-UN)

lcgdp	(1)	(2)	(3)	(4)	(5)
Obs	95	58	95	27	95
Year	1996	1996	1996	1996	1996
lfma	.1210	-.2772	.0594	.0155	.0011
	(.0805)	(.1718)	(.0816)	(.0633)	(.0685)
Lhcpc	.0382***	.0413**	.0520***	.0039	.0493***
	(.0145)	(.0179)	(.0138)	(.0119)	(.0124)
Land	-.0658	-.0547	-.0581	-.0596*	-.0510
	(.0459)	(.0695)	(.0422)	(.0341)	(.0420)
nminerals	.0038	.0077	.0043	.0020	.0047
	(.0101)	(.0112)	(.0103)	(.0094)	(.0076)
Tropicar	-.2506	-.4165***	-.4021*	.1532	.0778
	(.2006)	(.1460)	(.2027)	(.2655)	(.1494)
malfal94	-1.145***	-1.412***	-.7723***	-2.182***	-1.056***
	(.2156)	(.2382)	(.2198)	(.2258)	(.1833)
Pr	-.4466***	-	-	-	-.1776**
	(.0810)				(.0823)
Re	-	.1973***	-	-	-
		(.0470)			
Free	-	-	-.8120***	-.7566***	-
			(.1450)	(.1695)	
Socialst	-.1242	-.0575	-.0313	(dropped)	-
	(.1774)	(.2332)	(.2060)		
Wardum	-.0377	-.0692	-.1220	(dropped)	-
	(.1585)	(.1614)	(.1742)		
Trustkk	-	-	-	.0167***	-
				(.0051)	
Effec	-	-	-	-	.5101***
					(.0862)
Estimation	OLS	OLS	OLS	OLS	OLS
R^2	.7833	.7152	.7982	.9321	.8433
F(.)	48.07	16.99	50.00	80.63	65.07
Prob>F	.0000	.0000	.0000	.0000	.0000

Constant not shown. Heteroskedasticity corrected White-robust standard errors in parentheses. *Statistically significant at the 90% level. **Statistically significant at the 95% level. ***Statistically significant at the 99% level.

Note: Updating the log GDP per capita from Penn World Table 6.1 to the new version 6.2 adds just one more observation into the operative sample. Given that the results are very similar in any case, the use of Penn World Table 6.1 GDP data is preferred for consistency.

Table 2b – Log of current price real GDP pc 1996 (PWT 6.1), Market Access (NBER-UN), and Governance Matters V

lcgdp	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Obs	95	95	95	95	95	93	93
Year	1996	1996	1996	1996	1996	1996	1996
lma_c	.0104	.0594	.0013	.0617	.0400	.0217	-.00003†
	(.0769)	(.0761)	(.0685)	(.0790)	(.0835)	(.0798)	(.0754)
Lhcpc	.0542***	.0463***	.0493***	.0534***	.0500***	.0461***	.0500***
	(.0136)	(.0135)	(.0124)	(.0141)	(.0147)	(.0130)	(.0142)
Land	-.0683	-.0760	-.0510	-.0722	-.0734	-.0533	-.0384
	(.0431)	(.0441)	(.0420)	(.0418)	(.0447)	(.0417)	(.0400)
nminerals	.0033	.0070	.0047	.0024	.0014	.0082	.0036
	(.0090)	(.0089)	(.0076)	(.0100)	(.0098)	(.0082)	(.0081)
Tropicar	-.1644	-.1686	.0778	-.3200	-.2440	.0663	.1074
	(.1680)	(.1776)	(.1494)	(.1673)	(.1658)	(.1498)	(.1718)
malfal94	-1.039***	-1.093***	-1.056***	-.7624***	-1.058***	-1.070***	-1.041***
	(.1903)	(.2016)	(.1833)	(.2171)	(.1966)	(.1872)	(.2403)
Pr	-.3235***	-.3720***	-.1776**	-.2189**	-.3658***	-.2506***	-.1344
	(.0831)	(.0693)	(.0823)	(.0888)	(.0815)	(.0789)	(.0835)
Voice	.3351***	-	-	-	-	-	.0281
	(.0790)						(.1892)
Polsta	-	.2377***	-	-	-	-	.0781
		(.0747)					(.0832)
Effec	-	-	.5101***	-	-	-	.4775***
			(.0862)				(.1597)
Reg	-	-	-	.4965***	-	-	.0400
				(.1157)			(.1872)
RoL	-	-	-	-	.2342**	-	-.0133
					(.0908)		(.1370)
Contrl	-	-	-	-	-	.4074***	-.0068
						(.0762)	(.1404)
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS
R^2	.8104	.8033	.8433	.8132	.7972	.8246	.8509
F(.)	66.13	60.06	65.09	63.97	50.66	58.11	50.61
Prob>F	.0000	.0000	.0000	.0000	.0000	.0000	.0000

Constant not shown. Heteroskedasticity corrected White-robust standard errors in parentheses.
*Statistically significant at the 90% level. **Statistically significant at the 95% level. ***Statistically significant at the 99% level. †5 significant ciphers instead of the regular 4 allowed.

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