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## Trade Policy, Openness, Institutions

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This paper examines the importance of institutions *vis-à-vis* openness and trade policies in determining per capita income differences across countries. Recent literature has tried to demonstrate that more open economies grow faster. On the other hand, it has also been asserted that it is not openness *per se* but institutions and good governance that matter in promoting growth. This paper attempts to test this hypothesis across a cross-section of nations. Unlike other papers in the field, we have tested not only for the degree of openness but also for trade policy indicators, as well as a fuller set of six institutional variables. Our broad finding is that although institutions matter, trade policies are also relevant to promoting growth, whereas openness *per se* has little impact on growth.

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*Keywords:* International Integration; Economic Development.

### 1. INTRODUCTION

In poor low-income nations economic growth constitutes the principal avenue for poverty reduction. Redistribution, even when feasible, can never be enough on its own to substantially reduce poverty. Despite the fact that there may be a close link between growth and poverty reduction; growth may result not just from policies that foster it like trade policy reforms, but because certain nations have superior institutions within which the policy framework is determined and executed. This also raises the issue of reverse causality. Higher incomes that are the result of growth in the context of well-functioning institutions, in turn also produce superior institutions that are a function of increased per-capita income. By institutions we have in mind factors that result in good governance: political stability, voice and accountability, the rule of law, the regulatory framework, bureaucratic quality and the control of corruption [see Kaufmann, Kraay, and Zoido-Lobaton (2002) for example]. At

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present, there is little controversy over the crucial role played by both international trade as an engine of growth, and institutional quality in fostering growth in the longer term [see, Acemoglu, Johnson, and Robinson (2005) on the latter point].

With regard to international trade and growth, it has to be remembered that the quantum of trade can increase or decrease in the absence of any changes to the trade policy stance (tariffs, non-tariff barriers, export subsidies etc.).<sup>1</sup> Globalisation and factors that are external to an individual nation may facilitate trade. Technological changes and a decline in transportation costs may make certain goods cheaper despite trade restrictions. Trade may promote growth, but changes in trade policies may not increase international trade and hence not contribute to growth or poverty reduction.

The purpose of this paper is to empirically examine the role of trade policy in explaining differences in per-capita income levels across countries. We live in an era of globalisation which makes greater openness imperative. In addition we also analyse the relative contribution of institutions to prosperity compared to trade liberalisation. The rest of the paper is organised as follows. Section 2 contains a review of the literature covering the debate regarding the alternative impact of trade policy or openness on growth, with some authors establishing a direct link between openness and growth, while others emphasise the role of good institutions. Sections 3 (data and methodology) and 4 (regressions) contain our contribution to the debate. We go well beyond the comparable analysis of Rodrik, *et al.* (2004) by including more institutional measures, openness indicators, as well as trade policy variables. Finally, Section 5 briefly concludes.

## 2. TRADE POLICY, OPENNESS AND INSTITUTIONS

Apart from the effort required in generating savings leading to capital accumulation, do the fundamental determinants of growth lie in policies such as trade policy or human capital accumulation or is growth fostered by good institutions? In an influential paper, Sachs and Warner (1995) argued that countries that were more open (based upon a number of openness indicators) grew faster than countries that were not open. Rodriguez and Rodrik (2000), however, convincingly demonstrate that the Sachs and Warner (1995) study suffers from sample selection bias and that some openness indicators could be highly correlated to other indicators of good governance or institutional quality. Most damaging of the Rodriguez and Rodrik (2000) critique of Sachs and Warner's assertion that openness promotes growth lies in the fact that an Africa dummy variable capturing the special effect of Africa on cross-national growth could be substituted for two crucial openness indicators that contributed significantly to growth. Rodriguez and Rodrik (2000) went on to review some of the key cross-national empirical literature on the relationship between trade policy and economic growth and conclude that there is little evidence that open trade policies, in the sense of lower tariff and non-tariff

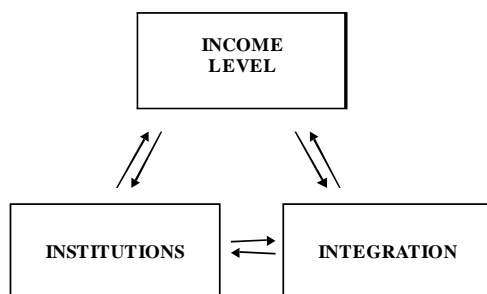
<sup>1</sup>By trade policy we mean governmentally induced mechanisms that restrict, relax or facilitate the international exchange of certain or all goods and services.

barriers to trade, are significantly associated with economic growth. The theory on this relationship, in the case of a small economy that takes world prices of tradable goods as given, would predict that: (1) in static models with no market imperfections and other pre-existing distortions, the effect of a trade restriction is to reduce the level of real GDP at world prices. In the presence of market failures such as externalities, trade restrictions may increase real GDP (although they are hardly ever the first-best means of doing so); (2) in standard models with exogenous technological change and diminishing returns to reproducible factors of production, a trade restriction has no effect on the long-run (steady-state)

Dollar and Kraay (2002) evaluated the role of institutions and international trade in economic development. They provide evidence that countries with better institutions and countries that trade more grow faster. However, they conclude that it is trade which matters more in this nexus as a short-term pro-growth strategy. Institutions matter only in the long-run. But this conclusion is rejected by Rodrik, *et al.* (2004), who find that the quality of institutions ‘trumps every thing else’. They conclude that when institutions are controlled for, the measures of integration have at best insignificant effects on the level of per-capita income. Similarly, Acemoglu, Johnson, and Robinson (2005) argue that the most important determinant of long-term growth is economic institutional functioning, specifically secure property rights. But there is a potential reverse causality between per-capita income levels or growth and institutions. For example richer and more developed countries have better institutions and they are more liberalised than more underdeveloped nations. So a question can be raised as to whether rich countries are affluent because they have superior institutions, or does this relationship work in reverse? There is also a debate as to whether better institutions encourage trade; or is it openness and liberalisation which eventually bring about improvements to institutions? There is some evidence to suggest that both possibilities exist [see for example: Anderson and Mercuiller (1999) and Wei (2000)].

Figure 1 below elaborates how the inter-relationship between growth, institutions and trade works. Any analysis which attempts to capture the effects of institutions and openness on growth is potentially loaded with endogeneity problems.

**Fig. 1. Non-linearity of Institutions and Integration.**



Additionally, not all institutions may matter equally. Democracy and voice and accountability may not always contribute to growth, as has been the case in rapidly growing nations such as China and Singapore, see Barro (1996). There is also the issue of human capital and its place in fostering growth, and even aiding the formation of superior institutions. Glaeser, *et al.* (2004) introduce an important missing link in the debate by suggesting that human capital is more important for growth than are institutions. They actually go a step further by suggesting that human capital actually contributes towards institutional improvement.

On the importance of human capital *vis-à-vis* growth, Schiff (1999), after reviewing recent empirical studies on the subject concludes that poor countries can only grow faster than rich countries if their initial stock of human capital exceeds the average level among other poor nations. For example, when East Asian and South Asian economies are compared, differences in human capital and differences in convergence levels seem to move together. For instance, East Asian Developing countries witnessed unprecedented increases in GNP per capita over the last three decades: 10 times for Malaysia, 65 times for Republic of Korea and 13 times for Thailand. During the same period in Asian least developed countries (Bhutan, Cambodia and Lao People's Democratic Republic) and South Asian developing countries (Bangladesh, India and Pakistan) only a meagre increase of 2 to a little over 5 times took place.

It is interesting to note that in 1960s when most of these countries were at similar stages of economic development, East Asian developing countries were far ahead of both Asian least developed countries and South Asia in human capital endowments. In fact, the total literacy rates for East Asian developing countries in the 1960s were as high as 71 percent for the Republic of Korea, 68 percent for Thailand and even Malaysia had a rate of over 50 percent. On the other hand, in case of all Asian least developed countries and South Asian developing countries, the total literacy rates were as low as only 9 percent for Nepal and 15 percent for Pakistan with Cambodia having 38 percent literacy. After three decades of development effort, the total literacy rates are still far below 50 percent in the cases of Bangladesh, Nepal and Pakistan. Economic progress in East Asia during the 1980s may have occurred because of policies aimed at augmenting their human capital endowment, which gathered momentum in the 1960s or earlier.

### 3. DATA AND METHODOLOGY

In the light of the debate above our equation for per capita income differences across countries<sup>2</sup> comprises all the core determinants of growth, namely international

<sup>2</sup>We follow the practice in Acemoglu, Johnson, and Robinson (2001, 2005) and Rodrik, *et al.* (2004) by looking at per capita income differences. The differences in average income are a consequence of varying past growth rates. Rodrik (2006) has pointed out that the adoption of growth rates may lower the explanatory of institutions.

economic integration (including measures of openness and trade policy), institutions and also human capital. We also include physical capital:

$$\log y_i = \alpha + \beta N_i + \chi TP_i + \gamma HK_i + \eta PK_i + \varepsilon_i \quad \dots \quad \dots \quad \dots \quad (1)$$

In many ways, the equation above is an augmented neo-classical growth model. The variable  $y_i$  is income per capita in country  $i$ ,  $N_i$ ,  $TP_i$ ,  $HK_i$ , and  $PK_i$  are respectively measures for institutions, integration, human capital and physical capital and  $\varepsilon_i$  is the random error term. Human Capital is represented by average years of schooling. In order to have an in-depth insight into how institutions or increased integration affects growth potential we employ several concepts of institutions and trade policy/openness variables following various definitions prevalent in the literature. For example, we take into account the six different classifications of institutions identified by Kaufman, *et al.* (2002), namely rule of law (*rl*), political stability (*ps*), regulatory quality (*rq*), government effectiveness (*ge*), voice and accountability (*va*) and control of corruption (*ctc*).<sup>3</sup> On the integration front, we have carefully chosen three specific measures of openness. For example, ratio of nominal imports plus exports to GDP (*lcopen*) is the conventional openness indicator [see Frankel and Romer (1999); Alcalá and Ciccone (2002); Rose (2002); Dollar and Kraay (2002); Rodrik, *et al.* (2004)]. Two other measures of openness are overall trade penetration (*tarshov*) derived from World Bank's TARS system and overall import penetration (*Impnov*) respectively [see Rose (2002)]. Neither of these measures are direct indicators of trade policy of a country, pointing only towards the level of its participation in international trade. There are indicators of trade restrictiveness acting as measures of trade policy [Edwards (1998); Greenaway, *et al.* (2001); Rose (2002)]. Import tariffs as percentage of imports (*Tariffs*), tariffs on intermediate inputs and capital goods (*Owti*), and total import charges (*Totimpov*) can all be considered as good proxies of trade restrictiveness and have also been employed in this study. Other measures which capture restrictions in overall trade are non-tariff barriers. Moreover, there is also a trend in the trade literature to use composite measures of trade policy. Edwards (1998) advocates the Sachs and Warner (1995) openness index (*open80*) and Leamer's Openness indicator (*leamer 82*) as being apposite proxies for openness. We have also used these composite measures to examine in detail how openness influences growth rate. In short this study has employed 6 institutional and 8 openness/trade policy variables in an attempt to undertake a comprehensive analysis of how institutional quality and exposure to increased international trade affects the economic performance of a country.

<sup>3</sup>The value of these variables range from -2.5 (worst) to 2.5 (best) for every country in the sample.

Note that unlike in the comparable study by Rodrik, *et al.* (2004) we have (a) included a role for human capital, (b) employed six institutional variables compared to one only in Rodrik, *et al.* (rule of law), (c) included trade policy variables and not just openness indicators and (d) expanded the set of openness measures employed.

As indicated earlier, there are potential endogeneity problems between growth and institutions, as well as between openness (or trade policy) and growth. One way of cleansing our empirical analysis from endogeneity in explanatory variables and the reverse causality between dependent and independent variables is to adopt an Instrumental Variable (IV) regression analysis. As a first step to run IV regressions we have to find appropriate instruments for our 8-openness/ trade policy variables and 6 institutional concepts. The first stage estimation includes instruments for the two explanatory variables with potential endogeneity problems. The estimate in the next stage utilises the predicted variables of these variables for institutions and trade policy/openness in a standard growth regression as in (1).

We follow previous studies, which have not only identified instruments for openness and institutions, but they have also run several robustness checks to validate the power of these instruments. The literature clearly establishes that predicted trade shares following Frankel and Romer (*FR*) (1999) from a gravity equation is the most appropriate instrument for openness/ trade policy. On the other hand, the most compelling institutional instrument has been the measure of settler mortality suggested by Acemolgu, Johnson, and Robinson (2001).<sup>4</sup> But the data is only available for 64 countries. Though Rodrik, *et al.* (2004) have extended it to 80 countries; it still covers a relatively low number when compared to another widely used institutional instrument namely ‘fractions of the population speaking English and Western European languages as the first language’ which covers as many as 140 countries. Thus following Dollar and Kraay (2002) and Hall and Jones (1999), we use this instrument for our institutional proxies. Following Rodrik, *et al.* (2004), we employed ‘distance from the equator’ as a third instrument (proxy for geography); this is a purely exogenous concept.

Our IV regression model has two equations, where in the first stage we generate predicted values of openness/trade policy and institutions by regressing them on a set of instruments.

$$N_i = \lambda_i + \phi ENG_i + \nu EUR_i + \tau FR_i + \theta GEO_i + \varepsilon_{Ni} \quad \dots \quad \dots \quad (2)$$

$$TP_i = \pi_i + \varpi FR_i + \zeta ENG_i + \rho EUR_i + \upsilon GEO_i + \varepsilon_{Ni} \quad \dots \quad \dots \quad (3)$$

where  $ENG_i$  and  $EUR_i$  are our instruments for institutions referring to fractions of population speaking English and European languages respectively.  $FR_i$  is instrument for trade policy and  $GEO_i$  is proxy for geography showing distance from the equator.

<sup>4</sup>Although more recently it has been criticised by Glaeser, *et al.* (2004).

At the second stage the predicted values of respective institutional and openness variables are employed in growth equation (Equation 1) along with concepts of human capital and physical capital.

#### 4. REGRESSION RESULTS

It would be interesting to ascertain what information our first stage results give us regarding the quality of instruments. Table 1 suggests that for nearly all specifications of openness and institutional quality, the respective instruments carry the right signs. In some cases where the instruments carry wrong signs, they are also insignificant. Before proceeding to our second stage regressions, we tried to see how predicted values of our openness and institutional variables relate to economic growth in a linear framework. It is interesting to note that the use of instrumental variables provides a much clearer picture of openness/trade policy and institutions with regard to economic growth and establishes the robustness of our instruments.

Table 1

*First Stage Regression Results for Instrumental Variables*

	First Stage Results								
	Lcopen	Impnov	Tarshov	Tariff	Owti	Txtrg	Totimpov	Owqi	Ntarfov
Lfrkrom	0.51 (12.7)*	15.9 (7.5)*	27.6 (7.2)*	-1.17 (-1.07)	-0.07 (-3.7)*	0.004 (0.75)	-15.3 (-4.6)*	-0.04 (-1.19)	-17.79 (-3.01)*
Engfrac	0.37 (2.4)*	16.3 (2.3)*	25.4 (2.01)*	-0.98 (-0.27)	0.004 (0.07)	0.002 (0.12)	11.28 (0.99)	-0.11 (-0.98)	17.06 (0.84)
Eurfrac	-0.12 (-1.2)	-5.9 (-1.6)	-5.5 (-0.6)	-3.7 (-1.3)	-0.06 (-1.3)	-0.18 (-1.7)***	-2.18 (-0.32)	-0.001 (-0.01)	-28.2 (-2.33)*
Disteq	-0.77 (-0.1)	0.05 (0.57)	0.1 (0.54)	-0.19 (-3.9)*	-0.002 (-2.3)*	-0.001 (-4.04)*	0.18 (0.93)	-0.01 (-0.71)	-0.27 (-0.77)
F-test	43.9*	17.4*	15.8*	5.6*	6.04*	5.9*	6.1*	1.04	3.88*
R <sup>2</sup>	0.55	0.43	0.41	0.19	0.21	0.32	0.26	0.04	0.18

	First Stage Results								
	Open80s	Leamer82	VA	PS	GE	RQ	RL	CTC	
Lfrkrom	0.16 (2.55)*	-0.07 (-0.48)	0.86 (2.37)*	0.26 (2.88)*	0.25 (3.31)*	0.097 (1.20)	0.27 (3.42)*	0.27 (3.53)*	
Engfrac	-0.03 (-0.16)	0.16 (0.70)	0.65 (2.03)*	0.24 (0.70)	0.48 (1.6)	0.286 (0.88)	0.502 (1.54)	0.73 (2.43)*	
Eurfrac	0.16 (1.22)	-0.15 (-0.95)	0.88 (4.47)*	0.64 (3.04)*	0.62 (3.39)*	0.82 (4.21)*	0.51 (2.63)*	0.49 (2.73)*	
Disteq	0.01 (4.03)*	0.01 (3.99)*	0.02 (7.09)	0.02 (6.63)*	0.02 (7.37)*	0.01 (3.76)*	0.03 (8.14)*	0.029 (8.08)*	
F-test	7.6*	4.7*	26.9*	17.8*	24.3*	11.9*	25.2*	28.2*	
R <sup>2</sup>	0.31	0.31	0.43	0.35	0.42	0.25	0.42	0.45	

*t*-values in the parenthesis. \*, \*\*, \*\*\* Denotes significance at 1 percent, 5 percent and 10 percent levels respectively.

Moving on to the second stage regression analysis, Table 2a, 2b and 2c (Appendix 1) provides the results of growth equation with combinations of our 3 openness variables with all the institutional concepts under various specifications. The results are very similar to the ones obtained by Rodrik, *et al.* (2004). Institutions clearly dominate openness because in most cases it is noted that the latter variable enters into the growth equation with the wrong sign. The insignificance of our openness proxies capturing the extent of trade or movements in terms of trade in explaining long term growth rate of a country comes as no surprise. These findings are in accordance with Dollar and Kraay (2002) and Rodrik (1998), who suggest that the correlation of trade levels and growth performance is at best weak in the long run. Our results reinforce this fact in a more comprehensive manner, as we have provided additional specifications to the growth equation by including human capital and physical capital. Especially, the inclusion of human capital has improved the explanatory power of our model as it is evident from higher  $R^2$  values and it has helped to anchor the influence of institutions in explaining growth.

In Tables 2d, 2e and 2f (Appendix 1), we have regressed various measurements of tariff and non-tariff barriers along with institutions under different specifications of Equation 1. Interestingly, we now find that the superiority of institutions *vis-à-vis* trade policy has diminished. In some instances, institutions enter the growth equation insignificantly. The frequency of such cases increases when human capital is present in Equation 1. For example, Tables 2d and 2e shows that rule of law enters into the growth equation with a negative sign nearly under all specifications. This is an interesting finding in the light of the Rodrik, *et al.* (2004) paper, who employed the rule of law as the one and only proxy for institutions, going on to claim the superiority of institutions over any other process of growth, as they find that the rule of law is always significant and carries the right sign as opposed to their different openness proxies which sometimes enters with the wrong sign. Though we also find that institutional superiority is unquestionable in regressions with openness proxies, but when trade *policy* variables are introduced the superiority of institutions diminishes, especially for the rule of law which appears with the wrong sign in some cases. Additionally, we observe from Table 2d that voice and accountability and control for corruption carry negative signs under specification 4 of the growth equation when they are paired with *tariffs*.

As far as our trade policy variables are concerned, they also can have wrong signs. But unlike Rodrik, *et al.* (2004), where in many instances openness variables carry wrong signs and are also significant, our trade policy variables which carry wrong signs are generally insignificant. For example, our proxies for import taxes, *tariffs* (import duties as percentage of imports) in 2d and *totimpov* (overall weighted average total import charges) in 2f are the trade policy variables which carry incorrect signs most frequently but are insignificant under all specifications.



There are many studies which have tried to capture the effects of trade policy on economic development, i.e., Sachs and Warner (1995), Edwards (1998) and Greenaway, Morgan, and Wright (2002) are among the prominent studies which have employed direct proxies of trade policies. They confirm that the countries with policy-induced barriers to international trade grow at a slower pace. Notwithstanding the important role of these studies in giving a useful insight into the 'trade and growth' debate *vis-à-vis* trade policy, they have two shortcomings: first, in the light of recent evidence provided by Rodrik, *et al.* (2004) and Dollar and Kraay (2002), their studies are likely to suffer from a misspecification bias as they have not taken account of institutions in their growth equations. Secondly, they have assumed trade policy to be a purely exogenous concept. Wood (2004) points out that no particular trade policy can be carried out without taking second best effects into account, as trade policies crucially depend on the functioning of domestic markets of any particular country.

To this effect we have somewhat addressed the endogeneity of trade policy variables by regressing them on a set of instruments. Though the instruments remain very general in nature, they do capture certain country specific characteristics. And as our dependent variable is regressed on institutional proxies and human capital along with trade policy variables, our analysis goes beyond previous cross sectional studies on the effects of trade policy on economic development.

Table 2g and 2h (Appendix 1) shows the results of composite measures of openness and measures based on residuals, when they are regressed with various institutional concepts. Again we find that institutions, though significant in most instances, are not the most important factor in determining economic growth as was the case in Tables 2a, 2b and 2c. By contrast, these results go on to suggest that trade liberalisation does matter as *open80s* in 2g (the Sachs-Warner openness measures) is significant when it enters the equation for regulatory quality and rule of law, and *leamer82* in 2h (Leamer's measure of trade restrictiveness based on residuals) is highly significant for regulatory quality.

Here the significance of *open80s* reinforces the importance of the trade policy stance, and gives us important insights into the debate. For example, the variable defines a country as open if (i) non-tariff barriers cover less than 40 percent of trade, (ii) average tariff rates are less than 40 percent, (iii) the black market premium was less than 20 percent during the 1980s, (iv) the economy is not socialist, and (v) the government does not control major exports through marketing boards. The rationale for combining these indicators into a single dichotomous variable is that they represent different ways in which policy makers can close their economy to international trade. However, according to the evidence provided by Rodriguez and Rodrik (2000), the Sachs-Warner composite measure mainly derives its strength from the combination of black market premium and the state monopoly of exports. The state monopoly on major exports captures cases where governments tax major

exports and therefore reduce the level of trade (exports and imports), and the black market premium measures foreign exchange restrictions as a trade barrier. Although Rodriguez and Rodrik (2000) accept the state monopoly of exports as an appropriate proxy of trade restrictiveness, they point out that the black market premia may not be such a good choice as it is highly correlated with inflation, the debt/export ratio, wars, institutional quality and may simply capture the effect of widespread macroeconomic and political crisis. To this effect, our IV regression analysis may solve the problem of endogeneity of black market premia as we have regressed *open80s* with a set of institutional and openness instruments. This may make both the government monopoly over major exports and the black market premia robust proxies of trade restrictiveness.

## 5. CONCLUSIONS

Institutions, particularly economic institutions such as property rights and the rule of law are important determinants of long-term economic development, as emphasised by Acemoglu, Johnson, and Robinson (2001, 2005). This was also the view taken by Rodrik, *et al.* (2004) who attempted to demonstrate the superiority of one institution (the rule of law) over the degree of exposure to international trade (openness). It has to be reiterated that their measure of openness is an outcome variable, and not a good proxy for the policy stance regarding international trade. The work of Glaeser, *et al.* (2004) dampens the enthusiasm for institutional quality as the ultimate determinant of economic prosperity by arguing that it is investment in human capital that is more relevant. After all, many of today's prosperous nations were once ruled by dictators who may have pursued enlightened policies in their own interests, leading to economic growth and a demand for democracy that eventually led to their removal. Other countries, that are growth failures, were (and are still) ruled, more often than not by unenlightened dictators. The fact remains that institutional quality and institutional development is mainly a long term phenomenon, and may not be amenable to change via short-term policies. This reservation was expressed by Rodrik, *et al.* (2004), despite their finding that institutions rule over integration. More recently, Rodrik (2006) has distanced himself further from the primacy of institutions, but his disenchantment is more with lessons learned from cross-country studies, and the 'one size fits all' type of general policy advice. Our paper, by adopting a more fully specified form of the Rodrik, *et al.* (2004) model, suggests that trade policies do matter and substantiates the earlier studies regarding the importance of trade policy in determining economic growth. Trade policies are far less systematic than other policies, such as those with regard to the domestic industrial structure (subsidies to state owned enterprises, say), and less subject to the Rodrik (2005) critique about the insignificance of the study of rules based policies across a cross-section of countries.

Table 2a

Table 2b

Table 2c

Table 2d

Table 2e

Table 2f



Table 2g

Table 2h

## APPENDIX 2

## DATA AND SOURCES

**Ctc:** Control of Corruption, Year: 1997-98.

*Source:* Kaufman, *et al.*

**Disteq:** Distance from Equator of capital city measured as  $\text{abs}(\text{Latitude})/90$ .

*Source:* Rodrik, Subramanian and Trebbi (2002).

**Engfrac:** Fraction of the population speaking English.

*Source:* Rodrik, Subramanian and Trebbi (2002).

**Eurfrac:** Fraction of the population speaking one of the major languages of Western Europe: English, French, German, Portuguese, or Spanish.

*Source:* Rodrik, Subramanian and Trebbi (2002).

**Ge:** Government Effectiveness, Year: 1997-98.

*Source:* Kaufman, *et al.*

**Hk:** Average Schooling Years in the total population at 25, Year, 1999.

*Source:* Barro and Lee, <http://post.economics.harvard.edu/faculty/barro/data.html>.

**Impnov:** Import Penetration Overall, 1985.

*Source:* Rose (2002).

**Lcopen:** Natural logarithm of openness. Openness is given by the ratio of (nominal) imports plus exports to GDP (in nominal US dollars), Year: 1985.

*Source:* Penn World Tables, Mark 6.

**Leamer82:** Leamer's Measure of Openness based on Residuals, Year: 1982.

*Source:* Rose (2002).

**Logfrankrom:** Natural logarithm of predicted trade shares computed following Frankel and Romer (1999) from a bilateral trade equation with 'pure geography' variables.

*Source:* Frankel and Romer (1999).

**LnY:** Natural logarithm of Per Capita Income at purchasing Power Prices (PPP), Year: 2000.

*Source:* World Development Indicators (WDI), 2002.

**Open80:** Sachs and Warners (1995) composite openness index.

*Source:* Rose (2002).

**Owti:** Tariffs on intermediate inputs and Capital Goods, Year: 1985.

*Source:* Barro and Lee

**Pk:** Gross Capital Formation as a percentage of GDP, Year: 2000.

*Source:* World Development Indicators (WDI), 2002.

**Ps:** Political Stability, Year: 1997/98.

*Source:* Kaufman *et al.*

**Rl:** Rule of Law, Year: 1997/98.

*Source:* Kaufman *et al.*

**Rq:** Regulatory Quality, Year: 1997/98.

*Source:* Kaufman *et al.*

**Tariffs:** Import Duties as percentage imports, Year: 1985.

*Source:* World Development Indicators (WDI), 2002.

**Tarshov:** TARS trade Penetration Overall, Year: 1985,

*Source:* Rose (2002).

**Totimpov:** Weighted Average Total Import Charges, Overall, Year: 1985.

*Source:* Rose (2002).

**Va:** Voice and Accountability, Year: 1997/98.

*Source:* Kaufman *et al.*

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