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# **Government Regulation and Policy trumps Courts in determining Economic Growth**

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## **Abstract:**

The paper evaluates the relative role of institutions and policy structure for a larger sample of developed and developing countries in determining economic growth. The paper finds that regulation and government effectiveness in formulating fiscal and monetary policy is closely related with economic growth more than the efficacy of rule of law. Unlike Rodrik et al (2004), social institutions that invest in human capabilities also matter equally if not more than independent judiciary. Globalization also works to the benefit of domestic polity and economy in income generation.

## **1 Introduction**

Generally the market failure outcomes from 1960s to 1980s had promoted the idea of direct government involvement in productive activities in developing countries by promoting industrialization through import substitution, investing in industry and agriculture, and by providing direct ownership of enterprises. However, this did not work well in most developing countries and success stories emerging from developed countries that have followed trade liberalization, encouraged many countries in Asia and Latin America to narrow down the role of state regulation and embraced free market paradigm especially in early 1990s. China, Malaysia, Costa Rica and India are the success stories that emerged in developing country landscape that benefited from market liberalization. These countries saw an unprecedented rise in productivity and thus higher growth rates that were sustained for longer time periods. The success of market liberalization on account of economic development motivated developing countries to follow suit and most of the South restricted the role of government in controlling market outcomes and constituted and promoted state regulatory institutions that acted as facilitators to increased private sector activity in productive sectors like services and industry or nonproductive sectors like agriculture. (see e.g. World Bank, 1995)

With regard to international trade and its impact on economic well-being, it has to be borne in mind that trade can increase or decrease independent of any changes to the trade policy stance (tariffs, non-tariff barriers, export subsidies etc.).<sup>1</sup> Globalisation, factors that are external to an individual nation, may facilitate trade. Technological changes may make certain goods, say imports, cheaper despite the presence of trade restrictions. Similarly, a fall in transportation costs or the end of war may alter the relative price of tradables encouraging more international trade. Trade may increase income, but

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<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.

changes in trade policies may not foster more international trade and hence not contribute to growth or poverty reduction. In short, we have to distinguish between openness, some thing that is an outcome of policy choices or serendipity; and trade *policies* aimed at promoting greater international trade which might or might not succeed. We make this important distinction in the empirical work that follows, unlike most authors including Rodrik et. al (2004).

Furthermore, Rodrik et al (2004) suggests that independent judiciary that can implement rule of law in a country is the most important factor in determining economic growth. However, this may be true but institutions have many connotations. In addition to legal institutions, economic and social institutions are no less important. Glaeser et al (2004) thinks that it is human capital that is the driving force of prosperity for nations. His result is substantiated by Mamoon and Murshed (2017). Here in this paper the author likes to further contribute to the debate on role of institutions in determining economic prosperity by analysing the relative role of legal, social, economic institutions on economic growth.

The rest of the paper is organised as follows. Section 2 (data and methodology) and 3 (regression analysis) contain our contribution to the debate. Our analysis, although similar to Rodrik et. al (2004), goes beyond their work by including more institutional measures, openness indicators, as well as explicit trade policy variables and a role for human capital. Therein lies the innovation of our paper. Finally, section 4 concludes with some policy implications.

## 2. Data and Methodology

In the light of the above debate our model includes many of the core determinants of growth, namely international economic integration (including measures of openness and trade policy), measures of institutional quality, physical and human capital. In fact, our dependent variable is not growth *per se*, but the log of income per-capita, as in Easterly and Levine (2003) and Rodrik et al (2004). Differences in per-capita income across countries are, of course, often a result of differential growth rates in the past. Here we follow the practice in Easterly and Levine (2003) and Rodrik et al (2004) where the relative contribution of policies and institutions in explaining per-capita income differentials is tested. Our sample includes both rich OECD countries and developing countries. As regards “policy”, we examine the effect of both openness, as in Rodrik et al (2004), as well as trade policy variables. Openness indicators are an outcome variable, pointing to the extent to which a country trades as a proportion of national income. Trade policy indicators are, however, a more direct measure of the policy stance, and this was not examined in Rodrik et al. (2004). We deem these policy variables to be of greater significance in a test of the relative efficacy of policy vis-à-vis institutions.

The final equation to be estimated takes the following form:

$$\log y_i = \alpha + \beta N_i + \chi TP_i + \gamma HK_i + \eta PK_i + \varepsilon_i \dots\dots\dots (2.1)$$

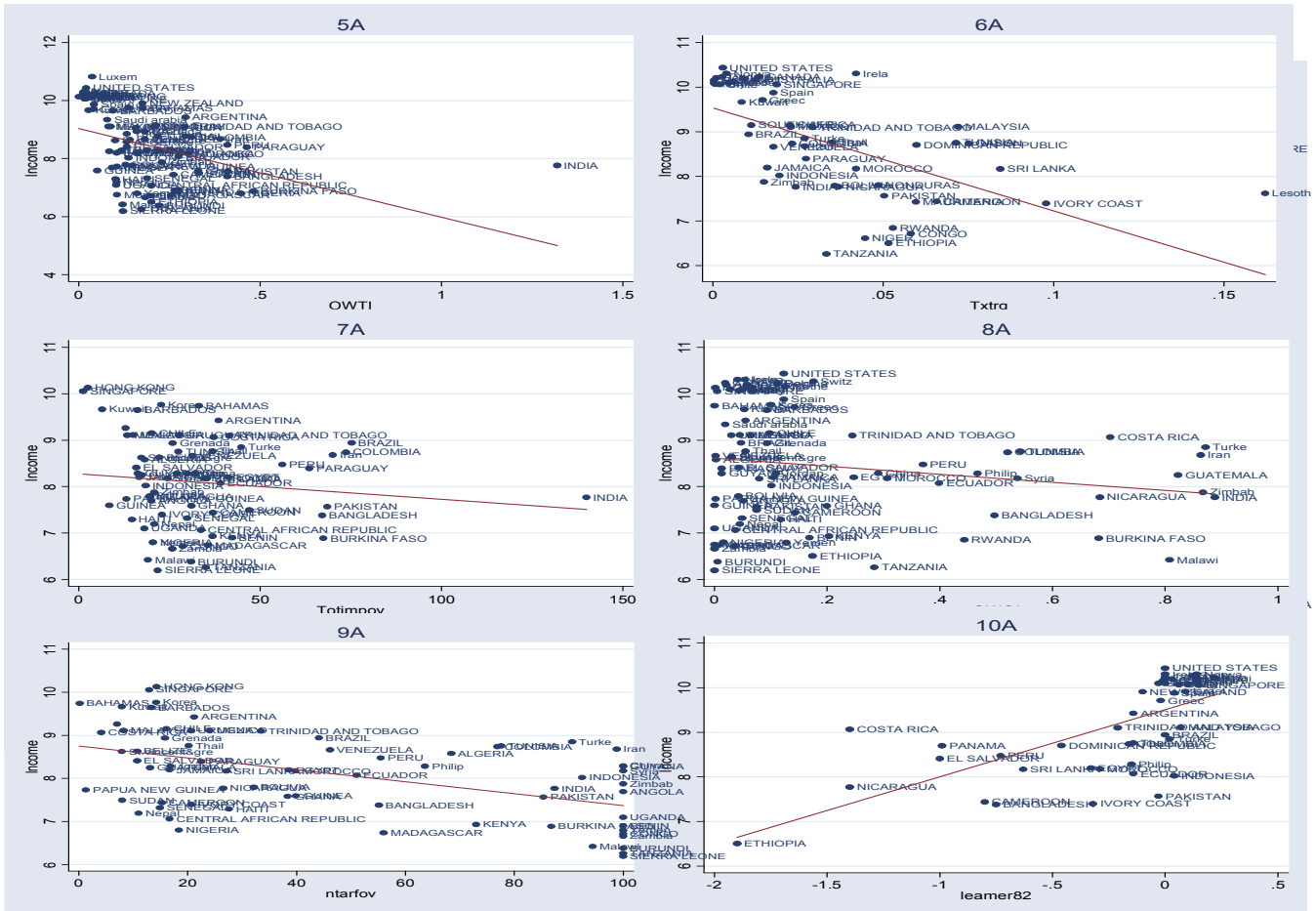
The variable  $y_i$  is income per capita in country  $i$ ,  $N_i$ ,  $TP_i$ ,  $HK_i$ , and  $PK_i$  are respectively measures for institutions, integration, human capital and physical capital and  $\varepsilon_i$  is the random error term. Human Capital is represented by average schooling years. In order to have an in-depth insight into how institutions or increased integration impact on income per-capita, we will employ several concepts of institutional quality, trade policy and

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*). The Kaufman et al (2002) formulated aggregate governance indicators covering 175 countries. They relied on 194 different measures of governance drawn from 17 different sources of subjective governance data constructed by 15 different sources including international organizations, political and business risk rating agencies, think tanks and non governmental organizations. The governance indicators have been oriented so that higher values correspond to better outcomes on a scale from -2.5 to 2.5. Rodrik et al (2004) only consider the rule of law. On the international economic integration front, we have carefully chosen three specific measures of openness. The ratio of nominal imports plus exports to GDP (*lcoopen*) 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 (*tarsbov*) 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*), trade taxes as a ratio of overall trade (*Txtrg*) and total import charges (*Totimpov*) can all be considered as good proxies for trade restrictiveness and have also been employed in our study. Other measures which capture restrictions in overall trade are non-tariff barriers. We use overall non-tariff coverage (*Ntarfov*) and non-tariff barriers on intermediate inputs and capital goods (*Owqi*) as two proxies for non-tariff barriers (see Rose, 2002). 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 of openness. We have also used these composite measures to examine in detail how openness influences per-capita income. In summary our study employs 6 institutional and 11 openness 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. 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.

**Table 2.1: Pair wise Correlation**

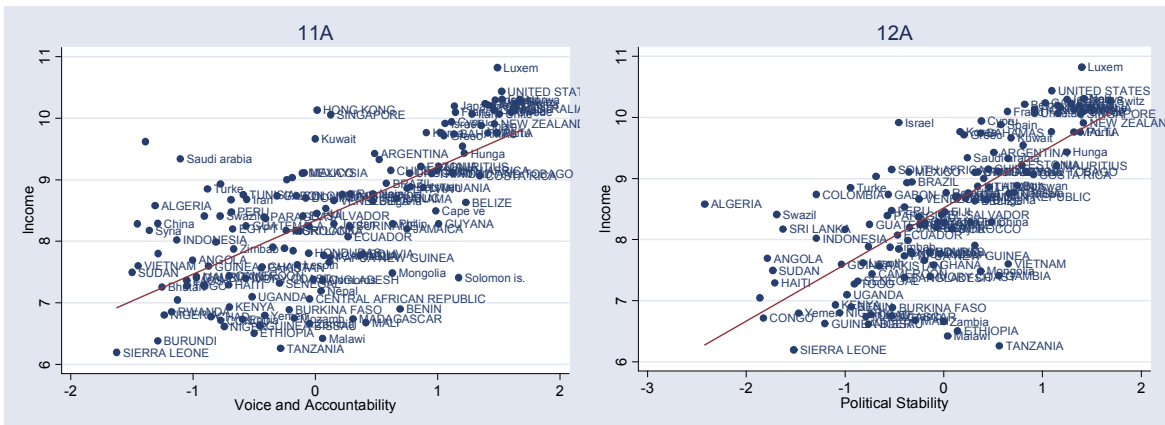
Regressors	LnY
Lcopen	0.19
Impnov	0.31
Tarshov	0.37***
Tariffs	-0.51*
Owti	-0.41*
Txtrdg	-0.59*
Totimpov	-0.11
Owqi	-0.17
Ntarfov	-0.501*
Open80	0.49*
Leamer82	0.68*
Va	0.69*
Ps	0.72*
Ge	0.74*
Rq	0.63*
Rl	0.78*
Ctc	0.75*
Pk	0.18
Hk	0.88*

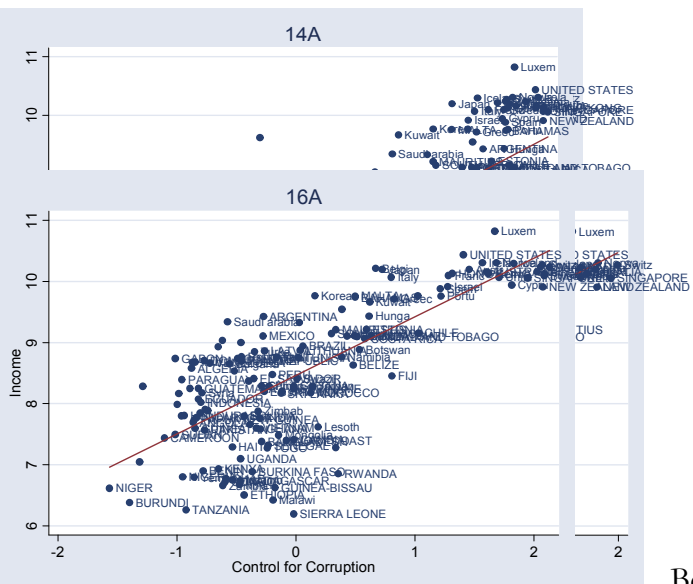
- \*, \*\*, \*\*\* Bonferroni- Adjusted significance at 1%, 5% and 10% level, respectively.



**GRAPH 2.1A : Correlations between Income and Openness/ Trade Policy Variables:**

**GRAPH 2.2A: Correlations between Income and Institutional Variables:**





Before we undertake the regression analysis it is useful to explore the linear dynamics of the relationship between income and our selected determinants of economic prosperity or growth. Table 2.1 provides pair wise correlations. The three openness measures show a weak relationship with income. This is expected because openness measures capture overall trade in a country. This makes them weak proxies for trade policy as differences in trade shares across countries can have many exogenous reasons along with income itself, such as geography and trade policies.

On the other hand, the coefficients of our core trade policy variables show that a significant linear relationship is present between income and trade restrictiveness. The table suggests that any decrease in tariffs and non-tariff barriers has a positive impact on per-capita income. Furthermore, institutions and human capital come out to be key determinants of economic wellbeing as nearly all of them are significantly related to income, see graphs 2.1A and 2.2A.

As indicated earlier, there are potential endogeneity problems between per-capita income and institutions, per-capita income and human capital, as well as between openness (or the trade policy stance) and income per-capita. One way of cleansing our empirical analysis from endogeneity in explanatory variables and the reverse causality between dependent and independent variables is to adopt Instrumental Variable (IV) techniques in the context of two stage least squares regression analysis (2SLS). As a first step to run IV regressions we have to find appropriate instruments for our 11 openness/ trade policy variables and 6 institutional concepts. The first stage estimation includes instruments for the two explanatory variables with potential endogeneity problems. The regression estimate in the next stage utilises the predicted variables of these variables for institutions and trade policy/openness in a standard per-capita income or growth regression as in (1).

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 is the measure of settler mortality suggested by Acemolgu, Johnson and Robinson (2001). 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 (*Engfrac*) and Western European languages as the first language (*Eurfrac*)’ 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. We have employed total public spending on education (as a percentage of GDP) and primary public-teacher ratio as two instruments for human capital, which is proxied by average years of schooling at age 25. The former instrument captures the quality of education and the later instrument captures the quantity of education. As in Rodrik et al (2004), we employ ‘distance from the equator’ as a fifth instrument (proxy for geography). This is a purely exogenous concept.

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

$$N_i = \lambda_{1i} + \phi_1 ENG_i + \nu_1 EUR_i + \tau_1 FR_i + \varpi_1 TLEX + \rho_1 PTR + \theta_1 GEO_i + \varepsilon_{Ni} \dots \dots (2.2)$$

$$TP_i = \lambda_{2i} + \phi_2 ENG_i + \nu_2 EUR_i + \tau_2 FR_i + \varpi_2 TLEX + \rho_2 PTR + \theta_2 GEO_i + \varepsilon_{Ni} \dots \dots (2.3)$$

$$HK_i = \lambda_{3i} + \phi_3 ENG_i + \nu_3 EUR_i + \tau_3 FR_i + \varpi_3 TLEX + \rho_3 PTR + \theta_3 GEO_i + \varepsilon_{Ni} \dots \dots (2.4)$$

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.  $TLEX$  is total public spending on education as a percentage of GDP and  $PTR$  is primary public-teacher ratio and both are instruments for human capital.  $GEO_i$  is proxy for geography showing distance from the equator. At the second stage the predicted values of respective institutional and openness variables are employed in the per-capita income equation (2.1) along with concepts of human capital and physical capital.

### 3. Regression Results

It would be interesting to know what information our first stage results give us regarding the quality of instruments. Table 2.2 suggests that for nearly all specifications of openness and institutional quality, the respective instruments carry the right signs. In some cases when the instruments carry the wrong signs, they are also insignificant. The ( $FR$ ) instrument is statistically significant for all openness variables and 2 out of 6 trade policy variables. Though ( $FR$ ) is not significant for most trade policy variables, there is a strong one to one correlation between trade policy and ( $FR$ ) instrument because the former variable always enters the trade policy equation with a right sign. Similarly  $ENG$  and  $EUR$  come out as sound instruments for institutions as they have generally been significant and always with a right sign. Similarly  $TLEX$  and  $PTR$  establish themselves as good instruments for human capital. However, note that for trade taxes ( $Txtg$ ) and non tariff barriers ( $Ntarfon$ ), the signs for public spending on education ( $TLEX$ ) are positive and they are highly significant. This suggests that in an effort to integrate more with the world economy, if governments decrease their trade restrictiveness, their development



expenditure would bear the brunt of cuts and they may be compromising their goals in the education sector by investing less on education.

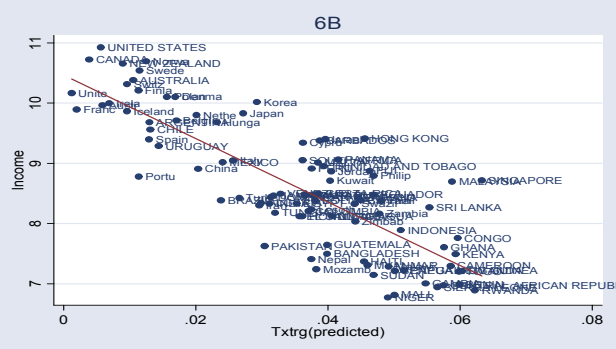
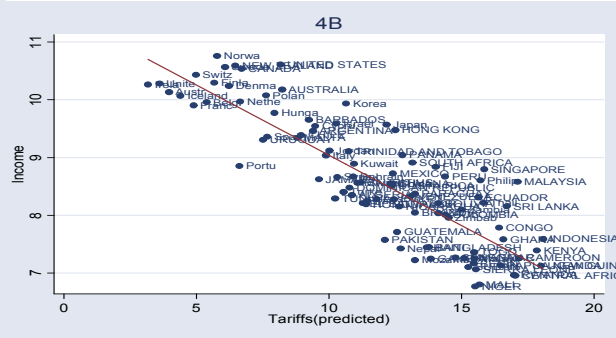
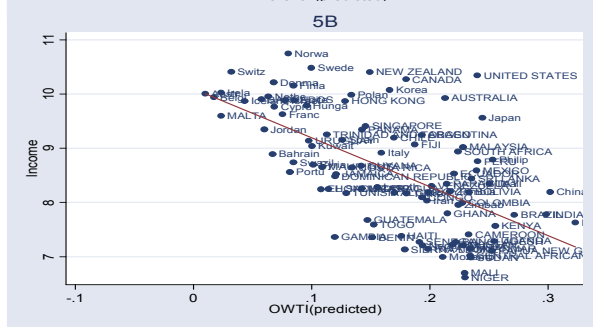
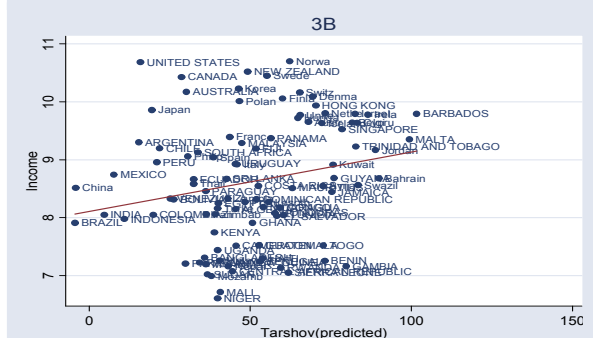
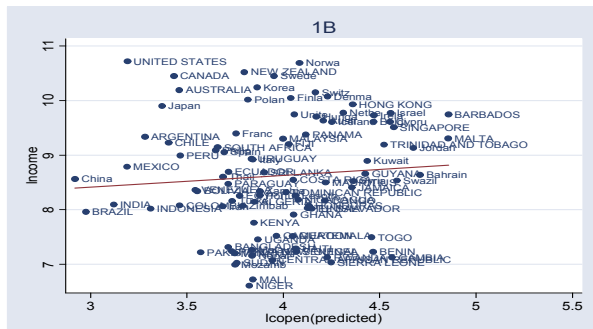
Before proceeding to our second stage regressions, we tried to see how predicted values of our openness and institutional variables relate to per-capita income in a linear framework. To this effect, graphs 2.3B and 2.4B provide graphical representations of such linear relationships. It is interesting to note that the use of instrumental variables provides a much clearer picture of openness/ trade policy and institutions with regard to income when compared to results in graphs 2.1A and 2.2A, especially for the ones which depict trade restrictiveness and institutions. This re-establishes the robustness of our instruments for openness/ trade policy and institutions.

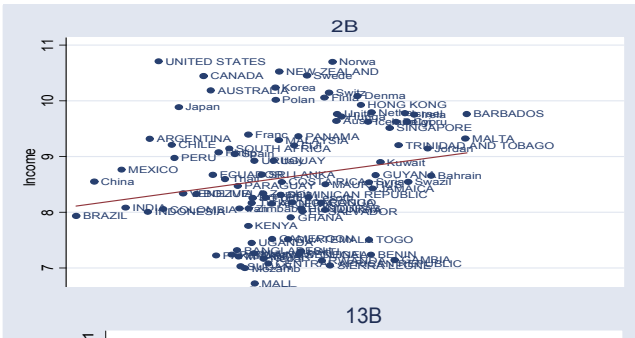
**Table 2.2:**  
**First Stage Regression Results for Instrumental variables:**

First Stage Results									
	lcoopen	Impnov	Tarshov	Tariff	Owti	Txtrg	Totimpov	Owqi	Ntarfov
Lfrkrom	0.524	14.71	21.25	-0.86	-0.152	0.008	-22.8	-0.076	-16.40
	(9.32)*	(8.33)*	(6.07)*	(-0.53)	(-3.33)*	(1.52)	(-3.3)*	(-1.25)	(-1.56)
Engfrac	0.421	12.34	21.98	-3.73	0.03	0.017	30.6	-0.157	11.68
	(2.31)**	(2.37)**	(2.13)**	(-0.72)	(0.32)	(1.33)	(1.53)	(-1.02)	0.38
Eurfrac	-0.115	-3.51	-1.29	-2.40	-0.07	-0.006	-13.66	0.09	-0.07
	(-0.91)	(-0.88)	(-0.16)	(-0.67)	(-0.88)	(-0.59)	(-1.16)	(0.85)	(-0.04)
Tlex	0.08	2.44	4.77	0.201	0.007	0.012	-1.94	0.03	7.84
	(3.35)*	(2.34)**	(2.31)**	(0.24)	(0.35)	(5.10)*	(-0.67)	(1.23)	(1.78)***
Ptr	0.001	0.02	0.11	0.083	0.0004	0.001	-0.19	0.003	1.45
	(0.43)	(0.20)	(0.42)	(0.72)	(0.15)	(3.94)*	(-0.49)	(0.94)	(2.42)**
Disteq	-0.004	-0.043	-0.105	-0.216	-0.0026	-0.0008	0.08	-0.001	-0.44
	(-0.30)	(-0.46)	(-0.57)	(-2.40)**	(-1.32)	(-3.05)*	(0.24)	(-0.67)	(-0.80)
N	81	53	53	60	49	34	38	49	38
F	23.1*	19.05	11.71*	3.28*	2.68*	12.5*	2.30*	0.87	1.96
R2	0.65	0.71	0.60	0.27	0.27	0.73	0.30	0.11	0.27
First Stage Results									
	Open80s	Leamer82	Va	Ps	Ge	Rq	Rl	Ctc	Hk
Lfrkrom	0.124	-0.0349	0.067	0.052	0.102	0.013	0.08	0.134	-0.25
	(0.97)	(-0.31)	(0.62)	(0.46)	(1.07)	(0.14)	(0.85)	(1.32)	(-0.81)
Engfrac	-0.03	0.211	0.75	0.252	0.469	0.175	0.42	0.569	1.28
	(-0.12)	(0.81)	(2.04)**	(0.68)	(1.49)	(0.56)	(1.29)	(1.69)***	(1.43)
Eurfrac	-0.02	-0.303	0.495	0.296	0.47	0.54	0.247	0.353	0.728
	(-0.09)	(-1.52)	(2.03)**	(1.21)	(2.26)**	(2.67)**	(1.15)	(1.59)	(1.10)
Tlex	-0.018	-0.067	0.0048	0.037	0.029	0.03	0.079	0.092	0.182
	(-0.35)	(-1.02)	(0.10)	(0.78)	(0.71)	(0.97)	(1.92)**	(2.15)**	(1.26)
Ptr	-0.009	-0.030	-0.0063	-0.013	-0.006	-0.005	-0.012	-0.005	-0.097
	(-1.32)	(-3.61)*	(-0.84)	(-1.7)***	(-1.03)	(-0.92)	(-1.8)***	(-0.85)	(-4.58)*
Disteq	0.005	0.006	0.026	0.02	0.02	0.01	0.025	0.0281	0.049
	(1.21)	(1.42)	(4.43)*	(3.68)*	(4.79)*	(1.96)**	(4.70)*	(5.03)*	(2.95)*
N	35	30	79	73	73	78	78	75	58
F	1.88	5.5*	13.1	10.76*	15.6*	6.95*	18.5*	18.23*	20.63*
R2	0.28	0.58	0.52	0.49	0.57	0.37	0.61	0.61	0.70

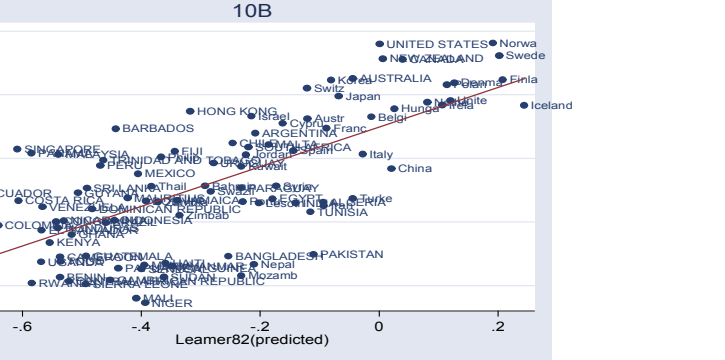
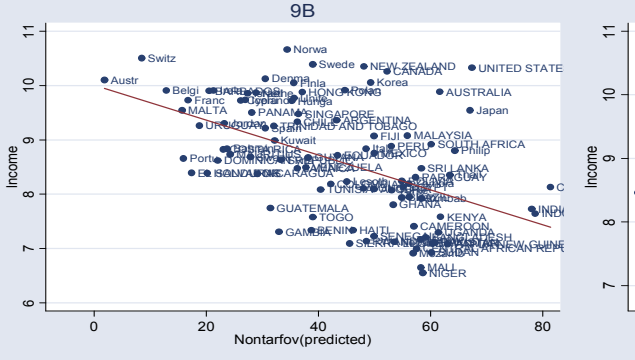
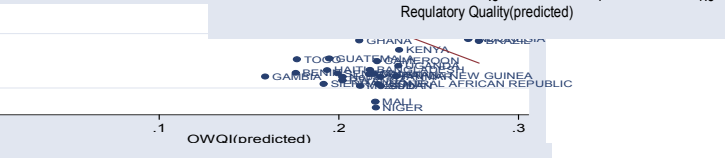
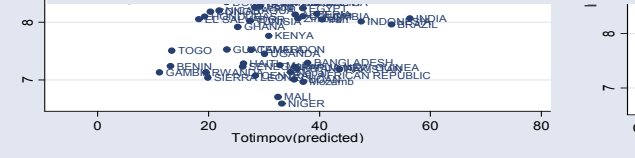
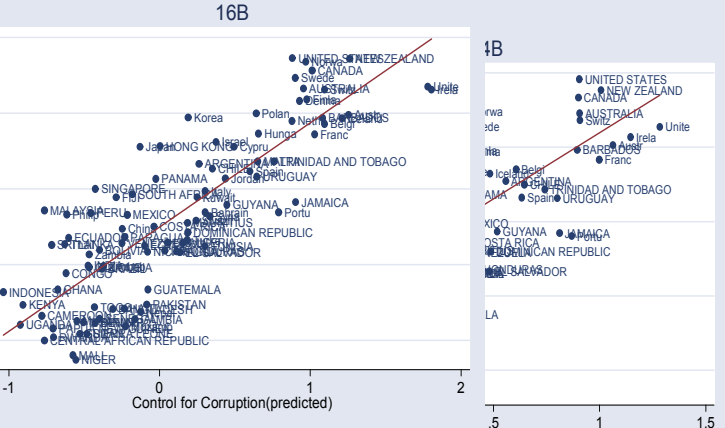
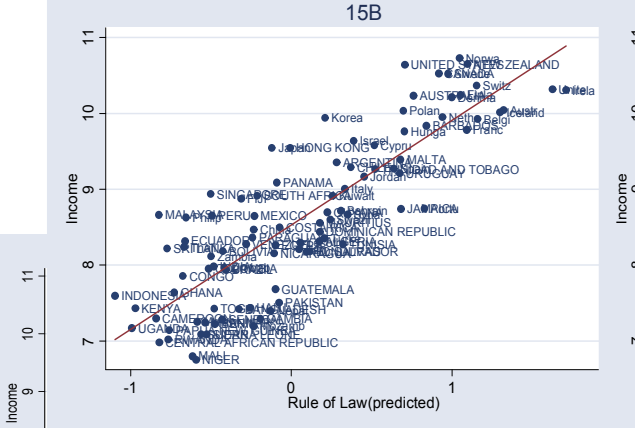
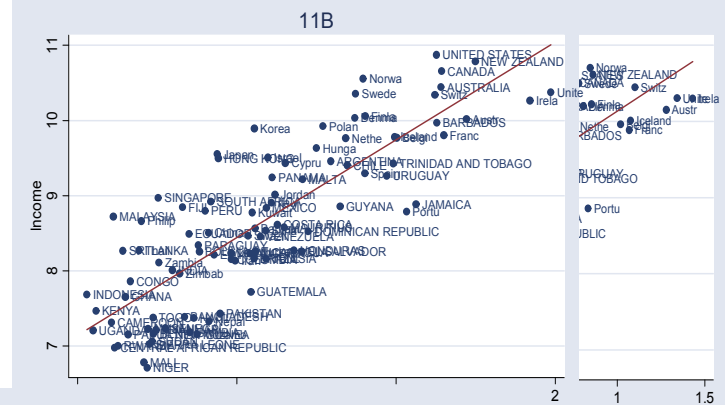
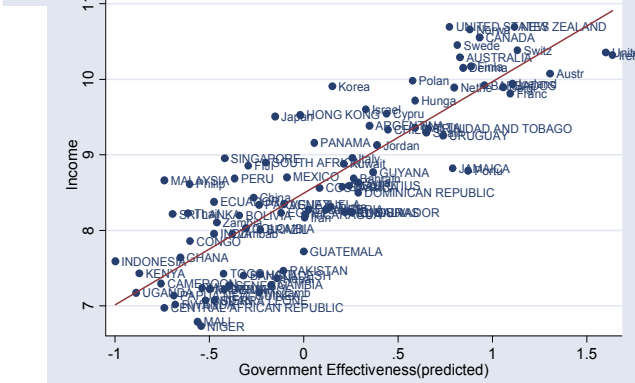
- t- Values in the parenthesis. \*, \*\*, \*\*\* denotes significance at 1%, 5% and 10% levels respectively.

**GRAPH 2.3B : Correlations between Income and Predicted Openness/ Trade Policy Variables:**





**GRAPH 2.4B : Correlations between Income and Predicted Institutional Variables:**



**Table 2.3. Second Stage Regression Results for Per Capita Income under Multiple Specifications**

Independent Variables	Specification	Significant	Right Sign	Significant and Right Sign
Openness				
Lcopen	1	0 out of 6	0 out of 6	None
	2	0 out of 6	0 out of 6	None
	3	2 out of 6	1 out of 6	1 out of 2
Impnov	1	0 out of 6	1 out of 6	None
	2	0 out of 6	0 out of 6	None
	3	3 out of 6	1 out of 6	0 out of 3
Tarshov	1	0 out of 6	1 out of 6	None
	2	0 out of 6	1 out of 6	None
	3	2 out of 6	1 out of 6	0 out of 2
Open80s	1	0 out of 6	6 out of 6	none
	2	0 out of 6	6 out of 6	none
	3	1 out of 6	5 out of 6	1 out of 1
Leamer80s	1	0 out of 6	6 out of 6	none
	2	1 out of 6	6 out of 6	1 out of 1
	3	1 out of 6	2 out of 6	1 out of 1
Trade Polciy				
Tariffs	1	0 out of 6	5 out of 6	None
	2	0 out of 6	5 out of 6	None
	3	0 out of 6	6 out of 6	None
Owti	1	0 out of 6	2 out of 6	None
	2	0 out of 6	1 out of 6	None
	3	0 out of 6	3 out of 6	None
Txfcrdg	1	4 out of 6	6 out of 6	4 out of 4
	2	2 out of 6	6 out of 6	2 out of 2
	3	2 out of 6	5 out of 6	2 out of 2
Totimpov	1	0 out of 6	0 out of 6	None
	2	0 out of 6	0 out of 6	None
	3	2 out of 6	0 out of 6	0 out of 2
Owqi	1	0 out of 6	0 out of 6	None
	2	0 out of 6	0 out of 6	None
	3	0 out of 6	2 out of 6	None
Ntarov	1	0 out of 6	3 out of 6	None
	2	0 out of 6	4 out of 6	None
	3	1 out of 6	4 out of 6	1 out of 1
Institutions				
Va	1	1 out of 11	5 out of 11	1 out of 1
	2	1 out of 11	7 out of 11	1 out of 1
	3	9 out of 11	10 out of 11	9 out of 9
Ps	1	0 out of 11	8 out of 11	None
	2	0 out of 11	8 out of 11	None
	3	10 out of 11	11 out of 11	10 out of 10
Ge	1	0 out of 11	10 out of 11	None
	2	0 out of 11	11 out of 11	None
	3	10 out of 11	11 out of 11	10 out of 10
Rq	1	0 out of 11	6 out of 11	None
	2	0 out of 11	6 out of 11	None
	3	9 out of 11	11 out of 11	9 out of 9
Rl	1	0 out of 11	8 out of 11	None
	2	0 out of 11	8 out of 11	None
	3	9 out of 11	11 out of 11	9 out of 9
Ctc	1	0 out of 11	5 out of 11	None
	2	0 out of 11	4 out of 11	None
	3	9 out of 11	10 out of 11	9 out of 9
Hk	1	60 out of 66	66 out of 66	60 out of 60
	2	60 out of 66	66 out of 66	60 out of 60
Pk	1	0 out of 66	49 out of 66	None

- Standard errors are corrected for as we run Durbin-Wu-Hausman test (augmented regression test) for endogeneity (see Davidson and MacKinnon. 1993).

- The table illustrates the results for equation 1 under various general specifications. i.e., specification 1: openness or trade policy + Institutions + Hk +Pk, Specification 2: openness or trade policy + Institutions + Hk, Specification 3: openness or trade policy + Institutions.
  - Note that specification 3 corresponds to the one adopted by Rodrik et al (2004) for their growth equation.
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Moving on to the second stage regression analysis, Table 2.3 provides the results for per-capita income equation with combinations of our 11 openness/trade policy variables with all various institutional concepts under multiple specifications. We employ three estimation specifications for our right-hand side variables (see appendix for data definitions and details). In specification 1 we combine openness or trade policy indicators with institutions as well as human and physical capital; specification 2 contains openness or trade policy indicators along with institutions and human capital but not physical capital; and specification 3 is the Rodrik et al. model with trade policy openness indicators juxtaposed against institutions only. We argue that specification 1 is a richer model, as it contains roles for human and physical capital in explaining per-capita income differences across nations.

Only for specification 3, which corresponds to the specification followed by Rodrik et al (2004), the results turn out to be similar to their study. Institutions clearly trump openness and trade policy as they have been highly significant in most cases. In contrast to institutional proxies, openness variables generally remained insignificant, and if significant have mostly entered equation 1 with a wrong sign. Trade policy variables also remained insignificant under specification 3 with the exception of trade taxes which are significant in some cases.

However, for specifications 1 and 2, where human capital enters equation 1, the results present a different picture and challenge the position taken up by Rodrik et al (2004) apropos the inconsequential role of trade in economic development in the face of stronger institutions. For specification 1 and 2 institutions are overwhelmingly insignificant. Compared to specification 3, the frequency of insignificance for openness reaches nearly 100 percent in specifications 1 and 2 when human capital is considered. Openness proxies are insignificant, as well as having the wrong signs in most cases. The insignificance of openness proxies capturing the level of trade or movements in terms of trade is not surprising. These results are in accordance with the findings of 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 per-capita income equation by including human capital and physical capital. Especially, the inclusion of human capital has improved the explanatory power of our model, as is evident from higher  $R^2$  values.

As far as the trade policy variables are concerned, they are significant in some cases and the frequency of significance is much higher when compared to openness variables. Though trade policy indicators too can have wrong signs,<sup>2</sup> unlike Rodrik et al (2004) and our own analysis, where in many instances openness variables carry wrong signs and have also been significant, our trade policy variables which carry incorrect signs are generally insignificant. With the exception of *Totimpov*, other trade policy variables always enter equation 1 with right signs whenever they are significant. *Tariffs*, *Omti*, *Omqi* and *Ntarov* also show wrong signs but in such instances they have also been insignificant. In fact,

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<sup>2</sup> This occurs when import protection increases per-capita income.

*Onqi* which has highest frequency of wrong signs next to *Totimpov*, remains insignificant under all specifications and with any of the institutional combinations. By contrast, *Txtrg* which is the most significant trade policy variable, always enter the equation with a right (negative) sign showing that trade policy does matter and trade restrictiveness indeed lowers per-capita income or growth.

It is also important to understand why some trade policy variables have the wrong signs or are insignificant, when others have passed the test by emerging as significant contributors to economic success. With regard to the insignificance of import taxes *Totimpov*, one can suggest that their contribution depends upon the composition of goods imported. For example, for a developing country the availability of technologically superior import goods has positive effects on output and growth, but if imports are dominated by consumption goods, a reduction in import taxes may very well hamper growth potentials, and at a cost to the public exchequer. Rodrik (1998) supports this line of argument, as he found that changes in import taxes fail to influence growth in Sub Saharan African countries. According to him it is export taxes, which if lowered, contribute to growth. Esfhani (1991), however, provides contrary evidence. Similarly Lee (1995) found that there is a significant impact of imports on growth suggesting import taxes do matter in affecting growth. Thus in the context of a cross sectional study, it is wiser to examine the impact of overall trade taxes (import and export) instead of looking at any one of them in order to have a general insight into the workings of trade taxes apropos economic activity. According to Rodriguez and Rodrik (2000), overall trade taxes capture trade restrictiveness in a more complete manner than any of the other proxies of trade policy as it is comprised of both import and export taxes.

Not surprisingly, *Txtrg* (overall trade taxes) comes out to be the most important trade policy variable since it has been recorded as significant in many instances in all the 3 specifications(see table 2.4). To be exact, *Txtrdg* is significant in 4 out of 6 cases in specification 1, 2 out of 6 cases in specification 2 and 2 out of 6 cases in specification 3. Note that trade taxes are most significant in specification 1, where human and physical capital enters the per capita equation. In comparison, the institutional proxies always enter equation 1 as insignificant under the same specification. This is again an important result if we compare it with the results obtained by Rodrik et al (2004), where it was openness which was generally insignificant and institutions (Rule of Law) have largely been highly significant at 1% level of significance. All in all, trade taxes enter significantly in the per-capita equation with voice and accountability, political stability, regulatory quality, rule of law and control of corruption making a strong case for the important role trade policy plays in economic development.

**Table 2.4: Second Stage Regression Results for Tlxtrdg and Institutions**

Dependent Variable: Log of Per Capita Income																		
Independent Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Tlxtrdg	-16.86	-9.61	1.33	-15.11	-9.38	-17.8	-14.68	-8.38	-8.21	-17.61	-9.28	-10.91	-14.72	-9.42	-18.41	-15.56	-9.05	-19.62
	(1.7)***	(-1.7)***	(0.1)	(2.0)**	(-1.9)***	(-1.61)	(-1.24)	(-1.63)	(-0.7)	(-1.57)	(-1.7)***	(-0.74)	(-1.9)***	(-2.1)**	(-1.9)***	(1.8)***	(-1.53)	(2.0)**
Va	-0.3508	-0.148	1.25															
	(-0.44)	(-0.21)	(3.7)*															
Ps				0.142	0.0528	0.97												
				(0.34)	(0.09)	(3.24)*												
Ge							0.122	0.355	1.04									
							(0.12)	(0.45)	(3.9)*									
Rq										-0.299	0.058	1.87						
										(-0.29)	(0.08)	(2.85)*						
Rl													0.205	0.250	0.85			
													(0.35)	(0.37)	(3.61)*			
Ctc																-0.194	-0.108	0.76
																(-0.25)	(-0.16)	(3.6)*
Hk	0.4752	0.461		0.313	0.392		0.323	0.286		0.413	0.399		0.283	0.306		0.446	0.46	
	(1.7)***	(1.9)***		(2.0)***	(1.72)***		(0.97)	(1.01)		(2.05)**	(2.42)**		(1.23)	(1.08)		(1.26)	(1.43)	
Pk	0.039			0.039			0.032			0.041			0.030			0.038		
	(1.12)			(1.13)			(0.78)			(1.07)			(0.97)			(1.12)		
N	31	32		31	32		31	32		31	32		31	32		31	32	
F	17.8*	29.6*	42.5*	26.9*	35.6*	27.9*	25.4*	46.0*	41.4*	18.2*	34.2*	41.4*	29.1*	45.4*	43.9*	19.4*	30.4*	42.5*
R	0.68	0.73	0.65	0.79	0.77	0.51	0.78	0.82	0.67	0.69	0.76	0.67	0.80	0.82	0.67	0.71	0.73	0.66

- t- Values in the parenthesis. \*, \*\*, \*\*\* denotes significance at 1%, 5 % and 10% levels respectively.
- Standard errors are corrected for as we run Durbin–Wu–Hausman test (augmented regression test) for endogeneity (see Davidson and MacKinnon. 1993).
- Please also refer to table 5, where we give results for equation 5. Tlxtrdg is the most significant variable out of the three openness and trade policy variables (i.e., Lcopen, tariffs and Tlxtrdg) we have employed, respectively.

We have also included more specific proxies of trade restrictiveness (tariffs and non-tariff barriers) in an attempt to identify the optimal trade policy tools for policy makers. In Table 2.3 *Omti* (tariffs on intermediate inputs and capital goods) and *Omqi* (non-tariff barriers on intermediate inputs and capital goods) have been insignificant under all specifications of our per-capita income equation and with any of the institutional combinations. Though we find *Ntarfov* (overall non-tariff barriers) significant for specification 3 when it enters the equation with rule of law, it does not say much about the role of non-tariff barriers (*NTBs*), as *Ntarfov* remains insignificant for the other five institutional proxies under the same specification.. The insignificance of *TB* and *NTBs* does come as a surprise. Dollar and Kraay (2002) share this skepticism over the relevance of these measures of trade policy with the likes of Rodriguez and Rodrik (2000) and Frankel and Romer (1999). Perhaps this is the reason why trade policy variables are virtually absent in the recent empirical debate over trade and institutions. For example, Frankel and Romer (1999), Acemoglu, Johnson and Robinson (2001), Alcalá and Ciccone (2002), Dollar and Kraay (2002) and Rodrik et al (2004) all have tried to find partial effects of trade and institutions on per-capita income or its growth by taking into account the general openness indicator (trade over GDP ratio) only.

There are many studies which have tried to capture the effects of trade policy on economic development: 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 providing useful insights into the ‘trade and growth’ debate, 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 misspecification bias as they have not taken account of institutions in their growth equations. Secondly, they have assumed trade policy to be purely exogenous.

Wood (2004), commenting on the ‘trade and growth’ debate, not only emphasised that a more convincing basis for trade policy recommendations could only be provided if trade policy variables are included in the regressions, but also pointed out that any such attempt should consider trade policy as an endogenous concept as no trade policy recommendations can be given without taking second best effects into account. This is because trade policies crucially depend on the functioning of domestic markets of any particular country, and if these are imperfect, second best considerations enter the picture.

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 per-capita income equation has institutional proxies and human capital along with trade policy variables, our analysis goes a step further from previous cross sectional studies which have attempted to gauge the effects of trade policy on economic development.

Although some of our trade policy variables are insignificant, we do get certain trade proxies which show that trade policy does matter in determining economic prosperity. The importance of any such cases is self evident because we not only dealt with trade policy as an endogenous concept but we have also included institutions and human capital in our per-capita income determining equation, so as to avoid the misspecification bias which cross section studies including the recent ones by Rodrik et al (2004) and Dollar and Kraay (2002) suffers from.



Overall, the results suggest that the general openness variables fail to explain per-capita income differences compared to direct proxies of the trade policy stance. For example, *lcopen*, *Impnov* and *Tarshov* have been found insignificant in all our specifications, suggesting their weak relationship with income. By contrast, our results suggest that decreases in overall trade taxes are associated with strong improvements in economic performance.

We also employ *composite* measures of openness that are really indices of the trade policy stance, as well as measures based on residuals, regressed with the six institutional concepts. Again we find that institutions, though significant in many instances, are not the most significant factor in determining per-capita income differences. Here too, we find out that trade liberalisation does matter as *Open80s* (the Sachs–Warner openness measures) enters equation 1 with a correct sign in 17 out of 18 cases including the ones it is significant for. Similarly *Leamer82* (Leamer’s measure of trade restrictiveness based on residuals) is significant with regulatory quality under specifications 2 and 3 and generally enters equation 1 with a correct sign (see table 2.3).

Here the significance and correct signs of *open80s* reinforces the importance of the overall trade policy stance, informing us that even if tariffs and non-tariff barriers are unimportant at times, the composite trade policy package, especially taxes on exports and controls in the foreign exchange market can be crucial in explaining per-capita income differences across nations. The Sachs-Warner criteria defines 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 (*open80*) mainly derives its strength from the combination of black market premium and the state monopoly of exports. A state monopoly on major exports captures cases in which governments tax major exports and therefore reduce the level of trade (exports and imports), and the black market premium captures foreign exchange restrictions as a trade barrier. Though Rodriguez and Rodrik (2000) accepted state monopoly of exports as an appropriate proxy of trade restrictiveness, they felt that black market premia was not a good choice as it is highly correlated with inflation, the debt/export ratio, wars and institutional quality and may simply capture the effect of widespread macroeconomic and political crisis. Our IV regression analysis solves the problem of endogeneity of black market premia as we have regressed *open80s* with set of institutional and openness instruments. It may, therefore, be that both government monopoly over major exports and black market premia are robust proxies of trade restrictiveness.

Now we turn to institutions and their apparent role in economic development. Specification 3 in table 2.3, which corresponds to the Rodrik et al (2004) specification, supplements their assertion that institutional development is the key to economic development as our six institutional proxies have largely been significant when paired with any of the openness and trade policy variables under specification 3. But it would be interesting to know which institutional concepts matter more in explaining income differentials across countries?

**Table 2.5 Institutional comparisons**

	Voice and Accountability (Va)	Political Stability (Ps)	Government Effectiveness (Ge)	Regulatory Quality (Rq)	Rule of Law (Rl)	Control for Corruption (Ctc)
Control Variables						
(Lcopen)	1.037 (4.52)***	2.132 (2.86)***	1.375 (4.04)***	1.546 (4.07)***	1.837 (2.76)***	1.181 (5.03)***
(Impnov85)	1.109 (6.64)***	2.242 (3.53)***	1.805 (4.13)***	1.464 (6.44)***	2.35 (3.11)***	1.682 (3.71)***
(Tarshov85)	1.484 (10.93)***	1.543 (9.84)***	1.568 (10.30)***	2.192 (10.73)***	1.412 (12.12)***	1.474 (9.34)***
(Tariffs)	1.23 (1.64)*	1.357 (2.95)***	1.354 (2.19)**	1.683 (3.28)***	0.811 (2.16)**	0.885 (1.30)
(Owti)	1.456 (6.37)***	1.481 (7.76)***	1.701 (5.94)***	1.928 (7.11)***	1.341 (8.38)***	1.491 (5.93)***
(Itrdrg)	1.110 (2.72)***	1.337 (3.16)***	1.188 (3.53)***	1.62 (2.96)***	1.281 (2.68)***	0.882 (3.29)***
(Totimpov85)	1.113 (5.31)***	1.906 (3.96)***	2.417 (3.88)***	1.542 (5.61)***	1.821 (4.27)***	2.434 (4.72)***
(Owqi)	1.46 (6.37)***	1.481 (7.76)***	1.701 (5.90)***	1.928 (7.11)***	1.341 (8.38)***	1.490 (5.93)***
(Ntarfov87)	0.616 (1.78)***	1.861 (2.24)**	2.68 (1.68)*	0.707 (1.09)	0.936 (1.73)*	1.181 (1.93)***
(Open80s)	1.085 (3.89)***	1.3904 (2.63)***	1.258 (3.13)***	1.296 (2.92)***	0.095 (0.12)	0.225 (0.33)
(Leamer82)	0.983 (4.97)***	1.094 (2.54)***	0.951 (2.16)**	1.387 (3.59)***	0.9036 (1.79)*	0.774 (1.75)*

t- values are in the parentheses. \*, \*\*, \*\*\* denotes significance at 1%, 5 % and 10% levels respectively, Control variables are in first column in parenthesis, Note: The above table provides IV regression coefficients of institutions under specification 3 of the per-capita income equation (Eq. 2.1). Note that specification 3, which only employs institutions and openness in order to explain income differences, is the one followed by Rodrik et al. (2004).

Table 2.5 shows that regulatory quality is the most important institutional definition in determining economic performance as it has one of the highest coefficients in nearly all instances. The superiority of regulatory quality is self evident because it captures the policy choices which dictate market outcomes. For example, it measures the incidence of market-unfriendly policies such as protection of imports, control on foreign ownership, obstacles to foreign bidders on public contracts, real personal tax as a burden to enterprise, real corporate tax as a disincentive for entrepreneurship, the legal framework as an obstacle to competitiveness, customs as an impediment to international trade, price controls and competition laws as obstacles to competition. The key to development may lie in market friendly regulations through which the workings of financial and commercial institutions improve and adequate business development takes place amid increased competition. The importance of prudential regulation can be judged from the fact that many developing countries have done well, despite being run by autocratic states. China and South Korea are the prime examples in this regard. Glaeser et al (2004a, 2004b) suggest that China, South Korea and Taiwan witnessed unprecedented increases in their growth rates under the reign of one-party dictatorships all due to the promotion of pro-market, pro growth policies, whereby property rights were secured and competition encouraged.

Regulatory quality is followed by government effectiveness as the most important institutional proxy. Again, this is expected because government effectiveness is very close to regulatory quality in the sense that the former focuses on inputs required for the government to be able to produce and implement robust policies whereas the later captures these policies itself. ‘Government effectiveness’ measures the quality of public service provision, the quality of bureaucracy, the independence of the civil service from political pressures, and the credibility of the government’s commitment to policies. In other words, it captures the efficient functioning of the government machinery.

The third most important institutional concept is political stability. It actually captures political instability arising from conflict via armed conflict, social unrest, politically motivated violence or terrorist threats. Large-scale conflict in the contemporary world mainly takes the form of internal wars in developing countries. There have been over forty civil war episodes since the end of the cold war. These conflicts are a major cause of development failure, contributing to the persistence of poverty.

Political stability is followed by rule of law and control for corruption. 'Rule of Law' measures respect for societal rules, confidence in the supremacy of law and captures the public perception of the incidence of both violent and non-violent crime, the effectiveness and predictability of the judiciary, and the enforceability of contracts. In short it accounts for the success of a society in developing an environment in which fair and predictable rules form the basis for economic and social interactions. On the other hand 'control for corruption' measures corruption within the legal, financial or economic system, which distorts the competitive environment, and reduces the efficiency of government and business by enabling people to abuse positions of power through bribes, patronage and nepotism.

'Voice and accountability', corresponding to democracy, is the institutional proxy which matters least. It captures various aspects of the political process, civil liberties and political right and measures the transparency of political, commercial and legal institutions. The view of Barro (1996) is that democracy can positively affect growth when personal and political freedoms are very weak, but lowers growth when some liberties are already in place. This suggests a quadratic relationship between democracy and growth, it is first positive and then negative. Voice and accountability may matter less when government effectiveness, regulatory capacity and the rule of law are well established and function well. But democracy may be of greater importance when these other factors are weak.

In contrast to our results for specification 3 apropos institutional superiority over trade, specifications 1 and 2 which include human capital, tell a different story which brings us back to the work of Rodrik et al (2004). However, they did not take into account human capital in their log of per capita income equations and thus their analysis may have misspecification biases as can be seen from the very low  $R^2$  values they get for their growth equations. Our analysis includes human capital, which significantly improves the explanatory power of the model as can be seen from highly significant F statistic and high  $R^2$  in table 4 (Appendix 2). Further more, our study is in line with recent cross sectional work on institutions and economic growth, which also brings human capital into the picture as an equally important determinant of economic development (see Glaeser et al, 2004a).

In comparison to the findings of Rodrik et al (2004) regarding the pre-eminence of institutions over trade, in a better specified model (refer to specifications 1 and 2 in table 3 and 4: Appendix 2), we find that institutional superiority vis-à-vis trade policy has diminished. In many instances, institutions enter the per-capita equation insignificantly especially when human capital is present in equation 1. Though institutions always carry right signs if significant, there have been many instances when they have entered equation 1 with wrong signs too. For example, in table 3, voice and accountability, regulatory quality and control of corruption have the wrong (negative) sign whenever they enter the equation with overall non-tariff barriers ( $Ntarfo$ ). Rule of law is insignificant in any combination with the 11 openness or trade policy variables for specifications 1 and 2, as well as enter with a

wrong sign in half of the cases. This is an interesting finding in the light of the Rodrik et al (2004) paper, which employed the rule of law as the only proxy for institutions and then go on to claim the superiority of institutions over openness. Though we also find that institutional superiority is somewhat retained in a per-capita income equation which has openness proxies, but with the introduction of trade policy variables the superiority of institutions diminishes especially in the case of trade taxes and open80s.

One reason for getting insignificant values for institutions in specification 1 and 2 could be because human capital influences economic development by improving the working of institutions, as suggested by Lipset (1960) and recently re-emphasised in Glaeser et al (2004a and 2004b). Our results support this, as we find that human capital is always significant when it enters in equation 1 under specifications 1 and 2, taking over from institutions in explaining differences in per capita income (table 2. 3).

#### **4. Conclusion:**

Though there are success stories of trade liberalization among both developed and developing countries - the failures on account of job loss to more competitive economies has led to a focus on regulatory state (Majone, 1994; 1997). The regulatory state model implies leaving production to private sector where competitive markets work well and using government regulation where significant market failure exists.(world Bank, 2001;1) For example, Chinese economy has been benefitting from strong government regulation and facilitation of private businesses by incorporation of property rights that creates strong incentives to local and international firms to exploit cheap production costs within Chinese borders and open up, operate and expand their businesses locally and globally.

The performance of new regulatory state remains under researched, especially in the context of developing countries with their own peculiar economic and social problems and institutional characteristics. (Jalilian et al, 2006) Our results provide some guidelines to this effect. If economic growth is the priority of the government and this has been the case for all developing countries, then improving regulatory structures within the economy makes it competitive and productive. However the back channel loops of social and legal institutions catch up to stifle this progress if not improved accordingly. (Mamoon, 2008) In developing countries, the social welfare objectives of regulation are likely to be not simply concerned with the pursuit of economic efficiency but with wider goals to promote sustainable development and poverty reduction. (Guasch and Hahn, 1999)

## References:

Acemoglu, D., S. Johnson and J. A. Robinson, "The Colonial Origins of Comparative Development: An Empirical Investigation," *American Economic Review*, 91, No. 5, 2001, pp. 1369-1401, [http://emlab.berkeley.edu/users/chad/e236c\\_f04/ajr2001.pdf](http://emlab.berkeley.edu/users/chad/e236c_f04/ajr2001.pdf)

Alcala, F. and A. Ciccone, "Trade and Productivity," CEPR Discussion Paper No. 3095, 2001.

Barro, R. J., "Democracy and Growth," *Journal of Economic Growth*, Vol.1, No.1, 1996, pp. 1-27.

Dollar, D. and A. Kraay, "Institutions, Trade and Growth," *Journal of Monetary Economics*, Vol. 50, No.1 , 2003, pp. 133-162.

Easterly, W. and R. Levine, "Tropics, Germs and Crops: How Endowments Influence Economic Development," *Journal of Monetary Economics*, Vol.50, No.1, 2003, pp. 3-39.

Edwards, S. "Openness, Productivity and Growth: What Do We Really Know?" *Economic Journal*, Vol. 108, 1998, pp. 383-398.

Esfahani, H. S., "Exports, Imports and Economic Growth in Semi-Industrialised Counties," *Journal of Development Economics*, Vol. 35, 1991, pp. 93-116.

Frankel, J. and D. Romer, "Does Trade Cause Growth?" *American Economic Review*, Vol. 89, No. 3, 1999, pp. 379-399.

Glaeser, E. L., R. La Porta,, F. Lopez-de-Silanes, and A. Shleifer, "Do Institutions cause Growth," *Journal of Economic Growth*, Vol. 9, No. 3, 2004a, pp. 271-303

Glaeser, E. L., R. La Porta,, F. Lopez-de-Silanes, and A. Shleifer, "Explaining Growth: Institutions, Human Capital, and Leaders," (PD: Preliminary Draft) 2004b  
[http://www.brook.edu/es/commentary/journals/bpea\\_macro/papers/20040325\\_glaeser.pdf](http://www.brook.edu/es/commentary/journals/bpea_macro/papers/20040325_glaeser.pdf)

Guasch, J.L. and Hahn, R. W. 'The Costs and Benefits of Regulation: Implications for Developing Countries', *World Bank Research Observer*, 1999, 14(1): 137-58

Greenaway D., W. Morgan, and P. Wright, "Trade Liberalisation and Growth in Developing Countries," *Journal of Development Economics*, Vol. 67, 2001, pp. 229-224.

Jalilian, H., Kirkpatrick, C., and Parker, D. 'The Impact of Regulation on Economic Growth in Developing Countries: A Cross-Country Analysis, Center of Regulation and Competition, University of Manchester, UK, Mimeo, 2006

Kaufman, D., A. Kraay and Z. Lobaton, "Governance Matters II: Updated Indicators for 2000/01," Policy Research Working Paper 2772, The World Bank, 2002  
<http://www.worldbank.org/wbi/governance/pdf/govmatters2.pdf>

Lee, J. W., "Capital Goods Imports and Long- Run Growth," *Journal of Development Economics*, Vol. 48, 1995, pp. 91-110.

Lipset, S., *Political Man: The Social Bases of Politics*, New York: Doubleday, 1960

Majone, G. 'The Emergence of the Regulatory State in Europe' *West European Politics*, 1994, 17: 77-101

Majone, G. 'From the positive to the Regulatory State', *Journal of Public Policy*, 1997, 17(2): 139-67

Rodriguez, F., and D. Rodrik, "Trade Policy and Economic Growth: A Skeptic's Guide to the Cross-National Evidence" *NBER Macroeconomics Annual* 2000, 15: 261, 2000

Rodrik, Dani (1998), 'Trade Policy and Economic Performance in Sub-Saharan Africa,' NBER Working Paper 6562.

Rodrik, D., A. Subramanian and F. Trebbi, "Institutions Rule: The Primacy of Institutions Over Geography and Integration in Economic Development," *Journal of Economic Growth*, Vol. 9, No. 2, 2004, pp. 131-165

Rose, A., "Do WTO Members Have a More Liberal Trade Policy?" NBER Working Paper 9347, 2002

Sachs, J. D. and A. Warner, "Economic Reform and Process of Global Integration," *Brookings Papers on Economic Activity*, Vol. 1, 1995, pp. 1-118

World Bank 'Bureaucrats in Business: The Economics and Politics of Government Ownership, Oxford: Oxford University Press for the World Bank, 1995

World Bank 'Private Sector Development Strategy – Directions for the World Bank Group, Mimeo, World Bank, Washington DC, 2001

Wood, C., "The Empirics of Trade and Growth: Where are the Policy recommendations," forthcoming *International Economics and Economic Policy*, 2004  
[http://www.ires.ucl.ac.be/DP/IRES\\_DP/2004-13.pdf](http://www.ires.ucl.ac.be/DP/IRES_DP/2004-13.pdf)