American University of Beirut Institute of Financial Economics

Lecture and Working Paper Series No. 3, 2008

Initial Inequality and Protectionism: A Political-Economy Approach

Marcus Marktanner and Nagham Sayour



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Initial Inequality and Protectionism: A Political-Economy Approach

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Abstract

This paper addresses the effect of initial asset inequality on trade openness. It provides theoretical and empirical support for initial asset inequality being inversely related to trade liberalization. The theoretical model assumes that government maximizes a Cobb-Douglas political support function for trade liberalization in which initial asset inequality is an exogenous variable. In order to empirically test our hypothesis we set up a simultaneous system of equations consisting of proxies for social equality, nature of the political regime, level of economic development, and trade structure. Using an unbalanced panel dataset of all countries for which data was available, empirical results show a strong correlation between inequality and trade openness. Addressing the difficult question of causality in the sense that inequality is in fact a source of trade resistance, we also test whether unequal countries join the General Agreement on Tariffs and Trade later. The empirical results support our political-economy model that unequal countries face more trade liberalization constraints than equal ones.

Introduction

In line with the general idea of the literature on the theory of regulation (Stigler, 1971; Peltzman, 1976; Becker, 1983) we develop a simple model in which initial asset inequality enters the political support maximization function for trade liberalization. Our main objective is to provide a theoretical foundation for the empirical cross-country observation that high initial asset inequality is inversely related to trade openness (Hwang and Jung, 2002).

To explain this empirical observation, we develop a model in which government maximizes a standard Cobb-Douglas political support function with political support shares being reflected by the functional income distribution between the scarce and abundant production factor prevailing prior to trade liberalization. We assume further that the decision regarding the trade regime needs to be taken at the beginning of the economic development process, so that one can think of a country that needs to make a choice between, for example, an import-substitution policy and little trade vs. an outward-orientation strategy and a lot of trade. Since the choice of a trade regime is a long run decision which is only interrupted by few major historical events such as the democratization wave in Latin America in the 1980s or the collapse of socialism in the 1990s, we conclude that one can infer from observable trade shares over long periods on the political constraints that must have prevailed at the time when the degree of trade liberalization was decided upon. If we additionally take into account that early stages of economic development are characterized by capital scarcity and labor abundance, countries that chose an outward orientation strategy must have had factor labor politically more empowered than factor capital, which in turn points towards more equality of income and economic opportunities.

A stylized comparison between the outward-oriented East Asian Tigers and import-substituting economies in Latin America and the Caribbean, the Arab world, or Sub Saharan Africa shall illustrate this intuition. After World War II, land reforms in many East Asian countries transformed societies from de-facto feudalism with high prevailing inequality into factor labor empowering economies, whereas in import-substituting regions factor capital remained concentrated

among small groups of political elites. Since, according to the Stolper-Samuelson theorem (1941), the owners of the scarce (abundant) production factor will oppose (support) free trade, redistributive policies have facilitated the adoption of outward-orientation in East Asia while conservation of capital concentration among political elites in other regions have helped to prevent it.

Our theoretical model is motivated by this stylized context. Following Grossmann and Helpman's (1994) classification of the literature into one camp dealing with party competition and another with political support maximization by an incumbent government, our approach falls into the second category. This particular branch of literature typically endogenizes the politically optimum trade policy from changes in some exogenous factors. Among these, the parameter inequality, according to Mitra, D. (1999, p. 1118), "is a much neglected aspect of the current literature" and Mitra concludes that changes in the asset distribution will affect the formation of special interest groups. Another important paper addressing endogenous trade policy with inequality is Mayer (1984) who argues that voting participation costs are crucial in allowing minority groups to promote their own interests at the expense of a majority. Whereas these studies focus mainly on special interest groups pursuing political influence as a response to certain trade dynamics, our study emphasizes the political support maximization calculus of an incumbent government anticipating redistributive consequences from trade.

In a second step, we approach our result empirically. As opposed to related studies, however, we take a more systemic look at this in which we combine social, economic, and political factors.

The Model

Assume that politicians maximize the iso-political support function (IPS)

$$IPS = SFY^{\sigma} . AFY^{1-\sigma}$$
 (1)

Where SFY stands for scarce production factor income, AFY for abundant production factor income, and σ the marginal political support elasticity of the

scarce production factor. We assume that the political equilibrium prior to trade liberalization is optimum in the sense that it reflects the actual income distribution, which is that

$$\sigma = \frac{SFY^*}{Y} \text{ and } 1 - \sigma = \frac{AFY^*}{Y} \text{ where } Y = SFY^* + AFY^*$$
 (2)

Then, the more elites hold the scarce production factor, the greater is their political weight and the prevailing inequality of income within the society.

Politicians maximize political support subject to the income-redistributive nature of trade liberalization. Trade liberalization is assumed to be reciprocal with the rest of the world. According to the factor-price equalization theorem, trade liberalization (TL) leads to a decline of income of the scarce production factor and an increase of income of the abundant production factor, with the abundant production factor gaining more than the scarce production factor losing.

This can be written as

$$AFY = AFY^* + \alpha TL \tag{3}$$

$$SFY = SFY * -\beta TL$$
⁽⁴⁾

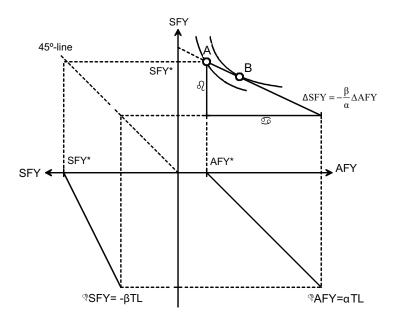
Where $\alpha > \beta > 0$. The parameters α and β are the marginal income changes associated with trade liberalization and AFY* and SFY* the initial incomes of the abundant and scarce production factors. Their values are determined by exogenous factors such as economic structure and geography. The income that politicians can redistribute through trade liberalization is then

$$\Delta SFY = -\frac{\beta}{\alpha} \Delta AFY \tag{5}$$

Figure 1 summarizes graphically the logic behind equations (1) to (5). The south-east and south-west quadrants show the change of income of the abundant and scarce production factor as trade liberalization approaches full openness. The

north-east quadrant shows the income redistribution line associated with trade liberalization.

Figure 1 Trade Liberalization, Redistribution, and Political Support Maximization



For policy makers to opt for trade liberalization from $\{SFY^*, AFY^*\}$, it is required that the (absolute) marginal rate of income substitution prior to trade liberalization (point A), dSFY/dAFY, is greater than the (absolute) slope of the income redistribution frontier, β/α , which is

$$\frac{(1-\sigma)}{\sigma} \frac{SFY^*}{AFY^*} > \frac{\beta}{\alpha} \tag{6}$$

Because of (2), the inequality of (6) always holds at the point (AFY*, SFY*) as substituting (2) in (6) yields

$$1 > \frac{\beta}{\alpha} \tag{7}$$

In order to maximize political support, policy makers will equate special and abundant factor income according to

$$\frac{(1-\sigma)}{\sigma} \frac{SFY}{AFY} = MRS = \frac{\beta}{\alpha}$$
 (8)

which, since AFY=AFY*+ α TL and SFY=SFY*- β TL, can be written as

$$\frac{dSFY}{dAFY} = \frac{(1 - \sigma)}{\sigma} \frac{(SFY - \beta TL)}{(AFY - \alpha TL)} = \frac{\beta}{\alpha}$$
(9)

The optimum trade liberalization level is eventually received by solving (9) for TL as

$$TL_{Opt.} = \frac{\left(1 - \acute{o}\right)}{\hat{a}} \left(SFY * + \frac{\hat{a}}{\acute{a}} AFY^*\right) - \frac{AFY *}{\acute{a}}$$

$$\tag{10}$$

Knowing that AFY*/SFY* = $(1-\sigma)/\sigma$, (10) can be written as

$$TL^* = (1 - \sigma) \left(\frac{1}{\beta} - \frac{1}{\alpha}\right) SFY^* \tag{11}$$

substituting $\sigma = SFY*/Y$ in (11) yields,

$$TL^* = \left(\frac{1}{\beta} - \frac{1}{\alpha}\right) SFY^* - \left(\frac{1}{\beta} - \frac{1}{\alpha}\right) \frac{SFY^{*2}}{Y}$$
 (12)

Maximizing TL* with respect to SFY* eventually yields

$$SFY^* = \frac{Y}{2}$$
 which is equivalent to $SFY^* = AFY^*$ (13)

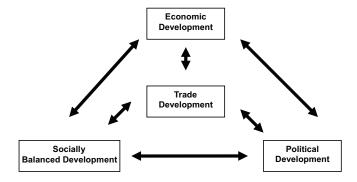
Therefore, since trade liberalization increases aggregate income, more equal countries will have, holding everything else constant, a greater foreign trade share.

Empirical Results

Methodology

In order to approach empirically the result that more equal countries trade more and more trade is reflected in better political regime quality, we set up a set of simultaneous equations. This system of equations consists of four major components: social equality, political, economic, and trade development. The basic idea, illustrated in Figure 2, is that those four developmental components form a system.

Figure 2 Economic, Political, Social, and Trade Development



We use various proxies to estimate the model of Figure 2. Regarding socially balanced development, we use the so-called estimated household income inequality indicator from the University of Texas Income Inequality Data Project. This indicator just reads like a Gini coefficient. For economic development we use GDP per capita (constant \$2000) from the 2005 World Bank Development Indicator Database (WDI). For political and trade development we use alternative measures. We use the Polity 2 from the University of Maryland Center for International Development and Conflict Management. Lastly, regarding trade development we use taxes on international trade (% of revenue), TradeTax, and manufacturing export share (% of GDP). The variables TradeTax is readily available from the WDI while the manufacturing export share (% of GDP) needs to be calculated from WDI data.

To estimate the relationships, we built an unbalanced panel dataset consisting of all countries in the world for which data was available. Each observation is a multiperiod average, specifically two five-year averages of the 1991-1995 and 1996-2000 period and the four-year average of the 2001-2004 period. The following Table 1 describes the regional distribution of our sample. For this purpose we use the World Bank's regional classification of countries consisting of East Asia and the Pacific (EAP), Europe and Central Asia (ECA), Latin America and the Caribbean (LAC), Middle East and North Africa (MENA), North America (NA), South Asia (SA), and Sub Saharan Africa (SSA) with slight modifications in the ECA, EAP, and MENA classification. We divide the ECA cluster into Western Europe (WE) and Eastern and Central Europe (ECE), with Western Europe comprising the members of the European Economic Community in 1989 plus Switzerland and Eastern and Central Europe, the former socialist economies in the East. From the EAP cluster we isolate the so-called East Asian tigers (EAT) and newly emerging economies of China, Hong Kong, Korea, Macao, Malaysia, Singapore, and Vietnam and label this group simply EAT. Lastly, we divide the Middle East and North Africa into oil economies (Oil MENA) and diversified economies (Div MENA).

Table 1 Regional Distribution of 64 Units of Observations (Total N=129)

OilMENA	DivMENA	LAC	SSA	ECE
Countries=5	Countries=7	Countries=12	Countries=10	Countries=11
Algeria (2)	Egypt (2)	Brazil (2)	Burundi (1)	Bulgaria (1)
Bahrain (3)	Israel (1)	Costa Rica (3)	Cameroon (1)	Croatia (2)
Iran (1)	Jordan(3)	Dom. Rep. (3)	Cote d'Ivoire (2)	Czech Rep. (1)
Kuwait (2)	Mauritius (2)	Guatemala (3)	Ethiopia (1)	Hungary (1)
Oman (3)	Syria (2)	Jamaica (1)	Kenya (2)	Latvia (2)
	Tunisia (3)	Mexico (2)	Madagascar (1)	Lithuania (1)
	Yemen (1)	Nicaragua (3)	Mauritius (3)	Moldova (1)
		Panama (1)	South Africa (2)	Poland (2)
		Paraguay (3)	Zambia (1)	Romania (3)
		Peru (3)	Zimbabwe (2)	Slovenia (2)
		Uruguay (3)		Ukraine (1)
		Venezuela (3)		
N=11	N=14	N=30	N=16	N=17

EAP	EAT	NA	WE	SA
Countries=6	Countries=3	Countries=1	Countries=4	Countries=5
Australia (1)	China (2)	Canada (3)	Cyprus (2)	Bhutan (1)
Fiji (2)	South Korea (3)		Norway (1)	India (3)
Indonesia (3)	Malaysia (3)		Spain (1)	Nepal (2)
Japan (1)			Turkey (2)	Pakistan (3)
Papua N. G. (2)				Sri Lanka (3)
Philippines (3)				
N=12	N=8	N=3	N=6	N=12

The equations to be estimated are:

Income, =
$$\beta_0 + \beta_1$$
Trade Devi* + β_2 Pol. Devi* + β_3 Inequalityi* + β_1 (14)

Trade Dev_i =
$$\beta_{12} + \beta_{13}$$
Pol. Dev i* $+\beta_{14}$ Inequality i*+ β_{15} Income i*+ β_4 (15-16)

Inequality_i =
$$\beta_4 + \beta_5 \text{Trade Dev}_i^* + \beta_6 \text{Pol. Dev}_i^* + \beta_7 \text{Income}_i^* + \beta_2$$
 (17)

Pol. Dev_i =
$$\beta_s + \beta_0$$
 Trade Dev_i* + β_{10} Inequality_i* + β_{11} Income_i* + β_3 (18)

We estimate equations (14) - (17) using two-stage least squares. We estimate the endogenous variables using the lagged values of all variables and regional dummies as instruments. The regressions are specified as robust double log regressions to obtain elasticities, using Arellano's (2003) heteroskedasticity and autocorrelation consistent estimator. Cameron and Trivedi (2005) recommend this estimator for samples with many units of observations over few time periods. Equation (18) is estimated using a Tobit model. This is necessary because the Polity dataset is bounded by observations between minus and plus ten. We run the regressions using the open source software "gretl," for which Cottrell and Luchetti (2007) have written an excellent user's guide.

Empirical Results

The regression results are summarized in Table 2. The coefficients carry the expected signs. Non-significant results are almost exclusively due to multicollinearity rather than political-economic non-significance. At least we found significant results with the expected sign when running the non-significant variables of Table 2 alone on the right-hand side, except for income in the polity equation.

Dv=Inequality

Ycap Polity

Table 2 TSLS Regression Results (N=129), Equations (14)-(18)

Dv=Income	Coeff.	P-Value
Polity	-0.040	0.812
Manu	0.256	0.003
Tradetax	-0.605	0.000
Ineq	-0.149	0.842
Adj. R2	37.0	
Dv=Manu	Coeff.	P-Value
Dv=Manu Ycap	Coeff. 0.244	P-Value 0.039
Ycap	0.244	0.039
Ycap Polity	0.244 0.128	0.039 0.296

Manu	-0.041	0.002
Tradetax	0.030	0.035
Adj. R2	27.1	
Dv=Polity	Coeff.	P-Value
Ycap	-0.016	0.824
Manu	0.054	0.209
Tradetax	-0.012	0.832
Ineq	-1.492	0.011

Coeff.

-0.002

-0.058

0.041

P-Value

0.846

0.001

0.002

Dv=Trade Tax	Coeff.	P-Value
Ycap	-0.525	0.000
Polity	-0.026	0.815
Ineq	1.672	0.000
Manu	0.067	0.383
Adj. R2	36.8	

The coefficients, which read as elasticities, are then used to calculate the systemic response elasticities of an exogenous one percent increase of any of the variables with respect to all other variables. For this we programmed a system-dynamic model. The results are shown in Table 3.

Table 3 Inequality and Socioeconomic and Political Response Elasticities

	Response elasticity to 1 percent increase in stimulus variable						
Stimulus	Income	Inequality	Manufacturing	Polity	Trade Tax		
Income	1.000	-0.026	0.244	0.038	-0.525		
Inequality	-1.388	1.000	-2.461	-1.492	2.126		
Manufacturing	0.538	-0.065	1.000	0.097	-0.804		
Polity	0.087	-0.063	0.155	1.000	-0.134		
Trade Tax	-0.625	0.071	-1.004	-0.106	1.000		

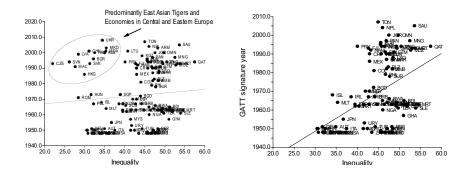
How can these elasticities be interpreted? Assuming that an equal society has an inequality index of 35 but a developing country an inequality level of 50, a reduction of inequality by 30% would bring about the equality target value of 35 and free, on average, 41.6 percent higher incomes (0.3×1.388). Similarly, manufacturing export capacities (% of GDP) would be 73.8% higher, the polity score 44.7% higher, and governmental reliance on trade taxes (% of revenues) 63.8% less.

Further Aspects

Of course, correlation is not causation and the above model does not necessarily support the hypothesis that unequal countries avoid trade. Inequality could be as much the result of the absence of trade opportunities. Yet, we argue that this is a rather non-plausible argument since most developing countries had the opportunity to increase their trade exposure by joining the General Agreement on Tariffs and Trade (GATT), the socialist countries in Eastern and Central Europe being the exception. Thus, in order to lend further support to our hypothesis that unequal countries choose not to trade, we also test the hypothesis whether unequal countries have joined GATT later. To illustrate this, we initially produce two scatter plots which display on the x-axis the average inequality value for all our observations and on the y-axis the year when a country signed the General Agreement on Tariffs and Trade (or the WTO after 1995).

The scatter plot to the left contains all WTO members as of the day of this writing. It also shows that there is a cluster in the North-West which is highly occupied by the transition economies of Eastern and Central Europe as well as some East Asian Tigers, namely Hong Kong, Macau, and China. Removing these countries from the sample because of the absence of independent political decision-making mechanisms leaves the sample to countries which were freer in their political choices. Doing so then suggests that unequal countries do in fact opt for free trade much later.

Figure 3 Inequality and GATT Membership



We also test whether unequal countries join GATT later using Heckman twostep estimation. Yet, due to data constraints, the dataset consists of only 144 observations, 126 of them being GATT members. The regional distribution of the observations is summarized in the following Table 4 where the asterisk indicates a non-GATT member. The regression results are reported in Table 5.

Table 4: Regional Distribution of Heckman Two-Step Sample

WE	ECE	LAC	SSA	SA
Countries=19	Countries=20	Countries=27	Countries=38	Countries=7
Austria Belgium Cyprus Denmark Finland France Germany Greece Island Ireland Italia Luxembourg Netherlands Norway Portugal Spain Sweden Turkey UK	Albania Armenia Azerbaijan* Bosnia H.* Bulgaria Croatia Czech Rep. Hungary Kirgizstan Latvia Lithuania Macedonia Moldova Poland Romania Russia* Serbia/MN Slovakia Slovenia Ukraine	Argentina Bahamas* Barbados Belize Bolivia Brazil Chile Colombia Costa Rica Dominican Rep. Ecuador El Salvador Guatemala Haiti Honduras Jamaica Mexico Nicaragua Panama Paraguay Peru Puerto Rico* St. Vincent & Gr. Suriname Trinidad and Tob. Uruguay Venezuela	Angola Benin Botswana Burkina Faso Burundi Cameroon Cap Verde* Central African Rep. Congo Ivory Coast Equatorial Guinea* Eritrea* Ethiopia* Gabon Gambia Ghana Kenya Lesotho Liberia* Madagascar Malawi Mauritania Mauritius Mozambique Namibia Nigeria Rwanda Senegal Seychelles* Sierra Leone South Africa Sudan* Swaziland Tanzania Togo Uganda Zambia Zimbabwe	Afghanistan* Bangladesh Bhutan* India Nepal Pakistan Sri Lanka

EAP	EAT	NA	OilMENA	DivMENA
Countries=10	Countries=6	Countries=2	Countries=7	Countries=8
Australia Fiji Indonesia Japan Mongolia New Zealand Papua New Guinea Philippines Thailand Tonga	China Hong Kong Korea, South Macau Malaysia Singapore	Canada USA	Algeria* Bahrain Iran* Kuwait Oman Saudi Arabia United Arab Emirates	Egypt Israel Jordan Malta Morocco Syria* Tunisia Yemen*

Table 5 Heckman Two-Step Regression Results

DV = Year of GATT Membership	Coeff.	Std. Err.	T-Stat	P-Value
Const	1936.140	20.079	96.427	0.000
Ycap	0.174	0.547	0.318	0.750
Ineq	0.732	0.336	2.176	0.030
ECE	28.327	5.709	4.962	0.000
EAT	16.149	8.735	1.849	0.065
WE	-10.582	6.406	-1.652	0.099
N	144			
Censored obs.	18			

The results confirm the expected relationships. The three regional dummies are significant at the 10% level and underscore their particular geo-economic and historical context. Western European countries were obviously the first to join GATT. The accession of the East Asian Tigers and Eastern and Central European economies occurred with statistical significance much later. After controlling for regional fixed effects, the per capita income variable, which we use as a control factor for general development levels, is not significant. The inequality variable carries the expected sign and is highly significant. We therefore feel safe to conclude that inequality is in fact a major explanatory factor in the delay of trade liberalization policies.

Conclusions

The literature indicates that the aspect of initial asset inequality is underresearched. Most of the literature addresses the effects of trade on equality while comparatively little attention is given to the question whether initial asset inequality is in fact the source of trade resistance. Our paper is aimed at contributing to this branch of the literature.

We find that initial asset inequality can be quite easily incorporated into a standard political-support maximization model in which a policymaker needs to anticipate a politically optimum trade liberalization level. The model is based on the standard behavioral assumption that trade creates winners (the owners of the abundant factor) and losers (the owners of the scarce ones), and that the winners will win more from free trade than the losers will lose. Then, assuming that policy makers rest in a political support maximization equilibrium prior to deciding on the optimum trade liberalization level, our model shows that perfect income equality between the two groups will lead to the greatest trade liberalization.

In order to support this hypothesis also empirically, we present two lines of evidence. The first is based on a system of simultaneous equations in which we interlink indicators of social, economic, political, and trade indicators. This procedure yields strong correlations along the predicted lines. This means that higher inequalities correspond to more inward-orientation and less political representation. Of course, this is no proof for the hypothesis that causality runs from inequality to trade-aversion, it could equally well be the case that the absence of trade opportunities is the cause for inequality. Yet, we find that this conclusion is rather unrealistic because most developing countries had the opportunity to increase their participation in the international division of labor through joining GATT. We therefore also test the hypothesis whether unequal countries tend to become GATT members at later stages. Our results lend support to this conclusion.

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The papers can be viewed at:

http://staff.aub.edu.lb/~webifeco/Working%20Papers.htm

