Capital Mobility, Financial Risk, Institutions and Redistributive Spending

Junkyu Lee and Jeffrey B. Nugent*

As democracy spreads, the importance of redistribution policies is believed to increase, bringing with them the threat of weakening incentives and slowing growth. Yet, to date the determinants of redistribution policies have rarely been investigated outside a few OECD countries and outside the context of narrowly defined transfer payments. This paper examines the determinants of a broader class of redistribution policies, namely, the share of public spending on health, education and welfare in total government spending in a larger set of countries (a panel data set consisting of 105 countries) over the period 1988-2000. In particular, the paper views redistributive spending as emanating from two global trends: deregulation of international capital movements and the spread of democratic institutions. Our basic hypothesis is that because of the risks involved in international capital mobility and the fact that their use of standard macroeconomic policies is increasingly limited by international rules of the game, governments find redistributive spending policies convenient tools for dealing with the distributive effects inherent in these risks, especially when financial crises actually occur. The results, with both fixed and random effects models, support most of the hypotheses, several of them quite strongly.

Keywords: Growth, Crisis, Redistribution, Capital Mobility, Reform

JEL Classification: H1, O4

*Director of the Americas Team in Korea Institute for International Economic Policy (KIEP), 300-4, Yomgok-Dong, Seocho-Gu, Seoul 137-747, Korea, (Tel) +82-2-3460-1128, (E-mail) junkyul@kiep.go.kr; Professor of Economics, USC Department of Economics, University Park Campus, Univetsity of Southern California, Los Angeles, CA 90089-0253, USA, (Tel) +1-213-740-2107, (E-mail) nugent@rcf.usc.edu, respectively. Paper to be presented at the 12*th Seoul Journal of Economics* International Symposium in Seoul on November 4, 2004.

[**Seoul Journal of Economics** 2004, Vol. 17, No. 3]

I. Introduction

The last 20 years of economic and political history around the world have witnessed two notable trends: economic liberalization and the spread of democracy. Democratic institutions have come to every continent of the world and in some of these continents a sizable majority of the countries now have some degree of democracy, though in many cases that democracy is still quite fragile. At the same time, economic liberalization has proceeded, in some cases very slowly but in others quite rapidly. While in some respects the two trends are reinforcing, in other ways they introduce new tensions that citizenry and governments have been struggling to resolve. Nowhere is this tension stronger than in the relatively fragile democracies of developing countries that have both democratized and liberalized primarily only since the mid-1980s.

Among the various forms of liberalization, the one that has posed the greatest challenge in this respect would seem to be the liberalization of international capital flows. This is because with increasing globalization massive capital inflows or outflows can occur rapidly and can reverse direction unexpectedly. These flows, moreover, are often speculative in nature and hence subject to "herding behavior" and "rational expectations bubbles" that can destabilize exchange rates, interest rates and a country's level of economic activity in a very short period of time. With free capital mobility, moreover, monetary policy is ineffective under a regime of fixed exchange rates, and fiscal policy is ineffective under a flexible exchange rate regime. Thus, under either exchange rate regime, even a responsive democratic government may be quite limited in its ability to manage the large and sudden shocks that can arise with international capital mobility and thereby to protect the economic security of its citizens. Notably also, these shocks and financial crises have been rather common during this period of increasing capital mobility and democratization. The standard policy prescription for dealing with these shocks seems to have been the adoption of tight monetary policies, policies that seemingly have caused considerable economic hardship in the short run.[1]

[1]While in some cases, the duration of these crises and painful economic policies has been quite short, the costs associated with the recent crises in emerging market economies have been substantial. For example, according

Yet somehow, many countries have managed to combine increasingly democratic institutions with international openness to capital inflows and outflows. Indeed, democracy and capital openness (and its associated financial risks), are highly correlated.

Indeed, the potential risks associated with capital market liberalization would seem to demand that these risks be mitigated in some way. But, as mentioned above, if liberalization has limited the ability of governments to manage these risks through macroeconomic policy, how can governments and especially democratic governments deal with them? Based on the median voter model of democracies, our hypothesis is that democratic governments may attempt to mitigate these risks through redistributive fiscal policies, especially those on the expenditure side. Has this happened? Has there been a greater tendency for capital-liberalizing countries, and especially democratic ones, to adopt redistribution policies? If such a tendency has been realized, has it been accentuated or retarded by financial risks and crises?

While there exist numerous studies relating financial opening to economic growth, financial liberalization to democracy and inequality to redistribution and growth, to the best of our knowledge, the relationship between liberalization of capital flows and income redistribution has not been addressed. For us the relationship between financial openness and redistribution derives from the risks of financial crises that financial openness implies. It may also depend on the way in which political leaders react to the risks, which, in turn, may depend on the character of the polity, *e.g.*, on whether or not the median voter model applies.

To test the hypothesis we make use of pooled cross-sectional and time series data for a panel of 105 countries over the period 1988-2000. This was the period in which the trends toward capital market liberalization and democracy were very noticeable but also associated with a number of largely unforeseen financial crises. The analysis also makes use of indexes for financial openness, financial risks, crises and democracy to examine the extent to which these

to Stiglitz and Bhattacharya (1999), unemployment doubled in Thailand and tripled in Korea over a year of the crisis, while standards of living declined 14% and 22%. In many cases the result has been substantial portions of the population falling under the poverty line, substantial reductions in real wages and increased unemployment (Baldacci, Mello, and Inchauste (2004) and Sen (1999)).

various indicators have contributed to the explanation of redistributive spending policies.

The structure of this paper is as follows. In Section II, we briefly review some relevant literature, outline the theoretical foundations, and derive hypotheses relating financial openness, risks, crises and democracy to income redistribution effort. In Section III, we present the data and some descriptive statistics on the variables and simple relationships among them. In Section IV we present our empirical results and in Section V our conclusions.

II. Literature, Model and Hypotheses

A. Some Relevant Antecedents

One very important source of the interest in redistributive policies has been the keen controversy over the role of inequality in growth that arose in the early 1990s. It was in this period that the earlier notion that inequality would be beneficial for growth (in the sense that it would allow aggregate savings to be higher than would be possible for the same average income per capita with a more equal distribution) began to be challenged by a new view that inequality would lower growth. One of the mechanisms cited for this latter effect was that, especially in democratic settings, greater existing inequality would make the median voter a poor voter and thereby prompt her to back candidates with programs to redistribute income from rich to poor (Alesina and Rodrik 1994; Persson and Tabellini 1994; and Barro 2000). Since the taxes on the rich and transfers to the poor would worsen incentives for work and saving and raise dead-weight transaction cost losses, inequality would lower growth. But relatively little has been done to empirically verify this connection and what has been done has yielded rather mixed results (Benabou 1996).

Another antecedent has been the increasing attention to capital market liberalization as one of the components of the "Washington Consensus" but then also of the increasing vulnerability of capital market liberalization to financial risks and crises. Some scholars (*e.g.*, Rodrik 1998) and international agencies have emphasized the need for liberalizing governments to develop social safety nets to protect vulnerable citizens against these risks. But again, have these safety nets been put in place?

A third but related antecedent is the empirical finding that in financial crises, the most vulnerable individuals are often children of rather poor families who are taken out of school and disproportionately deprived of good nutrition and access to health care.[2] Those with more education and other assets are better able to absorb and adjust to these risks than those who are less well-endowed in these respects. This calls attention to the need for more and better services and programs to overcome these access disparities during crises, not simply cash handouts and to viewing investments in health and education of children as means of reducing present and future vulnerability to such risks.

A relevant theoretical perspective on the role of income redistribution in the context of financial openness, it's associated risks, and democracy is that of constitutional political economy. Traditional welfare economics based on Pareto optimality had focused on efficiency and aggregate welfare but gave little attention to redistribution as a positive policy strategy. By contrast, the literature on constitutional political economy incorporates the role of institutions and the public choice process through which income redistribution can be implemented in a democratic society. Thus, from this perspective, income redistribution can constitute a potentially important and legitimate means of responding to the risks of financial instability in the interest of social justice and poverty reduction, and possibly also growth, and at the same time to increasing the political feasibility of liberalization.

We adopt the view of constitutional political economy and the assumption of a risk-averse median voter who in the face of risk and uncertainty prefers secured assets over income volatility. We employ the idea of an expected utility maximizing median voter with aversion to risk. Bishop, Formby, and Smith (1991) paved the groundwork for this idea. Risk-averse citizens consent to an involuntary redistribution because they view the redistribution as income insurance (Wessel 1993). Risk-averse citizens are willing to give up part of their income today to protect themselves and their children against the risk of becoming poor in the future (Olson

[2]Because of very detailed, large sample surveys covering health and education before and after the financial crisis of 1997 in Indonesia, this finding is especially well documented for Indonesia. See especially Strauss *et al.* (2004) and references therein.

1987).

Hence, economic volatility and insecurity related to financial openness may induce risk-averse voters to choose redistribution. In view of the special vulnerability of children to lack of access to health and education in financial crises, the median voter favors protection in the form of additional spending on public education, public health, and social security and welfare. Differing institutional conditions, however, such as varying degrees of democracy in different countries and over time might give rise to different influences on income redistribution efforts.

This is consistent with a production function based largely or exclusively on human capital $(h)y_t = h_t$ wherein human capital is determined by the following accumulation function:

$$h_{t+1} = f(h_t, E_t) \tag{1}$$

$$E_t = \sum_{i=1}^{n} t_{it} Y_{it} \tag{2}$$

where h_t is parental human capital at time t and E_t is public spending on education and health at time t, and t_{it} is the income tax rate.

Each generation in each household attempts to maximize the following utility function

$$\text{Max } u_1(c_t) + u_2(h_{t+1}) \tag{3}$$

subject to

$$c_t = (1 - t_{it})h_t \tag{4}$$

and equations (1) and (2).

Without formally introducing risk (since even in its present form the utility associated with h can be understood in terms of both its income-raising and risk-reducing properties) and without formally deriving our hypotheses, one can see how the problem can be simplified and simple hypotheses derived. For example, although the above maximization problem could be stated in terms of two policy choices, t_{it} and E_t, by assuming a uniform income tax rate,

from (2) the choice can be reduced to a single one for H_t.

Intuitively and from the stylized fact mentioned above without going through the formal models some of which are already available in the existing literature, we state the following hypotheses:

Hypothesis 1: Greater financial openness leads to greater income redistribution efforts through public spending on health, education and welfare.

Hypothesis 2: An important channel through which financial openness induces greater income redistribution effort is through the realization of greater vulnerability to financial risk.

Hypothesis 3: Taking Hypothesis 2 one step further, when the financial risk associated with financial openness actually results in crisis, this channel for inducing greater redistribution effort is likely to be even greater. Hence, a country with high financial risk and a crisis should exercise greater income redistribution effort than a country with high financial risk but without a crisis.

Hypothesis 4: Countries with more democratic institutions should be inclined to demand more redistribution effort for given levels of financial openness and financial risk because a poorer median voter is likely to be more inclined to push for redistribution than a member of the elite.

III. Measures, Data and Descriptive Analysis of Data

A. Measurement of Income Redistribution Effort

Income redistribution can take various forms and come about by various means. In particular, it can take place by hiring poor people with very unstable incomes at higher and steadier wage rates or by taxing the rich and providing transfers to the poor. But often governments do not hire poor people and by no means are redistributive tax and transfer policies very common, especially in developing countries (Milanovic 1999). In our opinion more intended redistribution in more countries takes place through the character

of government spending, such as spending directed to public health, education and welfare programs. This is not to deny that, in practice at least, substantial portions of public health and education programs actually go to middle class and rich families who may be the preponderant group taking advantage of the sophisticated services of fancy hospitals and universities. Nevertheless, even so, their allegedly positive effects on the ability of poor children and poor families to take advantage of the services provided often justify these kinds of expenditures. Hence, even if not truly redistributive, public spending on health, education and social security are widely *perceived* to be redistributive. For this reason, for our measure of effort to redistribute income by a government, we use the sum of public expenditures on health, education and social security as a share of government expenditures. Time series data on the relative importance of redistributive spending are computed from the figures on such expenditures and on total government spending obtained from various issues of the International Monetary Fund's *Government Financial Statistics Yearbook*. We have been able to obtain this data for the years 1988 to 2000 for 105 countries.[3]

B. Measure of the Explanatory Variables

Choosing an appropriate measure of financial openness is an admittedly controversial activity. The IMF *Annual Reports on Exchange Arrangements and Exchange Restrictions* are the most common source of most of the indexes that have been constructed.[4] Because of its availability for our 105-country sample for the time period for which we have redistributive expenditures, we have chosen to use the index of Capital Account Liberalization constructed from that data by Chinn and Ito (2002).

For our risk index, we make use of data from the International Country Risk Guide (ICRG). While ICRG provides data on various sources of risk, given our focus on the risk associated with

[3]For alternative measures, we also constructed the share of such expenditures in GDP but this measure was thought to reflect primarily the size of government. In our preliminary analysis the determinants of this measure of redistributive effort seemed quite similar.

[4]See, for example, Quinn and various co-authors (2000, 2001), Rodrik (1998), Levine and Zervos (1998), Edwards (2000), and Chinn and Ito (2002). Among them, Quinn's index is the founding work for the index.

deregulation of international capital flows, we make use only of its data on financial risk. This index was constructed by considering total debt as a percentage of GDP, debt service as a percentage of exports of goods and services, the current account deficit as a percentage total exports of goods and services, the number of months of import cover provided by the existing stock of international reserves, and exchange rate variability.

For our democracy index we use the Freedom House country ratings (Freedom House 2003, 2004). Each country is assigned ratings for both political rights and civil liberties derived in part from the extent of the country's adherence to the Universal Declaration of Human Rights. The scores assigned are on a scale of 1 to 7, with 1 representing the highest degree of freedom present and seven the lowest level of freedom. Each pair of political rights and civil liberties ratings is in turn averaged to obtain our composite index of democracy. Because of the way it is coded, with higher scores representing countries with less democracy, it is actually an inverse measure of democracy.

Crisis is a dummy variable that takes a value of unity after the crisis and a value of 0 before the crisis. For the identification of a crisis year we make use of Kaminsky and Reinhart (1999) who identify the dates of crises and financial liberalization in a large number of countries.

Since countries at high levels of development may be more able to afford to spend more on health, education and welfare, we also include real GDP per capita (based on PPP prices) and urbanization as control variables for level of development. Data for these variables is taken from World Development Indicators and the Penn World Tables (PWT 6.1). The first variable is also used to classify countries into high income, upper middle income, middle income and low income countries based on the World Development Indicators.

C. Descriptive Analysis of Data

Before undertaking our econometric estimation, we present some figures that serve to describe the data and motivate the further analysis by showing some simple relationships among the relevant variables.

TABLE 1
HYPOTHETICAL ARGUMENTS BETWEEN FINANCIAL OPENNESS AND THE INCOME REDISTRIBUTION

Different arguments	Various possibility of the outcomes
Positive influence	Financial Openness leads to economic growth and higher GDP per capita which should raise redistributive spending. - Risk-averse median voter will induce government to adopt redistributive spending in order to compensate for the greater risks, which the median voter is forced to bear due to financial openness.
Negative influence	Financial Openness leads to the weakness in the political power of working class, which may result in lower redistributive effort by government.
Ambiguous influence	Unclear other channel variables.

Figure 1 shows the gradually rising share of redistributive spending in total government spending over the years 1988-2000. Figure 2 shows that the trend in this share has been rising in both more democratic (high democracy) and (low democracy) less democratic countries. Yet the figure also shows that the share is much higher and rising more sharply in the more democratic countries. Figure 3 shows that the inverse measure of democracy is negatively related to the redistibutive spending share in total government spending.

Figure 4 shows that financial openness has also been increasing over time in both more and less democratic countries. Once again, however, the values of the financial openness index are higher and more rapidly rising in the more democratic countries. Figure 5 shows that there is at least a somewhat positive relationship between the score on the financial openness index and the share of redistibutive spending in total government spending.

Figure 6 demonstrates that the relationship between the financial risk scores and the redistributive spending scores is positive. Figure 7 shows the relationship between these same redistibutive shares and per capita income also to be positive. Finally, Figures 8 and 9 show that the average risk index rises with both income per capita and the degree of democracy.

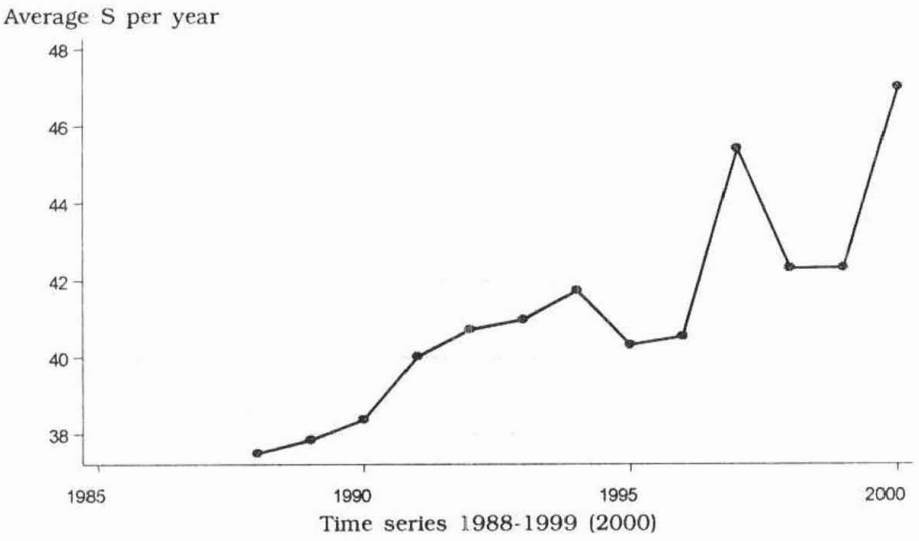

FIGURE 1

THE SHARE OF REDISTRIBUTIVE SPENDING IN TOTAL GOVERNMENT SPENDING (S) OVER TIME

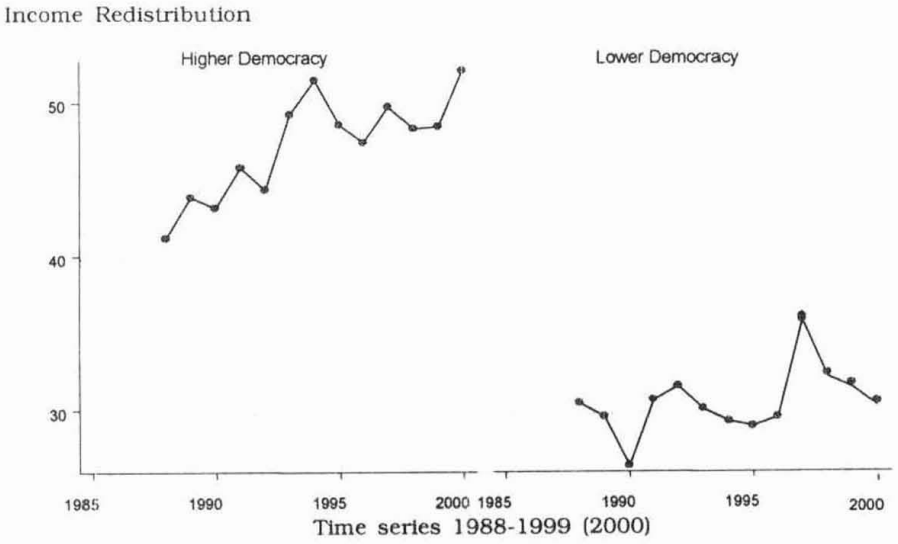

FIGURE 2

THE TREND IN THE SHARES OF REDISTRIBUTIVE SPENDING IN TOTAL SPENDING IN HIGH DEMOCRACY AND LOW DEMOCRACY COUNTRIES

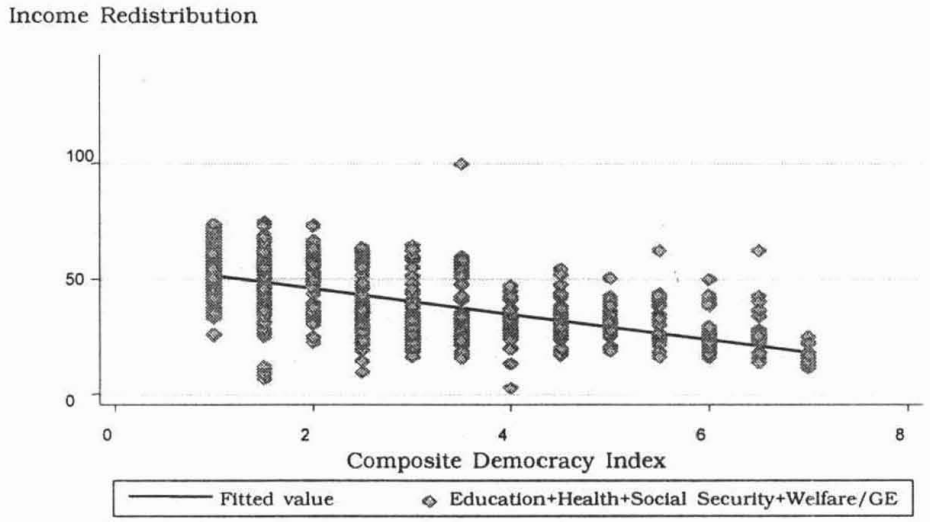

FIGURE 3

THE RELATIONSHIP BETWEEN THE REDISTRIBUTIVE SPENDING SHARE AND THE INVERSE DEMOCRACY INDEX

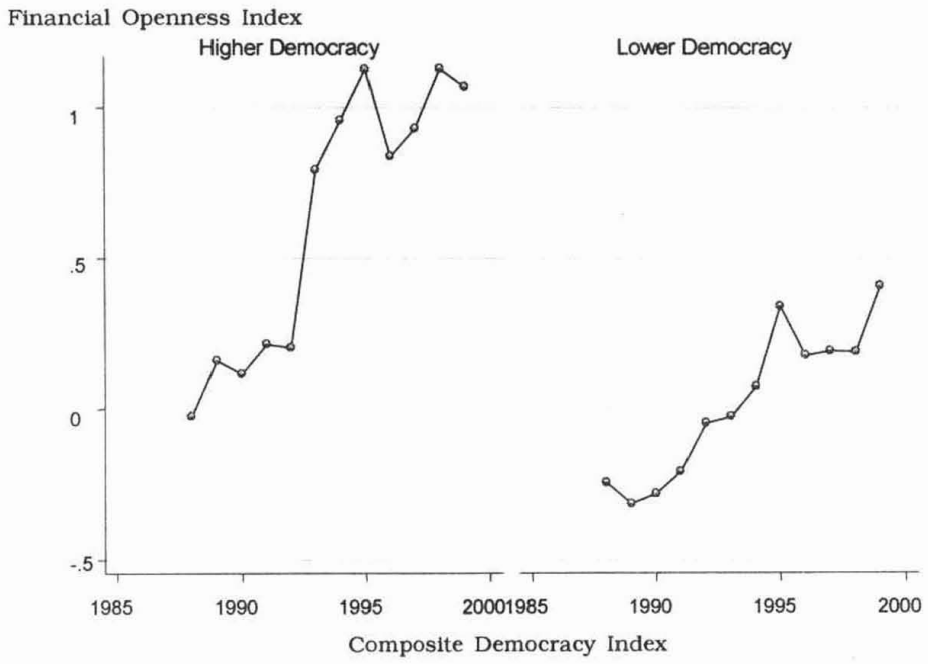

FIGURE 4

THE FINANCIAL OPENNESS INDEX OVER TIME FOR HIGH AND LOW DEMOCRACY COUNTRIES

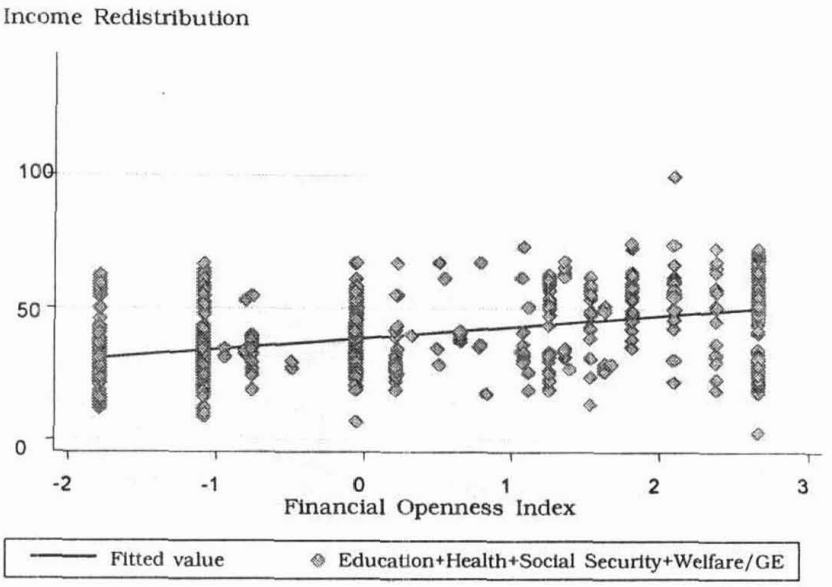

FIGURE 5

THE RELATIONSHIP BETWEEN THE FINANCIAL OPENNESS INDEX AND THE REDISTRIBUTIVE SPENDING SHARE

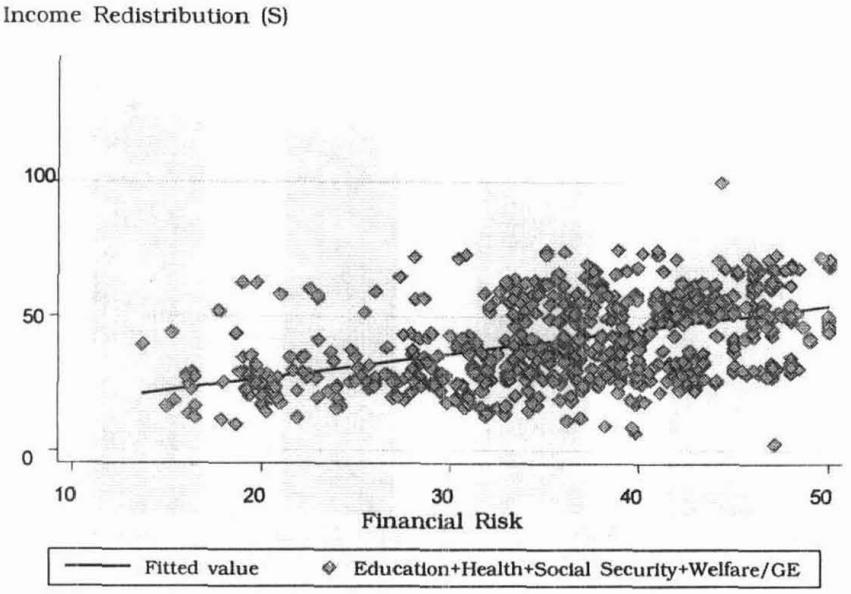

FIGURE 6

THE RELATIONSHIP BETWEEN FINANCIAL RISK AND THE REDISTRIBUTIVE SPENDING SHARE

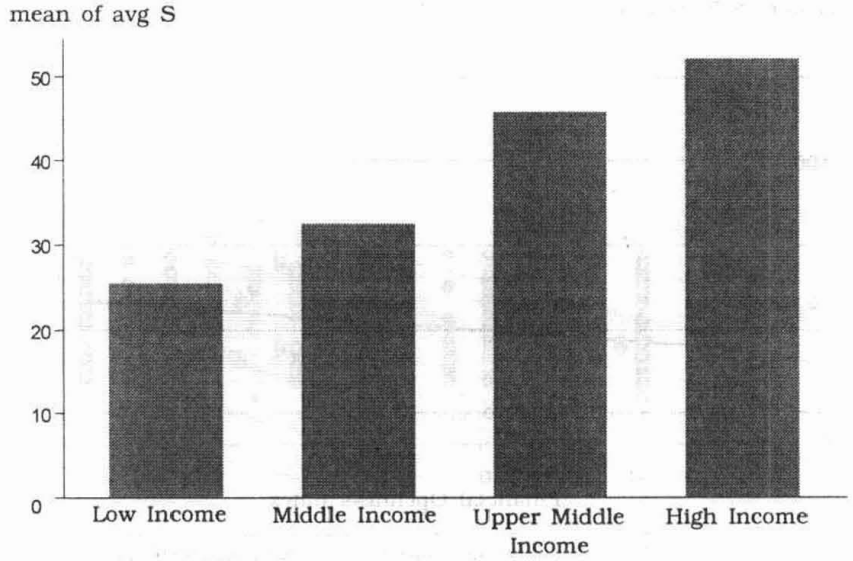

FIGURE 7

THE RELATIONSHIP BETWEEN THE SHARE OF REDISTIBUTIVE SPENDING IN TOTAL GOVERNMENT SPENDING AND INCOME PER CAPITA

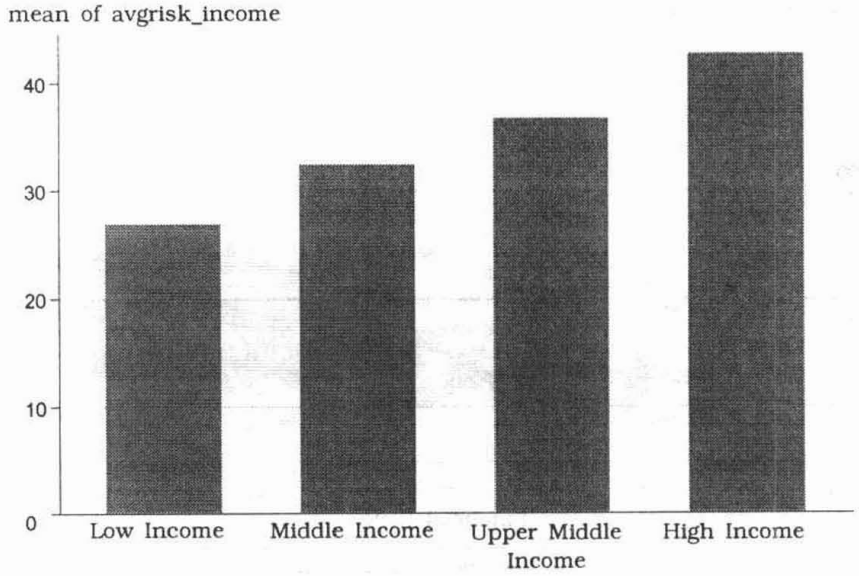

FIGURE 8

THE RELATIONSHIP BETWEEN AVERAGE FINANCIAL RISKS AND INCOME PER CAPITA

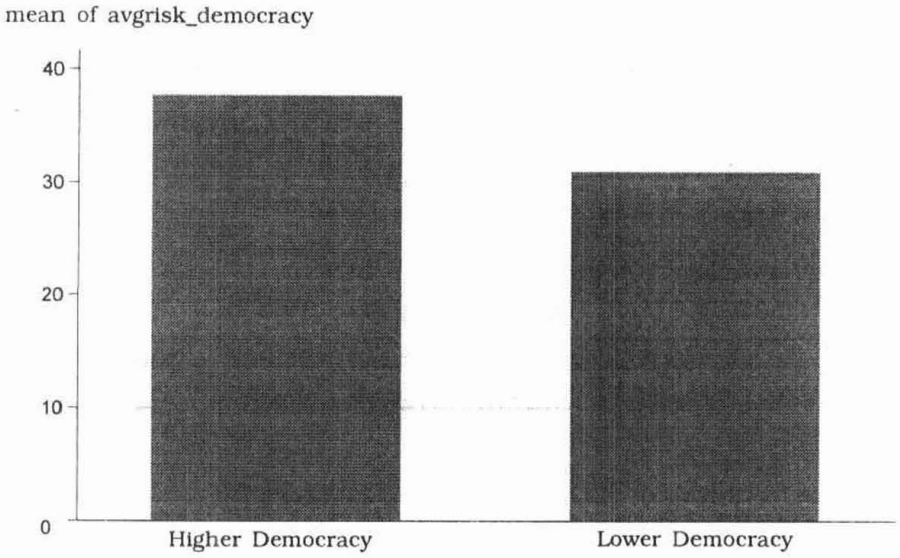

FIGURE 9
THE RELATIONSHIP BETWEEN FINANCIAL RISK AND DEMOCRACY

IV. Empirical Analysis

A. Simple Correlations

The first step in our empirical analysis is to show the correlations among all the variables included in our analysis. Figure 10 provides the matrix of scatter diagrams among the variables included in our analysis. Table 2 provides the matrix of correlation coefficients between each pair of variables (other than the dummy variables).

As can easily be seen, the share of public redistributional spending in total government spending is positively related to the level of GDP in real terms, the index of financial openness, the index of financial risk and the share of urban population in the total population. It is negatively related to inequality (as measured by the Gini coefficient for far fewer observations).[5] Note that several

[5]Because of the small number of available observations for Gini as a measure of inequality, this variable is omitted from the subsequent econometric analysis.

TABLE 2

THE MATRIX OF SIMPLE CORRELATION COEFFICIENTS

	S	rgdpch	fo	cdi	fr	gini	urban
S	1.0000						
rgdpch	0.6481	1.0000					
fo	0.5158	0.6598	1.0000				
cdi	-0.4434	-0.6689	-0.3871	1.0000			
fr	0.5029	0.7473	0.4104	-0.4532	1.0000		
gini	-0.6296	-0.7092	-0.6414	0.3294	-0.5897	1.0000	
urban	0.5485	0.6822	0.4242	-0.4415	0.4655	-0.4433	1.0000

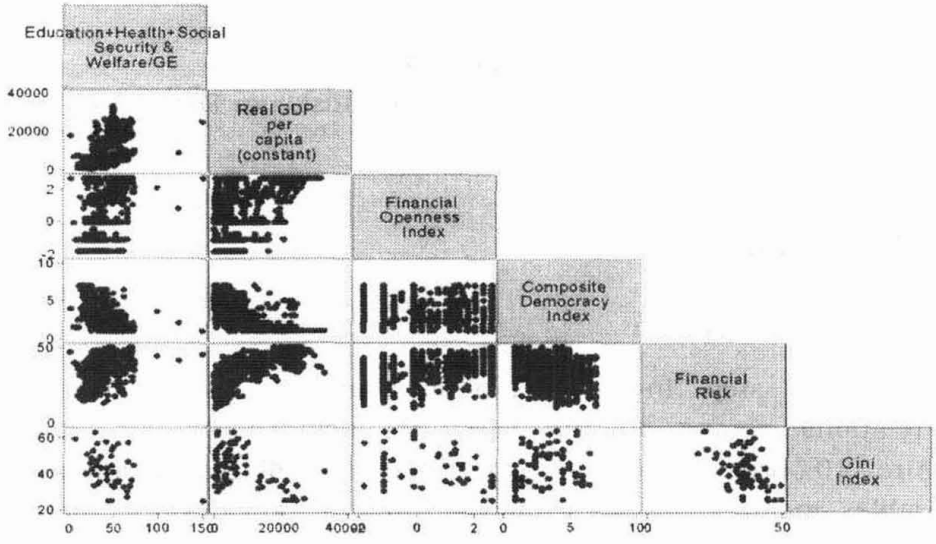

FIGURE 10

MATRIX OF SCATTER DIAGRAMS AMONG VARIABLES

of the explanatory variables are quite highly correlated with each other, implying that regression results may be subject to estimation biases arising from collinearity.[6] For this reason, we deem it

[6]This is especially true for the correlations involving the level of real GDP per capita. This variable has positive correlation coefficients above 0.65 with financial openness, financial risk, democracy and urban.

important to employ a number of different specifications of explanatory variables to determine the robustness of the results to different specifications.

B. Econometric Models

In order to test the hypotheses presented above, we use the following model for the share of redistibutive spending in total government expenditures (S) in country i and year t

$$S_{it} = \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \varepsilon_{it} \quad (5)$$
$$i = 105,\ t = 13,\ k = 1 \sim 3$$

X_{2it} is financial openness index.
X_{3it} is a set of macroeconomic control variables such as per capita real GDP and urbanization.
X_{4it} is a set of hypothesized channel variables such as financial risks, crisis and democracy.

The model is estimated with panel data for the sample of 105 countries for the years 1988-2000 using panel data methods. We use both fixed and random effects and then compare the two sets of results and apply the Hausman test to help us choose between the two models.

If the specification is correct, we can interpret the results of the model as identifying the channels through which financial openness exerts its effects on income redistribution effort. Given the identity of the variables included in X_{4it} and the different indicators included in the ICRG composite index for financial risk, these include the overall budget balance, debt service, exchange rate and the real interest rate as well as crisis and democracy.

What should we expect from the panel estimation? (1) From Hypothesis 1 we should expect a positive and significant influence of financial openness on the share of redistributive spending in total government spending. (2) Once we control for the macroeconomic and channel variables, X_{3it} and X_{4it} respectively, we would expect the size and significance of the effect of financial openness on redistributive spending to decline. This is because the channel variables would be capturing the effects of financial openness coming indirectly through these variables. (3) From

TABLE 3

PANEL REGRESSION ESTIMATES OF THE DETERMINANTS OF THE SHARE OF REDISTRIBUTIVE SPENDING IN TOTAL GOVERNMENT SPENDING (S) BASED ON FIXED EFFECTS

Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Financial Openness	1.36*** (0.000)	0.99*** (0.004)	0.65* (0.093)	0.48 (0.20)	0.48 (0.21)		0.82** (0.035)	0.49 (0.20)	0.41
Log (per capita real GDP)		12.54*** (0.000)	10.67** (0.001)	8.69*** (0.005)	8.69*** (0.005)			8.89*** (0.001)	6.3**
Financial Risk			0.16*** (0.01)	0.16*** (0.009)	0.16*** (0.01)	0.24*** (0.000)	0.212*** (0.000)	0.15** (0.01)	0.08
Crisis Dummy				4.94*** (0.001)	4.93*** (0.001)				
Composite Democracy Index					0.08 (0.88)				0.05
FRCD=Interaction of Risk and Crisis								0.12*** (0.001)	0.11***
Urbanization Ratio					0.45*** (0.01)				0.47***

Notes: ***; at 1%, **; at 5%, and *: at 10% significance level. ( ) are *p*-values.

Hypothesis 2 we should expect the effect of financial risk on the income redistribution to be positive and significant. (4) Because the effect of financial risk on redistributive spending should be greater when a crisis occurs (Hypothesis 3), we should expect the effect of the interaction term between crisis and financial risk to be positive. (5) From hypothesis 4 we should expect a negative effect of the inverse of democracy measure on the share of redistributive spending in total government spending.

Table 3 presents the results of the panel estimation with fixed effects for nine different specifications of the variables included in the model. The specification in column (1) includes only the financial openness variable; that in column (2) adds the control variable for per capita income. Those in columns (3)-(5) progressively add channel variables, first financial risk, then the crisis dummy variable and finally the inverse democracy index, and the additional control for level of development, urbanization.

TABLE 4

PANEL REGRESSION ESTIMATES OF THE DETERMINANTS OF THE SHARE OF REDISTRIBUTIVE SPENDING IN TOTAL GOVERNMENT SPENDING (S) BASED ON RANDOM EFFECTS

Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Financial Openness	1.66***	1.07***	0.74**	0.58 (0.11)	0.64*		1.1***	0.59 (0.11)	0.64*
Log (per capita real GDP)		9.35***	8.64***	8.24***	5.41***			8.28***	7.53***
Financial Risk			0.16***	0.15***	0.15***	0.29***	0.25***	0.15***	0.16***
Crisis Dummy				4.46***	4.26***				
Composite Democracy Index					-0.75*				-0.74 (0.11)
FRCD=Interaction of Risk and Crisis								0.11***	0.11***
Urbanization Ratio					0.14**				0.15**

Column (6) includes only the financial risk index; column (7) adds the financial openness index. The specification in column (8) is the same as that in column (3) but adds the interaction term between financial risk and crisis. The specification in column (9) is similar but includes also both the inverse democracy index and the urbanization index.

Table 4 presents the results for each of the same specifications as in Table 3 but estimated with a random effects model. Application of the Hausman test, shows that we cannot reject the null hypothesis that there is no significant difference between the two models.

For this reason we discuss the results collectively. First, there is fairly strong evidence from both sets of results in favor of Hypothesis 1. Indeed, the coefficient of financial openness on redistributive spending is positive in every case and significant at the ten percent level or better in 9 of the 16 specifications in which this variable is included. In two others it is significant at the 11 percent level.

As shown in the second row of each table, the level of development (measured by per capita GDP) has a positive and highly significant effect on redistributive spending. This confirms the importance of introducing this variable as a control. Urbanization, in the last row plays a similar role as it, too, has a positive and significant effect when introduced as in columns (5) and (9) when either fixed or random effects are used. Since the level of development is also positively related to financial openness, it is not surprising that the size of the coefficient of financial openness declines when these variables are included.

Under both fixed effects and random effects, the estimated values of the coefficient of financial risk on redistributive spending are positive and significant at the one percent level in all but one case. The exception, moreover, is column (9) of Table 3 where, in addition to financial risk there is an interaction term between financial risk and crisis, the coefficient of is positive and significant at the one percent level. Moreover since, the addition of financial risk to the model invariably has the effect of reducing the value of the coefficient of financial openness, it is clear that the results strongly confirm hypothesis 2 (that financial risk serves as an important channel for the realization of the effect of financial openness on redistribution effort by the government).

Similarly, note from the row of entries for the Crisis Dummy that the financial crisis variable also has a positive and significant effect on redistributive spending in the two specifications (columns (4) and (5)) in which it is included. Moreover, its inclusion in the model further reduces the magnitude of the direct impact of financial openness in the same relationship (in both the fixed and random effects models). These results support Hypothesis 3, namely, that Crisis is another channel whereby financial openness exercises an indirect effect on redistibutive spending.

The facts that the coefficient of the financial risk-crisis interaction term is positive and significant at the one percent level in both Tables 3 and 4, and that its introduction further weakens the direct impact of financial openness, show that the indirect effects of financial openness through both financial risk and crisis may be considerably more important than the direct effect.

The one result that, at first glance at least, goes against our hypotheses, is the insignificant effect of the inverse measure of democracy in columns (5) and (9) of Table 3. The coefficient is even

positive which goes against our hypothesis (4) in which we expected that democracy would have a positive effect on redistributive spending (*i.e.*, a negative effect of the inverse measure of democracy). However, since the variation in the inverse democracy index is primarily across countries, this means that in this table the cross section influence of democracy on redistribution is being picked up by country fixed effects. When random effects are used as in Table 4, the coefficients of the inverse democracy index become negative and in one case it is statistically significant so the result may not be as disappointing as at first it would seem. Another reason for the somewhat disappointing result with respect to democracy may be that, during the period covered, the democracy measure was quite high in most countries. Therefore, one would have to go back to somewhat earlier years than our starting point 1988 to have a good chance of detecting the influence of democracy on redistribution effort. Note, however, that, from Figure 1, on average, countries classified as more democratic had significantly higher shares of redistributive spending in total government spending.

V. Conclusion

Recent developments have made it clear that liberalizations of various sorts, but especially of international capital movements, can lead to increased financial risks and the likelihood of crises. In such crises it is often people with low levels of human capital including the children of the poor who are most severely disadvantaged.

Consistent with the constitutional political economy school, we have argued that in such circumstances, and especially in democratic countries, the risk-averse median voter will rationally induce her leaders to undertake redistributive efforts to protect her against the risks associated with financial liberalization. We have further argued that these redistibutive efforts could be expected to take the form of public expenditures on public health, education and welfare. Based on an underlying theoretical structure as well as existing stylized facts we have put forward four hypotheses concerning the determinants of redistributive spending relative to total government spending and then tested these hypotheses with

panel data on 105 countries over the period 1988-2000.

Our empirical results show that, while greater financial openness is associated with relatively larger redistributive government spending, as additional controls (other variables of relevance to such spending) are added, the estimated effect of financial openness tends to decline. At the same time, however, in the case of our direct measure of financial risk, there is no tendency for this effect to be diluted as more controls are added. This finding is consistent with the implication of our risk-averse median voter model that financial risk should induce greater fiscal efforts to redistribute income in line with the interest of the median voter.

Greater financial openness leads to greater income redistribution efforts. Greater financial risks are also significantly positively and significantly related to greater income redistribution efforts. A country with both higher financial risk indexes and a crisis undertakes more income redistribution effort than a country with just higher risk financial risk indexes. Regardless of the level of development, financial openness and financial risk, democratic countries experience somewhat but not generally significantly larger income redistribution efforts than non-democratic ones.

Thus all four hypotheses are verified with this panel data analysis, the first three much more strongly than the fourth. But certainly the findings should be subjected to additional robustness checks such as to the inclusion of additional controls and the use of alternative measures of redistributive spending (such as the inclusion of public employment). For example, it might be desirable to relax our assumption that all public expenditures on health and education are redistributive by carefully pulling out of the existing measure those public expenditures on universities and high cost medical services for the rich and then re-running the analysis. Similarly, alternative measures of the various indexes of explanatory variables, such as of capital liberalization, financial risk and democracy, could be used and sensitivity analysis on their use performed.[7]

Aside from this, the present effort could be extended in a number of desirable ways. First, it would be desirable to extend the data set and its analysis backward in time, at least to the 1970s.

[7]In the case of democracy, it would be highly desirable to use an index that would reflect greater variation over time.

This would be advantageous because the 1970s also witnessed numerous financial crises but in some cases with less openness to capital movements and with less democracy than in the more recent years. For this reason the collinearity problems might be reduced. Also, as mentioned above, this would have the effect of providing among other things greater variability over time in the democracy index. At the present time, a deterrent to doing this is the lack of comparable data on financial risk and crises before 1988. But, in principle, it should be possible to extend this and other data backwards even if one should have to make use of alternative data sources, thereby possibly limiting comparability over time. If this could be done, would the same effects of risk, and openness on redistribution be observed?

Once the time series coverage could be extended so as to provide a larger sample, it should become feasible to utilize data in lower frequencies without limiting the number of observations too greatly. For example, instead of annual observations as we have used here, we could then use data averaged over five year periods. Would the estimated effects of deregulation of international capital movements, crises and risk on redistibutive public spending be larger or smaller with such lower frequency data than suggested by the estimates reported in this paper?

Third, it would be useful to introduce additional controls for exchange rate regimes, the degree of checks and balances in the political system and perhaps other factors. Furthermore, both these variables and others already included in the analysis could be used interactively with other variables. For example, would the effects of crisis and risk indicators on redistributive spending be greater for countries with fixed exchange rate regimes than for those with flexible exchange rates? Similarly, would the effects of the same variables be greater for countries with more checks and balances across the different components of government than for others with fewer checks and balances?

Finally, since the original concern for redistributive policies was due to its allegedly harmful effects on growth, another useful extension would be to examine the effects on growth of our measure of redistributive spending. Whereas inequality data cannot be obtained on an annual basis for even a smaller number of countries in the sample, for five-year periods, it might be possible to obtain such data for a reasonable number of countries in the

sample. Hence, in this case, we would want to use the lower frequency data (for periods of five or more years) to examine the effect of redistributive spending averaged over such a period on the rate of growth of over the same period. Granger causality tests with alternating lags moreover could be run to determine the direction of causality in such relationships with the panel data. Also, it would be interesting to determine whether the effect of redistributive spending on growth might differ depending on whether or not the redistributive spending was up to a level that might be "justified by" the extra financial risk derived from deregulation of international capital movements. For example, it might be hypothesized that redistibutive spending up to the "risk-justified" level would have no adverse effect on growth whereas redistributive spending beyond that level would have a negative effect.

(*Received 4 November 2004; Revised 8 November 2004*)

References

Alesina, Alberto, and Dani, Rodrik. "Distributive Politics and Economic Growth." *Quarterly Journal of Economics* 109 (No. 2 1994): 465-90.

Baldacci, Emanuele, Luiz, Mello, and Gabriela, Inchauste. Financial Crises, Poverty, and Income Distribution. Washington, D.C.: International Monetary Fund, IMF Working Paper, 2004.

Barro, Robert. "Inequality and Growth in a Panel of Countries." *Journal of Economic Growth* 5 (No. 1 2000): 5-32.

Benabou. R. "Inequality and Growth." In *NBER Macroeconomic Annual*. Cambridge: MIT Press, pp. 1-74, 1996.

Bishop, John, Formby, John, and Smith, W. James. "Incomplete Information, Income Distribution and Risk Averse Median Voter Behavior." *Public Choice* 68 (Nos. 1-2 1991): 41-55.

Chinn, Dennis, and Ito, Hiro. Capital Account Liberalization, Institutions and Financial Development: Cross Country Evidence. USC Development Seminar, 2002.

Dailami, Mansoor. Financial Openness, Democracy, and Redistributive Policy. World Bank Working Paper, 2000.

Edwards, Sebastian. Capital Mobility and Economic Performance: Are Emerging Economies Different? NBER Working Paper No.

8076. 2000.

Fratzscher, Marchel, and Matthieu, Bussiere. Financial Openness and Growth: Short-Run Gain, Long-Run Gain. European Central Bank, Working Paper, 2004.

Freedom House. *Freedom in the World Country Ratings 1972 through 2003*. 2004.

Hausman, Jerry A. "Specification Tests in Econometrics." *Econometrics* 46 (No. 6 1978): 1251-71.

International Monetary Fund, *Government Finance Statistics Yearbook*. Washington, D.C.; IMF, Various Years.

Kaminsky, Graciela, and Carmen, Reinhart. "The Twin Crises: the Causes of Banking and Balance of Payments Problem." *American Economic Review* 89 (No. 3 1999): 473-500.

Levine, Loss, and Zervos, Sara. "Capital Control Liberalization and Stock Market Development." *World Development* 26 (August 1998): 766-84.

Milanovic, Branko. Do More Unequal Countries Redistribute More? Does the Median Voter Hypothesis Hold? Washington, D.C.: World Bank, Working Paper, 1999.

Olsen, Mancur. "Why Some Welfare State Redistribution Is a Great Idea." In Charles K. Rowley (ed.), *Democracy and Public Choice: Essays in Honor of Gordon Tullock*. Oxford. Blackwell, pp. 191-222, 1987.

Persson, Thorsten, and Guido, Tabellini. "Is Inequality Harmful for Growth?" *American Economic Review* 84 (No. 3 1994): 600 -21.

Prasad, E., Rogoff, Kenneth, Shang-Jin, Wei, and Kose, M. A. *Effects of Financial Globalization on Developing Countries: Some Empirical Evidence*. Washington, D.C.: IMF, 2003.

Quinn, Dennis, and Wooley, John. Democracy and International Financial Liberalization. American Political Science Association Conference, 2000.

_____. "Democracy and National Economic Performance." *American Journal of Political Science* 45 (No. 3 2001): 634-57.

Quinn, Dennis, and Wooley, John, and Inclan, Carla. How and Where Capital Account Liberalization Leads to Economic Growth. American Political Science Association Conference Paper, 2001.

Rodrik, Dani. "Why Do More Open Economies Have Bigger Governments." *Journal of Political Economy* 106 (No. 5 1998):

997-1032.

Sen, Amartya K. *Global Justice: Beyond International Equity*. New York, London: Oxford University Press, 1999.

Stiglitz, Joseph E., and Bhattacharya, Amar. Underpinnings for a Stable and Equitable Global Financial System from Old Debates to a New Paradigm. Paper Prepared for the Eleventh Annual Bank Conference on Development Economics, April 28-30, Washington, D.C.: 1999.

Strauss, John, Kathleen, Beegle, Agus, Dwiyanto, Yulia, Herawati, Daan, Pattinasarany, Satriawan, Bondan, Sikoki, Sukamdi, and Firman, Witoelar. *Indonesian Living Standards Before and after the Financial Crisis*. Santa Monica: Rand and Singapore: Institute of Southeast Asian Studies, 2004.

Wessel, J. H. "Redistribution from a Constitutional Perspective." *Constitutional Political Economy* 4 (No. 3 1993): 425-48.

World Bank. *World Development Indicators 2003*. 2003.