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TRADE, SOCIAL INSURANCE, AND  
THE LIMITS TO GLOBALIZATION

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to Globalization  
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**ABSTRACT**

International economic integration increases exposure to external risk and intensifies domestic demands for social insurance through government programs. But international economic integration also reduces the ability of governments to respond to such pressure by rendering the tax base footloose. With globalization proceeding apace, the social consensus required to maintain domestic markets open to trade may erode to the point where a return to protection becomes a serious possibility.

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## TRADE, SOCIAL INSURANCE, AND THE LIMITS TO GLOBALIZATION

### I. Introduction

Since the end of the second world war, national economies have become increasingly integrated through flows of goods, services, capital, and technology across borders. As shown in Chart 1, the ratio of foreign trade to GDP has steadily increased in Western Europe and the United States since the 1950s, to the point where this ratio exceeds the levels reached at the height of the pre-World War I gold standard. Of course, trade flows in themselves tell only part of the story. At least as important are the increasing mobility of footloose enterprises, and the speed with which technology and information can now be transmitted across national boundaries. Government policies (i.e., liberalization of restrictions on trade in goods, services, and capital) and technological developments have both contributed to this trends. As the pace of integration has picked up speed, the term "globalization" has become a mantra for the 1990s. Depending on who uses it, the term denotes an opportunity, an imperative, a source of anxiety, or at worst a curse.

To most economists, and international trade economists in particular, globalization is good news. The presumption is that unrestricted markets, on the whole, work well and their expansion on a global scale can only improve the economic prospects for the vast majority of the world's population. At the same time, globalization has come under attack from a curious mix of interests in the advanced industrial countries, ranging from labor advocates to conservative Republicans, from environmental groups to eccentric multi-millionaires (viz., Ross Perot and Sir James Goldsmith). The future of the global economy will depend crucially on how these interests will eventually balance out.

If increased international economic integration has constituted a key aspect of the post-war experience, a second striking feature has been the growth of government, and in particular the expansion of the redistributive role of the state. Chart 2 shows the record on social spending (including, most importantly, income transfers) for five OECD economies (the U.S., Japan,

France, Germany, and the U.K.) since 1960. In all five countries, spending for what the OECD classifies as "social protection" steadily increased until about the early to mid-1980s, and stabilized (or fell somewhat) thereafter. While most measures of government activity would show an increase over the postwar period, it is perhaps the rise in transfers that stands out the most clearly.

Economists have paid surprisingly little attention to the relationship between these two trends--the growth of government, on the one hand, and the intensification of international economic integration, on the other.<sup>1</sup> At first sight the co-existence of these two trends would appear to be spurious, a coincidence arising from the confluence of diverse determinants. At the same time, the coincidence--if that is what it is--is at least a bit puzzling from the standpoint of standard economic analysis. Presumably, increased international economic integration reflects a desire by governments to give markets freer rein; at the same time, such integration undercuts the effectiveness of government policies. On both counts, one would have expected increased economic integration to be accompanied with less, not more, government. Indeed, one possible reason behind the slowing down of income transfers during the 1980s--besides the "conservative revolution"--is precisely the intensification of the fiscal constraints arising from globalization.

On closer look, the evidence suggests that the relationship between economic openness and the growth of government may not be a coincidence. Turning from time-series to cross-section evidence, for example, one uncovers a surprisingly robust positive association across countries between the degree of exposure to international trade and the weight of the government sector in the economy. The point can be made with the help of two charts, reproduced from Rodrik (1996). Chart 3 shows the relationship between the share of

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<sup>1</sup>Not so with political scientists. The relationship between dependence on trade and the scope of the government has been an ongoing preoccupation in the political science literature. See Cameron (1978), Katzenstein (1985), and Garrett and Mitchell (1996) for examples.

government expenditures (excluding interest payments) in GDP and lagged exposure to trade (export plus imports divided by GDP) for 23 OECD countries during the early 1990s. The figure reveals an unmistakable positive association between openness and size of government. A semi-logarithmic regression equation fits the data extremely well, explaining 44 percent of the cross-country variance in government expenditures. At one end of the distribution we have the United States and Japan, which have the lowest trade shares in GDP and (along with Turkey and Canada) the lowest shares of government spending. At the other end we have Luxembourg, Belgium, and the Netherlands, economies with very high degrees of openness and large government.

Neither is the relationship confined to OECD economies. Chart 4 displays the partial correlation between openness and government consumption for 115 countries. I have controlled here for other potential determinants of government size--such as per capita income, demographic and economic structure, and geography. The figure shows that there is a remarkably tight empirical association between openness to trade and government consumption (as a share of GDP) in this large cross-section of countries. This result turns to be extremely robust; further details and experiments with additional controls are presented in Rodrik (1996).

What do we make of this? I have argued in Rodrik (1996) that the explanation that best fits the evidence is one that focusses on the role of the government providing insulation against external risk. The argument is that societies that expose themselves to greater amounts of external risk demand (and receive) a larger government role as shelter from the vicissitudes of global markets. In the context of the advanced industrial economies specifically, this translates into more generous income transfer programs. Hence, the social welfare state is the flip side of the open economy!

More evidence on this point will be presented later on. The main theme of this paper revolves around a related, but somewhat different argument. Remember the point made above

regarding the loss of policy effectiveness in highly open economies. In particular, it is obvious that governments are constrained in raising taxes on footloose factors. When capital is perfectly mobile across national borders, for example, a domestic tax on capital will be borne fully by immobile factors, and not at all by capital itself. But if it is true, as argued above, that these immobile groups will demand more generous social programs as the price for accepting greater amounts of external risk, we have the makings of a serious conflict. In order to square the circle, governments have been forced to raise taxes on labor while reducing taxes on capital, as I will show below.

This, then, is the dilemma which motivates the title of this paper: Globalization results in increased demands on the state to provide social insurance; yet at the same time, globalization reduces the ability of the state to perform that role effectively. Consequently, with globalization proceeding apace, the social consensus required to maintain domestic markets open to international trade may erode to the point where a return to old-style protectionism becomes a serious possibility.

I will develop the argument in the rest of the paper. I begin in section II with a simple model that helps sharpen the story. The point of the model is to show that a strategy of compensating internationally immobile groups (called workers) for exposing themselves to greater amounts of external risk can work as long as international economic integration is not too advanced. Once globalization becomes extreme, however, the government can no longer finance the requisite income transfers because the tax base turns too footloose. Hence at high levels of integration there is a serious conflict between openness and maintaining social consensus.

Section III turns to empirical evidence. I will present three types of evidence. First, I will use cross-country evidence from a broad sample of countries to show that external risk does matter: the greater the exposure to external risk, the greater is the aggregate income and

consumption risk to which domestic residents are subjected. Second, drawing a distinction between openness and exposure to external risk, I will show that higher levels of government spending (as a share of GDP) are associated with greater exposure to external risk, and that once external risk is explicitly controlled for, governments in more open economies do not necessarily spend more. Hence the positive correlation between openness and size of government discussed above seems to have exposure to external risk as its root cause.

Third, I will use panel evidence on different types of government spending and of taxes for the advanced industrial countries since the 1960s. With panel data, I cannot separately control for external risk, since my risk variable uses data on terms-of-trade variability over a two-decade period. But the panel approach has the advantage that it can provide us with information about how government activity has responded to *changes* in international economic integration in the short term in each country, holding constant the risk characteristics of each country's trade (the latter being absorbed into the fixed effects). Thus, controlling for country and year effects, I find that increases in openness have resulted in reductions in social spending and government consumption. This depressing effect on spending is larger in countries with no restrictions to capital mobility. Further, I will present evidence that the distribution of the tax burden has shifted from capital to labor as integration has advanced: as openness increases, taxes on capital decrease, while taxes on labor income increase.

## II. The Model

I will use a very simple model to capture the intuition of the story discussed in the introduction. I assume a small-open economy that produces (and exports) a single good, whose price is determined in world markets. This good is produced under constant returns to scale and using labor and capital. Unlike labor, capital can move across borders, but at a cost. The magnitude of this cost will be the parameter capturing the degree of "openness" of the

economy. Labor, whose welfare will be the focus of the analysis, consumes only the importable. The only source of uncertainty in the model is the terms-of-trade (the price of exports relative to the price of imports), which is assumed to be stochastic. Labor income consists of wage income plus the proceeds of a tax on domestic capital. I assume that the government maximizes domestic capitalists' welfare subject to a reservation level of utility for workers, and chooses the tax on capital accordingly.

I will use the model to show the following. An increase in openness makes domestic capital more responsive to changes in international prices and correspondingly magnifies the amplitude of fluctuations in real wages at home. Hence labor becomes worse off, due to increased exposure to risk, even if the mean (expected) real wage remains unchanged. To restore the expected utility of workers to its reservation level the government has to increase income transfers, and raise the tax on capital. This strategy works as long as the openness of the economy and the international mobility of capital are not too high. However, when openness crosses a certain threshold, an attempt to compensate labor by increasing the tax on capital becomes self-defeating. Past that threshold, the flight of capital and the erosion of real wages at home would more than offset the value of income transfers. In an extremely open economy, therefore, the government loses its ability to compensate workers through the tax system, and the constraint that workers' utility be above a certain reservation level can no longer be satisfied. One "solution" would be to make it more costly for capital to move abroad.

Let the production function of the exportable sector be written as  $f(k, \ell)$ , with the usual regularity conditions:  $f_k > 0$ ,  $f_\ell > 0$ ,  $f_{kk} < 0$ ,  $f_{\ell\ell} < 0$ , and  $f_{k\ell} > 0$ . We normalize the economy's fixed labor endowment to unity, so the production function can also be expressed as  $f(k)$ . The domestically-owned capital stock is exogenously fixed at  $k_0$ . Note that  $k$ , the capital used at home, can differ from  $k_0$  as capital moves in and out of the country. A key assumption is that an increasing cost is incurred by capitalists as capital moves across borders. We can think of this

as the cost of setting up business in a less-familiar environment, the cost incurred in transporting the final goods back to the home economy, the cost of communicating with subsidiaries in a different country, etc. Increased globalization will be captured in the model by reductions in  $\lambda$ .

Let  $p$  stand for the (relative) price of the exportable. The model is described in three equations:

$$r = pf_k(k) - \tau \quad (1)$$

$$r = r^* - \lambda(k_0 - k) \quad (2)$$

$$w = pf_l(k) \quad (3)$$

The domestic return to capital ( $r$ ) is given by the marginal value product of capital net of the domestic tax. International trade in capital services requires that this return be equal to the international return ( $r^*$ ) minus a margin that is related to the cost of moving capital abroad. Hence a capital outflow which reduces the capital stock at home to  $k$ , would depress the rate of return earned. Finally, the third equation states that the domestic wage ( $w$ ) equals the marginal value product of labor. These three equations determine the three endogenous variables in the system,  $w$ ,  $r$ , and  $k$ .

Figure 1 presents a graphical view of the way the model works. The downward sloping schedule shows the negative relationship between  $r$  and  $k$  expressed in equation 1. As the relative price of the exportable ( $p$ ) moves around, so does this schedule. Intuitively, the return to capital fluctuates in tandem with the world price of the exportable. The upwards sloping schedule in turn represents the relationship expressed in equation (2). Two versions of this schedule is shown, one for high  $\lambda$  (low globalization) and one for low  $\lambda$  (high globalization). The lower is  $\lambda$ , the flatter this schedule. In the limit, with capital fully mobile at zero cost, the schedule would be horizontal and it would fix the domestic rate of return at  $r^*$ .

Denote by  $k(p, \tau, \lambda)$  the equilibrium level of capital employed at home. Consider an initial equilibrium where the combination of parameters are such that  $k(p, \tau, \lambda) = k_0$ . In this equilibrium, denoted by A in Figure 1,  $r = r^*$ . Changes in  $\lambda$  would have no effect on  $w$  or  $k$  (or  $r$ ) starting from this initial equilibrium, since

$$\frac{dk}{d\lambda} = \frac{k - k_0}{\rho f_{kk} - \lambda},$$

$$\frac{dw}{d\lambda} = \rho f_{kl} \left[ \frac{k - k_0}{\rho f_{kk} - \lambda} \right]$$

and both expressions equal zero when  $k = k_0$ . Intuitively, we fix the initial equilibrium such that capital has no incentive to move in or out of the domestic economy, and consequently changes in the cost of mobility are of no consequence.

Now consider what happens as  $p$  fluctuates. A reduction in  $p$  drives down the domestic return to capital and results in a capital outflow, the magnitude of which is inversely proportional to  $\lambda$ . As the figure demonstrates, the greater the mobility of capital, the wider the fluctuations in the domestic capital stock in response to changes in the world price. Formally,

$$\frac{dk}{dp} = \frac{f_k}{\lambda - \rho f_{kk}} > 0,$$

which is decreasing in  $\lambda$ . The consequences for labor can be easily deduced. Since the domestic wage (in terms of the importable) is determined by the value marginal product of labor in the exportable (equation 3), capital mobility accentuates the fluctuation in the consumption wage. The lower is  $\lambda$ , the wider the amplitude of fluctuations in  $w$ :

$$\frac{dw}{dp} = f_l + \frac{pf_{kl}f_k}{\lambda - pf_{kk}} > 0,$$

which is decreasing in  $\lambda$ .

In fact, things are even worse for labor insofar as part of workers' income comes from the tax on capital. Denoting workers' total (real) income by  $I$ ,

$$I = w + \tau k \quad (4)$$

Fluctuations in  $I$  therefore result not only from fluctuations in wages, but also from fluctuations in the tax base ( $k$ ) as capital moves back and forth in search of higher returns.

Now consider the effect of changing the tax on capital, holding world prices constant.

We have:

$$\begin{aligned} \frac{dI}{d\tau} &= k + \left[ \frac{dw}{d\tau} + \tau \frac{dk}{d\tau} \right] \\ &= k - \frac{\tau + pf_{kl}}{\lambda - pf_{kk}} \end{aligned}$$

This expression is increasing in  $\lambda$ , indicating that the tax on capital is most effective as a redistributive tool when capital cannot move abroad easily. For  $\lambda$  sufficiently close to zero, on the other hand,  $dI/d\tau$  can be shown to be unambiguously negative for any strictly positive level of  $\tau$ .<sup>2</sup> The implication is that an increase in the tax on capital will enhance workers' incomes in a situation where globalization is low, but reduce it when globalization is high. This plays a key role in the argument.

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<sup>2</sup>This follows from setting  $\lambda = 0$  and noting that  $kf_{kk} + f_{kl} = 0$ .

Consider the following timing of events:

1.  $\lambda$  is determined;
2. the government sets  $\tau$  to maximize capitalists' income subject to a reservation level of (expected) utility for workers;
3.  $p$  is revealed; and
4. the equilibrium levels of  $w$ ,  $r$ , and  $k$  are determined.

Since  $\tau$  is selected before  $p$  is revealed, the government must take into account the stochastic properties of  $p$ , and how uncertainty affects workers' expected utility.

Assume that  $p$  is a random variable with mean  $\bar{p}$  and standard deviation  $\sigma$ . Let  $I(p, \tau, \lambda)$  stand for the realized equilibrium value of income. Taking a Taylor expansion around  $\bar{p}$ , expected utility,  $EV(I(p, \tau, \lambda))$ , can be approximated in the following manner:

$$\begin{aligned} EV(I(p, \tau, \lambda)) &= E[V(I(\bar{p}, \tau, \lambda)) + \frac{dV(I(\bar{p}, \tau, \lambda))}{dp} (p - \bar{p}) + \frac{1}{2} \frac{d^2V(I(\bar{p}, \tau, \lambda))}{dp^2} (p - \bar{p})^2] \\ &= V(I(\bar{p}, \tau, \lambda)) + \frac{1}{2} \frac{d^2V(I(\bar{p}, \tau, \lambda))}{dp^2} \sigma^2 \end{aligned}$$

Now assume that workers' utility ( $V$ ) is logarithmic:

$$V(I) = \log I = \log (w + \tau k)$$

Expected utility can then be written as

$$\begin{aligned} V(p, \tau, \lambda) &= \log (w(\bar{p}, \tau, \lambda) + \tau k(\bar{p}, \tau, \lambda)) \\ &\quad - \frac{1}{2} (w(\bar{p}, \tau, \lambda) + \tau k(\bar{p}, \tau, \lambda))^{-2} [f_l(k(\bar{p}, \tau, \lambda)) + f_k(k(\bar{p}, \tau, \lambda)) \frac{\tau + p f_{kl}(k(\bar{p}, \tau, \lambda))}{\lambda - p f_{kk}(k(\bar{p}, \tau, \lambda))}] \end{aligned}$$

Since the utility function is concave in income, and hence workers are risk averse, expected utility is decreasing in the variance of the world price. Moreover, an increase in openness increases the weight received by price volatility, and reduces expected utility *ceteris paribus*. This can be seen by evaluating this expression at an equilibrium where  $k = k_0$  (so that  $w$ , and  $k$  are insensitive to changes in  $\lambda$ ), and noting that a reduction in  $\lambda$  increases the second (negative) term in absolute value. The reason for this has been discussed above: enhanced mobility of capital magnifies the fluctuations in workers' income for any given change in  $p$ .

Note that this effect is a consequence purely of increased exposure to risk and is independent of any other consequences of openness. If increased openness further translates into a capital outflow, the losses to workers would of course be greater. Conversely, if increased openness were to reduce the relative price of importables (a channel from which we have abstracted), there would be a compensating gain.

As mentioned above, the government is assumed to operate under a constraint which puts a floor below the expected utility of workers:

$$EV(I(p, \tau, \lambda)) \geq \bar{U}$$

Let the initial levels of  $\tau$  and  $\lambda$  be  $\tau_0$  and  $\lambda_0$ . As before, assume that the domestic capital stock is such that  $k(\bar{p}, \tau_0, \lambda_0) = k_0$ . It is convenient to assume further that the above constraint just binds in this equilibrium. This is shown as point A in Figure 2. The figure shows the consequences of a reduction in  $\lambda$ . As discussed above, expected utility falls as  $\lambda$  comes down. For some range of  $\lambda$ , the government can compensate for the reduction in workers' expected utility by raising  $\tau$ . At point B, for example, workers have the same level of expected utility as at A thanks to an increase in the tax from  $\tau_0$  to  $\tau_1$ . However, as the figure shows, once the cost of moving capital abroad becomes sufficiently small, this is no longer a viable strategy. Neither an increase nor a

decrease in  $\tau$  can fully compensate for the loss in expected utility suffered as a result of a fall in  $\lambda$ . Consequently, for sufficiently high degrees of "globalization," the government can no longer meet the constraint on workers' utility.

What might then happen is left outside the model. But it is reasonable to think that the government would come under severe pressure from workers to introduce various restrictions on international economic integration (say, by imposing taxes on firms that move abroad).

### III. Empirical Evidence

#### (a) Is External Risk Important?

In the model presented above, the external terms of trade was the only source of uncertainty. This is obviously unrealistic, and biases the conclusions in the direction of making openness harmful to groups with low international mobility. It could be that increased openness instead reduces the exposure to risk. This could happen for a couple of reasons. First, increased international integration of capital markets may allow all domestic residents, including workers, to diversify internationally, reducing consumption risk. Second, world markets being larger than domestic markets, the effects of country-specific shocks may leave less of a mark in economies more tightly integrated with world markets. On the other side of the ledger, specialization according to comparative advantage can be expected to result in more concentrated production structures, and hence greater income variability. In addition, a significant part of workers' income is embodied in human capital, which is in practice impossible to diversify even under full capital mobility.

Hence, it is ultimately an empirical question whether increased exposure to risk of external origin is associated with increased exposure to risk in aggregate. Table 1 provides rather strong evidence that the answer is affirmative. This table shows the results of regressing various indicators of aggregate risk on a measure of external risk across a sample of 105

countries for which the requisite data were available. The measure of external risk I have selected is the one suggested by theory, namely the volatility of the streams of income associated with fluctuations in the external terms of trade. Formally, let  $x$ ,  $m$ , and  $y$  stand for volumes of exports, imports and GDP, respectively. Let  $\pi$  be the natural logarithm of the price of exports relative to imports (the terms of trade). Let the log of the terms of trade follow a random walk, possibly with drift (a hypothesis which cannot be rejected for most countries). The unanticipated component of the income effects of a terms of trade change can then be expressed (as a percentage of GDP) as  $\frac{1}{2}[(x+m)/y][d\pi - \alpha]$ , where  $\alpha$  is the trend growth rate in the terms of trade. The standard deviation of this is  $\frac{1}{2}[(x+m)/y] \times \text{st.dev.}(d\pi)$ . Hence, interacting a measure of openness  $[(x+m)/y]$  with the standard deviation of the first (log) differences in the terms of trade gives us (twice) the appropriate measure of external risk. This is the variable denoted by OPENAVG6092xTOTDLOGSTD in Table 1.

The dependent variables are four different measures of income or consumption risk, calculated as the standard deviation of the first (log) differences in: (a) real GDP adjusted for the terms of trade; (b) real GDP; (c) real GDP excluding government consumption (denoted private GDP); and (d) real consumption. Additional right-hand side variables are per-capita income and a range of country-grouping and regional dummies. For data sources and definitions, see the appendix.

The results show that all three measures of income risk, as well as consumption risk, increase with exposure to external risk. This finding is robust to the inclusion of a wide range of additional controls on the right-hand side. It is also robust to instrumenting for OPENAVG6092 (which in principle is an endogenous variable) by using a set of exogenous geographical and country-size variables (results not shown). Note in particular that the estimated coefficient on external risk is largest in the regression on consumption risk, which is notable because one might have expected capital mobility to allow diversification of consumption risk (even if income

risk cannot be diversified away).

To get a sense of the quantitative magnitudes involved, consider the estimated effect on consumption risk of an increase in external risk by one standard deviation. The standard deviation of our external risk variable is 5.6 (which corresponds to a standard deviation in the growth rates of external income of  $\frac{1}{2} \times 5.6 = 2.8\%$ ). According to column (4) of Table 1, this would be associated with an increase in the standard deviation of consumption growth of  $5.6 \times 0.0012 = 0.67\%$ . The median value of the standard deviation of consumption growth in our sample is 2.63%. Hence the implied effect is not negligible. Note further that these aggregate relationships say nothing about the distribution of risk within the economy. Presumably, this kind of risk is borne disproportionately by groups with low international mobility, as the model in the previous section suggests.

#### (b) Cross-Country Evidence on Openness, External Risk, and Government Activity

We now turn to a more direct look at the consequences of external risk for government behavior. The evidence presented earlier showed that there is a close association between exposure to trade and the scale of government spending in a broad cross-section of countries. A more systematic look at the evidence suggests that the reason has to do with external risk: exposure to external risk has resulted in a more active government role in the provision of social insurance.

Working with data from a cross-section of countries, it is possible to distinguish empirically between exposure to external risk and openness, as in the previous section. Intuitively, two economies can be equally exposed to trade, yet have quite different levels of exposure to external risk if their terms of trade differ in their volatility. For example, the ratio of trade to GDP is around 20% in both Japan and the U.S., yet the terms of trade are almost twice as volatile in Japan. New Zealand and the U.K. are equally open (around 55%), but New Zealand's terms of trade fluctuate twice as much as the U.K.'s. Note also that our empirical

measure of openness (total trade divided by GDP) is only a rough proxy for the theoretically relevant measure--the elasticity of the domestic tax base with respect to the tax rate. Imperfect as it is, this measure should capture to some extent the maneuvering room that domestic fiscal authorities have.

The empirical approach consists of entering both openness and exposure to external risk as explanatory variables in regressions explaining the magnitude of government spending. We can then see whether openness is still positively related to government spending, once external risk is controlled for. I use two measures of government spending. One is social security and welfare spending averaged over 1985-89. This category of spending is obviously the one most directly targeted at social insurance, so we expect to find a positive correlation between exposure to external risk and this type of spending. The second measure is government consumption (which excludes income transfers as well as public investment), also averaged over 1985-89. This measure has the advantage that it is available for over 100 countries on a standardized basis (thanks to the Penn World Tables). Its disadvantage is that the links between government spending on such things as education and the military and the provision of social insurance are more tenuous. Nonetheless, in lower income countries where social security and welfare systems are difficult to set up, the evidence to be presented below suggests that government purchases of goods and services does indeed perform an insurance function.

The evidence is shown in Table 2. The first two columns focus on the OECD countries. The results with social security and welfare spending are strongly supportive of the argument. As expected, exposure to external risk is positively correlated with social security and welfare spending (at the 99% confidence level). The coefficient on openness now turns negative (and is also statistically significant). Terms-of-trade volatility, which is entered independently in these regressions, also has a negative and significant estimated coefficient. Taken together, these results suggest that social transfers tend to be largest in economies which are simultaneously

very open and subject to substantial price risk in world markets. While the sample is small (19), these variables together account for 75% of the variation in social security and welfare spending across countries. By contrast, in this OECD sample openness and external risk indicators have no explanatory power for spending on government consumption (column 2).

The next two columns enlarge the sample to all countries with 1985 GDP per-capita above \$4500. The results with regard to social security and welfare spending are qualitatively the same, although the estimated coefficients are much smaller and the levels of statistical significance lower. The main change now is that the openness and risk variables begin to enter significantly in the regression on government consumption as well, although the overall fit is still not impressive.

The last two columns display results for all countries for which the requisite data are available. These regressions also include additional controls for per-capita income, economic structure, demography, and geographic region. The pattern of signs is once again in accord with the expectation, and the estimated coefficient are mostly significant. But note that the variables of interest now do much worse in the regression on social security and welfare spending (col. 5) than they do in the one on government consumption (col. 6). I attribute this to the fact that social security and welfare spending is largely a mixed bag in lower-income countries, and that most such countries do not have the capacity to run adequate welfare systems. It is plausible that some of the same insurance functions are provided in these countries through government employment and government purchases of goods and services (as captured in government consumption). The regression results displayed in col. (6) strongly supports this hypothesis. See Rodrik (1996) for more evidence on this score.

To summarize, the cross-country evidence provides strong support for the ideas discussed above. Government spending--on social security and welfare in the rich countries and consumption in poorer countries--is highest in countries which are exposed to significant

amounts of external risk. Since exposure to external risk is the consequence both of high levels of trade and of volatility in the prices of traded goods, it is the interaction of these two that seems to matter. Holding either one of these constant while varying the other has an ambiguous effect on government spending.

### (c) Evidence from Panel Data for the OECD Countries

Cross-country evidence has a number of shortcomings. In particular, drawing inferences from such evidence about the consequences of changes in openness or external risk for any given country is problematic except under very restrictive assumptions. Hence, it would be useful to have supplementary evidence drawn from combined cross-section, time-series data, using panel techniques. I present this kind of evidence here for the advanced industrial countries for which annual data on social spending and tax rates are available for the period since the mid-1960s.<sup>3</sup> The countries included are most of the OECD members, including the U.S., Canada, U.K., Netherlands, France, Germany, Austria, Italy, Finland, Sweden, Norway, Denmark, Japan, and Australia.

This approach, however, has a problem of its own. Since our external risk variable is constructed using terms-of-trade data over the 1971-90 period, it is not possible to obtain a time-varying measure of external risk that is independent from openness. Therefore, unlike in the previous section, we cannot test to see whether government spending reacts differently to openness and external risk. Terms-of-trade risk (TOTDLOGSTD) will be now absorbed into the fixed effects for each country. But what we can do is see how government spending on income transfers (as well as consumption) has reacted to changes in openness, *after country and year*

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<sup>3</sup>The data used in this section were made available by Roberto Perotti (spending on social protection) and Gian-Maria Milesi-Ferretti (taxes), to whom I am grateful. The original source for the spending data is the OECD.

*effects are controlled for.*<sup>4</sup>

The results are displayed in Table 3 for two types of government expenditures: (i) spending that is classified by the OECD as "spending on social protection," which includes income transfers; and (ii) government consumption. Both are expressed as a percent of GDP. The explanatory variables included in the first two columns are (lagged) openness and GDP per capita, as well as a full set of year dummies (coefficients for the latter are not separately shown). We find a negative relationship between income per capita and government spending of both types, which goes against Wagner's law. More relevant for our purposes, we find that social spending and government consumption both respond negatively to lagged increases in openness. The estimated coefficients suggest that an increase in the shares of imports and exports in GDP of 5 percentage points (which translates into an increase in our measure of openness of 10 percentage points) results in a reduction in social spending of about 0.3 percentage points.

The next two columns of Table 3 add as regressors a dummy variable for the presence of restrictions on capital mobility, both individually and in interaction with openness.<sup>5</sup> The results are interesting in that they show the negative effect of openness on spending to be particularly strong in countries or periods without restrictions on capital mobility. Hence the magnitude of the effect discussed in the previous paragraph is more than doubled in cases where the capital account is entirely free.

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<sup>4</sup>Alternatively, one could try to construct a time-varying estimate of external risk by using terms-of-trade data for shorter sub-samples (e.g. using 5-year windows). However, the value added from this approach is not quite clear. In the current framework, it is reasonable to suppose that the "riskiness" of each country's trade is absorbed into the fixed effect. The panel regressions reported in this section have also been estimated using a random-effects model. The results were essentially identical, so are not presented here.

<sup>5</sup>The source for this variable is the summary table in the IMF's annual reports on exchange arrangements and exchange restrictions. I am grateful to Andy Rose for making this dataset available to me in electronic form.

The results of this section can be related to those of the previous one as follows. The question that we are now asking is this: what is the relationship between openness and government spending, holding the volatility of the terms-of-trade constant? The cross-section evidence discussed above suggests that the answer depends on the level at which this volatility is being held constant. For a set of countries with high levels of terms-of-trade volatility, increased openness will be associated with expanded spending. For countries with low levels of terms-of-trade volatility, on the other hand, such as the OECD countries, the reverse will be true and increased openness will be associated with reduced government spending. That is indeed what we find.<sup>6</sup>

The bottom line, therefore, is that increased openness since the mid-1960s has been associated with reductions in government activity in the advanced industrial countries. Hence while countries that are exposed to significant amounts of external risk traditionally have had governments playing a more substantial role in the provision of social insurance, it becomes increasingly difficult to discharge this role as economic integration advances.

The manner in which the dilemma has been resolved on the revenue side is shown in Table 4. This table shows results from panel regressions similar to those above, except that the dependent variables are now tax rates separately on labor and capital income. These tax rates have been estimated from national income accounts by Mendoza *et al.* (1996), using a methodology due to Mendoza *et al.* (1994). They are available for the period 1965-1991 for 18

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<sup>6</sup>For example, from column (1) of Table 2, we have that the change in social spending as openness increases is given by  $-0.170 + 1.869 \times \text{TOTDLOGSTD}$ . For levels of  $\text{TOTDLOGSTD} < 0.170/1.869 = 0.091$ , the relationship is negative. The median value of  $\text{TOTDLOGSTD}$  for the OECD sample is just above this threshold at 0.092. This assumes, of course, that the cross-section and time-series evidence can be directly compared in this manner. An alternative perspective is that the cross-section evidence reflects some long-run tendencies, while the panel evidence is more germane to short-term adjustments.

OECD countries.<sup>7</sup> We find that taxes on labor respond positively to increases in lagged openness, while taxes on capital respond negatively. The estimated coefficient on openness is positive and statistically significant in the regression on labor taxes, while it is negative and statistically significant in the regression on capital taxes. In other words, there is strong evidence that as economic integration advances the tax burden of social insurance programs is shifted from capital to labor.

More visual evidence on this is displayed in Chart 5, which shows the unweighted average of tax rates on capital and labor in four leading industrial countries, the U.S, France, Germany and the U.K. The trends exhibit a clear turning point in the early 1980s. Since the early 1980s taxes on capital have come down sharply, while taxes on labor have kept increasing at the same rate as before.

Hence the evidence, while not definitive, is certainly suggestive: globalization reduces the ability of governments to spend resources on social programs; it makes it more difficult to tax capital; and a growing share of the tax burden is now carried by labor.

#### IV. Concluding Comments

It is generally accepted that integration into the world economy reduces the ability of governments to undertake redistributive taxation or implement generous social programs. It is less well understood that this may create a serious dilemma where maintaining political support for open markets is concerned. This paper has tried to provide an analytical basis for the latter argument, as well as provide some concrete evidence on that score. In particular, I have showed that societies (rich and poor alike) have demanded and received a larger government role as the price of exposing themselves to greater amounts of external risk. I read this

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<sup>7</sup>These are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, U.K., and U.S.

evidence as pointing to a tension between globalization, on the one hand, and the requirements of maintaining the social legitimacy of free trade, on the other.

The arguments made in this paper add a new dimension to the ongoing debate on trade and wages. There has been a widespread tendency to view international trade as being responsible for the disappointing labor-market outcomes in Europe and the U.S. over the last two decades. Most international economists, however, have tended to downplay the social costs of globalization by questioning the claim that growing trade has had much redistributive effect in the advanced industrial countries.<sup>8</sup> This skepticism has been based on empirical studies that find increased trade to account for perhaps 10-20 percent, but no more, of the rising skill premium in the United States. However, an important dimension of globalization is that internationally immobile groups are now confronted with less certain, more volatile outcomes,<sup>9</sup> something that is reflected both in the generalized anxiety expressed in the polls and in the fractal nature of the deteriorating income distribution in the U.S. Whatever the "true" number may be about the effect of increased trade on the mean wage premium for skilled workers, a growing sense of insecurity in jobs and earnings seems to be at the heart of the problem. What complicates matters is that these changes are taking place in an environment where the capacity of governments to provide social insurance, as in the past, is seriously compromised.

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<sup>8</sup>See for example the article by Ethan B. Kapstein, "Workers and the World Economy," *Foreign Affairs*, May/June 1996, and the riposte by Paul Krugman and Robert Lawrence in the July/August issue of the same journal.

<sup>9</sup>See Gottschalk and Moffitt (1994) for evidence on this score.

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**Merchandise Exports as a % of GDP**  
(Three-year annual averages)

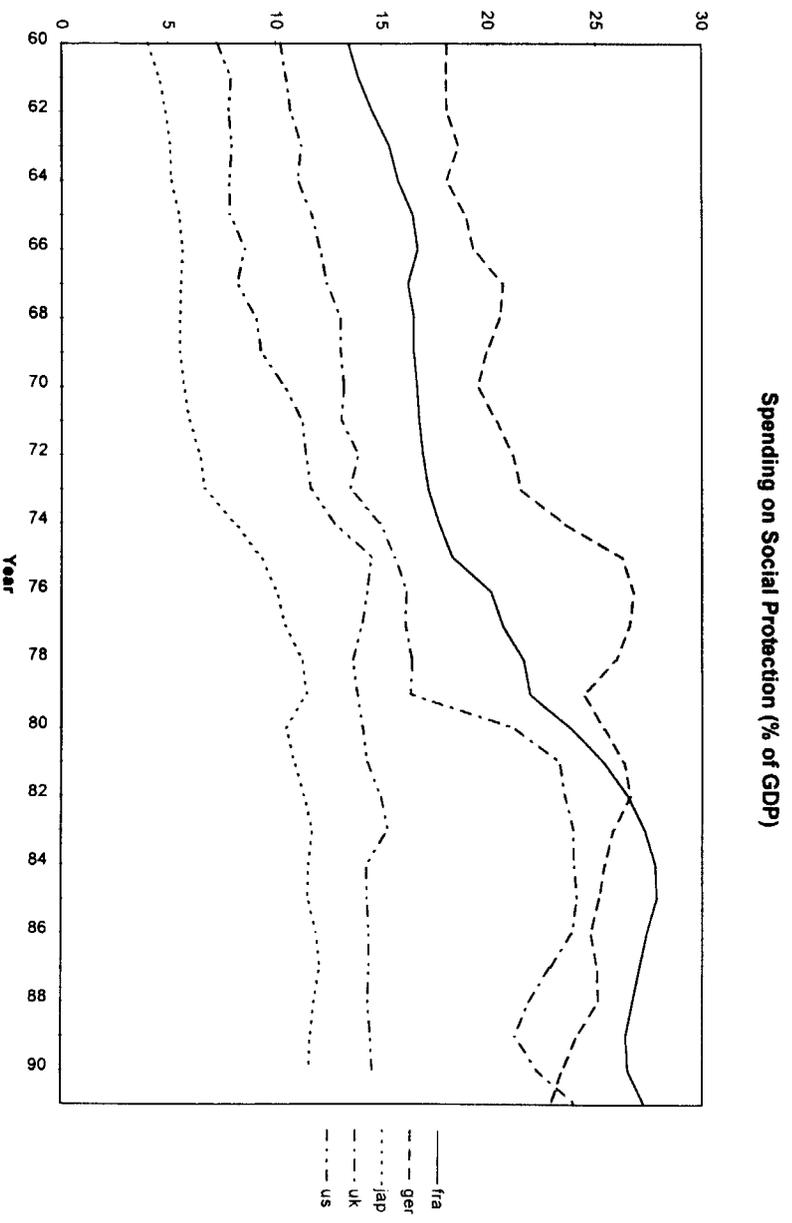


Source: Bairoch and Kozul-Wright (1996)

**Legend**

— U.S.      - - - W. Europe      . . . Japan

**Chart 1**



**Chart 2**

Source: Data supplied by Roberto Perotti, from original OECD sources.

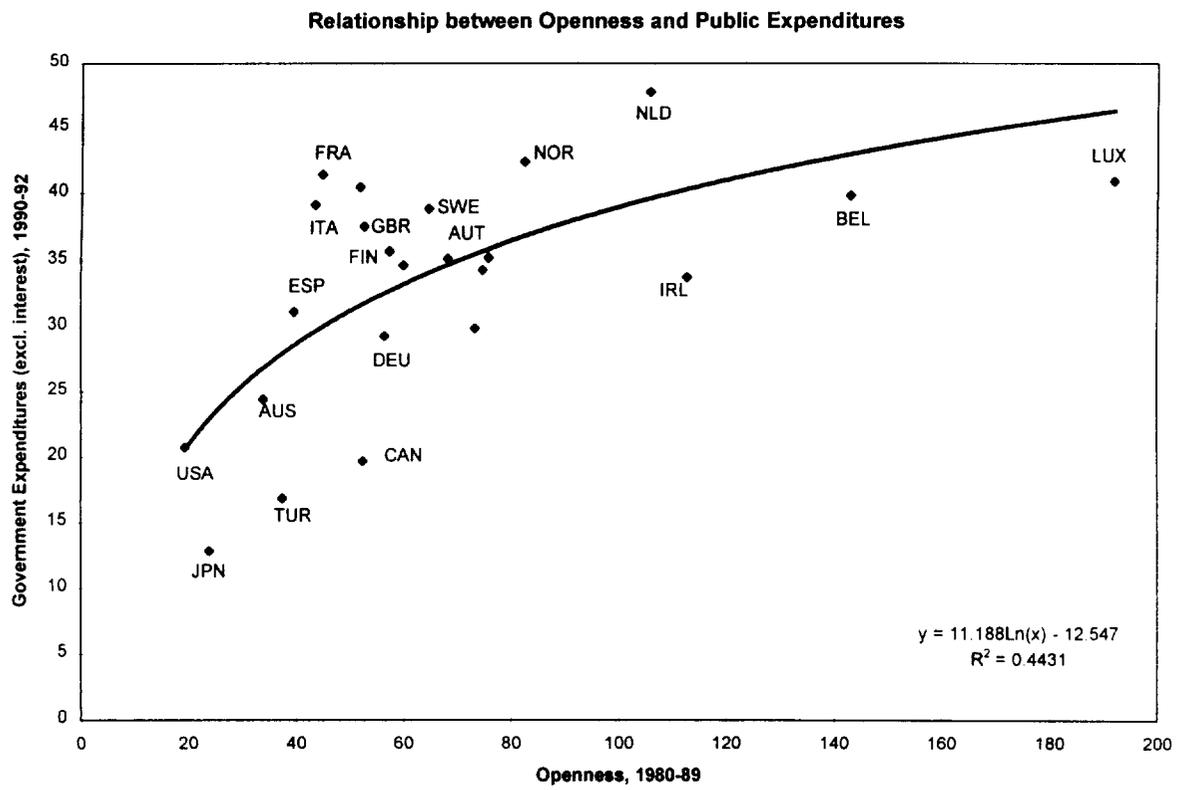


Chart 3

Partial Relation Between Openness and Government Consumption  
(controlling for per-capita income, urbanization, dependency ratio, area, and region)

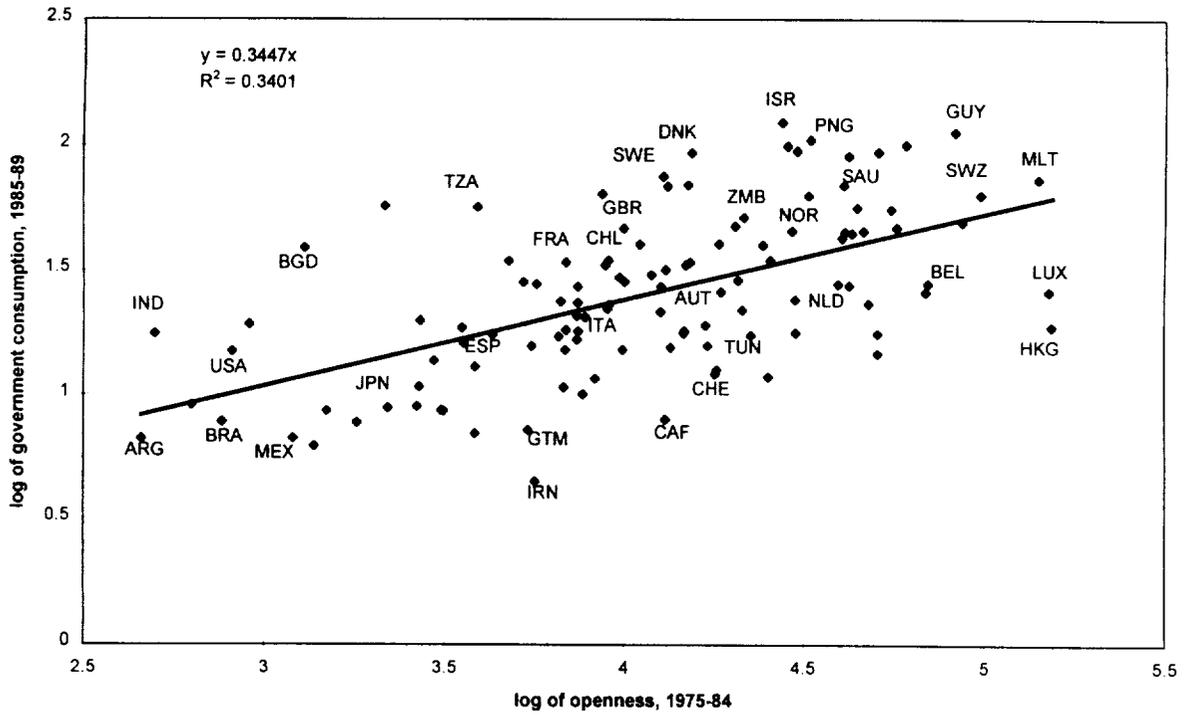


Chart 4

Taxes on Labor and Capital: unweighted averages for France, Germany, US, and UK (in percent)

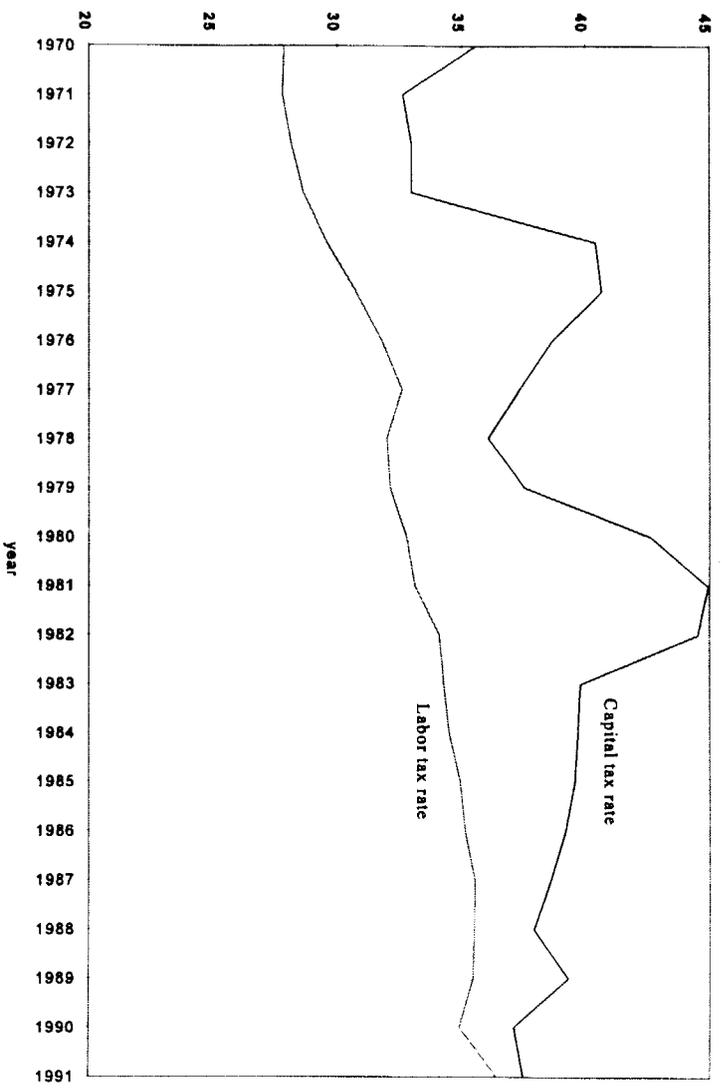
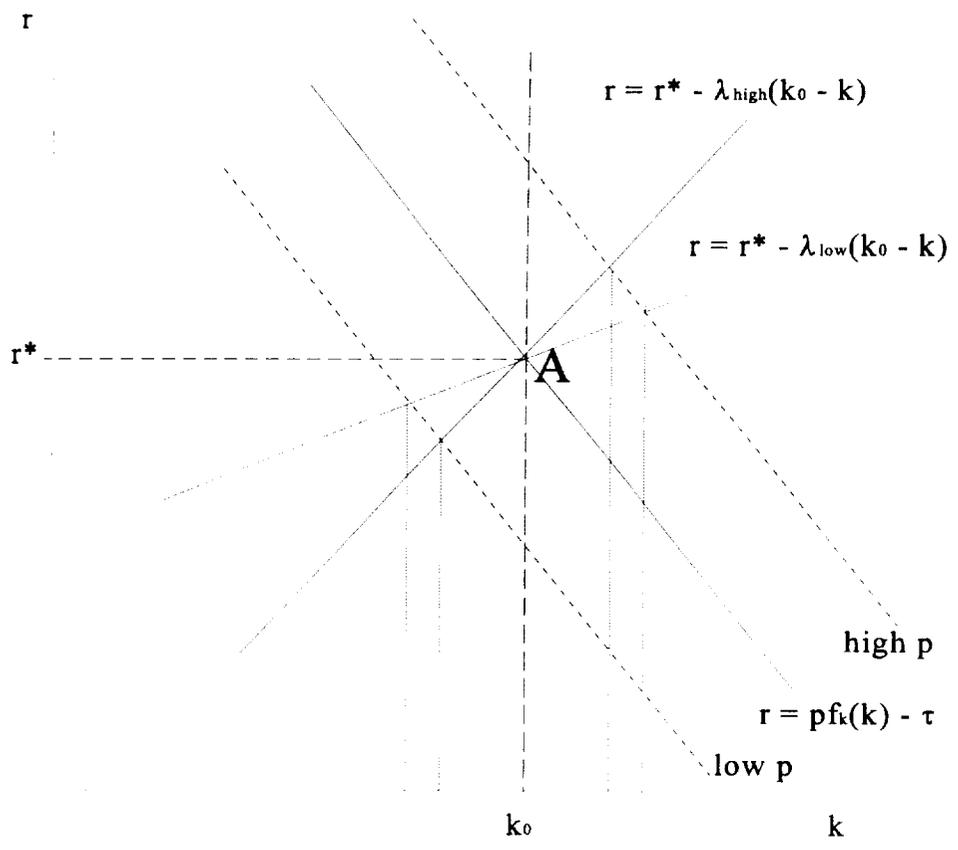


Chart 5



**Figure 1**

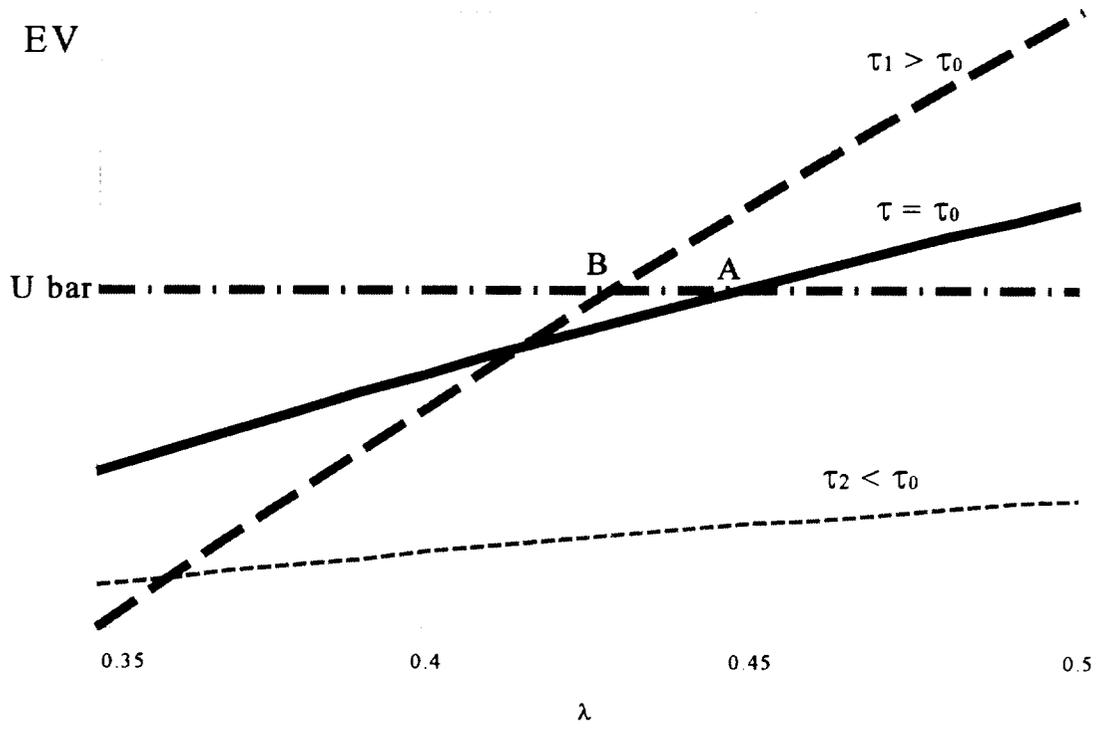


Figure 2

Table 1: Impact of External Risk on Volatility of Income and Consumption

<i>Independent variables</i>	<i>Dependent variable: standard deviation of growth rates of</i>			
	real GDP adjusted for the terms of trade	real GDP	real "private" GDP	real consumption
constant	0.026* (0.003)	0.026* (0.003)	0.025* (0.003)	0.027* (0.004)
GDP5H75	-4.22E-07 (3.97E-07)	-3.40E-07 (3.64E-07)	-1.42E-07 (3.91E-07)	-7.53E-07 (7.37E-07)
SOC	0.001 (0.006)	0.001 (0.005)	0.004 (0.006)	0.006 (0.005)
OECD	-0.012* (0.004)	-0.012* (0.004)	-0.013* (0.004)	-0.013*** (0.007)
LAAM	-0.006 (0.004)	-0.005 (0.003)	-0.005 (0.004)	-0.005 (0.004)
ASIAE	-0.012* (0.003)	-0.011* (0.003)	-0.011* (0.003)	-0.016* (0.006)
SAFRICA	0.001 (0.004)	0.002 (0.004)	0.004 (0.004)	0.006 (0.004)
<b>OPENAVG6092 x TOTDLOGSTD</b>	<b>0.0007* (0.0002)</b>	<b>0.0004** (0.0002)</b>	<b>0.0006* (0.0002)</b>	<b>0.0012* (0.0003)</b>
N	104	104	104	104
Adj. R <sup>2</sup>	0.39	0.36	0.36	0.48

Notes: Standard errors in parentheses. See appendix for variable definitions and sources. Asterisks denote level of statistical significance:

- \* 99% significant;
- \*\* 95% significant
- \*\*\* 90% significant.

Table 2: The Effects of Openness and External Risk on Government Expenditures of Different Types, by Income groups

<i>Independent variables</i>	<i>Dependent variable: log of Government Expenditure (by type) as % of GDP</i>					
	OECD countries		Countries with 1985 per capita GDP > \$4500		All countries	
	social security and welfare	government consumption	social security and welfare	government consumption	social security and welfare	government consumption
	(1)	(2)	(3)	(4)	(5)	(6)
OPENAVG7584	-0.170*	-0.005	-0.043***	-0.006***	-0.018	-0.004***
TOTDLOGSTD	-134.088*	-8.329	-35.010**	-4.148***	-16.484*	-3.585*
OPENAVG7584 X TOTDLOGSTD	1.869*	0.070	0.438**	0.067**	0.183***	0.056*
N	19	22	25	32	68	109
Adj. R <sup>2</sup>	0.75	0.18	0.23	0.09	0.48	0.51

**Notes:** Regressions in columns (5) and (6) include the following other regressors: log(GDPSH585), log(DEPEND90), log(URBAN90), SOC, OECD, LAAM, ASIAE, SAFRICA. Coefficients on these additional regressors are not shown. See appendix for variable definitions.

- \* significant at 99% level;
- \*\* significant at 95% level;
- \*\*\* significant at 90% level.

Table 3: Relationship Between Government Spending and Openness in OECD Countries, 1966-1991

	dependent variable:			
	social spending	government consumption	social spending	government consumption
Openness <sub>t-1</sub>	-0.028*** (0.015)	-0.029* (0.013)	-0.064* (0.018)	-0.053* (0.013)
GDP/cap.	-0.001* (0.000)	-0.001* (0.000)	-0.001* (0.000)	-0.001* (0.000)
Openness <sub>t-1</sub> x capital account restrictions			0.030** (0.012)	0.021* (0.006)
capital account restrictions			-0.041 (0.730)	-0.023 (0.353)
F	56.47	10.31	47.85	13.10
Prob > F	0.000	0.000	0.000	0.000
N	502	571	426	456
R <sup>2</sup>	0.77	0.35	0.77	0.46

**Notes:** Data are annual. Estimated using fixed effects. Year dummies included (coefficients not shown). Standard-errors are in parentheses. Levels of statistical significance:

- \* 99% confidence level
- \*\* 95% confidence level
- \*\*\* 90% confidence level.

Table 4: Relationship Between Taxes and Openness in OECD Countries, 1965-1992

	Dependent variable:			
	tax rate on labor income	tax rate on capital income	tax rate on labor income	tax rate on capital income
Openness <sub>t-1</sub>	0.108* (0.019)	-0.122** (0.051)	0.069* (0.021)	-0.082 (0.051)
GDP/cap.	0.000 (0.000)	-0.000 (0.001)	-0.000 (0.000)	-0.000 (0.001)
Openness <sub>t-1</sub> x capital account restrictions			0.061* (0.020)	0.256* (0.052)
capital account restrictions			-1.135 (0.925)	-14.330* (2.394)
F	45.61	8.43	41.35	8.72
Prob > F	0.000	0.000	0.000	0.000
N	371	371	343	343
R <sup>2</sup>	0.80	0.42	0.80	0.46

**Notes:** Data are annual. Estimated using fixed effects. Year dummies included (coefficients not shown). Standard-errors are in parentheses. Levels of statistical significance:

- \* 99% confidence level
- \*\* 95% confidence level.

## APPENDIX

List of Variables and Sources		
Variable	Definition	Source
AREA	land area	Barro & Lee 1994
ASIAE	dummy for East Asian countries	Barro & Lee 1994
CGAVGxxyy	real government consumption as a percent of GDP	PWT 5.6
DEPEND90	dependency ratio	WD
GDPSH5xx	real per-capita GDP	Barro & Lee 1994
LAAM	dummy for Latin American countries	Barro & Lee 1994
OECD	dummy for OECD countries	Barro & Lee 1994
OPENAVGxxyy	exports plus imports divided by GDP	PWT5.6
SAFRICA	dummy for sub-Saharan African countries	Barro & Lee 1994
SOC	dummy for socialist countries	Sachs & Warner 1995
TOTDLOGSTD	st. dev. of log-differences in terms of trade, 71-90	WD
URBAN90	Urbanization rate	WD

Notes: "xx" refers to year 19xx, while "xxyy" refers to an average during 19xx-19yy (unless specified otherwise). All government expenditure and revenue data are expressed as a percent of GDP or GNP. "PWT 5.6" stands for Penn World Tables 5.6; "WD" for World Data 1995, (World Bank). Sachs & Warner 1995: Jeffrey Sachs and Andrew Warner, "Economic Reform and the Process of Global Integration," Brookings Papers on Economic Activity, 1995:1, 1-95.