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External Debt and Economic Reform:
Does a Pain Reliever Delay the Necessary
Treatment?

Athanasios Vamvakidis

IMF Working Paper

European Department

**External Debt and Economic Reform:
Does a Pain Reliever Delay the Necessary Treatment?**

Prepared by Athanasios Vamvakidis¹

Authorized for distribution by Robert A. Feldman

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Abstract

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Recent literature argues that conflict in shifting adjustment costs between different socioeconomic groups delays necessary reforms and finds that such reforms often follow economic crises. This paper expands these models by including external borrowing by the private sector and shows that this may lead to a further delay in economic reform. Empirical evidence based on a large panel of developing and emerging economies supports this argument and shows that the result is slower economic growth. External financing sometimes acts like a “pain reliever,” postponing the much needed “treatment” of a “sick” economy by reform.

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Author’s E-Mail Address: AVamvakidis@imf.org

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I. INTRODUCTION

If economic reform is a necessary treatment for a sick economy, why is it often delayed? If the sickness has been detected and the treatment is well known, why wait? Although there is still a broad debate on the right composition and pace of economic reform to achieve macroeconomic stability and accelerate economic growth, some countries delay introducing reforms that are eventually unavoidable. They know the sickness and the cure, but they seem reluctant to start the treatment. A large literature has been developed recently to explain why.

The literature has argued that often things have to get really bad before introducing necessary economic reforms. Sachs and Warner (1995) and Rodrik (1994) find that trade liberalization in most cases follows after a major economic crisis. Bruno and Easterly (1996) argue that broad economic reforms are “the children of high-inflation crises.” They find that such crises are often followed by macroeconomic and structural reforms, which are deeper than in low-inflation countries. Drazen and Easterly (2001) find similar results for a broader definition of crisis and for an extended sample of countries. Krueger (1993) argues that economic or financial crises, or a long period of negative economic growth, results in reforms as the cost of the status quo becomes large and obvious to the public. Pitlik and Wirth (2003) present empirical evidence for a panel of countries that deep economic crises, in terms of very negative growth rates and high inflation, are conducive to market-oriented reforms. Indeed, Tommasi and Velasco (1995) label reform-after-crisis as “the new conventional wisdom.”

These empirical results gave birth to a large literature trying to explain why stabilizations are delayed.² Alesina and Drazen (1991) model the political decision process for economic reform as a war of attrition, in which each socioeconomic group tries to shift the costs of the reform—in terms of higher taxes or lower benefits—to the other groups. In their model, economic reform is delayed, increasing the cost for everybody, until one group concedes and bears most of the burden. Taking this argument a step further, Drazen and Grilli (1993) show that crises can be welfare improving in the medium term, because their heavy costs force economic adjustment and reform, eventually leading to faster growth. In this sense, policy measures that provide short-term solutions are counterproductive and delay the needed reforms.³ As argued by Drazen and Easterly (2001) “things need to get very bad (and not just bad) to induce reform.” Therefore, in countries where the political system does not lead to reform when needed, forced adjustment may be the only solution.

A related argument is that easily available external financing may delay economic reform even further and, therefore, make the eventual adjustment more difficult. A number of theoretical models in the literature have demonstrated this point for the case of foreign aid, with strong

² See Tommasi and Velasco (1995), Rodrik (1996), and Drazen (2000) for a literature review.

³ Taking inflation as an example, policies that do not allow high inflation to increase further, or reduce the costs implied by high inflation—such as in the case of indexation—eventually lead to lower welfare (see Fischer and Summers, 1989).

support from empirical evidence. Casella and Eichengreen (1996) extend the Alesina and Drazen (1991) war-of-attrition model and show that when the competing economic groups expect foreign aid, concession, and therefore reform, is delayed until the transfer arrives. Svensson (1999a) uses a game-theory model to show that any windfall, including also foreign aid, or the mere expectation of it, increases rent-seeking and reduces productive public spending. Svensson (1999b) shows that foreign aid can induce policy reform only under strong conditionality. Boycko, Shleifer, and Vishny (1996) argue that since not all parts of government support reform, especially in transition economies, financial aid that goes to ministries that oppose it results in spending that strengthens their position. Empirical evidence in Svensson (1999a) and Drazen (1999) suggests that unconditional aid may delay economic reform. Moreover, Drazen and Easterly (2001) find that when financial aid is given following a deterioration of the economy, it delays reform.

Although the literature has primarily focused on foreign aid, its main results could be generalized for any easily available external financing—indeed, foreign aid is often given through low interest-rate loans. A government that can easily borrow abroad may use such borrowing to postpone otherwise necessary reforms. For example, there is less urgency to cut a high fiscal deficit when it can be easily financed by borrowing abroad. Furthermore, the availability of external financing to the competing economic groups in a war-of-attrition model could result in a further postponement of conceding, which would delay reform. The availability of external financing may postpone the eventually inevitable adjustment in an economy in which macroeconomic conditions are deteriorating and there is urgent need for structural reforms. Things will not feel as bad, although they are very bad and are getting worse. In this case, external financing acts like a “pain reliever,” postponing the very much needed treatment. Furthermore, foreign financing can be used by economic groups to finance lobbying and rent-seeking activities, or to “wait out” the other economic groups, delaying reform.

This paper argues that easily available foreign financing can indeed cause a delay of economic reform. This is one of the implications of the Alesina and Drazen (1991) war-of-attrition model, when the government can borrow abroad. We extend their model to include foreign borrowing by the private sector, showing that in the absence of credit constraints it can delay reform even further.

Empirical evidence support the theoretical predictions. A number of empirical specifications for a large panel of developing and emerging economies suggest that countries that borrow more, reform less. This is the case for a broad index of economic liberalization and a number of subindexes measuring specific macroeconomic and structural aspects of policy and after controlling for other variables that may affect the introduction of reforms. The results seem to be stronger when external borrowing is demand driven than when it is supply driven, as would be expected. The results are robust to estimation with lags, or using the U.S. short-term interest rate to instrument for the availability of external financing. Although this does not fully address potential causality problems, it does imply that at least part of the estimated impact is from external borrowing to reform.

If easily available external financing delays economic reform, this would explain why countries with high levels of external debt grow slower. Recent literature has found a significant negative correlation between high levels of external debt, as a ratio of GDP or of exports of goods and services, and long-run economic growth, even after controlling for a number of other standard determinants of growth (Clements, Bhattacharya, and Nguyen (2003) and Pattillo, Poirson, and Ricci (2004)). This relationship appears to be nonlinear, positive at relatively low levels of debt-to-GDP ratio and negative at higher levels (Cordella, Ricci, and Ruiz-Arranz (2005)).⁴ Since economic reform leads to faster economic growth, one of the possible channels through which high levels of external debt results in relatively slow growth rates is by delaying economic reform. The model discussed in this paper and the empirical evidence suggest that what matters for economic reform is the change in external debt rather than its level. This is intuitive, since new financing is what makes the status quo easier to bear.

Estimates from a growth regression suggest that both the level and the change of the external debt-to-GDP ratio affect economic growth. A panel regression with real GDP per capita growth as the dependant variable and the standard growth determinants in the literature as independent variables is estimated for a sample of developing and emerging economies. The estimates of the level and the change of the external debt-to-GDP ratio are both negative and statistically significant.

These results could also provide an explanation why countries often reform after a crisis. As the international capital markets stop the financing of an economy in crisis, postponing reform cannot be afforded. If anything, the country in crisis will have to start paying back its debts, which, based on the arguments in this paper, will actually speed up economic reform.

II. A WAR-OF-ATTRITION MODEL WITH GOVERNMENT AND PRIVATE SECTOR EXTERNAL BORROWING

The Alesina and Drazen (1991) war-of-attrition model implies that the possibility of the government to borrow abroad may delay the necessary economic reform. The reason is that borrowing abroad reduces the need for distortionary taxes to finance a high level of spending, and therefore, reduces the cost of delaying reform. The competing economic groups can wait longer before conceding to reform because their cost of waiting is being reduced as the government finances part of its spending by external borrowing.

This section extends the Alesina and Drazen (1991) model to allow for private sector borrowing.⁵ A key assumption is that economic groups can borrow abroad to reduce the cost of

⁴ The correlation becomes zero at very high levels of debt, suggesting that once foreign debt reaches a very high level, it becomes irrelevant and it does not matter how much higher it gets. It also turns out that the negative correlation between growth and foreign debt appears at lower debt levels in countries with relatively bad economic policies.

⁵ For simplicity, the notation is the same as in Alesina and Drazen (1991).

distortionary taxation. Alternatively, one could assume that these funds are used for lobbying to reduce the share of distortionary taxes that fall on the respective economic group. The bottom line is that, up to some point, the more a group borrows abroad, the longer it can wait before conceding to bear most of the reform burden. This result holds only up to some point, because servicing the external debt eventually becomes too expensive. The model derives formally the conditions under which private sector foreign borrowing could delay, otherwise necessary, economic reforms. Under these conditions, people don't feel the need to reform because external borrowing makes the status quo bearable. In other words, external borrowing acts as a "pain reliever," delaying the necessary "treatment" by economic reform, up to the point where taking too many "pain relievers" becomes harmful.

At time $t = 0$ the government has a balanced budget and total fiscal revenue τ equals fiscal spending g plus interest spending: $g + r b_0 = \tau$, where b_0 is the stock of public sector debt, which for simplicity is assumed to be entirely external.

At time t , where $0 < t < T$, the government decides to increase spending to $g_t > g_0$ and run a deficit. A share $\gamma < 1$ of the total budget spending is paid by taxes, while the rest, $(1 - \gamma)$, is financed by external borrowing. Therefore, the level of taxes at time t is equal to:

$$\tau(t) = \gamma[rb(t) + g_t] \quad (1)$$

while the change of public sector external debt is equal to:

$$\dot{b}(t) = (1 - \gamma)[rb(t) + g_t] \quad (2)$$

From equations (1) and (2):

$$\tau(t) = \gamma \bar{b} e^{(1-\gamma)rt} \quad (3)$$

where $\bar{b} \equiv b_0 + \frac{g_0}{r}$, which is the present discounted value of future tax payments for any nonzero values of γ .

Assuming that taxes are distortionary, each economic group i has utility losses equal to K_i from taxes:

$$K_i(t) = \theta(l_i)\tau(t) \quad (4)$$

where $\theta(l_i)$ is group i 's utility loss from distortionary taxes, which is a negative function of the flow of external borrowing by group i , l_i , assumed to be constant over time. l_i is known only to

group i and is drawn from a uniform distribution $F(l)$, which is known to all groups. Assuming that $\underline{l} \leq l \leq \bar{l}$, if $l_i = \underline{l}$ group i concedes immediately.⁶

For simplicity, it is assumed that taxes at time 0, when the budget is balanced before the increase in spending, and at time T , when adjustment takes place, are not distortionary. This is the case when, for example, the government uses inflation tax to finance part of the deficit. It is also assumed that the only reason that the private sector borrows is to reduce the disutility from distortionary taxation. Therefore, no private sector borrowing takes place at time 0 and after time T .

The external debt of each group i is growing as follows:

$$\dot{l}_i(t) = rl_i(t) + l_i \quad (5)$$

Therefore, the stock of external debt of group i at time t is equal to:

$$l_i(t) = l_i(0)e^{rt} + \frac{l_i}{r}(e^{rt} - 1) = \frac{l_i}{r}(e^{rt} - 1) \quad (6)$$

since there is no private sector borrowing at time 0.

At time T the government reforms reducing spending to its previous level, reducing taxes and achieving a balanced budget: $g_T = g_0$. Tax revenues at T are equal to:

$$\tau(T) = rb(T) + g_0 \quad (7)$$

or, from (3),

$$\tau(T) = r\bar{b}e^{(1-\gamma)rT} \quad (8)$$

Assume that there are only two groups and that each group pays half of the taxes before stabilization. The flow utility for $0 < t < T$ for group i is:⁷

$$u_i = -\frac{\gamma}{2}r\bar{b}e^{(1-\gamma)rt} - K_i - rl_i(t) \quad (9)$$

⁶ The possibility for private sector borrowing is an extension to Alesina and Drazen (1991), since in their model θ itself is drawn from a uniform distribution.

⁷ For simplicity, this analysis ignores utility gains from government spending. The analysis would be the same if the utility resulting from higher government spending is lower than the utility loss from distortionary taxes.

If each group paid the same cost of stabilization, then utility maximization would result in immediate stabilization. However, assume that one group will pay $\alpha > 1/2$ share of the taxes following stabilization. In this case, the utility flows U^L of the loser and U^W of the winner will respectively be equal to:

$$U^L = -\alpha r \bar{b} e^{(1-\gamma)rT} - r l^L(T) \quad (10)$$

$$U^W = -(1-\alpha)r \bar{b} e^{(1-\gamma)rT} - r l^W(T) \quad (11)$$

In contrast to the Alesina and Drazen (1991) model without private sector borrowing, where $U^W > U^L$ always, this condition holds only when:

$$l^W(T) < l^L(T) + (2\alpha - 1)\bar{b}e^{(1-\gamma)rT} \quad (12)$$

When this condition does not hold, the winner is actually a loser, because the winner has borrowed so much that the debt servicing cost is much higher than the gains from shifting most of the reform burden to the loser.

The discounted lifetime utilities evaluated at time T are equal to:

$$V^L = -\alpha \bar{b} e^{(1-\gamma)rT} - l^L(T) \quad (13)$$

$$V^W = -(1-\alpha)\bar{b} e^{(1-\gamma)rT} - l^W(T) \quad (14)$$

The difference between V^W and V^L is the present value of the excess taxes paid by the group who concedes first, the loser, minus how much more the winner has borrowed compared with the loser:

$$V^W - V^L = (2\alpha - 1)\bar{b} e^{(1-\gamma)rT} - [l^W(T) - l^L(T)] \quad (15)$$

implying that the winner is really a winner only if (12) holds.

The time of concession T is the solution to the first order conditions of the utility maximization problem of each group i , which equates the marginal benefit of conceding at time T with the marginal benefit of waiting:

$$-u_i + U^L - \frac{dV^L}{dT} = H(T, l_j) (V^W - V^L) \quad (16)$$

$$\text{where, } H(T, l_j) = -\frac{f(l_j)}{F(l_j)} \frac{1}{T'(l_j)} \quad (17)$$

is the probability that the other group will concede.

Solving for the first derivative of T:

$$T'(l) = \frac{-\frac{f(l_i)}{F(l_i)} \left[(2\alpha - 1) \bar{b} e^{(1-\gamma)rT} - (l^W(T) - l^L(T)) \right]}{\gamma \left(\frac{1}{2} + \theta(l_i) \right) \bar{b} e^{(1-\gamma)rT} + l_i (e^{rT} - 1) - \alpha r \bar{b} e^{(1-\gamma)rT} - r l^L(T)} \quad (18)$$

Equation (18) is positive if the loser is not credit constrained, which means that the time of reform T is a positive function of external borrowing l_i . Assuming that (12) holds, the numerator is always negative. The denominator is negative if the loser can borrow at least:

$$l^L(T) > \gamma \left(\frac{1}{2} + \theta(l_i) \right) \bar{b} e^{(1-\gamma)rT} + \frac{l_i}{r} (e^{rT} - 1) - \alpha \bar{b} e^{(1-\gamma)rT} \quad (19)$$

If (19) does not hold, then the more the winner can borrow, the sooner the loser concedes. Therefore, if only one group can borrow, or if one group is credit constraint, reform takes place sooner. On the other hand, if foreign borrowing is relatively easily available for all groups, which implies that (19) holds, then reform is delayed. Therefore, allowing for private sector foreign borrowing in the model and assuming that all groups in the economy can borrow leads to a further delay of reform.

This also provides an explanation why reform follows with no delay when the international capital markets stop financing both the public and the private sectors in an economy during a crisis. In such a case, external lenders stop providing new financing and domestic interest rates increase, often considerably. Access to foreign capital markets is denied and the government either has to reduce spending or raise taxes. As taxes are distortionary, reform follows soon. No economic group could bear for too long the cost of the status quo without being able to borrow abroad.

III. EMPIRICAL EVIDENCE

This section presents empirical evidence that high levels of external borrowing may delay economic reform. The literature discussed above has found strong evidence that economic reforms often follow economic crises. The empirical model that explains economic reform in this literature could be extended to include external borrowing. If things have to get really bad before introducing necessary reforms, then external borrowing may delay these reforms further, as the above theoretical discussion suggested.

Following Pitlik and Wirth (2003), we measure economic reform using the index of economic freedom of the Fraser Institute.⁸ This is a broad index, compiled based on a large number of

⁸ <http://www.freetheworld.com/index.html>.

economic variables and survey data, taking values from 1 to 10 and increasing as an economy reforms. It is the average of five sub-indexes, measuring: the size of the government, legal system and property rights, sound monetary policy, freedom to trade, and regulation strictness and efficiency (Annex I). A change in this index is used to measure the extent of economic reform that takes place over time, capturing both macroeconomic and structural reforms. All other variables are from the World Development Indicators of the World Bank. All developing and emerging economies with available data in the period 1970–2002 are included, a total of 81 countries (Annex II).⁹

Simple correlations show a strong link between external borrowing and slower economic reform. Figure 1 shows such correlations for the index of economic freedom and the five sub-indexes for the countries in the sample, based on five-year periods during 1970–2002 (three years for the last observation). There is a strong negative correlation between the change in the external debt-to-GDP ratio and all indexes.¹⁰ Although causality is a question, it is clear that economic reform and external debt accumulation do not seem to go together. Figure 2 includes only countries with a low ranking of economic freedom (below average) to see if the correlations are smaller for countries that need to reform the most. However, the link between external debt and economic reform seems to be the same for these economies.

We next estimate an empirical model explaining economic reform, following Pitlik and Wirth (2003), for a panel of 81 developing and emerging economies and for the period 1970–2000, using five-year periods. The empirical model is the following:

$$R(t) = c + b_1B(t) + b_2F(t) + b_3GR(t-1) + b_4INF(t-1) + b_5AID(t) + b_6OP(t) + b_7B(t) \times F(t)$$

where R is economic reform, measured as the change in the index of economic freedom over each five-year period; B is a dummy variable grouping countries in six groups according to the change in their ratio of external debt to GDP (see below); F is the level of the index of economic freedom at the beginning of each five-year period, to account for the fact that countries with a high index have already reformed; GR is a dummy variable for an economic crisis defined as average real GDP growth rate below -1 percent in the previous period (as defined in Pitlik and Wirth (2003)); INF is a dummy variable for an economic crisis defined as average inflation rate above 40 percent in the previous period (as defined in Pitlik and Wirth (2003)); AID is the ratio of average aid flows to GDP, to control for the possibility that aid is often conditional on reforms on the one hand and for the possibility that aid may delay reform by providing a temporary relief, as suggested by part of the literature discussed above, on the other hand; and OP is the ratio of trade to GDP, to control for the possibility that open

⁹ The sample excludes countries with change in their external debt ratio of more than 100 percentage points over a five-year period. Such large changes in the time series may be caused by statistical breaks or measurement errors. Nevertheless, the results discussed below hold when these outliers are included.

¹⁰ Charts for ten-year periods look the same.

economies are forced to reform because of pressures from international competition.¹¹ The crisis dummy variables are entered with one lag to test if an economic crisis in one period leads to reform in the next period. The empirical model also includes an interaction term of foreign borrowing with the level of the index of economic freedom, to test if the impact of foreign borrowing on reform depends on the reforms that have been already introduced.

Although the results are statistically significant when the actual debt-to-GDP ratio is on the right hand side of the regression, we construct a dummy variable grouping countries in six groups, increasing in the change of their debt ratios. The reason is that the change in the actual ratios is highly volatile and may include too much noise and measurement errors, making the estimates much less meaningful. The dummy variable is equal to 1 if the external debt-to-GDP ratio falls by more than the average fall in the sample plus one standard deviation, 2 if it falls by between this amount and the average fall, 3 if it falls by below the average fall, 4 if it increases but up to the average increase, 5 if it increases by between the average increase and the average increase plus one standard deviation, and 6 if it increases by even more. We tried alternative groupings, such as a smaller number of groups or a zero-one dummy variable, and the results remain robust.

The estimated equations include fixed time effects, or random country effects. Likelihood ratio tests indicate that the fixed time effects are statistically significant. In contrast, the fixed country effects turn out to be redundant. Moreover, the Hausman test clearly indicates that the specification with random country effects, as opposed to fixed country effects, is preferred.

The results suggest a statistically significant and robust link between external borrowing and delay in economic reform. According to the results in Table 1, the estimate of the level of the economic freedom index is negative and statistically significant at the 1 percent level, suggesting that, in countries that are already liberalized, there is not much room left for reform, at least to the extent measured by the economic freedom index. As in previous literature, inflation crises seem to lead to reform. Countries that experience high inflation in one period, reform in the next period. Although the dummy variable for a crisis in terms of slow growth has a positive estimate, it is not statistically significant. Aid does not seem to lead to or delay reform, while the estimate of openness is positive, although it is significant only at the 10 percent level and only in the specification with random country effects.

Turning to external borrowing, its estimate is negative and statistically significant at the 1 percent level, in all specifications. Switching to the next group of borrowers is correlated with a reduction in the reform index by about 0.4. This is double the average change in the index over a five-year period in the sample. The results are robust to estimation with fixed time effects

¹¹ This variable is included in some specifications because it is included in Pitlik and Wirth (2003). However, since the index of economic freedom already includes openness, the trade share affects the index of economic freedom by definition.

or random country effects. Although the specification with fixed country effects is rejected by the likelihood ratio test, the results are robust even in this case.¹²

The interaction term of the external debt variable and the level of the economic freedom index has a positive and statistically significant estimated coefficient. This implies that the negative link between external borrowing and reform is stronger in countries that have not reformed much in the past. The reason may be that countries that have already reformed receive capital inflows because of their reforms, while countries that have not reformed, may borrow abroad, up to an extent, to postpone reforms. In the first case, capital inflows may be primarily supply driven and, therefore, one would not expect that they would be used to delay reform. In the second case, capital inflows may be primarily demand driven, with part of them used to delay reform.

The explanatory power of the regression is small, with an adjusted R-squared equal to 0.3. However, this is also the case with the estimation of similar models in the literature. Although this is a problem, there is not much one could do about it. It implies that we still know very little about the factors that drive economic reform.

A number of other specifications give similar results.¹³ The level of the external debt-to-GDP ratio and its interaction with its change are not statistically significant. Therefore, what really matters for economic reform is not the debt stock but its flow, which is consistent with the theoretical models discussed above. The square of the change in external debt also does not turn out to be statistically significant.

The question of the direction of causality between external borrowing and economic reform is relevant. Indeed, countries that reform are able to attract more foreign funds, although this would go in the opposite direction of the above results and, as explained above, may be in part captured by the interaction term in the regression. On the other hand, fiscal reforms and privatization reduce the financing needs of the government, reducing the need for external borrowing, which would move in the direction of the above results. Since the period considered includes only a small number of observations per country—six five-year periods—a meaningful Granger causality test is not feasible. Using annual data is not an option, since they are not available for the economic freedom index, which in any case does not fluctuate much in short periods.

Including the lagged change in external debt in the regression helps, to some extent, address the causality problem. The results in Table 2 show that the lagged value of external borrowing also has a negative and statistically significant estimated coefficient, although its size is about $\frac{1}{4}$ of the estimated coefficient using the current value. Higher lags do not turn out to be statistically

¹² These results are available from the author.

¹³ These results are available from the author.

significant. The results suggest that countries that borrow a lot in one period reform less in the current and the next periods.

Furthermore, the results are robust to estimation with instrumental variables. A potential instrument is the interest rate of the lending country. The U.S. short-term interest rate is a good candidate and can be used to instrument for the availability of external borrowing. These results are in the last two columns of Table 2. Since the U.S. interest rate is the same for all countries, estimation with fixed time effects is not possible and the results are only for the specification with random country effects. The estimate of external borrowing is still negative and statistically significant. Although this does not fully address potential causality problems, it does imply that at least part of the estimated impact is from external borrowing to reform.

Rising external debt seems to be linked to almost all aspects of economic reform. As explained above, the economic freedom index is the average of five subindexes, which captures most aspects of economic policy reform: government size, legal system and property rights, sound money, freedom to trade, and regulation. Table 3 estimates a panel regression with random country effects and the change in the five subindexes as dependent variables.¹⁴ The estimates of the subindexes are all negative, and statistically significant at least at the 5 percent level except for the legal system and property rights. This implies that rising external debt is linked to slower progress in both macroeconomic and structural reforms. The highest estimate is for the index of sound money, which implies that rising foreign debt is correlated with less control over monetary conditions. The smaller estimates are for regulation and for legal system and property rights, while the estimated coefficient of the latter is not even statistically significant. This may be explained by the fact that legal and institutional reforms usually take place less often and may take longer to be implemented than macroeconomic and other structural reforms.

Since the dependent variable is an index, an alternative way to address the question at hand is to estimate a probit regression. This is done in Table 4. The first three regressions are a probit. The dependant variable is a dummy taking the value of one if the economic freedom index has increased and zero if it has decreased. The next three regressions are an ordered probit. The dependant variable is a dummy that groups reformers in six groups, using the same criteria as for the grouping based on external borrowing, explained above. The specifications include only statistically significant lags for external borrowing. All specifications have negative and statistically significant estimates for the change in external debt, confirming the above results.

The results imply that a possible channel through which countries with a high level of external debt grow slower may be that they reform less when foreign financing is easily available. As discussed above, the growth literature has focused on the level of external debt and its impact on growth. However, the above results suggest that what matters for reform is not the level of the debt but its change. Estimating a growth regression can be enlightening on this issue.

¹⁴ The results are similar for all other specification presented in Tables 1 and 2.

Indeed, both the level and the change of external debt seem to affect economic growth. Table 5 presents results from a growth, panel regression, with fixed country effect, for the developing and emerging economies in our sample. The regression includes the usual growth determinants in the literature: initial GDP per capita, secondary school enrollment, the share of investment to GDP, the inflation rate, the growth in trading partners, and the trade-to-GDP ratio.¹⁵ The inclusion of fixed country effects is supported by the Hausman test. The estimates for all standard growth determinants have the expected signs and are statistically significant. In addition, the regression includes the level and the change of the external debt-to-GDP ratio. They both have negative and statistically significant estimates.¹⁶ Their interaction term (the product of the level and the change of external debt) also has a negative estimate, but does not turn out to be statistically significant.¹⁷

IV. CONCLUDING REMARKS

Recent literature has argued that a crisis is often needed in order for a government to be able to introduce otherwise necessary macroeconomic and structural reforms. In other words, one has to first get sick, or even have a heart attack, before starting a healthy diet. One of the possible explanations is that political conflict for who gets the benefits and who pays for the reform is delaying the eventually unavoidable policy change, risking making the final adjustment even more difficult.

This paper has argued that easily available foreign financing can cause a further delay of economic reform. A theoretical model was discussed, showing that private sector borrowing can make the cost of the status quo easier to bear. In other words, cheap foreign borrowing acts as a pain reliever, postponing the necessary treatment by economic reform.

Empirical evidence show that higher foreign borrowing and slower progress in macroeconomic and structural reforms are linked. A number of empirical specifications for a large panel of developing and emerging economies suggest that countries that borrow more reform less. This is the case for a broad index of economic liberalization and a number of subindexes measuring specific macroeconomic and structural aspects of policy. The results seem to be stronger when external borrowing is demand driven than when it is supply driven. The results are robust to estimation with lags, or using the U.S. short-term interest rate to instrument for the availability of external borrowing. Although this does not fully address potential causality problems, it does imply that at least part of the estimated impact is from external borrowing to reform.

¹⁵ See Arora and Vamvakidis (2005).

¹⁶ Their squared terms (not included here) do not turn out to be statistically significant.

¹⁷ These results are available from the author.

The empirical results may explain empirical findings in the literature that countries with high external debt grow slower. A possible channel seems to be that countries that can borrow easily abroad face less pressure to reform and, therefore, grow slower. According to this explanation, what matters for reform is not the level of the external debt but its change. Indeed, empirical evidence from a growth regression suggest that both the level and change of the external debt matter for growth. Part of this borrowing may be financing investment, and, therefore, support economic growth. However, as this paper has argued, it may also delay reforms that support growth.

Figure 1. External Debt and Economic Reform

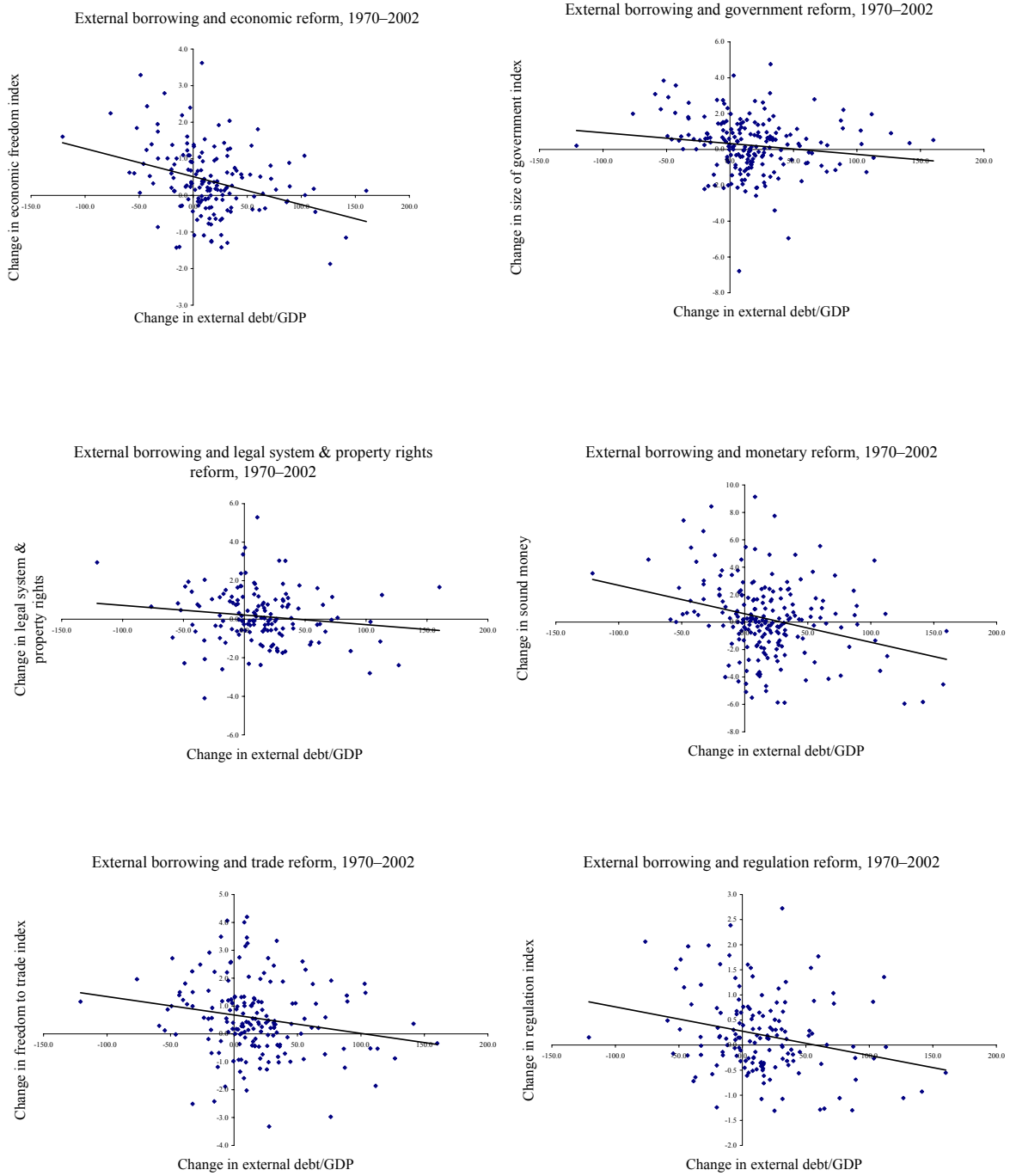


Figure 2. External Debt and Economic Reform in Countries with Low Ranking of Economic Freedom

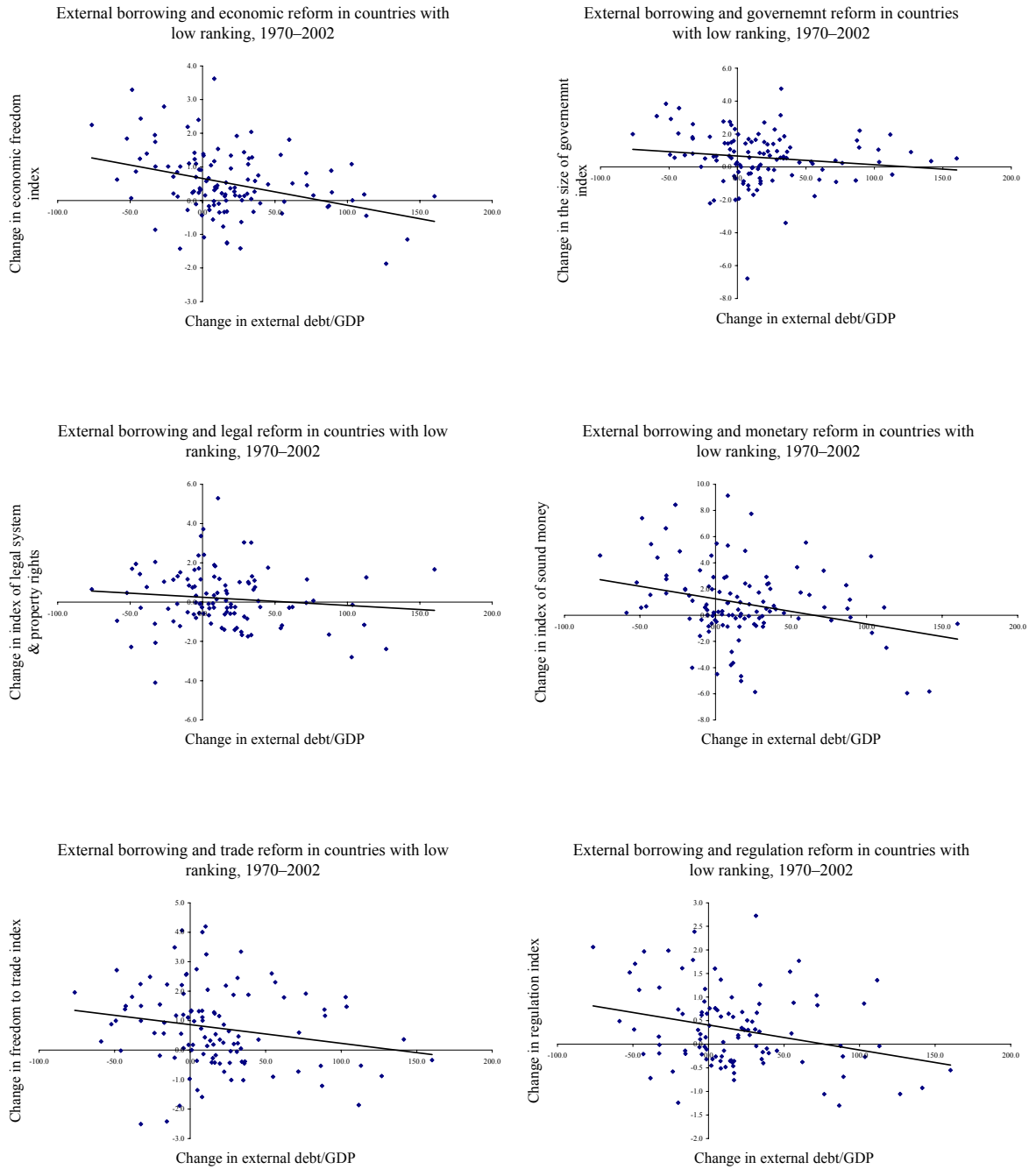


Table 1. Economic Reform and External Debt, Panel Regressions, 1970–2000, 5-year Periods

| | Fixed time effects | | Random country effects | | |
|--------------------|---------------------|---------------------|------------------------|---------------------|---------------------|
| B | -0.13*** (-4.05) | -0.14*** (-3.06) | -0.39*** (-6.68) | -0.43*** (-5.69) | -0.38*** (-6.56) |
| F | | -0.26*** (-9.15) | -0.41*** (-10.26) | -0.49*** (-7.13) | -0.42*** (-7.02) |
| GR | | | 0.04 (0.71) | 0.04 (0.92) | 0.07 (1.00) |
| INF | | | 0.29*** (3.34) | 0.32*** (4.86) | 0.44*** (5.95) |
| B*F | | | 0.05*** (5.40) | 0.06*** (3.91) | 0.05*** (3.54) |
| AID | | | | -0.00 (-1.10) | 0.00 (0.32) |
| OP | | | | 0.32 (1.36) | 0.47 (1.85) |
| Adj.R ² | 0.15 | 0.27 | 0.30 | 0.30 | 0.24 |

Note. The dependent variable is the change in the index of economic freedom over each five-year period. *B* is a dummy variable, grouping countries in six groups, increasing at the change in their ratio of external debt to GDP; *F* is the level of the index of economic freedom at the beginning of each five-year period; *GR* is a dummy variable for an economic crisis defined as average real GDP growth rate below -1 percent in the previous period; *INF* is a dummy variable for an economic crisis defined as average inflation rate above 40 percent in the previous period; *AID* is the ratio of average aid flows to GDP; and *OP* is the ratio of trade to GDP. Heteroskedasticity-consistent t-statistics in parenthesis. One (*), two (**), and three (***) asterisks indicate coefficients significant at the 10, 5, and 1 percent level of significance, respectively.

Table 2. Economic Reform and External Debt, Panel Regressions with Lags and Estimation with Instrumental Variables, 1970–2000, 5-year Periods

| | Fixed time effects | | Random effects | | Random effects, IV | |
|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| B | -0.15*** (-4.03) | -0.45*** (-5.35) | -0.19*** (-9.14) | -0.40*** (-4.91) | -0.37** (-2.09) | -0.36** (-2.06) |
| B(-1) | -0.09** (-2.52) | -0.09** (-2.16) | -0.11*** (-3.41) | -0.11*** (-4.02) | | |
| F | -0.27*** (-6.83) | -0.51*** (-7.04) | -0.25*** (-6.62) | -0.43*** (-8.68) | -0.36*** (-5.92) | -0.37*** (-5.09) |
| GR | | 0.02 (0.78) | | 0.05 (1.08) | 0.02 (0.16) | 0.03 (0.28) |
| INF | | 0.26*** (3.40) | | 0.33*** (3.56) | 0.47*** (3.32) | 0.45*** (3.33) |
| B*F | | 0.06*** (3.49) | | 0.05*** (2.85) | | |
| AID | | -0.00 (-0.22) | | 0.00 (0.60) | | -0.00 (-1.04) |
| OP | | 0.25 (0.89) | | 0.29 (1.05) | | 0.00 (0.88) |
| Adj.R ² | 0.27 | 0.28 | 0.21 | 0.25 | 0.10 | 0.12 |

Note. The dependent variable is the change in the index of economic freedom over each five-year period. *B* is a dummy variable, grouping countries in six groups, increasing at the change in their ratio of external debt to GDP; *F* is the level of the index of economic freedom at the beginning of each five-year period; GR is a dummy variable for an economic crisis defined as average real GDP growth rate below -1 percent in the previous period; and INF is a dummy variable for an economic crisis defined as average inflation rate above 40 percent in the previous period. Heteroskedasticity-consistent t-statistics in parenthesis. One (*), two (**), and three (***) asterisks indicate coefficients significant at the 10, 5, and 1 percent level of significance, respectively. The US short-term lending interest rate is used as an instrument for external borrowing.

Table 3. Economic Reform and External Debt, Panel Regressions with Random Country Effects, 1970–2000, 5-year Periods

| | Dependent variables, indexes in changes | | | | |
|---------------------|---|---------------------|---------------------|----------------------|---------------------|
| | D(F1) | D(F2) | D(F3) | D(F4) | D(F5) |
| B | -0.09*** (-5.95) | -0.07 (-1.01) | -0.36*** (-5.95) | -0.11*** (-2.85) | -0.07** (-2.43) |
| F1 | -0.30*** (-7.23) | | | | |
| F2 | | -0.42*** (-3.60) | | | |
| F3 | | | -0.38*** (-4.68) | | |
| F4 | | | | -0.36*** (-14.07) | |
| F5 | | | | | -0.28*** (-7.50) |
| GR | -0.02 (0.15) | -0.08 (-0.81) | 0.29 (1.26) | 0.12 (0.78) | -0.08 (-0.55) |
| INF | 0.33*** (2.84) | 0.15 (1.16) | 0.48 (1.64) | 0.47*** (2.63) | 0.39*** (3.37) |
| AID | 0.00 (0.08) | -0.01 (-1.11) | 0.01 (0.43) | -0.00 (-0.19) | -0.01*** (-6.56) |
| OP | -0.07 (-0.62) | 0.54** (2.21) | 1.01*** (3.26) | 0.26*** (2.79) | 0.45*** (4.97) |
| Adj. R ² | 0.18 | 0.21 | 0.27 | 0.19 | 0.34 |

Note. *F1* to *F5* are the following subindexes of economic freedom respectively: government size, legal system and property rights, sound money, freedom to trade, and regulation. *D* indicate the change in these indexes. *B* is a dummy variable, grouping countries in six groups, increasing at the change in their ratio of external debt to GDP; *F* is the level of the index of economic freedom at the beginning of each five-year period; *GR* is a dummy variable for an economic crisis defined as average real GDP growth rate below -1 percent in the previous period; and *INF* is a dummy variable for an economic crisis defined as average inflation rate above 40 percent in the previous period. Heteroskedasticity-consistent t-statistics in parenthesis. One (*), two (**), and three (***) asterisks indicate coefficients significant at the 10, 5, and 1 percent level of significance, respectively.

Table 4. Economic Reform and External Debt, Probit and Ordered Probit Regressions 1970–2000, 5-year Periods

| | Probit | | | Ordered probit | | |
|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|--------------------|
| B | -0.35*** (-3.41) | -0.42*** (-3.64) | -1.68** (-2.31) | -0.24*** (-4.17) | -0.28*** (-4.80) | -0.48 (-1.47) |
| B(-1) | | -0.21* (-1.93) | -0.23** (-1.99) | | -0.16** (-2.42) | -0.16** (-2.45) |
| F | -0.49*** (-3.69) | -0.58*** (-3.93) | -1.51*** (-2.72) | -0.31*** (-4.54) | -0.38*** (-5.18) | -0.53** (-2.10) |
| GR | 0.16 (0.71) | 0.19 (0.76) | 0.25 (0.96) | 0.15 (1.02) | -0.10 (0.64) | 0.11 (0.68) |
| INF | 0.78*** (3.13) | 0.57** (2.07) | 0.56** (1.99) | 0.62*** (3.47) | 0.45** (2.37) | 0.44** (2.35) |
| B*F | | | 0.26* (1.79) | | | 0.04 (0.62) |
| Adj.R ² | 0.15 | 0.29 | 0.28 | | | |

Note. The dependent variable in the probit is a dummy variable equal to 1 if the reform index has increased by more than 1 during the respective period and 0 otherwise, while in the ordered probit it is a dummy variable ranking the change in the index in a scale from 1 to 6. *B* is a dummy variable, grouping countries in six groups, increasing at the change in their ratio of external debt to GDP; *F* is the level of the index of economic freedom at the beginning of each five-year period; *GR* is a dummy variable for an economic crisis defined as average real GDP growth rate below -1 percent in the previous period; and *INF* is a dummy variable for an economic crisis defined as average inflation rate above 40 percent in the previous period. z-statistics in parenthesis. One (*), two (**), and three (***) asterisks indicate coefficients significant at the 10, 5, and 1 percent level of significance, respectively.

Table 5. External Debt and Economic Growth, Panel Regressions with Fixed Effects, 1970–2000, 5-year Periods

| | | | |
|-----------------------------|-----------------------|-----------------------|-----------------------|
| Real per capita GDP | -4.233*** (-6.230) | -3.353*** (-4.044) | -6.439*** (-6.309) |
| External debt/GDP | -0.012*** (-4.162) | -0.026*** (-4.893) | -0.016** (-2.450) |
| Change of External debt/GDP | | -0.021*** (-3.168) | -0.013** (-1.909) |
| Secondary school enrollment | | | 0.055** (2.539) |
| Investment/GDP | | | 0.311*** (7.647) |
| Inflation rate | | | -0.001*** (-3.490) |
| Growth in trading partners | | | 0.559*** (3.552) |
| Trade/GDP | | | 0.031** (2.403) |
| Adj. R ² | 0.28 | 0.37 | 0.60 |

Note. The dependent variable is the average real GDP per capita growth over five-year non-overlapping sub-periods. t-statistics in parenthesis. One (*), two (**), and three (***) asterisks indicate coefficients significant at the 10, 5, and 1 percent level of significance, respectively.

ANNEX I. DEFINITION OF INDEX OF ECONOMIC FREEDOM

Economic freedom index

Size of Government

- General government consumption as share of total consumption
- Transfers and subsidies as a share of GDP
- Government enterprises and investment as a share of gross investment
- Top marginal tax rate
 - Top Marginal Income Tax Rate
 - Top Marginal Income and Payroll Tax Rate

Legal System & Property Rights

- Judiciary independence
- Impartial courts
- Protection of intellectual property
- Military in Politics
- Law and Order

Sound Money

- Avg. growth of money (last 5 yrs) minus growth of real GDP (last 10 yrs)
- Standard deviation of annual inflation (last 5 yrs)
- Annual inflation (most recent yr)
- Freedom of citizens to own foreign currency bank accounts (dom. and abroad)

Freedom to Trade Internationally

Tariffs

- International trade tax revenues (in percent of trade sector)
- Mean tariff rate
- Standard deviation of tariff rates

Regulatory Trade Barriers

- Hidden import barriers
- Costs of importing

Actual vs. expected size of trade sector

- Difference between official and black market exchange rates

International Capital Market Controls

- Foreign ownership restrictions
- Index of capital controls among 13 IMF categories

Regulation

Credit Market Regulation

- Ownership of banks
- Competition in domestic banking
- Extension of credit
- Interest rate regulations (leading to neg. rates)
- Interest rate controls

Labor Market Regulations

- Impact of minimum wage
- Hiring and firing practices
- Labor force share with wages set by centralized collective bargaining

Unemployment insurance
Use of conscripts
Business Regulations
Price controls
Burden of Regulations
Time with government bureaucracy
Starting a new business
Irregular payments

ANNEX II. COUNTRIES INCLUDED IN THE PANEL REGRESSION

| | |
|--------------------------|----------------------|
| Algeria | Kenya |
| Argentina | Latvia |
| Bangladesh | Madagascar |
| Barbados | Malawi |
| Belize | Malaysia |
| Benin | Mali |
| Bolivia | Mauritania |
| Botswana | Mexico |
| Brazil | Morocco |
| Bulgaria | Nepal |
| Burundi | Nicaragua |
| Cameroon | Niger |
| Central African Republic | Nigeria |
| Chad | Oman |
| Chile | Pakistan |
| China | Panama |
| Colombia | Papua New Guinea |
| Congo, Dem. Rep. | Paraguay |
| Congo, Rep. | Peru |
| Costa Rica | Philippines |
| Cote d'Ivoire | Poland |
| Croatia | Romania |
| Czech Republic | Rwanda |
| Dominican Republic | Senegal |
| Ecuador | Sierra Leone |
| Egypt, Arab Rep. | Slovak Republic |
| El Salvador | South Africa |
| Fiji | Sri Lanka |
| Gabon | Syrian Arab Republic |
| Ghana | Tanzania |
| Guatemala | Thailand |
| Guinea-Bissau | Togo |
| Guyana | Trinidad and Tobago |
| Haiti | Tunisia |
| Honduras | Turkey |
| Hungary | Uganda |
| India | Uruguay |
| Indonesia | Venezuela, RB |
| Iran, Islamic Rep. | Zambia |
| Jamaica | Zimbabwe |
| Jordan | |

REFERENCES

- Alesina, Alberto, and Allan Drazen, 1991, "Why are Stabilizations Delayed?" *The American Economic Review*, Vol. 81, No. 5, pp. 1170–1188.
- Arora, Vivek, and Athanasios Vamvakidis, 2005, "How Much Do Trading Partners Matter for Economic Growth?," *Staff Papers*, International Monetary Fund, Vol. 52, No. 1, pp. 24–40.
- Boycko, Maxim, Andrei Shleifer, and Robert W. Vishny, 1996, "Second-best Economic Policy for a Divided Government," *European Economic Review*, Vol. 40, pp. 767–774.
- Bruno, Michael, and William Easterly, 1996, "Inflation's Children: Tales of Crises that Beget Reforms," *The American Economic Review*, Vol. 86, No. 2, pp. 213–217.
- Casella, Alessandra, and Barry Eichengreen, 1996, "Can Foreign Aid Accelerate Stabilization?" *The Economic Journal*, Vol. 106, No. 436, pp. 605–619.
- Clements, Benedict, Rina Bhattacharya, and Toan Quoc Nguyen, "External Debt, Public Investment, and Growth in Low-Income Countries," IMF Working Paper 03/249 (Washington: International Monetary Fund).
- Cordella, Tito, Luca Antonio Ricci, and Marta Ruiz-Arranz, 2005, "Debt Overhang or Debt Irrelevance? Revisiting the Debt-Growth Link," IMF Working Paper 05/223 (Washington: International Monetary Fund).
- Drazen, Alan, 1999, "What is Gained by Selectively Withholding Foreign Aid?" unpublished manuscript, University of Maryland.
- , 2000, *Political Economy in Macroeconomics* (Princeton: Princeton University Press).
- , and Vittorio Grilli, 1993, "The Benefit of Crises for Economic Reform," *The American Economic Review*, Vol. 83, No. 3, pp. 598–607.
- , and William Easterly, 2001, "Do Crises Induce Reform? Simple Empirical Tests of Conventional Wisdom," *Economics and Politics*, Vol. 13, No. 2, pp. 129–157.
- Fischer, Stanley, and Lawrence Summers, 1989, "Should Nations Learn to Live with Inflation?" *American Economic Review*, Vol. 79, pp. 382–387.
- Krueger, Anne O., 1993, *Political Economy of Policy Reform in Developing Countries* (Cambridge: MIT Press).
- Pattillo, Catherine, Helene Poirson, and Luca Antonio Ricci, "What are the Channels

- Through which External Debt Affects Growth?" IMF Working Paper 04/15 (Washington: International Monetary Fund).
- Pitlik, Hans, and Steffen Wirth, 2003, "Do Crises Promote the Extent of Economic Liberalization? An Empirical Test," *European Journal of Political Economy*, Vol. 19, pp. 565–581.
- Rodrik, Dani, 1994, "The Rush to Free Trade in the Developing World: Why so Late? Why Now? Will it Last?" in *Voting for Reform: Democracy, Political Liberalization, and Economic Adjustment*, ed. by S. Haggard and S. Webb (Oxford: Oxford University Press), pp. 61–88.
- , 1996, "Understanding Economic Policy Reform," *Journal of Economic Literature*, Vol. 34, No. 1, pp. 9–41.
- Sachs, Jeffrey D., and Andrew Warner, 1995, "Economic Reform and the Process of Global Integration," *Brookings Papers on Economic Activity: 1*, Brookings Institution, pp. 1–95.
- Svensson, Jakob, 1999a, "Foreign Aid and Rent-Seeking," *Journal of International Economics*, Vol. 51, pp. 437–461.
- , 1999b, "When is Foreign Aid Policy Credible? Aid Dependence and Conditionality," *Journal of Development Economics*, Vol. 61, pp. 61–84.
- Tommasi, Mariano, and Andres Velasco, 1996, "Where Are We in the Political Economy of Reform?" *Journal of Policy Reform*, Vol. 1, No. 2, pp. 187–238.