

# Working Paper

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Research Department

Policy Inconsistency and External Debt Service

Prepared by Michael Dooley and Lars E.O. Svensson 1/

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Abstract

In this paper it is argued that the willingness of debtors to make external debt-service payments reflects, in part, their inability to credibly and permanently suspend debt service. The benefits of a credible debt-service suspension would include increased private investment. But this would, in turn, tend to create conditions in which it would then be optimal for the government to resume payments. Thus, debt remains a threat even after the announcement of suspension of debt service. It follows that the expected benefits of such a suspension are limited and may be offset by penalties imposed by creditors.

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### Summary

Debtor countries have made substantial net transfers to private creditors since 1982. While there are many reasons why a country chooses to honor its external obligations, economic analyses have generally assumed that debtors compare the costs of penalties that might be imposed by creditors on defaulting countries with the benefits of suspending debt-service payments. A problem with this line of argument is that the historical experience of defaulting countries in the 1930s, as well as analytical arguments, suggests that the costs that creditors could impose are small and temporary. Thus, some observers have concluded that payments performance in the 1980s seems to be inconsistent with the economic incentives.

This paper argues that continued debt service is rational, even on narrow economic grounds, in circumstances where the economic benefits as well as the costs of default are likely to be quite limited. A permanent suspension of debt service would imply that the debtor government would not need to tax new investors in order to pay existing creditors. But if the new investors acted on this expectation, investment would increase and income would rise in the debtor country. Once the investment is in place, it might then be optimal for the debtor government to resume debt-service payments. This, of course, requires a higher level of taxation than was expected initially. It follows that an announced unilateral suspension of debt service may not be credible and thus may not lead to the benefits associated with increased investment and growth. In these circumstances, the debtor country does not have the ability to break away from the low investment equilibrium by unilateral decisions about debt service. This suggests that negotiated debt reduction coupled with policy reforms may be necessary in order to create a favorable environment for private investment.

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## I. Introduction

A fundamental question about the behavior of debtor countries has been their willingness to make substantial net transfers to creditors in the face of very difficult economic circumstances. Although it is common for debts to be renegotiated, debtor countries have made substantial net real transfers to creditors and have, for the most part, reached contractual agreements to finance remaining debt-service obligations. For problem debtors 1/ real debt-service payments to private creditors from 1983-1989 were sufficiently large so that the entire real interest expense was paid; additional interest payments resulted in a fall in the real value of debt to private creditors of about 4 percent. 2/

Historical experience and theoretical arguments suggest that penalties imposed on defaulting countries by creditors are likely to be small and temporary. In this note it is argued that continued debt service may be optimal because debtor countries cannot credibly and permanently suspend debt-service payments. Since any announced suspension of payments would be regarded by the private sector as potentially temporary, investment in the debtor country would remain depressed. It follows that the benefits of default to the debtor country might be quite limited. For this reason even small costs of default might be sufficient to offset the limited benefits.

A suspension of payments that was permanent, and was believed to be permanent, might provide substantial benefits in terms of increased private domestic investment in the debtor country. Investment would tend to increase because a default is, in effect, a promise not to tax new investors in order to pay existing creditors. However, creditors have no incentive to extinguish the debt, and any announced default could turn out to be temporary. 3/

Investors would expect a default to be temporary if a rise in investment and income in the debtor country made it optimal for the debtor government to eventually renew debt-service payments. In the next section, a plausible example of such behavior is provided. The debtor

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1/ The 65 countries described as countries with recent debt-service problems in the IMF's World Economic Outlook, April 1988.

2/ See Corden and Dooley (1989) for a discussion of the inflation accounting and the data. In a recent paper Lindert (1989) argues that only a handful of debtors have made "major" net repayments to creditors during the 1980s. It is clearly the case that payments have varied among debtor countries, but in our view the balance of payments data and the price adjusted debt stock data support the view that debtors have made major net transfers to their private creditors. The fact that a part of these transfers was financed by net official credits does not explain debtors' willingness to make such payments.

3/ Even if the debt is sold to a new creditor at a discount, the new creditor would attempt to collect the contractual value of the debt.

government is expected to "default on the default" because, at higher levels of domestic income, the marginal costs of resuming payments are lower as compared to the benefits of avoiding penalties. Thus, the debtor government's announced policy of a permanent suspension of debt service may not be "time consistent" and, therefore, not credible to private investors. 1/

This lack of credibility suggests that it may not be possible to convince investors that a default is permanent. In the interim, the benefits of increased investment and growth are lost. Moreover, the debt will continue to grow in the form of interest arrears, and there is no incentive for creditors to forgive this additional debt.

## II. The Costs of Default

If the benefits from default are limited, it follows that even mild penalties might be sufficient to explain the reluctance of debtors to adopt this policy. The theoretical literature and historical analysis of the costs of default suggest that penalties are indeed likely to be both temporary and mild.

The theoretical literature has focused on the loss of access to credit and losses in gains from trade as the likely costs of default. 2/ Access to credit markets is valuable in order to smooth consumption. However, as Bulow and Rogoff (1986) point out, a debtor country could divert debt-service payments to accumulate assets that could subsequently be drawn down and replenished in order to smooth consumption. At some point in time the debtor will face the choice of making a large payment in order to preserve access to credit markets or acquiring an asset that would provide a large and growing amount of insurance against a temporary fall in income. Looking forward it would be difficult to rule out the self-insurance option, and it follows that a loss of access to credit markets may not be an effective penalty.

A recent collection of papers examining the experience of defaulting countries in the 1930s casts further doubt on the hypothesis that default results in loss of access to credit markets. Eichengreen and Lindert (1989) conclude that "there is remarkably little evidence that defaulting countries acquire a reputation for unwillingness to pay, which in turn hinders their ability to borrow."

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1/ See Kydland and Prescott (1977) for other examples of inconsistency in government policies.

2/ See Eaton, Gersovitz, and Stiglitz (1986) for a comprehensive review of the theoretical literature. See Eichengreen and Lindert (1989) for a collection of papers reviewing historical experience.

The logical case for trade restrictions is also suspect. Clearly, trade restrictions injure residents of creditor countries as well as residents of the debtor country. While it is rational for the government of the creditor to threaten trade sanctions in the event of default, it may not be rational to actually carry out the threat. Moreover, important interest groups in creditor countries that depend upon trade can only lose by supporting sanctions favored by creditors. Eichengreen and Portes (1986), for example, conclude that efforts by creditors to restrict trade or trade credit for defaulting countries in the 1930s were generally successfully resisted by residents of creditor countries.

In this note, small but positive costs for default are taken as a working hypothesis. It is argued, however, that debtor countries have not necessarily made payments that exceed what would be consistent with this cost structure. Even these relatively low costs can be sufficient to deter debtors from announcing defaults because time consistency considerations tend to limit the gains from default.

### III. An Example

To illustrate the argument, suppose the debtor government maximizes utility,  $U(y)$ , from income after debt repayment,  $y$ , less costs,  $C(x)$ , of the amount of default,  $x$ . (We assume positive and decreasing marginal utility, and positive and increasing marginal cost.  $U_y > 0$ ,  $U_{yy} < 0$ ,  $C_x > 0$ , and  $C_{xx} > 0$ .)

Income after taxes used for debt repayment equals  $y = (1-\tau)\alpha I$ , where  $\tau$  is the tax rate,  $I$  ( $0 \leq I \leq \bar{I}$ ) is investment,  $\alpha$  is the constant output capital ratio, and  $\alpha I$  is income after investment. The production technology is hence assumed linear up to a maximum possible investment level  $\bar{I}$ .

The amount of default is  $x = R\bar{D} - \tau\alpha I$ , where  $\bar{D}$  is the given debt level,  $R$  is the contracted gross interest rate (one plus the real interest rate), and  $\tau\alpha I$  is debt repayment.

For a given tax rate and a given investment level, the government's net utility level can be written

$$V(\tau, I) = U((1-\tau)\alpha I) - C(R\bar{D} - \tau\alpha I). \quad (1)$$

Investment is determined on a competitive world capital market. Investors require an after-tax rate of return,  $(1-\tau)\alpha$ , at least equal to the given world rate of return,  $R^*$ . As a consequence, equilibrium investment is a function,  $I(\tau)$ , of the tax rate, such that

$$I(\tau) = \begin{cases} \bar{I} & \text{for } \tau \leq \tau^*, \text{ and} \\ 0 & \text{for } \tau > \tau^*, \end{cases} \quad (2)$$



where the critical tax rate  $\tau^*$  equals  $1 - R^*/\alpha$  (assumed positive). (For  $\tau = \tau^*$ , investors are indifferent to the level of investment. For simplicity, we assume that they then choose the maximum level  $\bar{I}$ .)

The government chooses the tax rate so as to maximize the net utility level (1), given that investment by (2) depends on the tax rate.

Suppose the government chooses a tax rate larger than  $\tau^*$ . Then investment and income after tax will be zero,  $y = 0$ , and the amount of default will be maximal,  $x = R\bar{D}$ . The net utility will be minimal, and the outcome for the government is the worst possible. Therefore, the government will restrict the tax rate to be less than or equal to  $\tau^*$ , so that the investment equals its maximum,  $\bar{I}$ .

Hence the government chooses  $\tau$  to maximize  $V(\tau, \bar{I})$  subject to  $\tau \leq \tau^*$ . A first-order condition for an optimum  $\tau = \hat{\tau}$  is

$$U_y((1-\hat{\tau})\alpha\bar{I}) \leq C_x(R\bar{D}-\hat{\tau}\alpha\bar{I}), \quad \hat{\tau} \leq \tau^*, \quad (3)$$

with equality if  $\hat{\tau} < \tau^*$ . If the constraint on the tax rate is not binding, marginal utility of income after taxes equals the marginal cost of default. If the constraint is binding, marginal utility of income falls short of the marginal cost of default.

The first-order conditions are illustrated in Figure 1. As the tax rate falls, after-tax income rises, and the marginal utility of consumption,  $U_y$ , falls so that  $U_y$  has a positive slope. As the tax rate falls, the amount of default rises. Then the marginal cost imposed on the debtor increases so that  $C_x$  has a negative slope.

Marginal utility and marginal cost are equal for  $\tau = \tau^1$ . If the critical tax rate  $\tau^*$  exceeds  $\tau^1$ ,  $\hat{\tau} = \tau^1$  is the optimum. Suppose, however, as in Figure 1, that the critical tax rate falls short of  $\tau^1$ . Then the optimal tax rate is  $\hat{\tau} = \tau^*$ , and marginal utility falls short of marginal cost.

Suppose now that we allow the government to re-optimize after international investors have committed themselves to  $\bar{I}$ , which, of course, depends on their belief that the government will set  $\tau = \tau^*$ . What will the government do? After international investors have committed themselves, the constraint  $\tau \leq \tau^*$  is no longer relevant. The government will simply choose  $\tau = \tau^1$  so as to equalize marginal utility and marginal cost. The after-tax rate of return on investment will now fall below the world rate of interest, but investors have committed to  $\bar{I}$ , and it may be costly or impossible to reverse this decision.

The lesson is that, even if the government promises to increase the amount of default (promises to set a low tax rate), they will be tempted to reverse this decision (raise the tax rate) once the investment is in place. This is a simple application of the familiar time-consistency argument.

Rational investors will anticipate the increase in tax rate ex post, and choose not to invest at all. The government is caught in the worst possible outcome, zero investment and maximum default.

A slightly more complicated model can be utilized to show that in cases where the debtor government cannot credibly default, the low investment equilibrium might involve very high tax rates. In this example, it is assumed that a minimum level of income,  $\bar{Y}$ , is generated in the debtor country and that investment adds to that level. Then income after tax is  $y = (1-\tau)(\bar{Y}+\alpha I(\tau))$  and the amount of default is  $x = R\bar{D} - \tau(\bar{Y}+\alpha \bar{I}(\tau))$ . Utilizing the same framework as above, the government would set the optimal tax rate to maximize net utility defined as

$$V(\tau, I) = U((1-\tau)(\bar{Y}+\alpha I) - C(R\bar{D}-\tau(\bar{Y}+\alpha I))). \quad (4)$$

The first-order conditions are more complicated in this case. For tax rates less than the critical rate  $\tau \leq \tau^*$ , investment is maximal, and we have

$$U_y((1-\tau)(\bar{Y}+\alpha \bar{I})) \leq C_x(R\bar{D}-\tau(\bar{Y}+\alpha \bar{I})), \quad (5a)$$

with equality if the constraint is not binding. For tax rates above the critical rate,  $\tau > \tau^*$ , investment is zero, and we have

$$U_y((1-\tau)\bar{Y}) = C_x(R\bar{D}-\tau\bar{Y}) \quad (5b)$$

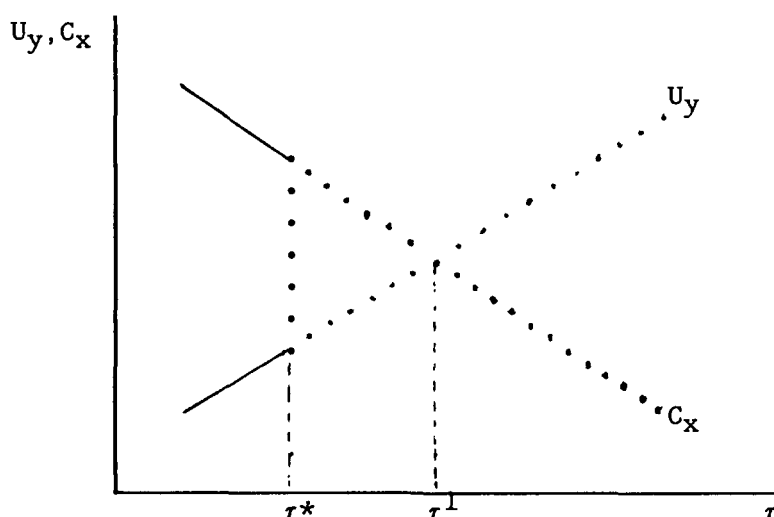
The left-hand side of (5a), marginal utility with high investment, is shown on the top panel in Figure 2, as the curve ABA'. Only the portion left of  $\tau^*$  is relevant, AB. The right-hand side of (5a), marginal cost with high investment, is curve EFE', where only EF is relevant.

The middle panel shows investment, equal to  $\bar{I}$  to the left of  $\tau^*$ , equal to zero to the right of  $\tau^*$ .

The left-hand side of (5b), marginal utility with low investment, is shown as D'CD. It lies above ABA' since marginal utility is higher with lower investment and lower income. Only the portion CD is relevant. The right-hand side of (5b), marginal cost with low investment, is shown as H'GH, where the position GH is relevant. It lies above EFE' since marginal cost is higher with low investment and higher default.

The total marginal utility curve is ABCD, with a vertical portion BC. The total marginal cost curve is EFGH, with a vertical portion FG.

Figure 1



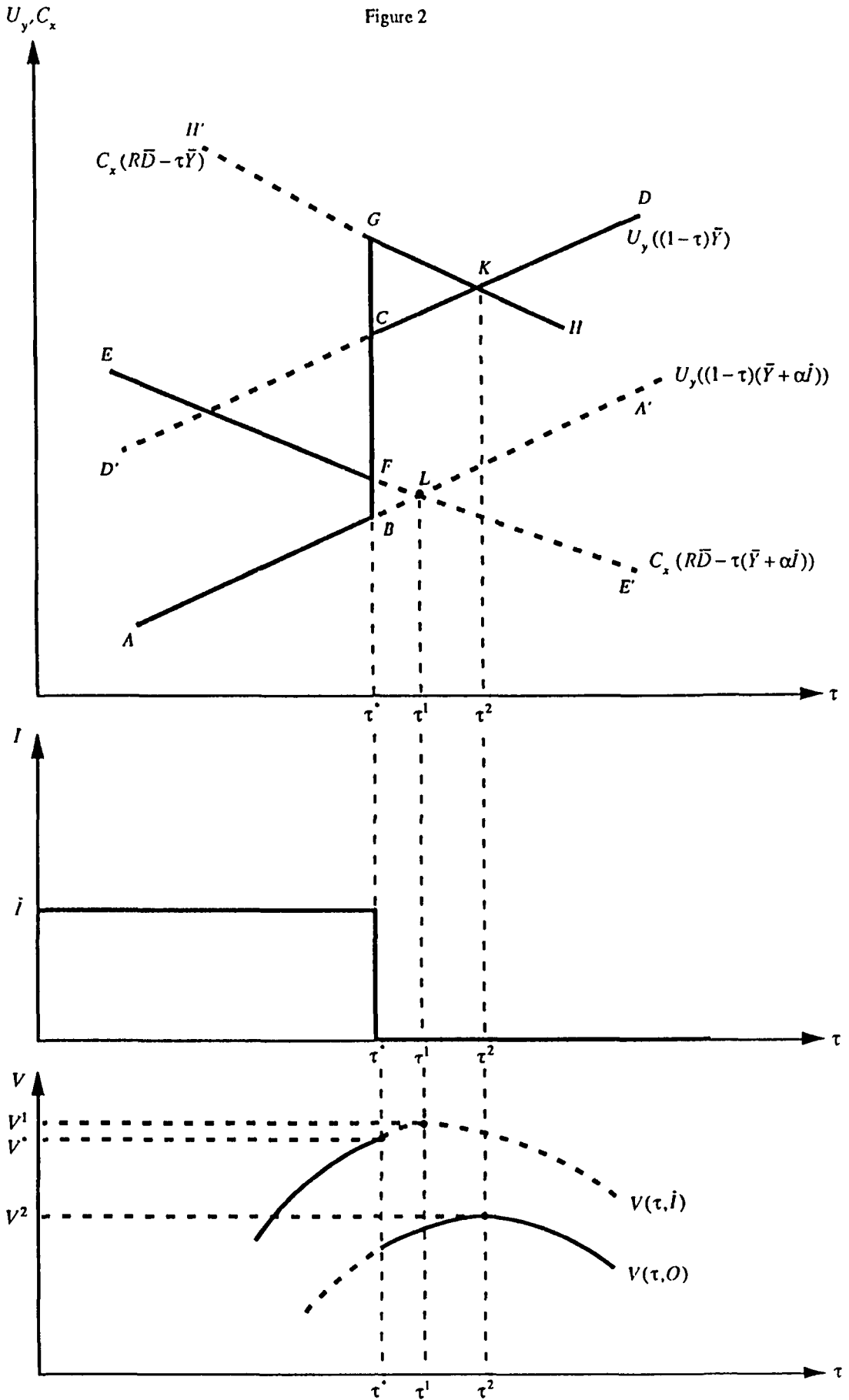
The total net utility curves for high and low investment are shown in the bottom panel.  $V(\tau, \bar{I})$  is at a maximum rate at  $\tau^1$  and is above  $V(\tau, 0)$  which is at a maximum of  $\tau^2$ . As drawn in Figure 2 the optimal tax rate in the low investment equilibrium  $\tau^2$  is higher than the optimal tax rate in the high investment equilibrium. This need not necessarily be the case since the income elasticity of marginal cost and marginal utility depends on factors that appear to depend upon circumstances in each debtor country. As in the earlier example, it is assumed that the critical value of the tax rate is below both of these optimal tax rates.

If the government could commit to  $\tau^*$  investment would be set at  $\bar{I}$  and utility  $V^*$  would result. However, once the investment was in place, the government would want to increase the tax rate to  $\tau^1$ , increasing utility to  $V^1$  but also reducing the after-tax rate of return to a level below the world interest rate. In this example, the fact that the government will be tempted to raise taxes slightly will lead to a low investment equilibrium. Given the low investment the government will find it optimal to set an even higher tax rate  $\tau^2$  and will be forced to accept a much lower level of utility  $V^2$ .

Positive investment, and the associated payoff for the debtor country, is attainable if the high investment curve  $EFE'$  in Figure 2 could be shifted to the left or the high investment curve  $ABA'$  shifted to the left so that  $\tau^1$  was less than or equal to  $\tau^*$ .

The most direct way to accomplish this would be to reduce  $\bar{D}$ . The difficulty, of course, is that the debtor has very limited ability to do so. Recall that the debtor can only suspend debt-service payments; it cannot extinguish debt except by agreement with the creditor. Over time the decision to pay partial interest would limit the growth in debt. In fact this is what most debtor countries have done. At the same time

Figure 2



growth in income would tend to shift the high investment  $U_y$  curve to the left. This would be similar to a growing out-of-debt scenario, but the potential growth in the high investment equilibrium would have to occur in the low investment equilibrium. A complementary action would be for a third party to force the creditors to forgive debt or buy them out at market prices.

#### IV. Conclusion

A suspension of debt-service payments to external creditors may not allow a debtor country to break out of a low growth, low investment equilibrium. Such a policy accelerates the growth of external debt as interest arrears are added to the stock of debt. Moreover, the debtor government may not be able to credibly insulate new domestic investment from taxation. The dilemma is that if new investors believe the debtor governments promise not to tax their returns in order to service existing debt, the new investment can create the conditions under which it will be optimal for the government to break that promise.

The potential benefits of moving to the high investment and growth equilibrium are substantial. Policies that improve the probability that such a move will be possible include improved economic performance as well as policies that limit the growth in debt. The latter include interest payments as well as debt reduction operations. An extension of this analysis might consider the option value of current debt-service and debt-reduction expenditures. Such expenditures may be valuable to the debtor because they increase the debtor's ability to move to a high investment and growth equilibrium in the future.

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