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How to Reduce Uncertainty in International Capital Flows? The Investor’s View

1. Introduction

Standard neoclassical theory suggests that capital will flow to countries where it is relatively scarce and the potential rate of return is high. Actually huge capital transfers from capital-abundant developed countries to capital-poor developing countries took place until the early 1980s. Subsequently, however, the sudden reversal of capital flows led to the “perverse” situation of capital exporting Third World economies.

From the investor’s point of view, it may be tempting to argue that it is up to the borrowers to restore their attractiveness for foreign capital by enacting policy reforms. By contrast, borrowers argue that it is up to the creditors to remove disincentives for internal adjustment in the borrowing countries by granting debt relief in the first place. The discussion about which side should take the lead in breaking through the vicious circle of underadjustment and underlending resulted in a deadlock, though some adjustment and some relief have been seen recently in a few countries (e.g., Chile, Mexico).

The age-old saying “it takes two to tango” retains its validity here. Neither of the parties involved can be expected to take part in the dance unless some idea exists about the behavior of the other side:

— Borrowers are uncertain as to whether internal adjustment efforts will be honored by foreign creditors and investors through relaxing the strict capital rationing of the recent past.

— Foreign investors and creditors are uncertain as to whether concessions for servicing existing obligations will automatically result in intensified adjustment efforts on the part of the borrowers.

The decisions of both parties are closely intertwined, so that uncertainty is systemic [Blejer, Ize, 1989]. Under such conditions, it is not very useful to take an isolated investor’s view. In the following, a more global view is applied by stressing the interrelationship between the decisions of potential capital recipients and capital
providers. Section 2 discusses why it may be in the interest of creditors to agree to innovative transfer contracts. Former attempts to shift transfer risks to the borrowers via general obligation lending are shown to have resulted in an inefficient distribution of risks and increased uncertainty for both borrowers and creditors. Section 3 analyzes how to reduce systemic uncertainty. Only after this has been achieved can the stability and efficiency of international capital transfers to capital-poor countries be improved by introducing innovative transfer contracts. Section 4 focuses on contingency schemes as a means of reducing sovereign risk and achieving better risk sharing. Section 5 discusses whether prohibitively high default costs could be created by stronger sanctions, eventually coordinated by a new contract system. Section 6 concludes.

2. The Flaws of Implicit Contingencies in General Obligation Lending

To ask how to improve the creditor’s position in international capital transfer negotiations appears to be a somewhat curious question. This is because transfer risks were largely shifted to the capital recipients in the traditional loan contracts of the 1970s and early 1980s. This was most evident insofar as external shock risks were concerned. General obligation loans with flexible interest rates rendered it easy for lenders to burden borrowers with rising refinancing costs. Service obligations were explicitly independent of adverse world market trends such as declining terms of trade or depressed demand for the borrowers’ exports. The performance risk of specific projects was not relevant to the lenders, as general obligation loans were typically guaranteed by the debtor governments. Economic policy risks were at least partly covered by credit insurance schemes, lender-of-last-resort facilities, and public guarantees by creditor governments, and, hence, were perceived to be low by the lenders. Interest rate spreads over LIBOR compensated for another part of the economic policy risk.

Assuming that capital-rich economic agents are typically less risk averse than capital-poor economic agents, the risk distribution in international capital transfers was highly inefficient from a macroeconomic viewpoint. Actually, the alternative transfer contracts discussed later in this paper require creditors to assume more, rather than less, risk in transferring capital to developing countries. However, creditors cannot reasonably be expected to agree to innovative transfer contracts and accept more risk ex ante unless this is in their own best interests. Surprisingly enough, this may indeed be the case.

Similar to creditors’ experiences with noncontingent lending in the national realm, creditors were also satisfied with general obligation lending to developing countries ex ante, until the debt crisis erupted. The serious drawback of shifting
risks to sovereign borrowers became evident only with the widespread payment problems of developing countries that occurred after 1982. Ex post, general obligation loans proved to be contracts implicitly warranting some debt relief in the case of unfavorable payment conditions.

Ex post concessions on debt service do not pose serious problems for the creditors in the national realm. The existence of a binding legal and regulative framework guarantees the enforceability of the creditors’ claims, thereby preventing borrowers from willfully defaulting on debt. Bankruptcy and composition procedures provide the creditors with information on the causes of domestic borrowers’ payment problems, i.e., management failures or external influences that were beyond the borrowers’ control. Hence, the decision on whether or not concessions are to be granted is straightforward. Renegotiation is likely to result in an optimal ex post distribution of risks from the creditors’ point of view.

The position of creditors is considerably weaker when sovereign borrowers experience payment problems and ask for ex post concessions [Stüven, 1988]. An institutional framework that enforces international claims and provides foreign creditors with straightforward information on the causes of payment problems does not exist. A great amount of discretionary treatment accrues to sovereign borrowers whose default decisions are based on a cost-benefit calculus. Creditors have little at hand to distinguish between “justified” demands for renegotiation (i.e., adverse effects on the ability to pay that are beyond the borrowers’ control), home-made inability to pay because of moral-hazard-induced policy failure, and outright unwillingness to pay.

The traditional preference of creditors to grant general obligation loans and implicitly agree to ex post concessions, once payment problems have arisen, indicates that the institutional peculiarities of sovereign lending were largely ignored. Until the early 1980s, the banks felt safe simply because “countries don’t go bust.” The sovereign risk perspective missing in this attitude became evident with the subsequent cumulation of payment disruptions and debt renegotiations which could hardly be attributed to impaired ability to pay alone. From the creditors’ point of view, rescheduling was unlikely to result in an optimal ex post distribution of risks as long as there was the chance that the developing countries pressing for renegotiation might not only be unable to pay but also unwilling to service the inherited debt. Because of the threat of willful default, the move to an ex post contingency portfolio in international lending was resisted by the creditors. In other words, “it is difficult to sustain the argument that existing LDC debt is implicitly commodity contingent to the optimal extent. Rather, banks have been willing to acknowledge contingency only when forced into this by the alternative of default” [Powell, Gilbert, 1988, p. 163].

In summary, creditors paid a high price for maintaining discretion in deciding ex post on repayment concessions in the case of sovereign debt. The strategy of
organizing general obligation lending in a way that it could serve as an implicit substitute for ex ante contingencies added to the systemic uncertainty in international transfer negotiations. Decisions on ex post relief were seriously impaired by informational asymmetries and uncertainty about the motivation of borrowers. In turn, borrowers were uncertain whether or not ex post concessions were granted in the case of “justified” demands for relief. Eventually, the general reluctance of creditors to reduce high debt service obligations, even when the ability to pay was impaired by external shocks, discouraged internal adjustment by the borrowers, thereby contributing to the present debt overhang.

The threat of recurrent disincentive problems in the future will be reduced only if creditors are prepared to forego the discretion in deciding ex post on concessions and to agree to ex ante contingencies. However, before entering into future transfer contracts with a more efficient distribution of risks, the disincentives for adjustment and debt reduction under the inherited debt overhang have to be solved.

3. How to Deal with Systemic Uncertainty under Conditions of a Debt Overhang

The negative incentive effects of an excessive debt service burden have been brought into prominence in the debt overhang literature [Sachs, Huizinga, 1987; Krugman, 1988; Corden, 1988; Sachs, 1989]. It is argued that the borrowers have no reason to intensify their adjustment efforts unless the debt overhang is reduced. Without debt relief, creditors would reap all or most of the benefits of higher investment by the borrowers, so that the latter have no incentive to sacrifice current consumption. In this view, it is up to the creditors to take the first step and break through the vicious circle of underadjustment and underlending.

Krugman’s model shows that not only the borrowers but also the creditors would be better off by agreeing to some form of debt relief. Creditors protect their outstanding claims through defensive lending in the amount of $L = D - X_t > 0$ in period 1, where $D$ denotes the contractual debt service obligations and $X_t$ the resources actually available for service payments. Whether the contractual debt service of $L (1 + r)$ in period 2 is transferred by the borrower depends on his (nonsubsistence) output $X_2$, which is unknown at the time of the loan agreement. $X_2$ depends on the borrower’s investment efforts, $z$, in period 1 and a random variable, $s$, that is distributed according to $f(s)$:

$$[1] \quad X_2 = s + z, \quad s \in [\underline{s}, \bar{s}].$$

Debt service payments, $P$, in period 2 are then given as follows:
\[ P = L (1 + r), \quad \text{when } X_2 > L (1 + r) \]
\[ P = X_2, \quad \text{when } X_2 < L (1 + r). \]

In determining the interest rate \( r \) on \( L \), the creditor has to take into account the negative effects of higher interest rates on internal adjustment by the borrower. The latter can be derived from the borrower’s utility function:

\[ U = X_2 - P - \nu (z), \]

whereby \( \nu (z) \) denotes the adjustment costs in terms of forgone consumption in period 1, with \( \nu' (z), \nu''(z) > 0 \).

Substituting [1] and [2] into [3] and then calculating the first derivative of the borrower’s expected utility, reveals the optimal adjustment for a given interest rate \( r \):

\[ \frac{\delta EU}{\delta z} = \int_{L(1+r)-z}^{\bar{z}} f(s) \, ds - \nu' (z) = 0. \]

From the cross-derivative of [4], the negative adjustment effects of higher interest rates can be derived as follows:

\[ \frac{dz}{dr} = L f[L(1+r) - z] / (\delta^2 EU / \delta z^2) < 0. \]

The interest rate, \( r \), is determined by the creditor maximizing his expected return on outstanding claims, \( ER \):

\[ ER = \int_{\bar{z}}^{L(1+r)-z} (s + z) f(s) \, ds + L (1 + r) \int_{L(1+r)-z}^{\bar{z}} f(s) \, ds \]

\[ \frac{\delta ER}{\delta r} = \frac{dz}{dr} \int_{\bar{z}}^{L(1+r)-z} f(s) \, ds + L \int_{L(1+r)-z}^{\bar{z}} f(s) \, ds = 0. \]

An interest rate of \( \bar{r} \) would be optimal for the creditor if disincentives for adjustment by the borrower did not exist; that is, in the case of \( dz / dr = 0 \), \( r \) is set so that \( L (1 + \bar{r}) = \bar{s} + z = X_2 \). In the case of \( dz / dr < 0 \), the first term of [7] captures the reduction of expected returns for the creditor due to the disincentive effects of higher interest rates. The optimal interest rate is reduced to \( r^* \). The optimal degree of debt service concessions is then given by \( L (\bar{r} - r^*) \).
The approach of dealing with disincentive problems under conditions of a debt overhang, as suggested by Krugman and others, has some serious flaws, however. The strategy of ex ante interest rate reductions shares major shortcomings with general obligation lending. Most importantly, the risk distribution continues to be suboptimal:

— Relief is not related to the borrowing country's economic situation in the future, but is the same across all future states of the world. Creditors forego the chance of benefiting from improved payment conditions. On the other hand, there may still be some states of the world for which the borrowers find it unattractive to invest [Froot et al., 1988].

— Unconditional relief for borrowers whose payment problems were at least partly caused by internal policy failures is likely to give rise to moral hazard behavior on the part of borrowers who made costly efforts to maintain the contractual debt service payments in the past [Buiter, Srinivasan, 1987]. Consequently, the creditors may suffer from increased economic policy risk.

— The institutional peculiarities of sovereign lending continue to be ignored. If an unrecognized unwillingness to pay made creditors agree to relief, borrowers can be expected to redefine their bargaining position. They will ask for more relief as soon as the creditors indicate that they are willing to forgive some debt.

Uncertainty of creditors in the case of debt relief granted prior to internal adjustment by the beneficiaries can be reduced when concessions, \( \beta \), are made only after adjustment has taken place [for a detailed presentation of the following scheme, see Nunnenkamp, Stüven, 1990]. To this end, \( \beta \) is introduced into the borrower's utility function [3], with \( \beta = 0 \) for \( P = X^2 < L (1 + r) \), and \( \beta = L (\bar{r} - r^*) \) for \( P = L (1 + r) \). The adjustment response to an increase in \( \beta \) can then be derived along the lines of [3]–[5]:

\[
\frac{d\pi}{d\beta} = f \left[ L (1 + r) - z \right] / (\delta^2 EU / \delta z^2) > 0.
\]

The comparison of [5] and [8] shows that replacing ex ante interest rate concessions by ex post benefits, \( d\beta = L \, dr \), leaves the adjustment incentives of the borrower unaffected. However, the modified strategy of encouraging internal adjustment raises the expected return of the creditor at the expense of the borrower's expected utility. Assuming that enforcement problems prevent the creditor from raising the interest rate on \( L \) beyond international market terms, \( i \), the reduction in the expected utility of the borrower (and the corresponding increase of the creditor's expected return) is given as follows:
$\Delta EU = \int_{L(1+i) - z(r^*)}^{L(1 + r^*) - z(r^*)} \left[ (s + z(r^*)) - L(1 + r^*) \right] f(s) \, ds < 0.$

The borrower bears a greater proportion of the costs that resulted from his partial default in period 1. This is because the modified incentive scheme provides for concessions only in the case of $X_2 \geq L(1 + i).$ The altered distribution of adjustment costs helps to overcome the serious flaws of ex ante interest rate concessions, thereby improving the creditor's position in international transfer negotiations. Additional economic policy risks due to moral hazard behavior on the part of third countries are kept to the minimum, since beneficiaries of ex post concessions have to assume adjustment costs before receiving benefits. The temptation of sovereign borrowers to abstain from adjustment and press for more relief instead is weakened, since borrowers behaving in such a way would forgo the ex post benefits in the first place.

The modified incentive scheme may also reduce the uncertainty of borrowers about whether adjustment efforts will be honored by the creditors. This can be achieved by the creditors' making a credible commitment to make new capital transfers available once credit-constrained borrowers have resumed contractual debt service payments. The borrowers' confidence that adjustment helps to restore access to foreign capital would be strengthened if contingent credit facilities were established. Such funds would have to be raised by the private creditors, e.g., on a pro rata basis referring to the creditors' outstanding claims in a country. The facilities could be managed by a public institution, such as the IMF, so that borrowers who adjust successfully would have immediate access to foreign capital.

The proposed system of contingent credit facilities also allows for more flexibility than unconditional debt relief. It could help to bridge the difficult transition period once consistent adjustment programs have been implemented. To prevent policy reforms from being abandoned because of lack of external finance, borrowers could be entitled to receive a proportion of the ex post benefits during the transition period, e.g., after restrictive trade regimes have been liberalized or an overvaluation of domestic currencies has been eliminated by real devaluation.

However, overcoming the inherited debt overhang is only the first step towards the stabilization of international financial relations. The subsequent sections will show that reduction of sovereign risk and efficient ex ante risk sharing remain major

1 On this point, Neumann's critical remarks in his comment are highly appreciated. It turns out that the reduction of the borrower's expected utility has detrimental effects on his incentive to maintain the optimal adjustment effort derived from ex ante interest rate reductions à la Krugman. A possible solution to this problem may be to increase the ex post benefits in order to ensure a constant expected utility of the borrower under both schemes. In this case, $\beta$ must exceed the interest reduction given by $L(i - r^*),$ which is otherwise granted.
problems to be solved. Contingent repayment schemes and a new system of default sanctions may be helpful in this respect.

4. Risk Reduction and Efficient Risk Distribution through Contingent Transfer Contracts

The preceding sections have shown that insufficient ex ante risk sharing by creditors contributed to the present debt overhang. The timing of ex post risk sharing through debt reduction proved important for inducing the required adjustment incentives under conditions of sovereign risk. Removing the inherited debt overhang is, however, just the first step towards solving the debt problem. The second step is determining how to reduce sovereign risk and achieve an efficient distribution of the remaining risks in future capital transfers. The prospects for stable relations in financing the economic development of the Third World can only be improved if the disincentives for sovereign borrowers to put foreign funds to an efficient use and to honor contractual repayment are removed.

Assuming that default decisions of sovereign borrowers are based on a cost-benefit calculus [Eaton et al., 1986], attempts to reduce sovereign risk can apply to either side of this calculus. This section focuses on contingent repayment schemes as a possible means of limiting the benefits borrowers may reap from default. In the literature, contingencies are sometimes considered a panacea for inefficient risk distribution in future lending. But the model results are often based on restrictive assumptions (e.g., symmetric information or investment under certainty). By adapting Aizenman’s model [1987], it is shown in the following that contingency contracts can indeed reduce the borrower’s benefits from default in the case of depressed ability to pay. However, the risk inherent in sovereign lending cannot be eliminated completely in this way. Therefore, Section 5 discusses whether stronger sanctions, eventually coordinated by a new contract system, could cause prohibitively high default costs.

In the subsequent paragraphs, it is taken for granted that the costs of default are perfectly and positively correlated with the borrower’s economic performance. Obviously the potential benefits from default consist of the scheduled payment obligations that the borrower refuses to pay. Transfer contracts with contingent repayment structures specify repayments that are linked to some measure of the borrower’s ability to pay. For example, scheduled repayments are higher (lower) at times of relatively high (low) income growth of the borrower. Sovereign risk may be reduced by specifying a contingent debt repayment burden, since the borrower’s

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2 For a detailed discussion, see, for example, Anderson et al. [1989] and Froot et al. [1988].
(relative) benefit from default on a given absolute debt repayment increases with impaired ability to pay.  

Contingencies in international financial relations are already existent in foreign direct investment (FDI) and portfolio investment. FDI represents a special case, since capital transfers are combined with control and management rights of the investor and eventually with additional know-how transfers. Payment obligations are fully output contingent. Portfolio investment offers a contract type with repayment properties similar to those in the case of FDI, but without additional control and management rights and know-how transfer. By contrast, credit contracts with contingent repayment structures have hardly been concluded in the past. They would have introduced an element of ex ante risk sharing by the creditor into international lending. This would constitute a major deviation from the still dominant interest formula, i.e., LIBOR plus spread, that allows only for ex post risk sharing. Creditors should be willing to agree to ex ante risk sharing arrangements because of the costs arising from distorted incentives in the case of ex post risk sharing.

Possible types of contingent credit contracts may be classified according to the variables to which repayment obligations are indexed. In sovereign lending, a possible indexation variable is the borrowing country’s GDP. Output contingency implies indexation to a combination of exogenous and endogenous variables. This is because future output depends on both the borrower’s investment decisions and exogenous influences that are beyond the borrower’s control (e.g., his terms of trade). Resource contracts make repayment obligations contingent on the value of resource flows or resource prices that are important determinants of the borrower’s external trade position and, thereby, his ability to pay. Exported as well as imported resources can serve as the index base. Contingencies based on the value of resource flows are similar to output contingencies as far as the endogeneity or exogeneity of the indexation variable is concerned. They employ a combination of both indexation schemes because import and export volumes are controlled by the borrower. Only pure price contingencies, with world market prices as the indexation variable, provide a fully exogenous base of contingency contracts in the small-country case. Terms of trade indexing, for example, can be interpreted as a combination of contingency contracts for all exported and imported goods and services based on the respective world market prices.

The efficiency of indexing repayment obligations to endogenous variables that are under the control of the borrower may be seriously impaired due to moral hazard.

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3 Assuming that default costs are positively correlated with the borrower’s economic performance, high contingent repayment obligations in the case of favorable payment conditions are enforced by higher default costs. Sachs [1983] and Gersovitz [1985] argue, for example, that impaired access to trade financing after a credit stop results in higher costs for the borrower when his economic performance is relatively good.
problems. Unless exogenous shocks occur, an output contingent repayment scheme is effectively an indexation based on the borrower's investment efforts. In determining his optimal investment, the borrower will take into account that higher investment leads to higher repayment obligations. Given the borrower's time preference rate and the marginal productivity of investment, this leads to lower optimal investment than in the case of fixed repayment obligations. By contrast, exogenous contingency variables do not enter into the borrower's first order condition and, thus, leave the optimal investment unchanged.

The effects of an exogenous contingency scheme on sovereign risk in international lending may be evaluated by adapting a model by Aizenman [1987]. The model focuses on the repayment period when the borrower faces the realization of a stochastic output variable, \( Y(\theta) \). Default occurs if the repayment obligation, \( P \), exceeds default costs, \( N \). Here, \( N \) is assumed to be smaller than the borrower's output in the repayment period and perfectly correlated with \( Y \). The penalty is given by \( N = N_0 / \theta \), where \( \theta \) represents the stochastic disturbance with the density function \( g(\theta) \):

\[
[10] \quad \theta \in [\underline{\theta}, \bar{\theta}], \quad \int_{\underline{\theta}}^{\bar{\theta}} \frac{1}{\theta} g(\theta) = 1.
\]

Possible disincentives that result from a debt overhang are disregarded here, because our concern is the stabilization and revitalization of international financial relations after the debt overhang has been removed.

The strict superiority of exogenous indexation variables over endogenous variables has been disputed by Froot et al. [1988]. They conclude that this result is only valid under symmetric information between the borrower and the creditor. If the borrower has private information, e.g., about his willingness to invest, contingencies with endogenous variables may be useful. The model applied by the authors covers three periods, with an exogenous shock observed at the beginning of period 2. After that, the investment decision by the borrower is made under certainty. In effect, the model contains a dichotomy: uncertainty is introduced to allow for the emergence of a debt overhang in the case of strongly negative shocks; but if investment occurs, future output is known with certainty. For analyzing the prospects of contingency contracts to induce stabler relations in international lending, a more realistic setting seems to be necessary, one in which each investment decision faces uncertainty. Moreover, only under this setting can risk sharing questions be dealt with. The moral hazard problems in the case of endogenous indexation variables also remain under the condition of asymmetric information. However, the counteracting benefits turn out to be far more difficult to prove under the condition of investment uncertainty, especially if borrowers are risk averse.

Aizenman analyzes the effects of flexible vs. fixed penalties on the propensity of borrowers to default and introduces only subsequently a contingent interest rate scheme. Thereby, output is assumed to be constant most of the time.
For the time being, the borrower is assumed to be risk neutral, with the utility function $U(X) = X$. The repayment obligation may be fixed across all states of the world or be flexible, i.e., contingent on the stochastic disturbance. In the case of fixed repayment obligations, $P = P (1 + r^*)$, contractual servicing is secured as long as:

\[ P (1 + r^*) < N_0 / \theta \iff \theta < Z = N_0 / P (1 + r^*) . \]

Credit supply is then upward sloping due to the fact that a risk-neutral lender will extend credit as long as the expected return on the risky loan equals the risk-free return, $r_f$:

\[ (1 + r^*) \int \limits_0^Z g(\theta) \, d\theta = 1 + r_f . \]

In the case of the contingent repayment contract, the interest rate is linked to $Y(\theta)$ and $N(\theta)$ in such a way that repayments never exceed the penalty. So, default is ruled out:

\[ P (1 + r_f) / \theta < N_0 / \theta . \]

This implies that capital transfers are rationed, with $P < N_0 / (1 + r_f)$. Up to the credit ceiling, the supply of transfers is perfectly elastic at the risk-free rate of interest.

It is now possible to derive the borrower’s utility under the contingent ($U_c$) versus the noncontingent repayment scheme ($U_n$):\(^8\)

\[ U_c = \int \limits_0^Z [ Y(\theta) - P (1 + r_f) / \theta ] g(\theta) \, d\theta , \]

\[ Aizenman shows that, nevertheless, credit rationing occurs in the noncontingent case and that the credit ceiling is even lower than with contingent repayment contracts.\(^7\)

\[ \text{Here, it is assumed that } (d / d\theta) [ Y(\theta) - N_0 / \theta ] < 0. \text{ This rules out an anomaly of the Aizenman model, where in the default case the borrower’s utility increases with the severity of the stochastic shock.} \]
Comparing the borrower's utility positions by taking the difference of \([14]\) and \([15]\) results in:

\[
U_e - U_{ne} = \int_2^{\tilde{\theta}} [Y(\theta) - \frac{N_0}{\theta}] g(\theta) d\theta.
\]

The model shows that the borrower's expected utility, i.e., his expected income, is higher under the contingent repayment scheme. The gain in expected income equals the expected penalty in the noncontingent scheme [Aizenman, 1987]. Because the default penalty is a deadweight loss, the benefits of introducing contingencies accrue fully to the borrower. The expected return of the creditor equals the safe rate of return under both repayment schemes.

However, matters change if the borrower is risk averse. In this case, the income smoothing properties of the contingency contract provide an additional benefit to the borrower. Risk-averse borrowers should thus be willing to accept higher expected rates of return for the creditor on contingent interest contracts than on contracts with fixed repayments. The means of reducing sovereign risk and providing for more efficient risk sharing between creditors and borrowers in international financing are complementary under these circumstances. Both aims can be achieved simultaneously by making interest rates contingent on the exogenous shocks that influence the borrower's output. This result even holds if creditors are risk averse as long as they show lower risk aversion than the borrowers or are able to diversify risks better. This is most probably the case.

In summary, one is tempted to conclude that credit contracts with contingent interest rates represent a perfect blueprint for solving the most serious problems of international lending. However, two important caveats are in place. The model employed assumes perfect and symmetric information on the influence of exogenous stochastic disturbances on the borrower's output. In reality, knowledge of the relationship between exogenous shocks and the country's economic performance is far from being perfect. Additionally, the contracting parties will try to keep the contingency formula simple. For example, they may focus on a few major determinants of the borrower's future output, e.g., prices of major export or import commodities. In this case, contingency contracts will not reduce the probability of sovereign default to zero, although they retain their positive role in facilitating
increased risk sharing. Therefore, it appears necessary to look for additional means that focus on the second side of the default calculus, i.e., increase the borrower's costs of default.

5. A Contract System for Reducing Sovereign Risk

Up to this point, the borrower's default costs have been formulated as being positively correlated with his output. This rationale rests on the assumption that creditors will react to default by denying further loans in the first place. A credit stop implies costs for the borrower for mainly two reasons: (1) profitable investment opportunities may not be exploited because of the lack of external financing; (2) the borrower's external trade will be severely hindered if short-term trade financing is no longer available. However, it is open to question whether the related default costs are sufficient to eliminate sovereign risk.

This is because coordination problems on the side of the creditors may prevent a credit stop from being executed. Continued lending after payment disruptions may well be profitable for creditors. Their reaction depends on the degree of losses experienced on a sovereign loan. Only outright default can be expected to result in a total credit stop. Developing country borrowers seem to have been aware of this fact and avoided outright default in the past. Instead, they tried to reach reschedulings using the default threat to induce the banks to participate. This behavior is another manifestation of sovereign risk. Obviously, the borrower's costs in the case of partial default or rescheduling are too low to match the benefits they may reap from such behavior.

Even if they were able to pay, sovereign borrowers could be expected to use the default threat to press for rescheduling, because of their utility ranking of alternative options and the creditor's difficulty to distinguish between inability and unwillingness to pay. Difficulties in checking the sovereign borrower's ability to pay result from the nonexistence of legal mechanisms that provide information to the creditor in the case of repayment problems. Furthermore, there are no incentives for the creditors to gather information at their own cost, e.g., by strictly monitoring the economic situation of the country in order to be able to evaluate its ability to pay. This is because the creditors will generally find it difficult to transform improved information into a more favorable outcome of reschedulings through a change in negotiation strategy. The missing enforcement mechanisms leave only limited scope to counter default threats by the borrowing countries. Past experience

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9 In domestic credit markets, composition and bankruptcy laws solve this problem.
suggests the following utility rankings of the debtor country and the creditor (in respective order):  

**Borrower:**
Rescheduling  >  Partial default  >  Contractual repayment  >  Outright default

**Creditor:**
Contractual repayment  >  Rescheduling  >  Partial default  >  Outright default.

The problem of sovereign risk leading to an increased probability of forced rescheduling would be reduced if prohibitively high sanctions were available. Under the present institutional circumstances, however, an announcement by creditors that a total credit stop would be imposed also in the case of rescheduling lacks credibility. In the following, a contract mechanism is proposed that aims at inducing the creditors to react to reschedulings in a way comparable to that in the case of outright default.

For that reason, new loan contracts should incorporate the obligation for the creditor to enter an additional contract with a third party belonging to the same jurisdiction as the creditor. The contract specifies a premium the creditor will have to pay to the third party if he continues the loan contract with the borrowing country after rescheduling has taken place. The premium would be fixed in advance at a level high enough to lead to a negative present value of the loan contract for the creditor if the premium payments are taken into account. The creditor will then prefer to withdraw from the loan contract as soon as the third party requests premium payments after a rescheduling. In this case, there will be no subsequent repayments and no premium payments.

With the third party enforcing premium payments due to it, the creditor would rather insist on the old loan contract than renegotiate because the former option entails some probability of repayment. The borrower can then be supposed to abstain from pressing for rescheduling and service the loan, as the costs to be borne by him in the case of forced rescheduling would be as high as in the case of outright default.

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10 It is assumed here that the borrowing country is able to pay; hence, it prefers contractual repayment over outright default.

11 A similar contract scheme that is used in agriculture and employs "most-favored-customer" clauses is discussed by Knoeber [1983].
default. This is because the creditor experiences the same loss in both cases and, thus, his reaction with regard to future credit would be equivalent.\footnote{To secure this result, the third party must be given the right to enforce the premium payments in the case of partial default as well. This rules out the country's attempting to circumvent the contract system by reducing the loan terms unilaterally rather than asking for rescheduling. Otherwise the expected outcome of rescheduling, accepted by creditors if renegotiations took place, would be imitated by the borrower through unilateral actions.}

By changing the utility ranking of both the borrower and the creditor, the proposed contract system makes country loans self-enforcing as long as the borrower's ability to pay is not reduced. However, deferred payments may also be due to impaired ability to pay. Inability to pay raises the costs of contractual repayment for the borrower, while the costs of default remain constant. If the creditor refuses to reschedule, the borrowing country is left with the alternative of repaying the full amount or defaulting on the whole loan. It will choose to default if its ability to pay is severely reduced and, therefore, default results in a higher utility than repaying the loan. For the creditor, outright default is certainly associated with higher costs than is the case with rescheduling agreements (without premium payments) that would have prevented the country from defaulting. For that reason, it would be to the creditor's advantage to agree to rescheduling when he expects the borrowing country to resort to outright default after its rescheduling request has been rejected.

Hence, the contract system has to be modified in a way that it allows for rescheduling if the country proves unable to pay. This objective can be achieved by granting creditors the option of rescheduling their loans without activating the third party contract; i.e., creditors may declare that rescheduling is in their own interest. Creditors confronted with the request for rescheduling would then have the choice of agreeing and putting the third party contract out of force, or of rejecting the rescheduling if they expect full repayment of the loan under the contract system.

With the modified contract system the creditor faces three possible payoffs, whereby $X_1 > X_2 > X_3$:

— $X_1$ is realized if the creditor rejects the demand for rescheduling and relies on the contract system, and the borrower is able to pay.

— By contrast, the creditor is left with the most unfavorable outcome $X_1$ if he behaves as above, but the borrower is unable to pay and defaults.

— The creditor receives $X_2$ if he agrees to rescheduling. Assuming risk-neutral creditors, rescheduling is accepted if $X_2 > (1 - e) X_1 + eX_2$, with $e$ being the expected probability of the borrower being unable to pay.

The creditor's decision can be modeled as a Bayesian decision problem. Stüven \cite{1988} has shown elsewhere that the contract system strengthens the creditor's incentive to monitor the borrowing countries, thereby improving his assessment of the borrower's repayment capability. With improved information and the credible

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threat of imposing a credit stop on willfully defaulting borrowers, the creditors are better equipped to distinguish between inability and unwillingness to pay. This may make creditors more willing to participate in the modified contract system.

Generally, whether the contract system is introduced is open to a market test, since the additional third party contract is of a voluntary nature. But the chances it will be introduced are not too bad. First, from the creditors’ point of view, the contract system will not impair their utility position even in the worst of all states of the world, i.e., when the creditors do not regard the system as improving their bargaining position. Creditor behavior will then remain strongly biased towards a general acceptance of rescheduling requests. But even in this case the contract system does no harm. The creditors can prevent the premium payment from becoming effective by agreeing to rescheduling. The creditors are thus able to generate a situation comparable to the present one.

Second, borrowers do, of course, prefer loans without further obligations. But under present conditions, developing countries relying on unconditional loans are typically subject to strict credit rationing. They should have an incentive to reduce the supply constraint by suggesting third party contracts, especially if this enhances the willingness of creditors to agree to ex post risk sharing under specific circumstances.

Third, it has to be clarified whether the third party will demand a compensation for playing its role. The expected payoff to the third party from the additional contract is zero because the probability that premium payments will become effective is zero. Creditors would prefer to withdraw from the third party contract rather than pay the premium. However, the third party has to bear the costs of surveilling the credit contracts. The third party’s expected profit being negative, a public provision of the third party function seems to be necessary. This can be justified because the contract system serves as a partial substitute for an international legal system. The third party engages in the supply of a public good.

Finally, it may be argued that side payments between the three parties involved seriously impede the effectiveness of the contract system. Side payments by the creditor or borrower may induce the third party not to enforce the premium payments. The motivation for side payments after partial default has occurred is that both the borrower and the creditor are better off without premium payments ex post. Neither of them will force the third party legally to adhere to the contract. The third party’s expected payoff from the contract being zero, only small side payments would induce the third party not to enforce the premium payments. However, this problem can be solved given the borrower’s and creditor’s ex ante incentive to design the contract system in such a way as to ensure its credibility and permanent functioning, and given that the third party is a public institution. Even though bribing the public institution with side payments may be to all parties’ benefit, the
judicial system is obliged to enter ex officio. Hence, the judicial system of the creditor country ensures that the third party really calls in due premium payments.

6. Conclusions

Evaluating the functioning of the proposed contract system in combination with an extended use of contingency contracts leads to the following conclusion. Contingency contracts can reduce the borrower’s benefits from default in the case of depressed ability to pay by linking the repayment obligation to the country’s economic situation. However, the risk of sovereign lending cannot be eliminated completely in this way due to informational asymmetries and the need to keep the contingency formula simple. Consequently, borrowing countries unwilling to pay may continue to press for rescheduling by claiming that they are unable to pay, thus threatening default.

The contract system improves the bargaining position of the creditors. Creditors who expect the borrower to be unwilling to pay have the means to induce contractual repayment by credibly threatening a credit stop even in the case of only partial default. This should have the positive effect of making creditors more willing to agree to ex post risk sharing if they believe the borrower is unable to pay in spite of the ex ante agreed contingencies. Thus, the contract system offers the possibility of enhancing the stability of international financial relations in the future.

Creditors should be willing to engage in innovative transfer contracts after the present debt overhang has been solved. To overcome the inherited disincentive problems for borrowers attempting an internal adjustment, some form of debt relief is commonly regarded as necessary. However, an adequate timing of relief is crucially important. Replacing the frequently suggested ex ante concessions by ex post benefits for reform-minded borrowers provides equally strong incentives for internal adjustment efforts. Furthermore, economic policy risks due to moral hazard behavior on the part of nonbeneficiaries are kept to the minimum in this way. The uncertainty of borrowers as to whether adjustment efforts will be honored by the creditors should be strengthened by establishing contingent credit facilities that are made available once consistent adjustment programs have been implemented.

Bibliography


