COMMENT

'A Geometrical Analysis of the Incentives for Default and Credit Rationing'
by Daniel Cohen and Jeffrey Sachs

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The paper by Cohen and Sachs forms part of a growing literature attempting to understand and explain the enormously complex set of phenomena surrounding the international debt issue. Its strength is that it places the discussion of lenders and sovereign borrowers into an explicit intertemporal framework and derives therein an explicit description of debt dynamics. Its weakness is mainly that, as a purely theoretical exercise, we are left unsure about whether it describes wordly phenomena or whether, like a growing part of economic literature, it is self-referential. In my comments I will undertake both to explain the Cohen–Sachs results and to place them in the context of behavior in the trenches of economic life.

Fig. 1 describes the apparatus concisely in a static framework. A country contracts debt $D$. With this debt it is able to produce gross wealth (equal to the present value of income) shown as $W(D)$. With no debt, the country is at autarky point, $N$. But, at least in the more realistic model of part 4, the marginal product of debt (equal to the marginal product of capital times the
fraction of debt going into capital) is higher than the interest rate on the
debt – hence the $W(D)$ curve rises rapidly at first. Then the country gradually
becomes saturated with capital and debt, so $W'(D)=0$ at $D^f$. A country
wishes to maximize its net wealth (or discounted value of income after either
paying off debt or defaulting). If a country undertakes to repay its debt, then
its wealth is equal to gross wealth less debt, shown as the solid line in fig. 2.

To understand a country’s incentive to repay its debt, we consider curves
showing the effect of repudiation. In fig. 1, repudiation lowers net wealth to
$\hat{W}(D) = (1 - \lambda)W(D)$, shown as the dashed line. According to Cohen–Sachs,
the $\hat{W}(D)$ line lies exactly $(1 - \lambda)$ below the $W(D)$ line, reflecting the
assumption that the fraction $\lambda$ of output, and hence of the present value of
output, is lost because of loss of access to capital markets as well as because of
other forms of economic retaliation.

![Net Wealth with and without Default](image)

*Fig. 2. Net wealth with and without default; lending limits at $D_f$.*

Fig. 2 lays out a country’s choices. If a country plays the repayment game,
it stays on the solid line; as long as it knows it will always play the
repayment game, its best policy is to borrow only up to point $\hat{D}$, the honest
optimum.

If a country is contemplating repudiation, it must consider dashed lines in
fig. 2, which represent net wealth after repudiation. If $\lambda$ is high (as in case B
of fig. 2), then it will never pay for a country to repudiate its debts. Lenders
know that repudiation doesn’t pay, so they need not constrain lending.
Cohen and Sachs’ Proposition 1 concerns the corner solution of $\lambda=1$, but
there must also be a whole range of relatively high $\lambda$’s where repudiation
does not pay so banks need not restrain lending.
The more interesting situation in case A, where losses from repudiation are low. Note that for any debt level greater than \( D^*_A \), a country is better off repudiating its debt than repaying its debt. At the honest optimal debt level \( \hat{D} \), a country's wealth rises from \( R \) to \( R' \) after repudiation.

Enter the lenders. As Cohen and Sachs show, because lenders understand borrowers' options, they will never lend more than \( D^*_A \) in fig. 2. For debt levels up to \( D^*_A \), lenders prefer not to default. Cohen and Sachs show that until debt is accumulated up to \( D^*_A \), there will be no credit rationing. But once borrowers reach \( D^*_A \), lenders will lend no more for fear of leading borrowers into temptation.

Using this informal graphical apparatus, we can perhaps shed some light on realistic aspects of international indebtedness.

(1) To begin with, it is apparent that there is a threshold \( \lambda^* \), which is given by \((1 - \lambda^*)W(D^D) = W(D) - \hat{D}\). For \( \lambda \) is greater than \( \lambda^* \), credit rationing is necessary. For \( \lambda \) less than \( \lambda^* \), the painful consequences of default make credit rationing unnecessary.

(2) This insight leads to a second and paradoxical conclusion. If we can make the consequences of default sufficiently automatic and painful, then borrowers will exercise the necessary restraint on themselves. Conversely, the more humane and generous become the institutions of national bankruptcy and IMF lending, the more will lenders have to protect their portfolios. Hence, it is in the interest of debtors to make the rules of default more draconian. By raising the cost of default, default becomes less attractive and lenders will thereby raise their lending limits. (I might add that I have yet to find a constrained country that espoused draconian consequences of default or debt rescheduling — just as I have yet to find a lender who advocated repeal of usury legislation or a homeless person lobbying for decontrol of apartment rents. The inability of people to perceive subtle self-interests is troubling here as in other places.)

(3) A third point about the approach concerns the nature of the equilibrium. They propose that banks simply calculate the indifference point at \( D^F \) in fig. 2 and then ration their lending. Alas, this would be a very poor policy because behavior at that point — and the payoffs — is violently asymmetrical. Start out in an equilibrium where a country — call it MañanaLand — has borrowed up to the limit, \( D^F < \hat{D} \). Everyone is solvent; everyone is happy. Then a foolish go-go bank — Penn Square, if you will — lends a bit more, so MañanaLand decides to default. MañanaLand doesn't much care whether it defaults or not, but banks care a lot as they lose their entire portfolio of \( D^F \)-plus.

Or do they? Won't everyone be better off is the banks 're-schedule' the debt, effectively reducing MañanaLand's debt below the default threshold? Such a solution makes everyone better off — everyone except future lenders. But if lenders blink in the face of disaster (as they have every time to date),
doesn’t this give borrowers tremendous power to threaten default? Won’t the whole process break down because default is so wasteful? If default never occurs, because default is never the solution of the relevant game, then the analysis becomes curiously irrelevant?

(4) Although the authors do not relate their paper to recent events, they might use their results to explain the dramatic decline in lending during the early 1980’s. According to their theory, what occurred was that major Latin American countries were suddenly at the point where a default was economically attractive relative to repayment. Banks were reining in countries to keep them in the corral of responsible financial behavior.

While this explanation is ingenious, it is flying against a very powerful fact – that no non-communist country has defaulted since World War II. If all the big Latin American countries were really near the threshold, then one would certainly have tipped over the threshold and declared default after 1980. My hunch is that default is so undesirable that countries will go to any lengths to avoid it. If this hunch is correct, then countries are in case B of fig. 2 – they are not tempted to default and in fact are not being credit rationed to avoid default.

Surely, you will say, something was happening to debtor countries and to banks. What was happening was that countries were forcing banks to reschedule at the same time countries were being visited by the IMF. Perhaps this is the set of events to which the Cohen–Sachs paper applies. If a debt rescheduling is a partial default under another name, then banks will ration credit to Mafianaland as long as rescheduling is not unpleasant enough to make countries restrain themselves. So perhaps the Cohen–Sachs model really will apply to events of the 1980’s, where the analyzed event is the complex set of events involving IMF negotiations and debt rescheduling.

The curious factor here, however, is that the events surrounding an IMF visit are not well described by a high $\lambda$. Indeed, most orthodox economists would say that an IMF visit allows a country to undertake policies that improve future prospects, or have a negative $\lambda$! By the Cohen–Sachs logic, won’t every country desire rescheduling? Perhaps not. For an IMF visit is an interesting arrangement – somewhat like making convicted felons pick up garbage – which is immediately unpleasant to decisionmakers even though it is ultimately healthy to the country. It has a high psychic $\lambda$ and a negative real $\lambda$. Surely as an institution such an arrangement is far improved over the horribly inefficient mechanism of default – indeed from the point of view of institutional arrangements to combat self-selection and moral hazard, the arrangement is remarkable.