ECONOMIC DEVELOPMENT AND INTERNATIONAL TRADE[†]

Credible Economic Liberalizations and Overborrowing

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When undertaking reform and stabilization programs, some countries are prone to excessive foreign borrowing that ultimately proves unsustainable. A sharp withdrawal of foreign funds, declines in asset values, and a painful economic downturn may follow.

The policy reforms favoring free trade, privatization, deregulation of domestic industry, and fiscal consolidation pursued by Chile in the mid-1970's led to massive capital inflows through 1981, followed by a financial crash and economic downturn during 1982–1983. In Mexico after 1988, similarly comprehensive real-side reforms attracted large capital inflows, which suddenly reversed during the December 1994 financial panic and steep 1995 downturn. Argentina currently faces the depressed aftermath of a reform program during which it borrowed too much and subsequently had to retrench.

This pattern is not confined to developing countries. After a dismal period of high inflation and public intervention in Britain in the 1970's, the Thatcher government undertook apparently successful industrial restructuring and fiscal consolidation in the early 1980's. Enthusiasm for Britain's changed economic prospects attracted capital inflows, increased consumption, and triggered a boom in residential and commercial real estate in the late 1980's that culminated in the bust of the early 1990's.

Nevertheless, not all liberalizing countries attracting large capital inflows need experience this boom-and-bust cycle. Indonesia,

Malaysia, and Thailand have all had current-account deficits of 5–8 percent of GNP (similar to Mexico before the fall) for almost a decade, without a Mexico- or Chile-type debacle. These East Asian economies achieved virtual steady-state growth with high saving and very high investment, although doubts about its quality could yet provoke a cutback in foreign lending.

In contrast to the East Asian experience, this paper is more concerned with the *transition* from economic repression to liberalization (McKinnon, 1993; Pill, 1996; McKinnon and Pill, 1996). When does an economy undertaking apparently well conceived industrial and financial reforms suddenly become vulnerable to overborrowing? In particular, both Chile and Mexico showed sharp declines in private saving in the early stages of the reforms. Does this make sense in a "first-best" model of intertemporal optimization? Alternatively, does a fall in saving indicate something wrong with the capital market, or that the structural reforms lack credibility?

I. The Model

Initially, we believed that the problem was a matter of getting the exchange rate right. However, here we abstract from monetary variables (the money supply, exchange rate, and price level) altogether, as did J. P. Conley and W. F. Maloney (1995). To pursue the analysis one step further, we build a highly simplified Fisher two-period model of borrowing and investing to show how the capital market could malfunction when, in moving from repression to reform, uncertainty about payoffs to new investments greatly increases.

In Figure 1, the function $f(\cdot)$ portrays the pre-reform opportunity set, linking investments in period 1 to payoffs in period 2, open to a representative firm-household with an

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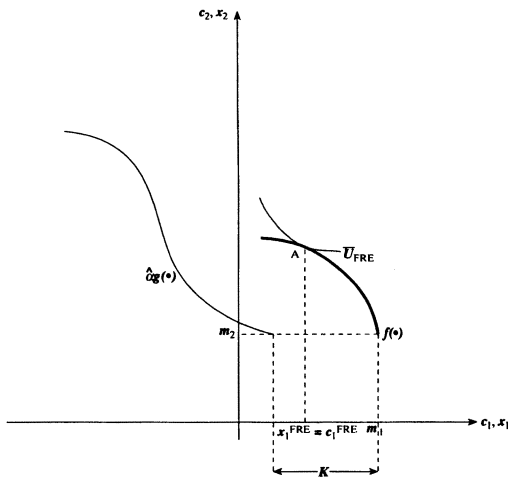
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FIGURE 1. EQUILIBRIUM IN THE FINANCIALLY REPRESSED
ECONOMY (FRE)

FIGURE 2. FIRST-BEST SOLUTION IN THE DOMESTICALLY
LIBERALIZED ECONOMY (DLE)

endowment (m_1, m_2). In the standard
Fisherian mode, $f(\cdot)$ displays diminishing re-
turns overall; and, because agents are identi-
cal, the capital market is redundant: point A
represents the intertemporal consumption *and*
production equilibrium (i.e., $c_1 = x_1$).

The potential economic gains from a real-
side reform, such as a move to free trade,
are portrayed by a new investment function
$\hat{\alpha}g(\cdot)$, which shows a segment with much
higher payoffs in period 2 from investments in
period 1. Because $\hat{\alpha}g(\cdot)$ incorporates indivis-
ibilities and increasing returns, the capital mar-
ket is now critically important if the new
export opportunities are to be exploited. Only
after discrete setup costs (K in Fig. 1) are in-
curred does further investment in $\hat{\alpha}g(\cdot)$ show
increasing yields. Then, at a much higher level
of average productivity, diminishing returns
(from the economy's fixed factors of labor,
land, etc.) eventually set in at the margin.

Suppose, however, that the reforming econ-
omy remains financially repressed because of
inflation and high-reserve requirements for fi-
nancial intermediaries that are outside of our
nonmonetary Fisherian model, and because
agents cannot borrow abroad. In this finan-
cially repressed economy (FRE), the po-
tentially superior investment opportunities
represented by $\hat{\alpha}g(\cdot)$ have setup costs that are
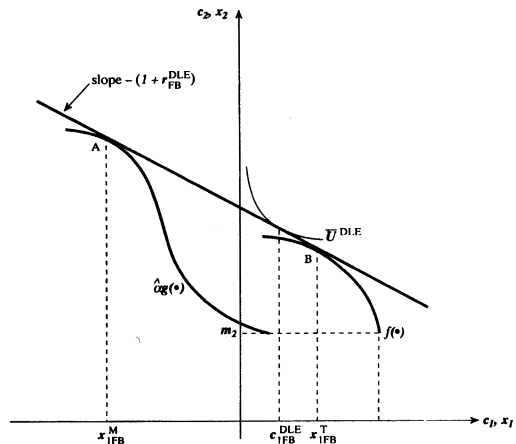too large to be self-financed by individual

firm-households. Thus, despite the trade re-
form, the economy remains mired close to A,
which we shall call the FRE equilibrium.

Alternatively, when the real-side reform oc-
curs, suppose that the domestic (bank-based)
capital market, but not international capital
flows, is open: our so-called domestically lib-
eralized economy (DLE) shown in Figure 2.
It assumes that investment payoffs in period 2
are known with certainty so that moral hazard
in the banks remains latent and the domestic
capital market works efficiently. In this risk-
free DLE economy, some agents borrow to in-
vest in the superior $\hat{\alpha}g(\cdot)$ technology (point
A), while others are confined to the old $f(\cdot)$
technology (point B). The latter become net
depositors in the banking system. This double
tangency, where both the new and old invest-
ment technologies coexist in the DLE, reflects
the high setup costs (indivisibilities) of jump-
ing to the new technology. The active bidding
for investment resources to exploit the new,
more productive, investment technology
drives up the rate of interest to induce some
disinvestment in the old less efficient technol-
ogy and to curb current consumption. Thus,
without foreign-capital flows in our DLE, sav-
ing does not fall in period 1.

In this "first-best" (FB) equilibrium where
future payoffs to investment are known,
everybody's welfare increases regardless of
whether they be borrowers or depositors. Be-

cause firm-households are identical, their now-higher utility (and, by implication, their consumption choices) must be the same, as shown by the tangency of $\bar{U}^{\text{DLE}}$ with the budget line in Figure 2. Borrowers investing in the new technology gain from output in period 2 exceeding the cost of repaying their loans, while lenders (who all stay with the old technology) gain from the higher yields on their deposits made with the banks.

However, this state of bliss need not hold once uncertainty is introduced. By subsuming monetary and exchange-rate risk into an ex ante probability distribution of returns on investment, we sidestep the complex details of how macroeconomic management of the reforms affects profitability. Let the random variable α modify the function $g(\cdot)$, so that $\alpha g(\cdot)$ is the actual investment payoff in period 2. Based on the best information available in period 1, the expected value of α is $\hat{\alpha}$. (In the deterministic cases portrayed in Figs. 1 and 2, investment outcomes were known exactly.)

Because α now varies stochastically, Figures 3, 4, and 5 represent possible investment equilibria in period 1 together with the corresponding *expected* payoffs in period 2. But how do nonbank firms decide what the returns to investment in the (radically) transformed economy likely will be? Here we posit a substantial informational asymmetry. Banks are special because (i) they are at the center of the flow of funds in the economy, and (ii) collectively they can price credit and determine its availability to liquidity-constrained enterprises.

The upshot is that, in period 1, the aggressiveness of the banks' lending behavior offers an implicit signal to the nonbank sector of the likely success of the reforms (i.e., of the mean realization of α). Domestic firm-households, perhaps naively, rely on these implicit signals from the "expert" banking system to generate their expectations of $\hat{\alpha}$. Besides enabling firms to finance their setup costs and so stimulate current economic activity, easy credit signals that new investments in the reform technology will have high payoffs, and so it increases peoples' estimates of their future income.

If accurate, having the banks implicitly signal how successful the reforms will be could be efficient. In Figure 3 portraying a DLE,
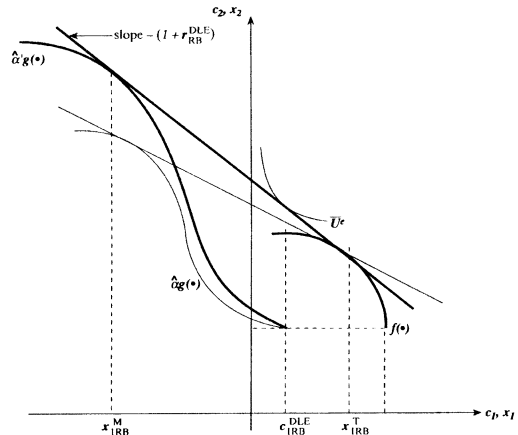

FIGURE 3. RATIONAL-BELIEFS EQUILIBRIUM IN THE DLE

$\hat{\alpha} g(\cdot)$ now gives the unbiased locus of expected investment outcomes in period 2 when banks are free from moral hazard. If firm-households are risk-neutral in this stochastic world, the double tangency of the borrowing–lending line with $f(\cdot)$ and $\hat{\alpha} g(\cdot)$ is the first-best solution, where expected two-period income is maximized.

The problem comes when banks exploit the potential for moral hazard implied by the implicit or explicit government guarantee of bank deposits. If prudential supervision is insufficient, risk-neutral banks will truncate the true probability distribution of future investment returns by unduly discounting the possibility of bad outcomes. They and their depositors know that if the overall reform program fails to deliver and leads to widespread bankruptcies and panic, the government will enter to bail out distressed institutions. Thus, ex ante, risk-neutral banks could run their loan programs overly optimistically as if the mean realization of α were $\hat{\alpha}'$, where $\hat{\alpha}' > \hat{\alpha}$. The result seen by nonbanks is the unduly inflated investment payoff function $\hat{\alpha}' g(\cdot)$ shown in Figure 3.

Unaware of the inadequacy of bank supervision, firm-households take this overly optimistic signal at face value and bid eagerly for funds to exploit the pseudo higher returns. The equilibrium interest rate, as shown by the double tangency of the domestic interest rate with $\hat{\alpha}' g(\cdot)$ and $f(\cdot)$ in Figure 3, is bid up higher

than it would have been if the signal from the banks had been accurate. This corresponds to what Mordecai Kurz (1994) has called a *rational-beliefs* (RB) equilibrium. Unlike a full rational-expectations equilibrium, in our model nonbank agents with rational beliefs have insufficient information to reject a false signal from the banks. Under deposit insurance, loosely supervised banks prefer to gamble with the government's money.

Nevertheless, because the capital account of the balance of payments remains closed in the RB equilibrium shown for a DLE in Figure 3, the false optimism about the higher returns to investment does not lead the economy into serious overinvestment or overconsumption. Although firm-households see their future income to be too high, the sharp increase in the domestic interest rate above the first-best level (and probably far above international rates as well) restrains consumption and investment in period 1. Income and substitution effects offset each other so that current saving does not fall.

True, in period 2, when investments in the RB case turn out to yield less than anticipated, and high-cost bank loans must be repaid, bankruptcies could cause severe problems between debtors and creditors. But all of this is bottled up within the domestic economy. Moral hazard in the domestic banking system did not induce the nation as a whole to overborrow because, by definition, the capital account of the DLE remains closed, a crude fail-safe condition.

II. Opening the Model to International Capital Flows

Our analytical machinery also applies directly to an internationally liberalized economy (ILE), where the capital account is left open when credible real-side reforms are implemented. Now *all* our identical firm-households become net borrowers in period 1 in order to surmount the discrete setup costs of investing to exploit the structural reforms. The pace of technical advance quickens.

Suppose first that there is no moral hazard in the banking system; that is, a strong regulatory system prevents banks from discounting bad macroeconomic outcomes. Figure 4 shows
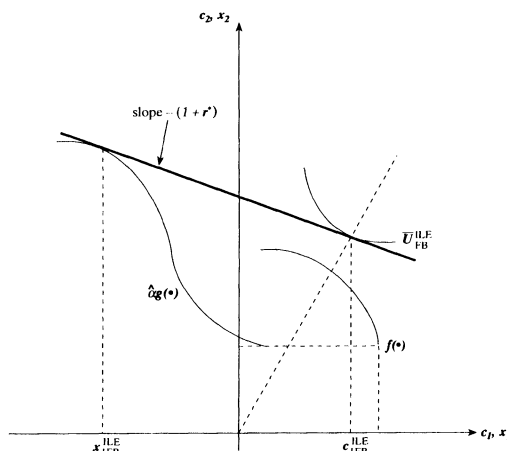

FIGURE 4. THE FIRST-BEST SOLUTION IN THE INTERNATIONALLY LIBERALIZED ECONOMY (ILE)

that consumption rises (saving falls) in an ILE in period 1 because income and substitution effects now pull in the same direction. Not only does expected income rise into the indefinite future, but domestic interest rates fall to the world level r^*. (Remember, we are abstracting from currency risk and other monetary considerations.) The open international capital market allows people to borrow against their much higher incomes expected in the future in order to increase consumption today.

Although authorities in the ILE might get nervous about the large observed current-account deficit in period 1, it diminishes naturally in period 2 as loans are repaid. The fall in saving in period 1 (see Fig. 4), beyond that shown for a DLE (Fig. 2), is simply part and parcel of the first-best solution: the reforming economy's resources for investment and consumption are optimally distributed intertemporally. Welfare improves beyond what would prevail if the capital account had remained closed.

The potential for disaster arises when there is moral hazard in the capital market *and* international financial flows are unrestricted. Suppose now that the banks lend too exuberantly. They signal higher payoffs for investments than the reforms warrant. In the resulting RB equilibrium as shown by the tangency of the world interest rate with the in-
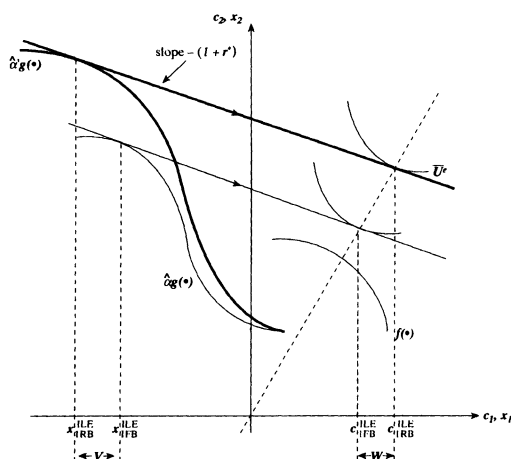
FIGURE 5. RATIONAL-BELIEFS EQUILIBRIUM IN THE ILE:
THE OVERBORROWING SYNDROME

vestment function $\hat{\alpha}'g(\cdot)$ in Figure 5, saving declines further, and the corresponding current-account deficit mushrooms. Relative to the first-best equilibrium, first-period (over-) consumption increases by W, and (over-) investment increases by V.

Unless the economy experiences a lucky (upper-tail) payoff to today's investments, this RB equilibrium in Figure 5 is unsustainable. If the actual payoff is its true unbiased mean, $\hat{\alpha}g(\cdot)$, firms will have trouble repaying investment loans, and households debt burdens will escalate relative to their incomes. Widespread loan defaults could cause the domestic banking system to seize up and could require a bailout from foreign indebtedness.

III. Policy Conclusions

First, when real-side reforms are credible and expected to be permanent, private saving in period 1 could decline, with some domestic consumption financed by foreign-capital inflows in a first-best equilibrium, even if moral hazard in the banks is absent.

Second, the authorities still need be concerned that a decline in private saving, and a surge in investment, may result, at least in part, from a false euphoria regarding what the eventual payoffs from the credible reforms will be. The unavoidable presence of deposit insurance may lead banks to lend overly aggressively, which in turn sends a falsely optimistic signal to nonbank firms and households regarding the macroeconomic outcome of the reform process.

Third, the effectiveness of prudential banking regulations is particularly hard to assess at a time of great structural change in the economy. But if foreign capital inflows and domestic consumer credit are insufficiently restrained, the effect of moral hazard in the banks becomes much more damaging, as the Chilean and Mexican experiences attest.

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