

SOROS ON INTERNATIONAL CAPITAL MARKETS AND DEVELOPING ECONOMIES:

MULTIPLE EQUILIBRIA AND THE ROLE OF POLICY

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INTRODUCTION

By any standard George Soros is an impressive person. Not only is he one of the world's most successful financiers, making him one of the world's richest men, he is also one of the world's leading philanthropists, having given away hundreds of millions of dollars in the cause of promoting democracy, human rights, and open society. This financial success and philanthropic generosity would be enough to mark him as an exceptional individual, but on top of this Soros has become a leading public intellectual engaged with vital questions concerning financial markets, economic development, and globalization.

Soros' views on financial markets are complex and at odds with most of the economics profession, marking him as an intellectual iconoclast. Especially important is the fact that his theoretical iconoclasm extends to the realm of policy, where he has continually engaged in a search for new and better policies. In doing so, Soros joins iconoclastic intellectualism with the real world pragmatism of a financier.

This paper explores George Soros' thinking about financial markets, with special emphasis on his views regarding the shortcomings of the current international financial system and its treatment of developing countries. The paper distinguishes among Soros as financial market theorist, Soros as political economist, and Soros as analyst of the current international financial system. Regarding Soros' theorizing about financial markets, the paper identifies a robust connection to the post-Keynesian tradition in economics. His thinking on developing countries and the international financial system is represented in terms of a model of multiple equilibria. The model is then applied to analyze Brazil's current financial problems, and policies for escaping the current "bad" high interest rate equilibrium are explored. At the policy level, Soros' thinking makes two important contributions. First, it offers important insights into how to remedy the immediate financial predicament afflicting developing countries such as Brazil. Second, it challenges neo-liberal thinking about financial markets and what constitutes appropriate regulation. As such, it can provide the intellectual justification for selective forms of capital controls.

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SOROS AS FINANCIAL MARKET THEORIST

At a meta-theoretical level, Soros' view of capital markets is captured in his theory of reflexivity, developed in *The Alchemy of Finance* [1987].¹ This theory represents a head-on critique of the economics profession's "market fundamentalism" approach to capital markets, which maintains that asset prices are determined by economic fundamentals as embodied in market supply and demand schedules. In sharp contrast, Soros questions the existence of exogenous market fundamentals, and in doing so brings into question the notion of fundamentals-driven equilibrium, which is the core of mainstream financial markets theory.² Within Soros' schema, equilibrium is an inappropriate concept for financial markets since agents in these markets seek to discount a future that is itself contingent on how it is discounted. Not only do market participants have to anticipate a future that is intrinsically unknowable, but their very actions change the future while their own understandings are changed by that changing future.

This reflexive construction of financial markets has clear links back to Keynes' [1936] description of the operation of stock markets in *The General Theory*. At the theoretical level, Keynes questioned the relevance of probability in a world characterized by risk, arguing that strict objective probabilistic reasoning cannot apply "since our existing knowledge does not provide a sufficient basis for a calculated mathematical expectation" [1936, 152]. To this negative critique, Keynes added important behavioral insights regarding investing being akin to a "game of Snap, of Old Maid, of Musical Chairs—a pastime in which he is victor who says *Snap* neither too soon nor too late, who passes the Old Maid to his neighbour before the game is over, who secures a chair for himself when the music stops" [1936, 155-56]. This description of investing is further complicated by the fact that market participants condition their actions on conjectures about what others are thinking. Thus, Keynes writes

(P)rofessional investment may be likened to those newspaper competitions in which the competitors have to pick out the six prettiest faces from a hundred photographs, the prize being awarded to the competitor whose choice most nearly corresponds to the average preferences of the competitors as a whole; so that each competitor has to pick, not those faces which he himself finds prettiest, but those which he thinks likeliest to catch the fancy of the other competitors, all of whom are looking at the problem from the same point of view. It is not a case of choosing those which, to the best of one's judgment, are really the prettiest, nor even those which average opinion genuinely thinks the prettiest. We have reached the third degree where we devote our intelligences to anticipating what average opinion expects the average opinion to be [1936, 156].

These Keynesian behavioral constructions of capital market behavior are clearly consistent with Soros' theoretical interpretation. Soros takes these insights a step deeper, however, by dynamizing them and placing them in a framework that allows for feedback, making the future conditional on the actions of the present. Elsewhere

[Palley, 1993] I have described a post-Keynesian theory of reflexive rational expectations, in which agents have rational expectations in the sense that their expectations and behaviors are guided by their understandings (what economists call a model) of the world. But that is where the parallel with mainstream rational expectations theory ends, because agents have differing views of the world and these views are constantly changing in light of their experiences. Nor is there any question of agents' converging on a common view, as suggested by mainstream economists' descriptions of rational expectations with learning. Such convergence is at odds with everything we know about human nature and society, and it would certainly never occur in an open society. All these features are either directly present or implied in Soros' view of financial markets and, when added to his Keynesian instincts regarding the causes of and cures for economic recession, they make George Soros a post-Keynesian thinker.

SOROS AS POLITICAL ECONOMIST

The above theoretical construction of financial markets is joined with deep political and moral insights, and this has contributed to Soros' standing as a public intellectual. For Soros, market fundamentalism is not only a false theory, but it is also a dangerous one.³ It is false because it profoundly misapprehends the way financial markets operate by assuming that markets tend toward a fundamentals-determined equilibrium. It is dangerous because it mistakenly endows the pursuit of self-interest with a moral quality by assuming an identity of private and public interests. In fact, moral considerations find no expression in market prices because anonymous market participants reason that they need not be overly concerned with the social consequences of their actions as these actions are so marginal in terms of the overall market. Moreover, even if some choose to step out of the market process for moral reasons, their place is quickly taken by others who are less scrupulous.

The amorality of markets has important policy implications, as it opens a justification for public policy interventions. Thus, Soros [2002b] writes: "It is exactly because markets are amoral that we cannot leave the allocation of resources entirely to them. Society cannot hold together without some consideration of the common interest. If private interests cannot be equated with the public interest, the public interest must be given expression in some other way than through the market." The upshot is that society must develop means of ensuring that both private and public interests are served by the market process.

Recognizing the shortcomings of markets does not mean an abandonment of markets, however. Instead, it points to the need for regulation that provides boundaries on markets and market behavior. In making this observation, Soros also recognizes the dangers and limits of regulation, which must be nested in a system that allows for regulations to be updated and modified in response to changing understandings: "To be sure, in developing a new regulatory framework we must remember that regulations are liable to be even more imperfect than markets. They need a feedback mechanism that allows mistakes to be corrected. That is what makes regulated markets superior to central planning. In the absence of feedback either from markets or from free speech and free elections, there is no limit to how far governments can go wrong.

But democracy can keep the excesses of government within bounds, just as government can contain the excesses of the financial markets" [Soros, 2002b].

It is this need for feedback that makes open society so critical for markets. Left to their own devices, markets risk going to socially disruptive extremes.⁴ Yet, market regulation in a closed society will destroy the creative and beneficial energy of markets, rendering regulation as imperfect as markets. Open society in the form of democracy, free speech, and freedom of association is therefore needed to keep the excesses of government within bounds, just as government must contain the excesses of the financial markets. This capacity for regulatory feedback is what makes democratic regulated markets economically superior to authoritarian central planning. This functional contribution of open society also makes it both a means and an end—a means for harvesting the benefits of markets and a desired end of civil society in its own right. In this regard, the concept of open society has similarities with Nobel laureate economist Amartya Sen's [1999] conception of freedom as means and end of development.

The above construction of the political economy of markets is completed by adding a role for individuals that embodies a distinction between "rule making" and "playing by the rules." As market participants, individuals are allowed to pursue their own self-interest, but only as long as they play by the rules. However, individuals in an open society also have a role to play as rule makers. In a democracy, all citizens are rule makers, and as rule makers they should be guided by the common interest.

There is an elegant architecture to this political economy, but it does mean that market economies are inevitably politicized. This in turn links to a problem that has increasingly concerned Soros, and that is the possibility that markets might twist the democratic process. This problem was visible in Brazil's last presidential election, in which the winning candidate, Lula da Silva, was disliked by financial investors. The threat of financial capital—both foreign and domestic—fleeing Brazil and triggering an economic crisis raised the prospect that financial markets might prejudice the election by intimidating voters into voting for the candidate preferred by investors.⁵ Such a possibility represents a serious threat to open society that troubles Soros, who has written in connection with Brazil's election "(i)f financial markets take precedence over the democratic process, there is something wrong with the system" [Soros, 2002c].

Even with the election over, the new Brazilian government remains significantly constrained by financial markets regarding the policies it can pursue. In effect, Brazil has brought into sharp focus the fact that the structure of market regimes has political feedbacks. Not only does democratic government regulate markets, but markets also regulate democratic government. This feature means that policy makers should not only focus on policy within a given regime structure, but should also focus on design of the structure itself [Palley, 2001]. It is also why International Monetary Fund (IMF) structural adjustment programs are so contentious, since they intentionally aim to change country economic structures in ways that change the policy space in potentially antipluralistic and antidemocratic directions [Grabel, 2000]. These issues and tensions have been largely denied for the last twenty years—the period of the Washington consensus. But with Brazil having elected a government that espouses a significantly different social philosophy from its recent predecessor governments, they can be expected to have greater political salience in the coming years.

SOROS ON THE INTERNATIONAL FINANCIAL SYSTEM AND DEVELOPING COUNTRIES

One aspect of the international financial system is the manner in which it constrains countries' abilities to pursue alternative domestic economic policies. A second aspect is the extent to which it delivers stable fairly priced flows of capital to developing country economies. On this latter point Soros is clear: the system is broken. "The international financial system is failing in the sense that it does not provide an adequate flow of capital to countries that need it and qualify for it. The markets are very good at sucking up the savings of the world to the center; but they are failing in their task of pumping it out to the periphery. This qualifies as news because the problem is not generally recognized. It is generally believed that financial markets are very efficient in allocating capital, both domestically and internationally. That is not the case" [Soros, 2002a, 1].

In a manner reminiscent of 1970s radical dependency theory, Soros uses the language of center-periphery relations, and he believes that the current international financial system dramatically disadvantages periphery (developing) countries. In Soros' words, "the international financial system is lopsided in favor of the center and to the detriment of the periphery" [2002a, 2]. This contrasts sharply with the prevailing conventional wisdom of market discipline, which maintains that countries that play by the rules and submit to market discipline will be rewarded with steady reasonably priced flows of capital.

Market fundamentalists believe that all that is needed is for countries to get their policies right and they will be rewarded by an equilibrium with low interest rates and plentiful supplies of stable capital. However, at an empirical level the claims of fundamentalists have been repeatedly challenged by the string of financial crises that have afflicted the global economy since the Mexican crisis of 1994. As Nobel laureate economist Joseph Stiglitz puts it, the world has been enjoying a "boom in busts." Today, Argentina and Brazil are the countries currently afflicted by crisis or near-crisis. Argentina faces an economic breakdown more severe than what took place in the United States during the 1930s. And Brazil is afflicted by a crisis of confidence in capital markets that has sent its borrowing costs soaring. Both of these countries have played by the rules. Argentina privatized its state industries and pension system, promoted labor market reform, lowered tariff barriers and opened its financial markets, practiced relative fiscal responsibility that was reflected in primary budget surpluses, and dollarized its currency to guard against inflation.⁶ Brazil has followed a broadly similar collection of policies, though it has allowed its currency to float rather than dollarizing. Yet, in Argentina the result has been economic implosion, while in Brazil the outcome is still unfolding. Even if Brazil escapes the current crisis, similar problems stand to resurface in other countries on future occasions.

These failings of the existing system reflect the fact that its construction has been guided by the principles of market fundamentalism, which assert that financial markets are governed by stable equilibria. A Keynes-Soros view maintains, however, that financial markets are inherently unstable. Moreover, within this unstable arrangement, countries on the periphery are especially exposed to crisis. This is because the system allows free flows of capital but provides no lender of last resort for countries of

the periphery. Since these countries borrow in the hard currencies of the center, they are subject to the persistent risk of capital flight and currency crisis. This drives up interest rates, setting the stage for self-fulfilling prophecies regarding imminent bankruptcy.

Not only does this asymmetry expose the periphery countries to persistent risk of crisis, they are also forced to respond to crises in a manner that amplifies and deepens the negative domestic economic effects of crises. When economies of the center are hit by negative economic shocks or when their financial institutions get into trouble, the monetary and fiscal authorities are able to intervene in a counter-cyclical fashion that dampens the shock. This is exemplified by the U.S. today, which when confronted by recession has dramatically lowered interest rates and turned to large budget deficits. Contrastingly, countries at the periphery are unable to take such actions because they borrow in international markets in foreign currency. When they are hit by negative shocks, investors flee. This deepens the crisis, and these countries are then compelled to adopt monetary and fiscal austerity to placate financial markets. Though they can turn to the IMF, the IMF has historically been concerned with preserving the stability of the international financial system. This means that IMF rescue programs have tended to be designed so as to enable debtor countries to meet their obligations rather than fend off recession.

DEBT INSTABILITY WITH MULTIPLE EQUILIBRIA: AN APPLICATION TO BRAZIL

In many regards Brazil serves as a poster child for the failings of the international system. Brazil has played by the rules in the sense of running a primary budget surplus equal to 3.75 percent of GDP and having a conservative anti-inflation-oriented monetary policy under the direction of a central banker—Arminio Fraga—who has the support of financial market participants. Despite this, Brazil is subject to capital flight, and has real interest rates of the order of 20 percent.

A simple model of debt algebra shows that these real interest rates in turn imply an exploding debt-to-GDP ratio. The growth of the debt-to-GDP ratio is given by

$$(1) \quad g_{D/Y} = g_D - g_Y,$$

where $g_{D/Y}$ = growth of debt to income ratio, g_D = growth of debt, and g_Y = growth of real GDP. The growth of the debt is given by

$$(2) \quad g_D = i + d/D,$$

where i = real interest rate on debt, d = primary budget deficit, and D = national debt. This can in turn be written as

$$(3) \quad g_D = i + [d/Y] \cdot [Y/D],$$

where d/Y = primary budget deficit as a percent of GDP, and Y/D = GDP to debt ratio. Substituting Equation (3) in Equation (1) yields

$$(4) \quad g_{D/Y} = i + [d/Y] \cdot [Y/D] - g_Y.$$

For the case of Brazil $i = 18$ percent, $d/Y = -3.75$ percent, $Y/D = 1.67$, and $g_Y = 3.5$ percent. Substituting these values into Equation (4) shows that Brazil's debt-to-GDP

ratio is currently growing at 8.25 percent per annum, which constitutes an explosive trajectory. If the debt-to-GDP ratio is to be stabilized (that is, $g_{D/Y} = 0$), the real interest rate must fall to 9.75 percent.

The above simple debt-GDP algebra reveals that Brazil's problem is one of excessively high interest rates. It has a primary budget surplus, a reasonable real growth rate, and the debt-to GDP ratio is still within sustainable bounds. The one parameter that is out of balance is the interest rate, of which Soros writes: "The right question to ask is what interest rates could be reconciled with reasonable growth. A primary surplus of 3.75 per cent would be the maximum required, rather than the minimum, and could support real interest rates of no more than 10 per cent. The challenge would be how to bring interest rates down to that level" [Soros, 2002c].

Brazil's interest rate problem can be interpreted through a model of multiple equilibria, with Brazil now being stuck in the bad equilibrium with high interest rates. Because interest rates are high, investors expect a greater likelihood of Brazilian default, and because they hold such expectations they need a high interest rate to compensate them for bearing the risk of default. In this fashion, expectations sustain the bad equilibrium. The policy challenge is how to move financial markets from the "bad" high interest rate equilibrium to the "good" low interest rate equilibrium.

This situation can be modeled as follows. Investors in Brazil need to earn a risk-adjusted expected return equal to that which they could earn outside, implying the following condition:

$$(5) \quad 1 + i^* + z = E(R) ,$$

where i^* = foreign interest rate, z = risk premium required for investing in Brazil, and $E(R)$ = expected return to investments in Brazil. The expected return to Brazilian investments is given by

$$(6) \quad E(R) = p \left(i, d(i), D/Y, e(i, \dots), \dots \right) X + [1 - p(i, d(i), D/Y, e(i, \dots))] [1 + i],$$

where $p(\cdot)$ = probability of default, X = payment in default state, i = Brazilian real domestic interest rate, e = real exchange rate. An increase in e represents an appreciation of the Brazilian currency. The probability of default is such that $0 \leq p \leq 1$, and the default payment is such that $0 \leq X \leq 1$. Signs above functional arguments represent assumed signs of partial derivatives. An increase in the Brazilian domestic interest rate increases the probability of default by increasing the government's debt service burden. An increase in the primary deficit has an ambiguous effect. On one hand there is a positive Keynesian aggregate demand effect, but on the other hand it adds to the government's indebtedness. The primary deficit may also be negatively impacted by higher interest rates, with the government being forced to cut back spending as rates rise. The impact of the real exchange rate on the probability of default is ambiguous. On one hand an appreciation reduces the debt burden since much Brazilian debt is indexed to the dollar, but on the other hand it reduces aggregate demand and economic activity by reducing net exports. Finally, the impact of the domestic interest rate on the exchange rate is ambiguous.

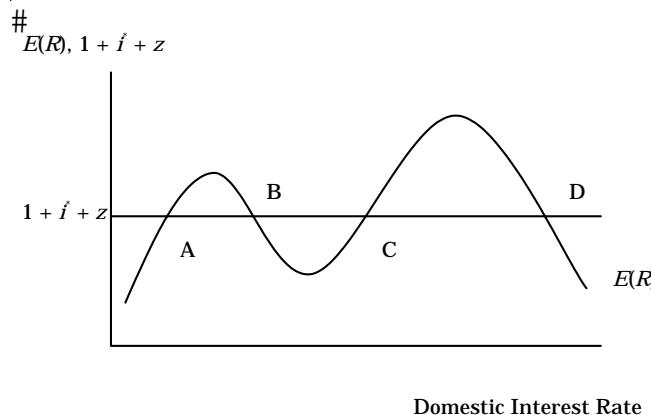
The model is closed by adding a dynamic interest rate adjustment mechanism given by

$$(7) \quad \frac{di}{dt} = f(1 + i^* + z - E(R)) \quad f(0) = 0, \quad f' > 0, \quad f'' > 0$$

If the return on foreign assets exceeds the risk-adjusted expected return on Brazilian assets, the Brazilian domestic interest rate rises as agents sell Brazilian assets to buy foreign assets.

Equation (6), describing the expected return function, is the critical equation of the model. In Keynes-Soros financial markets, this expected return function is very unstable. It is also highly nonlinear with respect to the domestic interest rate, and Figure 1 shows the case in which it partakes of a wave motion. The economic logic of this nonlinearity is as follows. Initially, a higher domestic interest rate raises the expected return on Brazilian assets. As interest rates rise, however, the expected return is pulled down owing to increased bankruptcy risk from higher debt service burdens. As the interest rate continues to rise, the expected return function may increase, perhaps because the government is compelled to make budget cuts that increase the primary surplus. Further rises in the interest rate then bring about a decline in the expected return, however, as unstable debt dynamics kick in and as budget cuts to accommodate rising debt service payments generate macroeconomic recession.

FIGURE 1
Multiple Equilibria in the Domestic Bond Market

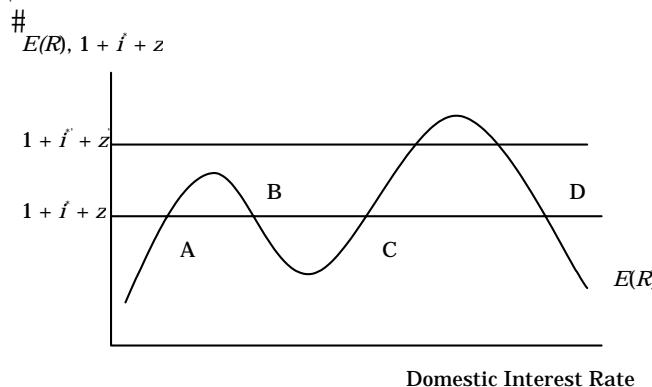


There are four equilibria in Figure 1. Equilibrium A is the stable “good” equilibrium with low interest rates, Equilibrium B is the unstable low interest rate equilibrium, Equilibrium C is the stable “bad” equilibrium with high interest rates, and Equilibrium D is the unstable high interest rate equilibrium. Brazil, today, can be thought of as trapped in the bad high interest rate equilibrium given by C or D. The policy challenge is to move the economy to A.

Figure 2 shows how exogenous shocks originating in the center can negatively impact the periphery. In Figure 2, the external rate of interest increases, perhaps as a result of tightening of monetary policy in the U.S. by the Federal Reserve. If the tightening is sufficiently strong, a developing country could potentially be driven from

the good low interest rate equilibrium at A to the bad high interest rate equilibrium at C. An interesting feature about this is that when rates in the center come down again, the developing country remains trapped in the bad equilibrium.

FIGURE 2
Effect of a Rise in Foreign Interest Rates
(which can shift the economy from the good to the bad equilibrium)



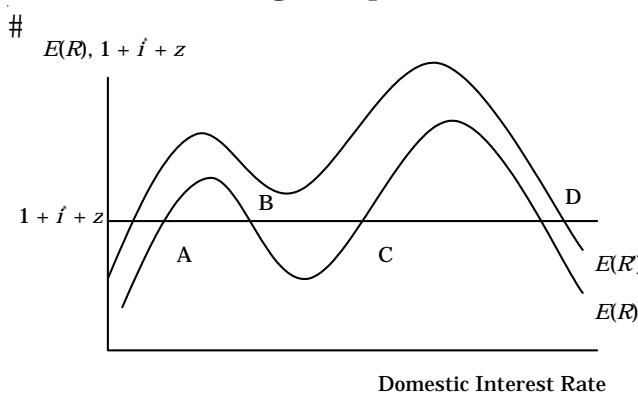
This scenario can reasonably be interpreted to apply to Brazil. In 1997, the East Asian financial crisis caused an increase in the risk premium, z , demanded by global investors. This in turn shifted up the required rate of return, $i^* + z$, though this shift was mitigated by the Federal Reserve's lowering of rates to counter the crisis. Though the Fed's actions helped keep the U.S. economic boom going, they also meant that subsequently in July 1999 the Fed started raising interest rates, thereby driving up the externally available interest rate, i^* . Moreover, throughout this period the U.S. dollar was appreciating, and since much of Brazil's domestic debt is indexed to the dollar, this caused Brazil's national debt to increase. In effect, dollar appreciation also served to push the $E(R)$ function down, compounding the effect of investors' rising required rate of return.

FINANCIAL POLICIES FOR ADDRESSING THE HIGH INTEREST RATE-EXTERNAL DEBT PROBLEM

In an economy such as the U.S., the monetary authority can unilaterally lower interest rates. However, Brazil is a large foreign debtor. Approximately 30 percent of the public debt is denominated in foreign currency, and a further 30 percent is indexed to the exchange rate although it is denominated in domestic currency terms. Moreover, the private sector has large foreign currency denominated debts equal to 22.5 percent of GDP.⁷ These features mean that Brazil needs to maintain the confidence of international financial markets, since any exchange rate crisis raises the burden of debt for both the public and private sectors, and generates imported inflation. The need to placate international financial markets in turn restricts Brazil's ability unilaterally to lower domestic interest rates. Successfully lowering domestic interest rates requires international capital markets buying into such a situation.

The policy challenge is how to get international capital markets to accept a lower interest rate. To this end, Soros has suggested two policies. The first is the creation of some form of guarantee system (perhaps provided by the IMF) that can reduce perceived default risk. "The challenge would be how to bring interest rates down to that level. That might require some international credit enhancements or guarantees, and the task would be to find the right instruments that keep the real risks as distinct from moral hazard within tolerable bounds" [Soros, 2002c]. Figure 3 illustrates the economic logic behind this solution. Guaranteeing the size of the payment in the default state is equivalent to increasing the value of X , which shifts up the $E(R)$ function. If the increase is sufficiently large it can enable escape from the bad equilibrium at C to the good equilibrium at A.

FIGURE 3
Effect of an Increase in the Default Payment
(which shifts up the $E(R)$ function and can shift the economy
to the good equilibrium)



Soros' guarantee proposal has some similarities with that of Lerrick and Meltzer [2001]. They propose that rather than bailing out countries with emergency loans in times of crisis, the IMF should set a floor price for country debt and provide countries with a facility to buy their debt at deeply discounted prices. This would provide support to bond prices, set a ceiling on interest rates, help retire from the market part of a country's debt at below par prices, and give the IMF a secured asset traded on financial markets rather than the untradable promise of repayment it currently gets.

Lerrick and Meltzer [2001] view their proposal as an alternative means of handling financial crises. In a multiple equilibrium model the same mechanism can be used to free economies from the pull of a bad equilibrium. Thus, an announced guarantee floor price can be thought of as increasing the value of the default state payment, thereby raising the $E(R)$ function. By simply announcing a guaranteed floor price for Brazilian bonds, the IMF could potentially free Brazil from the high interest rate equilibrium in which it is trapped.

A second Soros suggestion is that the central banks of center countries accept Brazilian government paper at their discount windows [Soros, 2002d, 136]. This would help correct some of the systemic bias in the system discussed earlier in connection with countries' abilities to borrow in their own currency. In terms of the above model,

it would have the effect of shifting up the $E(R)$ function. The reason is that it would increase the perceived liquidity of Brazilian paper to international investors since they would be able to use such paper as collateral at preset prices with center country central banks.

The prior analysis has identified high interest rates as the cause of Brazil's financial crisis, with high interest rates driving a process of unsustainable debt dynamics. These debt dynamics have also impacted Brazil's exchange rate dynamics, with unsustainable debt leading to capital flight that depreciates the exchange rate. And exchange rate depreciation in turn generates worsened debt dynamics because a significant portion of Brazil's debt is foreign currency denominated or indexed to the dollar.

Recognizing this pattern has important policy implications. First, too much attention has been focused on the exchange rate, and scarce foreign currency has been wasted defending it. Exchange rate weakness is a symptom of the problem, not the cause. The real problem is expectations of default. This suggests that Brazilian authorities should systemically change the focus of their financial market interventions. Defending the exchange rate should be abandoned. This merely has Brazil exchanging costly foreign reserves on which it must pay high interest rates for zero-interest-bearing domestic currency. Instead, Brazil should use its foreign reserves—when the price is right—to purchase foreign debt. In this case debt can be retired below par, and significant interest can be saved.

Recently (first half of 2003), financial sentiment has improved in favor of Brazil, and such interventions are not warranted given current conditions. If there is renewed financial crisis, however, the foreign bond market should be the locus of intervention. In these circumstances, Brazil might even consider a "bear squeeze," buying large quantities of Brazilian foreign debt. However, for Brazil to be able to do so, the IMF will have to cooperate. Rather than lending in successive tranches, the IMF will have to give Brazil the entire loan package in one shot to finance the repurchase of foreign currency debt. This would drive bond prices up and interest rates down. Falling interest rates would then strengthen the exchange rate by lowering default risk and making Brazilian assets more attractive. And a stronger exchange rate would further reduce the debt burden and default risk, making for lower interest rates. In this fashion, a virtuous circle can be created. Such a strategy contrasts with that currently employed, which has the IMF lending in small tranches. The current strategy risks having loans bleed away without fundamentally changing market expectations.

Finally, all new foreign currency denominated debt, including roll-overs of existing debt, should include a call feature allowing for early redemption. This would send another clear signal that the authorities anticipate the interest rate Brazil pays coming down.

In addition to these changes in the conduct of international financial policy, Brazil should make several changes to the management of its domestic market debt. First, the monetary authority should create a bear squeeze in domestic bond markets, buying up non-dollar-indexed domestic currency denominated debt. If worried about adverse inflationary consequences of such open market operations, the authorities should impose credit creation restrictions and raise reserve requirements on banks who have earned significant excess returns for a considerable while.

Second, Brazil should permanently abandon the practice of indexing any part of its public debt to the exchange rate. This practice has some parallels with dollarization and, as with dollarization, it has created enormous financial fragility. In the absence of capital controls, Brazil cannot reliably control its exchange rate. This means that exchange rate indexing makes the public debt vulnerable to massive increase in the event that the exchange rate depreciates, as has happened. Debt expansion in turn creates twin fears of default and inflation, leading to further exchange rate weakness. Put bluntly, Brazil cannot issue dollars, and it should therefore never tie its internal financial liability structure to the dollar.

CONCLUSION

Brazil is currently afflicted by a high interest rate bad equilibrium. If nothing is done, simple extrapolation suggests that Brazil will eventually be forced to default because the debt dynamics implied by current interest rates are unsustainable. The above policy suggestions offer a possible avenue for avoiding default. Much else remains to be done in Brazil regarding matters of income distribution and the efficacy of Brazil's internal financial system. These are issues for another paper. However, it will be hard to make progress on these issues until Brazil escapes the shadow of imminent financial default. George Soros' analysis of financial markets and Brazil's financial predicament are suggestive of how Brazil might escape its current high interest rate trap. More broadly, Soros' analysis of financial markets suggests a need for policy makers to reconsider how these markets operate, which may in turn result in rethinking the role and relevance of capital controls.

NOTES

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1. His views on reflexivity are further developed and restated in his later books, *On Globalization* [2002] and *The Crisis of Global Capitalism: Open Society Endangered* [1998].
2. The field of behavioral finance, pioneered by economists such as Robert Shiller of Yale, suggests the possibility of some convergence with Soros' thinking. Some pieces of behavioral finance are consistent with Soros' thinking, others are not. For instance, the noise trade literature has superficial resemblances, but is in fact inconsistent because it retains the notion of a "fundamentals asset price" benchmark. The same holds for rational expectations price bubbles theory, which also retains a market fundamentals benchmark that provides a reference point for measuring the extent of the price bubble.
3. Soros' observations on the morality of markets are well stated in his *New Republic* [2002b] article.
4. These disruptive extremes can include excessive concentrations of income, wealth, and power; disregard for comprehensive social inclusion; and disregard for public goods and public bads.
5. The intimidation takes the form of a "capital strike." The implication is that if the candidate disliked by capital markets wins, capital will exit with grave consequences for the economy. *Ergo*, voters should vote for the candidate whom capital markets like.
6. Whether Argentina pursued "fiscally responsible" policies has been the subject of considerable discussion. In this connection, the share of GDP devoted to government expenditure remained fixed from 1994 through to the crisis of 2001. Argentina was plagued by high interest rates, however, which raised the debt service burden—the same problem that afflicts Brazil. It also

privatized its PAYG pension system. Absent that change, Argentina would have had a balanced budget in 2001.

7. Debt figures are based on "Brazil—Letter of Intent: Memorandum of Economic and Financial Policies, and Technical Memorandum of Understanding," 5 June 2002, signed with the IMF. Available at <http://www.imf.org/external/NP/LOI/2002/bra/02index.htm>.

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