ANTONIO J. ALVES, JR., FERNANDO FERRARI, JR.,
AND LUIZ F.R. DE PAULA

The Post Keynesian critique of conventional currency crisis models and Davidson's proposal to reform the international monetary system

In a recent article, Krugman (1997) reviewed currency crisis models, which he divided into two types: "canonical" crisis models and second-generation crisis models. While the former explain different experiences of speculative attacks, the latter seem appropriate for understanding the European monetary crisis in 1992–93. Subsequently, recognizing the failure of conventional theory in providing consistent answers for the Asian crisis, Krugman (1998) developed a new approach to currency in order to explain this crisis, based on the moral hazard/asset bubble view.

As stated by Krugman (1997, p. 6), conventional theory presumes that foreign exchange markets are efficient—that is, they make the best use of available information, while, in the real world, foreign exchange markets exhibit strong "anomalies." Efficient market theory claims that economic agents analyze past and present market data, which means that price signals are presumed to provide enough information about forming rational expectations as a basis for making utility maximizing decisions. The author recognizes, however, that foreign exchange markets can be inefficient.

Thus, currency crises can be generated either by self-fulfilling rational expectations or by irrational herding behavior involving bandwagon effects. But, even in models with self-fulfilling features, it is only when fundamentals are sufficiently weak that a country is po-

Antonio J. Alves, Jr., is Associate Professor at the Rural Federal University of Rio de Janeiro. Fernando Ferrari is Professor of Economics at the Federal University of Rio Grande do Sul. Luiz F.R. de Paula is Associate Professor at the State University of Rio de Janeiro and Candido Mendes University. The authors would like to thank Philip Arestis, Paul Davidson, and Gary Dymski who made important comments. We dedicate this article to them. Of course, all remaining errors are our responsibility.

0160–3477 / 2000 $9.50 + 0.00.

tentially vulnerable to speculative attack. In other words, currency crises are explained, even in the last resort, by the inconsistency of economic fundamentals.

As we know, efficient market theory has its foundation in the ergodic axiom, which means that the expected value of an objective probability can always be estimated from observed data that provide reliable information about the conditional probability function that will govern future outcomes. In this system, the decision maker believes that an immutable real objective probability distribution governs both current and future market outcomes. Therefore, market fundamentals are immutable in the sense that they cannot be changed by human actions; they also determine the conditional probabilities of future outcomes. According to efficient market theory, short-run speculation can interfere with the efficient capital allocation function of financial markets, and speculative volatility is explained by the existence of foolish "noise traders." Otherwise, the observed secular trend of financial markets is determined by immutable real sector fundamentals, which means that in the long run irrational traders are made extinct by an efficient market (Davidson, 1998).[1]

By contrast, Keynes and Post Keynesians reject the ergodic axiom of efficient market theory to explain the financial market behavior. In an uncertain world, where fundamentals do not provide a reliable guide to the future, which is subject to sudden and violent changes, future market valuations are always subject to disappointments. Thus, speculation is not an "anomaly," explained by the existence of foolish "noise traders," but is a consequence of the operational way in which financial markets work in the real world. For Keynes and Post Keynesians, the outcome of speculation is ambiguous, because it can be disruptive with real consequences, devastating particular sectors as well as whole economies, once it can create speculative whirlpools; but, at the same time, it provides liquidity assets, an essential role of the financial markets.

This paper analyzes the currency crises models from a Post Keynesian perspective,[2] and presents a Post Keynesian proposal to reform the international monetary system in order to prevent international currency crises.

[1] See also Stiglitz (1989) for a New Keynesian approach.

[2] While we try to contrast the differences between mainstream theory and Post Keynesian approach, Andrade and Silva (1998) explore the convergence between these different views on currency crises.

Currency crisis models: the conventional theory

Speculative attack and currency crisis: the conventional theory[3]

Currency crisis can be defined as "a sort of circular logic—in which investors flee a currency because they expect it to be devalued, and much (though usually not all) of the pressure on the currency com es precisely because of this investor lack of confidence" (Krugman, 1997, p. 1). On the other hand, a speculative attack on government's reserves "can be viewed as a process by which investors change the composition of their portfolios, reducing the proportion of domestic currency and raising the proportion of foreign currency. This change in composition is then justified by a change in relative yields, for when the government is no longer able to defend the exchange rate [that is, a currency depreciation begins]" (Krugman, 1995, p. 2).

Currency crisis and speculative attack are used almost synonymously, but in reality a speculative attack on government's reserves may or may not result in a currency crisis. It depends on the ability or the will of the government to defend the domestic currency. In this context, a currency crisis happens when the government cannot (or does not want to) support the exchange rate.

Krugman (1997) divides conventional currency crisis theory, in general, into two types of models: "canonical" crisis models and "second-generation" crisis models.[4] In a more recent work, Krugman (1998) added another view on currency crises for the understanding of the Asian crisis, the "third-generation" model, which can be more properly referred to as financial-crisis models.

The "canonical" crises are the first-generation crisis models (Krugman, 1979; also Flood and Garber, 1984) and they are derived from the models applied to commodity boards trying to stabilize commodity prices, known as "hotelling model." The logic of the currency crisis in "canonical" models is the following: At the point in which speculators are supposed to wait until the reserves are exhausted in the natural course of events, they would know that the price of foreign exchange rate, fixed up to now, will begin ris-

[3] This section is based mainly on Krugman's ideas.

[4] Besides these, it is important to point out that there is something known as a *contagious* crisis—that is, a phenomenon in which a currency crisis in one country seems to trigger a crisis in other countries. A contagious crisis can involve real linkages between countries (a currency crisis in country A can worsen the fundamentals of country B, or vice versa) or not (as in the case of Mexico/Argentina), but the countries are perceived as a group with some common, even imperfectly, observed characteristics.

ing. In this situation, people would hold foreign currency instead of holding domestic currency, leading to a jump in the exchange rate, and by doing so advance the date of the exhaustion of reserves. When reserves fall to some critical level, there would be an abrupt speculative attack that would quickly drive those reserves near to zero and, as a result, force an abandonment of the fixed exchange rate.

But what explains such crisis? According to this model, such crisis results from a fundamental inconsistency between domestic policies—typically the existence of money-financial budget deficits—and the attempt to maintain a fixed exchange rate, once the government is assumed to use a limited stock of reserves to peg its exchange rate. As this policy reveals is unsustainable, the attempt of investors to anticipate the inevitable collapse would generate a speculative attack on the currency when reserves fell to some critical level. The main criticism of this model is that it represents government policy in a mechanical way, once the role of the central bank in the model is passive.[5]

The "second-generation" crisis models (Obstfeld, 1994) are more sophisticated than "canonical" crisis models and their government policy is less mechanical. In these models, government chooses to defend or not to defend a pegged exchange rate by a trade-off between short-run macroeconomic flexibility and long-term credibility.

The government must have a reason for either abandoning or defending its fixed exchange rate. The cost of defending a fixed exchange rate must itself increase when people expect that the exchange rate might be abandoned. In general, the main reason to allow currency depreciation in a country has to do with increasing unemployment due to a downward rigid nominal wage rate, while a specific motive to fix the exchange rate can be related to the possibility of facilitating international trade and investment. According to these models, a fixed exchange rate will be costly to defend due to the fact that people, in the past, expected it would be depreciated at any time and/or because economic agents now expect it will be depreciated in the future. Thus, the logic of a crisis arises from the fact that defending a parity is more expensive (i.e., it requires higher interest rates) if the market believes that that defense will ultimately fail.

If a country's trade-off between the cost of maintaining the current

[5] For example, the central bank does not make use of a variety of tools other than exchange market intervention to defend the exchange rate, as its ability to tighten domestic monetary policies.

parity and the cost of abandoning the fixed exchange rate is predictable, at some future date the country is likely to devaluate its currency even in the absence of a speculative attack. In this case, the speculators would try to get out of the currency ahead of that devaluation, but in doing so they would aggravate the government's trade-off, probably bringing about an earlier devaluation. The end of the story can be a crisis that ends the fixed exchange rate regime before the fundamentals appear to necessitate devaluation.

In summary, a currency crisis may result from a conflict between domestic objectives and the currency peg, which can make an eventual collapse of the currency peg inevitable. According to this view, a speculative attack on a currency can also develop as a consequence of a predictable future deterioration in economic fundamentals, or purely through self-fulfilling prophecy, caused by a self-confirming pessimism, a case in which a country would suffer an "unnecessary" crisis. But even in the second-generation crisis, a currency crisis is essentially the result of inconsistent policies with the long-run maintenance of a fixed exchange rate. In other words, it is only when fundamentals—such as foreign exchange reserves, the government fiscal position, and the government's political commitment to an exchange regime—are sufficiently weak that the country is vulnerable to speculative attack.

If a predictable crisis can happen before the fundamentals have reached the point where the exchange rate collapses, then it can be provoked by a speculative attack not justified by current fundamentals. But what prevents them? According to Krugman (1997), microeconomic frictions—such as transaction costs, the difficulty of arranging credit lines, and so on—may prevent a subjectively low-probability crisis from ballooning into a full-fledged speculative attack.

Krugman (1998, pp. 1–2) now recognizes that "in order to make sense of what happened to [the 1997 Asian crisis], it is necessary to adopt an approach quite different from that of traditional currency crisis theory," as in Asia the "currency crises were only part of a broader financial crisis, which had very little to do with currencies or even monetary issues per se." Thus, he develops a new approach to currency crisis—the "third-generation" crisis models[6]—in order to explain this crisis based on the moral hazard/asset bubble view.

According to the "third-generation" crisis models, currency crisis

[6] The "third-generation" approach was also developed in Calvo and Mendoza's (1996) analysis of the Mexican peso crisis.

is viewed as an integral part of a general crisis in the economy, in which currency crises are preannounced by financial crises. The logic of the analysis is that capital inflows increase the lending capacity of the banking system. So the certainty of "bailout" of the financial institutions by the monetary authorities explains "bad lending" practices used by the banks. Finally, a growing financial fragility path is followed, leading the way to speculative crises, once the increase in the money supply validates the bank run, and, as a result, the economy begins to lose reserves.

In the case of the Asian crisis, none of the fundamentals that drive "first-generation" crisis models seem to have been observed in any of the afflicted Asian economies, and there seemed to be no incentive to abandon the fixed exchange rate to pursue a more expansive monetary policy (as in the case of the 1992–93 European monetary crisis). In other words, "[the] Asian crisis is best seen not as a problem brought on by fiscal deficits, as in 'first-generation' models, nor as one brought on by macroeconomic temptation, as in 'second-generation' models, but as one brought on by financial excess and then financial collapse. . . . The Asian story is really about a bubble in and subsequent collapse of asset values in general with the currency crisis more a symptom than a cause of this underlying (in both senses of the word) malady" (Krugman, 1998, p. 3).

In Asia, a boom–bust cycle created by financial excess preceded the currency crisis because the financial crisis was the real driver of the whole process. According to the moral hazard/asset bubble view, "the problem with financial intermediaries—institutions whose liabilities were perceived as having an implicit government guarantee, but were essentially unregulated and therefore subject to serve moral hazard problems [and] the excessive risky lending of these institutions created inflation—not of goods but of asset prices" (Krugman, 1998, p. 3), resulting in overpricing of assets. However, the bubble of prices caused a deflation of assets and a deterioration in banking credits. Once a bank crisis has just been burst, the running against domestic currency was the natural consequence of the financial panic.

Some critiques of conventional views of speculative activity and currency crises

As stated before, according to the efficient market theory, agents with rational expectations make the best use of the available information, so that stock prices always reflect fundamental values. The

social function of financial markets is to correctly allocate capital among enterprises in accordance with reliable information about future rates of returns determined by fundamentals.

How, then, can one explain the speculative activity within this theory? Speculation is the activity of buying (selling) and reselling (rebuying) assets in order to anticipate market value and making money by exploring "delays" as market prices adjust to new economic fundamentals. Therefore, mainstream economics cannot explain why there is speculation without *ad hoc* assumptions. Speculators can only survive if there are both informational problems and waves of irrationality, which are attributes of "delay" markets. The problem in adopting *ad hoc* assumptions is that they give the formulation of the models too much freedom, generating, in this case, a contradiction inside the general equilibrium model framework.

Stiglitz (1989), for example, points out that short-term traders only include "noise traders"—investors who believe that they know more than the market and therefore do not have to acquire the correct information regarding future outcomes from the fundamentals. Of course, these phenomena can only occur in the short run because of the fact that rational people conduct markets toward a long-run trend. Therefore, in spite of speculation, the economy will tend toward the long-run equilibrium. Otherwise, in spite of short-term effects, speculation "affects how the pie is divided, but does not affect the size of the pie" (Stiglitz, 1989, p. 103). As it appears, the mainstream categorically supports that there is a kind of *speculation neutrality axiom*, since, at least in the long run, the size of the pie is determined by fundamentals. In other words, *there are no long-run real effects if we assume (ad hoc) short-term speculation.*

As conventional theory presumes that foreign exchange markets are efficient, according to the currency crisis models, speculative attack only occurs if there is any sort of real "market fundamental," in general associated with a current or predictable future deterioration in economic fundamentals: an inconsistency or a conflict between domestic policies and exchange rate policy. These models also describe currency crises that are not driven by fundamentals, generated by self-fulfilling rational expectations or by irrational herding behavior (when a wave of selling, whatever its initial cause, is magnified through sheer imitation or turn). The point is that these models struggle to find consistent explanations for currency crises that are not driven by fundamentals.

In an ergodic world, in which market fundamentals determine the

conditional probabilities of future outcomes, speculative activity in foreign exchange markets is explained by the actions of foolish "noise traders." Krugman (1997), for instance, uses microfundamentals that create market inefficiencies to explain "herding" or the possibility of self-fulfilling crisis—as investors with access to private information, creating asymmetric information in an exchange rate market, or investment funds being managed by professional agents rather than directly by principals, that can prompt investment money in crisis-prone countries.

Besides using *ad hoc* microfundamentals to explain "irrational" crises, conventional theory is always trying to find an *ex post* explanation for each "new" currency crisis, as in the European monetary crisis of 1992–93, the Mexican peso crisis of 1994–95, the Asian crisis of 1997, the Russian crisis of 1998, and so on. For each new crisis, a new and generally more sophisticated model is developed—evidence that speculative activity in foreign exchange markets is difficult to model as Krugman recognizes.

A Post Keynesian approach to financial instability and speculative attack in an uncertain world

Financial markets and speculative activity in a nonergodic world

Keynes and Post Keynesians reject the classical ergodic axiom of efficient market theory to explain financial market behavior because, in an uncertain world, future market valuations are always uncertain since the future is subject to sudden and violent changes and fundamentals do not provide a reliable guide to the future.[7] In such a world, speculation is not an anomaly but results from the operational way in which financial markets work!

In different works, Keynes separated uncertainty from probable events, especially in relation to decisions involving the accumulation of wealth and the possession of liquidity. By uncertainty, he meant that "human decisions affecting the future, whether personal or political or economic, cannot depend on strict mathematical expectation, since the basis for making such calculations does not exist" (Keynes, 1964, pp. 162–163), which means that "there is no scientific basis on which to form any calculable probability whatever. We simply do not know" (Keynes, 1973, p. 114).

[7] See, particularly, Keynes (1964, ch. 12) and Davidson (1997, 1998).

Therefore, Keynes rejected the belief that some observed economic phenomena are the outcome of any stochastic process, because for some occurrences, agents do not possess adequate information to construct useful future probabilities. The future is not calculable nor is the statistical reflection of the past, since, as Davidson (1994, p. 89) points out, "the decision maker believes that during the lapse of calendar time between the moment of choice and the date(s) of payoff, unforeseeable changes can occur. In other words, the decision maker believes that reliable information regarding future prospects does not exist today."

It is because uncertainty exists that future market valuations are neither predictable nor calculable by probability. Economic agents in financial markets have heterogeneous expectations, once one can never expect whatever data sets exist today to provide a reliable guide to future outcomes. In this sense, expectations that drive spot financial markets are not rational, because the conventional valuation based on psychological forecasting of the market cannot be statistically reliable. Therefore, financial markets cannot be presumed to be efficient in the sense stated by efficient market theory (Davidson, 1998).

In the Post Keynesian view, the axiom of money neutrality does not work because, in a world under incalculable uncertainty, money—as the object that liquidates contractual commitments denominated in the money account—can be held as a safety asset in moments of greater uncertainty by its characteristic of transporting purchasing power over time.[8] So liquidity preference can grow if entrepreneurs and speculators have contractual obligations and there is some degradation in confidence. Since confidence is subjective, there is room for diversity of opinions about the future. And, if there is diversity of opinions and organized markets designed to give liquidity to assets, then several opportunities will present themselves for the emergence of speculative activities.

According to Kaldor (1980), speculation is the act of purchasing an asset with the intention of reselling it later, at a higher price, in the expectation of favorable changes taking place in the concerned markets. The role of the speculator is essential in these markets, because he or she can take the risk of acting against the market in anticipation of future movements in the price of assets—in other words, his or her behavior can stabilize, or not, the price of assets,

[8] This idea is clearly developed in Keynes (1964, ch. 17) and Davidson (1994, ch. 6).

depending on the range of price oscillations. As the spot markets for existing stock of assets determine their liquidity attributes, the presence of speculators operating in organized markets creates the possibility of disposing of assets, which are the content of the liquidity premium.

Keynes showed, in *The General Theory of Employment, Interest and Money*, that investor and speculator expectations are governed not by real fundamentals in the long run related to a prospective yield of an investment over a long term of years, but by how much the market will currently value the asset, in an effort to anticipate the basis of conventional valuation in a few months' time. In Keynes' words, "most of these persons are, in fact, largely concerned, not with making superior long-term forecasts of the probable yield of an investment over its whole life, but with foreseeing changes in the conventional basis of valuation a short time ahead of the general public. They are concerned, not with what an investment is worth to a man who buys it 'for keeps,' but with what the market will value it at, under the influence of mass psychology, three months or a year hence" (1964, pp. 154–155).

Speculation essentially is forecasting the psychology of the market. In an entrepreneurial economy,[9] the organization of financial markets faces a severe trade-off between liquidity and speculation, as Keynes pointed out in chapter 12 of the *General Theory*. The primary function of financial markets is to provide liquidity, which involves the ability to buy and to resell assets in a well-organized market where financial assets can be readily resold for cash. Since markets give liquidity to assets, this characteristic facilitates the use of these assets to finance the investment as soon as they can encourage savers to provide the necessary funding that stimulates investors to spend their monetary resources on new investment projects.[10]

As speculators dominate financial markets, short-run practices provide the rhythm of assets prices. Financial market stability requires a larger number of speculators with different opinions (bull and bear expectations). However, although the liquidity of financial markets often facilitates, it can sometimes impede the course of a new investment, because "with the development of organised investment

[9] Keynes' concept of an entrepreneur economy is developed in his article, "The Distinction Between a Co-operative Economy and an Entrepreneur Economy" (Keynes, 1979, pp. 76–87).

[10] See, for example, Carvalho (1995) for a discussion on functionality and efficiency of the financial system in a Post Keynesian approach.

markets, a new factor of great importance has entered in, which sometimes facilitates investment but sometimes adds greatly to the instability of the system. In the absence of security markets, there is no object in frequently attempting to revalue an investment to which are committed" (Keynes, 1964, pp. 150–151). Therefore, a dilemma arises involving speculative activity, "for the fact that each individual investor flatters himself that his commitment is 'liquid' (though this cannot be true for all investors collectively) calms his nerves and makes him much more willing to run a risk. If individual purchases of investments were rendered illiquid, this might seriously impede new investment, so long as *alternative ways* in which to hold his savings are available to the individual" (Keynes, 1964, p. 160).

Keynes and Post Keynesians claim that there are close connections between the financial sector and the real world. One of these connections is the impact of speculative activity on productive activity, especially on investment. According to Keynes, "[I]f I may be allowed to appropriate the term *speculation* for the activity of forecasting the psychology of the market, and the term *enterprise* for the activity of forecasting the prospective yield of assets over their whole life, it is by no means always the case that speculation predominates over enterprise" (1964, p. 158), but "the position is serious when enterprise becomes the bubble on a whirlpool of speculation. When the capital development of a country becomes a by-product of the activities of a casino, the job is likely to be ill-done" (1964, p. 159).

Since speculators valorize liquidity and create their expectations based on others' expectations about the future (market medium price of assets), an expected shift in the liquidity preference will be transferred to financial markets as an increase in the seller orders, and this may cause a great decrease in prices of assets. Market makers have a strategic role in stabilizing markets, because they act against the market tides, as residual operators. Thus, they are speculators that know better where the market will ultimately head. If there are no safeguards, such as a lender of last resort or another kind of market maker, the market system by itself has no automatic reverting price system that is able to stop these movements. Of course, there are large real implications of a continuous decrease in asset prices, especially in the case of investment and on the validity of the financial structure.[11]

[11] See, for instance, Davidson (1994) and Minsky (1982, 1986).

Because volatility is a consequence of speculation, markets must be organized in order to limit price fluctuations that include continuous assets selling others. This must be done by the establishment of access rules to the participants of the financial market, and mainly by the presence of a powerful market maker. Only these rules are able to inhibit great speculation effects—in other words, a specific institutional design of a financial market determines its potential as an environment where speculation can flourish.

Financial globalization and speculative attack

Keynes (1964, p. 158), in reference to one of the greatest investment markets in the world, New York, stated that, "as the organisation of investment markets improves, the risk of the predominance of speculation . . . increase(s)." This seems to be the case of today's increase of financial globalization: Under the action of "global players" (big fund managers), in a more liberalized and integrated market, the mode of operation of the financial markets has become a sort of big, global casino. The high capital mobility of today's global economy has increased the arbitrage and speculative transactions in foreign exchange. As Davidson (1997, p. 671) points out, "even in the absence of reliable information, rapid evaluations of the potential effects of any event on exchange rates and hence on portfolio value are essential as rival market participants can move funds from one country to another in nanoseconds with a few clicks on the computer keyboard or a quick telephone call to some international market at any time of day or night."

Unlike the closed financial markets of yesterday, capital flows can have a disruptive effect on countries, damaging the autonomy of domestic macroeconomic policies, and even generate speculative attacks on domestic currencies. As Eichengreen, Tobin, and Wyplosz (1995, p. 164) state, "volatility in exchange rates and interest rates induced by speculation and capital flows could have real economic consequences devastating for particular sectors and whole economies." Here emerges what we can call "dilemma of the globalization": While financial globalization increases the opportunities for investment finance, with the diversification of financial instruments (securitization, derivatives, and so on),[12] this trend can also gener-

[12] For an analysis of the recent trends of financial globalization, see, particularly, Carvalho (1996).

ate negative real economic consequences, which can involve the collapsing of investment decisions.

In such a world, self-fulfilling attack can defeat governments' attempts to peg the exchange rate, and this may result in a currency crisis. According to Davidson (1997, pp. 671–672), "in today's global economy any news event that fund managers even suspect that others will interpret as a whiff of currency weakness can quickly become a conflagration spread along the information highway. This results in lemming-like behaviour that can be self-reinforcing and self-justifying." A currency crisis can happen even when a government is prepared to maintain a pegged exchange rate once it becomes unwilling or unable to do so when attacked by the speculators. On the other hand, *contagious* crisis can occur so that an overall fall in the asset prices of a certain financial market may provoke sales of assets in another market to compensate for the losses in the portfolio of great operators, "global players," and this turns into successive rounds of asset sales.

In general, speculative attacks result from the actions of people and institutions with the use of large amounts of money, landed by resident banks, to acquire call options or futures, at a contractual exchange rate that is lower than the exchange rate they expect for the near future. The expected rate can be the result of a fundamental analysis, but it can also be based on expectation of what other speculators will think about the future of the exchange rate. Again, it will depend on the characteristics of each market; therefore, it is necessary to know what kinds of rules will limit or promote access to financial and capital markets, and the quality of the market maker.

If the markets—especially the exchange market—have liberalized access to speculators and they can borrow or obtain a great amount of local money, the institutional conditions for the beginning of a speculative attack arise. Since their recent financial liberalization, developing countries in Latin America, Eastern Europe, and Asia began to receive massive inflows of foreign capital that could be reconverted into foreign currency without legal constraints. Moreover, in a context in which dollars are emitted exclusively by the United States, a non–U.S. market maker has limited power to support a fixed currency.

A speculative attack can start once speculators believe that someone can convert their resources in foreign currency and the government is unable to support the total demand for foreign currency. Nevertheless, it is impossible to explain *ex ante* the exact moment

of the attack, because, as Keynes pointed out, speculation is essentially a (subjective) activity of forecasting the psychology of the market. Besides, institutional arrangements of the global era, since the end of the Bretton Woods system, do not protect economies from speculative attacks. A speculative attack on a country's reserves is *always* possible when there is no strong market maker and rules that can be used to control speculators' actions are lacking. In a global and nonergodic world, microfundamentals are not necessary to explain this sort of behavior.

Mainstream economics, as we have seen above, attributes currency crisis to any sort of informational failure or irrationality. Crisis and volatility do not result from endogenous economic variables, but from exogenous ones. In a Post Keynesian view, on the other hand, the presence of uncertainty makes it possible to see the instability as an endogenous phenomenon, mainly in the case where market participants are free to do as they please. In a global and uncertain world, we cannot consider financial instability and speculative attack "anomalies." On the contrary, they are expected, and possible outcomes that emerge from the operation of global financial markets in a nonergodic system where there is no safeguarding framework act as an overall market maker.

Davidson's proposal for reforming the international monetary system

Since the collapse of the Bretton Woods system in the early 1970s, the increased international mobility of capital and financial liberalization—i.e., the globalization process—has substantially altered the dynamic process of international economy. In other words, the globalization process has limited the actions of macroeconomic policies and national states to stimulate effective demand and, as a consequence, increase the level of employment. Moreover, in the absence of government macroeconomic policies to stimulate economic growth and to limit the movements of capital flows, international speculative capital flows have created serious monetary problems, such as the European monetary crisis in 1992–93, the Mexican peso crisis in 1994–95, the Asian crisis in 1997, and, recently, the 1998 Russian crisis, provoking high rates of unemployment, exchange rates disequilibria, persistent balance of payments imbalances, and so on.

As presented in the previous section, in a Post Keynesian view

these monetary crises have resulted from an unprecedented volatility of financial and foreign exchange rate markets that has increased the liquidity preference of economic agents. Moreover, the recent international experience has shown us that the current international institutions, such as the IMF, have been unable to monitor and solve the financial crises in today's global economy.

In this context, what can be done to avoid the instability of financial and exchange rate markets and, as a consequence, to face the financial crises in global economy? At this point, Keynes' revolutionary analysis provides us a starting point for designing a new international monetary system that may be able to resolve the current financial crises and at the same time promote full employment and economic growth in the global economy. Thus, bringing back Keynes' ideas and proposals about an international monetary system, Post Keynesian theory, basically in the work of Davidson, builds a proposal for reforming the international monetary system.

In many of his writings, Keynes discussed and suggested schemes to reform the international monetary system. For example, in *A Tract on Monetary Reform* (1923/1971), he proposed the abandonment of a gold-standard regime; in *A Treatise on Money* (1930/1976), he outlined a proposal for the operation of a supranational central bank to maintain the stability of international price levels; in *The Means to Prosperity* (1933/1972), he presented an international agreement under fixed, but alterable, exchange rates; and in his proposal for an International Clearing Union (1944/1980), Keynes developed a scheme based on an international currency, *bancor*. However, it is Keynes' revolutionary analysis in the International Clearing Union that deserves special attention.

The main idea of Keynes' International Clearing Union is "the substitution of an expansionist, in place of a contractionist, pressure on world trade" (Keynes, 1980, p. 176). Thus, Keynes suggested a scheme set out in an international agreement as follows:

> We need an instrument of international currency having general acceptability between nations. . . . We need an orderly and agreed method of determining the relative exchange values of national currency units. . . . We need a quantum of international currency, which is *neither determined in an unpredictable* and irrelevant manner . . . *nor subject to large variations depending on the gold reserve policies of individual countries*; but is governed by the actual current requirements of world commerce, and is also capable of deliberate expansion and contraction to offset deflationary and inflationary tendencies in effective demand world.

> We need a system possessed of an internal stabilising mechanism, by which pressure is exercised on any country whose balance of payments with the rest of the world is departing from equilibrium in *either* position, so as to prevent movements which must create for its neighbours an equal but opposite want of balance. . . . We need a central institution . . . to aid and support other international institutions. [1980, pp. 168–169, emphasis added]

Moreover, Keynes, aiming at reducing entrepreneurial uncertainties, proposed (1) an international agreement under a fixed, but alterable, exchange rate, and (2) the control of capital movements:

> The proposal is to establish a Currency Union . . . based on international bank money, called (let us say) *bancor*, fixed (but not unalterably). [1980, p. 170]

> The system contemplated should greatly facilitate the restoration of international credit loan for loan purposes . . . distinguishing (a) between movements of floating funds and genuine new investment for developing the world's resources. [1980, p. 186]

Going in this direction, Davidson (1994) develops a Post Keynesian proposal for reforming the international monetary system. After defining a specific taxonomy to explain the economic dynamism of an open unionized monetary system (UMS) and an open nonunionized monetary system (NUMS),[13] Davidson attempts to present the rules required to operate an international monetary agreement according to a UMS, due to the fact that this system can "(1) prevent a lack of global effective demand . . . (2) provide an automatic mechanism for placing a major burden of payments adjustments on the surplus nations, (3) provide each nation with the ability to monitor and, if desired, to control movements of capital, and finally (4) expand the quantity of the liquid asset" (Davidson, 1994, p. 268).

Like Keynes, Davidson argues that the international monetary system must be rooted in the following basic points: a new international currency to regulate the international liquidity, a stable exchange rate system to protect the exchange rates from speculation activity, and an agreement currency clause to eliminate the balance-of-payments disequilibrium in either position. Thus, Davidson's pro-

[13] According to Davidson (1994, ch. 12), in an open unionized monetary system (UMS) the contracts are expressed in the same monetary system—i.e., the exchange rate is fixed—while in an open nonunionized monetary system (NUMS) the contracts are expressed in different currencies and, as a consequence, the exchange rate is flexible.

posal must have some provisions, such as: (1) an International Money Clearing Unit (IMCU) as a reserve asset for international liquidity; (2) a mechanism to permit that the IMCUs can be held *only* by the national central banks; (3) a system of fixed, but adjustable, exchange rate between the national currency and the IMCU to help countries to solve balance-of-payments troubles; and (4) a "trigger mechanism" to put more pressure of balance payments adjustments on the creditor countries than on the debtor countries—that is, according to this mechanism, a creditor nation would be encouraged to spend its excessive credits in three ways: buying products of any other country of the international payment system, investing capital in deficit countries (direct foreign investment projects), and providing foreign aid to deficit countries (Davidson, 1994, pp. 268–272).

The first two provisions are preconditions to reduce and/or avoid people holding the international asset, IMCU, as a store of value. As a consequence, the IMCUs would be used only for international financial and commercial transactions. In other words, the national central banks and the governments have the power to control the quantity of liquid assets to expand global effective demand. The third provision is a necessary condition to stabilize the long-term purchasing power of the IMCU. At the same time, it restricts private speculation regarding the IMCU; that is to say, there is no possibility of the IMCU losing its international purchasing power. Finally, the "trigger mechanism" is the main instrument to guarantee that "export-import imbalance is eliminated without unleashing significant recessionary forces" (Davidson, 1994, p. 272).

Thus, we realize that the (Post) Keynesian proposal creates conditions to alter the current logic of financial globalization—that is, it can substitute the process of international production for the dynamic of international speculative capital—and, as a consequence, can reduce entrepreneurs' uncertainties, which is necessary to expand global effective demand. As Keynes points out, an international monetary system built like that "could use its influence and its power to maintain stability of prices and to control the trade cycle" (Keynes, 1980, pp. 190–191).

Conclusion

If we accept that liberalized and integrated market arrangements of the *global era* may be dangerous to economic stability and that they limit the long-run attainment of a full employment economy, any

sort of global institutional arrangement is necessary to establish some sort of control on capital flows in order to avoid the disruptive real effects of speculative whirlpools. According to Davidson (1997, p. 672), "what is necessary is to build permanent fireproofing rules and structures that prevent 'beauty contest' induced currency fires. *Crisis prevention rather than crises rescues must be the primary long-term objective.*"

According to the IMF's pattern of intervention for a currency crisis nation, rescue financial operations only occur after a crisis has happened, with the purpose of restoring investors' trust in the economy; nothing is done to *prevent* the crisis. Otherwise, the IMF's solution to overcome external imbalances is asymmetric and recessive, since the costs of the adjustment arise only in the nation with external disequilibrium, and it imposes heavy adjustment costs on the country suffering a currency crisis.

Despite the fact that the international monetary problems we now face are more difficult than those faced in Keynes' period, we can bring back Keynes' revolutionary analysis to reform the international monetary system to help us understand the necessity of creating an international standard currency to promote full employment economic growth as well as to maintain long-run price stability.

Going in this direction, Davidson, overcoming the problem of financial markets volatility, claims that market maker institutions with sufficient resources to assure market price stability are necessary to prevent the volatility due to bandwagon actions. For this purpose, a policy of building a buffer stock exchange rate market institution to fix price movements is socially desirable. Thus, we must concentrate our efforts on finding creative overall policy purposes in order to reduce the real disruptive outcomes derived from the speculative activity in financial markets. This is one of the principal legacies of Keynes' ideas.

REFERENCES

Andrade, J.P., and Silva, M.L.F. "Contrasting or Convergent Views on Currency Crises: Mainstream Versus Keynesian Approach." Paper presented at the Fifth International Workshop on Post Keynesian Economics, June–July 1998, Knoxville, Tennessee.

Calvo, G.A., and Mendoza, E.G. "Petty Crime and Cruel Punishment: Lessons from the Mexican Debacle." *American Economic Review*, May 1996, *86* (2),170–175.

de Carvalho, F. Cardim. "Keynes's Concepts on Finance and Funding, and the Structure of the Financial System." Discussion Paper IE/UFRJ, 344. Rio de Janeiro: Universidade Federal do Rio de Janeiro, 1995.

———. "Financial Innovation and the Post Keynesian Approach to the Process of Capital Formation." Discussion Paper IE/UFRJ, 380. Rio de Janeiro: Universidade Federal do Rio de Janeiro, 1996.

Davidson, P. *Post Keynesian Macroeconomic Theory*. Aldershot, UK: Edward Elgar, 1994.

———. "Are Grains of Sand in the Wheels of International Finance Sufficient to Do the Job When Boulders Are Often Required?" *Economic Journal*, May 1997, *107* (442), 671–686.

———. "Thoughts on Speculation and Open Markets." Paper presented at the Fifth International Workshop on Post Keynesian Economics, June–July 1998, Knoxville, Tennessee.

Eichengreen, B.; Tobin, J.; and Wyplosz, C. "Two Cases for Sand in the Wheels of International Finance." *Economic Journal*, January 1995, *105* (428), 162–172.

Flood, R., and Garber, P. "Collapsing Exchange Rate Regimes: Some Linear Examples." *Journal of International Economics*, August 1984, *17* (1–2), 1–13.

Kaldor, N. *Essays on Economic Stability and Growth*. New York: Holmes and Meier, 1980.

Keynes, J.M. *The General Theory of Employment, Interest and Money*. New York: Harcourt Brace, 1964.

———. *A Tract on Monetary Reform. The Collected Writings of John Maynard Keynes*, vol. 4. London: Macmillan, 1971.

———. *Essays in Persuasion. The Collected Writings of John Maynard Keynes*, vol. 9. London: Macmillan, 1972.

———. *The General Theory and After: Defence and Development. The Collected Writings of John Maynard Keynes*, vol. 14, ed. by D. Moggridge. London: Macmillan, 1973.

———. *A Treatise on Money*. New York: AMS Press, 1976.

———. *Activities 1940–1944: Shaping the Post-War World, the Clearing Union. The Collected Writings of John Maynard Keynes*, vol. 25, ed. by D. Moggridge. London: Macmillan, 1980.

Krugman, P. "A Model of Balance of Payments Crises." *Journal of Money, Credit, and Banking*, August 1979, *11* (3), 311–325.

———. *Currency and Crises*. Cambridge: MIT Press, 1995.

———. "Currency Crises." Mimeo, 1997.

———. "What Happened to Asia?" Mimeo, 1998.

Minsky, H. *Can It Happen Again? Essays on Instability and Finance*. New York: M.E. Sharpe, 1982.

———. *Stabilizing an Unstable Economy*. New Haven, CT: Yale University Press, 1986.

Obstfeld, M. "The Logic of Currency Crises." *Cahiers Économiques et Monetáires*, 1984, *43*, 189–213.

Stiglitz, J. "Using Tax Policy to Curb Speculative Short-Term Trading." *Journal of Financial Services Research*, December 1989, *3* (2–3), 101–115.