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Comment Frederic S. Mishkin

The paper by Radelet and Sachs is a very useful discussion of the events in the East Asian financial crises. In my comment, I will present my own view of the East Asian crisis using an asymmetric information framework

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outlined in Mishkin (1996, 1997) that applies not only to the East Asian crisis but also to earlier crises such as those in Mexico in 1994–95 and Chile in 1982. The asymmetric information analysis of the East Asian crisis has many elements in common with the Radelet and Sachs discussion, but it has a somewhat different emphasis and a tighter focus. Using this framework, I sometimes find agreement with the views on policy expressed by Radelet and Sachs but also come to some different conclusions.

An Asymmetric Information View of the East Asian Crisis

An asymmetric information view of financial crises defines a financial crisis to be a nonlinear disruption to financial markets in which the asymmetric information problems of adverse selection and moral hazard become much worse, so that financial markets are unable to efficiently channel funds to those who have the most productive investment opportunities. In most financial crises, and particularly in the East Asian crisis, the key factor that causes asymmetric information problems to worsen and launch the financial crisis is a deterioration in balance sheets, particularly those in the financial sector. This perspective suggests that microeconomic factors are the root causes of the crisis, and it should therefore not be surprising that as Radelet and Sachs point out, it was very hard to predict this type of crisis from the macroeconomic factors many market analysts and economists typically focus on. It also suggests that successful resolution of the crisis dictates a focus on fixing microeconomic rather than macroeconomic fundamentals.

The key initiating factor in the East Asian crisis was financial liberalization resulting in the lending boom documented in the Radelet-Sachs paper. Once restrictions are lifted on both interest rate ceilings and the type of lending allowed, lending will surely increase. The problem is not that lending expands but that it expands so rapidly that excessive risk taking is the result, with large losses on loans in the future. There are two reasons that excessive risk taking takes place after financial liberalization. The first is that managers of banking institutions often lack the expertise to manage risk appropriately when new lending opportunities open up after financial liberalization. In addition, with rapid growth of lending, banking institutions cannot add the necessary managerial capital (well-trained loan officers, risk assessment systems, etc.) fast enough to enable these institutions to screen and monitor these new loans appropriately.

The second reason that excessive risk taking occurs is the inadequacy of the regulatory and supervisory system. Even if there is no explicit government safety net for the banking system, there clearly is an implicit safety net that creates a moral hazard problem. Depositors and foreign lenders to the banks, knowing that there are likely to be government bailouts to protect them, have little incentive to monitor banks, with the result that these institutions have an incentive to take on excessive risk by aggres-

sively seeking new loan business. In order to prevent this moral hazard problem, adequate government regulation needs to be in place to restrict excessive risk taking. Such measures include the adoption of adequate accounting and legal standards, disclosure requirements, restrictions on certain holdings of assets, and capital standards. Adequate government supervision is also needed in order to monitor compliance with the regulations and to assess whether the proper management controls are in place to limit risk.

Emerging market countries, and particularly those in East Asia, are notorious for weak financial regulation and supervision. When financial liberalization yields new opportunities to take on risk, these weak regulatory and supervisory systems cannot limit the moral hazard created by the government safety net, and excessive risk taking is the result. This problem is made even more severe by the rapid credit growth in the lending boom, which stretches the resources of bank supervisors. Bank supervisory agencies are also unable to add to their supervisory capital (well-trained examiners and information systems) fast enough to enable them to keep up with their increased responsibilities both because they have to monitor new activities of the banks and because these activities are expanding at a rapid pace.

Capital inflows can make this problem even worse. Once financial liberalization is adopted, foreign capital flows into banks in emerging market countries because it earns high yields but is likely to be protected by a government safety net, whether it is provided by the government of the emerging market country or by international agencies such as the IMF. The result is that capital inflows can fuel a lending boom, which leads to excessive risk taking on the part of banks. Folkerts-Landau et al. (1995), for example, find that emerging market countries in the Asia Pacific region with large net private capital inflows also experienced large increases in their banking sectors.

The outcome of the lending boom arising after financial liberalization is huge loan losses and a subsequent deterioration of bank balance sheets. The deterioration in bank balance sheets is the key fundamental that drives emerging market countries into their financial crises, and this was particularly true for East Asia. It does this in two ways. First, the deterioration in the balance sheets of banking firms can lead them to restrict their lending in order to improve their capital ratios or can even lead to a full-scale banking crisis that forces many banks into insolvency, thereby directly removing the ability of the banking sector to make loans.

Second, the deterioration in bank balance sheets can promote a currency crisis because it becomes very difficult for the central bank to defend its currency against a speculative attack. Any rise in interest rates to keep the domestic currency from depreciating has the additional effect of weakening the banking system further because the rise in interest rates hurts

bank balance sheets. This negative effect of a rise in interest rates on bank balance sheets occurs because of their maturity mismatch and their exposure to increased credit risk when the economy deteriorates. Thus, when a speculative attack on the currency occurs in an emerging market country, if the central bank raises interest rates enough to defend the currency, the banking system may collapse. Once investors recognize that a country's weak banking system makes it less likely that the central bank will take the steps to successfully defend the domestic currency, they have even greater incentives to attack the currency because expected profits from selling the currency have now risen. Thus, with a weakened banking sector, a successful speculative attack is likely to materialize and can be triggered by any of many factors, a large current account deficit being just one of them. In this view, the deterioration in the banking sector is the key fundamental that causes the currency crisis to occur.

Two special institutional features of credit markets in emerging market countries explain why a devaluation in the aftermath of the currency crisis then helps to trigger a full-fledged financial crisis. Because of past experience with high and variable inflation rates these countries have little inflation-fighting credibility, and debt contracts are therefore of very short duration and are often denominated in foreign currencies. This structure of debt contracts is very different from that in most industrialized countries, which have almost all of their debt denominated in domestic currency, with much of it long term, and it explains why there is such a different response to a devaluation in emerging market countries than there is in industrialized countries.

There are three mechanisms through which a currency crisis causes a financial crisis to occur in emerging market countries. The first involves the direct effect of currency devaluation on the balance sheets of firms. With debt contracts denominated in foreign currency, when there is a devaluation of the domestic currency the debt burden of domestic firms increases. On the other hand, since assets are typically denominated in domestic currency, there is no simultaneous increase in the value of firm assets. The result is that a devaluation leads to substantial deterioration in firm balance sheets and a decline in net worth, which, in turn, worsens the adverse selection problem because effective collateral has shrunk, thereby providing less protection to lenders. Furthermore, the decline in net worth increases moral hazard incentives for firms to take on greater risk because they have less to lose if the loans go sour. Because lenders are now subject to much higher risks of losses, there is now a decline in lending and hence a decline in investment and economic activity. The damage to balance sheets from devaluation in the aftermath of the foreign exchange crisis is a major source of the contraction of the economies in East Asia, as it was in Mexico in 1995.

A second mechanism linking currency crises with financial crises in

emerging market countries is that devaluation can lead to higher inflation. Because many emerging market countries have previously experienced both high and variable inflation, their central banks are unlikely to have deep-rooted credibility as inflation fighters. Thus a sharp depreciation of the currency after a speculative attack that leads to immediate upward pressure on prices can lead to a dramatic rise in both actual and expected inflation. Indeed, Mexican inflation surged to 50 percent in 1995 after the foreign exchange crisis in 1994, and we have seen a similar phenomenon in East Asian countries such as Indonesia. A rise in expected inflation after the currency crisis exacerbates the financial crisis because it leads to a sharp rise in interest rates. The interaction of the short duration of debt contracts and the interest rate rise leads to huge increases in interest payments by firms, thereby weakening their cash flow positions and further weakening their balance sheets. Then, as we have seen, both lending and economic activity are likely to undergo sharp declines.

A third mechanism linking financial crises and currency crises arises because the devaluation of the domestic currency can lead to further deterioration in the balance sheets of the banking sector, provoking a large-scale banking crisis. In emerging market countries, banks have many liabilities denominated in foreign currency, which increase sharply in value when a depreciation occurs. On the other hand, the problems of firms and households mean that they are unable to pay their debts, also resulting in loan losses on the asset side of bank balance sheets.¹ The result is that bank balance sheets are squeezed from both the asset and liability sides, and the net worth of banks therefore declines. An additional problem for banks is that much of their foreign-currency-denominated debt is very short term, so that the sharp increase in the value of this debt leads to liquidity problems for them because this debt needs to be paid back quickly. The result of the further deterioration in bank balance sheets and their weakened capital base is that they cut back lending. In the extreme case in which the deterioration of bank balance sheets leads to a banking

1. An important point is that even if banks have matched portfolios of foreign-currency-denominated assets and liabilities and so appear to avoid foreign exchange market risk, a devaluation can nonetheless cause substantial harm to bank balance sheets. The reason is that when a devaluation occurs, the offsetting foreign-currency-denominated assets are unlikely to be paid off in full because of worsening business conditions and the negative effect that these increases in the value in domestic currency terms of these foreign-currency-denominated loans have on the balance sheets of borrowing firms. Another way of saying this is that when there is a devaluation, the mismatch between foreign-currency-denominated assets and liabilities on borrowers' balance sheets can lead them to default on their loans, thereby converting a market risk for borrowers into a credit risk for the banks that have made foreign-currency-denominated loans. Garber and Lall (1996) have pointed out that even with a matched book on their balance sheets, banks may also be exposed to foreign exchange risk because of their use of derivatives, as occurred for Mexican banks during the tequila crisis.

crisis that forces many banks to close their doors, thereby directly limiting the ability of the banking sector to make loans, the effect on the economy is even more severe.

The bottom line from this asymmetric information analysis is that the East Asian financial crisis is the result of a collapse in both financial and nonfinancial firm balance sheets that makes asymmetric information problems worse. The result is that financial markets are no longer able to channel funds to those with productive investment opportunities, which then leads to a severe economic contraction.

Much of the story that I have outlined here is consistent with the discussion in the Radelet-Sachs paper. However, the authors put much more emphasis on multiple equilibria as a key factor in the East Asian financial crisis. I find that the multiple-equilibrium view can be highly dangerous when it is put in the wrong hands. Too much emphasis on the multiple-equilibrium story often gives credence to the view that the crisis is not due to policy mistakes, thereby encouraging politicians in these countries to put the blame for the crisis on everyone but themselves.

The view I have presented suggests that the crisis in East Asia was indeed due to serious policy mistakes. I agree with Radelet and Sachs that it is hard to find a smoking gun in the macroeconomic fundamentals of these countries and so the source of the crisis was unlikely poor macroeconomic policies. Indeed, the market's focus on *macroeconomic* fundamentals is one reason why the crisis in East Asia came as such a surprise. However, the story I have told sees the crisis as the result of *microeconomic* policy mistakes. Problems in the financial sectors of these countries, which resulted from poor regulatory and supervisory structures, were the key fundamental driving the crisis. Clearly, politicians in these countries were to blame for allowing the financial sector to get into the mess it was in before the crisis, and allowing them to escape accountability for the crisis, which the stress on multiple equilibria often does, may mean that they are less likely to put policies into place that will help to resolve the crisis.

To be clear, I do not want to give the impression that the multiple-equilibrium story is nonsense. I believe it is a valuable line of thinking that can help us to understand the dynamics of currency and financial crises. Indeed, the presence of multiple equilibria is consistent with the asymmetric information story I have outlined because an attack on a currency that leads to a devaluation does help trigger financial crisis. Thus, without the speculative attack, the bad equilibrium with a financial crisis does not have to occur. Furthermore, the exact date when an attack occurs may be quite random, just as the multiple-equilibrium view suggests. However, the likelihood of a successful speculative attack and a subsequent financial crisis is driven by fundamentals. Given the initial state of the financial sector in the crisis countries, the financial crisis was inevitable: the only

question was when it would occur and the multiple-equilibrium view provides us with the useful insight that the timing may have been unpredictable.

Policy Implications for Crisis Resolution

The asymmetric information view of the East Asian financial crisis provides some broad principles for steps to resolve this type of crisis. First, it suggests that the underlying reasons for these crises are microeconomic rather than macroeconomic. This suggests that a focus on microeconomic policies is likely to be the best way to resolve these crises. The asymmetric information view also suggests three principles that should guide resolution of these crises: (1) The financial system needs to be restarted so that it can resume its job of channeling funds to those with productive investment opportunities. (2) Balance sheets of financial and nonfinancial firms need to be restored so that asymmetric information problems lessen. (3) An adequate regulatory and supervisory system needs to be put in place in order to limit the moral hazard created by intervention to resolve the crisis, whether by the domestic government or by international organizations.

These principles are useful in thinking about the role of international organizations such as the IMF in helping to resolve crises like the ones we have experienced recently in Mexico and East Asia. In order to follow the first principle and quickly restart a financial system in a country, a lender of last resort is typically needed to restore liquidity to the financial sector. In industrialized countries, central banks can typically perform this lender-of-last-resort function well. However, there are reasons why the ability of a central bank in an emerging market country to take on this role is very limited. Central bank lending to the financial system in the wake of a financial crisis requires the expansion of domestic credit, which, because of weak credibility in an emerging market country, might arouse fears that inflation will spiral out of control. When inflation expectations rise, interest rates will rise and the exchange rate will depreciate. Thus, as we have seen above, cash flow and balance sheets can deteriorate further, potentially making the financial crisis even worse.

The above argument suggests that an outside entity—a large rich country such as the United States or an international agency such as the IMF—may be needed as a lender of last resort. The broad principles outlined above suggest what elements would be part of a successful international lender-of-last-resort operation to restart the financial system in a crisis country. The first principle implies an important element for success of a lender-of-last-resort operation is that it restore confidence in the financial system. Not only is the liquidity supplied by the lender of last resort necessary for this goal, but confidence that financial institutions will not go on taking excessive risk is also essential. This implies that steps to beef up the

regulatory and supervisory systems in crisis countries can play a useful role in restoring confidence and resolving crises. Insistence by the international lender of last resort on these steps as a condition for its lending can thus be an important part of making its operation successful.

The second principle indicates that resolution of a financial crisis requires a restoration of the balance sheets of both financial and nonfinancial firms. Restoration of balance sheets of nonfinancial firms requires a well-functioning bankruptcy law that enables the balance sheets of these firms to be cleaned up so they can regain access to credit markets. Restoration of balance sheets of financial firms may require the injection of public funds so that healthy institutions can buy the assets of insolvent institutions, but it also needs the creation of entities like the Resolution Trust Corporation in the United States, which can sell assets of failed institutions and get them off the books of the banking sector. International organizations can help in this process by sharing their expertise and by encouraging the governments in crisis countries to take steps to create a better legal structure and better resolution process for failed financial institutions.

The third principle indicates that it is necessary to limit the moral hazard created by intervention to resolve the crisis, whether by the domestic government or an international organization. This moral hazard can be limited by the usual elements of a well-functioning regulatory and supervisory system: punishment of the managers and stockholders of insolvent financial institutions, adequate disclosure requirements, adequate capital standards, prompt corrective action, careful monitoring of risk and institutions' risk management procedures, and monitoring of financial institutions to enforce compliance with the regulations. Because an international lender of last resort has so much leverage, it can use it to encourage adoption of these elements by emerging market countries, thereby limiting the moral hazard problem created by its intervention.

The bottom line of the discussion here is that an international lender of last resort may be needed to limit the damage from financial crises of the type that have recently been experienced in East Asia. However, in order for the international lender-of-last-resort role to be successful, it needs to focus on the microeconomics of financial markets in the crisis countries and impose strong conditionality on its lending in order to encourage governments in these countries to take the steps that will make a financial crisis less likely in the future. This leaves me in fundamental disagreement with the position outlined in Feldstein (1998): the asymmetric information framework for analyzing financial crises suggests that conditionality on microeconomic issues is a valid and necessary element of IMF intervention.

The analysis here also suggests that macroeconomic policies should not be emphasized as a solution to financial crises. The Radelet-Sachs paper

criticizes the IMF for its so-called austerity program for the East Asian countries. What are the right set of macroeconomic policies to pursue when a currency crisis develops is not absolutely clear, and this is currently a hot topic of debate. Regardless of what the right macro policies are, I think there are two reasons for deemphasizing them in coming up with a plan to limit financial crises in emerging market countries.

First is that the fundamentals driving the crises have been primarily micro, not macro. Thus macro policies are unlikely to resolve the crises. Second is that a focus on austerity programs is likely to be a political disaster. Politicians are prone to avoid dealing with the hard issues of appropriate reform of their financial systems, and this is particularly true in East Asia where many politicians' close friends, and even families, have much to lose if the financial system is reformed properly. Austerity programs allow these politicians to label the international lender of last resort, the IMF in the East Asian case, as antigrowth and even anti-Asian. This can help the politicians to mobilize the public against the international lender of last resort and avoid doing what they really need to do to reform the financial systems in their countries. With conditionality focused on microeconomic policies, there is a greater likelihood that the international lender of last resort will be seen as a helping hand that aids the emerging market country by assisting it in creating a more efficient financial system. An international lender of last resort is more likely to succeed if it is perceived as a proponent of tough love rather than abuse.

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