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spreads seem to be more correlated with those of Latin America than those of Asia. This may be due to some "cross-hedging" across markets. Also, the robustness of this result in subsamples of turbulent periods may have to be tested. Also, the results of the Granger causality tests showing causality going from Korea to East Asia but not vice versa are a bit at odds with the exchange rate results suggesting contagion from East Asia to Korea.

The results on the effects of news on asset prices are novel and interesting; they confirm the view that negative domestic news about *chaebols* and financial distress of commercial and merchant banks as well as government bailout policies negatively affected asset markets. Two issues here: Although bailout news signals that there are serious distress problems, they should reduce panic and runs as long as the bailout commitment is credible. The results instead seem to suggest that bailout news is perceived as negative by investors. Second, finding a significant effect of bad news on asset prices does not rule out the possibility that such prices overreacted to the news; it is one thing to find that news matters, and another to infer that such significant relations between news and prices imply no overshooting of such prices to the news. In the absence of a fundamental model of the quantitative effect of such news, it is again hard to assess whether Korean financial markets and foreign investors overreacted to the negative news that came out of the Korean economy at the end of 1997. Although fundamentals played a strong role, as the paper convincingly argues, at the end of 1997 some run psychology and panic may have been triggered by such negative developments and may have led Korea to the brink of default. Only the negotiated agreement at the end of 1997 between Korea and its international creditor banks to roll over short term cross-border lines avoided this potentially disastrous outcome.

In conclusion, this is an interesting empirical study of the causes of the Korean crisis; it confirms the view that fundamentals mattered in triggering the crisis but that external interdependence (contagion) also mattered. The results appear to be convincing. Perhaps the authors could have tried to probe a little more the alternative view that Korea's crisis was caused by a self-fulfilling bank run and panic.

Comment

Ponciano S. Intal, Jr.

I would like to congratulate Dongchul Cho and Kiseok Hong for their admirable effort in analyzing the causes of the recent currency crisis in Korea. I start my comments on a few technical points. Afterwards, I will

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focus on the real sector to complement Cho and Hong's "fundamentals" story. Of course, Cho and Hong, being Koreans, know the real sector aspects much more than I do. My aim is primarily to nudge the authors to consider somewhat more fully the real sector aspects in their paper. Clearly, no single paper can ever do justice to such a complex phenomenon as a currency or economic crisis. Nevertheless, I feel that the authors will end up with a more insightful paper if they give more space in the paper on the real sector aspects of the Korean crisis.

Some Technical Points

One technical point I would like to highlight is that the contagion index in the Cho and Hong paper does not measure the usual meaning of contagion as presented in Kaminsky and Reinhart (chap. 3, this volume). Given that the data used is annual, thereby raising issues of simultaneity/endogeneity, the geography-based contagion index can proxy more neatly the trade, financial, and investment linkages among neighboring countries, i.e., akin to an index of economic integration or economic interdependence. Viewed this way, Cho and Hong's contagion index supports better the authors' view that the Korean crisis was primarily determined by Korea's fundamentals but was substantially aggravated by the crisis in Southeast Asia. (There may be some quibbling here, in the sense that what could have been an economic turbulence in Korea ended up being a full-blown crisis because of the regional contagion effect.)

The second point is that some of the results are counterintuitive. For example, in the case of Thailand and Indonesia, the results indicate that the probability of a currency crisis in Thailand and Indonesia was historically higher during the late 1980s and early 1990s than in 1997. In view of the modest results, Cho and Hong might like to consider modifying the specification of the probit model. For example, like in Corsetti, Pesenti, and Roubini (chap. 1, this volume), Tornell (chap. 2, this volume), and Kaminsky and Reinhart (chap. 3, this volume), it may be that some variables need to pass some threshold levels or be conditional upon other relevant variables before they significantly contribute to the occurrence of a crisis. Cho and Hong may also like to use the sharp increase in the "foreign exchange market pressure" à la Girton and Roper instead of a sharp drop in the exchange rate as the measure of currency crisis. The foreign exchange market pressure is a weighted sum of the exchange rate change and the change in foreign exchange reserves similar to those in Corsetti, Pesenti, and Roubini and Tornell. This is the more analytically satisfactory measure, especially in developing countries that do not have free and flexible foreign exchange markets. Finally, the authors may also include direct measures of financial sector vulnerability in the probit model, given the prominence of Korea's financial sector in the unraveling of Korea's crisis.

The last technical point is related to the Granger causality tests. Using

daily data of log differences of exchange rates, the authors found minimal pair-wise correlation between the won and the Southeast Asian currencies. Moreover, the Korean won Granger-caused the Southeast Asian currencies, which is somewhat surprising. Except for the possible sample size requirement of a Granger causality test, it does not seem persuasive that daily data need to be used especially in the light of the counterintuitive results and the fact that the South Korean won and the Southeast Asian currencies are not freely floating.

Some Real Sector Underpinnings

Cho and Hong show the importance of terms of trade changes and real exchange rate changes as contributing factors to the occurrence of currency crises. The authors did not discuss them; nevertheless, the two factors appear to be important for the Korean crisis story because they bring out some of the real economy underpinnings of the financial sector fragility in Korea. Specifically, the decline in Korea's corporate profit rate to its lowest level ever (Smith 1998) may have stemmed in large part from the appreciation of the won vis-à-vis the yen (resulting in the loss of price competitiveness of Korea's exports vis-à-vis Japan's exports in third markets), the sharp fall in the export prices of Korea's semiconductor exports, and the significant slowdown in Korea's exports.

The drop in export prices was partly of Korea's doing because Korea is a major player in the world's semiconductor chips industry. The drop in export prices resulted from the serious overcapacity in the industry brought about by the slowdown in world demand on the one hand and, to some extent, the investment binge of Korea's *chaebols* on the other. The increased commodity concentration of Korea's exports, which led to Korea's greater vulnerability to terms of trade changes, may have stemmed in part from the *chaebols*' bias for economies of scale as the source of international competitiveness (rather than manufacturing flexibility in niches followed by Taiwanese firms), the real appreciation of the won, and the sharp rise in real wages in Korea.

It must be noted that the *chaebols*' corporate strategy is fundamentally a high-wire act. Focusing on economies of scale as a source of competitive advantage means building large, capital-intensive plants, which in the case of Korea's *chaebols* were largely debt financed. Highly leveraged with historically low corporate profit rates compared to a number of East Asian countries, the *chaebols* need robust growth in exports and the Korean economy as well as low wages in labor-efficiency terms in order to stay afloat. However, the sharp rise in the real wages in the 1990s and the sharp slowdown in exports and economic growth in 1996 substantially raised the probability of corporate failures and, given the debt-financed nature of Korean investments, also of bank failures.

The 1997–98 Korean economic crisis has a precedent in Korea: the 1980

crisis, which was caused as much by debt-financed overinvestment in the late 1970s as by an external shock (the world oil price hike). A major difference between the 1980 crisis and the 1997–98 crisis, however, is the sharply higher rate of Korean bank-intermediated, variable-rate, and short-term external debt in the recent episode. Cho and Hong show the significance of short-term debt as a predictor of a currency crisis. Why there was a sharp rise in short-term external debt in Korea is an interesting issue by itself. What is worth noting here is that it has been the less regulated merchant banks that triggered Korea's recent financial crisis, just as it was the less regulated finance companies that did it for Thailand in 1997 and for the Philippines in the early 1980s. Although this points to the issue of prudential regulations, it may also indicate problems related to the pace and pattern of the liberalization and deregulation of Korea's financial market.

Finally, it may be noted that within two years after the 1980 crisis, the Korean economy recovered as Korea reflated and as the triple lows (i.e., low won, low interest rate, and low world oil price) eventually led to surging exports. A low won (i.e., depreciation of the won and appreciation of the yen relative to the dollar) and a recovery in world semiconductor chip prices may lead to an export-led recovery of the Korean economy. Nevertheless, the success story of the 1980s may not be totally replicated in the recent episode. The drastically changed industrial relations environment in Korea and the increasing competition from Southeast Asia and China may constrain the recovery and growth potentials of the Korean economy. Thus, the basis for optimism for sustained recovery from the crisis would have to come from something else. Specifically, just as the 1980 crisis led to Korea's trade policy reforms, the 1997–98 crisis provides the impetus for Korea's financial sector and corporate restructuring and governance reforms. This seems to be happening despite much difficulty, as indicated by the Daewoo case.

Reference

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