



[Home](#) > [Economic Research](#) > [Publications](#) > [Economic Letter](#) > Contractionary Effects of Devaluation



FRBSF ECONOMIC LETTER

1998-34 | November 13, 1998

[Subscribe](#) [RSS Feed](#) [Share](#)

[« More Economic Letters](#)

Contractionary Effects of Devaluation

Kenneth Kasa

- [Lax financial regulation: setting the stage](#)
- [Borrowing constraints and the propagation of banking crises](#)
- [Conclusion](#)
- [References](#)

Pacific Basin Notes. *This series appears on an occasional basis. It is prepared under the auspices of the [Center for Pacific Basin Monetary and Economic Studies](#) within the FRBSF's Economic Research Department.*

What is perhaps most surprising about recent events in Asia is not the widespread currency devaluations but the subsequent declines in economic activity. Many observers noted that the declining yen and China's devaluation of the yuan had eroded the competitiveness of these countries. (Chinn 1998 provides some evidence that most of these currencies were overvalued based on standard Purchasing Power Parity considerations.) In addition, given these countries' common interest in exporting similar products to the U.S. and Japan, it is not surprising that they devalued together. (See, e.g., Huh and Kasa 1997 or Glick and Rose 1998.) However, devaluation was supposed to restore their competitiveness and *stimulate* their economies. Instead, these devaluations produced recessions.

There are many reasons why a devaluation might produce a recession. For example, by raising the cost of imported intermediate inputs, a devaluation can have adverse supply-side effects. Alternatively, when a devaluation is accompanied by a rise in the domestic price level, as is often the case, it erodes the purchasing power of money, which through a so-called "real-balance effect" leads to a decline in aggregate demand. While there are many possibilities, this *Letter* argues that in the case of the recent Asian crisis, a combination of financial market imperfections and inadequate regulation provides a particularly likely explanation.

Lax financial regulation: setting the stage

Economists typically interpret economic fluctuations in terms of "impulses" and "propagation mechanisms." Impulses are shocks that get things rolling. Propagation mechanisms are structural

features of the economy that prolong, and possibly even amplify, the effects of shocks. A complete understanding of the Asian crisis requires an identification of both the impulse(s) that initiated the crisis, and the propagation mechanisms that are responsible for its ongoing effects.

The conventional view of the impulse is as follows. Market participants recognize that in the event of a bad shock to the economy, governments will find it politically difficult not to bail out the banking system. Knowing this, banks will tend to engage in excessively risky lending. After all, if nothing bad happens, management and shareholders reap the rewards of high-yielding risky investments, while if things do turn sour, the taxpayers are left holding the bag. Due to these adverse incentive effects, governments generally reserve the right to monitor and restrict the lending activities of their banking sectors.

Unfortunately, this monitoring function was not performed effectively in many Asian countries. As a result, with little interference from annoying bank auditors, banks (and their customers) found it advantageous to “play the spread.” That is, for several years prior to the crisis U.S. interest rates were lower than local interest rates. Borrowing money at low dollar rates and then turning around and lending it out again at higher local rates seemed like a wonderful way to make money. The catch, of course, is that interest rates generally differ for a reason, and despite the fact that these countries had for several years maintained stable exchange rates against the dollar, the market was still assigning to them some risk of devaluation. That is, to offset the potential for capital loss from an exchange rate devaluation, holders of baht, rupiah, and won were demanding a risk premium in the form of higher interest rates.

The end result from a policy of borrowing dollars and lending locally was a banking system that collectively had what amounted to a large short dollar position. In this situation, any increase in the price of the dollar (i.e., a devaluation) would inflict a large capital loss on banks as the value of their dollar-denominated liabilities suddenly rose relative to the value of their assets. Unfortunately for the banks (and the domestic taxpayers), a devaluation is exactly what happened.

In the next phase of the crisis, a sudden decline in bank capital gets propagated forward into the real economy. This is where financial market imperfections enter the picture.

Borrowing constraints and the propagation of banking crises

Just as government guarantees create incentive problems for the banking industry in general, individual banks confront their own incentive problems. This is because the people they lend to typically have more information about the riskiness of their projects than the banks do. In addition, it can be difficult to verify that the borrowed funds are used in exactly the way outlined in the loan application. Simply charging a higher interest rate to cover the extra risk can actually be counterproductive, since doing so tends to scare off the relatively low-risk borrowers. The only people willing to pay high rates are the risky borrowers, who will be more than happy to pay high rates if their risky, high-yielding projects are successful, while defaulting otherwise.

The usual way of dealing with these kinds of incentive problems is to require that loans be backed by collateral, i.e., tangible assets that are easily liquidated. Now if a borrower cannot repay, the bank has some collateral it can resell to cover at least part of the loss.

What does this have to do with currency crises? Well, it turns out that collateralized lending is a powerful propagation mechanism. When borrowing must be backed by the value of collateral, a dynamic feedback process arises between asset prices and *aggregate* economic activity. In particular, a sudden decline in the value of collateral (e.g., land or equity prices), or a sudden increase in the real value of debt (due, e.g., to a currency devaluation) tends to reduce borrowing capacity, and therefore investment, in those sectors with the strictest collateral requirements, e.g., small businesses with little access to secondary debt markets.

Some of these lendable funds will get redirected to other, less constrained sectors, but in general, a decline in the value of collateral depresses aggregate investment and output. Unfortunately, the decline in aggregate output further depresses asset prices, which starts the cycle all over again.

Economists have long recognized the potential role of collateral as a cyclical propagation mechanism. For example, Veblen (1904, p. 55), in his own inimitable way, described the process clearly:

Funds obtained on credit are applied to extend the business; competing business men bid up the material items of industrial equipment by the use of funds so obtained; the value of the material items employed in industry advances; ...but since an advance of credit rests on the collateral as expressed in terms of value, an enhanced value of the property affords a basis for a further extension of credit, and so on... The extension of loans on collateral has therefore in the nature of things a cumulative character. This cumulative extension of credit through the enhancement of prices goes on, if otherwise undisturbed, so long as no adverse price phenomenon obtrudes itself with sufficient force to convict this cumulative enhancement of capitalized values of imbecility.

Although Veblen's account *describes* the process, as an *explanation* it is rather unsatisfying. These days economists generally prefer to study economies inhabited by rational actors, not imbeciles, and it has proved to be difficult to model this kind of cumulative process formally in an explicit, internally consistent model, where someone isn't making a blatantly stupid decision. Fortunately, in an influential recent paper, Kiyotaki and Moore (1997) develop a dynamic model that rationalizes the cumulative extension of collateralized credit. Although there are still some kinks to be ironed out before it becomes fully implementable, this model provides economists with an organizing framework that allows the dynamic feedback between asset values and economic activity to be quantified.

In a recent paper (Kasa 1998) I apply the Kiyotaki-Moore model to historical data from Japan, Hong Kong, and Korea. Although the crisis itself is too recent to be fully reflected in published data, in the past each of these countries has experienced considerable fluctuations in asset values. So while the "impulse" of the recent crisis is certainly larger than anything previously experienced, historical estimates of the propagation mechanism may at least give us an idea of how long the crisis will persist.

To implement the Kiyotaki-Moore model one needs to take a stand on exactly what kinds of assets are used as collateral. In principle, any asset that is not highly specific to a given industry could serve as collateral. And, in fact, we do see a broad range of durable assets playing the role of collateral, e.g., automobiles. However, without question the most commonly used form of collateral is land. So to simplify the analysis I just collected data on land values. Specifically, I assembled a time series of land prices for each country that reflects an average of both commercial and residential uses of land. To get a reasonable estimate of the persistence of land price fluctuations, these data go back to the 1960s and early 1970s.

The results imply that once a shock to land prices occurs, its effects linger for a long time. In particular, the "half-life" of a shock (i.e., the time it takes for land prices to return halfway back to their steady-state growth paths) ranges from 2.5 years in Korea to over 5 years in Japan, with Hong Kong more or less in the middle. This suggests that, absent outside intervention, we should expect the fallout from the Asian crisis to persist for several years. Once a sudden decline in the value of collateral takes place, it tends to trigger distress sales of collateral, which then leads to further declines in collateral values. Although estimates of the model indicate that this process is stable (i.e., land prices eventually recover), it takes a long time for them to do so.

Conclusion

There are two main policy implications from this analysis. First, to avoid the negative impulse associated

with currency devaluations, it is essential that governments either credibly commit not to bail out their banking systems or, more realistically, that they vigilantly monitor their activities. Second, once a shock occurs, feedback effects between collateral values, investment, and aggregate economic activity tend to propagate its effects over time. Estimates from a recent model suggest that this propagation typically takes several years to work itself out. Hence, it is important to devise policies that can accelerate recovery, while at the same time not exacerbating the sort of incentive problems that create the problem in the first place.

Kenneth Kasa
Senior Economist

References

Chinn, Menzie D. 1998. "Before the Fall: Were East Asian Currencies Overvalued?" NBER Working Paper No. 6491.

Glick, Reuven, and Andrew K. Rose. 1998. "Contagion and Trade: Why Are Currency Crises Regional?" FRBSF Center for Pacific Basin Studies Working Paper No. 98-03 and CEPR Working Paper No. 1847.

Huh, Chan, and Kenneth Kasa. 1997. "A Dynamic Model of Export Competition, Policy Coordination, and Simultaneous Currency Collapse." Pacific Basin Working Paper No. 97-08.

Kasa, Kenneth. 1998. "Borrowing Constraints and Asset Market Dynamics: Evidence from the Pacific Basin." FRBSF Economic Review 3 (forthcoming).

Kiyotaki, Nobuhiro, and John Moore. 1997. "Credit Cycles." *Journal of Political Economy* 105, pp. 211-248.

Veblen, Thorstein. 1904. *The Theory of Business Enterprise*. New York: Charles Scribner's & Sons.

 [Subscribe](#)  [RSS Feed](#)  [Share](#)

[More Economic Letters](#)

Pacific Basin Notes are published occasionally by the [Center for Pacific Basin Studies](#).

Opinions expressed in FRBSF Economic Letter do not necessarily reflect the views of the management of the Federal Reserve Bank of San Francisco or of the Board of Governors of the Federal Reserve System. This publication is edited by Sam Zuckerman and Anita Todd. Permission to reprint must be obtained in writing.

Please send editorial comments and requests for reprint permission to

[Research Library](#)
Attn: Research publications, MS 1140
Federal Reserve Bank of San Francisco
P.O. Box 7702
San Francisco, CA 94120

[Site Policies](#) | [Privacy](#) | [Contact Us](#) | [Work for Us](#)

Federal Reserve Bank of San Francisco © 2015