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How Do Currency Crises Spread?

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Department.

The world has experienced three waves of speculative attacks on fixed exchange rate regimes recently: the European Monetary System (EMS) crisis of 1992-93, the Mexican meltdown and "Tequila Hangover" of 1994-95, and the "Asian Flu" of 1997-98. These currency crises generally involved countries in the same region. Why?

One explanation is that currency crises tend to spread through a region because countries are linked by trade, and trade tends to be regional. Once Thailand floated the baht, its main trade competitors (Malaysia and Indonesia) were suddenly at a competitive disadvantage, and so were themselves likely to be attacked. Thus the *spread of currency crises reflects international trade patterns*. Countries who trade and compete with the targets of speculative attacks are themselves likely to be attacked

Our explanation of the regional nature of currency crises might seem obvious. But most economists think about currency crises using *macroeconomic* models. They think of crises as resulting from conflicts between incompatible internal and external macroeconomic objectives. This apparently reasonable view has a simple problem: macroeconomic phenomena do not tend to be regional. So it is hard to understand why currency crises would be regional from a strictly macroeconomic perspective.

In this *Letter* we summarize empirical evidence by Glick and Rose (1998) that systematically assesses the role of trade linkages as a channel for contagion. Using data for a number of differen episodes, we show that currency crises affect currency together by international trade. This linkage is important in

Currency crises have been regional

This decade has witnessed three important currency crises. In the autumn of 1992, a wave of speculative attacks hit the EMS and its periphery. Before the end of the year, five countries (Finland, the U.K., Italy, Sweden, and Norway) had floated their currencies. Despite attempts by a number of other countries to remain in the EMS by devaluing their currencies (Spain, Portugal, and Ireland), the old system was ultimately unsalvageable. The bands of the EMS were widened from ± 2.25% to ± 15% in August 1993.

The Mexican peso was attacked in late 1994 and floated shortly after an unsuccessful devaluation. A rash of speculative attacks broke out immediately. The most prominent targets of the "Tequila Hangover" were Latin American countries, especially Argentina and Brazil, but also including Peru and Venezuela. Not all Latin countries were attacked – Chile was the most visible exception – and not all economies attacked were in Latin America (Thailand, Hong Kong, the Philippines, and Hungary suffered brief speculative attacks). While few countries actually devalued, the Tequila attacks were not without effect. Argentine macroeconomic policy in particular tightened dramatically, precipitating a sharp recession.

The "Asian Flu" began with the flotation of the Thai baht in July 1997. Within days speculators attacked Malaysia, the Philippines, and Indonesia. Hong Kong and Korea were attacked somewhat later on; the crisis then spread across the Pacific to Chile and Brazil, and "bahtulism" effects still linger.

All three waves of attacks were largely regional. Once a country had suffered a speculative attack – Thailand in 1997, Mexico in 1994, Finland in 1992 – its trading partners and competitors were disproportionately

trade channel irrelevant as a means of transmitting speculative pressures across international borders.

It should be noted that currency crises were regional long before the 1990s. The German decision in April 1971 to abandon its Bretton Woods exchange rate obligations precipitated a rash of flotations by other European countries. The same was true of the German decision to float out of the Smithsonian Agreement in February 1973.

Explanations of currency crises

Most economists tend to think about currency crises using one of two standard models of speculative attacks, both of which emphasize macroeconomic fundamentals as determinants. "First generation" models direct attention to inconsistencies between an exchange rate commitment and domestic economic fundamentals. For example, excessive monetary expansion to monetize fiscal deficits can deplete the central bank=s foreign exchange reserves and weaken its ability to defend a peg. "Second generation" models view currency crises as shifts between different monetary policy equilibria in response to selffulfilling speculative attacks. In these models, market speculators initiate attacks based on their beliefs about the willingness of policymakers to resist pressure on the exchange rate. When markets perceive that conditions such as high unemployment or a weak banking system compromise the central bank's *willingness* to defend a currency peg by raising interest rates, speculative attacks are more likely to succeed.

Both models suggest that currency crises will b conditions are regional, i.e., a crisis may spread

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same region if they exhibit similar macroeconomic and financial features. But macroeconomic conditions do not tend to be regional.

macroeconomic fundamentals.

The "extra ingredient" may well be trade patterns, which *are* regional: countries tend to export and import with countries in geographic proximity. It is easy to imagine why the trade channel is important. If prices tend to be sticky, a nominal devaluation delivers a real exchange rate pricing advantage, at least in the short run. That is, countries lose competitiveness when their trading partners devalue. They are therefore more likely to be attacked – and to devalue – themselves.

Of course, this channel may not be important in practice. Nominal devaluations need not result in real exchange rate changes for any long period of time. Devaluations are costly and can be resisted. Making the case for the trade channel is therefore primarily an empirical exercise.

Empirical methodology

To demonstrate that trade provides an important channel for contagion above and beyond macroeconomic and financial similarities, we focus on explaining the incidence of currency crises *across countries* for five different currency crisis episodes: the breakdown of the Bretton Woods system in 1971, the collapse of the Smithsonian Agreement in 1973, the EMS Crisis of 1992-93, the Mexican meltdown and the Tequila Effect of 1994-95, and the Asian Flu of 1997-98. We ask why some countries were hit during each of these episodes of currency instability, while others were not. Further details are provided in Glick and Rose (1998).

Our empirical strategy keys off the "first victim" in a given crisis episode. Given the incidence of the initial speculative attack (e.g., Thailand in 1997 and Mexico in 1994), we ask how the crisis spreads from this first

crisis episode; we compare the incidence of crises with a measure of each other country's trade linkage with the first crisis victim as well as relevant macroeconomic variables. To estimate this relationship we must (1) define the incidence of currency crises, (2) measure the trade linkage between the first crisis victim and other countries, and (3) measure the relevant macroeconomic and financial control variables.

We define our currency crisis measure as a simple binary variable indicator of crisis victims (1 if a country is a victim, 0 if it is not) determined from journalistic and academic histories of the various episodes. More complex measures of currency crisis involvement that take into account the extent of exchange rate pressure experienced by a country during a crisis deliver similar results.

The magnitude of international trade links between the first victim and other countries is constructed from a weighted average measure of the extent to which the countries compete in foreign export markets. This trade measure is computed for each episode using annual data for the relevant crisis year taken from the IMF's *Direction of Trade* data set.

As an example, in 1997 all of Thailand's top 10 trade competitors and 16 of its top 20 trade competitors were located in Asia. (The top 10 ranked in descending order were Malaysia, Korea, Indonesia, China, Japan, Taiwan, the Philippines, India, Myanmar, and Singapore; Hong Kong was 17th.) Unsurprisingly, these countries were also disproportionately likely to have suffered speculative attacks. Perturbing the trade linkage measure in different ways makes little difference to the results.

A variety of different macroeconomic variable Readability Tools the determinants of currency crises dictated by standard macroeconomic models of speculative attacks. We do this so that the trade linkage variable picks up the effects of currency crises that spill

employ include the annual growth rate of domestic credit, the government budget as a percentage of GDP, the current account as a percentage of GDP, the growth rate of real GDP, the ratio of M2 to international reserves, domestic CPI inflation, and the degree of currency under-valuation. (We also tested other variables, and the thrust of the results was the same.) The data set is annual and was extracted from the IMF's *International Financial Statistics*.

Empirical results: trade links matter

The cross-country relationships between currency crisis involvement, trade linkage, and other macroeconomic variables are estimated by bivariate and multivariate probit analysis. The results are striking.

For all five episodes, the strength of trade linkage to the "first victim" varies systematically between crisis and non-crisis countries. In particular, it is systematically higher for crisis countries at all reasonable levels of statistical significance, i.e., countries that become "infected" by the crisis have closer trade linkages to the "first victim" than countries that escape the disease.

In contrast, none of the macroeconomic variables typically varies systematically across crisis and non-crisis countries. While some variables sometimes have significantly different means, these results are not consistent across episodes. And they are never as striking as the trade results. These findings are consistent with the importance of the trade channel in contagion.

When macroeconomic and trade linkages are in **Readability Tools** the results are unchanged. The trade channel in **Readability Tools** consistently important. While the economic size of the effect varies significantly across episodes, it is consistently different from zero at

On the other hand, the macroeconomic controls are small economically and rarely of statistical importance. This is true both of individual variables and of a host of macroeconomic factors taken simultaneously. These results hold up with respect to a number of perturbations to the basic empirical methodology.

The hypothesis of no significant trade channel for contagion seems wildly inconsistent with the data, while macroeconomic conditions do not explain the cross-country incidence of currency crises. That is, currency crises seem to spread contagiously because of international trade patterns.

Conclusion

We have found strong evidence that currency crises tend to spread along the regional lines suggested by international trade. Countries tend to suffer speculative attacks after their foreign competitors are attacked. This is true of five waves of speculative attacks since 1971. Accounting for a variety of different macroeconomic effects does not change this result. Indeed, macroeconomic factors do not consistently help much in explaining the cross-country incidence of speculative attacks.

Our analysis implies that countries may be attacked because of the actions (or inaction) of their neighbors who tend to be trading partners merely because of geographic proximity. This externality has important implications for policy. If speculative attacks spread through trade links, then enhanced international monitoring or desirable. Moreover, If countries are more at ris **Readability Tools** currency crisis than is apparent by looking just at domestic economic factors, a lower threshold for international or regional assistance is also warranted in order to limit the spread of speculative attacks.

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Glick, Reuven, and Andrew K. Rose. 1998. "Contagion and Trade: Why Are Currency Crises Regional? ?" U.C Berkeley Working Paper and Pacific Basin Working Paper No. 98-03.

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