University of Bern Prof. H. Dellas
International Finance Wintersemester 01/02

Class note 7: Currency and Financial Crises

1 Currency Crises

1.1 Preliminaries

Sustainability:

- Few countries have been able to maintain fixed regime. Typically small, dependent

Technical feasibility of defending a fixed regime:

- Shrink MB
- Raise interest rates
- Foreign borrowing

Conclusion:

- For at least the industrial countries it is always technically feasible to defend a fixed parity. Nevertheless, quite often parities are not defended

Defense can prove very costly for a number of reasons:

- High short term public debt (Italy)
- Troubled financial sector (Sweden)
- High unemployment (Spain)
- Other reasons: UK (link of short rates to mortgage rates)

1.2 Theories of currency crises

Fundamentals

Governments are to blame for failure (Krugman, 1979, Flood and Garber, 1984). The collapse of a fixed regime is the result of inconsistencies between domestic economic policies and the exchange rate commitment. Expansionary policies -for instance, fiscal policy that is monetized by the central bank- create a balance of payments deficit which is financed by the foreign reserves of the central bank. With limited reserves, sustained attrition is bound to lead to their exhaustion and hence to the abandonment of the fixed parity. Interestingly, the process of reserve depletion is not smooth. Once reserves have fallen below a critical low level, there is a speculative attack that depletes the remaining reserves and forces the government to float -or devalue- the currency. It must be stressed though that, according to this model, the fixed exchange rate regime is undermined exclusively by the pursuit of the "wrong" government policies. The parity would not have survived even in the absence of a speculative attack. The attack merely hastens the inevitable collapse but it does not cause it.

Arbitrary, self-fulfilling speculative attacks in the presence of sound fundamentals

Markets are to blame. The second theory (Flood and Garber, 1984, Obstfeld, 1986) lays all of the blame on the financial markets and consequently enjoys great popularity among finance ministers and central bank officials. According to this theory, a fixed parity is susceptible to a collapse even when economic fundamentals are presently fine and are also expected to remain sound as long a the fixed regime is maintained. The survival of the regime depends mainly on the whims of the speculators. As long as there is no massive selling of the domestic currency that exhausts the -limited- foreign reserves of the central bank, the regime

survives. If, however, the speculators start perceiving the currency as vulnerable and decide to sell, and if that happens during a period of some even small structural difficulty -for instance, if the attack coincides with a moderate deterioration in the balance of payments- the government is forced to let the currency go (because it eventually runs out of foreign reserves). Here, the collapse of the fixed regime is not inevitable. It is caused exclusively by speculative behaviour and reflects, in a self-fulfilling manner, arbitrary -that is, not based on current economic fundamentals-expectations of a devaluation.

Multiple equilibria

In the absence of an attack the fixed regime is viable. But it may fail if it is attacked because of vulnerabilities

Sources of vulnerabilities (weaknesses): Those created by the hard currency policy itself, that is, those relating to international trade; and those relating to the cost of defending against a speculative attack (large public debt, unemployment...).

The role of international contagion

A number of factors have been cited as having contributed to the contemporaneous nature of the East Asian crisis:

Country risk. Sudden changes in market expectations or in the market's interpretation of existing information can lead to financial market spillovers from one country to another. The occurrence of a crisis in one country might induce investors to rebalance their portfolios for risk management reasons in the whole area..

Monsoonal effects. Crises often stem from common external causes. The appreciation of the U.S. dollar against the yen and the European currencies between mid-1995 and 1997, and a fall in the terms of trade for electronic goods exporters, have been cited as important factors underlying the East Asian crisis (IMF, 1998). These shocks brought into question the sustainability of the currency pegs contributing to a sharp reversal of market confidence and a sudden withdrawal of funds.

Trade spillovers. When a country experiences a significant devaluation of its currency, countries in the same region, and sometimes beyond, that have not devalued, experience a deterioration in competitiveness, making their currencies more susceptible to speculative attacks. If a country's exchange rate was in equilibrium before the devaluation in a competitor country, the exchange rate of the former is unlikely to be in equilibrium after the devaluation. The competitiveness effect operates not only through bilateral trade linkages but also through competition in third markets.

Herd behavior. If investment fund managers are evaluated on the basis of their performance relative to other managers, they may find it optimal to "follow the herd"

Monsoonal effects and trade spillovers involve changes in macroeconomic fundamentals that can affect more than one country contemporaneously. Essentially, these are "first generation" reasons for contagion. External shocks cause a change in the equilibrium real exchange rate. With an unchanged nominal rate and sticky wages and prices, disequilibria occur between the current real rate and the changed equilibrium rate that precipitates an attack. In contrast, the effects of self-fulfilling expectations and country risk operate through changes in expectations, perhaps because of shifts in market sentiment or changes in the interpretation of existing information, for unchanged values of a country's fundamentals (Masson, 1998). The

changes in expectations can be self-fulfilling because, by altering the trade-off between the costs and benefits of maintaining the peg, they can lead to a devaluation that would not have occurred in the absence of the change in expectations. These are, in effect, "second-generation" reasons for contagion.

Key question: What is the relative contribution of fundamentals vs that of self-fulfilling speculation?

In order to assign responsibility one needs to answer the following question. Is it probable that the regime would have been abandoned even if the financial markets had not turned against the currency? The answer to this question is more likely to be affirmative when the mere action of fixing the parity creates weak fundamentals. For instance, if the fixed exchange rate leads to a persistent and large currency overvaluation, loss of international competitiveness and hence to trade deficits and unemployment (the norm during disinflation experiments) then the fixed regime may be perceived as self-destructing. In this case, it is hard to blame the markets for doubting the viability of the exchange rate policy as this policy looks problematic. On the other hand, a negative answer to this question may create a presumption that the blame for the collapse should lie with the speculators. This case is more likely to arise when the weak fundamentals that precipitate the attack are not caused by changes in international competitiveness but are related to the perception that the government has only limited politico-economic ability to defend the parity (say, because it is saddled with a large, short term, nominal public debt). In this situation the speculators collectively exploit an obvious weakness.

1.3 The empirical evidence: Predicting speculative attacks

Some useful currency crisis predictors

- **Inflation differentials**

Pattern 1: Inflation rates were higher in the pegging countries relative to the anchor country. Inflation differences, however, were being narrowed.

- **The real exchange rate**

  The real effective exchange rate, REER, takes into account trade in manufacturing and primary products. It adjusts the changes in the nominal exchange rates of a country's main trading partners with prices indexes corresponding to relative unit labor costs in manufacturing in those countries. It is a reasonable measure of international trade competitiveness when international trade involves mostly industrial products. The CPI based real exchange rate compares the cost of the consumption basket in some country relative to other countries Germany, while the WPI based rate does a similar comparison but at the wholesale level.

  Note: It should be kept in mind that because these series are based on indexes with an arbitrary starting point, they are not appropriate for making absolute level comparisons within any individual point in time. They can be meaningfully employed, though, to determine whether the products of a particular have become more expensive relative to the foreign ones over a particular period of time.

Pattern 2: By all measures, real exchange rate appreciated significantly during the period leading up to the time of the attack

Note that the REER and WPI based real exchange rates tend to show lower appreciation than the CPI based measure.

- **Interest rate differentials**

  The average rate of return on nominal bonds after adjusting for foreign exchange realized capital gains or losses was systematically higher in the countries that followed the hard currency policy.

Pattern 3: The net -adjusted for exchange rate changes- rate of return on bonds is systematically higher in countries following hard currency policy.

- **The implications of a real appreciation: The foreign accounts**

  What are the implications of the real appreciation of a currency for international trade competitiveness? Does a real appreciation necessarily imply that domestic products become increasingly non-competitive with detrimental effects on the foreign accounts and economic activity? - Not necessarily. But in practice it appears that the hard currency policy and the associated real appreciation were accompanied by a deterioration in at least some of the foreign accounts.

Pattern 4: The trade balance and the current account experienced a significant deterioration before the speculative attack.

- **Real GDP growth**.

  Again it seems that currency crises were proceeded by and took place during a slowdown in economic activity

Pattern 5: Currency crises are more likely to have taken place during economic downturns.

The five patterns described so far confirm the standard chronicle of a currency crises. That is, disinflation motivated hard currency policies result in a loss in international competitiveness which worsens trade and macroeconomic performance.

How to cope with a currency crisis? How to restore credibility? - Policy measures

Capital controls

Implications:

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A breather

(-)

- Reputational considerations / Future borrowing
- Distortions
- Discipline of authorities

Effectiveness:

Capital flight, under-invoicing, use of derivatives to evade controls

Improvement of fundamentals

Tighten fiscal policy, clean up, introduction of reforms

Float

Implications for borrowers in foreign currency

International bail out

The role of the IMF

Loan guarantees and imprudent behavior (risk taking). Moral hazard

Financial Crises

The importance of the financial system for the allocation of resources and economic growth → *Monitoring activities*

1.4 Impediments to the efficient functioning of the financial system

The problem of asymmetric information: one party to a financial contract has less information than the other party

- **Adverse selection**: The lemons problem

  It occurs *before* the transaction

- **Moral hazard**: Conflict of interest between principal and agent

  It occurs *after* the transaction

Asymmetric info problems explain why securities markets are not well developed in less developed countries (few companies use them to raise funds)

Asymmetric info explains the special role played by banks in the financial markets of LDCs: The banks have an advantage in information collection and monitoring activities

Long term relationships with customers

A definition of a financial crisis: A major disruption in financial markets that is characterized by sharp declines in asset prices and the failures of many financial and non financial firms. It is associated with a large increase in moral hazard and adverse selection problems.

1.5 Factors leading to banking and financial crises

An increase in interest rates

Leads to an increase in adverse selection and hence a decline in lending, investment and economic activity. Leads to an increase in interest payments → reduction in cash flow → deterioration of balance sheets

An increase in uncertainty

Could be due to bank/company failure, a stock market crash...Makes it harder to distinguish good from bad risks. It increases adverse selection..

A deterioration of balance sheets

Value of assets goes down, value of liabilities goes up

Could be due to

- a stock market crash
- an increase in interest rates
- an unanticipated decline in prices (because of an increase in the real value of nominal debt). Mostly a problem in countries with low/stable rates of inflation ...

Role of collateral and firm net worth in protecting creditors from default

Adverse selection problems become less severe

High net worth also discourages firms from undertaking projects that are too risky (much to lose).

Example: The S&L crisis in the US in the 80s.

A bank panic (bank run)

Leads to *disintermediation*: Reduces lending, increases interest rates

→ Banking with 100% Reserve Requirement

→ Banking with Fractional Reserve Requirement

Major banking panics occurred in 1873, 1884,1890, 1893 and 1907, and 1930-33. By far the worst panics occurred between 1930 and 1933 when over one-third of the US banks failed. In 1933 there was an official banking holiday, during which all U.S. banks were closed for over a week.

Mechanisms to Prevent Bank Runs

- Federal Deposit Insurance

  In 1934 deposits in the US became federally insured up to $5,000

  Discount Window
- A liquid overnight inter-bank market

  The Fed Funds Market

1.6 Policies to recover from financial crises

Developed countries

Two key characteristics of financial contracts:

- Denominated in domestic currency
- Fairly long term

Remedies:

- The CB can inject additional reserves into the system (follow expansionary monetary policy)

  → higher inflation → debt burden decreases (debt deflation) → stock and other asset prices (e.g real estate) go up
- The CB can exercise its lender of last resort function

Example: US 1987

Developing countries

Characteristics of financial contracts:

- Sizeable foreign currency debt
- short term debt

Expansionary monetary policy is less effective. Lender of last resort policy is also less effective because of lack of credibility. It may fuel inflationary expectations increasing risk premia on real interest rates.

What should a developing country do?

- Create a strong *bank regulatory/supervisory mechanism* to reduce excessive risk taking in the financial system (in the banking sector)
  - Deposit insurance? It creates moral hazard problems
  - Improve accounting and disclosure requirements for financial institutions
  - Create professional, well managed, independent from political pressures supervisory agencies
  - Establish a good reputation as a tough regulator. Take strong corrective measures when needed
  - Make agencies transparent and accountable
- Improve *legal* and *judicial system*
- Follow *sound macroeconomic policies* (low inflation, low budget deficits) in order to allow the development of financial markets in long term nominal contracts (to limit liquidity crises)

1.7 Some important questions

- Should financial deregulation and liberalization be pursued vigorously in developing countries if financial crises cannot be ruled out?
- Should the practice of denominating debts in foreign currency be encouraged?
- Should a pegged exchange rate system be adopted? A knife edge situation.

2 Case studies

The debate: Wrong fundamentals? Overvalued currencies? Political factors?

2.1 The Mexican experience, 1994-95

- Deterioration of banks' balance sheets because of increasing loan losses (lending boom of newly privatized banks + other institutions stressed monitoring activities, inexperience, lack of capability to monitor bank activities by supervising authorities)
- An increase in foreign interest rates. Domestic rates were also increased to defend the peso

→ increased interest payments (contracts are mostly short term), reduced cash flow, deteriorated balance sheets of firms and households

→ Increase in uncertainty (assassination of Colosio, Chiapas..)

→ Stock market decline

→ Devaluation of the peso. Hurt firms that had borrowed in USD

→ Huge capital outflow dried up funds for lending.

→ Large decline in economic activity that made balance sheets even worse. Business failures worsened banks' balance sheets

→ The collapse of the banking system was averted because of government deposit insurance

2.2 The Asian case, 1997-98

The Asian crisis was a financial crisis problem, first of all. Financial intermediaries engaged in excessive risky lending. This led to asset overpricing (an asset price bubble). When asset prices collapsed many intermediaries became insolvent.

Why Was the Banking System in Trouble?

Government Guarantees Encouraged Risk-Taking

The liabilities of the banks (bank deposits) were perceived as carrying an implicit government guarantee - in addition to that the banks were essentially unregulated (moral hazard problem).

Consider the following two projects:

- A – Safe: make 5 always
- B – Risky: make 20 with probability 1/2 and lose 20 w. p. 1/2

Which (if any) projects would you undertake?

Suppose now that the government covers your losses. Which project would you choose? → The banks lent to speculative investors (Thailand), friends of the government (Indonesia), high leveraged corporations (Korea). Loans were used to a great extent inefficiently.

Credible pegs encourage unhedged behavior in currency markets

There was a spread between the local interest rate for loans in local currency and the world interest rate for loans in dollars.

This encouraged the banks and companies to borrow in the international capital market and lend domestically.

They did not hedge exchange rate risk because:

- It was “too expensive”…
- The government provided assurances that currency risk did not exist.

The devaluation had adverse effects on the balance sheets of the banks

→ The collapse of assets prices reduced the value of the banks → Insolvency

→ Many unworthy projects had been undertaken. Some of these projects were brought to a halt. You see many hotels and shopping models half built in these countries.

→ There was exit from the banking sector, since many banks were bankrupt.

→ This destroyed important credit channels.

→ It increased the bid-ask spread on interest rates.

→ The crisis created policy instability that discouraged investment. Foreign capital dried up

→ Recession

Was the Asia crisis due to fundamentals or to self fulfilling expectations?

Two views

1. Aghion, Bacchetta and Banerjee (2001) develop a "third generation" model of financial and currency crises that can account for this triple crisis. Their approach employs sticky prices and credit constraints and is based on the idea that the crisis is the result of a shock (actual or imagined) that is amplified by a financial accelerator mechanism. A simple story of currency crisis emerges: When nominal goods prices are rigid in the short run, an unanticipated currency devaluation leads to an increase in the debt obligations of domestic firms that have borrowed in

foreign currency, lowering profits and net worth. This, in turn, reduces investment and production. The reduction in output lowers the demand for money requiring a currency depreciation (given the rigidity of goods prices). The expectation of a future domestic currency devaluation then puts pressure on the current value of the domestic currency. A currency crisis may occur simply because people expect that the domestic currency will become weaker in the future. This is a situation of multiple equilibria.

The main advantage of this approach over related (that is, multiple equilibria, self-fulfilling) theories of currency crises is that it captures some important features of actual crises. First, it can account for the triple crises. Second, it explains the finding that countries with less developed financial systems are more likely to experience an output decline during a crisis. Finally, it is consistent (by assumption) with the fact that large exchange rate devaluations are not followed by significant upsurges in the rate of CPI inflation.

It must be emphasized, though, that the chain of events described above (from currency to banking crises) is not unique. It is also quite possible that the crisis is due exclusively to fundamentals, and in particular, that it spreads from the banking sector to the foreign exchange rate market even in the absence of multiple equilibria and self-fulfilling expectations (Mishkin, 1999). The initial banking crisis may be due to imprudent bank lending or could be the result of a deterioration in bank balance sheets due to an adverse change in the economic environment. Since the cost of dealing with a banking crisis, including the liquidation of insolvent banks, is typically borne by the public sector, the unexpected worsening of the public sector fiscal balance can lead to expectations of future money creation, triggering a speculative attack on the currency.

2. Burnside, Eichenbaum and Rebelo (2001) offer an alternative explanation of the East Asian crises based on a modified first-generation model along the lines suggested above. The critical

fundamental in their model is the large prospective deficits associated with implicit bailout guarantees to failing banks. The expectation that these deficits would -at least in part- be financed by seignorage revenues or an inflation tax on outstanding nominal debt led to the collapse of the fixed regimes.

Burnside, Eichenbaum and Rebelo offer evidence that their theory can account well for the Asian currency crisis. Their evidence suggests that the exchange rate crises were preceded by publicly available signs of imminent banking crises. And that, governments were either unwilling or unable to raise the resources required to pay for the bank bailouts via fiscal reforms. Finally, their model can also explain the limited pass through of the large exchange rate changes on goods prices even with perfectly flexible prices.

Conclusion (BER, JPE, 2001): The Asian Crisis

•The Asian currency crises were not caused by large current deficits, common in the Latin American currency crises.
•The root of the Asian currency crises were *prospective* deficits associated with the bailout of a fragile banking system.
•The financial system bailout could have been financed by raising taxes or lowering seignorage, but this was politically unlikely.
•The prospect that seignorage would have to be raised in the future made the currency collapse inevitable.

<u>The Asian Crises</u>
Cumulative Depreciation Rates (as of May 1998)
Indonesia 77% (from July 1997)
Malaysia 35% (from July 1997)
Thailand 36% (from July 1997)
Korea 34% (from October 1997)
Philippines 32% (from July 1987)
Hong Kong 0% (from July 1987)
Singapore 12% (from August 1997)
Taiwan 13% (from October 1997)
Source: Craig Burnside, Martin Eichenbaum and Sergio Rebelo "Prospective Deficits and the Asian Currency Crises," Working Paper, Kellogg Graduate School of Management, 1998.