Chapter 5

Foreign Exchange Rate Determination

In Ch. 3 we talked about the BOP approach of exchange rate determination under different currency regimes. In Ch. 4 we examined the parity conditions for foreign exchange rate determination. In this chapter we shall examine the foreign exchange rate determination under the **Asset Approach**: which basically suggests that the demand and supply of any currency can be viewed as an asset choice issue within the portfolio of investors. We shall also explore how the three major approaches to exchange rate determination – parity conditions, the balance of payments, and the asset approach – combine to explain in part the recent currency crises experienced in Asia, Russia and Argentina. We shall also observe how forecasters combine technical analysis with the three major theoretical approaches to forecasting exchange rates.

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**Exchange Rate Determination**

- Three basic approaches
  - Parity conditions
  - Balance of Payments
  - Asset market
- These are not *competing* theories but are in fact *complimentary* theories
- Without the depth and breadth of the various approaches combined, our ability to capture the complexity of the global market for currencies is lost

- **Cross-border foreign direct investment** and international portfolio investment into emerging markets dried up during the recent crises
- **Foreign political risks** have been much reduced in recent years as capital markets became less segmented from each other and more liquid
- Finally, note that most *determinants* of spot exchange rates are also in turn affected by changes in the spot rate – in other words, they are not only linked but mutually determined

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**Exchange Rate Determination**

- Along with an understanding of the theories, an understanding of the complexities of international political economy, societal and economic infrastructures, and random political and social events is needed when viewing the foreign exchange markets
  - **Infrastructure weaknesses** were among the major causes of the exchange rate collapses in emerging markets in the late 1990s
  - **Speculation** contributed greatly to the emerging market crises. Uncovered interest rate arbitrage caused by extremely low interest rates in Japan coupled with high real interest rates in the US was a problem in the 1990s

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**Parity Conditions**

1. Relative inflation rates
2. Relative interest rates
3. Forward exchange rates
4. Interest rate parity

**Balance of Payments**

1. Current account balances
2. Portfolio investment
3. Foreign direct investment
4. Exchange rate regimes
5. Official monetary reserves

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**Asset Approach**

1. Relative interest rates
2. Prospects for economic growth
3. Supply & demand for assets
4. Outlook for political stability
5. Speculation & liquidity
6. Political risks & controls

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**Spot Exchange Rate**

Is there a well-developed and liquid money and capital market in that currency?

Is there a sound and secure banking system in place to support currency trading activities?
Asset Market Approach

- The **Asset market approach** assumes that whether foreigners are willing to hold claims in monetary form depends on an extensive set of investment considerations or drivers (as per the previous exhibit).
- In highly developed countries, foreign investors are willing to hold securities and undertake foreign direct investment based primarily on relative real interest rates and the outlook for economic growth and profitability.

Disequilibria: Exchange Rates in Emerging Markets

- Although the three different schools of thought on exchange rate determination make understanding exchange rates appear to be straightforward, that is rarely the case.
- The problem lies not in the theories but in the relevance of the assumptions underlying each theory.
- After several years of relative global economic tranquility, the second half of the 1990s was racked by a series of currency crises which shook all emerging markets:
  - The Asian crisis of July 1997
  - The Russian ruble’s collapse in August 1998

The Asian Crisis – July 1997

- The roots of the Asian crisis extended from a fundamental change in the economies of the region, the transition of many Asian countries from being net exporters to net importers.
- Starting in 1990 in Thailand, the rapidly expanding economies of the Far East began importing more than they were exporting, requiring major net capital inflows to support their currencies:
  - As long as capital kept flowing in, the currencies were stable, but if this inflow stopped then the governments would not be able to support their fixed currencies.

The Asian Crisis – July 1997

- The most visible roots of the crisis were in the excesses of capital inflows into Thailand in 1996 and 1997.
- Thai banks, firms and finance companies had ready access to capital and found US dollar denominated debt at cheap rates.
- Banks continued to extend credits and as long as the capital inflows were still coming, the banks, firms, and government was able to support these credit extensions abroad.

The Asian Crisis – July 1997

- After some time, the Thai Baht came under attack due to the country’s rising debt.
- The Thai government intervened in the foreign exchange markets directly to try to defend the Baht by selling foreign reserves and indirectly by raising interest rates.
- This caused the Thai markets to come to a halt along with massive currency losses and bank failures.
- On July 2, 1997 the Thai central bank allowed the Baht to float and it fell over 17% against the dollar and 12% against the Japanese Yen:
  - By November 1997, the baht fell 38% against the US dollar.

The Asian Crisis – July 1997

- Within days, other Asian countries suffered from the contagion effect from Thailand’s devaluation.
- Speculators and capital markets turned towards countries with similar economic traits as Thailand and their currencies fell under attack.
- In late October, Taiwan caught the markets off-guard with a 15% devaluation and this only added to the momentum:
  - The Korean Won fell from WON900/$ to WON1100/$ (18.2%)
  - The Malaysian ringgit fell 28.6% and the Filipino peso fell 20.6% against the dollar.
- The only currencies that were not severely affected were the Hong Kong dollar and the Chinese renminbi.
The Asian Crisis – July 1997

- The Asian currency crisis was more than just a currency collapse
- Although the varying countries were different they did have similar characteristics which allow comparison
  - Corporate socialism – Post WWII Asian companies believed that their governments would not allow them to fail, thus they engaged in practices, such as lifetime employment, that were no longer sustainable

- Corporate governance – Most companies in the Far East were often largely controlled by either families or groups related to the governing body or party of that country
  - This was labeled cronyism and allowed the management to ignore the bottom line at times when this was deteriorating

- Banking liquidity and management – Although bank regulatory structures and markets have been deregulated across the globe, their central role in the conduct of business has been ignored
  - As firms collapsed, government coffers were emptied and investments made by banks failed
  - The banks became illiquid and they could no longer support companies’ need for capital

The Russian Crisis – August 1998

- The Russian crisis was a culmination of a continuing deterioration in general economic conditions
- During 1995-1998, Russian borrowers (both public and private) had tapped international markets for capital
- Servicing this debt became a problem as dollars were required for the payments
  - Although the CA had a surplus of $15-$20 billion per year,
  - Capital flight was accelerating as hard-currency earnings were leaving the country

- Finally, in the spring of 1998 Russian export earnings began to decline

  - Although the CA had a surplus of $15-$20 billion per year,
  - Capital flight was accelerating as hard-currency earnings were leaving the country

- The central bank adjusted this band over several years and tried to maintain the band at 1.5% per month
- The government maintained this band by announcing what rate it was willing to buy/sell rubles to the markets
- Even after a $4.3 billion IMF facility, the ruble fell under attack in August of 1998

- The Chinese currency was the only one not affected by the Asian crisis and a devaluation would aid Chinese exports thereby cutting into Russia’s ability to generate foreign exchange reserves
- As financing options dried up for the Russian government, the debt issuance was cancelled
  - Russian bond credit spreads increased 350 basis points and now yielded 23.6%; the ruble fell to Ru6.30/$
- The Russian government issued several press releases stating that this effect was not fiscal but merely psychological
**The Russian Crisis – August 1998**

- On August 17th, the central bank announced that the Ruble would be allowed to fall by 34% to Ru9.50/$
  - They also postponed $43 billion in short-term debt as well as a 90-day moratorium on all repayment of foreign debt in order to avoid a banking collapse
  - On August 28th, trading of the Ruble was halted after ten minutes as the Ruble traded around Ru19.0/$
- Russia began to print money in order to make domestic payments to retirement funds and pensions and by January the Ruble had settled at Ru25.0/$

**The Russian Crisis – August 1998**

- Russia had defaulted on its foreign denominated debt, mostly dollar debt marking the first time a sovereign issuer defaulted on Eurobonds
- This lead to still lingering problems of Russia’s access to international capital markets which is necessary in order to rebuild the economy

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**The Argentine Crisis - 2002**

- In 1991 the Argentine peso had been fixed to the U.S. dollar at a one-to-one rate of exchange
- This policy was a radical departure from traditional methods of fixing the rate of a currency’s value
- Argentina adopted a *currency board*, which was a structure rather than just a commitment, to limiting the growth of money in the economy
- Under a currency board, the central bank of a country may increase the money supply in the banking system only with increases in its holdings of hard currency reserves

**The Argentine Crisis - 2002**

- By removing the ability of government to expand the rate of growth of the money supply, Argentina believed it was eliminating the source of inflation which had devastated its standard of living
- The idea was to limit the rate of growth in the country’s money supply to the rate at which the country receives net inflows of U.S. dollars as a result of trade growth and general surplus

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**The Argentine Crisis - 2002**

- A recession that began in 1998, as a result of a restrictive monetary policy, continued to worsen by 2001 and revealed three very important problems with Argentina’s economy:
  - The Argentine peso was overvalued
  - The currency board regime had eliminated monetary policy alternatives for macroeconomic policy
  - The Argentine government budget deficit – and deficit spending – was out of control

**The Argentine Crisis - 2002**

- While the value of the peso had been stabilized, inflation had not been eliminated
- The inability of the peso’s value to change with market forces led many to believe increasingly that it was overvalued
- Argentine exports became some of the most expensive in all of South America as other countries saw their currencies slide marginally against the dollar over the past decade while the peso did not
The Argentine Crisis - 2002

- Because the currency board eliminated expansionary monetary policy as a means to stimulate economic growth in Argentina, the Argentine government was left with only fiscal policy as a means to this end
- The Argentine government continued to spend as a means to quell increasing social and political tensions and unrest, but without the benefit of increasing (or even stable) tax receipts
- Continued government spending and the injection of foreign capital into the country steadily increased the debt burden

Exhibit 5.7 The Collapse of the Argentine Peso

Forecasting in Practice

- In addition to the three approaches to forecasting discussed earlier (Parity Conditions, Balance of Payments, Asset Approach) forecasting practitioners also utilize technical analysis
- These analysts, traditionally referred to as chartists, focus on price and volume data to determine past trends that are expected to continue into the future
- The longer time horizon of the forecast, the more inaccurate the forecast is likely to be
- The following summarizes the various forecasting periods, regimes and preferred forecasting methods for each

Forecast Period | Regime | Recommended Forecast Methods
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**SHORT-RUN** | Fixed Rate | 1. Assume fixed rate is maintained
2. Indications of stress on fixed rate
3. Capital controls, black market rates
4. Indicators of government's capability to maintain fixed rate
5. Changes in official reserves

**SHORT-RUN** | Floating Rate | 1. Technical methods which capture trend
2. Forward rates as forecasts
   a. 0-30 days, assume random walk
   b. 30-90 days, forward rates
3. 90-360 days, combine trend with fundamental analysis
4. Fundamental analysis of inflationary concerns
5. Government declarations and agreements regarding exchange rate goals
6. Cooperative agreements with other countries

**LONG-RUN** | Fixed Rate | 1. Fundamental analysis
2. BOP management
3. Ability to control domestic inflation
4. Ability to generate hard currency reserves to use for intervention
5. Ability to run trade surpluses

**LONG-RUN** | Floating Rate | 1. Focus on inflationary fundamentals and PPP
2. Indicators of general economic health such as economic growth and stability
3. Technical analysis of long-term trends, new research indicates possibility of long-term technical "waves"
## Forecasting in Practice

- Decades of theoretical and empirical studies show that exchange rates do adhere to the fundamental principles and theories outlined in the previous sections — *fundamentals do apply in the long term*.
- Therefore, there is something of a *fundamental equilibrium* path for a currency’s value.
- In the short term, a variety of random events, institutional frictions, and technical factors may cause currency values to deviate significantly from their long term fundamental path — this is sometimes referred to as *noise*.

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## Differentiating Short-Term Noise From Long-Term Trends

*Foreign currency per unit of domestic currency*

![Diagram showing technical or random events may drive the exchange rate from the long-term path leading to overreactions or undershots.]

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## Forecasting in Practice

- Although the various theories surrounding exchange rate determination are clear and sound, it may appear on a day-to-day basis that the currency markets do not pay much attention to the theories.
- The difficulty is understanding which fundamentals are driving markets at which points in time.
- One example of this relative confusion over exchange rate dynamics is the phenomenon known as *overshooting*.

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## Exchange Rate Dynamics: Overshooting

If the U.S. Federal Reserve were to announce a change in monetary policy, an expansion in money supply growth, it could potentially result in an “overshooting” exchange rate change.

The Fed announces a monetary expansion at time $t_1$. This results immediately in lower dollar interest rates. The foreign exchange markets immediately respond to the lower dollar interest rates by driving the value of the dollar down from $S_0$ to $S_1$. This new rate is based on interest differentials. However, as the effects of the monetary action work their way through the economy, purchasing power parity takes hold and the market moves towards a longer term valuation of the dollar — by time $t_2$ — of $S_2$, a weaker dollar than $S_1$, but not as weak as initially set at $S_1$.

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## Summary of Learning Objectives

- The asset approach suggests that whether foreigners are willing to hold claims in monetary form depends partly on relative real interest rates and partly on a country’s outlook for economic growth.
- Longer-term forecasting requires a return to basic analysis of exchange rate fundamentals such as BOP, relative inflation, interest rates and long-run properties of PPP.
- Technical analysis focus on price and volume data to determine past trends that are expected to continue in the future.

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## Summary of Learning Objectives

- Exchange rate forecasting in practice is a mix of both fundamental and technical forms of analysis.
- The Asian crisis was primarily a BOP crisis in its origins and impacts on exchange rates. A weak economic and financial infrastructure, corporate governance problems and speculation also contributed.
- The Russian crisis was a complex combination of speculative pressures best explained by the asset approach to exchange rate determination.
- The Argentina crisis of 2002 was probably a combination of disequilibrium in international parity conditions (different rates of inflation) and balance of payments disequilibrium (current account deficits combined with financial account outflows).
Summary of Learning Objectives

- Longer-term forecasting, longer than one year, requires a return to the basic analysis of exchange rate fundamentals such as BOP, relative inflation rates, and the long-run properties of purchasing power parity
- Technical analysis (chartists) focus on price and volume data to determine past trends that are expected to continue into the future
- Exchange rate forecasting in practice is a mix of both fundamental and technical forms of exchange rate analysis

Mini Case: Turkey’s Kriz (B)

- The previous case from Chapter 3, “Turkey’s Kriz (A), documented the deterioration of the Turkish current account balance in the year prior to the Turkish lira crisis – or kriz – of Feb. 2001
- Although the BOP current and financial accounts recorded major swings in the year prior to the crisis, the question remained as to the underlying cause of the crisis
- Please review the information on the Turkish banking system, and economic conditions in preparation for the case questions

Mini Case: Turkey’s Kriz (B)

The Turkish Inflation Rate and Exchange Rate (quarterly)

Mini Case Questions: Turkey’s Kriz (B)

- Was the Turkish lira’s collapse the result of a BOP crisis, and inflation crisis, a political crisis or an economic crisis?
- Describe precisely how the Turkish banks were performing uncovered interest arbitrage – was this an appropriate policy?
- How could the Turkish banks be contributing to financial crisis if they were purchasing Turkish gov’t bonds and helping finance and support their own government?

Mini Case Questions: Turkey’s Kriz (B)

- Which do you think is more critical to a country such as Turkey, fighting inflation or fighting a large trade and current account deficit?
- The quote from Corporate Finance, although noting the outside possibility of a devaluation, was largely positive regarding Turkey’s future in January 2001 – what would you have thought?