Note on Chapter 20: Currency Crisis  
November 16, 2010

- Fixed exchange rate regime

<table>
<thead>
<tr>
<th>Central Bank (CB)’s balance sheet</th>
<th>Liabilities</th>
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<tbody>
<tr>
<td><strong>Assets</strong></td>
<td><strong>Liabilities</strong></td>
</tr>
<tr>
<td>1. Domestic bond, B</td>
<td>3 Commercial banks reserves</td>
</tr>
<tr>
<td>2. Foreign reserves, F</td>
<td>4. Currency in circulation</td>
</tr>
</tbody>
</table>

$3 + 4 = \text{Monetary base, MB. As an accounting identity,}$

<table>
<thead>
<tr>
<th>Monetary base</th>
<th>= Domestic bond $ + $ Foreign reserves</th>
</tr>
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<tbody>
<tr>
<td>MB</td>
<td>B + F</td>
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</table>

**Foreign exchange market intervention**  
Depreciation pressure $\rightarrow$ CB sells $F$ $\rightarrow$ $F$ falls $\rightarrow$ MB falls $\rightarrow$ Money supply decreases  
Appreciation pressure $\rightarrow$ CB buys $F$ $\rightarrow$ $F$ rises $\rightarrow$ MB rises $\rightarrow$ Money supply increases

**Sterilized intervention**  
CB sells (buys) $B$ when it buys (sells) $F$ to keep money supply constant.

**Balance of payments and foreign reserves**  
BoP>0 $\Rightarrow$ $F$ increases

**Comparison: Fixed vs. Flexible exchange rate regime**

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<thead>
<tr>
<th></th>
<th>Fixed exchange rate</th>
<th>Flexible exchange rate</th>
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</thead>
<tbody>
<tr>
<td>(1) Central bank’s goal</td>
<td>Set $\bar{E}$</td>
<td>Set $M^*$ or $i$</td>
</tr>
<tr>
<td>(2) Consequences</td>
<td>$M^*$ and $i$ get determined, too.</td>
<td>$E$ gets determined.</td>
</tr>
<tr>
<td></td>
<td>No monetary independence.</td>
<td>Independent monetary policy</td>
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- Impossible Trilemma  
A central bank cannot achieve the following 3 objectives at the same time.

1. Free capital mobility:  $i = i^* + \Delta E^*/E$
2. Fixed exchange rate policy:  $i = i^*$
3. Independent monetary policy:  $i \neq i^*$

Currency crisis is can occur when the central bank tries to violate the Impossible Trilemma. Specifically, this is when the central bank engages in (1) and (2) but creates inflationary expectations, i.e. $\Delta E^*/E > 0$, which implies (3).
Currency crisis
A currency crisis is characterized by two events: (1) large losses of foreign assets (F); and (2) sharp depreciation or sharp devaluation of national currency. A currency crisis results from a central bank’s attempt to implement two inconsistent policies as follows.
(1) Fixed exchange rate, at $\bar{E}$.
(2) Expansion of domestic credit, at the rate $\mu>0$.

Tool: Monetary model
(i) Money market, Relative PPP: $\Delta E^e / E = \pi - \pi^*$
(ii) Free capital mobility, UIP: $i = i^* + \Delta E^e / E$

Shadow floating exchange rate
It is a hypothetical equilibrium exchange rate if the central bank has zero foreign exchange reserves and let the currency float freely. Assume foreign inflation is zero. We can derive the shadow floating exchange rate $\bar{E}$ directly from the monetary model:
$\Delta \bar{E}^e / \bar{E} = \pi - \pi^* = \mu$

![Graph of shadow floating exchange rate](image)

T: Time of currency crisis, i.e. when $\bar{E} = \bar{E}$

Time paths of key variables before and after the currency crisis taking place at T

![Graph of time paths](image)
Foreign reserves (F) falls gradually until speculators “attack” the currency at time T. Then speculators will acquire the remaining foreign reserves (FT). This is a completely rational action taken by speculators, given a perfect foresight assumption. To be specific, with knowledge about the initial stock of reserves and the rate of domestic credit expansion μ, everybody can compute the precise timing of T. If they do not attack by selling the currency, they will face capital loss after the devaluation.

The drain of foreign reserves before the crisis (FT) is called “capital flight.”

**Bottom line:** A speculative attack is not avoidable because the central bank policies are inconsistent. This set of policies violates the Impossible Trilemma.

**The interest rate** will also rise due to the inflation expectation, i.e. there is the Fischer effect on the nominal interest rate.

\[
i = i^* + \mu
\]