DM/$ Rate was fixed 1957-1973
- allowed (by Germany) to float, 2/1973
- $ floated relative to the other major currencies at same time.
- $ continues to float relative to Euro since 1999.
Foreign Exchange (FX) Regimes (cond. M+B 32-33)

- Floating Exchange Rate
- Fixed Exchange Rate

Floating Exchange Rate

($ Post - 1973)$

$X \rightarrow Market\ Rate$ $X_m$ set by

1-3 Fundamental $S \times D$
   - 1. Trade $S \times D$
   - 2. Investment $S \times D$
   - 3. Transfer $S \times D$

4. Speculative $S \times D$
   Anticipate fundamentals

No Official Intervention in pure float
Fixed Exchange Rates

($ pre-1973 - Bretton Woods system)

Central Bank(s) use(s) Intl Reserves (I) to hold X at official rate X_o.

Add(s) unlimited Official S or D (III) to Market S + D (#1-4)

• Devaluation
  a reduction in X_o (Foreign/Dom)

• Revaluation
  an increase in X_o (Foreign/Dom)
Balance of Payments (BOP) Problems

Since $X_m$ is continually changing, at any moment, either

- $X_o > X_m$ (Ex/Dom),
  - Overvalued Currency,
  - BOP Deficit Problem.
- $X_o < X_m$,
  - Undervalued Currency,
  - BOP Surplus Problem.
Overvalued Currency

\[ x_0 > x_m \]


\[ \frac{X}{\text{Dom. Car.}} \]

\[ \frac{X}{\text{Foreign Car.}} \]

\[ Q^D \quad Q_m \quad Q^S \]

\[ Q(\text{Dom.})/y.r. \]

At \[ x_0 > x_m \], \[ Q^S > Q^D \].

\[ \Rightarrow \text{Balance of Payments Deficit Problem.} \]

It must intervene to maintain \[ x_0 \].

Adds Official D to \( M+D \).

\[ \Rightarrow \text{Dom.} \downarrow \]
Overvalued Currency

\[ x_0 > x_m \] (US pre-1968, UK 1924-30, China 1986-1994)

\[
\begin{array}{c}
\text{Market } S \\
\frac{1}{1-n} \\
\text{BOP} \\
\text{Deficit}\end{array}
\]

\[
\begin{array}{c}
\text{Market } D \\
\frac{1}{1-n} \\
\text{+ Official } D\end{array}
\]

\[ q^d \quad q_m \quad q^s \]

\[ q \ (\text{Dom.}) / \text{yr.} \]

At \[ x_0 > x_m \], \[ q^s > q^d \]

\Rightarrow \text{Balance of Payments Deficit Problem}

\text{CB must intervene to maintain } x_0

\text{Adds Official } D (\text{FDI}) \text{ to } MK + D.

\Rightarrow I_{\text{Dom}} \downarrow
CB Options with Overvalued Currency

1. Demonstrate Deficit

\[ I \downarrow, B \downarrow \]

\[ \Rightarrow M \downarrow, P_{Dom.} \downarrow, X_m \uparrow \text{ to } X_0 \text{ by PPP} \]

"Specie-Flow Mechanism"

\[ \Rightarrow \text{Country gives up independent } M \text{ policy, imports } P_{Dom.} \]

But Deficit ends.

2. Sterilize Deficit

\[ I \downarrow, \Delta S = -\Delta I, \Delta B = 0 \]

(Defensive OMO)

\[ \Rightarrow \text{Deficit continues, } I \Rightarrow 0 \]

\[ \Rightarrow \text{Speculation against Domestic Currency} \]

Supply \( \uparrow \), \( X_m \downarrow \), Deficit \( \uparrow \), I \( \uparrow \).
3. **Suppress Deficit**
   - Discourage imports (Reduces $ of Dom. Curr.)
     - Tariffs
     - Quotas
     - Popular w/ Producers, bad for consumers.
   - Encourage exports (Increases $ of Dom. Curr.)
     - Subsidies
     - Popular w/ Producers, bad for taxpayers.
   - Discourage investment abroad
     - Interest equalization tax - early 60's
     - Capital Controls
   - Exchange controls.

   All turn terms of trade against domestic country.

4. **Devalue to Xn**
   - Encourages speculation. (before fact)
   - Makes $ uncertain
5. Borrow Reserves

"Swap Agreement"

Must be repaid. - Problem just postponed.

International Monetary Fund (IMF)

6. Let Foreign CBs fix $X$.

(US 1968)

→ Foreign Currency Undervalued

\[ x_0 \left( \frac{Dom}{Ft} \right) = \frac{1}{x_0 \left( \frac{Ft}{Dom} \right)} \]
Undervalued Currency

\[ X_0 < X_m \quad (\text{Post, Japan 1968-73, China 1994- presently}) \]

\[ X(\frac{E^m}{Dom}) \]

\[ X_n \]

\[ X_0 \]

\[ Q^S \quad Q_m \quad Q^D \]

\[ Q(Dom) \text{ /yr} \]

Market S

\[ \frac{1}{1+r} \]

Market D

\[ (1+r) \]

At \( X_0 < X_m \), \( Q^D > Q^S \).

\rightarrow BOP Surplus Problem.

CB must intervene to provide \( Q^D - Q^S \)

Adds Official S (of Dom) (\( Q_S \))

\( \rightarrow \text{MKTS} \) \( \Rightarrow \text{IDom} \)
**Undervalued Currency**

\[ X_0 < X_m \]  
(Conf. Japan 1968-73, China 1994- present)

\[ X(\frac{E_n}{E_m}) \]

\[ X \]

\[ X_0 \]

- \( Q^S \)
- \( Q^m \)
- \( Q^D \)

\[ Q(\text{Dom}) /yr \]

At \( X_0 < X_m \), \( Q^D > Q^S \)

\[ \Rightarrow \text{BOP Surplus Problem.} \]

\[ \text{CB must intervene to provide } Q^D - Q^S \]

Ads Official S (of Dom) (ES)

\( \Rightarrow \text{Mkt S. } \Rightarrow \text{I Dom} \]
CB Options with Undervalued Currency. (Cen. Japan 1968-73, China 2000-present)

1. Monetize Surplus

$I_{dom}^\uparrow, B_{dom}^\uparrow$

$\Rightarrow M_{dom}^\uparrow, P_{dom}^\uparrow, X_m (\frac{F_n}{dom}) \downarrow$ to $X_0$

by PPP, surplus ends

Specie-Flow Mechanism

$\Rightarrow$ Home country supports foreign inflation

2. Sterilize Surplus w/ Defensive OMO

$I_{dom}^\uparrow, \Delta S_{dom}^\downarrow = -\Delta I, \Delta B_{dom} = 0$

Surplus continues, may grow

$I_{dom}^\uparrow, S^\downarrow$

$\Rightarrow$ CB finances foreign fiscal deficits instead of domestic.

If $S \Rightarrow 0$, must revalue or monetize

$\Rightarrow$ Speculation for $Dom \times NP \times \nabla$

BOP Surplus $\uparrow$
3. Suppress Surplus

- Encourage imports
- Discourage exports
- etc.

Unpopular with domestic producers, hence rare.

4. Revalue

Raise X₀ to X₀. (for 1961, 69, 71, 73)

Encourages Speculation
Makes X uncertain
Unpopular with Dom. Producers.

5. Borrow domestic reserves (rare) (Reverse Swap)

6. Float

Germany, Japan 2/73.
China fixes Yuan Renminbi (¥) to US Dollar
w/ occasional devaluations prior to 1995,
- occasional revaluations since 1995,
- interim floats

Yuan has been undervalued most of last decade
- Gives China big trade surplus, capital outflows to US
- China now holds over $1T in US Treasuries, GSEs.
  helps finance US deficits, subprime mortgages.
3 Instruments of M policy

- M
- i
- \( X_0 \)

Pursuing one requires giving up control of other \( Z \) in L.R.

\( X_0 \) instrument.

- \( P_{\text{dom}} \) governed by \( P_{\text{m}} \), \( X_0 \), via PPP.
- \( M_{\text{dom}} \rightarrow P_{\text{dom}} \cdot m^{D}_{\text{dom}} \)

by Specie Flow Mechanism

- \( i_{\text{dom}} \rightarrow i_{\text{foreign}} \)

to prevent massive capital flows.
Fixed vs Floating FX Rates

* Pros
* Cons

** Fixed
* X predictable
* Imposes discipline on M policy
* Encourages speculation
* Imports Foreign M policy
* BOP Problems

** Floating
* No BOP Problems
* CB may pursue independent M policy
* X changes continually, is unpredictable
* But Forward FX mkt shifts risk
* No Intl' Discpline
Fixed vs Floating FX Rates

**Pros**
- Cons

**Fixed**
- *X* predictable
- Imposes discipline on M policy
- Encourage speculation about $X_0$
- Imports foreign M policy
- BOP Problems

**Floating**
- No BOP Problems
- CB may pursue independent M policy
- $X$ changes continually, is unpredictable
  - But forward FX mkt shifts risk,
- No Intl Discipline