Topics for Today

1. Coordinated Fixed Ex. Rate Systems
   - The (N-1) Problem
   - Commodity Standards
   - Reserve Currency Standards

2. Evolution of the International Monetary System
   - The Gold Standard
   - Inter-War Instability
   - The Bretton Woods System

3. The Open Economy Trilemma

4. Macroeconomic Policy Goals in Open-Economies
   - Internal & External Balance
Coordinated Fixed Ex. Rate Systems

(N-1) Problem: With N countries and currencies, there are only \( N-1 \) independent ex. rates.

\[ \Rightarrow \] To achieve a system of fixed ex. rates, only \( N-1 \) countries need to intervene. Who gets a free ride?

Ways to Resolve the Indeterminacy

1.) Have everyone peg their currencies to something else, e.g., gold. Commodity Standards

\[ \frac{\$}{¥} = \frac{\$}{\text{Gold}} \div \frac{¥}{\text{Gold}} \]

2.) Have everyone (except one) peg to the same currency. The currency you peg to is called the "reserve currency"

3.) Hybrid. Peg to a reserve currency, and then peg its reserve currency to a commodity.
There have been 4 broad phases in the evolution of the international financial system:

1.) Gold Standard  > 1870 - 1914

2.) Inter-War Instability Failed attempts to restore Gold Standard  > 1918 - 1939

3.) Bretton Woods  > 1944 - 1973

4.) Managed Floating  > 1973 - Present
We know from Chpt. 17 that you can only have 2 of the 3.
Figure 1: Conjecture? A Stylized View of Capital Mobility in Modern History

Source: Introspection.

Table 1: The Trilemma and Major Phases of Capital Mobility

<table>
<thead>
<tr>
<th>Era</th>
<th>Activist Policies</th>
<th>Capital Mobility</th>
<th>Fixed Exchange Rate</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold standard</td>
<td>Most</td>
<td>Few</td>
<td>Few</td>
<td>Broad consensus.</td>
</tr>
<tr>
<td>Interwar (when off gold)</td>
<td>Few</td>
<td>Several</td>
<td>Most</td>
<td>Capital controls especially in Central Europe, Latin America.</td>
</tr>
<tr>
<td>Bretton Woods</td>
<td>Few</td>
<td>Most</td>
<td>Few</td>
<td>Broad consensus.</td>
</tr>
<tr>
<td>Float</td>
<td>Few</td>
<td>Few</td>
<td>Many</td>
<td>Some consensus; except currency boards, dollarization, etc.</td>
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</table>
Achieving Internal + External Balance With Fixed Exchange Rates

Remember, with fixed rates, monetary policy is endogenous. Instead the exchange rate itself becomes an object of policy.

**Internal Balance**: What combos of \((G, T)\) and \(E\) cause \(Y = Y^f\)?

\[
Y^f = C(Y^f - T) + I + G + CA\left(\frac{E^d}{E^s}, Y^f - T\right)
\]

\(Y^f\) = full-employment output

Since \(G \uparrow\) and \(E \uparrow\) both cause \(AD \uparrow\) (and \(Y \uparrow\)), to maintain internal balance we must have \(G \uparrow \Rightarrow E \downarrow\)
Internal Balance

Unemployment

Overemployment/Inflation
External Balance: What combos of $(G, T)$ and $E$ cause $CA = X$?

$CA(\frac{E^*}{E}, Y(G) - T) = X$

Note, $E \uparrow \Rightarrow CA \uparrow$ (Marshall-Lerner)

$G \uparrow \Rightarrow Y \uparrow$

$\Rightarrow IM \uparrow$

$\Rightarrow CA \downarrow$

Therefore, to maintain external balance we must have $E \uparrow \Rightarrow G \uparrow$
Excess CA surplus

Excess CA deficit
Internal and External Balance

\[ E \]

\[ I \]

\[ X (CA=x) \]

\[ I (Y=I) \]

\[ Y < Y_f \]
\[ CA > x \]

\[ Y = Y_f \]
\[ CA = x \]

\[ Y > Y_f \]
\[ CA < x \]
Policy Dilemmas

In general, you need to change both E (expenditure-switching policy) and G (expenditure-changing policy) to achieve both internal and external balance.

Note the dilemma at pt. 2.

1.) Fiscal expansion restores internal balance but exacerbates external imbalance.

2.) Fiscal contraction restores external balance but exacerbates internal imbalance. => Need to devalue!