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Gold Standard in International Finance

Econ 434 Lecture

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Fall 2009

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- Gold standard brought benefits and costs

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Introduction

- Gold standard brought benefits and costs
- Did not survive World War 1 well

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- Gold standard brought benefits and costs
- Did not survive World War 1 well
- Attempt to re-create the gold standard after WW1 did not work

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- Gold standard brought benefits and costs
- Did not survive World War 1 well
- Attempt to re-create the gold standard after WW1 did not work
  - Eventually Bretton Woods was created as alternative to interwar failure

Interwar Period

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- Between the wars the gold exchange standard was developed. Key differences with gold standard.

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- But didn't this operate before the War as well?

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  - central banks no longer wished to play by the rules – emergence of popular democracy
  - asymmetry of debtor and surplus countries – this creates a *deflationary bias*
- But didn't this operate before the War as well?
  - Yes, but then the center of the system was the Bank of England which was (then) privately owned.

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Deflationary Bias

- Fractional reserves (by Central Banks) also led to deflationary bias.

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    - Much of gold holdings was backing for the domestic money supply. This left less gold to be used for external flows.

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Deflationary Bias

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    - For example, in 1929 according to the League of Nations, for 41 countries with a total gold reserve of $9.378 billion, only $2.178 billion were "surplus" reserves, with the rest required as cover for the money stock (Bernanke 2000, 73).

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  - For a deficit country this meant that a small outflow would threaten the currency, but obviously no effect for surplus countries.
  - Moreover, it meant that a small reduction in gold stock had a big effect on the money supply.

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- Mundell argued that the primary failure of this system in the interwar period was too low a price of gold.

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- Mundell argued that the primary failure of this system in the interwar period was too low a price of gold.
- The dollar price of gold was left unchanged even though prices had risen substantially, perhaps overvaluing the dollar by 35-40%.

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Too Low a Price of Gold

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  - Major countries returned at misaligned real exchange rates
- In the UK and other European countries that implemented rule 5, eventually, the rise in prices during WW1 was even higher.

Too Low a Price of Gold

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  - Major countries returned at misaligned real exchange rates
- In the UK and other European countries that implemented rule 5, eventually, the rise in prices during WW1 was even higher.
- A higher gold price would have increased liquidity

Consumer Prices 1913-1924

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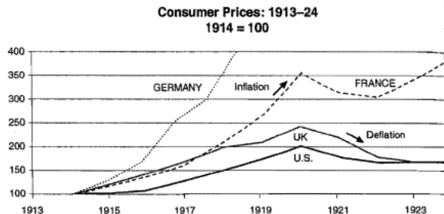

After World War I was over, Germany and France chose inflation and devaluation, the United States and the UK chose deflation.

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Example

- Too low a price of gold – or too high a value of domestic currency – $\Longrightarrow$ ED for gold domestically, $\Longrightarrow$ gold flow will be negative – our prices are too high so we lose gold to our trading partners.

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- Notice that adjustment requires the gold stock, and hence domestic prices to decline.

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    - The problem in the interwar period is that prices were rigid downward, so the deflationary pressure lead to unemployment not just a fall in prices

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- Notice that adjustment requires the gold stock, and hence domestic prices to decline.
  - The problem in the interwar period is that prices were rigid downward, so the deflationary pressure lead to unemployment not just a fall in prices
  - Democracy made the fall in unemployment unacceptable
- But,
  - Churchill on Montagu Norman: "The Governor (Montagu Norman) shows himself perfectly happy in the spectacle of Britain possessing the finest credit in the world simultaneously with a million and a quarter unemployed."

Example

- Consider figure 3.

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- Consider figure 3.
- Initially the gold stock is at G_0.

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- Consider figure 3.
- Initially the gold stock is at G_0.
- Given income we should be at point A with $\left(\frac{P^G}{P}\right)^*$

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- Consider figure 3.
- Initially the gold stock is at G_0.
- Given income we should be at point A with $\left(\frac{P^G}{P}\right)^*$
  - Given the price level increase during the war $(P_{1920} > P_{1913})$ equilibrium requires a price of gold high enough so that the relative price is $\left(\frac{P^G}{P}\right)^*$.

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  - But suppose that the gold price is set too low, so that we are at $\left(\frac{P^G}{P}\right)^0 <. \left(\frac{P^G}{P}\right)^*$ in figure 6

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  - Given the price level increase during the war ($P_{1920} > P_{1913}$) equilibrium requires a price of gold high enough so that the relative price is $\left(\frac{P^G}{P}\right)^*$.
  - But suppose that the gold price is set too low, so that we are at $\left(\frac{P^G}{P}\right)^0 <. \left(\frac{P^G}{P}\right)^*$ in figure 6
  - if prices are flexible, then relative price of gold rises back to $\left(\frac{P^G}{P}\right)^*$

Example: Figure 3

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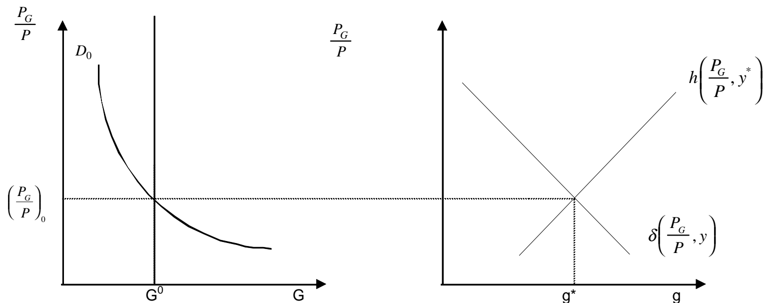

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Example

- Downward wage and price rigidity the price level cannot just fall

Example

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- Downward wage and price rigidity the price level cannot just fall
    - At B there is ED for gold, and balance of payments deficit

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- Downward wage and price rigidity the price level cannot just fall
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  - $\Delta G < 0$, equal to yx.

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- Downward wage and price rigidity the price level cannot just fall
  - At B there is ED for gold, and balance of payments deficit
  - $\Delta G < 0$, equal to yx.
- To relieve the excess demand – the demand for gold must fall, either by a decrease in income (as in the figure) or a decrease in λ.

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- adjustment via Δy rather than ΔG

Example

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- Rules of the gold standard $\Rightarrow$ eventually reach point C.

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- Here $\downarrow y \Longrightarrow \left(\frac{P^G}{P}\right)^0$ is now equilibrium

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- Here $\downarrow y \implies \left(\frac{P^G}{P}\right)^0$ is now equilibrium
- This happens as $\delta(\cdot)$ shifts left due to $\downarrow y$

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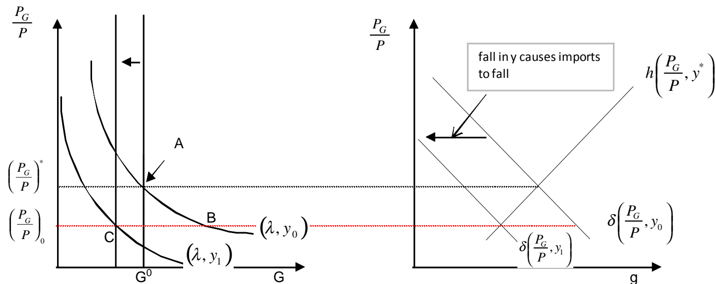
- Here $\downarrow y \Longrightarrow \left(\frac{P^G}{P}\right)^0$ is now equilibrium
- This happens as $\delta(\cdot)$ shifts left due to $\downarrow y$
- But this assumes only we adjust!
- If $y_f \downarrow$ we are no more competitive $\Longrightarrow$ further deflationary pressure

Example: Figure 6



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- What about raising P_G?

Implications

- What about raising P_G?
  - effectively raising the volume of gold

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- What about raising P_G?
  - effectively raising the volume of gold
  - if $P_G \nearrow P_G^{'}$, then we could have $\frac{P_G^{'}}{P_{1920}} = \frac{P_G}{P_{1913=}} = \left(\frac{P^G}{P}\right)^0$

Implications

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- What about raising P_G?
  - effectively raising the volume of gold
  - if $P_G \nearrow P'_G$, then we could have $\frac{P'_G}{P_{1920}} = \frac{P_G}{P_{1913=}} = \left(\frac{P^G}{P}\right)^0$
  - hence, we stay at point A, and no need for adjustment

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  - this could have been done at the Paris Peace Conference
    - need an organized response, cannot do in isolation
  - But they were too busy creating new countries and putting debt on Germany
    - US expected to be repaid by UK, UK by France, France by Germany, nobody wants to reduce the gold value of the debt

Reparations and Debts

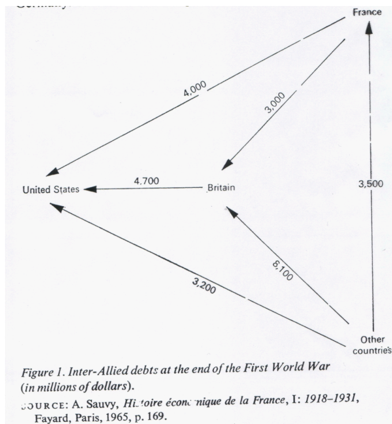

Figure 1. Inter-Allied debts at the end of the First World War (in millions of dollars).

SOURCE: A. Sauvy, *Histoire économique de la France*, I: *1918–1931*, Fayard, Paris, 1965, p. 169.

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- "Playing by the rules" the Central Bank could tighten monetary policy to hasten the fall in prices so that less gold is lost. Policy reinforces deflation.

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  - If they conduct expansionary policy to combat the recession it is even worse.
  - Suppose that they reduce reserve requirements.
  - This will cause the price level to rise even further, and enhance the rate at which we lose gold.
- This is a key point: in the interwar years the willingness to sacrifice internal balance for external balance was weak

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- Foreign exchange reserves augment gold supplies

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- Foreign exchange reserves augment gold supplies
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  - See figure 1

Foreign Reserves: Figure 1

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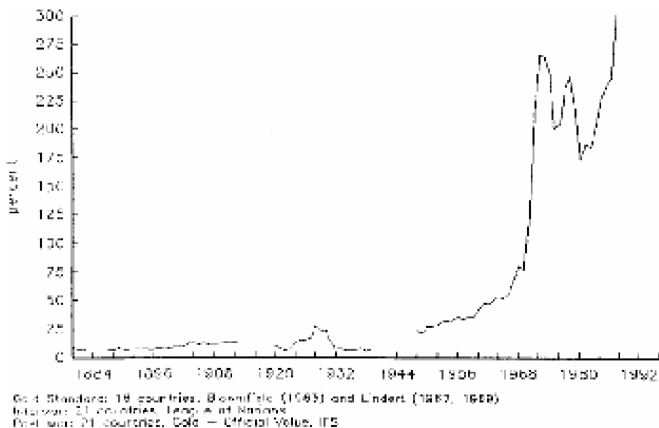
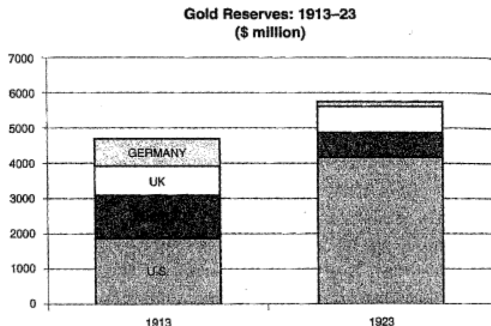


Figure: The Ratio of Foreign Exchange Reserves to Gold Reserves (source: Bordo and Eichengreen).

Foreign Reserves:



After the war, the United States acquired much of the world's gold reserves.

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  - Both countries sterilized surpluses, exerting deflationary pressure
  - They took gold from the rest of the world instead of being passive.

Resumption

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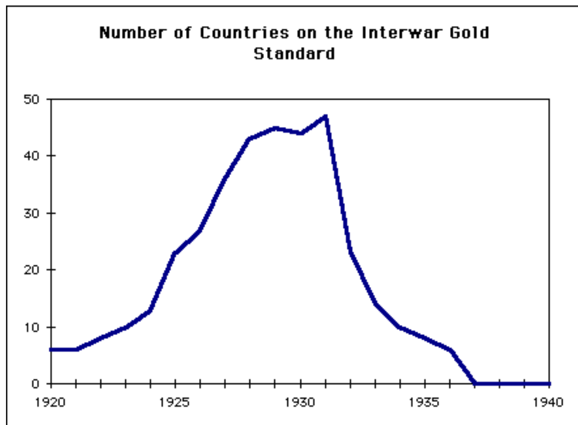

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- Essentially following rule 5, but this meant lots of deflation and high unemployment.
    - Eventually costs fell, but the Great Depression ensued before stabilization could take place in Britain.

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- But neither the U.S. nor France was willing to tolerate the domestic inflation that would have restored balance,
  - hence, nothing removed the tendency for their two countries to continue to accumulate gold.

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  - Fixed e and modern democratic politics can coexist as long as capital mobility is restricted so that large-scale speculative attacks on the currency cannot develop.

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Eichengreen Doctrine

- A country can have two of
  1. a fixed exchange rate system,
  2. free capital mobility, and
  3. modern democratic politics oriented toward preserving full employment.
- But it cannot have all three.
  - Fixed e and modern democratic politics can coexist as long as capital mobility is restricted so that large-scale speculative attacks on the currency cannot develop.
  - Fixed e and free capital mobility can coexist as long as democratic politics are absent–so that a government does not feel the need to intervene to stimulate aggregate demand during a gold standard-generated deflation.

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  - Fixed e and free capital mobility can coexist as long as democratic politics are absent–so that a government does not feel the need to intervene to stimulate aggregate demand during a gold standard-generated deflation.
  - Free capital mobility and modern democratic politics can coexist as long as exchange rates are floating.

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- Doctrine implies that sacrifices necessary to restore prewar parities could *not* have borne fruit.

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- Doctrine implies that sacrifices necessary to restore prewar parities could *not* have borne fruit.
- Government could point to its restoration of the pre-World War I parity, and say that it showed that the government's commitment to the gold standard was immutable.

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  - there is nothing worse than attempting to establish the credibility of an incredible commitment.

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  - there is nothing worse than attempting to establish the credibility of an incredible commitment.
- And indeed in 1931 the British government was to cast the gold standard over the side, well before the nadir of the Great Depression.

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- Focus on internal balance actually reduced scope for monetary policy

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- Focus on internal balance actually reduced scope for monetary policy
  - If rule 5 credible, then temporary suspension does not cause speculation

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  - If rule 5 credible, higher interest rates do not signal crisis
  - Suppose that $S_t \uparrow$, so $S_t > \overline{S}$, If rule 5 is credible investors expect the future spot rate to decline; then $\underline{S} < S_{t+1} < \overline{S}$, $\Longrightarrow S_{t+1} < S_t$.

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  - If the dollar is expected to appreciate interest parity suggests that current interest rates decrease relative to foreign rates.
  - Hence, belief in rule 5 makes exchange rate expectations stabilizing – they exhibit *negative* feedback. This is all due to the credibility enhancing effect of rule 5.

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- If rule 5 not credible, $S_t > \overline{S}$ could signal further depreciation

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Internal Balance and Monetary Policy

- If rule 5 not credible, $S_t > \overline{S}$ could signal further depreciation
  - So interest rates must rise to offset capital loss

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- If rule 5 not credible, $S_t > \overline{S}$ could signal further depreciation
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  - Hence, interest rates would have to rise to offset the risk that the currency might depreciate further, and thus the ability to use stabilization policy is weaker despite the greater demand for it.
  - monetary policy cannot be eased to further internal balance
  - capital flows seem destabilizing as does exchange rate variability

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- In Autumn 1931 FED raised interest rates to stem outflow of gold

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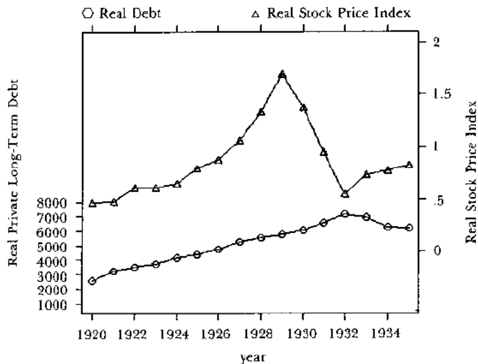
  - At that moment, wholesale prices had falled 24% below the 1929 level, unemployment was over 15% and 3000 banks had failed

Real Debt and Stock Prices

Figure 3
Real Debt and Stock Prices



Money, Prices, and Production

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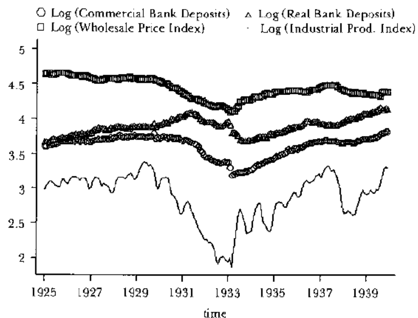

Internal Balance and Monetary Policy

- Concurrently England finally left the gold standard

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- Concurrently England finally left the gold standard
  - The value of the sterling immediately fell from \$4.86 to \$3.75, and \$3.25 two months later

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  - US did the natural thing, raise interest rates (discount rate more than doubled) to stem outflow of gold

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  - Now we get Great Depression

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- Too much gold concentrated in 3 major countries (63% by 1930)

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- Too much gold concentrated in 3 major countries (63% by 1930)
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- Too much gold concentrated in 3 major countries (63% by 1930)
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  - led to liquidation of foreign exchange reserves – the ratio of foreign exchange reserves to gold fell from 37% in 1930 to 11% by the end of 1932.

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- Beggar-thy-neighbor policies led to collapse of world trade

Distribution of Gold

Gold Reserves of Key Currency Countries, 1913-35

Millions of 1929$ gold content

$7,000
$6,000
$5,000
$4,000
$3,000
$2,000
$1,000
$0

1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935

Source: Hardy, Is There Enough Gold? p. 92.

United States — United Kingdom — France — Germany

1918–1945: Great Depression & WWII

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  - Abandon the gold standard (Britain and U.S.)

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  - Abandon the gold standard (Britain and U.S.)
  - Eruption of beggar-thy-neighbor policies

Depression

- Collapse in payments and trade turned Depression into Great Depression

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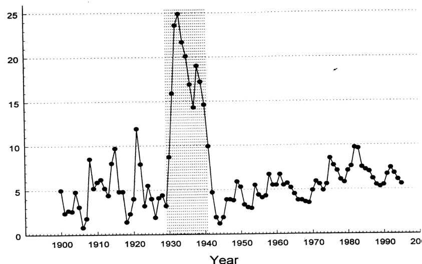
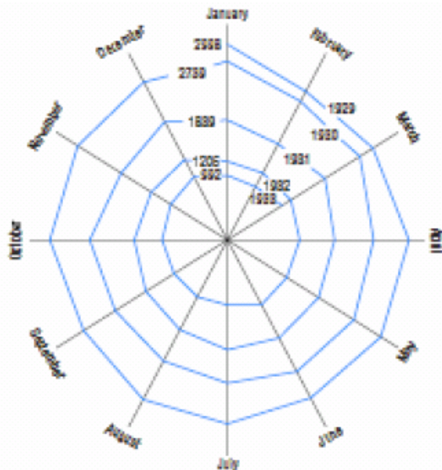


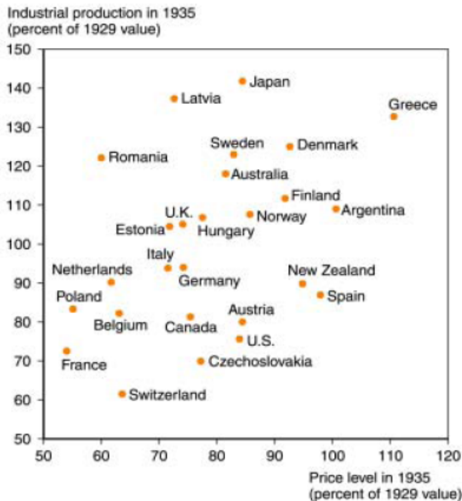
5 **Unemployment rate, 1900–1995**
ces: 1900–1970, U.S. Bureau of the Census (1975, series D-86); 1971–95, U.S. Council o
omic Advisers (1996, table B-39).
s: Hatched area delineates the period of the Great Depression. Unemployment refers to peopl
ears old or older prior to 1947 and 16 years old or older afterward.

Kindleberger Diagram



Industrial Production and Wholesale Prices

- Countries that left Gold first recovered faster



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- International Monetary Fund (IMF)

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- It intended to provide lending to countries with current account deficits.
- It called for movement toward currency convertibility on current account (not on capital account).

Bretton Woods

- Gold Exchange Standard

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  - All currencies pegged to the dollar, while the dollar was fixed to gold.

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Logic

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- System designed to combat perceived ills of Interwar period

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  - Adjustment Problem, Liquidity Problem, Confidence Problem

Asymmetry

- This system contained a key asymmetry, as a consequence of the *redundancy* problem.

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  - open to capital flows, run low fiscal deficits, and remain passive in exchange markets.
  - For this system to work the US had to conduct monetary policy so as to keep other countries happy with the loss of their monetary independence.

Adjustment Problem

- How to adjust to external imbalances?

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- How to adjust to external imbalances?
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- How does US adjust?

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  - If both $P*$ and e are fixed, internal balance requires full employment ($Y = Y^f$)
- Internal Balance:

$$Y^f = C(Y - T) + I + G + CA(\frac{eP^*}{P}, Y^f - T) \quad (1)$$

- Policy tools that affect aggregate demand in the short run: T, G, e (devaluation/revaluation)
- – If e depreciates, economy can run larger budget deficit (small G),
  - so combinations of the two policies that maintain *internal balance* will be negatively sloped

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- Maintaining External Balance

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Adjustment Options under BW

- Maintaining External Balance
- How do policy tools affect the economy's external balance?

$$CA\left(\frac{eP^*}{P}, Y - T\right) = X \tag{2}$$

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  - A decrease in taxes (or increase in government expenditures, which raises output, Y) will require a devaluation today.
- Put these two together to get figure 2: we want to be at point 1 (note XX should be flatter than IB)

Adjustment Options under BW: Figure 2

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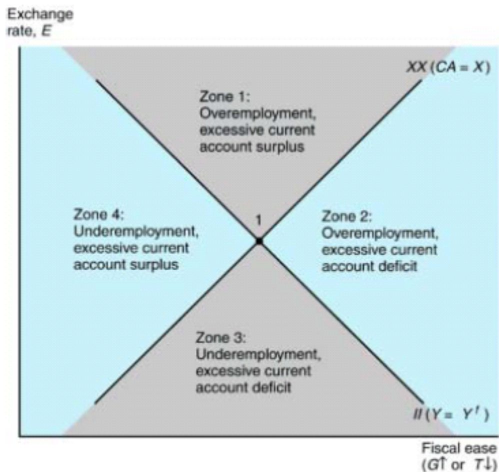

Figure: Internal and External Balance

Expenditure-Changing and Expenditure-Switching Policies

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- Two types of policies available to achieve external and internal balance

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Expenditure-Changing and Expenditure-Switching Policies

- Two types of policies available to achieve external and internal balance
- Expenditure-changing policy

Expenditure-Changing and Expenditure-Switching Policies

- Two types of policies available to achieve external and internal balance
- Expenditure-changing policy
  - The change in fiscal policy that moves the economy to Point 1.

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- Two types of policies available to achieve external and internal balance
- Expenditure-changing policy
  - The change in fiscal policy that moves the economy to Point 1.
  - It alters the level of the economy's total demand for goods and services.

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  - The accompanying exchange rate adjustment

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Expenditure-Changing and Expenditure-Switching Policies

- Two types of policies available to achieve external and internal balance
- Expenditure-changing policy
  - The change in fiscal policy that moves the economy to Point 1.
  - It alters the level of the economy's total demand for goods and services.
- Expenditure-switching policy
  - The accompanying exchange rate adjustment
  - It changes the direction of demand, shifting it between domestic output and imports.
- Both expenditure changing and expenditure switching are needed to reach internal and external balance.

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Expenditure-Changing and Expenditure-Switching Policies

- Suppose we start with unemployment and current account deficit (zone 3)

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- Suppose we start with unemployment and current account deficit (zone 3)
- How do we assign policies to targets?

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Expenditure-Changing and Expenditure-Switching Policies

- Suppose we start with unemployment and current account deficit (zone 3)
- How do we assign policies to targets?
  - need to use comparative advantage

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- Suppose we start with unemployment and current account deficit (zone 3)
- How do we assign policies to targets?
  - need to use comparative advantage
    - use expenditure changing to raise Y and use expenditure switching policy to improve CA

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    - (move from $2 \longrightarrow 1$)

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    - use expenditure changing to raise Y and use expenditure switching policy to improve CA
    - (move from $2 \longrightarrow 1$)
    - With fiscal policy alone, we can achieve Y^f only by making $CA \downarrow$

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        - What if we choose the wrong assignment?
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  - have to wait for deflation to improve Q, could be painful

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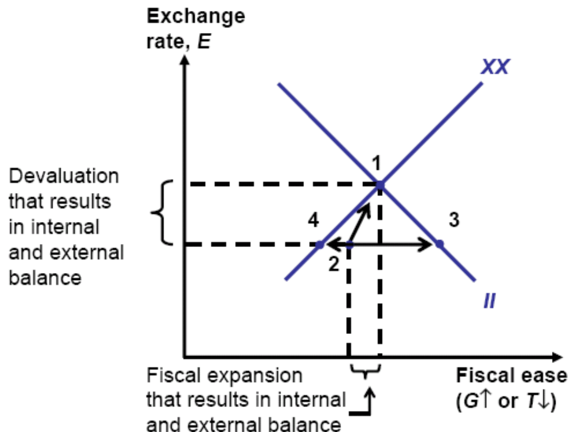
    - What if we choose the wrong assignment?
- What if we cannot use devaluation?
  - have to wait for deflation to improve Q, could be painful
  - speculators could anticipate devaluation

Expenditure-Changing and Expenditure-Switching Policies



Adjustment Options

- How would this work under the gold standard?

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Adjustment Options

- How would this work under the gold standard?
  - Exchange rate is fixed? What is the expenditure-switching policy?

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Adjustment Options

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  - makes exchange-rate policy more important, but this is limited to fundamental disequilibrium
  - anticipation of devaluation leads to destabilizing capital outflows

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- Asymmetric pressure
  - surplus countries under less pressure to adjust $\longrightarrow$burden falls on debtor countries

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- Fundamental problem was the Triffin Dilemma

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- Fundamental problem was the Triffin Dilemma
  - where do increases in world liquidity come from?

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- Fixed exchange rates $\Longrightarrow$ money supply increases only if reserves increase
  - that is, other countries need more dollars
  - so US has to run BoP deficits to export dollars to ROW
  - but this raises question of convertibility into gold; will the anchor hold?

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- Solution to liquidity problem leads to confidence problem

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Triffin Dilemma

- Solution to liquidity problem leads to confidence problem
  - If the US continued to run deficits it supplied liquidity but this threatened the gold backing

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  - made worse by US deficits and inflation
  - fear of a run on US gold supplies

Triffin Dilemma

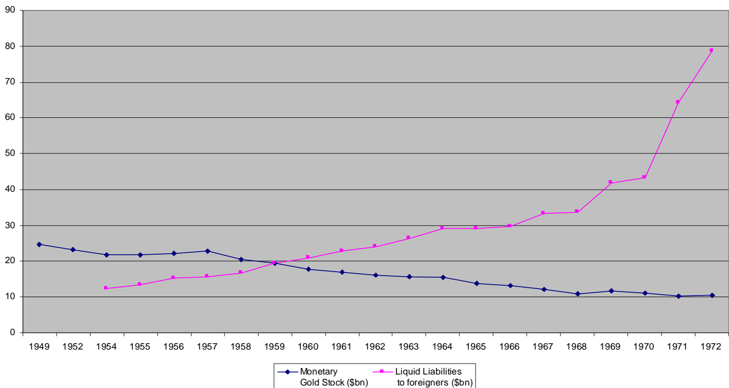

Figure: The Triffin Dilemma

Triffin Dilemma

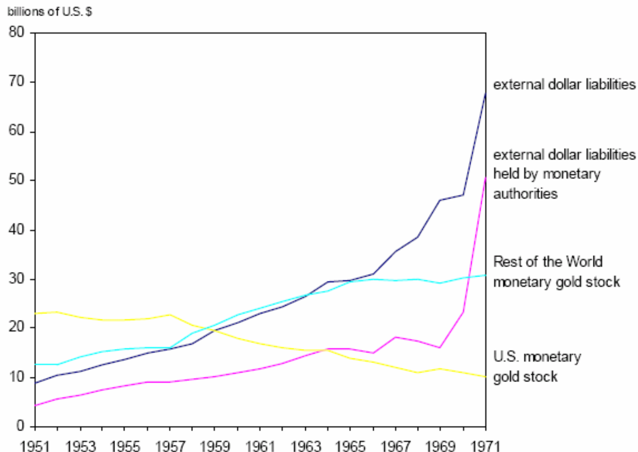

Figure: More on the Triffin Dilemma

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- Solution, new reserve asset, Special Drawing Right

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  - SDRs are used in transactions between central banks but had little impact on the functioning of the international monetary system.

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- The acceleration of American inflation in the late 1960's was a worldwide phenomenon.
  - When the reserve currency country speeds up its monetary growth, one effect is an automatic increase in monetary growth rates and inflation abroad.
  - U.S. macroeconomic policies in the late 1960s helped cause the breakdown of the Bretton Woods system by early 1973.

US Macro Data

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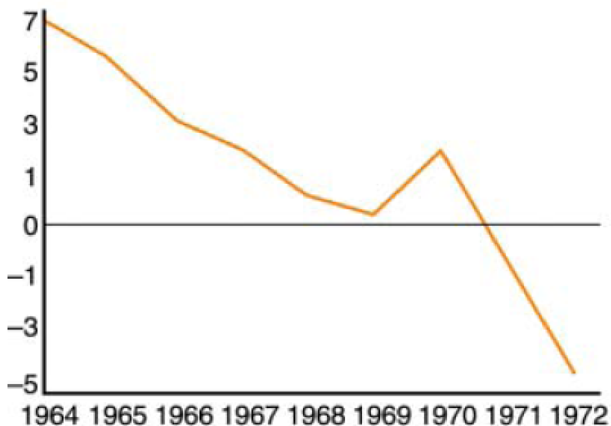

US Macro Data

Inflation Rates in European Economies

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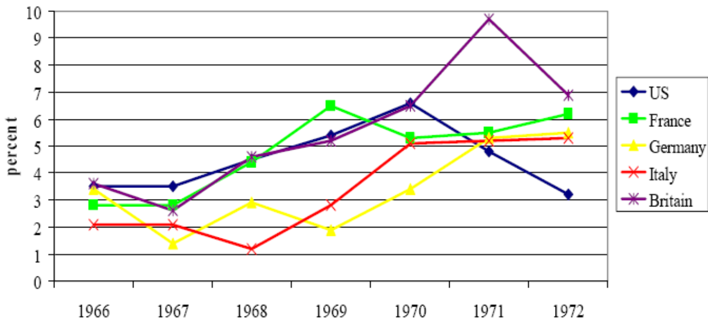

Importing Inflation

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- Suppose P^* increases

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Importing Inflation

- Suppose P^* increases
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  - if government does nothing, rise in $MB \longrightarrow \uparrow P$, this causes $\frac{eP^*}{P}$ to return to initial level, but the rise in the price level is imported inflation

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- Flexibility of the exchange rate avoids importing inflation
- With fixed rates, other countries import inflation from the US
  - architects of BW assumed US would act in world interest, but when US acted in its own interest BW was doomed.

Importing Inflation

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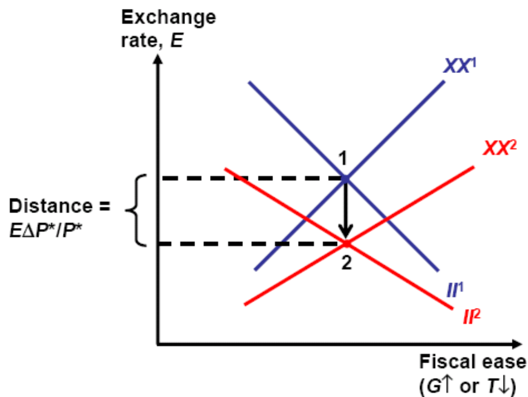

The End of Bretton Woods

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