

LSE EC1B5 Macroeconomics

Handout 20

**Real Exchange Rates and
What Have We Learned?**

Real Exchange Rates

The Real Exchange Rate

U.S. importers like Walmart compare the cost of a good from China and from the United States in the same currency:

$$\frac{\text{Dollar price of U.S. toy}}{\text{Dollar price of Chinese toy}}$$

If **purchasing power parity** (PPP) holds, then real exchange rate is equal to 1.

(recall PPP-adjusted GDP in cross-country income comparison)

The Real Exchange Rate

U.S. importers like Walmart compare the cost of a good from China and from the United States in the same currency:

$$\frac{\text{Dollar price of U.S. toy}}{(\text{Yuan price of Chinese toy}) \times \frac{1}{e}} =$$
$$\frac{\text{Dollar price of U.S. toy} \times e}{\text{Yuan price of Chinese toy}}$$

The Real Exchange Rate

The **real exchange rate** is the ratio of the dollar price of a basket of goods and services in the United States divided by the dollar price of the same basket of goods and services in a foreign country:

$$E = \frac{\text{Dollar price of U.S. basket} \times e}{\text{Yuan price of Chinese basket}}$$

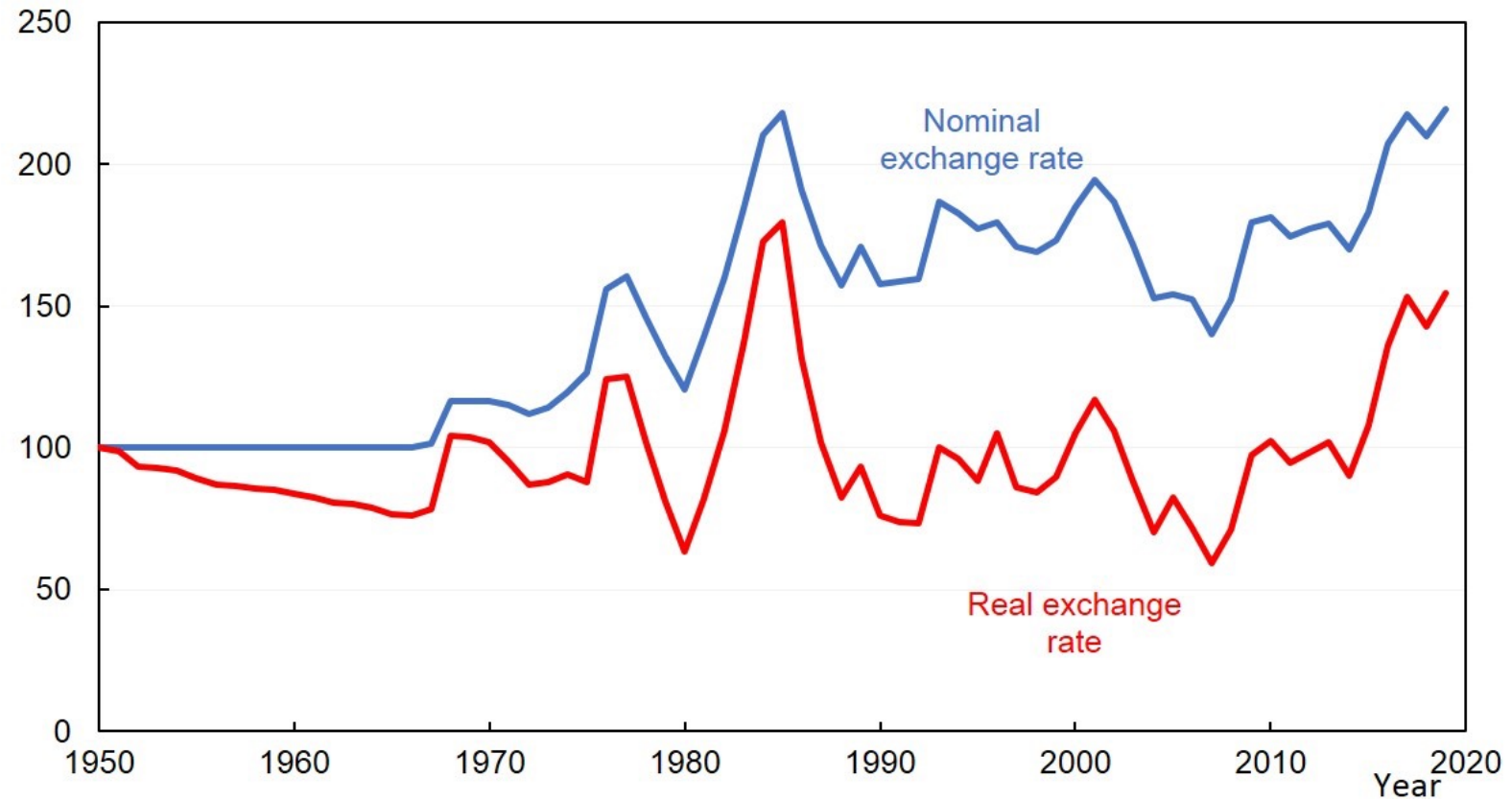
The Nominal and Real Exchange Rates

Question: Does the real exchange rate follow the nominal exchange rate?

Data: The nominal and the real pound–dollar exchange rates from 1950 to 2019

The Nominal and the Real Pound-per-Dollar Exchange Rates (1950–2019)

Pound-per-dollar nominal and real exchange rates (1950 = 100)



The Nominal and Real Exchange Rates

Question: Does the real exchange rate follow the nominal exchange rate?

Answer: Not always. In our example, the real exchange rate fell from 1950 to 1966, when the nominal exchange rate was fixed. After 1967, the real and nominal exchange rates moved together, although the real exchange rate keeps falling further behind.

The Real Exchange Rate and Exports

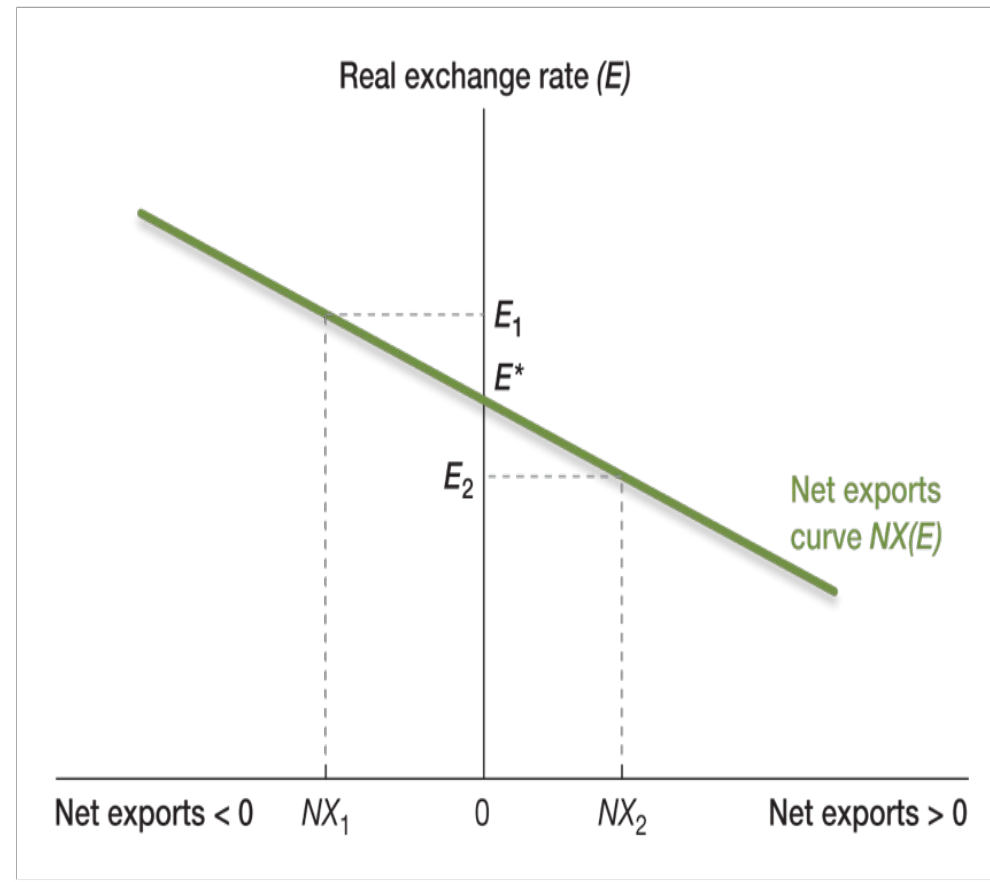
Question: What happens to U.S. exports to China and Chinese exports to the United States when the real exchange rate goes up?

Question: What happens to U.S. exports to China and Chinese exports to the United States when the real exchange rate goes down?

The Real Exchange Rate and Trade Flows

Yuan-Dollar Real Exchange Rate	China	United States
Goes up (dollar appreciates and the yuan depreciates)	Import less from United States Export more to United States	Export less to China Import more from China
Goes down (dollar depreciates and the yuan appreciates)	Import more from United States Export less to United States	Export more to China Import less from China

The Real Exchange Rate and Net Exports



GDP in the Open Economy

National income accounting identity:

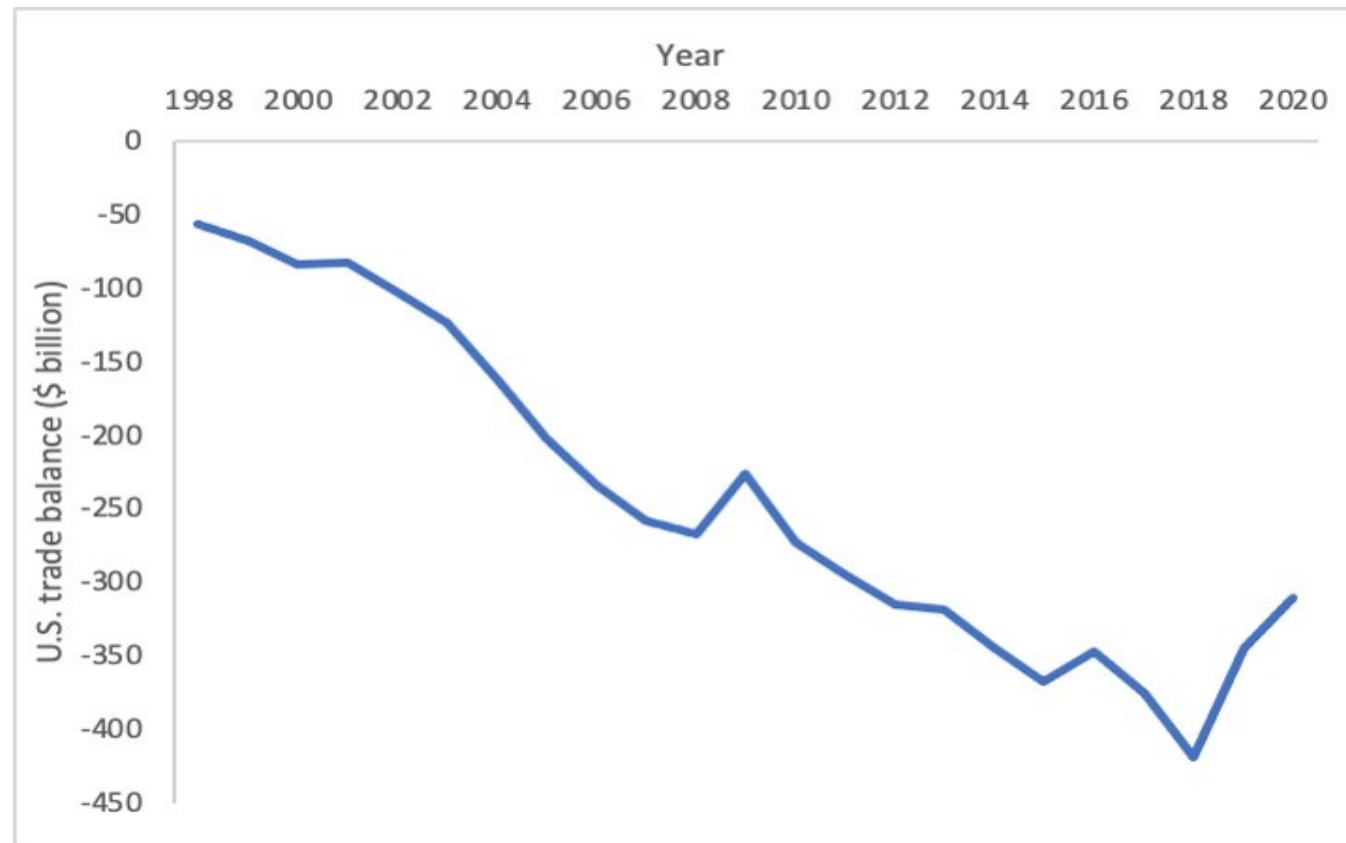
$$Y = C + I + G + X - M$$

Question: Why has the Chinese government kept the yuan undervalued?

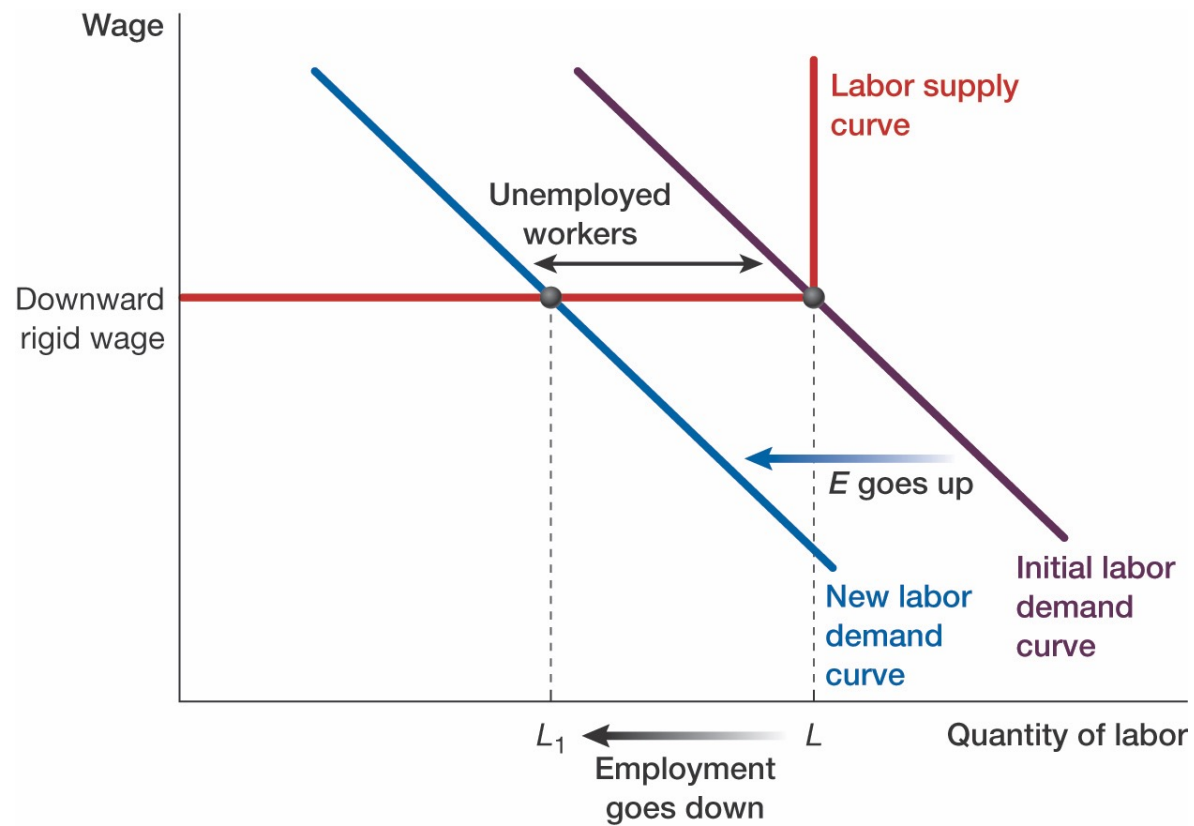
Answer: A weaker yuan leads to an overvalued yuan–dollar real exchange rate E .

An increase in E leads to a trade deficit in the United States ($X_{\text{U.S.}} < M_{\text{U.S.}}$) and therefore a trade surplus in China ($X_{\text{China}} > M_{\text{China}}$).

U.S. Trade Balance with China (1998–2020)



Employment Falls When the Real Exchange Rate Appreciates



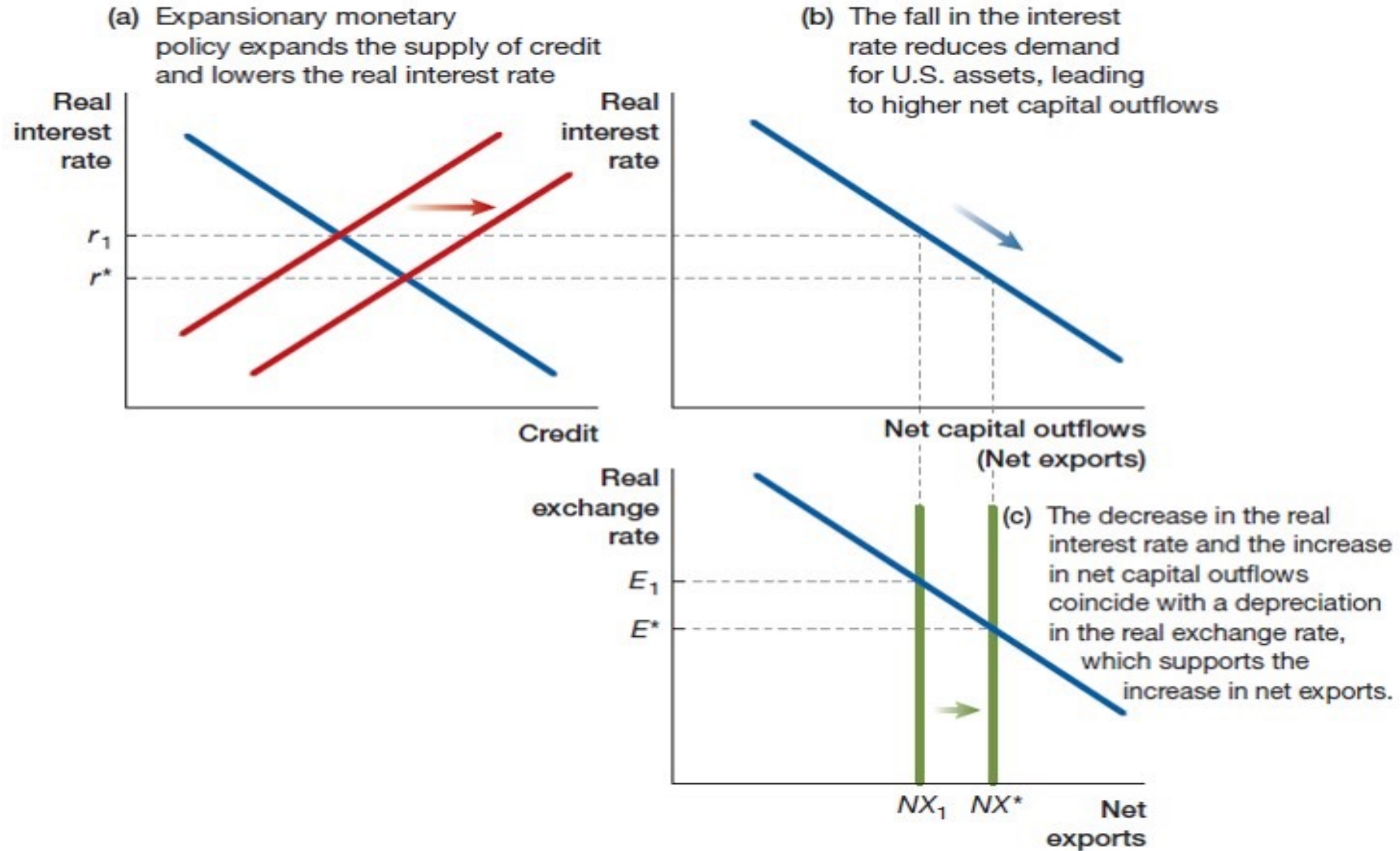
Question: Can U.S. monetary policy respond to the appreciation of the real exchange rate?

Answer: The U.S. Fed can pursue an expansionary monetary policy to decrease the real exchange rate.
How?

An expansionary monetary policy shifts the credit supply curve to the right, lowering U.S. interest rates. Here's what happens next:

- Capital outflow in the U.S. increases looking for greater rate of return
- From the national income account identity $S - I = \text{net exports} = \text{net capital outflow}$, net exports in the U.S. increase.
- As net exports increase, the economy transition to lower real exchange rate.

The Effects of Expansionary Monetary Policy under a Flexible Exchange Rate



Question: What is the implication for the depreciation of the pound on Black Wednesday?

$$E = \frac{\text{UK prices} \times e}{\text{German prices}}$$

Answer: The sharp depreciation of the pound led to a decline in the pound's real exchange rate, an expansion of British net exports, and a corresponding increase in economic activity.

What Have We Learned?

Using What We have learnt: The Euro Crisis

- Large capital inflows into Greece, Spain, Portugal from Germany Netherlands
- These inflows financed property sector, consumption and government budget deficits
- Low interest rates in these 'peripheral' nations, more borrowing (larger fiscal deficits or bank debt)
- Labor demand curve to shift to the right, causing higher wages and prices
- Countries lost competitiveness (higher real exchange rate)

- Sudden stop of capital flows triggered by US financial crisis
- Boom turns into bust, government lost tax revenue base, had to borrow more from banks
- Banks were highly leveraged ---found it difficult to roll over debt
- Economic crisis in Greece, Portugal, Ireland, Spain
- Unemployment rates in Greece, Italy and Spain reaching 27%

- **Multipliers**

- Economic crisis caused higher debt-to –GDP ratios, investors charged even higher interest rates---debt became even more unsustainable
- Banks which held government debt (those that were in trouble) were seen as unviable, government tries to bail them out, and goes down with the banks (the rescue involves the rescuer borrowing from the rescued) –Ireland ('Doom Loop')
- When banks get into trouble, spillovers into the real economy –Portugal
- Wage rigidity: worsens the crisis (especially since cannot resort to currency devaluation)

What Can Be Done?

- Can these countries do countercyclical monetary policy?
 - No, because part of the Eurozone, monetary policy determined by ECB
 - No national central bank to print money to service the debt
- Can these countries do countercyclical fiscal policy?
 - Fiscal policy: no because these countries were either in bailout or had to cut down deficits (austerity)
- Moreover, they could not devalue currency
- So had to undergo painful internal devaluation, but then is met with downward wage rigidity...

Basics

- GDP measurement
 - Production= expenditure= income
 - Nominal versus Real, PPP adjusted (to compare income across countries)
- Prices
 - GDP deflator
 - Inflation (affects real wages, real interest rates, produces winners and losers)
- Money
 - Quantity theory of money (money supply = constant * nominal GDP)
- Trend= economic growth
- Cycles= short run fluctuations

Markets

- Labor market
 - Determines wages, equilibrium employment (unemployment)
 - Important for understanding amplification of business cycles
- Credit market
 - Interest rates
 - The role of banks
 - Important for understanding monetary policy
- Foreign exchange market
 - Exchange rates

Topic 1: Growth ----long run macro

- Growth: why are some countries richer than others?
 - Economic growth is powerful because it can be exponential
 - Income per capita in the long run depends on saving rate, human capital, productivity (Solow Model)
 - Diminishing returns to capital and human capital, so only way to sustain growth in the long run is productivity growth
 - Catch-up growth and sustained growth
 - Convergence (absolute and conditional)
 - Different debates: geography, institutions, culture (fundamental causes)
- But no role for globalization (trade, FDI)

Topic 2: Short run Fluctuations and What can do about it?

- Fluctuations:
 - Booms and busts
 - Keynesian view, real business cycle (productivity shocks), monetary view
 - Multipliers from consumption, investment through labor market and credit market (firms reduce employment, households consume less, demand less, causes firms to produce less and reduce employment, and so on; banks lend less, firms cut down on production, reduces employment, consumption falls, and so on)
 - More amplification from downward wage rigidity

Countercyclical Policy

- Monetary policy
 - Changing interest rates (federal funds rate), reserve requirement ratio, interest paid on reserves (quantity measures)
 - By lowering interest rates, increase investment and consumption, labor demand shifts to the right (expansionary policy)
 - Contractionary monetary policy to reduce inflation
 - Taylor Rule
 - If too much stimulus, can generate inflation without additional output
 - Quantitative easing: unconventional monetary policy used when nominal interest rates hit 0 (post 2009)

Countercyclical Policy

- Fiscal policy
 - Automatic stabilizers
 - Government spending and taxes
 - Government spending multipliers: for every dollar of government spending, by how many dollars does it raise GDP?
If it is less than 1, there is some crowding out
 - Long lags and potential waste

Open Economy

- $Y=C+I+G+NX$
- Trade of goods and services is an additional component contributing to GDP
- One reason for trade is comparative advantage, another is global supply chain trade
- Current account records international transactions in goods and services, financial account records those in financial assets.
- Current account reflects net capital flows, surplus indicates net capital outflow, as countries running trade surpluses must be accumulate foreign assets on net

Congratulations on Becoming a
Macro Expert !