

Lecture 13: Openness in Goods and Financial Markets

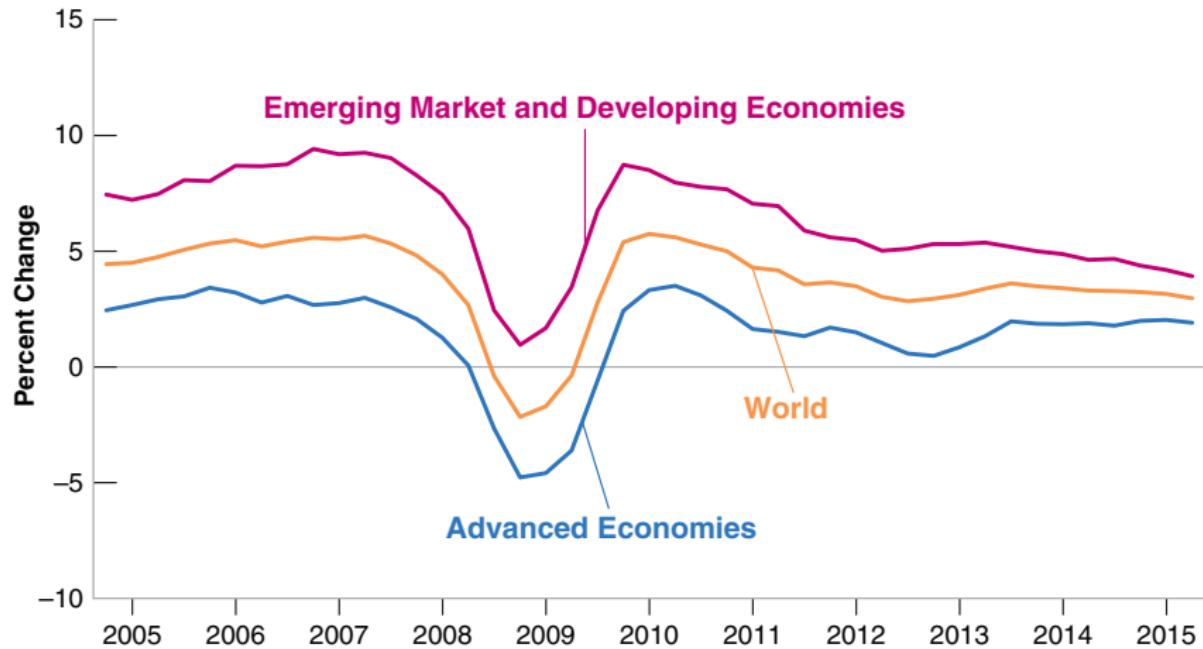
Intermediate Macroeconomics, Econ 102

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2007-2009 US Financial Crisis



From a Closed to an Open Economy

- The crisis in 2007-2009 started in the United States.
- However, the previous figure shows that there was a worldwide recession with negative growth both in advanced and emerging economies.
- Why was there such a contagion?
- Part of the lower demand in the US led to lower demand for other countries' exports, which reduced GDP:

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

- Today's markets are indeed quite open, in three dimensions: goods can move across borders, savings can chase for the most profitable investment opportunities, and factors or production, both capital and labor, may move to some extent.

3 dimensions of openness

- ① **Openness in goods markets.** Consumers and firms can choose between domestic and foreign goods. However, even the countries most committed to free trade have **tariffs** (taxes on imported goods, to protect local industries) **quotas** (restrictions on the quantity of goods which can be imported), or **Voluntary Export Restraints** (VER). Before Donald Trump at least, average tariffs were low and getting lower over time.
- ② **Openness in financial markets.** Investors also may choose between domestic assets and foreign assets, although the limits to opening a bank account vary across countries. However, capital controls in places such as France or Italy were in place until fairly recently. World financial markets are becoming more integrated.
- ③ **Openness in factor markets.** Firms may choose where to locate production (capital), and workers may choose where to work (subject to visa restrictions). Immigration from low-wage country is a hot political issue everywhere.

Limits to openness

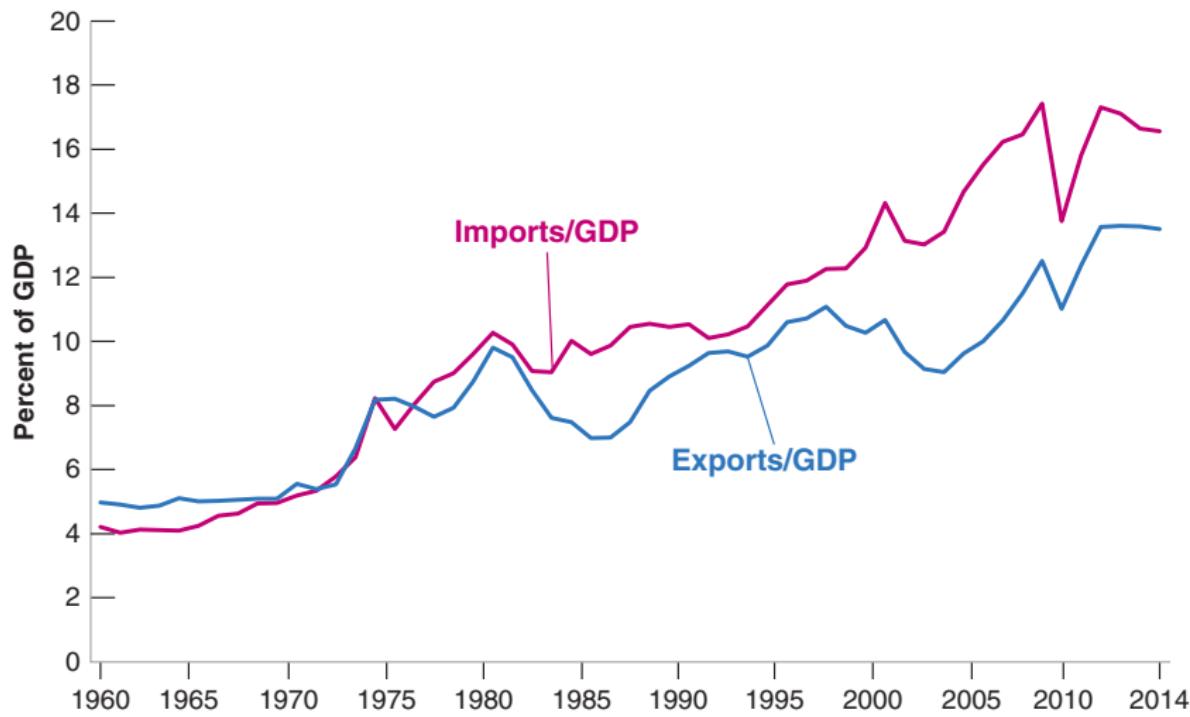
- Examples of limits to openness in goods markets:
 - ① **US's Import quota on sugar.** In 2014, the quota limits imports of raw sugar to \$3.4M tons, while the US production totals \$8.4M tons.
 - ② **Voluntary Export Restraint on Japanese autos.** 1960s-1970s: US auto industry was largely insulated from competition (low gasoline tax market \Rightarrow large cars). 1980s: higher prices for fuel led Japanese cars to compete, and Ronald Reagan decided on big tax cuts. US threatened to use protectionist measures \Rightarrow Japan agreed on VER.
 - ③ **Buy American Act.** This affects procurement (purchases by government agencies, including state and local governments), in that it requires that American firms be given preference in all such purchases. (A bid by a foreign company can be accepted only if it is a specified percentage below the lowest bid by a domestic firm.)
 - ④ Donald Trump: aluminum and steel tariffs. More to come?
- In lectures 14-16, we shall discuss the **links between fiscal policy and trade policy** in particular, and how Keynesian policies are more difficult with openness in goods & financial markets.

1 Openness in Goods Markets

2 Openness in Financial Markets

U.S. Exports and Imports as Ratios of GDP since 1960

Since 1960, exports and imports have more than tripled in relation to GDP. The United States has become a much more open economy.



Exports and Imports

- Given all the fuss in the media (and across the political spectrum), around 15% for exports and imports may seem like a quite low number. However, the volume of trade is not necessarily a good measure of openness – many firms are exposed to foreign competition, and are “kept on their toes” by low prices abroad.
- Therefore, even local firms that survive may need to lower their wages in order to compete with, say, Chinese labor.
- A better index of openness than export and import ratios is indeed the proportion of aggregate output composed of **tradable goods** – this is approximately **60% of aggregate output in the US today**.
- According to the WTO, world trade is composed in 2011 of **53% of manufactures, 19% of fuels and mining products, 20% of services, and 8% of agricultural products**.

Exports and Imports

- In fact, the United States is at a low end of the range of export ratios.
- The export ratio is somewhat higher in Japan (17.7%), much higher in Germany (45.7%) and even more in Switzerland (64.1%).
- The number in the Netherlands may lead to a natural question: can exports actually exceed GDP? Yes! Example: Singapore (188%): this is because of the exports and imports of intermediate goods.

Table 17-1 Ratios of Exports to GDP for Selected OECD Countries, 2014

Country	Export Ratio	Country	Export Ratio
United States	13.5%	Germany	45.7%
Japan	17.7%	Austria	53.2%
United Kingdom	28.3%	Switzerland	64.1%
Chile	33.8%	Netherlands	82.9%

Source: IMF, *World Economic Outlook*.

Exchange Rates

- **Real exchange rate:** The price of domestic goods relative to foreign goods.
- **Nominal exchange rate:** The price of the domestic currency in terms of foreign currency.
- **(Nominal) appreciation:** An increase in the price of the domestic currency in terms of a foreign currency, i.e., an increase in the exchange rate.
- **(Nominal) depreciation:** A decrease in the price of the domestic currency in terms of a foreign currency, i.e., a decrease in the exchange rate.

Exchange Rates

- **Fixed exchange rates:** A system in which two or more countries maintain a constant exchange rate between their currencies.
- In the fixed exchange rate system, **revaluations** are increases in the exchange rate, and **devaluations** are decreases in the exchange rate.
For example: the \$ has appreciated with respect to the £.



Exchange Rates

- Denote by E the £/\$ exchange rate (for example, \$1 = £0.74, so $E = 0.74$ £/\$), P the price in \$, and P^* the price in £.
- The **real exchange rate**, the price of U.S. goods in terms of British goods, is:

$$\epsilon = \frac{EP}{P^*}$$



Real Exchange Rates

- **Real appreciation:** An increase in the real exchange rate, i.e., an increase in the relative price of domestic goods in terms of foreign goods.
- **Real depreciation:** A decrease in the real exchange rate, i.e., a decrease in the relative price of domestic goods in terms of foreign goods.
- In the long run, a nominal depreciation often causes / is caused by an increase in inflation. However, nominal and real exchange rates move in tandem in the short / medium run.
- For example, again **the \$/£ exchange rate**. Except for the difference in trend reflecting higher average inflation in the United Kingdom than in the United States until the early 1990s, the nominal and the real exchange rates have moved largely together.

The Big Mac Index

- In 1986, *The Economist* conducted an extensive survey on the prices of Big Mac hamburgers at McDonald's restaurants throughout the world.
- Why 1986? As we shall see later, the Reagan tax cuts led to a steep appreciation of the US \$, and a concern about deindustrialization, echoing the discussions that are held today around the Trump tax cuts. Real Exchange Rates were everywhere in the news.
- A main appeal of Big Macs at the time was that it was "sold in 41 countries, with only the most trivial changes of recipe".
- It was a way to measure the **Real Exchange Rates** across countries.
- There are various reasons why prices are different:
 - ▶ The price of a Big Mac does not just cover the cost of raw materials (ground meat, and buns) but also the wages of waiters, local rental costs, local electricity prices, which are **largely non tradable**. (and for which there is not a unique price across countries)
 - ▶ Big Macs may have different prices depending on how much competition McDonald's faces locally.

The First Big Mac Index, 1986 (Source: Link)

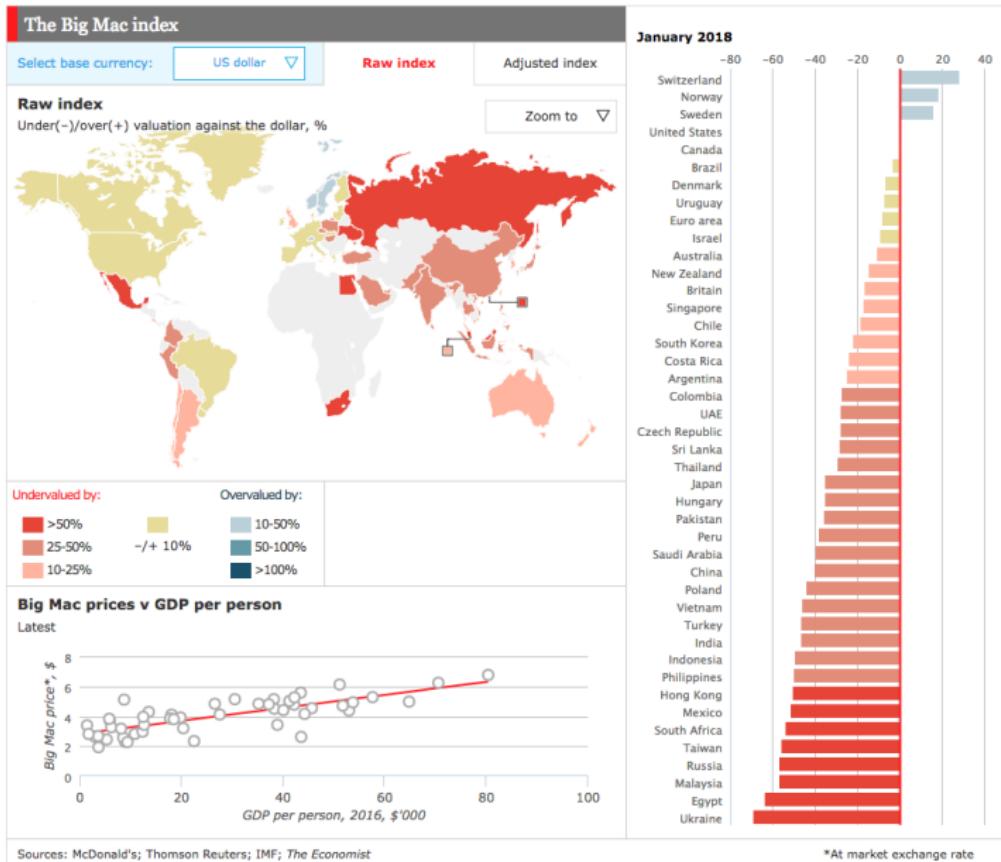
Big MacCurrencies

Hamburger prices round the world

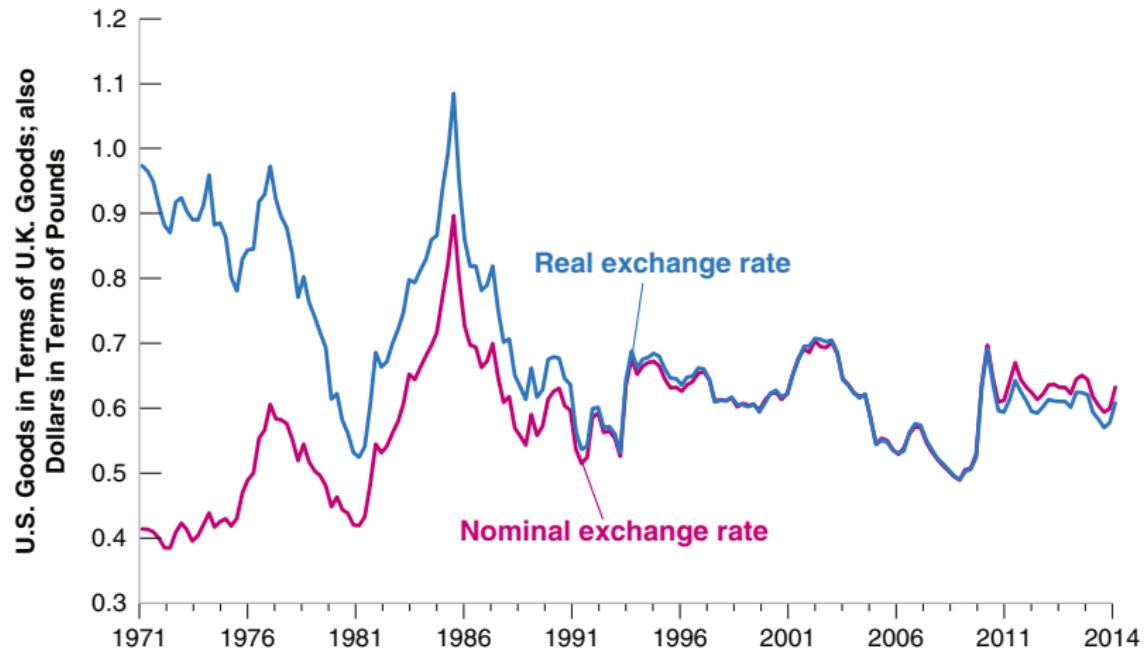
Country	Price* in local currency	Implied† purchasing power parity of the dollar	Actual exchange rate Sept 1st	% over (+) or under (-) valuation of US\$
Australia	A\$1.75	1.09	1.64	+50
Belgium	BFr90	56	42	-25
Brazil	Cz\$2.5	7.80	13.80	+78
Britain	£1.10	0.69	0.67	-3
Canada	C\$1.89	1.18	1.39	+18
France	FFr16.4	10.30	6.65	-35
Hongkong	HK\$7.60	4.75	7.80	+64
Ireland	IR£1.18	0.74	0.74	-1
Japan	Y370	231	154	-33
Holland	Fl4.35	2.72	2.28	-16
Singapore	S\$2.80	1.75	2.15	+23
Spain	Ptas260	163	133	-18
Sweden	SKr16.5	10.30	6.87	-33
United States	\$1.60	—	—	—
W Germany	DM4.25	2.66	2.02	-24

Source: McDonald's. *Prices may vary slightly between branches. †Foreign price divided by dollar price.

The Big Mac Index, January 2018 (Link)



Real and Nominal Exchange Rates between the United States and the United Kingdom since 1971



Multilateral Exchange Rates

- Exchange rates shown previously were bilateral.
- In practice, trade is multilateral. Therefore, the **\$** can **appreciate** vis à vis the **€** and **depreciate** vis à vis the **£**.
- The Multilateral real U.S. Exchange rate (or U.S. real exchange rate) requires data on the geographic composition of U.S. trade for both exports and imports.

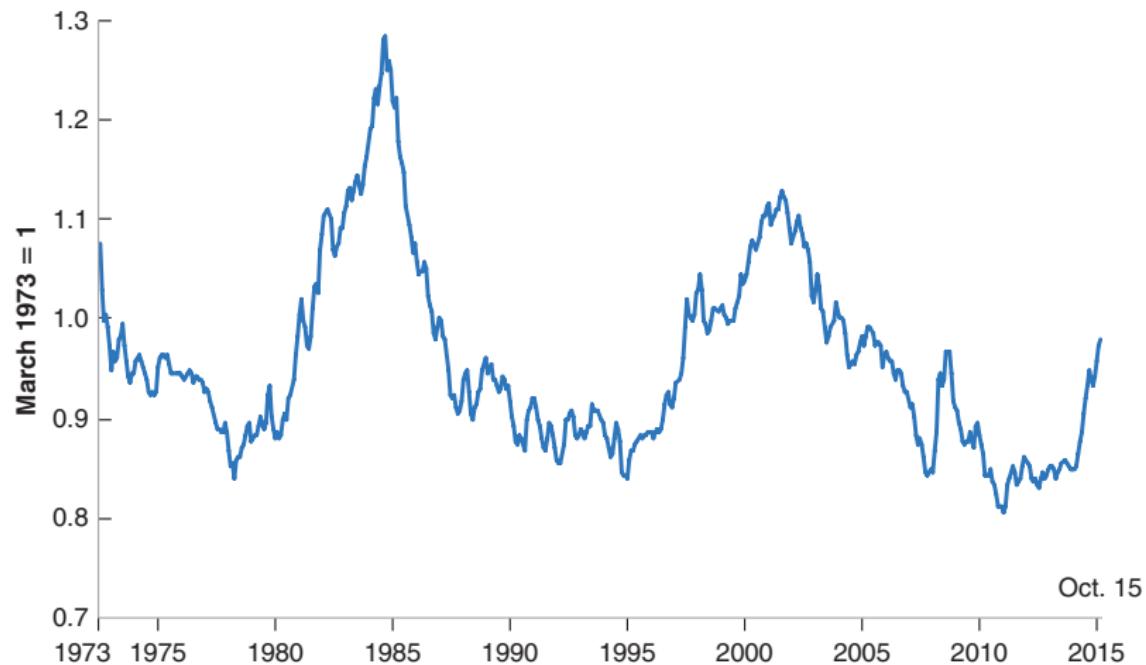
Table 17-2 The Country Composition of U.S. Exports and Imports, 2014

	Percent of Exports to	Percent of Imports from
Canada	16	15
Mexico	12	13
European Union	15	18
China	7	20
Japan	4	6
Rest of Asia and Pacific	11	10
Others	35	18

Source: US Census, Related Party Trade, May 2015.

The U.S. Multilateral Real Exchange Rate, since 1973

- Since 1973 there have been two large real appreciations of the U.S. dollar and two large real depreciations.



① Openness in Goods Markets

② Openness in Financial Markets

The US Balance of Payments in 2014

Table 17-3 The U.S. Balance of Payments, 2014, in Billions of U.S. Dollars

Current Account		
Exports	2343	
Imports	2851	
Trade balance (deficit = -)(1)		- 508
Income received	823	
Income paid	585	
Net income (2)		238
Net transfers received (3)		- 119
Current account balance (deficit = -)(1) + (2) + (3)		- 389
Capital Account		
Increase in foreign holdings of U.S. assets (4) (*)	1031	
Increase in U.S. holdings of foreign assets (5)	792	
Capital account balance (7) = (4) - (5)		239
Statistical discrepancy (= capital account balance - current account balance)		150
*including an increase in foreign holdings of U.S. assets of \$54 billion from net transactions in financial derivatives		
Source: US Bureau of Economic Analysis, September 17, 2015.		

Current Account

- **Balance of payments:** A set of accounts that summarize a country's transactions with the rest of the world.
- **Current account** – Transactions **above the line** record payments to and from the rest of the world:
 - ▶ Exports and imports of goods and services (exports minus imports is the trade balance, sometimes called net exports)
 - ▶ Net income balance between income received from the rest of the world and income paid to foreigners
 - ▶ Net transfer received—the difference in foreign aid given and received
- **Current account balance** – The sum of net payments to and from the rest of the world:
 - ▶ Surplus: Positive net payments from the rest of the world
 - ▶ Deficit: Negative net payments from the rest of the world

Capital Account

- **Capital account** – Transactions **below the line** record net foreign holdings of domestic assets.
- **Net capital flows or capital account balance** – An increase in net foreign indebtedness (holdings of domestic assets minus the increase in domestic holdings of foreign assets):
 - ▶ **Capital account surplus**: Positive net capital flows
 - ▶ **Capital account deficit**: Negative net capital flows
- **Statistical discrepancy** – Difference between current and capital account transactions.

Difference between GDP and GNP

- GDP measures value added domestically.
- Gross national product (GNP) measures the value added by domestic factors of production:

$$GNP = GDP + NI$$

where NI denotes net income – that is, payments received from the rest of the world less income paid to the rest of the world.

- For most countries, this is just a detail. However, for other countries, it is clearly not. For example, Kuwait ran a large current account surplus and accumulated large foreign assets, resulting in larger GNP compared to GDP.

GDP, GNP, and Net Income in Kuwait, 1989–1994

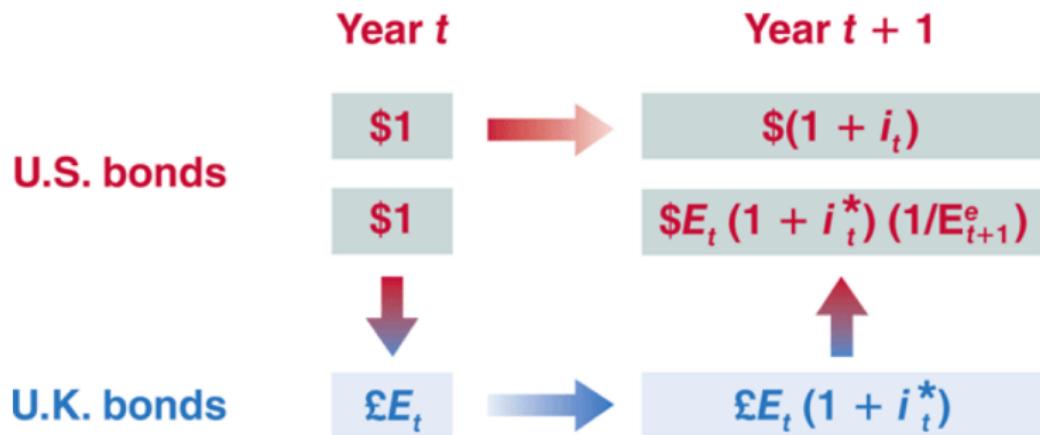
Table 1 GDP, GNP, and Net Income in Kuwait, 1989–1994

Year	GDP	GNP	Net Income (NI)
1989	7143	9616	2473
1990	5328	7560	2232
1991	3131	4669	1538
1992	5826	7364	1538
1993	7231	8386	1151
1994	7380	8321	941

Source: *International Financial Statistics*, IMF. All numbers are in millions of Kuwaiti dinars. 1 dinar = \$0.3. (2015).

Uncovered interest parity

- Consider a U.S. investor's decision between holding U.S. one year bonds and U.S. one-year bonds.



Uncovered interest parity

- Arbitrage implies that:

$$1 + i_t = (E_t)(1 + i_t^*) \left(\frac{1}{E_{t+1}^e} \right) \Rightarrow 1 + i_t = (1 + i_t^*) \frac{E_t}{E_{t+1}^e}.$$

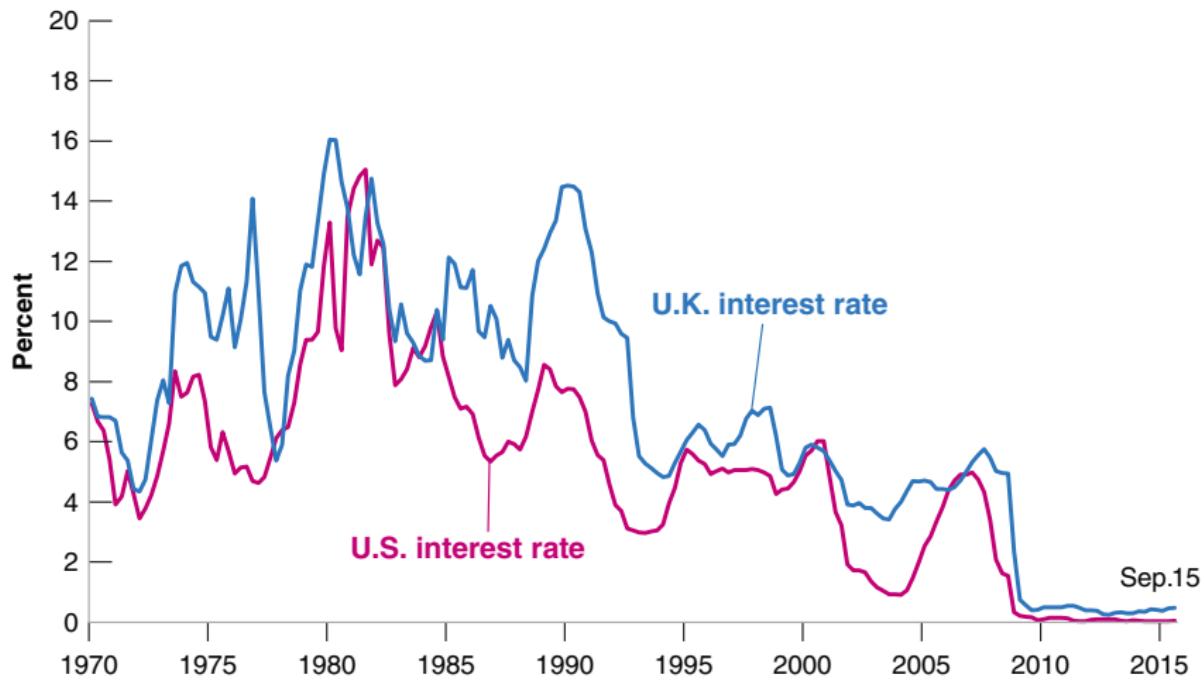
which is called the uncovered interest parity relation or the interest parity relation.

- This equation implies:

$$1 + i_t = \frac{1 + i_t^*}{1 + \frac{E_{t+1}^e - E_t}{E_t}} \Rightarrow i_t = i_t^* - \frac{E_{t+1}^e - E_t}{E_t}.$$

- Arbitrage by investors implies that the **domestic interest rate** must be equal to the **foreign interest rate** minus the **expected appreciation rate** of the domestic currency.
- If $E_{t+1}^e = E_t$, then $i_t = i_t^*$.

Three-Month Nominal Interest Rates in the US and in the UK since 1970



Suggested Readings / Exercises

- 👉 Chapter 17, *Macroeconomics*, 7th Edition, Olivier Blanchard.
- ★★★ Chapter 17, Problems 2, 4, *Macroeconomics*, 7th Edition, Olivier Blanchard.
- ☆☆ Chapter 17, Problem 7, *Macroeconomics*, 7th Edition, Olivier Blanchard.
- ☆ Chapter 17, Problem 8, *Macroeconomics*, 7th Edition, Olivier Blanchard.
On the hamburger standard, *The Economist*, September 6, 1986. Link
Paul Krugman, Marc Melitz, Maurice Obstfeld, Prentice Hall, International Economics, Theory and Policy, 11th edition. Link