

# Lecture 16 - Notes

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Intermediate Macroeconomics, Econ 102

If you want to know more about exchange rates, I strongly encourage you to take a look at the third part of Krugman et al. (2018), who devotes ten chapters to issues surrounding open economy macroeconomics (Chapters 13 to Chapter 22) – of course, this is not examinable. Maurice Obstfeld, a coauthor on this textbook, is a successor to Olivier Blanchard as a chief economist of the IMF.

## 1 Using the IS-LM-UIP Model

We saw during lecture 15 the IS-LM-UIP model, also called the Mundell (1963)-Fleming (1962) model, after the two economists who put it together. Again, the IS-LM-UIP model is one where the IS curve declines as a function of the interest rate, because of the effect on investment, and the appreciation of the real exchange rate, which reduces net exports:

$$Y = C(Y - T) + I(Y, i) + G + NX\left(Y, Y^*, \frac{1+i}{1+i^*}\bar{E}^e\right)$$

**Contractionary Monetary Policy.** What is the effect of  $\Delta i > 0$  in the IS-LM-UIP model? In the IS-LM-UIP model, a contractionary monetary policy leads to an appreciation of the exchange rate as the interest rate moves from  $i$  to  $i' = i + \Delta i$ . This, therefore, leads to move along the IS curve for two reasons. First, investment declines, as in the usual IS-LM model. Second, net exports decline, if the Marshall-Lerner condition holds, as the real exchange rate appreciates.

**Increase in government spending.** What is the effect of  $\Delta G > 0$  in the IS-LM-UIP model? Imagine that taxes are not changed to offset the effects of higher government spending on the budget deficit, so that there is a fall in public saving  $\Delta(T - G) = -\Delta G < 0$ .

The (IS) curve shifts rightwards: for a same level of the interest rate, there is now a higher level of output. There is also higher consumption, because consumption depends on income through  $C = C(Y - T)$ , and higher investment if  $I = I(Y, i)$ . There would also be higher imports, and a lower net export balance. However, if there is no further change in monetary policy, this does not change the level of the interest rate, or the level of the exchange rate. This would be the case if output is initially below potential, so that the central bank is not too worried about more inflation when output rises in this way. This situation is depicted on Figure 3.

Figure 1: THE IS-LM MODEL IN AN OPEN ECONOMY (IS-LM-UIP)

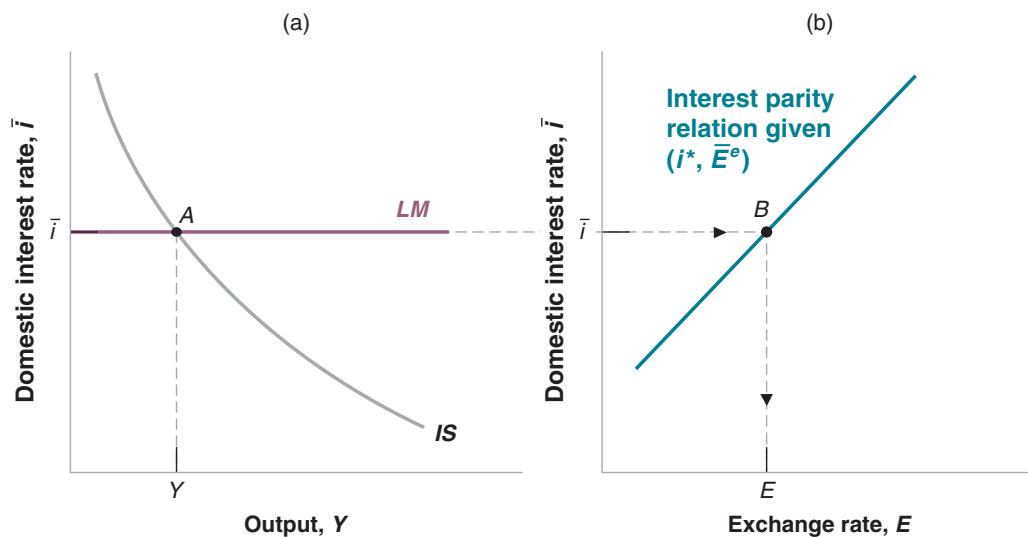


Figure 2: EFFECTS OF AN INCREASE IN THE INTEREST RATE

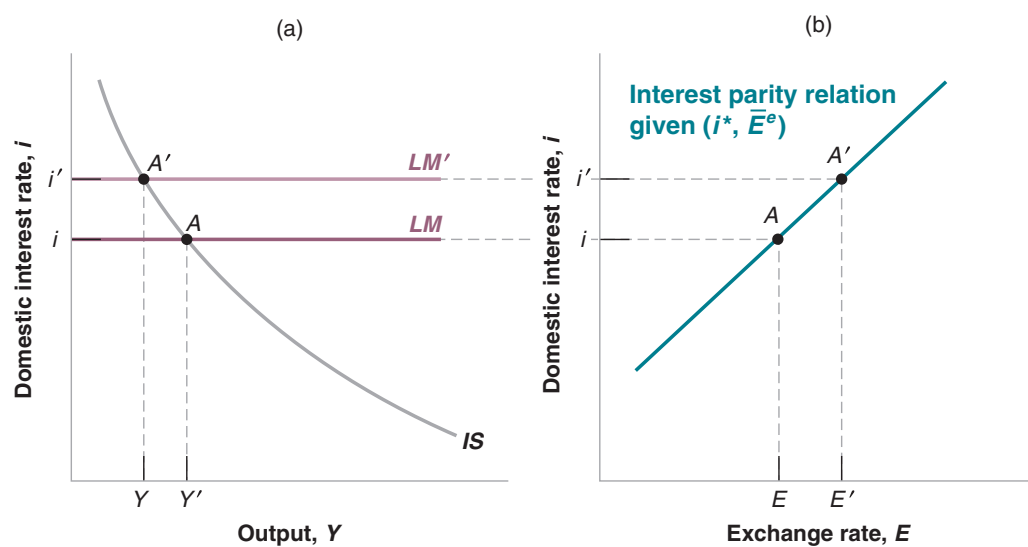
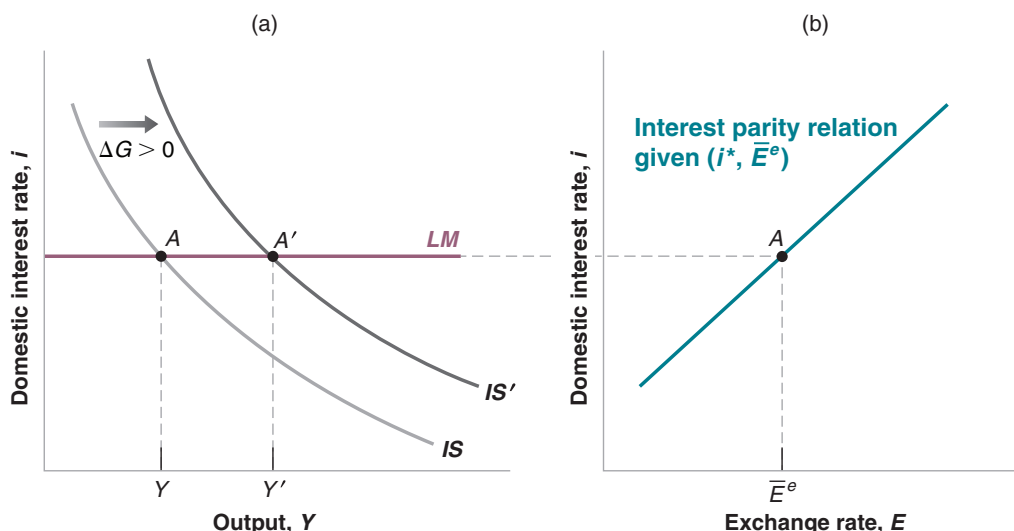


Figure 3: THE EFFECTS OF AN INCREASE IN GOVERNMENT SPENDING WITH AN UNCHANGED INTEREST RATE



**Increase in government spending and in the interest rate.** If the economy starts from a situation where output is already at potential, above potential, or if the economy is even below potential but the increase in government spending is too high, then the economy overheats and the central bank might want to raise the interest rate to avoid inflation fears. What happens is then described on Figure 4. The nominal exchange rate will then appreciate, because:

$$E = \frac{1 + i}{1 + i^*} \bar{E}^e$$

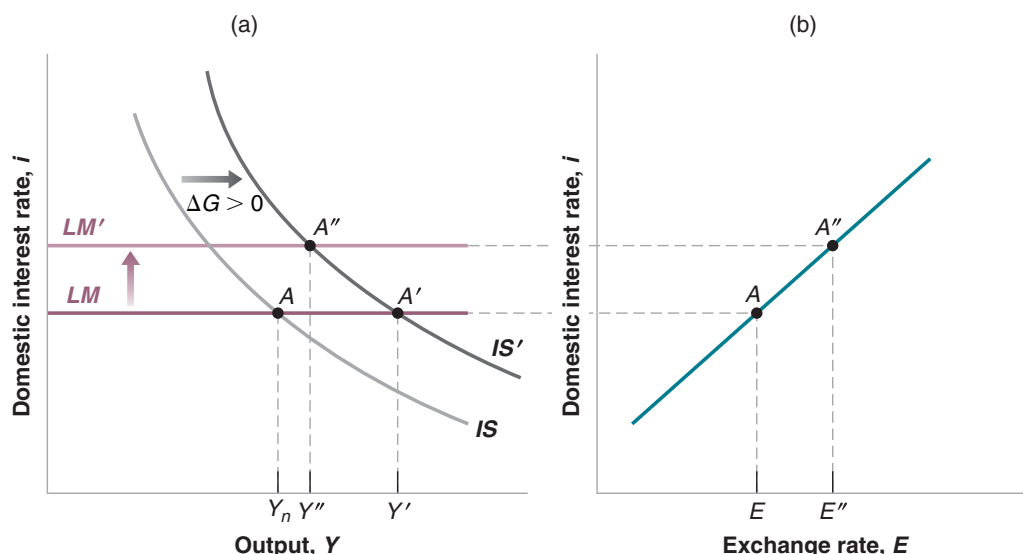
What happens to the various components of demand? Unambiguously, consumption increases because income rises and taxes are unchanged by assumption. Net exports are reduced for two reasons: first, output increases; and second, the real exchange rate appreciates, which worsens the trade balance. Overall, the impact on investment is now ambiguous: on the one hand, output increases, but on the other, the interest rate is higher.

## 2 Failure of the Uncovered Interest Parity Condition: Sudden Stops

Unfortunately, the uncovered interest parity condition does not always explain the flows of capital, and nominal exchange rate movements. Emerging countries, in particular, have often been subject to **sudden stops**. During these episodes, the interest parity condition fails, so that the exchange rate may decrease a lot, without much change in interest rates.

This is explained in the Focus Box of Blanchard (2017): “Sudden Stops, Safe Havens, and the Limits to the Interest Parity Condition.” In particular, Blanchard (2017) argues that perceptions of risk are very important for pension funds, and traders in investment banks, who are very quick to change their minds about the prospect of a particular emerging market economy. There are many examples of this: Mexico in the 1980s, Mexico in 1994 (the

Figure 4: THE EFFECTS OF AN INCREASE IN GOVERNMENT SPENDING WHEN THE CENTRAL BANK RESPONDS BY RAISING THE INTEREST RATE



“Tequila” crisis), multiple crises in Asia in 1997, a balance of payment crisis in Brazil in 1998-1999, an exchange rate crisis in Argentina in 2002.

**Argentina’s Currency Board.** Carlos Menem became president of Argentina in 1989. Inflation was running at more than 30% per month. In 1991, there was a decision to peg the Argentine peso to the dollar, to bring inflation under control. Under the currency board, Argentina would stand ready to exchange pesos for dollars on demand, at a symbolic rate of 1 dollar equals 1 peso.

Inflation then went down to 4% by 1994. The real exchange rate was appreciating, because inflation was still higher in Argentina than in the US:

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

There was an increase in the trade deficit, and a seemingly large “overvaluation” of the peso. When the crisis came, the real exchange rate was too high. As always in these cases, Argentina faced two options: either “internal devaluation”, which is a decrease in the price level, which would bring a real depreciation, or nominal exchange rate devaluation, which would also hurt bondholders. In December 2001, the government decided to default on part of its debt. In early 2002, it gave up the currency board and let the peso float.

### 3 Fixed Exchange Rates

How does the IS-LM-UIP model work, when the exchange rate is fixed? If the exchange rate is fixed, and investors expect it to remain fixed forever, then  $E_t = E_{t+1}^e$ . Therefore, it has to be that  $i_t = i_t^*$ . This is only true if fixed exchange rates are considered credible. And indeed,

when the Euro was introduced, the interest rate on 10-year government bonds converged in the Euro area, as can be seen on Figure 5: while interest rates were previously much higher in Greece, reflecting a compensation for devaluation of the drachma with respect to “strong” currencies, they converged in 1999. In 2009, fears that Greece and other periphery would leave, devalue, and repay government bonds in a depreciated currency mounted: there was divergence in interest rates in the Euro area. As you can see on Figure 6, there has been a small jump in spreads on May 29, 2018, following the announcement of new elections in Italy.

Figure 5: INTEREST RATES ON 10-YEAR GOVERNMENT BONDS

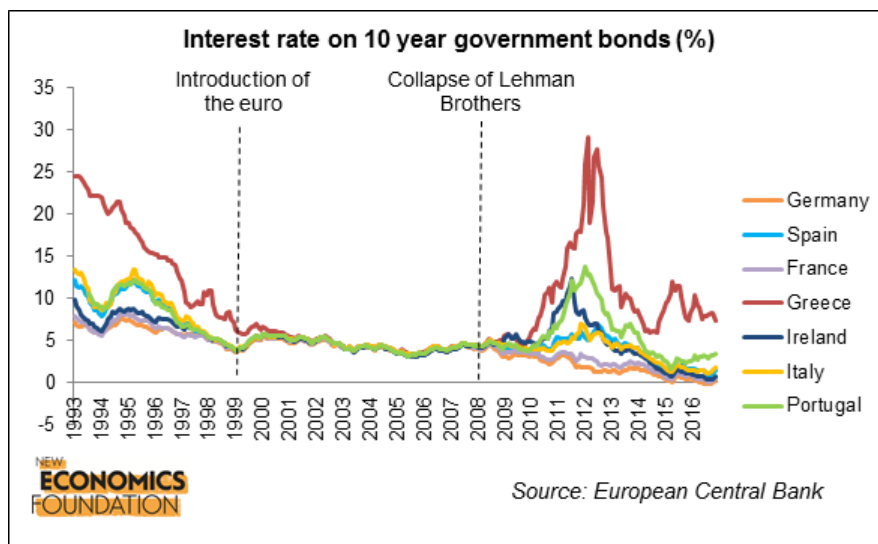
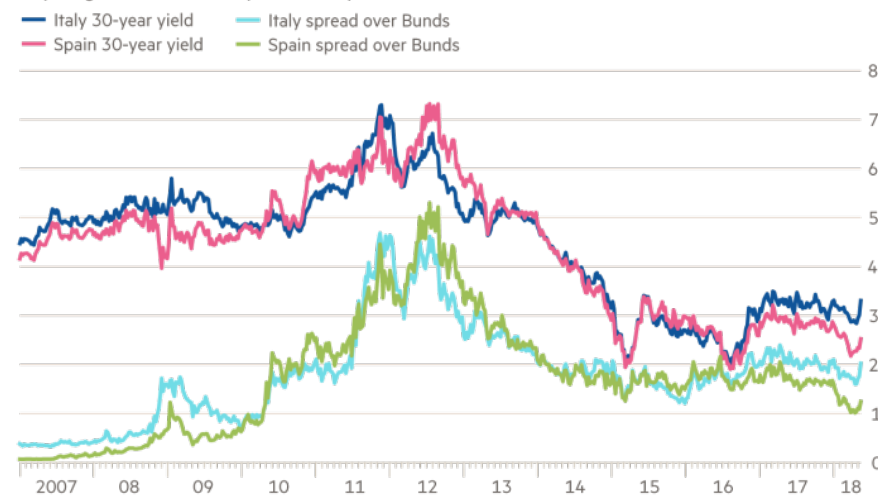


Figure 6: 30-YEAR GOVERNMENT BOND YIELDS UNTIL YESTERDAY

### A small jump in spreads

30-year government bond yields and spreads over German Bunds (%)



Source: Thomson Reuters Datastream  
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## References

**Blanchard, Olivier J.**, *Macroeconomics*, Pearson Education, 2017.

**Fleming, J. Marcus**, “Domestic Financial Policies under Fixed and under Floating Exchange Rates,” *Staff Papers (International Monetary Fund)*, 1962, 9 (3), 369–380.

**Krugman, Paul R., Maurice Obstfeld, and Marc Melitz**, *International Economics: Theory and Policy*, Pearson Higher Ed, 2018.

**Mundell, R. A.**, “Capital Mobility and Stabilization Policy under Fixed and Flexible Exchange Rates,” *The Canadian Journal of Economics and Political Science / Revue canadienne d’Economie et de Science politique*, 1963, 29 (4), 475–485.