The Mundell-Fleming Model in the Small Open Economy

(a.k.a. IS*-LM*)

The Mundell-Fleming IS*-LM* model isn’t horribly different from the IS-LM model we saw in Chapter 10. In fact, it’s based on it. The vertical LM* curve is derived from the intersection of the regular LM curve and the interest rate, while the IS* curve is derived from the Keynesian Cross and the net exports graph we saw in Chapter 5. Put them together, and you get something like Figure 1.

Notice that the LM* curve is now a vertical line. That’s because it is independent of the exchange rate, i.e. the level of real money balances in the economy will not vary with the exchange rate. The IS* curve looks like it always did. The important thing to notice here is that the vertical axis no longer shows the interest rate, but is now the exchange rate.

1 Exchange Rates: Floating or Fixed?

As an economy, we can choose to have a floating exchange rate or a fixed exchange rate. Let’s take a quick look at each:

1.1 Floating Exchange Rate

A floating exchange rate means we let current economic conditions and the worldwide financial markets determine the exchange rate in our economy. In other words, the value of our currency is

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allowed to fluctuate with the economic tide.

1.1.1 Fiscal Policy

In the floating exchange rate economy, fiscal policy is basically useless when it comes to influencing output. Remember that gov’t spending is a component of the IS* curve. So increasing \( G \) will bump out the IS* curve. But all that will do is raise the nominal exchange rate, decreasing net exports, offsetting the gain from the increase in \( G \) (Figure 2).

\[ \text{Output (Y)} \quad \text{Nominal Exchange Rate (e)} \]

\[ \text{LM}^* \quad \text{IS}^* \]

\[ Y_1 \quad e_1 \quad \text{IS}^* \_1 \]

\[ Y_2 \quad e_2 \quad \text{IS}^* \_2 \]

**Figure 2:** An increase in government spending under a floating exchange rate.

1.1.2 Monetary Policy

Unlike fiscal policy, under a floating exchange rate monetary policy can change overall output. For example, an increase in the money supply would cause an outward shift in the LM* curve. That

\[^1\text{Even without looking at the graphs, I could tell you a story as to why this has to hold. Remember, the supply of money balances is fixed for a drawn LM^* curve, and the supply of real balances has to equal the demand of real balances. Real balances, as we saw in Chapter 5, is a function of the interest rate } r \text{ and income } Y. \text{ Since were in an open economy, } r \text{ is set at the worldwide level, and cant change with an increase in } G. \text{ That means that } Y \text{ cant change either, and so we know right off the bat that fiscal policy does nothing when it comes to increasing } Y. \]
results in a drop in the real exchange rate, which increases net exports and thus output (Figure 3).

\[ \text{Output (Y)} \quad \text{Nominal Exchange Rate (e)} \]

\[ \text{LM}^* \quad \text{IS}^* \]

\[ 1 \quad 2 \]

\[ e_1 \quad e_2 \]

\[ \text{Output (Y)} \]

\[ \text{Nominal Exchange Rate (e)} \]

\[ \text{LM}^* \quad \text{IS}^* \]

\[ 1 \quad 2 \]

\[ e_1 \quad e_2 \]

Figure 3: An increase in the money supply under a floating exchange rate.

1.2 Fixed Exchange Rate

Under a fixed exchange rate regime, the exchange rate is set by a country power (central bank). The central bank promises to always buy and sell currency at a particular price, which, after that lovely thing we call arbitrage, guarantees that the exchange rate will always be the same.

How exactly does that work? Say the world markets try to lower the value of our national currency (lowering the nominal exchange rate). Our central bank still promises to buy and sell at the old rate. That means that people can make money by buying our currency on the foreign exchange market and selling it back to the central bank – and they will. In doing so, they make the central bank restrict the money supply, which lowers the level of real money balances. This shifts the LM* curve left, which will raise the nominal exchange rate back up until it returns to the central bank-set level. A similar (but opposite direction) effect will occur if the market tries to raise our nominal exchange rate.

Note the difference here from the old IS-LM model. Here, an increase in the money supply doesn’t increase domestic spending, but instead increases capital outflows, which in turn increases NX, which increases output.

\[ ^2 \text{Note the difference here from the old IS-LM model. Here, an increase in the money supply doesn’t increase domestic spending, but instead increases capital outflows, which in turn increases NX, which increases output.} \]
1.2.1 Fiscal Policy

Unlike the floating exchange rate scenario, fiscal policy can actually do something in the fixed regime world. Say the gov’t bumps out the IS* curve. The central bank promised to keep the exchange rate where it is. In order to do that, they bump out the LM* curve (which happens due to arbitrage increasing the money supply) to return to the previous exchange rate equilibrium point at a higher level of overall income (Figure 4).

![Figure 4: An increase in government spending under a fixed exchange rate.](image)

1.2.2 Monetary Policy

For a fixed exchange rates monetary policy is highly limited. Any attempt to adjust the money supply would result in a change in the exchange rate, which will lead to arbitrage, which will drive the money supply right back to where it was in the first place. Basically, the central bank can’t do anything by changing the amount of money circulating in a fixed exchange rate regime.

That doesn’t mean they’re totally powerless. The bank can change the rate that it uses for its “fixed” exchange rate (i.e. devaluation or revaluation). A devaluation will shift the LM* curve right (equivalent to increasing money supply in old LM model, increasing NX) and a revaluation
will shift the LM\(^*\) curve left (equivalent to decreasing the money supply in the old LM\(^*\) model, decreasing NX).

### 2 Mundell-Fleming with Changing Prices (the Long Run)

Changing prices are a way of bringing together the IS\(^*\)-LM\(^*\) curves and the AD/SRAS/LRAS curves. Just like in Chapter 11 with the original IS-LM model, the intersection of the IS\(^*\)-LM\(^*\) curves makes up the AD curve. And just like Chapter 11, any change in the IS\(^*\)-LM\(^*\) curves that happens as a result of a change in prices will be a movement along the AD curve. All other changes will be shifts in the curve.

Before we can tie these two graphs together, we have to make a minor change – replace the nominal exchange rate on the vertical axis with the real exchange rate. Remember before we said domestic and foreign prices were fixed, so the real and nominal exchange rates were the same thing? Well, now domestic prices aren’t fixed, so we have to go back to using the real exchange rate.

\[ \epsilon = \frac{e}{e^*} \text{ domestic prices} / \text{foreign prices} \]

And remember, the real exchange rate can move even in a “fixed” exchange rate regime – the central bank fixes the nominal exchange rate, not the real one. Even if the nominal remains unchanged, if prices change, the real exchange rate will too.

You can trace the usual changes in the AD-AS curve just as we did in Chapter 11. In a floating exchange rate economy, a decrease in prices, for example, increases real money balances, shifting the LM\(^*\) curve out, which decreases the real exchange rate, which increases NX, which increases output. Try running through a variety of scenarios to see how movements in the Mundell-Fleming model change the AD/SRAS/LRAS curve.