Being the earliest approach to explaining exchange rates, the Monetary Model can be used as a benchmark for comparing other exchange rate determination models. Despite its relative inadequacy in explaining the fluctuations seen in recent years, the monetary model provides useful insights into long-run trends. By the end of this video, we will have derived a model similar to this one here and will examine the effects of certain shocks.

But first, let’s lay out our assumptions:

Our first of which is that the aggregate supply curve is vertical. I.e. prices are completely flexible. It’s important to note that this doesn’t mean that output is constant at the same level. Quite the opposite is true actually. Output can vary as a result of technical progress, capital accumulation and changes in the size of the labour force. It can be said that output is fixed but not constant.

Our second assumption is about the demand for money. Following the Cambridge Quantity Equation, we assume that real money balances, M/P, depend only on real income, Y where K is just a parameter which implies a relation of proportionality. At equilibrium, the supply of money is equal to the demand for money. Therefore, for a given Money Stock we can see that money supply and demand are equal to the nominal level of income, I, multiplied by a parameter. We can also see that nominal income is just the real level of income multiplied by the price level.

On the Aggregate Demand curve, the money stock is constant so nominal income is the same everywhere on the curve. This means that P0 times Y0 at this point is the same as P1 time Y1 at this point where the price level is lower but real income is higher.

Our last assumption is that PPP always holds such that when expressed in a common currency, domestic and foreign price levels are the same. This is denoted by the equation P = eP\* where P and P\* are the domestic and foreign price levels, respectively and e is the nominal exchange rate expressed as the domestic price of foreign currency. If P rises above eP\*, then the domestic economy becomes under competitive as the domestic price level is greater than the foreign price level. The reverse is true if the domestic price level falls below eP\*.

Now we’ve got the assumptions out of the way, we can start to define our equilibrium. In the closed economy, the price level is determined by AD and AS but in the open economy PPP has to hold such that the nominal exchange rate is the ratio of the money stock to the demand measured at the foreign price level. From this, we obtain some predictions of the model in a floating exchange rate regime. First, if the money supply increases, e increases which is a depreciation. Also, if either real income or P\* (or both!) increase, e decreases, which is an appreciation.

Next, we’ll move on to the effects of some exogenous changes starting with a money supply increase. If the money stock increases to MS1, whilst all other exogenous variables remain the same, it creates an excess supply of money at the old price level, P0. This excess supply of money implies an excess demand for goods and services. Since we’re assuming that output is fixed, the excess demand for goods drives prices upwards which results in an increase in the domestic price level. This, in turn, results in the domestic economy becoming under competitive so, for PPP to hold, the currency must depreciate. This depreciation is proportional to the increase in P. The end result tells us that in the monetary model, an increase in the money supply leads to a depreciation of the domestic currency.

Next, we’ll analyse the effects of an increase in the level of income from y0 to y1 whilst all other exogenous variables remain the same. At P0, there is an excess demand for money which implies an excess supply of goods and services. This leads to a fall in the domestic price level and, therefore, the domestic economy becomes more competitive. An appreciation of the currency is required to ensure that PPP holds. From this, we can infer that in the monetary model, an increase in real income leads to an appreciation of the domestic currency.

Our final case to examine under flexible exchange rates is an increase in P\*, the foreign price level. An increase in P\* to P\*1 will see an increase in the slope of the PPP curve. At the original nominal exchange rate, the domestic economy becomes overcompetitive so the domestic currency must appreciate. This tells us that the monetary model predicts that a rise in the foreign price level leads to an appreciation of the domestic currency and no other changes in the domestic economy.

Let’s now examine the effects of some shocks under a fixed exchange rate regime where the central bank buys and sells domestic currency to fix the nominal exchange rate. Money supply is now given by the sum of foreign exchange reserves and domestic credit, both of which are controlled by the central bank.

If we assume an excess supply of domestic currency, under floating exchange rates this wouldn’t be a problem – the domestic currency would just depreciate. But, under fixed exchange rates, the CB will buy the excess supply of domestic currency using its foreign exchange reserves, which decrease as a result of their intervention.

The Fixed Exchange rate regime sees an interesting equilibrium where, given that PPP holds, the demand for money can be written like this: (kep\*y). As we can see, there is nothing that the central bank can do to stimulate money demand – it can only influence supply which we know is equal to domestic credit plus the central bank’s foreign exchanges reserves. When we equate demand and supply we get this rather confusing looking equation which is really just a rearrangement of what we have just derived which says that Forex reserves are maintained at a level such that they are always equal to the gap between money demand and the supply generated by the local banking system, or domestic credit. The key takeaways from this though are that if domestic credit increases forex reserves decrease. Also, if the foreign price level increases forex reserve must increase and finally, if real income increases, forex reserves must also increase.

You should use the necessary graphs to help you to analyse the following 2 cases. I’ll go through what you should find now anyway and you can check that you derived the same mechanism.

First, what are the effects of an increase in the foreign price level under fixed exchange rates? Well, the slope of the PPP line will increase and so, for a given Price Level the domestic country becomes more competitive. This will result in an excess of demand which In turn will generate a balance of payments surplus. Foreign exchange reserves increase so the money supply increases, too which will increase the domestic price level to its PPP level. It’s important to note that an implication of this is that a country which pegs its exchange rate has no choice but to accept the world price level. It’s as though it imports inflation from the rest of the world. In other words, there can be no independent monetary policy and its price level and inflation rate will match the rest of the world.

The second case is that of a devaluation of the fixed exchange rate. At the previous price level, the country becomes more competitive and this, as before, generates excess demand which of course evokes a BoP surplus. FX reserves increase and so the money supply increases, too which leads to a rise in the price level to its PPP level. In practice, the full effects of the devaluation on the balance of payments may be delayed as illustrated by the J-curve effect. This effect depends on the short run elasticities for imports and exports.