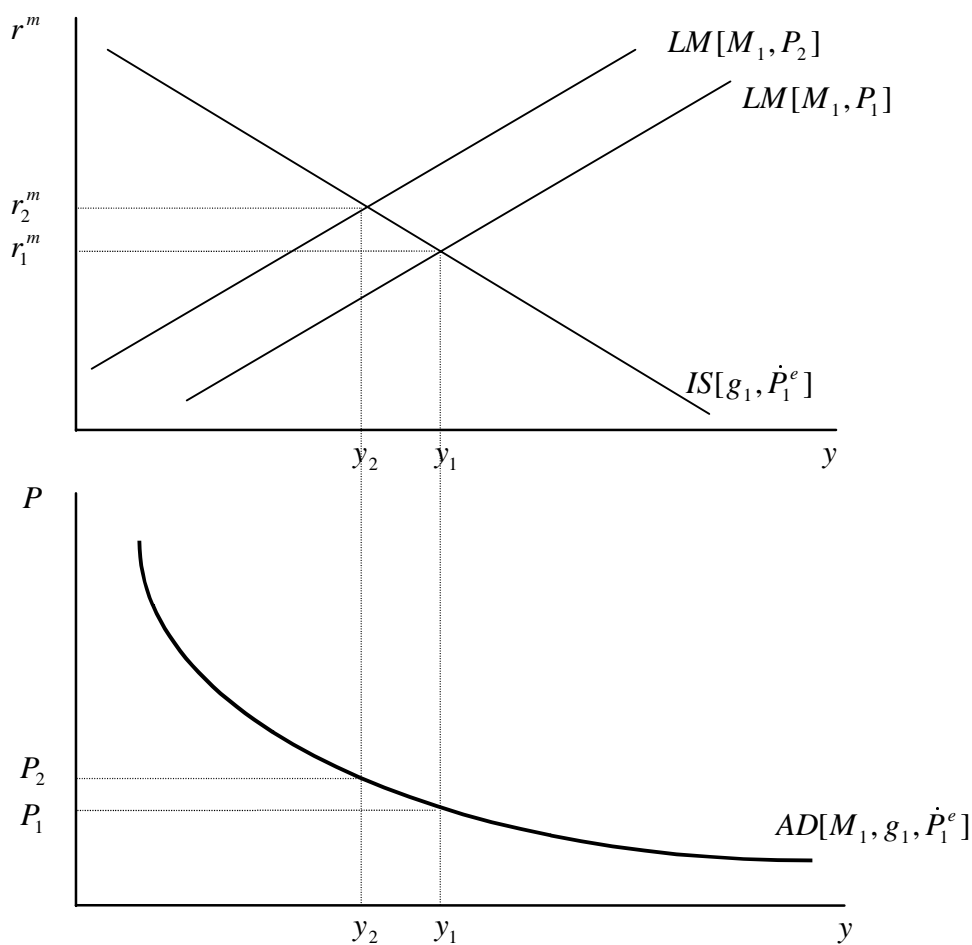


## *Macroeconomics: BSc Year One*

### **Equilibrium in the ISLM Model**

Any economy has an equilibrium level of aggregate demand, affected by  $y$ ,  $\dot{P}^e$ ,  $M$  and  $P$  (that is, the levels of income, expected inflation, money supply and prices). We therefore need to know the variables  $b$ ,  $h$ ,  $l$  and  $k$  (as set out in previous notes) to fully understand how sensitive changes in these variables will be to the economy.

The aggregate demand in an economy can be found by varying the price level in the LM curve, and looking at the intersection with the IS curve:



From this we can see that as the level of prices falls, the total desired spending rises. We may explain this thus. We start in equilibrium, so the money supply equals the money demand. If the price rises, the demand for money is higher, and so therefore there is excess demand in the money market. People will sell bonds to get money to spend, and so the price of bonds will

### Equilibrium in the ISLM Model

fall, increasing the rate of interest<sup>1</sup>. The subsequent fall in investment implies a fall in aggregate demand.

#### Changes in the 'Constants' for Aggregate Demand

From our equations for the interest rate and for the IS curve previously outlined, we may derive:

$$y^d = \frac{a + I_0 + \bar{g} + h\bar{P}^e}{1 - b + \frac{hk}{l}} + \frac{\bar{M}}{P} \frac{h}{(1 - b)l + hk}$$

or

$$r^m = \frac{k(a + I_0 + \bar{g}) + kh\bar{P}^e - (1 - b)\bar{M}/P}{(1 - b)l + hk}$$

This is the AD (aggregate demand) curve. From these equations, we can look at what will happen if the exogenous variables were to change.

#### Changes in Government Expenditure

Partially differentiating our equations for the AD curve, we obtain:

$$\frac{\partial y^d}{\partial \bar{g}} = \frac{1}{1 - b + \frac{hk}{l}},$$

which is necessarily greater than zero. We can therefore deduce that if government expenditure ( $g$ ) increases, the AD curve will shift to the right.

Intuitively, we can explain that an increase in government spending will increase aggregate demand directly, but there will also be subsequent effects because of the increases in income (such as increases in consumption).

#### Increases in Money Supply

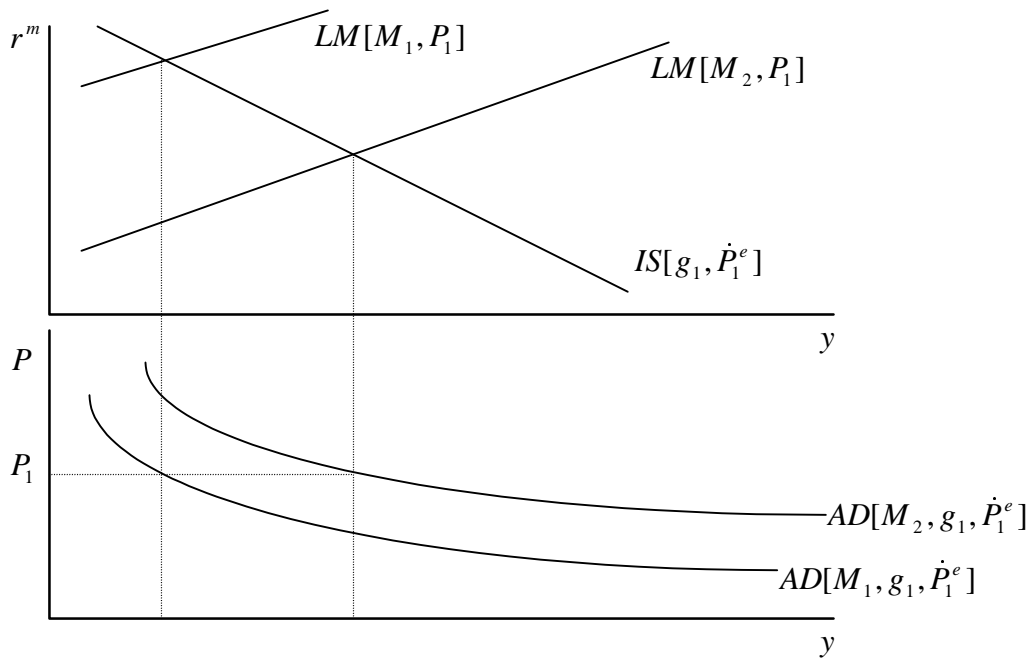
Similarly to changes in government expenditure, the partial derivative with respect to  $M$ :

$$\frac{\partial y^d}{\partial \bar{M}} = \frac{h/P}{(1 - b)l + hk}$$

will always be positive, and so an increase in money supply will lead to a shift of the AD curve to the right. This can be shown on a diagram:

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<sup>1</sup> A financial asset is a legal claim to be paid a specific amount of money at a date (or dates) in the future. If the price of a financial asset falls, the interest rate will rise, as the relative value of the bond payment rises compared to the price paid for it.



### Variation of Coefficients

Imagine  $h$  is low; that is investment expenditure does not vary much with the rate of interest. Taking this to the limit, with  $h = 0$ , we get the AD equation:

$$y^d = \frac{a + I_0 + \bar{g}}{1 - b}.$$

This implies that changes in price have no effect on aggregate demand, and we get a vertical line aggregate demand curve. This implies that fiscal policy is very important in determining how the economy will function.

A small value for  $l$ , however, will imply that the demand for money will not be very sensitive to changes in interest rates. Monetary policy will therefore be the most effective way of affecting aggregate demand in these economies.