

Internal and External Balance

Internal and External Balance under Fixed Exchange Rate System

Internal Equilibrium

An internal equilibrium is achieved at the full employment and stable prices. If there is an inflationary pressure or unemployment, the economy will require further adjustment in prices or move toward the full employment output level..

(i) product market:

$$y(1 - b + m) = a + i(r) + g + x ; b = \text{Marginal Propensity to Consume}, m = \text{Marginal Propensity to Import}.$$

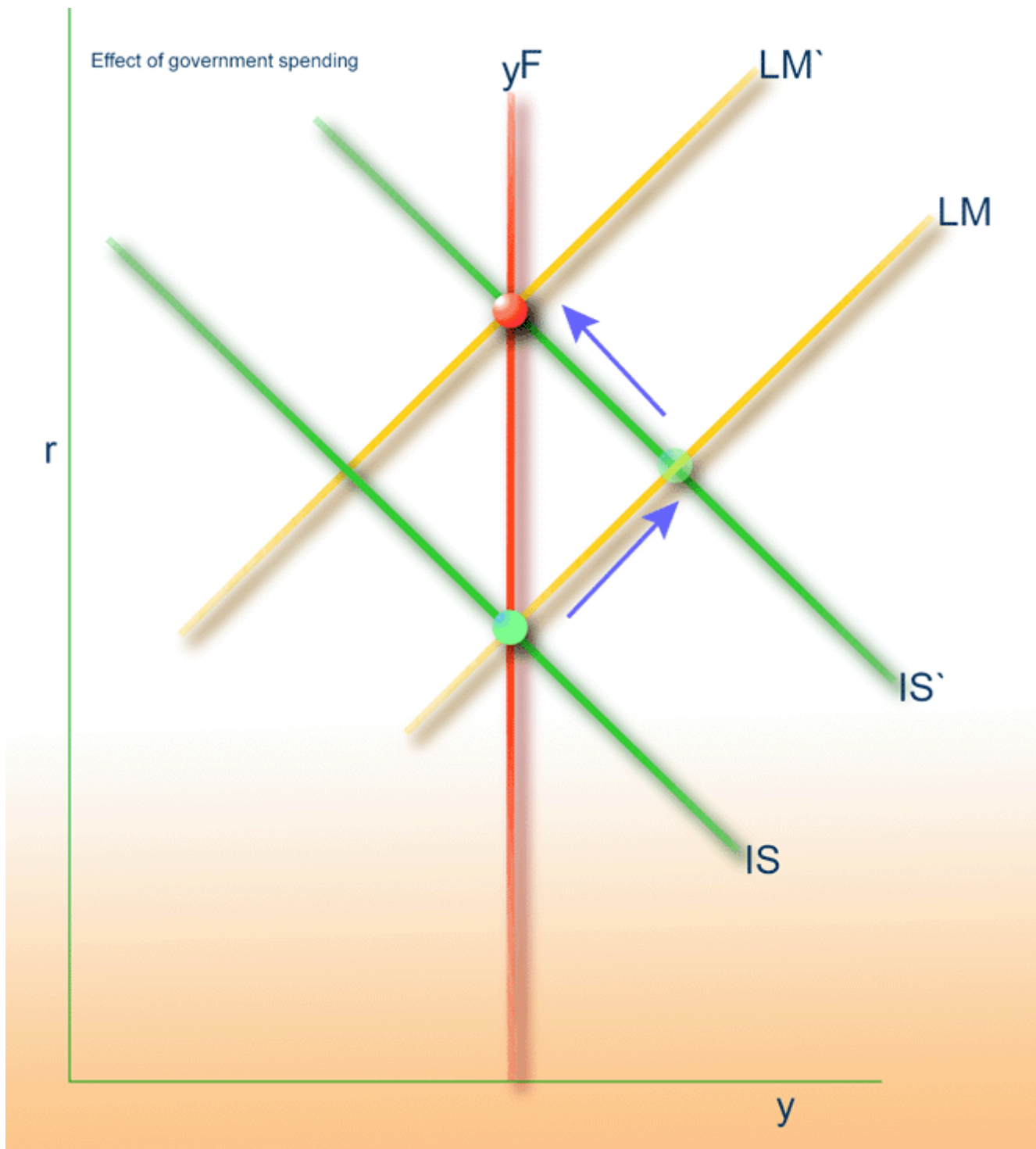
(ii) money market:

$$m^s = l(r) + ky; l(r) = \text{liquidity balance}, ky = \text{transactions balance } (k > 0, \text{ not capital-labor ratio})..$$

An internal equilibrium is attained when the output is at the full employment level. An increase in g shifts the IS curve to the right, thereby raising the interest rate. Moreover, because the economy is fully employed, real output cannot increase beyond y^F . Thus, an increase in g increases inflationary pressure, thereby raising domestic price, which shifts the LM curve to the left. Thus, along the IE curve, government spending and interest rate are directly related. That is, in order to maintain the full employment rate of output, any increase in government spending must be accompanied by a rise in the interest rate.

What happens to the money supply? It does not stay put. The aggregate output demand (at the intersection of IS' and LM) exceeds the full employment output y^F . Accordingly, price level rises, which reduces the real money supply (M^S/P), thereby shifting the LM curve to the left to LM' and raising the domestic interest rate. (See Figure 5a.)

Figure 13. Internal Equilibrium and government expenditure



External Equilibrium

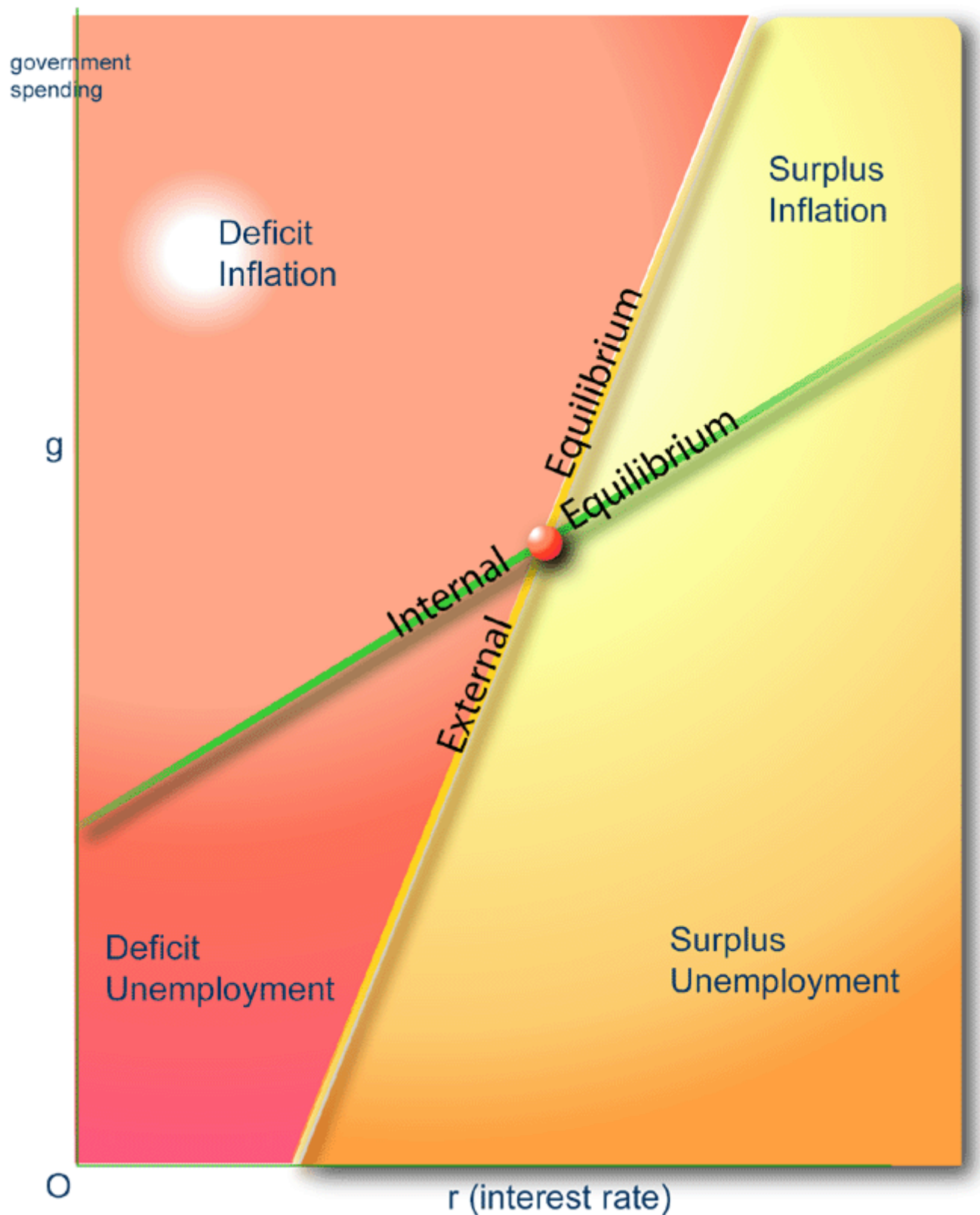
$$BP = x(p^-, e^+, y^{*+}) - m(p^+, e^-, y^+) + F(r^+)$$

An external equilibrium refers to a balance of payments equilibrium of an open economy. Note that when an open economy achieves an external equilibrium, output y is not necessarily at the full employment rate. As g increases, output y also increases (through the multiplier effect), which in turn creates a current account deficit. To offset this, under the fixed exchange rate system, the capital account has to improve, which can be realized by an increase in the interest rate. (If the exchange rates are allowed to move freely, the market will find the equilibrium value of e).

Thus, an external equilibrium requires a positive relationship between government expenditure and interest rate.

It is generally believed that EE curve is steeper than the IE curve in the (g,r) space.

Figure 14.



Along the EE curve, the economy has achieved the balance of payments equilibrium, i.e., the official reserve transactions balance is zero and there is no need for the government to do anything to delay a change in the exchange rate. Above the EE curve, as the government spending increases, trade deficits and hence balance of payments deficits arise and the government has to borrow money from foreign central banks or use up its international reserve asset to defend the exchange rates.

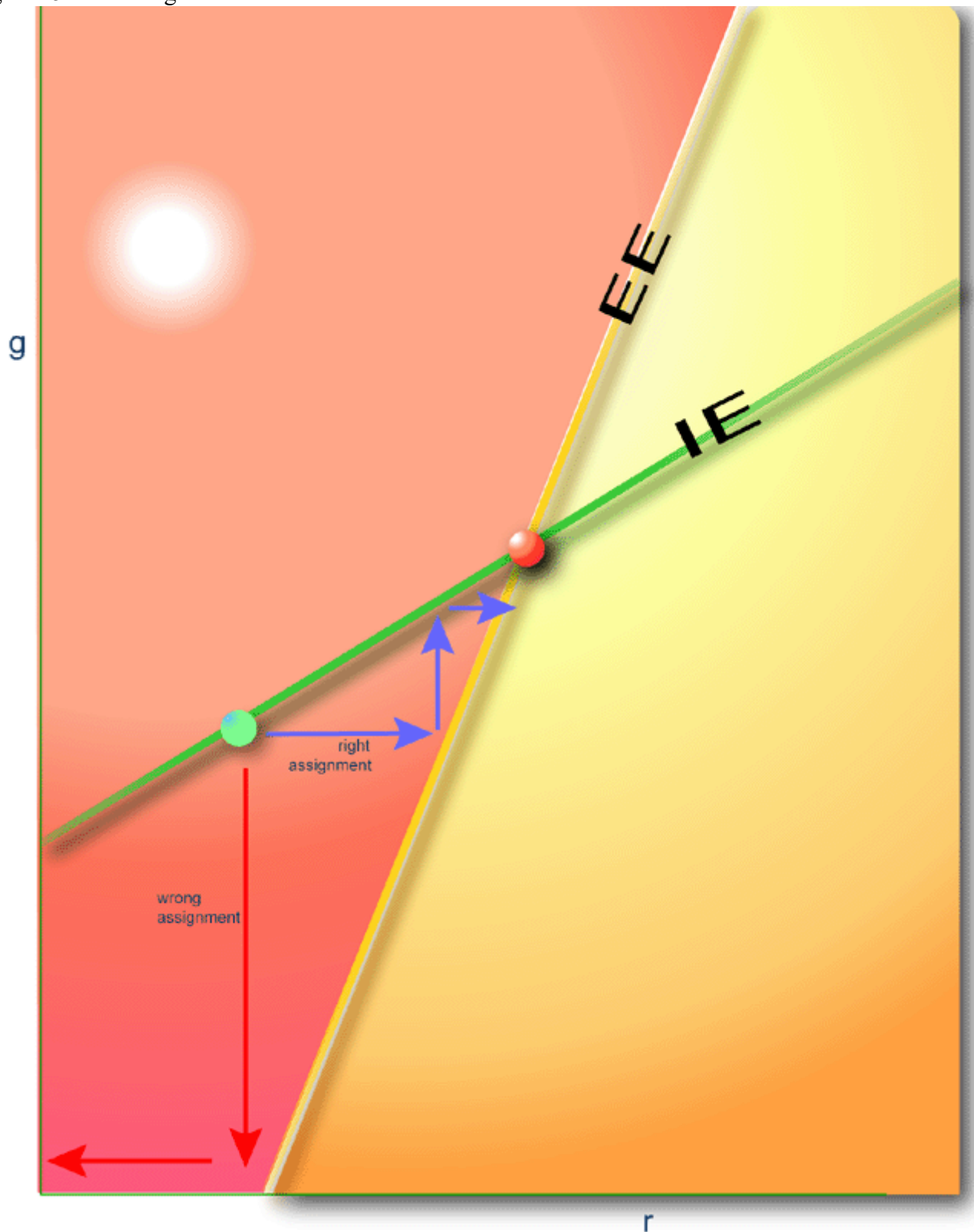
Assignment Problem

Apply fiscal policy to attain IE
apply monetary policy to attain EE

If the assignments are directed this way, monetary and fiscal agents will attain both IE and EE.
Otherwise, they may move away from the simultaneous equilibrium

Since the 1990s, Federal Reserve Bank sets the interest rate in order to achieve domestic equilibrium. The US has no exchange rate policy and allows the exchange rates to respond to changes in the market. The latter policy, however, does not guarantee balance of payments equilibrium, due to exchange rate manipulations in some countries (e.g., China, Japan).

Figure 15. The Assignment Problem



It appears especially since the 1990s both the government and the Fed are using fiscal policy and monetary policy (interest rate fixing policy) to address domestic disequilibrium and let the exchange rates find their equilibrium rates, thereby getting rid of the assignment problem. In other words, no monetary or fiscal policy instruments seem to be used to address the disequilibrium in US balance of payments. The assignment problem is important to countries that frequently intervene in the foreign exchange markets.

An Alternative Method

The US does not have exchange rate policy, but some countries do and purposely manipulates exchange rates by changing the pegs.

Fiscal policy: g

Exchange rate policy: e

(i) Internal Equilibrium

$$y = a + by + i(r^-) + g + x(e) - m(e, y)$$

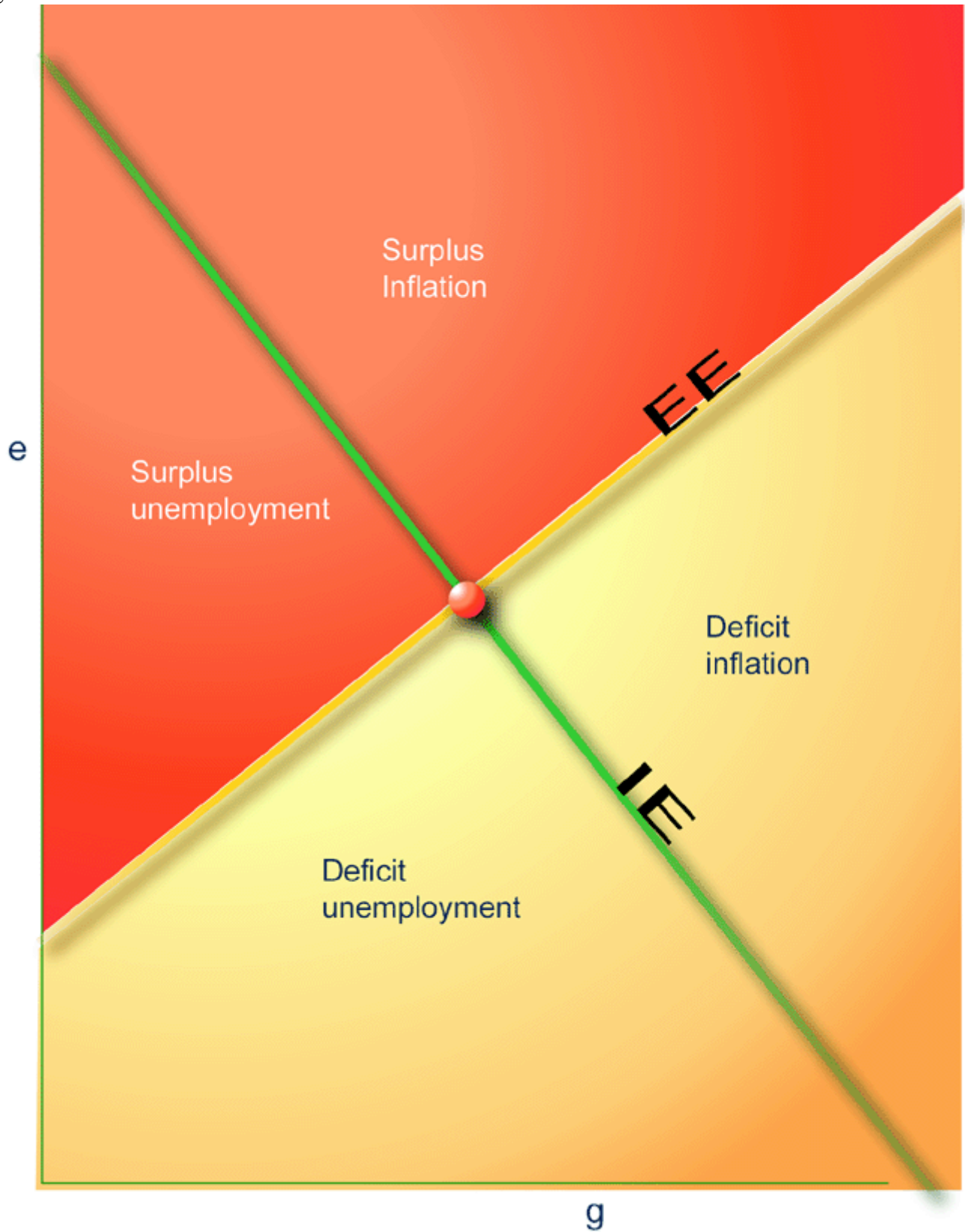
$$M^S/P = l(r) + k(y)$$

An increase in e , the price of foreign currency, requires a decrease in the government expenditure to attain an internal equilibrium. The improvement in the current account increases output (through the multiplier effect). To offset this change in y , government spending has to decrease. The IE curve is negatively sloped in the (e, g) space.

(ii) External Equilibrium

$BP = x(p, e, y^*) - m(p, e, y) + F(r)$. As e increases m decreases, and current account improves. To offset this, an increase in g is required. The EE curve is positively sloped in the (e, g) space.

Figure 16



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