

# From the Mundell-Fleming model to the long run.

Open Economy Macroeconomics

Dr hab. Gabriela Grotkowska  
Dr hab. Joanna Siwińska-Gorzelałak

Warsaw University, Faculty of Economic Studies

# Assumptions:

- Prices are fixed in the short run, and flexible in the long run
- In the long run, output is equal to its potential (full employment) value, in the short run it adjusts to demand

# The aggregate demand schedule

- The aggregate demand schedule consists of real income–price level combinations that achieve equality of real income and aggregate desired expenditures while at the same time maintaining equilibrium in the market for real money balances.
- Consequently, every point along an aggregate demand schedule corresponds to a point of *IS–LM–BP* equilibrium.

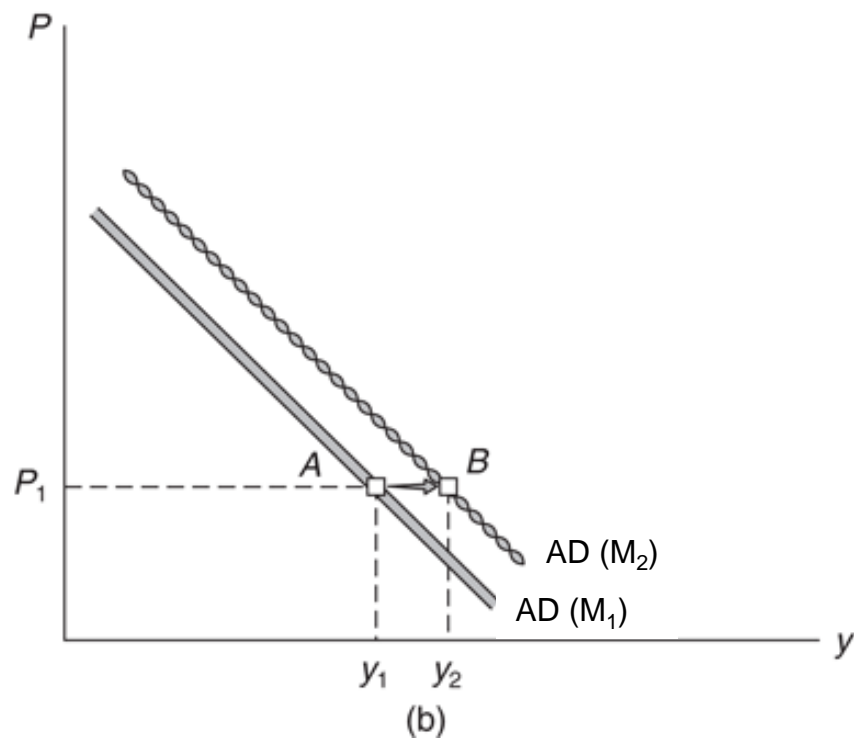
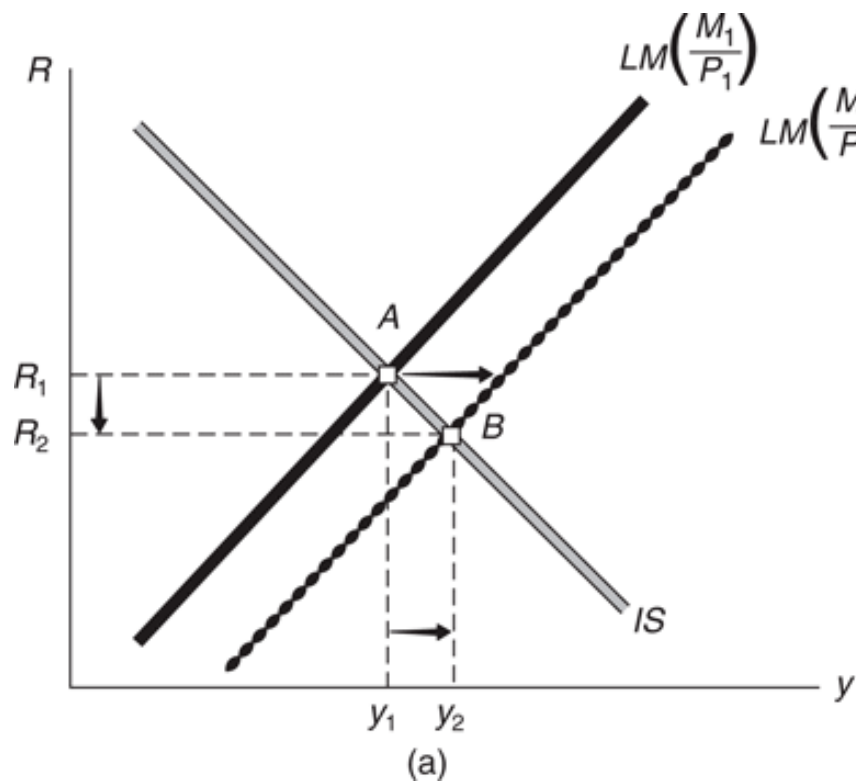
# Factors that Determine the Position of the Aggregate Demand Schedule in an Open Economy

- The degree of capital mobility conditions the extent to which monetary and fiscal policy actions can affect equilibrium real income.
- In addition, the real income effects of monetary and fiscal policies depend on whether a nation adopts fixed or floating exchange rates.
- It follows that the extent to which aggregate demand responds to monetary or fiscal policy actions in an open economy depends on the degree of capital mobility and the system of exchange rates that is in place.

# Expansionary Monetary & Fiscal Policy and Aggregate Demand in Closed Economy

- Consider a *closed economy* in which the issues of capital mobility and exchange rate-flexibility are irrelevant.
- In a closed economy, a rise in the nominal money stock (or an expansionary fiscal policy) causes an increase in aggregate demand, an increase in output and then – an increase in prices
- As prices increase, real interest rate changes crowd out the excess demand, and output returns to its potential level

# The Effect of an Increase in the Money Stock on Aggregate Demand in a Closed Economy

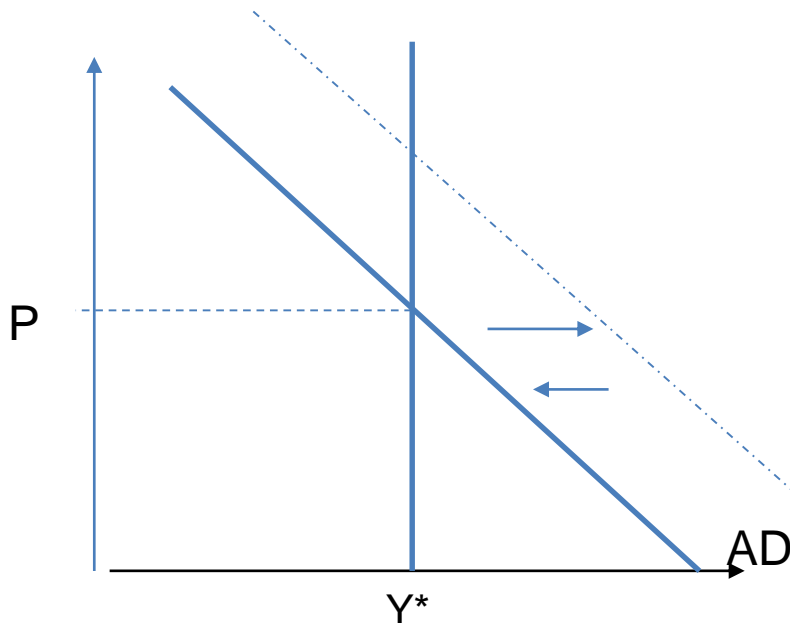


# Expansionary Monetary & Fiscal Policy and Aggregate Demand in Open Economy

- In open economy, the reaction of aggregate demand (and all subsequent changes) depend on whether a given policy is able to affect aggregate demand in the short run

# Monetary Policy and Aggregate Demand in an **Open Economy with a Fixed Exchange Rate**

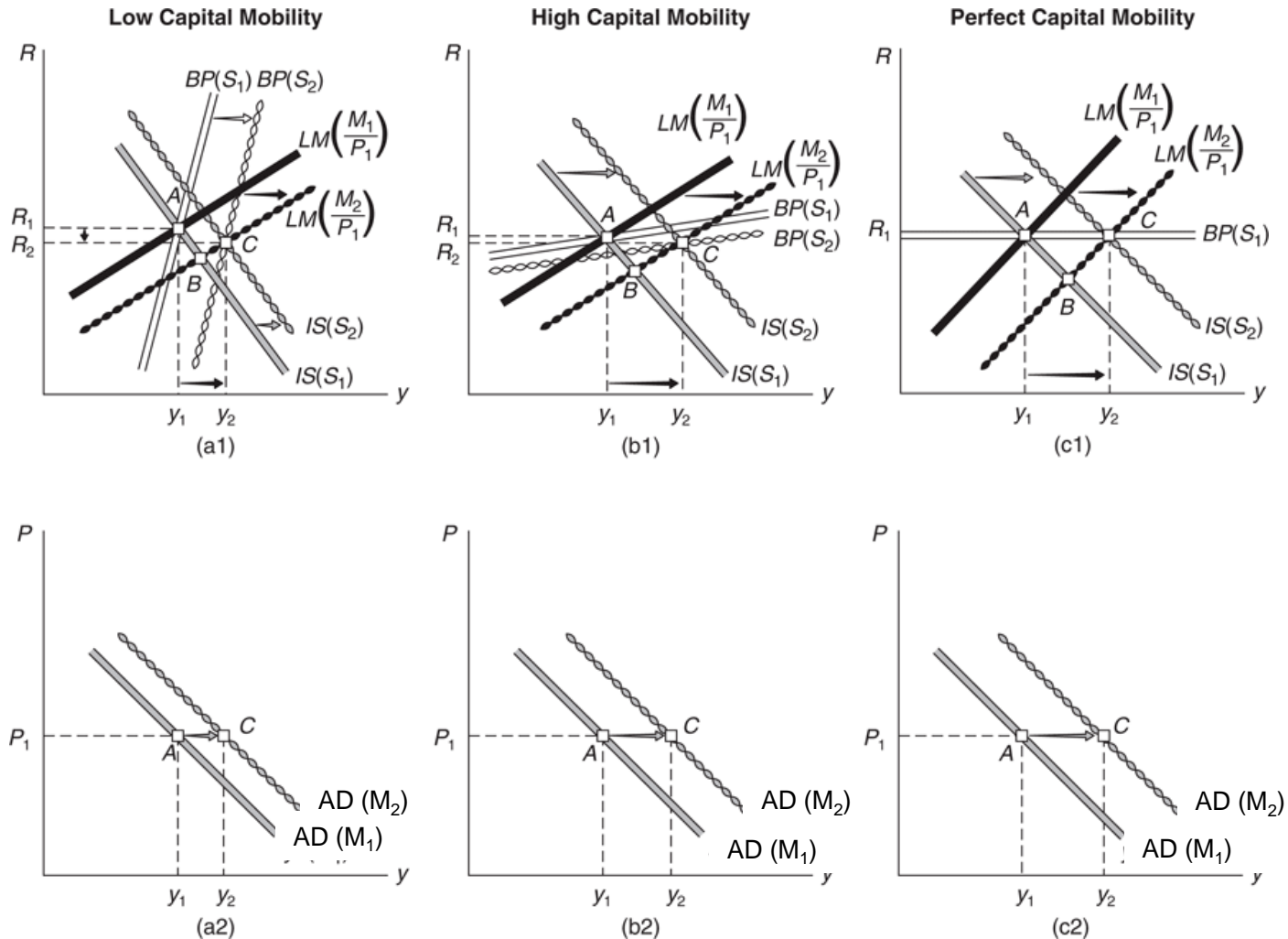
- If central bank foreign exchange interventions to maintain fixed exchange rates are unsterilized, then efforts to expand aggregate demand through increases in the money stock **ultimately are ineffective**.
- Output, prices and exchange rate remain constant (the only change is the change in foreign reserves of the Central Bank)



# Monetary Policy and Aggregate Demand in an **Open Economy** with a **Floating Exchange Rate**

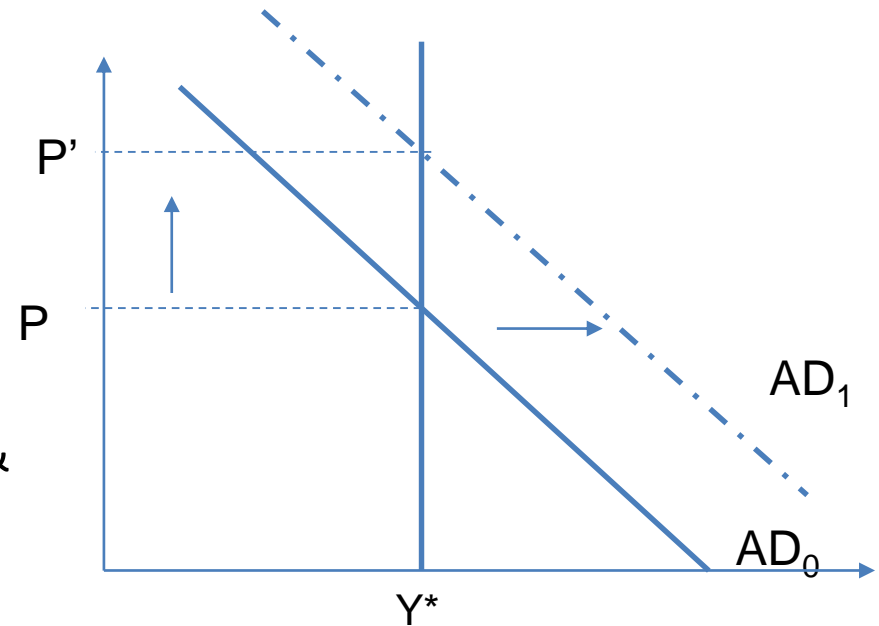
- In a system of floating exchange rates, an expansionary monetary policy action raises aggregate demand over the short run.
- The size of the effect on aggregate demand becomes greater as the degree of capital mobility increases (for a given increase in  $M$ ).
- **Thus, under floating exchange rates, greater capital mobility enhances the potential strength of monetary policy over the short run**
- Over the short run, exchange rate depreciates (real and nominal depreciation).

# The Effect of an Increase in the Money Stock on Aggregate Demand in an Open Economy with a Floating Exchange Rate



# Monetary Policy and Aggregate Demand in an Open Economy with a **Floating Exchange Rate**

- Over the long run, **prices increase**, output comes back to its equilibrium value.
- Due to increased prices, the long run value of nominal exchange rate is higher (domestic currency has depreciated; **but the real exchange rate has not changed** (recall the PPP & classical model))
- Note that this implies that as prices increase, there must be a real appreciation (initially we observe a big depreciation – nominal and reals, then the increase in prices implies an appreciation and at the end, the real exchange rate is unchanged)



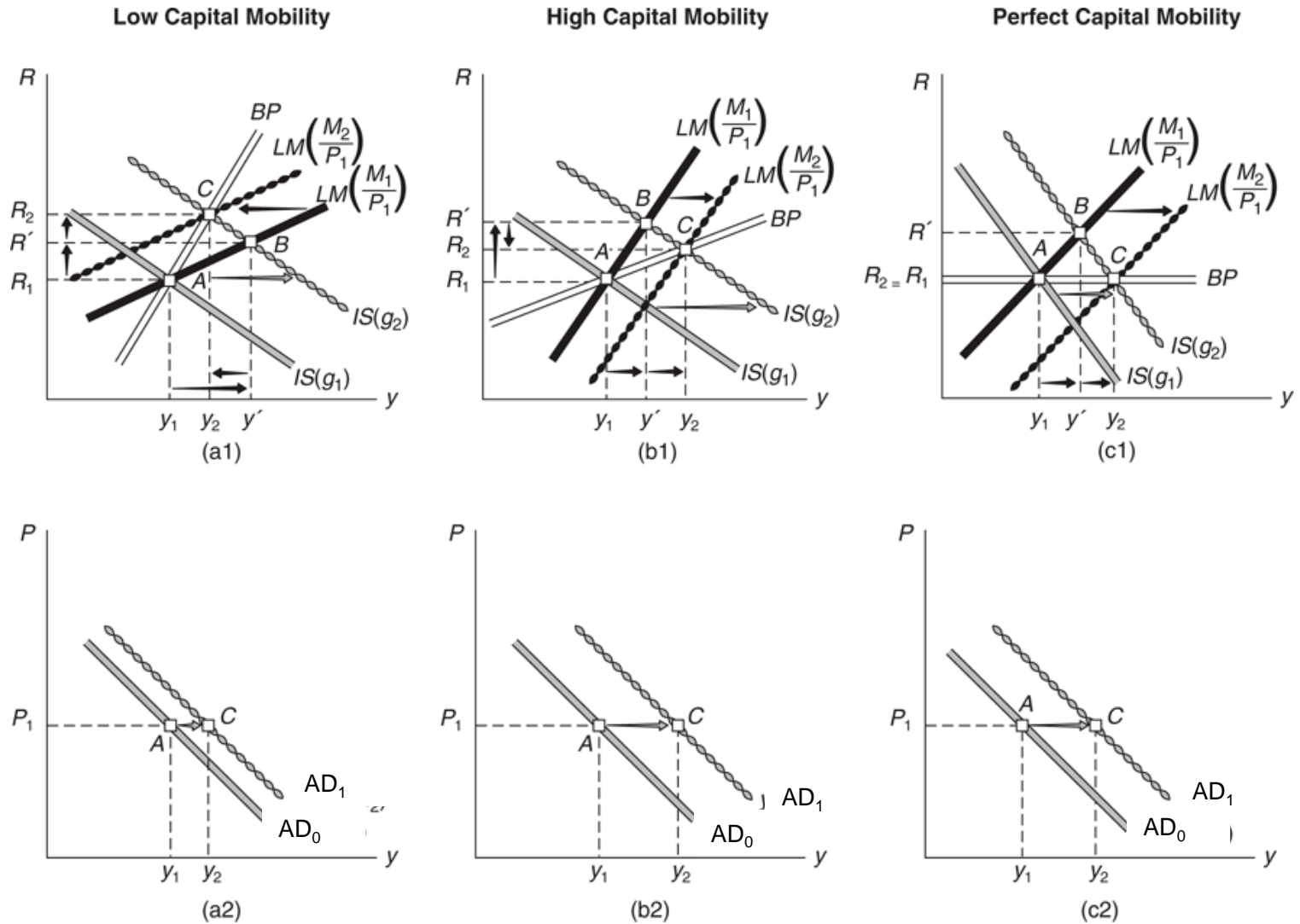
# Monetary expansion and exchange rates in the long run .

- Over the long run, monetary expansion under flexible exchange rates leads to an increase in prices and a constant output
- Hence, prices will increase and we know from PPP that the nominal exchange rate should depreciate proportionately over the long run. It also depreciates (devalues) over the short run.
- Note that the increase in  $P$  decreases the real money supply (and pushes LM back), hence some interesting medium-run dynamics will appear

# Fiscal Policy and Aggregate Demand in an Open Economy with a **Fixed Exchange Rate**

- In a system of fixed exchange rates, an expansionary fiscal policy action unambiguously raises aggregate demand.
- The size of the effect on aggregate demand becomes greater as the degree of capital mobility increases.
- Thus, under fixed exchange rates, greater capital mobility enhances the potential strength of fiscal policy **in the short-run**.
- **Over the long run**, prices start to rise, leading to real appreciation (recall the classical model!), and output returns to long run value.
- **Full crowding out of net exports by fiscal policy changes.**

# The Effect of an Increase in Government Spending on Aggregate Demand in an Open Economy with a Fixed Exchange Rate

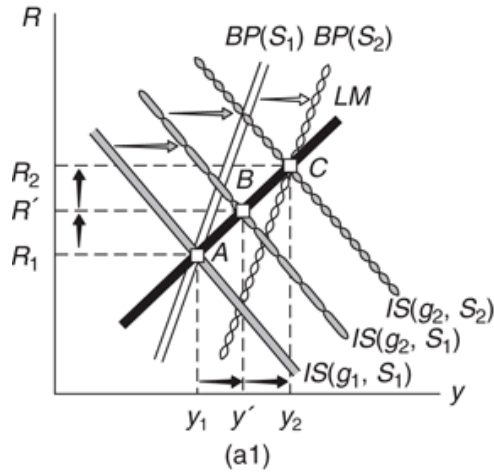


# Fiscal Policy and Aggregate Demand in an Open Economy with a **Floating Exchange Rate**

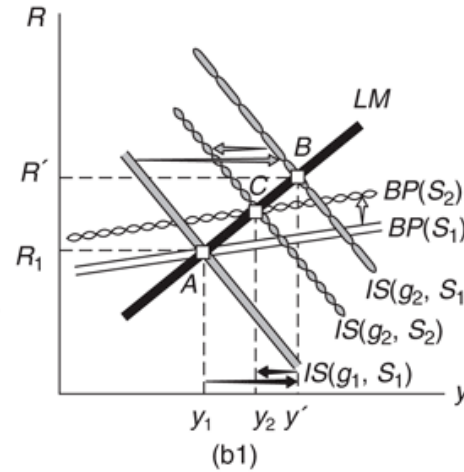
- Under floating exchange rates, the size of the effect of a given fiscal policy action on aggregate demand declines as the degree of capital mobility increases.
- Under perfect capital mobility, fiscal policy cannot influence the position of the aggregate demand schedule.
- **Adopting a system of floating exchange rates tends to mute the effects that fiscal policy actions can exert on aggregate demand.**
- Remember, that as a result of fiscal policy, we observe an exchange rate change over the short run (an appreciation with big and perfect capital mobility).
- Over the long run, the increase in prices and further real appreciation makes output return to long run value.

# The Effect of an Increase in Government Spending on Aggregate Demand in an Open Economy with a Floating Exchange Rate

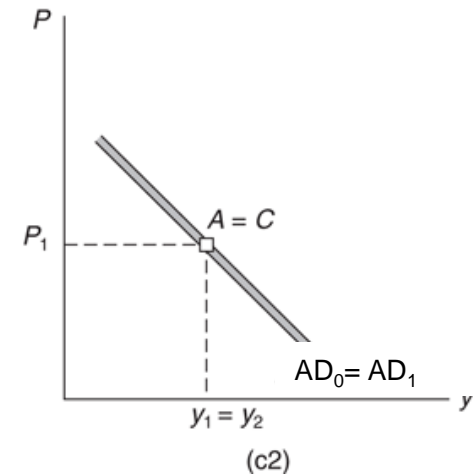
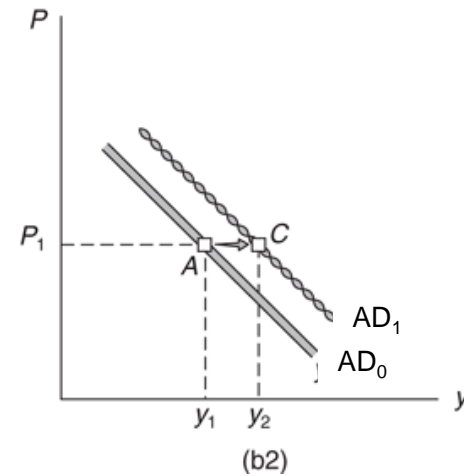
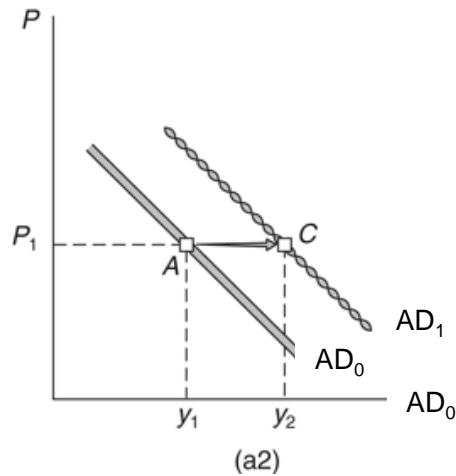
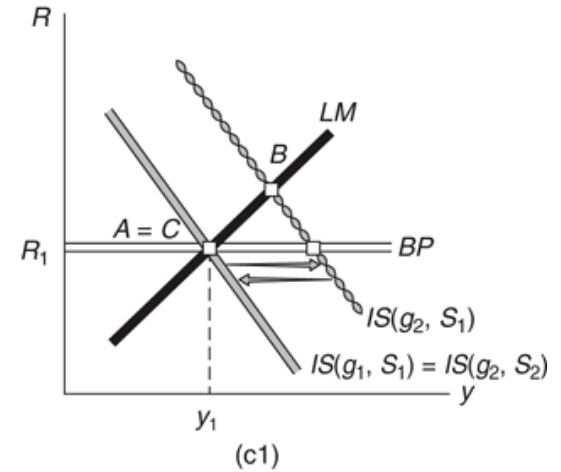
Low Capital Mobility



High Capital Mobility



Perfect Capital Mobility



# **What factors determine the extent to which fiscal policy actions can influence aggregate demand in an open economy?**

- The key factors influencing the aggregate demand effects of fiscal policy actions are capital mobility and the exchange rate system that is adopted.

# The Output and Price Level Effects of Economic Policies with Floating versus Fixed Exchange Rates

- An expansionary policy action **IF it yields an increase in aggregate demand** has the following key effects.
  - It produces inflation, because it pushes up the price level.
  - In the short and medium run, as real output increase; total employment increases in conjunction with the rise in real output.
  - Over the long run, prices rise further and output returns to its long run value.

# Summary (for big & perfect capital mobility)

	Fiscal expansion		Monetary expansion	
	Fixed	Floating	Fixed	Floating
Y (short run)	+	0 (or close to zero)	0	+
Y (long run)	0	0	0	0
P (long run)	+	0	0	+
E nominal	0	Appreciation	0	Big depreciation, then small appreciation
E real	Appreciation	Appreciation	0	0

# Conclusions

- In open economies, the consequences of macroeconomic policies might be different over the short run compared to closed economies (some policies lose the ability to influence output even in the short run)
- Over the long run, in both the closed and the open economies, policies cannot influence output
- In open economies, the economy returns to long run equilibrium also through real exchange rate changes.