

# MANAGING SHORT-RUN CRISIS IN AN OPEN ECONOMY

---

EE 462 Development Macroeconomics

Semester 1/2015

# Topics

- Equilibrium in A Small, Open Economy
- Australian Model
- Zones of Imbalance
- Applications of the Australian Model

# EQUILIBRIUM IN A SMALL, OPEN ECONOMY

---

# Introduction

- So far, we have seen some evidence of **'unbalanced' economies** due to unstable world market conditions (especially in the 1970s and 1980s).
  - Oil price shocks and rising inflation in the 1970s
  - Overvalued exchange rates prior to the Asian financial crisis
  - IMF's stabilization programs intended to correct these macroeconomic imbalances.
- This lecture is to explain a mechanism for analyzing the macroeconomic policies for LDCs to stabilize its economy and create a climate for faster economic growth.
- Two main policies for correcting macroeconomic imbalances: *reductions in expenditures* and adjustments in *relative prices*.

# Small and Open Economy

- Two features of developing countries:
  - **Open economy:** Trade and capital flows across borders in sufficient volume to influence the domestic economy, particularly prices and money supply.
  - **Small economy:** Price takers in world markets. Their exports and imports cannot influence world market prices.
- **Australian model:**
  - Exports and imports are *tradables*; all other goods and services are *nontradables*.

# Australian Model

- **Tradable goods and services:**

- Prices within the country are determined by supply and demand on world markets, and therefore are exogenous to the model.

$$P_t = eP_t^*$$

where  $e$  = nominal exchange rate (baht/\$),  $P_t^*$  = world market price

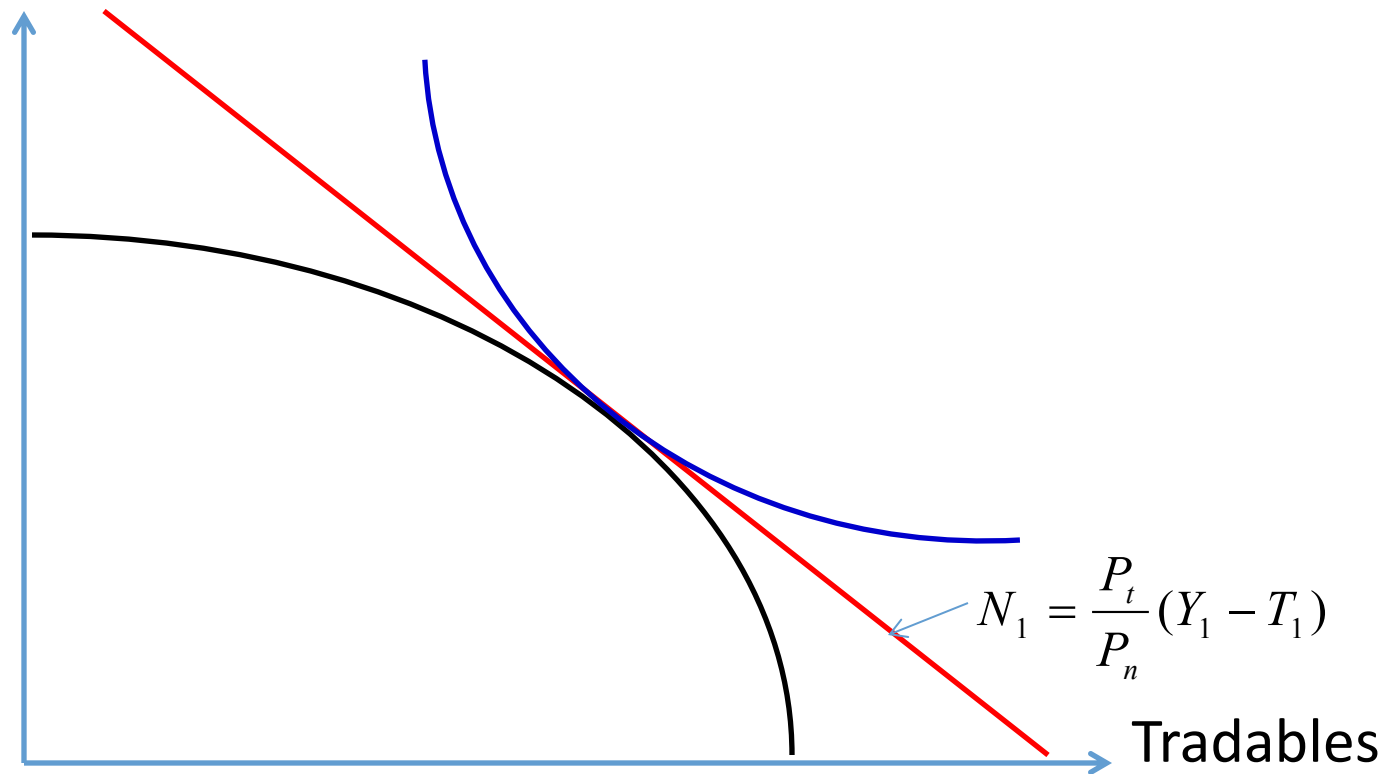
- How does  $e$  change as a country *devalue* (or *revalue*) its currency?

- **Nontradables:**

- Prices ( $P_n$ ) are determined by market forces within the country and therefore are endogenous to the model.

# Equilibrium in the Australian Model

Nontradables



# Internal and External Balance

- **Internal balance (IB):** equilibrium in the nontradeables markets
- **External balance (EB):** equilibrium in the tradeables markets
- **Real exchange rate (RER):**

$$P = P_t/P_n \quad \text{where } P_t = eP_t^*$$

- **Trade balance:**

$B_t$  = value of tradable supply – value of tradable demand

$$B_t = P_t(S_t - D_t)$$

- Recall:  $GDP = Y = C + I + X - M = A + X - M$  (A= Absorption).

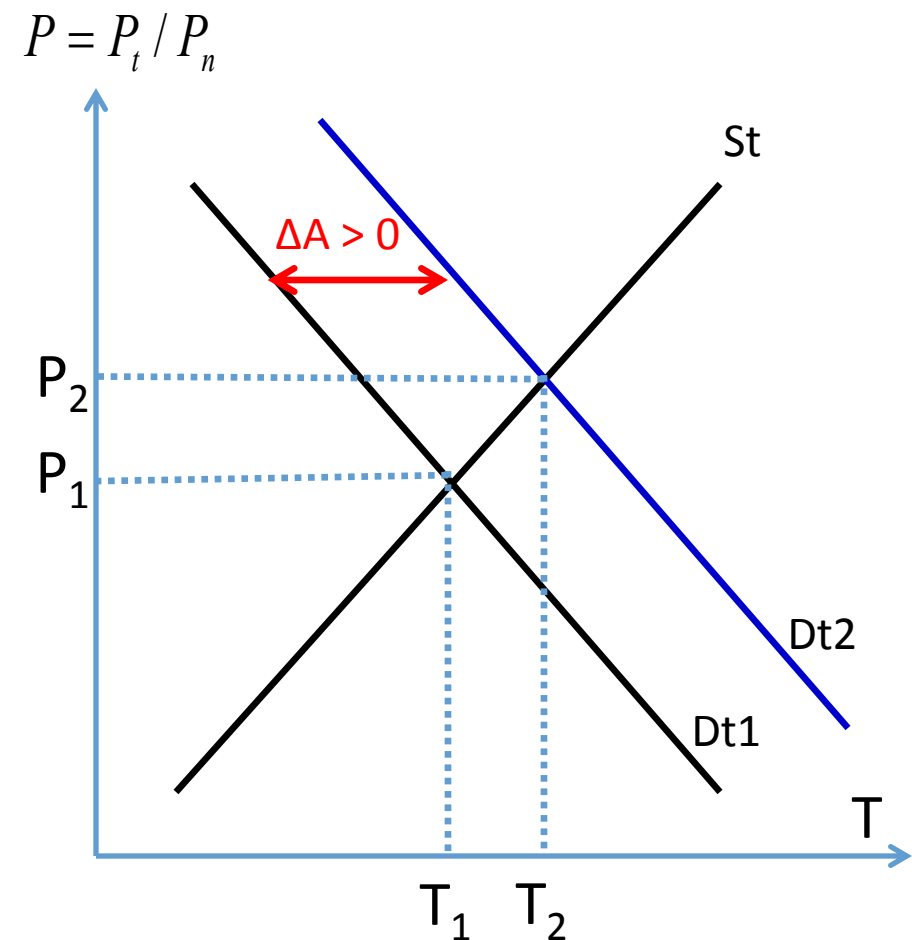
→  $A - GDP = M - X$  (equilibrium in Australian model).

# Results from Australian Model

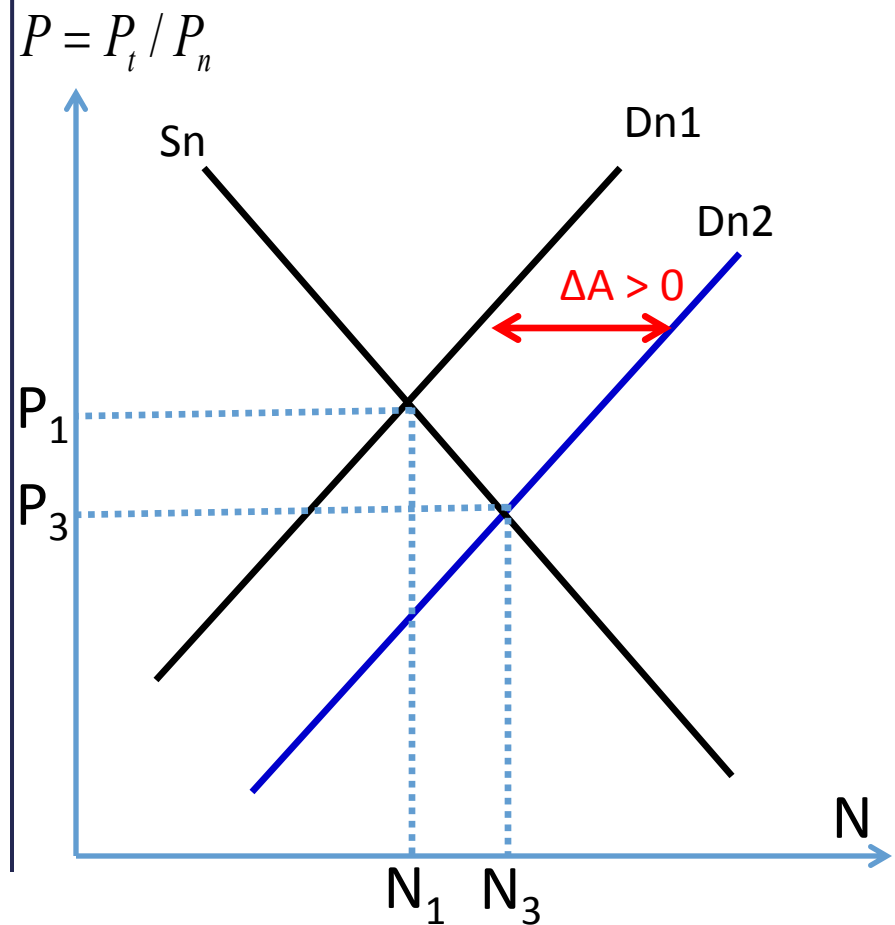
- *Macroeconomic equilibrium* is defined as a balance between supply and demand in two markets, tradables (**external balance**) and nontradables (**internal balance**).
- To achieve equilibrium in both markets, two conditions must be satisfied:
  - ✓ Expenditure (absorption) = income
  - ✓ The relative price of tradables (real exchange rate) must be at a level that equates demand and supply in both markets.
- Two remedies for an economy that is out of balance: **adjusting absorption**, the **nominal exchange rate**, or both.

# Tradables and Nontradables Markets

## Tradables Market

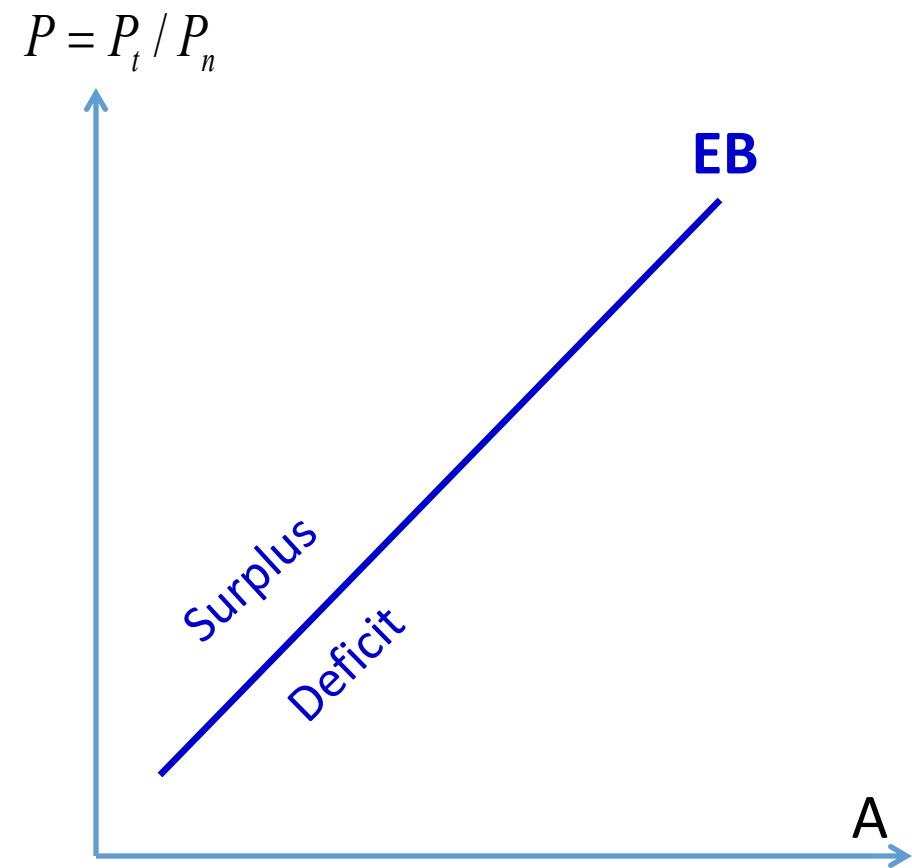


## Nontradables Market

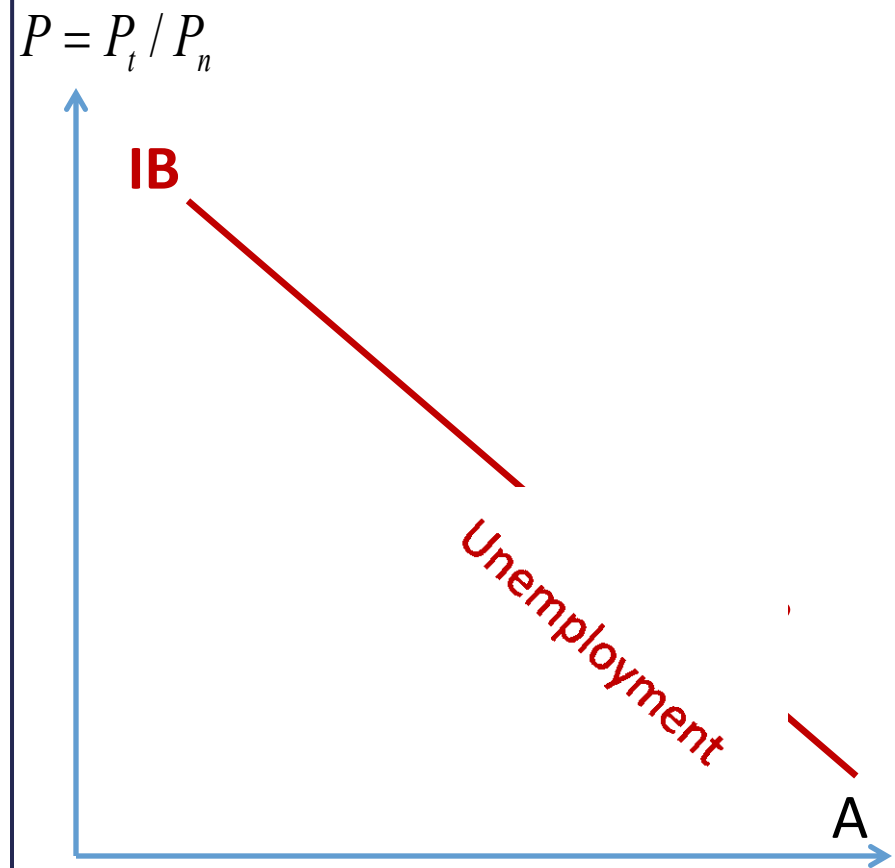


# The Phase Diagram

## External Balance



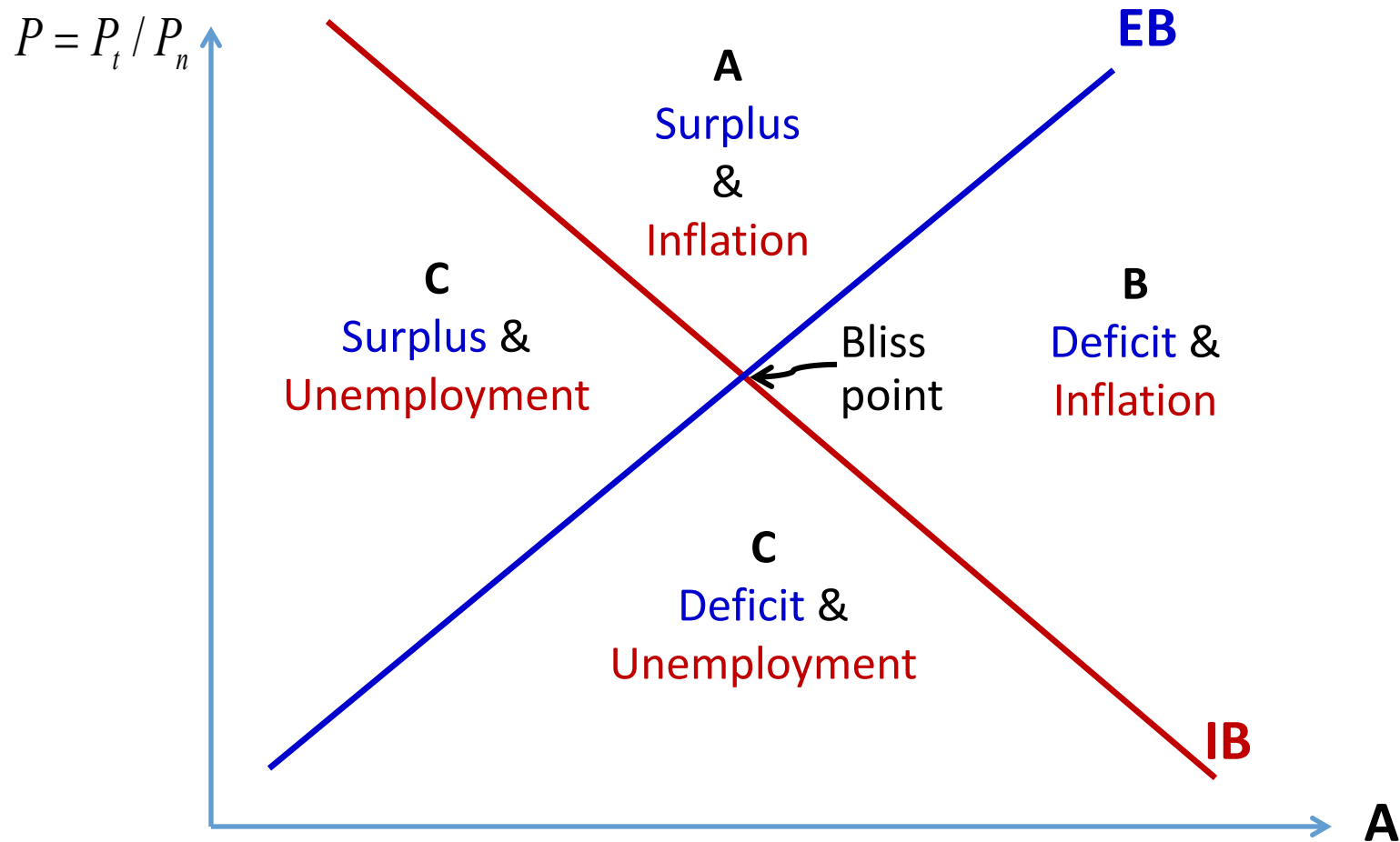
## Internal Balance



# Zones of Imbalance

- External imbalance:
  - **External surplus**:  $X > M$ , real exchange rate  $P >$  equilibrium  $P$ , production of tradables exceeds demand →  $P$  is more **depreciated** than required
  - **External deficit**:  $X < M$ , demand  $>$  supply of tradables →  $P$  is more **appreciated**
- Internal imbalance:
  - **Internal deficit**: excess demand for nontradables, absorption is too high → **Inflation**
  - **Internal surplus**: excess supply of nontradables, absorption is too low → **unemployment**

# Figure: Zones of Imbalance



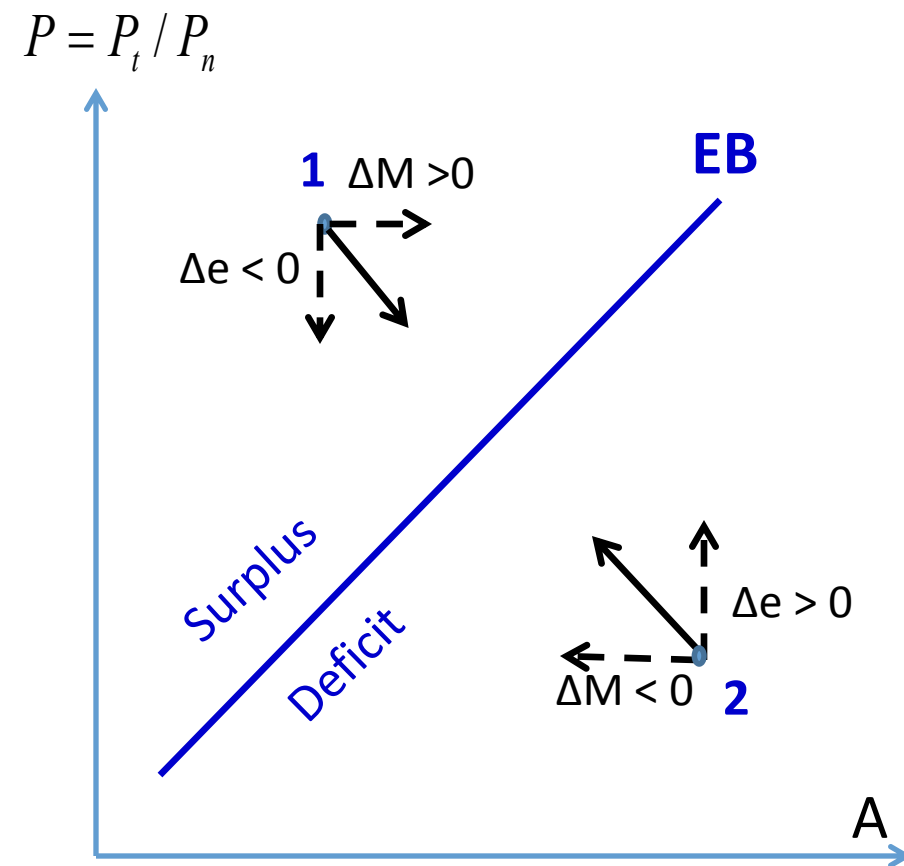
# Equilibrium vs. Disequilibrium

- Disequilibrium in the tradable markets
  - ➔ Either a balance of payments deficits (case of excess demand) or a balance of payments surplus (case of excess supply)
- Disequilibrium in the nontradable markets
  - ➔ Either a higher rate of inflation (case of excess demand) or higher unemployment (case of excess supply)
- Four combinations of disequilibrium:

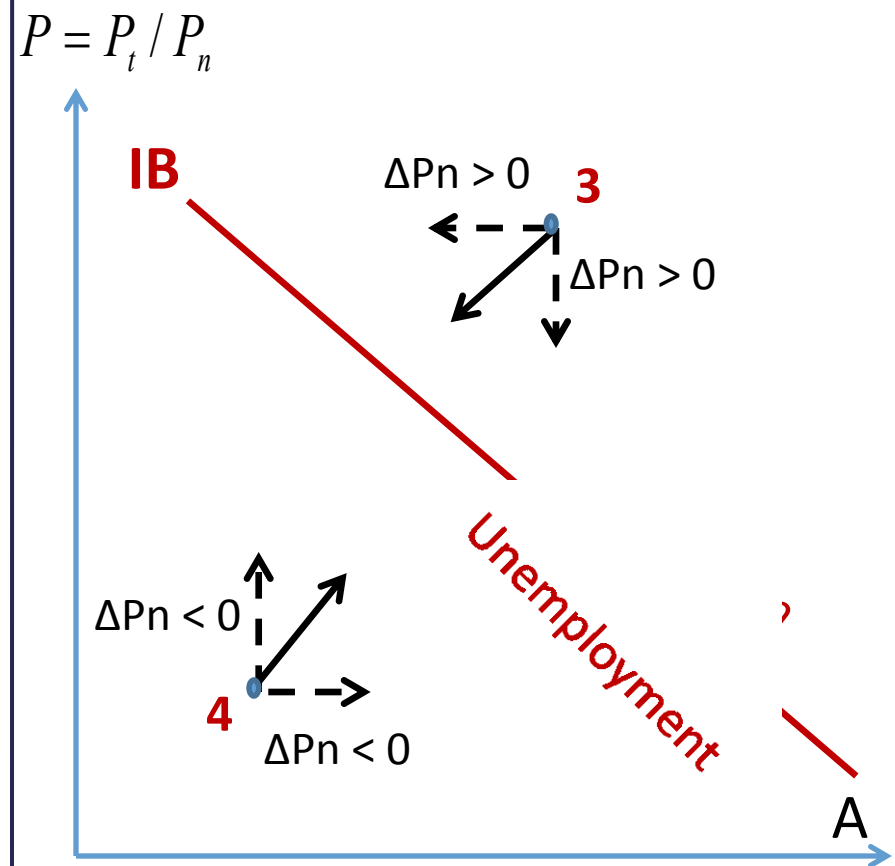
	Nontradables	
Tradables	A: BOP surplus + inflation	D: BOP surplus + unemployment
	B: BOP deficit + inflation	C: BOP deficit + unemployment

# Tendencies toward Equilibrium

## External Balance



## Internal Balance



# Tendencies toward Equilibrium: Self-Correcting Tendencies

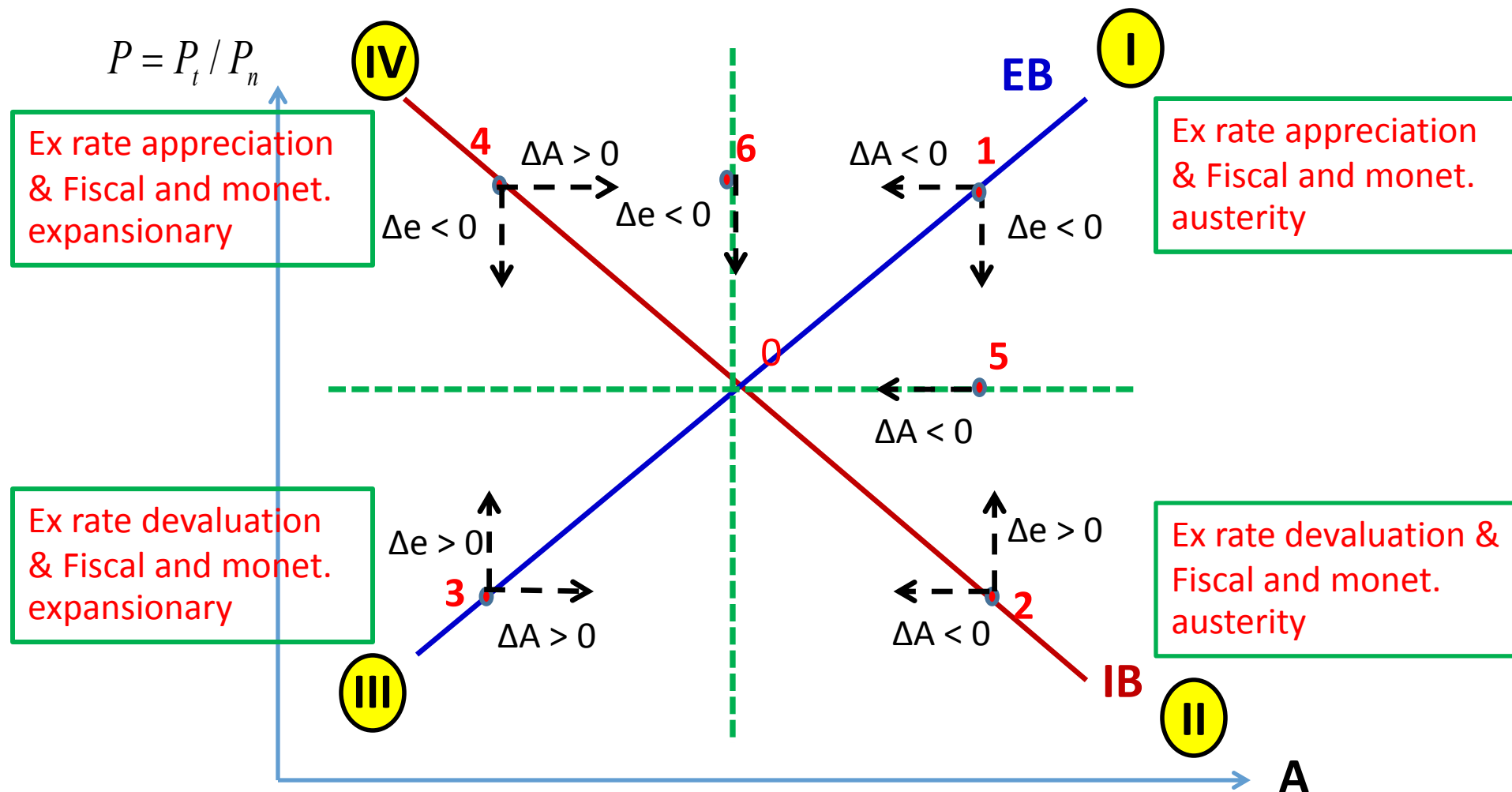
- External surplus (1)
  - International reserves increase  $\rightarrow M_s \uparrow \rightarrow r \downarrow \rightarrow A \uparrow$
  - Inflow of foreign exchange  $\rightarrow M_d \uparrow \rightarrow e \downarrow$  (appreciation)
- External deficit (2)
  - International reserves decrease  $\rightarrow M_s \downarrow \rightarrow r \uparrow \rightarrow A \downarrow$
  - Inflow of foreign exchange  $\rightarrow M_d \downarrow \rightarrow e \uparrow$  (depreciation)
- Internal deficit (3)
  - Inflation (rise in NT prices)  $\rightarrow \rightarrow e \downarrow$  (appreciation) &  $A \uparrow$
- Internal surplus (4)
  - Unemployment would be self-correcting if prices are able to fall as easily as they rise, but this is seldom the case.

# Stabilization Policies

- Because of *structural rigidities*, the economy often fails to work smoothly.
  - ✓ Exchange rate changes may take time to affect actual imports and exports.
  - ✓ Nontradables prices may rise quickly if there is excess demand, but the inflation may persist once it starts.
  - ✓ When there is unemployment, unions strike may prevent prices from falling.
- Governments need to take an active role to stabilize their economies. Three instruments: **exchange rate management**, **fiscal policy**, and **monetary policy**.
  - **Exchange rate management**. From fixed to floating rates.
  - **Fiscal policy and monetary policy** are two instruments to influence absorption level.

# Policy Zones

$$P = P_t / P_n$$



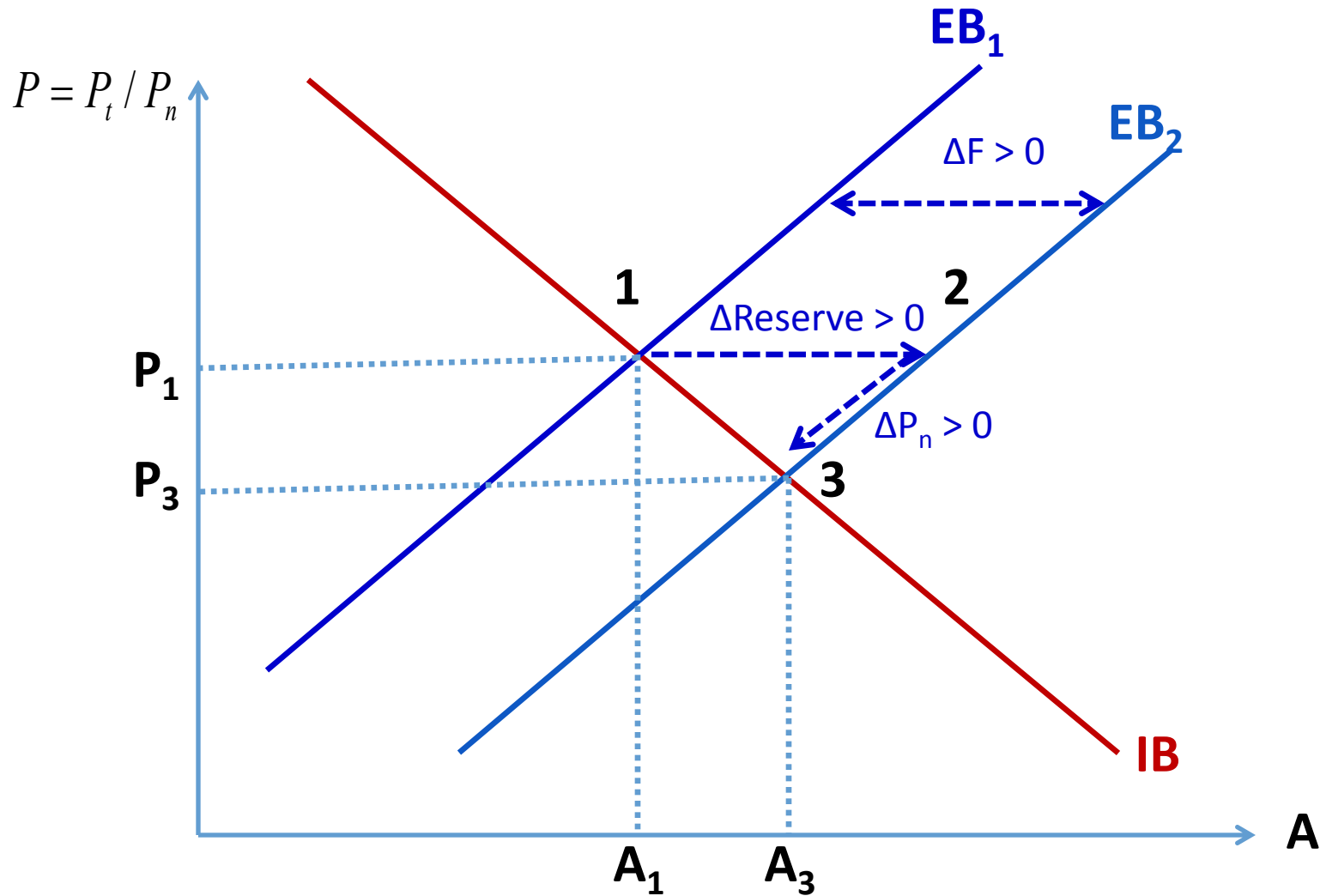
# APPLICATIONS OF THE AUSTRALIAN MODEL

---

# Dutch Disease

- A country receives higher export prices or a larger inflow of foreign capital may end up worse off than without the windfall.
- Windfall in foreign reserves occurs:
  - EB shifts rightward, the economy is in surplus, leads to more expenditure.
  - Absorption rises.
  - The economy moves off its internal balance into inflation.
- Effects of a rise in  $P_N$ :
  - *Reduction in real absorption* (partially corrects the initial rise in A)
  - *Real appreciation of exchange rate* (assuming official rate is fixed)

# Figure: Dutch Disease



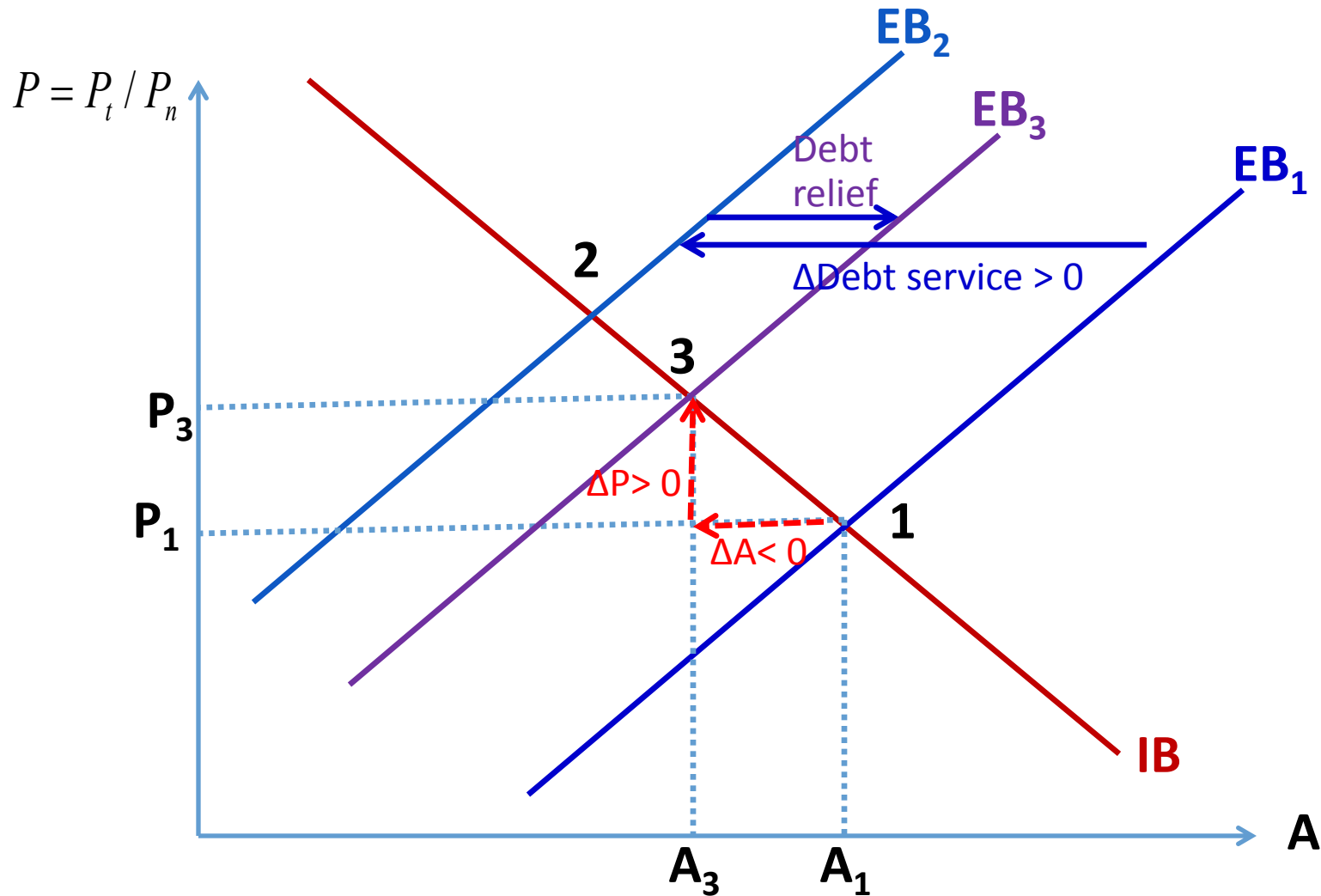
# Problems from Dutch Disease

- Such windfalls generally are temporary.
  - When export prices fall or the capital inflow dries up, the EB curve will shift back and a costly adjustment will be necessary.
- In shifting from the old to the new equilibrium, there have to be adjustments in the economy.
  - The *real exchange rate  $P$  is lower* ( $P_n$  rises), so  $S_t$  (tradables supply) has fallen and  $S_n$  (nontradables supply) risen.
  - *Unemployment* occurs when workers switch from tradables to nontradables production.
  - *Decline in tradables sector* → “disease”

# Debt Repayment Crisis

- It's a reverse of the Dutch Disease, a decline of terms of trade.
- Initially, the economy needs to find additional resources to repay its foreign debt or needs to adjust to falling terms of trade.
- EB curve shifts leftward ( $EB_1 \rightarrow EB_2$ ).
- If there is debt relief, then the curve shift rightward EB3.
  - Absorption is reduced due to falling foreign reserves and reduced expenditure.
  - To gain the new equilibrium at point 3, it is also necessary to devalue the currency.

# Figure: Debt Repayment Crisis



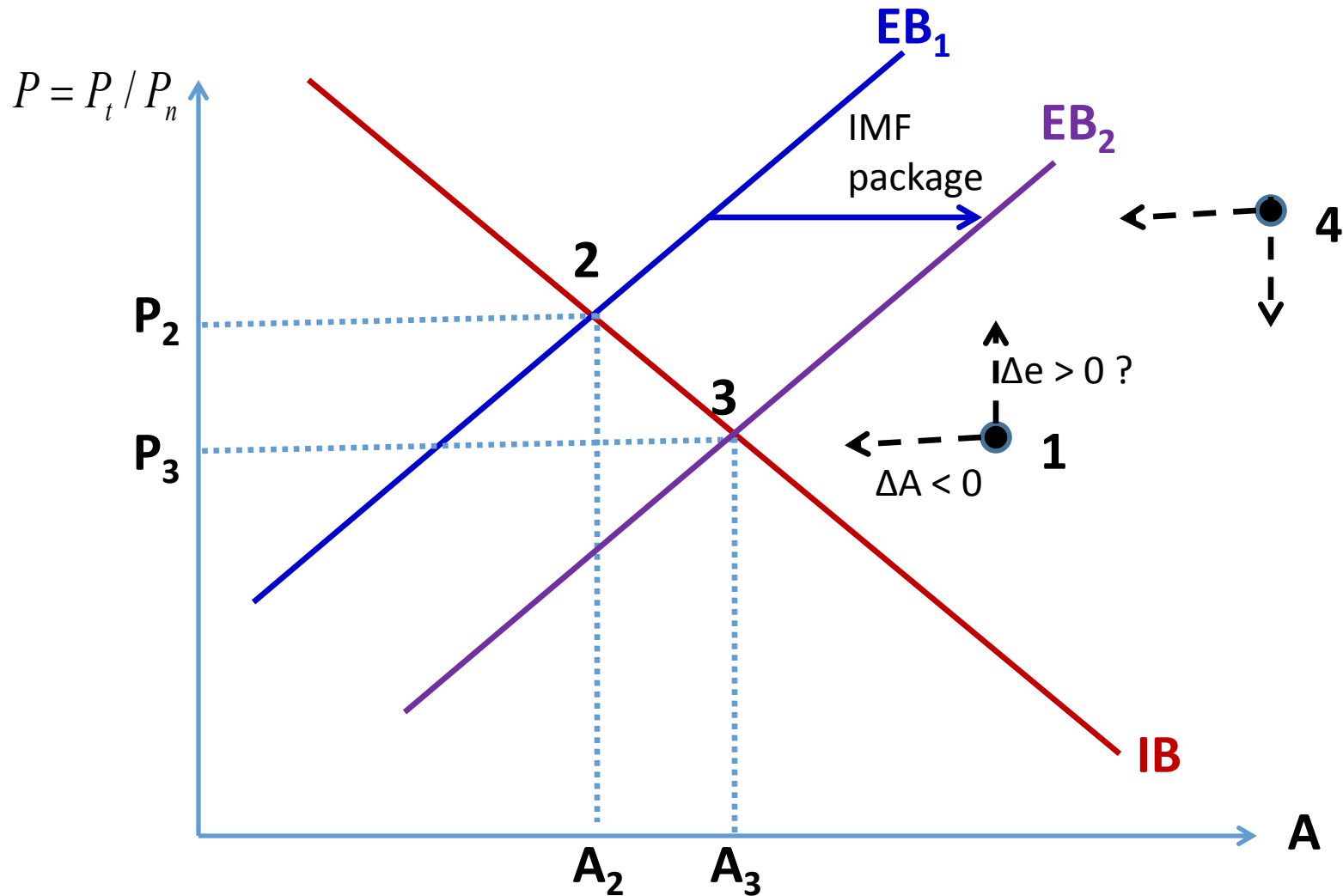
# Stabilization Package: Inflation and a Deficit (1)

- An economy has **foreign deficit** and **inflation**. Private investors try to invest in nonproductive assets like land or to invest abroad, which deepens the external deficit.
  - IMF is called to make **stabilization program loans**.
- IMF stabilization programs:
  - **Reduction in government's budget deficit**
  - Programmed targets for domestic credit to **cap the growth of money supply** in order to **reduce absorption**
  - The package may require **devaluation** of exchange rate, to reach a new equilibrium and avoid unemployment.

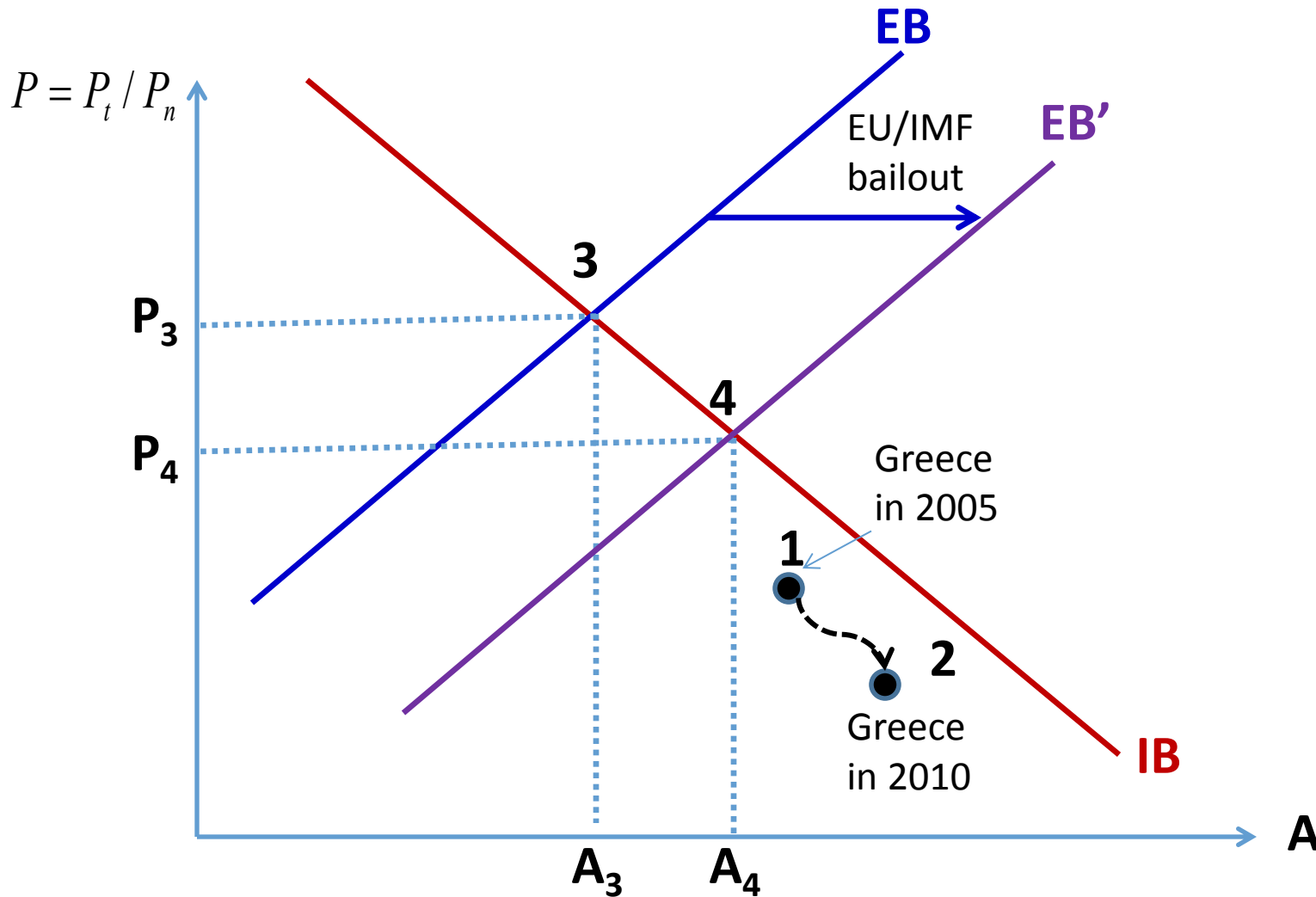
## Stabilization Package: Inflation and a Deficit (2)

- However, IMF programs usually come with substantial aid attached from IMF, World Bank and bilateral donors.
- The **aid package** would enable the country to have more foreign reserves to buy tradables.
  - EB shifts to the right → new equilibrium
- Two things happen for the package:
  - It reduces the need for austerity.
  - It reduces the need for devaluation of the exchange rate. But IMF and donors often insist on devaluation.

# Figure: Stabilization from Inflation and Deficit



# Figure: The Greek Debt Crisis, 2010-2012



# Drought, Hurricanes, and Earthquakes

- Starting from point 1, drought or another natural disaster reduces the capacity to produce both N and T, so both IB and EB curves shift to the left.
- Disaster relief from abroad helps by shifting EB to the right → new equilibrium (point 3).
- If the economy remains temporarily at point 1, it is inflationary.
  - The *absorption declines* due to a fall in incomes
  - At the same time government tries to spend more to relieve hunger, disease and other problems.
  - The outcome could be *continued inflation* (somewhere between points 1 and 3).

# Figure: Drought

