International Economics

Unit 7

Fixed versus Floating Exchange Rates

Aim: How to choose between fixed and floating exchange rates

Which is the most preferred exchange rate regime depends on:

- The type of shock that is impinging upon the economy (for simplicity, all shocks are considered to be transitory)
- The specification of the objective function of the authorities
- The structural parameters of the economy

Objective function:

$$O(P,Y) = \omega \cdot \left(Y - Y_n\right)^2 + \left(1-\omega\right) \cdot \left(P - P_n\right)^2 \qquad 0 \le w \le 1$$

Money demand function:

$$M_t^d = P_{It} + nY_t - \sigma r_t + u_{t_1}$$

$$P_{It} = \alpha P_t + \left(1-\alpha\right) \cdot \left(s_t + P_t^*\right) \qquad 0 < \propto < 1$$

Aggregate demand function

$$Y_t^d = \theta \cdot \left(s_t + P_t^* - P_t\right) - \beta \cdot \left(r_t + P_t - P_{t+1/t}\right) + \pi Y_n + u_{t_2}$$

Aggregate supply function:

$$Y_t^s = \varphi \cdot \left(P_t - W_t \right) + u_{t_3}$$ or

$$Y_t^s = Y^s \left(L_t \right)$$

where $\delta Ys_t/\delta L_t > 0$ and $\delta^2 Ys_t/\delta^2 L_t < 0$

UIP condition:

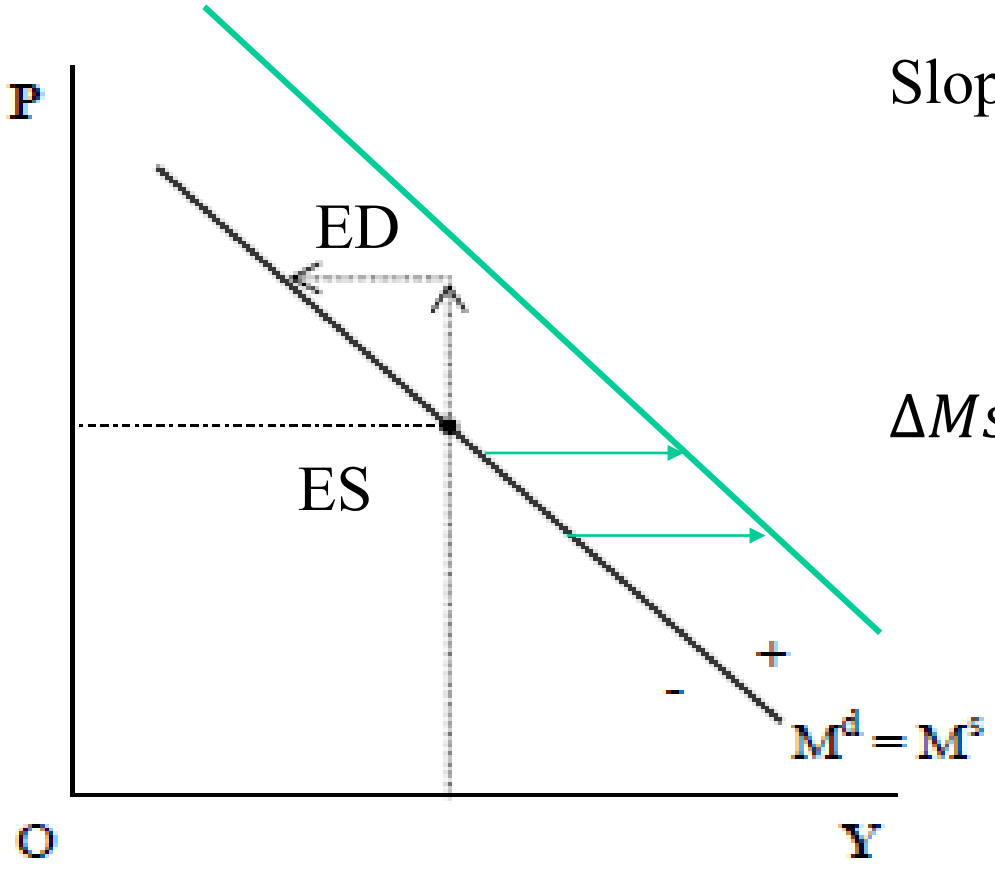
$$r_t = r_t^* + \left(S_{t+1/t} - S_t \right)$$

Equilibrium equations:

$$W_t = W_{t^*} \quad \rightarrow \quad Y_t = Y_n$$

$$Ms_t = Md_t \qquad Ys_t = Yd_t$$

Equilibrium of the money market



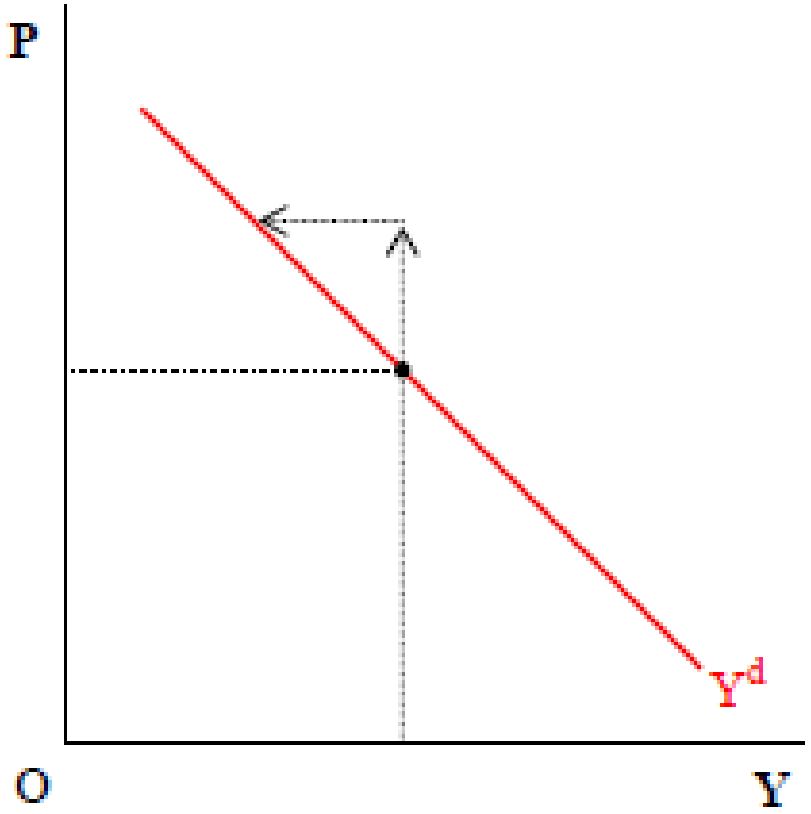
Slope:

$$\frac{dP_t}{dY_t} = -\frac{n}{\propto}$$

ΔMs?

Rightward shift

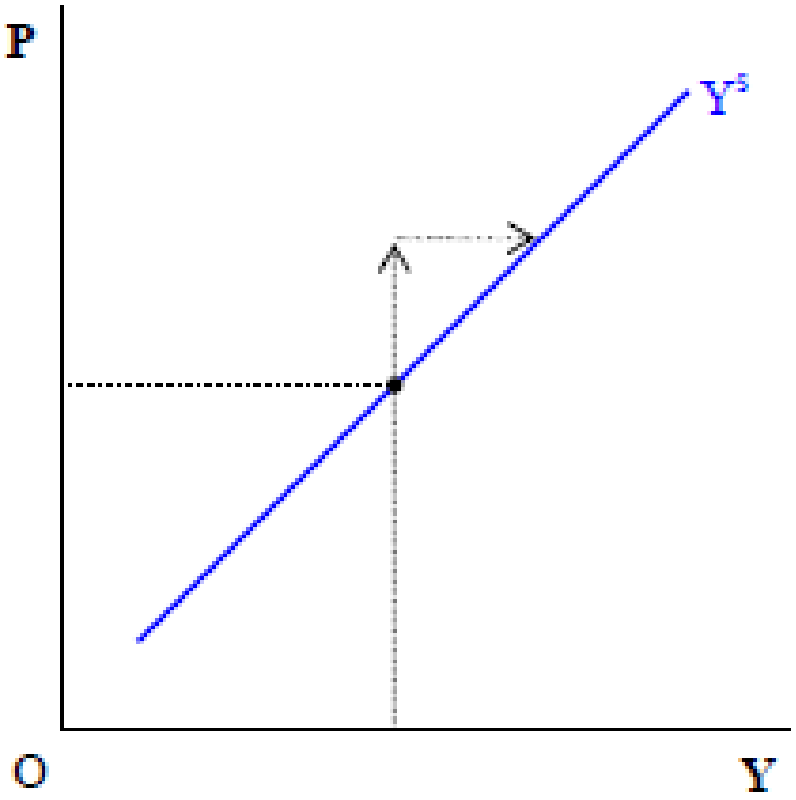
Aggregate demand curve



Slope:

$$\frac{dP_t}{dY_t} = -\frac{1}{\theta + \beta}$$

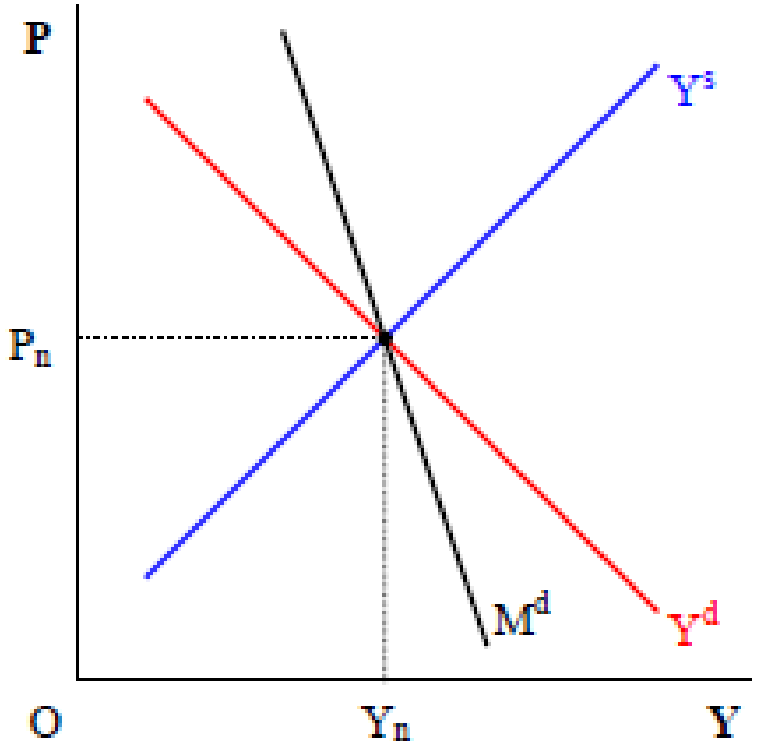
Aggregate supply curve



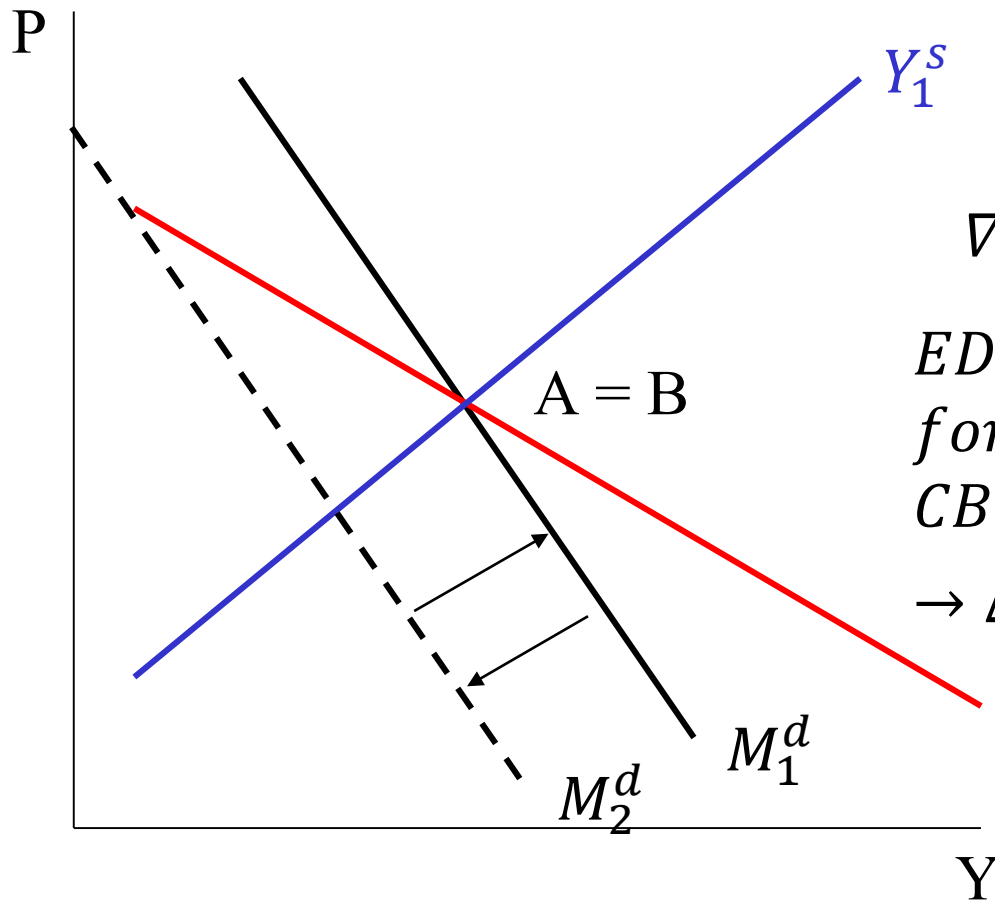
Slope:

$$\frac{dP_t}{dY_t} = \frac{1}{\varphi}$$

Equilibrium of the model



Money demand shock: Fixed exchange rate regime

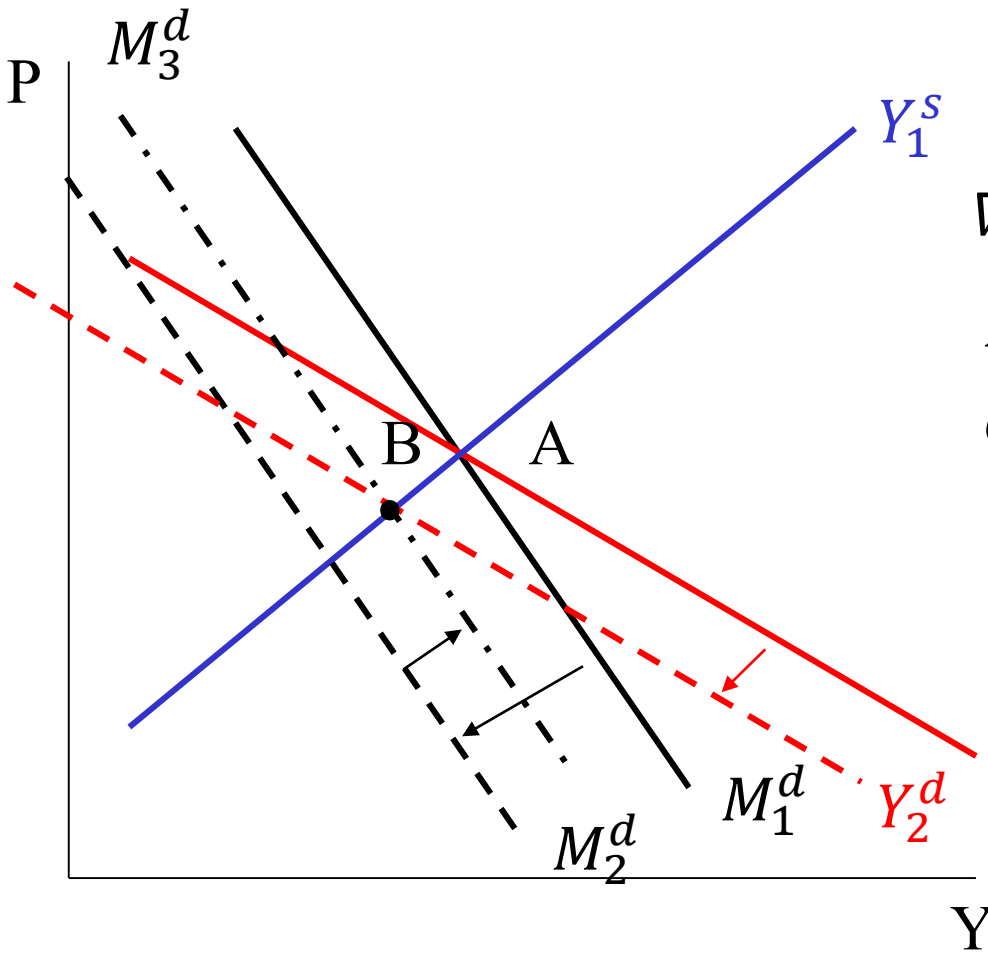


Positive shock: $u_{t_1} > 0$

$ED\ money \rightarrow for\ a\ given\ M^s,$
$\nabla P\ and, or\ \nabla Y\ to\ keep\ eq. \rightarrow \overleftarrow{M^d}$

$ED\ money\ at\ point\ A \rightarrow tendency$
$for\ the\ appreciation\ of\ € \rightarrow$
$CB\ increases\ D_{\$} \rightarrow \Delta Reserves$
$\rightarrow \Delta M^s \rightarrow \overrightarrow{M^d}$

Money demand shock: Floating exchange rate regime



Positive shock: $u_{t_1} > 0$

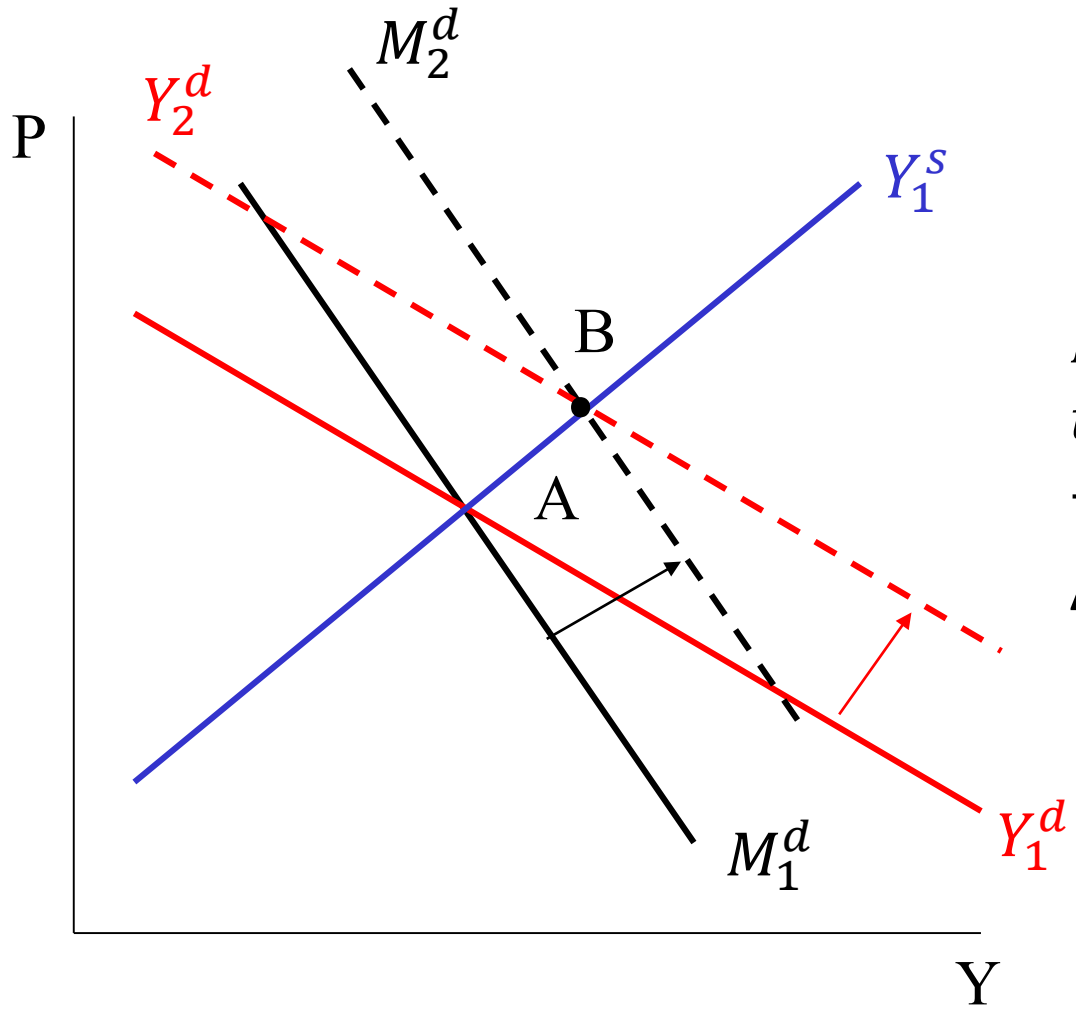
$ED\ money \rightarrow for\ a\ given\ M^s,$
$\nabla P\ and, or\ \nabla Y\ to\ keep\ eq. \rightarrow \overleftarrow{M^d}$

$ED\ money\ at\ point\ A \rightarrow$
$appreciation\ of\ € \rightarrow \overleftarrow{Y^d}$

$Since\ shocks\ are\ transitory,$
$a\ depreciation\ is\ expected \rightarrow$

$according\ to\ UIP\ \Delta r \rightarrow \begin{cases} \overleftarrow{Y^d} \\ \overrightarrow{M^d} \end{cases}$

Aggregate demand shock: Fixed exchange rate regime

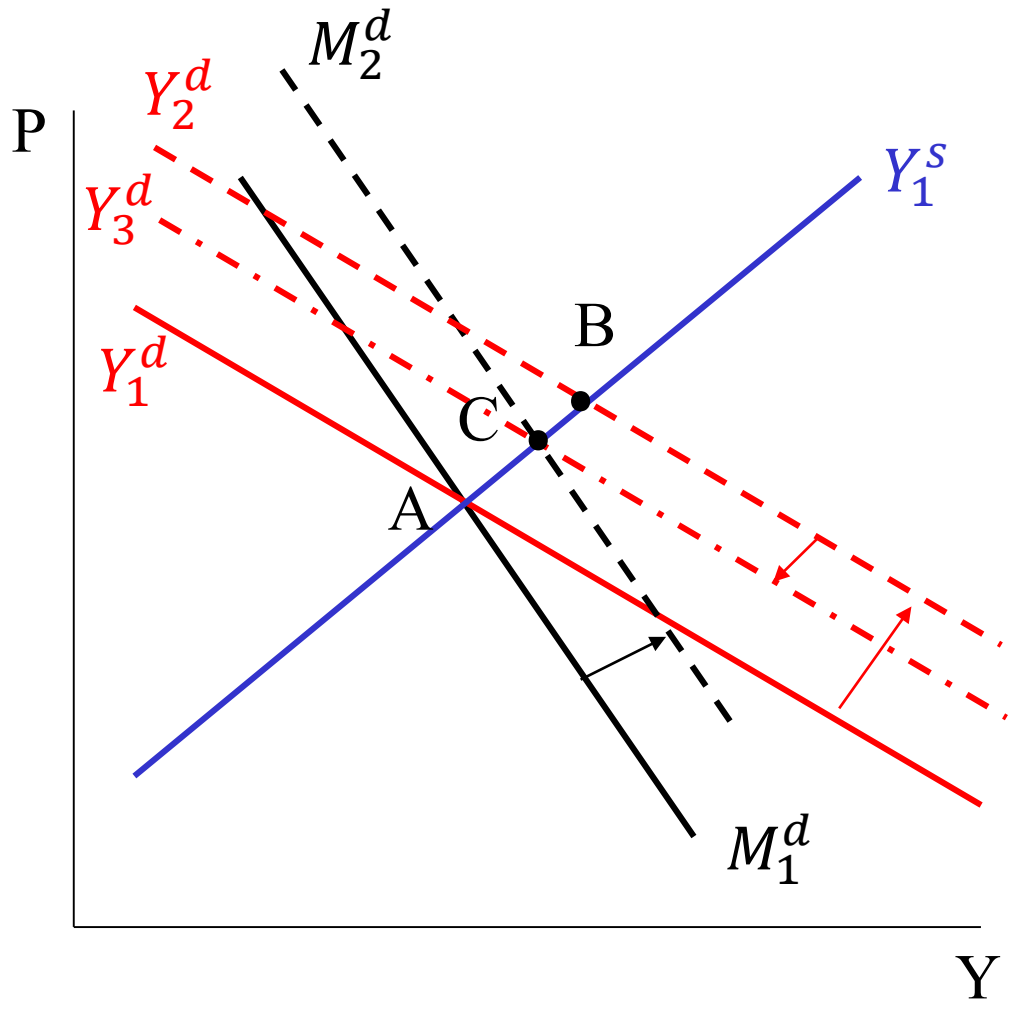


Positive shock: $u_{t_2} > 0$

$\overrightarrow{Y^d} \rightarrow point\ B$

$ED\ money\ at\ point\ B \rightarrow$
$tendency\ appreciation\ of\ €$
$\rightarrow CB\ increases\ D_{\$} \rightarrow$
$\Delta Reserves \rightarrow \Delta M^s \rightarrow \overrightarrow{M^d}$

Aggregate demand shock: Floating exchange rate regime



Positive shock: $u_{t_2} > 0$

$\overrightarrow{Y^d} \rightarrow point\ B$

$ED\ money\ at\ point\ B \rightarrow$
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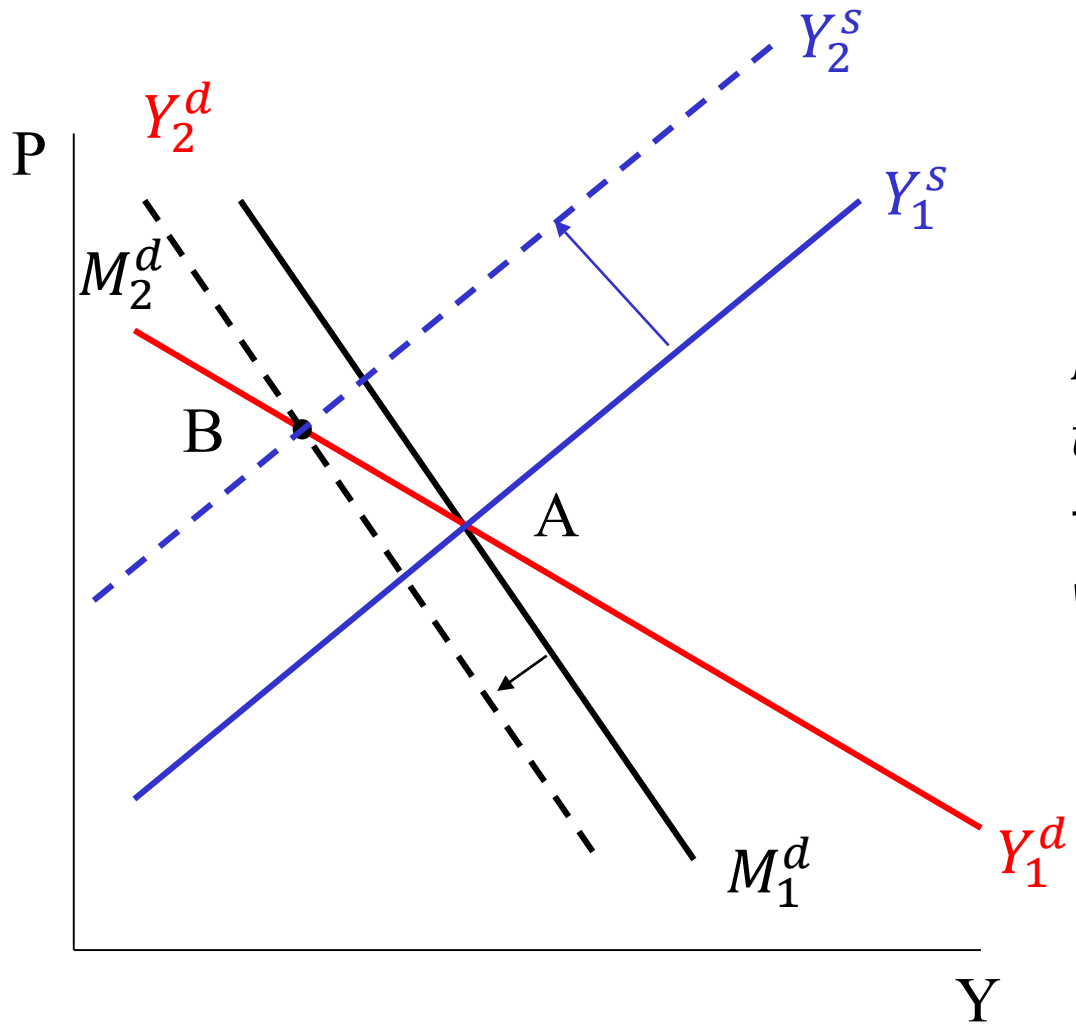
$a\ depreciation\ is\ expected \rightarrow$
$according\ to\ UIP\ \Delta r \rightarrow \begin{cases} \overleftarrow{Y^d} \\ \overrightarrow{M^d} \end{cases}$

Aggregate supply shock with fixed exchange rates. Case 1: *Md* schedule is steeper than the *Yd* schedule

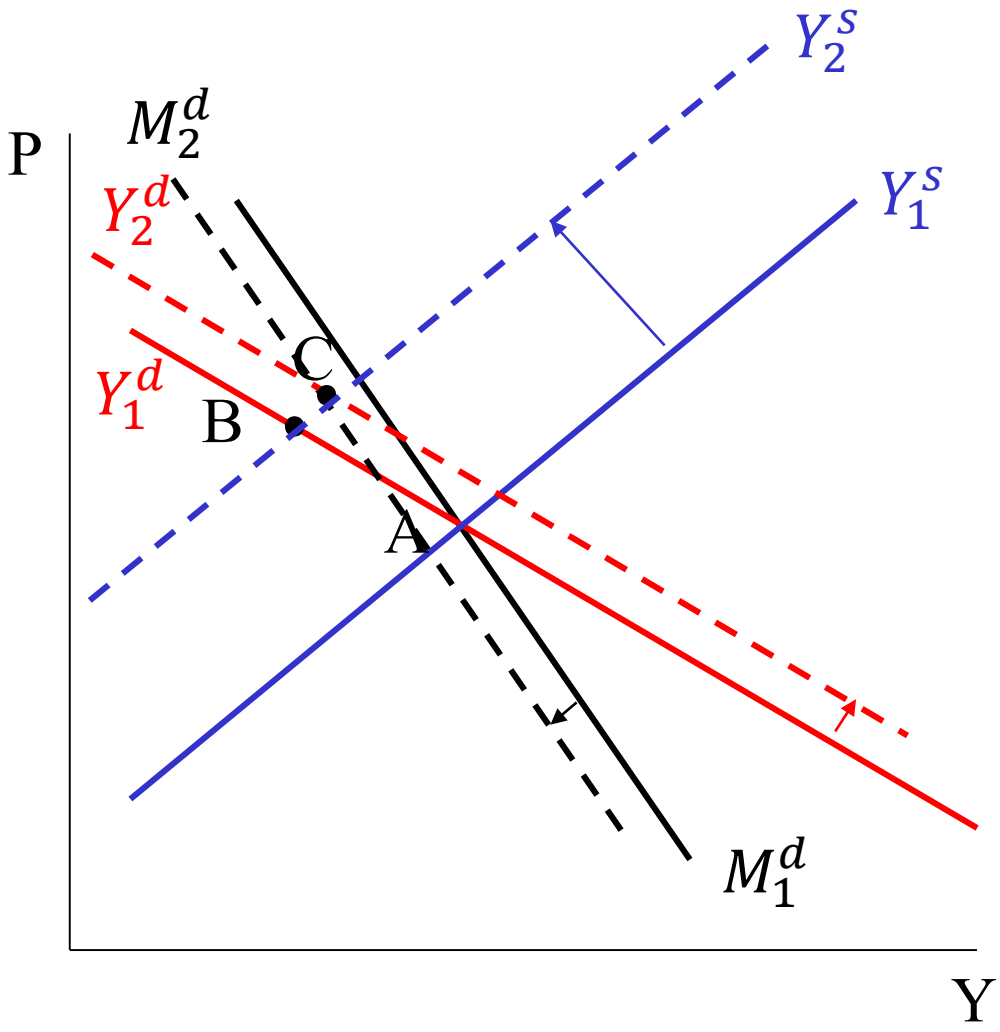


Negative shock: $u_{t_3} < 0$

$\overleftarrow{Y^s} \rightarrow point\ B$

$ES\ money\ at\ point\ B \rightarrow$
$tendency\ depreciation\ of\ €$
$\rightarrow CB\ increases\ S_{\$} \rightarrow$
$\nabla Reserves \rightarrow \nabla M^s \rightarrow \overleftarrow{M^d}$

Aggregate supply shock with floating exchange rates. Case 1: *Md* schedule is steeper than the *Yd* schedule



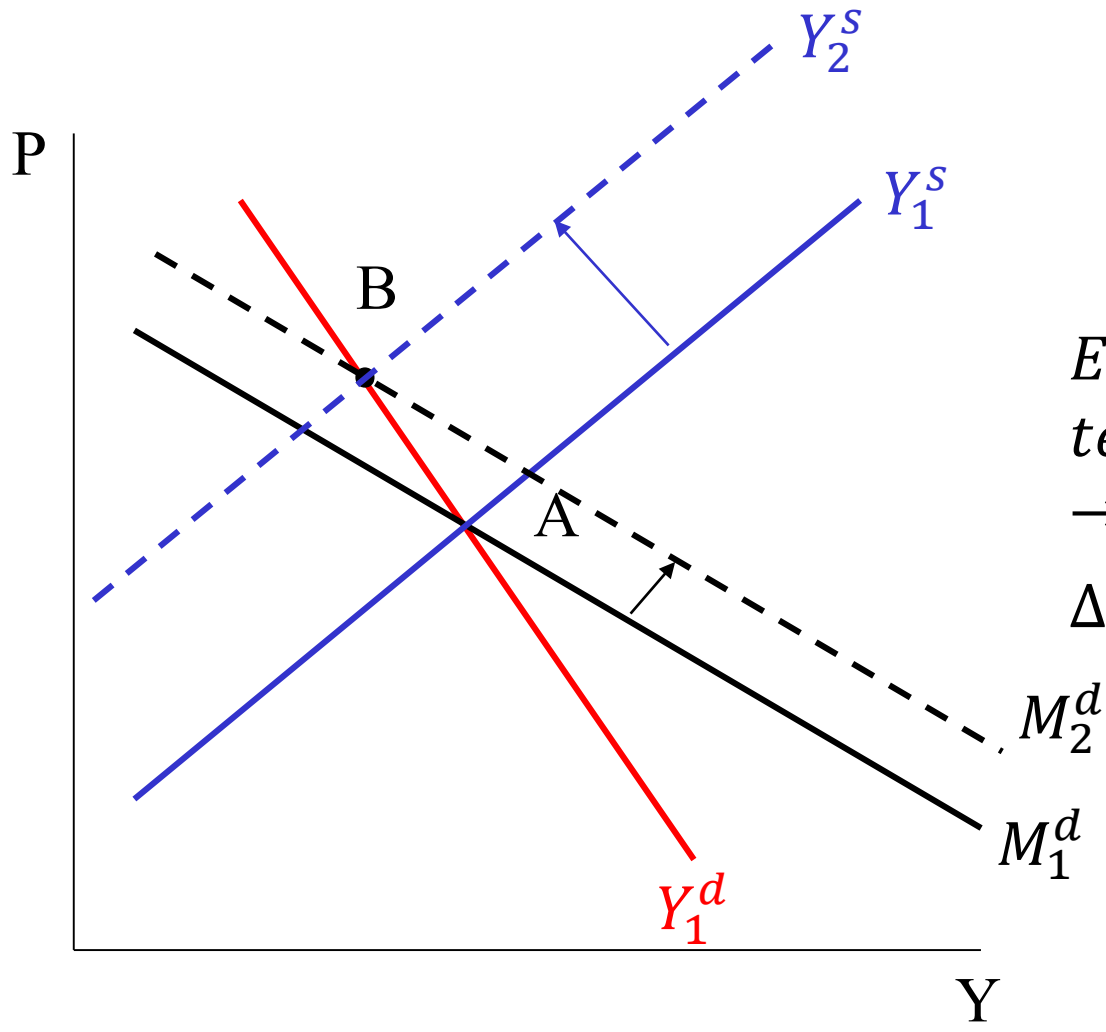
Negative shock: $u_{t_3} < 0$

$\overleftarrow{Y^s} \rightarrow point\ B$

$ES\ money\ at\ point\ B \rightarrow$ $\text{de}preciation\ of\ € \rightarrow \overrightarrow{Y^d}$

$Since\ shocks\ are\ transitory,$ $an\ appreciation\ is\ expected \rightarrow$ $according\ to\ UIP\ \nabla r \rightarrow \begin{cases} \overrightarrow{Y^d} \\ \overleftarrow{M^d} \end{cases}$

Aggregate supply shock with fixed exchange rates. Case 2: *Yd* schedule is steeper than the *Md* schedule

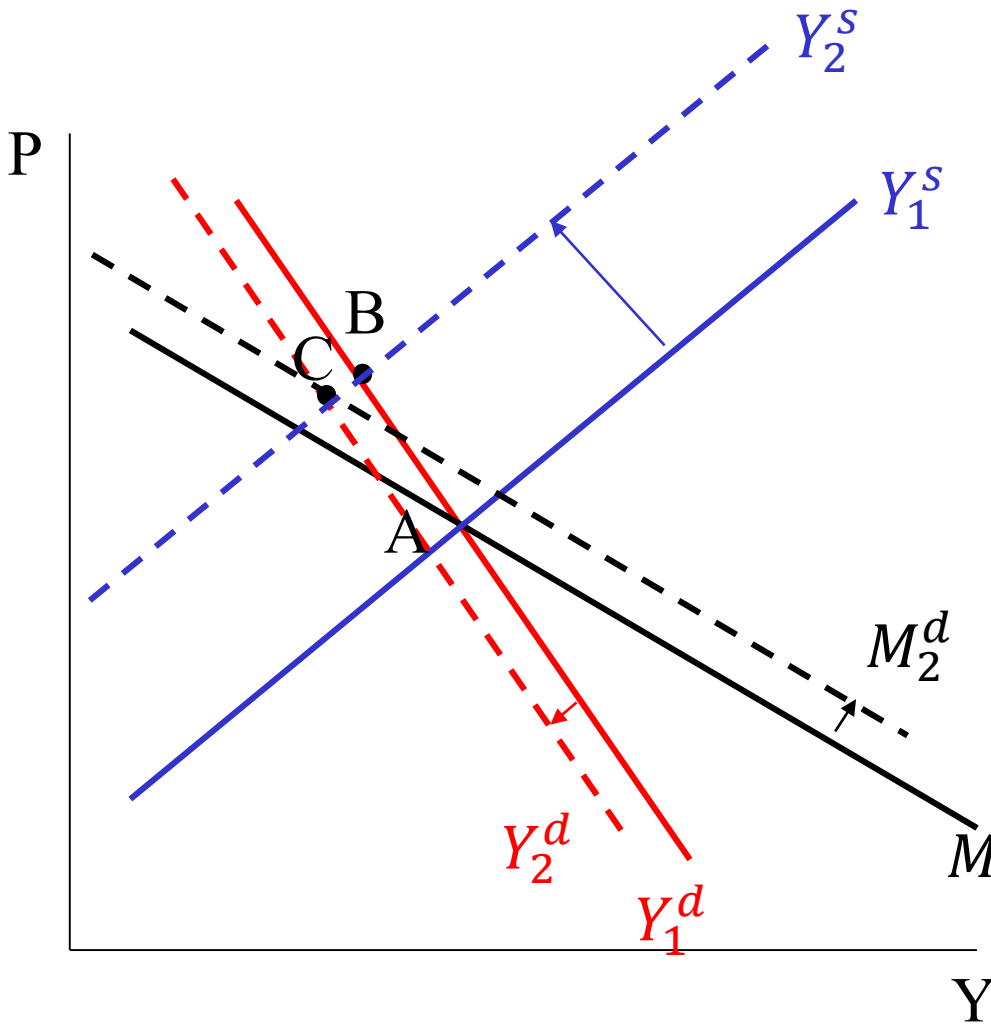


Negative shock: $u_{t_3} < 0$

$\overleftarrow{Y^s} \rightarrow point\ B$

$ED\ money\ at\ point\ B \rightarrow$
$tendency\ appreciation\ of\ €$
$\rightarrow CB\ increases\ D_{\$} \rightarrow$
$\Delta Reserves \rightarrow \Delta M^s \rightarrow \overrightarrow{M^d}$

Aggregate supply shock with floating exchange rates. Case 2: *Yd* schedule is steeper than the *Md* schedule



Negative shock: $u_{t_3} < 0$

$\overleftarrow{Y^s} \rightarrow point\ B$

$ED\ money\ at\ point\ B \rightarrow$
$appreciation\ of\ € \rightarrow \overleftarrow{Y^d}$

$Since\ shocks\ are\ transitory,$
$a\ depreciation\ is\ expected \rightarrow$
$according\ to\ UIP\ \Delta r \rightarrow \begin{cases} \overleftarrow{Y^d} \\ \overrightarrow{M^d} \end{cases}$

Summary of the results under fixed and floating rates

Transitory shock	Floating rates		Fixed rates	
	Price stability	Output stability	Price stability	Output stability
Money demand	X	X	✓	✓
Aggregate demand	✓	✓	X	X
Aggregate supply *Md* steeper than *Yd*	X	✓	✓	X
Aggregate supply *Yd* steeper than *Md*	✓	X	X	✓

Note: ✓ – indicates performs best, X – indicates performs worst.

Source: Pilbeam: "International Finance"

- Arguments for fixed exchange rates

  - Predictability: Fixed exchange rates provide stability and predictability to businesses and investors. They know exactly what the exchange rate will be in the future, which makes it easier to plan and invest. It promotes trade and foreign direct investment.
  - Reduced speculation: By fixing the exchange rate, governments can reduce speculation in the foreign exchange market. This can help to stabilize the currency and prevent sudden fluctuations in the exchange rate. However, investors can bet against a fixed exchange rate, which could lead to a currency crisis.
  - Control of money printing: Fixed exchange rates can help control inflation by limiting the amount of money in circulation. When a country has a fixed exchange rate, it basically loses the ability to print money. On the other hand, the risk of a banking crisis increases.

- Arguments for fixed exchange rates (cont.)

  - Lower transaction costs: Fixed exchange rates reduce transaction costs for businesses that engage in international trade. This is because there is no need to constantly monitor exchange rates and make adjustments to pricing.
  - Discipline for macroeconomic policies. In short, you do not have the 'wildcard', I mean, the exchange rate in case you make a mistake.
  - Promote international cooperation. In my view, this is not the case in many situations, since if you peg your currency to the one of a richer country… there is a kind of leader and a follower (as in love relationships ☺).

- Arguments for floating exchange rates

  - Policy flexibility (Monetary independence): Floating exchange rates give governments more flexibility to use monetary policy to address economic issues. For example, if a country is experiencing high inflation, it can reduce money supply and control inflation.
  - Automatic stabilizer: Floating exchange rates act as an automatic stabilizer for the economy. If a country is experiencing a recession, its currency will lose value, making its exports more competitive and stimulating economic growth. So, it promotes economic stability and reduces the need for government intervention.
  - Reduced vulnerability to external shocks: Floating exchange rates make a country less vulnerable to external shocks.

- Arguments for floating exchange rates (cont.)
    - Balanced trade. Thus avoiding recurrent balance of payments imbalances.
    - Speculation under floating exchange rates is stabilizing: As a rule, speculators will move the exchange rate towards its fundamental equilibrium value

Kind of short conclusion

While fixed exchange rates provide stability and predictability, they come at the cost of loss of monetary independence and lack of flexibility (lack of response to economic shocks). On the other hand, floating exchange rates allow for monetary independence and flexibility, but they can lead to volatility and uncertainty in international trade. Ultimately, the choice between fixed and floating exchange rates depends on the goals of the government and the needs of the economy. For example, a small, open economy may benefit from a fixed exchange rate to provide stability in international trade, while a larger economy may benefit from a floating exchange rate to allow for greater monetary independence and flexibility.

While there is no one-size-fits-all solution, countries should consider the advantages and disadvantages of each system and choose the one that best suits their economic goals.

A hybrid exchange rate regime that tries to combine the advantages of both fixed and floating exchange rates can also be the best option for some countries.

Different classifications and discordance between them.

- De jure classifications. Let's say official commitment communicated to the IMF.
- De facto classifications. Let's say what actually happens

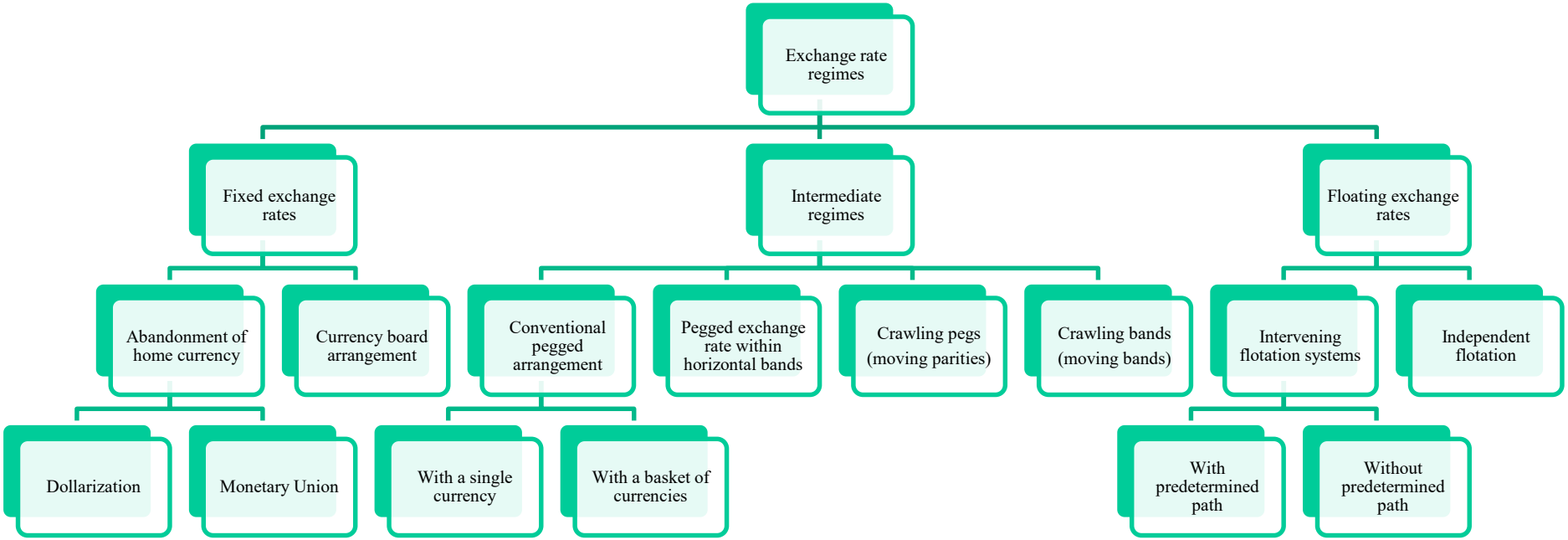


Table. Consistency of methodologies for classifying exchange rate regimes

	FMI	Levy-Yeyati y Sturzenegger (2003)	Reinhart y Rogoff (2004)	Shambaugh (2004)
FMI	100			
Levy-Yeyati y Sturzenegger (2003)	59	100		
Reinhart y Rogoff (2004)	59	55	100	
Shambaugh (2004)	68	65	65	100

Note: % of cases in which the classification coincides. Taken of Klein and Shambaugh (2010)

Branch of the literature dealing with the effect of exchange rate regimes on:

1. *Inflation control*
2. *Monetary policy Independence*
3. *Bank runs and currency crises*
4. *Absorption and insulation capacity against disturbances*
5. *Trade and Foreign Direct Investment*
6. *Economic growth*

A summary of countries' situation

Exchange rate arrangement (Number of countries)	Monetary policy framework								
	Exchange rate anchor						Monetary aggregate target (25)	Inflation-targeting framework (45)	Other[1] (43)
	US dollar (37)		Euro (26)		Composite (8)	Other (10)			
No separate legal tender (14)	Ecuador El Salvador Marshall Islands Micronesia	Palau Panama Timor-Leste	Andorra Kosovo San Marino Montenegro			Kiribati Nauru Tuvalu			
Currency board (12)	Djibouti Hong Kong SAR **ECCU** Antigua and Barbuda Dominica Grenada	St. Kitts and Nevis St. Lucia St. Vincent and the Grenadines	Bosnia and Herzegovina Bulgaria			Brunei Darussalam Macao SAR[2]			
Conventional peg (40)	Aruba The Bahamas Bahrain Barbados Belize Curaçao and Sint Maarten Eritrea	Iraq Jordan Oman Qatar Saudi Arabia Turkmenistan United Arab Emirates	Cabo Verde Comoros Denmark[3] São Tomé and Príncipe **WAEMU** Benin Burkina Faso Côte d'Ivoire Guinea-Bissau Mali Niger Senegal Togo	**CEMAC** Cameroon Central African Rep. Chad Rep. of Congo Equatorial Guinea Gabon	Fiji Libya	Bhutan Eswatini Lesotho Namibia Nepal	Samoa[4]		

Note: If the member country's de facto exchange rate arrangement has been reclassified during the reporting period, the date of change is indicated in parentheses (month, year). CEMAC = Central African Economic and Monetary Community; ECCU = Eastern Caribbean Currency Union; EMU = European Economic and Monetary Union; WAEMU = West African Economic and Monetary Union.

1 Includes countries that have no explicitly stated nominal anchor, but rather monitor various indicators in conducting monetary policy.

2 Country chapter for Macao SAR was added to this year's AREAER.

3 The member participates in the European Exchange Rate Mechanism (ERM II).

4 The country maintains a de facto exchange rate anchor to a composite.

Source: ANNUAL REPORT ON EXCHANGE ARRANGEMENTS AND EXCHANGE RESTRICTIONS 2022

Table 4 (continued)

Exchange rate arrangement (Number of countries)	Monetary policy framework						
	Exchange rate anchor				Monetary aggregate target (25)	Inflation-targeting framework (45)	Other[1] (43)
	US dollar (37)	Euro (26)	Composite (8)	Other (10)			
Stabilized arrangement (23)	Cambodia Guyana Iran Lebanon Maldives Trinidad and Tobago	Croatia North Macedonia	Singapore		Bolivia[5] Nigeria[5] Papua New Guinea[5] Tanzania[5] Tajikistan[5,7]	Guatemala[5] Serbia[6]	Azerbaijan[5] Egypt[5,7] Kyrgyz Rep[5] (1/21) Malawi[5] (9/21) Mongolia[7] Mozambique [5,7,10] (6/21) Sudan[5,10] (7/21)
Crawling peg (3)	Honduras Nicaragua		Botswana				
Crawl-like arrangement (24)			Vietnam[5]		Afghanistan[5] (7/21) Algeria[5,9] (12/20) Bangladesh[5] (8/21) Burundi[5] China[4] Democratic Rep. of the Congo[5] Ethiopia[5] The Gambia[5] (5/21) Guinea[5] Rwanda[5]	Dominican Republic[5] Ghana[5] Kenya[5,10] (5/21) Romania[6] Sri Lanka[5,8] (4/21) Uzbekistan[5]	Argentina[5] Lao P.D.R.[5] Mauritania[5] Mauritius[5,7,10] (12/20) Switzerland[6] Solomon Islands[4] Tunisia[6,7]
Pegged exchange rate within horizontal bands (1)			Morocco[12]				
Other managed arrangement (11)			Kuwait Syria		Liberia[10] (10/21) Myanmar Sierra Leone Zimbabwe[9,10] (8/21)		Haiti South Sudan (3/21) Tonga Zambia

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4 The country maintains a de facto exchange rate anchor to a composite.
5 The country maintains a de facto exchange rate anchor to the US dollar.
6 The country maintains a de facto exchange rate anchor to the euro.
7 The central bank is in transition toward inflation-targeting.
8 The authorities reported that their monetary policy framework is referred to as "flexible inflation-targeting."
9 The exchange rate arrangement or monetary policy framework was reclassified retroactively, overriding a previously published classification.
10 The exchange rate arrangement was reclassified twice during this reporting period.
11 Currently the Central Bank of Somalia does not have a monetary policy framework.
12 Within the framework of an exchange rate fixed to a currency composite, the Bank Al-Maghrib adopted a monetary policy framework in 2006 based on various inflation
indicators, with the overnight interest rate as its operational target to pursue its main objective of price stability.

Source: ANNUAL REPORT ON EXCHANGE ARRANGEMENTS AND EXCHANGE RESTRICTIONS 2022

Table 4 (concluded)

Exchange rate arrangement (Number of countries)	Monetary policy framework						
	Exchange rate anchor				Monetary aggregate target (25)	Inflation-targeting framework (45)	Other[1] (43)
	US dollar (37)	Euro (26)	Composite (8)	Other (10)			
Floating (35)					Angola Belarus Madagascar Suriname (6/21) Yemen	Albania Armenia Brazil[8] Colombia Costa Rica (10/21) Czech Republic (1/22) Georgia Hungary Iceland India[8] Indonesia[8] Israel Jamaica Kazakhstan Korea Moldova New Zealand Paraguay Peru Philippines (6/21) Seychelles South Africa Thailand[8] Türkiye Uganda Ukraine Uruguay	Malaysia Pakistan[7] Zambia (7/21)
Free floating (31)						Australia Canada Chile Japan Mexico Norway Poland[8] Russia Sweden[8] United Kingdom	Somalia[11] United States **EMU** Austria Belgium Cyprus Estonia Finland France Germany Greece Ireland Italy Latvia Lithuania Luxembourg Malta The Netherlands Portugal Slovak Rep. Slovenia Spain

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IMF Exchange rates regimes. Revised Classification System

Hard Pegs

- *Exchange arrangement with no separate legal tender*

Classification as an *exchange arrangement with no separate legal tender* involves the confirmation of the country authorities' de jure exchange rate arrangement. The currency of another country circulates as the sole legal tender (formal dollarization). Adopting such an arrangement implies the complete surrender of the monetary authorities' control over domestic monetary policy.

Note: effective January 1, 2007, exchange arrangements of the countries that belong to a monetary or currency union in which the same legal tender is shared by the members of the union are classified under the arrangement governing the joint currency. The new classification is based on the behavior of the common currency, whereas the previous classification was based on the lack of a separate legal tender. The classification thus reflects only a definitional change, and is not based on a judgement that there has been a substantive change in the exchange arrangement or other policies of the currency union or its members.

Hard Pegs *(continued)*

- *Currency board arrangement*

Classification as a currency board arrangement involves the confirmation of the country authorities' de jure exchange rate arrangement. A currency board arrangement is a monetary arrangement based on an explicit legislative commitment to exchange domestic currency for a specified foreign currency at a fixed exchange rate, combined with restrictions on the issuing authority to ensure the fulfillment of its legal obligation. This implies that domestic currency will be issued only against foreign exchange and that it remains fully backed by foreign assets, eliminating traditional central bank functions such as monetary control and lender-of-last-resort, and leaving little scope for discretionary monetary policy. Some flexibility may still be afforded, depending on the strictness of the banking rules of the currency board arrangement.

Soft Pegs

- *Conventional pegged arrangement*

For classification as a conventional pegged arrangement, the country formally (de jure) pegs its currency at a fixed rate to another currency or a basket of currencies, where the basket is formed, for example, from the currencies of major trading or financial partners, and weights reflect the geographic distribution of trade, services, or capital flows. The anchor currency or basket weights are public or notified to the IMF. The country authorities stand ready to maintain the fixed parity through direct intervention (i.e., via sale or purchase of foreign exchange in the market) or indirect intervention (e.g., via exchange rate related use of interest rate policy, imposition of foreign exchange regulations, exercise of moral suasion that constrains foreign exchange activity, or intervention by other public institutions). There is no commitment to irrevocably keep the parity, but the formal arrangement must be confirmed empirically: the exchange rate may fluctuate within narrow margins of less than ±1% around a central rate—or the maximum and minimum value of the spot market exchange rate must remain within a narrow margin of 2%—for at least six months.

Soft Pegs *(continued)*

- *Stabilized arrangement*

Classification as a stabilized arrangement entails a spot market exchange rate that remains within a margin of 2% for six months or more (with the exception of a specified number of outliers or step adjustments), and is not floating. The required margin of stability can be met either with respect to a single currency or a basket of currencies, where the anchor currency or the basket is ascertained or confirmed using statistical techniques.

Classification as a stabilized arrangement requires that the statistical criteria are met, and that the exchange rate remains stable as a result of official action (including structural market rigidities). The classification does not imply a policy commitment on the part of the country authorities.

Soft Pegs *(continued)*

- *Crawling peg*

Classification as a crawling peg involves the confirmation of the country authorities' de jure exchange rate arrangement. The currency is adjusted in small amounts at a fixed rate or in response to changes in selected quantitative indicators, such as past inflation differentials vis-à-vis major trading partners or differentials between the inflation target and expected inflation in major trading partners. The rate of crawl can be set to generate inflation-adjusted changes in the exchange rate (backward looking) or set at a predetermined fixed rate and/or below the projected inflation differentials (forward looking). The rules and parameters of the arrangement are public or notified to the IMF.

- *Crawl-like arrangement*

For classification as a crawl-like arrangement, the exchange rate must remain within a narrow margin of 2 % relative to a statistically identified trend for six months or more (with the exception of a specified number of outliers), and the exchange rate arrangement cannot be considered as floating. Normally, a minimum rate of change greater than allowed under a stabilized (peg-like) arrangement is required. However, an arrangement will be considered crawl-like with an annualized rate of change of at least 1%, provided that the ER appreciates or depreciates in a sufficiently monotonic and continuous manner.

Soft Pegs *(continued)*

- *Pegged exchange rate within horizontal bands*

Classification as a pegged exchange rate within horizontal bands involves the confirmation of the country authorities' de jure exchange rate arrangement. The value of the currency is maintained within certain margins of fluctuation of at least ±1% around a fixed central rate, or the margin between the maximum and minimum value of the exchange rate exceeds 2%. It includes arrangements of countries in the ERM of the European Monetary System (EMS), which was replaced with the ERM II on January 1, 1999, for those countries with margins of fluctuation wider than ±1%. The central rate and width of the band are public or notified to the IMF.

Floating arrangements

- *Floating*

A floating exchange rate is largely market determined, without an ascertainable or predictable path for the rate. In particular, an exchange rate that satisfies the statistical criteria for a peg-like or a crawl-like arrangement will be classified as such unless it is clear that the stability of the exchange rate is not the result of official actions. Foreign exchange market intervention may be either direct or indirect, and serves to moderate the rate of change and prevent undue fluctuations in the exchange rate, but policies targeting a specific level of the exchange rate are incompatible with floating. Indicators for managing the rate are broadly judgmental (e.g., balance of payments position, international reserves, parallel market developments). Floating arrangements may exhibit more or less exchange rate volatility, depending on the size of the shocks affecting the economy.

Floating arrangements *(continued)*

- *Free floating*

A floating exchange rate can be classified as free floating if intervention occurs only exceptionally, aims to address disorderly market conditions, and if the authorities have provided information or data confirming that intervention has been limited to at most three instances in the previous six months, each lasting no more than three business days. If the information or data required are not available to the IMF staff, the arrangement will be classified as floating.

Residuals

- *Other managed arrangement*

This category is a residual, and is used when the exchange rate arrangement does not meet the criteria for any of the other categories. Arrangements characterized by frequent shifts in policies may fall into this category.

Note: For more information: Reinhart, C. M., and K. S. Rogoff. 2004. The Modern History of Exchange Rate Arrangements: A Reinterpretation. Quarterly Journal of Economics 119: 1–48. (one of the best papers ever)