OPEN ECONOMY MACROECONOMICS 2

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AGENDA

- ~~International linkage and Balance of payments~~
- ~~Foreign exchange market and Exchange rate determination~~
- Macroeconomics framework for open-economy
- Shocks and propagation under open-economy
- Policy effectiveness
- Emerging markets crisis

Reading: Froyen Chapter 15

IMPLICATIONS OF OPEN ECONOMY TO MACROECONOMICS FRAMEWORK

- Traditional closed-economy model becomes incomplete for the analysis, i.e. needing some modifications

- Missing a market that summarizes overall activities in international aspect, i.e. balance of payment.

- Open-economy macroeconomic model: IS-LM-BP model (Mendell-Fleming model)

IS-LM-BP MODEL

- Three interconnected markets

  - Goods market → IS

  - Money market → LM

  - International transaction → BP

- Two questions:

  1. Does the relationship between "r" and "y" *change* under the open-economy?

  2. To fix the original idea of IS-LM, how can we characterize the relationship between "r" and "y" that represent the equilibrium in the overall international activities?

FOREIGN SECTOR AND IS

- **Net exports (X – IM)** is now part of aggregate expenditure (AE and IS curve).

- Structure of the goods-market conditions slightly changes.

  - **Exports** are determined by foreign income (Y^f) and real exchange rate (rer).

  - **Imports** are determined by domestic income (Y) and real exchange rate (rer).

PRODUCT MARKET EQUILIBRIUM (IS)

$$Y = C(Y_d, r) + I(Y, r) + G$$

$$\Downarrow$$

$$Y = C(Y_d, r) + I(Y, r) + G + X(Y^f, rer) - IM(Y, rer)$$

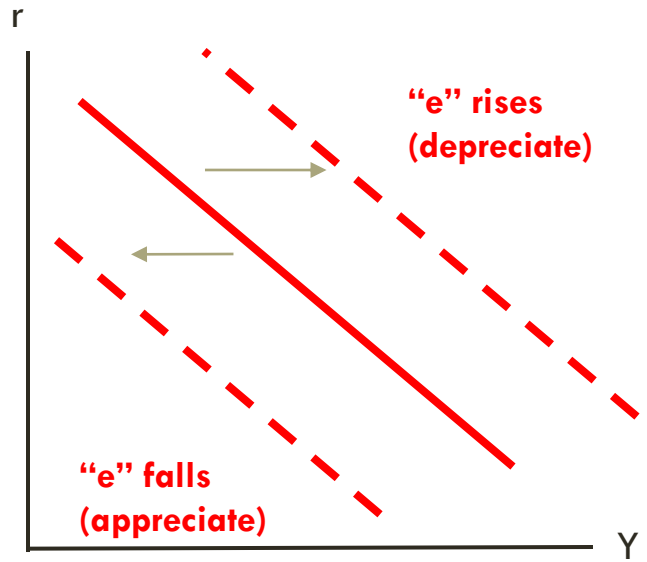
$$where \quad rer = \frac{eP^*}{P}$$

$$\frac{\partial IM}{\partial Y} > 0; \frac{\partial IM}{\partial rer} < 0 \ \ and \ \ \frac{\partial X}{\partial Y^f} > 0; \frac{\partial X}{\partial rer} > 0$$

OPEN-ECONOMY IS CURVE

- Still downward sloping.
  - For fixing everything else constant, higher "*r*"
  → lower "Investment" and "Consumption"
  → Lower "AE", and hence output (Y).

- The role of **exchange rate** can now be discussed.
  - Higher (lower) "e" causes a rise (decline) in exports, for a given real interest rate.
  - → IS curve shift right (left).



IS curve

FOREIGN SECTOR AND LM

- Nothing affects money market.
- LM curve remains upward sloping.
  - → higher Y causes a higher demand for money,
  - → higher demand for money leads to rising market interest rate.

NEW FEATURE: BALANCE OF PAYMENTS

- International activities can be summarized by the balance of payment (BOP).

$$\begin{aligned} \text{BOP} &= (\text{X} - \text{IM}) + (F_{in} - F_{out}) \\ &= \text{Net exports} + \text{Net inflows} \\ &= \text{CA} + \text{KA} \end{aligned}$$

BALANCE OF PAYMENTS: BEHAVIOR

- Behavior of the balance of payments can be analyzed by the behavior of its component.

$$BOP(*) = \underbrace{\left[X\left(Y^f, rer\right) - IM(Y, rer)\right]}_{\text{CA: negatively in "Y"}} + \underbrace{KA\left(r - r^f - \theta\right)}_{\text{KA: positively in "r"}}$$

r = domestic (real) interest rate;

r^f = foreign (real) interest rate;

θ = country risk premium

EQUILIBRIUM IN THE BALANCE OF PAYMENTS

- BOP is in the equilibrium if BOP = 0.

$$[X(Y^f, rer) - IM(Y, rer)] + KA(r - r^f - \theta) = 0$$

- To analyze the balance of payments in equilibrium, "what can be learned about the relationship between "r" and "y" that governs the equilibrium BOP?"

- BP line: equilibrium relationship between "r" and "Y" that puts the balance of payments in the equilibrium.

THE BP LINE

- An upward sloping curve. Why?

- Back to the equilibrium condition, and consider an initial combination (r1,y1) where BOP equilibrium is attained.

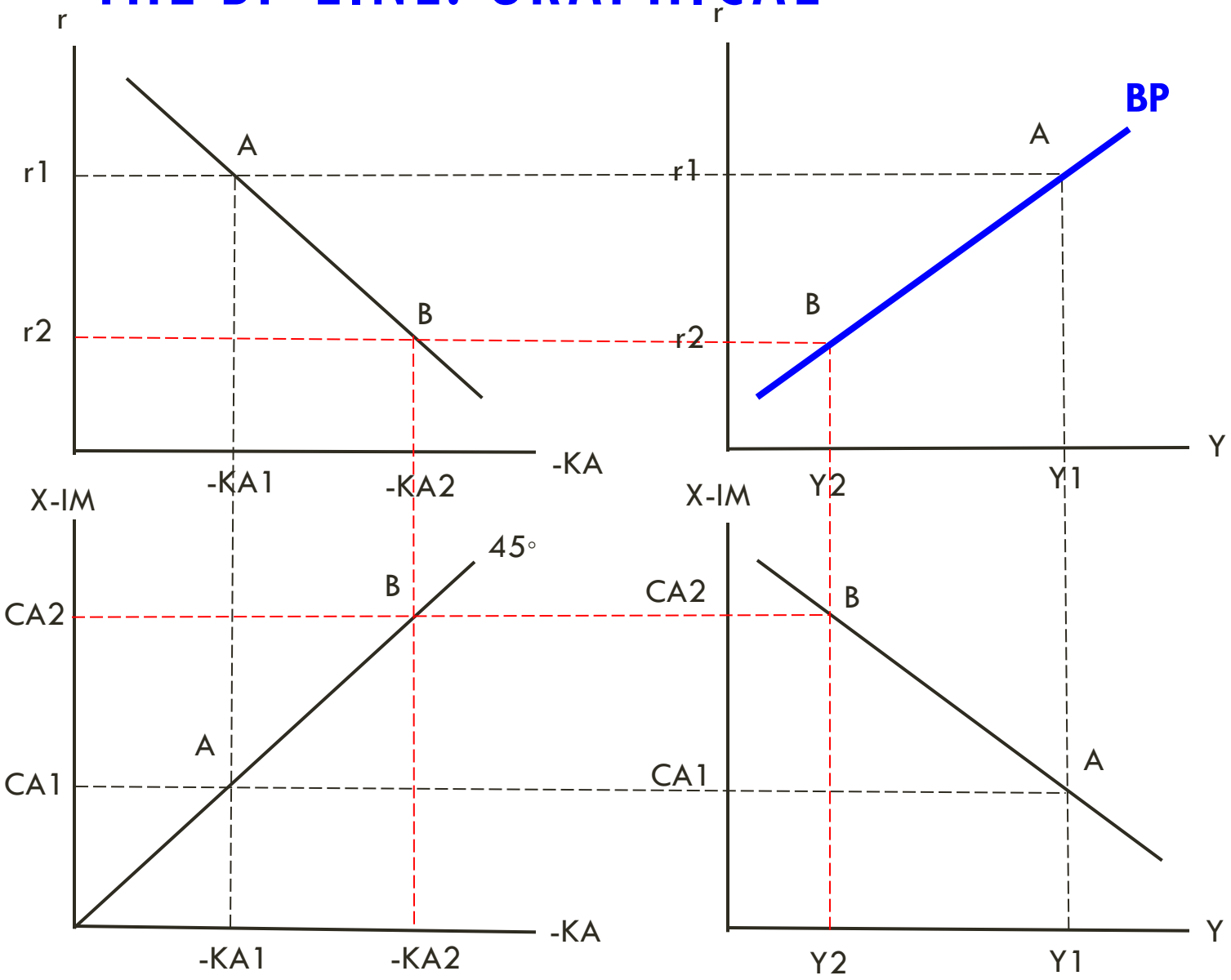
$$\left[X\left(Y^f, rer\right) - IM(Y_1, rer)\right] = -KA\left(r_1 - r^f - \theta\right)$$

Question: What happen to the level of "y" if interest rate drops from r1?

THE BP LINE: INTUITIONS

- Why BP line is upward sloping?
  - Lower interest rate reduces net capital inflows (KA worsened) → worsening BOP
  - BOP can be balanced if this is compensated by an increase in net exports (CA improved).
  - Net exports can be improving when "y" is lower; lowering imports.
  - Hence, we have positive relationship between "r" and "y" under the BOP equilibrium

THE BP LINE: GRAPHICAL



THE BP LINE: MATHEMATICAL

- Suppose linear equation in current account and capital account

$$\left[X\left(Y^f, rer\right) - IM(Y, rer)\right] = \alpha_0 - \alpha_1 Y + \alpha_2 Y^f + \alpha_3 rer$$

$$KA\left(r - r^f - \theta\right) = \beta_0 + \beta_1\left(r - r^f - \theta\right)$$

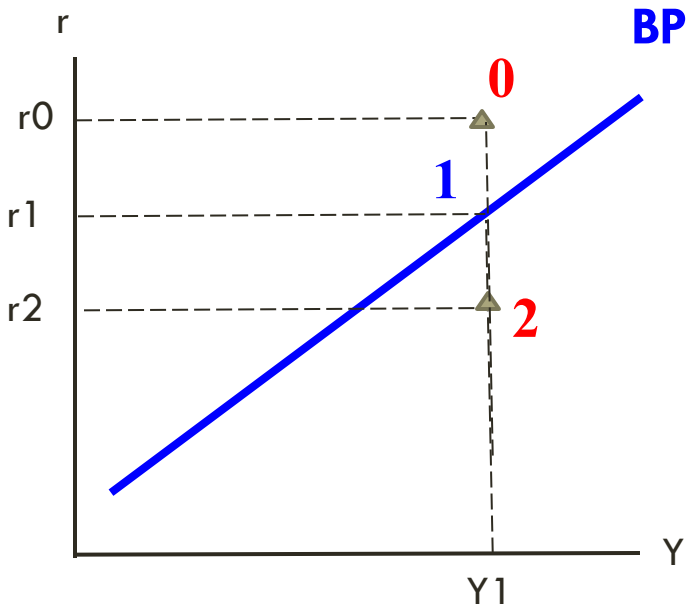
- Equilibrium:

$$\alpha_0 - \alpha_1 Y + \alpha_2 Y^f + \alpha_3 rer + \beta_0 + \beta_1\left(r - r^f\right) = 0$$

- BP equation:

$$r = \theta + r^f + \left(\frac{1}{\beta_1}\right)\left[\alpha_1 Y - \left(\alpha_0 + \alpha_2 Y^f + \alpha_3 rer + \beta_0\right)\right]$$

THE BP LINE: DISEQUILIBRIUM



Off the BP line?

If above the BP, "r" is too high.

BOP is positive (surplus); net capital inflow is better than the level needed to ensure BOP = 0.

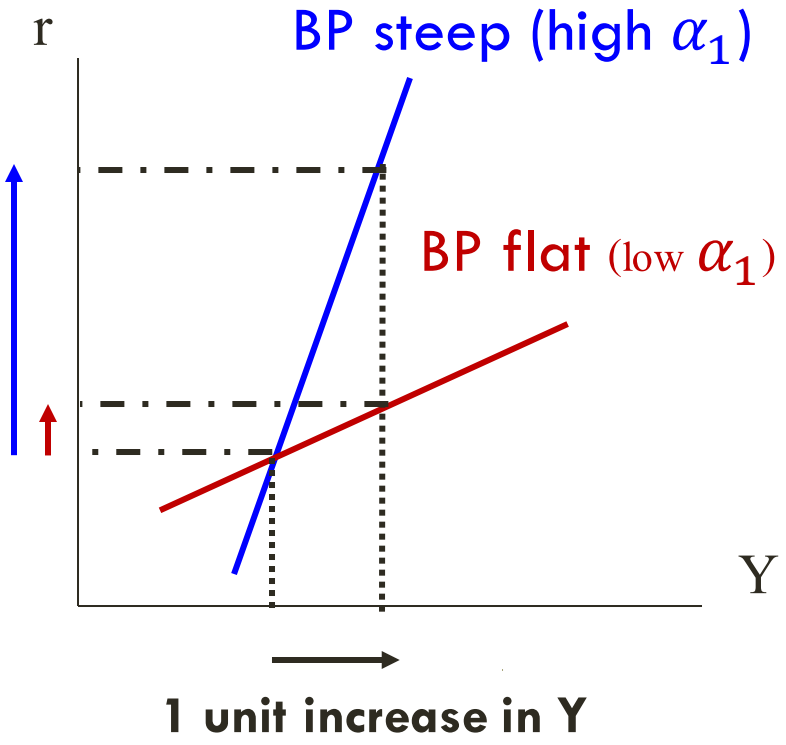
If below the BP, "r" is too low.

BOP is negative (deficit); net capital inflow is worse than the level needed to ensure BOP = 0.

SLOPE OF BP LINE

The slope of BP line depends on

- Sensitivity of imports to real GDP (Y)
  - Higher propensity to imports (α_1) implies that CA sizably deteriorates when income increases.
  - Other things being equal, "r" must be sizably rising as well, to induce an improvement in KA.
  - SO, highly sensitive of imports to real GDP (Y) → steeper BP curve.

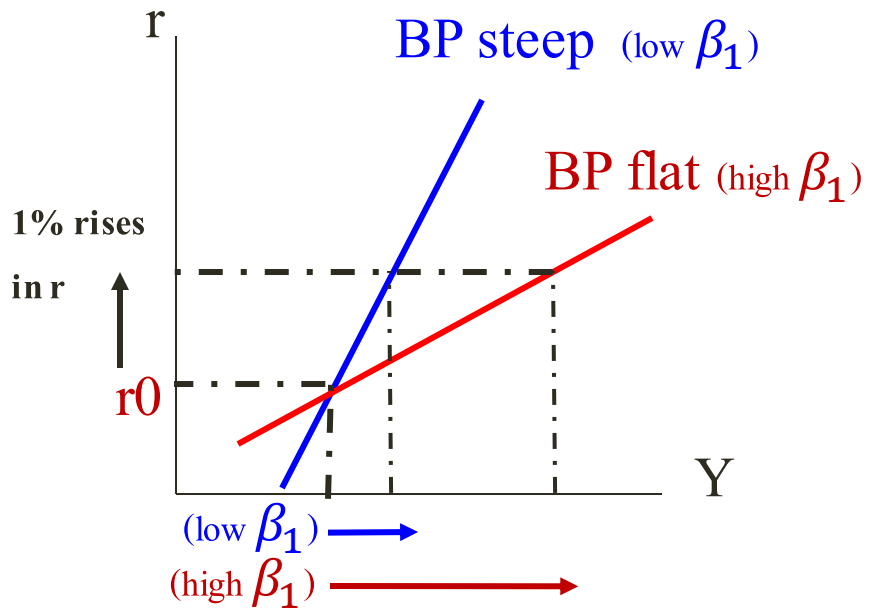


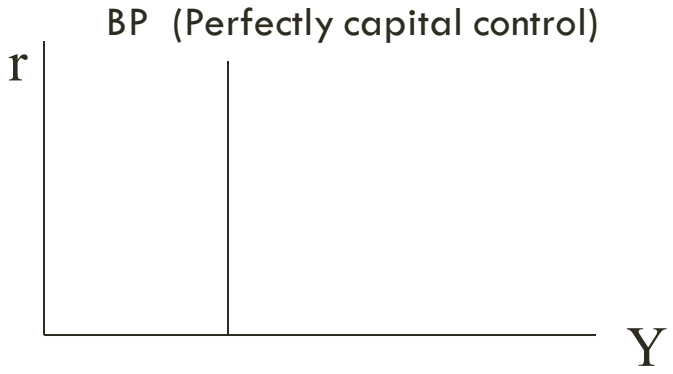
SLOPE OF BP LINE

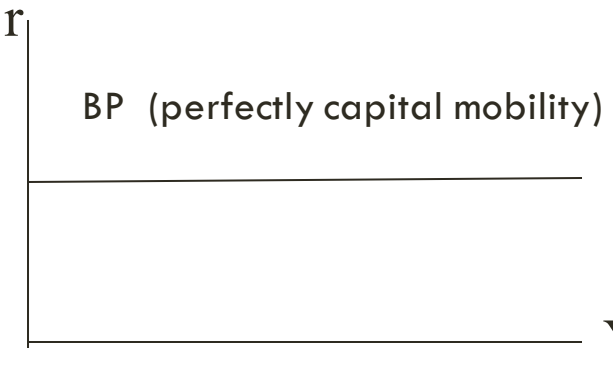
The slope of BP line depends on

- Sensitivity of net capital flow (KA) to interest rate differentials (r-r^f); the β_1.
- β_1 measures the degree of capital mobility

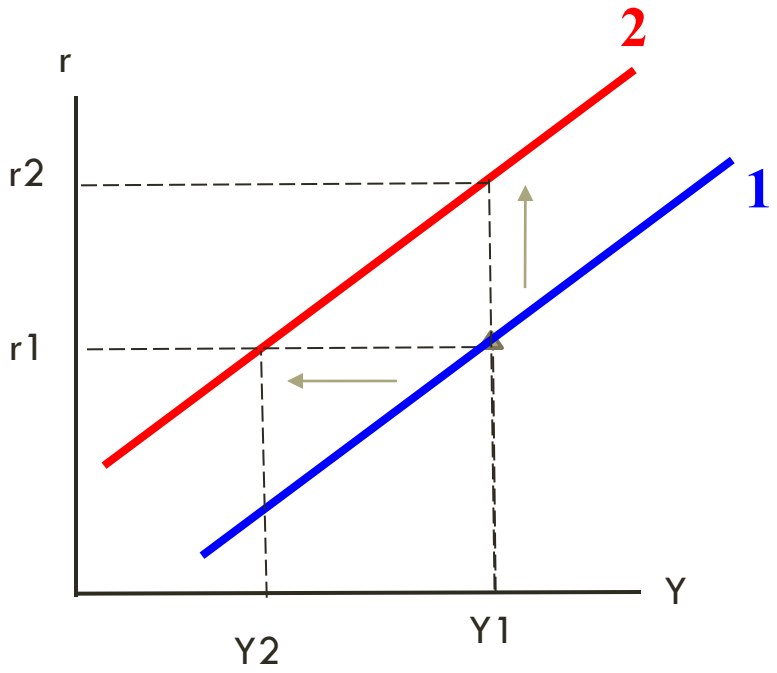
  - Low sensitivity → low capital mobility → steep BP.
    - *Vertical BP* = Perfectly capital control
  - High sensitivity → high capital mobility → flat BP.
    - *Horizontal BP* = Perfectly capital mobility







SHIFTING THE BP LINE



- Recall our equilibrium condition

$$\left[X\left(Y^f, rer\right) - IM(Y_1, rer)\right] + KA\left(r_1 - r^f - \theta\right) = 0$$

- Left shift in the BP line can occurs because of
  - Higher in $r^f + \theta$
  - Lower in Y^f
  - Lower in rer
- Develop your own intuition for the right shift.

OPEN-ECONOMY EQUILIBRIUM

- Notions of equilibrium concepts

1. Internal equilibrium (IE)

"r" and "y" clear goods and money market: IS-LM intersection

2. External equilibrium (EE)

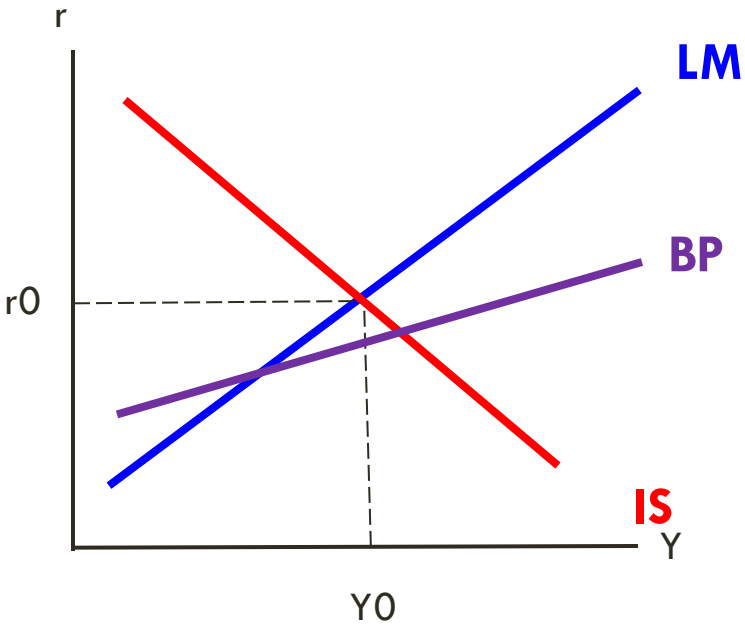
"r" and "y" clear the balance of payments: on the BP

- Open-economy equilibrium: The General equilibrium (GE)

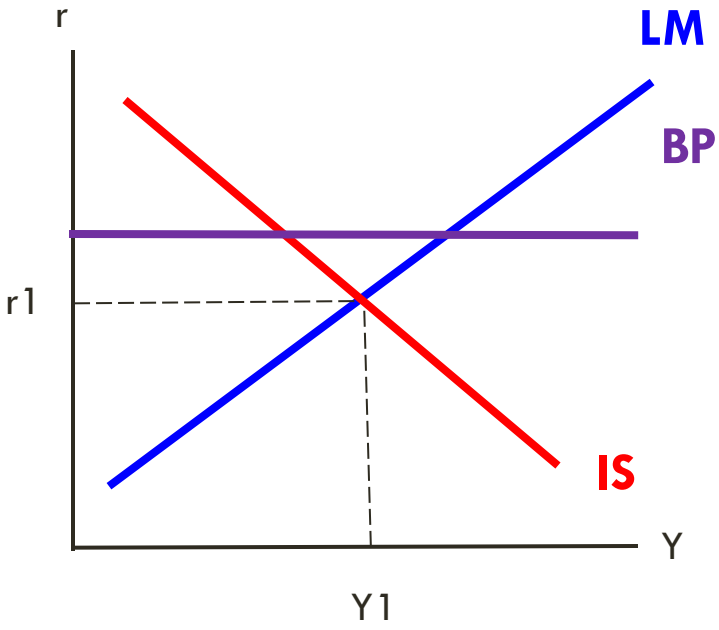
Internal + External: *intersections among IS-LM-BP.*

OPEN-ECONOMY (DIS) EQUILIBRIUM

- (r0,y0): Internal equilibrium
- BOP > 0

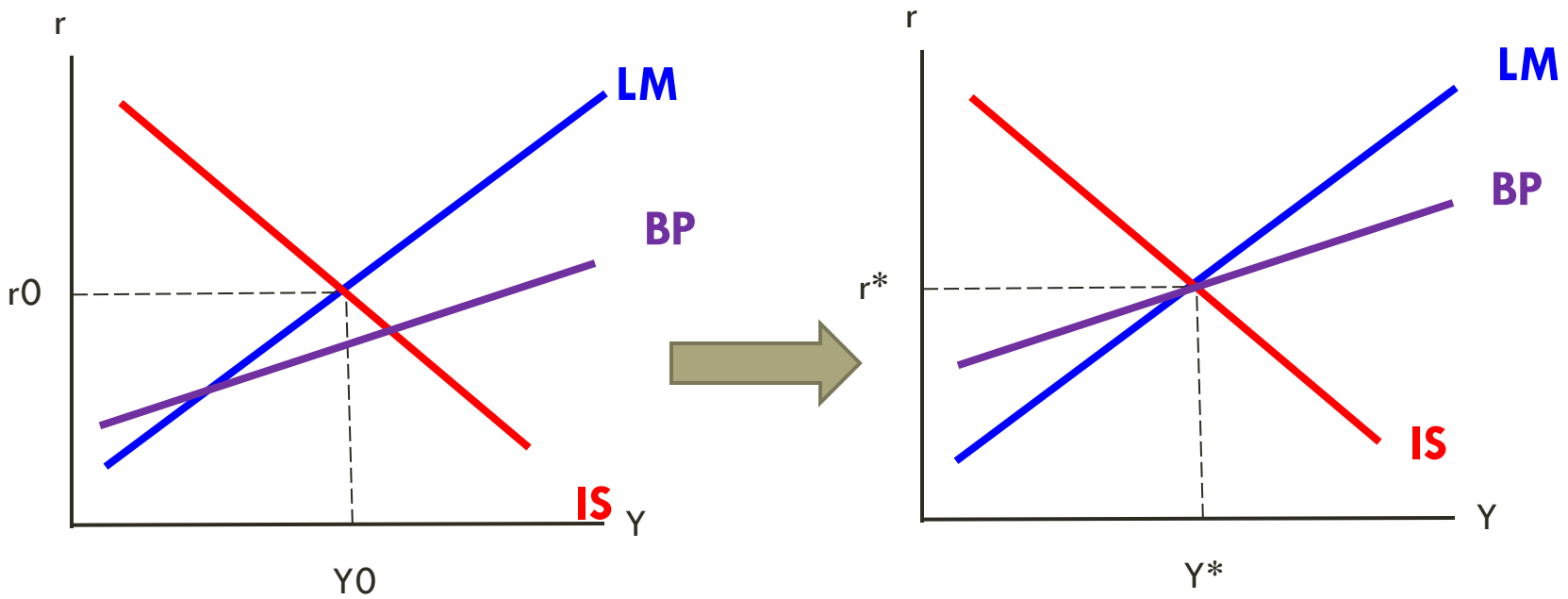


- (r1,y1): Internal equilibrium
- BOP < 0



OPEN-ECONOMY (DIS) EQUILIBRIUM: ADJUSTMENT PROCESS

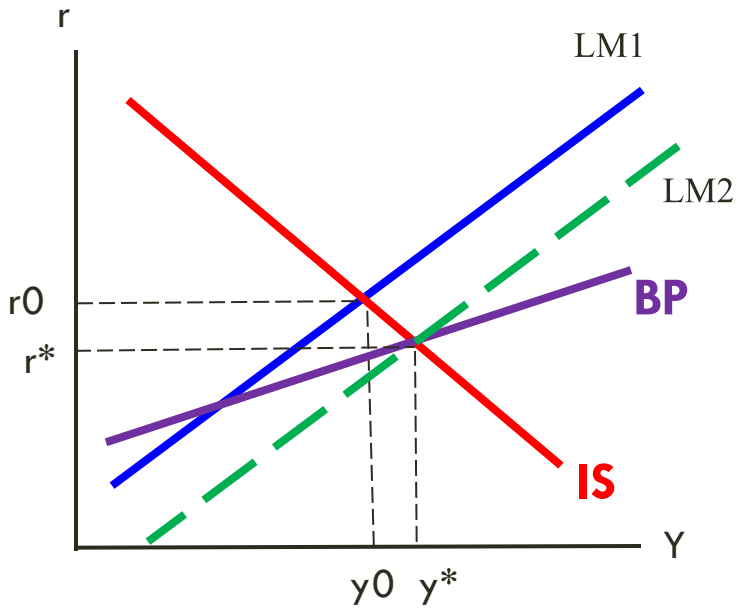
- Given the Internal equilibrium, how does the economy reach the GE? Mechanism?



- Answer depends on the choice of exchange rate regime!

OPEN-ECONOMY (DIS) EQUILIBRIUM: ADJUSTMENT PROCESS

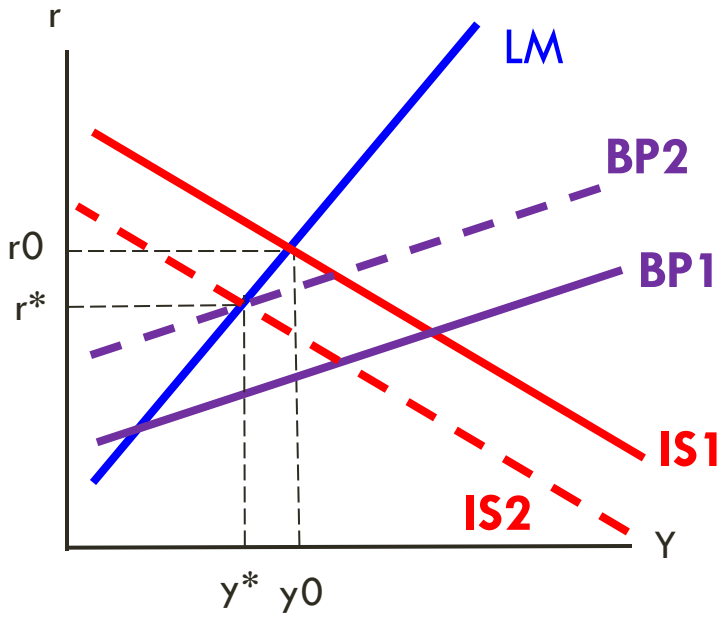
- Under the fixed exchange rate, nominal exchange rate is fixed.
- The adjustment mechanism will work through the level of money supply.



- (r0,y0): BOP > 0
- To maintain fixed "e", central bank buys all surplus of forex; this causes money supply to rise, i.e. LM1 → LM2.
- Rising M lowers "r" (worsening KA) and increase "y" (causing more import)
- net positive BOP is gradually eliminated while the economy reaches the GE (r*,y*).

OPEN-ECONOMY (DIS) EQUILIBRIUM: ADJUSTMENT PROCESS

- Under the flexible exchange rate, "e" will directionally move to clear the imbalance of BOP.
- BOP surplus → "e" falling (appreciate); BOP surplus → "e" rising (depreciate)



- (r0,y0): BOP > 0
- Without any interventions, "e" will fall.
  - Causing deterioration in BOP: BP1 → BP2
  - Causing a lower in AE: IS1 → IS2
- net positive BOP is gradually eliminated while the economy reaches the GE (r*,y*).

AGENDA

- ~~International linkage and Balance of payments~~
- ~~Foreign exchange market and Exchange rate determination~~
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SHOCKS AND PROPAGATION

- Equilibrium occurs where all the three lines intersect.
- Fluctuations in output arise because shocks randomly hit the economy, causing the movement of equilibrium.
- In the closed economy, we usually think about shocks in IS as real shocks and shocks in LM as monetary (financial) shocks.
- Under the opened-economy, shocks can also be classified as the country origin.

SHOCKS AND PROPAGATION

type / Country	**Real**	**Monetary / finance**
Domestic (local)	- business/consumer confidence changing - Government spending	- domestic banking panics - Money supply - Financial deregulation
External	- World GDP growth - Global productivity - Oil price	- Global financial downturn; - Global Interest rate trends

SHOCKS AND PROPAGATION

Question

1. How do the different types of shocks work under open-economy; contraction v.s. expansion?

2. Can shocks get amplified, i.e. large or small?

3. What is the characteristic of the economy that is prone to have high volatility? Resiliency; self-correcting mechanism?

SHOCKS AND PROPAGATION

- We will focus on the analysis under "small open-economy with perfect capital mobility"
  - Horizontal BP line. → Mundel-Flemming world
  - Shocks by line.

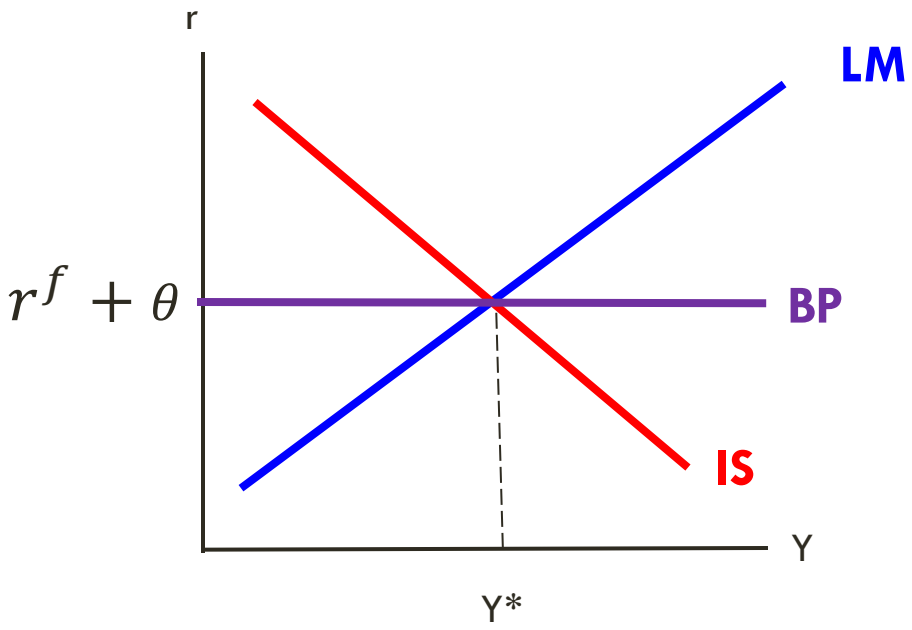
- Answers/Insights to the posted questions are:

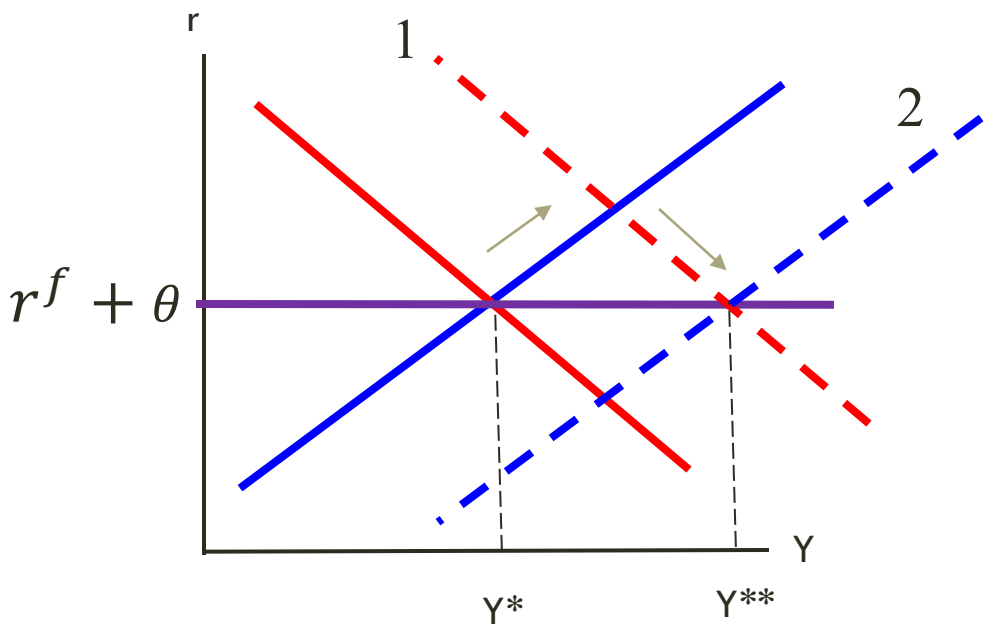
1) Nature of shocks: *origin (country/type)*.

2) Choice of exchange rate regime: *fixed v.s. flexible.*

DOMESTIC SHOCKS: IS SHOCKS

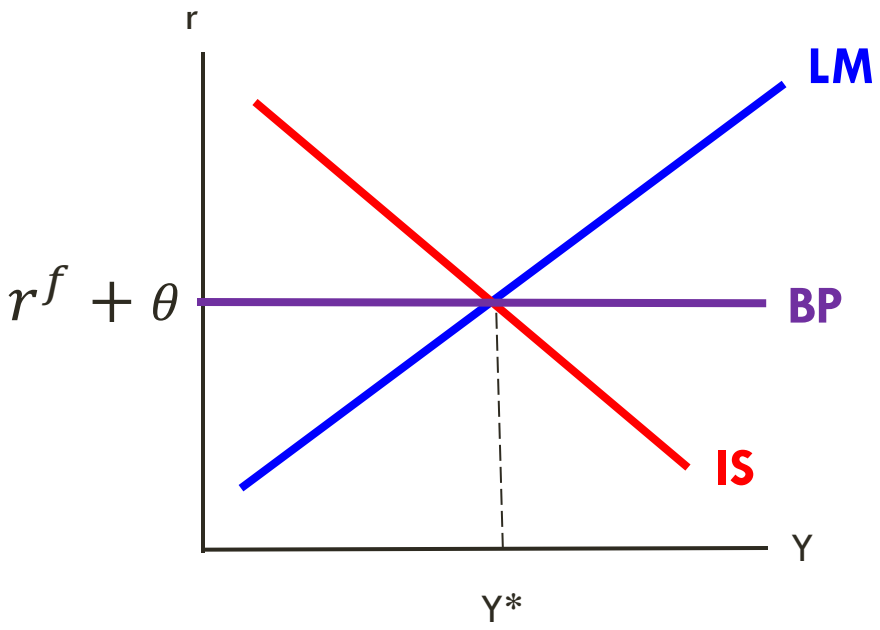
Case 1: Improvement in business sentiments / fixed exchange rate

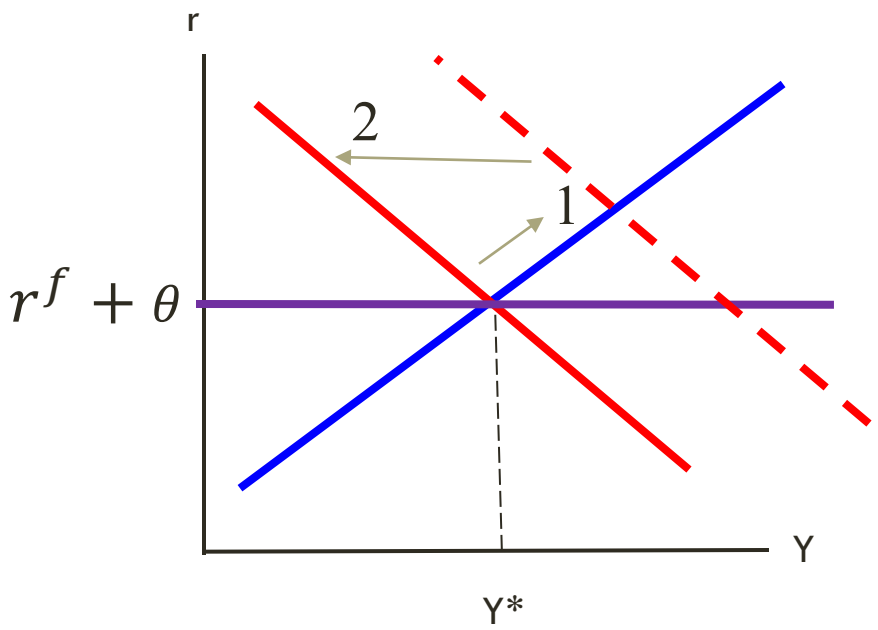




DOMESTIC SHOCKS: IS SHOCKS

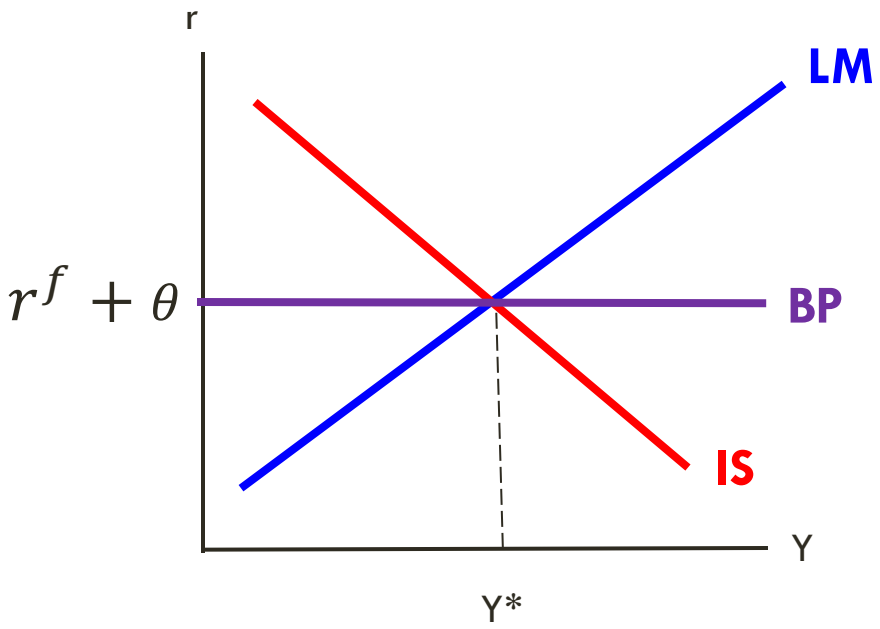
Case 2: Improvement in business sentiments / flexible exchange rate

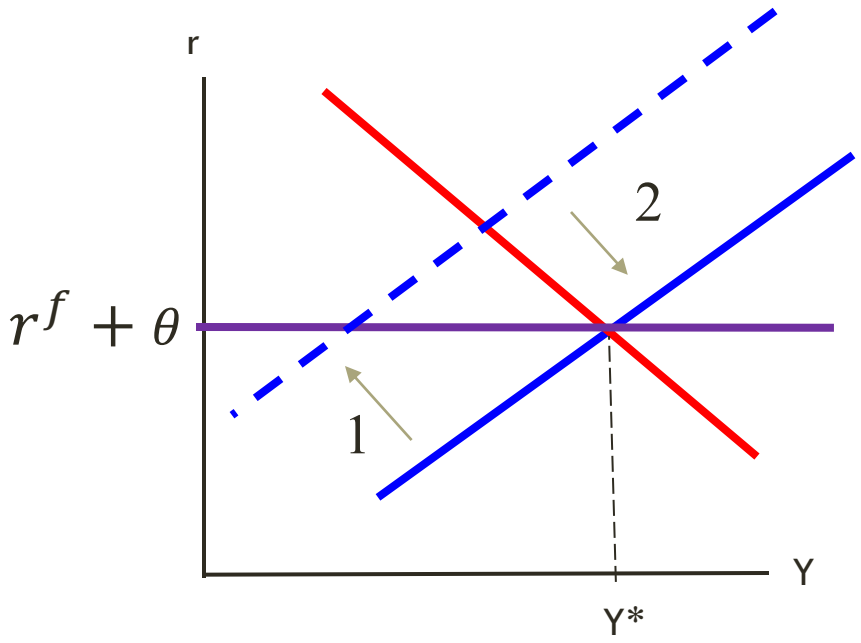




DOMESTIC SHOCKS: LM SHOCKS

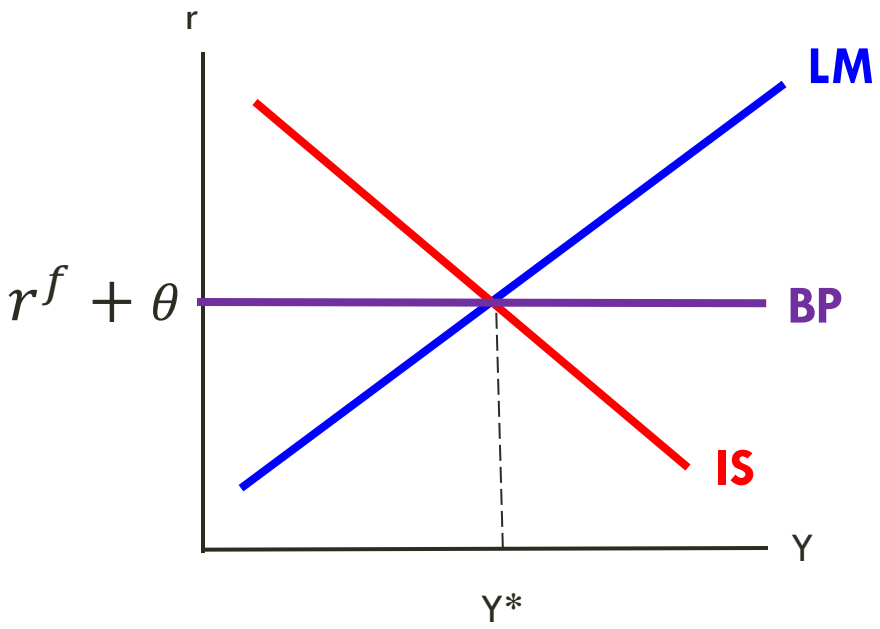
Case 3: Banking panic / fixed exchange rate

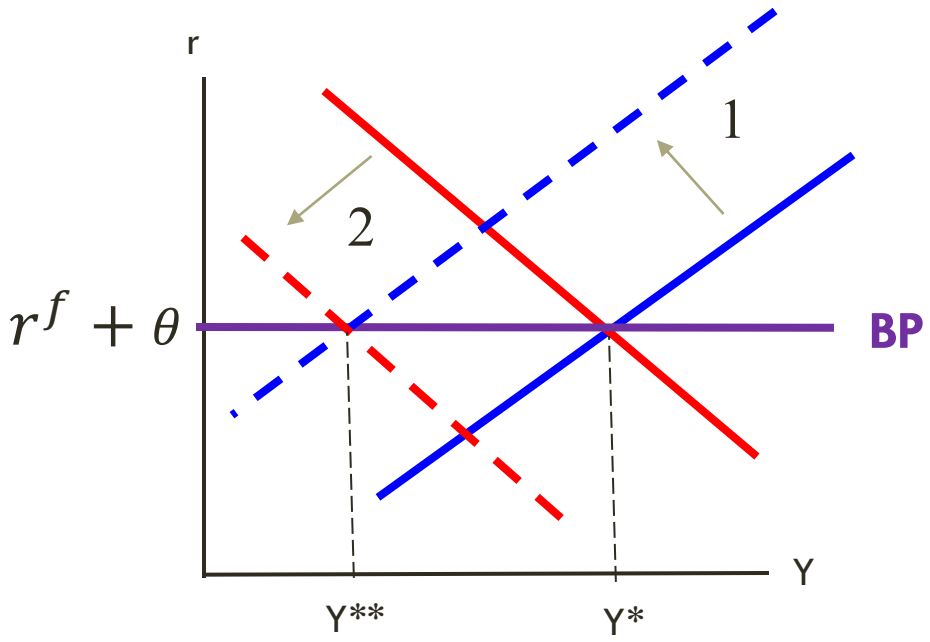




DOMESTIC SHOCKS: LM SHOCKS

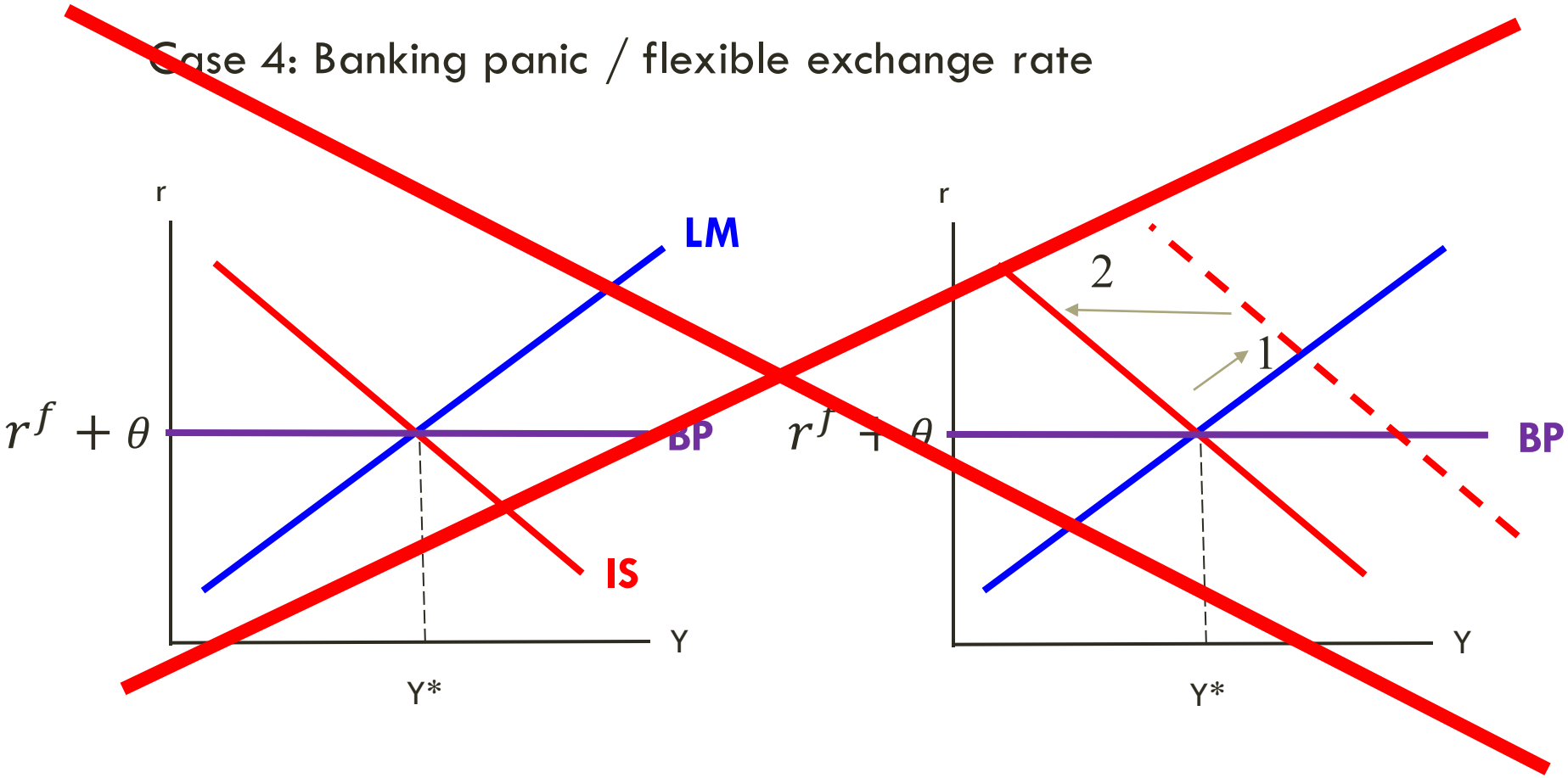
Case ~~3~~ 4: Banking panic / ~~fixed exchange rate~~ flexible exchange rate





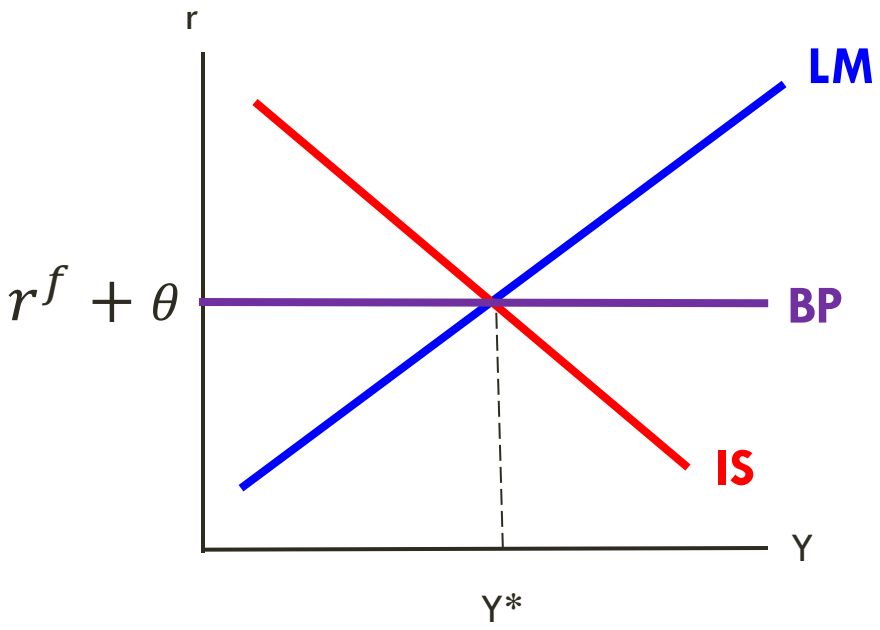
DOMESTIC SHOCKS: LM SHOCKS

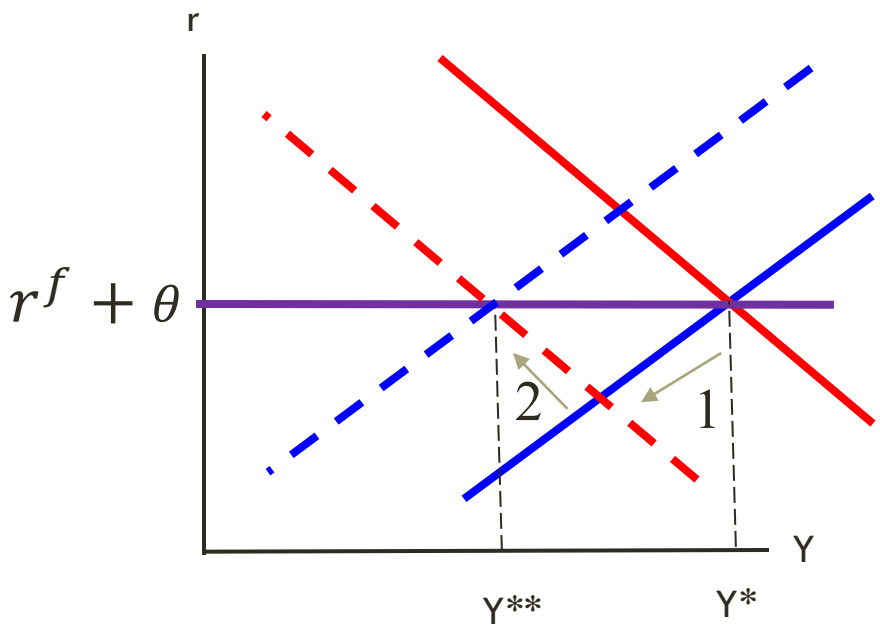
Case 4: Banking panic / flexible exchange rate



EXTERNAL SHOCKS: IS SHOCKS

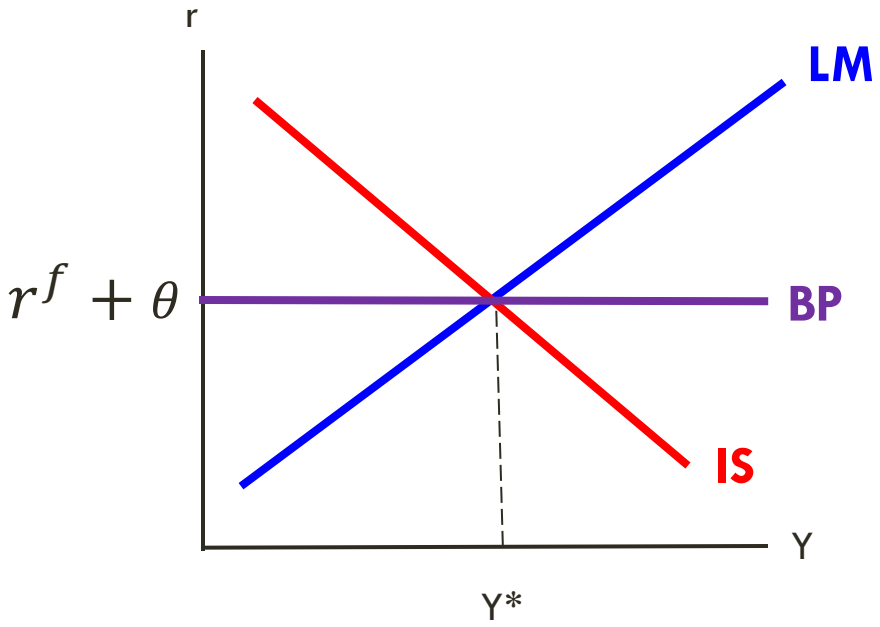
Case 5: Global GDP recession / fixed exchange rate

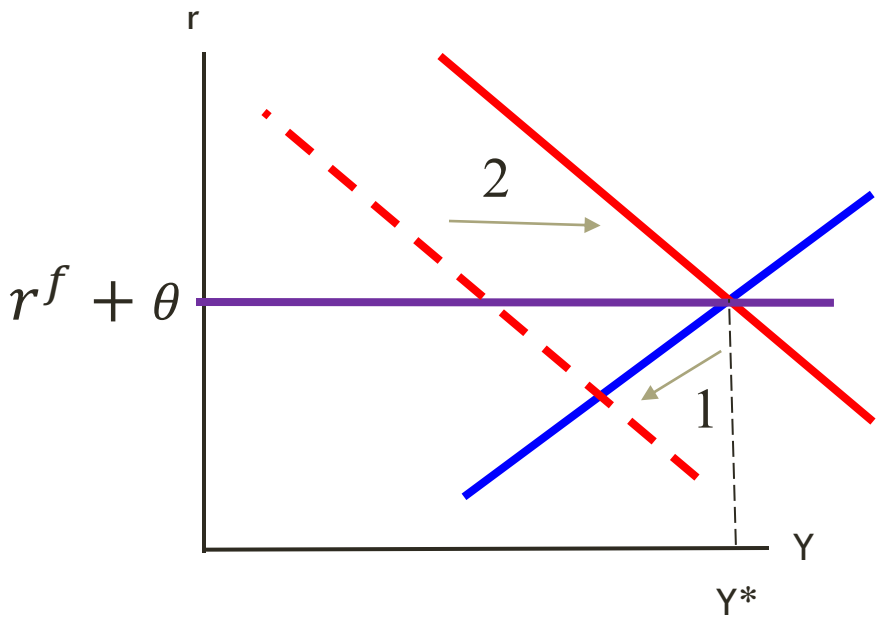




EXTERNAL SHOCKS: IS SHOCKS

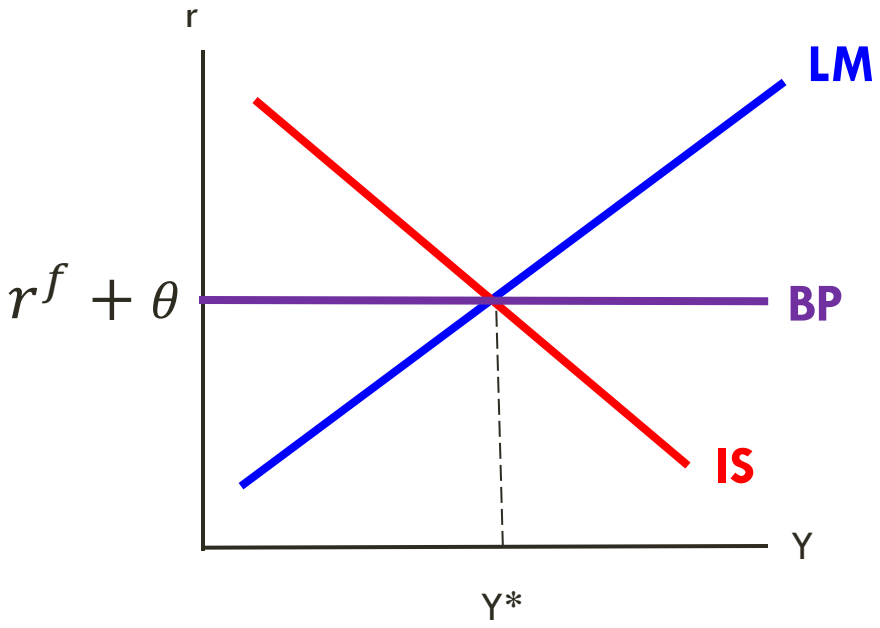
Case 6: Global GDP recession / flexible change rate

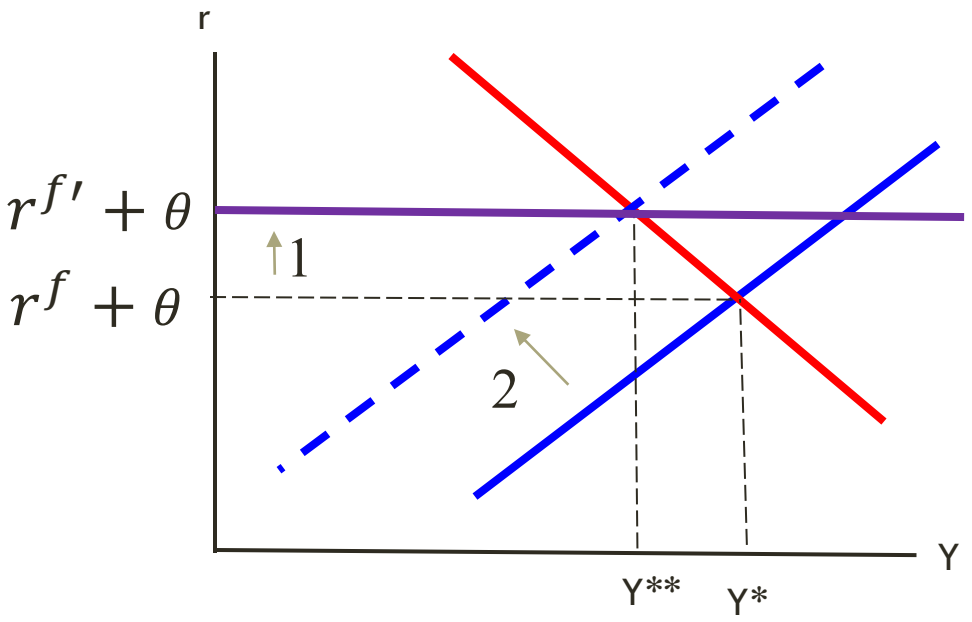




EXTERNAL SHOCKS: BP SHOCKS

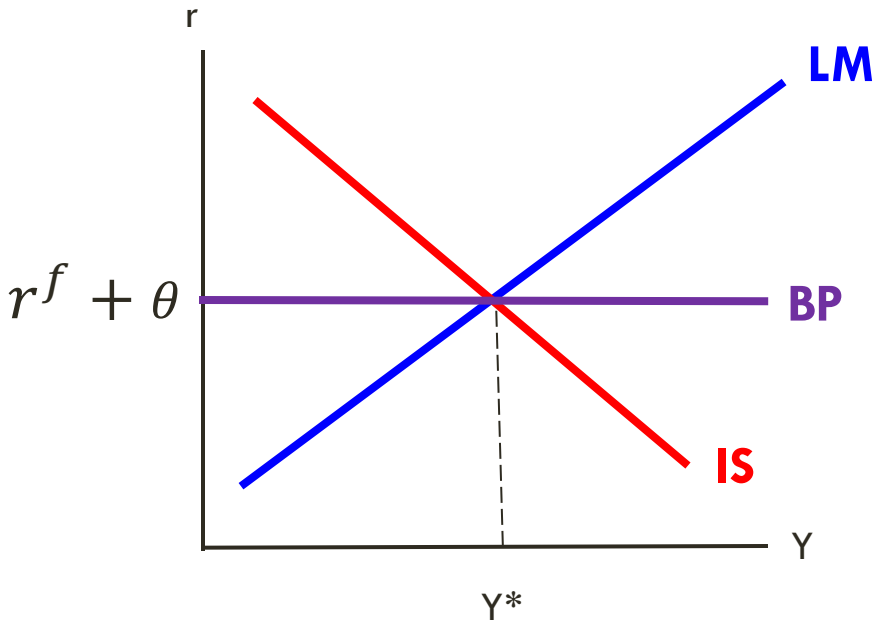
Case 7: Fed raises FED fund/ fixed exchange rate

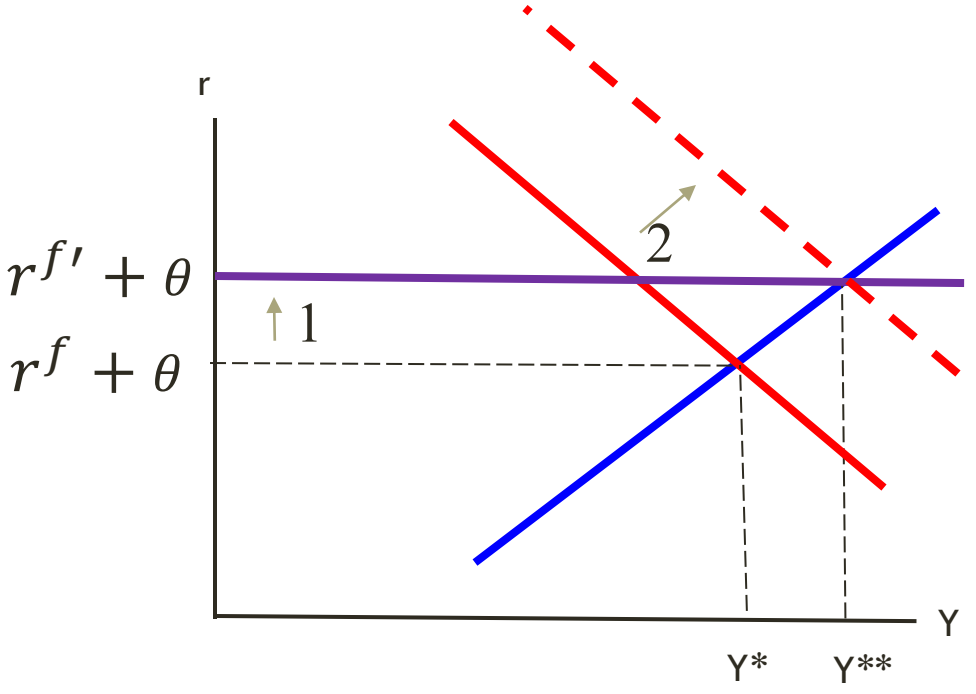




EXTERNAL SHOCKS: BP SHOCKS

Case 8: Fed raises Fed fund / flexible exchange rate





HOW SHOCKS GET AMPLIFIED…

Origin	Fixed	Flexible
1. Domestic shocks		
IS shocks (real)	Amplified (1)	Insulated (2)
LM shocks (financial)	Insulated (3)	Amplified (4)
2. External shocks		
IS shocks (real)	Amplified (5)	Insulated (6)
BP shocks (financial)	Amplified (7)	Amplified (8)

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POLICY UNDER OPEN-ECONOMY

- Policy can be used to fix the imbalances.
  - CA deficits with unemployment → Fixing the imbalances
- Possible choices of policy include
  - Exchange rate policy
  - Fiscal policy and fiscal policy.
- Policy effectiveness issue revisited.

EXCHANGE RATE POLICY

- Usable when country initially adopts the fixed exchange rate regime.

- The central bank sets the nominal exchange rate at a fixed (official) level
  - It stands ready to buy or sell foreign currency at the fixed rate using its foreign exchange reserves.

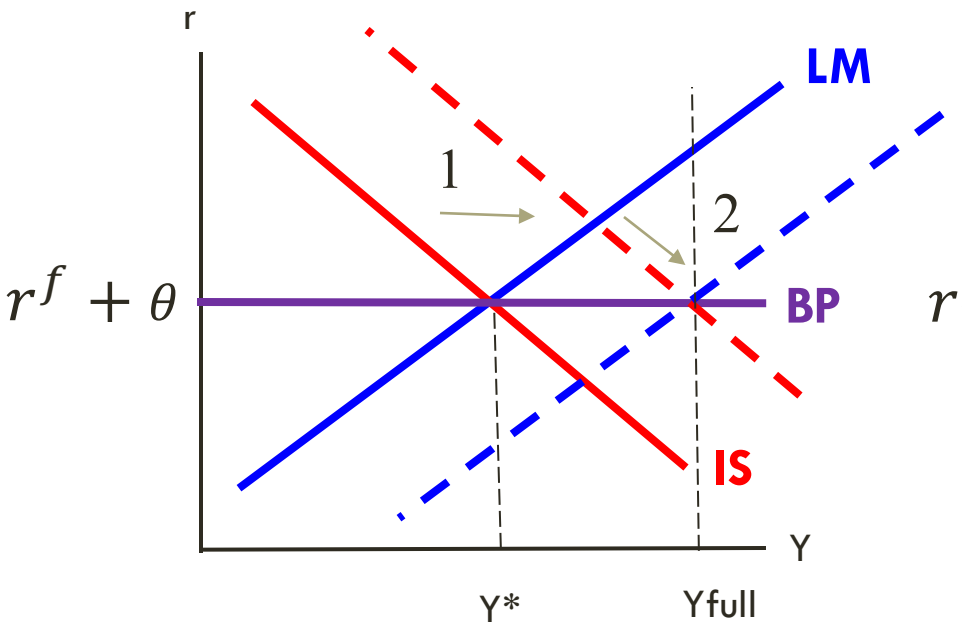
- Overvalue/undervalue currency can occur as the fundamental of macroeconomy has changed, and hence causing some imbalances.

EXCHANGE RATE POLICY

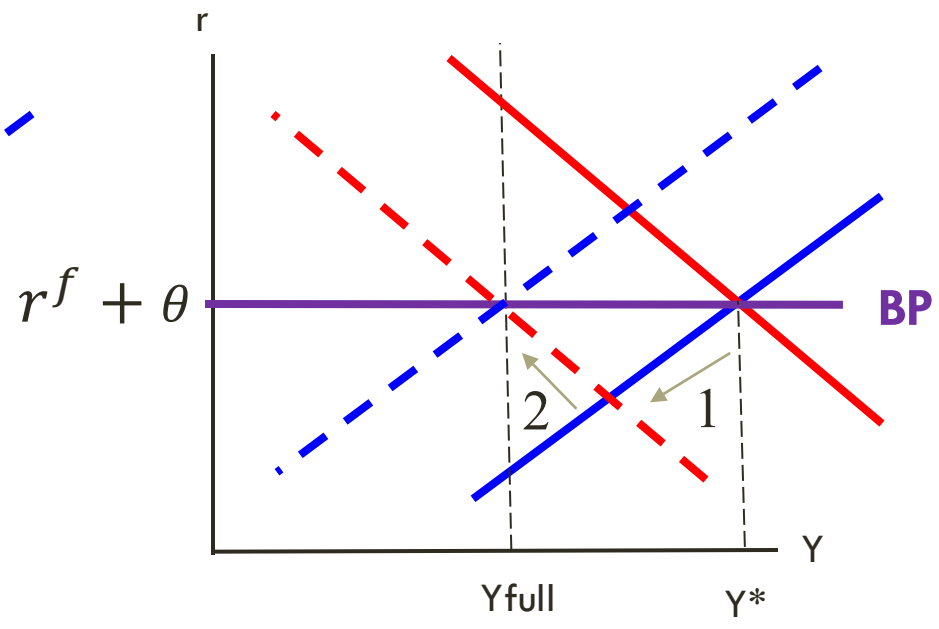
- Periodic realignments, e.g. revaluation/devaluation, can help fixing the imbalance through the so called "expenditure-switching channel".
  - Changing the composition of net exports, aggregate expenditure, and hence output.

EFFECTS OF EXCHANGE RATE REALIGNMENT

Effect of devaluation



Effect of revaluation



FISCAL AND MONETARY POLICY EFFECTIVENESS

- Unlike the closed-economy, effectiveness of fiscal and monetary policy also depends on the choices of exchange rate regime. (let alone the slope issue.)

- As we had seen before, propagation of shocks would vary across different exchange rate regimes, so the effect of policy as well.

- Polices under fixed exchange rate → policies under flexible exchange rate.

POLICY EFFECTIVENESS

Perfect capital mobility world (BP horizontal)

Policy	Fixed exchange rate	Flexible exchange rate
Fiscal policy	Effective	*Ineffective*
Monetary policy	*Ineffective*	Effective

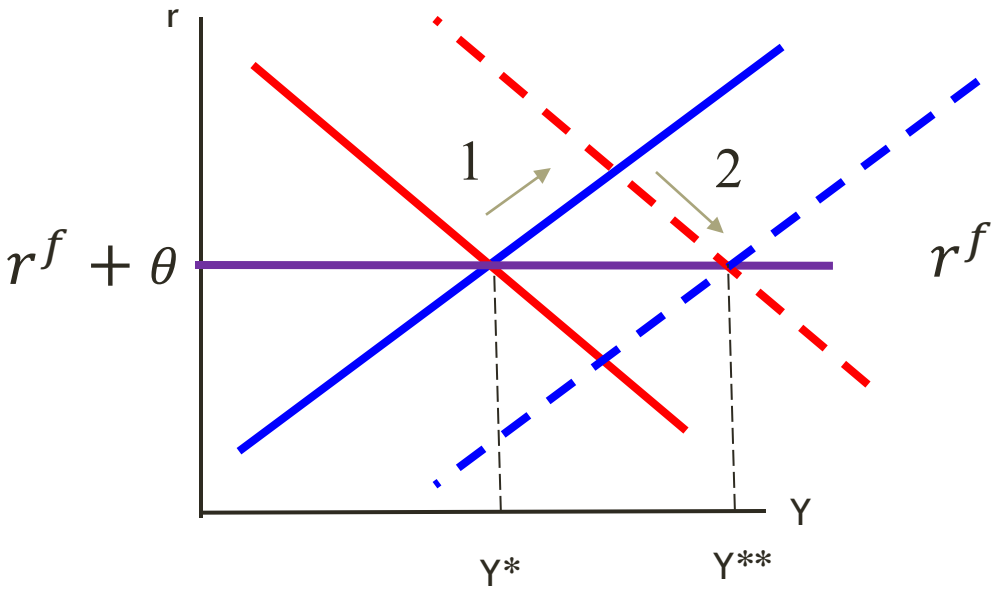
Imperfect capital mobility world (BP positive slope; **See Froyen**)

Policy	Fixed exchange rate	Flexible exchange rate
Fiscal policy	???	???
Monetary policy	???	???

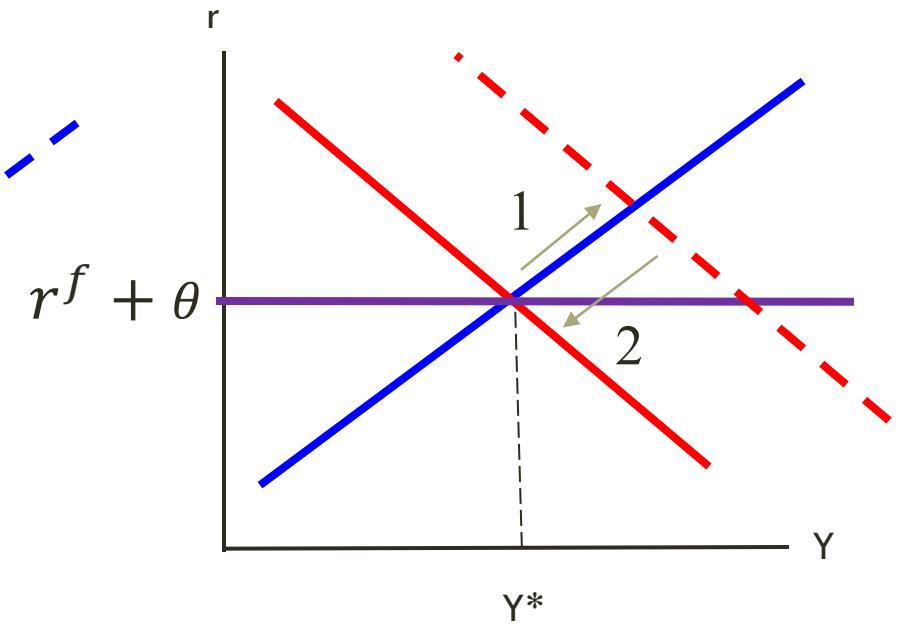
FISCAL POLICY

Fiscal instruments: G, T

Changes in G (or T) cause a shift in IS curve. (ex. expansionary fiscal policy)



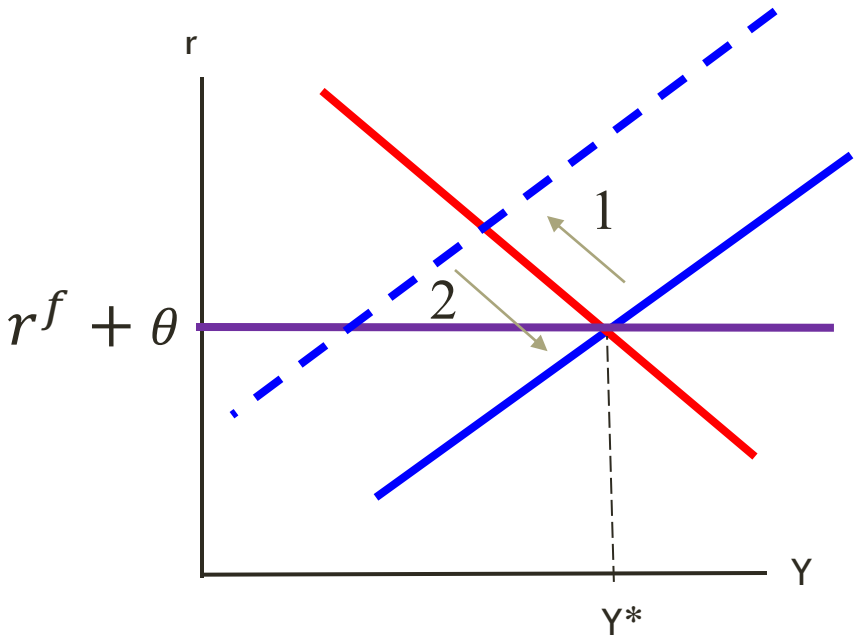
Fixed exchange rate



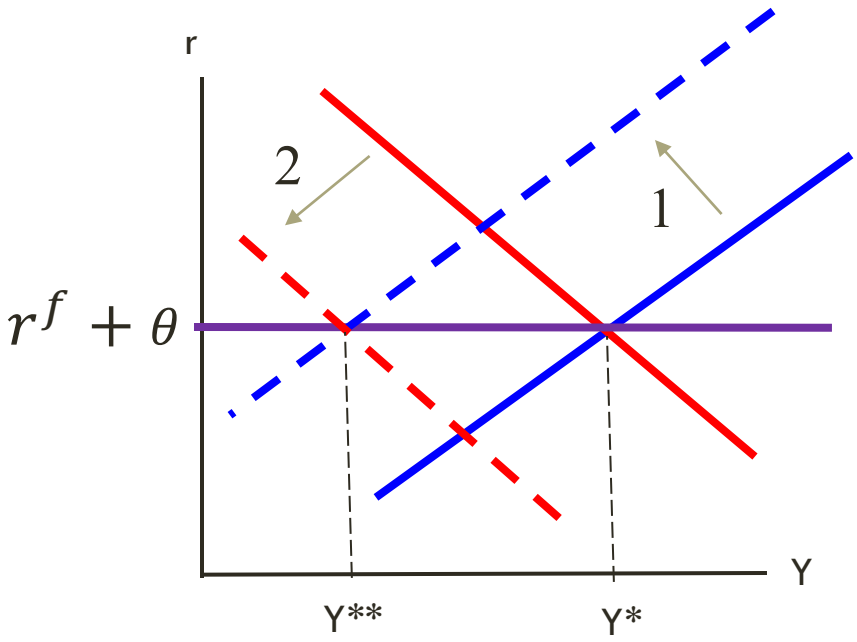
Flexible exchange rate

MONETARY POLICY

Restrictive monetary policy



Fixed exchange rate



Flexible exchange rate

AGENDA

- ~~International linkage and Balance of payments~~
- ~~Foreign exchange market and Exchange rate determination~~
- ~~Macroeconomics framework for open-economy~~
- ~~Shocks and propagation under open-economy~~
- ~~Policy effectiveness~~
- Emerging market crisis

DURING THE 1990S

- Many emerging markets had experienced/plunged into the so called emerging market crisis.

Ex: Mexican peso crisis (1994-95), Asian financial crisis (1997-98), Argentinian financial collapse (2001-2002).

- A factor that has triggered the crisis was due to the "too ambitious policies concurrently adopted at the same time."
  - The limit of policy design under open-economy.

THE IDEAL STABILITY AND POWER…

- Designing macroeconomic landscape and policies were aimed at ensuring the "Ideal conditions":
  - Stable exchange rate: exchange is not volatile → Fixed exchange rate
  - Stable/efficient financial sector: enjoy benefit from world financial market → Fully financial integration / capital mobility
  - Monetary stability: having sovereign authority to control money supply and hence inflation → having ability to control domestic interest and hence inflation.

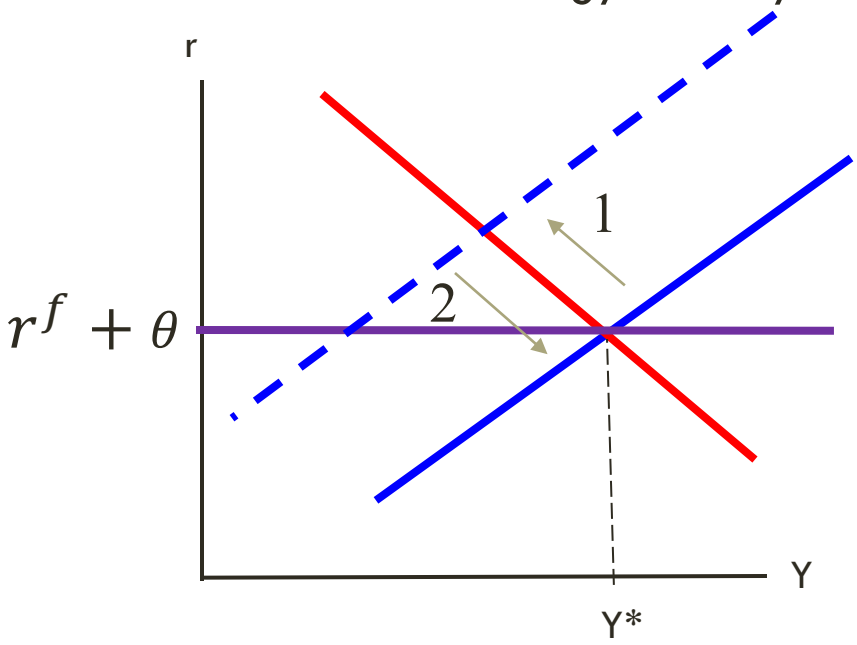
POWER TO ACHIEVE THE IDEAL STABILITY.

- Can we really achieve all these? Are there any concerns?
  - Mundell showed a long time ago that these three choices of control are **not feasible at the same time**.
  - However, back then, people thought the answer was YES.
  - They thought that they can resist the force by means of the so called *sterilization policy*.

CAN WE ACHIEVE ALL THREE?

Our IS-LM-BP framework would suggest that NO.

What kind of strategy do they think help achieving the three things?



Fixed exchange rate

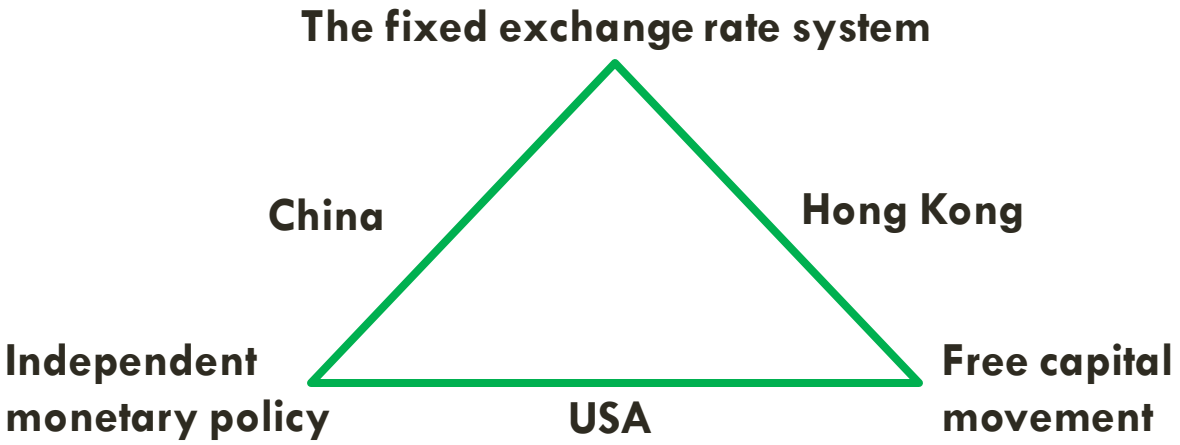
- At (1), we have BOP > 0.
- To fixed exchange rate, money supply will rise.
- To prevent the economy moving from (1) back to (2), central back simultaneously conducts sale OMO, to counteract and prevent money supply from rising.

STERILIZATION POLICY

- The central bank may prevent the expansion of the money supply by draining domestic currency back from the circulation.
  - Selling bonds to the public.
  - Forcing domestic interest rate above $r^f + \theta$
  - But, the CB will keep accumulating FX --- rising FX reserves.
- Sounds not a problem, but policy is actually costly.
  - Most central bank keeps their foreign reserve in terms of hard-currency government bond.
  - Implicitly, CB is swapping high-return assets for low-return assets.
- An independent monetary policy is self-defeating.

IMPOSSIBLE TRINITY

- **Trilemma:** it is impossible to conduct all three policies at the same time:



- **Ex:** Mexican peso crisis (1994-95), Asian financial crisis (1997-98), Argentinian financial collapse (2001-2002).

ASIAN FINANCIAL CRISIS (1997-98): THE GOLDEN ERA

- When things looked GREAT before 1990.

  - Adopting the Pegged exchange rate, particularly basket currency.
  - The fifth Tiger of Asia: Double digits growth in GDP
  - Current account surplus; Government Budget surplus; low inflation; stock market boom.

ASIAN FINANCIAL CRISIS (1997-98): THE PHANTOM MENACES OF THE IMPOSSIBLE TRINITY

- The phantom menaces: *Financial liberalization in 1993*
  - Growth slowdown; financial hubs → capital account liberalization.

- *Consequence of the liberalization policy in 1993*
  - Massive capital influx; external debt rose rapidly.
  - Credit easing; private credit growth rose dramatically.
  - Real-estate boom

ASIAN FINANCIAL CRISIS (1997-98): WHEN THINGS TURNED SOUR

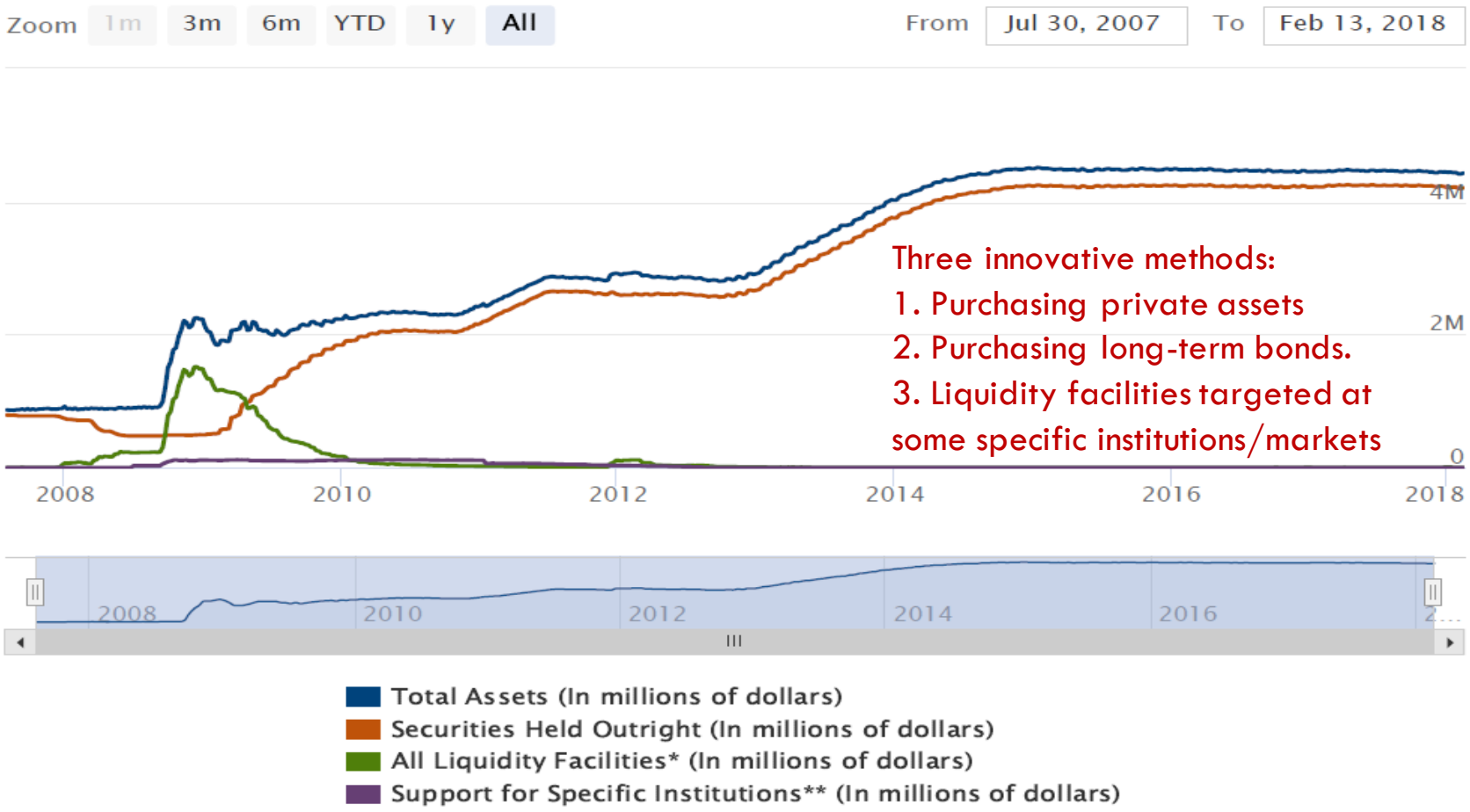
- External imbalances
  - Huge amount of current account deficit
  - Huge amount of external debt, esp. short-term

- Domestic imbalances
  - Real-estate bubble
  - Banking NPLs rise

ASIAN FINANCIAL CRISIS (1997-98): THE FALLS OF EVERYTHING

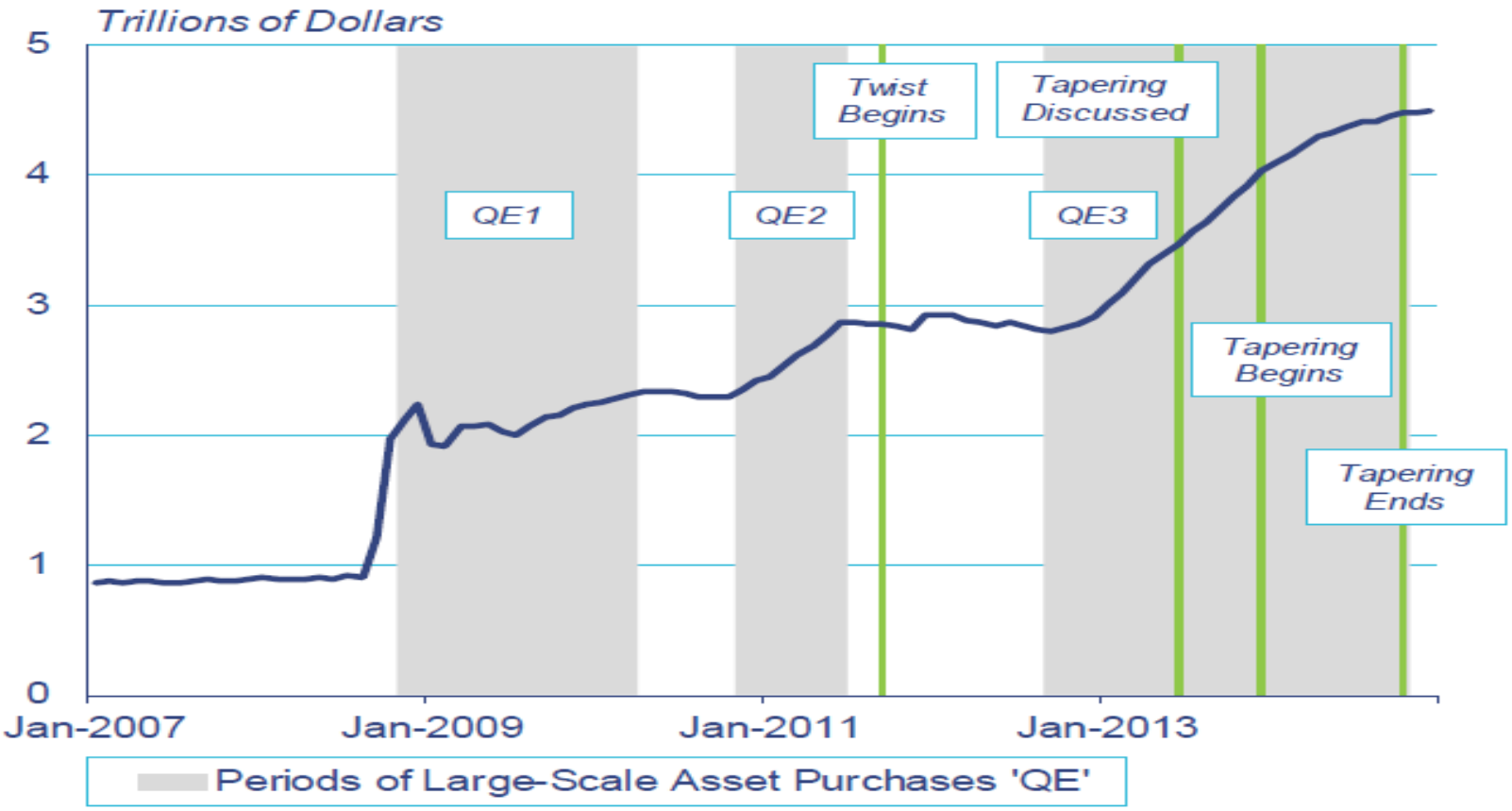
- Fundamentally weak → speculative attack
- BOT had tried very hard to prevent the speculation as they were worried about all the short-term US-denominated borrowing.
- Depletion in Foreign reserve had continued.
- Decided to abandon the fixed exchange rate regime in July 2nd, 1997.
- Currency depreciation; Capital reversal; Financial Crunch
- Resulting in the worst ever experienced economic contraction in Thailand: Asian Financial Crisis.

FEDERAL RESERVE BALANCE SHEET AND THE UNCONVENTIONAL MONETARY POLICY



Source: Fed balance sheet

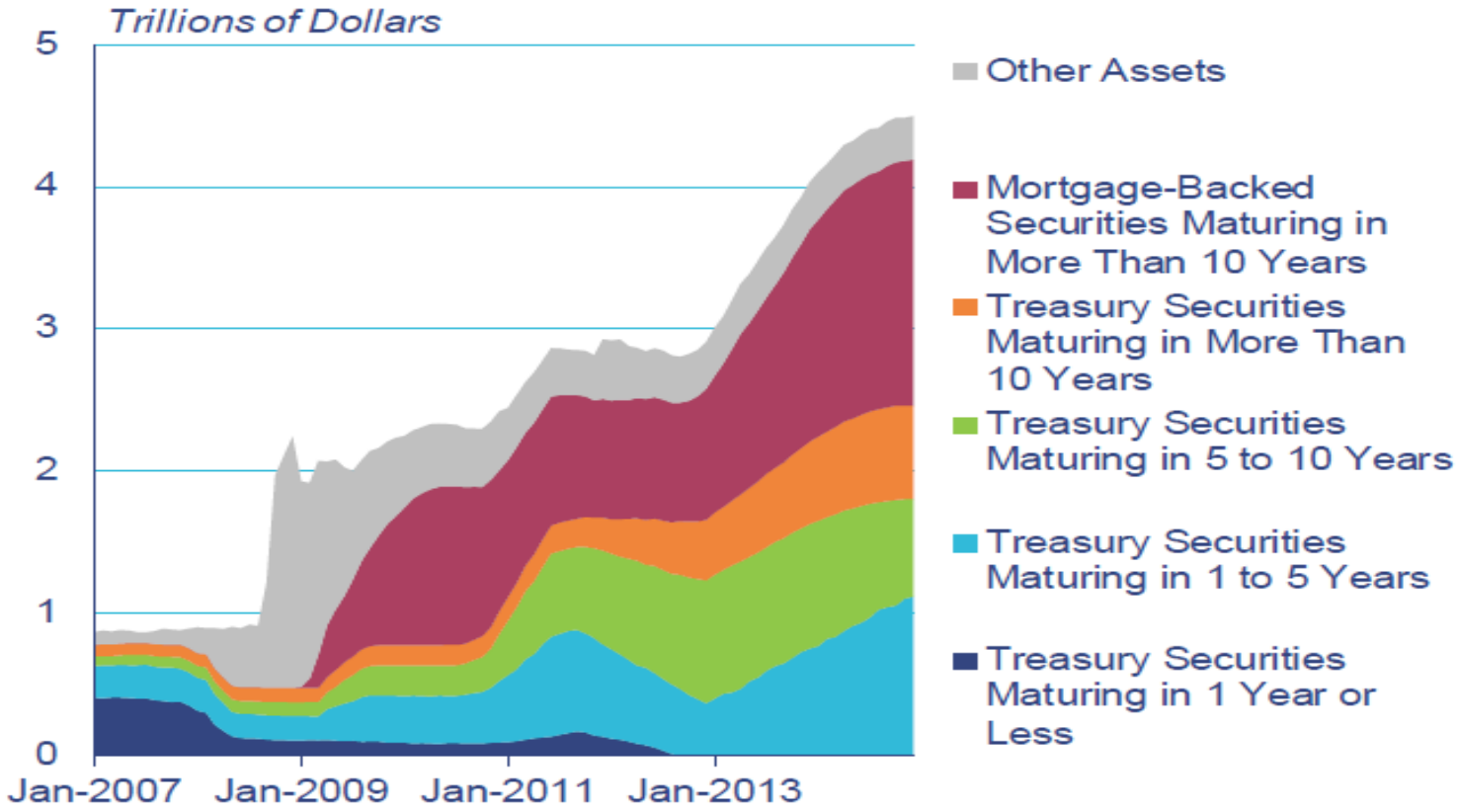
TIMELINE OF QUANTITATIVE EASING: LASP



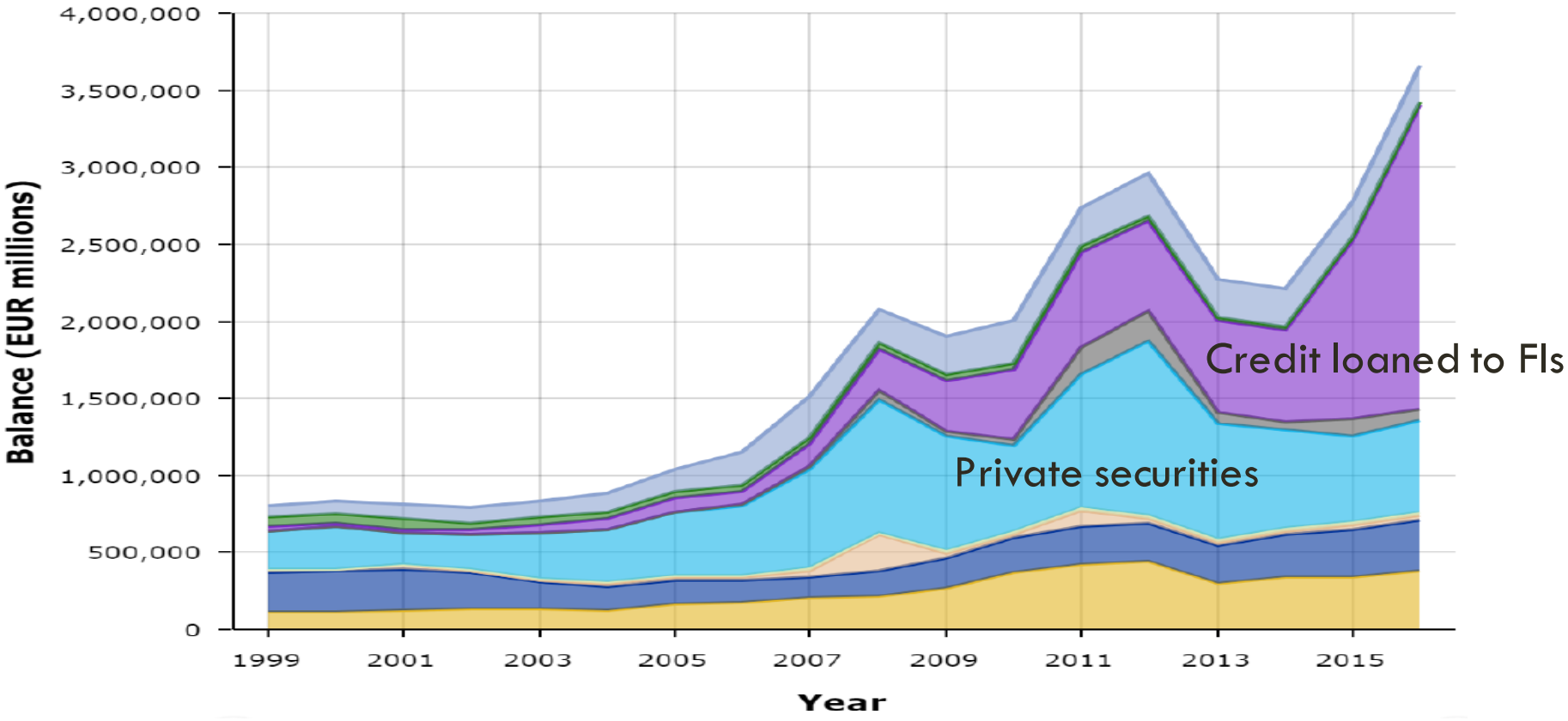
Program	Announcement Date	Targeted End Date	Targeted Total Purchase	Composition of Purchases	Program Details as Announced
Quantitative Easing 1 (QE1)	November 25, 2008	Over Several Quarters	Agency Debt: Up to $100 bil Agency MBS: Up to $500 bil	Agency Debt and Agency MBS	Purchase up to $100 bil of agency debt and up to $500 bil of agency MBS. Purchases expected to take place over several quarters.
	March 18, 2009	Treasury Securities: September 30, 2009 Agency Debt and MBS: December 31, 2009	Agency Debt: Additional $100 bil Agency MBS: Additional $750 bil Longer-Term Treasuries: $300 bil	Agency Debt, Agency MBS, and Longer-Term Treasury Securities	Total purchases of agency MBS will now be to up to $1.25 trillion, and agency debt up to $200 bil. Purchase up to $300 bil of longer-term Treasury securities over next 6 months.
Quantitative Easing 2 (QE2)	November 3, 2010	June 30, 2011	$600 bil	Longer-Term Treasury Securities	Purchase $600 bil of longer-term Treasury securities by the end of the second quarter of 2011, a pace of about $75 bil per month.
Maturity Extension Program (Operation Twist)	September 21, 2011	June 30, 2012	$400 bil	Longer-Term Treasury Securities[1]	Purchase, by the end of June 2012, $400 bil of Treasury securities with remaining maturities of 6-30 years and sell an equal amount of Treasury securities with remaining maturities of 3 years or less.
	June 20, 2012	December 31, 2012	Amount Limited by Remaining Shorter-Term Treasury Securities[1]	Longer-Term Treasury Securities[1]	Purchase Treasury securities with remaining maturities of 6-30 years at the current pace and sell or redeem an equal amount of Treasury securities with remaining maturities of approximately 3 years or less.
Quantitative Easing 3 (QE3)	September 13, 2012	None Given	None Given	Agency MBS and Longer-Term Treasury Securities	Purchase agency MBS at pace of $40 bil per month and continue Twist through yearend, increasing holdings of longer-term securities in aggregate by $85 bil.
	December 12, 2012	None Given	None Given	Agency MBS and Longer-Term Treasury Securities	Purchase agency MBS at a pace of $40 bil per month and longer-term Treasury securities initially at a pace of $45 bil per month after Twist ends at yearend.

[1]Shorter-term Treasury securities are sold or redeemed while an equal amount of longer-term Treasury securities are purchased, resulting in no net increase in balance-sheet size.

TIMELINE OF QUANTITATIVE EASING: MATURITY COMPOSITION OF ASSETS PURCHASED.



ECB UNCONVENTIONAL MONETARY POLICY: NEGATIVE INTEREST RATE POLICY



QES ON (NOMINAL) EXCHANGE RATE: APPRECIATION

Table 2
One-day depreciation rates with respect to the U.S. dollar, summary statistics.

	Mean	St. dev.	Largest appreciation	Date	Largest depreciation	Date	Kurt.	Skew
EME Index	−0.27	0.28	−2.08	10/14/2008	2.45	10/8/2008	12.00	0.61
Brazil	0.08	1.07	−9.57	10/14/2008	7.76	10/8/2008	15.94	−0.05
China	−1.43	0.12	−1.03	8/26/2008	1.03	9/15/2008	13.74	−0.16
Czech Rep.	−0.95	0.88	−4.67	10/23/2008	5.16	11/7/2013	6.06	0.18
Hong Kong	0.00	0.05	−0.26	3/17/2008	0.26	5/17/2010	7.28	−0.21
Hungary	0.12	1.10	−5.50	10/28/2008	6.86	10/15/2008	5.51	0.25
India	1.63	0.60	−3.76	9/14/2012	3.94	11/12/2008	9.31	0.14
Indonesia	1.05	0.71	−7.76	12/9/2008	5.82	11/12/2008	19.72	−0.16
Korea	0.30	0.88	−13.22	10/30/2008	10.14	10/16/2008	47.69	−0.66
Malaysia	−0.70	0.43	−2.51	9/19/2013	1.82	6/7/2010	5.03	−0.15
Mexico	1.03	0.75	−5.96	10/9/2008	8.08	10/8/2008	16.71	0.80
Philippines	−0.81	0.42	−1.87	7/17/2008	1.96	11/8/2010	4.37	0.14
Poland	−0.32	1.07	−6.69	10/28/2008	5.18	10/22/2008	6.19	0.21
Singapore	−1.30	0.45	−2.06	12/17/2008	3.10	9/22/2011	5.50	0.15
South Africa	2.47	1.16	−6.58	10/28/2008	15.51	10/15/2008	20.78	1.42
Taiwan	−0.41	0.31	−3.42	12/18/2008	2.48	4/20/2009	17.73	−0.72
Thailand	−1.04	0.45	−3.53	2/26/2008	4.47	2/29/2008	14.76	0.04
Turkey	2.30	0.95	−5.68	10/28/2008	7.28	10/22/2008	9.21	0.67

This table reports the summary statistics for the one-day percent depreciation rates of EME currencies with respect to the U.S. dollar. For each currency, we also report the date and size of the largest one-day negative (appreciation of the currency with respect to the U.S. dollar) and positive (depreciation) moves in the currency.

EME NOMINAL EXCHANGE RATE INDEX.

B. EME exchange rates (index)

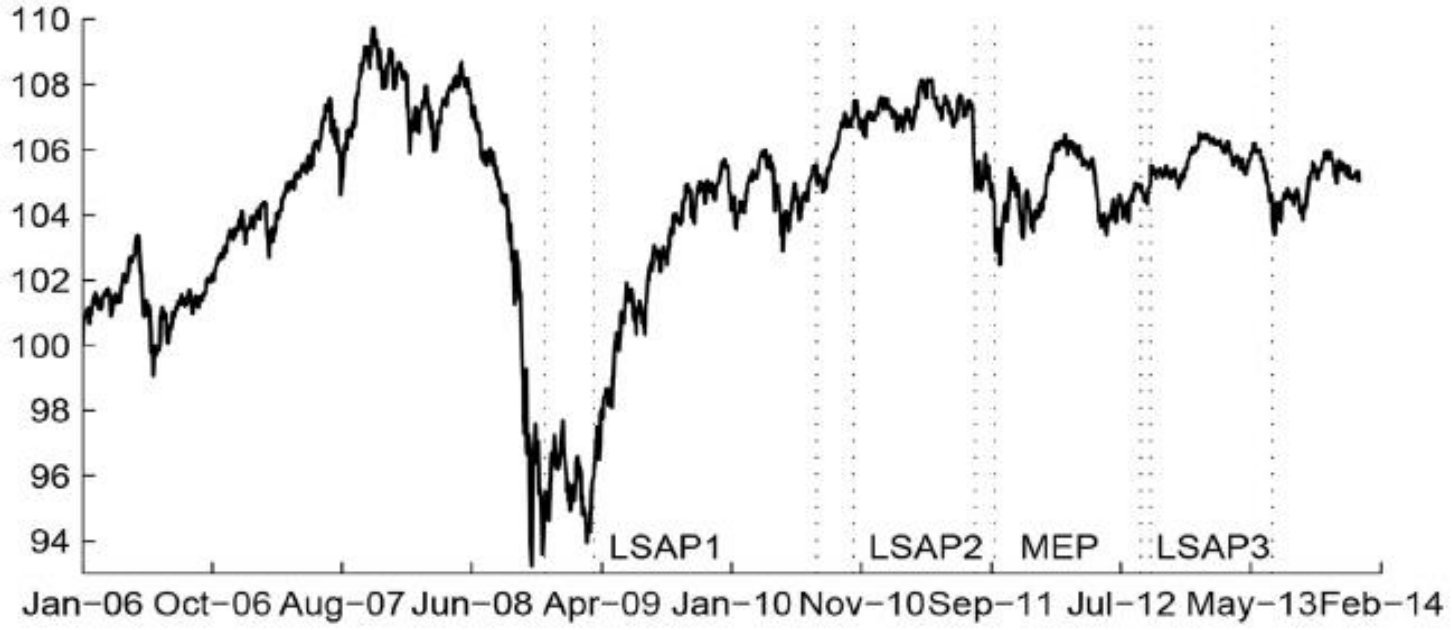
QES ON STOCK PRICES: BOOM IN PRICE.

Table 3
One-day stock returns, summary statistics.

	Mean	St. Dev.	Worst performance	Date	Best performance	Date	Kurt.	Skew
EME Index	0.02	1.45	−9.99	10/6/2008	10.07	10/30/2008	10.26	−0.46
Brazil	0.02	1.87	−12.10	10/15/2008	13.68	10/13/2008	9.19	−0.03
China	0.03	1.77	−9.26	2/27/2007	9.03	9/19/2008	6.23	−0.39
Czech Rep.	−0.02	1.64	−16.19	10/10/2008	12.36	10/29/2008	16.35	−0.48
Hong Kong	0.02	1.74	−13.58	10/27/2008	13.41	10/28/2008	11.03	0.05
Hungary	−0.01	1.77	−12.65	10/15/2008	13.18	10/29/2008	9.38	−0.04
India	0.04	1.69	−11.60	10/24/2008	15.99	5/18/2009	10.19	0.14
Indonesia	0.07	1.54	−10.95	10/8/2008	7.62	1/23/2008	9.39	−0.66
Korea	0.02	1.46	−11.17	10/24/2008	11.28	10/30/2008	10.33	−0.55
Malaysia	0.04	0.82	−9.98	3/10/2008	4.26	8/20/2007	17.74	−1.26
Mexico	0.04	1.41	−7.27	10/22/2008	10.44	10/13/2008	8.74	0.14
Philippines	0.05	1.43	−13.09	10/27/2008	9.37	8/21/2007	10.58	−0.75
Poland	0.02	1.40	−8.29	10/10/2008	6.08	10/29/2008	6.10	−0.44
Singapore	0.01	1.28	−11.48	1/31/2008	7.53	10/30/2008	11.04	−0.49
South Africa	0.05	1.36	−7.58	10/6/2008	6.83	12/8/2008	6.33	−0.19
Taiwan	0.01	1.34	−6.74	1/22/2008	6.52	4/30/2009	5.96	−0.38
Thailand	0.03	1.46	−16.06	12/19/2006	10.58	12/20/2006	16.55	−1.02
Turkey	0.03	1.84	−11.06	6/3/2013	12.13	9/19/2008	6.54	−0.26

This table reports the summary statistics for one-day log returns of each country's headline stock index in percent. For each country, we also report the date and size of the largest one-day negative (worst performance of the index) and positive (best performance) moves.

EME STOCK PRICE

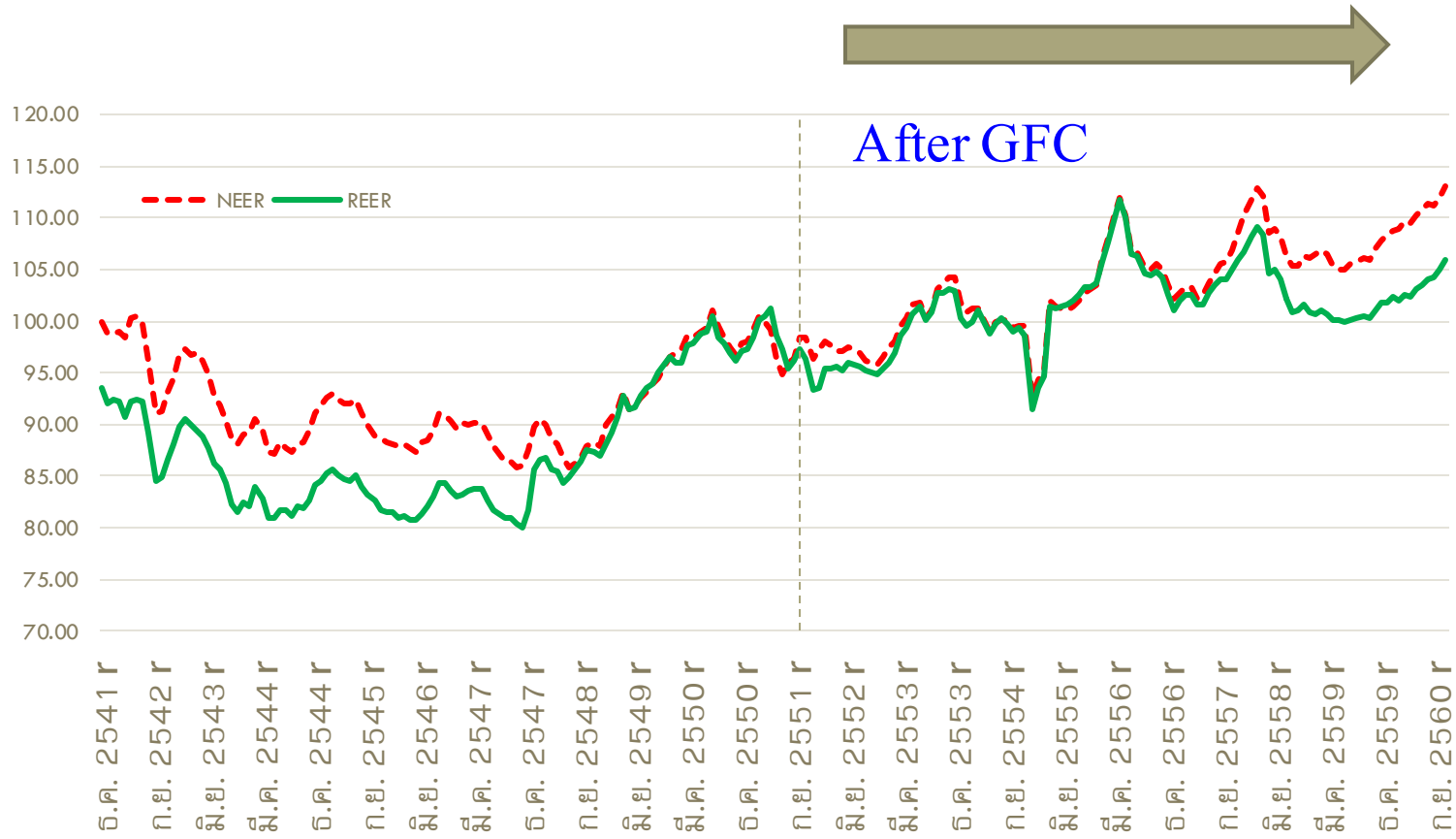


C. EME stock prices (index)

EXTERNAL IMPACT ON THAILAND…..

- Capital influx since GFC… net capital inflow.
- Trend appears less strong and probably reverse around 2014 (why?... B/C quantitative tapering! Stop the QE)
- Back again….delayed the tapering and normalization
- Strong current account position is now growing.

IMPACT OF CAPITAL (NET) INFLOWS: BATH APPRECIATION



TRILEMMA IS BACK AGAIN.

- Continue to welcome capital inflows..
- Bath strong → resist market trend by intervention
  - Foreign reserve rises rapidly..
- Control money supply → Controlling interest rate, maintained at 1.5% since 2015Q2.
  - Inflation threat?
  - Argument shifted towards financial stability