

OPEN ECONOMY MACROECONOMICS 3

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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 market crisis

DURING THE 1990S

- Many emerging markets 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 had 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.**

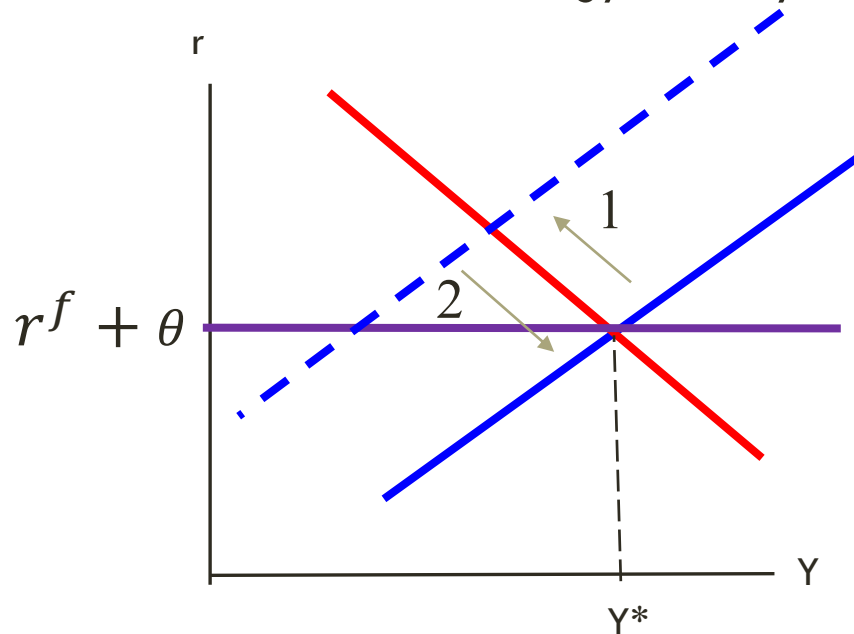
POWER TO ACHIEVE THE IDEAL STABILITY.

- 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

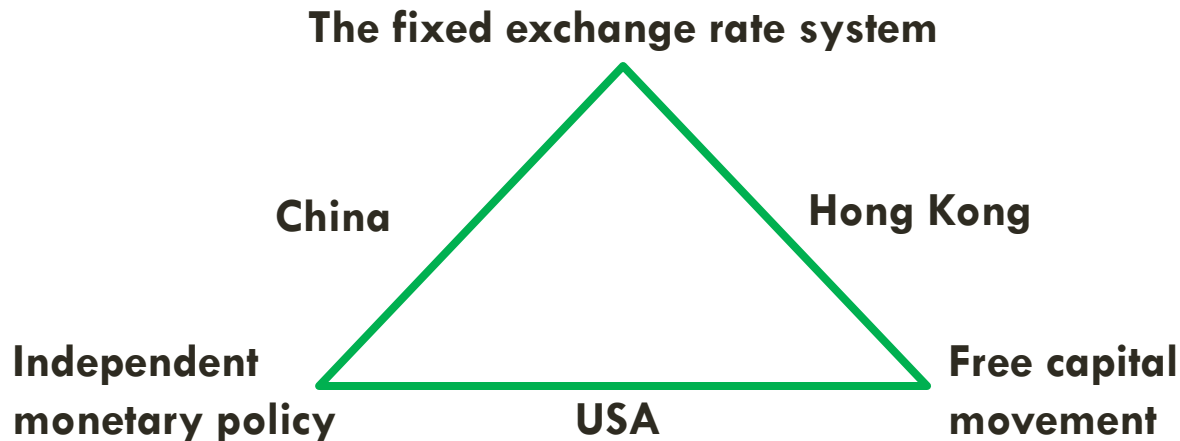
- At (1), we have $BOP > 0$.
- To fixed exchange rate, money supply will rise.
- To prevent the economy moving from (1) back to (2), central bank simultaneously conducts sale OMO, to counteract and prevent money supply from rising.

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 still 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

- Financial integration began around 1990s
 - Balance of payments surplus
- A key important milestone: *Financial liberalization in 1993*
 - 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

Causes of BoP Surpluses in Thailand

I. “Pull” Factors (internal causes)

e.g., 1990-97

1. High interest rate policy $\Rightarrow$ LM shifts up

2. Removal of capital controls $\Rightarrow$ BP flatten

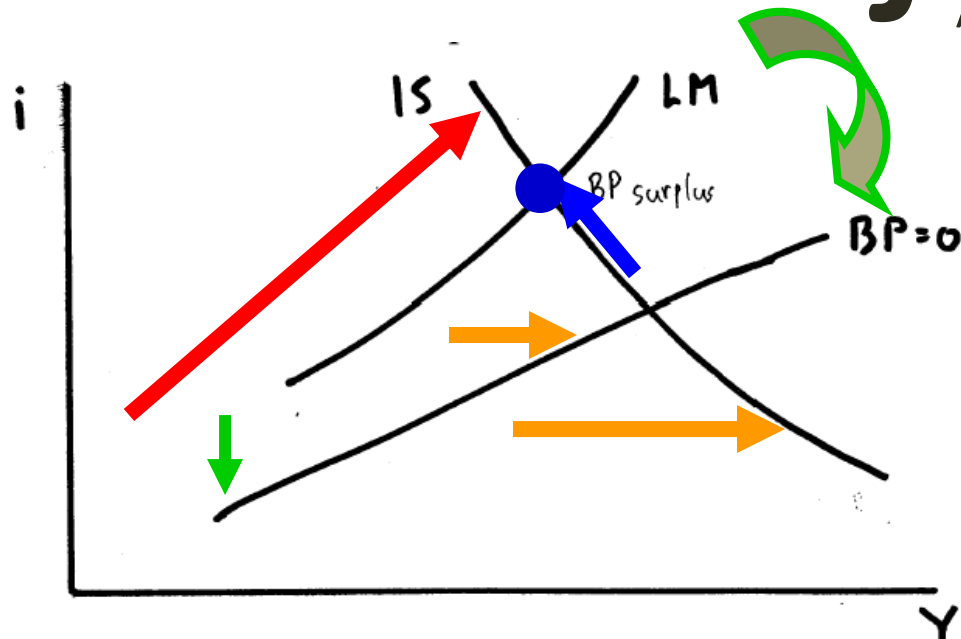
3. Spending boom $\Rightarrow$ IS shifts out/up

II. “Push” Factors (external causes)

1. Low interest rates in rich countries
 $\Rightarrow i^*$ down $\Rightarrow$

2. Boom in export markets $\Rightarrow$

BP
shifts
down
/out



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

➤ Domestic imbalances

- Growth slowdown (productivity)
- Real-estate **bubble** → **banking failure!**
- Banking Non-performing-loans increased

➤ External imbalances

- Fixed nominal exchange rate, but **real appreciation**
 - Huge amount of current account deficit (persistent)
- Highly venerable
 - Huge amount of external debt, esp. short-term

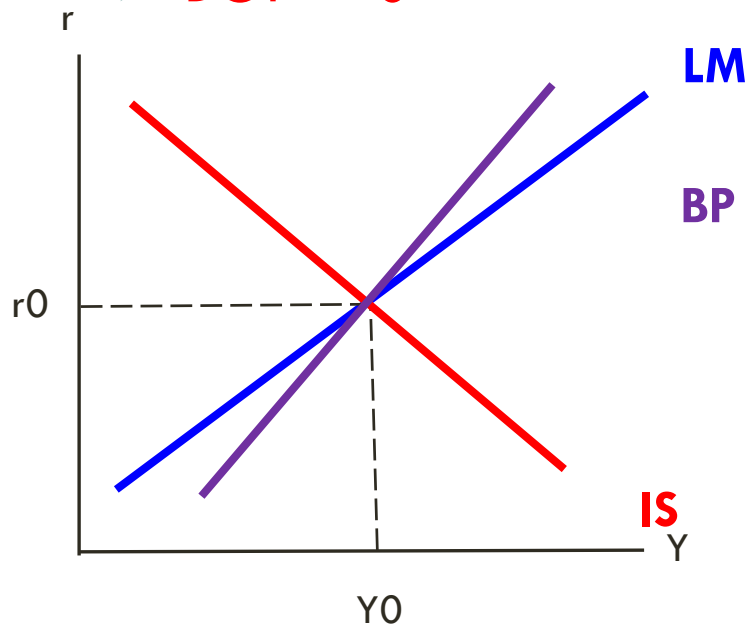
ASIAN FINANCIAL CRISIS (1997-98): THE FALLS OF EVERYTHING

- Consequence followed
 - Perceived riskiness increase!
 - Capital reversal
 - **Speculative attack**
- Central bank's response? Policy options?

PROLONGED SITUATION, SWEEPING THINGS UNDER THE RUG....

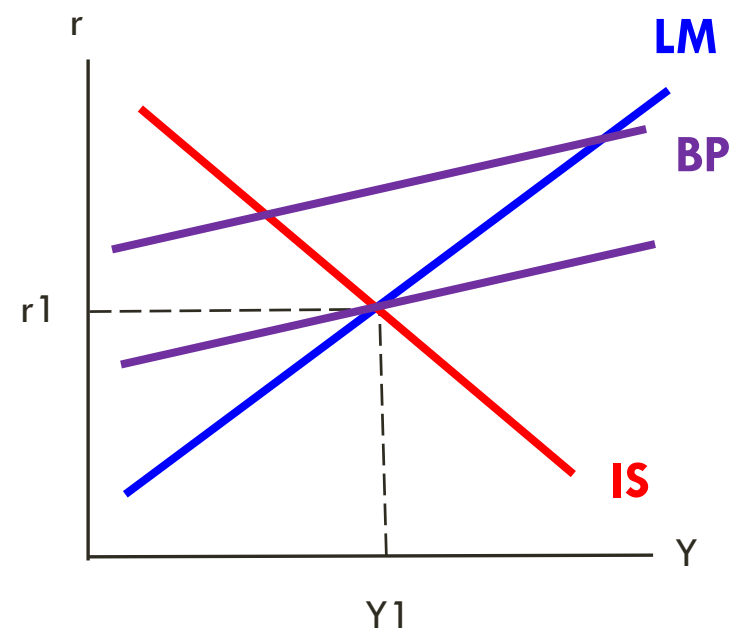
➤ (r_0, y_0) : Internal equilibrium

➤ $BOP > 0$

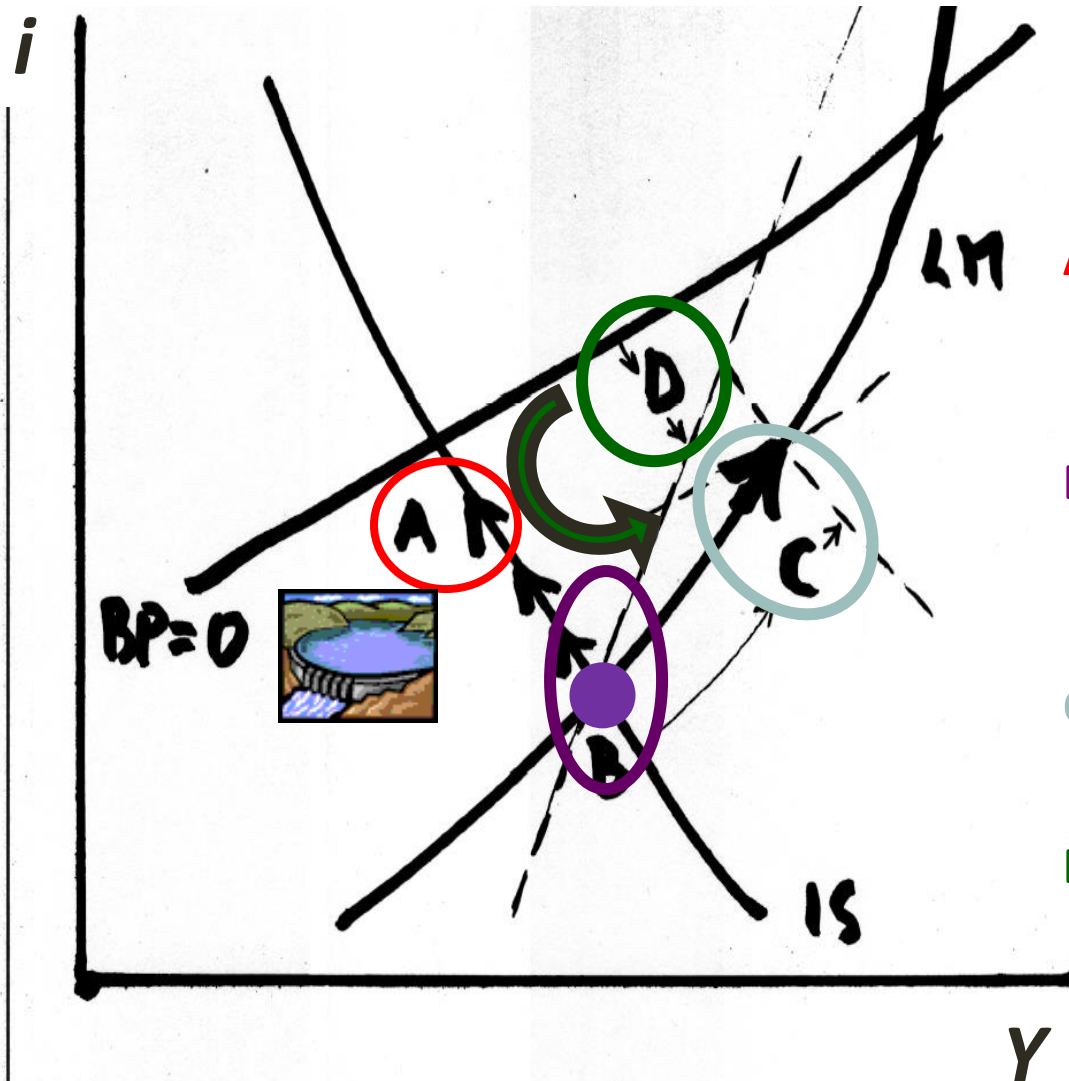


➤ (r_1, y_1) : Internal equilibrium

➤ $BOP < 0$



Say a country finds itself with a deficit,
e.g., because of an increase in the perceived riskiness /
speculative → capital reversal



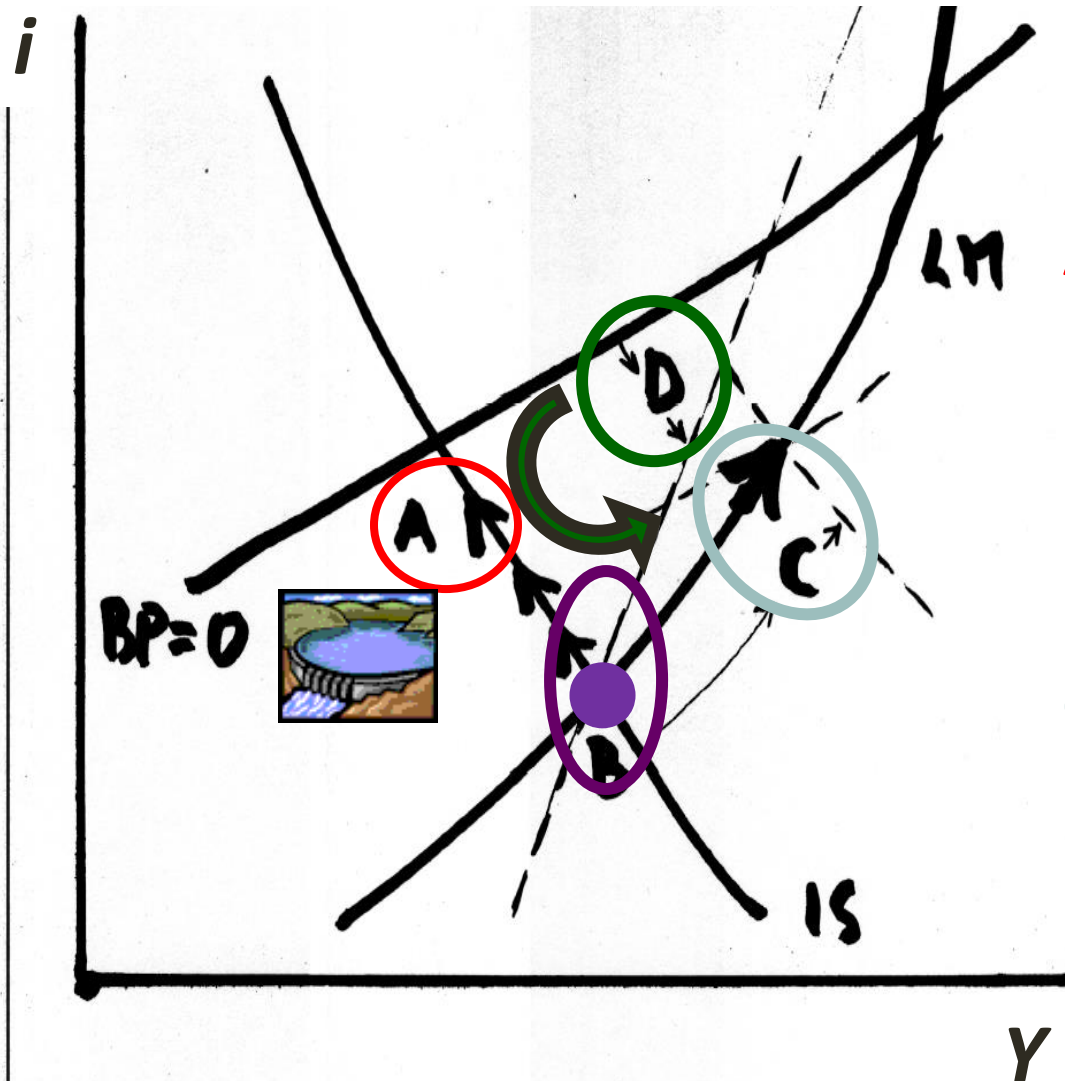
Alternative Ways to Manage Capital Outflows

- A. Allow money to flow out (can cause recession, & banking failures)**
- B. Sterilized intervention (can be difficult, and only prolongs the problem)**
- C. Allow currency to depreciate (inflationary)**
- D. Reimpose capital controls (probably not very effective)**

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

- Central bank prolonged the situation; forbearance (buying time)
- Eventually, they decided to abandon the fixed exchange rate regime in July 2nd, 1997.
- Currency depreciation → help export sectors
- As we had prolonged the situation, financial sector were paralyzed → credit crunch.
- Resulting in the worst ever experienced economic contraction in Thailand: **Asian Financial Crisis.**

Say a country finds itself with a deficit,
e.g., because of an increase in the perceived riskiness →
capital reversal



Alternative Ways to Manage Capital Outflows

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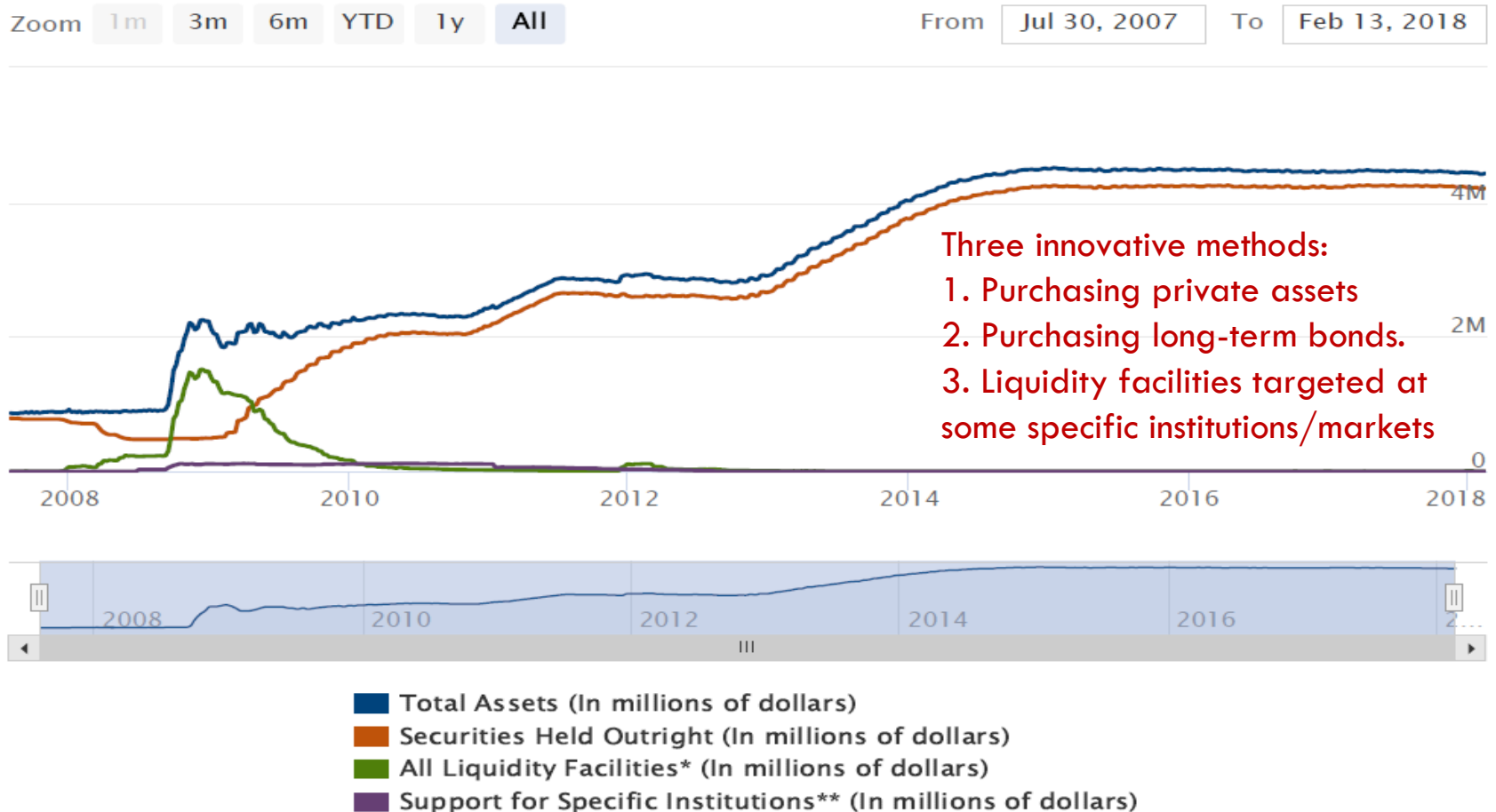
LESSONS

Sowing the seed of crisis!!

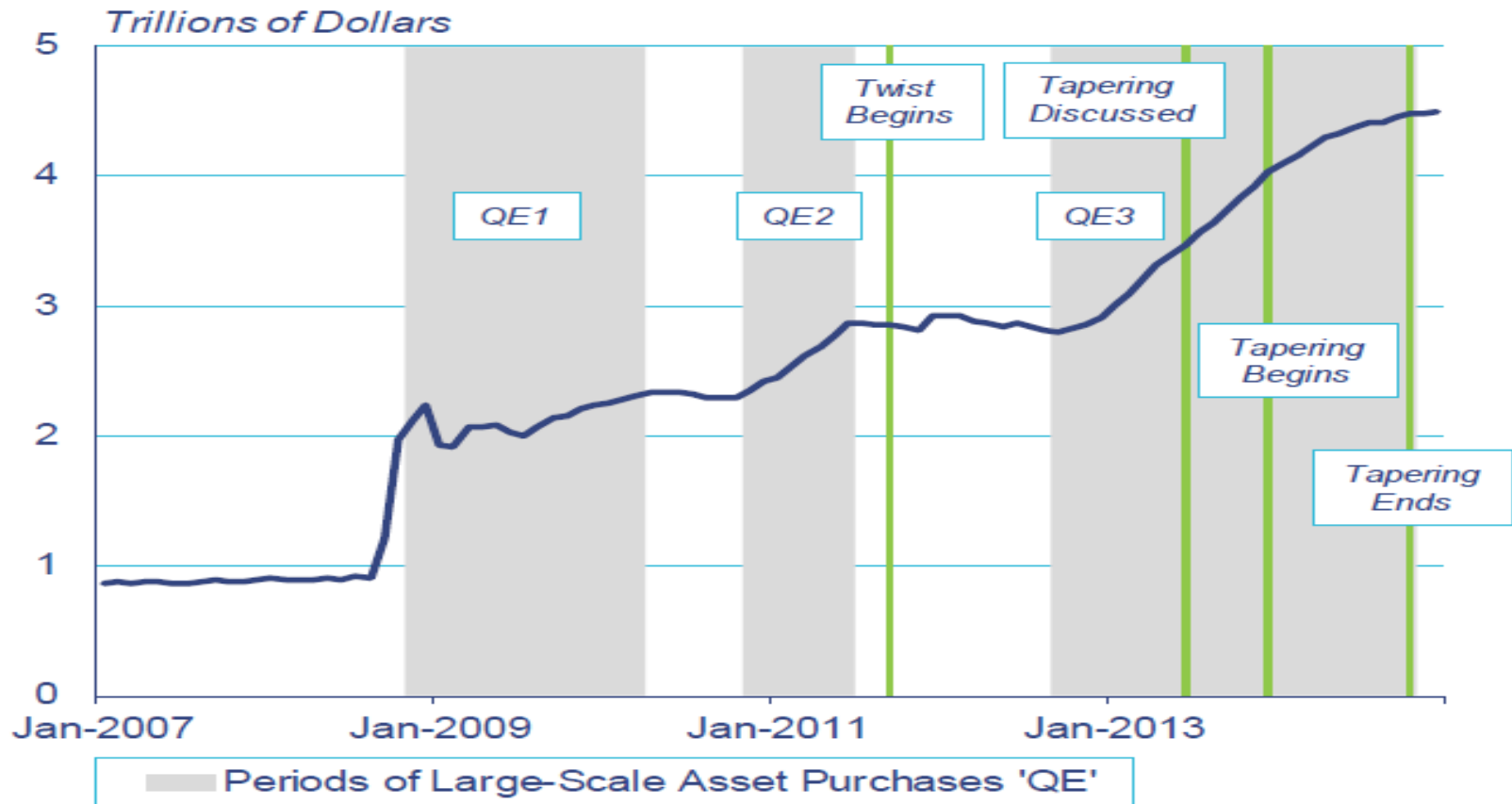
Usually a phantom menace “Credit cheap!” → Imbalance in some sectors.

Cycles... BOP surplus → Capital outflows → BOP deficit → crisis!!!

A NEW ROUND OF BOP SURPLUS HAPPENED AFTER THE QES



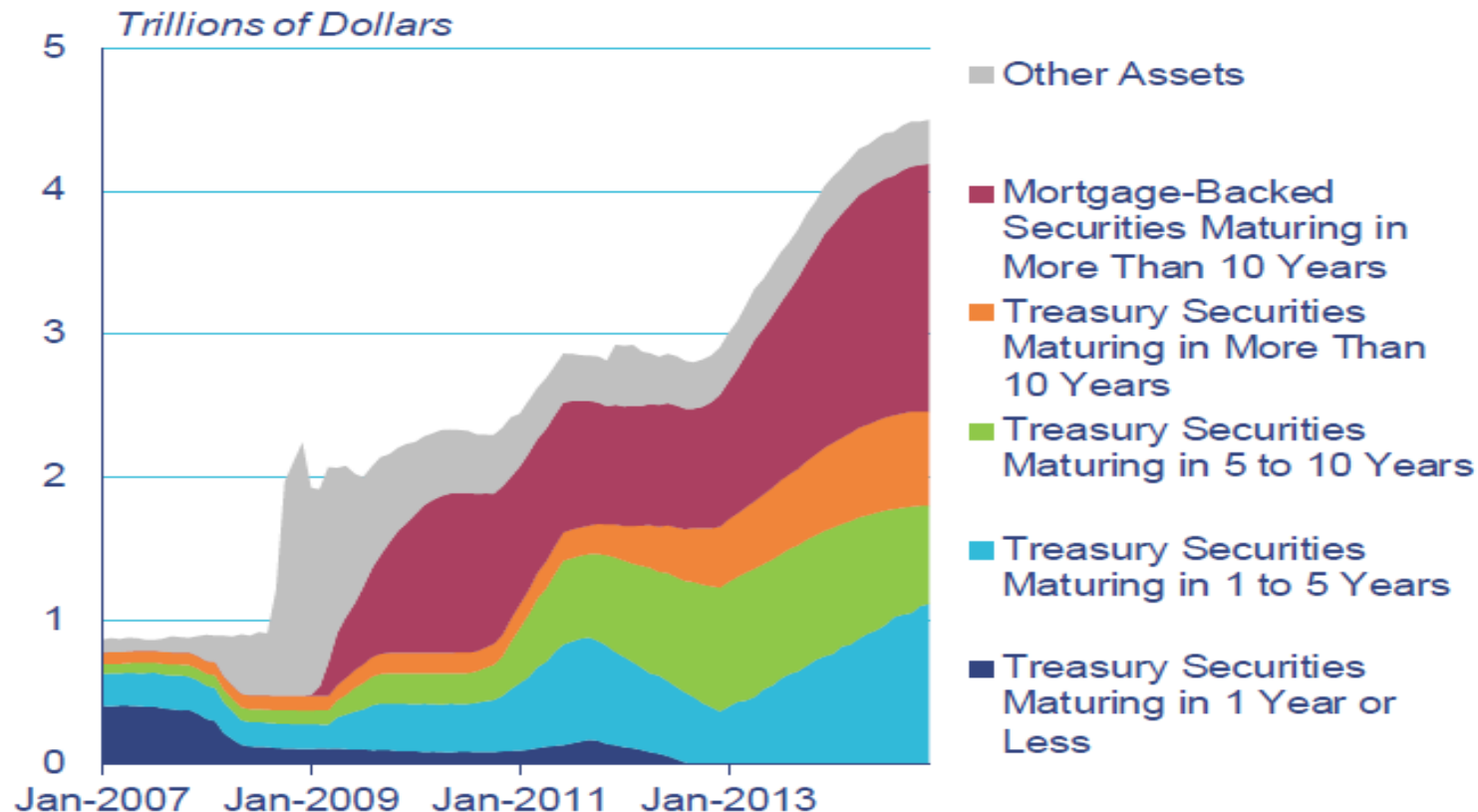
TIMELINE OF QUANTITATIVE EASING: LASP



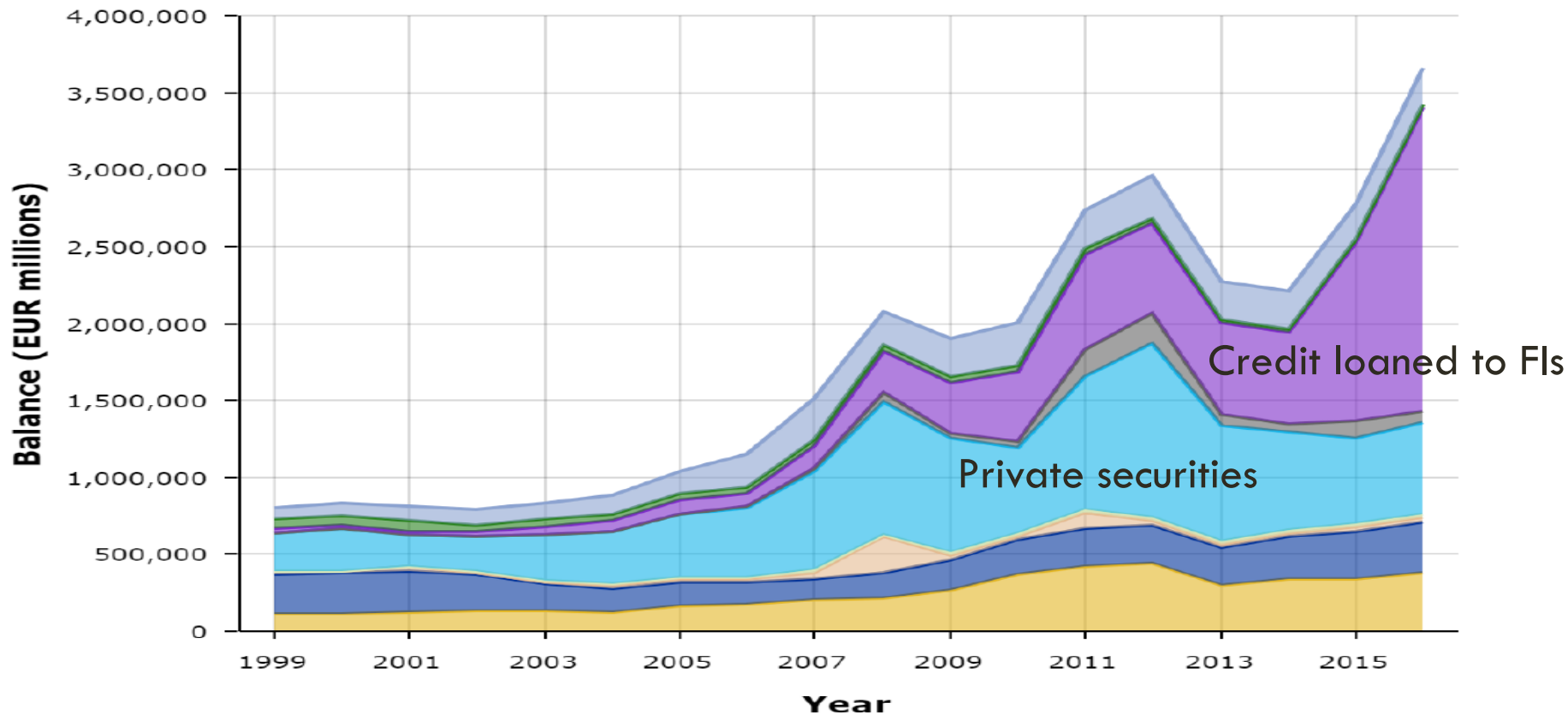
Program	Announcement Date	Targeted End Date	Targeted Total Purchase	Composition of Purchases	Program Details as Announced
Quantitative Easing 1 (QE1)	November 25, 2008	Over Several Quarters	Agency Debt: Up to \$100 bil Agency MBS: Up to \$500 bil	Agency Debt and Agency MBS	Purchase up to \$100 bil of 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.

¹Shorter-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)

QUES ON STOCK PRICES: BOOM IN PRICE.

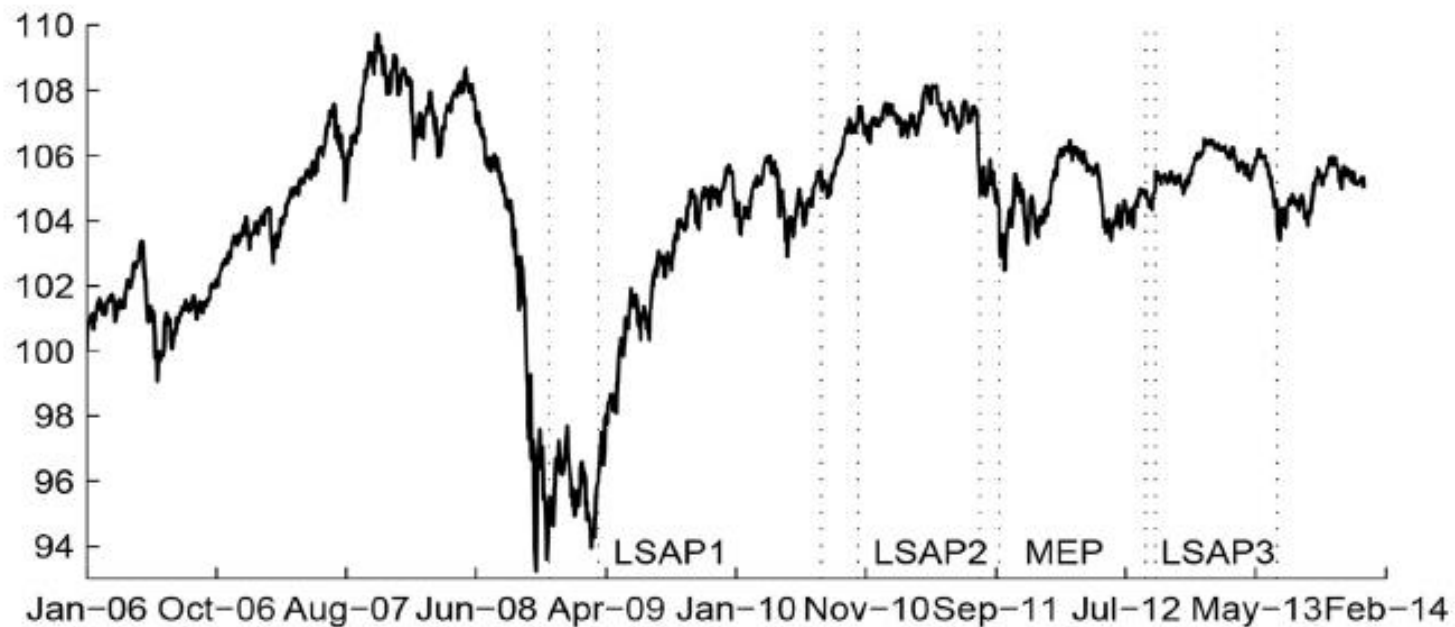
Table 3

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

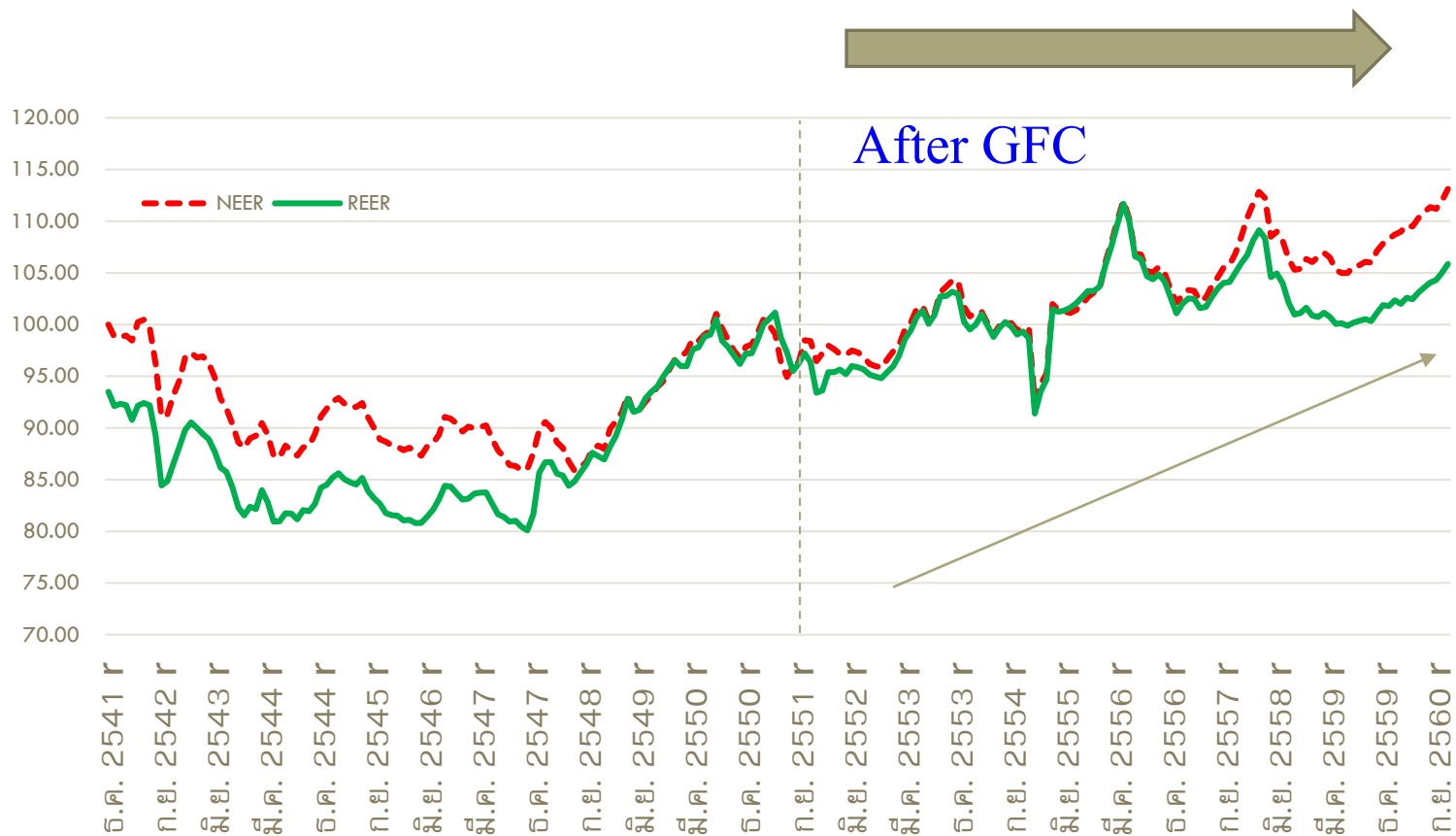


C. EME stock prices (index)

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....
- Baht strong → resist market trend by intervention
 - Foreign reserve rises rapidly..
- Control money supply → Controlling interest rate, maintained at 1.5% since 2015Q2.
 - Inflation threat?
- This time is different; we are not so venerable as we were when hitting the financial crisis.