2604697
Financial Markets, Institutions and Instruments

Topic 10: International Monetary System

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Overview

1. Exchange Rate Systems
2. History of International Monetary System
3. Financial Crises

Fixed rate system
- Gold standard
- Gold exchange standard < Bretton Woods system)
- European monetary system
  EMS <fixed rate> → € single currency

1990s Emerging economy
2008 Subprime crisis
2010 Greece crisis

1. Exchange Rate Systems

1.1 Broad Types of Exchange Rate System

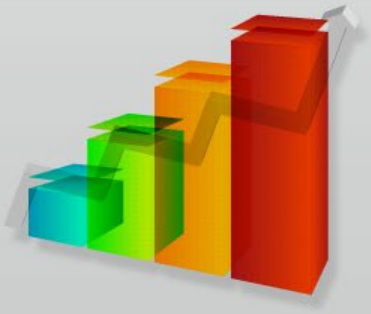
1.2 Freely Float System

1.3 Fixed Rate System

1.4 Managed Float System

1.5 Foreign Exchange Market Intervention

1.6 The Trinity of Impossibility



1.1 Broad Types of Exchange Rate System

- Generally, exchange rate systems can be divided into 3 main types. How exchange rate is determined?

Freely Float System	Managed or Dirty Float System	Fixed Rate System
<determined by flow of demand & supply> by mkt participant → float rate	CB will intervene to stabilize exchange rate → managed float	by authority (central bank) → fixed rate

1.2 Freely Float System

- Mechanism: Market forces of demand and supply are allowed to determine the exchange rate. volatile

  with float rate, this doesn't occur

  We will not create inflation link across countries || A has high inflation → A wants to join B → B has to import inflation from A

- Pros: Inflations among countries are not linked through currency values. Nations are more flexible in using monetary policies to solve their internal economic problems.

- Cons: Rates fluctuate over time randomly. Resources are wasted to hedge currency risk. International trades and investment may be hindered.

  revenue of international firm becomes volatile as well

  not friendly & not encouraging

  single currency : boost trading btw members
  fixed rate : boost cross-border trading

  - The change in currency value is called appreciation or depreciation.

    Dollar appreciates against Thai Baht
    Baht depreciates against Dollar

    $S^{฿/\$}$: ฿33 / $ → $37 / $

* i_{TH} ↑ เพิ่มขึ้น ดึงดูดนักลงทุนต่างชาติมาลงทุนในไทย
⇓
demand เงินบาท ↑ (demand for THB increases)
⇓
ค่าเงินแข็งขึ้น (฿ appreciates agaist $)

TH under fixed rate

policy
$\bar{S}$ = ฿30 | $

Now ① TH faces recession

ค่าเงินบาทอ่อน (depreciate against $)

② S > ฿30 | $ → THB is too weak

int rate

CB has obligation to fixed exchange rate

CB will increase i_{TH} to comply with fixed exchange rate instead of decrease i_{TH} to solve internal problem

But with float rate, country doesn't have to give up monetary policy to solve fixed rate problem

↳ CB ↓ i_{TH} → encourage people to spend more (ต้นทุนการกู้ถูกลง)

→ THB become cheap → encourage export

ค่าเงินบาทอ่อนตัว

We hold US govt bonds as reserve instead of gold
↳ also earn interest

CB : do survey from commercial bank and average it → float ⇒ announce in evening
CB: announce fixed rate in morning → how do CB make people believe in announced rate

1.3 Fixed Rate System

e.g. Palm oil: price is controled by ministry of commerce : ceiling $\bar{P}$ = ฿30/litre
↓
There was shortage → P_0 : ฿35 → ฿38 → ฿40
people store it making price to become higher but real demand
↳ any grocery shop/business sell more than policy is prohibited
↳ shop sell it secretly with risk premium
"Black-market"
people don't believe in the policy price (parity) bcs ministry doesn't have enough palm oil reserve.

- Mechanism: A country declares a par value of its currency relative to gold or other hard currencies. The central bank is committed to maintain the exchange rate at the target level through;

  announce

  A
  - Foreign exchange market intervention
  - Currency control measures
    - Capital control measures
    - Trade control measures, such as import restrictions (i.e., control demand for FC)

  * CB must have exchange currency reserve
  if they have enough palm oil, they can sell it to reduce price immediately

  B
  - Overtimes, the central bank may adjust the par value through devaluation or revaluation.

    Exchange rate change
    announcement make currency become weaker
    become stronger

? if already use future reserve by borrowing from IMF → float
solutions C
has condition is to float

1.3 Fixed Rate System

- Pros: It reduces exchange rate volatility and risk, which encourages international trades and investment.
- Cons:
  - Monetary policies are committed to fix the exchange rate. There will be less policy choices to solve internal economic problems.

    central bank

    give up monetary policies → only fiscal policy left to solve internal problem
  - Although exchange rate rarely change under this system, one change can be significant and abrupt.

    high π A ⟷ low π B

    B is not happy
    has to import π from A
    to become fixed rate
  - Devaluation may create unfair trade and lead to currency and price war.
  - Currency may be subject to speculative attack.

1.4 Managed Float System

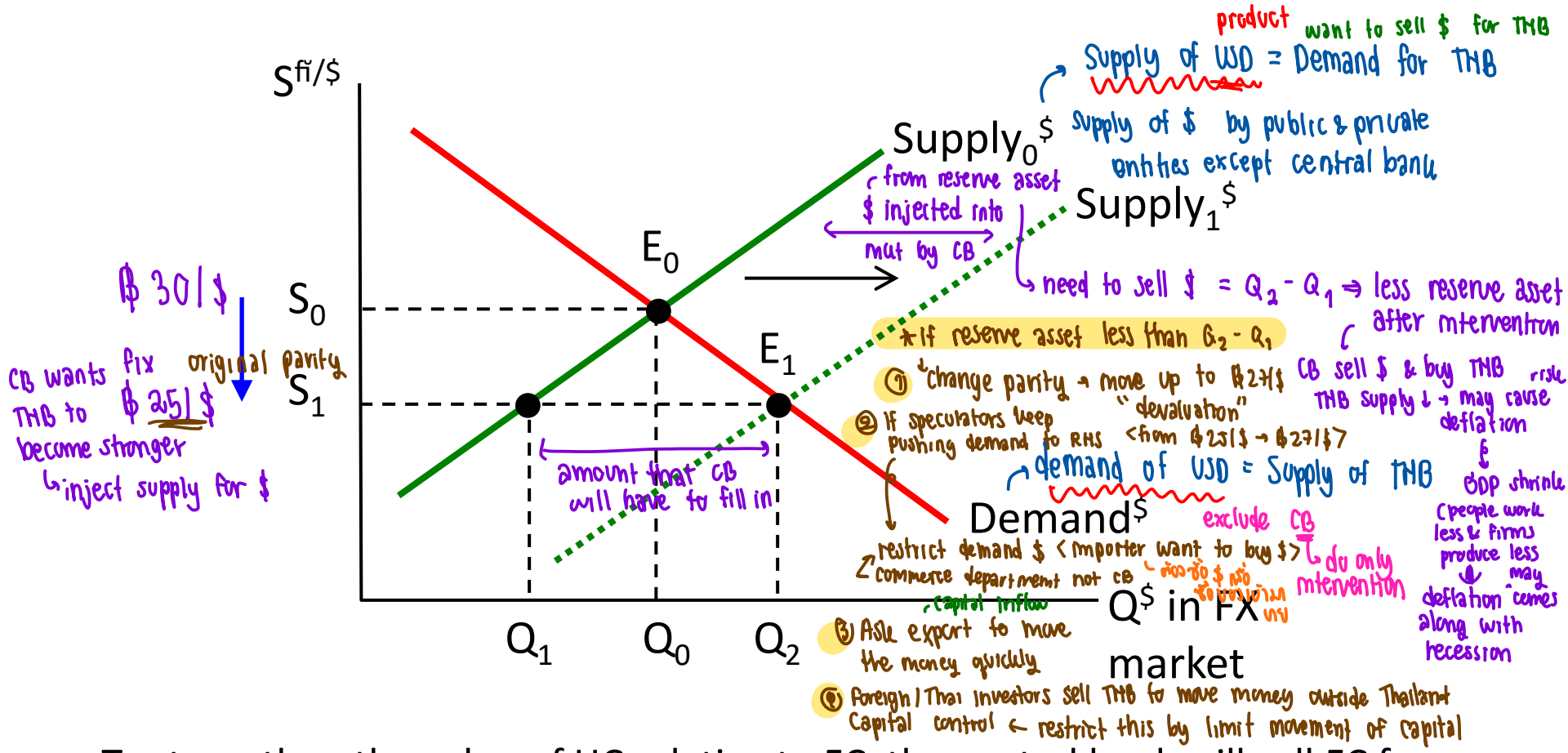
(country tries to strike advantage of both exchange rate systems

- Mechanism: Market forces are allowed to determine the exchange rate. The central bank will intervene the market from time to time when the exchange rate falls outside its target range or exchange rate is too volatile.
- Pros: It reduces exchange rate volatility and risk, which will encourage international trades and investment.
- Cons:
  - Effectiveness of market intervention is questionable.
  - Market intervention may create unfair trade and lead to currency and price war.
  - Currency may be subject to speculative attack.

FX market → trade 1 currency for another currency

home currency = ฿

Market Intervention: Strengthen the Value of HC

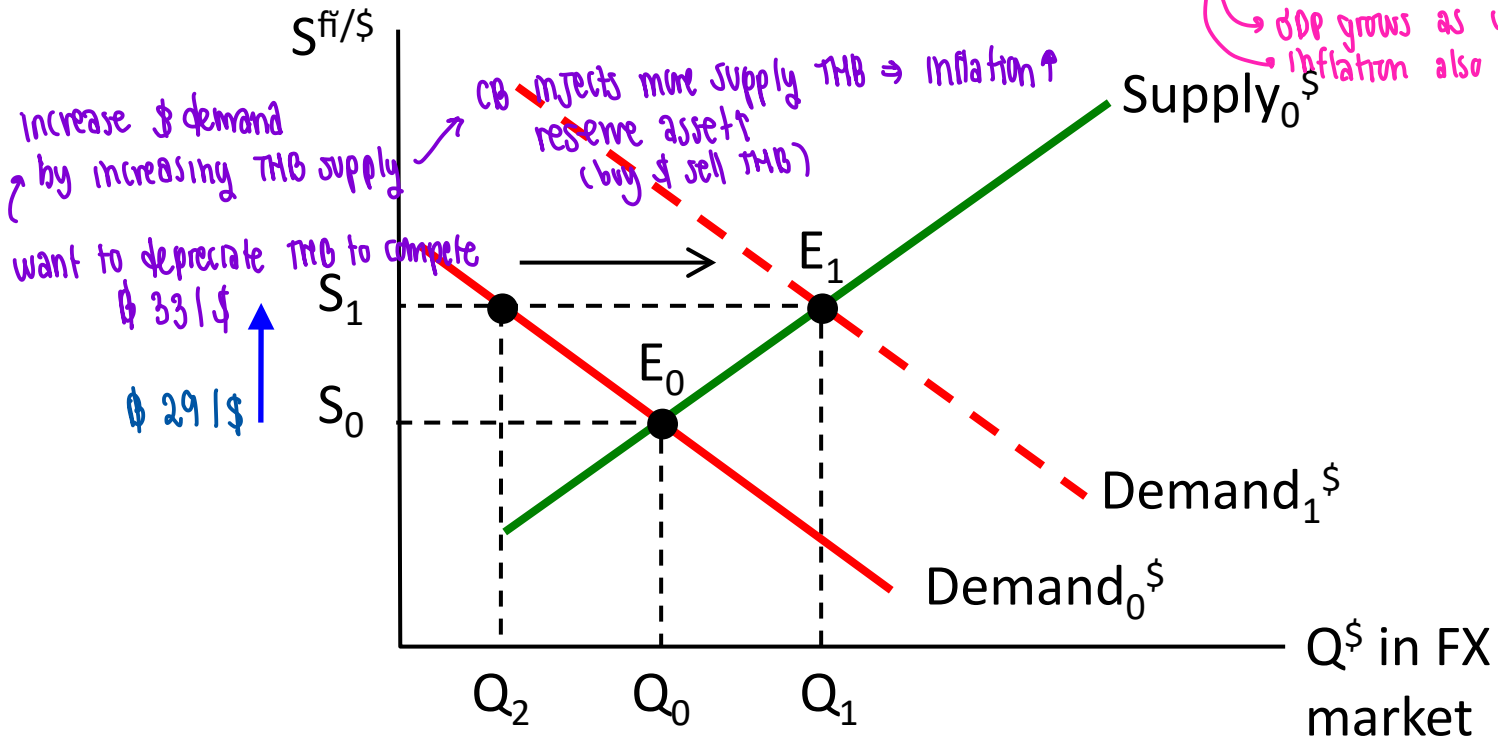


To strengthen the value of HC relative to FC, the central bank will sell FC from its reserve (equal to Q_2–Q_1). To make the fixed rate credible, the central bank must have sufficient reserve.

Market Intervention: Weaken the Value of HC

// ฿

China wants to export <keep Yuan cheaper>
US intervenes the exchange mkt
→ GDP grows as well
→ Inflation also takes place in asset prices
Security bubble
(
Compare with intrinsic value
(cannot tell)
observe



To weaken the value of HC relative to FC, the central bank will buy FC (Q_1–Q_2). Such intervention will increase FC reserve and domestic money supply. It produces inflationary pressure. Note that weakening intervention is less restrictive for the central bank compared to strengthening intervention.

เงินfixed ไว้ก่อน
① คนแห่ไปซื้อของที่ US ที่ π_{US} ต่ำ
TH run trade deficit
② ค่าเงินเปลี่ยน
↳ ทั้งสองประเทศต้องทำค่าเงินให้กลับมาที่ดุลยภาพ

ของไทยแพงกว่า ของเหมือนกันใน US

$\pi_{TH} > \pi_{US} \rightarrow S^{B/\$} \uparrow$ → cannot compete → TH has trade deficit → country is weaker
CB wants to make THB stronger → sell USD & buy THB

Thai & US manufacturers compete each other but cost in production in US more efficient than in TH

1.5 Foreign Exchange Market Intervention

TH uses more relaxing macro policy → tend to have high inflation
US use tightening macro policy

- EX: Assume TH and US are under bilateral fixed exchange rate agreement. However, TH runs more relaxing macro policy leading to relatively higher inflation in TH. This causes upward pressure on the B/$ exchange rate. Both BoT and Fed will intervene the FX market by buying THB and selling USD.

อยากทำให้ค่าเงินอ่อนลง ส่วน BoT อยากให้ค่าเงินแข็งขึ้น ⇒ Buy B & sell $

↳ make BoT to face more difficulty
↳ run out of reserve asset ⇒ no one will believe in exchange rate

assume ⇒ unilateral fixed
bilateral fixed ; two countries agree to fixed
multilateral fixed : European

- Hence,
  - $MS_{US} \uparrow \rightarrow \pi_{US} \uparrow$ (both sell USD)
  - $MS_{TH} \downarrow \rightarrow \pi_{TH} \downarrow$ (cause reduction in money supply → may create deflation)

Fed increase i_{US} will make dollar even stronger!! → ex rate will not be fixed

This intervention shall stop once inflation rates are equal $\pi_{TH} = \pi_{US}$ = equilibrium

open mkt operation (OMO) : Fed should implement OMO by sell $bond_{US}$ to absorb money supply

- This is called "unsterilized FX intervention"

BoT use OMO by buy $bond_{TH}$ → increase $MS_{TH} \uparrow \rightarrow \pi_{TH} \uparrow$

use OMO to counter effect of inflation

- The drawback is that it causes the inflation in the U.S. and deflation in Thailand (i.e., inflationary links)

1.5 Foreign Exchange Market Intervention

- Both BoT and Fed may sterilize the effect of FX market intervention on the domestic general price level and ST interest rates by using open market operation.

  too much → increase demand for bond → P^B ↑ → yield ↓ → counter effect first action !!

  - BoT buys Thai government bonds from Thai banks

    → increase supply for bond^{US} → $P^{\$}$ ↓ → yield ↑ → 〃 ——————

  - Fed sells U.S. government bond to U.S. banks

  - FX intervention + OMO = Sterilized FX intervention

- Unsterilized FX intervention creates a lasting effect on the exchange rate at the expense of changing relative inflation between 2 nations. On the other hand, sterilized FX intervention may not be successful in the long run. For example, BoT's intervention may drive i_{TH} down causing THB to be less attractive.

1.5 Foreign Exchange Market Intervention

- Managed floats fall into 3 distinct categories of central bank intervention.

  under manage float

  - Smoothing out daily fluctuation: The aim is to preserve an orderly pattern of exchange rate changes, rather than resisting fundamental market forces.
  - Leaning against the wind: This is an intermediate policy designed to moderate or prevent abrupt short- and medium-term fluctuations brought about by random events whose effects are expected to be temporary.
  - Unofficial peg: The aim is to fix exchange rates, thus resisting any fundamental upward or downward exchange rate movements.

1.5 The Trinity of Impossibility

- Three Attributes of an "Ideal Exchange Rate System"
  - Exchange rate stability encourage growth for international trade & investment
  - High level of capital mobility allow capital to go in & out
  - Independence of domestic monetary policy.

    to free-up monetary policy → don't want to tie up this policy to exchange rate

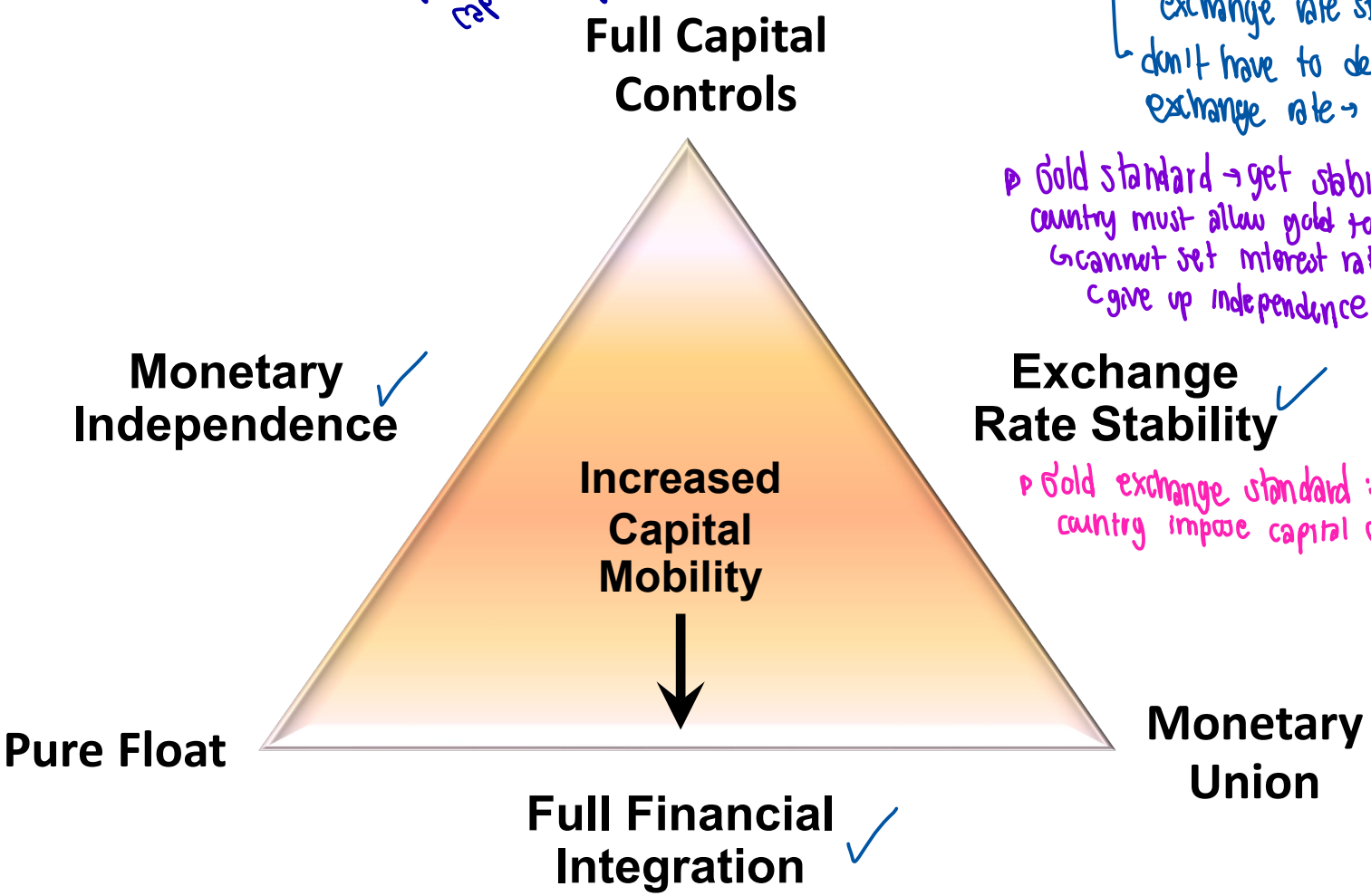
The Impossible Trinity

▸ Free Float
↳ cannot get exchange rate stability
↳ don't have to defend fixed exchange rate → achieve other 2.

▸ Gold standard → get stability
country must allow gold to move freely
↳ cannot set interest rate at any rate
↳ give up independence

▸ Gold exchange standard :
country impose capital control

ไม่ allow cap in/out ← ต้องการแก้ปัญหาเงินไหลออก



2. History of International Monetary System

fixed

2.1 Gold Standard (1876-1913)

จ้ำเป็น reserve ได้ after world-war II

2.2 Gold Exchange Standard (1944-1973)

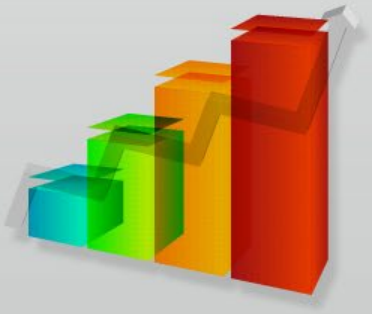
↳ ได้ US มาเป็นผู้นำด้านการเงิน (แทน IMF & world bank) ; no allow capital in/out

2.3 Post-Bretton Woods Systems (1973-present)

fix

2.4 The European Monetary System

but strict to just Euro zone



2.1 Gold Standard

- Participating countries announced the par value of their currency in terms of gold called "gold parity".
- Gold parity is the rate at which its currency unit could be converted to a weight of gold.
- This came to be known as the gold standard and gained acceptance in Western Europe in the 1870s
- The US adopted the gold standard in 1879

gold parity

The Gold Standard

Gold
1 ounce of gold

US Dollar
$20.67

British Pond
£4.2474

gold parity btw USD & 1 ounce

÷

$4.8665/£

Bank of England

- gold = 1000 ounces
- $MB^{£}$ (monetary base) = £4,247 cannot print more than this
  CB must stand ready to buy/sell gold with the homecurrency
  ↳ have to control money supply
  country will not have independent monetary policy

announce by CB

มูลค่า reserve ↑

ถ้าสมมติใช้ค่าเงินแห่งชาติเป็น reserve
ประเทศนั้นต่าง print เยอะ

everybody only trust gold → use gold as reserve

① Gold subject to less inflation
↳ cannot be produced easily

② Gold acts like distribution center

	A	B	C	D	E
A	x				
B		x			
C			x		
D				x	
E					x

we need to announce $\frac{5^2-5}{2} = 10$ if there's no gold
↳ manage a lot exchange rate
hold various foreign currency as reserve
But with gold, need to only announce gold parity

$$\frac{\$}{£} = \frac{\$/\text{ounce}}{£/\text{ounce}} = \frac{\$20.67/\text{ounce}}{£4.2474/\text{ounce}}$$

$$\frac{£}{\$} = \frac{£/\text{ounce}}{\$/\text{ounce}} = \frac{£4.2474/\text{ounce}}{\$20.67/\text{ounce}}$$

2.1 Gold Standard

- Rules of the game
  - Each country (i.e., national central bank) must be willing to exchange (buy and sell) between gold and their currencies at the par values. at the rate they announce
    - The country must balance the amounts of its monetary base (MB) with its gold reserve.

Drawback : don't have independence monetary policy เพราะ fix เงินกับ gold

mobility ⇒ ใช้ gold เป็นตัวกลาง

  - Gold was allowed to move freely among countries
  - Currency convertibility applied to both current account transactions and capital/financial account transactions.

2.1 Gold Standard

mobility & fixed rate stability

- Current account imbalance was adjusted automatically through changes in monetary base and money supply.
- Expansionary monetary policy was limited to a government's supply of gold.

  no independence of

  give up

- Countries had to maintain adequate gold reserves to back its currency's value otherwise the stability of the exchange rate will be undermined.
- The Gold Standard worked until the outbreak of WWI as the free movement of gold was interrupted.

Countries that have trade deficit in fixed income rate ⇒ sell foreign currency otherwise no reserve left

Both under gold standard

The Price-Specie-Flow Mechanism

run restrictive macro policy

X_{US} = £ 100

M_{US} = £ 70

UK

run relaxing policy

U.S. prices stay relatively stable

Foreign prices increase

US exports is UK import

assume only two countries

high inflation

goods more expensive relative to US

U.S. balance-of-payment surplus

$(X–M)_{US}$ ↑

$(X–M)_{FC}$ ↓ trade deficit

Flow of foreign gold to U.S.

เงินไหลเข้า US เพราะ net export ↑ (gold)

Gold supply ↑

MS_{US} ↑

Gold supply ↓

MS_{FC} ↓

U.S. prices rise

inflation$_{US}$ ↑

Foreign prices fall

inflation$_{UK}$ ↓

US may resist this by doing OMO

resist this to not face deflation

no more gold!!!

if not paying according to game

เงินเฟ้อ

เงินฝืด

face less and less deficit

Balance-of-payment equilibrium

$(X–M)_{US}$ ↓

$(X–M)_{FC}$ ↑

End of gold flow

should have less surplus

World war 1 ⇒ every country not allow gold to move ⇒ collapse of system

2.2 Gold Exchange Standard

Start at the end of world war 2

- The gold exchange standard was established in 1945 after a meeting at Bretton Woods, New Hampshire by The Allied Countries.
- Under this system, the U.S. declared the gold parity of USD.
- Other countries declared parities of their currencies in terms of either gold or USD.
- Member countries were committed to maintain exchange rates within ±1% of the fixed rates.
- Two supranational institutions were created, namely, the International Monetary Fund (IMF) and the World Bank.

The Gold Exchange Standard

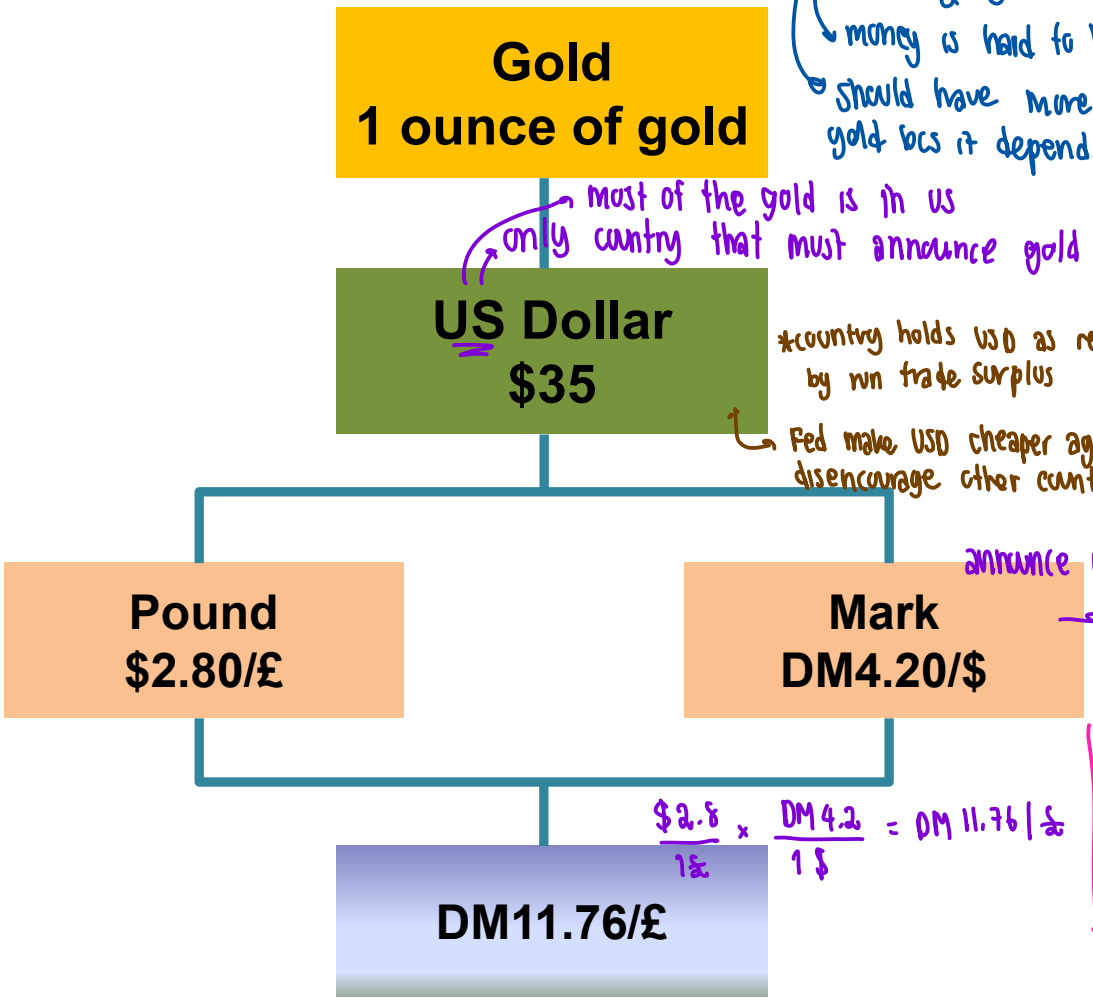
patrol <economic activities> engine oil < to make engine move smoothly >
human capital money supply

* size of economy = size on engine

Need more reserve asset when economic activity grows
- money is hard to be found → slow down
- should have more money, cannot relies on gold bcs it depends on mining result

⇓

have USD as another reserve



most of the gold is in US
only country that must announce gold parity

*country holds USD as reserve ⇒ US faces trade deficit by run trade surplus

Fed make USD cheaper against gold < devaluation >, make it disencourage other countries to sell USD to gold from US

announce parity against USD
→ can invest USD and earn return

$\frac{\$2.8}{1£} \times \frac{DM\,4.2}{1\$} = DM\,11.76/£$

After war,
country can have independent monetary
- no allow capital to move freely

2.2 Gold Exchange Standard

- Rules of the game
  - Each country (i.e., national central bank) must be willing to exchange (buy and sell) between USD (or gold in the U.S. case) and their currencies at the fixed rates.
  - Gold and USD are international reserve assets.
  - Each nation applies capital controls to prevent speculative attacks and preserve currency value.

need to ask CB
not allow capital to move freely to not allow arbitrage

2.2 Gold Exchange Standard

- Toward the end of 1960s and early 1970s,
  - The U.S. faced large current account deficit.
  - The U.S. engaged in Vietnam War → เวียดนาม US เยอะ → reserve เหลือน้อยมาก
- Unsure whether the U.S. government had enough gold reserves to support USD in circulation. Finally, foreign central banks started selling USD for gold with the Fed causing the Fed to lose a significant amount of gold reserves.
- In 1971, Smithsonian Agreement was reached to devalue the USD to 1/38 of an ounce of gold and other currencies were revalued against USD. (X−M) deficit → (X−M) surplus ด้วยการปล่อยค่าเงิน float + ภาษี
- Finally, the US withdrew from the system in 1973.

ขุดตีกงา

Fiat money: no country has commitment to have gold as reserve / paper money / no backup & CB doesn't have to buy back HC

& ใช้ USD trade ไม่มีใครกับราคา

People believe that fiat money has value

2.3 Post Bretton Woods System (1973-present)

CB has to control inflation to make sure people believe in value of currency

- After the collapse of the Bretton Woods System, exchange rate regimes became more flexible.
- Jamaica Agreement: Major currencies started to float in February 1973.
- Plaza Agreement: The G-5 countries agreed that it would be desirable for the USD to depreciate against most major currencies to solve the U.S. trade deficits.

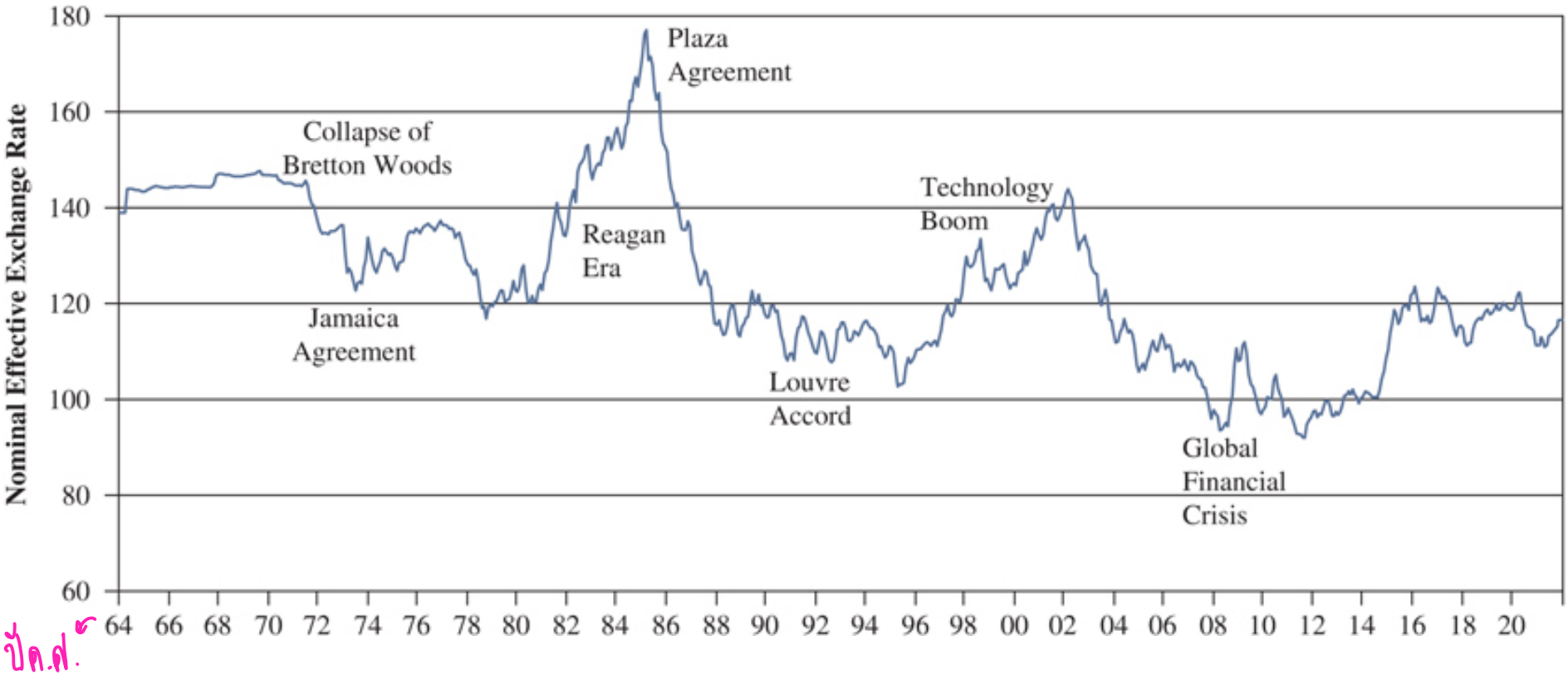
  French, Germany, Japan, UK, US

  want currency depreciate

  ขอลดค่าเงิน

  ให้
- Louvre Accord: The Louvre Accord marked the inception of the managed float system. The G-7 countries agree to jointly intervene in the exchange market to correct over- or under-valuation of currencies to achieve exchange rate stability.

The Trade-Weighted Exchange Rate of USD since 1964



Trade weighted exchange rate of USD against 27 currencies of industrialized countries.
Base year = 2010.

Sources: Eun, C., et al., 2023, International Financial Management, Chapter 1.

2.3 Post Bretton Woods System (1973-present)

- At present, the international FX system is a hybrid system.
  - Major currencies use freely float method
  - emerging economy
  - Others use managed float or fixed rate systems
- Overall, exchange rates have been more fluctuated compared to under the fixed rate systems of the past.
- As the U.S. government does not commit to the convertibility of USD into gold, the USD and other currencies now become "fiat money".
  - CB doesn't give commitment to exchange btw printed money & reserve asset
  - No 100% backup anymore → become paper money
- The next table shows exchange rate regimes classified by the IMF.

Thailand → uses managed float
US → free-float

Exchange Rate Regimes

Hyperinflation : a situation when price level skyrocket out of control — Zimbabwe *
1 day, price change 100% → barter system
no more negocate based on HC
transaction very slow → economy ↓
use foreign currency instead

degree of being fixed become higher
* lower flexibility

	Regime Type	Regime	Example
1	Floating Rate	Free Float (US)	USD
2		Managed/Dirty Float (Thailand)	Thailand, Singapore
3	Intermediate Rate	Band (Target zone)	EMS
4		Crawling peg with band (narrow interval ช่วงแคบ)	Belarus, Romania
5		Crawling peg (ไม่ได้อธิบายครั้งนี้ (next page)) (interval กว้างกว่า)	Bolivia, Honduras
6		Peg with band (more btw narrow band)	Denmark
7		Conventional peg	Iraq
8	Fixed Exchange Rate (quite rigid compared to others)	Currency board (HK, country have to give up monetary policy to solve internal problem)	Hong Kong
9		Dollarization (when a country use foreign currency for legal tender in its own country; the country give up its own currency or still us HC but allows to us foreign currency in its country)	Ecuador (allows to us USD for domestic transactions; has problem: people don't trust its HC)
10		Currency Union	EUR

Sources: https://www.imf.org/external/np/mfd/er/2004/eng/0604.htm

How do they fix exchange rate?
- Monetary authority will only print HC if they have foreign reserve asset
- assign monetary authority role to "currency board" commetee
- assign 2) to CB

separate to 2 roles

* 2 main roles of CB
1) Monetary authority : act as agent who implement monetary policy
- set up policy int rate
- influence money supply or EX rate

control inflation
may conflict

2) Lender of last resort
When commercial bank face liquidity problem (bank run), can go to CB to ask for liquidity <on condition> → prevent bank to collapse

inject liquidity → can cause inflation to be out of control

- IMF : lender of last resort for CB

keep money supply = reserve asset in line of that rate

E.g. HK CB can only prints HKD 7.7 mm for USD 1 mm reserve asset

E.g. foreign investor $1 mm → a commercial bank in HK → $1 mm as reserve asset → currency board

could not issue HKD 7.7 mm — to ask for quota for right to issue HKD 7.7 mm

drawback: give up independence of monetary policy

USD/CNY= Monthly Exchange Rate 2018-2023

US Chinese

China used quiet fixed

let currency became stronger overtime but under control → "crawling peg" → announce rate but let rate to move in their direction

peg = fix

with band: in one day, CB will allow exchange rate to vary within narrow band that want to fix

if upgrade union
AEC → AEU

2.4 European Monetary Union and the Euro

how called EU union

- Countries from the European Economic Community [EC] joined in to form the European Monetary System [EMS] in 1979.

  fixed exchange rate system

- The exchange-rate mechanism [ERM] requires each member to determine a central ex. rate for its currency; each rate is denominated in currency units per European Currency Unit [ECU].

  - know that we cannot rely on $\boxed{\text{gold}}$ as only reserve asset
    bcs sometimes it goes quite limit & cannot keep up with economic growth
    & don't want to put too much value on only one currency
  - use Deutsche Marle as reserve asset in Europe
    <Germany> has biggest GDP size
    need to rely on discipline of that country a lot
    If use only 1 currency
    e.g. US printed too much currency → causing concern & distrust
    *
    to avoid this → create new asset called "ECU"
    - no physical money
    - no must to trade
    - created to be used as unit of account

Value of 1 ECU
treat as basket of currencies
SDR - special drawing right
basket of currency
legacy from Bretton wood system
use relative GDP as the weight

$\frac{GDP_{GER}}{GDP_{EC}} = 30\%$

DM has the highest weight

⇓

each country goes back and determine fixed ex rate btw its MC against 1 ECU

allow money to move freely within Euro zone

2.4 European Monetary Union and the Euro

determine fixed exchange rate btw HC and ECU

- EX: Assume $S^{DEM/ECU}$ = DEM1.92573/ECU and $S^{DKK/ECU}$ = DKK7.34555/ECU.

  if both are fixed <use ECU instead of gold or USD>

  this will also be fixed

  – $S^{DEM/DKK}$ = DEM0.26216/DKK (Denmark)

  also allow exchange rate to move in 1 day within a range

  if go out of this range, need intervention to bring back the fixed rate

  in practice, fixing that par value is quite difficult because there's no mkt to trade ECU, don't know actual price. How to intervene???

- The ERM allows the market exchange rate to move within ±2.5% of the central rates. (Target Zone)

  cause system to collapse || 1989 West & East Germany reunified

  Berlin wall → caused high economic activities in Germany

  CB of Germany independent from politic (Bundesbank) → famous for controlling inflation → CB fight against inflation by increase int rate → trigger crisis

  since DEM has the highest weight in ECU, so other countries defend on DEM instead of ECU → DEM becomes center

- 1992 Currency Crisis: Bundesbank decided to force up German interest rates due to inflationary pressures and the need for inflows of foreign capital.

  e.g. UK | GER

  $\bar{S}$ = DM 2.9 / £

  assume i_{UK} = 4% , i_{GER} = 4% (6%)

  not willing to increase int rate

  ! arbitrage S < DM 2.9/£ → £ weaker → pressure to sell £

  borrow £ and pay 4% → use to buy DM and invest to earn 6% → get 2% diff

  normally, have rule that £ becomes stronger → can exchange back to £ less

  both countries intervene by buy £ and sell DM

  UK has to sell DM from reserve, GER just print & sell

- To defend parities with the DM, other members have to match high interest of Germany. This caused higher unemployment rates, which were already high, in Britain, Italy and France.

  "trinity of impossibility"

  cannot have diff int rate!

  don't have to worry because we use fixed exchange rate! & allow cash to move freely

UK drop from system ECU
CB let exchange rate drop
speculator buy back cheaper

as UK election is coming → will not slowdown economy
speculators (like George Soros)
↳ think UK will not increase int rate
↓
ability of UK to defend value of £ lower due to less reserve
↓
speculator think UK will drop out from system
sell £ at fixed rate (short sell) (before drop out)

reserve ↓↓↓
↑
UK had to fight this too

2.4 European Monetary Union and the Euro

European CB feel that they have to tighten their relationship

- In Sep 1992, speculators began to short sell these currencies betting that countries will either give up the ERM or devalue their currencies.
- After losing much money through FX market intervention, Britain and Italy were out of the ERM.
- In 1993, ERM allowed S to move within ±15% of central exchange rate.

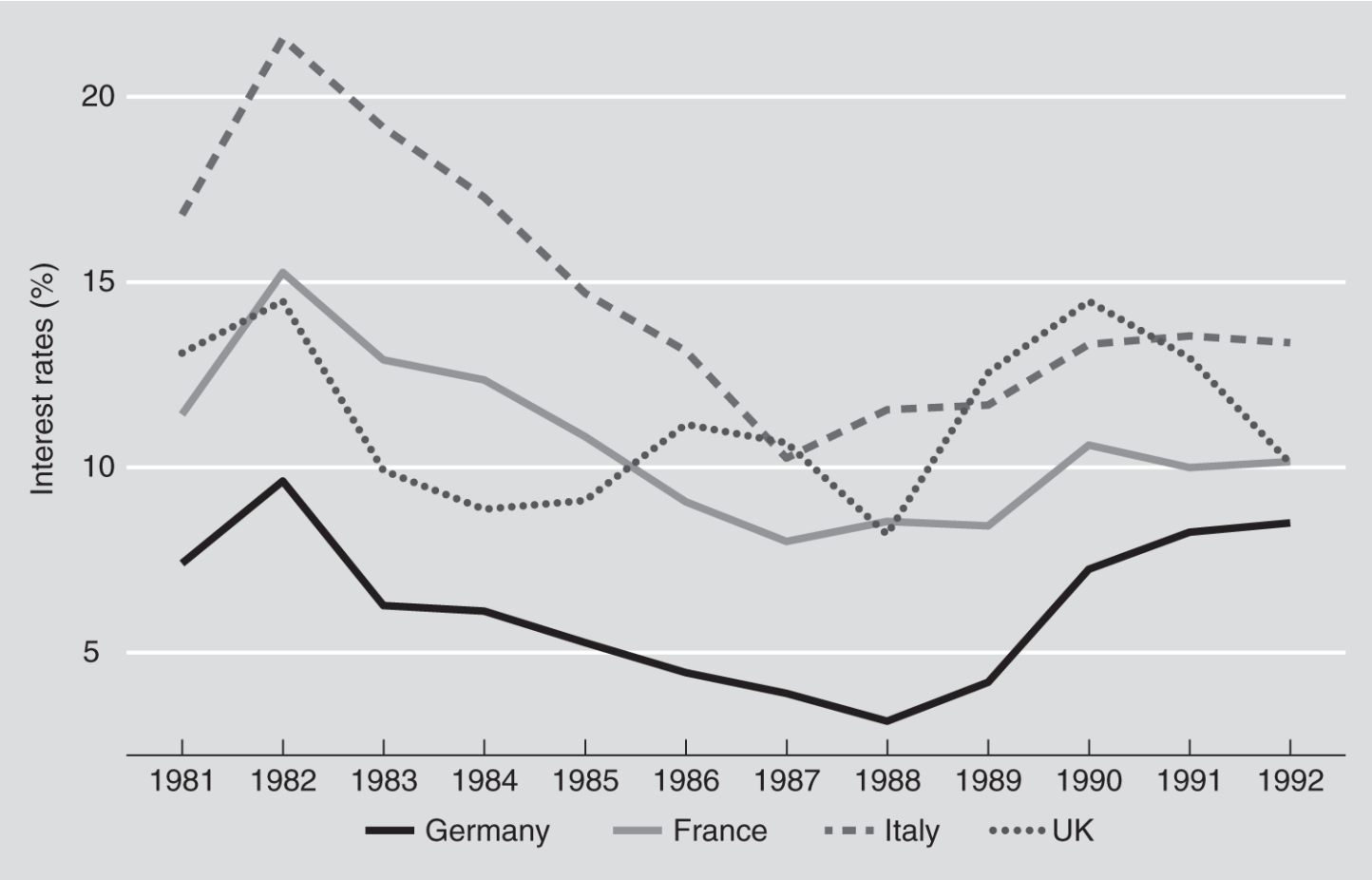
If you want to have
- fixed exchange rate
- capital mobility (move freely within zone) to boost international trade & investment within zone

] have to give up independence of monetary policy
↑
must coordinate
↳ set up "ECB" to coordinate monetary policy within group

1992 → sign
1999
use same currency called € (euro)
diff in economy → can cause crisis
must pass criteria first
e.g. keep budget deficit < 3% of GDP
price stability low inflation

Goldman Sachs help Greece → too high public debt
↳ reported false number

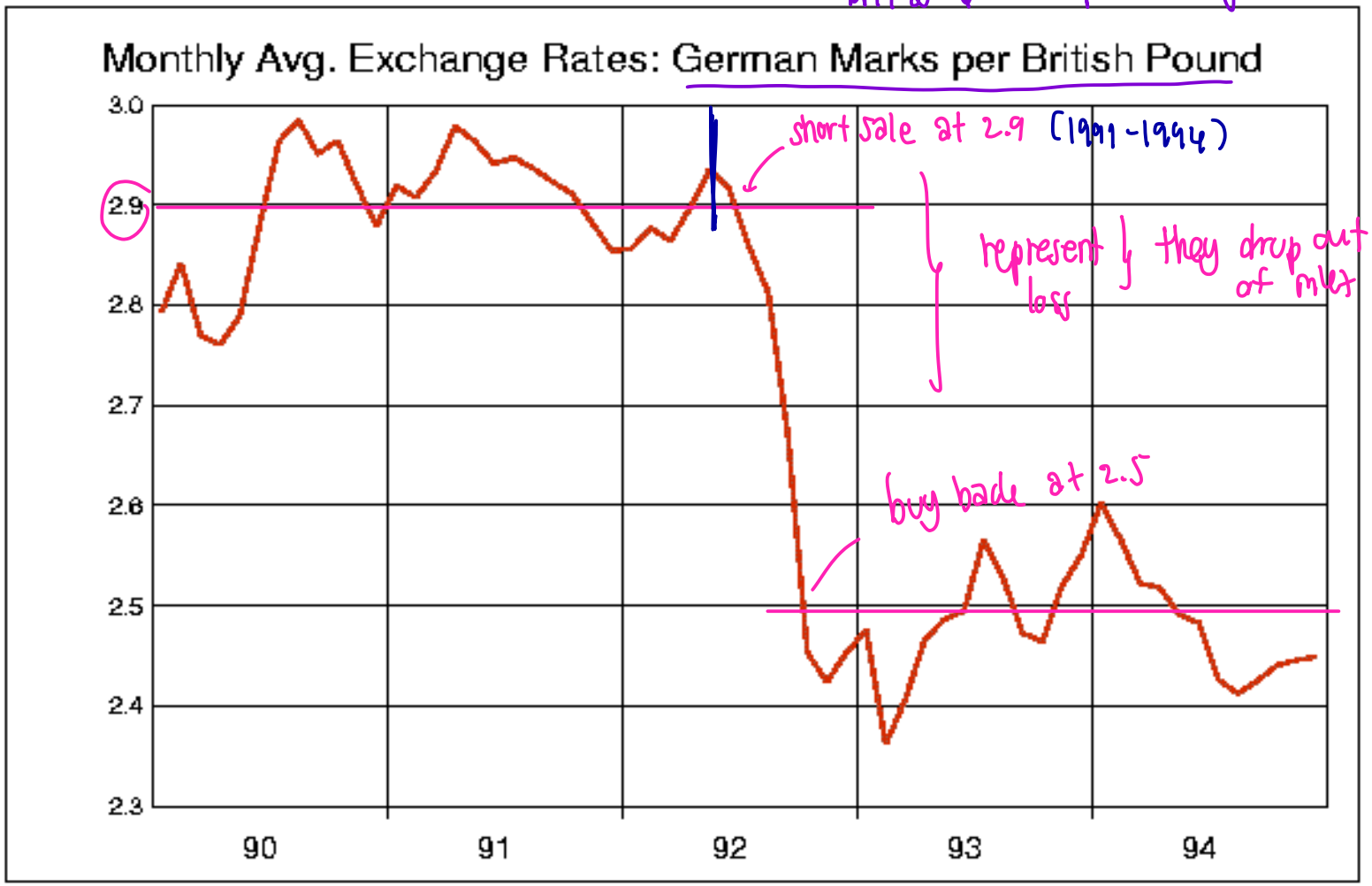
Defending the ERM Required High Interest Rates in Europe: 1980-1992



ถ้าคนขายค่าเงิน → ขายเงิน £ → £ depreciate

GBP/DM= Exchange Rate (1/1/90-31/12/94)

DM / £ ↓ £ depreciates against DM



2.4 European Monetary Union and the Euro

- The turmoil urged the EU to move toward monetary union.
- The Maastricht Treaty was signed in 1992, under which the EU nations would establish European Monetary Union [EMU] and European Central Bank [ECB] with the sole power to issue single European currency called the euro as of January 1, 1999.
- Under the EMU, the level of coordination in monetary policies among member nations is higher than under its predecessor, namely the EMS.

2.4 European Monetary Union and the Euro

- To become a member, a country must meet various macroeconomic criteria, for example;
  - Keep the budget deficit below 3 % of GDP
  - Keep gross public debt below 60% of GDP
  - Achieve high degree of price stability
- The euro, €, was launched on January 4, 1999, with 11 member states.
- As of 2020, there were 27 member states in the EU with 19 of these participating in the euro.

19-Member Eurozone (as of 2020)

↳ after this, UK exit

* EU is bigger than Eurozone
* Eurozone is subset of EU

ใช้เปรียบ

Northern Europe → Better productivity than southern

Southern Europe → To produce same product require more time = cost higher → start to lose out competitiveness

fixed rate vs. single currency

Germany trades with France,

① party need to pay bid-ask spread

transaction cost ~1% of transaction value

② there's a chance that the country involved might not be able to defend currency value → there're some volatility of exchange rate

Benefits of single currency:

① • reduce transaction cost & the need to hedge exchange rate risk

② • zero risk of volatility of exchange rate

③ • can compare price easier for consumer

① can devalue HC to help solving recession

E.g. Greece → cannot use fiscal policy (recession)

↘ too much public debt, cannot issue more bond

Disadvantages of single currency:

• cannot devalue euro bcs euro doesn't belong to any country alone

↓

give up monetary policy as a tool to solve internal problem

2.4 European Monetary Union and the Euro

- Potential benefits for countries joint the euro include
  - Cheaper transaction costs,
  - Currency risks and costs related to exchange rate uncertainty are reduced,
  - All consumers and businesses, both inside and outside of the euro zone enjoy price transparency and increased price-based competition.

compare price easier

too much debt & not sustainable, we don't really know whether it's too much debt before crisis

3. Financial Crises

In Mexico, gov debt
In Thailand, debt belong to private enterprise
originated from external debt (foreign currency debt)

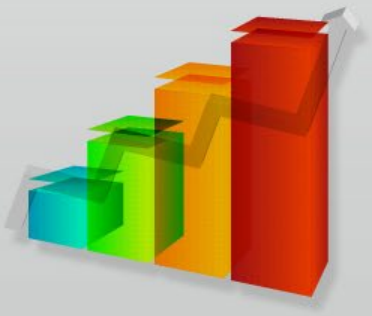
3.1 Emerging Markets Financial Crises 1990's

domestic private debt but not commercial
US internal debt from consumer debt → to buy house

3.2 Sub-Prime Crisis 2008

debt in euro — public debt
Greece ; Euro denominated debt

3.3 Europe's Sovereign Debt Crisis 2010



3.1 Emerging Markets Financial Crises

- Currency crises experienced by emerging economies in the 1990s.
  - Mexican peso crisis of 1995
  - Asian contagion of 1997 (Korea, Indonesia, and Thailand)
  - Russian ruble crisis in 1998
  - Brazilian real crisis in 1998
  - Argentine peso crisis of 2002.

prior to 1995, Maxico, US, Canada Joined in free trade agreement (AFTA)

caused a lot of cash inflow (foreign capital) to Maxico for cheap labor (produce in Maxico, then export to US & Canada without tax)

Maxico became more in debt as money keep coming in → moving economy boom → caused Maxico to accumulate foreign debt & using fixed exchange rate

fixed rate overvalue the MC → debt creditors doubt Maxico had ability to repay debt → started to pull out money → MC value dropped very quickly → crisis!

MC value ↓ & had a lot of foreign currency debt ← many firms declared bankruptcy

Debt: $100 — S_0 = ฿25/$; S_1 = ฿35/$ ∴

bcs of booming economy → a lot of capital flow into TH → TH accumulated foreign currency debt → money partly went to production → overcapacity

China vs. TH export were similar → fixed with $ → TH became stronger due to USD → TH lose out competitiveness → difficult to export → ability to repay ↓

& part of the money went to speculative activity → buying property (e.g. price of land went up anywhere) → 1997 but money stop to come in → property price ↓ → cannot repay

* not well spend money

Black-Scholes model

hedge fund | option crisis model !!!

LTCM: long-term capital management

quan → arbitrage on bond

They found that when bond is newly issued (on the run bond) tend to have small misprice

use a lot of money to get high absolute return

use derivative

before 1998, they were betting on Russian gov bond

bcs of price of commodity drop → stop repay bond (default) & cause crisis in Russia (large exporter of commodity) → LTCM didn't predict default → make big loss → get call margin → if it falls banks also fall

(JP Morgan lends liquidity to LTCM big gain :)

3.1 Emerging Markets Financial Crises

- Contributing factors
  - Fixed exchange rates that overvalued the local currency
  - Large amounts (not sustainable) of foreign currency debt
- Consequences
  - Significant drop in currency value
  - Asset value was wiped out
  - Higher cost of capital for business
  - Severe GDP contraction

3.2 Sub-Prime Crisis 2008

- With the collapse of the dot.com bubble at the end of 1990s and a low interest rate environment that followed, capital began to flow increasingly toward the real estate sectors in the United States
- The U.S. banking sector found mortgage lending highly profitable and saw it as a rapidly expanding market
- Mortgage loans in the U.S. marketplace are normally categorized (in increasing order of riskiness) as:

How US banks classify their customers based on credit worthiness :

- Prime (or A-paper) → very good " —— "
  ↳ MLR (int rate ที่ ธ. เรียกจาก ลูกค้ารายใหญ่ชั้นดี)
- Alt-A (Alternative A-paper)
- Sub-prime. → has worst credit worthiness
  ↳ most default risk
  but banks can charge highest int rate

→ Sub-prime crisis : banks lent a lot to sub-prime borrower → then Fed started to increase interest rate
↓
this sub-prime group has highest chance of being vulnerable to increase int rate
↓
started to default → dominal effect to all banks

3.2 Sub-Prime Crisis

- Sub-prime borrowers are those who have a high perceived risk of default normally as a result of credit history.
- Sub-prime mortgages are nearly exclusively floating-rate structures and carry significantly higher interest rate spreads over the reference interest rates.

→ subprime lending became even larger

* MBS & CDO allow banks to get to access money in capital mkt <LT> easier

- Mortgage-back securities, Collateralized Debt Obligations (CDOs) allow banks to get access to cheap money in capital markets and carry the mortgage loans off-balance sheet. Lending became reckless.
- Credit Default Swap allows investors both the hedge and bet against default risk.

housing loan → ① turnover is very slow — no risk unlike int from loan

② Bank also charge fee <upfront> when lend

* Bank would want to make the loan turnover becomes quicker → bank sell loan to 3rd party → get cash then lend again → increase turnover

so that they can lend more than one time from same $ of deposit

* this process is called "securitization" ← use mortgage to back up "Mortgage-back security" <MBS>

Bank records deposit in liabilities

BIS of bank

Cash	10	Deposit	$ 100
Loan	90	Equity	$ 14
Other	14		
	114		114

legal reserve 10% requirement

1st SPV borrow & buy loan from bank → cash goes to bank
2nd SPV issues bond

Bank set up separate entity
↳ SPV (special purpose vehicle)

Cash 90	Bank loan 90
loan agreement 90	Bond 90

buy from many houses to diversify

back up this bond as collateral

MBS ↳ sell this to capital market

BIS of bank

Cash 10	Deposit $ 100
Loan 90	Equity $ 14
Other 14	
114	114

* Bank have incentive to lend more & more reckless
↳ issue bond in non-recourse basis
↳ if home owner default on loan → bond holders don't have right to go after bank

CDO ; combine MBS to become back-up for another securities → CDO
⇓
many layer of owners on only 1 underlying asset (house)

CDS : insurance against default on bond issued by insurance company
(people who don't have risk exposure can also buy CDO if they bet that it will default
e.g. house : $1 mm ← actual exposure is just 1 mm!
but they sell CDS at $100 mm
↳ cover ↳ if a person (without exposure) buy this → 2 mm!

2009 → Fed started to increase int rate → too quick!!
Mortgage is float-rate ⇒ borrowers (sub-prime group) find that their financing cost become higher
↓
cause house price to drop & mortgage default
⇓
affect who buy bond & insurance company
||

⇓

cause recession across the world :

* Other countries outside US also get effect because :

2. Kinds of effect ① Direct effect :

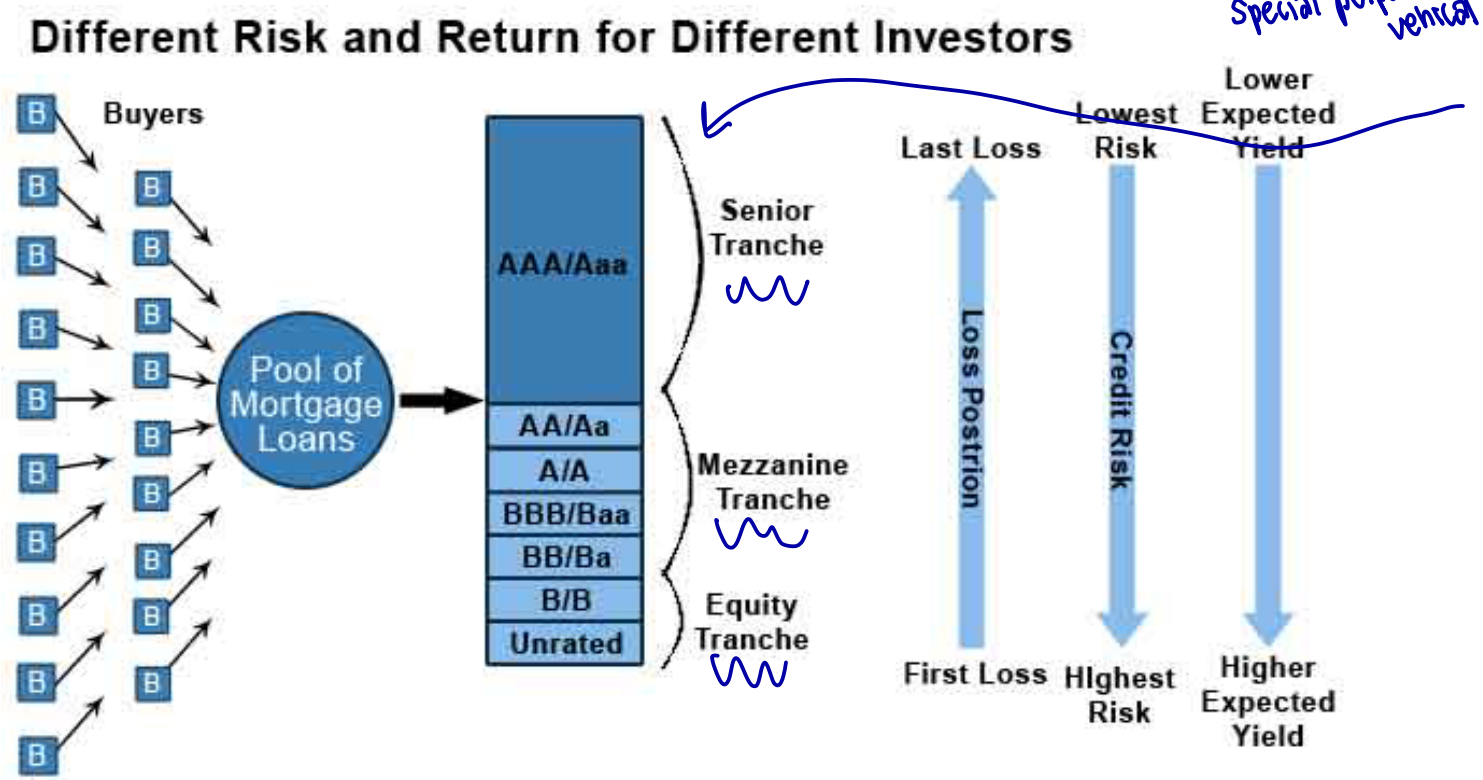
- In Thailand, we don't have direct effect bcs we don't have any financial institution in Thailand invest in subprime mkt.
- Banks in Europe & mutual funds in Europe invest in MBS
  ↳ one value or price of underlying asset drop → value of MBS ↓

② Indirect effect :

- In Thailand, we get indirect effect bcs when US people become poorer, they consume less and US is the largest import mkt (export mkt to others) ⇒ So, US affect Thailand through real sector.
- also due to size of US's economy ⇒ In the end, it became global crisis
  ↓
  mkt started to doubt about true risk of debt investment
  ↓
  triger another crisis in 2010

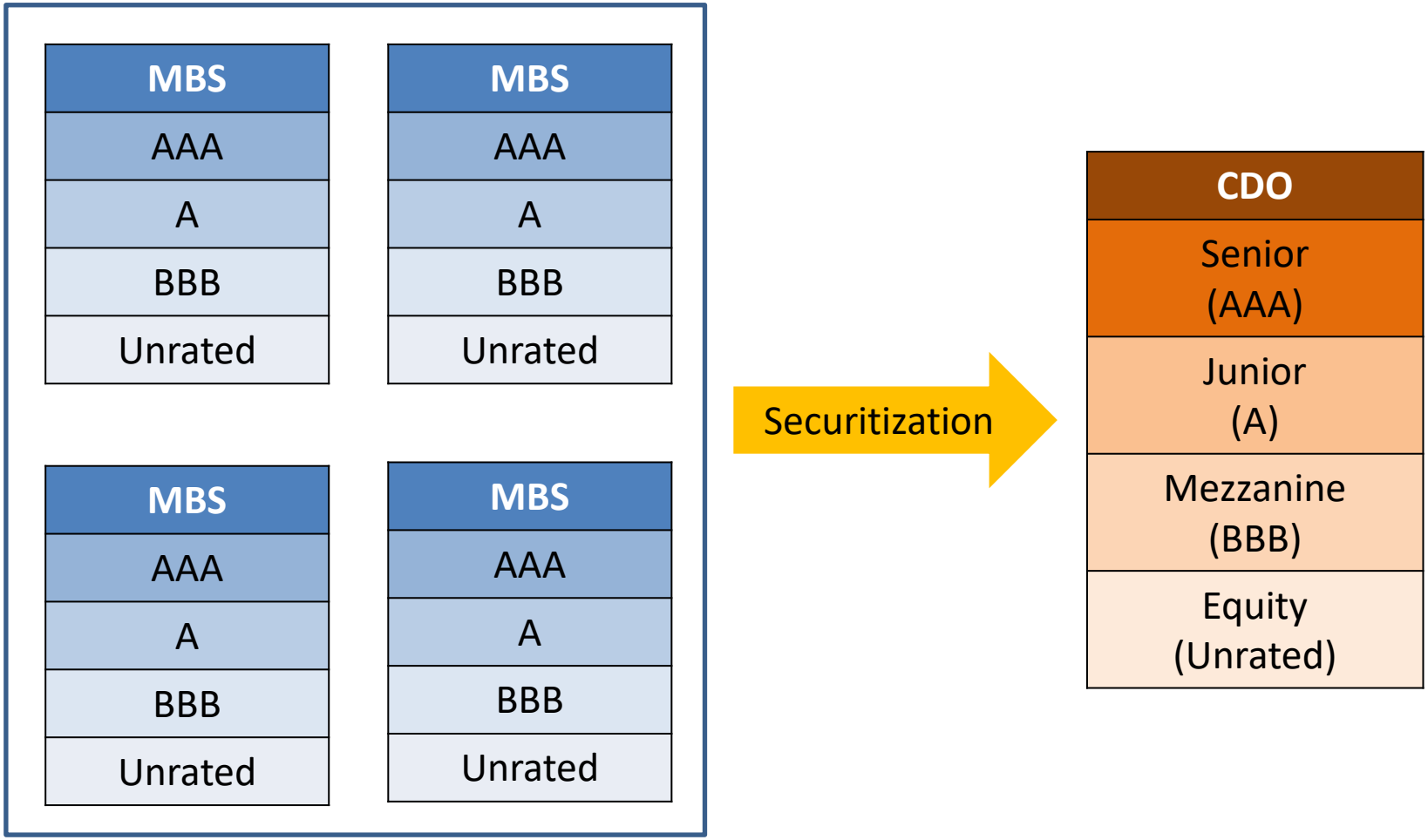
Mortgages to MBS

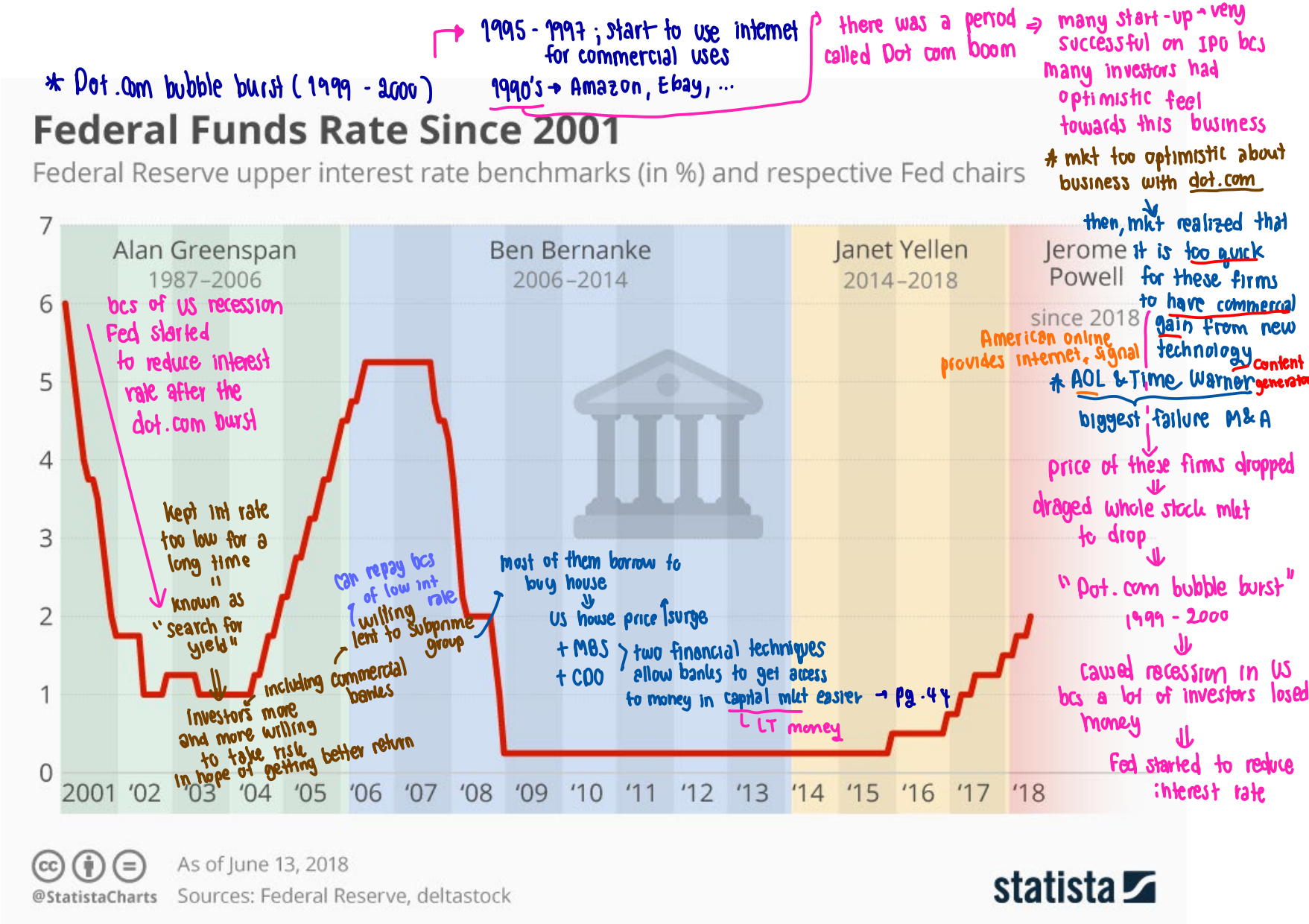
เช่น IB
ประกาศ หุ้นกู้ลงทุน
สร้าง SPV → เพื่อทำ MBS ออกขาย
Special purpose vehicle



Source: https://www.wallstreetmojo.com/asset-backed-securities/

MBS to CDO


MBS
AAA
A
BBB
Unrated
MBS
AAA
A
BBB
Unrated
MBS
AAA
A
BBB
Unrated
MBS
AAA
A
BBB
Unrated
Securitization
CDO
Senior
(AAA)
Junior
(A)
Mezzanine
(BBB)
Equity
(Unrated)



Source: https://www.statista.com/chart/7227/federal-reserve-moves-up-base-rate-025-percent/

3.2 Sub-Prime Crisis

- In 2007, a series of increases in the interest rate started to cause drops in real estate prices country-wide and sub-prime borrowers to default on their mortgages.
- Geographical diversification structure of MBS's did not help as the price drop was country wide.
- This in turns resulted in a drop in MBS's and CDO's value held by financial institutions in the US and Europe.
- Default on mortgage-back bonds meant protection sellers of CDS had to make large payment to protection buyers.
- These events created chain effect that threaten collapses of financial institutions and caused credit crunch. Effects now felt in the real sectors as well.

3-Month Money Market and Credit Spreads (BIS) in bps.

[1]Three-month LIBOR rates minus corresponding OIS rates (for the euro area, EONIA swap; for the United Kingdom, SONIA swap).

[2]Average of the five-year on-the-run CDS spreads for the panel banks reporting LIBOR quotes in the domestic currency's panel.

[3]Three-month LIBOR rates minus general collateral repo rates (for the United States, ICAP government general collateral repo; for the euro area, EBF eurepo; for the United Kingdom, BBA repo) in the same currency and maturity.

Sources: Bloomberg; BIS calculations.

Source: From Eiteman, et al. (2010)

OIS = Overnight Index Swap
EONIA = Euro Overnight Index Average (i.e., interbank rate on the EURO among European banks
SONIA = Sterling Overnight Index Average

15:53 อา. 5 พ.ย. 33%
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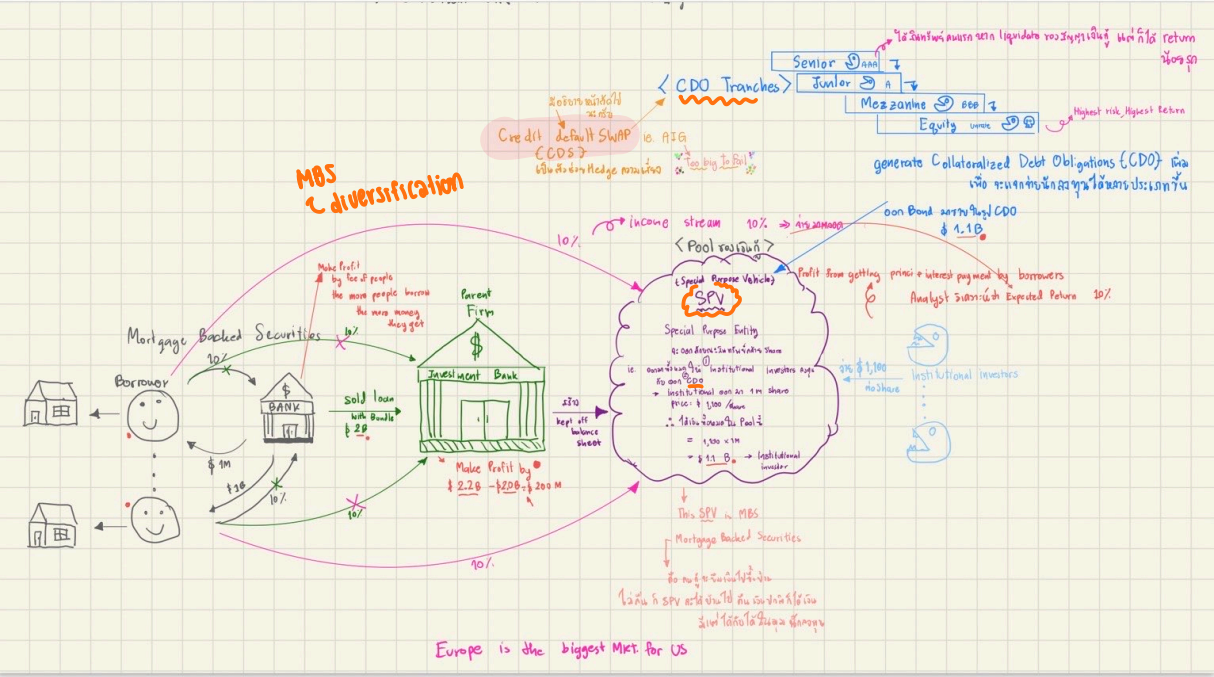

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CDS credit default swap

fed ปั๊ม int rate
↓
bubble

eg. ถ้า Pension Fund ~ conservative ต้องๆ จะลงทุนแค่ Corporate AA or Above เพราะ Pension เป็นของ
<bond>

• ลำดับเหตุการณ์
1st
2nd
...

Pension Fund ⟷ CDO
10% /year
$ 1B

CDO <Bond จาก Mortgage Backed>
Rating of Securities : A

** ทำไมปกติจะลงทุนไม่ได้
Pension คือกองทุนสวัสดิการ
AIG ร่วม ; ก็ลงได้ ละ

2nd แบ่งกำไร ให้ AIG

1% year
* CDS *

Insured on CDO
<Mortgage Backed Debt>

Insurance Company
AIG

ถ้า CDO วิ่งจะจ่ายให้

คล้ายเงินตั้ง $ 500 M
Credit Rating บริษัทอยู่ที่ AA

เชื่อว่า CDO ไม่วิ่ง

รับจากกั่ง pension funds short จาก hedge fund

Pension ไปลงทุนใน CDO ได้

เพราะ Rating ของ AIG ไม่ลง

หาเงินเพิ่มได้จาก CDS
รับเบี้ยก่อนนี้ไปล่วง เพื่อพนันว่า CDO จะ Default มั้ง

Synthetic CDO
↓ ออกโดย bank

อธิบายเหตุการณ์ :
ถ้า Pool CDO ล่ม Pension Fund ได้เงินคืน
$ 1B จาก AIG ที่ประกันไว้
แต่ถ้าไม่ ก็จ่าย AIG 1% /year

• AIG ไม่ต้อง put any collateral
คือถ้า AIG เจ๊ง บังคับกรจ่าย Pension ยาก

• Subprime : คือ AIG ให้ประกันไปที่ม่เสง
↓
เช่นกลุ่ม migrant
↳ float-rate loan

flight to quality → ไม่ลงทุนเสี่ยง

3.3 Europe's Sovereign Debt Crises

ไม่ลงทุนนี้

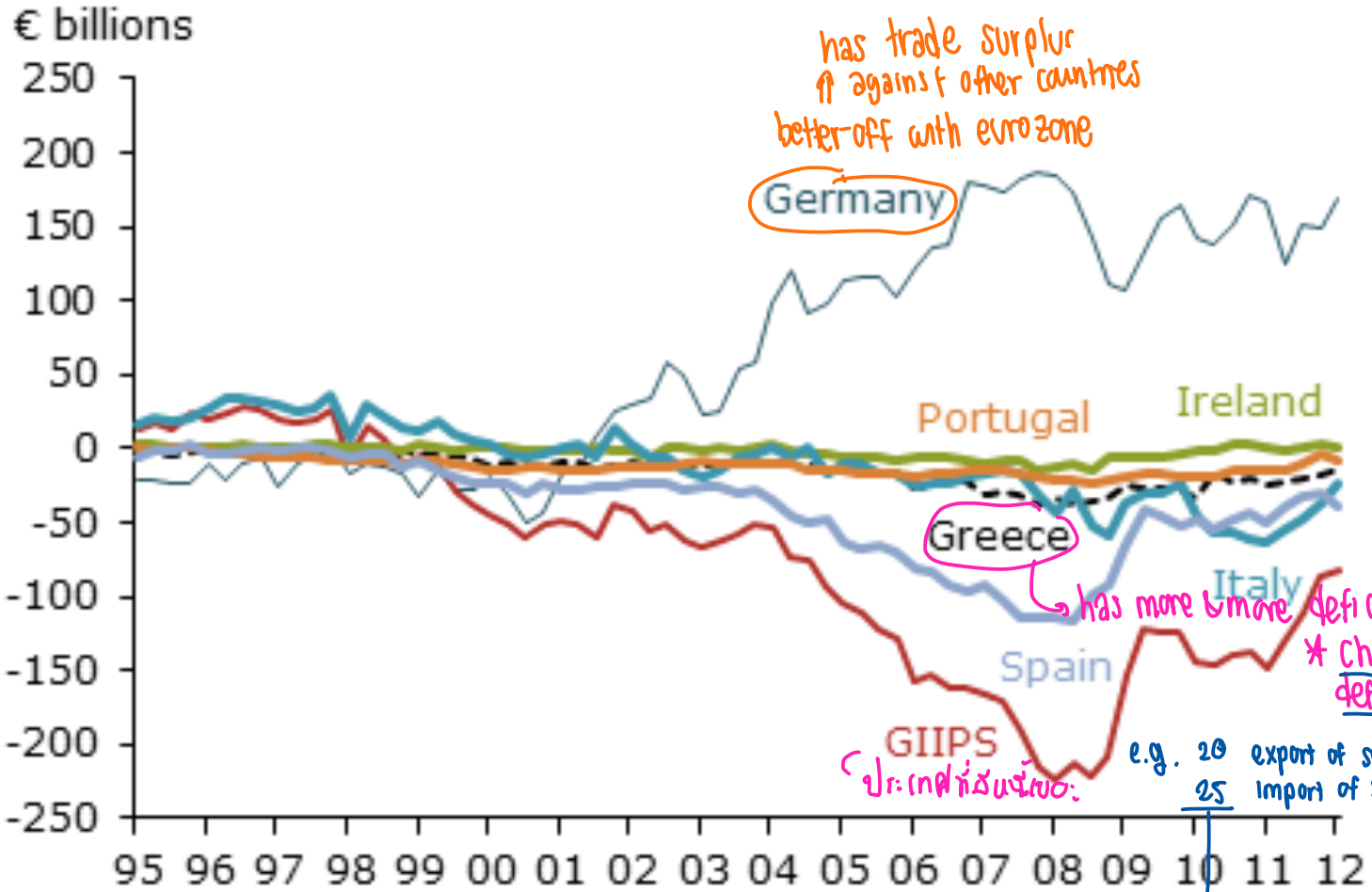
- In early 2010, fears of a sovereign debt crisis developed concerning European states including Euro-zone members, namely Portugal, Ireland, Italy, Greece and Spain. มี public debt เยอะ

ออกพันธบัตรเพื่อทบต้นหนี้เก่า ↳ ยิ่งสูงมากๆ เพื่อดึงดูดนักลงทุน → ไม่มีใครลงทุน ↘ ล้ม

- This led to a crisis of confidence as well as widening of bond yield spreads and risk insurance on CDS between these countries and other Euro-zone members, especially Germany.

- In May 2010, Euro-zone countries and the IMF agreed to an EUR110 billion loan for Greece.

Current Account Balances in the Euro Area



has trade surplus against other countries
better-off with eurozone

has more & more deficit against others

* Chronic trade deficit problem

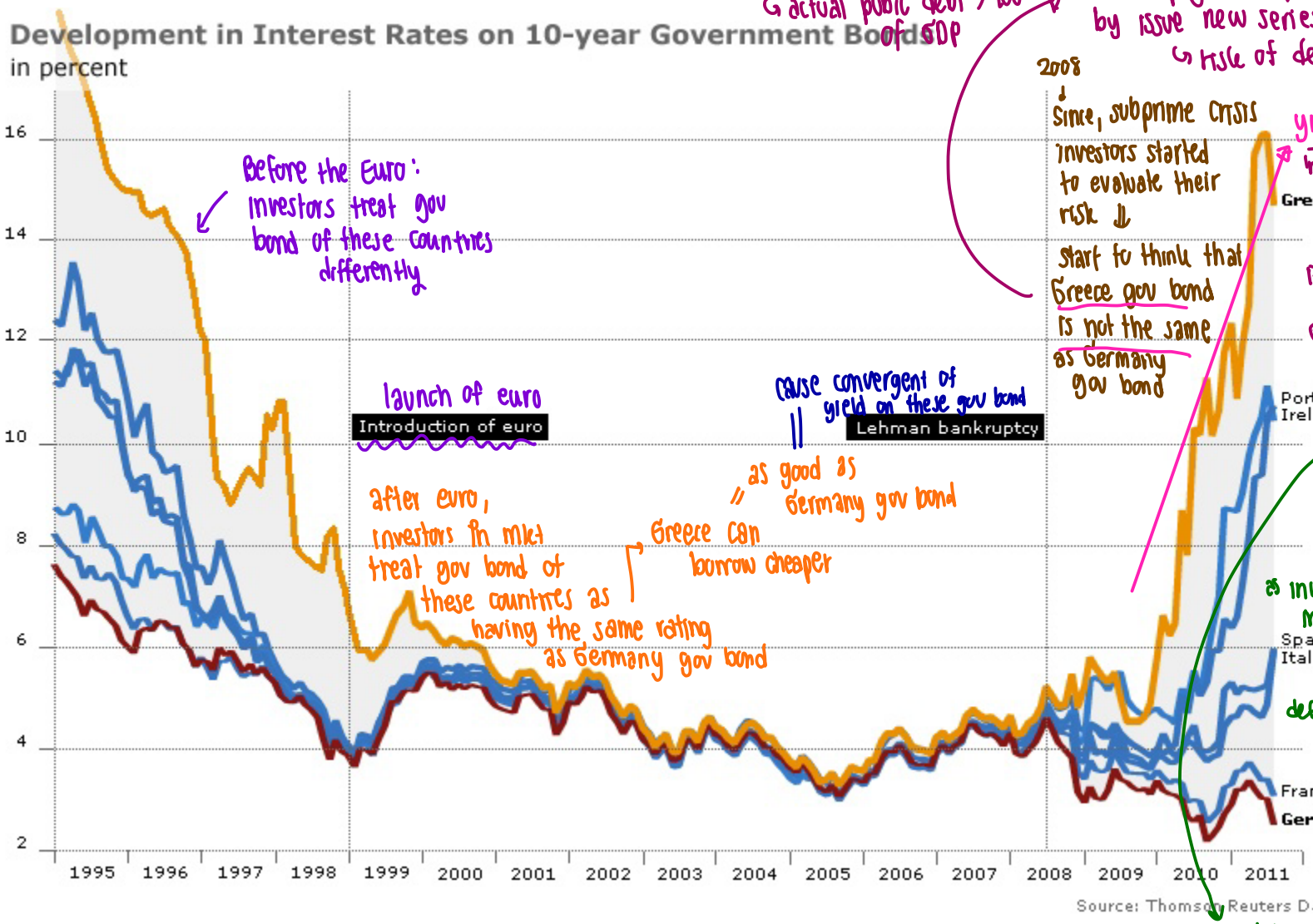
e.g. 20 export of service → earn money
25 import of service ⇒ pay money

deficit = 5 cannot print currency
need to borrow → generate external debt
Euro debt

Still HC unlike Thailand ($)
cannot control but
not generate exchange rate risk

As Greece borrow a lot of money
double deficit !!
① national budget deficit by borrow a lot
② current account deficit

Source: The Federal Reserve Bank of San Francisco



Before the Euro: investors treat gov bond of these countries differently

launch of euro

after euro, investors in mkt treat gov bond of these countries as having the same rating as Germany gov bond

Greece can borrow cheaper

cause convergent of yield on these gov bond

as good as Germany gov bond

& Greece has misreported public debt

↳ actual public debt > 100% of GDP

2008

since, subprime crisis investors started to evaluate their risk ⇓

start to think that Greece gov bond is not the same as Germany gov bond

cost of borrowing become higher!

↑

has accumulated a lot of debt at national level

Greece pay back principal by issue new series of bond!!

↳ risk of default

yield of Greece ???

harder to find who willing to buy the bonds

↓

if nobody buy bond

↓

Greece bond default

↑

European came to help bcs they were the lender

" contagion effect "

↓

as investors & financial institutions invest across each others

↓

default of one country can also affect other countries

with condition that Greece has to limit spending to limit public debt

National Debt as a Percentage of GDP, 2010

The reckoning

% of GDP (unless stated)

	Gross government debt 2010 est	Gross government debt 2015 f'cast	Primary budget adjustment, 2010-15 f'cast	Net international-investment position, 2009	% of gov't bonds held abroad*	Ten-year gov't-bond yield†, %
Greece	140.2	165	10	-89.1	58.0	11.3
Ireland	97.4	125	13	-102.5	54.2	8.3
Portugal	82.8	100	8	-113.2	66.0	6.8
Spain	64.4	85	10	-95.7	38.7	5.5

Sources: *The Economist*; European Commission; IMF; Citigroup; Thomson Reuters *Q3 2010 †January 12th 2011

Public debt / GDP

Japan > 300%

Japan not face same crisis as Greece:

Japanese gov issues Yen bonds and mainly sell to Japanese investors

is in home currency

However, for Greece, ①

even Euro is its HC,

it cannot print Euro, must be earned

has a lot of restriction compared to Japan

② Greece offers best retirement benefit to citizen from tax

spend a lot than investment in consumption

not productivity

Source: From The Economist

structure of economy

③ Greece main export is "tourism"

↳ It is not capital incentive but labor incentive

difficult to improve productivity