

Monetary Policy Strategy for long term growth and price stability

Bhanupong

Lecture 24

Chapter 8

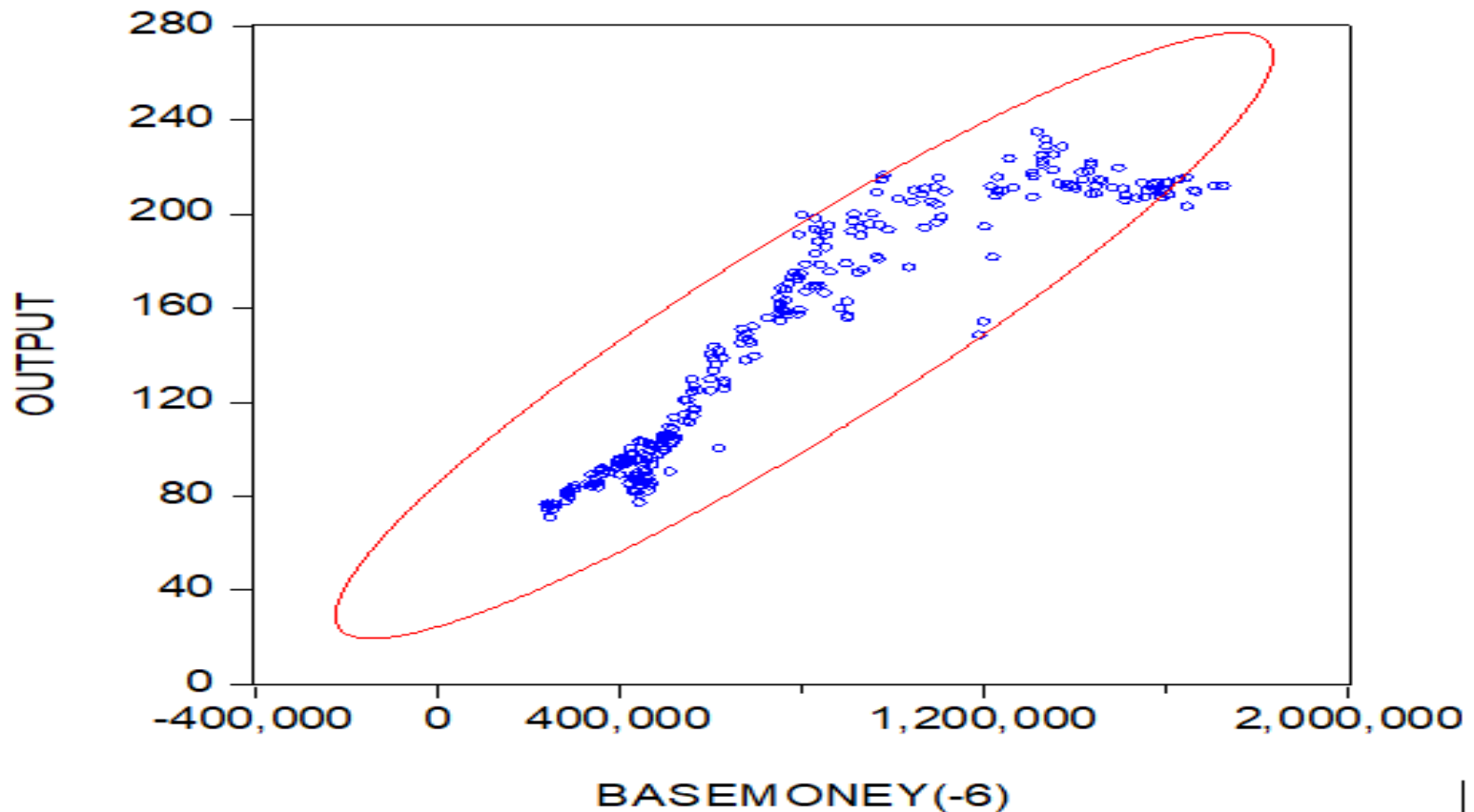
Outline

1. Monetary aggregate and economic activity
2. Monetary policy transmission channels
3. Inflation targeting strategy
4. Asset price bubbles and monetary policy
5. Covid-19 and zombie firms

1. Monetary aggregates and economic activity

The importance of monetary aggregates

Figure 8.1



Money and economic activity

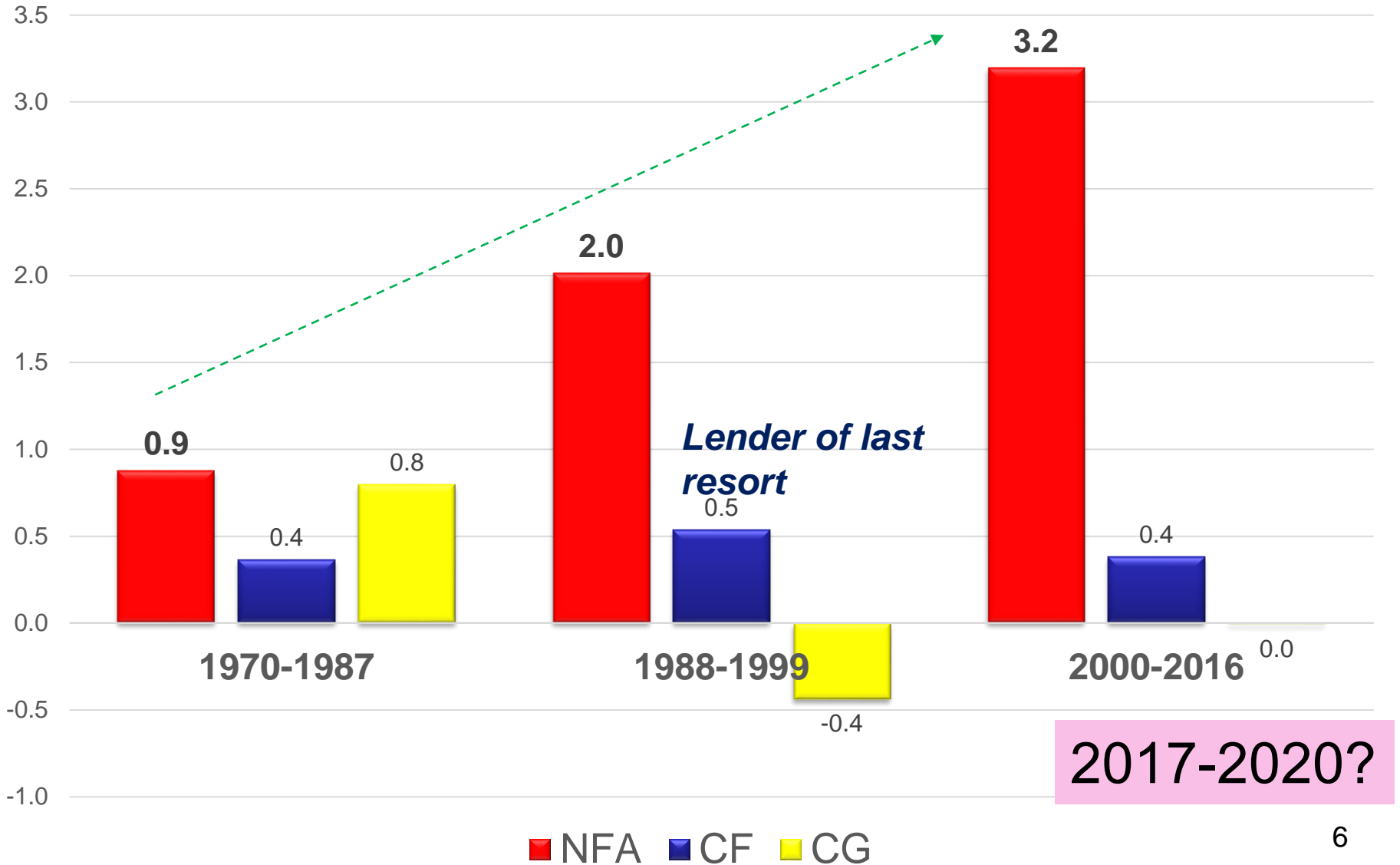
- There is a *long-run relationship* between output and monetary aggregates: monetary base (high-powered money), money supply, bank credit.
- **Growth in money supply** is not a perfect linkage to economic activity, but it provides *a rough measure of economic activity* in the medium term.
- Acceleration in the US money supply would generally be a good signal, and the slump of MS in China is a terrible thing.

On the *asset* side of the balance sheet of the central bank

- Expansion of monetary base (MB) is caused by capital inflows, intervention in the foreign exchange market (NFA), and domestic credit expansion by the central bank in the form of net claims on government (CoG) and financial institutions (CoF).

$$**MB = NFA + CoG + CoF**$$

Figure 8.2: Sources of Monetary Base Ratio to Monetary Base (period average)



On the liability side

- On the liability side of the central bank's balance sheet: $MB = \text{currency} + \text{commercial banks' } \textit{required reserves} (R)$.
- Whether banks extend loans depends on ***lending rate*** (r_L), ***the cost of borrowing*** from the central bank (r_p)-the BoT key policy rate.
- How do monetary ***policy instruments*** affect commercial bank lending?

$$Credit = \kappa MB$$

$$\kappa > 1$$

$$MB = NFA + CoG + CoF$$

$$MB = Currency + Bank\ reserves$$

$$\kappa = \kappa(\bar{R}, r_L, \bar{r}_p, \psi)$$

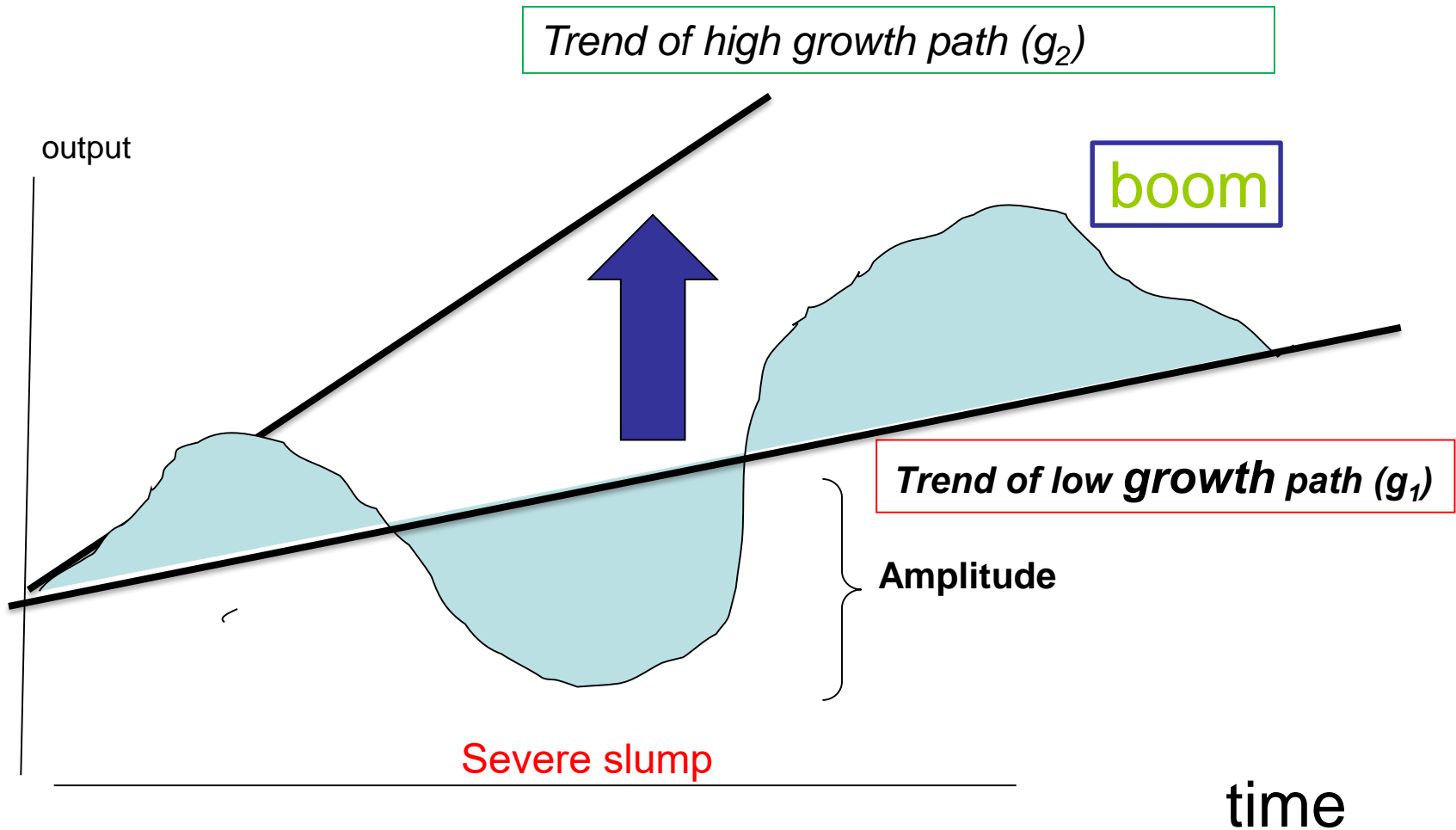
A bar superscript indicates policy parameters:
Reserve ratio (\bar{R}) central bank policy rate (\bar{r}_p)

κ = Credit multiplier = (Credit)/MB

Shocks cause deviations from the long-term growth path

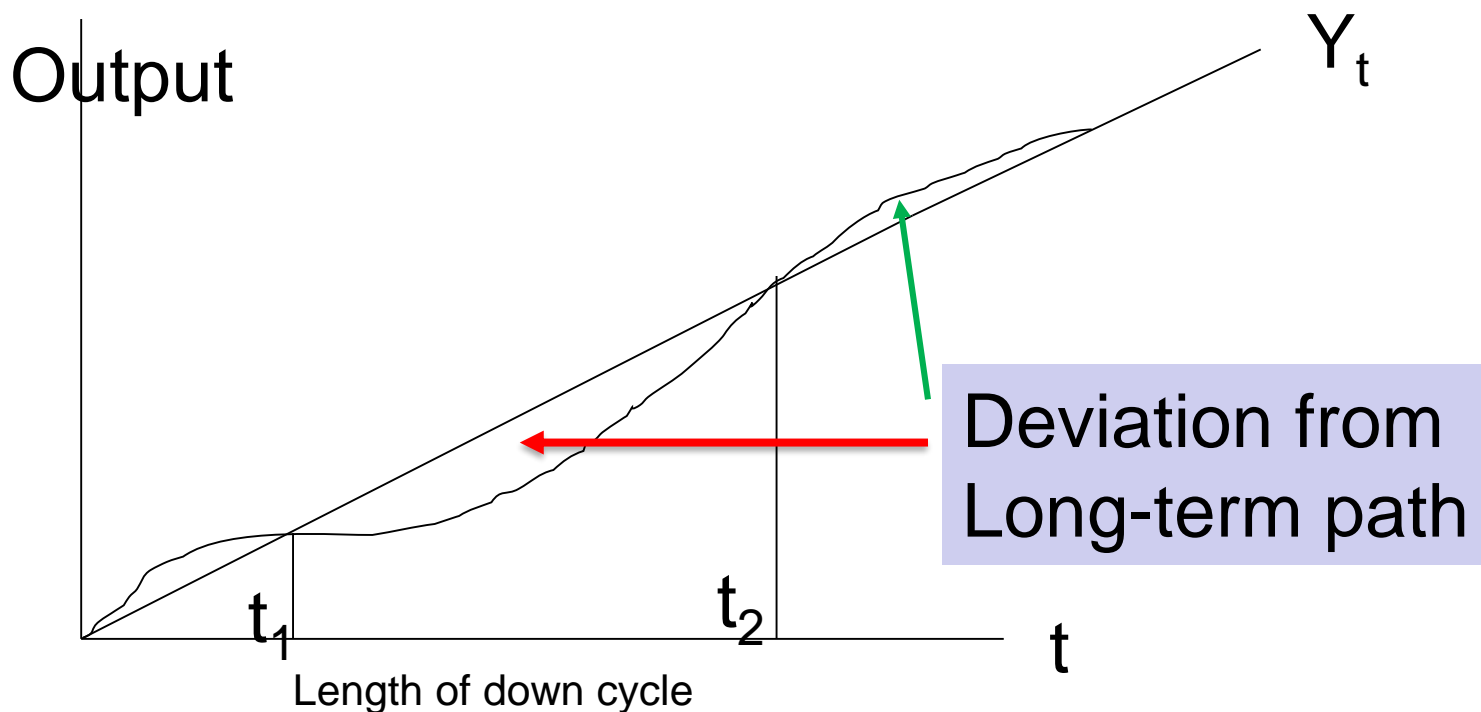
- Long-run output path is dictated by productive capacity (**technological innovation**) of the economy.
- Monetary aggregates must increase at the rate corresponding to the trend growth rate of real output.
- Credit booms and busts lead to deviations of output from its long-term growth path.

A limitation to monetary policy



In a mild cycle, output oscillates around its long-term growth path

$$(Y_t = Y_0 e^{gt})$$



Monetary policy can shorten the duration of the downturn and reduce the amplitudes of the swings.

Excessive cyclical movement of money leads to booms and busts

- Economic booms and busts can be attributed to **excessive** expansion and contraction of monetary aggregate, i.e., money supply, credit, and monetary base.
- In a **mild** cycle, without excessive cyclical movements of money, output growth oscillates around its rising trend: there is *no system-wide financial crisis*.

Severe business cycles

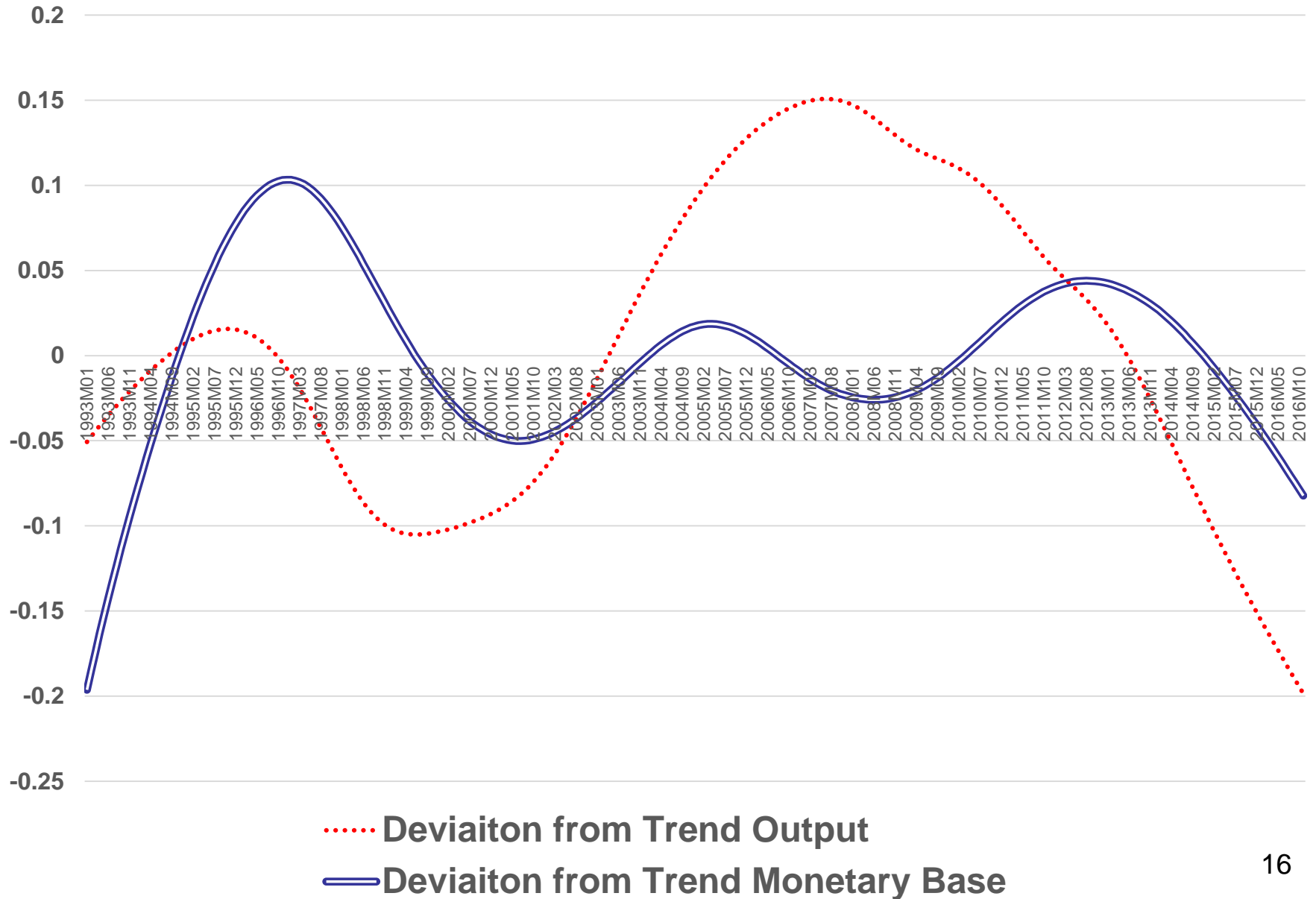
- In **severe** cycles, the soundness of the **whole** financial system is threatened.
- In this situation, we are dealing simultaneously with financial crisis and output depression.
- **Excessive growth** of money supply and its **sharp reduction** lead to wild swings in the business cycle.

- We observe a remarkable **positive relationship** between the degree of the cyclicalness of output and monetary aggregates (base money) in Figure 8.3.
- When base money exceeded its long-run trend, output also expanded at a rate faster than its normal growth path
- Similarly, when monetary aggregates contracted below their long-run trend, output growth slowed to beneath its trend.

Lag impacts of monetary growth

- Peaks of monetary growth (lagged five months) were associated with peaks in manufacturing output; the deepest contraction in output synchronized with a trough in monetary cycles.
- The lead-lag relationship of two variables gives us a clue to the direction of causation.
- Statistical evidence supports the notion that money supply growth affects economic growth.
- Changes in output do not contain information useful for predicting the future movement of monetary aggregates.

Figure 8.3: Output and Monetary Base Deviations from their trends (1993-2018)



Substantial output response to *mild* cyclical movement in base money

- When the monetary base grew excessively over its long-term trend, output growth would expand at the rate faster than its average growth rate.
- When the monetary base contracted below its normal growth path, the economy experienced a downturn.

From peaks to troughs of business cycles

- The peaks of monetary growth coincide with the peaks in manufacturing output.
- Similarly, the deepest contraction in output synchronized with the trough in the monetary cycle.
- Monetary base changes have a substantial impact on output fluctuations.
- Cyclical movements in the *monetary base and credit growth rate* can be used to predict the cyclical movement in industrial output.

Monetary policy Implications

- Both monetary and output cycles are related.
- Shocks in the financial sector can be transmitted into the real sector and vice versa.
- ***Shocks in the real sector caused by Covid-19 will eventually transmit to financial sector.***
- The implication for stabilization policy is that monetary authority should ***avoid large swings*** in monetary aggregate.

Monetary policy strategy for stable growth

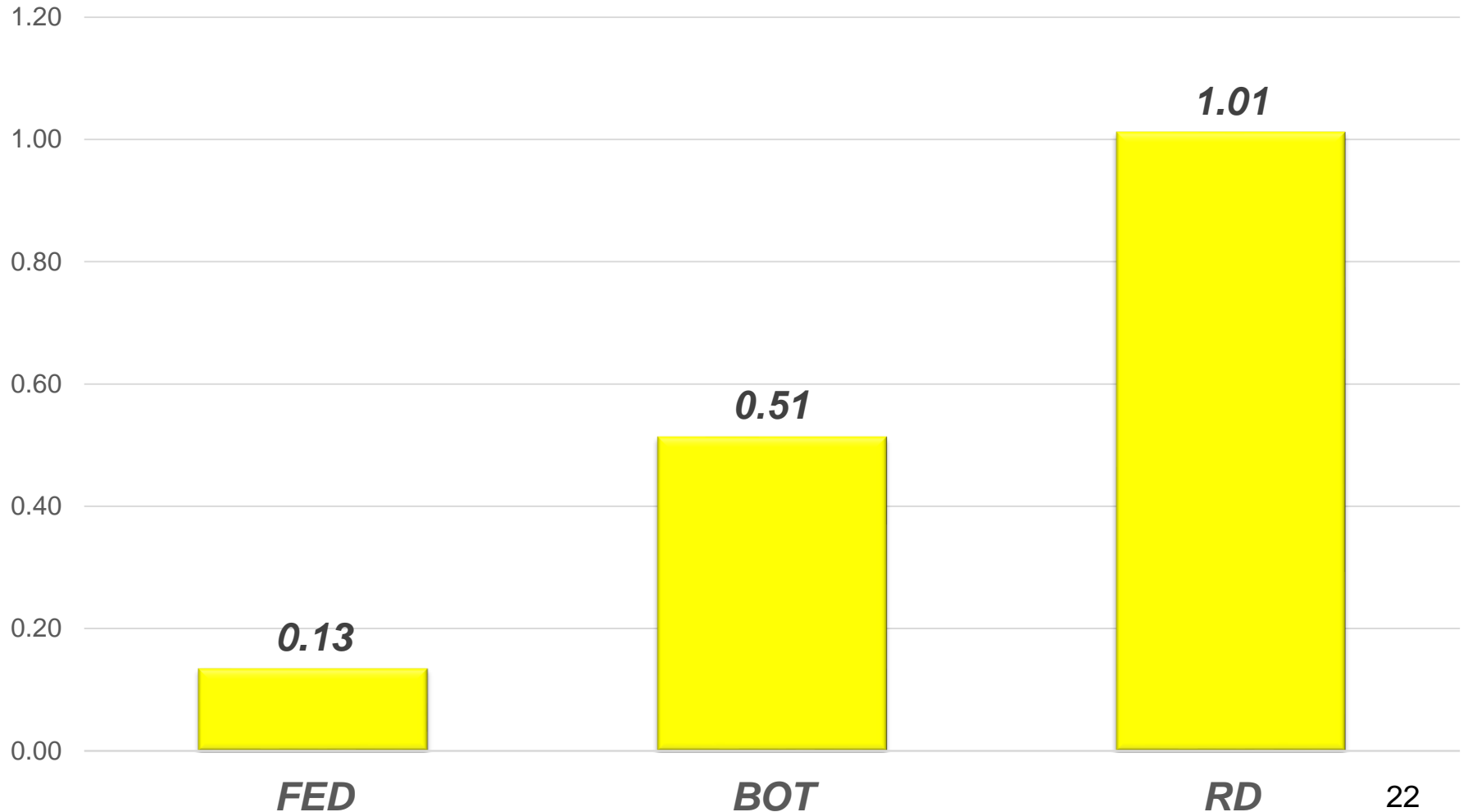
- The monetary base must be kept in line with output growth to maintain a stable growth path.
- There is at least *five months lag** impact of monetary expansion on output level. * *The lag lengths may change over time.*
- Monetary base affects money supply, and credit through money and credit multipliers.

2. Monetary policy transmission

Channels: (1) **interest rates**

- Monetary policy instrument maybe effective if it can change the cost of capital.
- Whether the interest rate can exert an immediate impact on the real economy depends on the ***responsiveness of consumption and investment*** to the user cost of capital.
- That responsiveness depends mainly on the ***business confidence.***

Figure: 8.7 Factors affecting MLR
Interest rates: Federal funds, BOT repurchase, and
bank saving deposits (RD)
Source: FMOLS Estimated coefficients
(Jan 1993-June 2017)

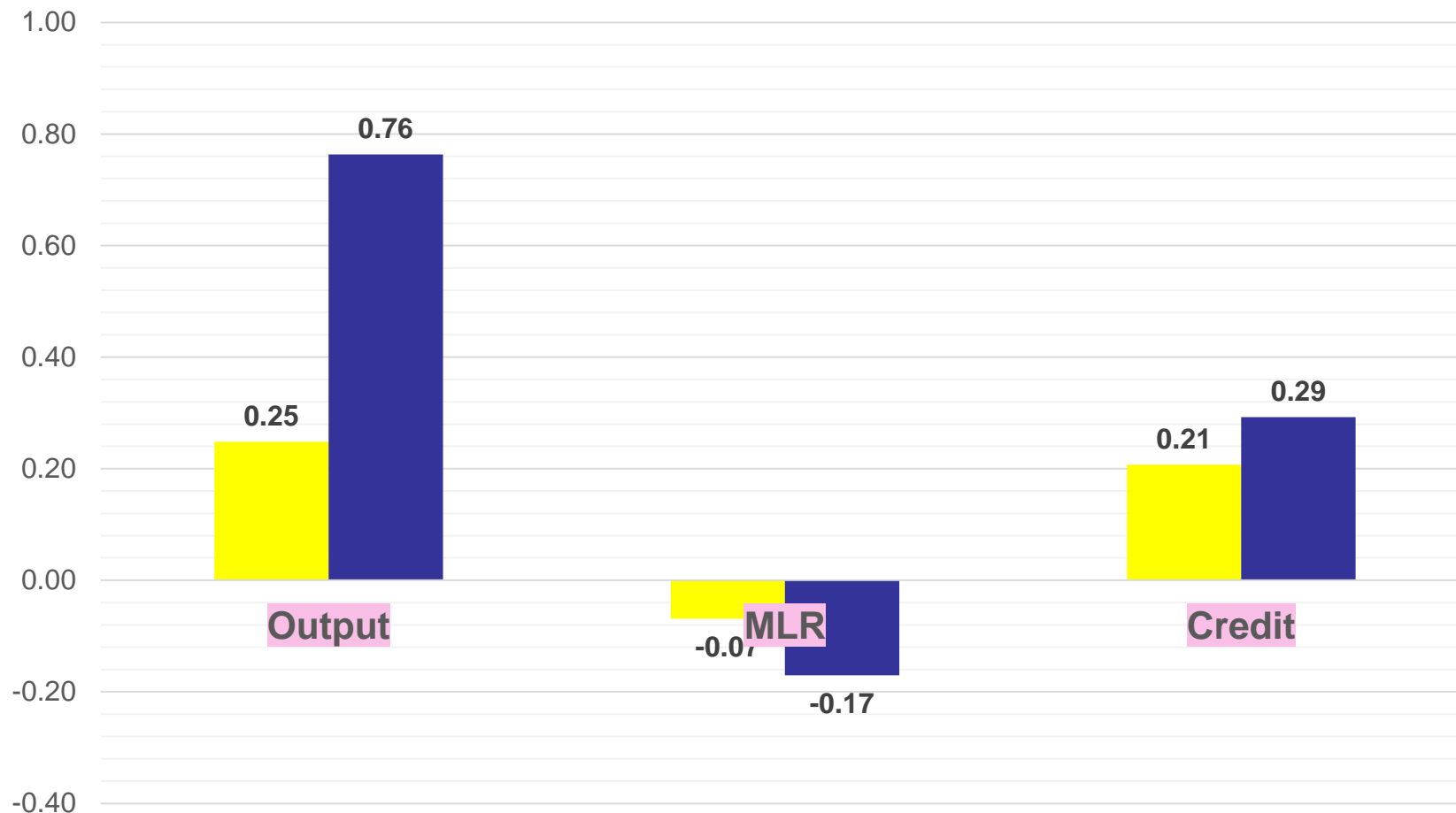


Monetary policy transmission channel: (2) Credit availability (balance sheet)

- It is not just the cost, but also the availability of credit.
- It is possible that the quantity of credit or credit availability is also vital to investment and durable consumption.
- But ***credit booms often end badly*** – and China is in the grip of a major one.

Figure 8.11: **Elasticities of Consumption and Investment** expenditures (trend)
Source: FMOLS estimates (Jan 2000-June 2017)

■ *Consumption* ■ *Investment*



IMF: Rising Credit-to-GDP Ratio

Risk of a financial crisis

- It is impossible to know the “appropriate” level of credit to GDP ratio.
- This ratio depends on the diversity of the financial system and the maturity of its banks, which itself is dependent on such factors as the domestic regulatory environment, and culture.
- *Rapid increases in credit is a **telltale** sign of deteriorating loan quality.*

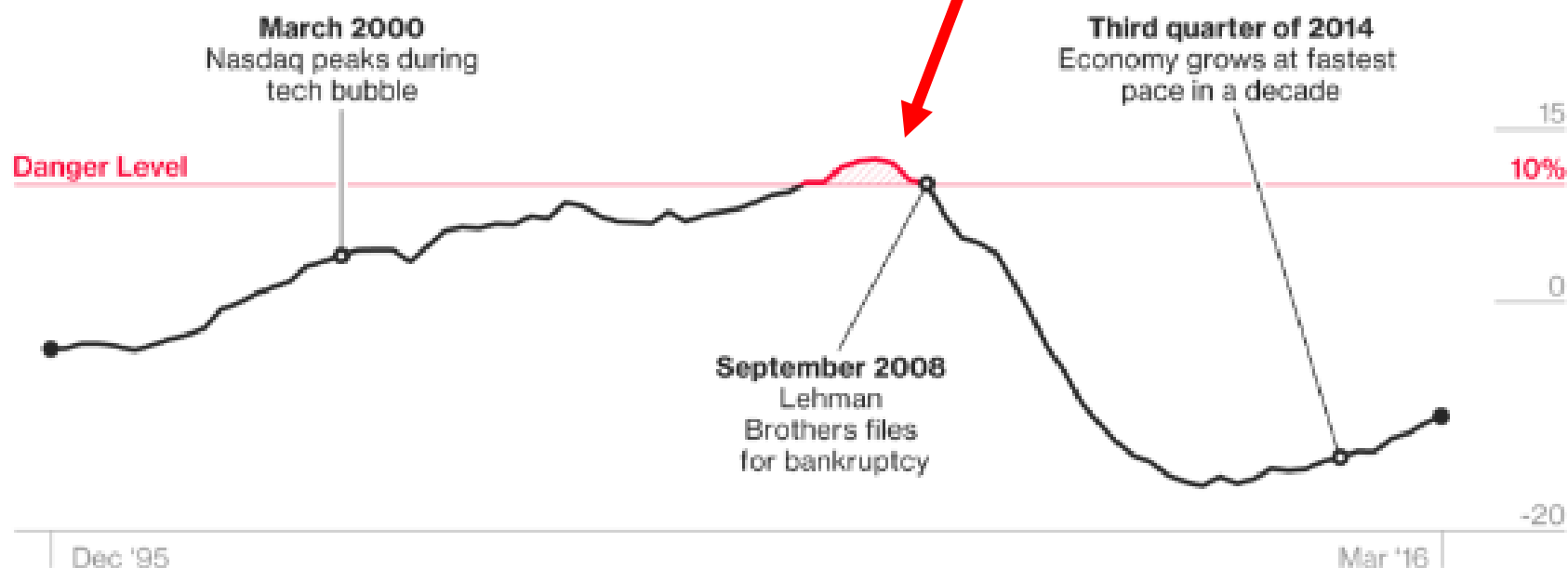
The higher the Credit-to-GDP Ratio, higher risk of a financial crisis

- IMF researchers have found that increases in the credit to GDP ratio in **excess of 5 percentage points** in one year were associated with a heightened risk of a financial crisis.
- In Emerging Market (EM) aggregate, the credit ratio has increased about 25%-pts since 2008, or 4% per annum for six years straight.
- Importantly, the ratio **only** reflects bank loans, but **non-bank lending** also has been strong in some countries.

Nordic and Japanese crises in the late 1980s and early 1990s followed blow-outs and, likewise, the data flashed red for the U.S. during that country's boom, which morphed into the global financial crisis

U.S. Financial Meltdown followed excessive monetary growth: credit/GDP ration increased more than 10%

U.S. Financial Meltdown



Interest Rate in the U.S: A record low of 0.25 percent in December of 2008.

3. Inflation Targeting

- An **independent** central bank is a condition for successful inflation targeting.
- **Inflationary expectations can be reduced**, thanks to the credibility of monetary policy enhanced by both institutional and instrumental independence of the central bank.
- As more countries have abandoned fixed exchange rates ($P^T = e^- \cdot P^\$$),
- Previously, $\pi^{Thai} = \pi^{US}$

Set inflation Target = π^*

Countries which abandoned the fixed exchanged rate desperately need a **nominal anchor** for the price level, since $P^T = \tilde{e} P^{\$}$

$$\pi^{Thai} = \pi^*$$

Taylor rule and inflation target: π^*

i = Nominal interest rate set by the BoT as the key policy rate

Fisher equation: $i = r + \pi^e$

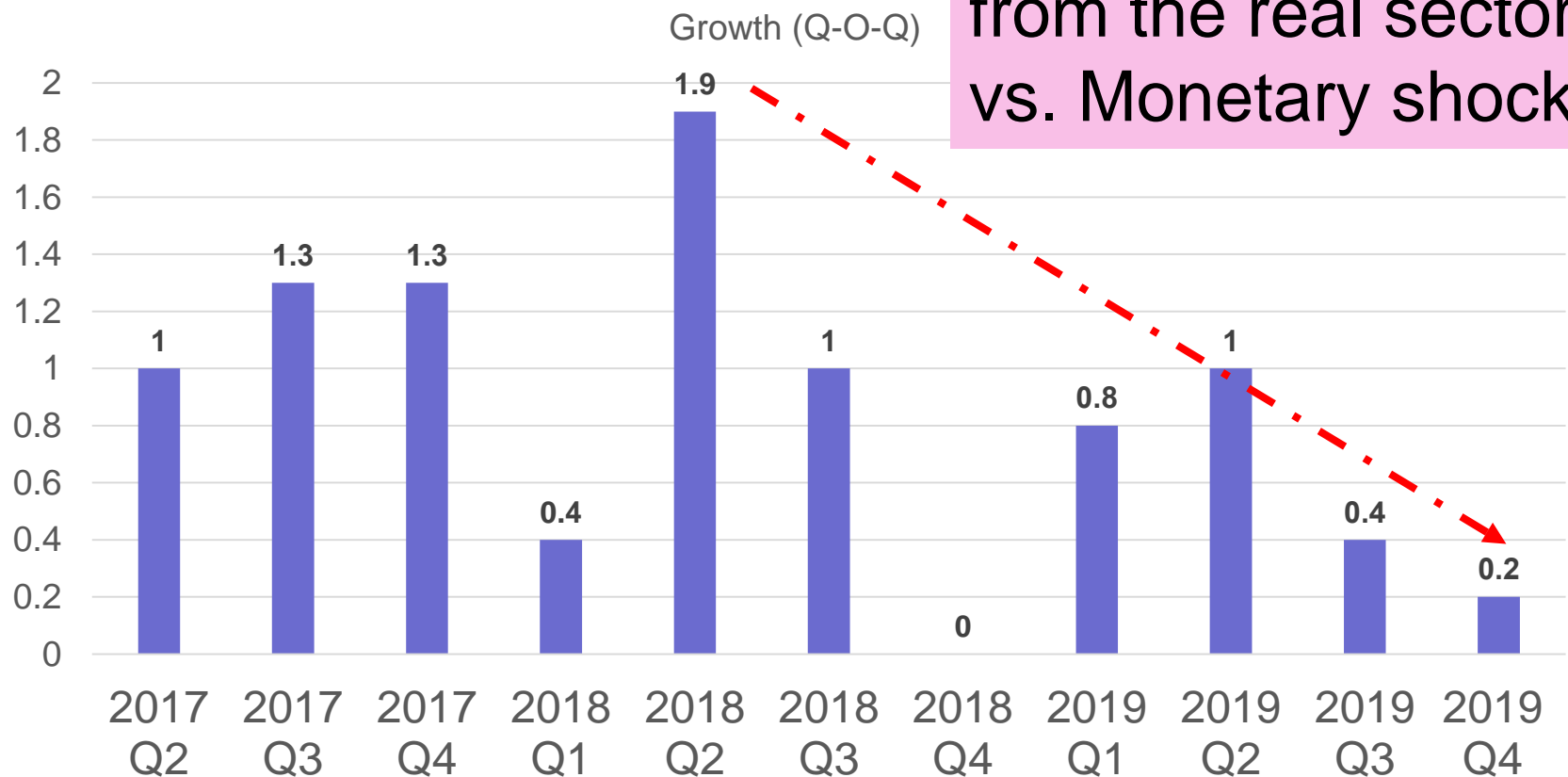
$$i_t = \rho + \pi_{t-1} + \phi_1(\pi_{t-1} - \pi^*) + \phi_2(y_t - y^p)$$

ρ = the natural *real rate* of interest (constant)

y^p = potential output

Φ_i = a positive reaction policy parameter

Thailand's quarterly GDP growth



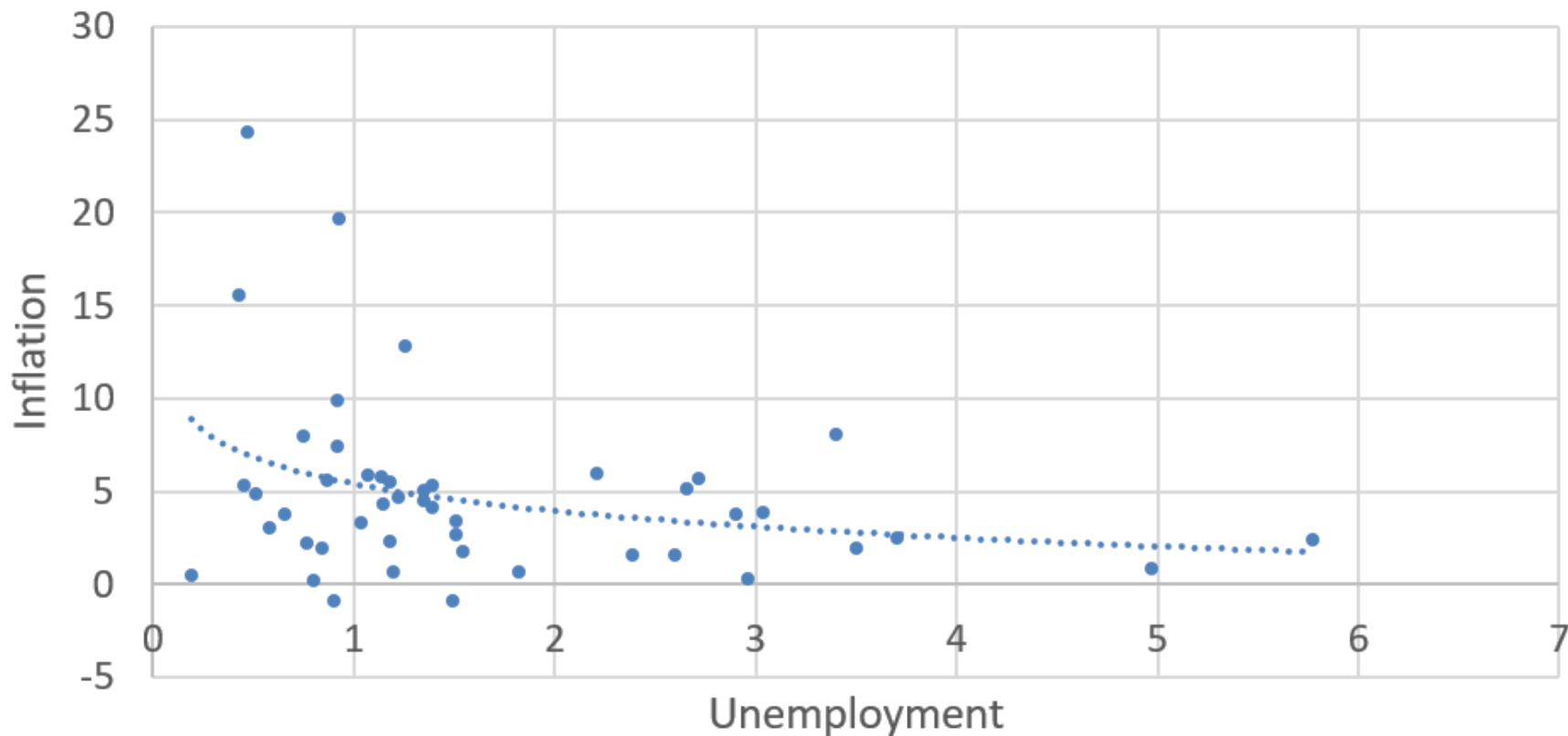
Caveats on inflation targeting

- Adopting inflation targeting implies a commitment to no other nominal targets.
- But for countries that are highly dependent on external trade, ***inflation targeting is akin to targeting the exchange rate.***
- **When there is no close and stable relationship** between the short-run monetary instruments and long-term interest rates (due to underdeveloped bond market), a policy rule like Taylor's rule ***may not produce a desirable outcome.***
- In particular, if monetary policy has a long and variable lag effect.

Why has the curve become flatter over the year?

Figure 8.4 The Phillips Curve: 1971-2017

Source: Bank of Thailand



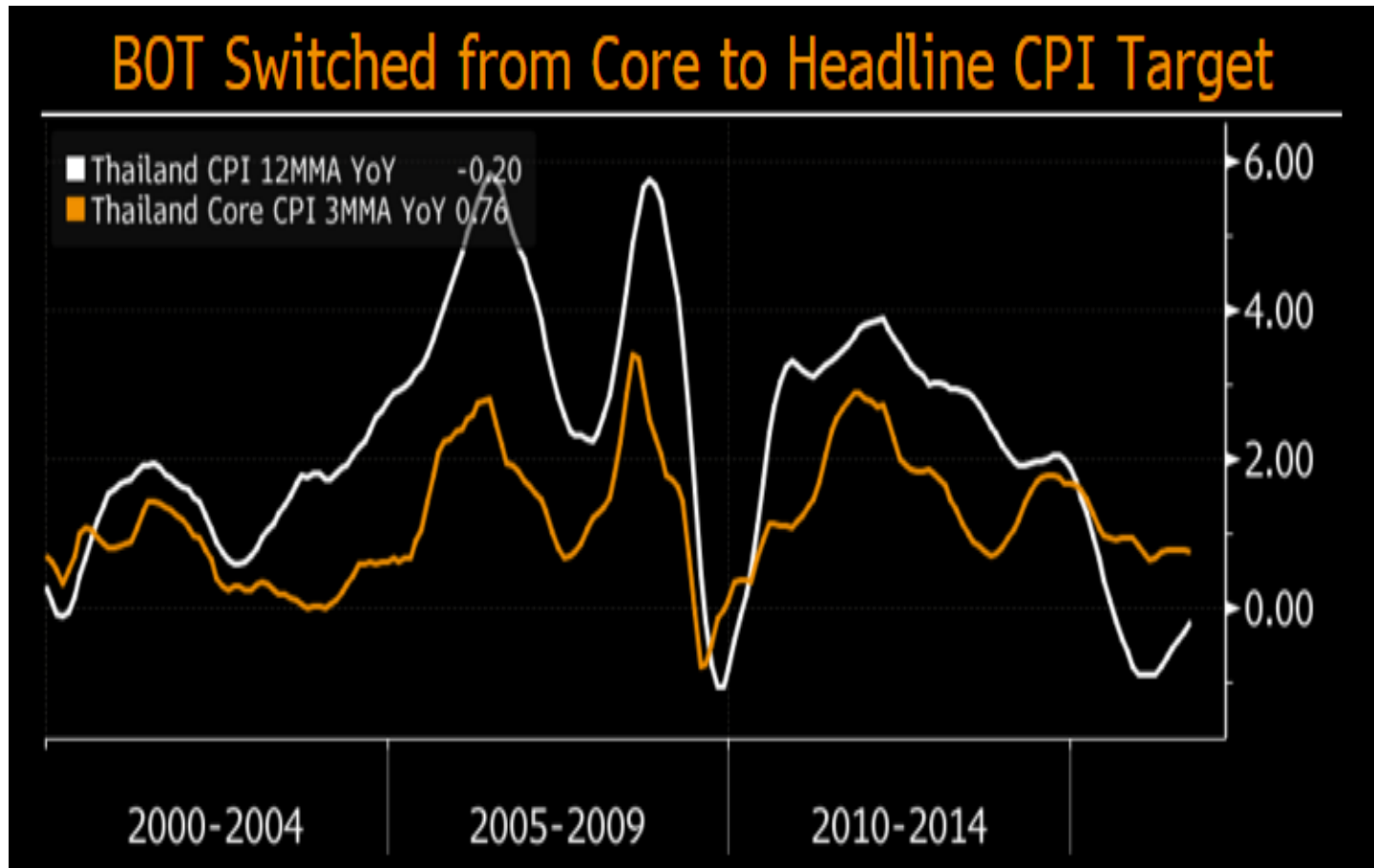
Flexible inflation targeting strategy

- The central bank key interest rates responds to inflation ***and real exchange rate changes.***
- There had been an attempt to prevent the appreciation of the real effective exchange rates (fear of appreciation).
- How about property bubbles?
- Why not targeting stock and house prices?

BoT's Flexible Inflation Target

- The Bank of Thailand has a flexible inflation target framework, paying attention to both **economic growth** and **financial stability**.
- The goal was previously defined as quarterly average **core inflation** in the range of 0.5-3% (2009-2014) and 0.0-3.5% (2000-2008).
- Since 2015, the objective has been annual average **headline inflation** of 2.5% +/- 1.5 ppt.
- Each year the target for the following period is set by the Monetary Policy Committee with agreement from the Minister of Finance and approval by the Cabinet.

In 2015, the headline inflation target was set at between 2.5 % and -0.5%



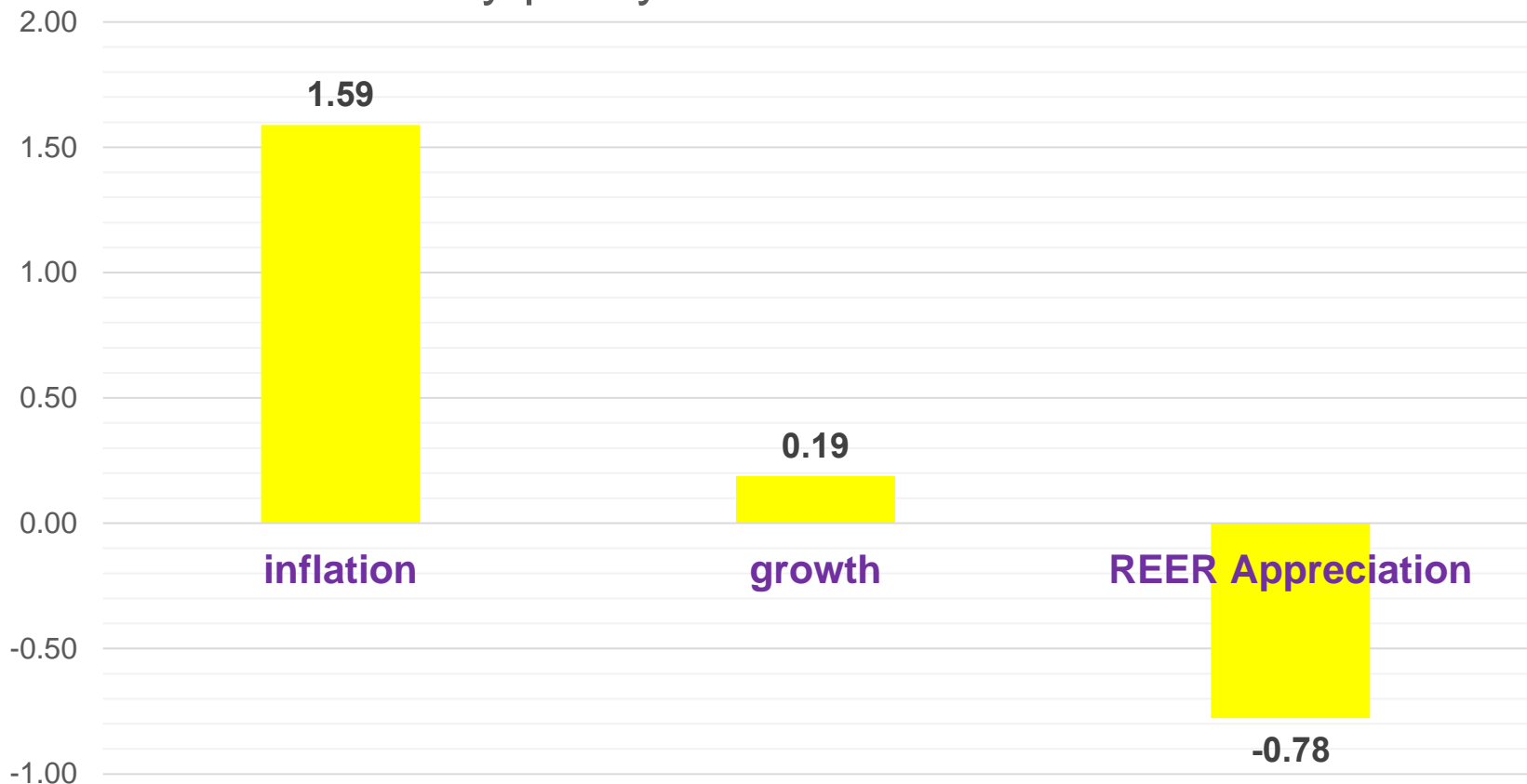
0.0% - 3.5%

0.5 - 3%

-0.5-2.5%

$$i_t = +\phi_1(\pi_{t-1} - \pi^*) + \phi_2(y_t - y^p) + \phi_3(e_t - e^*)$$

Figure 8.6 Normalized coefficients in the monetary policy reaction function



CONTINUED DECLINE

The consumer price index (CPI), a gauge of headline inflation, dropped 0.50% year-on-year in October, with a major contribution coming from raw food because of higher demand from both domestic and foreign markets, especially for meat, while fresh vegetables were affected by flooding in many farm areas.

Core inflation, which strips out energy and food categories, was 0.19% in October. For the first 10 months, headline inflation was -0.94% and core inflation was 0.31%.

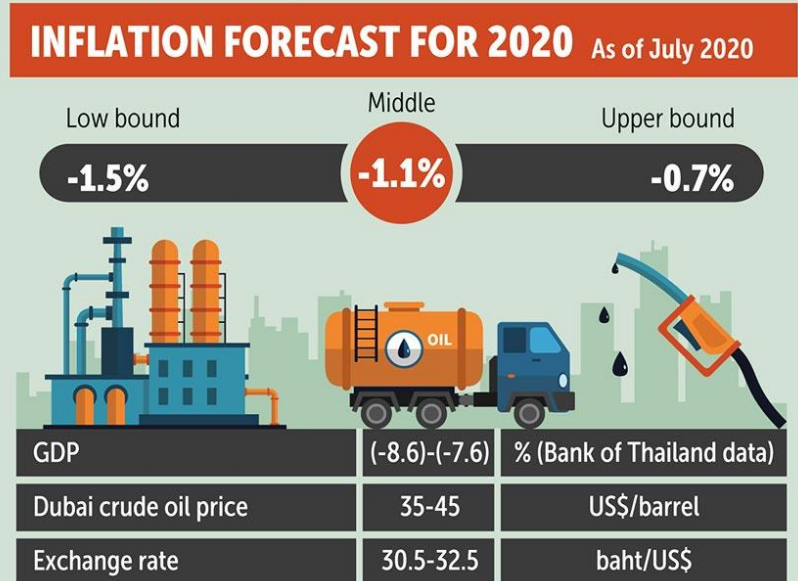
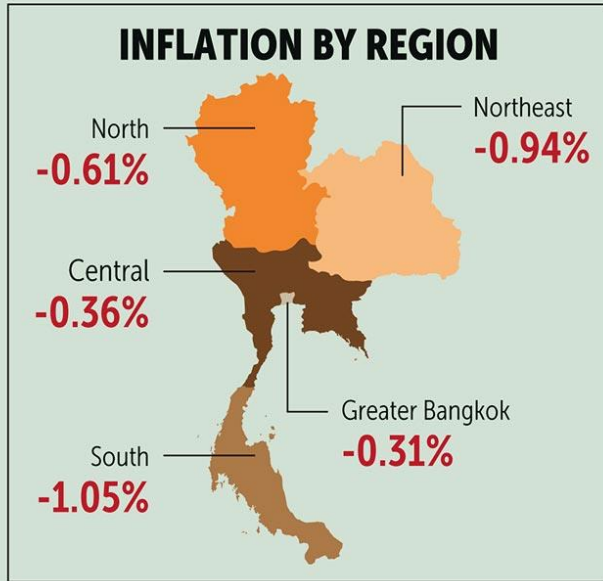
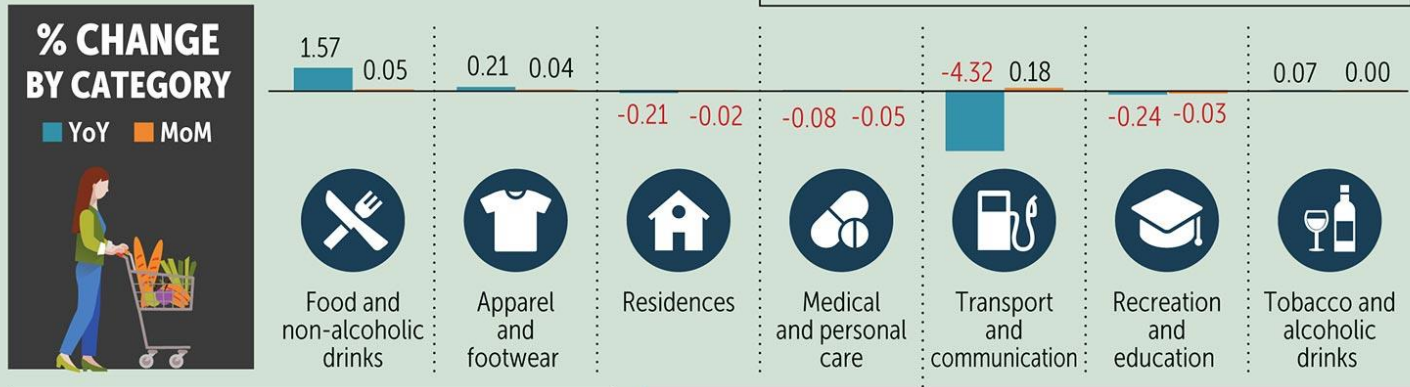
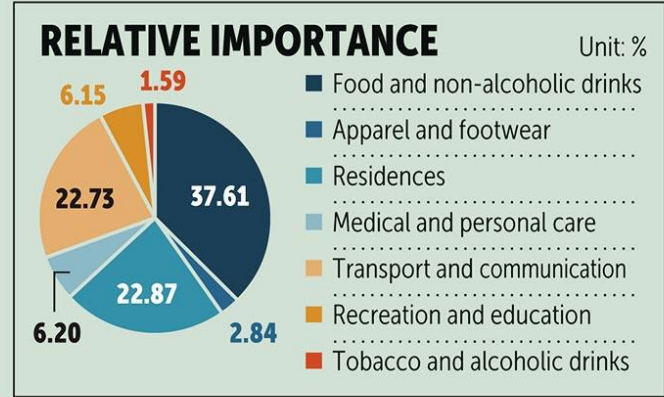
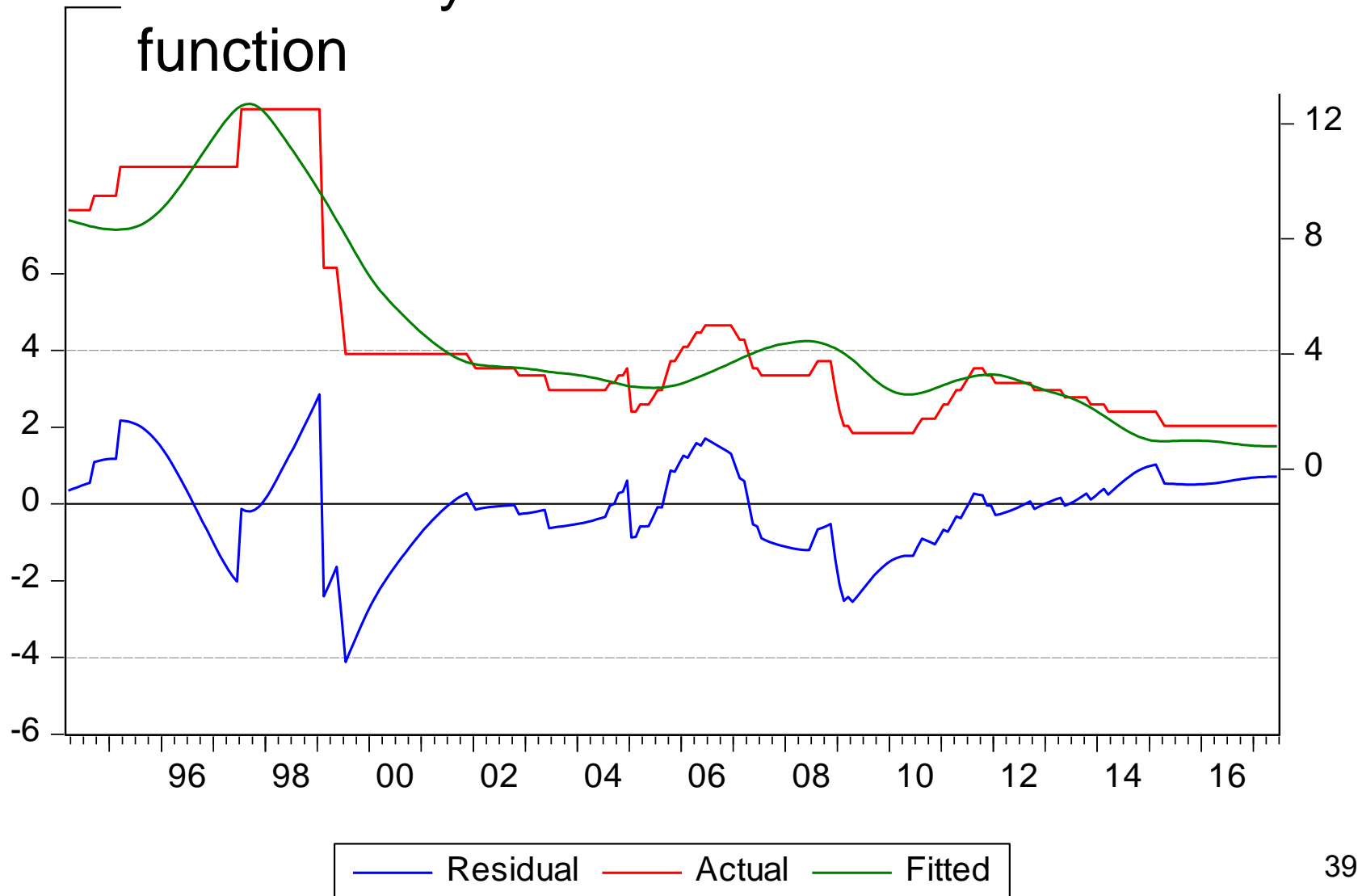


Figure 8.5: Modeling BoT key policy rate

How the Taylor rule fits BoT reaction function



BoT needed to save limited ammunition

- On Sept 23, the central bank's monetary policy committee voted unanimously to leave the one-day repurchase rate at an **all-time low of 0.50%** after **cutting it three times in 2020** to support an economy badly hit by the coronavirus pandemic.
- Thailand suffered its biggest contraction in 22 years in the second quarter as tourism and domestic activity tumbled.
- The BoT predicts it will shrink a record 7.8% this year before growing 3.6% next year.

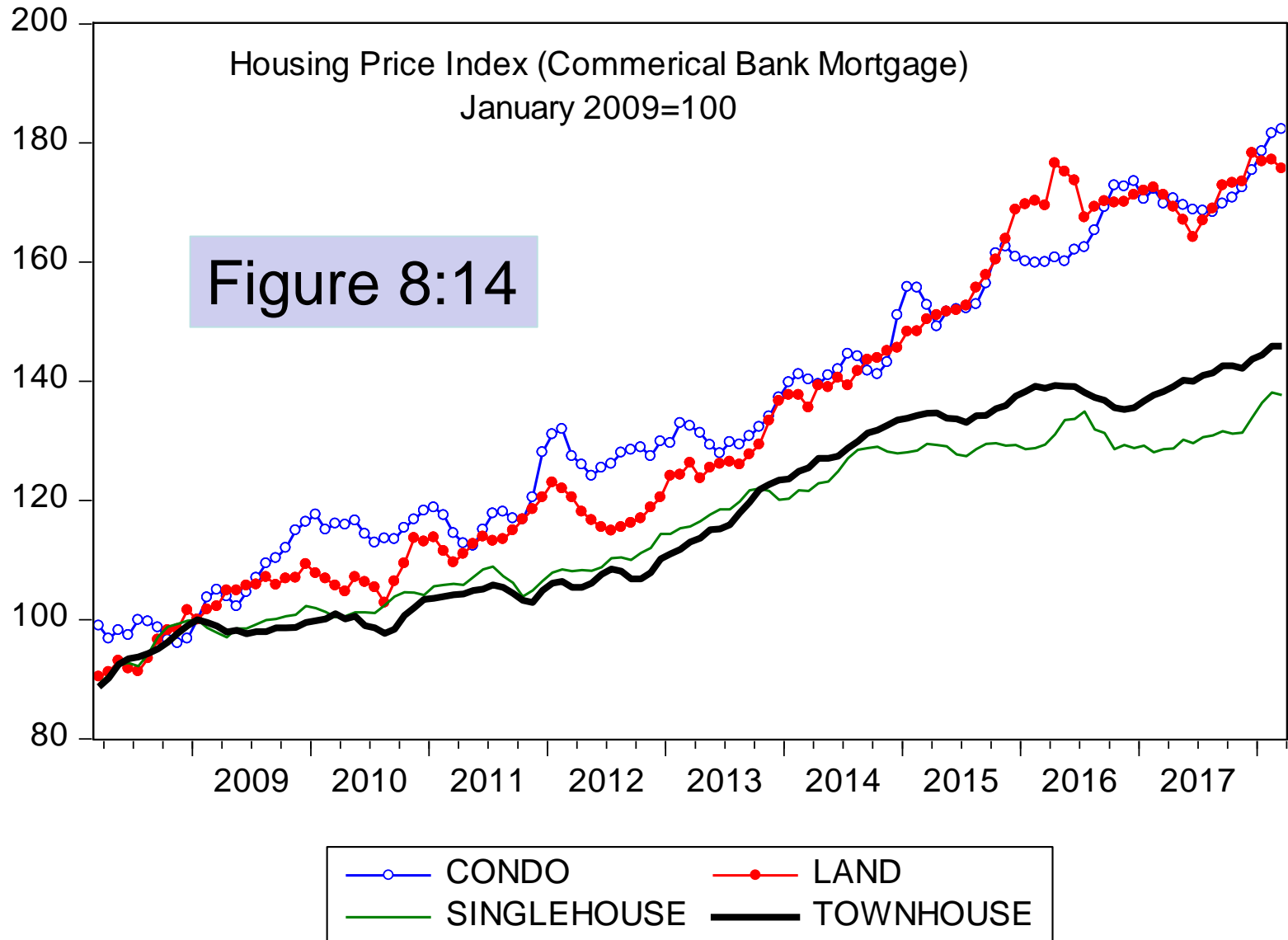
Encouraging capital outflows

- The monetary policy committee felt a rapid rise in the baht could affect the economic recovery and would consider the necessity of additional measures, such as encouraging balanced capital flows by increasing flexibility and convenience in foreign currency transactions and by promoting further liberalization of outward portfolio investments.

When the interest rate cannot go below 0%

- The monetary policy committee was concerned the weak labor market could affect the recovery and fiscal policy needed to play a greater role to support.
- The government has a 1.9 trillion baht (US\$61 billion) virus response package, but drawdown has been slow.

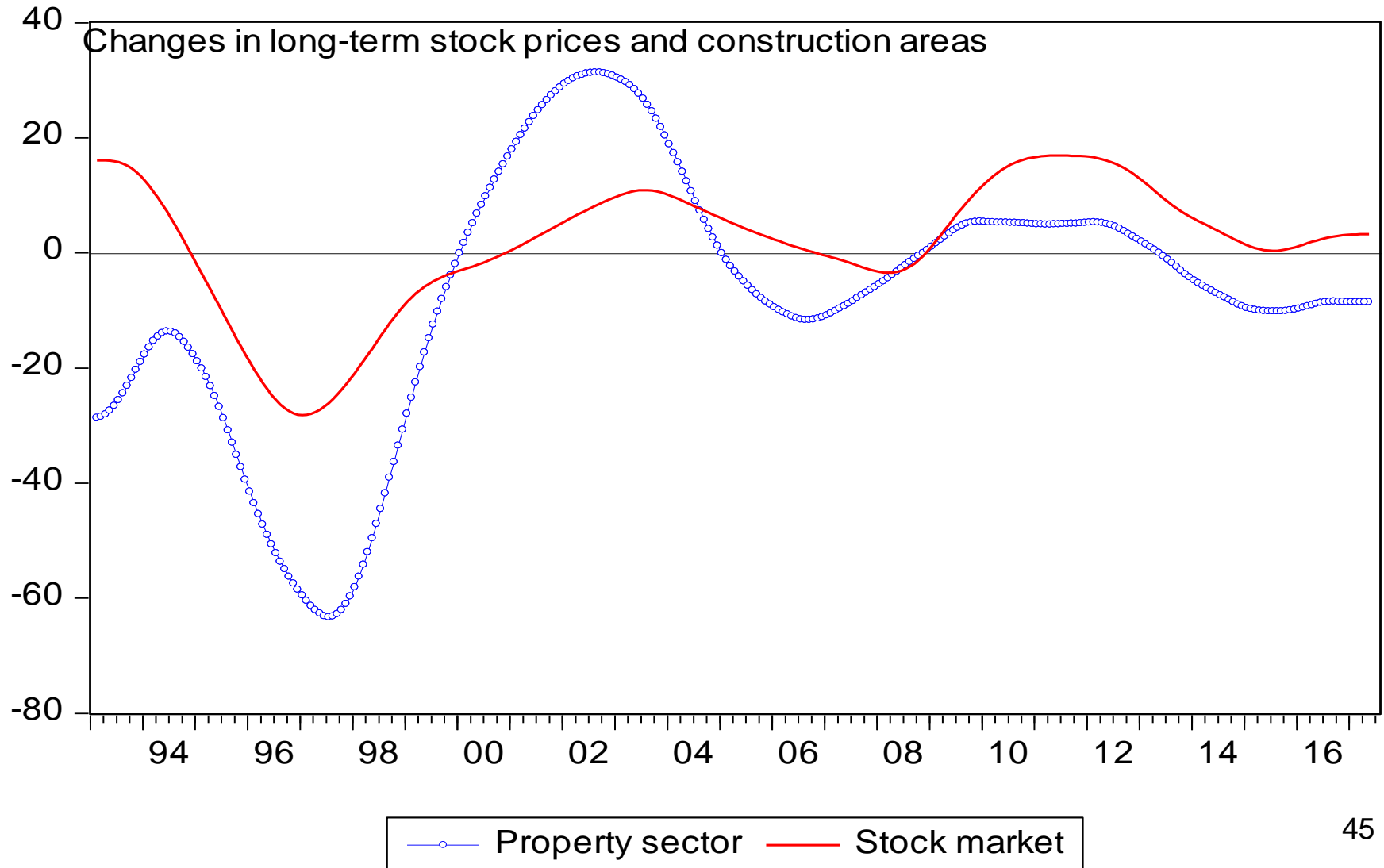
4. Asset price bubbles



Approximation of hidden asset bubbles

- The size of the property bubble can be approximated by the **change** in the HP(Hodrick-Prescott Filter) trend of construction activity, represented by permitted construction in urban areas, lagged by six months.
- The size of the stock price bubble can be similarly captured by the **change** in the HP trend of the SET.

Figure 8.12: How stock market is related to property sector



Selective control measures

- We can predict the property bubble from speculative activities in the stock market.
- Measures to curb stock market speculation are necessary to prevent bubbles in the property sector.
- It does not imply that the stock market index should be included in the monetary policy reaction function.
- Selective control measures may be used directly to stamp out speculative lending in the stock market.

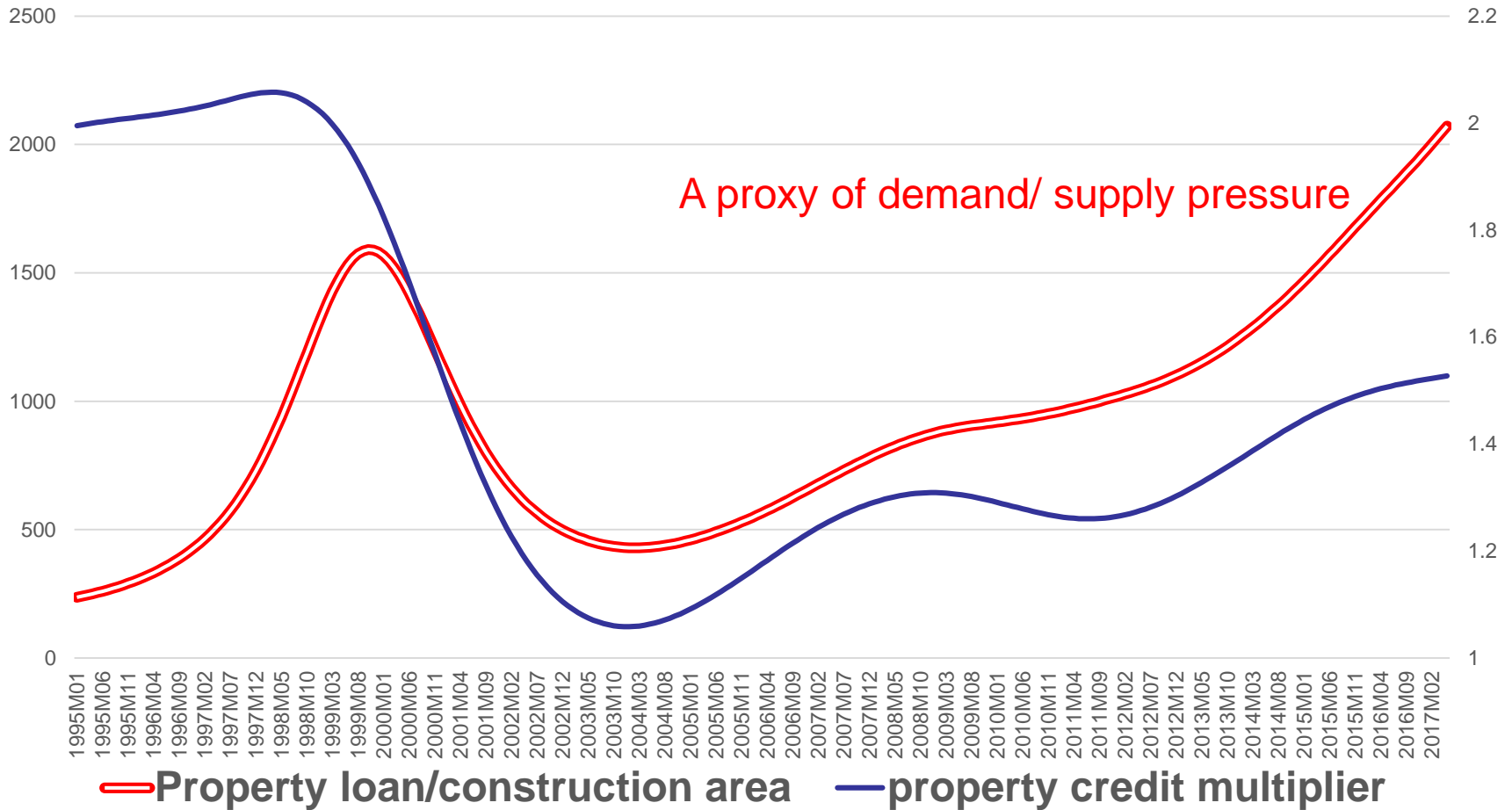
$$Credit = \kappa MB$$

$$MB = NFA + CoG + CoF$$

$$\kappa = \kappa(\bar{R}, r_L, \bar{r}_p, \psi)$$

Prior to the economic crisis in 1998, there was excessive lending, which can be captured by the rapidly rising **credit multiplier**.

Figure 8.13: Excessive Expansion in Property Credit



An early warning indicator

- Property credit multiplier increased abnormally high during speculative bubbles.
- We can monitor the financial sector by using the credit multiplier as an early warning indicator for over-lending.
- Recall the IMF hypothesis on $\Delta(\text{credit}/\text{GDP})$ growth and Frederick Hayek's hypothesis.

The central bank can prick the bubble by controlling the credit multiplier

- Rising bank minimum lending (MLR) rate increases the credit multiplier, while the BOT's lending rate reduces it.
- There is a significant degree of inertia in bank lending.
- When interest rate is high, commercial banks are willing to take more risk to obtain higher returns from their assets, which later on become NPAs.
- If the Bank of Thailand raises the interest rate on its lending facilities, banks would be discouraged in lending, thereby causing a decline in the credit multiplier.
- **When the Fed reduces the funds rate**, the BoT faces a *policy dilemma*.

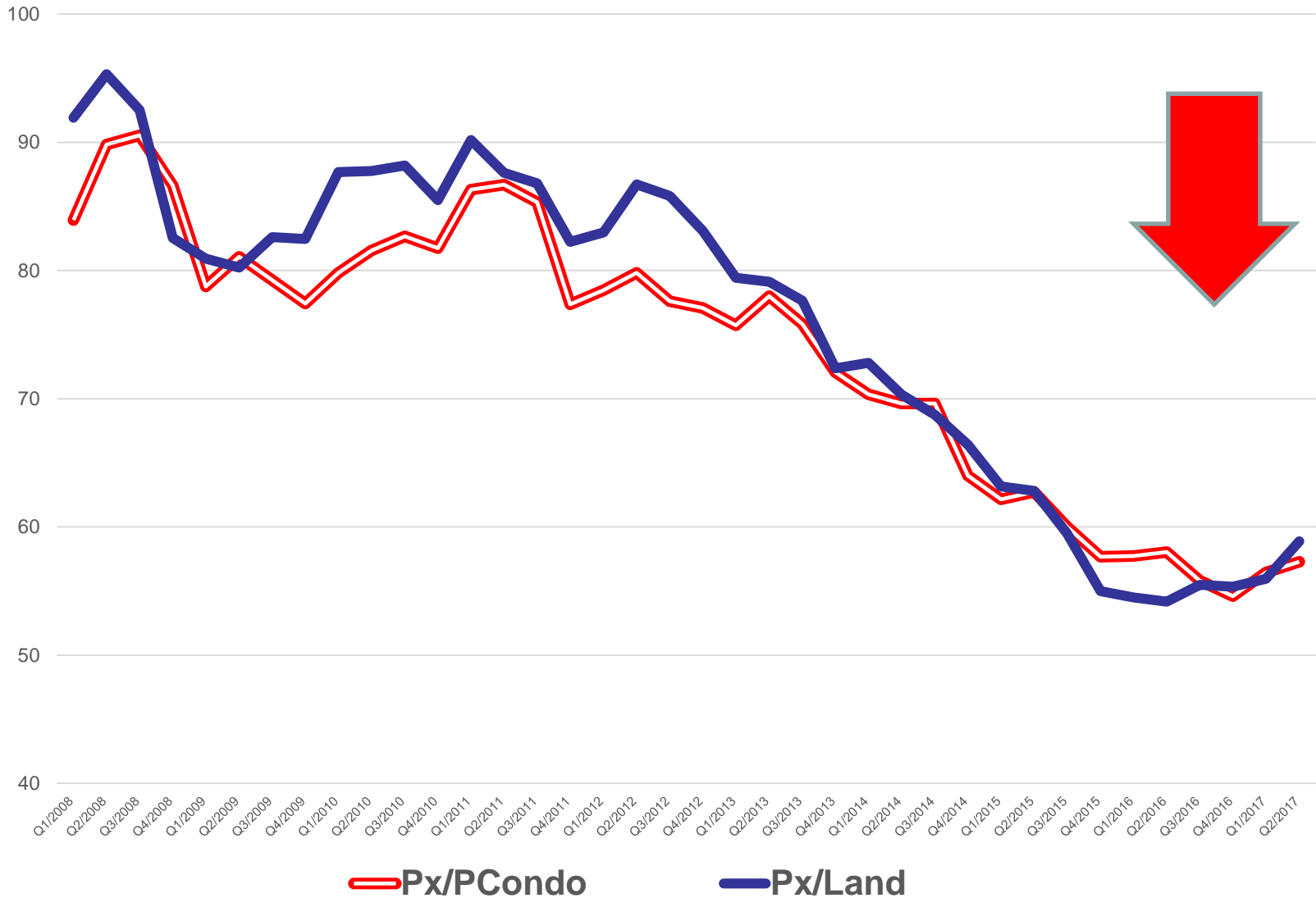
The root cause stems from the supply side: Slow supply adjustments

- **Quantity demand** adjusts *faster* than the **quantity supply**, because of the long gestation period of property development.
- ***Downward price rigidity*** prevents market clearance, although we have seen a sign of price reduction in 2020, which not enough to get rid of supply overhang..
- Expectations change rapidly, much more rapidly than the supply of property development.
- Property gluts are a natural consequence of credit booms.

Figure 8.15 Index of the Dutch Disease

Export price-to-property price ratio

Source: Calculation based on BoT data



As early as October 2018, we have been warned by BIS

BIS has warned Thailand: Bangkok condominium price has gone up 78% from the last decade.

The Median Loan-to-income ratio went up 3.8 times.

Housing loans are the only consumer loans where NPLs are rising.

Mortgages account for 17 % of total loans.

Housing NPLs went up to 3.4% in June 2018.

By imposing the maximum Loan-To-Value ratio

(LTV) and the loan-to income-ratio (LTI),

the central bank has employed macroprudential policy.

January 21, 2020

BoT relaxes LTV rule for mortgages

Central bank tweaks debt-servicing period

- The Bank of Thailand is easing loan-to-value (LTV) regulations governing mortgage lending, shortening the minimum debt-servicing period for first mortgages for those seeking a second for homes priced below 10 million baht.
- Another tweak is there is **NO minimum down payment** for first mortgages for homes valued 10 million baht or more.

Stimulus galore

- **Those who buy residences valued less than 10 million** baht and apply for a first mortgage are also allowed to take out a top-up mortgage of up to 10% on top of the housing loan, constituting as much as **110%** for the mortgage bundled with the top-up.

NEW LOAN -TO-VALUE REGULATIONS



Home price	Number of mortgage contracts	Minimum down payment	
		New	Previous
< 10 million baht	■ First	- No minimum requirement but borrowers can seek home loan up to 110% if that top-up mortgage is included	- No minimum requirement but the loan was capped at 100% if a top-up mortgage was included
	■ Second	- 10% if the first mortgage has been paid \geq 2 yrs - 20% if the first mortgage has been paid for < 2 yrs	- 10% if the first mortgage has been paid for \geq 3 yrs - 20% if the first mortgage has been paid for < 3 yrs
	■ Third and Subsequent	30%	30%
\geq 10 million	■ First	10%	20%
	■ Second	20%	20%
	■ Third and Subsequent	30%	30%

Standing at 318 meters, the Magnolias Waterfront Residences at IconSiam is Thailand's tallest building.



Thailand's richest man is building Bangkok's tallest skyscraper

- “It embodies what our company aims to do -- set new trends and lift the benchmark,” said Asset World’s Chief Executive Officer and Charoen’s daughter, Wallapa Traisorat.
- The skyscraper will be a “new landmark” and *draw more visitors to Thailand*.
- Recall the *skyscraper effect* hypothesis

Bangkok Post: April 2020

Bangkok's tallest skyscraper

- The planned construction, however, comes at a difficult time for the Southeast Asian nation's property and tourism markets.
- *Bangkok is facing an apartment glut with 100,000 empty units* and more to come.
- *And Chinese investors, who for years have propped up the real estate sector, are staying away because of the travel curbs and economic havoc caused by the coronavirus.*

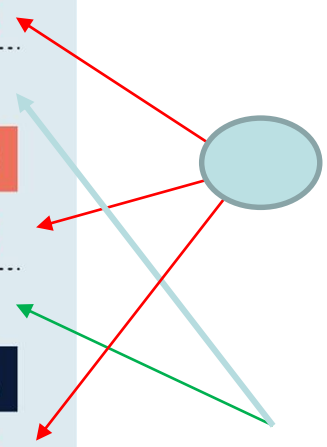


UNSOLD INVENTORY IN BANGKOK METRO REGION (UNITS)

	Q2 19	Q3 19	Q4 19	Q1 20	Q2 20	% change (Q2 2019- Q2 2020)
Total	194,848	196,367	209,354	214,420	207,451	+7%
● Condo	90,948	89,661	96,060	98,275	90,237	-1%
● Single detached house	45,494	46,889	49,701	50,594	49,539	+9%
● Townhouse	53,665	55,089	59,201	61,105	62,846	+17%

CHANGE IN PRICE INDEX OF CONDOS AVAILABLE FOR SALE IN BANGKOK METRO REGION (Q1 2019-Q2 2020)

Index	Q1 19	Q2 19	Q3 19	Q4 19	Q1 20	Q2 20
Greater Bangkok	149.3	150.5	153.0	153.8	153.4	153.2
Quarter-to-quarter	1.3%	0.8%	1.7%	0.5%	-0.3%	-0.1%
Year-on-year	12.2%	8.2%	7%	4.3%	2.7%	1.8%
Bangkok	150.6	151.9	154.6	155.4	155.0	154.9
Quarter-to-quarter	1.4%	0.9%	1.8%	0.5%	-0.3%	-0.1%
Year-on-year	12.9%	9.1%	7.5%	4.6%	2.9%	2%
Vicinity	142.7	143.7	145.5	145.9	145.6	145.1
Quarter-to-quarter	0.9%	0.7%	1.3%	0.3%	-0.2%	-0.3%
Year-on-year	9.3%	4.7%	5%	3.2%	2%	1%



NEW CONDO SUPPLY LAUNCHED IN BANGKOK AND SALES RATE (Q1 2015-Q3 2020)



5. Covid-19 and zombie firms

Bangkok Post: Nov 9, 2020

- ***The top 5% of companies by revenue account for 85%*** of Thailand's business sector revenue, while medium-sized companies have been restricted in accessing funding and small firms have low productivity (BoT research institute)
- Market power has an adverse impact on efficiency in resource allocation, discouraging investment to improve productivity and weakening motivation and exportability.

Monopoly and Damage to Society

- A continuous decline in productivity of Thai companies, raising the number of **zombie firms**.
- The term originated in Japan to describe companies that **were only generating enough cash to pay interest** on their debts (the living dead).

Zombie firms

- These companies ***do not earn enough to reduce the principal*** amount of their debt.
- Industries that have a high number of zombie companies include construction, hospitality, sports and recreation, education and basic metal production.

THE PROLONGED ECONOMIC DOWNTURN AND THE RISE OF ZOMBIE FIRMS

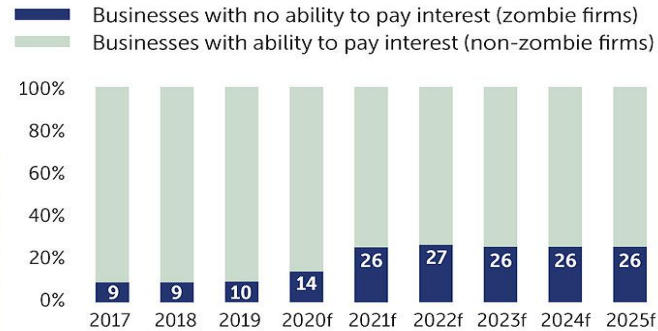
"Zombie firms" increased 14% in 2020 and are projected to rise 26-27% between 2021 and 2025

Zombie firms have an interest coverage ratio lower than 1 time for three consecutive fiscal years



PROPORTION OF BUSINESSES CLASSIFIED BY THE INTEREST COVERAGE RATIO

Zombie firms could account for 26% of total businesses in five years



CHARACTERISTICS AND DIFFERENCES BETWEEN ZOMBIE AND NON-ZOMBIE FIRMS



	SMEs		Large corporations	
	Non-Zombie	Zombie	Non-Zombie	Zombie
Proportion of businesses (%)	90.5	9.5	90.1	9.9
Business duration (years)	15	16	21	13
Assets (million baht)	21	15	1,142	765
Fixed assets (million baht)	2	3	476	466
Liabilities (million baht)	9	19	512	604
Total annual income (million baht)	24	8	1,056	238

Small and large businesses account for a similar proportion of zombie firms.

Zombie firms have more debts, but lower assets and income than non-zombie firms.

Where are those zombie firms?

- *Hotels, restaurants and real estate companies* stand out in terms of having the potential to be sickened with a long stretch of being unable to pay back the principal on debt.
- Companies that are **half-dead and half-alive** are those in the tourism industry and related businesses, which sell products and services to the tourism sector.
- When tourism tumbles, manufacturing firms that serve this sector also tumble.

Interest coverage ratio (ICR)

- $ICR = \text{Operating profit} / \text{interest payments}$
- ICR indicates whether firms have enough income to pay debt.
- More than 200,000 companies have ICR drop from 3.6 times in 2019 to 3.1 in 2020
- It will take at least three years to return to the same level of debt servicing (Krungsri Research)

Half-dead, half-alive

- Firms with ***ICR below 1 will rise to 30%*** in the next few years.
- These zombie firms made up 9.5% of total businesses in 2019 and are expected to rise to ***14% in 2020***, then 26% in 2022.
- Being a bank based economy, commercial banks will experience rising NPLs and shrinking profits.

90% of tour companies

- The tourism industry has been one of the hardest-hit sectors, and none of the operators can escape financial distress because foreign tourists have disappeared.
- Almost 90% of inbound operators out of a total 10,000 companies *remain temporarily closed.*

Slow recovery

- Debt is mounting while tour operators do not know when international tourists will return, leaving them desperate for a lifeline as they burn through cash every day,
- Tour operators that own a bus fleet will feel more pain as they have to pay high maintenance costs after sitting them idle for months.
- "If they have to carry those assets for years without being used, they may not gain any profit from the fleet, as some of their clients from Europe have clear regulations that they will not use buses that are more than five years old."

Badly hit by the covid-19

- Around 80% of 14,000 registered hotels nationwide have reopened, though most are ***not back to full operations*** because of soft domestic demand.
- Nearly all hotel operators are not at a break-even point, do not have the ability to pay debts or interest due because they are suffer from operating losses.

Economic scars from Covid-19

- Lost jobs
- Record debts
- Corporate bankruptcies
- Atrophying skills
- Missed investment
- Deglobalization
- Frayed mental health,
- Rising inequality