

EE432 Monetary Theory and Policy



Lecture 15 New Keynesian Monetary Economics
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Additional lecture made for EE432 Monetary Theory and Policy at Thammasat University
(This is not part of Cecchetti and Schoenholtz (2017) Money, Banking, and Financial Markets. McGraw-Hill Textbook)

Outline

- Real Business Cycle Theory and Classical Monetary Model
- The Development of New Keynesian Model in Monetary Economics
- The New Keynesian Model
- Evidence of Monetary Policy Non-neutralities
- Phillips Curve and Non-accelerating inflation rate of unemployment (NAIRU)
- Modern Monetary Theory

Real Business Cycle Theory and Classical Monetary Model

Real Business Cycle Theory

- Following Kydland and Prescott (1982) seminal papers, **Real Business Cycle (RBC) theory** *provided the framework for the analysis of economic fluctuations*
- **Behavioral equations** describing aggregate variables were *replaced by* first order conditions of **intertemporal problems facing consumers and firms**

Real Business Cycle Theory

- The most striking dimension of the **Real Business Cycle** revolution *rested on three basic claims*
- The efficiency of business cycles; *fluctuations* could be *interpreted as an equilibrium outcome* response to *exogenous variations (mostly technology)* in an environment characterized by *competition and frictionless markets*, seeking to *clear all markets*.

Real Business Cycle Theory

- The importance of technology shocks as a *source of economic fluctuations*.
- The limited role of monetary factors, refers to *money neutrality*

Real Business Cycle Theory

- **Real Business Cycle model** assumes **perfect competition** *and flexible prices and wages*, and that the economy is **always in equilibrium**.
- The economy *moves from one steady state to another* through the agency of *shocks* originating in **technological advances, preferences or fiscal policy**.
- *However*, this view was *sharply at odds* with empirical research which demonstrated that *wages and prices were sticky*.

Real Business Cycle Theory

- The role of monetary policy was dismissed, in the view that **central banks** should not act because *their activities had little impact* and *may be harm* than good.
- At most it was recognized that an unexpected **change in monetary policy** *could have some impact*.

The Development of New Keynesian Model in Monetary Economics

New Keynesian Model

- Over the past two decades, **macroeconomics** has evolved from a divided field, which in many ways ***lacked a solid foundation***, into a more comprehensive discipline built on a fairly firm **microeconomic foundation**.

New Keynesian Model

- **New Keynesian economics** reconciles the *general equilibrium approach* of the *real business cycle school* with the clear role of **rigidities** advocated by Keynes and Phelps.
- The **general equilibrium approach** derives the *equilibrium conditions* from the **optimization problem** of *forward-looking* households, firms and fiscal and monetary authorities in conditions of *uncertainty*.

New Keynesian Model

- The **New Keynesian** emphasis on **expectations** and **forward-looking behaviour** in markets has similarly had major consequences for monetary policy implementation.
- If **private agents' expectations about future inflation** are the **main determinants of inflation**, it is crucial for monetary policy-making to be ***systematic, credible and transparent*** to maximize its impact on them.

New Keynesian Model

- This **expectational channel** of monetary policy introduces a *new instrument for monetary authorities*, i.e. the possibility to influence inflation by **influencing forward-looking expectations**.

New Keynesian Model

- This has led to an ongoing discussion on the **advantages of commitment *versus discretion***.
- The current debate centres on the ***benefits from committing to price stability*** by introducing an **official inflation target**, and *being transparent in formulation, communication and implementation of monetary policy* in order to **anchor future inflation expectations** and **improve the tradeoff between stabilizing inflation and output gap volatility**.

New Keynesian Model

- As a consequence of the **presence of nominal rigidities**, *prices do not adjust in proportion to changes in the money supply* (thus causing real balances to vary), or *if expected inflation does not move one-for-one with the nominal interest rate* when the latter varies, thus *leading to a change in the real interest rate*.
- The **central bank** will generally be *able to alter the level aggregate demand* and, as a result, *the equilibrium levels of output and employment*.

The New Keynesian Model

Key Properties of Model

- **Monopolistic competition**; prices and wages are *set by private economic agents* in order to maximize their objectives
- **Nominal rigidities**; firms are *subjected to some constraints to adjust the price of goods*, including wage

Key Properties of Model

- **Short-run non-neutrality of monetary policy; *in the presence of nominal rigidities, changes in short-term nominal interest rates are not matched by one-for-one changes in expected inflation, thus leading to variations in real interest rates.***
- **As a result, firms find it optimal to adjust the quantity of goods supplied to the new level of demand. However, in the long run, the economy reverts back to its natural equilibrium.**

Key Properties of Model

- **New Keynesian models** represent a convergence between
- (i) **simple (static) policy-oriented models** such as the *IS-LM model*,
- (ii) **Keynesian** emphasis on the role of **monopolistic competition**, *markups and costly price adjustments*, and
- (iii) **dynamic general equilibrium models** with their roots in the real business cycle literature.

The New Keynesian Model for a Closed Economy

- A **small-scale new Keynesian model** *for a closed economy* basically consists of three components;
- The **demand block** is represented by an ***expectational IS curve***, which is a linear approximation to the representative household's intertemporal Euler equation to **optimize household consumption** across time *based on their intertemporal budget constraints*.
- This relates the **level of real activity** *to expected (and sometimes past) real activity* and the **real interest rate**.

The New Keynesian Model for a Closed Economy

- The **supply block** is represented by a *price-setting equation* – the **new Keynesian Phillips curve** – which can be derived from price-setting behaviour.
- It *relates inflation to expected* (and sometimes past) *inflation* and a measure of excess demand.
- Thus, it *adds an expectation term* to the conventional **Phillips curve**.

The New Keynesian Model for a Closed Economy

- The third relationship is an interest rate rule, which *describes how the nominal rate of interest is determined*.
- This condition is *typically linked to interest rate rule* to conduct of monetary policy.
- The policy interest rate setting is thus *commonly a reaction function* where the *monetary authorities respond to the output gap and (expected) inflation*

Evidence of Monetary Policy Non-neutralities

Evidence of Monetary Policy Non-neutralities

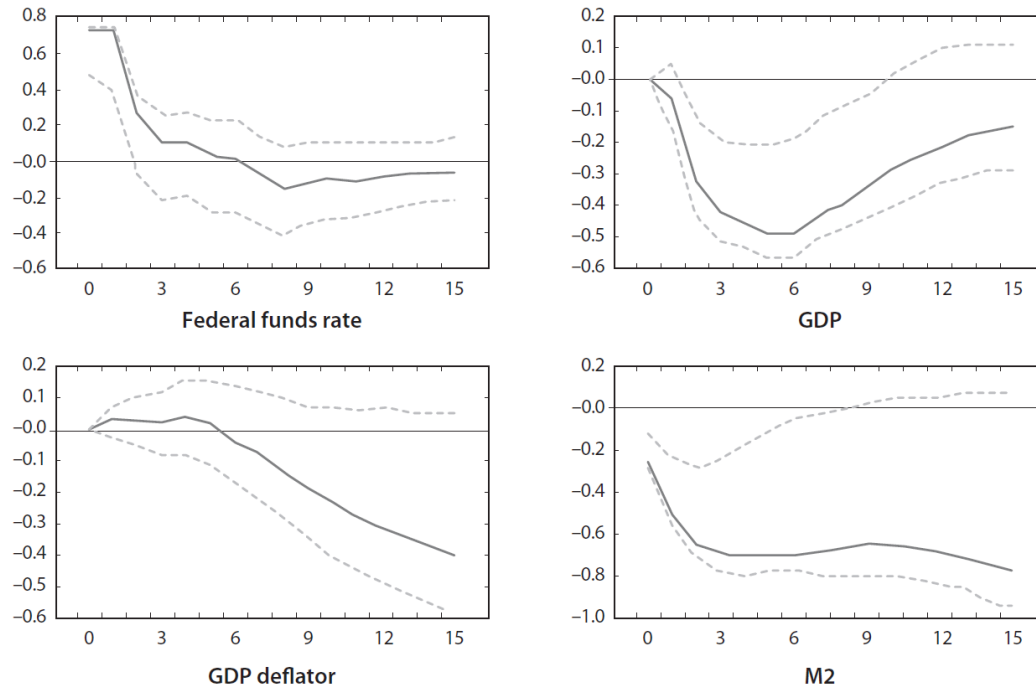


Figure 1.1. Estimated Dynamic Response to a Monetary Policy Shock
Source: Christiano, Eichenbaum, and Evans (1999).

- The evidence taken from Christiano, Eichenbaum, and Evans (1999) seeking to **estimate the effects of exogenous monetary policy shocks.**

Evidence of Monetary Policy Non-neutralities

- Figure shows the **dynamic responses** of the *federal funds rate*, (log) **GDP**, (log) **GDP deflator**, and the (log) **money supply** (measured by M2), to an *exogenous tightening of monetary policy*.
- The **solid line** represents *the estimated response*, with the **dashed lines** capturing the *corresponding 95 percent confidence interval*.
- The scale on the *horizontal axis* measures the *number of quarters after the initial shock*.

Evidence of Monetary Policy Non-neutralities

- An initial increase of Fed funds rate about 75 basis points, followed by a gradual return to its original level.
- In response to that tightening of policy, GDP declines with a characteristic *hump-shaped pattern*, and then it slowly reverts back to its original level. That estimated response of GDP can be viewed as **evidence of sizable persistent real effects** of monetary policy shocks.

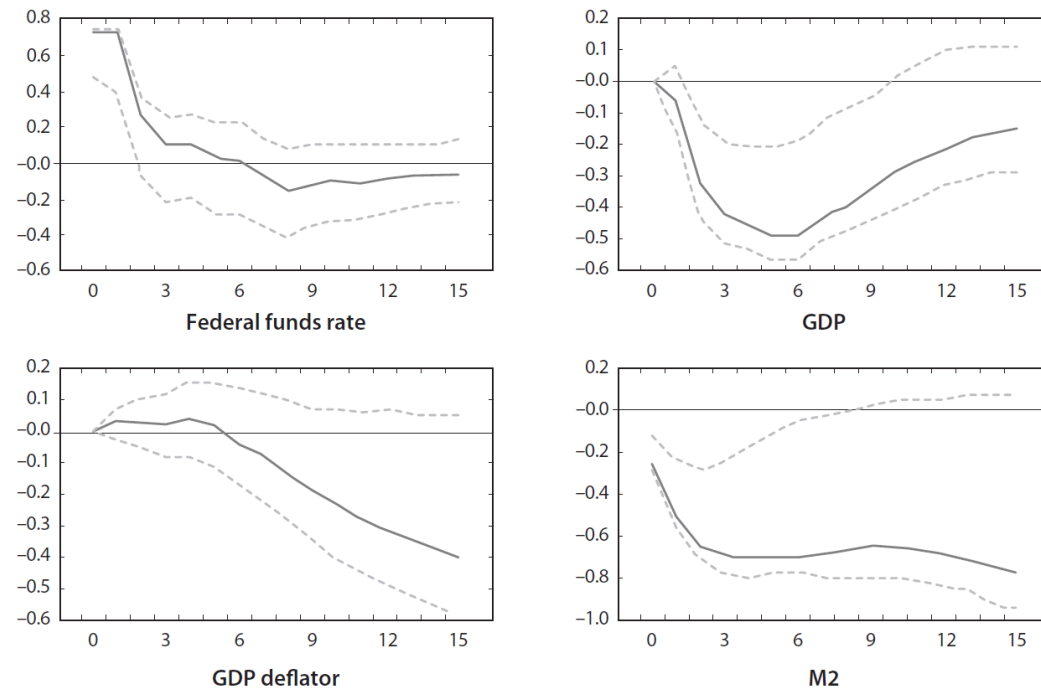


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Source: Christiano, Eichenbaum, and Evans (1999).

Evidence of Monetary Policy Non-neutralities

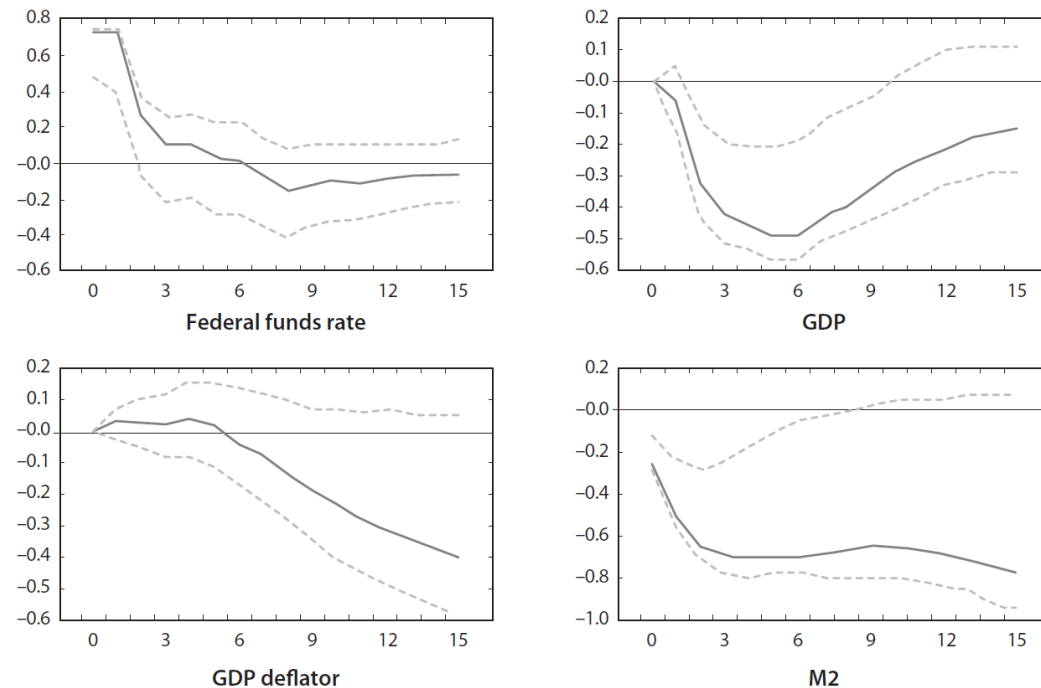


Figure 1.1. Estimated Dynamic Response to a Monetary Policy Shock
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- On the other hand, the (log) **GDP deflator** displays *a flat response for over a year, after which it declines*.
- That estimated **sluggish response of prices to the policy tightening** is generally interpreted as **evidence of substantial price rigidities**.
- Note: Surprisingly, *there is an initial positive response of inflation due to risk averse behavior* – higher cost to compensate possibly higher risk premium from interest rate hike, so called **prize puzzle**.

Evidence of Monetary Policy Non-neutralities

- Note that (log) **M2** displays a ***persistent decline*** in the face of the *rise in the federal funds rate*, suggesting that the **Fed needs to reduce the amount of money in circulation** in order to bring about the increase in the nominal rate.

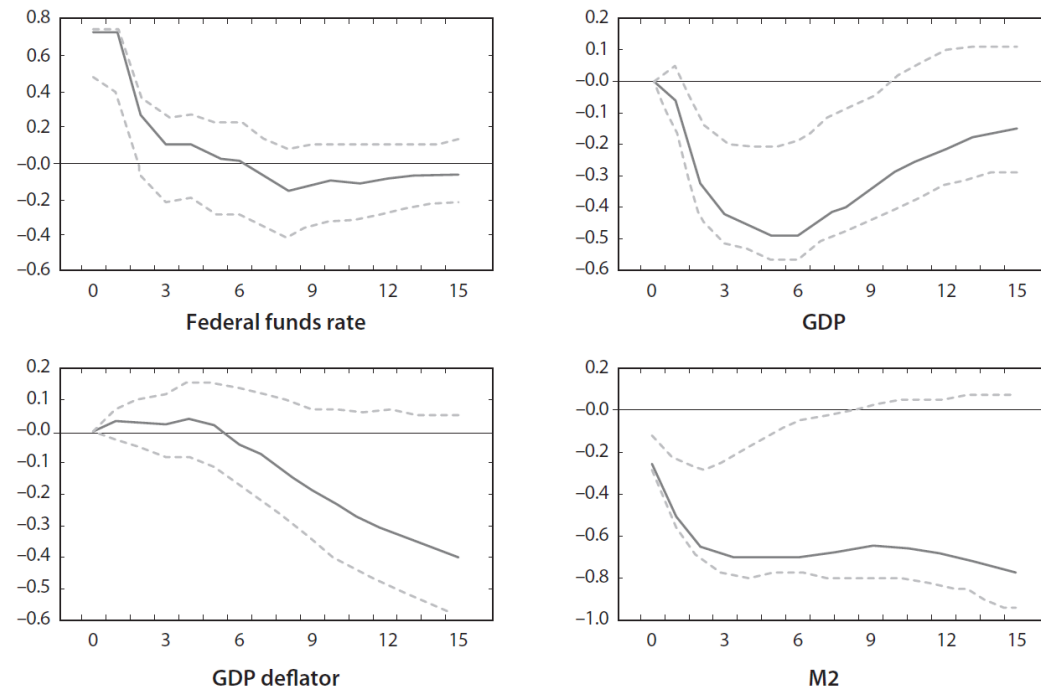


Figure 1.1. Estimated Dynamic Response to a Monetary Policy Shock
Source: Christiano, Eichenbaum, and Evans (1999).

EE432 Monetary Theory and Policy



Special Topics on Monetary Theory and Policy

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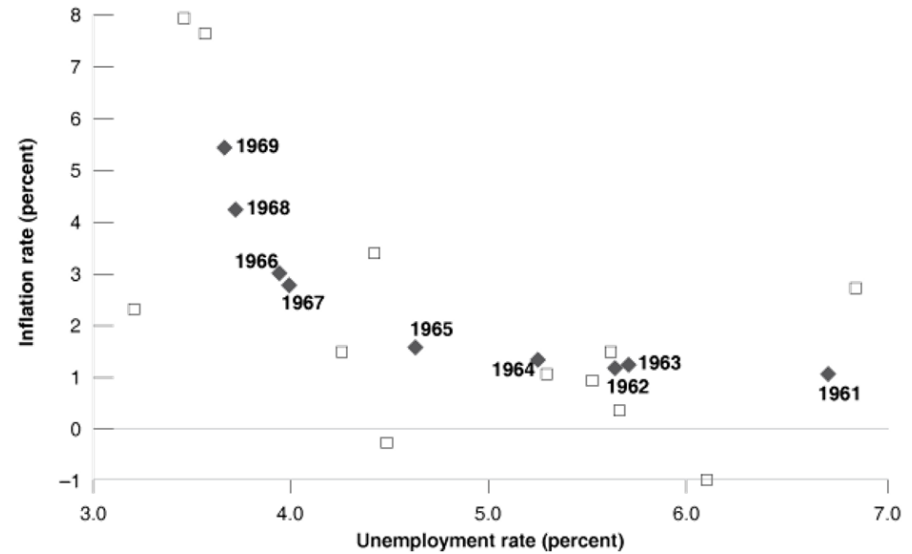
Phillips Curve and
Non-accelerating Inflation Rate
of Unemployment (NAIRU)

Phillips Curve

Phillips curve

- The *negative* relation between unemployment and inflation

$$\pi_t = (\mu + z) - \alpha u_t$$

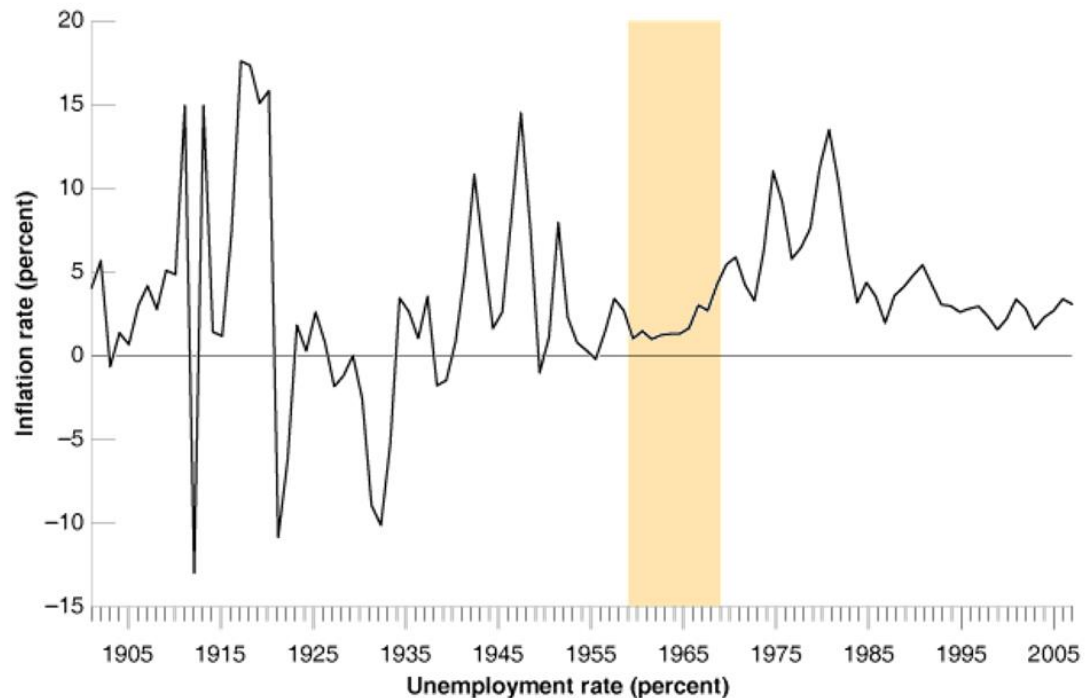


The **steady decline** in the U.S. unemployment rate throughout the 1960s was associated with a **steady increase** in the inflation rate.

Phillips Curve

- Since 1970, a clear ***negative relation*** emerged between the **unemployment rate** and the **change in the inflation rate**.
- The **modified Phillips curve**, or the ***expectations-augmented Phillips curve***, or the ***accelerationist Phillips curve***, is:

$$\pi_t - \pi_{t-1} = (\mu + z) - \alpha u_t$$



Since the 1960s, the U.S. **inflation rate** has been **consistently positive**. Inflation has also **become more persistent**: ***A high inflation rate this year is more likely to be followed by a high inflation rate next year.***

Natural Rate of Unemployment

- Nobel prize laureates, Milton Friedman and Edmund Phelps ***questioned the trade-off between unemployment and inflation***. They argued that the **unemployment rate** could not be ***sustained below a certain level***, a level they called the “**natural rate of unemployment**.”
- The natural rate of unemployment is the ***unemployment rate*** such that the **actual inflation rate** is equal to the **expected inflation rate**.
- It is the **minimum unemployment rate**, which includes only ***frictional*** and ***structural unemployment*** (not include cyclical unemployment)

Natural Rate of Unemployment

$$\pi_t - \pi_{t-1} = -\alpha(u_t - u_n)$$

- This relation gives *another way of thinking about the **Phillips curve*** in terms of the ***actual*** and the ***natural unemployment rates***, and the ***change in the inflation rate***.

Natural Rate of Unemployment

- *If policymakers* try to maintain unemployment below its natural rate, the inflation will **accelerate** with each successive attempt.
- The result is a *self-fulfilling spiral* of **wage and price** increases.
- The natural unemployment rate is referred as the *non-accelerating inflation* rate of unemployment (NAIRU).

Modern Monetary Theory

Modern Monetary Theory

- **‘Modern monetary theory’ (MMT)** has *become a much-discussed topic in policy recently*. US Congresswoman, *Ocasio-Cortez*, stressed its importance to **boost public spending for education and medical services**
- *Former ECB President Mario Draghi* mentioned about MMT and former *Fed Vice Chairman Stanley Fischer* said **central banks should put money “directly in the hands of public and private sector spenders.”**

Modern Monetary Theory

- **Modern monetary theory (MMT):** government with a fiat money system *can print as much money as they need* to spend since *it could not be insolvent*.
- If a nation's *expenditure exceeds its revenues*, it incurs a **government deficit**, which can *be financed by 'debt monetization'*

Modern Monetary Theory

- **Monetizing debt** is a *two-step process*
 - The **government issues debt** (*government bond*) to **cover its spending**
 - The **central bank purchases bond** *from secondary markets through open market operation*, and **perpetually rolls it over**, leaving the system an **increased supply of money**
- **Taxes** would drain money *from consumers and businesses* so total spending in the economy **won't be excessive** to keep inflation under control.

Features of MMT

The **dominance of fiscal policy** over monetary policy - ***fiscal policy is effective*** while *monetary policy is ineffective*

- **Monetary accommodation** in a downturn does **not** necessarily ***generate sufficient demand for credit*** when the *outlook on firm profitability and household income* remains ***weak***
- A **cut in interest rates** ***could be economically contractionary***, since **reduced interest income discourages** active private sector ***spending***.
- **Monetary easing** tends to promote an **accumulation of private sector debt** and thus ***reduce private sector net wealth***.

Why MMT should be considered as alternative monetary policy

- **Public spending** should intensively ***prioritize productivity-enhancing infrastructure, human capital, and innovation***, which would raise potential economic growth and thereby **prevent substantial inflation**.
- Government should **issue its own currency** rather than ***issue bonds*** that are *sensitive to investor sentiment and subject to volatility*.

Why MMT should be considered as alternative monetary policy

- **Government debt** is *more desirable* and *sustainable* than *private sector debt*.
- In contrast, **growing private sector debt** *reduces net financial wealth* within the private sector and *amplifies default risk*.

Critiques on MMT

- *Lawrence Summers*, the former Treasury secretary and *Paul Krugman*, Nobel prize laureate worried that **MMT will give a bad name** to their more *conventionally **dovish** views on deficits*.
- Trying to ***use fiscal policy to steer the economy*** is a ***proven failure*** because politicians ***rarely*** act ***quickly enough*** to respond to ***economic downturn***.
- Politicians ***hardly*** impose higher taxes or lower spending to cope with rising inflation.

End of lecture