

# EE432 Monetary Theory and Policy



Lecture 15 New Keynesian Monetary Economics  
Dr. Chamadanai Marknual  
Faculty of Economics, Thammasat University  
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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

# 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

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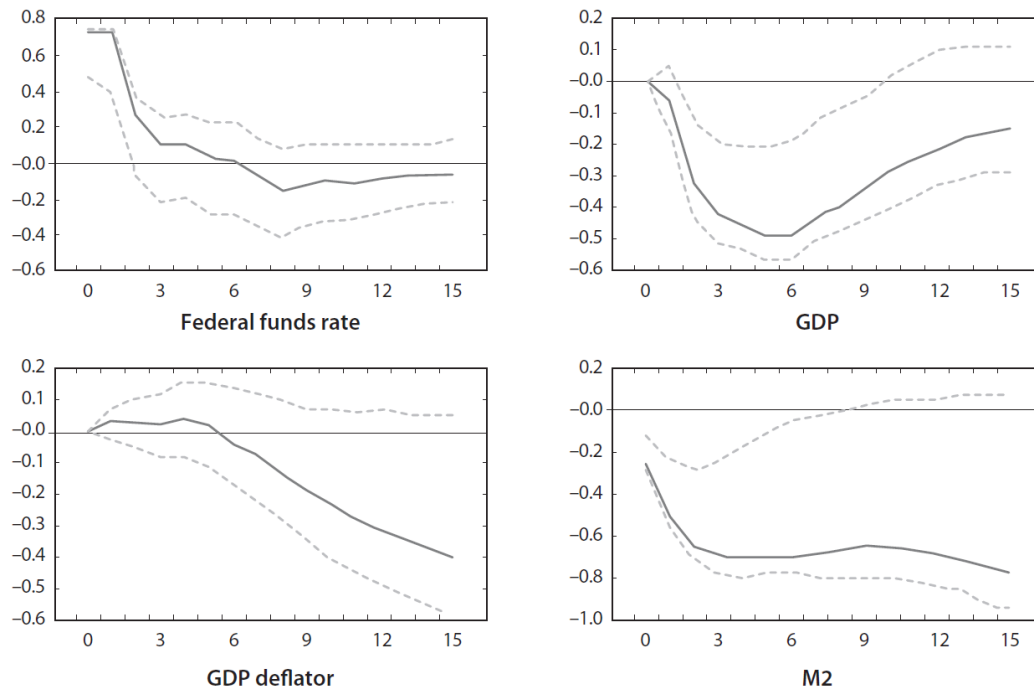


Figure 1.1. Estimated Dynamic Response to a Monetary Policy Shock  
Source: Christiano, Eichenbaum, and Evans (1999).

- 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.

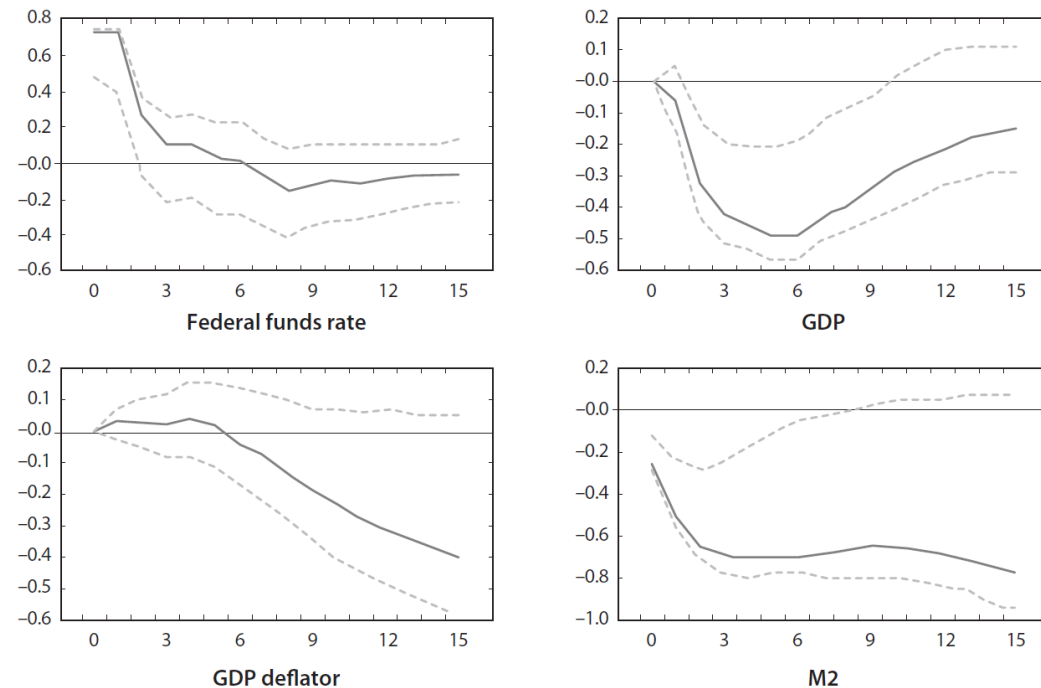


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Source: Christiano, Eichenbaum, and Evans (1999).

# Evidence of Monetary Policy Non-neutralities

- 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**.

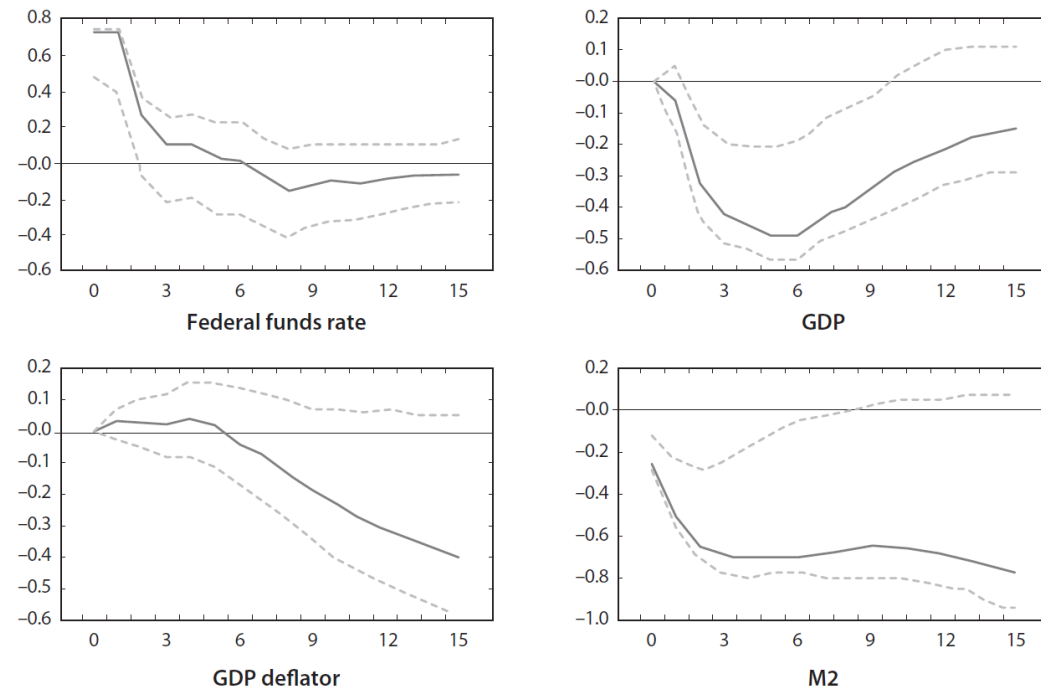


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# Evidence of Monetary Policy Non-neutralities

- 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.

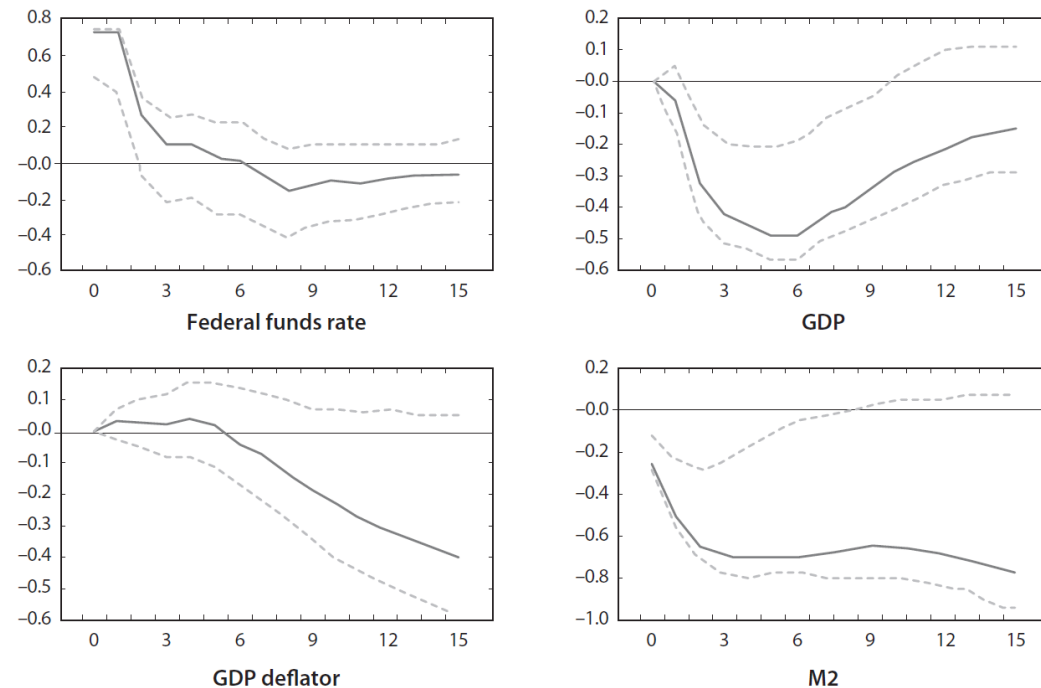


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End of lecture