EE432 Monetary Theory and Policy

Lecture 15 New Keynesian Monetary Economics

Dr. Chamadanai Marknual
Faculty of Economics, Thammasat University

Semester 2/2021

Additional lecture made for EE432 Monetary Theory and Policy at Thammasat University
(This is not part of Cecchetti and Schoenholtz (2021) Money, Banking, and Financial Markets. McGraw-Hill Textbook)

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 its *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

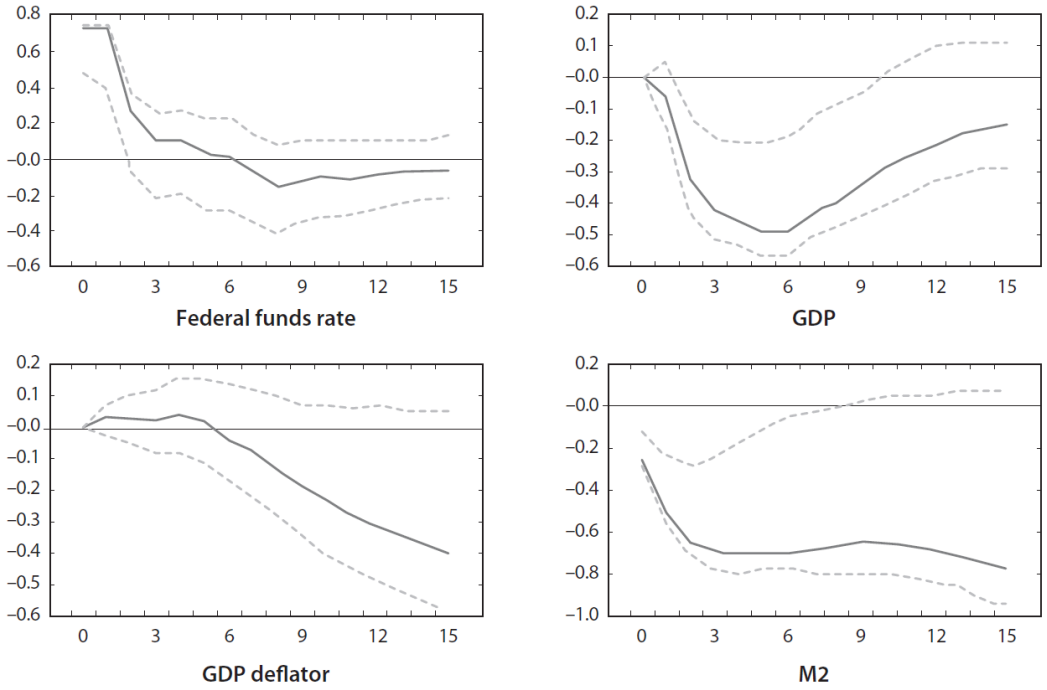

Figure 1.1. Estimated Dynamic Response to a Monetary Policy Shock
Source: Christiano, Eichenbaum, and Evans (1999).

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

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

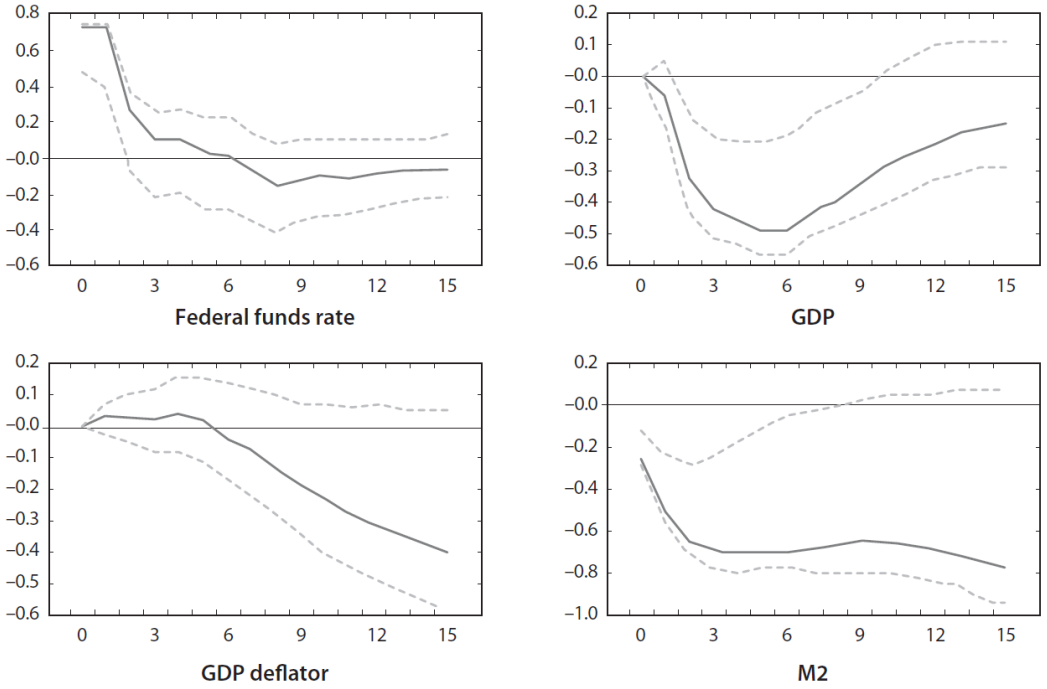

Figure 1.1. Estimated Dynamic Response to a Monetary Policy Shock
Source: Christiano, Eichenbaum, and Evans (1999).

- 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.

Evidence of Monetary Policy Non-neutralities

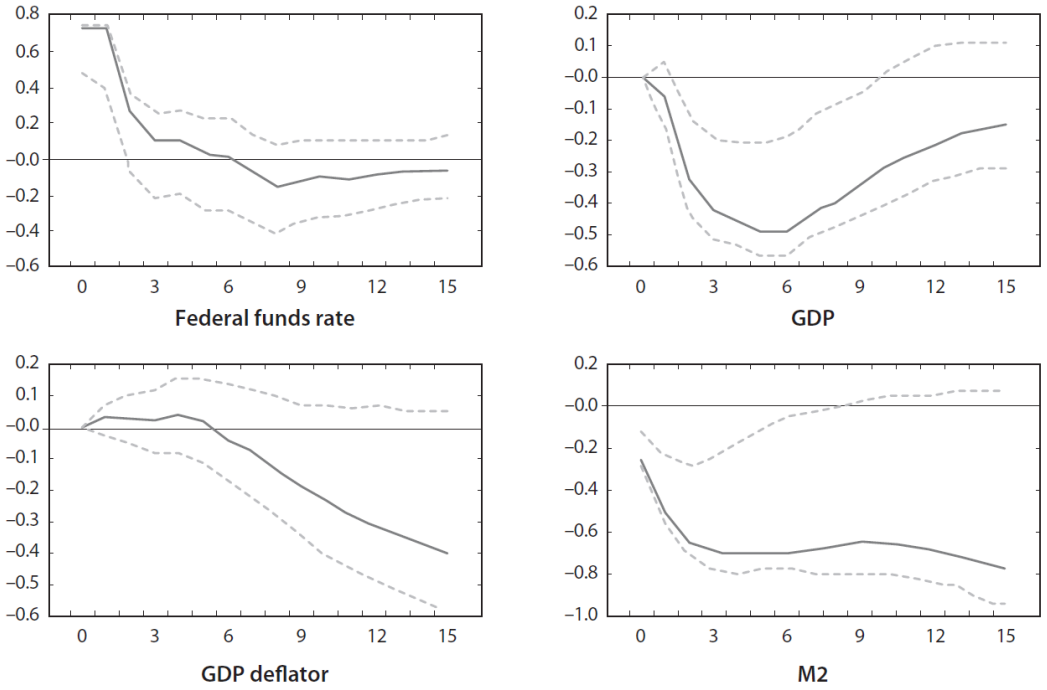

Figure 1.1. Estimated Dynamic Response to a Monetary Policy Shock
Source: Christiano, Eichenbaum, and Evans (1999).

- 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

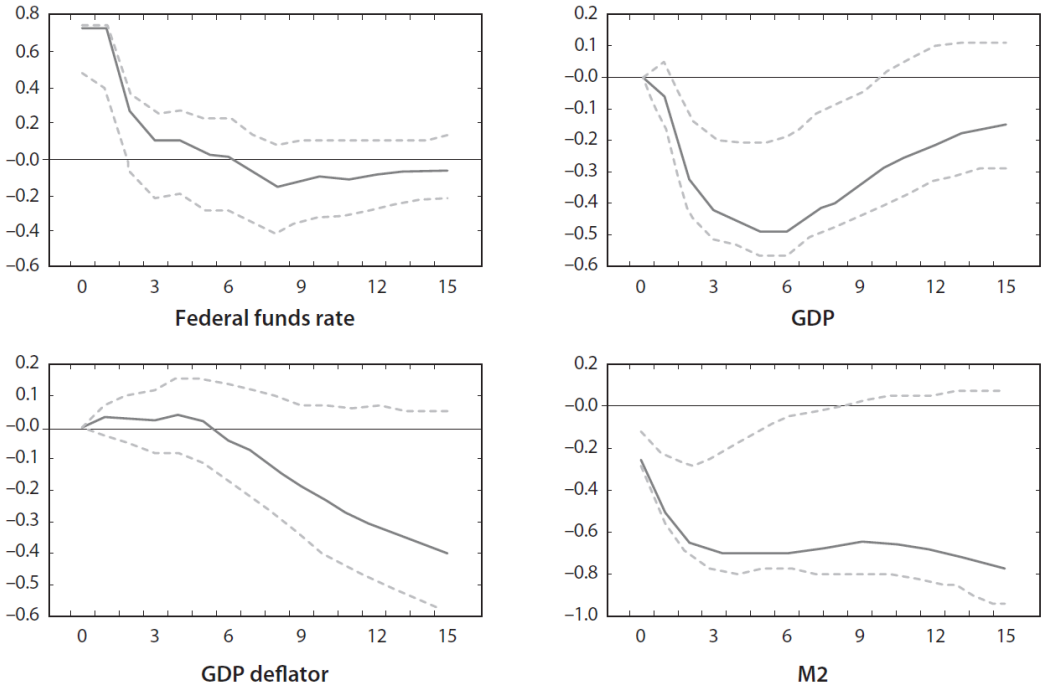

Figure 1.1. Estimated Dynamic Response to a Monetary Policy Shock
Source: Christiano, Eichenbaum, and Evans (1999).

- 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.*

End of lecture