MONEY SUPPLY CONCEPT IN PRACTICE, THEORY, AND UNIVERSITY EDUCATION

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Abstract

The paper points to a dichotomy between the teaching of the money creation theory in macroeconomics bachelor's and master's degree courses at universities and the practice of monetary policy by central banks. The contribution consists of three interconnected parts. The first part of the paper presents the basic differences between the exogenous and endogenous concepts of money supply. The second part presents the results of a meta-analysis of money supply concepts in professional journals and working papers, and subsequently in university macroeconomics textbooks. The textbooks considered in the analysis are those that are most recommended in the syllabi of subjects taught in English or Czech. The paper also takes into account the approach to the money supply, which is implicitly included in the Czech National Bank's model. In the third, final part, the paper points out the discrepancy in the view of money supply between textbooks on the one hand and other publications on the other hand, and also suggests a possible solution to this difference.

Keywords: endogenous money supply, exogenous money supply, macroeconomics

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Introduction

In the 1990s, the monetary policy of central banks experienced a fundamental transformation. While in previous decades, a monetary targeting regime or dual regime combining exchange rate fixing with monetary aggregate targeting dominated, at the turn of the millennium, a new approach, inflation targeting, gradually developed. The central banks that used monetary targeting included the Fed and the Swiss National Bank. The dual regime was applied in the 1990s by the central banks of the Czech Republic, Slovakia, and Poland.

The origins of inflation targeting as a formal monetary policy framework date back to 1990, when the Reserve Bank of New Zealand became the first central bank in the world to announce a public inflation target. A year later, the Bank of Canada followed. In the following years, other advanced economies joined this approach – the United Kingdom and Israel (1992), Australia and Sweden (1993). This regime currently prevails. According to the Bank for

International Settlements (2025), 26 central banks use inflation targeting. Among them is the Czech National Bank (CNB), which joined this regime in 1997 as the first post-communist country. In addition, although some central banks, such as the US Federal Reserve or the European Central Bank (ECB), do not explicitly implement the inflation targeting system, they actually implement it through their monetary policy instruments.

As the BIS analysis cited above shows, inflation targeting frameworks are constantly evolving. While numerical targets are becoming tighter (e.g., point targets instead of bands), the horizons for achieving them are lengthening, and there is increasing emphasis on other objectives, notably employment and economic output. These developments suggest that inflation targeting will remain the main monetary policy regime worldwide, but will adapt to new challenges and changing economic conditions.

1 Competing paradigms: Exogenous and endogenous money supply

The monetary and inflation targeting regimes are based on different views on causality between economic variables.

The monetary targeting regime is based on an exogenous approach to the money supply. The concept is based on the assumption that the central bank can control the monetary base or high-powered money (i.e., currency in circulation and bank reserves), and, given stable characteristics that determine the money multiplier, it subsequently controls the money supply. The exogenous concept assumes that the variables that affect the size of the multiplier are stable. These include the ratio of currency in circulation to deposits, which is determined only by the slowly changing payment habits of the public, and the ratio of excess (voluntary) reserves to deposits, which is given by the fact that banks do not hold excess reserves to a large extent. Furthermore, the value of the multiplier is related to the reserve-deposit ratio, which is exogenously determined by the central bank. Under these assumptions, the money multiplier is stable, and the central bank can predict how a change in the monetary base will affect the money supply.

The inflation targeting regime is based on the endogenous concept of money supply, which reverses the described causality. According to the endogenous approach, the decisive factor is the demand for loans by companies and households. Banks provide loans based on the demand of their clients and subsequently obtain the necessary reserves from the central bank. Money is created as a result of the credit expansion of commercial banks, which respond to the demand of economic agents.

The answer to the question of whether the money supply is an exogenous or endogenous quantity has fundamental consequences not only for the theoretical explanation of how the monetary system works, but also for the implementation of monetary policy by the central bank. In the exogenous concept of money supply, the starting variable is the monetary base. The central bank has a direct influence on it and usually uses open market operations as its most flexible tool, and also applies foreign exchange (unsterilized) interventions. An additional tool is changes in interest rates. The central bank also directly influences the value of the multiplier by changing its reserve-deposit ratio. In practice, this tool is used rather exceptionally, because it is considered too drastic. This approach is the basis of monetary targeting.

The endogenous view is quite different. The central bank cannot directly control the money supply – it is determined by the decisions of commercial banks and their clients. What the central bank can control are its interest rates, which are its main monetary policy instrument now. By changing these rates, it influences the interest rates of commercial banks, and thus indirectly affects the demand for loans and subsequently the money supply and economic activity. This approach is the basis of inflation targeting.

Exogenous and endogenous concepts do not represent minor differences, but two incompatible schools of thought, a real dichotomy. Money either enters the economy from outside through a decision by the central bank or it is created within the economy through market activities.

An analysis of the differences between both concepts of money supply can be found in many articles, inter alia in Deleidi & Levrero (2019), Metelski & Sobieraj (2025), Docherty (2009) or Delli Gatti & Gallegati (1997).

2 Authors from the central banks

In the next part of the contribution, we will examine whether the authors who are employed in central banks, tend to favor an exogenous or endogenous concept of the money supply in their articles or working papers. The analysis is not based on their explicit statements, such as “I support an exogenous or endogenous theory of money.” Most of them do not directly comment on this dichotomy at all. The analysis is based on how the authors:

- explain the origin of money,
- attribute role to banks,
- whether the money multiplier is a central or secondary model,
- whether the central bank primarily controls the money base or the interest rate.

Let's first look at the opinions of the authors from the Czech National Bank. The Czech National Bank uses the Dynamic Stochastic General Equilibrium Model g3+ for its forecasts, see Brázdik et al. (2020), which it innovated in 2024, Brázdik et al. (2025). In both versions of the g3+ model, the money supply is not exogenously determined by the central bank, but is an endogenous variable that adjusts to the demand of the economic agents. The central bank does not directly determine the money stock, but sets its interest rates. The main instrument of monetary policy is the interest rate, and the money stock is thus the result of interactions in the model, not a parameter.

Both variants of the model are therefore built on an endogenous concept of money, where the interest rate is the central instrument and the money supply is only a derived variable. The CNB website also features several official materials, presentations, and blog posts on the issue of money creation. These include Král (2016) and Holub (2016), who describe the mechanism of the money creation based on the principles of endogenous theory.

Other central banks also have a similar approach to the money supply. For example, McLeay et al. (2014) from the Bank of England clearly supported the endogenous approach by stating: “Whenever a bank makes a loan, it simultaneously creates a matching deposit in the borrower's bank account, thereby creating new money”.

Similarly, the Deutsche Bundesbank (2017) states in one of its monthly reports: "a bank's ability to grant loans and create money has nothing to do with whether it already has excess reserves or deposits at its disposal. [...] From the perspective of banks, the creation of money is limited by the need for individual banks to lend profitably and also by micro and macroprudential regulations."

3 Textbooks positions

In this part of the paper, we will observe how the shift from monetary to inflation targeting has been reflected in the macroeconomics courses at universities. We will first look at the situation in the Anglo-Saxon countries and then in the Czech Republic. We will analyze the syllabi of various macroeconomics courses and examine which textbooks are recommended to students.

For analysis of academic courses taught in English, we use the Open Syllabus Project database. It tracks thousands of university syllabi and allows users to find out which textbooks are most commonly prescribed. Within this database, we focus on the most frequently recommended (i.e., most frequently appearing in syllabi) macroeconomics textbooks for undergraduate and master's degree courses.

According to this database, syllabi are strongly concentrated around 2-3 dominant texts, while the others represent regional or methodological alternatives. Textbooks are published repeatedly, in many editions. The highest frequency is shown by textbooks by Mankiw (2022), and by Blanchard & Johnson (2021). The second group, often alternatives to the two textbooks already mentioned, consists of texts by Hubbard & O'Brien (2024), Abel, Bernanke & Croushore (2020), Parkin (2023) or Williamson (2022). We will also include the textbook Burda & Wyplosz (2022), which is often used in European study programs as an alternative to Mankiw or Blanchard, because it contains extensive applications to European economies, the eurozone, and the ECB.

Tab. 1: Macroeconomics in English

Criterion	Mankiw (2022)	Blanchard & Johnson (2021)	Burda & Wyplosz (2022)
Main monetary policy framework	Monetary base and multiplier	Interest rate and banking system	Interest rate and banking system
The role of banks	They multiply reserves	They create deposits by lending	They create deposits by lending
Money multiplier	Key model	Secondary model	Secondary model
The role of the central bank	Monetary base control	Determining the interest rate	Determining the interest rate
Exogenous money supply	High	Medium	Medium
Endogeneity of money supply	Low	Medium to higher	Medium to higher

Source: own analysis

The table offers a comparison of Mankiw (2022) Blanchard & Johnson (2021) and Burda & Wyplosz (2022) textbooks. We apply the criteria described in the previous part of the contribution. We also compared the other above-mentioned textbooks. We can create two groups of publications, depending on whether they are based on an exogenous or endogenous concept.

The traditional exogenous approach is represented by the textbooks Mankiw (2022), Parkin (2023), and Abel, Bernanke & Croushore (2020). Their approach is based on the monetary base – deposit multiplication model. The central bank is therefore presented as an institution that determines the amount of money in the economy.

The textbooks Blanchard & Johnson (2021), Burda & Wyplosz (2022), Hubbard & O'Brien (2024), and Williamson (2022) present a hybrid approach between the exogenous and the endogenous concept of money. The money multiplier model is still present in the textbooks, but it is not the main element of the explanation. The authors emphasize the role of bank

lending, the demand for loans, and interest rates, which moves their explanation closer to the endogenous theory of money supply.

Czech universities do not have a central database like the Open Syllabus Project. The above ranking is therefore a synthesis of typical mandatory and recommended literature from current syllabi of macroeconomics courses at Czech universities. The analysis of the syllabi shows that 80-90% of the core literature is English textbooks, and the remaining 10-20% is Czech textbooks. Czech literature is therefore a minority, but a stable minority. The dominant Czech macroeconomics textbooks are Holman (2010) and Soukup, Pošta, Neset, & Pavelka (2022).

Most Czech macroeconomics textbooks were written in the 1990s and early 2000s under the strong influence of the mainstream of the time (Mankiw, Dornbusch–Fischer, Samuelson–Nordhaus, later Blanchard). Therefore, we often find in them a traditional, exogenous concept of money supply, see Table 2.

Tab. 2: Macroeconomics in Czech

Criterion	Holman (2010)	Soukup et al. (2022)
Main monetary policy framework	Money supply and interest rate	Interest rate and money supply
Money multiplier	A very important analytical tool	Present, but not key
Banks create deposits by lending	Limited	Partly
Emphasis on the credit channel	Low	Medium
Exogenous money supply	High	Medium
Endogeneity of money supply	Low	Medium

Source: own analysis

Holman (2010) draws largely from the traditional neoclassical and monetarist tradition. Credit creation of money is explained, but it is not a central element of the theory. The money supply is essentially understood as a quantity controlled by the central bank, with the money multiplier playing a significant role. The central bank is understood as an institution determining the quantity of money, and the banking sector is more of an intermediary for monetary policy than an autonomous creator of money. The approach is therefore largely exogenous.

Soukup et al. (2022) retain the standard money supply and multiplier model, but they reflect modern central bank practice, and the limited ability of the central bank to directly manage broader monetary aggregates. The authors retain the interpretation of the money multiplier, but at the same time reflect the fact that central banks in practice primarily target interest rates,

commercial banks actively influence deposit formation through credit expansion, and that the relationship between the monetary base and broader aggregates is not mechanical. The approach is therefore hybrid, with more room for endogenous elements than Holman.

Conclusion

The paper analyses the differences between the exogenous and endogenous concepts of money supply and the reflection of both approaches in the professional literature. The analysis of documents and articles by authors from central banks shows the dominance of the endogenous concept of money supply. In contrast, many university macroeconomics textbooks still teach mainly the model of exogenous money supply. The conclusion is obvious: it is necessary to revise the textbooks and adapt them to the practice of monetary policy.

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