

Central bank balance sheet, liquidity and autonomous factors

Ghazaryan Amasya A.

Graduate student of the Department of Mathematical Modeling in Economics, Faculty of Economics and Management, Yerevan State University (Yerevan, RA)

 <https://orcid.org/0000-0001-7726-5136>

amasyaghazaryan@yahoo.com

UDC: 336.7, 338.2; EDN: FBYDSZ; JEL: E5, E58

DOI: 10.58587/18292437-2024.4-147

Keywords & phrases: central bank, monetary policy implementation, balance, liquidity, autonomous factor

Կենտրոնական բանկի հաշվեկշիռ, իրացվելիություն և ավտոնոմ գործոններ

Ղազարյան Ամասյա Ա.

Տնտեսագիտության մեջ մաթեմատիկական մոդելավորման ամբիոնի ասպիրանտ,
Տնտեսագիտության և կառավարման ֆակուլտետ, Երևանի Պետական Համալսարան (Երևան, ՀՀ)

Ամփոփագիր. Դրամավարկային քաղաքականության իրականացման համար անհրաժեշտ է կանխատեսել շուկայում իրացվելիության պահանջարկը, որպեսզի իրացվելիության տրամադրման կան կրճատման միջոցով շուկայական հավասարակշռությունը ձգտի դրամավարկային քաղաքականության նպատակային ցուցանիշին: Իրացվելիության պահանջարկի վրա ազդող հիմնական գործոններից մեկը ավտոնոմ գործոններն են, որոնք արտացոլվում են կենտրոնական բանկի հաշվեկշռում: Այդ գործոնների փոփոխությունների միջև գոյություն ունեն որոշակի կապեր, որոնց բացահայտումը կարող է բարձրացնել իրացվելիության պահանջարկի կանխատեսման արդյունավետությունը:

Հանգուցաբառեր և բառակապակցություններ՝ կենտրոնական բանկ, դրամավարկային քաղաքականության իրականացում, հաշվեկշիռ, իրացվելիություն, ավտոնոմ գործոններ

Баланс центрального банка, ликвидность и автономные факторы

Казарян Амасия А.

Аспирант кафедры математического моделирования в экономике, Факультет экономики и менеджмента, Ереванский государственный университет (Ереван, РА)

Аннотация. Для исполнения кредитно-денежной политики важен прогноз ликвидности рынка для того, чтобы с помощью предоставления или изъятия ликвидности обеспечить такое равновесие рынка, которое ближе к цели монетарной политики. Один из основных факторов влияющий на спрос ликвидности является автономные факторы, которые отражаются в балансе центрального банка. Среди изменений в этих факторах есть связи, исследование которых может повысить эффективность прогнозирования спроса ликвидности.

Ключевые слова и словосочетания: центральный банк, исполнение монетарной политики, баланс, ликвидность, автономные факторы

Introduction

In the context of monetary policy implementation, two critical factors come into play: the central bank's balance sheet and commercial banks' reserves. As a financial institution, the central bank maintains its own balance sheet, which holds specific significance. Notably, the central bank serves as the primary player in the local financial market and acts as the exclusive provider of reserve money for the country (including both commercial banks' reserves and cash) [5]. Every financial operation in the local currency are reflected in the central bank balance sheet. All financial transactions denominated in the local currency find their reflection in the central bank's balance sheet. Understanding this balance sheet is essential for grasping the dynamics of demand and supply in the interbank reserves market.

For the monetary policy purposes, central bank balance sheet is represented in a transformed form. According to [6] on the liabilities side the balance sheet is composed of monetary base which is defined as currency in circulation, other deposit corporations' deposit holdings at the central bank, and those deposits of money-holding sectors¹ at the central bank that are also included in broad money. On the asset size, all other asset and liabilities are included.

The main components of the (net) asset side of the Central Bank of Armenia are:

- Net foreign assets
- Net liabilities to the government

¹ According to the same source the economy is categorized into three sectors: money-issuing, money-holding and money-neutral sectors.

- Net demand to banks and net other assets.
- Net other assets

Note that the asset side is represented in net form meaning that it reflects the net of the same asset types. For example: net foreign assets includes foreign assets minus foreign liabilities.

The liability side of Central Bank of Armenia's balance sheet is composed of the following components:

- Cash in circulation
- Armenian commercial banks' corresponding accounts in AMD and in foreign currency
- Other accounts in foreign currency and in AMD

The commercial banks' corresponding accounts at the central bank and cash in circulation are collectively called **liquidity**. According to [4] liquidity is the local currency non-interest-bearing liabilities of central bank to the non-government sector.

Commercial banks' corresponding accounts within the central bank function as assets for the banks themselves and as liabilities for the central bank. In systems where reserve requirements exist, these accounts are further categorized into required reserves and free reserves. Required reserves represent the minimum amount that commercial banks must maintain on their balance sheets (whether fixed or based on an average, depending on the specific reserve requirement framework) to adhere to regulatory norms. Any reserves held beyond this mandatory requirement are considered free reserves. Conversely, in economies without reserve requirements, all commercial bank reserves are inherently classified as free reserves.

In the market, all else equal, some banks have free reserves (surplus liquidity) and other banks have deficit of liquidity needed to cover reserve requirements or support daily operations. And this in turn creates a market for reserves to be traded (the interbank market). The interbank market rate is an integral part of monetary policy framework in inflation targeting regimes serving as an operational target [2]. Therefore, the management of interbank liquidity (often referred as primary liquidity) is essential in achieving central bank objectives in monetary policy, because of the relationship between liquidity volume and price of the liquidity (interbank rate).

Market of reserves

As discussed, in the reserves market banks with surplus reserves trade with the banks which have deficit. And if the amount of demand is not equal to the supply of reserves, the market price of the reserves (interbank rate) goes either up or down. Deficit in the market pushes the equilibrium price up while the surplus pushes it down [1].

From commercial banks' perspectives their reserve accounts serve as a means to support daily operations. For example, a transaction between clients of bank A and bank B is reflected in the reserve accounts of the corresponding banks. Therefore, one component of the demand for reserves is formed from operational needs. On the other hand, the regulatory minimum requirements create a demand for reserves, because the banks are supposed to keep the level of reserves at the minimum required level. To sum up, the demand for reserves are formed by reserve requirements and operational needs.

Supply of reserves is controlled by the central bank. E.g. considering the conditions in the market, central bank either inject or withdraws liquidity into/from the system.

The forces behind demand of reserves

From interbank liquidity perspective, it is important to distinguish between operations that change the level of liquidity and that of with no effect on liquidity. The operations between banks do not affect the amount of reserves in the system. Rather, these operations have effect on the composition of reserves, meaning that while at the same level of liquidity in the system, there can be banks with surplus liquidity and banks with deficit.

There are operations that have effect on the liquidity of the system. For example, in the systems where government treasury operations are carried out through central bank only, government spending injects liquidity in the system while collection of taxes withdraws liquidity. These operations are not directly influenced by the central bank. In general, central bank balance sheet items that are not directly influenced by the central bank are called **autonomous factors** of liquidity [2; 4].

From the discussion of the interbank market of liquidity, it is apparent that central bank as a sole provider of liquidity should forecast the autonomous factors to understand the liquidity demand of the system to ensure an equilibrium market conditions where the operational target is reached. Particularly in the symmetric corridor regimes² the zero excess reserve condition (no surplus or deficit of liquidity), all else equal, ensures the existence of interbank rate which is equal to the target policy rate [3; 7].

From demand-supply equilibrium perspective, the following equation should hold

$$CB = -(AF - RR)$$

where CB is central bank open market operations, AF is autonomous factors and RR is reserve requirements.

In order to make forecasts less complicated, it is important to explore the interconnections between different balance sheet items. Because changes in some items result in changes of other items in opposite direction, their forecast can be made easier if some transformations are applied before forecasting.

² Where standing facility rates are in equal distance from central bank policy rate

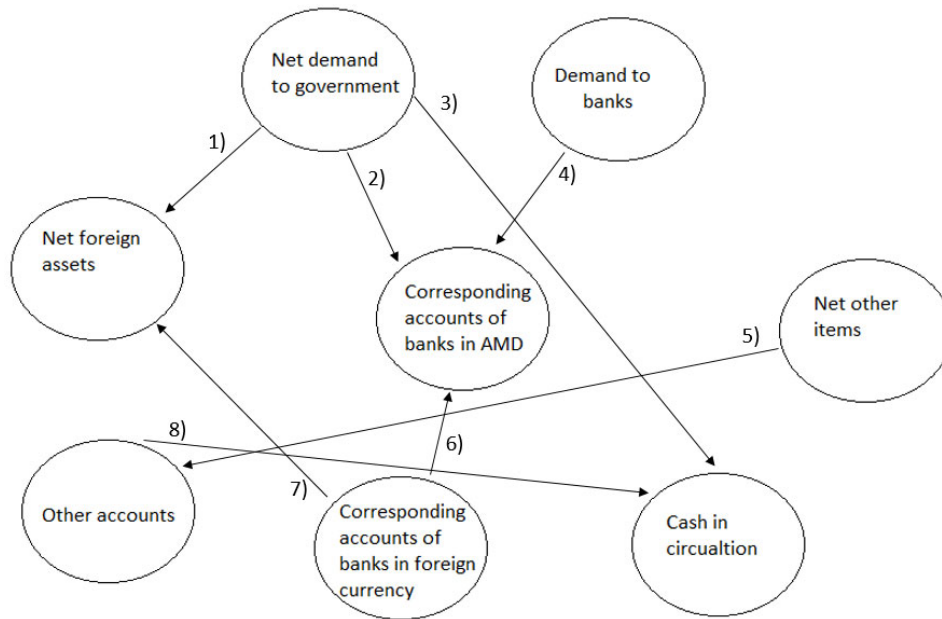


Figure 1. Some interconnections between balance sheet items. (The start of the arrow is the reason of a change and the end of the arrow is the result).

Consider some interconnections between balance sheet items. In the following, the + sign denotes a positive relationship between items (in the examples), e.g. an increase in reason increases the result item (and vice versa) and the – sign denotes negative relationship, e.g. an increase in reason decreases the result and (vice versa).

1. (-) Government operations in foreign currency: Net demand to government ↑ Net foreign assets ↓

2. (+) Government budget operations (expenditures, tax collection, etc.)

3. (+) Government budget operations (expenditures, tax collection, etc.), direct and indirect effects possible

4. (+) Central bank operations, program loans

5. (-) Household deposits in central bank

6. (-) Foreign exchange operations

7. (+) Foreign currency flows from abroad

8. (-) Cash out of household deposits from central bank

Conclusion

In inflation-targeting regimes, the short-term market interest rate serves as the primary operational target. This rate is significantly influenced by liquidity conditions. To effectively implement monetary policy, central banks must closely monitor market liquidity, adjusting it through injections or withdrawals to maintain equilibrium.

Understanding the factors driving changes in autonomous components of liquidity is crucial for

enhancing the central bank's predictive capabilities. By conducting in-depth analyses of its balance sheet and the interrelationships among its components, the central bank can better grasp these underlying forces, facilitating more precise liquidity management.

Օգտագործված գրականության ցանկ

1. **Alexandra Baker; David Jacobs** | Reserve Bank of Australia. 2010. “December Quarter.” *Bulletin*, 37-44.
2. **Bindseil, Ulrich.** 2004. *Monetary Policy Implementation: Theory, Past and Present.* Oxford University Press.
3. **Bindseil, Ulrich.** 2014. *Monetary Policy Operations and the Financial System.* Oxford: Oxford University Press.
4. **Gray, Simon.** 2008. “Liquidity Forecasting.” *Centre for Central Banking Studies publication\Bank of England.*
5. **Gray, Simon, Nick Talbot.** 2006. “Monetary Operations.” *Handbooks in Central Banking\Bank of England.*
6. IMF. 2017. *Monetary and financial statistics manual and compilation guide.* Washington, D.C.
7. **Veyrune, Romain, Guido della Valle, & Shaoyu Guo.** 2018. “Relationship Between Short-Term Interest Rates and Excess Reserves: A Logistic Approach.” *IMF Working Paper.*

Տճանաշար/Հանձնվել է 07.08.2024

Рецензирована/Գրախոսվել է 13.08.2024

Принята/Ընդունվել է 29.08.2024