საქართველოს ეროვნული ბანკი
National Bank of Georgia

# Central Bank Liquidity and Money Creation in the Real World

Shalva Mkhatrishvili* and the BPP coordinators

*Seminar at the **Better Policy Project** Network*

* *The views are my own and not necessarily those of the NBG*

January, 2022

# How money creation works?

Mankiw (2003) textbook: "imagine first a world without any banks at all… let's suppose that the total quantity of currency is \$100. The supply of money is, therefore, \$100". Then, with banks:

FIRST NATIONAL BANK

| Assets | | Liabilities | |
|---|---|---|---|
| Reserves | \$100.00 | Deposits | \$100.00 |

⬇

FIRST NATIONAL BANK

| Assets | | Liabilities | |
|---|---|---|---|
| Reserves | \$10.00 | Deposits | \$100.00 |
| Loans | 90.00 | | |

# How money creation works

**Whole lot of general equilibrium effects**

⬇

FIRST NATIONAL BANK

| Assets | | Liabilities | |
|---|---|---|---|
| Reserves | $10.00 | Deposits | $100.00 |
| Loans | 90.00 | | |

# Bank of Canada decades ago

“we didn’t abandon **monetary aggregates, they abandoned us**”

*Source: Dodge (2006) on Gerald Bouey*

# BoE on money creation

“banks do not act simply as intermediaries, lending out deposits that savers place with them, and **nor do they ‘multiply up’ central bank money** to create new loans and deposits”

*Source: McLeay, Radia and Thomas (2014)*

# IMF papers on money creation

“in the process of making new loans, commercial **banks create matching liabilities (bank deposits)** for their borrowers, thereby expanding their balance sheets”


*Source: Benes, Kumhof and Laxton (2014)*

# BIS papers on money creation

“most prevailing models also overlook the **role of banks in endogenously creating purchasing power**”

*Source: Borio and Disyatat (2015)*

# Bundesbank on money creation

“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”


*Source: Bundesbank (2017)*

# RBA on money creation

"The process of extending **loans will therefore typically create deposits at a system-wide level**, although it may or may not create deposits at the intermediary that extended the loan"


*Source: Doherty, Jackman and Perry (2018)*

# The Fed "Teaching the New Tools"

"in explaining bank lending, these textbooks use a concept called the money multiplier, which depicts a strict **linkage between banks, the Fed, and the money supply… outdated concept**"

*Source: Ihrig, Weinbach and Wolla (2021)*

# Jerome Powell on monetary aggregates

"when you and I studied economics a million years ago, M2 and monetary aggregates generally seemed to have a relationship to economic growth… it just no longer holds… **something we have to unlearn**"

*Source: Jerome Powell's congressional hearing, Feb 23, 2021*

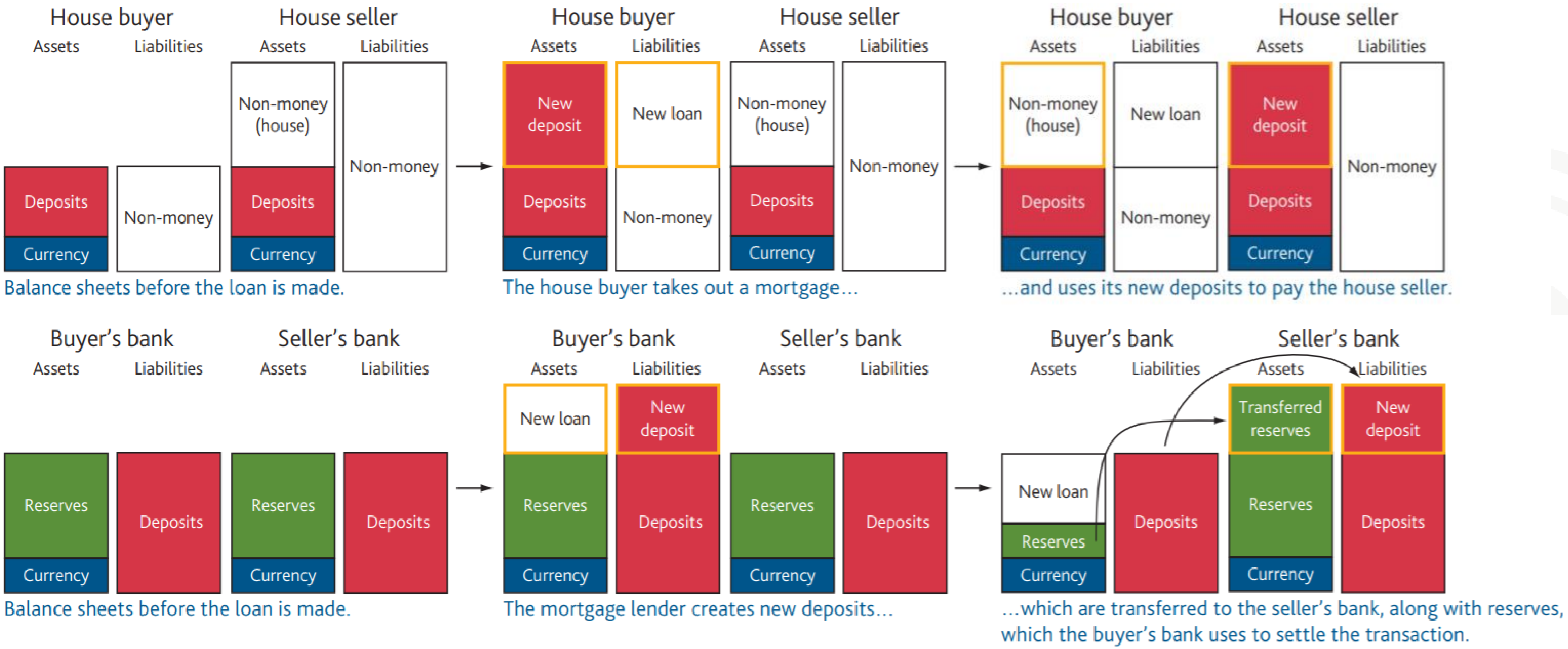
# Banking business *(in a nutshell )*

- **Liquidity / maturity / risk transformation:**
  - “selling” one type of liabilities *(liquid, short-term, low risk, serving as a medium of exchange)* and in exchange “buying” other type of liabilities *(illiquid, long-term, high risk, profit-generating)*, which becomes an asset for the bank

⇒ **Money creation** *(contemporary money = IOU)*

- *loan rate* – *term deposit rate* ≈ *price of “intermediation”*
- *term deposit rate* – *current account deposit rate* ≈ *seigniorage*

# How money creation works




*Source: McLeay and others (2014); Bank of England Quarterly Bulletin*

# Financing budget deficit with domestic debt

## Government spends 100 GEL, which is financed by borrowing from domestic agents:

*Monetary survey*

| Assets | issuing treasuries | spending | total |
|---|---|---|---|
| **Net foreign assets** | **0** | **0** | **0** |
| Net international reserves (NBG) | 0 | 0 | 0 |
| Net foreign assets (banks) | 0 | 0 | 0 |
| **Net domestic assets** | **0** | **100** | **100** |
| Government position (net) | 0 | 100 | 100 |
| Treasuries | 100 | 0 | 100 |
| Government deposits (NBG) | -100 | 100 | 0 |
| Lending to the real economy | 0 | 0 | 0 |
| Other assets (net) | 0 | 0 | 0 |

| Liabilities | issuing treasuries | spending | total |
|---|---|---|---|
| **Broad money (M2)** | **0** | **100** | **100** |
| Cash in circulation | 0 | 0 | 0 |
| Deposits | 0 | 100 | 100 |

# Financing budget deficit with foreign debt

## Government spends 100 GEL, which is financed by borrowing from foreign agents (in FX):

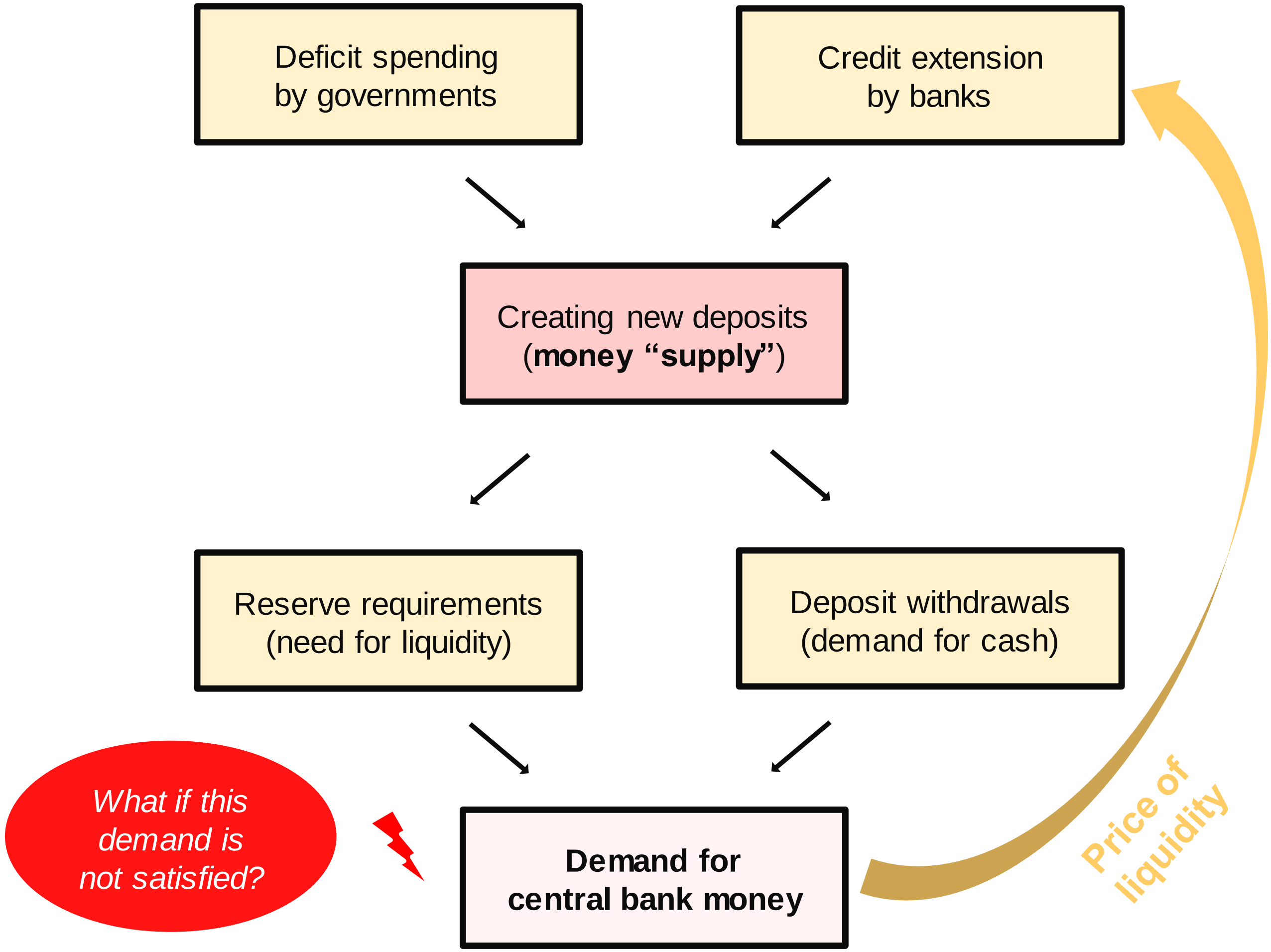
*Monetary survey*

| Assets | issuing FX debt | spending | total |
|---|---|---|---|
| **Net foreign assets** | **100** | **0** | **100** |
| Net international reserves (NBG) | 100 | 0 | 100 |
| Net foreign assets (banks) | 0 | 0 | 0 |
| **Net domestic assets** | **-100** | **100** | **0** |
| Government position (net) | -100 | 100 | 0 |
| Treasuries | 0 | 0 | 0 |
| Government deposits (NBG) | -100 | 100 | 0 |
| Lending to the real economy | 0 | 0 | 0 |
| Other assets (net) | 0 | 0 | 0 |

| Liabilities | issuing FX debt | spending | total |
|---|---|---|---|
| **Broad money (M2)** | **0** | **100** | **100** |
| Cash in circulation | 0 | 0 | 0 |
| Deposits | 0 | 100 | 100 |

**Conclusion: deficit spending creates money, no matter in which currency it is financed**

# Money creation process




**Hence, in principle, central banks stand at the end of the money creation process, not at the start**

**Contemporary monetary systems: money created by issuing specific liabilities (mostly against public debt / bank credit)**

**Deficit spending / new bank credit simultaneously create respective amounts of new deposits at banks**

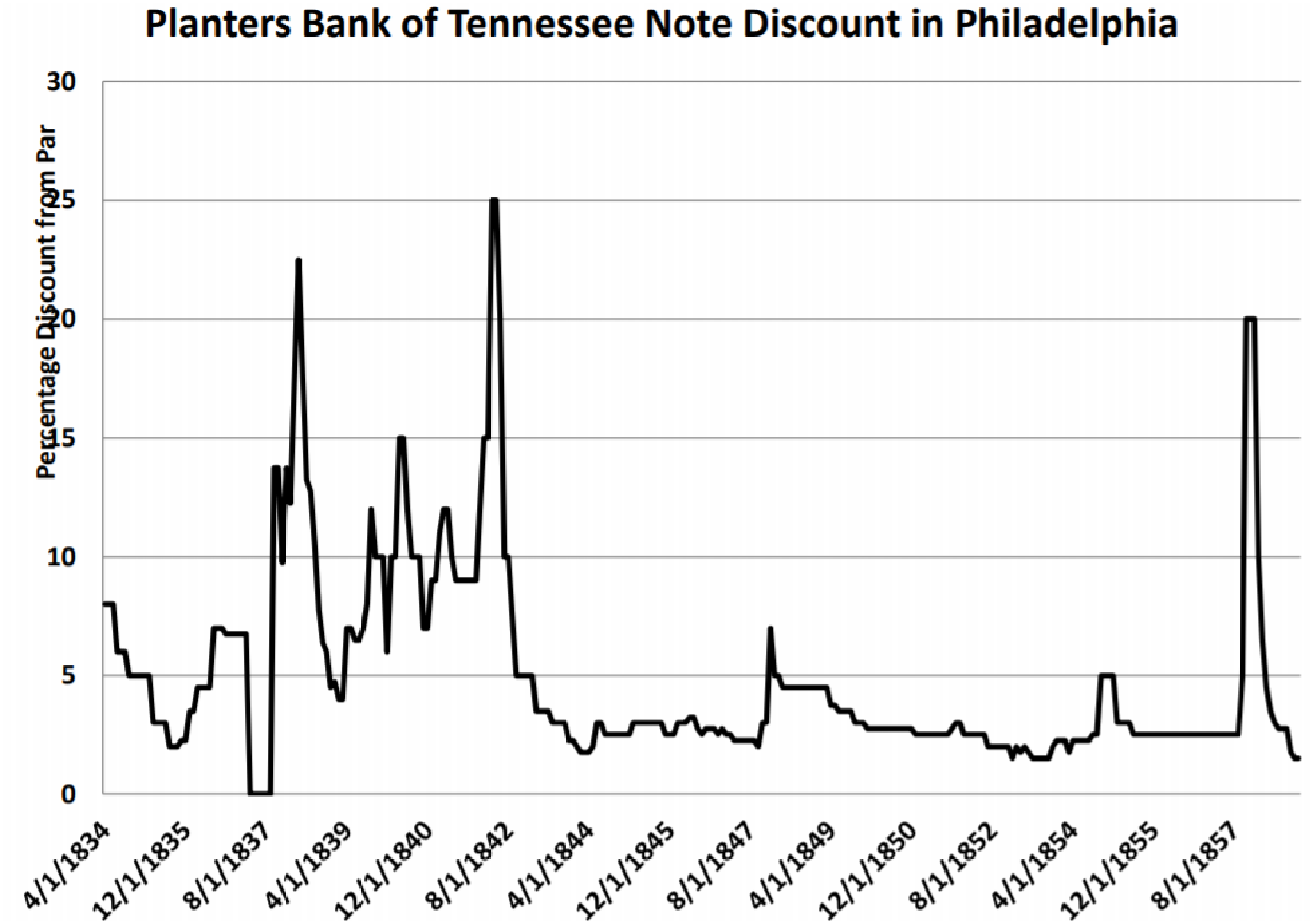
- The first stage of money creation

**However, newly created deposits then generate demand for liquidity:**

- To satisfy reserve requirements
- To satisfy withdrawals (demand for cash)

**Price of central bank liquidity is then exactly the central banks' instrument to affect money creation *incentives***

# $1 deposit = $1 cash?




*Source: Gorton and Weber (2018)*


THE BANK OF UNITED STATES
THE BANK OF UNITED STATES
PITKIN
UNITED CIGARS
UNITED CIGARS

# Bank intermediation *(in a nutshell)*

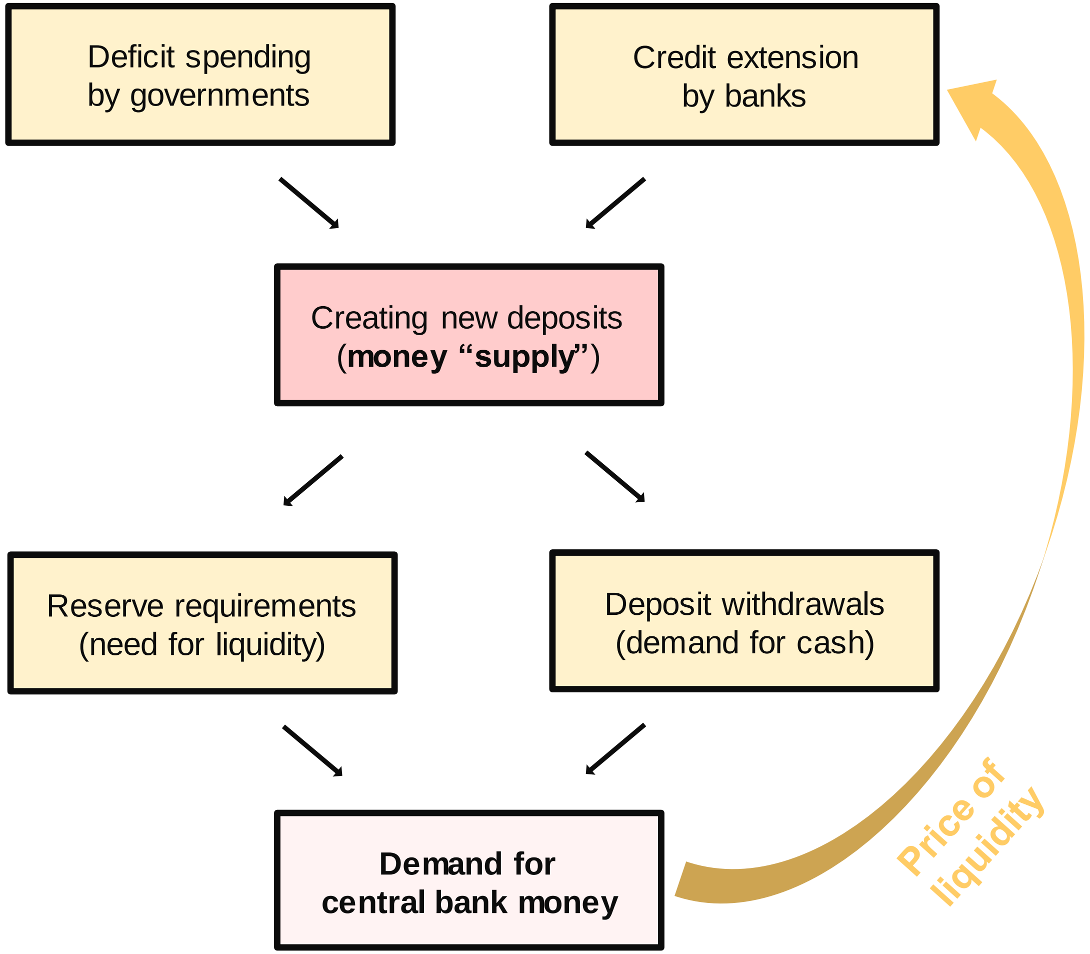
“Every banker knows that if he has to prove that he is worthy of credit… in fact his credit is gone”

*Walter Bagehot*

**Trust guarantor:** *(should be)* **central bank**

- $1 deposit = $1 cash
- *Trust*↑ ⇒ *Risk premium*↓
- *Moral hazard?*

# Money creation process




**Hence, central banks stand at the end of the money creation process, not at the start**

# Price of liquidity ⇒ credit and money creation

$$\underbrace{i^L}_{\text{Loan rate}} \approx \underbrace{\overbrace{\underbrace{\frac{\sum_{i=1}^{T} i_{t+i}}{T}}_{\text{Interbank rates}} + \underbrace{\rho^i}_{\text{Interest rate risk}}}^{\text{T-bill rate}^*} + \underbrace{\rho^l}_{\text{Liquidity risk}}}_{\text{Term deposit rate}} + \underbrace{\rho^c}_{\text{Credit risk}} + \underbrace{\mu}_{\text{Interest rate spread}}$$

Loan rate

Interbank rates

Interest rate risk

Liquidity risk

Credit risk

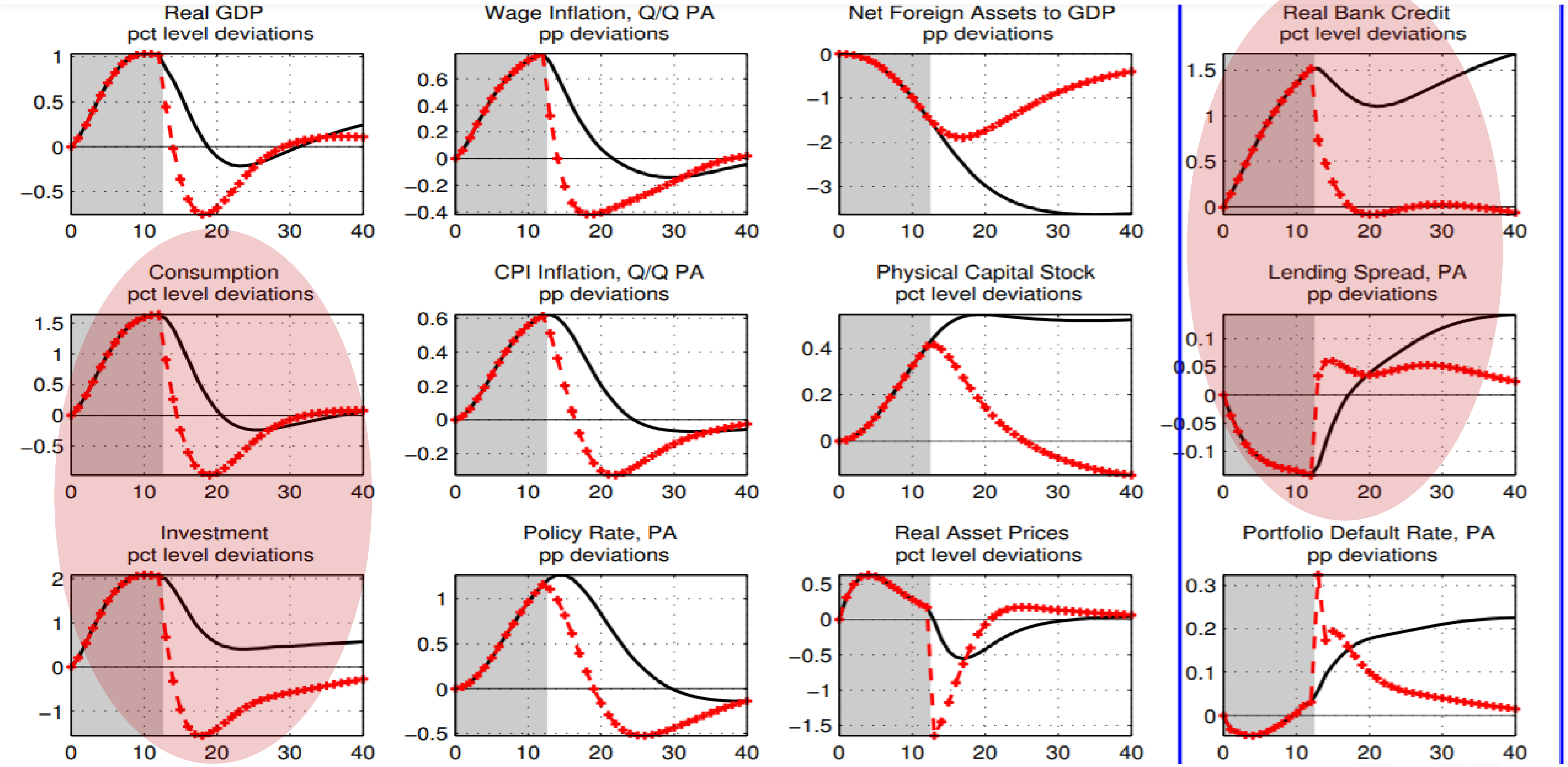
Interest rate spread

**T-bill rate***

**Term deposit rate**

** Assuming that T-bills always are eligible collateral for CB operations. Otherwise it will also have a liquidity risk.*

# One of very few models with money creation – MAPMOD




*Source: Benes, Kumhof and Laxton (2014)*

# Widespread misconceptions

- „**central banks print money**, which is then lent out by banks“

banks lend and create their own money (deposits), which then creates demand for central bank money

- „by multiple loan extension, **banks multiply up** money that was initially printed by the central bank“

if anything, money is multiplied down – mechanically, broad money is created first, only then - narrow (central bank) money

- „for bank to be able to lend, someone must **save funds first**“

banks do not lend real assets, they lend financial assets, which is created without prior real saving

- „when interest **rates go up, the actual volume of savings (deposits) go up** as well“

higher rates reduce lending, which reduces amount of deposits, including savings ones most probably

- „bank regulation and **supervision is necessary to make sure banks don’t steal depositor money**“

banks are given a money creation privilege; stealing money is already a criminal offence (no need for separate supervision)

- „banks are always **in competition with the capital market**“

unlike banks, capital markets can’t usually create money, but intermediate them

# CB liquidity and money "supply"

If a central bank "prints" more central bank money (supplies more liquidity), doesn't this still result in an increase in a broad money (e.g. M2) aggregate?

No, unless interest rates in the economy are affected

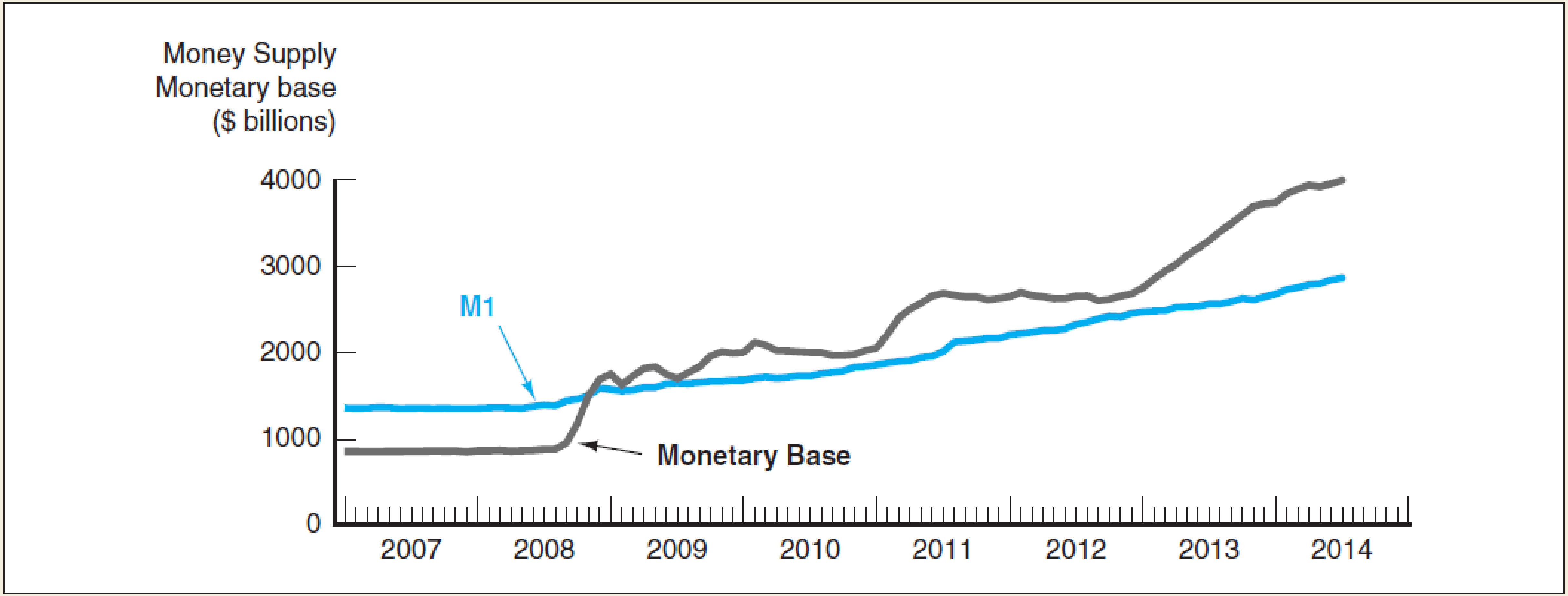



**FIGURE 1** **M1 and the Monetary Base, 2007–2014**

The money supply rose by less than 110% despite the increase in the monetary base by over 370%.

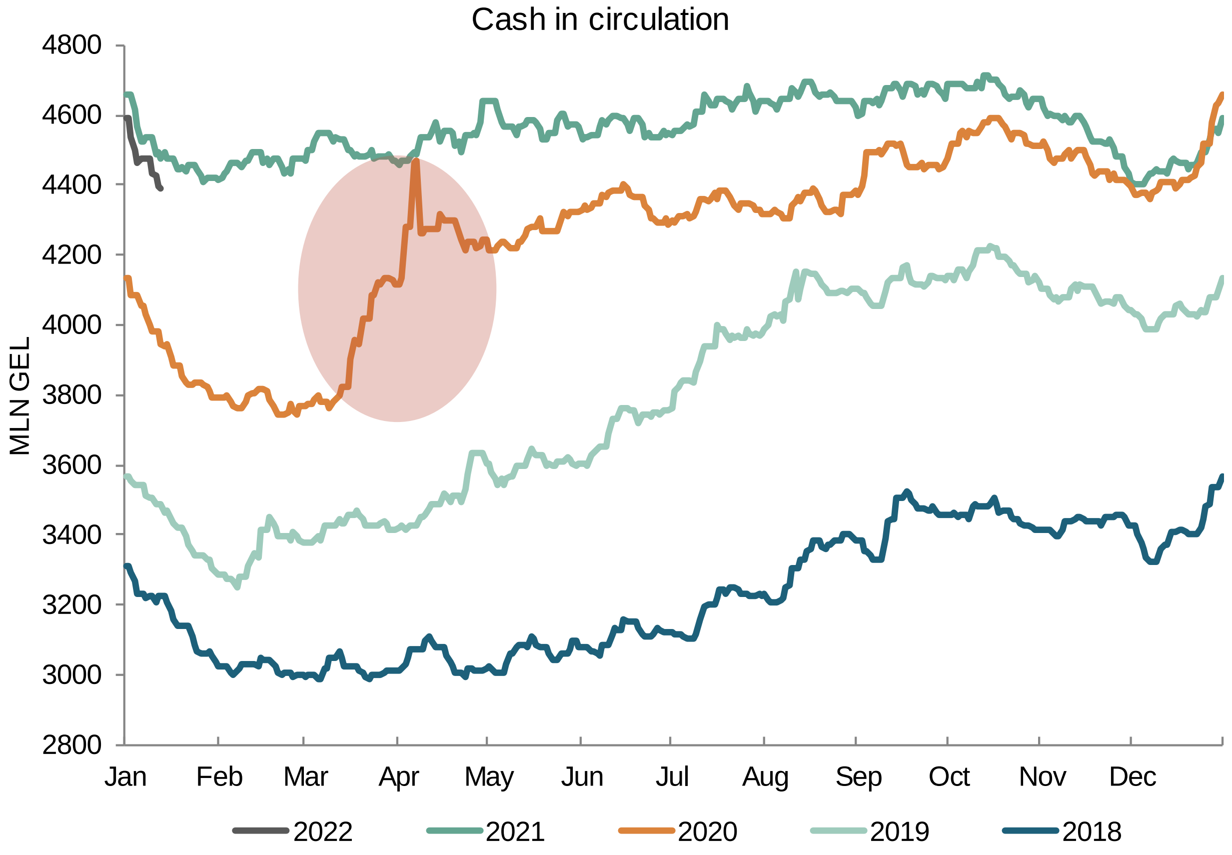
*Source:* Federal Reserve Bank of St. Louis, FRED database: http://research.stlouisfed.org/fred2/.

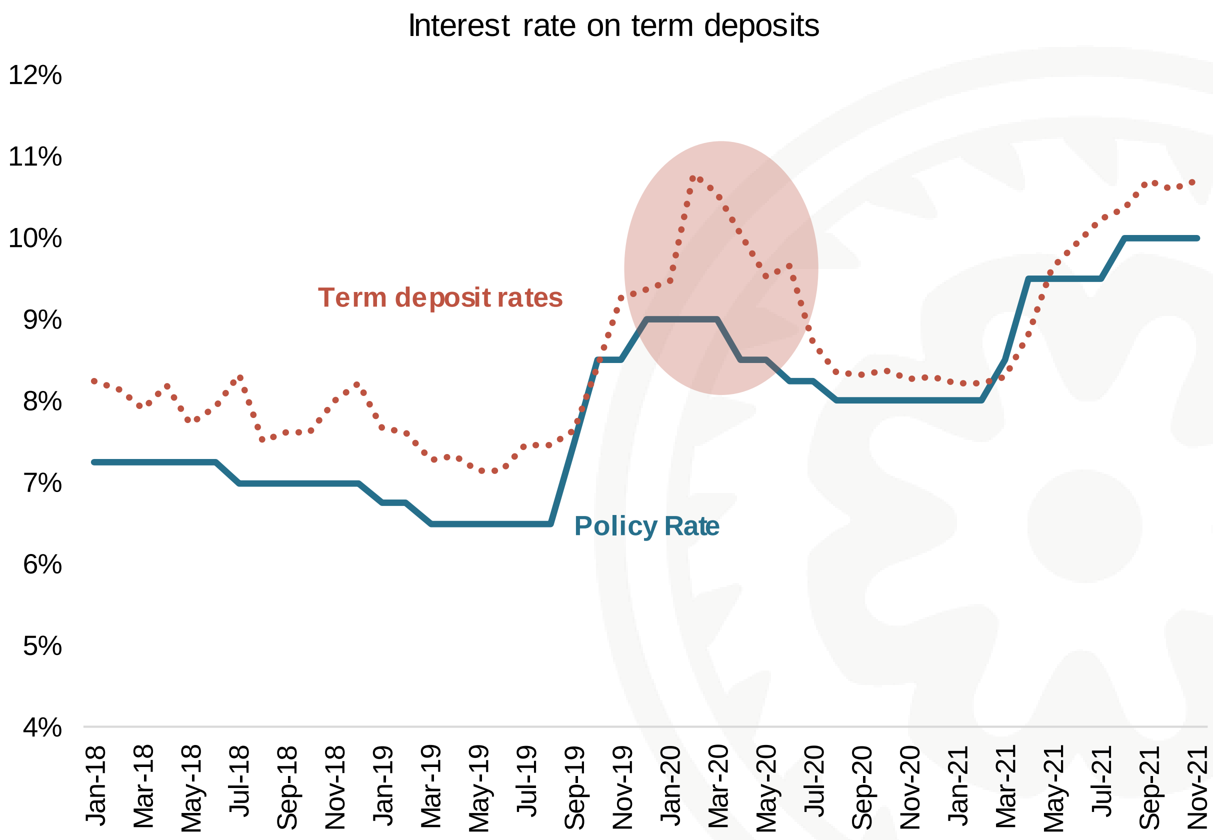
*Source: Mishkin (2016)*

# COVID-19 and liquidity demand

Due to huge uncertainty, demand for cash had surged in the first half of 2020

Higher demand for liquidity resulted in fears that liquidity supply may not be able to follow suit




*Source: National Bank of Georgia*

# Supply of liquidity (central bank IOU)

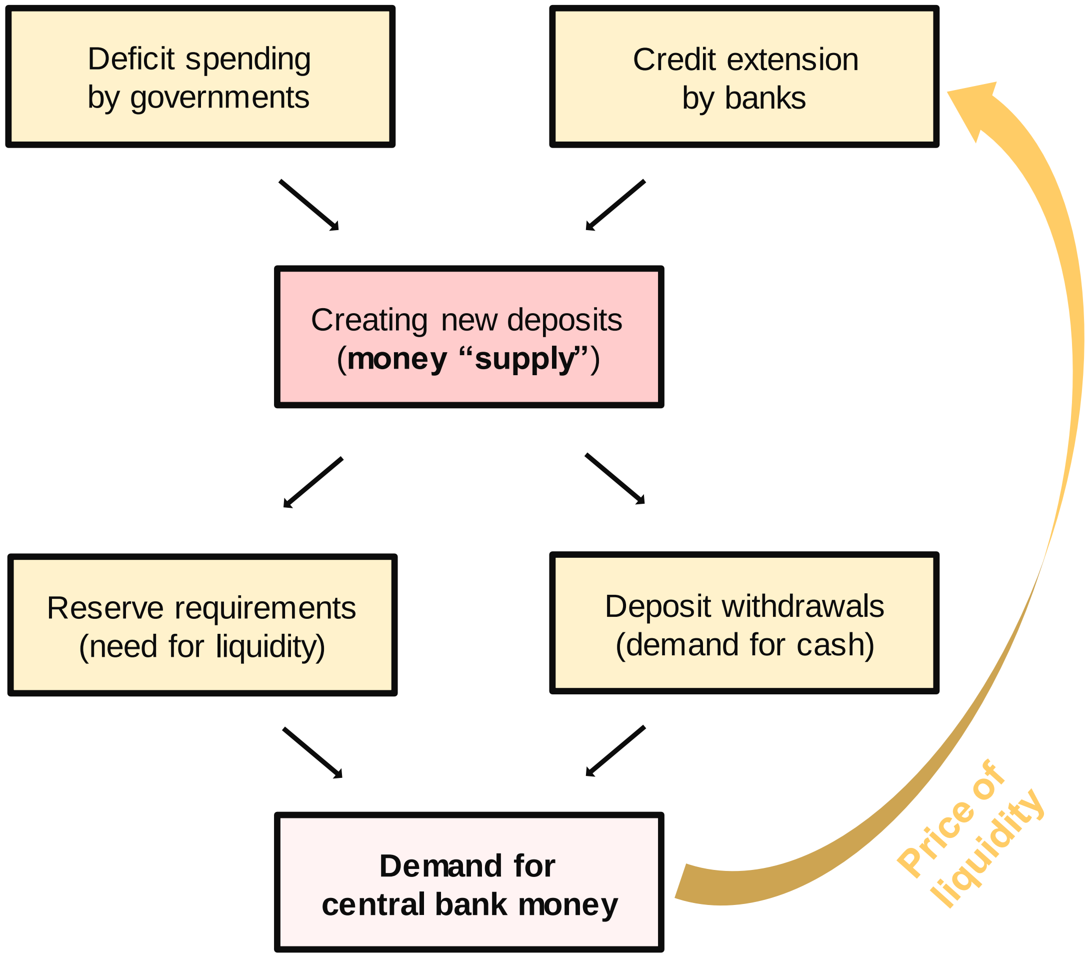
| Assets | Liabilities |
|---|---|
| **Net foreign assets** | **Reserve money** |
| International reserves | Cash in circulation |
| Foreign liabilities | Banks' reserves |
| **Net domestic assets** | |
| Government position at the NBG | |
| *Government deposits* | |
| Banks' position at the NBG | Monetary operations balance other autonomous factors, so that money market rates remain close to the policy rate |
| *Refinancing loans* | |
| *Certificates of deposits* | |
| *Other monetary instruments* | |
| Other assets, net | |

FX interventions → International reserves

Government operations → Government position at the NBG

Change in cash demand → Cash in circulation

# Money creation process




**Hence, central banks stand at the end of the money creation process, not at the start**

# GEL liquidity and funding GEL loans

If a commercial bank has loans on the asset side, but on the liability side, instead of retail deposits, it has refinancing loans from a central bank, doesn't this mean that the central bank is funding these GEL loans?

From a macro perspective, no

# Funding loans

| Household | |
|---|---|
| *Assets* | *Liabilities* |
| Household Deposit | Equity |
| 100 GEL | 100 GEL |

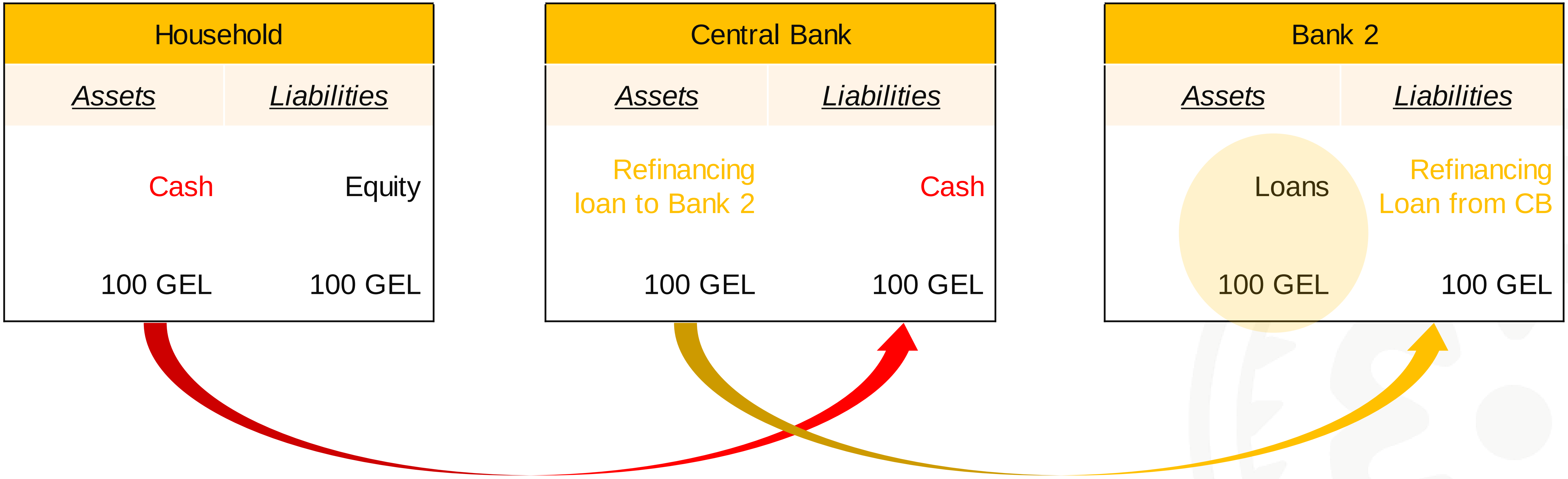
| Bank 1 | |
|---|---|
| *Assets* | *Liabilities* |
| Interbank loan to Bank 2 | Household Deposit |
| 100 GEL | 100 GEL |

| Bank 2 | |
|---|---|
| *Assets* | *Liabilities* |
| Loans | Interbank Loan from Bank 1 |
| 100 GEL | 100 GEL |

Who is funding loans extended by Bank 2?

In accounting terms – Bank 1 (with interbank loans).
On a macro level – the depositor of Bank 1 (who is willing to hold its wealth in the form of deposits).

# Funding loans




Who is funding loans extended by Bank 2?

In accounting terms – the central bank (with refinancing loans).
On a macro level – the cash holder (who is willing to hold its wealth in the form of cash).

# Thank you!