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Building financial accounts by using “From-whom-to-whom (FWTW)” approach and its analytical value – NBRNM case¹

Snezhana Janeska Popovska, Nada Ciriviri and Biljana
Petrushevska,
National Bank of the Republic of North Macedonia

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Building Financial Accounts by using “From-whom-to-whom (FWTW)” approach and its analytical value - NBRNM case

Snezhana Janeska Popovska¹, Nada Ciriviri, Biljana Petrushevska

Abstract

A challenging task for financial accounts compilers is to shift from traditional to “From-whom-to-whom (FWTW)” approach, providing a comprehensive picture of creditor and debtor sector, by financial instruments and focusing on inter-sectoral linkages. This paper addresses the NBRNM’s FWTW methodology, including utilization of various data sources, integrating micro-databases and developing a compilation system within a complex stock-flow framework, to construct values for instruments in the institutional sectors/subsectors. Data for major financial instruments and sectoral inter-relations are presented through the analytical lens. The results demonstrate the benefits of FWTW, by adding value to financial accounts statistics for data users.

Keywords: Statistics, Financial accounts, “From-whom-to-whom (FWTW)”, net financial worth

JEL classification: C00, C82

¹ Email: JaneskaS@nbrm.mk, corresponding author. National Bank of the Republic of North Macedonia

Email: CiriviriN@nbrm.mk, PetrushevskaB@nbrm.mk. National Bank of the Republic of North Macedonia

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1. Introduction

Financial accounts statistics is exceptionally important and it is among the most complex statistical domains. As a component of the integrated national accounts system, it presents the stocks and flows of financial assets and liabilities by sectors and instruments. The accounts provide detailed insights into the financial relationships within the national economy and with the rest of the world, explaining the structure and role of the financial system, as well as the channels for acquiring and investing financial assets and incurring financial liabilities.

The compilation of financial accounts statistics involves integrating various data sources, often designed for different statistical purposes and based on different methodologies. This integration requires considerable effort to effectively combine and establish a hierarchy of data sources, incorporating primary statistics and numerous supplementary data sources. In some cases, this process involves estimating individual data or aggregates, particularly concerning the estimation of counterpart sector information.

This paper aims to outline the compilation process using the “From whom-to-whom” approach and to demonstrate the utility of this approach in the sectoral financial accounts of the Macedonian economy. It is structured as follows: after the introduction, the second section explores the theoretical framework of the “From whom-to-whom” approach for financial accounts compilation; the third section details the methodology and compilation practices specific to Macedonian financial accounts; and the fourth section provides an overview of results derived “From whom-to-whom” matrices. The final section offers concluding remarks.

2. Theoretical framework

Financial accounts statistics systematically, in a detailed and unified manner, present the stock and flows of financial assets and liabilities of the sectors within the domestic economy and with the rest of the world over a specific period (year/quarter) (SNA, 2008). The accounts are important for monetary policy analysis, financial stability, and for understanding the financial relationships between institutional sectors and the rest of the world. Identifying these connections is possible through the “From whom-to-whom” presentation, which focuses on counterparty relationships (ibid). This approach offers detailed insights into the financial positions and tracking of financial instruments between creditors (asset sectors) and debtors (liability sectors), thereby facilitating a more comprehensive economic analysis.

The 2008 global financial crisis highlighted the rapid spread of economic shocks across sectors and revealed gaps in macroeconomic statistics (Shrestha, 2014). In response, international initiatives like the IMF's Special Data Dissemination Standard Plus (SDDS+) and the G20 Data Gaps Initiative (DGI) emphasized the need for FWTW data for financial stocks and transactions. These initiatives require G-20 economies to compile and disseminate sectoral accounts flows and balance sheet data, facilitating a better understanding of who funds whom and with what instruments (IMF&FSB, 2009). In recent years, the interconnectedness of domestic sectors and with non-resident sector has also gained importance due to the complexity of financial systems

and innovation in financial instruments. The FWTW framework helps analyse cross-sector financial flows and assess a country's financial relations abroad. It offers a detailed structural analysis of financial assets and liabilities and supports the identification of economic and financial spillovers (Shrestha, 2011). Also, FWTW enables analysis of economic behaviour of households and non-financial corporations through integration of financial information, which would otherwise be decentralized, through various statistical surveys. This integrated approach not only supports national economic policy but also facilitates international data comparability and cross-country analysis, providing a better understanding of global economic dynamics and potential vulnerabilities from international crises.

The integration of statistical data into a comprehensive FWTW framework is complex and time-consuming. Some of the data on financial flows and positions by subsector and corresponding counterparty information are available in different statistical data sets produced by the statistical authorities. Still, they may not always follow ESA2010²/SNA2008³ methodological standards. The lack of detailed and frequent data for non-financial corporations and households is another obstacle for compilation of comprehensive and integrated "from whom-to-whom" statistics. Thus, broad implementation of FWTW on an international level within an integrated macroeconomic accounts framework has yet to be achieved (Shrestha&Reimund 2011).

Despite these challenges, FWTW can enhance data quality and consistency by providing systematic tools for cross-checking, validation, and balancing. In addition, compilation systems that successfully integrate micro and frequent data from various sources can significantly enhance the overall quality and consistency of financial accounts. However, the collection of extensive microdata, such as from security-by-security databases is a challenging task, as it often requires aggregating large datasets and granular data from diverse sources with varying methodologies. While accessing microdata offers benefits like enhanced analytical value, greater flexibility, and reduced reporting burden over time, it also presents challenges. These include legal issues, data confidentiality, costs and complexity of data aggregation, and data quality concerns (Tissot, 2016). Adequate skilled personnel and IT infrastructure are crucial. Additionally, providing or estimating missing data, particularly for non-financial corporations and households, and developing comprehensive algorithms to utilize detailed granular information are significant challenges for financial accounts compilers.

It is recommended that the implementation of the FWTW framework be carried out in several stages. Initially, accounts for main institutional sectors by financial instrument should be developed as a minimum standard, followed by detailed data for financial corporations, by subsector. Eventually, FWTW data for selected financial instruments like loans and deposits should be compiled, though securities and other negotiable instruments may pose difficulties due to secondary market transactions (Shrestha et al., 2012).

² ESA2010 – European System of Accounts

³ SNA2008 – System of National Accounts

3. Methodology: Compilation of Macedonian financial accounts, using the FWTW approach

The financial accounts statistics of the Macedonian economy provide data pertaining to the balance sheet (stocks) of financial assets and liabilities by financial instruments and sub-instruments for each institutional sector and sub-sector of the national economy, as well as for the rest of the world. This statistics is prepared on a non-consolidated basis, with quarterly frequency. Consequently, the analyses presented in this paper relate to the data on the stocks of Financial Accounts in the Macedonian economy (hereinafter: FAME).

For the presentation and publication of data in the Macedonian financial accounts, a two-dimensional format is utilized, grouping the national economy into sectors and subsectors that own and issue financial instruments. The sectors encompass non-financial corporations (NFCs), financial institutions, general government, households, non-profit institutions serving households (NPISH), and the rest of the world, all further divided into subsectors. The financial instruments include debt and equity securities, loans, deposits, equity, trade credits, etc. The tables illustrate the accounts for each sector and all financial instruments, but they do not specify which sectors issue the assets owned by other sectors.

The FWTW approach is a principal characteristic of the FAME compilation process, introducing a third dimension to the accounts by identifying the counterpart sector. These data offer a clear view of the direct relationships between sectors for every financial instrument, although they have not yet been publicly released. The development of these statistics involves creating a comprehensive stock-flow framework in two phases. The first phase focuses on stock data, while the second aims to enhance the quality of flow data. Improving estimates for the FWTW is an ongoing process at the national level, involving significant efforts to incorporate additional data sources and refine the methods of data collection and accounts compilation. Notably, some significant initiatives in this process have led to the introduction of detailed reporting from Other Financial Institutions and the establishment of a security-by-security database (s-b-s).

3.1 Data sources

The financial accounts statistics utilize both primary and secondary data sources. Primary sources include data from monetary statistics, statistics of other financial institutions, and external statistics. The complexity and extensive scope of financial accounts require the use of secondary data sources, such as administrative sources and granular data sets. Additionally, estimates are made for specific data points or aggregates. When multiple sources provide the same data (for a particular sector or financial instrument), the financial accounts are compiled based on a hierarchical arrangement of data sources. This hierarchy adheres to the guidelines of ESA 2010, ensuring sector consistency, satisfactory coverage, timeliness, and counterparty information. For example, monetary statistics are used as a data source for non-financial corporations' deposits, despite similar data being available in the NFC's balance sheets. Similarly, data on securities from the Central Securities Depository (CSD) are utilized for quoted shares liabilities to non-residents, even though primary statistics provide similar information. The data source hierarchy varies across instruments and sectors and may change over time.

For the FWTW compilation, it is essential to have information on both the creditor and debtor sectors of the underlying instrument. In this context, data sources can be categorized into three types: (1) individual data about the sector/subsector and counterpart sector/subsector, (2) aggregated data at the sector/subsector and counterpart sector/subsector levels, and (3) in some cases, assumptions about the counterpart sector based on relevant additional information.

1. Data sources that provide individual data on sector/subsector and counterpart sector/subsector (granular databases):

Primarily, a unified sector classification of institutional units according to ESA 2010 is ensured. The State Statistical Office (SSO) is responsible for the sector classification of all institutional units in the country, with data regularly exchanged on a quarterly and annual basis. This exchange allows for the establishment of a comprehensive database for sectorization within the Statistics Department, linking all data on institutional sectors to granular statistical databases.

This is particularly relevant for external statistics data sources, where domestic institutional units that have relations with the rest of the world for specific instruments are assigned the corresponding sector. The following databases are utilized for whom-to-whom compilation: (i) loan-by-loan reporting for claims and liabilities on credit operations with non-residents, (ii) trade credits and advances with foreign entities, (iii) equity investments to/from the rest of the world, (iv) investments in equity securities and investment fund units on foreign markets, and investments in debt securities on foreign markets, (v) accounts held abroad and settlement accounts, and (vi) International Transaction Reporting System (ITRS).

Additionally, more recently introduced granular data sources enable the assignment of counterparty sectors according to individual institutional units, including: (i) security-by-security data (debt and equity securities issued and traded on the domestic market) from the Central Security Depository (CSD). Information about the sector of individual institutional units is regularly exchanged with the CSD, which subsequently submits data on securities holdings, stocks and transactions on an aggregated subsector level, (ii) government securities (security-by-security) for which the National Bank acts as the government's fiscal agent, (iii) data on the government sector from the Ministry of Finance (MoF), including individual data on the stock of government debt of public companies classified in the government sector, and data on on-lending loans.

2. Aggregated information on the level of the sector/subsector and counterpart sector/subsector:

a) Monetary Statistics: This includes the balance sheets of the Central Bank and Deposit taking corporations (DTCs), such as banks and savings houses. These institutions report counterparty information for the corresponding instruments on an aggregate level, for instance: deposits from households, deposits from non-financial corporations (private and public), deposits from the central government, etc. Notably, there is an ongoing project to implement a new integrated data reporting system for banks aimed at both statistical and supervisory purposes. The project goal is to develop a comprehensive and granular database where all banks will report monthly balance sheet positions and flows, including counterparty information.

b) Other Financial Institutions (OFIs) Statistics: Other Financial Institutions - such as insurance companies, pension funds, investment funds, financial corporations, leasing companies, and investment and pension fund management companies -

report data on the counterparty sectors of their respective instruments at an aggregated level.

3. Assuming the counterparty sector, based on a relevant information:

a) Tax Claims Data: Data on inflows and outflows for tax claims of the government, as provided by the Ministry of Finance (MoF). Assumptions about the counterparty sector are made based on tax laws defining taxpayers for specific taxes, as well as payment information from the MoF.

b) Annual Financial Statements: The annual financial statements of non-financial corporations and the government - aggregated data from the State Statistical Office (SSO) and individual data from the Central Registry database are utilized to assume the counterparty sector. These assumptions are based on additional information obtained directly from reporters or, in some cases, from supplementary data included in published financial reports of corporations and institutions.

3.2 Filling the data gaps

In practice, the use of multiple data sources in the compilation of financial accounts can result in discrepancies between sectors and instruments. These discrepancies may arise from various factors, including differences in data grouping by sectors and financial instruments, the use of multiple sources for different purposes, variations in valuations, and incomplete data. Consequently, the next step in the FWTW compilation process involves a balancing procedure that is complex and entails various types of adjustments. This process includes making decisions on which information to prioritize and, in some cases, estimating missing data from existing sources. Adjustments may sometimes be based on counterpart information from other data sources; however, there are instances where assumptions must be made to address data gaps.

In the FWTW compilation of financial accounts, several data estimation methods are employed, particularly in the following cases:

- Estimation of quarterly data: For categories where only annual financial statements are available, appropriate statistical estimation methods are applied to derive quarterly data. This includes estimating other accounts receivable and payables of non-financial corporations towards other NFCs or the government, as well as intercompany loans.
- Expert Judgment: This involves disaggregating financial instruments by sector based on information from supplementary sources and classifying financial instruments by maturity, such as intercompany loans, using data from NFC's annual balance sheets.
- Residual Estimations: These are typically applied to non-financial corporations), households, and non-profit institutions serving households, where data gaps necessitate estimation.

3.3 Compilation process

The FWTW compilation process can be defined into five distinct stages: (1) the initial stage involves integrating data from monetary statistics and other financial institutions (OFI) statistics, (2) incorporation of external statistics includes the International Investment Position (IIP) and Balance of Payments (BOP) data sources,

(3) data for government sector, (4) utilization of s-b-s databases. Up to this point, FWTW data is available. The last stage refers to integration of non-financial corporations data (a large part of this sector is constructed with counterpart data), including the residual calculation of linkages among non-financial corporations and with households.

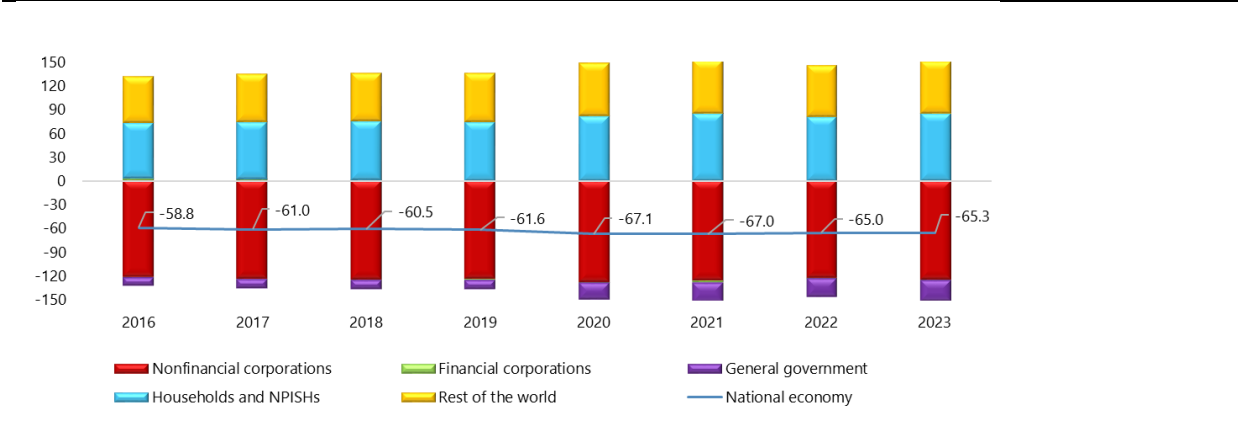
Standardization and technical integration for compilation purposes involve a process in which diverse data sources are converted into standardized tables according to the stock-flow framework. This process adheres to a unified three-dimensional structure comprising creditor sector, debtor sector, and financial instrument. Approximately 40 standardized input tables, which cover various instruments or sectors depending on the specific data source, are developed. To facilitate the automated transfer of these standardized tables into a unified financial accounts (FA) database, a technical solution is implemented. This solution enables the automatic aggregation and consolidation of data from the FA database into output FA tables, organized by sectors/subsectors and instruments, with counterparty information.

4. Results and Discussion

The analysis of the Macedonian economy's performance from the perspective of the financial accounts indicates that the domestic economy has a negative net financial position amounting to around 63% of GDP on average between 2016 and 2023. According to the results of the sector-by-sector analysis, households and the rest of the world sectors are net creditors, financing the other sectors in the national economy (non-financial corporations and the general government), which are net debtors. Aside from that, the financial sector maintained a nearly balanced net financial position during the examined period. The domestic economy's negative net financial worth (NFW) is mostly caused by the negative NFW of non-financial corporations and, to a lesser extent, due to the negative NFW of the government, which in the last period has been significantly deepening. This is mainly as a result of series of global crisis, starting with the Covid-19 crisis, compounded by ongoing conflicts around the world, all having a profound impact on the Macedonian economic developments (Figure 1).

Net Financial Worth, by sectors, 2016-2023, % of GDP

Figure 1

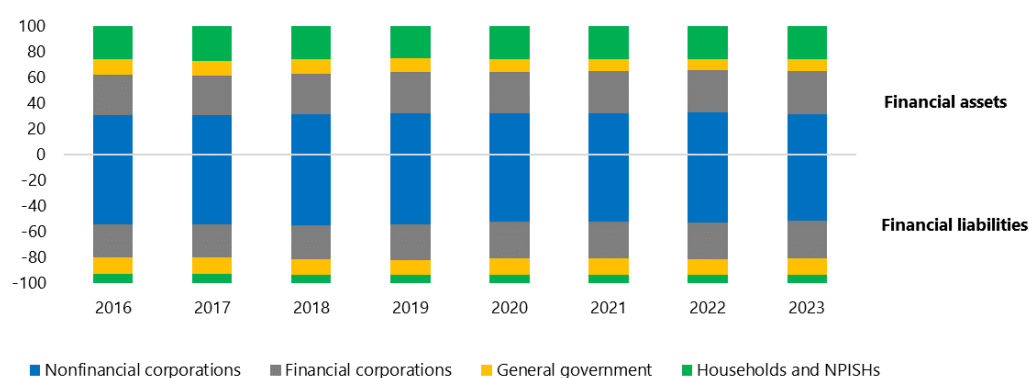


Source: NBRNM, Financial Accounts

The structure of the national economy's financial assets and liabilities by sector shows no significant changes over the observed period. As a result, the NFCs sector and financial corporations accounted for the highest and almost equal amount of total assets, followed by households and the general government. The sector-by-sector analysis of total liabilities reveals that non-financial corporations contribute the most, followed by financial corporations and the general government. In addition, the analysis shows that households have the lowest share of the national economy's total liabilities (Figure 2).

Structure of financial assets and liabilities, by sectors, 2016-2023, in %

Figure 2



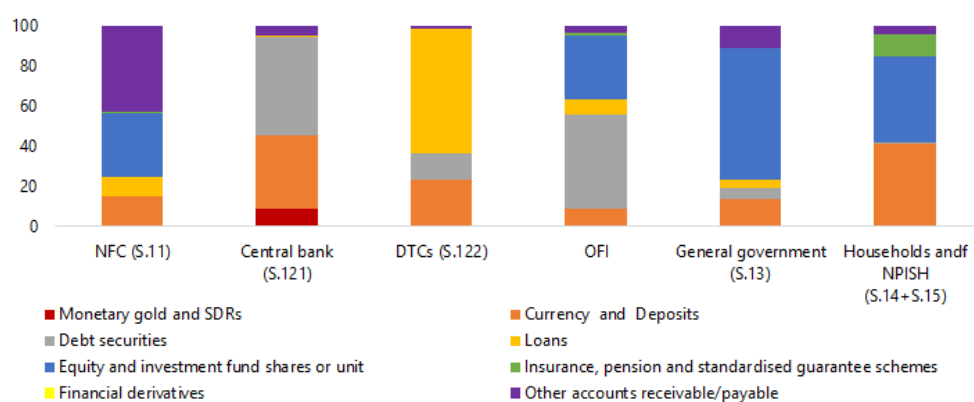
Source: NBRNM, Financial Accounts

Figures 3 and 4 show more detailed results based on the structure of domestic sectors' financial assets and liabilities, represented by financial instruments. In terms of financial assets structure, the analysis shows that households hold deposits and equity (84% of total assets), whereas non-financial corporations' assets are dominated by other accounts receivable and equity (75% of total assets). DTCs assets are mostly represented by loans and deposits, accounting 85% of total assets. Debt securities and equity and investment funds share account for 79% of total OFI assets (Figure 3).

On the liabilities side, the government sector has the majority of its liabilities in debt securities (63%), whereas households have the majority of their liabilities in loans (93%), non-financial corporations in equity and loans (76%), DTCs in deposits (77%), and the OFI sector in insurance and pension schemes and equity and investment funds share (89%) (Figure 4).

Structure of financial assets, by sectors and instruments, 2023, in %

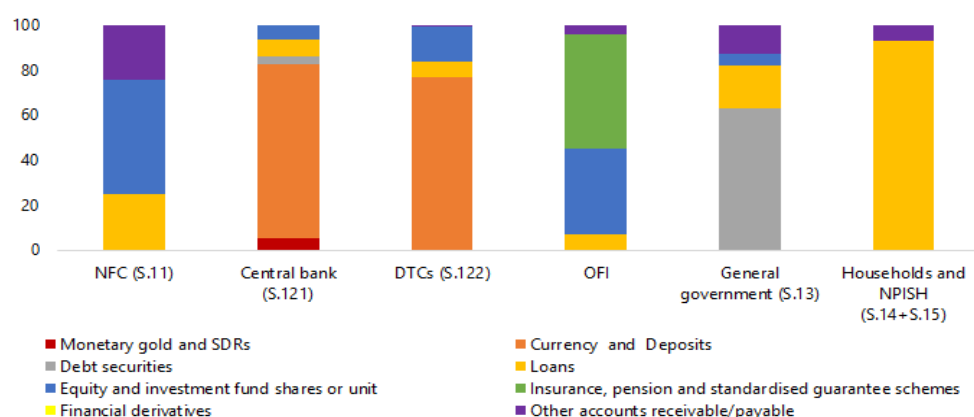
Figure 3



Source: NBRNM, Financial Accounts

Structure of financial liabilities, by sectors and instruments, 2023, in %

Figure 4



Source: NBRNM, Financial Accounts

Furthermore, the analysis is focused on whom-to-whom relationships in the context of the Macedonian economy, referring to balance sheet data of 2023 compared to 2019.

In terms of the net financial worth of the main sectors and their inter-sectoral relationships, it is evident that non-financial corporations and the government have the highest levels of indebtedness to cover the financial gap from abroad. During the analysed period, the net negative position of NFCs increased by 1 percentage point (from 55% in 2019 to 56% of GDP in 2023) and the government's net financial position by 3 percentage point (from 25% to about 28% of GDP).

Domestically, NFCs are net borrowers, with households providing the majority of funding, followed by the government and the financial sector. In 2023, the government's negative financial worth significantly increased compared to 2019 by

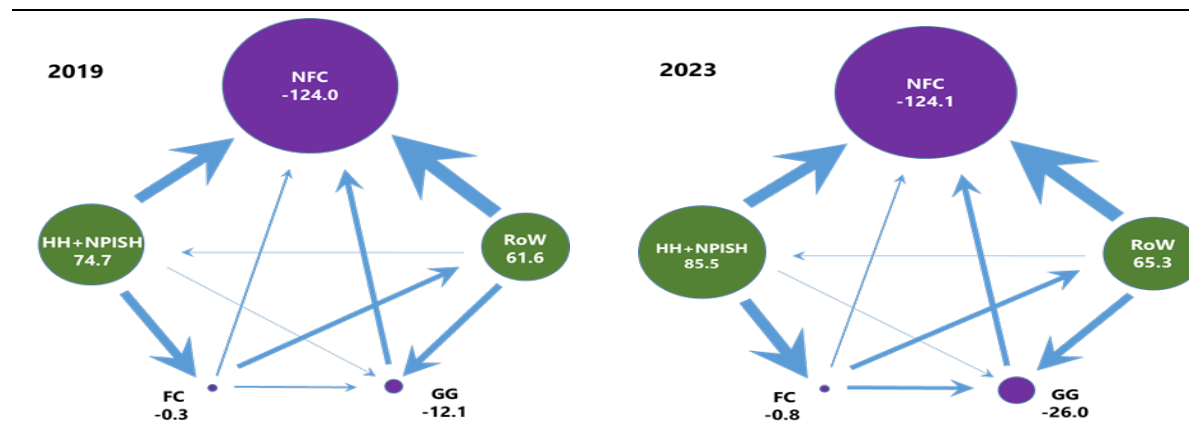
14 percentage point, primarily due to the increased need for financing the budget deficit to mitigate the effects of the poly crises, such as the Covid-19 crisis, the energy crisis following the war in Ukraine, and some domestic factors in 2023, related to two public infrastructure projects. The government sector was mostly financed through external net borrowing both in 2019 and 2023, with additional net borrowing on the domestic securities market, which doubled in 2023.

The financial sector is a net creditor to abroad, with 20% of GDP in 2023, primarily due to the investment of the central bank's foreign exchange reserves and the investments of the other financial institutions (OFI) sector in foreign securities. Financial corporations are the major domestic net creditors to the government, being mainly financed by households in the form of deposits.

Inter-sectoral linkages within the domestic economy demonstrate that households are the primary net creditors to NFCs and financial corporations (banks and OFIs), for 44% and 41% of GDP, respectively. In 2023, the household sector increased its net financial position by 11 percentage point compared to 2019 (Figure 5⁴).

Net financial worth by sectors and inter-sectoral relationship, in % of GDP

Figure 5



Source: NBRNM, Financial Accounts

Figure 6 depicts the counterparty relationships (on the asset side) for each sector's financial liabilities. Figure 7 shows the counterparty relationships (on the liability side) for each sector's financial assets. These charts illustrate the trends of counterparty relationships in 2023 compared to 2019, using non-consolidated data, expressed in billions of MKD.

The intra-sectoral connection among Macedonian non-financial corporations, as well as their relationships with the rest of the world and banks, is visible and has grown over the study period. In 2023, non-financial corporations accounted for up to 68% of total NFCs assets, followed by banks and the rest of the world at 16% and 12%, respectively. Analysing NFCs' financial liabilities, we can determine that inter-company financing contributed the most in 2023, accounting for 36% of total liabilities. Non-residents account for 27% of total liabilities, followed by households

⁴ This figure illustrates the relationships between domestic sectors and the rest of the world. The circles indicate the net financial position of individual sectors, with green circles representing net creditors (sectors with positive net financial worth) and violet circles representing net debtors (sectors with negative net financial worth). The size of the arrows represents the strength of these relationships (adapted from OECD, 2017, Understanding Financial Accounts).

and banks at 17% and 10%, respectively. When we analyse NFCs debt⁵, companies borrow nearly equally from the financial sector (banks) and abroad, and use less intercompany borrowings.

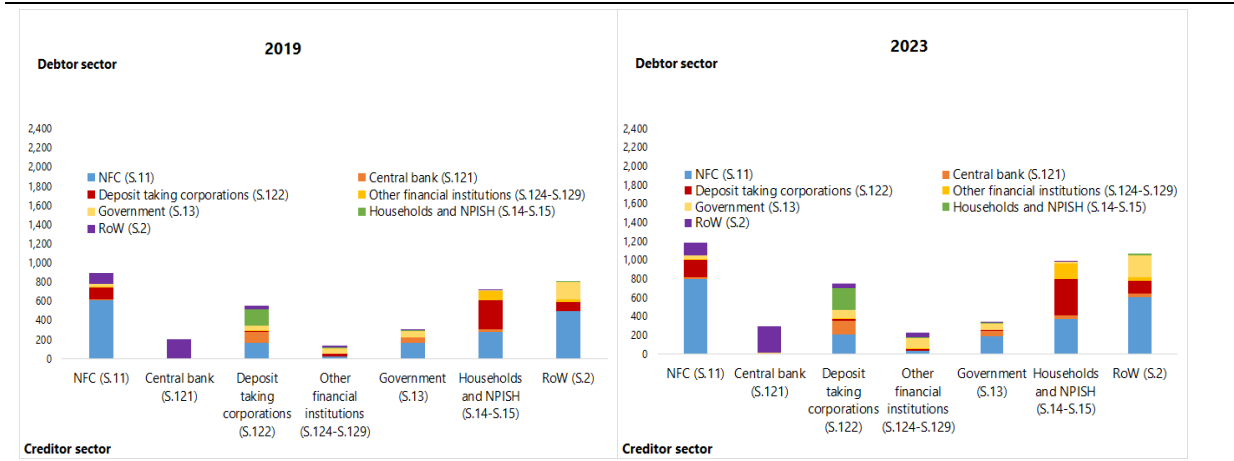
Macedonian households invest their assets in the financial sector and non-financial corporations. Historically, households have kept their assets in bank deposits, which have grown over time. However, there is a considerable increase in OFI counterparties in 2023, as households' insurance and pension assets nearly doubled. Focusing on the counterparty sectors, households' liabilities are mostly to banks, with loans accounting for 91% of the debt structure. A lower amount of households' debt is owed to the rest of the world and the OFI sector.

Macedonian banks are traditionally exposed to domestic debtors, accounting for 94% of total financial assets in 2023, primarily in the form of loans granted to households and non-financial corporations (60%). On the liabilities side, households and non-financial corporations are the largest counterparty sectors (76%), followed by non-residents (18%).

The OFI sector has expanded in recent years, increasing its stocks and interrelations with households, as seen by the liabilities side. Their asset portfolio is mostly comprised of government securities, with lower investments in securities issued by non-residents. Government assets are dominated by equity in public corporations, whereas the rest of the world, together with OFIs and banks, have increased their share of financing, primarily through debt securities.

Total financial assets, by creditor and debtor sector, in Denar billion

Figure 6

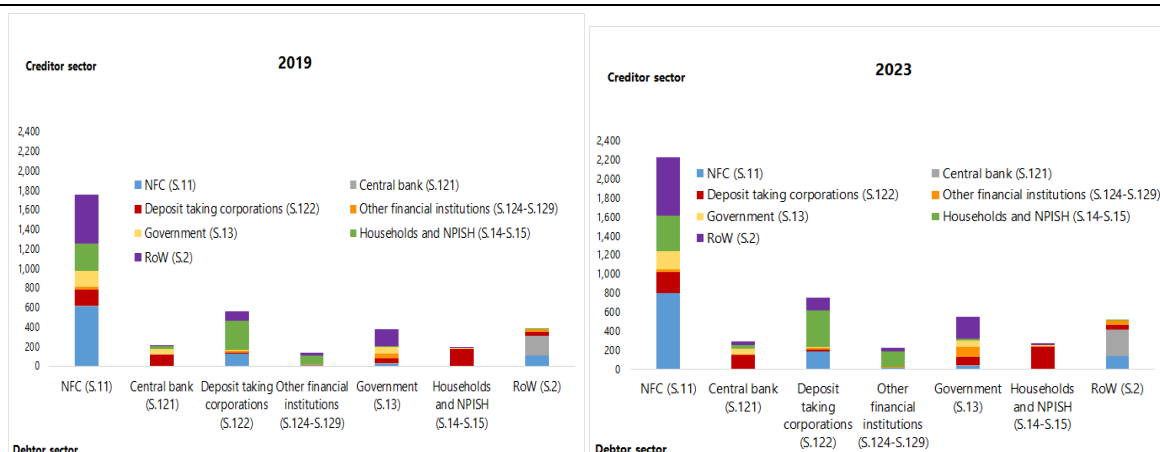


Source: NBRNM, Financial Accounts

⁵ Debt of NFC's includes liabilities on loans and debt securities.

Total financial liabilities, by debtor and creditor sector, in Denar billion

Figure 7



Source: NBRNM, Financial Accounts

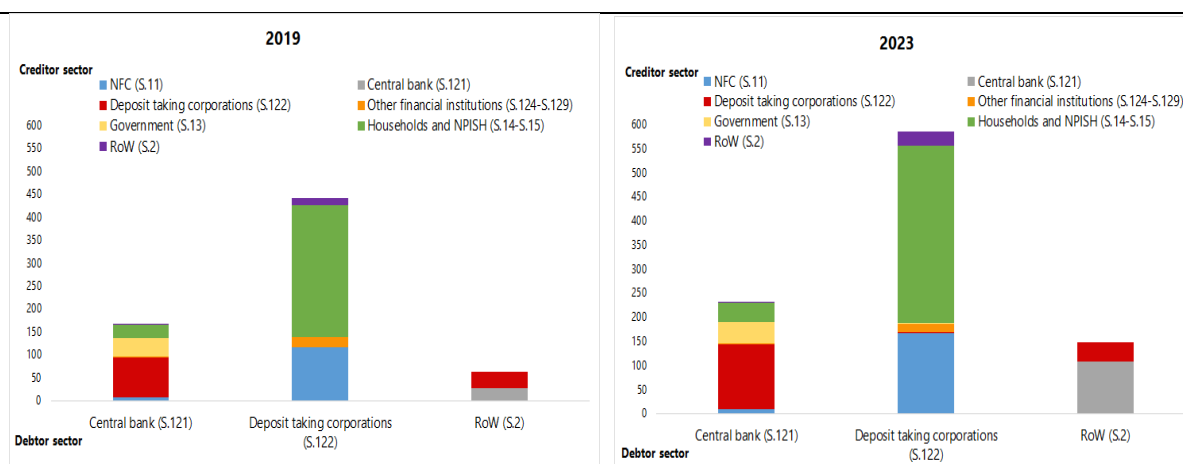
The results from the analysis for major financial instruments based on a "From-whom-to-whom principle are thoroughly elaborated below (Figure 8, Figure 9, Figure 10).

- Currency and deposits

According to the "From whom-to-whom" presentation, banks and the central bank are the largest debtors in 2023, with households and non-financial corporations (NFCs) acting as creditors. Compared to 2019, there has been an increase in the central bank's currency and deposits, primarily from banks. Furthermore, households and non-financial corporate deposits have expanded significantly, while the central bank and banks have increased their deposits abroad (Figure 8).

Currency and deposits, by debtor and creditor sector, in Denar billion

Figure 8



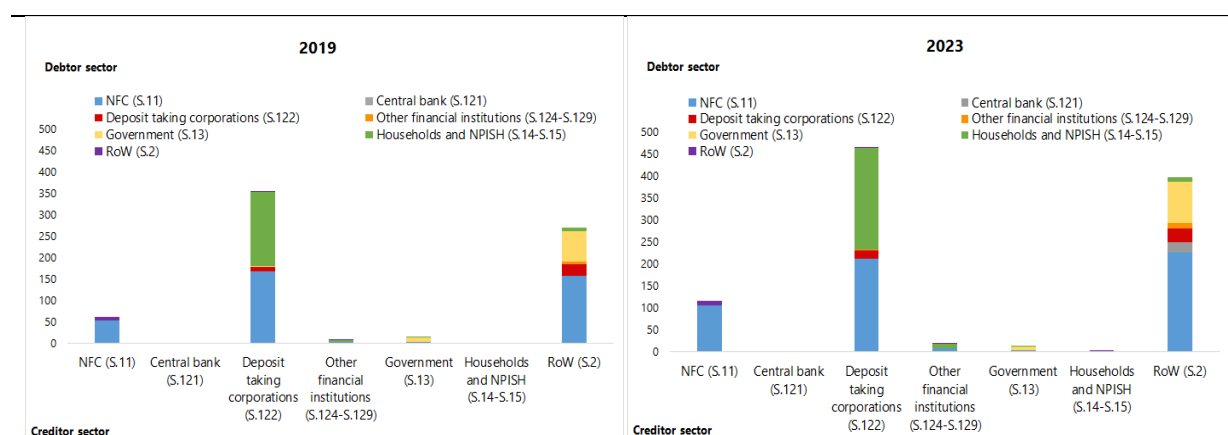
Source: NBRNM, Financial Accounts

- Loans

The "From whom-to-whom" presentation demonstrates that banks continue to be the largest creditors in the national economy. Outstanding amounts have increased in both stock and relationships across every sector. Banks have a strong interaction with households and non-financial corporations. In 2023, non-financial corporations strengthened their connections with the rest of the world while increasing their debt relative to bank borrowings. In addition, the general government enlarged its stocks to the rest of the world (Figure 9).

Loans, by creditor and debtor sector, in Denar billion

Figure 9



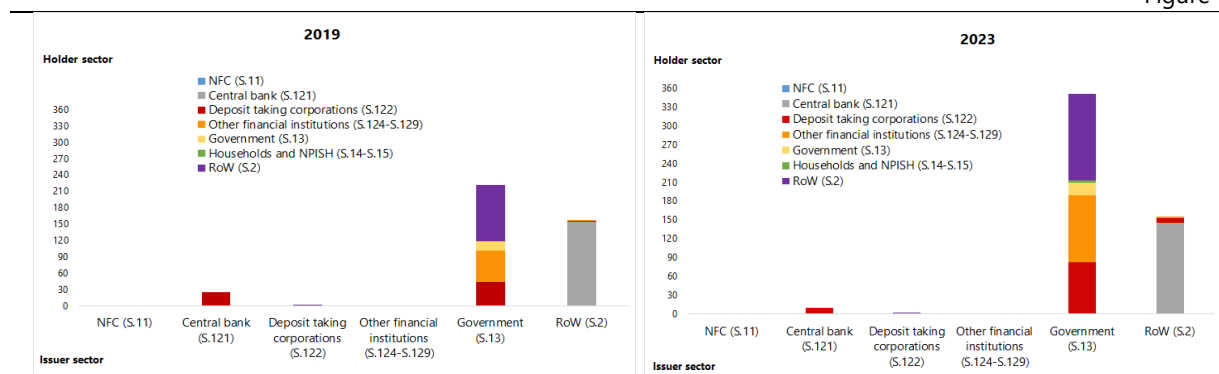
Source: NBRNM, Financial Accounts

- Debt securities

The "From whom-to-whom" presentation of debt securities data reveals that the government is the main issuer of debt securities, with non-residents and financial corporations being the largest investors. The amount of government securities issued in 2023 is significantly higher than it was in 2019. However, there are no significant structural changes; non-residents and financial corporations (mostly pension funds, banks, and insurance corporations) remain the primary investors in these assets. The financial sector, particularly the central bank, owns the most securities overseas, with a growth since 2019, attributable to the CB's foreign reserves being invested in debt securities. The financial sector and NFCs demonstrate a small interest in financing their operations with debt securities. Debt securities as an instrument have the lowest share in the NFCs, households and NPISH sector portfolio (Figure 10).

Debt securities, by issuer and holder sector, in Denar billion

Figure 10



Source: NBRNM, Financial Accounts

5. Conclusions

The aim of this paper is to illustrate the complexity and importance of the “From-whom-to-whom financial accounts statistics for the Macedonian economy. This analysis shows that the NBRNM effectively uses all primary and additional data sources by integrating FWTW counterpart information within a stock-flow framework. As a result, quarterly balance sheet data are regularly produced, published and disseminated to users.

However, further efforts are needed to analyse the quality of flow data, improve the reconciliation of different types of FWTW information from source data, and ensure consistency with related macroeconomic datasets. A key issue is the lack of quarterly data for non-financial corporations and households, highlighting the need for eventual development of additional data sources or estimation models for compiling specific instruments. Despite major financial instruments being largely offset by reliance on counterpart entries, filling these data gaps remains crucial.

Upon the commencement of regular production of flow data, efforts will be directed towards enriching the dataset for users by supplementing the disseminated data with data on a “From-whom-to-whom basis. Initially, this has been applied to debt securities, but it could be further supplemented by the inclusion of data for other financial instruments and comprehensive set of financial accounts, as well.

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Building Financial Accounts by using “From-whom-to-whom (FWTW)” approach and its analytical value - NBRNM case

Snezhana Janeska Popovska
National Bank of the Republic of North Macedonia
Statistics Department

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Financial accounts in NBRNM

- FWTW approach

- The Financial Accounts statistics provide/disseminate quarterly balance sheet (stocks), non-consolidated data, by financial instruments/sub-instruments for each institutional sector/sub-sector of the national economy, as well as the rest of the world
- The development of this statistics involves creating a comprehensive stock-flow framework in two phases. The first phase focuses on stock data, while the second aims to enhance the quality of flow data
- Some significant initiatives in this process have led to the introduction of detailed reporting from Other Financial Institutions and the establishment of a security-by-security database (s-b-s).
- Basic compilation principle is “from whom to whom – FWTW”. These data offer a clear view of the direct relationships between sectors for every financial instrument, although they have not yet been publicly released
- Majority of the data sources support the compilation on a from-whom-to-whom basis. Still estimations are necessary for filling some data gaps
- Standardization and technical integration - process in which diverse data sources are converted into standardized tables with a unified three-dimensional structure in stock-flow framework



Financial Accounts in NBRNM

- Data sources

- The financial accounts statistics utilize both primary and secondary data sources
- For the FWTW compilation, essential is to have **information on both the creditor and debtor sectors** of the underlying instrument
- Data sources can be categorized into three types:
 - **Individual data** about the sector/subsector and counterpart sector/subsector (granular databases in external statistics, security-by-security data, loan-by-loan data etc.)
 - **Aggregated information** on the level of the counterpart sector/subsector (monetary statistics, other financial institutions statistics)
 - **Assuming the counterparty sector**, based on a relevant information (tax claims of government, annual financial statements etc.)





Financial Accounts in NBRNM - Compilation

- Primarily, unified sector classification of institutional units according to ESA 2010 is ensured
- Source data in different (not) unified structure are compiled on a **FWTW base**
- Source data is transferred into standardized tables with the unified structure:
 - Creditor sector (CSC),
 - Debtor sector (DSC) and
 - Financial instrument (INS)

Structure of FA compilation tables:

4 dimensions (S, T, R, O)

- ☐ Stocks
- ☐ Transactions
- ☐ Revaluation changes
- ☐ Other changes

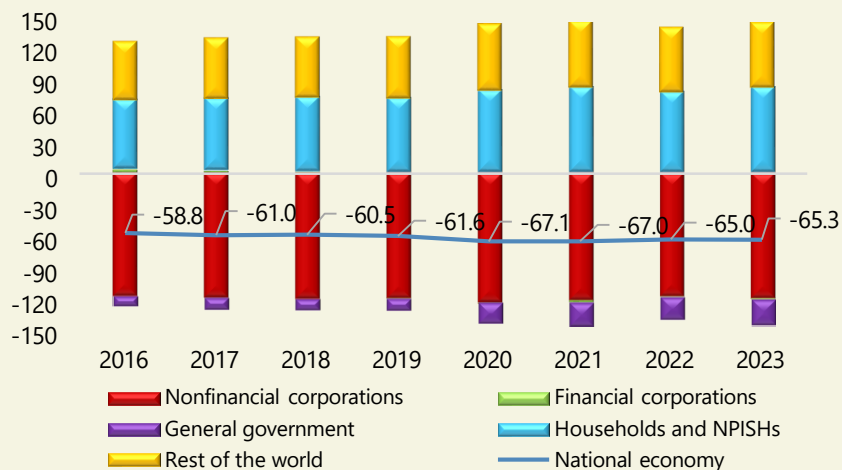
Stock-flow balancing is ensured:
Closing balance $\pm$ Transactions $\pm$ Revaluation changes $\pm$ Other changes – Opening balance = 0



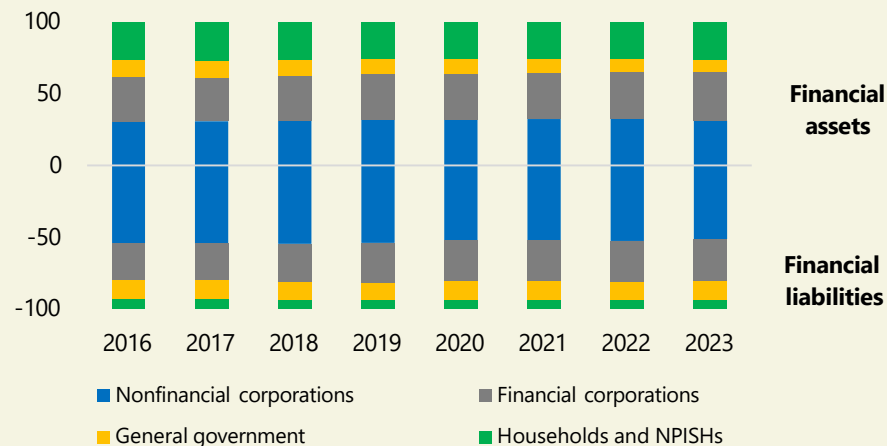
Financial Accounts in NBRNM

- Results

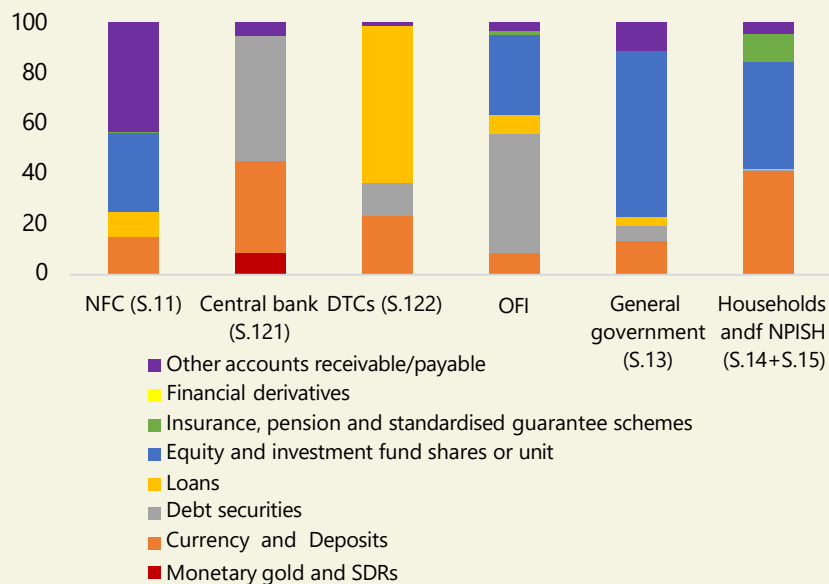
Net financial worth (% of GDP)



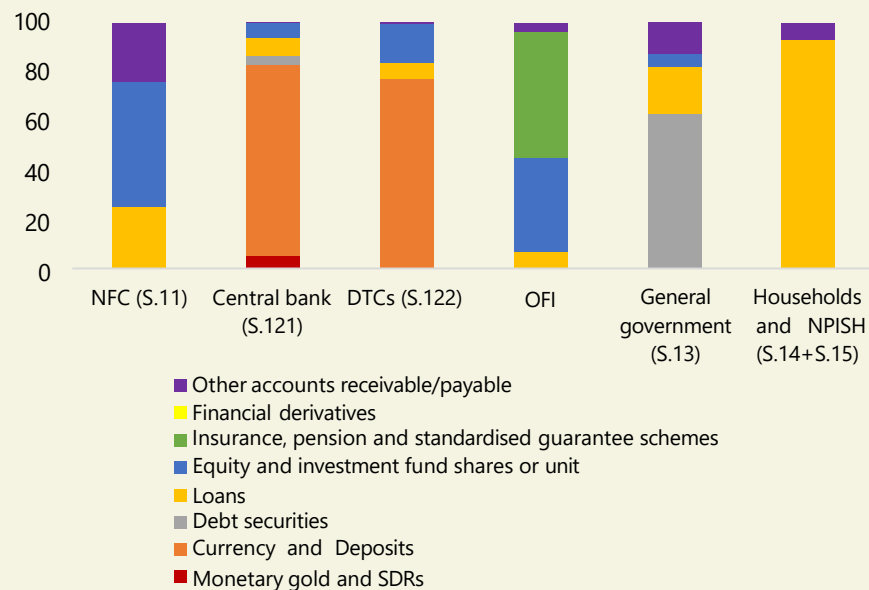
Structure of financial assets and liabilities (in %)



Total financial assets (in%)



Total financial liabilities (in %)

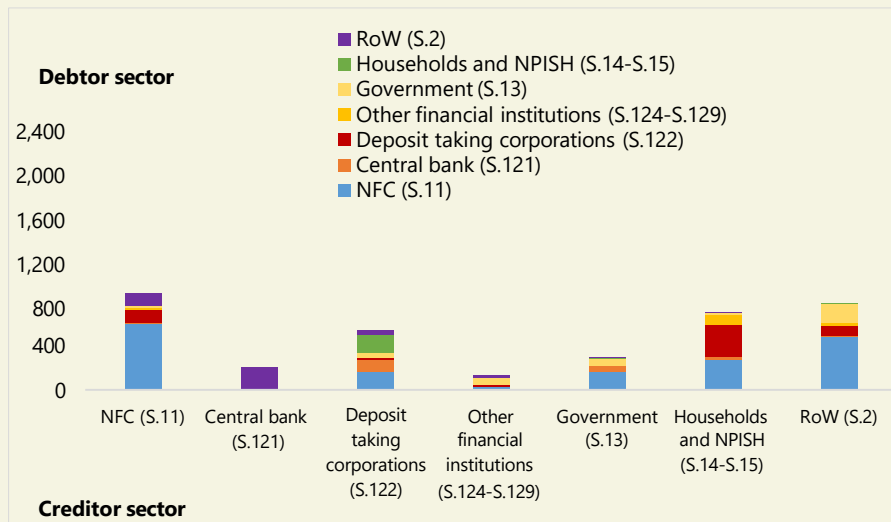




Financial Accounts in NBRNM

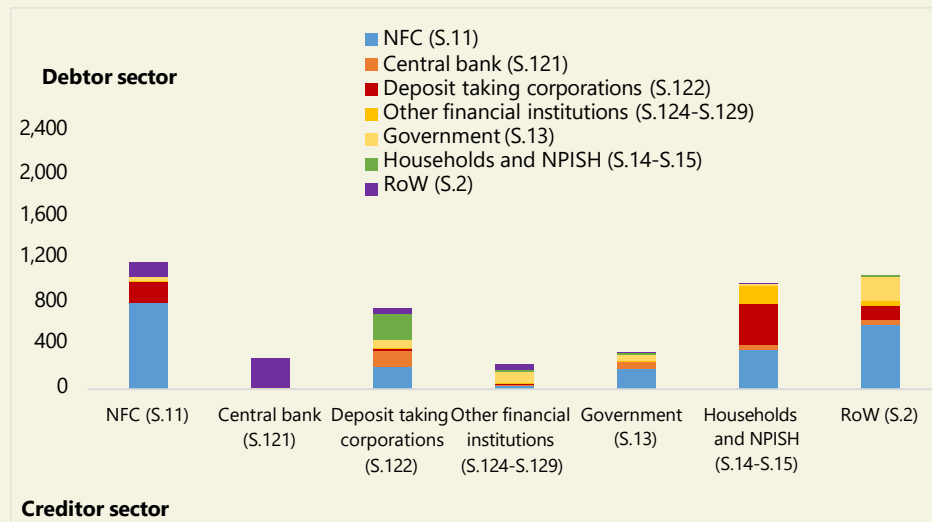
- Results (FWTW)

Total financial assets 2019

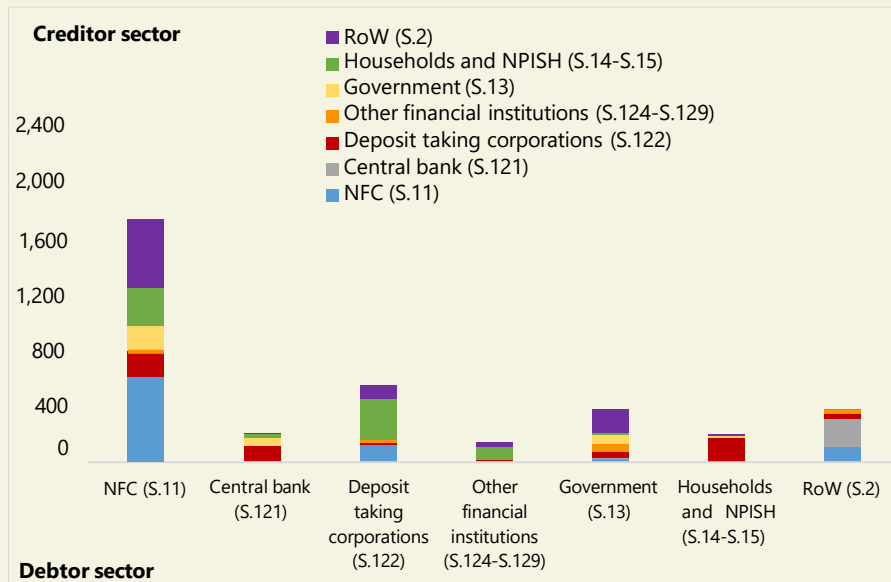


Total financial assets 2023

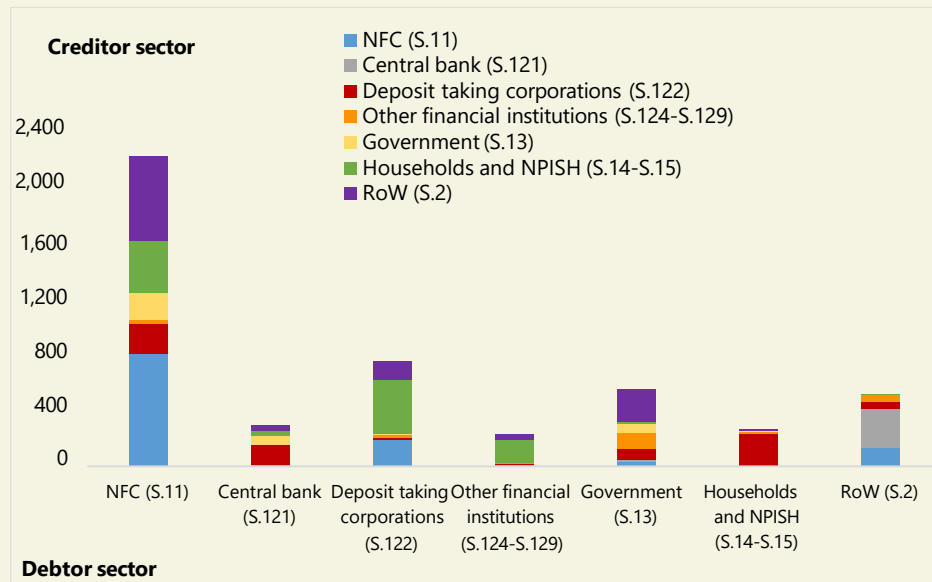
Denar billion



Total financial liabilities 2019



Total financial liabilities 2023





Financial Accounts in NBRNM - Results (FWTW)

DEBT SECURITIES

Denar billion

2019

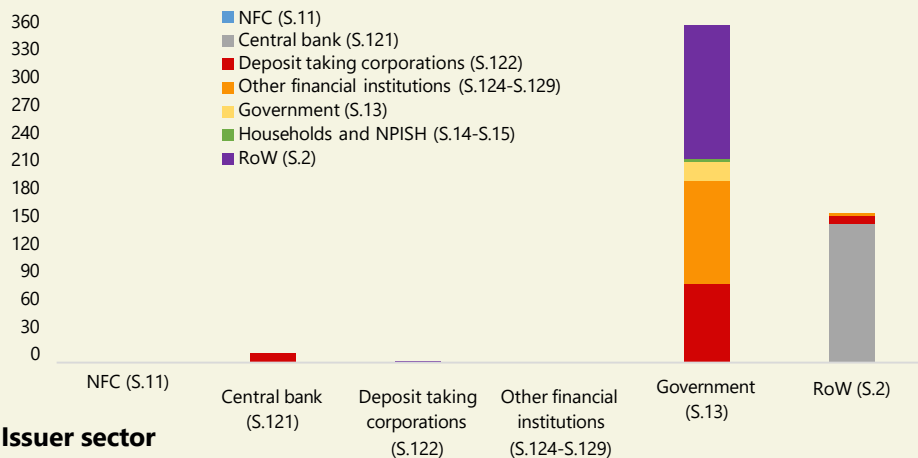
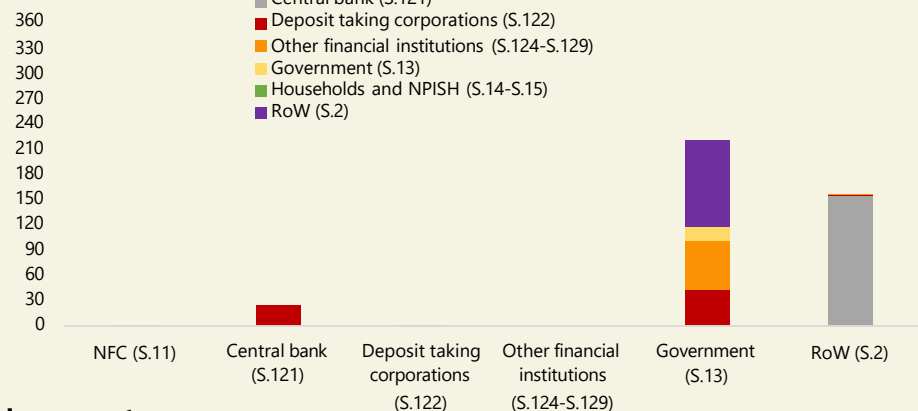
2023

Holder sector

Holder sector

- NFC (S.11)
- Central bank (S.121)
- Deposit taking corporations (S.122)
- Other financial institutions (S.124-S.129)
- Government (S.13)
- Households and NPISH (S.14-S.15)
- RoW (S.2)

- NFC (S.11)
- Central bank (S.121)
- Deposit taking corporations (S.122)
- Other financial institutions (S.124-S.129)
- Government (S.13)
- Households and NPISH (S.14-S.15)
- RoW (S.2)



Issuer sector

Issuer sector

LOANS

2019

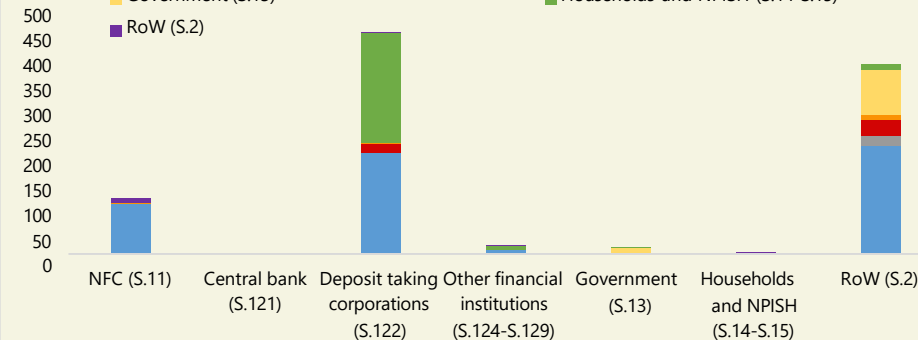
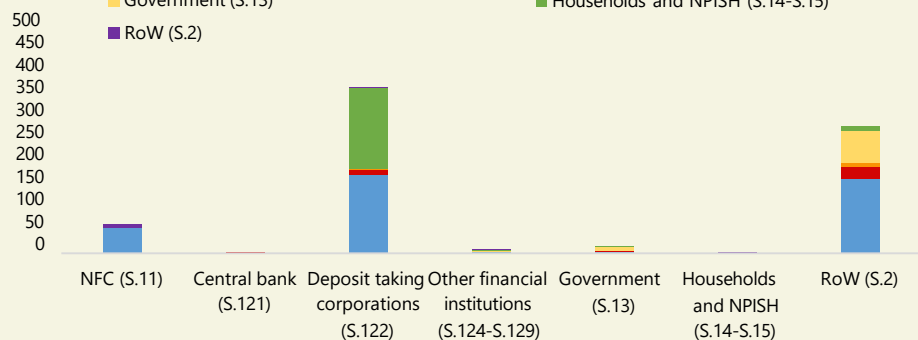
2023

Debtor sector

Debtor sector

- NFC (S.11)
- Central bank (S.121)
- Deposit taking corporations (S.122)
- Other financial institutions (S.124-S.129)
- Government (S.13)
- Households and NPISH (S.14-S.15)
- RoW (S.2)

- NFC (S.11)
- Central bank (S.121)
- Deposit taking corporations (S.122)
- Other financial institutions (S.124-S.129)
- Government (S.13)
- Households and NPISH (S.14-S.15)
- RoW (S.2)



Creditor sector

Creditor sector



Financial accounts in NBRNM - Conclusions and future plans

- Analyse the quality of flow data
- Improve the reconciliation of different types of FWTW information from source data
- Ensure consistency with related macroeconomic datasets
- Development of additional data sources or refinement of estimation models – a key issue is the lack of quarterly data for non-financial corporations and households for specific instruments
- Upon the commencement of regular production of flow data, efforts will be directed towards enriching the dataset for users by supplementing the disseminated data with data on a “From-whom-to-whom” basis.



THANK YOU