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Foreign Currency Balance Sheets in Türkiye

Exposure and Interconnectedness

Alex Pienkowski

WP/23/132

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WORKING PAPER

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**Foreign Currency Balance Sheets in Türkiye
Exposure and Interconnectedness**

Prepared by Alex Pienkowski

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ABSTRACT: As a heavily “dollarized” economy, large foreign currency mismatches exist between institutional sectors within Türkiye, as well as with non-residents. Combining several separate data sources, this working paper builds a picture of the aggregate FX exposure of the total economy. It explores the interlinkages between sectors and how they have evolved in recent years. Since the start of the pandemic, the overall net FX position of the economy deteriorated, and there has also been a considerable shift in FX risk from the private to the public sector. Especially for the central bank, this shift constrains policy space.

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WORKING PAPERS

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Contents

Glossary	3
Executive Summary	4
A. Introduction	5
B. FX balance sheets by sector	5
C. Combining balance sheets	8
D. Interlinkages	9
E. Conclusion	10
References	12

Glossary

FX - foreign exchange

NFC - non-financial corporation

NIR - net international reserves

NIIP - net international investment position

Executive Summary

Balance sheet mismatches have historically been a source of vulnerability in Türkiye, and emerging markets more generally. Financial deepening, combined with greater integration into global capital markets, have meant that Türkiye's balance sheet has become much more complex in recent decades. While this can bring benefits—access to global saving, information sharing, diversification of risk—it also brings hazards, especially if not well managed. This paper combines several databases to build a picture of the aggregate FX exposure of Türkiye's total economy. It explores the interlinkages between sectors and how they have evolved in recent years.

In 2020, the central bank net FX position deteriorated by around US\$66 billion as it undertook foreign exchange intervention to support the lira at the height of pandemic. A significant share of this was used to finance the current account deficit. However, part of this also allowed NFCs and households to, directly or indirectly, improve their net FX position. A plausible argument could be made that this implicit support of the private sector could have prevented a more costly adjustment when economic activity was already extremely weak.

But these actions also weakened the central bank, reduced its policy space, and increased FX mismatches. Not only has the overall FX position of the economy weakened since the start of the pandemic, but risk has also shifted from the private to the public sector. With a large negative net FX position, the central bank is vulnerable to exchange rate depreciations and shocks to FX liquidity. In addition, the central bank's scope for policy intervention has also shrunk, as its ability to intervene in FX markets in times of instability has diminished. Finally, interlinkages between the central bank and banks have also grown, which combined with the central banks negative net FX position, increases FX liquidity risks within the economy.

Non-financial corporations, despite recent significant FX deleveraging, remain a source of risk. Supported by regulation to reduce unhedged FX borrowing, the corporate net FX position has declined significantly since its peak in 2018. Nevertheless, they remain a central part of the FX network. They pose liquidity risks for banks—and hence the central bank—if they choose to withdrawal FX deposits. And they pose asset quality risks to banks if they have problems servicing their FX debt. This shows their continued systemic importance, and the need for ongoing careful monitoring.

A. Introduction

Balance sheet mismatches have historically been a source of vulnerability in emerging markets. Financial deepening, combined with greater integration into global capital markets, have meant that emerging market balance sheets have become much more complex in recent decades. While this can bring benefits—access to global saving, information sharing, diversification of risk—it also brings hazards, especially if not well managed (Sahay and others, 2015). In particular, balance sheet mismatches, in maturity, currency, and capital structure, can quickly spill-over into other sectors, potentially triggering an external balance of payments crisis (Allen and others, 2002).

The focus of this paper is foreign exchange (FX) mismatches in Türkiye. It combines several data sources from the CBRT, Turkstat and the BRSA to build a picture of FX assets and liabilities by institutional sector. Equity holdings are excluded as these instruments do not represent a fixed foreign currency claim, such as the principal payment on a bond or loan.¹ Where possible, the database also links claims between institutional sectors—so called, “whom-to-whom” relationships—for example, from households to banks.

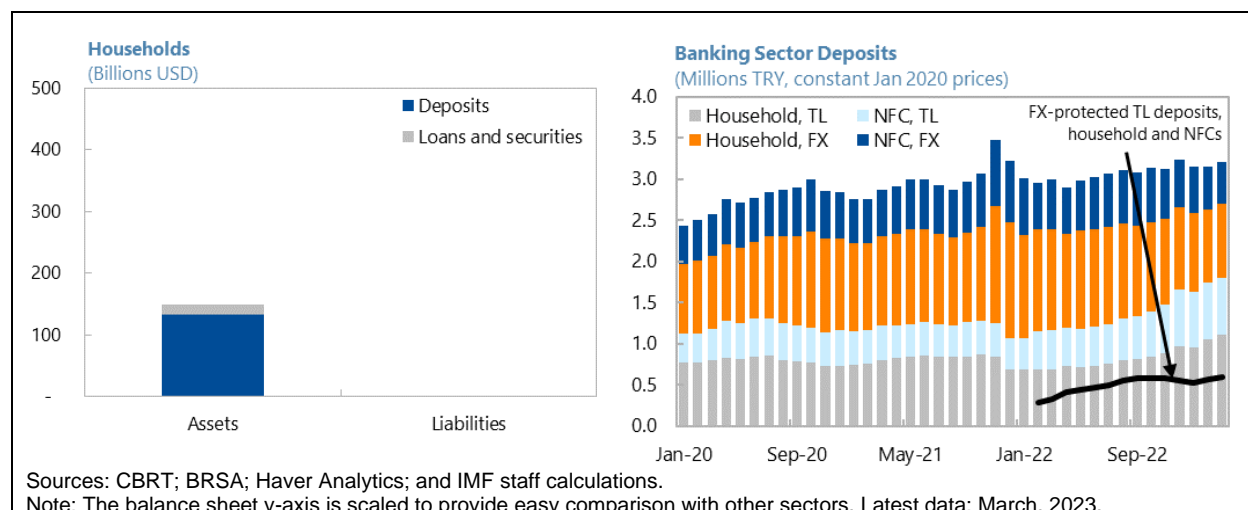
Source	Database
CBRT	Central bank balance sheet
	Securities statistics
	NFC FX balance sheet
	Net International Investment Position
BRSA	Bank balance sheets
MOTF	External debt statistics

The data has some limitations – i) it excludes non-bank financial institutions, such as pension, insurance and money market funds; and ii) some links between sectors are inconsistent, for example, non-financial corporation (NFC) liabilities to banks do not exactly match banks’ assets from NFCs. But overall, these omissions are relatively minor. The remainder of this paper is structured as follows: i) Section B explores the individual FX balance sheets of each institutional sector in turn; ii) Section C combines these balance sheets to give an economy-wide perspective, looking at how this has shifted in recent years; iii) Section D looks in detail at the interlinkages between sectors using network analysis, and; iv) Section E concludes with a discussion on risk.

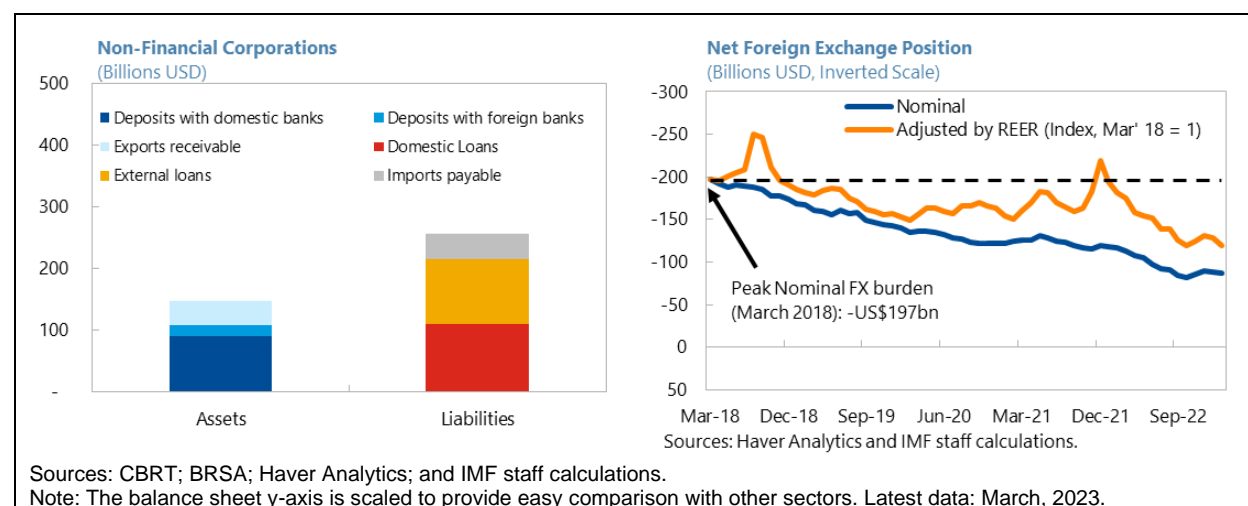
B. FX balance sheets by sector

Households. The household sector has by far the largest positive FX position, mainly in the form of FX deposits in banks, but also FX loans to NFCs, often from owners/family members to firms. In 2009, the Türkiye authorities prohibited lending to households in foreign currency, which means that this sector has virtually no FX liabilities. While not captured in this database, households also hold deposits in the public-guaranteed FX-protected lira deposit scheme, introduced at the end of 2021. Overall, this ‘long’ FX position means that households are well hedged against the direct impact of a lira depreciation, providing an important source of stability for this sector.

¹ Equity claims reflect the underlying value of a company, which will be influenced by exchange rate developments, for example through valuation effects on the firm’s balance sheet or export competitiveness. However, these claims are not fixed and can provide an important shock-absorber to firms and the wider economy.

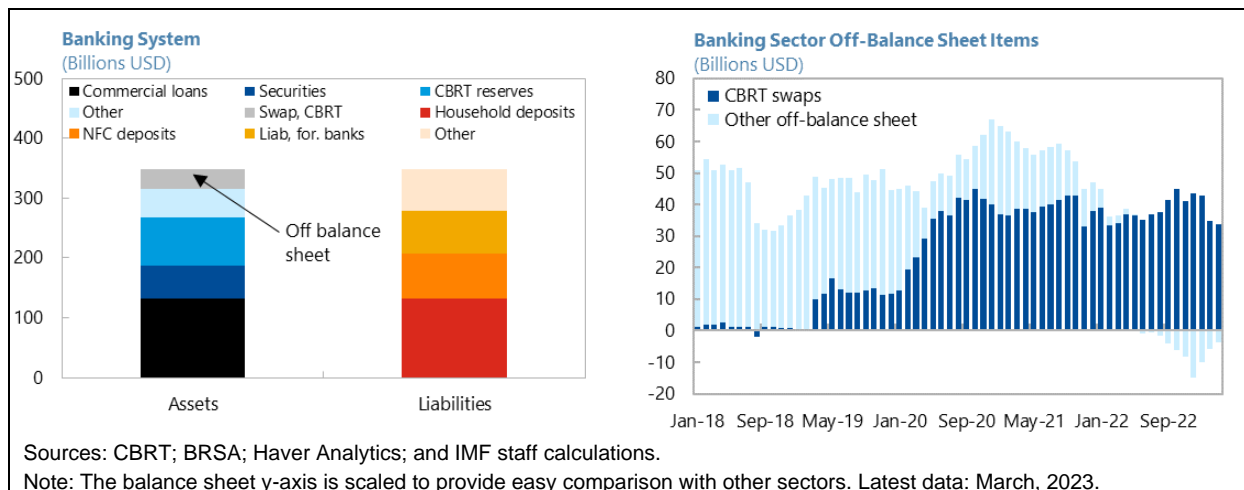


Non-financial corporations. With significant FX loans from domestic and foreign banks, NFCs have a large *negative* net FX position. Supported by regulations to reduce unhedged FX borrowing, NFC nominal FX indebtedness has fallen significantly to around half of its peak in 2018, although it remains high compared to other emerging market economies. Furthermore, the sustained real depreciation of the lira in recent years has increased the real burden of this debt on NFCs. However, FX liquidity risk is substantially mitigated by the high share of FX deposits on the asset side of the balance sheet, relative to short-term debt. This net positive *short-term* position provides some stability against temporary exchange rate and external liquidity shocks, at least for the sector in aggregate. In addition, many large NFCs are also exporters, so have FX income that provides a natural hedge. Indeed, despite the recent weakening of the real exchange rate, corporate profit margins have remained robust and insolvencies rates have remained low.

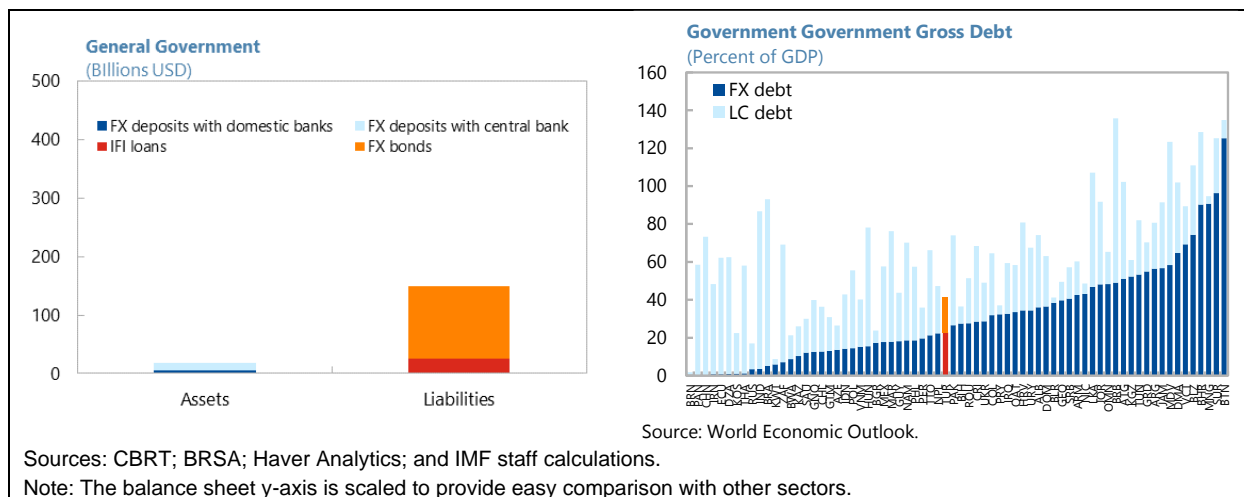


Banks. In the aftermath of the early-2000s financial crisis, banks were prohibited from holding large *net* FX positions, which means that they are well hedged against the *direct* effects of exchange rate shocks. But banks have the largest gross FX balance sheet, intermediating deposits from households and NFCs to the rest of the economy. Banks also hold significant assets at the central bank in the form of deposits and off-balance sheet FX-TL swaps. Similar swaps were previously held with offshore counterparts but were gradually prohibited and

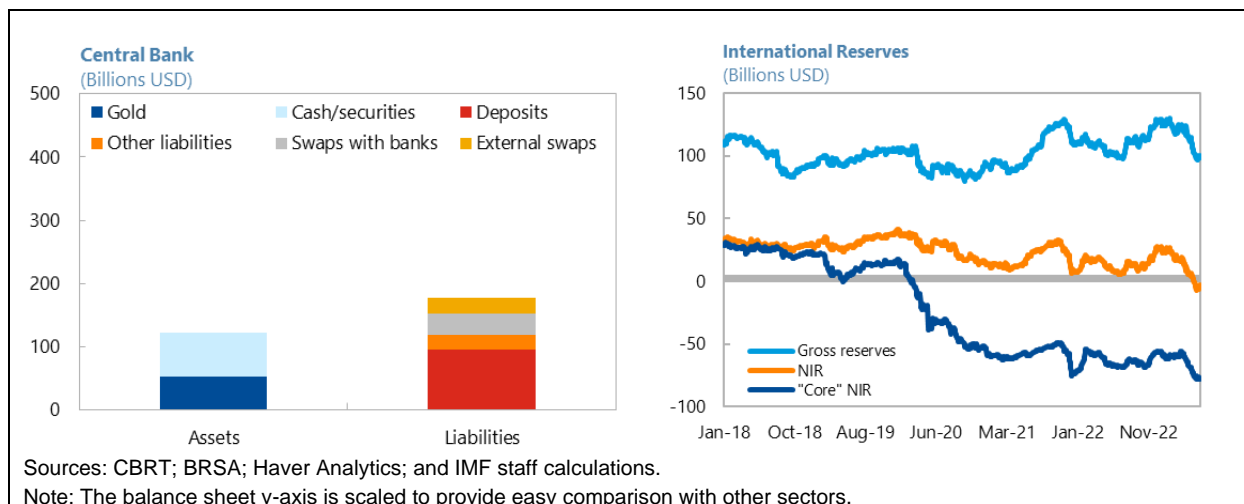
eventually entirely replaced by CBRT swaps. As discussed in more detail below, this greatly increased the (risky) nexus between banks and the central bank.



General government. Perhaps not surprisingly, the general government holds more FX liabilities (mainly in the form of Eurobonds) than FX assets. These Eurobonds are held by both foreigners and domestic banks. While this negative net FX position exposes the government to real exchange rate shocks, it is not unusual for emerging markets governments to issue debt in FX. Indeed, in large part due to Türkiye’s relatively low public debt stock, FX debt as a share of GDP is low compared to country peers.

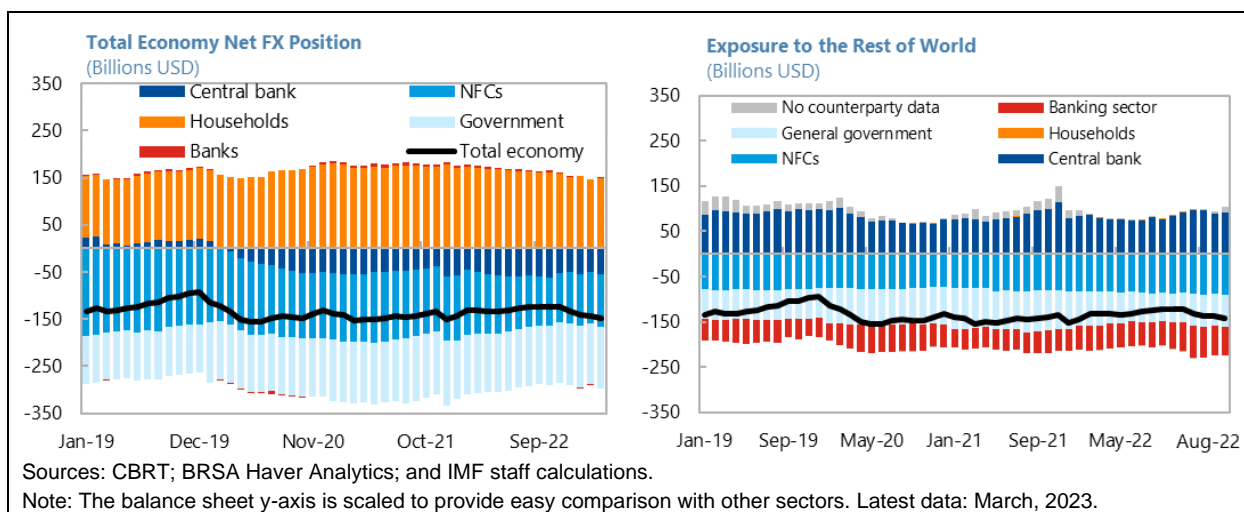


Central bank. Since March 2020, the central bank has had a negative net FX position. Most liabilities are in the form of FX deposits from the banking system, but there also the TL-FX bank swaps discussed above. While gross international reserves have not fallen significantly in recent years, there has been a steady deterioration in net international reserves (NIR), which have turned slightly negative in May 2023. Furthermore, once other domestic claims on the central bank are removed, “core” NIR is deeply negative.



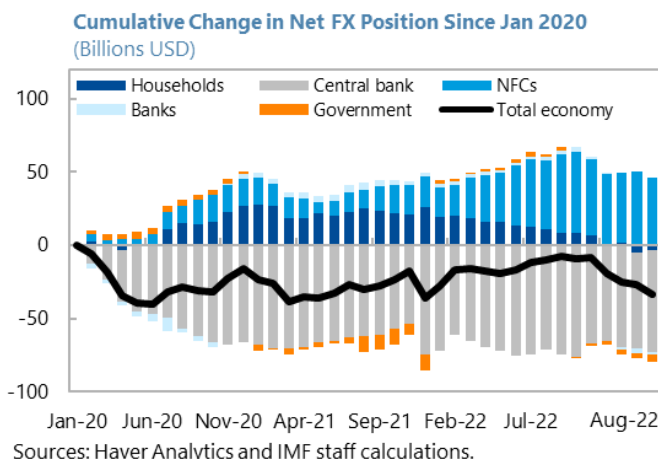
C. Combining balance sheets

Türkiye has a large negative net foreign currency position relative to the rest-of-the-world. Each of these sectoral balance sheets can be combined to construct an *economy-wide* net FX position. As of end-2022, this stood at minus US\$150 billion (14 percent of GDP). This is equivalent to the *non-equity* and *FX-only* net international investment position (NIIP).² As discussed, the household sector provides virtually all *domestic* net FX to the system. But this is not enough to match the sizable FX debtor position of NFCs, the general government and the central bank, with the remainder coming from external creditors. In this regard, it is also possible to consolidate the sectoral FX positions and focus on obligations relative to the rest-of-the-world. Here the overall *economy-wide* net position is unchanged compared to the discussion above. Only the central bank has more foreign assets than liabilities, with all other sectors acting as net FX debtors to the rest of the world. However this is viewed, this large negative FX position leaves Türkiye vulnerable to adverse balance sheet effects from exchange rate shocks.



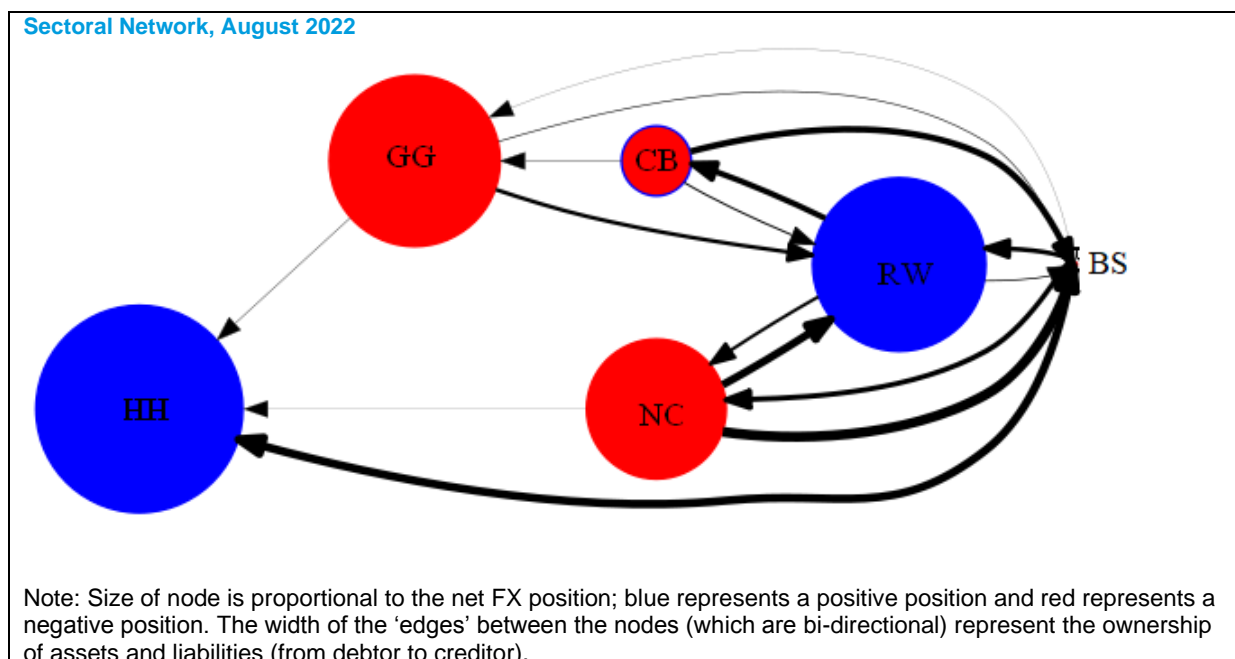
² The official non-equity, but all currency, NIIP is minus US\$165 billion, with the difference attributed to lira-denominated assets and liabilities, plus any discrepancies between the datasets.

Since the start of the pandemic, there has been a significant shift in FX risk from the private to the public sector. The central bank’s net FX position weakened considerably by around US\$70 billion, as FX assets were sold in large amounts in the middle of 2020 with the aim of supporting the lira. However, this drain on foreign exchange was partly offset by two sectors elsewhere in the economy. First, NFCs used relatively inexpensive lira financing to reduce FX debt and build FX deposits, improving the overall FX position. Second, “dollarization” by households increased as inflation eroded the value of lira deposits – this peaked in late 2020 but has now largely reversed, in part driven by the public-guaranteed FX-protected lira deposit scheme, among other measures. The change in the overall total economy position over this period—around minus US\$35 billion—can be thought of as residual financing for the current account deficit after FDI, net errors and omissions and net lira-denominated asset flows are netted out.



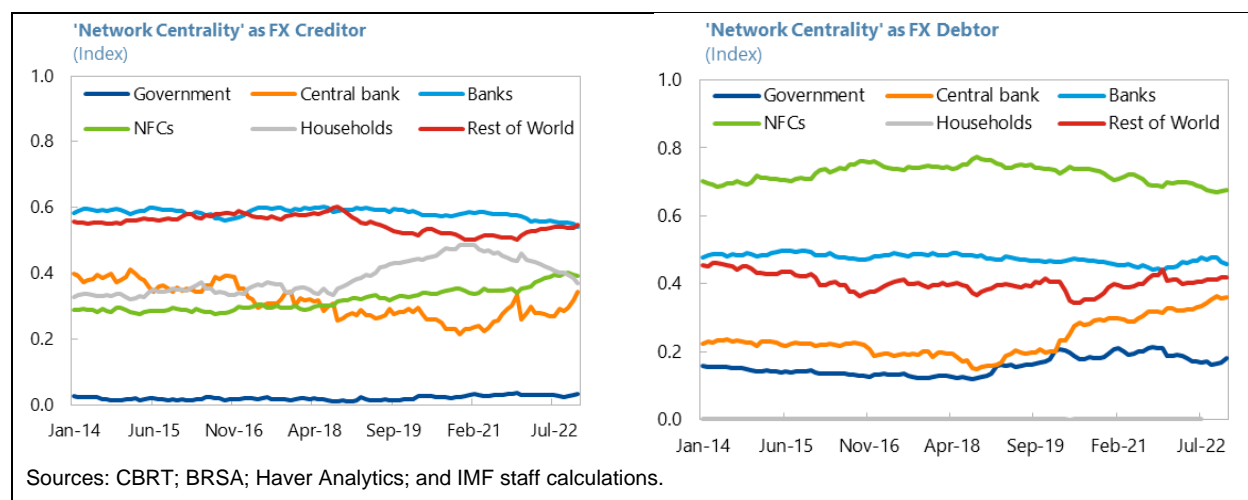
D. Interlinkages

Network analysis can shed light on the systemic importance of sectors. Households (HH) and the general government (GG) are relatively detached from the FX network, despite having large net positions. Households almost entirely credit their FX to banks (BS), in the form of deposits; while the general government mainly borrows from abroad (RW). The banking sector has a tiny FX position (hence the ‘node’ in the chart below is not visible), but play an important role in intermediating FX flows. The central bank (CB), NFCs (NC) and the rest-of-the-world are all highly interlinked with each other and the banking system.



Network interlinkages between sectors have also shifted in important ways. To consider how this network has changed over time, it is possible to build a ‘network centrality metric’, designed to capture the influence of a node in the network.³ The metric considers the importance of both FX creditors and debtors. The following observations can be made:

- Households have played an increasingly important creditor role, peaking in early 2021 as ‘dollarization’ increased. This is because household FX deposits have become a much more important source of funding for banks, which have in turn reduced their exposure to external financing.
- The NFC net position has improved in recent years. Nevertheless, the network centrality metrics shows this sector’s continuing importance as a FX borrower, not only as a large debtor, but also because it borrows from multiple sectors.
- Banks obviously play an important intermediary role: they have equal importance as a creditor and debtor. In contrast, the government does not play an important role either as an FX debtor or creditor.
- The central bank has switched from having a ‘long’ to a ‘short’ net FX position. As the central bank rebuilt reserves following the sell-off in 2020, new liabilities were generated with the rest of the world and with domestic banks, both through swap arrangements and FX deposits. This has increased the importance of this sector as a net FX debtor.



E. Conclusion

The large sell-off of reserves by the central bank in 2020 likely built some resilience in other sectors. In 2020, the central bank net FX position deteriorated by around US\$70 billion as it undertook foreign exchange intervention to support the lira at the height of pandemic. A significant share of this was used to finance the current account deficit. However, part of this also allowed NFCs and households to, directly or indirectly,

³ The analysis uses an ‘Eigenvector centrality’ measure developed by NetworkX using Python. A larger node (greater the net FX position), with more connections between sectors (size of FX gross relationships), will get a greater score.

improve their net FX position. A plausible argument could be made that this implicit support of the private sector could have prevented a more costly adjustment when economic activity was already extremely weak.

But these actions also weakened the central bank, reduced its policy space, and increased FX mismatches. Not only has the overall FX position of the economy weakened since the start of the pandemic, but risk has also shifted from the private to the public sector. With a large negative net FX position, the central bank is vulnerable to exchange rate depreciations and shocks to FX liquidity. In addition, the central bank's scope for policy intervention has also shrunk, as its ability to intervene in FX markets in times of instability has diminished. Finally, interlinkages between the central bank and banks have also grown, which combined with the central banks negative net FX position, increases FX liquidity risks within the economy.

NFCs, despite recent significant FX deleveraging, remain a source of risk. Supported by regulation to reduce unhedged FX borrowing, the NFC net FX position has declined significantly since its peak in 2018. Nevertheless, NFCs remain a central part of the FX network. They pose liquidity risks for banks - and hence the central bank - if they choose to withdrawal FX deposits. And they pose asset quality risks to banks if they have problems servicing their FX debt. This shows their continued systemic importance, and the need for ongoing careful monitoring.

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