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## Measuring the foreign exchange position for the corporate sector: CBRT’s experience<sup>1</sup>

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<sup>1</sup> This paper was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

# Measuring the Foreign Exchange Position for the Corporate Sector: CBRT's Experience<sup>1</sup>

Aylin Aslan<sup>2</sup> and Burcu Tunç<sup>3</sup>

## Abstract

The foreign exchange (FX) assets and liabilities of the corporate sector could give important insights regarding the funding conditions of the sector and also signal financial strengths/vulnerabilities of the economy. Specifically, the indirect exchange-rate-induced credit risk for the banking sector stemming from the FX denominated loans to commercial sector is considered as one of the systemic risk measures. Two different methodological approaches could be applied to measure FX assets and liabilities of the non-financial sector: (1) a micro approach which basically depends on the direct aggregation of the granular data and (2) a macro approach which refers to indirect compilation of the data from the counterpart information e.g. from financial sector's balance sheets and balance of payments statistics. The granularity of the data in micro approach would provide the user the opportunity to pursue a comprehensive currency mismatch analysis which could also be extended for the sub-sectors and firm size. However, it comes with a difficult task of collecting the FX balance sheets of each single firm and applying plausibility checks on the data and hence has a potential timeliness problem. Even though it has a drawback due to the non- granularity of the data, the macro approach produces a timely and reliable data set which covers the whole corporate sector for the transactions with the financial sector and the non-resident sector. This paper aims to represent the Foreign Exchange Assets and Liabilities of the Non-Financial Companies data set compiled by the Central Bank of Turkey (CBRT) on a monthly basis within a macro perspective and propose a new methodology to fill in the gaps by using firm-level granular data without losing the advantages of the macro approach.

Keywords: Currency mismatches, corporate balance sheets, FX assets and liabilities, macro approach, micro approach

JEL classification: E40, F20, F30, F34, F41, G15, G21, G23

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## 1- Introduction

The FX assets and liabilities of the corporate sector could give important insights regarding the funding conditions of the sector and also signal financial strengths/vulnerabilities of the economy;

- funding conditions of the corporate sector directly affects the growth performance of an economy. FX funding is a crucial source for the corporate sector especially in the economies with relatively low saving rates.
- the ability of the commercial sector to raise FX funding especially from abroad is a good indicator for the overall creditability of the economy.
- the indirect exchange-rate-induced credit risk for the banking sector stemming from the FX denominated loans to commercial sector is accepted as one of the systemic risk measures. Although the degree of currency mismatch in bank balance sheets is small, banking sector might face a spillover effect stemming from the FX loans granted to the unhedged corporate sector. To assess this indirect risk accurately, the structure of the FX assets of the corporate sector is as crucial as the structure of the FX liabilities.

Two different methodological approaches could be applied to measure FX assets and liabilities of the non-banking sector: (1) a micro approach which basically depends on the direct aggregation of the granular data and (2) a macro approach which compiles the data indirectly from the counterpart information e.g. from financial sector's balance sheets and balance of payments statistics.

Micro approach, ideally, refers to a direct summation of FX financial balance sheets data collected from each of the individual firms that are classified as corporate sector. Since the output will be a fully aggregated balance sheet of the corporate sector, it is expected to cover the whole set of economic and financial activities and hence would give the exact stock values of the FX assets and liabilities of the sector. With such a comprehensive data set, it would be possible to analyze accurately the level of currency mismatches (if there is any) for the sector. The analysis could also be extended for the sub-sectors, firm size (large and small and medium size enterprises) and even for firm level (e.g. systemically important firms). In addition to the information regarding the currency mismatch, the maturity breakdown of the FX debt could easily be assessed. The level of hedging is also derivable from the data since the granularity of the data gives the user the opportunity to pursue an instrument- and firm-level analysis.

On the other hand, collecting the FX balance sheets of each single firm can be costly and frequency of these micro data bases (mostly annual) is not in accord with the need of the users.

The macro approach, on the other hand, refers to an indirect compilation of the data from the counterpart information instead of the firm-level balance sheets. This approach utilizes monetary and financial statistics (MFS) that capture the relations between the corporate sector and financial sector, and the international investment position (IIP) that captures the relations between the corporate sector and non-resident sector. Both MFS and the IIP statistics are compiled on a monthly basis and have sectoral and currency breakdowns. The data produced with macro approach would be timely and accurate since all the plausibility checks regarding the relevant information for this study is already applied. Thus, the macro approach produces a timely and reliable data set which covers whole corporate

sector for the transactions with the both domestic and non-resident financial sector as well as non-financial non-resident sector.

However, the data set does not cover the intra-sector relations or FX cash hold by the sector. Besides the disadvantage regarding the coverage, the main disadvantage arises from the fact that the data set is compiled from an aggregated data set instead of the granular data and thus the level of currency mismatch can only be tracked for the whole sector. In other words, the data for a deeper analysis on a sub-sector or firm size level is not available with this approach.

There is an extensive literature analyzing currency mismatch and its risks. As defined in the paper of Chui et al. (2016), a currency mismatch between domestic and foreign currencies arises whenever a company's balance sheet or income flows (or both) is sensitive to changes in the exchange rate. The "stock" aspect of a currency mismatch is revealed by the sensitivity of the balance sheet to changes in the exchange rate, and the "flow" aspect is revealed by the sensitivity of the income statement (net income) to changes in the exchange rate. The greater the degree of sensitivity to exchange rate fluctuations, the greater the extent of the currency mismatch.

Most of the papers tend to explore currency risk within a micro perspective by using a firm level dataset. For example, Hülögü and Yalçın (2014) find that firms in Turkey with small size and high currency risk have reduced their liability dollarization ratios and extended the maturity of FX debt in recent years. Moreover, their findings suggest that firms in Turkey with limited export revenues and having high FX denominated debt obtain higher FX profits which compensate a significant amount of their FX financial expenditures.

Özmen and Yalçın (2007) have similar approach on this aspect. They also discuss financial fragilities of Turkish corporate sector to exogenous financial risks stemming mainly from global imbalances by using the CBRT Risk Center and CBRT Company Accounts firm level data over the 1996-2005 period. The findings of their study suggest that, in spite of improvements in the leverage ratios and interest risks after the 2001 crisis, liability dollarization and short maturity structure of debt still appear to be the main sources of fragility in Turkish corporate sector against exogenous financial shocks.

In the same vein, Özlü et. al. (2012) investigate the trade credit channel of monetary policy transmission in Turkey by using a large data set of corporate firms, which includes detailed information on balance sheets and income statements of firms regularly reported to the CBRT in the period of 1996-2008. Their study suggests that the composition of external finance differs considerably across firm types based on size and export performance under tight and loose financial conditions.

Chui et al. (2016) emphasize that data on the aggregate position of the corporate sector are meagre. They report on a balance sheet analysis of about 280 companies, distinguishing in particular those which produce tradable goods or services and those which produce non-tradables. According to their analysis, microeconomic or firm-level data may be more illuminating and show that the companies producing tradable goods or services are better placed to service foreign currency debt suggesting they have a natural hedge.

Another strand emphasizes the implications of using aggregate data. For example, Cowan et al (2006)'s study of Chilean nonfinancial corporations makes a comparison between the inferences of using macro data and micro data. They suggest that both dollarization of external liabilities and dollarization of the domestic financial system are correlated with increased volatility of output and capital flows and with

greater financial vulnerability. Moreover, external dollarization reduces the expansionary effects of depreciation and makes a sudden stop in capital flows more likely. In contrast to the macroeconomic literature, they argue that studies based on firm-level data obtain ambiguous results on the impact of depreciation on investment and output of firms with dollar debt.

This paper aims to represent the FX Assets and Liabilities of the Non-Financial Companies data set compiled by the Central Bank of Turkey (CBRT) on a monthly basis using macro approach and propose an improvement to fill in the gaps by using firm-level granular data without losing the aforementioned advantages of the macro approach.

The paper is organized as follows: Section 2 introduces the data and methodology regarding the current compilation practices of Turkey, Section 3 gives an overview for the FX position of the non-financial sector based on the data produced, Section 4 discusses the deficiencies of the data with future plans for improvement and Section 5 concludes the paper.

## 2. Data and Methodology

### 2.1. Assets

2.1.1. Deposits consist of the sum of deposits held in domestic banks and banks abroad. Deposits held in domestic banks, in turn, are the sum of deposits held in deposit banks and participation banks.

*2.1.1.a. Deposits held in domestic banks:* Data source is Monthly Money and Banking Statistics of CBRT. Data is compiled from Participation Banks' Funds Raised (Sectoral Breakdown) and Deposit Money Banks-Deposits-Sectoral Breakdown. The relevant data is the total of the entire "Resident Legal Persons' Foreign Exchange Funds" item and "Precious Stones Deposit Accounts (FX) of non-financial corporations and individual corporations". Legal persons include Commercial Firms, Individual Corporations and Non-Profit Institutions Serving Households. The data is published on a monthly basis with a lag of 2 months.

*2.1.1.b. Deposits abroad:* Data is accessible, in its broadest form, through the Locational Banking Statistics published by the Bank for International Settlements (BIS). As the relevant data provides a breakdown of the sector as banks and non-banks, deposits of the non-bank sector abroad may also include non-bank financial sector. Data on deposits, covers all institutions except the banking sector, includes real persons and excludes official monetary authorities. Also included in the non-bank sector are general government and public administrations.

As the Turkish lira is not one of the reported currencies, in the BIS statistics pertaining to 'deposits abroad', data includes both TL deposits held with the branches of domestic banks abroad, as well as TL deposits held with the banks abroad. Data for the countries such as Bahrain, Cayman Islands and the Bahamas have been consolidated as "the data for off-shore centers" upon the requests from these countries. The relevant data is accessible through the BIS web site: Statistics/Banking/Locational Statistics/A6 Residence of counterparty. BIS publishes the data on a quarterly basis with a six-month lag.

2.1.2. Securities consist of government securities issued in Turkey, Eurobonds and portfolio investments abroad.

*2.1.2.a. Government Securities:* Data compiled from the Securities Weekly Information Form reported by banks and intermediaries as a part of "Supervisory Reporting Package of Banks and Participation Banks" while the current values of the stock by the final week of the each month are used as a proxy for end-month stocks values. The data covers FX denominated government securities issued domestically or abroad and which are held by domestic non-bank commercial sector which is classified as other commercial corporations in the weekly report.

*2.1.2.b. Portfolio Investments Abroad* consists of the market value of residents' investments in equities, bills and bonds issued abroad. Data source is the Portfolio Investments Surveys that have been conducted initially on an annual basis between 2001 and March 2006, and on a quarterly basis then onwards. Data is derived by deducting the non-financial firms from the sum of Equity Securities, Debt Securities and Money Market Instruments of Firms listed under Other Sectors in the table of "Residents' Portfolio Investment Assets in Foreign Securities-By Instrument" published on CBRT's website under Statistics/Balance of Payments and Related Statistics/ International Investment Position/Data. The data is published quarterly with a lag of 2 months.

2.1.3. Export Receivables equals to the sum of short-term trade credits extended by domestic exporters to the clients abroad and classified as a short term asset in the Foreign Exchange Assets and Liabilities of Non-Financial Companies Table. Trade credits include the payment methods of cash against goods, deferred payment letter of credit, acceptance credit and advance payments. The data covers the export receivables of "non- bank financial institutions" including insurance companies, pension funds and other financial intermediaries; "non-financial institutions (including SOEs)", including non-profit institutions such as trade unions, charities, etc. and "households".

The data is accessible at the CBRT's website, through "International Investment Position: External Assets and Liabilities at End of Period" link under Statistics/Balance of Payments and Related Statistics/ International Investment Position/Data. The data is published on a monthly basis and the lag period is 2 months.

2.1.4. Direct Investments Abroad: Main source of the data is the annual survey of "Turkey's Direct Investment by Country and Sector" applied by the Undersecretariat of Treasury. The data is taken from the table "Residents' Foreign Direct Investments Abroad-By Sectors" published at CBRT's web site under Statistics/Balance of Payments and Related Statistics/International Investment Position/Data (Tables) by deducting Financial and Insurance Activities. Because the table is drawn up as annual stock values, the flow variable in Balance of Payments Statistics is used for the monthly data set. The data includes the loans granted by the resident parent enterprise to the nonresident enterprise in which the resident enterprise owns 10 percent or more of the shares and the loans granted by the resident enterprise to its nonresident affiliates. Stock data are released annually and flow data are released monthly. The lag period of stock data is 6 months, and that of flow data is 2 months.

## 2.2. Liabilities

2.2.1. Loans composed of Domestic Loans and External Loans.

*2.2.1.1. Domestic Loans* composed of Loans extended by Banks, Non-Bank Financial Institutions and Past-Due Loans Taken Over by SDIF.

*2.2.1.1.1. Loans Extended by Banks* composed of FX loans and FX-indexed loans extended by deposit, development, investment and participation banks. The data is based on the forms filled in by the banks within the framework of the "Uniform Reporting Package of Banks and Participation Banks". Loans Extended to Private Sector is composed of non-financial companies, private companies, non-profit corporations serving households, agricultural sales cooperatives and other items. The data is published on a monthly basis and the lag period is 2 months.

- *FX-Indexed Loans*: The data is compiled from the forms filled in by the deposit, development, investment and participation banks within the framework of the "Uniform Reporting Package of Banks and Participation Banks". Accruals arising from exchange rate appreciation and exchange rate appreciation discounts are added to the private sector FX-indexed loans while the reductions resulting from exchange rate depreciation are reduced from the private sector FX-indexed loans. Beginning from the data of December 2008, FX Indexed Loans are decomposed into "short term" and "long term" based on the original maturity of the loans. The data is published on a monthly basis and the lag period is 2 months.

*2.2.1.1.2. Non-Bank Financial Institutions*: For receivables of non-bank financial institutions from corporate sector (private companies, non-financial companies (including SMEs)), the data is based on the FX and FX-indexed loans of a total of 188 non-bank institutions that have reported to the Banking Regulation and Supervision Agency (BRSA). Data for December 2005 was directly obtained from the Turkish Leasing Association (FÖDER), the Factoring Association and finance companies. As of March 2006, data started to be obtained directly from the BRSA based on quarterly terms. Receivables from Leasing Transactions refer to the sum of the credit at the amount of the invoice of the goods provided by the leasing company to institutions and the interest accrued on the credit. This sum is subject to a discounting operation by subtracting the unearned finance income from this sum. Receivables from Factoring Transactions (Net) are followed under two headings as discount and other transactions on balance sheets, where in a discount transaction the net amount paid to the bill holder is directly recorded as loans receivable. The credits extended by finance companies are composed of credits extended to non-financial companies as commercial loans. The data is published on a quarterly basis and the lag period is 3 months.

*2.2.1.1.3. Past-due Loans Taken Over by SDIF*: The past-due loans taken over by Saving Deposits Insurance Fund are the receivables from controlling shareholders of bankrupt banks. Receivables in foreign currencies are affected by the exchange rate movements. Data is accessible at CBRT's website through "Monthly Money and Banking Statistics" under Banking Sector Credit Volume Data. The data is published weekly and the lag period is 2 weeks.

*2.2.1.2. External Loans*: The cash loans received from abroad are reported with respect to their maturities based on declarations of non-bank financial companies and real sector excluding real persons. Data source is the "Outstanding Loans Received From Abroad by Private Sector" tables published at the CBRT's website under Statistics/Balance of Payments and Related Statistics/Outstanding Loans Received From Abroad by Private Sector/Data, which are based on real sector's declarations about loans. While loans received by the resident enterprise from the nonresident parent enterprise which owns 10 percent or more of the shares in the resident enterprise or from its nonresident affiliates, and debt securities issued abroad by residents with original maturity of more than one year and with fixed interest rates or variable interest rates specified on a contractual basis are included; TL loans, loans borrowed by banks,



and non-bank financial companies and real persons are excluded. The data is first decomposed into "short term" and "long term" based on the original maturity, then the loans classified as long term is decomposed into "One Year or Less to Maturity" and "Over One Year to Maturity" based on a remaining maturity basis. The data is published monthly and the lag period is 1 month.

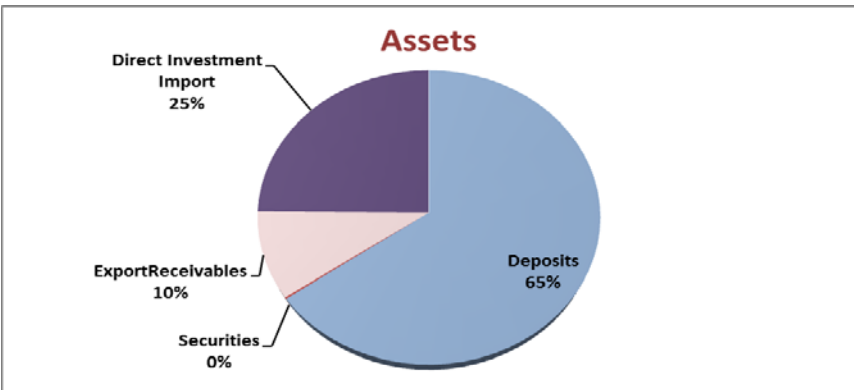
2.2.2. Import Payables are short-term liabilities arising from imports and its payment is due after the delivery of goods. They are followed under "Short-term Debt Stock" under International Investment Position. Import payables are compiled from Turkish Statistical Institution's data on commercial loans. Data is available at CBRT's website under Statistics/Balance of Payments and Related Statistics/International Investment Position/Data/Short-term Debt Stock/Due to Imports. The data for long-term liabilities arising from imports is accessible through the CBRT's website at Statistics/Outstanding Loans Received From Abroad by Private Sector/Data/Outstanding Long-Term Loans Received From Abroad By Private Sector. The relevant data is "Trade Credits" item under "Nonfinancial" part of the table. The data is published monthly and the lag period is 1 month.

### 3. An FX Position Overview for Turkish Non-Financial Corporation Sector

This part of the paper aims to provide an overview regarding the FX assets and liabilities of the non-financial corporations sector based on the produced data. It is seen in Table 14 that the analysis covers the period between 2002 and 2016. As of April 2016, the net FX position is USD 195 billion with assets USD 109 billion and liabilities USD 302 billion.

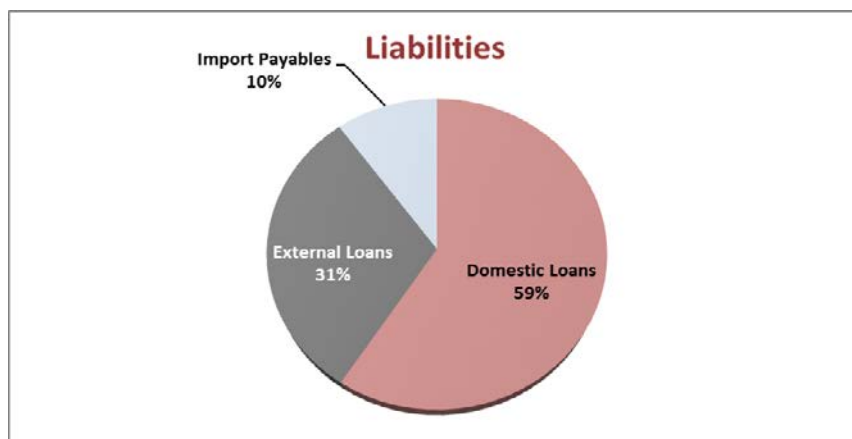
Structure of assets and liabilities is displayed in Chart 1. The asset structure shows that deposits and the direct foreign investments are the main asset items with 65 and 25 percent shares as of April 2016, respectively. On the liabilities side, cash loans item has a share of 90 percent while non-cash loans (import payables) item's share is 10 percent. 66 percent of the cash loans are raised in domestic sector, banking sector being the main fund supplier with a 95 percent share in the domestic loans.

**Chart 1. Structure of Assets and Liabilities (Percentage Share of the Items)**



Source: CBRT

<sup>4</sup> The table of "Foreign Exchange Assets And Liabilities of Non-Financial Companies" is available in Appendix.



Source: CBRT

Net FX position defined as the difference between the FX assets and FX liabilities shows the indebtedness of sector. Table 1 also shows that the non-financial corporations are net FX debtor and carry a deficit throughout the analyzed period. As a second fact, the liabilities grow faster than the assets and thus deficit is growing continuously. For example, Chart 25 shows that the net FX deficit increased from USD 66 billion to USD 192 billion from December 2009 to April 2016.

While the high deficit holding of the sector signals vulnerability against the exchange rate fluctuations both for the non-financial and also for the banking sector as an indirect risk, maturity structure of the assets and liabilities reveals a positive picture. More specifically, data shows that the corporate sector is holding short-term liquid assets against its long-term liabilities. Chart 36 demonstrates short term net FX position of the sector. Accordingly, as of April 2016, short-term assets recorded USD 82 billion, while short-term liabilities recorded USD 78 billion. As a result, the sector has a short term surplus of USD 3,7 billion over its liabilities.

#### 4. A proposed Improvement to Macro Approach

As noted earlier, the FX assets and liabilities data of the corporate sector for Turkey could give important insights regarding the exchange rate risk the non-financial companies carry. For the purpose of providing necessary data for such analysis, the "Foreign Exchange Assets and Liabilities of Non-Financial Companies" data is compiled from transaction records of non-financial private companies in Turkey with the counterpart being the resident financial institutions and non-residents. The data provides end-of-period stock values of sector's FX denominated and FX indexed assets and liabilities of domestic non-financial corporate sector with their net short positions regarding maturity breakdown. However, the dataset is not complete since it does not cover the data on the items whose counterpart is not a domestic financial institution or non-residents. To be more specific, the dataset misses the information on the FX cash holdings of the sector which is beyond the coverage of counterparty-based macro datasets we use.

To fill the gaps, an approach constructed by means of Monthly Money and Banking Statistics (MBS) and Financial Accounts (FA) would be beneficial. The aim of the approach is to estimate the FX cash holdings of the sector by using the figures of deposits and funds holding of the non-financial companies from

<sup>5</sup> Chart 2 in Appendix presents net FX position of the sector.

<sup>6</sup> Chart 3 in Appendix presents short term net FX position of the sector.

MBS and the total cash holdings of the sector from FA. In this approach, we assume that the share of FX denominated deposits in total deposits is a proxy for the share of the FX cash holdings relative to the total cash holdings. The FX/total deposits ratio is calculated from the MBS and then this ratio is going to be used to calculate FX cash holdings by applying it to the total cash holdings figure in the FA. The resulting data will be quarterly.

Table 2 shows the cash holdings of the sector calculated with this approach. Our calculations showed that between 2010 and 2015, the FX cash holding of the sector is around USD 7 billion on average.

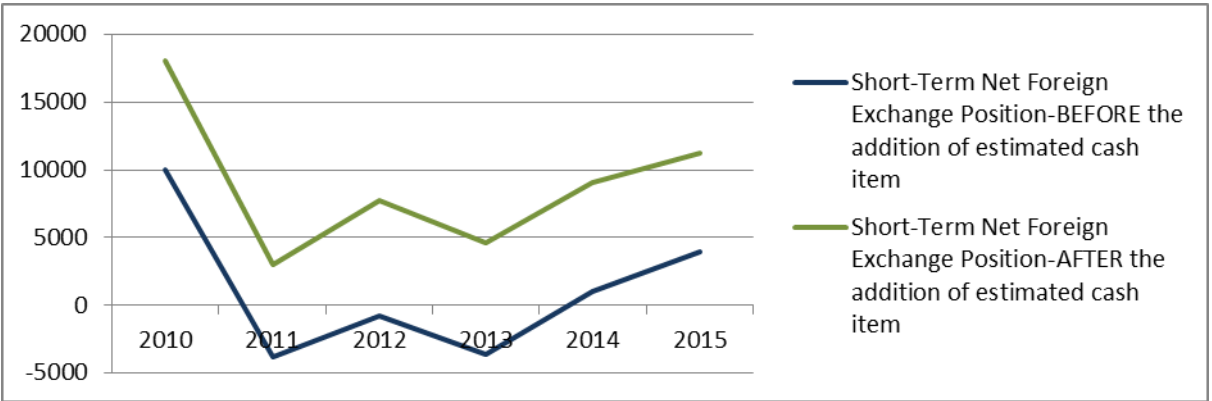
**Table 2: Cash Holdings of the Non-Financial Companies**

thousand TRY						
Non-financial Corporations	2010	2011	2012	2013	2014	2015
Currency	32.499.999	28.324.296	34.885.554	39.009.621	40.499.980	40.499.980
ratio found before	0,380	0,458	0,434	0,450	0,460	0,521
FX-currency, in TRY	12.350.931	12.970.865	15.124.357	17.559.339	18.629.997	21.106.213
exchange rate	1,546	1,9065	1,7826	2,1343	2,3189	2,9076
thousand dollar	7.988.959	6.803.496	8.484.437	8.227.212	8.033.980	7.258.981
million dollar	7.989	6.803	8.484	8.227	8.034	7.259

Source: CBRT, Authors’ calculations

On the other hand, Chart 4 shows how the addition of the cash item into our macro table changes the figures. After incorporating cash item into short-term assets, as of 2015, the short-term surplus increased by USD 7.259 million and reached from USD 3.964 million to USD 11.223 million.

**Chart 4: Short-Term Net Foreign Exchange Position (Million USD)**



Source: CBRT

In addition to the cash item, other accounts receivables/payables items are also not possible to be included to the table via counterparty-based information. To complete the picture precisely, we need additional and preferably micro-level information.

For tax-related purposes, the Revenue Administration Unit of Ministry of Finance (RA) is collecting balance sheets and income statements of every company which operates in Turkey on a yearly basis. The financial statements are reported in TRY and there is no distinction between TRY and FX items. What we propose is to fill in the gaps of the macro data with this comprehensive micro dataset by carrying

out a joint project with the RA which will basically depend on collecting a separate financial statement from each firm on their FX denominated assets and liabilities within the regular reporting routine. The result will be a big and flexible micro dataset which covers all the firms in the sector with all the items in their balance sheet.

Macro data, although compiled indirectly and lacks some information, is produced by reliable MFS and IIP data. Thus, instead of compiling the FX position directly from the micro dataset we will have, merging the micro and macro datasets might be the optimal way to produce a monthly report for the FX position of the sector. Since the resulting micro dataset will come with a different frequency (annually) and a longer time lag, we are going to estimate the monthly stock of the missing items, such as FX cash holding, depending on their last available annual stocks to enhance the existing report.

## 5. Conclusion

Transaction records of non-financial companies operating in Turkey, arising from their transactions with resident financial institutions and non-residents, provide indicators for the amount of their FX assets and liabilities, and hence the FX risk they bear.

To conclude; though its drawbacks, the FX assets and liabilities data set of Turkey based on macro approach is an important data source in evaluating the financial structure and developments of non-financial corporations. There is an area of improvement through either collecting micro data in cooperation with the RA or through utilizing additional data sources like MBS and FA or both.

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Foreign Exchange Assets and Liabilities of Non-Financial Companies

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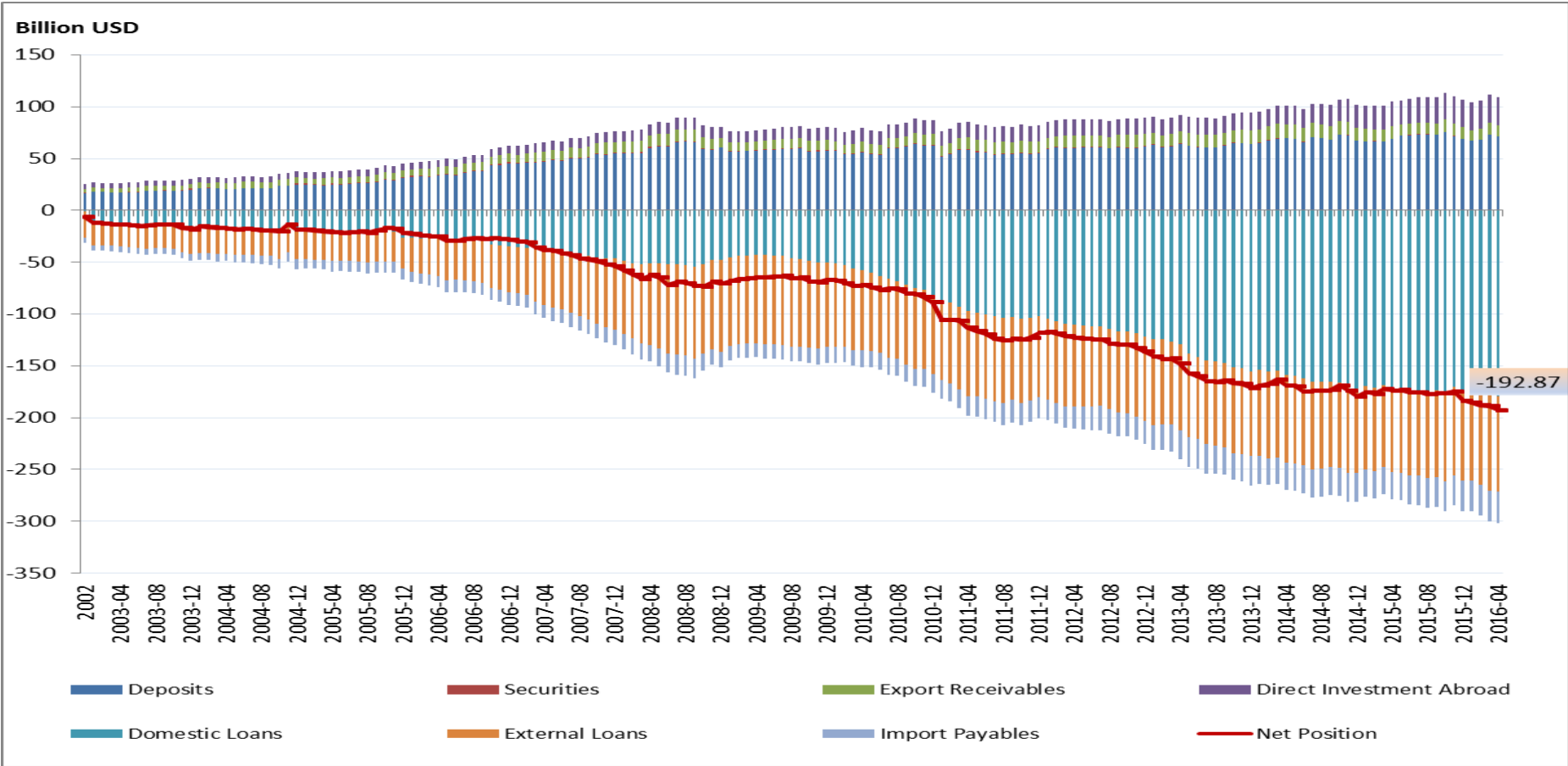
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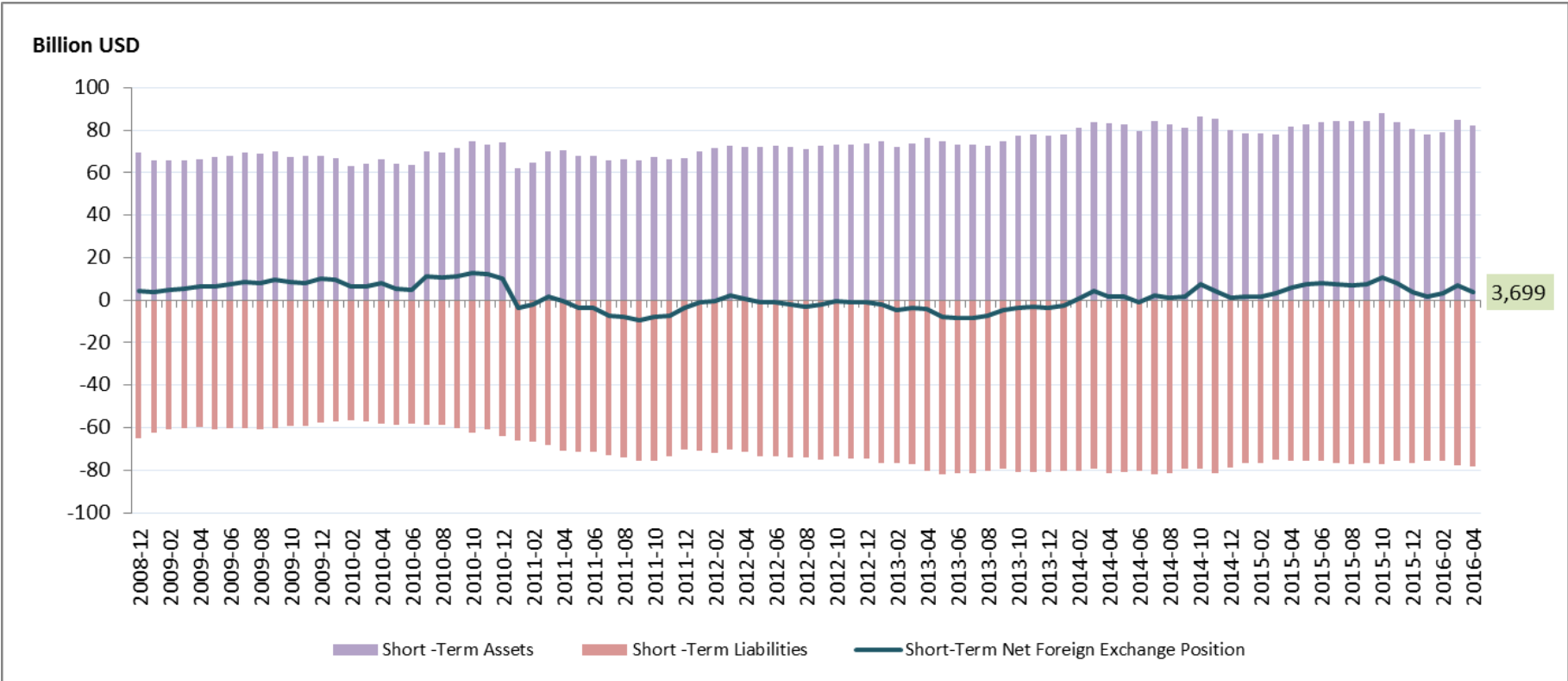


**Chart 2 Net FX Position of the Sector (Billion USD)**



Source: CBRT

**Chart 3 Short Term Net FX Position of the Sector (Billion USD)**



Source: CBRT





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## Measuring the foreign exchange position for the corporate sector:

### CBRT’s experience<sup>1</sup>

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<sup>1</sup> This presentation was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

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**TÜRKİYE CUMHURİYET  
MERKEZ BANKASI**

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# Outline

- Two different methodological approaches
- An FX Position Overview for Turkish Non-Financial Corporation Sector
- A proposed Improvement to Macro Approach

# Two different methodological approaches

## Micro data

- depends on the direct aggregation of the granular data
- a direct summation of FX financial balance sheets data collected from each of the individual firms
- costly and frequency of these micro data bases (mostly annual) is not in accord with the need of the users

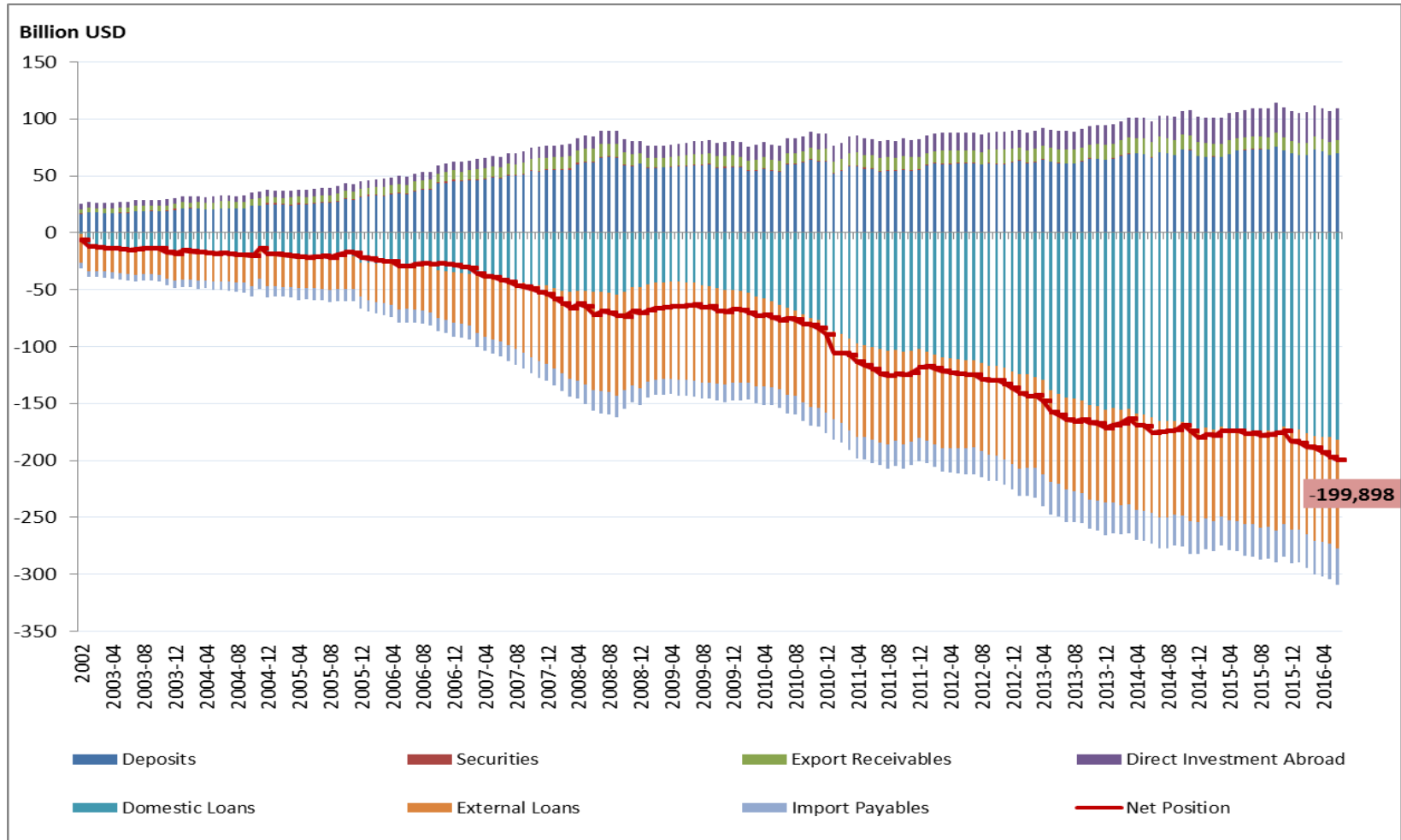
## Macro data

- compiles the data indirectly from the counterpart information e.g. from financial sector's balance sheets and balance of payments statistics
- a timely and reliable data set covering whole corporate sector
- not cover the intra-sector relations or FX cash hold by the sector



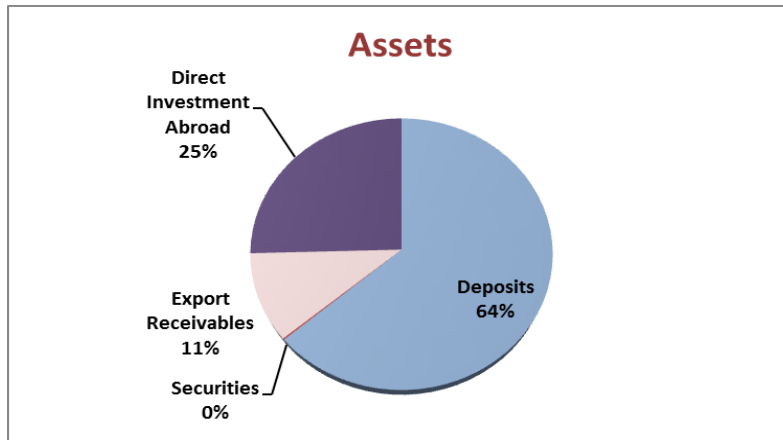
# NET FOREIGN EXCHANGE POSITION OF THE NFCs

## Composition

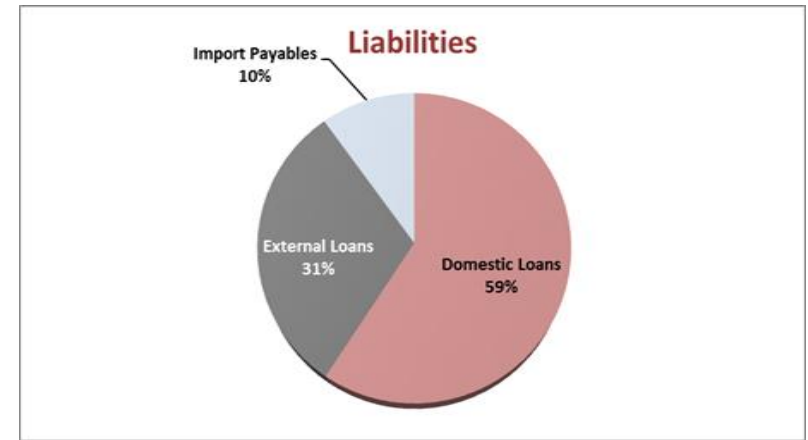


# Structure of Assets and Liabilities (Percentage Share of the Items)

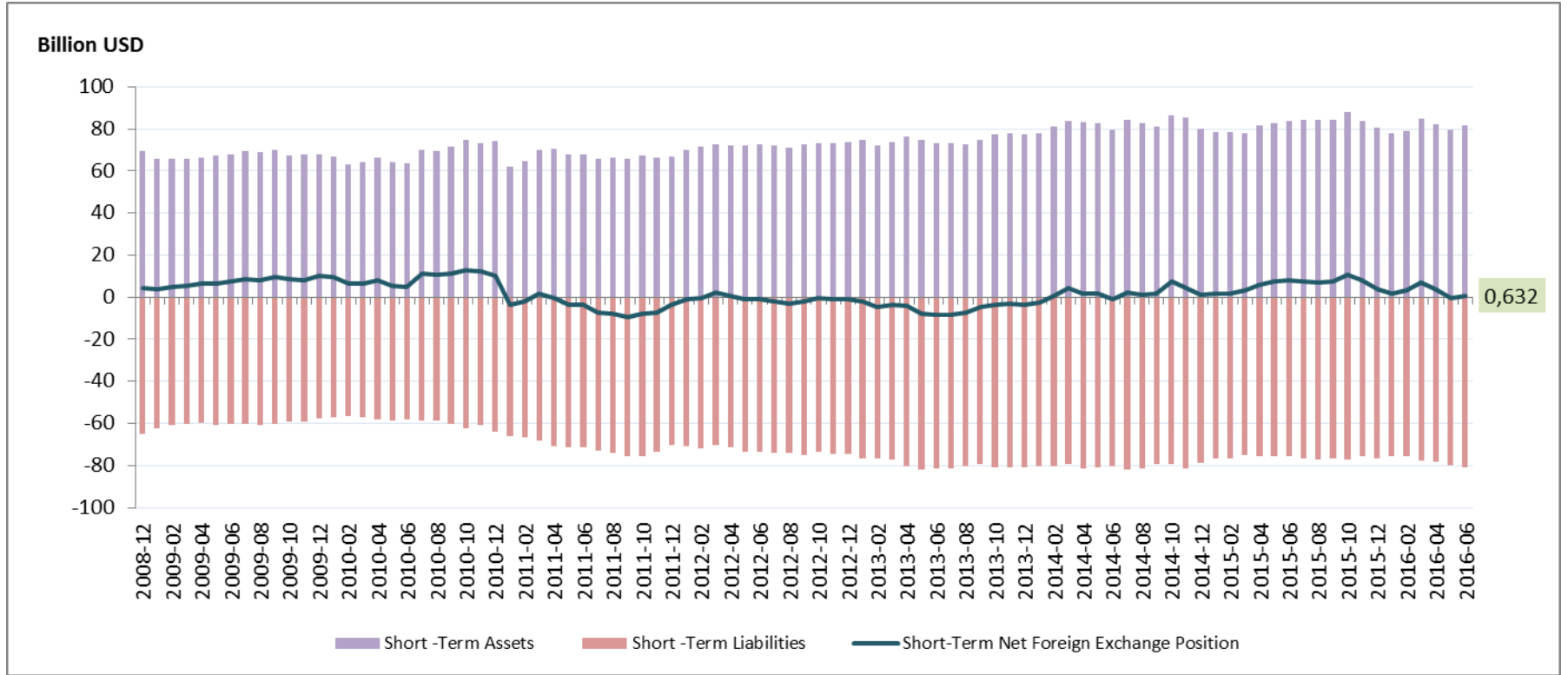
Composition of Foreign Exchange Assets,  
as of June 2016



Composition of Foreign Exchange Liabilities,  
as of June 2016



# Short Term Net FX Position of the Sector





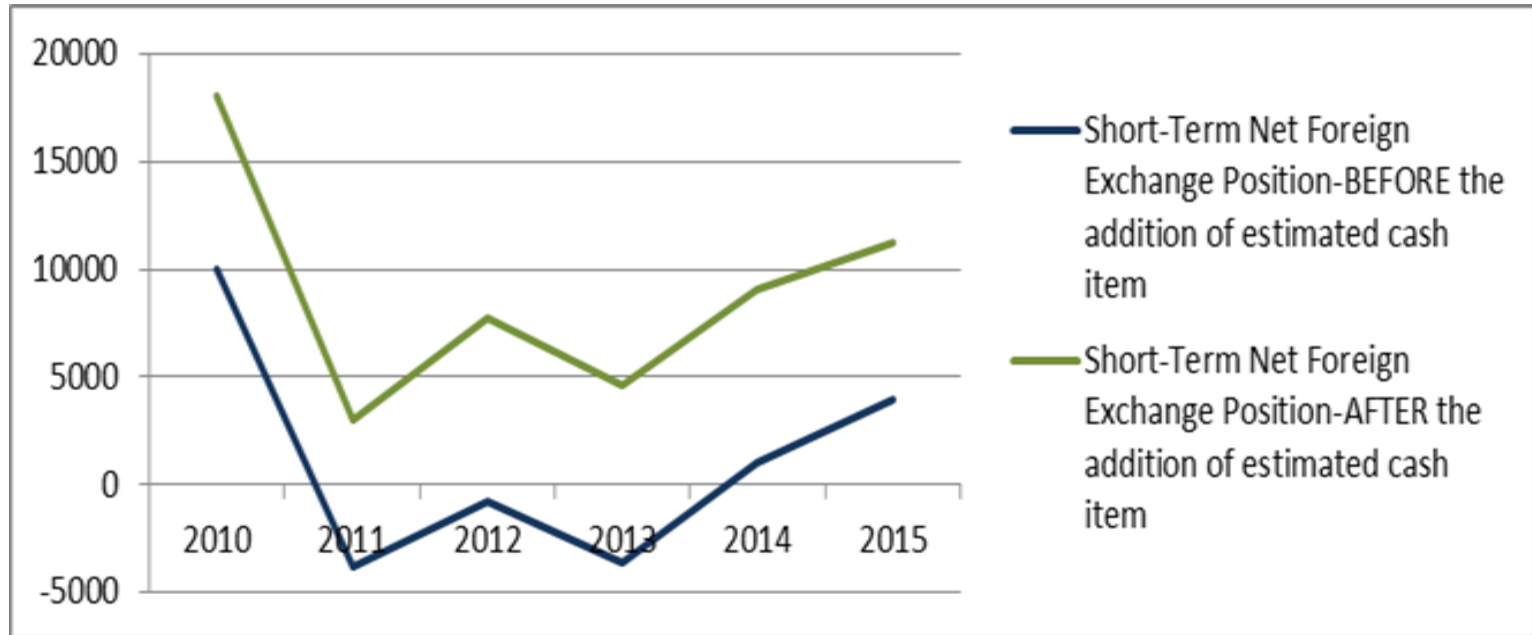
# A proposed Improvement to Macro Approach

- An approach to estimate the FX cash holdings of the sector
- The share of FX denominated deposits in total deposits is a proxy for the share of the FX cash holdings relative to the total cash holdings.

thousand TRY						
Non-financial Corporations	2010	2011	2012	2013	2014	2015
Currency	32.499.999	28.324.296	34.885.554	39.009.621	40.499.980	40.499.980
ratio found before	0,380	0,458	0,434	0,450	0,460	0,521
FX-currency, in TRY	12.350.931	12.970.865	15.124.357	17.559.339	18.629.997	21.106.213
exchange rate	1,546	1,9065	1,7826	2,1343	2,3189	2,9076
thousand dollar	7.988.959	6.803.496	8.484.437	8.227.212	8.033.980	7.258.981
million dollar	7.989	6.803	8.484	8.227	8.034	7.259

# How the cash item changes the short-term position?

Short-Term Net Foreign Exchange Position (Million USD)



# Concluding remarks

- Two different methodological approaches to measure FX assets and liabilities of the non-financial sector:  
micro approach and macro approach
- FX assets and liabilities data set of Turkey based on macro approach is an important data source.  
timely and reliable data set  
compiled on a monthly basis
- Improvements through  
collecting micro data in cooperation with the RA  
utilizing additional data sources like MBS and FA



**TÜRKİYE CUMHURİYET  
MERKEZ BANKASI**

# **Measuring the Foreign Exchange Position for the Corporate Sector: CBRT's Experience**

**Aylin Aslan and Burcu Tunç  
Statistics Department  
Central Bank of the Republic of Turkey**

**8th IFC Conference  
"Statistical implications of the new financial landscape"  
BIS, Basel, 8-9 September 2016**