

Box 3: A Characterization of the Exchange Rate Risk of Real Sector Firms in Colombia in 2023

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1. Introduction

During 2023, Colombian firms that turned to international financing sources faced interest rate increases and an appreciation of the peso against the dollar of 21.5%.¹ Despite the positive effect on firms' balance sheets due to the appreciation of the local currency, the presence of exchange rate mismatches is a factor of external vulnerability of the economy due to its potential impact on investment, growth, liquidity, and solvency of the firms that are subjected to this phenomenon. Likewise, by potentially affecting the creditworthiness of firms, these vulnerabilities can impact the local financial system and generate pressures on loan portfolio quality indicators.

This box characterizes the negative exchange rate mismatch² of firms in the real private and public sectors in Colombia. First, a description of the recent dynamics of negative exchange rate mismatches is presented³. Second, an estimate of the level of risk⁴ faced by Colombian firms is presented based on their balance sheets. Finally, the exposure of credit institutions (CIs) to firms with negative exchange rate mismatches is analyzed, and conclusions are presented.

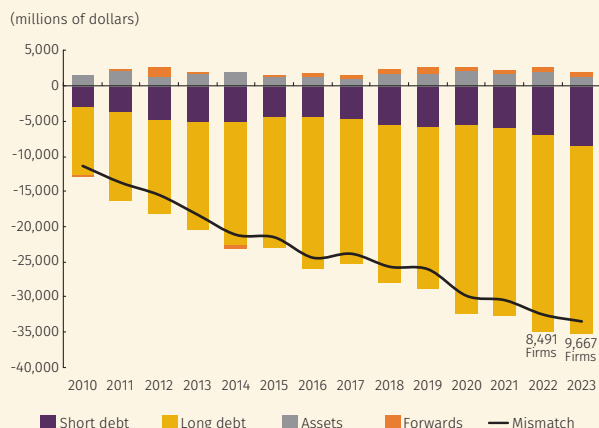
2. Results of the Negative Exchange Rate Mismatch: General Outlook

The results of the negative mismatch of private companies in the Colombian real sector are described below⁵. In the last ten years, the negative exchange rate mismatch measured in dollars has tended to widen. This dynamic is explained by the growth of economic activity, which means that firms require greater working capital and by their greater financing needs to make productive investments. Greater access to international markets, links with parent companies, and greater liquidity needs in foreign currency have led to an increase in foreign currency debt contracted by Colombian firms without their assets in this denomination increasing in the same proportion.

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- 1 Representative Market Exchange Rate (TRM) at the end of 2023 vs. at the end of 2022.
- 2 A company has a negative currency mismatch when its currency liabilities are greater than its foreign currency assets. In this regard, a negative currency mismatch financially exposes firms to unexpected depreciation of the local currency.
- 3 In Box 1 of the *Financial Stability Report* for the first half of 2022, the sources of information and the calculation methodology are detailed.
- 4 In Box 3 of the *Financial Stability Report* for the second half of 2022, the sources of information and the methodology for calculating the risk of firms with a negative currency nominal mismatch are detailed.
- 5 This analysis does not include credit institutions or non-banking financial institutions; likewise, some firms that have financial leasing liabilities are excluded because they are secured by a real asset (capital asset) of the same value.

Graph B3.1
Disaggregation of the Negative Currency Mismatch



Sources: Banco de la República, DANE, DIAN, MHCP; calculations by Banco de la República.

In 2023, 64.6% of real sector firms with external borrowing presented a negative currency mismatch. This percentage groups 9,667 firms, which accumulate a negative currency mismatch worth USD 33,387 million (m). This percentage increased compared to 2022, when 8,491 firms accumulated a negative currency mismatch of USD 32,444 m (Graph B3.1). The 10% of firms with a negative currency mismatch account for around 90.4% of this value. The high concentration of the negative currency mismatch has occurred recurrently in the different years of study. By component, this annual increase in the negative currency mismatch is mainly explained by the increase in short-term debt (USD 1,585 million) and the decrease in financial assets in foreign currency (USD 760 million), effects partially offset by a decrease in long-term debt (USD 1,367 million) and the higher net position of forwards⁶ (USD 27 million).

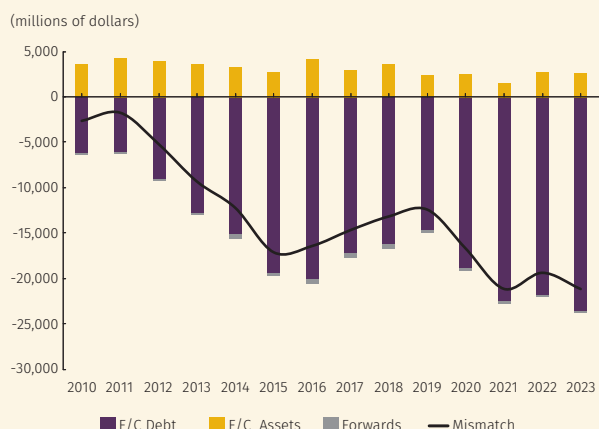
By economic sector, the negative currency mismatch is mainly distributed, in order, in transportation, storage and communications, manufacturing, commerce, hotels and restaurants, and administrative and professional services (Table B3.1). Companies operating in these sectors represent 72.5% of the total value of the negative currency mismatch in 2023.

Table B3.1
Negative Currency Mismatch by Economic Sectors

Economic Sector	Negative Mismatch (millions of dollars)	Percentage of negative mismatch	Percentage of firms with FDI
Transportation, storage, and communications	7,682	23.0%	33.5%
Manufacturing industries	6,729	20.2%	14.8%
Commerce, hotels, and restaurants	4,918	14.7%	13.5%
Administrative and professional services	4,871	14.6%	27.1%
Electricity, gas, and water	3,433	10.3%	55.2%
Other sectors	5,754	17.2%	31.8%

Note: The percentage of the negative mismatch corresponds to the percentage of the total negative mismatch concentrated in this sector. Sources: Banco de la República, DANE, DIAN, MHCP; calculations by Banco de la República.

Graph B3.2
Negative Mismatch of Public Sector Companies



Sources: Banco de la República, DANE, DIAN, MHCP; calculations by Banco de la República.

In 2023, the negative currency mismatch of public sector companies, totaling fourteen firms, amounted to USD 21,119 m (Graph B3.2). About 96.2% of this mismatch is concentrated in three conglomerates that belong to the mining, energy and electricity, gas, and water supply sectors. The firms that concentrate the mismatch actively participate in the export of goods, so they have natural coverage⁷. In general, these companies have significant direct investments abroad, particularly in Central and South America, and have a high share within their respective markets, which allows them to pass on to their consumers

6 Foreign currency assets correspond to active loans, bonds, and deposits, while the net position of forwards foreign exchange is the difference between buying and selling transactions. When the net result of purchases minus sales of forwards of foreign exchange is positive, this amount is included within the assets, while if it is negative, they are included in the liabilities.

7 In these cases, the risks associated with a negative mismatch are mitigated by incomes derived from its export operation.

the higher costs associated with a depreciation of the peso. With respect to 2022, the increase in the mismatch was 9.2% (USD 1,776 m), mainly explained by the contracting of external debt by firms in the hydrocarbons sector.

3. Results of Negative Currency Mismatch Risk Classification

This section describes the results of the calculation of the risk indicators of the negative currency mismatch of private companies in the Colombian real sector. These indicators measure the relative importance of the individual mismatch of firms with respect to their balance sheets (assets, revenues, etc.) and are intended to classify firms by their level of risk of negative currency mismatch. In this classification, level 1 is interpreted as the highest risk, while level 3 is the lowest risk. The risk indicators are: level of mismatch as a proportion of total assets, trade balance as a proportion of operating income, and percentage of foreign capital participation.

Of the total of 9,667 firms with a negative currency mismatch in 2023, there is balance sheet information for 34.5% of them, which represent 64.8% of the total amount of the negative currency mismatch. These proportions are similar to those observed since 2016 in the number of firms, while the amount of mismatch ranges from 49% to 75% (Graph B3.3). From this sample of firms, the indicators are calculated and classified according to their level of risk.

The results exhibit that, for 2023, in terms of the total value of the negative currency mismatch, the main risk factor for firms is the proportion of the mismatch to total assets (Graph B3.4, panel A). Only 189 companies (5.7% of the total) showed a high level of risk according to this indicator. However, these firms account for 30.2% of the total amount of currency mismatch for companies that reported balance sheets.

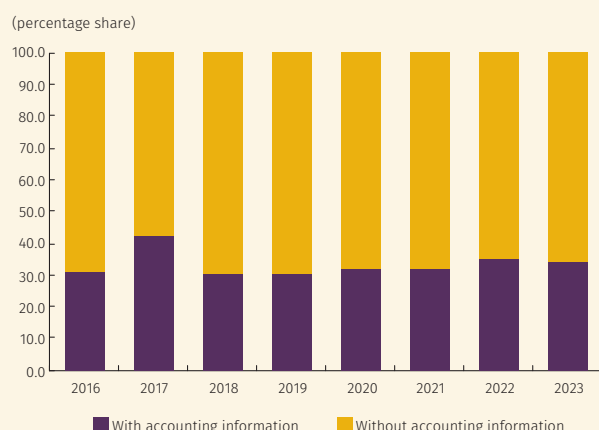
Regarding the participation of foreign capital (Graph B3.4, panel B), although 59.4% of the firms are classified at the highest level of risk (1,978 firms), the value of the currency mismatch that they accumulate is lower than the sum of the other two levels of more moderate risk (levels 2 and 3). In these, a smaller number of firms are classified, but with higher levels of foreign capital participation.

Finally, the balance of trade indicator as a proportion of operating income (Graph B3.4, panel C) shows that 41.7% of firms and 38.2% of the currency mismatch value are classified at the lowest risk level, i.e., these companies have a positive trade balance, so in the event of a depreciation they would receive higher income. Only 329 firms (9.9%) have a negative trade balance greater than 50% of their operating incomes.

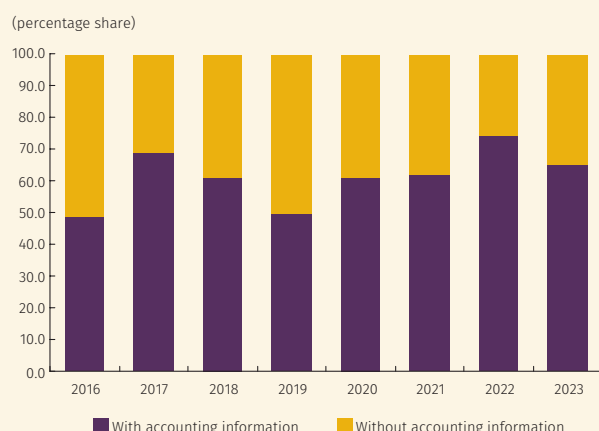
From the three components, the global risk indicator was constructed, which averages and approximates the three indicators described (Graph B3.4, panel D). The results suggest that, both by level of mismatch and by number of firms, the main classification obtained for the firms analyzed is the medium risk level. Firms with a high exposure (which may have liquidity or solvency problems), which puts their stability at risk in the face of depreciation, represent a low proportion

Graph B3.3
Negative Currency Mismatch: Accounting Information

A. Negative Currency Mismatch



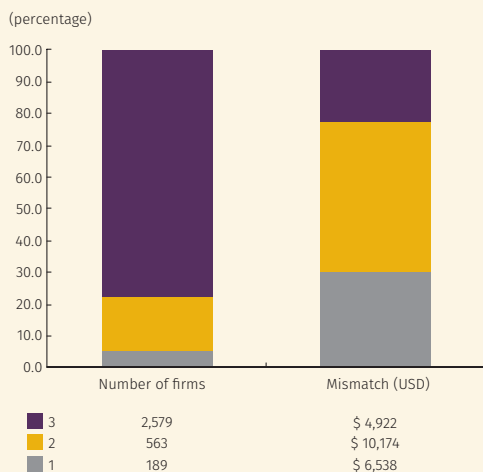
B. Number of Firms with a Negative Currency Mismatch



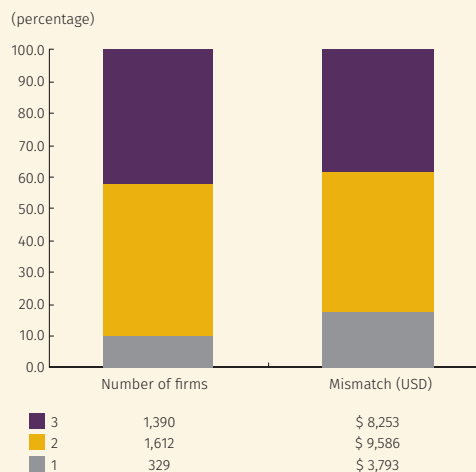
FSource: Author's own elaboration.

Graph B3.4
Risk Indicators

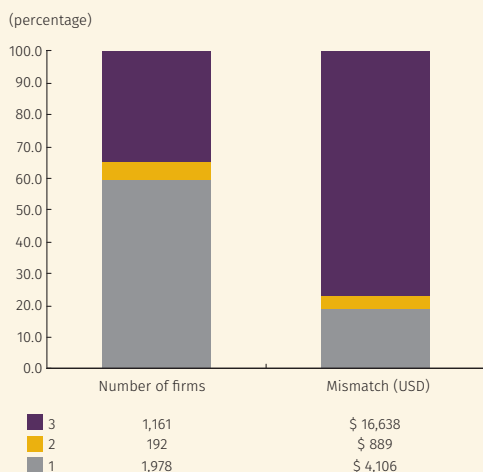
A. Mismatch as a Proportion of Total Assets



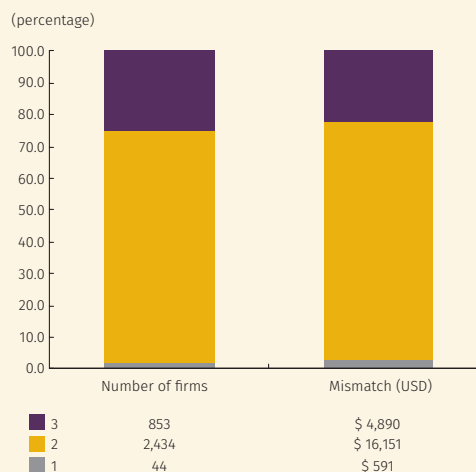
B. Share of Foreign Capital



C. Balance of Trade

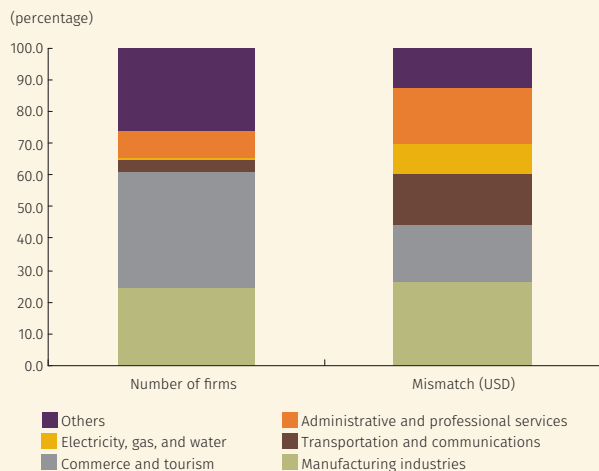


D. Total Indicator



Sources: Financial Superintendency of Colombia and Banco de la República; author's own elaboration.

Graph B3.5
Classification by Economic Sector Firms
in Risk Group 1 and 2

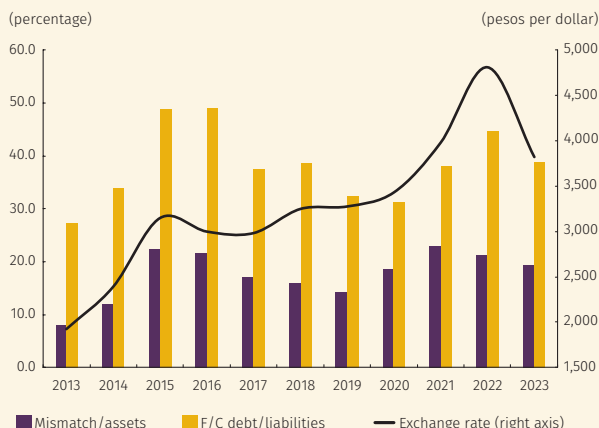


Source: Author's own elaboration.

both in number of firms (1.3%) and in amount of mismatch in dollars (2.7%). This indicates that, on average, companies with a negative mismatch seek to mitigate their exposure to sudden depreciation of the Colombian peso by compensating between their trade imbalance, the relative size of their negative mismatch, and their ability to obtain foreign currency from a parent company abroad.

In order to identify the economic activities most exposed to a sharp depreciation of the exchange rate, the firms with medium (2) or high (1) risk indicators were disaggregated by sector. Two of the five main sectors, which account for 60.9% of firms and 44.3% of the mismatch value, are manufacturing, trade, and tourism (Graph B3.5). On the other hand, activities dedicated to the supply of public services (transportation and communications, and electricity, gas, and water) do not have natural coverage due to the absence of foreign exchange revenues; however, the high concentration of production in a few firms in these sectors allows them to use the resources from their domestic sales to leverage their commitments in dollars.

Graph B3.6
Public Sector Companies: Exchange Rate Vulnerability Indicators



Sources: Banco de la República, MHCP, financial statements; calculations by Banco de la República.

For public sector companies, the mismatch as a proportion of total assets reached 19.4% in 2023, a value 2 percentage points (pp) lower than in 2022 (Graph B3.6). Regarding the risk indicator, the fourteen public firms analyzed showed a homogeneous performance and were located in the lowest risk group. The same can be said if the information is gathered by business conglomerates. The low level of risk is because they do not have foreign trade deficits or because they register a mismatch with respect to assets of less than 20.1%.

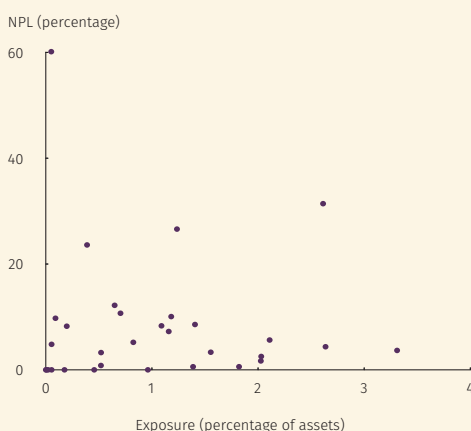
4. Exposure of the Local Financial System to Private Firms with a Negative Currency Mismatch

This section discusses the individual exposure of CIs to private corporate sector firms with a negative currency mismatch. To this end, the analysis focuses on: 1) firms with accounting information classified in risk level 1 (highest risk), and 2) the group of firms that do not have accounting information and therefore their risk level cannot be calculated. This is an acid measure of the exposure of CIs to credit risk of firms with a negative currency mismatch. However, it is a more complete metric of the exposure of CIs, considering the absence of accounting information for some firms. In the calculations, the balance sheets and individual exposures are used for those CIs with outstanding credits with the group of firms described as of 2023⁸.

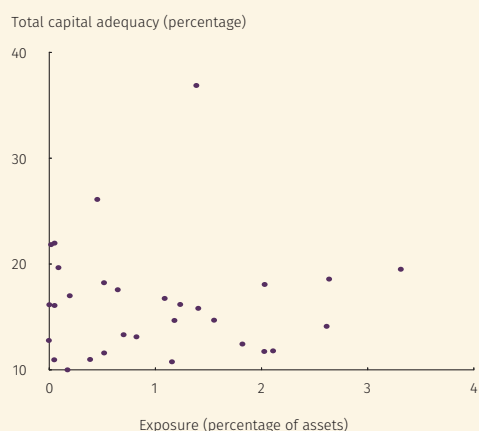
In accordance with the results, the individual exposure of CIs to firms with a negative currency mismatch is less than 3.0% of assets for most institutions, with an average exposure of 1.0% (Graph B3.7, panel A). This represents a slight reduction compared to the exposure of CIs in 2022 (1.2% on average). Likewise, there is no high concentration of firms with currency mismatch and high levels of the quality indicator for non-performing loans indicator (NPL) in this segment. In other

Graph B3.7
Exposure of CIs to Firms with Negative Currency Mismatches

A. NPL and Loan Portfolio Exposure of Firms with Negative Currency Mismatch



B. Total Capital Adequacy and Loan Portfolio Exposure to Firms with a Negative Currency Mismatch



Source: Financial Superintendency of Colombia; calculations by Banco de la República.

⁸ Form 341, “Individual Debtor Report: Lending Transactions,” of the Financial Superintendency of Colombia. The analysis focuses on the information for 2023, considering that the information on mismatches is on an annual basis. However, if exposures are calculated using the latest information from the CIs, i.e., June 2024, the conclusions are similar.

words, CIs with high NPLs of firms with currency mismatch (greater than 20%) have exposures to this segment, on average, close to 1.0% of the assets. In terms of capital, the most exposed CIs tend to have higher levels of total capital adequacy, although this ratio is not very strong (Graph B3.7, panel B). In any case, Chapter 3 of this *Report* measures the capacity of the financial system to face the materialization of extreme and unlikely risks for the loan portfolio of companies with currency mismatch and finds that, in general, the system is resilient.

5. Conclusion

Despite the phenomenon of nominal appreciation of the peso between 2022 and 2023 (21.5%), there is an increase in the total amount of the negative currency mismatch (2.9%) in the same period. This can be explained by a lower growth of the firms analyzed within a context of economic slowdown, which has an impact on a fall in their assets denominated in foreign currency. Results of the classification of private firms with a negative currency mismatch suggest that most of the firms evaluated are classified as medium risk and accumulate the highest value of the total mismatch. A small portion is located within the group with the highest exchange rate risk, with a total mismatch that represents 2.7% of the total amount of the negative mismatch, 7.3 pp less than in the previous year. High- and medium-risk firms belong to the manufacturing industry, trade, and tourism, as well as to regulated sectors with a market share concentrated in a few companies (transportation and communications, and electricity, gas, and water). On the other hand, firms that concentrate the mismatch of the public sector are located in the lowest risk group since they have natural coverage, high participation within their respective markets, and low levels of mismatch with respect to assets. Finally, it is found that CIs have a moderate exposure to firms with currency mismatch classified as high risk and that this exposure was reduced compared to 2022.

References

- Carmona-Duarte, A.; Martínez-Osorio, A.; Niño-Cuervo, J. (2022). Box 1: “Negative Currency Mismatch of the Real sector in Colombia in 2021,” *Financial Stability Report*, first semester.
- Carmona-Duarte, A.; Martínez-Osorio, A.; Niño-Cuervo, J. (2022). Box 3: “A Characterization of the Exchange Risk of Real Sector Firms in Colombia in 2021,” *Financial Stability Report*, second semester.