

The effect of pandemic on Central Bank of Türkiye (CBRT) real sector database and post- pandemic adjustments

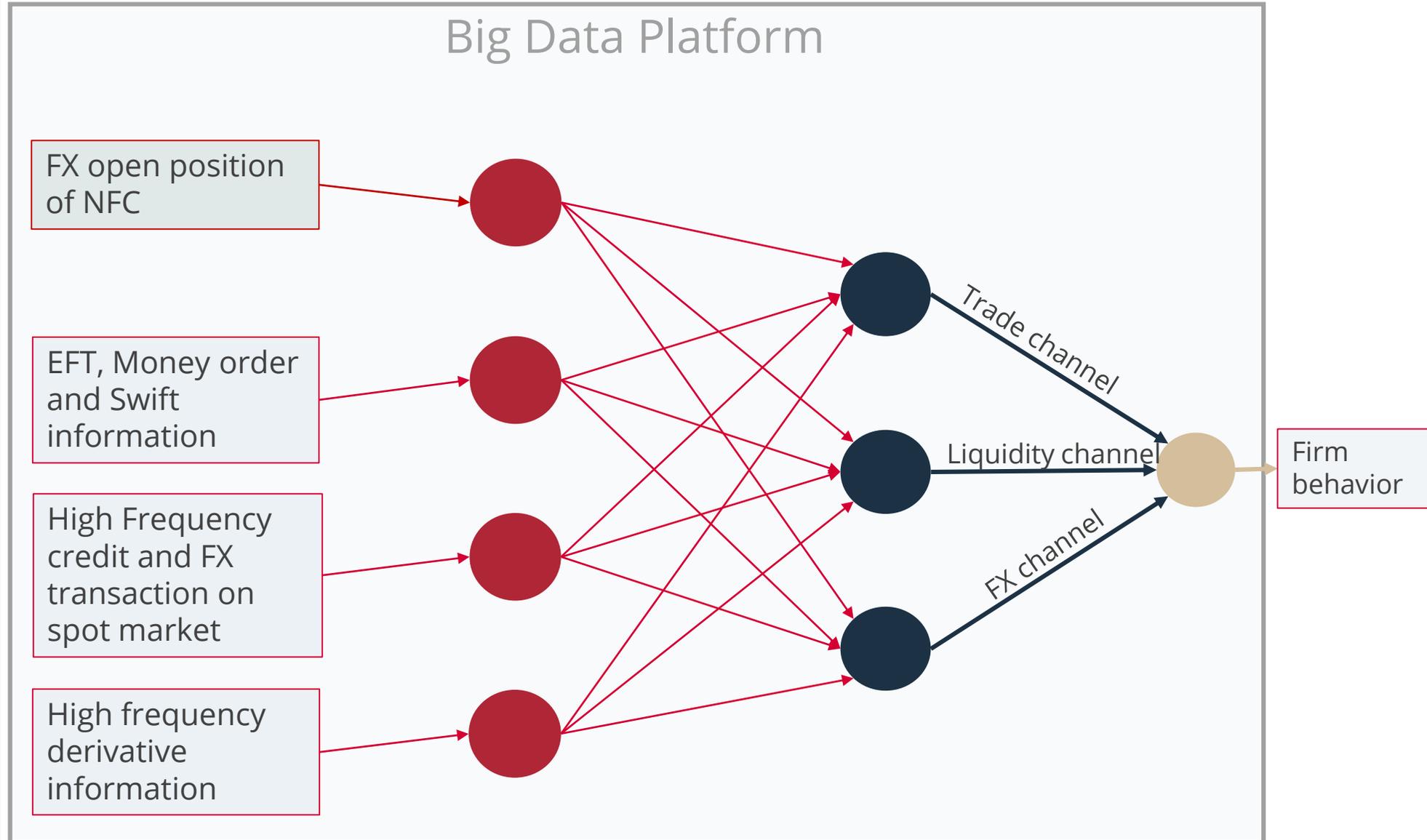
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Basel



High frequency data for financials but what about company accounts?



The Motivation for New Datasets



- Timely monitoring of the effects of the regulations has become very important. However, **delays in company reporting** did not make this possible.
- Some changes had to be made in frequency and structure of reporting in order to obtain timely
- This situation **required CBRT to fully adapt the reporting system to pandemic conditions**. So, CBRT has changed the reporting standard from **IFRS to national accounting standards, reduced the frequency to weekly, and compiled some part of reporting from administrative records (like derivatives)**
- Our most prominent motivation is to provide more complete, timely and granular information as a complement to traditional macroeconomic indicators. It is important to strengthen analysis for decision-making and data is valuable only if we can manage to extract value from it

The New Dataset

NEW

- From 2018 to 2020, we watched these company's data quarterly and after 2021, we changed the frequency to monthly. However, during the pandemic period in 2020, we requested weekly position from companies from June to December to follow the covid-19 effects on FX positions.
- Weekly reportings were made in the format determined by our institution, using the values that were the basis of the legal financial statements prepared in accordance with the Accounting System Implementation General Communiqués ("MSUGT") and the Uniform Chart of Accounts (THP) requirements published by the Ministry of Finance. CBRT had made some legal arrangements to establish the system.
- Since the account balances in the form would be updated on a weekly basis, changes resulting from such timing mismatches would be reflected in the account balances in subsequent reporting. Therefore, **no retrospective adjustment was required.**
- The weekly data sheet was not subject to independent audit.

The New Data set- In-house data process

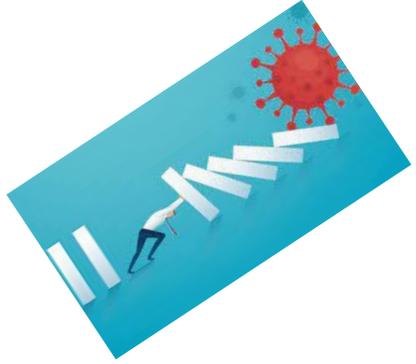
With the weekly data form, 13 active and 12 passive items in the balance sheet of the companies were collected in USD, EUR, Other FX and TRY currencies. Data were collected via e-mails sent to official e-mail address. **The data collection process was carried out in the following steps:**

- First of all, an excel file template to be sent weekly was sent to all companies that have a reporting obligation. The Excel template was protected with a password, and companies were only allowed to enter data in the relevant fields. Firms were requested to fill in the form with their current account balances as of Sunday every week and send it by the following Wednesday at the latest. E-mails sent by companies were read with a developed python script, error checks are passed and tables suitable for analysis were created. The process of the Python script was as follows:
- Separating the mails that had excel that we sent to the companies as an attachment to the mail that comes to the mailbox or that were categorized as data forms by the business unit.
- Checking whether the excel files attached to the parsed e-mails were compatible with the template we sent. If the template was corrupted, automatic e-mail reply containing this error was returned to the relevant companies.

The New Data set- In-house data process

- If the template was correct, checking the basic information in the form (TAC, Title, reporting week, writing 0 in all fields) and returning an automatic mail reply suitable for errors (for example, missing vkn or reporting for future dates).
- Reading the error-free form with the python openpyxl module using the excel sheet-excel cell and the account code matches (eg Data Form-C25 = Cashier) and converting it to tabular data format
- Aggregating and converting the data collected for the relevant week into a single data file after completing the previous step for all forms. Combining the single data form created for the relevant week with the single data forms created for the previous weeks. At this stage, automatic confirmation e-mails were sent to the companies in order to prevent the companies from repetitive reporting for the same dates. Updating the old data with the allowed data after the manual approval process (reading the mail content) (such as the company's request to correct the old data).
- Converting the data created in wide format into a structure suitable for analysis and transferring it to the big data environment.

The Post Pandemic Adjustments



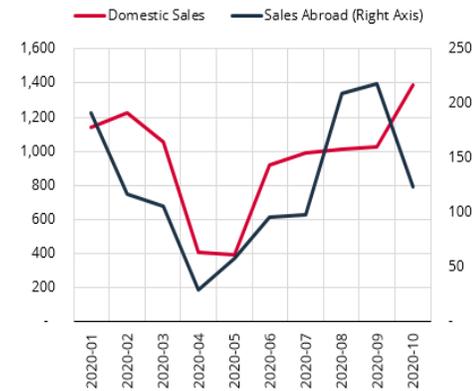
- **After the pandemic conditions relaxed, CBRT changed the reporting from weekly to monthly by integrating more complex reporting system to replace previous one.** Thus, we reduced the reporting obligation on our companies from weekly to monthly and established a more sustainable data infrastructure. However, we did not want to return to quarterly reporting again, because the analyses arising from the combination of timely company data with other datasets were used extensively in upper management decisions.
- In the monthly data form, different from the weekly data form, flow variables such as monthly domestic and international sales, stock purchases, tangible and financial fixed asset purchases are also included. Thus, it has made it possible to make monthly cash flow analysis of the companies. We can also provide ease of analysis by visualizing these cash flows with sankey charts
- The addition of other high frequency data such as quarterly temporary income statements and monthly VAT returns is now carried out within the scope of post-pandemic studies. it was a win to integrate company data with other high frequency databases, now researchers can work on this integrated dataset

The Post Pandemic Adjustments

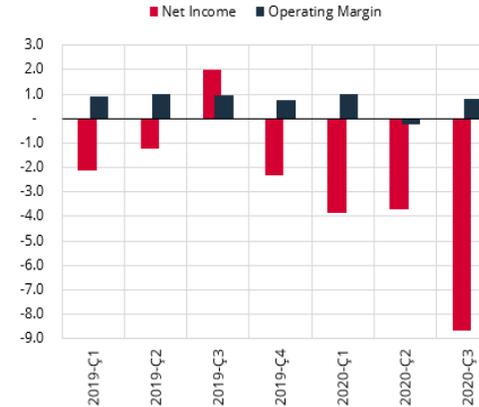
- **The monthly turnover table** calculated within our Directorate every month; the main table of Revenue Administration, Company notifications transferred from Turkish Statistical Institute on a monthly basis pursuant to the Revenue Administration
- **Temporary income statements** are submitted to Revenue Administration once every 3 months, until the evening of the 17th day of the 2nd month following the quarterly period. The relevant data is transferred to the Turkish Statistical Institute by the Revenue Administration within 15 days, and transferred to our Bank from the Turkish Statistical Institute on the 15th of the next month

Shopping center review with VAT and quarterly income statements

Domestic Sales- Sales Abroad (Million TL)



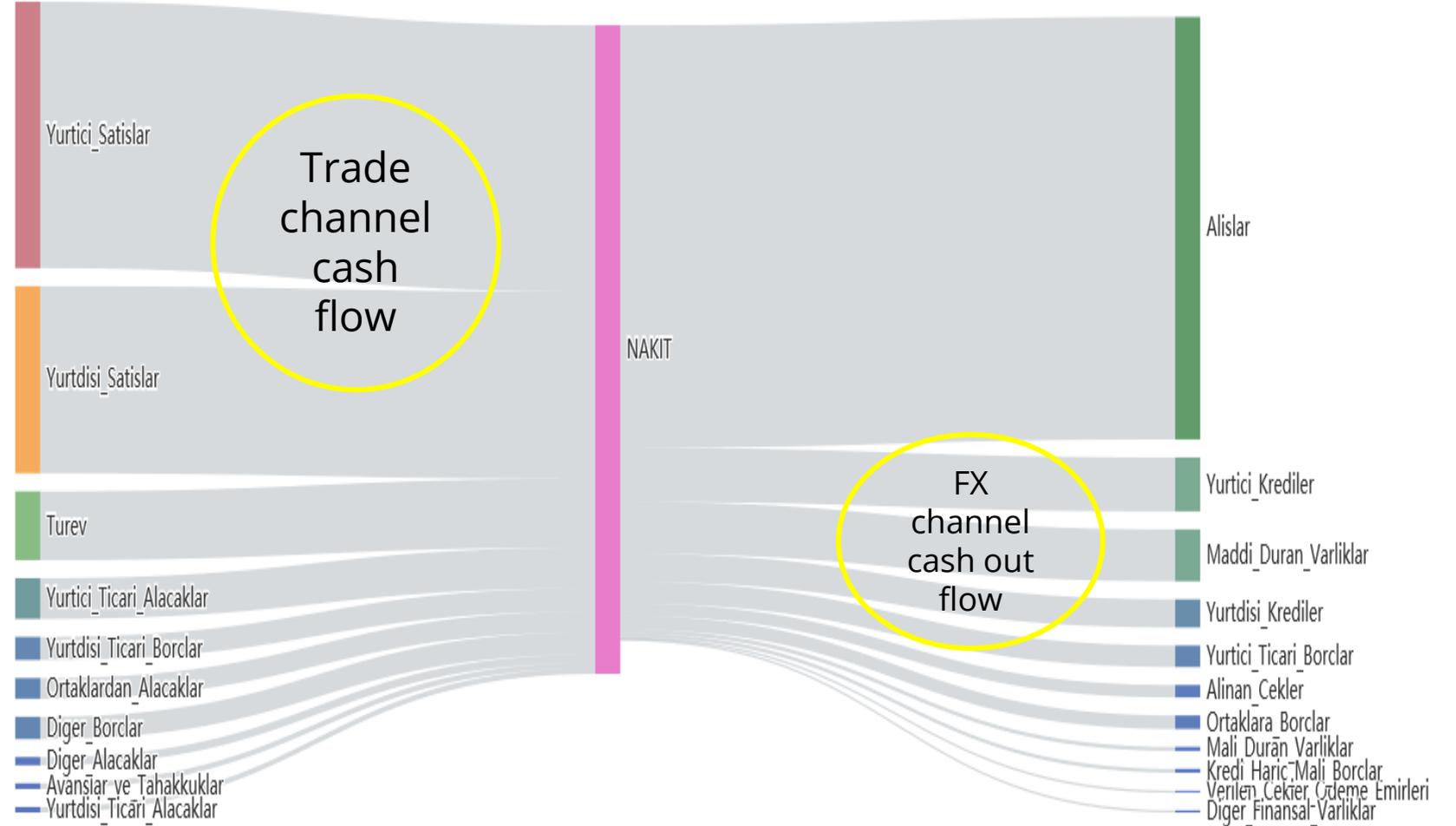
Net Income-Operating Margin (Billion TL)



Cash Flow Analysis

Firm and sector level cash flow analysis

Cash flow analysis for an sector examle





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