Initial statistical findings on the new Money Market Statistical Reporting

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Abstract

High-frequency statistical information on money market activity is considered necessary to better inform the monetary policy conduct as supported by the related market operations analysis for standard and non-standard measures, also taking into account the modified market patterns that emerged during the crisis. In this respect, the ECB launched a new Regulation to collect money market data on a transaction-by-transaction basis as of 1 July 2016, following a 3-month interim period.

Keywords: money market; secured market; unsecured market; derivatives.

1. Introduction

On 1 July 2016, the ECB started the regular collection and production of statistical data from the 52 euro area banks with the largest market share in euro money market segments. This data collection is part of the tasks of the European System of Central Banks (ESCB), and aims to provide a reliable and timely source of accurate information for policy-making, market analysts and the public at large. The production of European Statistics is organised around two separate pillars, the ESCB and the European Statistical System (ESS; basically Eurostat and national statistical offices) partnership, with separate legal frameworks and governance structures.

The Money Market Statistical Reporting (MMSR) entails the daily collection of individual transaction-by-transaction information from credit institutions on their transactions with other monetary financial institutions (MFIs), but also with other counterparties, such as financial intermediaries, insurance corporations, pension funds, central banks for investment purposes, the general government, as well as on wholesale transactions with non-financial corporations.

This new granular dataset covers four segments of the euro money markets, namely unsecured, secured, foreign exchange swaps and overnight index swaps (OIS) transactions denominated in euro. The new data collection framework is based on the daily reporting of transaction-by-transaction information on unsecured and secured lending and borrowing transactions in euro with a maturity of up to one year. All foreign exchange swap transactions involving euro and OIS transactions denominated in euro must also be reported. The detailed trade data to be provided include volume, rate, counterparty type and collateral type, together with the time at which the transaction was conducted.

Monitoring money markets much supports the analysis of the monetary policy transmission (as well as for macro- and micro-prudential supervision), especially in a context of high market fragmentation. It also helps surveying market expectations for future developments of policy rates. In such a situation, in 2014 the Eurosystem decided to collect statistical data on money market transactions. In sum, this dataset provides the Eurosystem with daily, accurate, timely (in the early morning on the working day following the deal) and comprehensive data on transactions concluded by the reporting banks.

The objective of this paper is to study statistical and methodological aspects concerning the transmission of this data. In this regard, the paper provides an overview of the automated validation procedures that have been used to identify wrong observations and outliers from the second quarter of 2017. Moreover, the paper presents statistics in terms of accepted transactions, amendments, corrections and revisions on the data transmitted by reporting agents and its follow-up on a daily basis. In addition, the paper also covers the standardisation of data variables following ISO 20022 and general quality data aspects found during the initial period of this new data collection.

2. Checks and statistical analysis of MMSR data

Since the launch of the MMSR data collection, more than 10 million transactional records have been reported, starting on 1 April 2016. On average, 45,000 transactional records, as shown in Chart 1, are received at 07:30 in the morning of the next working day, allowing an early assessment to be used as input to the daily monitoring of liquidity by the ECB.
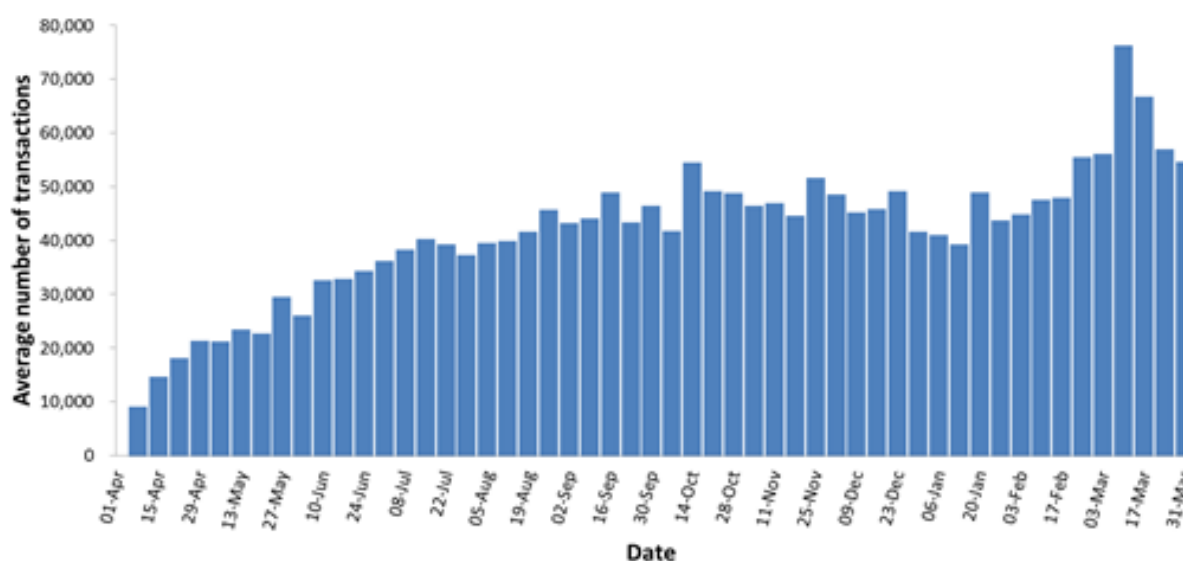

Chart 1. Average of transactional records per week

Given the large and significant data volumes that are received on a daily basis, a key challenge is to identify misreported data. To this end, a layered system of checks ensures the correct reporting of the transaction-by-transaction data.

The first layer consists of a large number of automated Data Quality Checks, which immediately reject those reported transactions that do not comply with the correct format or contain inconsistent data, for example regarding the date structure of the trade, based on ISO20022 standards (as described in detail in Section 3).

As presented in Chart 2, the current number of transactional records rejected by the system is very low. On average, in March 2017, the percentage of accepted transactions was around 92%, the percentage of warnings stood at 7% and the percentage of rejected transactions was only 1% of the total transactional records received in that month. In this respect, the success of building up a system which currently rejects such a low number of transactional records relies on the full automation of the system, made possible by using standardised definitions and a set of XML schemas based on ISO 20022.

Additionally, the ECB defined a set of MMSR Reporting Instructions and MMSR Questions and Answers which specify the standardised reporting framework that applies to the daily transmission of MMSR data. Moreover, in meetings with the reporting agents, the ECB explained and clarified the most relevant technical and methodological aspects of the reporting. Regulation ECB/2014/48 states that, in the interim period from 1 April 2016 to end-June 2016, reporting agents were permitted to report money market statistics for some but not all relevant days to the ECB or the relevant NCB. This 3-month testing period allowed reporting agents to set up and calibrate their reporting systems and solve teething problems. In this regard, the total numbers of daily transactions rejected decreased in less than 4 months from 30% to around 3%, as shown in Chart 2.
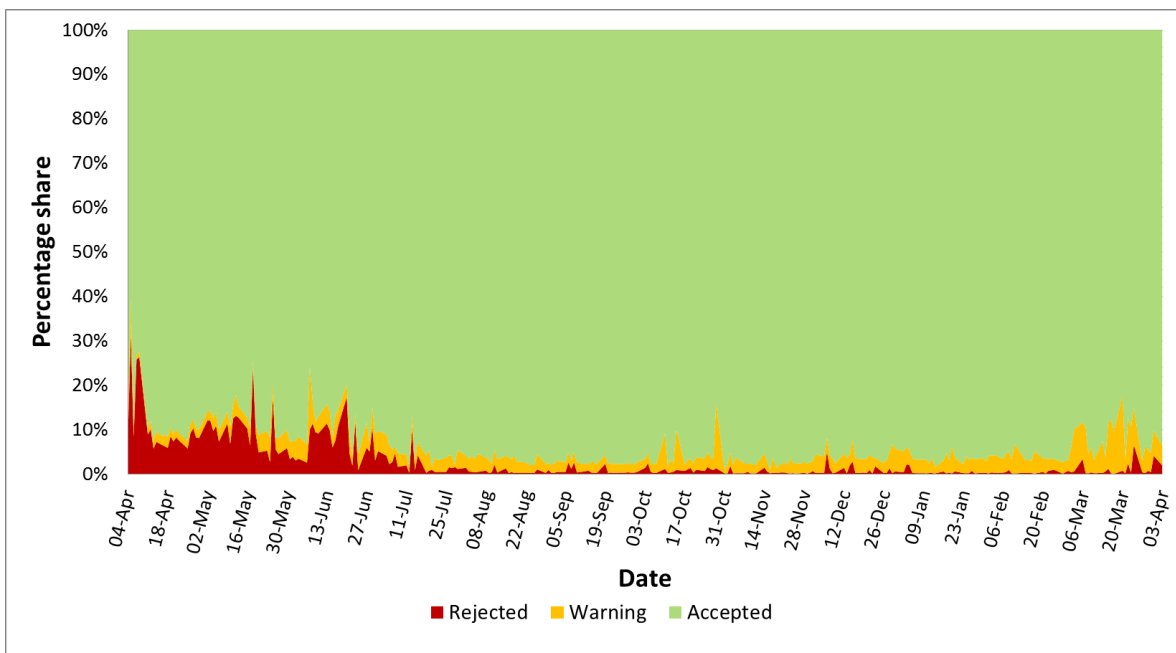

Chart 2. Percentage of transactional records classified as accepted, rejected and warning

The second layer consists in checking the consistency and plausibility of the individual transactions via a set of methods. The first method cross-checks the two legs of those individual transactional records which are reported by both counterparties (with respect to the interbank market). The matching of two legs help identify whether both counterparties actually reported this trade and whether the respective details of the trade have been consistently reported by both of them.[1] Underreporting is when, e.g., one credit institution omits to transmit transactions according to the Regulation, while over reporting is when transactions are out of the scope of the Regulation. When

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[1] Currently, no unique trade identifier exists for all money market segments. The Unique Trade Identifier (UTI) has been introduced for part of the derivatives markets and work is ongoing to implement a similar concept also for the secured and unsecured money markets (Bank for International Settlements, 2017).

analysing the two legs of a transaction differences in numerical values or other dimensions of transactions help identify whether counterparty information is appropriately classified.

Additionally, the MMSR further analyses the consistency of the data via clustering and multivariate analysis, time series analysis and outlier detection methods. By applying these techniques the data is clustered by maturity, counterparty sector and counterparty location. Analyses allow an understanding of the investment strategy on the different maturities and counterparties by reporting agent and to detect transactions which are outliers compared to the rest of the population. Outliers may either reflect a definite strategy of any credit institution in their liquidity management, or on behalf of customers, or indicate unfiltered mistakes in the reporting. .

While overall the statistical data analysis shows that the data quality is high, several important data quality issues have been identified and are currently being addressed to further improve the quality of the data.

3. ISO 20022 standard: automating the MMSR data transmission

Due to large data volumes, a full automation of the data flows is a critical success factor for the reporting between the relevant credit institutions, the four National Central Banks (NCBs) directly involved, and the European Central Bank (ECB). Hence, the MMSR implemented a full standardisation of the underlying taxonomy and data transmission format based on the ISO 20022 standard.

ISO 20022 is widely used in financial services and was created by the industry to allow an electronic data interchange between financial institutions. The ISO 20022 methodology was agreed by the financial industry to create consistent message standards across all business processes.

This ISO standard provides a method to develop well-structured financial messages and allows unifying the many existing standards which are used in the industry. In addition, it describes a metadata repository containing descriptions of messages and business processes, and a maintenance process for the repository content. The ISO 20022 standard was also chosen with a view to reducing the reporting burden of the sample bank taking into account that this standard is already widely used in the financial industry. The ECB developed a set of four new ISO 20022 reporting messages. [2] The messages improve the efficiency of the internal data processing of credit institutions, by making use of existing ISO 20022 business concepts. This way, credit institutions which are already using ISO 20022, are able to apply consistent definitions for the statistical reporting and re-use existing data from their internal systems for the MMSR. The usage of business concepts from the ISO 20022 standard allows the NCBS involved and the ECB to apply consistent definitions and automate processing of the received data. In addition, the usage of standards has been a key prerequisite for ensuring high data quality and providing global semantic interoperability with all other ISO 20022-based systems.

In January 2016, the Registration Management Group of the International Organization for Standardization (ISO) approved the new MMSR ISO 20022[3] for a set of new reporting messages

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[2] Each reporting agent provides the daily Money Market Statistical Reports by sending four separate reporting messages; one for each segment: MMSR Secured Market report, MMSR Unsecured Market report, MMSR FX Swaps report, MMSR OIS report. The four new messages use the ISO 20022 Business Application Header (BAH) without repeating header elements within the message.

[3] The business justification was reviewed and approved by the ISO 20022 Registration Management Group (RMG). The RMG is the highest ISO 20022 body governing the overall process. The RMG is composed of senior industry experts nominated by countries or international organisations.

which were developed by the ECB for the MMSR. The approval of the MMSR messages marked a first and very important step in the process to prepare a full ISO standardisation[4] for money markets.

4. Further usages of MMSR data

While the main purpose of the MMSR data is to support the analysis of the monetary policy transmission, the data also allow important insights regarding macro- and micro-prudential supervision; for example the network analysis regarding the relationships between banks. Overall, the reported individual transactions allow for the identification of trading patterns between banks and the analysis of potential contagion channels in funding markets. Since the MMSR data consistently cover the different segments of the euro area money market, a robust inference regarding possible substitution effects between the different market segments is possible and frictions in the intermediation of money markets can also be identified.

5. Publication of aggregated data

In order to serve as well the general public, practitioners and researchers, the ECB will publish a first set of around 1000 aggregates series based on MMSR data by the end of 2017. The first aggregates will be published initially every 6 weeks following the ECB maintenance period. The aggregated series will show the total turnover, the average weighted and the mean rate for each market segment, i.e. secured, unsecured, FX swaps and OIS, broken down by maturity band. Additionally, the series will be broken down by transaction type, i.e. differentiating between borrowing and lending transactions for the secured and unsecured market segments, buy and sell transactions for the FX swap segment and paid and received transactions for the OIS market segment. The series will also be broken down by counterparty sector, differentiating those transactions which belong purely to the interbank market from those which belong to the wholesale market.

The publication of aggregated data will be arranged in protecting the confidentiality of highly granular statistical data. Aggregated data will cover at least three reporting agents, so as to prevent their indirect identification. Given the large number of transactions received, it is expected that only a few time series will have some empty observations for a particular breakdown.

6. Conclusions

The MMSR data set is a new data collection that provides better and timelier information on the monetary policy transmission mechanism, as well as on market expectations on the future path of policy rates. This insight provides valuable information on the liquidity, depth and substitution effects within the money markets and on banks' lending and funding conditions, providing vital analysis on a relevant part of the ECB monetary policy transmission process.

The MMSR as a granular transaction-by-transaction dataset constitutes a new challenge in terms of data quality analysis. In this respect, the paper has presented different techniques and methods which are used to improve the quality of the data, together with the main quality data aspects encountered in this new data collection during the first year of reporting.

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4   The initial Business Justification was jointly submitted to ISO by the European Central bank, the Deutsche Bundesbank, the Banco de España and the Banque de France and approved in June 2015.

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