

Box 3

The usefulness of TARGET2 transaction data for the analysis of the unsecured overnight money market

Despite the importance of money markets, granular information on transactions is generally not readily available. Overnight transactions mainly take place over the counter, and when recording these, the few trading platforms typically focus on certain jurisdictions. For the euro area, daily information on unsecured overnight lending is collected for a panel of banks, and the weighted average of their rate contributions gives rise to the euro overnight index average (EONIA) as the reference rate for the overnight unsecured segment. However, the panel bank contributions are not at the level of individual transactions, but daily aggregates of their lending activity. As of mid-2016, money market transaction data will be collected for the euro area under the Money Market Statistical Reporting Regulation, under which, initially, 53 banks will report.¹

TARGET2 (the Trans-European Automated Real-time Gross settlement Express Transfer system) offers an unparalleled source of granular overnight money market information. While information on overnight unsecured loans in TARGET2 is not directly available, it can be accessed by screening the set of transactions that occur through the payment system for the settlement of the two legs of an interbank loan.² This method has long been used worldwide and allows for the reconstructing of significant parts of the unsecured overnight money market activity.

The large coverage of banks in TARGET2 provides a comprehensive picture of the unsecured overnight money market. A key benefit of using TARGET2 data for analysis is the high number of banks (around 1,000) participating in the payment system.³ Although a small fraction of overnight market trading settles privately outside TARGET2, TARGET2 data still provide a close representation of the euro area overnight market. This is evidenced by the fact that the total lending as measured by TARGET2 data for the second quarter of 2014 is broadly similar to that resulting from the Euro Money Market Survey (€2.0 trillion),⁴ which captures trading outside TARGET2, but covers a much lower number of banks (154).

¹ See Regulation (EU) No 1333/2014 of the European Central Bank of 26 November 2014 concerning statistics on the money markets (ECB/2014/48): https://www.ecb.europa.eu/ecb/legal/pdf/oj_jol_2014_359_r_0006_en_txt.pdf

² For more information, please see the box entitled “Using TARGET2 payment data to analyse money market conditions”, *Monthly Bulletin*, ECB, May 2013 or the report on the Macro-prudential Research Network (MaRs): <https://www.ecb.europa.eu/press/pr/date/2014/html/pr140623.en.html>

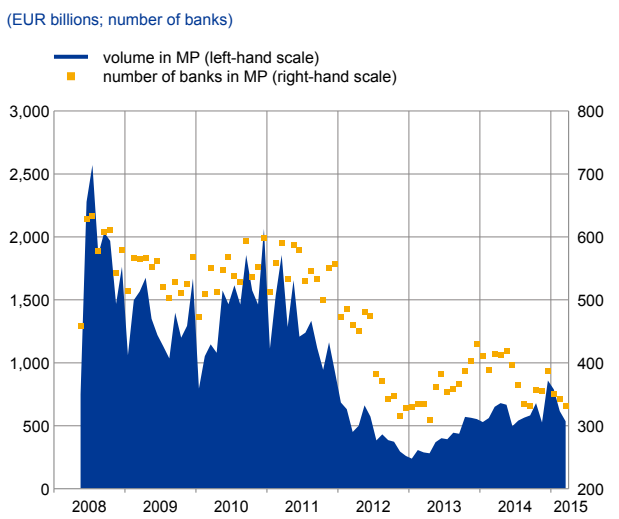
³ Furthermore, each transaction in TARGET2 contains the same fields and information, allowing comparability. See the TARGET Annual Report 2014: <https://www.ecb.europa.eu/press/pr/date/2015/html/pr150601.en.html>

⁴ See the Euro Money Market Survey and Study: <https://www.ecb.europa.eu/stats/money/mmss/html/index.en.html>

Aggregate statistics for the overnight unsecured money market based on TARGET2 data confirm some well-known crisis-related developments.

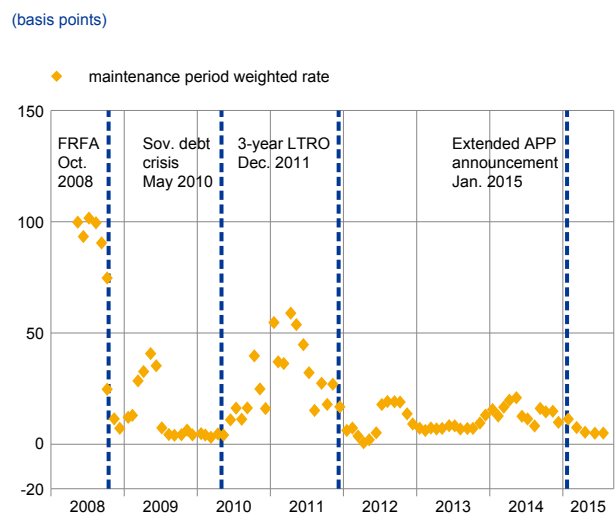
For instance, the overnight unsecured money market shrank from a peak of €2.5 trillion per reserve maintenance period in mid-2008 to slightly over €0.5 trillion by the time of the settlement of the second three-year longer-term refinancing operation in March 2012. The total number of banks active in the overnight unsecured market in a given reserve maintenance period dropped from a peak of around 600 in August 2008 to around 330 by June 2015 (see Chart A). In parallel, money market stress became apparent from rate developments. For example, the average spread of the interest rate paid for overnight market funds over the deposit facility rate varied significantly over time. After falling towards the deposit facility rate with the introduction of the fixed rate full allotment procedure and the associated increase in excess liquidity, the spread occasionally reached high levels, especially during the euro area sovereign debt crisis that started in spring 2010 (see Chart B).

Chart A
Overnight unsecured money market volume and number of banks



Sources: TARGET2 and ECB calculations.
 Note: Figures are computed at maintenance period (MP) level.

Chart B
Weighted average overnight spread



Sources: TARGET2 and ECB calculations.
 Notes: Figures are computed at maintenance period level. The overnight spread is over the deposit facility rate. FRFA = fixed rate full allotment. APP = asset purchase programme.

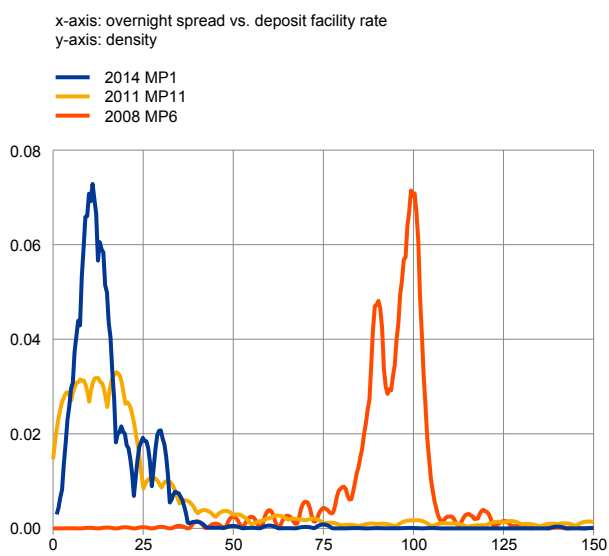
Money market data derived from TARGET2 transactions also provide information on the dispersion of rates and volumes across banks.

Chart C presents volume-weighted kernel densities of the spread of overnight rates over the deposit facility rate in selected periods. In mid-2008, the bulk of trading took place at interest rates close to the main refinancing operation rate (i.e. at a spread of 100 basis points) under the variable rate tender procedure, and in 2011 and 2014 at rates closer to the deposit facility rate, with excess liquidity resulting from the full allotment procedure. However, the densities also reveal considerable dispersion of

Chart C

Distribution of overnight spread in selected periods

(basis points)



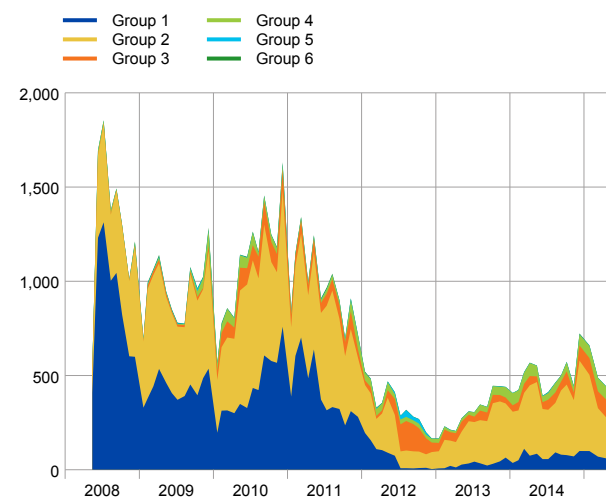
Sources: TARGET2 and ECB calculations.

Notes: Figures are computed at maintenance period (MP) level. The overnight spread is over the deposit facility rate.

Chart D

Overnight borrowing volume by credit risk group

(EUR billions)



Sources: TARGET2, DBRS, Fitch Ratings, Moody's, Standard & Poor's and ECB calculations.

Note: Figures are computed at maintenance period level.

interest rates at different points in time, with a particularly large tail towards higher spreads at the end of 2011 when the sovereign debt crisis reached its height.⁵

Individual bank transaction data can be matched with characteristics of the trading banks, such as their size, geographical location or credit risk, to obtain a better understanding of developments in the overnight unsecured market.

To explain the dispersion in rates, TARGET2 data are matched with the credit ratings of the trading banks. For this purpose, the ratings by four agencies⁶ are grouped into six credit risk groups from the lowest risk group (1) to the highest risk group (6), as presented in the table. Both borrowing and lending banks are assigned to credit risk groups.⁷

The credit rating data matching indicates that trading volume is largely determined by the credit risk of the borrowing banks. Chart D presents a breakdown of the total borrowing volume by credit risk group.⁸ Banks with the highest credit standing (Group 1) strongly reduced their borrowing by end-2012, for at least two important reasons. First, this group of non-stressed banks is known to have

⁵ As the densities are volume-weighted and trades at higher spreads are relatively small in volume, the density does not capture the full extent to which rates are dispersed.

⁶ DBRS, Fitch Ratings, Moody's and Standard & Poor's are the four external credit assessment institutions (ECAIs) accepted by the Eurosystem.

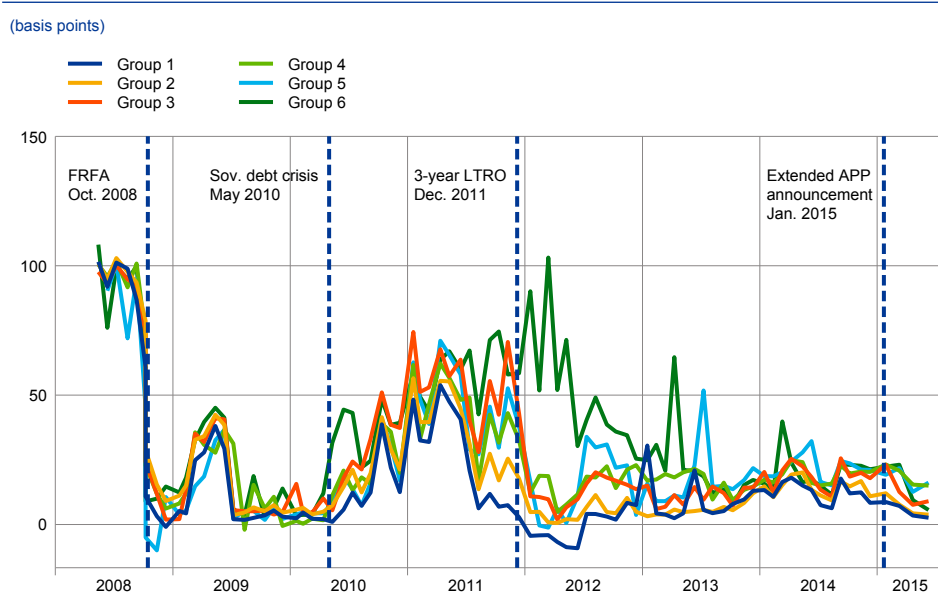
⁷ The assignment to a specific credit risk group is based on the availability of at least one longer-term rating. When two or more ratings are available, the group is determined by the average of the ratings after they have been converted into a numeric scale. The number of banks represented in each group is not homogeneous, as it reflects the representativeness of each group in the euro area. Over time, banks may change group owing to rating migration. See also the table.

⁸ The total share of overall volume for banks not included in the sample is around 25%. This share stays relatively constant over time, therefore not biasing the sample.

accumulated a lot of excess liquidity and therefore had smaller borrowing needs despite market access. Second, a significant portion of banks were downgraded during the financial crisis, potentially moving the banks and their lending volume to a new credit risk group. However, credit risk group migration could not, by itself, explain the reduction in total volume for all banks. Furthermore, banks with a lower rating (Groups 2 to 3) kept on borrowing contained amounts throughout the period. Considering the higher liquidity needs of such banks, these limited amounts reflect the fact that banks can also seek funds elsewhere, i.e. at a longer maturity, in the secured segment of the market, from non-bank counterparties or from the Eurosystem. The fact that the secured market has gained importance in recent years can also be partly attributed to a substitution of unsecured trading.⁹

The dispersion of interest rates is also determined by counterparty credit risk, with spreads across bank credit rating groups varying over time. Chart E presents weighted average borrowing rates per credit risk group. Lower-rated banks generally pay higher interest rates, which explain part of the rate dispersion observed in Chart C. However, Chart E also shows that there was little dispersion across the average borrowing rates of credit risk groups during 2008-10 and 2014-15. This indicates how banks with limited market access do not influence overall unsecured money market rates, as they often need to obtain liquidity from other sources, as mentioned above. It was only as of the end of 2011 and into 2012 that considerable rate differentials across credit risk groups emerged, but against small volumes for the more risky borrowers. Overall, only banks of a certain perceived quality could obtain funds in the unsecured interbank market.

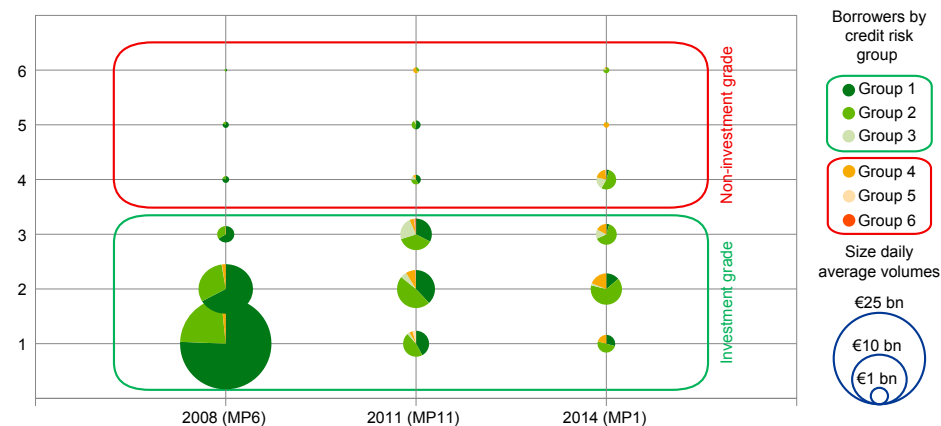
Chart E
Overnight borrowing spread by credit risk group



Sources: TARGET2, DBRS, Fitch Ratings, Moody's, Standard & Poor's and ECB calculations.
Notes: Figures are computed at maintenance period level. The overnight spread is over the deposit facility rate. FRFA = fixed rate full allotment. APP = asset purchase programme.

⁹ See the Euro Money Market Survey and Study: <https://www.ecb.europa.eu/stats/money/mmss/html/index.en.html>

Chart F
Overnight lending and borrowing volume by credit risk group



Sources: TARGET2, DBRS, Fitch Ratings, Moody's, Standard & Poor's and ECB calculations.
Notes: The size of the bubble represents average daily lending volumes. The shares within the bubbles represent the borrowing per credit risk group. The figures are based on transactions by counterparties identified in the TARGET2 database and having at least one public credit rating assessment.

Definition of credit risk groups

	Range of classes by credit rating agency (long-term)				Grade	Eurosysteem harmonised rating scale for ECAIs
	DBRS	Fitch Ratings	Moody's	Standard & Poor's		
Group 1	AAA to AA (low)	AAA to AA-	Aaa to Aa3	AAA to AA-	INVESTMENT	CQS1
Group 2	A (high) to A (low)	A+ to A-	A1 to A3	A+ to A-		CQS2
Group 3	BBB (high) to BBB (low)	BBB+ to BBB-	Baa1 to Baa3	BBB+ to BBB-		CQS3
Group 4	BB (high) to BB (low)	BB+ to BB-	Ba1 to Ba3	BB+ to BB-	NON-INVESTMENT	
Group 5	B (high) to B (low)	B+ to B-	B1 to B3	B+ to B-		
Group 6	CCC (high) to D	CCC+ to D	Caa1 to D	CCC+ to D		

Sources: TARGET2, DBRS, Fitch Ratings, Moody's, Standard & Poor's and ECB calculations.
Notes: CQS (credit quality step) refers to the Eurosysteem harmonised rating scale for ECAIs (external credit assessment institutions). See the box entitled "Eurosysteem credit assessment framework for monetary policy operations", *Monthly Bulletin*, ECB, April 2014.

Investment grade banks dominate overnight market lending. Chart F provides a who-to-whom breakdown of the overnight lending and borrowing volumes per credit risk group, which in comparison with Chart D adds information on the source of the funds in three maintenance periods. It shows that the bulk of trading took place among banks with the highest rating (Group 1) in 2008, but that this volume declined after 2008 as demand from those banks evaporated amid high levels of excess liquidity. However, the bulk of the supply remained in the hands of the investment grade banks, who lent contained amounts to a variety of lower-rated banks in 2011 and 2014.