THE HIDDEN TREASURES OF THE RUSSIAN SME SECTOR
A comparative cross-border statistical analysis of factors affecting SME loan delinquencies and its use for the validation of ACRA rating models

Proper use of modern analytical tools will reveal SME potential

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For the first time in the history of the Russian market, ACRA has conducted statistical validation of a modelling platform for the analysis of SME loan portfolios using Russian and international statistics. As part of the validation of the Methodology for assigning credit ratings to structured finance instruments and obligations, ACRA retrospectively rerated 26 SME securitization transactions — totaling around EUR 39 bln (RUB 2.9 trln) — using its GRASP modelling platform. According to ACRA, the final validation sample provides a statistical basis for GRASP modelling platform validation, continuous research and confirmation of ACRA’s key modelling assumptions including the SME loan probability of default (PD).

Retrospective rating analysis and back testing shows that the levels of credit enhancement measured using ACRA’s quantitative models provide protection sufficient to absorb actual observed losses for all rated tranches in all tested structured finance SME securitization transactions. ACRA’s modelling platform and analytical approach can be used to assign ratings to Russian and European issues of structured finance notes.

Analysis of the representative sample allowed ACRA to identify characteristics of SME loans, which are considered to be less risky. The model validation was preceded by a three-year effort in collecting and analyzing data from the Russian and European lending markets. ACRA was able to identify indicators of assets with higher credit quality by analyzing an extensive sample of historical data reflecting the quality of debt service for 1.2 million Russian and European SME loans with a total volume exceeding EUR 110 bln (RUB 8 trln).

European SME lending market statistics can and should be used to analyze Russian SME loan portfolios. A comparative analysis of historical data showed that the trends in the impact of the key loan characteristics on the level of delinquencies are fundamentally similar for the Russian and European markets (taking into account the existing country specifics).

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1 GRASP (Global Rating Analyzer of Structured Products) — The baseline platform of ACRA’s finance modelling used for the rating assignment of structured finance instruments.
Securitization instruments collateralized by SME loans significantly expand the volume of high-quality investments and ensure optimal use of public resources. The funds of institutional investors (including pension funds) can be channeled towards the real sector of the economy by investing in the senior (most protected) tranches of structured notes, thus ensuring the financing of the real sectors of the economy without additional subsidies from the state.

High credit quality structured notes backed by SME loans can be issued with state support or utilizing only the endogenous protection mechanism and therefore lead to significant savings of the budget and optimization of federal level support funds allocated for the development of the SME sector.

Using ACRA’s methodology and modelling platform, banks will be able to issue Russian securities backed by SME loan portfolios that will match the credit quality of comparable European securities. A detailed risk profile analysis of borrowers with better characteristics and a selective approach will make it possible to reduce interest rates for such borrowers. Consequently, it will save budgetary funds in the amount of more than RUB 63 bln, forming a tool to support the most reliable and competitive SMEs.
Collected statistical data on SME loans

Representative statistical sample

Statistical analysis of PD drivers
Comparative analysis of Russian and European SME loans

Modelling assumptions

Statistical validation using GRASP

Eligibility criteria
Summary

This research is devoted to the statistical analysis of the factors influencing the delinquency rate on loans issued to SME entities, as well as the key validation stages of GRASP-SME, GRASP-MC, and GRASP-CF modules\(^2\) used to analyze the distribution of PD and recovery rates in SME loan portfolios. In conducting its analysis, ACRA applied two separate SME loan samples that were formed using various eligibility criteria, which is explained by the specifics, goals and objectives of each part of the research.

1. **Statistical analysis of PD drivers.** ACRA conducted this analysis using a sample of Russian and European assets that includes 1.2 million loans totaling EUR 110 bln (RUB 8 trln)\(^3\). Key criteria included the availability and completeness of historical data.

2. **Validation of ACRA’s rating models.** ACRA conducted validation using a sample of 26 transactions totaling EUR 39 bln (RUB 2.9 trln). The selection criteria included the availability of pool cut-off data as of the closing date, the availability of a credit rating assigned by one of the international rating agencies, and the compliance of assets included in the transaction with the standard characteristics of SME loans.

**Statistical analysis of factors affecting the delinquency rate for SME loans**

The model validation was preceded by a three-year effort in collecting and analyzing data from the Russian and European SME lending markets. At the end of 2016, ACRA launched a project to collect statistical information on various asset classes. The aim of the project was to create a unique federal level analytical platform that takes into account the national and regional characteristics of the Russian and European markets, as well as to identify and assess the main risks affecting the quality of securitized portfolios of retail and corporate loans.

Traditionally, the quality of the loan portfolio is formed at the microeconomic level and influenced by the initial parameters of each individual loan, including the characteristics of debt (loan product), borrower, collateral, and lender (bank) profile. ACRA examines the impact of these parameters both separately and taking into account the possible correlation dynamic in the sample.

\(^2\)A more detailed description of modules can be found in the Methodology for assigning credit ratings to structured finance instruments and obligations on the National Scale for the Russian Federation.

\(^3\)According to the exchange rate of the Bank of Russia as of March 6, 2019.
ACRA conducted its analysis of historical performance data for Russian loans using a representative sample of the loan portfolio from several national banks. The total share of the sample in terms of SME debt is about 35% of the overall Russian market (as of January 1, 2018). The sample includes loans issued in 83 regions of the Russian Federation from 2001 to 2017 reflecting the majority of product types of borrowers present in the market. The banks provided ACRA with information on every individual loan using ACRA’s transaction template for the collection of information on the debt portfolios of loans issued to SMEs.

To improve the quality of data collection, ACRA has developed a series of transaction templates to collect and monitor the portfolio parameters of various types of loans. In particular, the analytical transaction template is used in the context of credit analysis; it is a digital template used by ACRA to collect “correct” portfolio data on a loan-by-loan level. The template is a stand-alone instrument that is fully integrated into ACRA’s analytical models and can be used to collect historical loan portfolio performance data and to carry out market research beyond the scope of any particular transaction.

The need to collect granular information is due to the lack of publicly available and sufficiently representative data on the quality of debt service for SME loans. Bank reporting statements are usually published as of a specific date in an aggregated format that does not allow for a quality assessment of the portfolio based on the delinquency rate attributable to individual loans with specified characteristics.

The cumulative default data provided in the format of vintage reports has a positive impact on the quality of the sample. Credit institutions use vintage reports for internal reporting in order to monitor the quality of loan portfolios by months of origination. Vintage reports enable the evaluation (with certain limitations) of the cumulative default rates for individual loan buckets over their lifetime.

Together with market participants including major banks, national development institutions, and the Bank of Russia, ACRA is working to create a national database that contains anonymized data on individual loans that can be used by all project participants. This will enhance the analytical tools needed to improve the credit quality of Russian SME debt portfolios as well as increase lending. International rating agencies are carrying out similar work in the US and EU. These agencies organize consortia to collect data that is used in annual studies of default and recovery rates in corporate and project finance debt.

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*By default, ACRA means the borrower’s delinquency on the relevant loan for more than 90 days, the company filing for bankruptcy, and/or debt restructuring.*

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*“Global default and recovery studies” published by international rating agencies that usually contain limited samples of Russian data, or do not include them at all.*
ACRA's cooperation with European DataWarehouse (EDW) has made a significant contribution to the validation project. EDW is a supranational statistical platform established in 2011 at the initiative of the European Central Bank (ECB) in response to the global decline in investor confidence in the securitization market after the global financial crisis of 2008-2009. The result of the crisis was not only the tightening of regulatory requirements in Europe's collateralized note market in the form of new Basel III regulations, but also the so-called ABS Loan-Level Initiative — a legislative initiative of Eurozone banks aimed at collecting and standardizing data on structured notes that are actively used by European banks in secured lending, repo, etc.

The EDW platform, working as a single statistical aggregation channel accountable to the ECB, is creating the market infrastructure needed to increase transparency and restore confidence in Europe's structured finance market. The company began operations in January 2013 and 17 European companies and financial institutions joined as shareholders of EDW, including large corporations like BNP Paribas S. A., Banco Santander S. A., UniCredit S. p.A., Société Générale S. A., DBRS Ratings Limited, and several others.

The EDW database contains detailed information on loans backing up more than 1,100 securitization transactions in Europe (see Figure 2).

Figure 2. Breakdown of securitization transactions in the EDW database by asset class

Source: EDW

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1. https://eurodw.eu/
ACRA used an EDW data sample covering 55 SME loan securitization transactions to conduct an analysis of the debt-service-quality dependency on credit parameters.

Key eligibility criteria for transactions in the sample:
- Representative historical data on the transaction cover a period of more than two years;
- The share of incomplete fields does not exceed 10%;
- There are no timeline gaps in the life of assets or changes in the unique identifier of the loan/borrower.

Figure 3. Default timing curve for SME loans in Russia

ACRA excluded from the sample several transactions lacking sufficient data quality (deals with timeline gaps in the life of the asset, inconsistencies in the unique identifier of the loan/borrower, etc.). ACRA included in the sample around 880,000 SME loans issued in Belgium, Italy, Spain, Portugal, and the Netherlands, which amount to about 74% of issued bonds in the European SME securitization market (see Figure 4). The profile of the selected sample has the same cumulative

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6 A full description of the statistical sample can be found in Appendix 1.
probabilistic as well as other quantitative and qualitative characteristics as the overall source population. The observed default rates correspond to the indicators published in the macro-statistical studies conducted by other rating agencies and market development institutions. ACRA believes that the size and content of the sample are sufficiently representative for the purposes of statistically analyzing the main factors that influence the amount of PD and correspond to the samples used in similar studies by reputable international rating agencies.

Figure 4. Distribution of European SME loans in the statistical sample by country of issue

![Graph showing distribution of European SME loans by country of issue]

Sources: EDW, ACRA’s calculations

In ACRA’s opinion, the SME segment is extremely heterogeneous, both in terms of the types of borrowers and in terms of the range of lending products present in the market.

The results of ACRA’s research focusing on the comparative analysis of the Russian and European SME loan sample lead to several conclusions.

In ACRA’s opinion, the SME segment is extremely heterogeneous, both in terms of the types of borrowers and in terms of the range of lending products present in the market. This key feature can be seen in the portfolios of Russian banks as well as in the securitized portfolios of European SME loans. Depending on the size of borrowers and the specifics of originators, SME loan portfolios can be both granular (similar in nature to the pool of retail loans when one borrower accounts for no more than 1-2% of total portfolio) as well as concentrated (combining large and medium-sized companies as well as microenterprises in one sample). In analyzing the latter, ACRA took into account the fact that the credit quality of portfolios with a higher concentration of the largest borrowers, to a larger degree, depends on the quality of such lumpy assets. In addition, unlike retail portfolios, SME loan portfolios (in Europe as well as in Russia) can have the following credit products: loans with individual/bespoke repayment schedules, revolving credit lines, bullet/balloon loans, second lien loans, etc.

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The final sample for statistical analysis included one Dutch transaction that meets all of the selection criteria.
Robust credit assessment of SME portfolios that adequately takes into account the multitude of specific features and overall heterogeneity of the SME loans demands in-depth analytical expertise and world-class statistical databases ensuring a competent and objective approach to data collection. The optimization of data collection and analysis in SME lending is the key for the creation of the best possible conditions for the most competitive SMEs. In particular, it facilitates the reduction of interest rates and provides for optimal growth conditions for strong borrowers. A strong statistical basis also creates a platform optimizing bank reserve requirements for SME loans in Russia.

Based on the results of the analysis, ACRA concluded that factors strongly impacting PD of SME loans include the following: the size of the company, the borrower’s industry, the type of loan amortization, and the age of the company.

**Company Size**

According to the statistical data collected by ACRA, the loan default rates exhibited by Russian and European microenterprises is significantly higher than for small and medium-sized enterprises (see Figure 5).

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The optimization of data collection and analysis in SME lending is the key for the creation of the best possible conditions for the most competitive SMEs. In particular, it facilitates the reduction of interest rates and provides for optimal growth conditions for strong borrowers. A strong statistical basis also creates a platform optimizing bank reserve requirements for SME loans in Russia.

In ACRA’s opinion, this is due to several advantages of the small and medium-sized enterprises over microenterprises, including:

- Diversification in sources of income as well as in activities;
- Broad client base;
- Diversification in sources of funding;

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*In accordance with ACRA’s criteria.*
• Economies of scale manifested in the reduction of costs per unit of output and the growth of output allowing larger companies to reduce the amount of fixed costs;

• Lower “key person” risk;

• Relatively higher quality of corporate governance and business transparency.

Throughout its analysis, ACRA carried out extensive work to compare and standardize the classification systems of borrowers among various banks. Analyzing the credit quality of the SME borrowers, ACRA considers legal entities that meet the following conditions:

• Microenterprise — the annual turnover for the previous calendar year does not exceed RUB 400 mln;

• Small-sized enterprise — the annual turnover for the previous calendar year does not exceed RUB 2 bln;

• Medium-sized enterprise — the annual turnover for the previous calendar year does not exceed RUB 4 bln.

SME classification in the European part of the sample met the criteria established by the Commission of the European Communities (Commission Recommendation of 6 May 2003–2003/361/EC), which define the borrower based on its annual turnover.

Considerable efforts were made to standardize the SME classification systems used by Russian banks. Despite there being criteria in Federal Law No 209-FZ from July 24, 2007, for classifying legal entities as SMEs, as well as several other criteria (including definitions from the European Central Bank), Russian banks use different classifications in accordance with internal selection criteria which include parameters like revenue, number of employees, the company’s total outstanding debt, etc. At the same time, the threshold values of these parameters may vary significantly for different types of SMEs depending on the specifics of the originator. In order to establish a single standard for the classification of borrowers that the Agency can use, ACRA has collected additional information from banks on the financial performance of companies.

**Borrower’s Industry**

In ACRA’s opinion, industry specifics and the nature of borrowers’ activities have a direct impact on the structure of their balance sheets, the leverage level, the types of loan products they use, and other characteristics. For example, agricultural enterprises and tourism companies are characterized by seasonal fluctuations in cash flow associated with industry specifics, harvest seasonality, and demand...
dynamics. Among construction and commercial real estate companies, loans with individual amortization schedules or balloon/bullet loans are popular products (in particular, loans for refinancing commercial real estate secured by property).

To analyze the dependence of debt service quality on the borrower’s industry, ACRA compared industry classifications used by various originators in Russia and Europe.

Together with OKVED\textsuperscript{9}, the majority of Russian banks use internal classification systems to differentiate companies by activity type, which can vary greatly in granularity both in terms of overall coverage (the number of industries used) and in terms of the depth of the classification tree (classes and subclasses of activities).

In Europe, credit institutions use NACE\textsuperscript{10} to classify borrower activities. In its research, ACRA carefully mapped the industry classification of borrowers from the Russian part of the sample into NACE codes, which allowed the Agency to conduct a comparative analysis on the default rates of Russian and European SMEs.

ACRA analyzed the dependence of PD on the industry in which the borrower operates, showing that the riskiest sectors include activities related to construction and real estate, as well as warehousing and support activities for transportation (see Figure 6).

Figure 6. Distribution of defaults (90+ day delinquencies) by borrower industry\textsuperscript{11}

<table>
<thead>
<tr>
<th>Industry</th>
<th>Europe</th>
<th>Russia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction of buildings</td>
<td>21.55%</td>
<td>21.09%</td>
</tr>
<tr>
<td>Warehousing and support activities for transportation</td>
<td>10.49%</td>
<td>8.77%</td>
</tr>
<tr>
<td>Real estate activities</td>
<td>18.32%</td>
<td>15.76%</td>
</tr>
<tr>
<td>Specialized construction activities</td>
<td>15.61%</td>
<td>15.61%</td>
</tr>
<tr>
<td>Manufacture of fabricated metal products, except machinery and equipment</td>
<td>7.80%</td>
<td>7.80%</td>
</tr>
<tr>
<td>Other personal service activities</td>
<td>6.59%</td>
<td>6.59%</td>
</tr>
<tr>
<td>Retail trade, except of motor vehicles and motorcycles</td>
<td>8.23%</td>
<td>8.23%</td>
</tr>
<tr>
<td>Food and beverage service activities</td>
<td>5.91%</td>
<td>6.71%</td>
</tr>
<tr>
<td>Manufacture of food products</td>
<td>6.15%</td>
<td>7.62%</td>
</tr>
<tr>
<td>Manufacture of machinery and equipment</td>
<td>8.77%</td>
<td>11.03%</td>
</tr>
</tbody>
</table>

In its research, ACRA carefully mapped the industry classification of borrowers from the Russian part of the sample into NACE codes, which allowed the Agency to conduct a comparative analysis on the default rates of Russian and European SMEs.

In the context of industry affiliation, the riskiest sectors include activities related to construction and real estate, as well as warehousing and support activities for transportation.

Sources: Data from Russian Banks, EDW, ACRA’s calculations

\textsuperscript{9}The Statistical Classification of Economic Activities in Russia.
\textsuperscript{10}The Statistical Classification of Economic Activities in the European Community.
\textsuperscript{11}The graph shows the industries with the highest level of defaults, the share of which exceeds 1% of the total sample.
In ACRA’s opinion, the construction industry has a higher degree of linkage to the country’s macroeconomic situation compared to other industries. This makes the construction sector more susceptible to macroeconomic shocks. For construction companies, high leverage levels are typical when they finance activities with borrowed funds. Liquidity is one of the main factors affecting the financial stability of construction companies. During the 2008-2009 financial crisis, the construction industry demonstrated a relatively high default rate worldwide, which was due to the fall in demand for construction projects and difficulties implementing illiquid projects, as well as the inability to raise additional funding.

The construction industry in Russia is also not sufficiently consolidated; it has a large number of small players with a low level of resistance to macroeconomic shocks. Traditionally, this industry leads in terms of the default rate and the level of outstanding debt to commercial banks. In addition, SME loans issued to borrowers in the construction and real estate sectors contain a significant proportion of balloon/bullet loans.

If a company is unable to repay a loan with sales revenues, it risks the restructuring or urgent refinancing of the outstanding loan through another bank loan.

Borrowers with the lowest levels of delinquency represent those industries in which effective demand for products does not decrease even during a crisis. These are manufacturers of essential goods, as well as goods of daily demand, for example, the health sector, legal services, passenger transportation, the IT-sector, etc.

According to ACRA’s research, the industry category exhibits similar impact on PD for both Russia and Europe. At the same time, the absolute rate of defaults in the Russian sample on average exceeds that of the European sample. According to ACRA, the difference in the default rate is due to the eligibility criteria used in the selection of SME loans in the securitized portfolios of the EDW sample, which are aimed at improving the credit quality of the collateral portfolio. The modelling results and the loss rate for such transactions largely depend on the number, size, and details of the eligibility (selection) criteria imposed on assets included in the transaction or acquired during the replenishment period. In addition, securitization transactions often provide the originator with the option (not an obligation) to buy delinquent assets back from the securitized pool in the advanced stages of asset credit deterioration, which also has an impact on the level of cumulative defaults. The Russian sample is represented by loans on banks’ balance sheets; these loans reflect to a greater extent the real level of losses on SME debt portfolios.

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12In many Russian and European ABS transactions, replenishment periods of two to three years are used. During this period, the Lender sells (cedes) to the Issuer further receivables under new (assigned) contracts. Replenishment periods are used to achieve consistency between the longer maturities of rated asset-backed notes and the shorter maturities of underlying assets.
An additional factor that has a positive impact on the PD of the EDW sample is the averaging of the default rate for all European countries, which does not take into account the differentiation of the northern and southern European countries (the latter are traditionally characterized by higher losses for the bank loan portfolios).

Figure 7. Comparative analysis of construction industry default rates by country

According to ACRA, securitized SME loans issued in the construction industries of Italy and Spain exhibit 20% default rates, which is comparable to indicators for similar balance sheet assets in the Russian sample. At the same time, loans issued by banks in northern European countries show extremely low PD, which is reflected in the relatively moderate subordination (credit support) levels in Belgian and Dutch SME loan securitization transactions. ACRA has also observed similar trends in the default rates of other industrial sectors included in the sample.

Type of Amortization

In terms of loan characteristics, one of the riskiest segments, according to ACRA’s statistics, is credit lines — a type of loan differing from a term loan in that the funds are issued to the borrower in parts (so-called tranches) and not as a single sum. The detailed framework of a credit line may vary depending on the originator, however in most/many credit lines the master framework agreement only prescribes the overall limit on the loan, while the individual tranches of the credit line may have different parameters in terms of applicable interest rate, maturity, and repayment type (see Figure 8).
ACRA considers balloon/bullet loans to be riskier notwithstanding the fact that in a benign economic environment they demonstrate comparatively low default rates. The most important factor in the credit quality of balloon/bullet loans is the borrower’s ability to pay the principal amount of the loan in full on the maturity date set forth in the loan agreement. Unlike loans with linear or French amortization, loans with individual repayment schedules or balloon/bullet loans imply the maintaining or slow reduction of the lender’s risk over time. Maintaining the amount of debt or a large part of it over the life of the loan also leads to higher refinancing risks and greater sensitivity to changes in the economy and financial markets.

ACRA believes that such loans are more exposed to refinancing risk because in order to facilitate their repayment the bank often has to extend to the same borrower additional credit funds. Therefore, the possibility of repaying such loans in a timely manner is conditional not only on the credit quality of the borrower, but also on the credit quality of the lending bank.

ACRA identifies two potential scenarios in which probabilities of default depend on the credit quality of the originator. In the first scenario, if the bank has sufficient liquidity and the borrower’s credit profile

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13 The share of balloon/bullet loans in the sample of Russian banks is relatively small, which is due, in particular, to the specifics of the analyzed portfolios and individual gaps/errors in the data provided. The small sample size causes corruption (overestimation) in the default rates on such loans, and therefore they were not included in the final graph.
complies with the bank’s credit policy, it is likely that the loan will be refinanced. At the same time, short-term loan statistics show a lower level of defaults, as the bank is more often able to implement measures to manage the credit risk of such loans by reducing the volume of loans or stopping lending to certain types of borrowers.

In the second scenario, the bank’s ability to refinance loans in its loan portfolio will also be significantly limited if there is a shortage of liquidity (also due to the deterioration of the lender’s credit quality). Therefore, in order to fulfill their obligations in a timely manner, borrowers of loans with a one-time payment must either have a sufficient amount of proprietary funds or refinance their current debt on short notice in another bank. As a result, some borrowers with short-term loans are unable to pay or refinance current liabilities in a timely manner.

Similarly, the credit quality of revolving credit lines is closely related to the credit quality of the lender. Given that borrowers of these loans often use them to maintain current activities on a continuous basis (up to the date of full repayment of the loan), two elements could have a significant impact on the level of defaults in the portfolio: 1) the ability of the lender to provide sufficient liquidity in stressful economic scenarios and in the case of a liquidity deficit at the bank, and 2) the ability of the borrower to repay a significant part of the credit line on short notice. ACRA notes that interest rates for such loans may be higher than for other types of credit products, and that such loans are generally intended for companies with a certain level of credit quality and/or for borrowers whose activities are subject to industry-specific conditions (e.g., marked/seasonal demand). When analyzing the credit quality of portfolios containing any of these types of loans, ACRA considers the aspects that increase the credit risk of the portfolios and applies the appropriate compensatory adjustments to the PD.

**Company Age**

According to ACRA’s statistics, recently registered companies aged three years or less represent one of the riskiest SME segments; default rates among these borrowers reach 10.02 and 7.57% in Europe and Russia, respectively. The share of defaulted loans noticeably decreases as company age increases (see Figure 9).
According to ACRA, the age of a company is an additional factor that indirectly affects the default rates of microenterprises operating in most cases for five years or less and having less experience in business compared to small and medium-sized enterprises. When analyzing SME debt portfolios, ACRA takes into account the age of the company, applying positive adjustments, the amount of which is progressive and depends on the age of a particular borrower.

Based on the analysis of historical data for SME loan debt service quality, ACRA concludes that the trends in the impact of key loan characteristics on default rates are fundamentally similar for both the Russian and European markets (taking into account the existing country specifics). The European and Russian SME lending markets have a common basis and trajectory despite the extreme heterogeneity in terms of participant composition and the range of SME credit products available in these markets. Most product lines and asset characteristics in the Russian market do not differ greatly from those in the European markets. This is due, among other things, to the fact that Russian banks use the systems and expertise of western banks that participated in the creation of the Russian SME lending market.

According to ACRA, the results of the analysis suggest that European SME lending market statistics can and ought to be used to analyze Russian SME loan portfolios. Proper use of European statistics can improve the quality of analysis of Russian SME portfolios both in the context of securitization transactions and in wider applications.
Statistical validation of the structured finance model platform using international statistical data

In order to validate rating models and confirm assumptions obtained from the statistical analysis (as detailed in the first part of this research), ACRA performed a qualitative and quantitative analysis of a select number of European SME loan securitization transactions from the EDW database. The goal of a thorough selection of transactions was to ensure the maximum sample whose data would be sufficient to validate modelling results as well as to assess the expected loss for each of the rated transaction tranches.

ACRA selected 26 transactions potentially suitable for this kind of analysis out of 169 SME loan securitization transactions available in the EDW database. In terms of their quality and quantity, the data from these transactions complied with all ACRA requirements. When selecting transactions, ACRA assessed the integrity and adequacy of data using the following key metrics:

- Borrower industry (using NACE classification);
- SME entity category classified as per the European Commission's criteria (micro, small, and medium-sized enterprises);
- Loan purpose (investments, working capital, fixed assets purchase, etc.);
- Principal debt amortization type (annuity, differential, bullet, etc.);
- Loan product (one-time loans, credit line with a limit (revolving), credit line with a limit (non-revolving), overdraft, bank guarantee, etc.);
- Interest basis (fixed, floating, hybrid/conditional variable);
- Country of incorporation;
- Region of incorporation;
- Incorporation date;
- Default characteristics (according to the Basel III definition);
- Days in delinquency;
- Loan origination date;
- Initial loan repayment date;
- Grace period for interest or principal payments.
The validation process involves analyzing the portfolio as of the pool cut-off date that is as close to the transaction date as possible. In view of the above, one of the significant factors that influenced the final size of the sample was the availability of historic figures for the portfolio in the EDW database in LLD format either as of the securities issue date (transaction date), or as of any date within three months after the notes issue.

An additional selection criterion was the compliance of loans in asset portfolios with typical characteristics of SME loans. In the course of the subsequent analysis accompanied by, among other things, an assessment of asset homogeneity, a few transactions were rejected — those whose asset portfolios exhibited a weighted-average life of less than six months. In addition, some transactions were rejected due to assets in the portfolio classified as “floor plan” (a separate hybrid class of securitization transactions covering loans issued to auto dealers) or due to a lack of borrower industry data in NACE format. The final validation sample comprised 26 transactions totalling RUB 2.9 trln, which is over ten times the total amount of all structured finance notes issued in Russia since 2006.

ACRA believes the final pool of selected transactions to be highly representative for further analysis, validation of GRASP model platform, and confirmation of assumptions and adjustments to the level of PD for SME loans.

**Validation Process**

ACRA analyzed the rating modelling results of the cleaned sample by comparing output data with results obtained by other international rating agencies (Moody’s, DBRS, and others). As a result, both existing adjustments and assumptions of ACRA and GRASP model series data as a whole have been successfully validated.

A comparative analysis of results obtained by ACRA and those of international rating agencies, and in particular Moody’s, was performed exclusively for the purposes of validating the methodology and GRASP model platform. Rating reports as well as other publicly available information from Moody’s were used in the validation process in view of the agency’s representative historical sample of SME loan data, the largest number of ratings assigned to structured finance instruments, including those in Russia, and the high level of detail and transparency of its rating reports. Information detailed in this section is not intended to quantitatively or qualitatively assess ratings assigned by Moody’s or by any other international rating agency.

In accordance with the Methodology for assigning credit ratings to structured finance instruments and obligations, ACRA’s approach includes:

- Integrity and adequacy of data for key loan and borrower characteristics;
- Availability of historical portfolio data in LLD format as of the transaction closing date in EDW databases;
- Compliance of assets included in the portfolio with the typical characteristics of SME loans;
- A rating assigned by an international rating agency.
to analyzing the credit quality of SME loan securitization transactions implies the application of compensatory assumptions to the projected PD value, which are determined by the characteristics of each individual loan (Polyparametric Comparative Approach, PCA). To generate PD distribution for each of the rated transactions, the following input data were uploaded and analysed:

- Characteristics of the loan/borrower/mortgaged property in LLD format in the EDW database;
- The Basic Rating Indicator (BRI), an indicator used by ACRA as a basic assumption estimating PD for typical SME entities;
- Level of adjustments to BRI, PD, and weighted-average asset life based on the following metrics:
  - SME entity category;
  - Availability of loan security;
  - Repayment type;
  - Loan purpose;
  - Interest basis;
  - Borrower industry and seasonality of the company’s cash flows;
  - Period elapsed since incorporation of the entity;
  - Availability of any additional terms and conditions (e.g., the need for insurance);
  - Use of subsidies from the local or federal government;
  - Other parameters as implied by transaction specifics.

ACRA took into account whether a borrower had multiple loans and if so, if this fact had any correlation with the probability of a cross default under all of the borrower’s obligations.

When modelling cash flows whose distribution is determined by transaction terms and conditions (waterfall payment), ACRA additionally analyzed a number of factors specific for each SME loan securitization transaction in question.

1. The applicability of limitations as to the highest possible rating for the transaction jurisdiction (“country ceiling”) was taken into account.
2. Assumptions as to recovery rates (RR) and their distribution over time were made by reference to collection process specifics for SME loans in each particular transaction jurisdiction.
3. When drawing default distribution vectors over time, each transaction’s specifics were considered.
4. Debt amortization vectors were drawn individually for each specific transaction using the outstanding balance, the interest rate and its basis, and the principal prepayment type as well as by factoring in the remaining term as of the portfolio cut-off date.

5. When modelling cash flows, the availability of a mechanism to hedge differences between floating and fixed interest rates applicable to assets and liabilities was taken into account (IRS — Interest Rate Swap). Also, the availability of interest rate risk hedging mechanisms was taken into consideration in cases where basis rates for variable rates were different for assets and liabilities (Basis Swap).

6. The vector for the Euribor basis rate was calculated for each individual transaction.

7. The prepayment level was determined based on historical data for SME loans in the jurisdiction of each particular transaction.

8. The definition of default was adjusted based on the definitions used in each specific jurisdiction and with due regard for transaction documentation governing transactions in the cleaned sample.

9. Following rating discussions, other factors specific for individual transactions were taken into account using expert opinions.

**Transaction characteristics and comparison of rating modelling results**

ACRA analyzed 26 transactions from the EDW database with the aggregate outstanding balance (at closing) of EUR 39,322,904,420. Table 1 details the number of transactions and total outstanding balances by countries in the final sample.

<table>
<thead>
<tr>
<th>Country</th>
<th>Italy</th>
<th>Spain</th>
<th>Portugal</th>
<th>Netherlands</th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of transactions</td>
<td>13</td>
<td>9</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Outstanding balance, EUR</td>
<td>12,712,786,536.29</td>
<td>15,792,446,048.20</td>
<td>1,427,024,768.23</td>
<td>400,000,000.00</td>
<td></td>
</tr>
</tbody>
</table>

Sources: EDW, ACRA’s calculations

In assigning public ratings in 2012-2015 to transactions in the final sample (13 transactions in Italy, nine in Spain, and two in Portugal), Moody’s applied the ceiling mechanism limiting the highest possible rating.

According to the country ceiling, a domestic issuer may not be assigned a rating above the respective sovereign rating level. This results in rating compression in countries where a sovereign rating is not the highest
on the international rating scale, i.e. borrowers exhibiting different quality can potentially be rated equally.

In order to compare credit ratings assigned by international rating agencies with the results obtained through validation in an objective and transparent manner, ACRA decided to disregard any limitations related to the transaction jurisdiction (country ceiling) and build its analysis exclusively upon the credit quality assessment of assets. At the same time, sovereign risks of specific countries were captured by applying corresponding adjustments in the model.

Information regarding potential transaction ratings excluding the Foreign Currency Ceiling/Local Currency Ceiling was disclosed in the final rating reports for each transaction in the final sample.

As part of the model validation and rating assumption confirmation process, ACRA used four GRASP modules while also following the order of analysis as detailed below:

1. Uploading key data from EDW databases followed by translating EDW encoding into ACRA encoding (industry, borrower segment, loan amortization, and other codes); a special-purpose GRASP module was used for database manipulations.

2. Calculating the BRI as of the transaction closing date taking into account country specifics.

3. Analyzing asset portfolios by means of the Polyparametric Comparative Approach based on the GRASP-SME module designed to compute the expected value of PD distribution.

4. Applying correlation assumptions and graphing the final PD distribution using the GRASP-MC module (Monte Carlo simulation).

5. Modelling payment flow with the use of output data derived from the portfolio analysis at the previous stages; modelling overall transaction structure in the GRASP-WF module (waterfall payment).

**Estimated default rate in asset portfolios**

As part of the asset portfolio analysis, ACRA compared the estimated expected PD obtained through the GRASP-SME and GRASP-MC modules with the respective target PD calculated by international rating agencies. The absolute average deviation of values compared was around -0.3%. In individual cases, the observed deviation was found to be more material, up to 14.8% (see details below).
Table 2. Comparison of projected and observed default probabilities of SME loan portfolios

<table>
<thead>
<tr>
<th>Transaction</th>
<th>Moody’s expected default rate</th>
<th>ACRA’s expected default rate</th>
<th>Difference</th>
<th>Observed default rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Italy 1</td>
<td>21.2%</td>
<td>22.7%</td>
<td>-1.6%</td>
<td>3.9%</td>
</tr>
<tr>
<td>Italy 2</td>
<td>17.7%</td>
<td>17.8%</td>
<td>-0.1%</td>
<td>7.3%</td>
</tr>
<tr>
<td>Italy 3</td>
<td>17.6%</td>
<td>17.4%</td>
<td>0.2%</td>
<td>17.6%</td>
</tr>
<tr>
<td>Italy 4</td>
<td>18.8%</td>
<td>17.4%</td>
<td>1.4%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Italy 5</td>
<td>16.5%</td>
<td>15.2%</td>
<td>1.2%</td>
<td>20.7%</td>
</tr>
<tr>
<td>Italy 6</td>
<td>20.8%</td>
<td>17.6%</td>
<td>3.2%</td>
<td>19.9%</td>
</tr>
<tr>
<td>Italy 7</td>
<td>15.0%</td>
<td>21.8%</td>
<td>-6.8%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Italy 8</td>
<td>13.0%</td>
<td>19.4%</td>
<td>-6.4%</td>
<td>1.4%</td>
</tr>
<tr>
<td>Italy 9</td>
<td>15.9%</td>
<td>15.7%</td>
<td>0.2%</td>
<td>3.8%</td>
</tr>
<tr>
<td>Italy 10</td>
<td>17.3%</td>
<td>23.0%</td>
<td>-5.7%</td>
<td>3.4%</td>
</tr>
<tr>
<td>Italy 11</td>
<td>24.5%</td>
<td>21.2%</td>
<td>3.3%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Italy 12</td>
<td>22.0%</td>
<td>17.0%</td>
<td>5.0%</td>
<td>14.3%</td>
</tr>
<tr>
<td>Italy 13</td>
<td>14.0%</td>
<td>19.7%</td>
<td>-5.7%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Spain 1</td>
<td>16.9%</td>
<td>19.6%</td>
<td>-2.6%</td>
<td>0.8%</td>
</tr>
<tr>
<td>Spain 2</td>
<td>9.1%</td>
<td>11.1%</td>
<td>-2.0%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Spain 3</td>
<td>9.1%</td>
<td>9.6%</td>
<td>-0.5%</td>
<td>0.8%</td>
</tr>
<tr>
<td>Spain 4</td>
<td>8.0%</td>
<td>10.2%</td>
<td>-2.3%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Spain 5</td>
<td>12.4%</td>
<td>12.0%</td>
<td>0.4%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Spain 6</td>
<td>13.0%</td>
<td>13.2%</td>
<td>-0.2%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Spain 7</td>
<td>10.6%</td>
<td>14.7%</td>
<td>-4.1%</td>
<td>0.8%</td>
</tr>
<tr>
<td>Spain 8</td>
<td>7.1%</td>
<td>7.7%</td>
<td>-0.6%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Spain 9</td>
<td>9.3%</td>
<td>9.7%</td>
<td>-0.4%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Portugal 1</td>
<td>31.7%</td>
<td>17.0%</td>
<td>14.8%</td>
<td>15.0%</td>
</tr>
<tr>
<td>Portugal 2</td>
<td>16.0%</td>
<td>12.1%</td>
<td>3.9%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>12.0%</td>
<td>15.4%</td>
<td>-3.4%</td>
<td>4.0%</td>
</tr>
<tr>
<td>Germany</td>
<td>9.0%</td>
<td>9.1%</td>
<td>-0.1%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

Sources: ACRA’s calculations, EDW, Moody’s
ACRA’s findings are overall consistent with the modelling results of international rating agencies. When analyzing portfolios that originated in countries with a relatively small statistical sample size (e.g., Portugal), ACRA used proprietary assumptions with respect to a number of rating factors. These assumptions may differ from metrics used by other rating agencies. For some cases, this explains deviation in calculations.

In the course of analyzing transactions that originated in Portugal, ACRA identified that international rating agencies applied additional stress adjustments. These adjustments were applied to offset the operating risks of counterparties, which were driven by the relatively low credit ratings of originating banks in these transactions. As ACRA did not assess the loan origination and servicing standards of these banks, assessing the feasibility of such adjustments is impossible. The increased sovereign risk of Portugal at the time of assigning credit ratings to the transactions in 2015-2016 exerted additional pressure on the level of the assigned ratings. The increased deviation in PD assessments by ACRA and Moody’s is attributable to the above factors; for instance, transaction No.1 in Portugal has a deviation of 14.8%.

Regarding transactions that originated in Italy, the difference between the average observed deviation of PD calculated by ACRA from target PD was -0.9%. The Agency believes that the above is indicative of a more conservative approach of ACRA to assessing rating factors and assumptions as compared to international credit ratings (in particular, Moody’s). The deviation ranged from -6.8% to 5%.

Similarly, the portfolio analysis results covering transactions that originated in Spain matched Moody’s assessments; the average PD deviation was -1.5%. The overwhelming majority of ACRA’s assessments were found to be more conservative.

**Rating Comparison**

In order to compare modelling approaches and rating assessment obtained by ACRA through transaction analysis with the respective credit ratings assigned earlier by international rating agencies, ACRA used the idealized expected loss tables of these agencies. In addition, the rating assessment corresponding to the estimated expected loss values and weighted-average life was determined for each particular transaction. The above approach allows for the comparison of alpha-numeric designations for credit ratings used by ACRA and those of international rating agencies (in particular, Moody’s) and the identification of the approximate difference between the rating scales used as measured by the number of notches.
Table 3. Comparative analysis of the results of assessments received by ACRA using the idealized tables of international agencies while rerating European SME securitization transactions

<table>
<thead>
<tr>
<th>Transaction</th>
<th>Moody's Ratings*</th>
<th>ACRA's Ratings**</th>
<th>Difference in notches</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tranche A</td>
<td>Tranche B***</td>
<td>Tranche A</td>
</tr>
<tr>
<td>Italy 1</td>
<td>Aaa</td>
<td></td>
<td>Aaa</td>
</tr>
<tr>
<td>Italy 2</td>
<td>Aaa</td>
<td></td>
<td>Aaa</td>
</tr>
<tr>
<td>Italy 3</td>
<td>Aaa</td>
<td>Baa2</td>
<td>Aaa</td>
</tr>
<tr>
<td>Italy 4</td>
<td>Aaa</td>
<td></td>
<td>Aaa</td>
</tr>
<tr>
<td>Italy 5</td>
<td>Aaa</td>
<td>A3</td>
<td>Aaa</td>
</tr>
<tr>
<td>Italy 6</td>
<td>A2</td>
<td></td>
<td>Aa3</td>
</tr>
<tr>
<td>Italy 7</td>
<td>Aaa</td>
<td></td>
<td>Aa2</td>
</tr>
<tr>
<td>Italy 8</td>
<td>Aaa</td>
<td>A3</td>
<td>Aaa</td>
</tr>
<tr>
<td>Italy 9</td>
<td>Aaa</td>
<td></td>
<td>Aaa</td>
</tr>
<tr>
<td>Italy 10</td>
<td>A2</td>
<td></td>
<td>A2</td>
</tr>
<tr>
<td>Italy 11</td>
<td>A2</td>
<td></td>
<td>A2</td>
</tr>
<tr>
<td>Italy 12</td>
<td>A2</td>
<td></td>
<td>A3</td>
</tr>
<tr>
<td>Italy 13</td>
<td>A1</td>
<td></td>
<td>A3</td>
</tr>
</tbody>
</table>

Average absolute difference in notches for transactions in Italy: 0.5 1.3

<table>
<thead>
<tr>
<th>transaction</th>
<th>Moody's Ratings*</th>
<th>ACRA's Ratings**</th>
<th>Difference in notches</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tranche A</td>
<td>Tranche B***</td>
<td>Tranche A</td>
</tr>
<tr>
<td>Spain 1</td>
<td>Aaa</td>
<td>Baa3</td>
<td>Aaa</td>
</tr>
<tr>
<td>Spain 2</td>
<td>A1</td>
<td>Baa1</td>
<td>A1</td>
</tr>
<tr>
<td>Spain 3</td>
<td>A3</td>
<td>Ba1</td>
<td>A1</td>
</tr>
<tr>
<td>Spain 4</td>
<td>Aaa</td>
<td>Caa1</td>
<td>Aa2</td>
</tr>
<tr>
<td>Spain 5</td>
<td>A3</td>
<td>B1</td>
<td>A2</td>
</tr>
<tr>
<td>Spain 6</td>
<td>Aaa</td>
<td>Caa2</td>
<td>Aaa</td>
</tr>
<tr>
<td>Spain 7</td>
<td>Aa3</td>
<td>B2</td>
<td>Aa3</td>
</tr>
<tr>
<td>Spain 8</td>
<td>Aaa</td>
<td>B2</td>
<td>Aaa</td>
</tr>
<tr>
<td>Spain 9</td>
<td>Aaa</td>
<td>Ba3</td>
<td>Aaa</td>
</tr>
</tbody>
</table>

Average absolute difference in notches for transactions in Spain: 0.6 1.9

<table>
<thead>
<tr>
<th>transaction</th>
<th>Moody's Ratings*</th>
<th>ACRA's Ratings**</th>
<th>Difference in notches</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tranche A</td>
<td>Tranche B***</td>
<td>Tranche A</td>
</tr>
<tr>
<td>Portugal 1</td>
<td>A3</td>
<td>B1</td>
<td>Aa2</td>
</tr>
<tr>
<td>Portugal 2</td>
<td>A3</td>
<td>Baa3</td>
<td>Aa2</td>
</tr>
<tr>
<td>Netherlands</td>
<td>Aaa</td>
<td></td>
<td>Aaa</td>
</tr>
<tr>
<td>Germany</td>
<td>A2</td>
<td></td>
<td>Baa2</td>
</tr>
</tbody>
</table>

Average absolute difference in notches for all transactions: 0.9 1.7

* Moody's ratings are given without country ceiling.
** ACRA's test ratings were assigned based on Moody’s idealized table.
*** The absence of a rating in the table is due to the fact that a rating was not assigned (was not solicited by the originator).

Sources: ACRA's calculations, EDW, Moody’s
Rating analysis of senior tranches

Following the transaction analysis using the GRASP-WF model, the average deviation in rating assessments by ACRA and Moody’s credit ratings was 0.9 notches in absolute terms. In most cases, ACRA assessments were found to be more conservative. Transactions that originated in Portugal constituted an exception as the results of their analysis were affected by the difference in rating assumptions applied by ACRA and those of Moody’s. In turn, this led to different PD assessments, and therefore, different rating assessments.

The average deviation between ACRA’s rating assessments and Moody’s credit ratings for transactions that originated in Italy equalled 0.5 notches with the highest observed difference of two notches (which is indicative of a somewhat more conservative approach by ACRA). In its analysis of transactions that originated in Italy, ACRA factored in a number of the Italian market specifics — for instance, the use of a non-traditional definition of defaulted assets (more than 180 or 365 days in arrears versus the standard 90+ days in arrears used in most European countries) and higher recovery rates (48.7%) compared to the average value for the Spanish and Portuguese markets (calculated using publicly available sources including rating reports by international rating agencies). As Table 3 shows, ACRA’s rating analysis results are very close to those of Moody’s.

The rating assumptions that ACRA used in its analysis of transactions that originated in Spain were overall similar to the assumptions used for analyzing transactions in Italy. However, ACRA identified a number of unique specifics. In particular, securitized transactions in Spain were found to be more exposed to commingling and interest rate risks, which explains the need to apply additional stress adjustments. ACRA defined some transactions as “pseudo-static,” which is unusual for other European markets and required additional adaptations in the models ACRA uses. Nevertheless, ACRA’s modelling results were found to be quite close to the results of international rating agencies. The maximum discrepancy between rating assessments by ACRA and Moody’s equalled two notches (with an observed average deviation of 0.6 notches).

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14 Rating scale notches can be regarded as a range of numeric values from 1 to 20 where 1 corresponds to AAA(ru.sf) and 20 to SD, i.e. default of a financial obligation (Rating’s Discrete Analogue, RDA). Under this approach, the difference in rating assessments can be expressed as a numeric value, including in fractions of a rating notch.

15 Risk of loss from notes backed by the securitized portfolio arising from temporary suspension of cash flow (from the securitized portfolio to the notes) after the collection account bank defaults.
Rating analysis of junior tranches

Due to the limited amount of available data, results obtained by ACRA following its analysis show the higher volatility of rating assessments for junior tranches as compared to the results exhibited by international rating agencies. In ACRA’s opinion, the substantial difference in notches observed in individual transactions is driven by more conservative assumptions and adjustments used by ACRA in its rating analysis. This, in turn, results from ACRA’s lack of some data that is usually provided directly by the originating bank to the rating agency.

Subordination

When modelling the payment flow and analyzing transaction structure, ACRA identified that issue documentation in individual transactions provides the originating bank with the right to buy back defaulted assets. In ACRA’s opinion, the buyback mechanism has a direct effect on the difference between the observed cumulative defaults for each transaction and the subordination levels calculated as part of rating the tranches.
Total credit enhancement includes subordination (the sum of junior tranches subordinated to the senior tranche, which are first to absorb losses in the portfolio) as well as the reserve fund, the nature and utilization methods of which are subject to the transaction structure.

The average credit enhancement for Italian transactions equalled 38%. At the same time, the average observed default rate in the sample of transactions in Italy was 5.9%.

With the average credit enhancement at 30.5% of the notes’ balance, the rate of actual defaults in transactions originated in Spain does not exceed 1.2%, and the maximum observed value is 2.8%.

Even disregarding three transactions that originated in Italy, whose senior tranches had a high level of total credit enhancement (85.4%, 83.35%, and 69.90%), the average credit enhancement for transactions in Italy equalled 38%. At the same time, the average rate of actual defaults in the sample of transactions in Italy was 5.9% (with the maximum observed value of 20.7%).

The modelling of transactions that originated in Spain performed using ACRA’s approach provides a similar result. Calculations show that with the average credit enhancement at 30.5% of the notes’ balance, the rate of actual defaults in transactions originated in Spain does not exceed 1.2%, and the maximum observed value is 2.8%.

The average credit enhancement for Italian transactions equalled 38%. At the same time, the average observed default rate in the sample of transactions in Italy was 5.9%.
ACRA notes that a substantial difference between the levels of subordination and actual recorded losses stems from the fact that the majority of models, including the GRASP platform, incorporate portfolios’ credit risks that could materialize in a serious macroeconomic downturn. The ACRA Stress Scenario for AAA (ru.sf) (ASSA) is based on the conservative scenario of an economic recession that takes into account downturns that occurred in the Russian economy from 1993 to 2016 and the US financial crisis of 2007-2009, and assumes a combination of external and internal adverse macroeconomic factors. The observed cumulative defaults reflect the scope of actual losses in stable or moderately conservative economic conditions during the transaction's lifetime, which are substantially less stressful as compared to ASSA.

In ACRA’s opinion, the low rate of actual recorded losses in the portfolios is also attributable to the originator’s right to buy back defaulted assets, which usually has a material positive effect on the rate of observed defaults. Nevertheless, ACRA’s analysis has shown that the total credit enhancement exhibited in the analyzed transactions exceeded the actual observed defaults in collateral portfolios, even in those transactions where originators had no real opportunity to buy back defaulted assets. For instance, the high actual defaults observed in the portfolios of some transactions that originated in Italy were related to financial difficulties experienced by originators who had to request financial aid from the Central Bank of Italy. At the same time, none of the said transactions had an event of default with respect to both senior and junior tranches of notes. ACRA believes that the positive momentum in historic servicing quality of asset portfolios and the absence of defaults in rated tranches represent the key factors that back the validity of the high ratings assigned to SME loan securitization transactions in Europe.

Conclusion

ACRA believes that the rating analysis of the sample of European SME loan securitization transactions performed in compliance with the current Methodology for assigning credit ratings to structured finance instruments and obligations (using the GRASP model platform) showed stable and sufficiently conservative results. The above supports the validity and reliability of ACRA’s approach as well as its applicability in the European SME loan securitization market. The rating analysis was performed using statistical data of the Russian and European lending markets as well as default probability assumptions for loans of various characteristics that are based on the statistical analysis detailed in the first part of this research. ACRA's work as part of the statistical validation of the rating platform showed that credit enhancement levels, which are incorporated in the transaction structure and confirmed by ACRA's calculations, ensure the protection required to offset actual recorded losses with respect to all rated tranches. A substantial number of transactions were assigned the highest possible rating under.
the international scale, which disregarded the effects of the country ceilings on the level of the assigned ratings. Therefore, the model platform and ACRA’s analytical approach can be applied to assign ratings to Russian and European issues of structured finance notes.

Effects of securitization instruments on SME sector development in Russia

National economies need a structured product market as one of the development instruments of the SME sector. Without financing diversification channels, banks are the only source of funding for the real sector. Provided there is sufficient expertise and analytical approaches are used that involve deep analysis of the transactions using appropriate instruments, securitization can help release additional financing for the real economy. Without the securitization market, national economies lose a financing channel and a risk transfer instrument, in particular, for small and medium-sized enterprises. In EU countries, for example, this has led to the slowdown in lending recovery rates, economic growth, and job creation in the aftermath of the global financial crisis of 2008-2009.

ACRA believes that multitranche securitization which entails inherent risk mitigation and investor protection mechanisms (without budget support) is indispensable for the optimization of internal processes and presents additional opportunities for the economy, including:

- A source of long-term investment;
- The factor of substantial diversification of investment instruments available to a broad spectrum of investors;
- A method for optimizing the use of endogenous mechanisms to increase and enhance credit quality that reduce dependence on government financing and help save more budget funds;
- Transparency, measurability, and the possibility to monitor total risk at both the individual transaction and federal levels;
- Increased lending standards based on the monitoring of statistics processing;
- Optimization of IT systems in banks including small financial institutions;
- Diversification of counterparty risks in transactions, which reduces dependence on key parties and increases the probability of their replacement if specific events occur.

Securitization instruments backed by SME loans will significantly increase the amount of high-quality investments and allow optimal utilization of government resources.

ACRA believes that notes backed by high-quality SME loans have equivalent (and in many cases, higher) credit quality as compared to unsecured issues, which is translated into corresponding expected loss assessments and rating levels.

Institutional investors (including pension funds) could be utilized in the real economy by investing in senior (the most protected) tranches of structured notes, making financing available to the real sector without additional subsidies from the government.

Due to high reliability, senior notes (tranches) secured by high-quality SME loans and that have sufficient credit enhancement demonstrate one of the lowest delinquency rates in the world. Their behavior is less exposed to macroeconomic fluctuations and is similar to the behavior of the least risky market assets. ACRA believes that security issues backed by these kinds of assets have equivalent (and in many cases, higher) credit quality as compared to unsecured issues, which is translated into corresponding expected loss assessments and rating levels.

Funds of institutional investors (including pension funds) could be utilized in the real economy by investing in senior (the most protected) tranches of structured notes, making financing available to the real sector without additional subsidies from the government.

High-quality structured notes backed by SME loans can be issued using both government support and endogenous protection mechanisms (e.g., subordination, reserve funds), which would allow saving substantially on budget appropriations designed to develop the SME sector. Securities of that kind would enrich investment strategies and enable risk diversification options for existing asset portfolios.

The maximum share of SME loan securitization in the total amount of issued loans was as high as 16%, which, in ACRA’s opinion, directly translated into more affordable and inexpensive financing for small and medium-sized enterprises. The share of the Russian SME loan securitization market is below 1/16th of the European market, or less than 1% of the total outstanding debt of SMEs in Russia. Considering the current total outstanding debt of Russian SMEs payable to commercial banks (around RUB 5 trln as of September 1, 2018), ACRA assumes that further development of multitranche securitization in Russia would allow banks to reach an issue volume of structured finance instruments backed by SME loans equal to Europe (16%, or RUB 800 bln). A growth in the number of structured securities issues would in turn enable banks to ease their capital load and substantially increase financing of small and microenterprises.

Further development of multitranche securitization in Russia would allow banks to reach an issue volume of structured finance instruments backed by SME loans equal to Europe.

Securitization would make SME loans more affordable, including by reducing the funding costs enabled by detailed analysis of the debt’s risk profile.

In ACRA’s opinion, securitization would make SME loans more affordable, including by reducing the funding costs enabled by detailed analysis of the debt’s risk profile. A detailed analysis of correlation between debt servicing quality and loan, borrower, and collateral properties would allow banks to identify baskets of assets (and issue securities) with superior characteristics that will be as good in terms of their quality as their European peers, and to adjust loan issue and servicing terms and conditions for such borrowers accordingly. Due to the identification of the debt’s risk profile, selective approach and, therefore, reduced interest rates on a case-by-case basis, an instrument for supporting the most reliable and competitive SMEs is established.
The interest margin\textsuperscript{18} for SME loans in Europe (vs the base interest rate) ranges from 2% to 3% for assets with maturities within five years. The average interest rate in Russia paid by SME entities ranges from 12% to 14% (excluding government support programs)\textsuperscript{19}, therefore the interest margin averages 4.25-6.25%. A higher volume of SME loan securitization using deep expertise and a broad statistical base would drive the interest margins in Russia closer to the levels observed in Europe, which would provide SME entities with less expensive financing. ACRA believes that the infrastructure and experience required for such growth are already available in Russian capital markets.

**Figure 10. Average interest rate on SME loans by country**

\begin{figure}
\begin{center}
\includegraphics[width=\textwidth]{average_interest_rate.png}
\end{center}
\end{figure}

Sources: Data from Russian Banks, EDW

In ACRA’s opinion, the interest rates paid by companies with the strongest risk profiles could drop from their current levels to 9.75% (subject to the characteristics of each individual loan). ACRA estimates that the most competitive SME entities currently account for approximately 10% of the total loan portfolio. Based on the assumptions regarding the average loan amounts and repayment periods for micro, small, and medium-sized enterprises, savings for the aggregate sample of strong SME entities could total around RUB 63.8 bln. In fact, the bulk of these funds represents budget appropriations and money from market development institutions that could be spent to finance other SME entities that are more in need of government support.

\textsuperscript{18}The nominal interest rate for loans is calculated by adding the interest margin to the base rate (usually Euribor or LIBOR interbank rates are used). The interest margin is determined using a wide range of factors: the borrower’s financial standing, loan characteristics, market environment, etc.

\textsuperscript{19}The average interest rate including special incentive programs ranges from 11% to 12%.
Appendix 1. Summary of Russian and European SME loan sample for comparative analysis

Figure 11. Portfolio distribution by country of issue

Source: Data from Russian Banks, EDW

Figure 12. Portfolio distribution by SME category

Source: Data from Russian Banks, EDW
Figure 13. Portfolio distribution by liabilities’ seniority

Source: Data from Russian Banks, EDW

Figure 14. Portfolio distribution by type of interest rate

Source: Data from Russian Banks, EDW

Figure 15. Loan distribution by company age on the date of loan issuance (years)

Source: Data from Russian Banks, EDW
Figure 16. Portfolio distribution by loan purpose

Figure 17. Portfolio distribution by borrower industry

Sources: Data from Russian Banks, EDW

20 The graph shows data for the 20 largest industries, the total share of which is 76.3%.
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