

Trends and risks in credit underwriting standards of significant institutions in the Single Supervisory Mechanism

Main findings from the credit underwriting data collection 2019



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Executive Summary

ECB Banking Supervision considers proper credit underwriting to be a key element¹ **of the stability of significant institutions (SIs) in the euro area (EA).** In the past, inadequate loan origination practices have contributed to an accumulation of non-performing loans (NPLs) on banks' balance sheets. The supervisory efforts that started in 2016 as a Single Supervisory Mechanism (SSM) priority to reduce NPLs have been aimed at strengthening banks' resilience and thus ensuring trust in the banking sector. To prevent future accumulation of NPLs, it is important to understand the risks that banks may take when granting new loans. The present work on credit underwriting therefore complements the strategic efforts to tackle existing NPLs. It also gives an unparalleled insight into underwriting processes in the EA with the aim of preventing the build-up of new NPLs.

This report provides a unique view of lending standards and practices across the EA. As relevant data were previously unavailable, the ECB launched a dedicated project to collect data on new loans in May 2019, covering the loan granting activities (key risk indicators (KRIs), risk parameters and loan characteristics) of 95 SIs in the period 2016-2018 for different lending portfolios. This is the first time that harmonised quantitative data, including a detailed breakdown of new loans, have been available for all SIs in the EA. The data therefore allow for a fresh analysis, providing useful insights into the underwriting practices of banks across lending portfolios and countries. In particular, the analysis focuses on six different portfolios. These cover, on the one hand, loans to private households, with a breakdown by (i) residential real estate (RRE) loans and (ii) credit for consumption (CRDCN), and, on the other hand, loans to the non-financial corporate (NFC) sector, encompassing (iii) commercial real estate (CRE) loans, (iv) loans to small and medium-sized enterprises (SME), (v) loans to corporates (CRP) and (vi) loans to large corporates (LGCRP). For these portfolios, our objectives are i) to assess the adequacy of lending standards and their trends over time, ii) to identify specific characteristics of individual loan segments and countries and iii) to analyse the application of risk-based loan pricing. The analysis of the dataset resulted in the following three main findings.

First, there were significant differences in the way high NPL banks² granted new loans compared with other banks in the period 2016-2018. The analysis finds that for new housing loans, high NPL banks were more conservative in their lending standards as measured by loan-to-value (LTV) ratios, loan-to-income (LTI) ratios and amortisation schedules than banks with lower NPL ratios. Meanwhile, the analysis of lending to CRP, LGCRP and SME portfolios reveals a mixed picture. The amortisation schedule of new loans was significantly more conservative for high NPL banks' new loans, but less conservative when it came to the interest coverage ratio (ICR).

¹ See supervisory priorities on the ECB's website.

² High NPL banks as defined in the ECB Guidance to banks on NPLs that are subject to the quarterly NPE reporting exercise.

Second, the data did not always show a clearly positive relationship between credit risk and loan pricing. Across the six portfolios analysed, portfolios with higher risk, as measured by the expected loss rate (EL), earned higher pricing spreads, and vice versa. However, looking at pricing patterns within portfolios, it seems that the relationship between pricing spreads and EL is weak. In particular, spreads earned on loans to high risk borrowers seem not to cover the EL.

Third, there is no evidence that banks using the internal ratings-based (IRB) approach for the calculation of risk-weighted assets (RWAs) of credit risk exposures have better risk-based loan pricing than other banks. Statistical tests showed no significant difference in how EL or KRIs relate to pricing spreads. This may be because IRB banks use models mainly for capital relief purposes. It may also be because of the high level of discretion often involved in loan pricing decisions.

The report also summarises developments observed in lending across the six portfolios analysed. In the recent environment of benign economic conditions (before the COVID-19 outbreak), banks increased lending across all portfolios on aggregate. Total exposure stock in all portfolios grew by 5% annually, with CRDCN and CRE lending rising particularly strongly. However, these two portfolios remain the smallest in volume, whereas housing loans represent the bulk of banks' loan portfolios, amounting to more than 40% of total loans in the sample.

Looking at loans to private households, we observed deteriorating KRIs and, at the same time, declining pricing spreads. For RRE and CRDCN loans, income-based KRIs in particular showed a deterioration, which was accompanied by an increase in maturities. There, loan profiles were characterised by increasing loan volumes and, for RRE, a higher share of bullet loans, while at the same time loan pricing spreads decreased.

Most of the NFC portfolios showed improving KRIs but also had riskier loan structures and decreasing pricing spreads. In particular, KRIs relating to borrowers' income improved to some extent during the sample period. However, the strong cyclicality of income and vulnerability of corporations to economic downturns are causes for concern, particularly given that pricing spreads decreased in these portfolios (except in the case of the CRE portfolio, where pricing spreads remained almost stable).

Bank-specific issues regarding credit underwriting practices and risk-based pricing are being tackled by Joint Supervisory Teams (JSTs) in their interactions with supervised banks. Follow-up assessments to better understand the risks in the context of each bank's specific situation are being carried out by banking supervisors. This in turn may lead to bank-specific action plans being developed.

1 Introduction

This report summarises the findings from the first analysis of newly collected quantitative data on banks' credit underwriting standards across EA SIs. The main goal of this project was to clarify how banks' credit underwriting standards have developed over time. It was also aimed at identifying patterns and highlighting the specific characteristics of individual loan segments, business models and countries. In addition, the data collection was intended to help understand whether high NPL banks (i.e. banks that are subject to the quarterly non-performing exposure (NPE) reporting exercise as defined in the ECB Guidance to banks on non-performing loans) exhibit different lending behaviour when granting new loans compared with other SIs. The data collection also made it possible to assess whether banks use risk-based pricing in their loan granting decisions and whether there is evidence that banks using the IRB approach for a particular portfolio (IRB banks) have better risk-based pricing than banks using the standardised approach (STA banks). Unless indicated otherwise, all conclusions drawn and data represented refer to the data collected in 2019 as described below.

As a practical measure to assess the quality of banks' credit underwriting criteria (part of the SSM supervisory priority of addressing credit risk), ECB Banking Supervision launched a dedicated project to collect data on new loans

in May 2019. The ECB thoroughly assessed relevant data that were already available to supervisors from sources such as common reporting (COREP)/financial reporting (FINREP), the ECB bank lending survey and AnaCredit. However, quantitative data on new loans, including information on KRIs and risk parameters, which are crucial for understanding the inherent risk of the loans, were unavailable. Consequently, additional harmonised data had to be collected to ensure a sound and structured assessment of the quality of banks' underwriting criteria with a focus on new lending. The data collection encompassed a total of nearly 2,500 data points from 95³ SIs under direct ECB supervision at the highest level of consolidation. The information gathered relates mainly to new loans granted over the period 2016-2018. To ensure a clear understanding of banks' active credit decisions, for the purposes of this exercise loan volumes include drawn and undrawn amounts and exclude non-performing or forborne exposures. Renegotiations with active client involvement are counted as new loans. The data provide a comprehensive overview of loan characteristics (e.g. amortisation, maturity), KRIs (e.g. LTV, LTI and Ioan service-to-income (LSTI) ratios), risk parameters (probability of default (PD), loss given default (LGD), exposure at default (EAD)) and loan pricing spreads. Participating banks were asked to submit data using templates comprising the six different, mutually exclusive portfolios shown in the table below.

³ In total, 116 SIs were under the ECB's direct supervision as of May 2019, while 21 SIs were excluded from the data collection for various reasons, including reasons under the headings (i) Change of Significance Status (4), (ii) Special business model (6), (iii) Restructuring banks (5), (iv) Brexit banks (4) and (v) Other reason (2).

Table 1

Overview of portfolios and their definitions

Portfolio	
Residential Real Estate (RRE)	The RRE portfolio consists of loans and advances to private households secured by an RRE property independent of the purpose of the loan as defined in the relevant ESRB Recommendation ¹ .
Commercial Real Estate (CRE)	The CRE portfolio consists of loans and advances which qualify as CRE loans i.e. loans for the purpose of acquiring a CRE property or secured by a CRE property. CRE means any income-producing real estate, either existing or under development, and excludes social housing in accordance with the ESRB Recommendation.
Small and Medium-sized Enterprises (SME)	The SME portfolio consists of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding $\mathfrak{S}0$ million.
Corporates (CRP)	The CRP portfolio consists of corporations and quasi-corporations engaged not in financial intermediation but principally in the production of market goods and non-financial services according to the ECB BSI Regulation ⁴ and which have an annual turnover between 50 million and 500 million.
Large Corporates (LGCRP)	The LGCRP portfolio consists of corporates with an annual turnover above €500 million.
Credit for Consumption (CRDCN)	The CRDCN portfolio consists of loans and advances to private households granted mainly for the personal consumption of goods and services in accordance with the ECB BSI Regulation.

1) Recommendation of the European Systemic Risk Board of 31 October 2016 on closing real estate data gaps (ESRB/2016/14) (OJ C 31, 31.1.2017, p. 1).

The data requested include data on domestic activities and on material non-domestic portfolios (EA and non-EA). Country averages are those of domestic and non-domestic SIs active in a particular country and portfolio.

- For the EA, participating banks reported 645 portfolios, of which 108 RRE, 114 CRE, 112 SME, 107 CRP, 100 LGCRP and 104 CRDCN.
- For non-EA countries, participating banks submitted 152 portfolios, of which 26 RRE, 31 CRE, 17 SME, 29 CRP, 26 LGCRP and 23 CRDCN.
- The market shares of participating SIs vary across sectors and markets. This is due to the importance of less significant institutions (LSIs) in these markets.⁵ Since LSIs are not part of the dataset collected, country and EA aggregates used in this report only refer to SIs.

To help ensure consistency of the data across credit institutions, the data collection was supported by an elaborate quality assurance process. A helpdesk providing answers to more than 300 frequently asked questions (FAQs) was set up in order to support banks in populating the templates. Data quality assurance activities ranged from the provision of data quality assurance reports for each template submitted and reconciliation with regulatory reporting figures to horizontal outlier detection and correction. In particular, the quality assurance reports contained the results of the following data checks:

 completeness checks to establish whether the bank reported values for all the mandatory fields and an automatic check to establish whether the relationship between two or more values made sense;

⁴ Regulation (EU) No 1071/2013 of the European Central Bank of 24 September 2013 concerning the balance sheet of the monetary financial institutions sector (recast) (ECB/2013/33) (OJ L 297, 7.11.2013, p. 1).

⁵ The ECB has launched an additional data collection regarding the new lending and lending standards of LSIs across the SSM and is currently assessing the data.

- plausibility checks to establish whether the submitted values were within the plausible ranges;
- other sense checks to establish whether the submitted values were significantly different from expected values considering the bank's business model and/or specific country characteristics.

It is important to note that gathering data across several countries and institutions results in a heterogeneous dataset. Although the banks were provided with definitions and guidance on submitting the data, the underlying methodologies or the definitions used for measuring the data may differ across banks and countries. This will then influence the comparability of loan characteristics, KRIs and risk parameters across countries. Harmonisation of definitions of important KRIs would improve the comparability of underwriting practices and help ensure that macroprudential instruments were properly calibrated. In this regard, national data collections and the relevant European Systemic Risk Board (ESRB) recommendations⁶ have helped to improve the availability and comparability of data, particularly for the RRE and CRE portfolios. However, further initiatives are needed to close significant data gaps.

Owing to the confidentiality of bank-specific data, this report only shows country averages. In addition, these country averages are not displayed where the data cover less than three banks or where one or two banks make up a sufficiently large proportion of the observation so as to render them indirectly identifiable.⁷ The report concentrates on EA countries only, as data for countries outside the EA were too scarce to enable conclusions to be drawn at an aggregate level. Finally, the report shows data based on a balanced sample to avoid distortions in developments over time that merely relate to different sample sizes; i.e. aggregates are based on the set of banks that reported the measure consistently over the three years.

⁶ See ESRB/2016/14 and Recommendation of the European Systemic Risk Board of 21 March 2019 amending Recommendation ESRB/2016/14 on closing real estate data gaps (ESRB/2019/3) (OJ C 271, 13.8.2019, p. 1).

⁷ See Article 2(3) of the Guideline of the European Central Bank of 22 December 1998 concerning the common rules and minimum standards to protect the confidentiality of the individual statistical information collected by the European Central Bank assisted by the national central banks (ECB/1998/NP28) (OJ L 55, 24.2.2001, p. 72).

Trends in lending standards – a portfolio view

2

As banks define their lending strategies and the associated underwriting standards by individual portfolio, it is vital first of all to gather an overview of lending characteristics across all portfolios. After presenting a comparison across portfolios, the following sections analyse each portfolio separately, providing a detailed assessment of trends in credit lending standards. Taking a step-by-step approach, the chapters describe the structural characteristics and highlight differences in the developments across countries. This is crucial, since EA averages will be influenced more strongly by banks and countries with higher market shares. Loan characteristics and KRIs are then analysed to reveal trends that have an impact on credit risk. This analysis is followed by an examination of how these trends are reflected in risk parameters and pricing spreads. Finally, each section concludes with a reflection on risks identified in the respective portfolio.

2.1 Overview: strong loan growth observed in all portfolios

Significant growth in lending was observed across all portfolios in an environment of benign economic conditions. The data collected for the EA captured performing exposure stock amounting to more than \notin 7,637 billion in 2018, of which domestic exposures represented more than 85% (see Chart 1, upper panel). The RRE portfolio was by far the largest portfolio, representing more than 40% of the total performing exposure stock, followed by the SME and the LGCRP portfolios. Meanwhile, the CRDCN and the CRE portfolios recorded the highest growth over the data collection horizon, with compound annual growth rates (CAGRs) of 9.3% and 7.9% respectively (see Chart 1, lower panel).





(CAGR of performing exposure stock between 2016 and 2018; percentages)



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA values are based on balanced data.

In lending to households, while strong growth in CRDCN portfolios is reported for nearly all countries, RRE portfolios grew less rapidly, with several countries reporting flat or contracting lending. The EA exposures to RRE and CRDCN

reporting flat or contracting lending. The EA exposures to RRE and CRDCN together represented half of the total performing stock in 2018.⁸ On average, lending to households (RRE and CRDCN) grew annually by 5.1% from 2016 to 2018 and outpaced the increase in households' gross disposable income in the EA, with annual growth rates of 2.2%, 2.5% and 3.0% respectively in the years from 2016 to 2018.⁹ For RRE, most EA countries reported moderate to considerable growth over the sample period. The exceptions were the Netherlands (0.2%), Spain (-1.9%) and Greece (-8.2%) (see Annex, **Chart A.1**). For CRDCN meanwhile, the Netherlands and Luxembourg reported negative annual growth rates of -9.9% and -9.7% respectively. In 2018, the Netherlands (61.6%), Portugal (59.7%) and Malta (52.5%) had the highest shares of RRE according to the breakdown by country. By contrast, Slovenia (15.6%), Greece (14.2%) and Germany (11.9%) had particularly high exposure to the CRDCN portfolio (see **Chart 2**).

⁸ New business volume figures are also available in the Annex.

⁹ QSA - Quarterly Sector Accounts (MUFA and NFA Eurostat ESA2010 TP, table 801).



RRE and CRDCN: shares in performing exposure stock

(share in total performing exposure stock in 2018; percentages)

Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country values are based on balanced data.

Lending to enterprises grew more rapidly than lending to households, albeit with large differences across portfolios and countries. The other half of the total performing exposure stock in 2018 represented lending to corporations, covered by the CRE, SME, CRP and LGCRP portfolios. Lending to enterprises grew annually by 5.2% on average from 2016 to 2018, with CRE and LGCRP expanding the most, although growth rates were highly heterogeneous across countries (see Chart A.4 Annex). The breakdown by country reveals that SME lending had the highest share in performing exposure stock in most countries. The exceptions were Germany, Austria, Ireland, Cyprus, Luxembourg, Malta and Slovenia (see Chart 3). Germany and Austria were mainly exposed to LGCRP and CRE, Ireland to LGCRP and Slovenia to CRP.

Chart 3





Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country values are based on balanced data.

Trends and risks in credit underwriting standards of significant institutions in the Single Supervisory Mechanism – Trends in lending standards – a portfolio view

2.2 RRE: signs of higher risk taking at low NPL banks but more conservative lending standards at high NPL banks

RRE is the largest loan portfolio, with 40% of total performing exposure stock.

Owing to its size and the large share of household wealth invested in real estate, RRE lending plays an important role in banks' financing activities. On an aggregated EA level, France and the Netherlands together account for about 50% of the total performing RRE exposure stock. It is worth noting that in Germany, Italy and Austria, LSIs are largely engaged in RRE lending but are not represented in this dataset.

Rapidly increasing price and credit growth is not backed by income growth. In the EA, RRE house prices increased annually by 4.6% and credit growth by 4.1% during the period 2016-2018. In nearly every country, RRE prices and credit growth increased faster than disposable income. However, there is a high degree of heterogeneity in credit stock growth and house price trends across the EA (see Chart 4). Slovakia, Estonia, Lithuania, Latvia and Austria experienced extraordinary annual increases in loan stock of over 12%, whereas in Spain and Greece, stock decreased.

Chart 4

RRE: strong loan growth compared with macroeconomic factors

(CAGR between 2016 and 2018; percentages)



Sources: ECB Banking Supervision credit underwriting data collection 2019, Eurostat. Notes: Data for the house price index in 2018 were not reported for Greece. EA and country averages are based on balanced data.

Loan profiles are characterised by a rise in bullet loans and loan sizes. In the majority of countries, RRE loans are structured as fully amortising loans with partial amortisation, bullet or interest-only loans representing only small shares (of less than 5%) of the total. The only countries where bullet or interest-only loans account for significant shares of the total are Belgium, Austria, Luxembourg, Germany and the Netherlands. In the Netherlands in particular, bullet financing makes up 41% of new lending (see Chart 5 upper panel), although this share has been declining in recent years (2016: 44%). The overall share of bullet or interest-only loans increased slightly in 2016, rising from 8% to 9%. The increase was driven by Germany, Austria and Belgium. In addition, owing to the increase in RRE property prices, rising loan sizes were observed across all countries with new loan production.

Longer maturities paired with a higher share of bullet financing can be

observed in some countries. The average maturity in the EA went up from 20 years to 22 years in the observation period. Notably, increasing maturities were observed in Germany (2016: 21 years, 2018: 24 years)¹⁰, France (2016: 17 years, 2018: 19 years) and Belgium (2016: 17 years, 2018: 19 years). Maturities were also particularly high in Lithuania (24 years) and Portugal (33 years). It should be highlighted that in Germany and the Netherlands, the combination of long maturities and a high proportion of bullet loans could be a sign of elevated credit risk compared with other countries (see Chart 5, lower panel). Meanwhile, interest rate fixation periods increased from 15 years in 2016 to 16 years in 2018, although there was a high degree of variation across countries. In Germany, the Netherlands, Belgium, France and Slovakia, new loans were predominantly originated with fixed interest rates, whereas in Latvia, Lithuania, Estonia, Greece and Portugal, new loans were almost exclusively variable rate loans (see Chart 5, lower panel).

Chart 5

RRE: loan characteristics highly scattered across countries

(share in NBV 2018; percentages)



(x-axis: NBV-weighted average maturity at origination 2018 (years); y-axis: share of variable interest rate fixation in NBV 2018 (percentages); bubble size: share of bullet or interest-only financing in NBV 2018 (percentages))



Source: ECB Banking Supervision credit underwriting data collection 2019.

Note: EA and country averages are weighted by each institution's RRE NBV and are based on balanced data

¹⁰ The weighted average maturity in Germany is largely skewed by non-domestic banks; domestic banks report a stable average maturity of 23 years.

Deteriorating income-based KRIs are combined with increased maturities.

During the period 2016-2018, LTV ratios remained stable but at a comparatively high level of 81%, mainly driven by high average LTVs in France (89%), the Netherlands (84%) and Germany (83%). High LTV ratios in these countries are the result of significant shares of new lending with LTVs above 100% (share of new business volume (NBV) with LTV of 100% or above: France (35%), Netherlands (21%), Germany (29%), Belgium (20%) and Austria (20%)). For income-based ratios, which compare the loan (LTI) or the annual loan service (LSTI) with the borrower's income, a deterioration can be observed. LTI ratios in the EA saw a substantial loosening from 4 to 4.4¹¹, meaning that on average households borrowed 40% more in relation to their annual income in 2018 compared with 2016. While LSTI ratios remained stable at 24% in the observation period, this indicator needs to be interpreted in combination with other factors. Longer maturities and the declining interest rates, down from 2.0% in 2016 to 1.8% in 2018 on average, have a decreasing effect on yearly loan service payments and offset the effects of the higher debt that households have in comparison with their income as measured by the LSTI ratio.

Box 1

Lending standards of high NPL banks compared with those of other banks

Former high NPL banks granted new loans more conservatively than other banks in the period 2016-2018. The data show that in the period 2016-2018, there were significant differences between high NPL banks (i.e. banks that were subject to the SSM quarterly NPE monitoring exercise) and other banks in the way new loans were granted. High NPL banks issued RRE loans at lower KRI combinations (see Chart A, left-hand panel). Statistical tests confirm the differences in lending standards. For LTVs, LTIs and the share of fully amortising loans, tests show that the lending standards of high NPL banks were significantly better for housing loans. Looking at the country perspective, as mentioned above, LTV ratios were high (above 80%) in France, the Netherlands and Germany. Compared with other countries, Austria and Belgium had significantly higher LTI ratios (multiple of above 5.5) (see Chart A, right-hand panel). Meanwhile, LSTI ratios were more conservative in Spain, Portugal, Greece and Ireland than in other countries.¹² Countries where high NPL banks are predominant (Italy, Portugal, Spain, Ireland and Greece), along with Lithuania, showed significantly lower KRI combinations than other EA countries (see Chart A, right-hand panel) but with ratios rising in Spain and Italy.¹³

It seems that macroprudential measures have supported this trend in many of the countries with lower KRI combinations. Borrower-based macroprudential measures are particularly well suited to addressing vulnerabilities stemming, for example, from excessive leverage and high debt servicing burdens taken on by borrowers.¹⁴

¹¹ The calculation of borrower's total annual disposable income may differ from country to country owing to national differences in how income is measured. In Austria, banks to some extent followed more conservative national reporting requirements for mortgage lending for the definition of disposable income.

¹² LSTI ratios for new loans (2016/2018): Italy (28%/29%), EA (24%/24%), Spain (23%/23%), Portugal (23%/21%), Greece (16%/22%), Ireland (18%/19%).

¹³ LTV ratios for new loans (2016/2018): Spain (66%/68%), Italy (61%/65%), Portugal (71%/72%), Ireland (74%/74%), Greece (64%/61%).

¹⁴ See Macroprudential approaches to non-performing loans, ESRB, January 2019, p. 26 ff.

Therefore, in the last few years, several EA countries have used macroprudential measures to strengthen mortgage lending standards, including limits on LTV ratios, income-based limits, maturity limits and amortisation requirements.¹⁵ These measures may have helped to ensure more conservative lending standards in the RRE portfolios of some former high NPL countries, and in those of Lithuania and, to some extent, Slovenia and Slovakia.

Chart A

RRF





(x-axis: average LTV at origination (percentages); y-axis: average LTI at origination (multiple))

Source: ECB Banking Supervision credit underwriting data collection 2019. Notes: EA and country averages in the right-hand panel are weighted by each institution's RRE available NBV. All measures are based on balanced data. NPL banks: all banks having participated in an NPE quarterly exercise between 2016 and 2018.

In the other portfolios included in this data collection, a number of differences between the loan granting practices of high NPL banks and those of other banks can be observed. However, the findings do not show conclusively whether lending is more or less conservative. High NPL banks seem to be more prudent with the amortisation schedule of new loans, but less so when it comes to the ICR.

> No apparent relationship between KRIs and risk parameters is observed. The deterioration in income-based KRIs was accompanied by only a slight worsening of the EA EL¹⁶. While the LGD went up from 14% in 2016 to 16% in 2018, the average PD remained stable at 0.9%, with the lowest PDs being reported by Spain (0.5%), Portugal (0.7%) and Slovenia (0.6%) and the Netherlands (0.6%). The disconnect between PDs and income-based KRIs (i.e. LTIs) is illustrated in Chart 6. In every country except for Lithuania, LTI ratios indicated a higher level of indebtedness

¹⁵ See the overview of national macroprudential measures on the ESRB's website. A wide range of measures were applicable during the sample period in Estonia, Ireland, Lithuania, Slovenia and Slovakia. LTV limits were in place in Cyprus, Finland and Latvia. Austria and Portugal enacted several measures during the course of 2018, while the Netherlands also took active measures, although the limits there were relatively high. Note that almost all borrower-based measures that were activated during the sample period targeted RRE lending, with very few measures being applied to CRDCN (i.e. only in Cyprus, Portugal, Slovenia and Slovakia) and none for NFC financing (which could be related to the challenges faced in defining this type of measure for this sector).

For the purpose of the analyses in this report the EL is calculated as: EL = PD*LGD. Thus, the EL is calculated as a rate as opposed to an absolute monetary amount.

amongst borrowers, although in many countries PDs actually fell. Similar behaviour was observed with loan characteristics e.g. LTV or maturity. This raises the question of whether risk parameters reflect variations in KRIs.

Chart 6

RRE: no apparent relationship between PD and LTI ratios



(x-axis: NBV-weighted average LTI at origination, delta between 2016 and 2018 (multiple); y-axis: NBV-weighted average PD at origination, delta between 2016 and 2048 (pps))



Source: ECB Banking Supervision credit underwriting data collection 2019.

Note: EA and country averages are weighted by each institution's RRE NBV (available NBV for LTI) and are based on balanced data.

Disconnect between deteriorating income-based KRIs and significantly

declining pricing spreads. Despite the worsening of income-based KRIs and a slight increase in EL, pricing spreads, which for RRE were already the tightest amongst all portfolios, fell sharply by nearly 20 basis points to 57 basis points. Spreads were strongly affected by France's reported average spread of 14 basis points (2016: 50 basis points), as France has a significant share of the RRE market. Except for France and Italy (51 basis points), every other country reported spreads significantly higher than the EA average (see Chart 7 upper panel). Owing to falling spreads accompanied by rising EL, excess pricing spreads (i.e. the difference between pricing spread and EL) fell sharply in Ireland, Portugal, Cyprus, Slovakia, Belgium, Italy and France (see Chart 7 lower panel). In France, the excess spread was close to zero,

which indicates that funding costs and potential losses were covered, but costs of capital or targeted returns on capital were not being met. As with risk parameters, pricing spreads appear not to reflect variations in KRIs.

Chart 7

RRE: EL and pricing spread developments show high heterogeneity across countries



Source: ECB Banking Supervision credit underwriting data collection 2019.

Notes: EA and country averages are weighted by each institution's RRE NBV and are based on balanced data. The excess pricing spread is defined as the difference between the NBV-weighted average pricing spread at origination and the NBV-weighted average EL at origination.

RRE: portfolio conclusion

The data showed many indications of higher risk taking in RRE portfolios in some countries over the past few years. The current low interest rate environment supported strong loan origination in many EA countries. Meanwhile, not every borrower's income kept pace with the pronounced house price growth, which resulted in worsening LTI ratios and a large share of loans with LTVs higher than 100%, particularly in France, the Netherlands, Germany, Belgium and Austria. Elevated LTV and LTI ratios signal higher indebtedness of borrowers, which is usually associated with a higher PD and LGD, although the data do not confirm a relationship between KRIs and the PD.

However, banks that in the past had held a high level of NPLs originated loans at more conservative conditions than other banks on average during the sample period. Additionally, most loan characteristics would have indicated a need to increase pricing spreads, yet spreads decreased further from already low levels. This trend is of particular importance, since declining margins reduce the ability to build up provisions for unexpected losses (ULs). The likelihood of ULs is particularly high in portfolios where above-average maturities are accompanied by a high share of bullet loans. Loans with these characteristics are particularly prone to challenging macrofinancial conditions, such as those currently experienced since the outbreak of the COVID-19 pandemic.

2.3

CRDCN: high growth and deteriorating lending standards – trends need to be monitored

CRDCN was the smallest but strongest growing portfolio of those covered by the data collection. This portfolio consists of loans granted for the personal consumption of goods and services according to the ECB BSI Regulation.¹⁷ CRDCN was the least material portfolio of the data collection, representing only 8.1% of the total performing exposure stock in 2018.¹⁸ Although it was the smallest portfolio, CRDCN had the highest annual growth rate in the period 2016-2018, at 9.3% (see Annex, Chart A.17). The rising demand for CRDCN loans was supported by increased confidence among households followed by a broad-based recovery in the economy and improved labour markets, ¹⁹ together with an increase in credit supply in the low interest rate environment.

The strong growth in CRDCN loans was broadly based across EA countries. All EA countries reported positive annual growth rates, except for the Netherlands (-9.9%) and Luxembourg (-9.7%), while Malta recorded only marginal annual growth (0.1%) (see Annex, Chart A.17). In Cyprus, Latvia, Belgium, Spain, Slovenia, Austria, Italy and Germany, CRDCN loans grew at double-digit rates, above the EA average. By contrast, the annual growth rates of CRDCN portfolios remained below the EA average in the cases of Estonia, France, Finland, Lithuania, Portugal, Slovakia, Greece and Ireland.

The loan features of CRDCN portfolios remained broadly unchanged, but automated loan granting processes became increasingly prevalent. In 2018, new CRDCN loans in the EA were typically²⁰ fixed-rate loans (86.8%). They were also predominantly fully unsecured (83.9%) and fully amortising (79.4%) (see Annex, **Chart A.18** and **Chart A.19**). In 2018, the main category of new CRDCN loans, according to the breakdown by purpose, was personal loans (52.8%), followed by

¹⁷ This definition is also aligned with FINREP F18 instructions for defining the portfolio and does not include business volumes classified as RRE loans as defined in the RRE portfolio section.

¹⁸ Countries with a particularly high share were Slovenia (15.6%), Greece (14.3%), Germany (11.9%) and Slovakia (11.5%), while the Netherlands (1.8%) and Luxembourg (1.6%) reported shares significantly below the EA average.

¹⁹ *Economic Bulletin*, Issue 7, ECB, 2017, p. 28.

²⁰ The exceptions were Slovenia, Ireland, Portugal and Austria.

vehicle loans (28.5%), credit cards (9.6%) and other loans (9.1%) (see Annex, Chart A.20). However, across the different countries, the breakdown of new loans by purpose shows a mixed picture. Credit card loans featured strongly in Greece (34.9%), Portugal (31.6%) and Spain (30.7%), while vehicles loans represented a significant portion of new CRDCN loans in Belgium (50.1%), Ireland (47.8%) and Germany (38%). Authorisation via an employee was the prevalent method for granting new CRDCN loans in 2018 (see Chart 8). However, it appears that manual and paper-based loan approval procedures are becoming obsolete in our digitised world. The use of automated underwriting decision engines increased in the period 2016-2018. Automation to streamline the loan origination process and to increase efficiency has become a major industry trend, particularly for loans of lower size and complexity. In 2018, the use of automated decision engines was most prevalent in Ireland (68.3%), Germany (60.0%), Belgium (52.8%) and Slovakia (42.8%). The growing share of automated underwriting becomes even more pronounced when the portion of pre-approved loans is taken into account, as these also tend to be processed automatically.²¹

Chart 8





Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's CRDCN NBV and are based on balanced data.

Lending standards for CRDCN portfolios are marked by elevated LSTI ratios combined with a slight increase in maturities. The LSTI at origination²² represents how much of the borrower's income is used to (re)pay the interest and principal of all the loans contracted. In the EA, the average LSTI ratio worsened steadily over the three-year period, increasing from 17.5% to 18.9% (see Chart 9). France, Italy and Spain each reported a particularly strong deterioration in their LSTI ratios, which increased by 2.5, 1.2 and 1.2 percentage points respectively. Over the same period,

²¹ Pre-approved loans are granted to existing clients on the basis of internally pre-approved limits (mostly based on the client's good internal rating).

²² The LSTI ratio at origination is defined as the ratio between the total annual loan service of all the loans contracted by the borrower and the total annual disposable income at the moment of loan origination. Both newly originated loans and existing ones originated in the past are included. This is for all types of loan (i.e. not only consumer loans).

except in Germany and the Netherlands, average maturities of new CRDCN loans increased slightly (up 0.2 years). In France, Greece and Estonia, maturities grew more sharply than in the other countries. Longer maturities (above six years) were prevalent in Austria, Slovakia, the Netherlands and Germany. By contrast, shorter maturities (below four years) were reported in Estonia, Lithuania, Latvia and Ireland.

Chart 9

CRDCN: development of new lending maturity vs LSTI

(x-axis: NBV-weighted average maturity at origination, in 2016 and 2018 (years); y-axis: NBV-weighted average LSTI at origination, in 2016 and 2018 (percentages))



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's CRDCN NBV (available NBV for the LSTI) and are based on balanced data

Relatively stable risk parameters and decreasing pricing spreads did not reflect deteriorating KRIs. For the CRDCN portfolio, at the EA level risk indicators remained stable over the data collection horizon. The EA PD increased slightly (up 0.03 percentage points from 2.11%), while the LGD decreased slightly (down 0.9 percentage points from 40.6%) (see Annex, Chart A.20). In addition, the general decline in pricing spreads (from 507 basis points to 466 basis points)²³ does not seem to reflect the deterioration in the LSTI, indicating a possible mismatch between risk indicators and pricing spreads and raising a question about the consistency of the pricing models over time.

²³ Driven by Slovakia, Portugal, Slovenia, Belgium and Spain.

CRDCN: pricing spread vs EL



(x-axis: NBV-weighted average EL at origination, in 2016 and 2018 (percentages); y-axis: NBV-weighted average pricing spread at origination, in 2016 and 2018 (bps))

Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's CRDCN NBV and are based on balanced data.

CRDCN: portfolio conclusion

Supported by the benign economic environment of the past few years and the search for yield in the low interest rate environment, significantly higher growth and slightly higher risk taking appear to have been prevalent across CRDCN portfolios, which were marked by a worsening of income-related KRIs and an increase in maturities. However, pricing spreads did not reflect the slightly deteriorating lending standards. Despite declining pricing spreads, the margins for CRDCN were still the highest across all portfolios.

2.4 CRE: lending shows heterogeneous developments

CRE is the second-fastest-growing loan segment, with strong growth in many countries. In CRE markets, higher competition from "search-for-yield behaviour" has contributed to both high CRE prices and low CRE yields²⁴, especially in prime segments in major European countries.²⁵ Strong CRE price growth and demand for CRE loans caused the portfolios' share in total credit exposure to grow from 8% to 9% in 2018, making it the second-fastest-growing loan segment. Looking at the entire EA market, Germany clearly dominates, accounting for 38% of total EA stock. Most other countries have a much lower share (see red dots in **Chart 11**). The chart also reveals that lending for CRE makes up a high proportion of total lending within Germany (see bars in **Chart 11**). CRE loans in this dataset are divided into loans to finance properties under development (PUD) and loans to finance income-producing real estate (IPRE),

²⁴ As measured by the ESRB in *Report on vulnerabilities in the EU commercial real estate sector*, ESRB, 2018, p. 55.

²⁵ See Report on vulnerabilities in the EU commercial real estate sector, ESRB, 2018, p. 55.

which are properties already built. The larger part of new lending falls into the category of IPRE and others, although the PUD share, while smaller, increased to 24% in 2018 (2016: 20%).²⁶

Chart 11

CRE: share in total performing exposure stock across countries and in the EA



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are based on balanced data.

Search-for-yield behaviour and peaking price levels fuelled CRE credit growth in nearly every country. Two key developments influenced CRE lending activity: the first was high demand, while the second was search-for-yield behaviour on the part of insurance companies and non-domestic investors, including US investment funds.²⁷ This resulted in booming investment transactions²⁸ and historical peak price levels in most European CRE markets.²⁹ The strength in transaction volumes coincided with increased activity on the part of non-domestic investors. In line with findings made by the ESRB, this dataset reveals that in almost all countries, the exposure stock showed high CAGRs of at least 4% in the observation period, except in Italy and Greece, where there was a contraction in the exposure stock (see Annex, **Chart A.22**). At the same time, to put the growth into perspective, vacancy rates were above historical averages, which indicates that demand was investor-driven rather than user-driven.³⁰ This was the case notably in Italy, Belgium and Ireland; vacancy rates in Germany, Austria, France, Spain and the Netherlands – which make up about three-quarters of overall exposure – were low to moderate.³¹

A higher share of bullet or interest-only financing increases the credit risk. Most CRE loans, i.e. approximately 64% of new lending in 2018, were not fully amortising loans (2016: 63%). High shares of bullet or interest-only and partially amortising loans were particularly prevalent in Greece (85%), Ireland (81%), Germany (78%) and the

²⁶ However, some countries had a high share of PUD in NBV in 2018, namely Spain (48%), Portugal (48%), Slovakia (45%) and Luxembourg (40%).

²⁷ *Financial Stability Review*, ECB, November 2019, p. 31.

²⁸ Report on vulnerabilities in the EU commercial real estate sector, ESRB, 2018, p. 37.

²⁹ Ibid., p. 32.

³⁰ Ibid., p. 38.

³¹ Ibid., p. 41 ff.

Netherlands (78%) (see **Chart 12**, upper panel), while there was a significant increase in bullet or interest-only payments in Germany and the Netherlands. Bullet or interest-only loans entail higher refinancing risk for the borrower at the end of the contract, which increases credit risk for banks.

Maturities decreased significantly in the EA, but there were marked differences across countries. Very long maturities may also pose an elevated risk of default. For income-producing real estate loans, this was the case in Italy (2018: 9.4 years, 2016: 9.6 years), Austria (2018: 9.0 years, 2016:10.3 years) and Germany (2018: 9.4 years, 2016: 9.6 years), where maturities largely exceeded the EA average maturity of 8.0 years in 2018 (2016: 8.5 years). Even so, average maturities fell in the countries mentioned and in the EA as a whole. The maturities of loans for property under development were considerably lower, with all countries having average loan maturities below six years, except for Spain (19.0 years) and Italy (11.3 years). The exceptionally long maturities in Spain can be explained by the fact that with a large part of property under development loans, once the construction is completed, the final purchaser of the building³² subrogates the loan. Therefore, at the time of loan origination, banks assign maturities that largely exceed the construction phase.

Collateralisation rate for for new loans increased over the recent years. In the period 2016-2018, CRE loans have been originated with increasing amounts of collateral. While 2016 26% of the NBV was unsecured, about 24% of new lending was originated without collateral in 2018 (see Chart 12, lower panel). This trend was mainly driven by a significantly decreasing share of unsecured loans in Austria (NBV 2016: 58%, NBV 2018: 24%) and Ireland (NBV 2016: 33%, NBV 2018: 19%).

² This type of loan structure is mainly used for residential purposes. Since the loan is originally granted to CRE clients, these loans are assigned to the CRE portfolio.

CRE: high bullet or interest-only financing in some countries and worsening collateralisation ratios



(x-axis: share of unsecured loans in CRE NBV, in 2016 (percentages); y-axis: share of unsecured loans in CRE NBV, in 2018 (percentages))



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's CRE stock and NBV and are based on balanced data.

KRIs such as LTV and ICR have improved. Although several countries have implemented borrower-based measures, e.g. limits on LTVs, in RRE lending, only two EA countries have implemented CRE-specific borrower-based or capital-based measures.³³ It is therefore even more important to monitor the development of borrower-based ratios. In the observation period, LTV ratios fell from 63% to 60%, with decreases across most CRE portfolios. However, LTVs varied widely across countries (see Chart 13, upper panel), and banks in some countries recorded elevated LTVs. This was notably the case in Austria (2016: 70%, 2018: 77%) and the Netherlands (2017: 64%, 2018: 76%). The high LTVs in Austria were essentially driven by significant NBV that was originated with LTVs above 100% (see Chart 13, lower panel). Meanwhile, ICRs (2016: 4.7, 2018: 5.4) indicate an improvement in borrowers' ability to repay debt. Most countries experienced a significant increase in ICRs, with

³³ Cyprus has implemented LTV limits, while Ireland has increased risk weights on CRE exposures. See Methodologies for the assessment of real estate vulnerabilities and macroprudential policies: commercial real estate, ESRB, December 2019, p. 62.

Italy and Germany the only countries where ICRs fell, while Belgium (3.2), Germany (3.5) and the Netherlands (4.4) were below the EA average.

Chart 13

CRE: KRIs indicate good quality of borrowers in some countries



Source: ECB Banking Supervision credit underwriting data collection 2019.

Notes: Only countries where both ICR and LTV are reported by at least three banks are shown in the chart. EA and country averages are weighted by each institution's available CRE NBV and are based on balanced data.

Falling PDs but increasing LGDs result in stable EL. The above-mentioned improvement in KRIs contributed to the trend of falling PDs (2016: 1.6, 2018: 1.4) but increasing LGDs (2016: 26%, 2018: 28%). However, PD levels largely differ across countries (see Chart 14, upper panel; for further information, see Annex, Chart A.30). While average PDs in Ireland (0.9%), France (0.8%) and Germany (0.6%) were the lowest, PDs in Portugal (3.8%), Greece (4.1%) and Belgium (3.1%) exceeded 3%. It is worth noting that PDs in both Portugal and Greece were at very high levels in 2016 (12.4%, 8.2%) and fell significantly during the observation period. In contrast to PDs, variance in LGD levels across countries is much lower, with most countries' LGDs ranging between 20% and 30%.

CRE: PDs improved while LGDs increased

(x-axis: NBV-weighted average LGD (percentages); y-axis: NBV-weighted average PD (percentages))



(x-axis: NBV-weighted average EL, in 2018 (bps); y-axis: NBV-weighted average pricing spread, in 2018 (bps))



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's CRE NBV and are based on balanced data.

Pricing spreads were stable and were strongly influenced by country effects.

Overall, pricing spreads remained stable at an EA average of 130 basis points compared with 129 basis points in 2016. Spreads in France, which were the lowest among those of all countries, fell further from 112 basis points to 86 basis points. In Belgium and Luxembourg, too, where French banks dominate the market, spreads were comparatively low (see **Chart 14**, lower panel). The chart also shows the heterogeneity across countries, suggesting that country-specific factors had a strong influence on pricing. It is also worth noting that in Slovakia and Slovenia, the realised interest spreads do not cover the EL.

CRE: portfolio conclusion

There are a number of historical instances illustrating the procyclical nature of CRE markets.³⁴ As a result of this procyclicality, CRE portfolios, along with SME portfolios, are currently the largest by volume of NPLs.³⁵ Nevertheless, overall lending standards have been loosened, and this is reflected specifically in increasing shares of bullet or interest-only financing and, in some cases, high shares of maturities of more than 20 years, in turn resulting in increasing LGDs. This is partly mitigated by the a smaller share of unsecured laons, improvement in LTVs and ICRs and in PDs. In certain countries, there are signs that imbalances between risk taking and risk/return widened significantly in the observation period. CRE exposure in Belgium, for instance, drove high growth rates, vacancy rates and comparably higher PDs, indicating higher risk taking, while spreads were relatively low and remained almost stable. The procyclical nature of the CRE sector and significant non-domestic investments mean that the sector is significantly exposed to global financial conditions. Shifts in financial conditions weaken the profitability and debt servicing capacity of borrowers. Borrowers with low ICRs (Ireland, Germany, Belgium) or that are financed via bullet or interest-only loans (Greece, Ireland, Germany, Netherlands) are the most susceptible to this.

2.5 SME: history has shown that SME portfolios need attention in an economic downturn

SMEs are a significant part of the EA economy and represent the largest non-retail portfolio. SMEs account for 99.8% of the total number of non-financial enterprises and generate 56.4% of the value added^{36,37} In the credit underwriting data collection, SMEs made up about 15% of banks' exposure stock in 2018 and therefore represented the largest non-retail portfolio.

Procyclical nature of SMEs creates vulnerability to economic downturns. SMEs are diverse in their composition. Some are more sensitive to developments in the household market, while others depend more on the strength of exports goods and services. Nevertheless, most SME industries are highly correlated with overall EU GDP growth.³⁸ In addition, SMEs rely heavily on banks as a major funding source, given the limited access to capital markets. This makes them highly susceptible to credit rationing and quite sensitive to economic fluctuations. In the recent past, these characteristics have led to SME portfolios being the largest portfolio by volume of

³⁴ See "Credit risk in commercial real estate bank loans: the role of idiosyncratic versus macro-economic factors", DNB Working Paper, No 653, 2019, p. 2.

³⁵ See EBA Report on NPLs – Progress Made and Challenges Ahead, European Banking Authority, 2019, p. 23.

³⁶ Value added is defined as output minus intermediate consumption. It can be broken down by industry and industrial sector. The sum of the value added across all industries or sectors plus taxes minus subsidies on products gives the gross domestic product.

³⁷ See "Annual Report on European SMEs 2018/2019", SME Performance Review, European Commission, 2019, p. 17.

³⁸ Ibid., p. 38.

NPLs.³⁹ A comparison of SMEs' CAGR with their value added⁴⁰ in the period 2016-2018 shows that credit growth in the EA matched demand in terms of value added (see **Chart 15**, upper panel). However, at country level the picture is mixed: in some countries, credit growth exceeded the value added of SMEs, and vice versa. In Italy, France, Spain, Slovakia and Portugal in particular, credit growth was far greater than the value added. Additionally, SMEs were the focus of new lending in Portugal, Spain, Italy, Lithuania, Latvia, Estonia, Greece and Slovakia. Notably, SME exposure made up a comparatively high share in new business exposure in these countries (see Annex, **Chart A.9**).

Chart 15



SME: significant credit growth in most EA countries and improving KRIs

Sources: ECB Banking Supervision credit underwriting data collection 2019, SME Annual Report 2018-2019, SME Annual Report 2017-2018. Note: EA and country averages are weighted by each institution's SME stock or available NBV and are based on balanced data.

Loan structuring remains broadly unchanged. Information asymmetries between borrowers and banks tend to be bigger for SMEs than for larger corporates⁴¹, so loan

³⁹ See EBA Report on NPLs – Progress Made and Challenges Ahead, European Banking Authority, 2019, p. 23.

- ⁴⁰ Output value at basic prices less intermediate consumption valued at purchasers' prices.
- ⁴¹ See "Debt overhang in Europe: Evidence from firm-bank-sovereign linkages", *Working Paper Series*, No 2241, ECB, 2019, p. 7.

structures and collateralisation are generally more conservative than those of loans to larger corporations. A main component of the loan structure is the maturity, which shows high variance across countries. In general, maturities in countries with large SME portfolios (Netherlands: 11.5 years, France: 8.4 years, Germany: 7.0 years) tend to be longer than in countries with smaller SME portfolios (Slovenia: 2.7 years, Lithuania: 4.0 years, Greece: 5.2 years). The average maturity in the EA (7.0 years) remained stable over the period 2016-2018, but with sharp rises in the Netherlands and Ireland to 11.5 years (+ 0.7 years) and 6.4 years (+ 1.3 years) respectively. Meanwhile, the share of collateralised exposure increased slightly from 46% to 47% over the observation period. In some countries, though, the share of unsecured loans was comparably high at over 60% (Slovenia, Slovakia, Austria, Spain) or rose significantly (Portugal 2016: 49%, 2018: 60%). In comparison with CRP and LGCRP, SME loans were mainly fully amortised loans (78%), with a smaller proportion structured as bullet or interest-only loans. Only in few countries, namely Austria (41%), Germany (40%) and Portugal (30%), did bullet or interest-only loans play a significant role in SME financing by the SIs in the sample.

In the observation period, the KRIs reported for the SME portfolio improved in line with economic developments. In a benign economic environment, KRIs for corporate clients are expected to improve as they are constructed using highly cyclical variables such as earnings. This can also be observed in the results of the data collection. The TDER (total debt-to-EBITDA ratio), measuring the relationship between debt and profitability, fell overall (from 5.4 in 2016 to 4.9 in 2018), with particular decreases in Italy, Germany, Austria, Greece, France and Portugal (see **Chart 15**, lower panel, and Annex, **Chart A.35**). Data for the ICR, which measures borrowers' ability to repay debt interest payments with their generated earnings, also showed an upward trend (2016: 13.9, 2018: 17.2) in combination with slightly falling D/E (debt-to-equity) ratios.

PDs improved overall and especially in former NPL legacy countries, but LGDs increased. The slightly declining PDs also seem to reflect the improvement in the above-mentioned KRIs, although EA SMEs' average PD (2.2%) remained the highest across all portfolios.⁴² As **Chart 16** shows, the average PD in new lending compared with outstanding stock exposure was reduced in all former NPL countries except for Portugal. By contrast, LGD levels for new business worsened in nearly every country (2016 average: 31%, 2018 average: 33%). As a result, the negative LGD trend offset the falling PDs, resulting in stable EL rates overall.

² EA NBV-weighted average PD in 2018 by portfolio: SME 2.2%, CRDCN 2.1%, CRP 1.5%, CRE 1.4%, RRE 0.9% and LGCRP 0.6%.





Source: ECB Banking Supervision credit underwriting data collection 2019.

Notes: For confidentiality reasons, the risk parameters for Ireland can only be shown for 2018. EA and country averages are weighted by each institution's SME NBV and are based on balanced data.

Margins deteriorated despite a stable EL. New lending exposure of EA banks showed a slight drop in pricing spreads while maintaining the same EL level. The large majority of banks experienced falling spreads, although banks in some countries (namely Luxembourg, the Netherlands, Germany and Slovakia) were able to improve their pricing spreads marginally. However, it is worth mentioning that in some countries (France, Luxembourg, Belgium), the average pricing spreads were not enough to cover the average EL for new business lending (see Chart 17).

Chart 17

SME: pricing spreads and EL



Source: ECB Banking Supervision credit underwriting data collection 2019.

Note: EA and country averages are weighted by each institution's SME NBV and are based on balanced data.

SME: portfolio conclusion

The benign economic situation and interest rate level generally supported SMEs' growth and consequently their demand for credit products. Improving KRIs and decreasing PDs appear to reflect these economic circumstances. However, European and world economic growth started weakening at the end of 2018, and the effects of the global coronavirus crisis will further weigh on the economy. Given the procyclical nature of SMEs' businesses, this will affect their profitability. Additionally, given that the SME portfolio has elevated levels of PDs, the likelihood of defaults in the event of an economic downturn appears to be the highest in the SME portfolio, and this is supported by historical observations. Therefore, with economic conditions weakening, the SME portfolio should be the most closely observed portfolio in the first instance.

2.6 CRP and LGCRP: stronger risk indicators and falling EL

CRP and LGCRP are more relevant in bigger economies. CRP and LGCRP portfolios accounted for 11% and 13% of banks' performing stock respectively in 2018. The size of the economy where corporates are located influences the importance of the respective portfolios. Generally, the shares of CRP and LGCRP are greater in bigger economies than they are in smaller economies. However, this does not apply to every country: LGCRP exposure had the highest share in performing stock across all portfolios in Luxembourg (48%), whereas CRP and LGCRP exposures in France (CRP: 8%, LGCRP: 11%) and Spain (CRP: 9%, LGCRP: 10%) had comparatively low shares.

LGCRP credit growth exceeded economic growth in some countries. In the dataset investigated, credit growth in the CRP segment differed significantly from that in the LGCRP segment (see Chart 18). To put credit growth into perspective, it was compared with an indicator for the economic development of corporations, namely their value added. In this regard, CRP credit exposure followed a reasonable growth trajectory (EA: 2.8%) that was mainly supported by the level of growth in value added (EA: 3.4%). By contrast, LGCRP credit growth (EA: 6.1%) was much larger and frequently surpassed value added growth in Italy, Greece, Germany, Austria and Ireland. It is also worth mentioning that CRP portfolios in Greece and Portugal shrank (with CAGRs of -6.5% and -15% respectively) in the observation period.



CRP and LGCRP: strong credit growth and value added growth across EA countries

Sources: ECB Banking Supervision credit underwriting data collection 2019, Eurostat. Note: EA and country averages are weighted by each institution's CRP or LGCRP performing exposure stock and are based on balanced data.

New lending was originated with less collateral than in the stock. Comparing the collateral statistics of the corporates sector, it appears clear that as enterprise size increases, collateral declines in importance. In 2018, the share of unsecured new loans in NBV stood at 53% for SME portfolios (2016: 54%), 69% for CRP portfolios (2016: 67%) and 85% for LGCRP portfolios (2016: 82%) (see Chart 19). Collateral is divided into three main categories: immovable property⁴³, financial guarantees and movable property⁴⁴. Immovable property (2%) is only relevant to LGCRP exposures, while financial guarantees (10%) remain significant and are the dominant collateral in LGCRP. In the observation period, banks accepted less collateral for newly contracted credits, resulting in slight growth in unsecured term loans in both the CRP and LGCRP portfolios. In particular, there was a significant increase in unsecured exposures among new term loans in Germany, Greece and the Netherlands⁴⁵. Most major European countries made use of financial guarantees. However, it is worth mentioning that in an economic downturn, the value of financial guarantees will be highly stressed. Therefore, the stress on the economy caused by the COVID-19 crisis could not only increase default rates (elevated realised PDs) but also push down collateral values (higher realised LGDs).

Maturities and the share of bullet or interest-only financing rose. When it comes to maturities, exposure to LGCRPs tends to be of shorter maturity (2018: 4.5 years, 2016: 4.1 years) than exposure to CRPs (2018: 6.6 years, 2016: 6.3 years) or SMEs (2018: 7.0 years, 2016: 7.0 years). Most countries in the LGCRP portfolio exhibited growing maturities; only Germany and Ireland had shorter maturities in 2018

⁴³ "Immovable property" mainly refers to real estate and offices.

⁴⁴ "Movable property" refers to any security type not covered by immovable property and financial guarantees.

⁴⁵ Unsecured exposure LGCRP (2016/2018): Germany (83%/90%), Greece (90%/98%); unsecured exposure CRP (2016/ 2018): Germany (58%/71%), Greece (52%/72%), Netherlands (41%/51%).

(Germany: 4.7 years, Ireland: 4.9 years) than in 2016 (Germany: 4.0 years, Ireland: 4.6 years). As with the LGCRP portfolio, maturities in the CRP portfolio did not vary much across countries, with the exception of the Netherlands, which reported an average maturity of 12 years in the CRP portfolio. In addition, an upward trend in the share of loans with bullet financing or interest-only conditions was observed in the CRP portfolio (2016: 16%, 2018: 23%). In nearly every country, the share rose within the observation period 2016-2018, with very high shares in the Netherlands (62%), Ireland (50%), Germany (44%) and Austria (42%).

Chart 19





Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's CRP or LGCRP NBV and are based on balanced data.

KRIs in CRP and LGCRP portfolios mostly improved – although there was a significant drop in ICR in some countries. KRIs measuring the debt levels of the borrowers with respect to their D/E ratio fell sharply in 2018 (CRP: 4.4 to 3.5, LGCRP: 3.7 to 3.2). CRPs in most portfolios managed to strengthen their capital positions. In particular, companies that borrow from SIs in Austria (2016: 5.8, 2018: 4.0), Germany (2016: 6.3., 2018: 3.9) and Spain (2016: 3.1, 2018: 2.2) showed improving D/E ratios (see Chart 20). This is in line with the data gathered on the whole sector of non-financial corporations, which consistently deleveraged⁴⁶ their balance sheets in the period 2016-2018.⁴⁷ When it comes to KRIs that compare the borrower's profitability with their indebtedness (TDER), only slight changes in the EA averages in CRP and LGCRP can be observed (4.8 to 4.6 and 4.1 to 4.1 respectively) (see Chart 20).

⁴⁶ Debt ratios defined as consolidated loans and debt securities as a percentage of GDP fell from 79.7% in 2016 to 76.6% in 2018.

⁴⁷ Economic Bulletin, Issue 1, ECB, 2020, p. 12.



CRP and LGCRP: mostly improving D/E and TDER ratios in new lending

(NBV-weighted average D/E ratio at origination (multiple))

Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's CRP or LGCRP available NBV and are based on balanced data.

Significantly lower PD but rising LGD levels. Borrowers in the CRP and LGCRP portfolios registered lower PDs compared with 2016 and compared with the average PD in the stock. In the period 2016-2018, the PD fell from 1.9% to 1.5% in the CRP portfolio and from 0.7% to 0.6% in the LGCRP portfolio. Even though nearly every country registered falling PDs, the level differs between countries, ranging from 0.6% to 3.5% in the CRP portfolio and from 0.4% to 1.5% in LGCRP portfolio respectively. In contrast to PDs, LGD levels in the EA are homogenously distributed. However, a systemic rise was registered in both portfolios during the observation period (CRP: 31% to 34%, LGCRP: 34% to 36%), driven by significant worsening of LGDs in Germany⁴⁸.

Spreads have been tightening in parallel with lower ELs. New lending in the CRP and LGCRP portfolios became less profitable in the observation period. Spreads in the

⁴⁸ LGD (2016/2018) in % for Germany: CRP (27/33), LGCRP (26/34).

CRP portfolio dropped to 122 basis points in 2018 (2016: 126 basis points) and to 83 basis points in the LGCRP portfolio (2016: 96 basis points). This is particularly worrying if risk levels did not decline accordingly. Data at the individual bank level give deeper insights into this topic (see Chart 21). Banks' CRP portfolios are scattered over the four quadrants. A narrow majority of banks measured less EL but also experienced tighter spreads, which in turn leads to a slight over-representation of the third quadrant. However, some banks were in the worrying situation of rising EL and falling spreads (fourth quadrant). In the LGCRP portfolio, the bulk of banks reported slightly falling EL but significantly narrower spreads, with a few banks experiencing severe drops in both EL and spreads. The proportion of banks in the fourth quadrant is about the same as that in the CRP portfolio, although in this case spreads had a higher influence than EL.

Chart 21

CRP and LGCRP: tightening spreads in both portfolios



(x-axis: NBV-weighted average EL at origination, difference between 2016 and 2018 (bps); y-axis: NBV-weighted average pricing spread at origination, difference between 2016 and 2018 (bps))

Source: ECB Banking Supervision credit underwriting data collection 2019. Note: Axes are cropped: outliers are not shown

CRP and LGCRP: portfolio conclusion

Similarly to the SME portfolio, CRP and LGCRP borrowers profited from a positive economic environment and a historically low interest rate level, which led to strengthened KRIs and improved PDs in the observation period. Despite less prioritisation of collateral and consequently higher LGDs, EL fell slightly in the case of most banks. Spreads tightened in parallel, and in most cases the effect of tightening spreads outweighed the effect of falling EL, particularly in LGCRP portfolios. This raises the question of whether risk-based pricing was adequate, specifically with regard to the looser credit conditions, i.e. in terms of longer maturities and a higher share of bullet financing, which are not reflected in the EL. In this connection, the ability to strengthen capitalisation and absorb potential future NPLs becomes relevant. This ability specifically gains importance in the context of the economic shock caused by the COVID-19 crisis, as the shock weakens the borrower's ability to repay debt. In the case of overleveraged borrowers in particular, this could lead to an increase in

payment arrears and loan defaults and to declining collateral values.⁴⁹ In fact, signs of a slowdown in economic growth had already been detected before the start of the COVID-19 crisis: the average debt ratio of non-financial corporations had climbed to 78% in the third quarter of 2019⁵⁰, growth in investment and machinery and equipment had been slowing gradually since 2018, and profit margins remained weak in a context of ongoing elevated uncertainty⁵¹. In conclusion, LGCRP borrowers, being more diversified and having easier access to capital market products, are less vulnerable to economic downturns. However, it will be necessary to closely observe specific CRP markets where there has been a significant loosening in credit conditions accompanied by a deterioration in the profitability and capitalisation of borrowers.

⁴⁹ See Macroprudential approaches to non-performing loans, ESRB, 2019, p. 11.

⁵⁰ See *Economic Bulletin*, Issue 1, ECB, 2020, p. 12.

⁵¹ Ibid.

Trends and risks in credit underwriting standards of significant institutions in the Single Supervisory Mechanism – Trends in lending standards – a portfolio view

3 Risk-based pricing deserves further attention

3.1 Risk-based pricing within and across portfolios

The estimation of credit risk has evolved over time. Banks face a wide range of risk characteristics when originating loans. Each creditor and each loan has individual characteristics that affect the risk level. In response to the industry's concerns that Basel I rules were insufficiently granular to capture the diversity of borrowers' risk, since Basel II, banks have been allowed to use internal models to evaluate borrowers' credit risk to calculate the regulatory RWA. Although this has resulted in a wide range of different approaches to model credit risk, all of the approaches are required to estimate a portfolio's probability density function. A portfolio's probability density function is composed of an EL, which is a loss that the bank would expect to experience on its credit portfolio, and a UL. While the EL should be covered by pricing spreads earned and by provisions, the UL needs to be covered by capital.⁵²

Box 2

In a risk-based lending approach, loan prices cover the credit risk costs and other costs

In order to ensure that the EL is backed by the spreads earned, a risk-sensitive pricing procedure needs to be established. Based on the costs that banks should consider in their loan pricing,⁵³ the following principles can be derived.

- Credit risk costs: If historical experience of recognised credit risk losses is incorporated into loan
 pricing, borrowers measured as having the lowest risk should generally pay the lowest rate,
 while those assigned the highest risk ratings should pay the highest price for a loan.
 Additionally, EL models should be used to measure the credit risk cost, so PD and LGD
 estimates should be a critical input for loan pricing.
- Cost of capital: Taking both regulatory and economic capital into account, the cost of capital should cover UL and the target return on capital.
- Cost of funding: This cost reflects the cost to refund the loan by matching key features of the loan, e.g. the expected duration of the loan.
- Other costs: These costs reflect operating and administrative costs, other real costs, competition and prevailing market conditions.

The following analysis was carried out to investigate whether these costs and principles of risk-based pricing hold true for the banks in the credit underwriting dataset. The cost of funding is an integral part of the lending rate, which depends to a large extent on a bank's business model and financial situation, and on the specific country characteristics. As the cost of funding is not subject to the credit

⁵² Modelling credit risk, Bank of England, 2015, pp. 6-7.

⁵³ According to the EBA Guidelines on loan origination and monitoring.
underwriting assessment, the following analysis focuses on the pricing spread, which is calculated by deducting the funding costs from the nominal interest rate. It is worth noting that internally defined funding costs might differ from one bank to the next, which could lead to some distortions. Nevertheless, it is expected that pricing spreads, as defined by banks, should always cover the ELs as reported by those banks, irrespective of their definition.

Clear positive relationship between EL and pricing spread across portfolios.

When testing the relationship between average EL and average pricing for all portfolios in the credit underwriting data collection, a clear positive relationship can be proven (see **Chart 22**). The ratio of spread to EL shows some variance over time, but in general, at the EA average level, portfolios with higher EL are priced with higher spreads. However, it also appears that the spreads of CRP portfolios are comparatively low and, to comply with the principles of risk-based pricing, should have higher spreads. By contrast, spreads in the CRDCN segment generate by far the largest return of all portfolios.

Chart 22

Clear positive relationship between EL and pricing spreads on a portfolio level



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: All dots are EA volume-weighted averages and are based on balanced data.

In most countries, pricing across portfolios is risk-sensitive. The clear positive relationship between EL and pricing spread across portfolios holds true for most countries (i.e. for Austria, Cyprus, Germany, Estonia, Spain, Italy, Lithuania, Latvia, Netherlands and Slovakia). In these countries, spreads tend to rise with increasing EL, although in most cases there is one portfolio that does not adhere to the principle of

Trends and risks in credit underwriting standards of significant institutions in the Single Supervisory Mechanism – Risk-based pricing deserves further attention

risk-based pricing. In almost every instance this is the CRP, SME or the CRE portfolio. In the respective countries, these portfolios are priced with significantly lower margins compared with other portfolios. In the case of Germany, the CRP portfolio seems to have spreads that are too low, while in the case of Italy, the CRE portfolio is priced with significantly low spreads (see **Chart 23**). However, data availability may have distorted these considerations.

Some countries show no clear positive relationship between EL and pricing spread across portfolios. In these countries, at least two portfolios disrupt the positive relationship between EL and the pricing spread. For example, in Belgium, the spreads in the CRP, SME and CRE and LGCRP portfolios are all at around the same level, despite significantly differing ELs. In Greece (see Chart 23) and Slovenia, spreads even seem to be unaffected or negatively related to EL.

Chart 23

Relationship between EL and pricing spreads at aggregated country level (Germany, Italy, Belgium, and Greece)



Source: ECB Banking Supervision credit underwriting data collection 2019.

Notes: All dots are country volume-weighted averages and are based on balanced data. The fitted linear regression line is depicted in grey.

No significant relationship between EL and pricing spread at the individual bank level within portfolios. To investigate further the application of risk-based pricing, each portfolio was analysed on a bank-by-bank basis. To this end, panel data regressions controlling for country specific effects were estimated using the weighted

average EL and spreads for each bank and each portfolio. The relationship between EL and pricing spread is low in all portfolios, with LGCRP being the portfolio with the best regression results (see **Chart 24**). Country-specific risk levels certainly affect the bank-by-bank comparison. However, these results also hold in regression analyses that control for country differences. LGCRP was the only portfolio where a significant ⁵⁴ positive linear relationship was measured, while in the RRE portfolio, the spread tended ⁵⁵ to be negatively correlated with the EL. Investigations into the influence of lending standards, as measured by loan structuring and KRIs, on the interest rate charged or the pricing spread were inconclusive.

Chart 24

No clear relationship between EL and pricing spreads across portfolios according to the bank-by-bank analysis

(x-axis: NBV-weighted average EL at origination, in 2018 (bps); y-axis: NBV-weighted pricing spread at origination, in 2018 (bps); scales omitted to preserve confidentiality)



Source: ECB Banking Supervision credit underwriting data collection 2019. Notes: All dots are based on balanced data. Fitted linear regression line is depicted in grey.

Further investigations are needed to identify reasons for imbalances in

risk-based pricing principles. The analyses performed reveal that on an aggregated level, i.e. when we aggregate all banks within one country or the entire EA, pricing seems to be positively related to EL across portfolios. However, at the individual bank level, loans seem not to adhere to risk-based pricing principles. There could be a number of reasons why this is the case, and they may be related to the general reasons for inadequate pricing which are summarised at the end of Chapter 3. It could also be argued that owing to excessive competition within certain portfolios, risk-based pricing is distorted. Given the way that banks organise their lending business, there is less competition across portfolios. For example, while credit desks for corporate clients compete with one other, they would not compete with the housing loan sales team. Further investigations are needed to obtain a clearer picture. In the next sections, the investigations undertaken go further into pricing patterns observed within portfolios, making use of more granular data collected on EL and pricing, and with a breakdown by PD bucket.

⁵⁴ p-value < 0.01.

⁵⁵ p-value < 0.1.

3.2 Prices for loans to higher-risk borrowers seem to fall short in covering EL

Within all portfolios, at the EA level there seemed to be a positive relationship between the EL and pricing spreads across most EL buckets. For each portfolio and for both performing exposure stock and NBV, EL rates were collected and grouped into buckets.⁵⁶ The EL buckets were then matched with their relevant pricing spreads.⁵⁷ When plotted against each other, EL buckets showed a positive relationship with the pricing spreads, i.e. the higher the EL of the bucket, the higher its pricing spread (see Annex, Chart A.56, Chart A.57and Chart A.58). The rationale is that in risk-based pricing, riskier borrowers (those in the higher-EL buckets) are charged higher nominal interest rates, thus increasing the pricing spread.⁵⁸ This positive relationship was observed at the EA level for all portfolios and for both performing exposure stock and NBV. There are only a few cases in which this positive relationship does not hold for the entire pricing curve, notably for the riskiest bucket and in the LGCRP portfolio.

In higher-EL buckets, pricing spreads do not rise in proportion to the increase in EL. At the EA level for NBV in 2018, the pricing spreads in the two (or three) riskiest buckets seemed too low to cover their implied ELs (see Chart 25). In fact, for the riskiest exposures, the increase in pricing spreads seemed to be disproportionate and potentially insufficient. This pattern held across all investigated portfolios (see Annex, Chart A.54 and Chart A.55). It was most strongly in evidence for the SME portfolio and least evident in the case of the CRDCN portfolio. Panel regressions that control for country effects have been used to analyse the statistical significance of the relationship between EL and pricing spreads across EL buckets. The results indicate that there are in fact higher pricing spreads in higher-EL buckets. However, the increase in spreads is disproportionate to the increase in average EL. This raises the question of whether there might be additional factors that affect pricing spreads of the riskiest buckets, such as fees earned, or whether there is cross-bucket subsidisation from lower-risk buckets.

⁵⁶ One-year PDs grouped into buckets and their corresponding one-year LGDs and exposures at default were first collected at the individual bank level for each portfolio. The EL buckets were then calculated using the following formula: EL = PD x LGD.

⁷ The pricing spread was defined as the difference between the nominal interest rate and funding costs (including reference rate). The nominal interest rate is the annualised agreed rate as defined by Regulation (EU) No 1072/2013 of the European Bank of 24 September 2013 concerning statistics on interest rates applied by monetary financial institutions (recast) (ECB/2013/34) (OJ L 297, 7.11.2013, p. 51). For performing exposure stock, the nominal interest rate was at the reference date, whereas for NBV, the nominal interest rate was at the origination date.

⁵⁸ This assumes that the banks' funding costs are independent of the risk of the loan.

Chart 25



(x-axis: NBV-weighted average pricing spread at origination, in 2018 (bps); y-axis: NBV-weighted average EL at origination, in 2018

RRE and CRP: EL vs pricing spread per EL bucket

Source: ECB Banking Supervision credit underwriting data collection 2019.

Notes: Figures for 2018. Each dot represents an EL bucket. All values are EA volume-weighted averages and are based on balanced data. The share of risk (corresponding to the bubble size) is the product of the EL rate and EAD.

Pricing spreads for new loans seem to have become less risk-sensitive compared with the performing exposure stock. Across all portfolios, pricing spreads for the riskiest EL buckets appeared to be potentially insufficient, providing further evidence that there might be additional factors influencing pricing spreads beyond merely interest rates charged. Nevertheless, with respect to their corresponding stock counterparts, new loans were consistently and significantly lower-priced while carrying higher risk⁵⁹ (see Annex, **Chart A.56**, **Chart A.57** and **Chart A.58**). More importantly, pricing spreads seem to have become less risk-sensitive in the RRE, SME and CRP portfolios, as shown by decreasing slope coefficients. If riskier buckets were subsidised by the less risky ones, the spread earned would be able to compensate. This can be tested by calculating the approximate risk-adjusted profits per bucket.

Cross-bucket subsidisation is not able to cover the riskiest loans at all banks and has worsened over time. Cross-bucket subsidisation entails that the excess of risk-adjusted pricing spread earned on lower risk loans is greater than the pricing spread shortfall of the riskier loans in the same portfolio. The pricing spread excess or shortfall is defined here as the difference between the pricing spread charged and the EL multiplied by the EAD for each risk bucket. The EAD is used as a proxy for the exposure. This calculation gives the approximate risk-adjusted profits per bucket and shows whether cross-bucket subsidisation might be plausible. The excess pricing spread was positive for all portfolios for NBV at the EA level during the observation period. Nevertheless, the excess spread decreased significantly in the RRE and LGCRP portfolios over that period. Additionally, in 2018, at bank level and even at country level, some portfolios showed negative risk-adjusted pricing profits. To conclude, it is not certain whether cross-bucket subsidisation would be able to cover

⁵⁹ The only exceptions were the CRDCN portfolio and some of the RRE and LGCRP portfolios' buckets.

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the ELs for the riskiest loans.⁶⁰ Further assessment is needed to analyse the contribution made by cross-selling and by fees and commissions towards covering ELs, as these income sources are not reflected in the stand-alone pricing of some credit products. Banks would need to consider whether profits made on high-risk borrowers including all income sources (e.g. cross-selling, fees and commissions) are enough to justify the apparently low risk-adjusted pricing spreads.

3.3 Data show no evidence that IRB banks have better risk-based pricing

The ECB expects banks to consider using IRB model estimates for pricing

transactions. The calculation of regulatory capital requirements in accordance with the IRB approach is widely used today. For the SIs in the sample, 63% have adopted the IRB approach for at least one of the portfolios analysed. According to Article 144(1)(b) of the Capital Requirements Regulation (CRR)⁶¹, internal ratings must play an essential role in the risk management and decision-making process. In addition, the ECB has stated that banks should consider using the model estimates for the pricing of transactions.⁶² This raises the question of whether banks that use sophisticated models for the calculation of their credit risk exposures apply superior risk-based pricing for the loans they grant.

There is no evidence that IRB banks apply better risk-based pricing. Looking at the relationship between EL and pricing spread with respect to different approaches to capital requirements for credit risk, there is no evidence that IRB banks have more risk-sensitive pricing policies than STA banks. The aggregate ELs and pricing spreads of IRB and STA banks per PD bucket in the CRDCN and CRP portfolios are depicted in **Chart 26**. The chart shows that on average, an increase in EL is not accompanied by an increase in pricing spreads in the case of either IRB or STA banks. This pattern is also confirmed for the other portfolios (see Annex, **Chart A.59**) and also at individual bank level for a large number of banks in both groups.

⁶⁰ In some countries, spreads are capped by law, e.g. to overcome predatory lending, which may be one possible reason why spreads in riskier bucket do not cover EL.

⁶¹ Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012 (OJ L 176, 27.6.2013, p. 1).

⁶² See ECB guide to internal models, ECB, October 2019, paragraph 85.

Chart 26



No striking differences in pricing patterns between IRB and STA banks

(x-axis: NBV-weighted average EL at origination, in 2018 (bps); y-axis: NBV-weighted pricing spread at origination, in 2018 (bps))

Source: ECB Banking Supervision credit underwriting data collection 2019. Note: All dots are EA volume-weighted averages and are based on balanced data

Econometric analysis that controls for country-specific differences confirms these findings for most of the portfolios. Using bank-level data in a panel model estimation does not show significant differences in the impact of the EL on the pricing spread for the majority of portfolios. CRP and LGCRP are the only portfolios in which there seems to be a stronger relationship between the EL and the pricing spread at IRB banks. In the CRDCN portfolio instead, STA banks are found to have more risk-sensitive pricing, as measured by EL reported by the banks. In addition, tests carried out to assess the influence of lending standards, in terms of KRIs or loan characteristics, on interest rates or the pricing spread provide no indication that IRB banks have superior risk-based pricing.

Conclusion on risk-based pricing

Based on the data collected from banks in 2019, when measuring risk by the EL reported, risk-based pricing seems to be applied insufficiently appropriate on an aggregate level. While at EA level pricing spreads seem to be higher for portfolios with higher EL, such as the CRDCN portfolio, and lower for less risky portfolios, such as RRE, within the portfolios patterns appear to indicate inadequate risk-based pricing. First, when average pricing spreads per bank in each portfolio are compared with average ELs, there appears to be no significant relationship between the two. Neither simple correlation nor advanced statistical analysis using panel regressions and controlling inter alia for country effects shows that the EL significantly influences the average pricing spread. In the case of the LGCRP portfolio, while the relationship is significant, it appears to be too small. There is also no clear evidence that lending standards (loan structures and KRIs) have any significant influence on interest rates charged or the pricing spread. Second, looking at the data from the breakdown of portfolios by PD bucket, a positive relationship between EL and the pricing spread can be observed. However, the positive relationship becomes weaker with increasing risk.

It is worth noting that in the lower-risk buckets, the spread seems mostly above annual EL, while in the higher-risk buckets, spreads are below the EL in most portfolios. In addition, there is no evidence that IRB banks have better risk-based pricing than STA banks.

Further investigations are needed to understand risk-based pricing as applied by SIs. There are many possible reasons for the lack of evidence for appropriate risk-based pricing. First, competition may be driving prices, so banks' pricing models may be calibrated to take competition into account, or it is possible that manual overwrites are being used widely. Second, other factors such as lending standards (on which the ECB collected information) are used to determine loan prices but are not captured in the ELs as reported by banks. The lack of evidence of lending standards significantly influencing loan prices may be due to the heterogeneous use of risk indicators. However, credit risk should be captured by EL and should influence loan prices, so pricing models might simply be inadequate. Third, fees and commissions, cross-selling, cross-product subsidies and within-product subsidies have not been taken account in this analysis and may distort the results to some extent. As the data seem to indicate that prices for higher-risk borrowers are too low in all loan portfolios, subsidisation across loan portfolios seems unlikely. Further evaluation is needed to establish to what extent fees or cross-selling can make up for excessively low prices.

When losses materialise, for example owing to an economic downturn as a consequence of the COVID-19 crisis, levels of NPLs will rise, and the loan portfolios may be loss-making, as the seemingly low risk-adjusted income in some portfolios of certain banks may be insufficient to cover these losses. This is why supervisors need to analyse pricing strategies and their application while providing support to help maintain adequate financing of the economy and households.

4 Conclusion

The unique quantitative dataset on credit underwriting standards presented in this report offered valuable insights. The goal of the credit underwriting data collection was to examine the quality of banks' lending practices in order to mitigate a potential build-up of excessive credit risk. Particularly in the light of the current COVID-19 crisis, it is crucial to understand where concentrated risks might lead to higher default rates. The present analyses indicated relevant trends across different portfolios and in risk-based pricing, with the following key findings.

There was a marked rise in lending to households, which was fuelled in part by sharply rising house prices and was not fully backed by household income growth. As a result, in the RRE and CRDCN portfolios, income-based KRIs deteriorated while pricing spreads also declined. In addition, the worsening of income-based KRIs was combined with a slight increase in maturities. Loan profiles were characterised by increasing loan volumes and a higher share of bullet loans for RRE. Finally, relatively stable risk parameters and significantly declining pricing spreads did not reflect the deterioration in income-based KRIs.

Most of the NFC portfolios were characterised by improving KRIs, but also by riskier loan structures and decreasing pricing spreads. Recent benign economic conditions (before the COVID-19 outbreak) brought an improvement in corporate profits accompanied by low interest rate expenses. KRIs for CRE, SME, CRP and LGCRP portfolios still reflected these favourable economic conditions during the observation period. As a consequence, KRIs relating to corporate profits improved to some extent. However, data on loan structuring seem to have worsened over the period 2016-2018. For the CRE portfolio in particular, higher shares of bullet were observed. For corporates and large corporates, less collateralisation, increasing maturities and rising shares of bullet lending were prevalent, while for SME portfolios, loan profiles remained almost unchanged. Pricing spreads remained broadly stable for CRE, while for the SME and corporates portfolios, pricing spreads declined.

The dataset showed significant differences in the way high NPL banks granted new loans (compared with other banks) in the period 2016-2018, particularly in

RRE. Banks that are subject to the quarterly NPE reporting exercise, as defined in the ECB Guidance to banks on non-performing loans (i.e. high NPL banks), exhibited different lending behaviour from that of other SIs when granting new loans. Statistical tests based on the data collected show that for housing loans, high NPL banks granted new loans in a more conservative manner than other SIs during the observation period. Particularly when looking at LTV ratios, there is evidence that high NPL banks expected a higher equity contribution from their borrowers when providing loan financing. In addition, these banks were targeting higher-income borrowers or granting lower amounts of credit, as the LTI ratios for their new loans were lower on average than those of other SIs. The analysis of CRP, LGCRP and SME portfolios revealed significant differences between NPL banks and other banks in the way new loans were

granted. High NPL banks seemed to be more prudent about the amortisation schedule of new loans, but less so when it came to the ICR.

Risk-based pricing deserves further attention, as the positive relationship between EL and pricing spread does not always hold within portfolios and for higher-risk loans. Risk-based pricing was investigated by assessing how EL is related to the pricing spreads (interest rate charged minus funding costs) that banks apply to their new loans. Within portfolios, e.g. for the RRE portfolio, when comparing the average KRIs and average EL with the average interest rate charged or pricing spread, the relationship is very weak. This is true for all portfolios. However, across portfolios, the EA aggregate ELs and pricing spreads exhibit a clear positive relationship for most countries in almost every portfolio, with CRDCN showing the highest EL and pricing spread. An analysis of pricing spreads per EL bucket within each portfolio shows that on average, the spread increases in step with an increase in EL. However, for higher-risk loans, the increase in the spread becomes disproportionate to the increase in the EL. In addition, the one-year EL cannot be covered by the annual pricing spread in the higher-risk buckets.

The dataset did not show any evidence that IRB banks have better risk-based pricing. IRB banks, which use internal models for regulatory capital calculations, seem not to have better risk-based loan pricing than STA banks.

The potential causes for the weak relationship between credit risk and pricing in some areas are worth investigating further. First, it seems possible that prices are being driven more by competition than by risks. Second, other factors besides EL may influence spreads, and these could be incorporated into pricing models in a variety of ways. Third, fees and commissions, cross-selling, cross-product subsidies or within-product subsidies may be having an impact on pricing but have not been taken into account in this data collection. There is therefore a need to continue engaging with the banking industry to investigate pricing strategies and their application, while providing support to help maintain the adequate financing of the economy and households.

To better understand the evident bank-specific issues regarding credit underwriting practices and risk-based pricing, JSTs are conducting dedicated follow-up assessments in the context of the individual situation of banks. These individual assessments of bank-specific issues will be discussed in supervisory dialogues with banks and may lead to further action plans being developed.

5 Annex

5.1 Introduction

The Annex contains additional statistical data to support the main findings presented in the report. Owing to the confidentiality of bank-specific data, this Annex only shows country averages. In addition, these country averages are not displayed where the data cover less than three banks or where one or two banks make up a sufficiently large proportion of the observation so as to render them indirectly identifiable.⁶³

The structure of the Annex follows that of the general table of contents.

5.2 Overview: strong loan growth observed in all portfolios

Chart A.1





Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country values are based on balanced data.

⁶³ See Article 2(3) of Guideline ECB/1998/NP28.



(performing exposure stock CAGR between 2016 and 2018; percentages)



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country values are based on balanced data.

Chart A.3



(performing exposure stock in 2018; EUR billions)



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country values are based on balanced data.



(performing exposure stock CAGR between 2016 and 2018; percentages)



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country values are based on balanced data.

Chart A.5

RRE and CRDCN: NBV across countries



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country values are based on balanced data.



RRE and CRDCN: NBV shares across countries

Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country values are based on balanced data.

Chart A.7

CRE, SME, CRP and LGCRP: NBV across countries



Source: ECB Banking Supervision credit underwriting data collection 2019.





Source: ECB Banking Supervision credit underwriting data collection 2019.

5.3 RRE: signs of higher risk taking at low NPL banks but more conservative lending standards at high NPL banks

Chart A.9

RRE: market share in NBV and stock



⁽share in RRE NBV; percentages)







(share in RRE NBV; percentages)

(share in RRE NBV; percentages)





RRE: distribution of NBV by loan size and maturity

(share in RRE NBV; percentages)







(NBV-weighted average maturity at origination (years))









(volume-weighted average LTV ratio at origination; percentages)



(share in RRE NBV; percentages)



RRE: average LTI and LSTI ratio









RRE: interest rate and pricing spread





(NBV-weighted average pricing spread at origination; bps)



RRE: average risk parameters









CRDCN: high growth and deteriorating lending standards 5.4 - trends need to be monitored

Chart A.17

CRDCN: performing exposure stock CAGR



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are based on balanced data.

Chart A.18

CRDCN: fully unsecured NBV





(share in CRDCN NBV; percentages)



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's CRDCN NBV and are based on balanced data.

Chart A.20

CRDCN: NBV broken down by purpose

(share in CRDCN NBV; percentages)



CRDCN: NBV PD vs LGD

(x-axis: NBV-weighted one-year average LGD at origination (percentages); y-axis: NBV-weighted one-year average PD at origination (percentages))



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's CRDCN NBV and are based on balanced data.

5.5 CRE: lending shows heterogeneous developments

Chart A.22

CRE: CAGR of total performing stock by country

(performing exposure stock CAGR between 2016 and 2018 (percentages))



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: Based on balanced data.

(share in CRE NBV; percentages)



CRE: distribution of NBV by amortisation and by interest rate fixation by country

(share in IPRE NBV; percentages)



CRE: average maturity in new lending by country

IPRE





PUD

(NBV-weighted average maturity at origination; years)





PUD

(share in PUD NBV; percentages)



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's CRE NBV and are based on balanced data.

Chart A.26

CRE: average ICR in new lending by country

IPRE

(NBV-weighted average ICR; multiple)



Source: ECB Banking Supervision credit underwriting data collection 2019.

Note: EA and country averages are weighted by each institution's CRE NBV and are based on balanced data.



CRE: average LTV ratio and LTV distribution in new lending by country

IPRE

(NBV-weighted average LTV ratio; percentages)





CRE: interest rate in new lending by country

IPRE

(NBV-weighted average interest rate; percentages)



PUD

(NBV-weighted average interest rate; percentages)





(NBV-weighted average spread; bps)





(NBV-weighted average PD; percentages)



(NBV-weighted average LGD; percentages)



5.6 SME: history has shown that SME portfolios need attention in an economic downturn

Chart A.31

SME: market share in NBV and stock



⁽share in SME NBV; percentages)



SME: weighted average maturity for term loans and share of fully unsecured term loans









(share in term loan NBV; percentages)



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's SME NBV and are based on balanced data.

Chart A.34

SME: amortisation schedules for term loans

(share in term loan NBV; percentages)



Source: ECB Banking Supervision credit underwriting data collection 2019.

Note: EA and country averages are weighted by each institution's SME NBV and are based on balanced data.
SME: TDER and D/E ratios









Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's SME available NBV and are based on balanced data.



(share in term loan NBV; percentages)



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's SME available NBV and are based on balanced data.

Chart A.37

SME: average ICR

(NBV-weighted average ICR at origination; percentages)



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's SME available NBV and are based on balanced data.



(NBV-weighted average interest rate for term loans; percentages)



(NBV-weighted average pricing spread for term loans; bps)



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's SME NBV and are based on balanced data.

SME: risk parameters for NBV





(NBV-weighted average LGD; percentages)



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's SME NBV and are based on balanced data.

CRP and LGCRP: stronger risk indicators and falling EL 5.7

Chart A.40

CRP: market share in NBV and stock



(share in CRP NBV; percentages)



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's CRP stock or NBV and are based on balanced data.

LGCRP: market share in NBV and stock





(share in LGCRP NBV; percentages)



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's LGCRP stock or NBV and are based on balanced data.



CRP: average maturity for term loans and share of fully unsecured term loans

(NBV-weighted average maturity at origination; years)

(share of fully unsecured term loans in CRP NBV; percentages)



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's CRP NBV and are based on balanced data.



LGCRP: average maturity for term loans and share of fully unsecured term loans

(NBV-weighted average maturity at origination; years)



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's LGCRP NBV and are based on balanced data.



CRP

(share in term loan NBV; percentages)



LGCRP

(share in term loan NBV; percentages)



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's CRP and LGCRP NBV and are based on balanced data.



CRP

(share in term loan NBV; percentages)



LGCRP

(share in term loan NBV; percentages)



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's CRP and LGCRP NBV and are based on balanced data.

CRP: TDER and D/E ratios





(NBV-weighted average D/E ratio at origination; multiple)



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's CRP available NBV and are based on balanced data.

LGCRP: TDER and D/E ratios





(NBV-weighted average D/E ratio at origination; multiple)



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's LGCRP available NBV and are based on balanced data.



CRP

(share in term loan NBV; percentages)



LGCRP

(share in term loan NBV; percentages)



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's CRP and LGCRP available NBV and are based on balanced data.

CRP and LGCRP: average ICR

CRP

(NBV-weighted average ICR at origination; percentages)



LGCRP

(NBV-weighted average ICR at origination; percentages)



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's CRP and LGCRP available NBV and are based on balanced data.



(NBV-weighted average interest rate for term loans; percentages)



(NBV-weighted average spread for term loans NBV; bps)



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's CRP NBV and are based on balanced data.



(NBV-weighted average interest rate for term loans; percentages)



(NBV-weighted average spread for term loans NBV; bps)



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's LGCRP NBV and are based on balanced data.

CRP: risk parameters for NBV

(NBV-weighted average PD; percentages)



(NBV-weighted average LGD; percentages)



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's CRP NBV and are based on balanced data.

LGCRP: risk parameters for NBV



NBV-weighted average LGD; percentages)



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: EA and country averages are weighted by each institution's LGCRP NBV and are based on balanced data.

5.8 Prices for loans to higher-risk borrowers seem to fall short in covering EL

Chart A.54

CRE and CRDCN: EL vs pricing spread per EL bucket



Source: Credit underwriting criteria 2019.

Notes: Figures for 2018. Each dot represents an EL bucket. All values are EA volume-weighted averages and are based on balanced data. The share of risk (corresponding to the bubble size) is the product of the EL rate and EAD.

Chart A.55

SME and LGCRP: EL vs pricing spread per EL bucket

(x-axis: NBV-weighted average pricing spread at origination, in 2018 (bps); y-axis: NBV-weighted average EL at origination, in 2018 (bps); bubble size: share of risk, in 2018 (EUR billions))



Source: Credit underwriting criteria 2019.

Notes: Figures for 2018. Each dot represents an EL bucket. All values are EA volume-weighted averages and are based on balanced data. The share of risk (corresponding to the bubble size) is the product of the EL rate and EAD.

RRE and CRE: EL vs pricing spread per EL bucket

(x-axis: NBV or performing exposure stock-weighted average pricing spread (bps); y-axis: NBV or performing exposure stock-weighted EL (bps))



Source: Credit underwriting criteria 2019.

Notes: Each dot represents an EL bucket. All dots are EA volume-weighted averages and are based on balanced data. Performing exposure stock figures are as at the start of the reference period, i.e. 2016. New business volume figures are as at the origination date, i.e. 2018. Fitted linear regression lines are depicted in grey.

Chart A.57

SME and CRP: EL vs pricing spread per EL bucket

(x-axis: NBV or performing exposure stock-weighted average pricing spread at origination (bps); y-axis: NBV or performing exposure stock-weighted EL at origination (bps))



Source: Credit underwriting criteria 2019. Notes: Each dot represents an EL bucket. All dots are EA volume-weighted averages and are based on balanced data. Performing exposure stock figures are as at the start of the reference period, i.e. 2016. New business volume figures are as at the origination date, i.e. 2018. Fitted linear regression lines are depicted in grey.

LGCRP and CRDCN: EL vs pricing spread per EL bucket

(x-axis: NBV or performing exposure stock-weighted average pricing spread at origination (bps); y-axis: NBV or performing exposure stock-weighted EL at origination (bps))



Source: Credit underwriting criteria 2019. Notes: Each dot represents an EL bucket. All dots are EA volume-weighted averages and are based on balanced data. Performing exposure stock figures are as at the start of the reference period, i.e. 2016. New business volume figures are as at the origination date, i.e. 2018. Fitted linear regression lines are depicted in grey.

5.9 Data show no evidence that IRB banks have better risk-based pricing

Chart A.59

EL vs pricing spread for IRB and non-IRB banks



Source: ECB Banking Supervision credit underwriting data collection 2019. Note: All dots are EA volume-weighted averages and are based on balanced data.

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