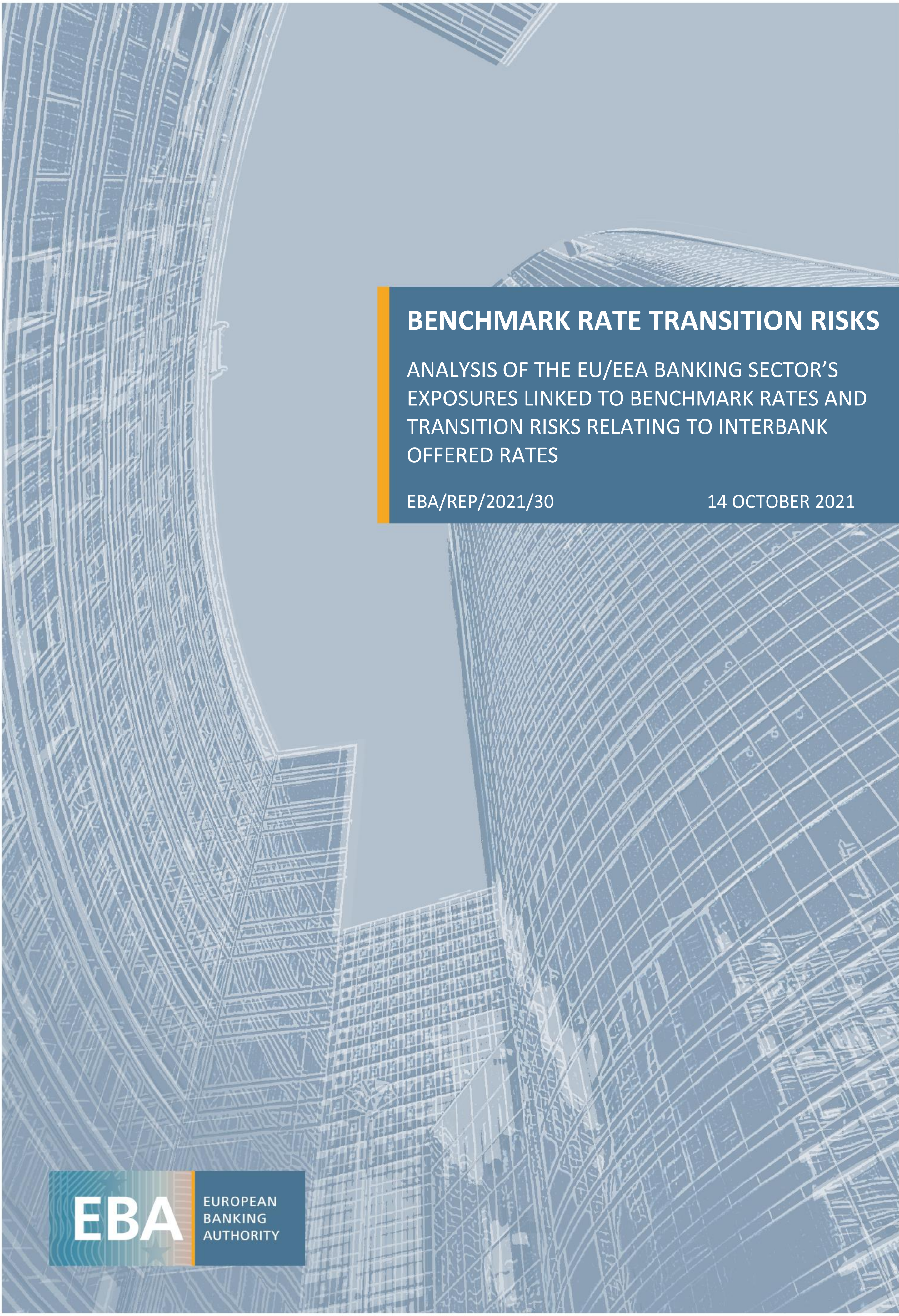

BENCHMARK RATE TRANSITION RISKS

ANALYSIS OF THE EU/EEA BANKING SECTOR’S EXPOSURES LINKED TO BENCHMARK RATES AND TRANSITION RISKS RELATING TO INTERBANK OFFERED RATES

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EUROPEAN BANKING AUTHORITY

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The reforms of two major benchmark (interest) rates are nearing their completion. These are the London Interbank Offered Rates (LIBOR) for different currencies and for varying tenors, and the Euro Overnight Index Average (EONIA). The reforms of other (national) benchmark rates are in various degrees of completion. Some have already been reformed while others have been replaced. Alternative nearly risk-free rates (RFRs)[1] have been developed in various jurisdictions, including the euro short-term rate (€STR). Even though there is no indication that the reformed Euro Interbank Offered Rate (EURIBOR) will also be abandoned, supervised entities using this or any other benchmark rate that is in scope of the Benchmark Regulation (Regulation (EU) 2016/1011 (BMR)) are required by law to produce and maintain robust written plans setting out the actions they would take in the event that the benchmark ceases to exist or materially changes. In addition, supervised entities are strongly encouraged to work on the introduction of fallback provisions in their contracts and financial instruments linked to the benchmark.

Benchmark rates play a major role in banks' daily business, including in valuation and risk management. Transitioning away from ceasing benchmark rates to new RFRs poses a potential key risk for financial markets in general and for banks in particular. There are also links to prudential requirements and accounting, as benchmark rate transitions may affect banks' internal market risk models, prudent valuations and the eligibility assessment of capital instruments. This may have a non-negligible impact on banks' financial statements.

Even though the largest share of benchmark-referenced assets and liabilities of EU/EEA banks is linked to EURIBOR and national benchmark rates, significant exposures are linked to LIBOR and EONIA, both of which will cease to exist[2]. LIBOR-linked derivative volumes are particularly high, mostly USD-denominated exposures. Data collected as part of an ad hoc survey exercise show that EU banks have exposures of almost EUR 57tn in derivatives (notional amounts) linked to LIBOR and EONIA. Derivatives referring to EURIBOR and other national reference benchmark rates reach around EUR 76tn. New RFR-referencing derivatives have a notional volume of only close to EUR 3tn. These numbers compare with around EUR 180tn in total of derivatives of EU/EEA banks – with the difference against the sum of benchmark-rate-referencing derivatives being primarily due to other kinds of derivatives which are not linked to variable interest rate considerations.

Loans and advances referencing benchmark rates (excluding new RFRs) amount to EUR 5.2tn. Of these, around EUR 3.6tn are linked to EURIBOR, close to EUR 1tn to LIBOR and around EUR 0.2tn to EONIA, and the remainder to national benchmark rates. Debt securities held and issued which are linked to benchmark rates have a volume of around EUR 0.3tn and EUR 0.6tn, respectively. LIBOR-referenced ones are mainly relevant on the liabilities side (EUR 0.2tn). EUR 1.2tn of deposits are

[1] The term 'alternative nearly risk-free (reference) rate' is for instance used in the Financial Stability Board (FSB) report on Reforming Major Interest Rate Benchmarks (July 2014).

[2] Data in the report are based on different cut-off dates. In the past year, institutions may have already reduced their exposures linked to benchmark rates and made additional efforts to adequately address and mitigate the key risks relating to benchmark rate reforms. See also the disclaimer in the text box in Chapter 1 on this.

referenced to benchmark rates, mainly to EURIBOR. Volumes of assets and liabilities referencing new RFRs are comparatively low.

LIBOR-referenced loans and advances are a particular focal point, as their transition risk might be higher than for other LIBOR-linked exposures. This is not least due to the related legal transition risks. When looking at country data, LIBOR-linked loans as a share of total loans referencing a benchmark reach their highest in Ireland and Luxembourg. For CHF LIBOR-referenced loans, for which political risks add to the already existing legal risks, Austria and Poland are the countries that report the highest shares. Regarding derivatives, France and Germany have the highest volumes and some of the highest shares of LIBOR-linked exposures (40% to 50%).

Banks and Competent Authorities (CAs) consider legal challenges accompanying the transition of existing business on the assets side as well as changes in bank-internal operations and systems as key areas of concern. Consistently with this, banks' benchmark replacement projects are focused on transitioning existing business and on internal operations, capabilities and systems. In a survey among CAs, they specifically point to LIBOR-linked exposures as a major risk, and not least to USD and CHF ones due to their forthcoming cessation. Concerns relating to the update and validation of internal risk models were also mentioned in the survey. Further areas of concern relate to the development of the market infrastructure and liquidity in products referencing new IBORs.

Despite these major challenges, CAs tend to agree that the ongoing work and general awareness of the banks under their supervision should adequately address and mitigate risks relating to benchmark rate reforms. However, they also point to challenges relating to the renegotiation of existing contracts, as litigation and conduct risks presumably do not dissipate even if transitions are well managed. They also stress that legal uncertainties would remain anyway even if transitions are well managed and show certain concerns relating to the updating and validation of internal risk models.

1. Introduction

1. **Benchmark (interest) rates play a major role in banks' daily business** as they are used in many kinds of contracts, such as mortgages or other credit products, bond investments or issuances, derivatives such as interest rate or currency swaps and off-balance-sheet instruments such as undrawn loan commitments and guarantees. Benchmark rates affect the initial pricing of such financial products, their ongoing valuation for risk control functions and accounting purposes, and banks' risk management strategies. For this reason, the replacement of ceasing benchmark rates is considered to be a key risk for the EU/EEA banking sector[3].

2. **In 2014, the Financial Stability Board (FSB) concluded that attempted manipulation and false reporting as well as a decline in liquidity in interbank funding markets put existing benchmark rates into question[4].** Alongside global reforms relating to benchmark rates, the BMR was adopted in the EU in 2016. The BMR governs the provision and contribution of input data, and the use of benchmarks in the EU[5]. **As a result of all these developments, several benchmark rates are nearing cessation or already have ceased. These include LIBOR, of which most settings for different currencies and tenors will cease at the end of 2021, though certain USD LIBOR settings will only terminate at the end of June 2023[6]. EONIA will be discontinued on 3 January 2022[7].** Furthermore, several national benchmark rates have already been terminated[8].

3. Alternative RFRs have been developed in various jurisdictions and recommended by national working groups. These include the €STR for EUR, the Secured Overnight Financing Rate (SOFR) for USD, the Swiss Average Rate Overnight (SARON) for CHF and the Sterling Overnight Index Average (SONIA) for GBP. **The process of transitioning away from ceasing benchmark rates to new RFRs is a key risk relating to the benchmark rate reforms.**

4. **Since February 2021 the BMR has provided for a statutory power to designate a replacement of a benchmark that is in scope of the BMR for the European Commission (Art. 23a ff BMR).** According to this, the European Commission can under certain circumstances and in certain cases designate one or more replacements for a benchmark. The replacement would apply to

[3] See for instance the EBA's Risk Assessment of the European Banking System (December 2020).

[4] See the FSB's report on Reforming Major Interest Rate Benchmarks (July 2014).

[5] See the European Commission's website on ensuring the integrity of securities markets and Regulation (EU) 2016/1011 of 8 June 2016 on indices used as benchmarks in financial instruments and financial contracts or to measure the performance of investment funds and amending Directives 2008/48/EC and 2014/17/EU and Regulation (EU) No 596/2014. ESMA is responsible for the drafting of regulatory technical standards (RTS) and implementing technical standards (ITS) and publishes e.g. guidelines and supervisory briefings relating to the BMR.

[6] On the LIBOR cessation see the Financial Conduct Authority (FCA) announcement on the end of LIBOR from 5 March 2021.

[7] EONIA will be replaced by the new euro short-term rate (€STR). During the transition period EONIA will be calculated as €STR plus a spread (see for instance the Euro Risk Free Rates Working Group on 'What is the transition from EONIA to €STR (€uro Short-Term Rate)'.

[8] See in the Annex a table on selected benchmark rates in the EU/EEA and their status regarding BMR compliance or similar.

all references to those benchmarks in contracts and financial instruments that do not contain fallback provisions or suitable fallback provisions. Such a replacement for a benchmark aims to ensure the avoidance of unclear situations, which might disrupt the functioning of financial markets.

5. **Due to the cessation of the above-mentioned benchmark rates, the pressure to manage the transition and replacement of them is high for banks and other market participants.** Within this context, the European Commission, the European Central Bank in its banking supervisory capacity (ECB Banking Supervision), the European Banking Authority (EBA) and the European Securities and Markets Authority (ESMA) have strongly **encouraged market participants to substantially reduce their exposure to LIBOR rates, as these are considered to be of increased riskiness due to both their significance for the European financial system and the imminent cessation date of LIBOR rates**[9]. A joint public statement called on market participants not to use LIBOR in new contracts any longer, to avoid referencing any variants of LIBOR that are derived using a changed methodology as far as possible and to ensure that existing contracts have robust fallback clauses covering benchmark cessation.

6. **EURIBOR, which is widely used by European banks as a benchmark rate, was reformed in 2019 to be BMR-compliant[10].** As a result, contracts and financial instruments referencing EURIBOR do not need to transition to an alternative rate. However, supervised entities, including EU/EEA banks, are required to produce and maintain robust written plans setting out the actions that they would take in the event that a benchmark (rate) materially changes or ceases to be provided (Art. 28(2) BMR). Where feasible and appropriate, such plans must designate one or more alternative benchmark (rates) that could be referenced in such a case. As such, banks need to incorporate new or improved fallback provisions, for instance to reduce potential uncertainties in the event of a EURIBOR cessation[11]. Other national benchmark rates have a different status or are out of scope regarding BMR compliance or their application to be considered compliant[12].

7. **The transition away from existing to alternative benchmark rates poses several risks**. In many cases banks are required to undertake changes to existing contracts at granular level. These changes usually require significant operational efforts and are accompanied by legal risks, including conduct risks. They can also significantly affect ICT systems, such as trading and

[9] See the joint public statement on forthcoming cessation of all LIBOR settings from June 2021.

[10] The Financial Services and Markets Authority (FSMA) of Belgium has granted authorisation to the European Money Market Institute (EMMI) as the administrator for EURIBOR. See the FMSA's statement granting authorisation to EMMI as administrator of the EURIBOR benchmark from 3 July 2019.

[11] See on these aspects e.g. the Euro Risk Free Rates Working Group's presentation on preparing for the interest rate benchmark reforms and the new risk-free rates from June 2020. The BMR requires that fallback solutions are in place in case e.g. a benchmark rate ceases (Art. 28(2) BMR). See also the Euro Risk Free Rates Working Group's publication on understanding EURIBOR fallbacks and their recommendations on EURIBOR fallback trigger events and €STR-based EURIBOR fallback rates. See, too, the speech of the ESMA Chair on 'A supervisory perspective on the interest rate benchmarks reform'.

[12] See in the Annex a table on selected key benchmark rates in the EU/EEA. Registers of benchmark administrators and third country benchmarks are available on ESMA's website.

payment systems, market data infrastructure or systems for the valuation of products referring to those benchmark rates[13].

8. **Benchmark rate transitions can affect banks' internal market risk models as well as prudent valuation.** Supervisors point to the need for banks to validate and perform calibration checks of internal models when they apply changes to them amid benchmark rate transitions[14]. Banks' value at risk (VaR) calculations can also become more difficult amid benchmark rate transitions. It might happen, too, that due to benchmark rate transitions certain risks cannot be capitalised in full as such, and an additional charge for covering the residual risk may need to be considered in, for example, 'risks not in the model engines' or similar approaches[15]. BCBS clarifications relating to market and counterparty credit risk provide certain alleviations, which, for instance, allow the mixed use of the previous and new benchmark rates in certain cases[16]. When it comes to prudent valuation, potentially rising uncertainty – due to less observable market data – could result in an increase in additional valuation adjustments (AVA), which are deducted from Common Equity Tier 1 (CET1) capital.

9. **The impact of benchmark rate reforms on the eligibility of capital instruments is also being considered by regulators, as are the impacts relating to financial statements.** The BCBS clarified that changes to capital instruments' contracts due to benchmark rate transitions must not imply that these instruments are considered as new when assessing minimum maturity and call date requirements[17]. Regarding accounting rules, the International Accounting Standards Board (IASB) introduced amendments to a few standards, including IFRS 9 (Financial instruments) and IFRS 7 (Financial instruments: Disclosures). The IASB project brought novelties that are relevant from a financial reporting perspective, including the assessment of changes to the contractual cash flows and how to account for those changes or how to amend the hedging relationships when replacing an interest rate benchmark with an alternative benchmark rate. It was also decided to provide some relief from the hedge accounting requirements[18].

10. The EBA's semi-annual Risk Assessment Questionnaire (RAQ) asks banks about their preparedness against these risks. **Their responses confirm that the key challenge is related to the transition of existing business on the assets side followed by derivatives and internal operations**[19]**.** According to the RAQ responses, the great majority of banks are currently

[13] See for instance the FSB and Basel Committee on Banking Supervision (BCBS) report on Supervisory issues associated with benchmark transition from July 2020 or the BCBS Newsletter on Benchmark rate reforms from February 2020.

[14] See the ECB Banking Supervision report on preparations for benchmark rate reforms from July 2020.

[15] See on 'risks not in the model engines' the ECB Banking Supervision guide to internal models from October 2019.

[16] See the BCBS Basel Framework frequently asked questions relating to benchmark rate reforms from June 2020. Not all of these aspects might be a similar issue under EU/EEA regulations, as they might be potentially otherwise addressed in the Capital Requirements Regulation / Capital Requirements Directive (CRR/CRD). The EBA is considering publishing a position relating to the definition of capital via a Q&A, too.

[17] See the BCBS newsletter on benchmark rate reforms from February 2020 and the Basel Framework frequently asked questions relating to benchmark rate reforms from June 2020.

[18] See the IFRS Foundation's project summary on the interest rate benchmark reform from August 2020.

[19] See for instance the Risk Assessment Questionnaire spring 2021 edition and its previous versions.

developing solutions to change existing contracts and adjust internal operations (like risk management systems).

11. This note provides an **analysis of the magnitude and relevance of benchmark rates in banks' business from different points of view (assets, liabilities, derivatives)**, and it aims to identify and raise the awareness for relating vulnerabilities in the EU/EEA banking sector, a short period ahead of the final transition date for LIBOR and EONIA. **Against this background the following analysis focuses mainly on LIBOR and EONIA exposures, as for these concrete transition risks are the most elevated.**

12. **The level of preparedness for benchmark-rate- related changes like LIBOR cessations can also affect banks through their interconnectedness within the financial sector more broadly, like with investment funds, insurance corporations or pension funds.** According to a report from the FSB and Basel Committee on Banking Supervision (BCBS) together with the International Association of Insurance Supervisors (IAIS) report indications are that LIBOR exposures – whose transition is currently a key risk relating to benchmark rate transitions – are limited in the insurance sector[20]. **On financial markets ESMA points out that volumes of LIBOR-referencing interest rate swaps were still significant as of Q1 2021, whereas RFR referencing ones kept on rising[21].**

[20] See the Annex on supervisory issues associated with benchmark transition from an insurance perspective (IAIS Report) in the FSB and BCBS report on Supervisory issues associated with benchmark transition from July 2020. Relating to benchmark rate reforms, there are also sector specifics to be considered, like assumed changes to the European Insurance and Occupational Pensions Authority (EIOPA) methodology and production of RFRs.

[21] See ESMA's Report on Trends, Risks and Vulnerabilities from September 2021.

The information in this thematic note is based on an ad hoc survey on a best-effort basis exercise, in which data from CAs on EU/EEA banks' exposures linked to various benchmark rates were collected during spring 2021. To alleviate the reporting burden on involved parties, the note mainly relies on data already available at CAs. **For this reason, volumes presented combine different datasets (e.g. regarding the level of granularity) and cut-off dates.** The latter range from June 2019 (for Denmark) and December 2019 (for Sweden and Norway) to December 2020 (for Iceland, Romania and others). Data were also provided by ECB Banking Supervision for significant institutions (SIs) in the euro area, for which the cut-off date was June 2020[22]. With the exception of some countries, data for less significant institutions (LSIs) in the euro area were provided by national CAs. In some parts there might also be certain data overlaps, in particular if data are reported by one CA for a subsidiary of a bank under another CA's responsibility. In such case, figures for the whole of the EU/EEA might be partially overestimated as both banks' respective exposures might be considered. This aspect should not affect country-level data[23].

Despite the range of cut-off dates and different datasets as well as certain overlaps, the results of the data collection can still be considered of key interest and relevance, as they provide an indication of benchmark-rate- related volumes of assets, liabilities and derivatives. It needs to be noted that **during 2021 volumes related to ceasing benchmark rates are presumably on the decline, whereas those related to new RFRs are presumably on the rise[24]. Still, risks related to ceasing benchmarks including LIBOR and EONIA rates remain elevated.**

When the data from the ad hoc survey exercise are compared with total volumes, the latter are based on FINREP and other reporting data as collected by the EBA[25]. The ad hoc survey itself is not based on FINREP definitions. **It needs to be noted that the data also include intra-group exposures and liabilities within the meaning of exposures or liabilities towards holding companies outside of the EU/EEA.** The share of such intra-group transactions tends not to be significant, with notional volumes of intra-group derivatives, for instance, reaching less than EUR 0.5tn, which corresponds to around 0.3% of total derivatives (analysis based on the highest level of consolidation). **In addition, the note presents qualitative feedback received by banks and CAs on the risks associated with the transition phase relating to ceasing benchmark rates[26].**

[22] On the relevance of benchmark rates for significant institutions (SIs) in the euro area, see the ECB Banking Supervision Horizontal assessment of SSM banks' preparedness for benchmark rate reforms as of July 2019 and the ECB Banking Supervision report on getting prepared for benchmark rate reforms from May 2021.

[23] Data were provided for euro area countries (SIs and a majority of LSIs) as well as BG, DK, HR, HU, IS, NO, PL, RO and SE.

[24] See, for instance, the International Swaps and Derivatives Association (ISDA) Clarus RFR Adoption Monitor and its accompanying monthly research notes. ESMA's Report on Trends, Risks and Vulnerabilities from September 2021 points to rising RFR referencing interest rate swap volumes. For the euro area see also the ECB Banking Supervision report on getting prepared for benchmark rate reforms from May 2021, according to which more than 70% of the LIBOR- related exposures (amounts) expire after 31 December 2021. For USD LIBOR- related exposures the share is around 60%, and for EONIA- related exposures more than 40% (all based on 2020 data).

[25] See information on secondary reporting: data from CAs to the EBA and the list of largest reporting institutions on the EBA website.

[26] Banks' results are those from the EBA's Risk Assessment Questionnaire (RAQ); see, for instance, its spring 2021 edition. The feedback from CAs was provided as part of the ad hoc survey, in which 27 CAs answered the qualitative part.

2. EU/EEA banks' benchmark-rate-linked exposures

2.1 EURIBOR and LIBOR benchmark rates are the most relevant ones for EU/EEA banks

13. **Not long ahead of the EONIA and first LIBOR cessations, EU/EEA banks still report considerable exposures linked to these benchmark rates, with derivative exposures being particularly high[27].** In addition, there are vulnerabilities in both the assets and liabilities side of banks in specific countries stemming from exposures to either ceasing LIBOR rates or other benchmark rates.

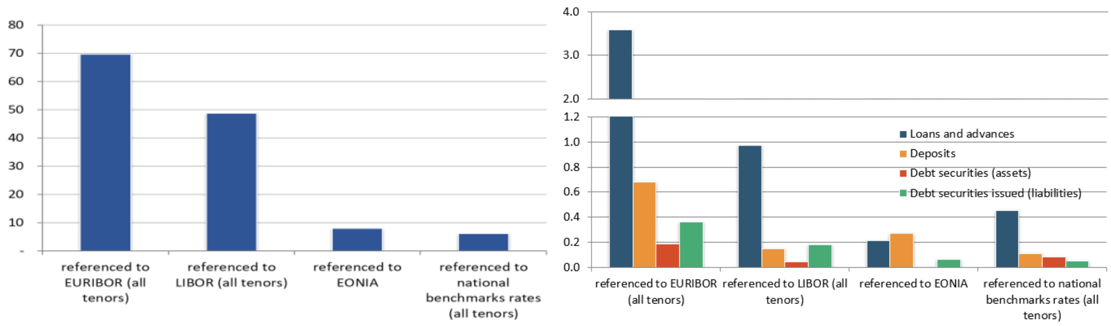
14. **The collected data show that there are almost EUR 57tn of derivatives (notional amounts) linked to LIBOR and EONIA.** Derivative exposures relating to ceasing LIBOR and EONIA rates might face major challenges in the event that their transition is not performed in time[28]. In addition, volumes of derivatives linked to EURIBOR or other national reference benchmark rates are reported at more than EUR 76tn according to the survey results. This compares with a total of around EUR 180tn of derivative exposures reported by EU/EEA banks. The difference between the sum of benchmark-rate-referencing derivatives and total derivative volumes is primarily due to other kinds of derivatives which are not linked to variable interest rate considerations.

15. According to the ad hoc data collection, close to EUR 5.2tn in loans and advances is linked to benchmark rates (which are not new RFRs), of which around EUR 3.6tn is linked to EURIBOR. **The volume of loans and advances linked to ceasing LIBOR rates is close to EUR 1tn (mostly USD-LIBOR- related exposures).** Loans and advances referenced to national benchmark rates are estimated not to exceed EUR 0.5tn. **EONIA-referenced loans and advances have a volume of around EUR 0.2tn.**

[27] Derivative exposures are analysed in notional terms in this note and are therefore not comparable as such with cash instruments.

[28] In a letter from the Chairman of the Euro Risk Free Rates Working Group to the European Commission following their July 2021 meeting it is estimated that the group's members have managed around 46% of their transition efforts for their EONIA- related derivatives business as of mid-2021. Relating to LIBOR-referencing derivatives under the ISDA protocol, ISDA published for instance a fallbacks protocol, a fallbacks supplement and some further guidance. Related spread fixing is published separately.

Figure 1: Volumes of derivatives (notional amounts: left) and other assets and liabilities linked to benchmark rates (which are not new RFRs; right) by type, EUR tn



Source: Ad hoc data collection among Competent Authorities

16. **Total deposits linked to benchmark rates are estimated to amount to about EUR 1.2tn.** In a similar way to derivatives and loans and advances, the **majority of the deposits are linked to EURIBOR. LIBOR and EONIA-referenced deposits have a volume of around EUR 0.4tn.**

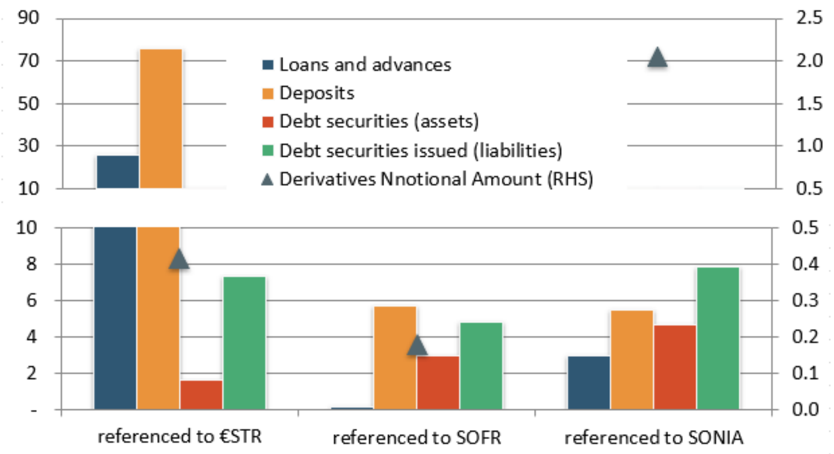
17. According to the ad hoc data collection, EU/EEA banks hold more than EUR 300bn of debt securities investments on the assets side, and they have issued a roughly similar amount of debt securities which are relating to the relevant benchmark rates. Although banks have **limited exposure to LIBOR-linked securities on their assets side, they report close to EUR 43bn outstanding issued securities as debt on the liabilities side which are linked to ceasing LIBORs.** Debt securities linked to ceasing EONIA are comparatively low on both the assets and liabilities side.

18. **Even though new RFRs (€STR, SOFR, SONIA) have been recommended as alternative benchmark rates by national working groups and have been in place for several currencies for some time now, EU/EEA banks' exposures to these are comparatively low.** For example, notional derivative exposures linked to these three rates amount to less than EUR 3tn (which compares with a reported notional amount of more than EUR 130tn in derivatives related to other benchmark rates). Loans and advances or deposits amount to a total of more than EUR 100bn. There might be different reasons for these comparatively low volumes, including the lack of a deep and liquid market for these rates or not (yet) available term rates in certain currency areas[29]. There are also indications that, for instance, the volume of derivatives referencing new RFRs has been on the rise recently[30].

[29] See for instance the update of the Alternative Reference Rate Committee (ARRC) on forward-looking SOFR term rate from 23 March 2021, the ARRC statement welcoming the recommendation to transition interdealer swap market trading conventions to SOFR from 8 June 2021 (the measure is, for instance, considered to support liquidity in SOFR- related markets) and the Bloomberg article 'Libor Transition Goes on Even With SOFR Term Rate Uncertain' from March 2021. See also Chapter 3. For SOFR, the ARRC recommended the Chicago Mercantile Exchange (CME) forward-looking SOFR term rates on 29 July.

[30] See, for instance, the International Swaps and Derivatives Association (ISDA) Clarus RFR Adoption Monitor.

Figure 2: Exposures linked to new RFRs by type (EUR bn left and EUR tn right)



Source: Ad hoc data collection among Competent Authorities

2.2 Analysis of benchmark-rate-linked exposures by country reveal idiosyncratic relevance

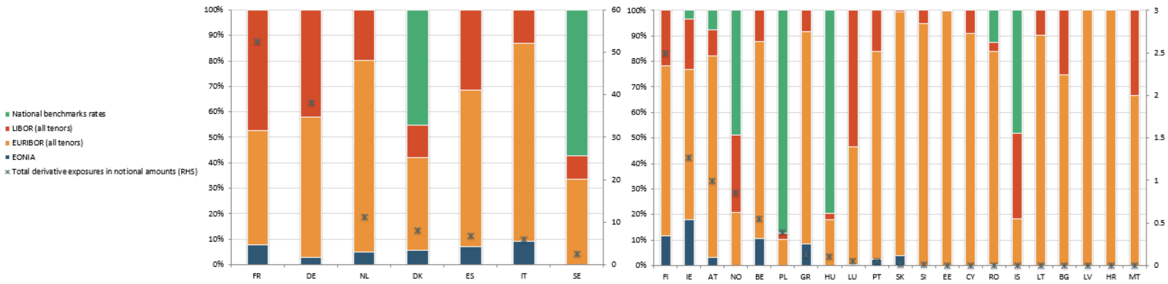
2.2.1 Derivatives

19.**Derivative exposures have the highest share for EU/EEA banks with reference to benchmark rates relative to other balance sheet items. This applies to most of the countries.** This is presumably not least due to their nature, as derivative instruments include interest rate swaps and foreign-currency- (FX) related derivatives such as cross-currency swaps.

20.**Regarding ceasing benchmark rates, French and German banks are among those reporting on average the highest derivative volumes and some of the highest shares of LIBOR-linked exposures**, reaching between 40% to 50%. **Finland and Ireland have the highest share in EONIA-referenced derivative exposures (ranging from slightly more than 10% to slightly more than 20%), but with comparatively low derivative notional amounts.** LIBOR and EONIA-referenced derivatives pose an elevated risk due to their upcoming cessations and the transition of remaining exposures needs to be performed quickly.

21.**In a similar way to other types of exposures, non-euro-area countries have heightened exposures linked to national benchmark rates.** Examples are Hungary, Iceland, Norway, Poland, and Sweden where the share of derivatives referencing other national benchmark rates is around 50% or higher. **For euro area countries the share of EURIBOR-referenced derivatives reaches up to 100% in several countries, including the Baltic countries.**

Figure 3: Distribution of derivative exposures by benchmark rate (which are not new RFRs; in %) and total derivative exposures with benchmark rate references (EUR tn)



Source: Ad hoc data collection among Competent Authorities

Text box: Swedish banks' benchmark-rate-linked exposures

Swedish banks' balance sheets including derivatives exposures, assets side exposures (loans and advances and debt securities) as well as deposits and issued notes are highly linked to the Stockholm Interbank Offered Rate (STIBOR).

STIBOR is administered by the Swedish Financial Benchmark Facility (SFBF), and it has been designated as a critical interest rate benchmark. SFBF is in the process of seeking authorisation from the Swedish FSA to operate as an administrator under the BMR[31]. As such, although transition risks do not seem to be imminent for STIBOR-linked exposures, the ongoing authorisation process for the benchmark rate merits close monitoring.

2.2.2 Assets side

22. **When looking at the composition of the assets side linked to benchmark rates it is evident that loans and advances have the biggest share across all jurisdictions.** Close to 90% of these assets linked to benchmark rates are loans and advances, with only a few countries reporting a share of debt securities of more than 20% (Belgium and Sweden).

23. **The analysis of country-specific exposures reveals heightened levels of benchmark-rate-linked loans and advances and debt securities (assets side[32]) compared to countries' total loans and debt securities for several Member States.** In particular Baltic and CEE countries report the highest share of benchmark-rate-linked exposures compared to their total loans and debt securities, and with only limited fixed-rate exposures. The share of benchmark-rate-linked exposures for these countries reaches up to 90%. For Belgium, Bulgaria, Denmark and Iceland the share is the lowest (around 5% to 15%).

[31] See the Swedish Financial Benchmark Facility (SFBF) overview of the STIBOR evolution.

[32] The data for the assets and liabilities sides include loans and advances and debt securities held for the assets side, and deposits and debt securities issued for the liabilities side. Derivatives are excluded and covered in a separate sub-chapter. For Ireland, in the case of one bank, benchmark-referencing loans and advances include loan commitments, i.e. the share of benchmark-referencing loans and advances is slightly inflated.

24. **For non-euro-area countries, benchmark-rate-linked exposures are mainly driven by national benchmark rates** such as the Stockholm Interbank Offered Rate (STIBOR) for Sweden (share of 25% of respective exposures referencing a benchmark rate), the Warsaw Interbank Offered Rate (WIBOR) for Poland (share of 80%) and the Romanian Interbank Offered Rate (ROBOR, share of 65%). For euro area countries, the exposures are mainly driven by EURIBOR-linked respective assets (in a range between 35% to 97%, yet with most countries reporting more than 80%).

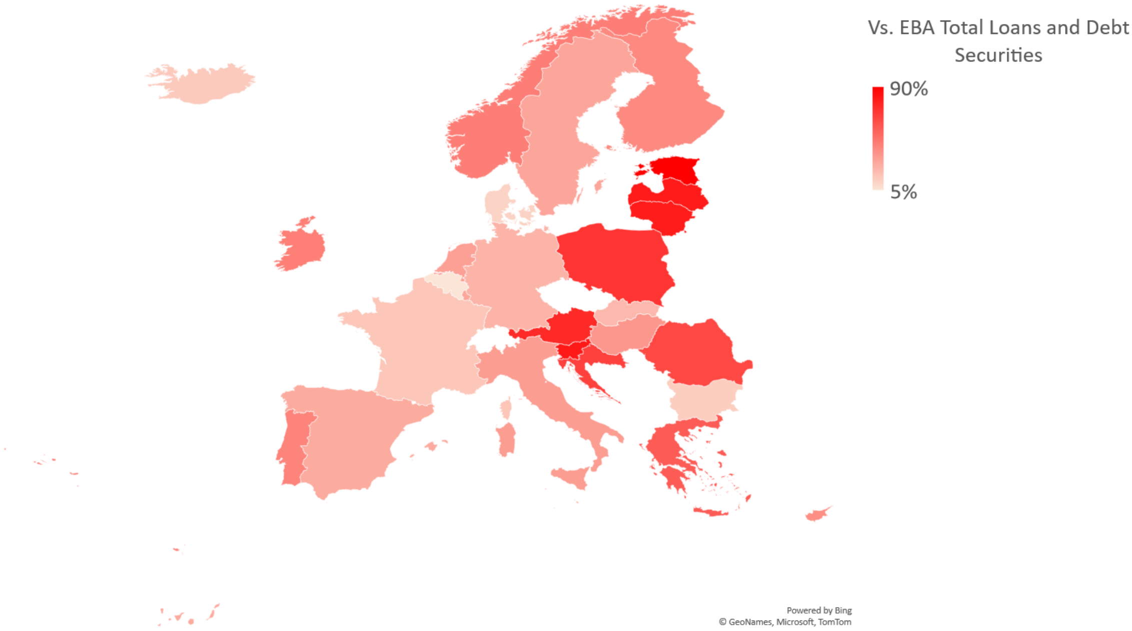
Text box: Romanian banks' benchmark-rate-linked exposures

The share of loans and advances and debt securities (assets side) linked to benchmark rates of Romanian banks is one of the highest compared to other jurisdictions. **The main benchmark rate to which these exposures are linked is the ROBOR, although there is a significant part linked to EURIBOR and the reference index for loans granted to consumers (IRCC; benchmark index for loans to consumers for new retail consumer loans in local currency) as well as smaller exposures towards CHF LIBOR.**

ROBOR is published by the National Bank of Romania (NBR) and IRCC is administered by a public authority[33]. ROBOR is based on firm bank quotes for each tenor and IRCC is a weighted average of all the effective interbank unsecured deposits. In this regard the benchmark transition risk for Romanian banks and consumers is mainly limited to the existing CHF exposures.

[33] See, for instance, the NBR's publications of benchmark rates, incl. ROBOR and IRCC, the NBR's rules for determining the […] ROBOR reference rate[…] and the rules on IRCC and other calculations (in Romanian).

Figure 4: Loans and advances and debt securities (assets side) linked with exposures referencing benchmark rates (which are not new RFRs) vs. EBA sample total loans and advances and debt securities

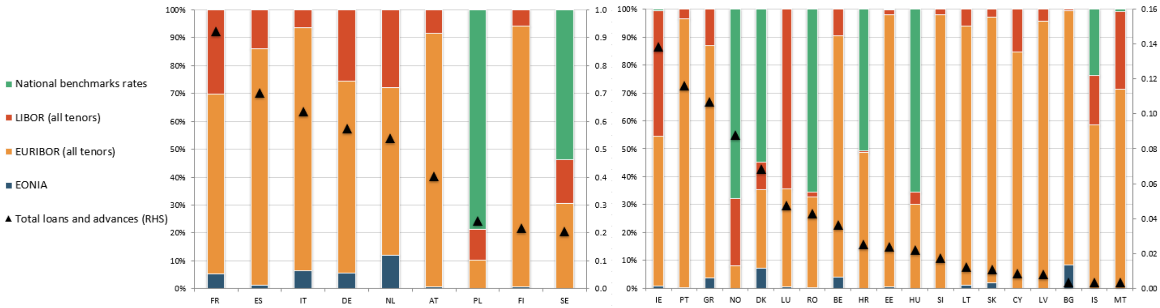


Source: Ad hoc data collection among Competent Authorities and EBA calculations

25. **The share of LIBOR-linked loans and advances to total loans and advances linked to benchmark rates is reported to be the highest in Luxembourg (65%) and Ireland (45%), yet respective absolute volumes tend not to be significant.** France, Germany and the Netherlands also have elevated shares of LIBOR-linked loans and advances (close to 30%), which are mostly driven by USD LIBOR ones. Austria and Poland are the countries that report the highest shares of CHF-LIBOR-referenced loans. CHF-LIBOR-referenced loans, in particular mortgage exposures, are a particular focal point, as they have in many cases adverse effects on consumers. As such their transition risk to new RFRs is elevated compared to other LIBOR or EONIA-referenced exposures, due to the additionally related political and legal risks[34].

[34] See, for instance, the European Parliament's paper on unfair terms in Swiss franc loans – overview of European Court of Justice case law from March 2021 and the European Commission's consultation on the designation of a statutory replacement rate for CHF LIBOR.

Figure 5: Distribution of loans and advances by benchmark rate (which are not new RFRs; in %) and total loans and advances with benchmark rate references (EUR tn)

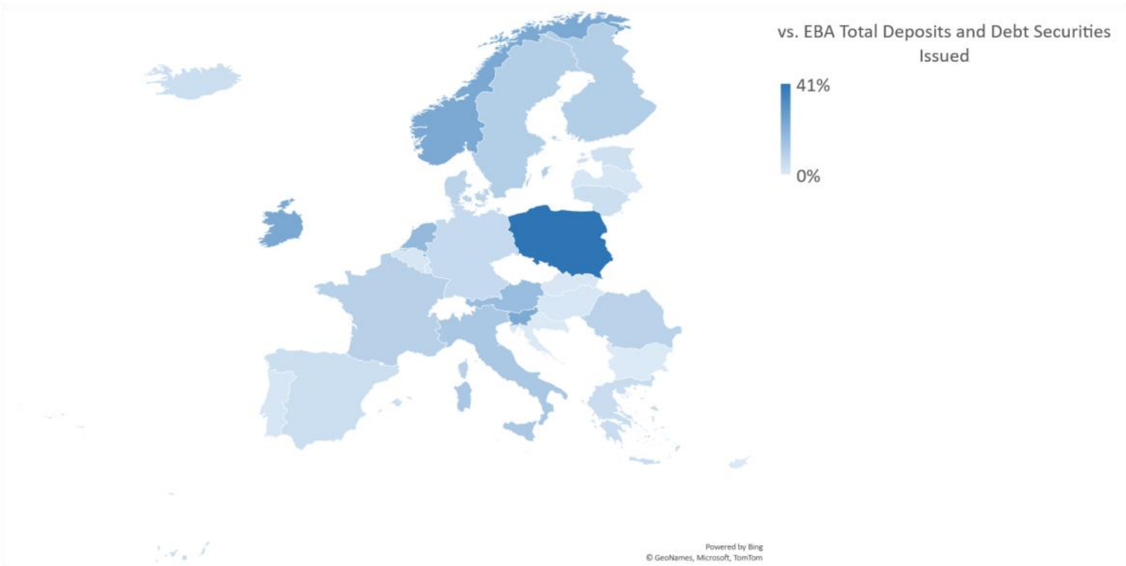


Source: Ad hoc data collection among Competent Authorities

2.2.3 Liabilities side

26. **On the liabilities side the share of benchmark-rate-referenced issued debt securities is in general lower than for the assets side.** Only a limited number of Member States have more than 10% of their deposits and debt securities issued linked to relevant benchmark rates. This is mainly related to several Nordic and central Eastern EU/EEA countries, which report a comparatively high share of benchmark-rate-linked deposits and debt securities issued as a percentage of respective totals.

Figure 6: Deposits and debt securities issued (liabilities side) linked with benchmark rate references (which are not new RFRs) vs. EBA sample total deposits and debt securities issued

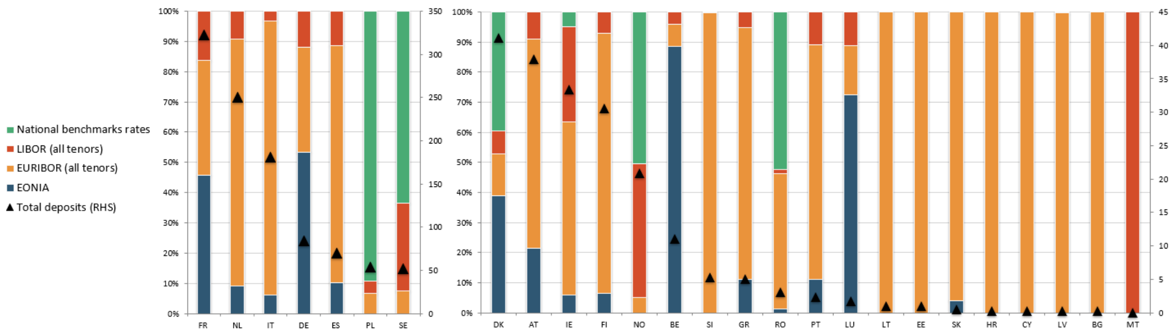


Source: Ad hoc data collection among Competent Authorities and EBA calculations

27. In a similar way to the assets side, benchmark-rate-linked exposures in non-euro-area countries are driven by national reference rates. For example, liabilities referenced to the Norwegian Interbank Offered Rate (NIBOR) range from 50% to close to 100% in Norway. Within the euro

area the share for EURIBOR-referenced deposits and debt securities ranges from around 35% to 100%. **The share of LIBOR and EONIA-referenced respective liabilities is the highest in France, Malta and Luxemburg, reaching more than 60%, yet for the latter two countries the absolute exposure is comparatively small.**

Figure 7: Distribution of deposits by benchmark rate (which are not new RFRs; in %) and total deposits with be nchmark rate references (EUR bn)



Source: Ad hoc data collection among Competent Authorities

Text box: Polish banks' benchmark-rate-linked exposures

More than 70% of the Polish benchmark-rate-linked exposures (loans and advances and debt securities) refer to WIBOR. The benchmark rate has been designated as a critical benchmark within the meaning of the BMR and is administered by GPW Benchmark S.A., which is authorised under the BMR. Therefore, exposures linked to WIBOR do not face transition risk in this respect.

Yet, there are substantial exposures linked to CHF LIBOR, reaching around 10% of loans and advances referencing relevant benchmark rates. This poses several risks, not least due to the lack of fallback language, for instance, in mortgage contracts. The European Commission is consulting about a statutory replacement rate for CHF LIBOR[35]. In addition, there are elevated legal risks linked to CHF LIBOR exposures, due to ongoing legal cases[36].

[35] See the European Commission's consultation on the designation of a statutory replacement rate for CHF LIBOR.

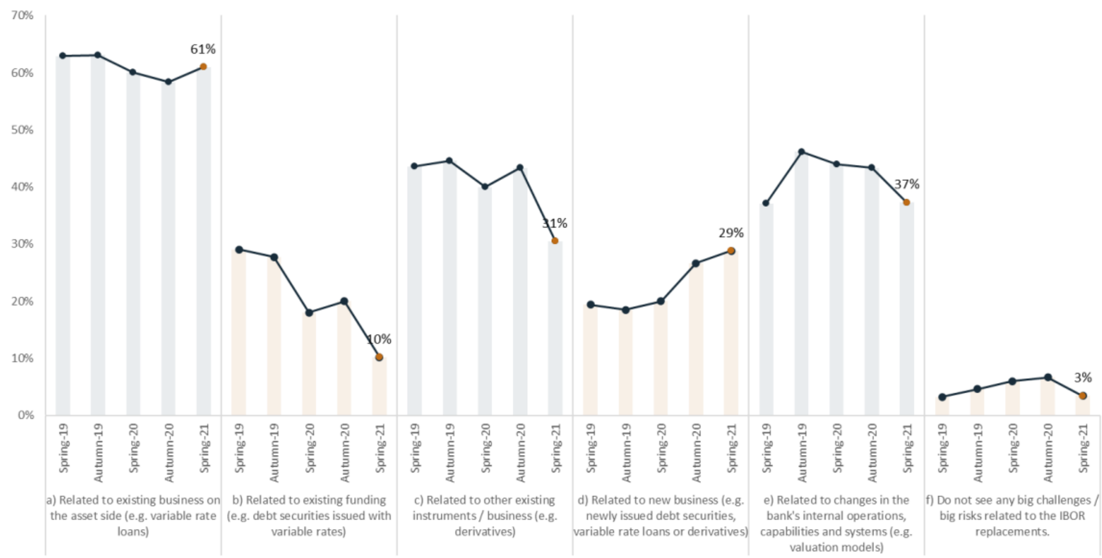
[36] See, for instance, the European Parliament's paper on unfair terms in Swiss franc loans – overview of European Court of Justice case law from March 2021.

3. Qualitative risk assessment for benchmark-rate-linked transition risks

3.1 Assessment based on banks' feedback: clear focus areas in transition projects

28. **Banks are surveyed semi-annually on their preparations and progress for the replacement of benchmark rates through the EBA's Risk Assessment Questionnaire (RAQ)[37].** The responses show that close to 60% of the banks surveyed consider existing business on the assets side as their biggest challenge relating to benchmark rate transitions. Around 40% of the banks see internal operational changes as a challenge they are confronted with. Banks seem to have made progress in terms of the debt securities on the liabilities side, as only 10% of the respondents consider this as an ongoing risk (down from 30% two years earlier).

Figure 8: Areas in which banks see the biggest challenges and potentially biggest risks in their preparations for the benchmark rate replacements – Risk Assessment Questionnaire, spring 2021



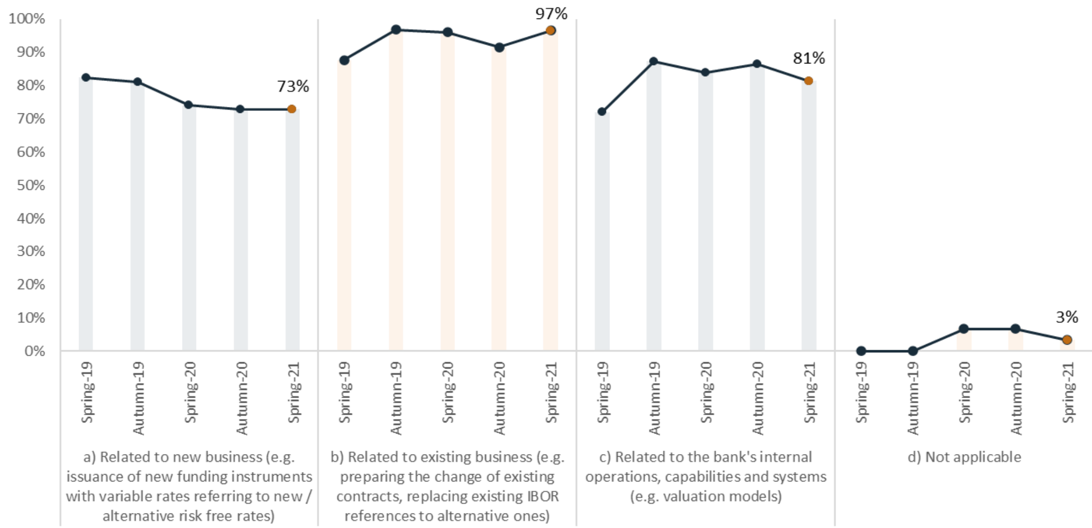
Source: EBA Risk Assessment Questionnaire, spring 2021

29. As a result, these two challenges have been among the banks' top priorities in terms of preparedness. **More than 95% of the banks responded that they are working on solutions with regards to their existing business, and more than 80% on their internal operations, capabilities**

[37] On the methodology, sample of banks etc. for the RAQ, see the Risk Assessment Questionnaire, spring 2021 edition and its previous versions.

and systems[38]. The share of these areas as top priorities has also been comparatively high for several years now.

Figure 9: Areas in which banks are working on solutions for the replacement of IBOR benchmark rates (e.g. LIBOR and EONIA) – Risk Assessment Questionnaire, spring 2021

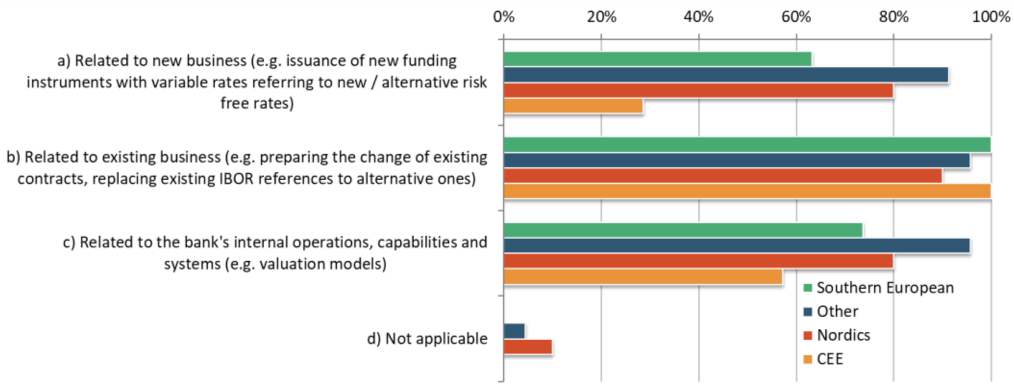


Source: EBA Risk Assessment Questionnaire, spring 2021

30. **Even though nearly all banks in the RAQ sample reported that they are currently working on solutions for benchmark rate replacements, there are wide dispersions between regions.** In the 'Nordics' and 'Other' regions banks seem to be particularly active in defining solutions relating to new business or internal operations and systems. However, low rates of agreement might not necessarily mean that banks lag behind others or are behind in their plans, but that they might, for instance, no longer face challenges relating to this issue as such. For instance, banks with higher EURIBOR-linked exposures might focus on challenges relating to existing business, as the transition risk is not considered to be imminent. Banks with higher LIBOR-linked exposures might, in contrast, need to develop the tools and procedures to accommodate new business with new benchmark rates.

[38] On the challenges relating to the change of contracts which do not include any fallback language and for which clients are not willing to cooperate, see agenda item 4 of the minutes of the Euro Risk Free Rates Working Group from 1 July 2021.

Figure 10: Areas in which banks are working on solutions for benchmark rate replacements (e.g. LIBOR and EONIA) by region – Risk Assessment Questionnaire, spring 2021 (in % of respondents)[39]



Source: EBA Risk Assessment Questionnaire, spring 2021

31. **As an example, central and eastern European (CEE) countries show some major differences compared to other regions relating to new business and changes in operations and systems.** This might not least be driven by the fact, for instance, that benchmark rates have already been reformed or replaced in several of these countries[40]. In such cases, work relating to respective transitions for new business might already be completed or well advanced. Of course, this aspect also depends on the benchmark rates mainly used in new contracts. Also, changes in operations and systems might have progressed more than in other regions for the same reason. However, it might also indicate that banks lag behind in their changes of operations and systems, maybe due to uncertainties relating to CHF mortgage loans. The 100% agreement on the relevance of work relating to existing business presumably confirms the challenges relating to transitions of CHF LIBOR and other LIBOR- related exposures in the region.

3.2 Assessment based on Competent Authorities' feedback: constantly monitoring banks' transition efforts

32. **In line with the qualitative data, CAs consider legal challenges accompanying the transition of existing business on the assets side such as business loans as a key area of concern.** The authorities also point to LIBOR- related exposures as a major risk, mainly USD and CHF exposures due to LIBOR cessations. In this regard, the authorities report that banks under their supervision have in general made progress according to their plans for the transition, with their focus on LIBOR rates. CAs also point to the challenges which banks might face when it is a matter of

[39] The regions were defined as following for this analysis: Southern Europe: CY, ES, GR, IT, MT, PT; Nordics: DK, FI, IS, NO, SE; CEE: BG, EE, PL, RO, SI; Other: AT, BE, DE, FR, IE, LU, NL.

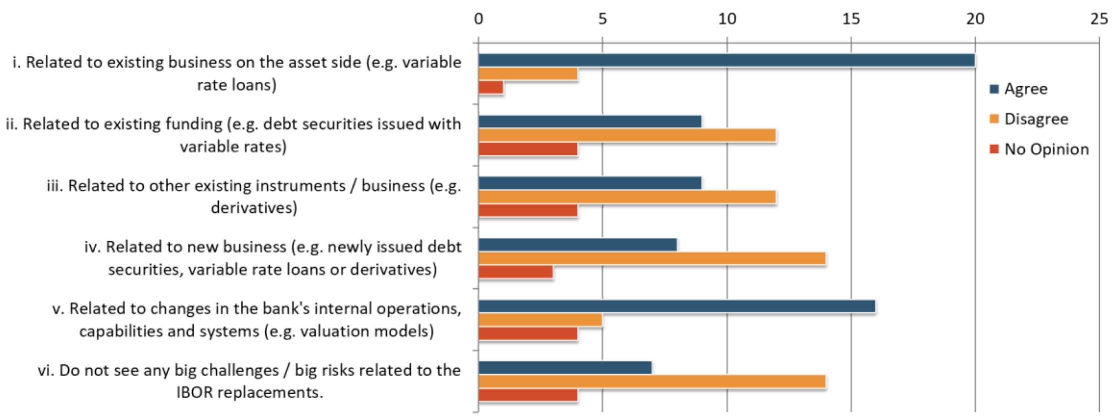
[40] See in the Annex a table on key benchmark rates in the EU/EEA. Registers of benchmark administrators and third country benchmarks are available on ESMA's website. The assumption regarding CEE countries would partially be supported by the data presented in Chapter 2, and in particular in Figure *3*, Figure *5* and Figure *7*, according to which in several CEE countries other national benchmark rates have a comparatively high share in benchmark-rate- related derivatives/exposures/debt. In some other CEE countries, the share of EURIBOR-linked exposures is comparatively high, which would similarly support this message, as elaborated in Paragraph 30.

renegotiating existing contracts to implement fallback language or similar[41]. They accordingly point to related litigation and conduct risks.

33.Furthermore, CAs assume that changes needed in banks' internal operations and system capabilities still pose a risk for banks. **They also partially point out that LSIs tend to be less affected by the transitions, on the one hand, but that they are also less well prepared than SIs, on the other hand.**

34.**As regards EURIBOR- related exposures CAs remain vigilant.** This is by far the most relevant benchmark rate, and thus should the rate cease in the future it may pose significant renegotiation, operational and governance risks. CAs also responded that banks are already working towards introducing fallback solutions to existing EURIBOR- related exposures.

Figure 11: Areas in which CAs see potentially the biggest risks in the preparations of banks in their jurisdiction (in % of respondents)



Source: Ad hoc survey among Competent Authorities

35.**According to the information provided by banks the impression of CAs is that banks in general and overall are trying to adequately manage their transition from ceasing benchmark rates in line with international practices and standards.** Yet they acknowledge the potential underlying risks in relation to the transition of IBOR rates and more specifically relating to the existing business in benchmark-rate-referencing loans. They also mention that legal uncertainties would anyhow remain even if transitions are well managed. Regarding new RFRs, a potential lack of liquidity for certain products referencing RFRs, the development of market infrastructure, missing forward-looking term rates and not yet developed market consensus on conventions relating to RFR-based instruments and contracts pose concerns among CAs. Concerns relating to the updating and validation of internal risk models were also mentioned in the survey.

[41] For the euro area, according to the ECB Banking Supervision report on getting prepared for benchmark rate reforms from May 2021, only around 33% of contracts (number of contracts) referencing EURIBOR have fallback clauses included (based on 2020 data).

36. **Despite these major challenges, CAs tend to agree that the ongoing work and general awareness of the banks under their jurisdiction adequately address and mitigate risks relating to benchmark rate reforms.** To monitor the preparedness, record the progress made and raise awareness among banks, CAs actively engage with banks via formal letters as well as surveys relating to this topic.

4. Conclusions

37. **This note shows that banks still hold major volumes of assets, liabilities and derivatives related to ceasing benchmark rates.** It remains key that their transition to new RFRs is managed diligently and in a timely manner within the remaining months. Banks will need to address all benchmark rate transition-related challenges in addition to those resulting from the COVID-19 pandemic.

38. **Banks need to address in particular the changes to affected contracts, which so far do not include, for instance, any fallback language, and need to check their robust written plans setting out the actions they would take in the event that a benchmark ceases or materially changes.** They need to work together with their clients and other affected counterparties during transitions, especially to negotiate missing fallback provisions. According to Art. 28(2) BMR banks must reflect their robust written plans in their contractual relationships with clients.

39. **Keeping clients and other counterparties informed about the upcoming changes is part of this work.** The use of different communication and information strategies might be necessary to address different levels of knowledge among clients and other affected parties with regard to benchmark rate transitions. This is not least needed to avoid legal and in particular conduct-related risks.

40. **It is paramount that all parties involved in this transition process cooperate, including banks, their clients and other counterparties as well as regulators and supervisors.** It remains important that banks, like any other market participants, adhere to guidance given by regulators and other authorities involved in the transition of benchmark rates.

41. **If benchmark rate transitions affect, for instance, banks' internal models or prudent valuations an early exchange with their supervisors is important.** This comes in addition to banks' own efforts relating to validation and calibration checks when adjusting internal models.

42. **On the impact of benchmark rate transitions on valuations in a more general sense, it is important to have in mind that they are presumably more material for instruments with longer remaining maturities.** If banks hold significant exposures with longer remaining maturities referencing benchmark rates, like long-term mortgage loans, this might affect their financial statements and prudential requirements more than in the case of more short-dated instruments.

43. **It will be key to avoid any mounting legal or conduct- related risks relating to the transitions**, which could be a result if existing contracts referring to ceasing benchmark rates and excluding fallback language cannot be changed in agreement with contractual counterparties, for instance. **The transitioning of ICT systems is another key risk** but should presumably be under better control by the banks. This is also relevant for benchmark rates being replaced by a statutory replacement rate.

44. **Changes relating to continued benchmark rates**, such as, for instance, the inclusion of fallback language and the availability of robust written plans setting out the actions they would take in the event that a benchmark ceases in respective EURIBOR- related contracts, **need to be addressed in parallel.**

45. In conclusion, the transition away from existing to new benchmark rates remains one of the key risks. **Only if this and similar risks are properly managed continuously and in a timely manner will banks be able to avoid a major negative impact on their business in the future.** If they are not managed properly and in a timely manner, the probability is high that the resulting negative impact will be even more concerning – with the risk of long-term litigation, impact on reputation, loss of customers and market share, ineffectiveness of hedging strategies and similar consequences.

Annex: overview of the status of selected benchmark rates regarding BMR compliance

The following table provides an indicative overview of selected interest- related benchmark rates applicable in the EU/EEA and their state of BMR compliance (including LIBOR). The development of benchmark rates and the approval of their BMR compliance are a work in progress in certain cases and the status might change quickly. The cut-off date for the following analysis was mid-July 2021.

Country / currency area / administrator or central bank	**Benchmark rate**	**Status[42]**	**Sources[43]**	**Comments**
UK / multi-currency (ICE Benchmark Administration (IBA))	London Interbank Offered Rates (LIBOR)	Ceasing / out of scope due to transitional provisions of the BMR	FCA	FCA announcement on the end of LIBOR
Bulgaria (Bulgarian National Bank (BNB))	Lev Overnight Index Average Plus (LEONIA PLUS)	In usage /out of scope of BMR	BNB	As of 1 July 2018, former benchmark rates SOFIBID and SOFIBOR are suspended (in Bulgarian); BNB calculates and publishes the LEONIA Plus index
Croatia (Croatian National Bank (HNB))	*National Reference Rate (NRR)*	In usage /out of scope of BMR	HNB	The previous benchmark rate ZIBOR ceased to be published on 1 January 2020

[42] The BMR does not apply, for instance, to a central bank according to Art. 2(2)(a).

[43] See, for instance, ESMA's Registers of benchmark administrators and third country benchmarks.

Country / currency area / administrator or central bank	Benchmark rate	Status[42]	Sources[43]	Comments
Czech Republic (Czech Financial Benchmark Facility (CFBF))	Prague Interbank Offered Rate (PRIBOR)	In usage (BMR compliant)	ESMA, CFBF	PRIBOR – Czech Financial Benchmark Facility
Denmark (Danish Financial Benchmark Facility (DFBF))	Copenhagen Interbank Offered Rate (CIBOR) / Tomorrow/Next (Tom/Next) / Copenhagen Interbank Tom/Next Average (CITA) / SWAP	In usage (BMR compliant)	ESMA, DFBF	DFBF benchmarks overview
Euro area (EMMI)	Euro Overnight Index Average (EONIA)	Ceasing	FSMA / ECB	ESMA background information on benchmark rate transitions; Euro Risk Free Rates Working Group
Euro area (ECB)	Euro Short-Term Rate (€STR)	In usage /out of scope of BMR	ECB	ESMA background information on benchmark rate transitions; Euro Risk Free Rates Working Group
Euro area (EMMI)	Euro Interbank Offered Rate (EURIBOR)	In usage (BMR compliant)	ESMA, FSMA	FSMA authorisation of EMMI as administrator of the EURIBOR benchmark

Country / currency area / administrator or central bank	Benchmark rate	Status[42]	Sources[43]	Comments
Hungary (Central Bank of Hungary (MNB))	Budapest Interbank Offered Rate (BUBOR)	In usage /out of scope of BMR	MNB	Budapest Interbank Forint Loan Interest Rate (in Hungarian)
Iceland (Central Bank of Iceland – (CBI))	Reykjavik Interbank Offered Rate (REIBOR) / Reykjavik Interbank Bid Rate (REIBID)	In usage /out of scope of BMR	CBI	Interbank market for kronur (REIBOR); Central Bank of Iceland's rules on interbank market trading in Icelandic kronur; Central Bank of Iceland to discontinue 9- and 12-month REIBOR listings in mid-2020
Poland (GPW Benchmark SA (GPW))	Warsaw Interbank Offered Rate (WIBOR) / Warsaw Interbank Bid Rate (WIBID)	In usage (BMR compliant)	ESMA, GPW	WIBOR and WIBID overview of GPW
Norway (Norske Finansielle Referanser AS (NoRe))	Norwegian Interbank Offered Rate (NIBOR)	In usage (BMR compliant)	ESMA, NoRe	NIBOR framework

Country / currency area / administrator or central bank	Benchmark rate	Status[42]	Sources[43]	Comments
Romania (National Bank of Romania (NBR))	Romanian Interbank Offer(ed) Rate (ROBOR) / Romanian Interbank Bid Rate (ROBID) / reference index for loans granted to consumers (IRCC)	In usage /out of scope of BMR	NBR	NBR's publications of benchmark rates, incl. ROBOR and IRCC; NBR's rules for determining the […] ROBOR reference rate[…];rules on the IRCC and other calculations (in Romanian)
Sweden (Swedish Financial Benchmark Facility (SFBF))	Stockholm Interbank Offered Rate (STIBOR)	Applying for authorisation	SFBF	The evolution of STIBOR and its authorisation process

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