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Is there a ‘retail challenge’ to banks’ resolvability? What do we know about the holders of bail-inable securities in the Banking Union?

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IN-DEPTH ANALYSIS

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Is there a 'retail challenge' to banks' resolvability? What do we know about the holders of bail-inable securities in the Banking Union?

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Is there a 'retail challenge' to banks' resolvability? What do we know about the holders of bail-inable securities in the Banking Union?

Abstract

To ensure the credibility of market discipline induced by bail-in, neither retail investors nor peer banks should appear prominently among the investor base of banks' loss absorbing capital. Empirical evidence on bank-level data provided by the German Federal Financial Supervisory Authority raises a few red flags. Our list of policy recommendations encompasses disclosure policy, data sharing among supervisors, information transparency on holdings of bail-inable debt for all stakeholders, threshold values, and a well-defined upper limit for any bail-in activity.

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LIST OF ABBREVIATIONS

AT1	Additional Tier 1
BaFin	German Federal Financial Supervisory Authority
BRRD	Bank Recovery and Resolution Directive
CMDI	Bank Crisis Management and Deposit Insurance
CSD	Central Securities Depositories
CSO	Central Statistics Office
CRR	Capital Requirements Regulation
EBA	European Banking Authority
ECB	European Central Bank
ESA	European System of National and Regional Accounts
ESMA	European Securities and Markets Authority
FITD	Italian Interbank Deposit Protection Fund
FSB	Financial Stability Board
GFC	Global Financial Crisis
G-SII	Global Systemically Important Institutions
HFCS	Household Finance and Consumption Survey
ISIN	International Securities Identification Numbers
LDR	Liability Data Report
MiFID	Markets in Financial Instruments Directive
MPS	Banca Monte dei Paschi di Siena
MREL	Minimum Requirement for Own Funds and Eligible Liability
NCWO	No Creditor Worse Off
OeNB	Austrian National Bank
SHSS	Securitites Holder Statistics by Sector
SMEs	Small and medium-sized enterprises
SNP	Senior Non-Preferred
SP	Senior Preferred
SRB	Single Resolution Board
SRMR	Single Resolution Mechanism Regulation
SSM	Single Supervisory Mechanism
SU	Senior Unsecured
TBTF	Too big to fail
TLAC	Total Loss-Absorbing Capacity
TLOF	Total Liabilities and Own Funds

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EXECUTIVE SUMMARY

Following the financial crisis 2008-2010, the European banking regulation was redesigned with the aim of terminating Too-Big-To-Fail (TBTF) for large financial institutions. The new BRRD regime focuses on bail-in and resolution as precautionary and crisis management tools. Market discipline is supposed to come in large parts from the pricing of bail-inable debt which has to be built up fully by 2024. In this report, we analyse whether a potential bail-in is endangered by vulnerable parties whose presence among bail-inable debt holders may force governments to bail them out. Two such vulnerable groups stand out: retail investors who are subject to government protection for political reasons, and fellow banks which tend to be bailed out for systemic risk reasons. Thus, for bail-in to be effective, neither retail investors nor fellow banks should hold significant fractions of any bank's bail-inable debt.

Our evidence on bail-inable debt holdings relies primarily on German supervisory data for SSM banks. Findings are as follows: A *retail challenge* is absent if the average over all banks is considered. However, if one looks at individual institutions, we find that 10% of all banks in the sample face a retail challenge (defined as >35% of bail-inable debt held by retail investors). The second risk, the *bank challenge*, is even more worrying, with a cross-sectional average of 40% of bail-inable debt held by other banks.

We learned that a public access to bail-in holding data is basically inexistant. For carrying out this study, several rounds of direct and indirect communications with central banks and supervisory agencies were needed to get the information we are using. Even more worryingly, the national and supranational supervisory and resolution agencies themselves have no unimpeded access to the data which are vital for fulfilment of their mandate.

Our recommendations on data disclosures and regulatory refinements follow closely our empirical findings. We recommend:

Data disclosure:

- Bail-inable debt holding data should be disclosed in full, and all debt instruments that are bail-inable should be visibly flagged to all investors, e.g. via ISIN number conventions.
- A Europe-wide effort to standardize, collect, and fully disclose the holding statistics for all banks individually, making them available to investors in real time, relying on a single data repository, e.g. via the European Data Warehouse.
- Supervisory agencies, resolution agencies and central banks should all have unrestricted real time access to bail-inable debt holding data.
- Regulatory refinements:
- A boundary between bail-in and not-to-bail-in should be defined, ending the ambiguity existing today with respect to wholesale deposits and other debt instruments not covered by deposit insurance.
- Minimum denomination requirements for MRELs (BRRD art. 44a para 5) for all member states as a binding rule are a clear and easy to enforce restriction that protects retail investors.
- Supervisors should set and enforce maximum individual holdings (concentration limits) of bail-inable debt securities for bank investors.

1. RESEARCH QUESTION AND BACKGROUND[1]

In this in-depth analysis, we study the holdings of retail investors of bank debt subject to bail-in. Such holdings may pose a threat to bank resolution without resorting to taxpayer money. Resolution authorities may refrain from imposing the losses the failing bank incurred on retail investors through bail-in, because such private sector involvement in bank crisis management would negatively impact the wealth of households and eventually imperil social stability. Politicians who anticipate these consequences may opt for a government bailout of the ailing financial institution.

In the wake of the Global Financial Crisis (GFC), policy makers around the globe implemented bail-in as the primary regulatory tool to (re-)instil market discipline in the financial sector. Bail-in forces private sector investors in bank capital and debt to internalize the losses the bank incurs in its business. It allows to recapitalize a failing institution without injecting taxpayer money, thus undoes implicit government guarantees, and therefore creates desirable incentives for the holders of capital and debt instruments to price bank risk adequately and monitor investment behaviour closely (Tröger, 2018). Yet, this incentive effect and the market discipline it creates hinge pivotally on the credibility of the bail-in tool. If investors can expect resolution authorities to behave inconsistently over time and bail-out bank capital and debt holders despite earlier vows to involve them in bank rescues, the pricing and monitoring incentives that the crisis management framework seeks to invigorate vanish. Among other things, investors in bail-in debt need to have sufficient loss bearing capacity to absorb the depreciation of their private wealth that bail-in forces them to incur. If financial instruments that are written-off or converted in a bail-in represent a significant fraction of retail investors' assets, the financial situation of households may become precarious overnight (Götz and Tröger, 2016). Against this background, not only financial stability concerns (High-Level Expert Group on Reforming the Structure of the EU Banking Sector, 2012; Zhou et al., 2012; Krahnen and Moretti, 2015), but also social considerations may induce politicians and regulators to back off from bail-in if the affected individuals faced financial ruin. Bail-in episodes in Italy and other European jurisdictions prove the validity of these considerations (see Box 1). Markets will anticipate the bail-out proclivity of politicians, question the credibility of the bail-in threat, and price bank debt again with a view to an implicit government guarantee. As a result, market discipline will be suboptimal and moral hazard will persist. Therefore, the policy objectives of the bank crisis management and deposit insurance (CMDI) framework will only be achieved if critical bail-inable debt is not held by retail investors without sufficient loss bearing capacity at the individual level. Only under this precondition, politicians and resolution authorities can be expected to behave consistently over time, thereby allowing the bail-in threat to be credible, and market discipline to prevail. Moreover, investors need to understand, in principle, the risk of losses inherent in holding bail-inable debt. Our analysis investigates whether these pivotal preconditions - sufficient loss-bearing capacity and awareness of the risks taken - are present under the European CMDI.

[1] Acknowledgments: The authors are grateful to BaFin, Deutsche Bundesbank and SRB for the preparation and provision of otherwise unavailable data and for several helpful discussions and comments on bail-inable debt data.

Box 1: Retail Challenge: The Italian experience (2015-2017)

The retail-challenge under the CMDI framework has been particularly acute in Italy, as retail investors constituted a significant part of banks' debt issuance. In October 2015, the total amount of subordinated bonds issued by Italian banks was €67 billion; of the circulating bonds (€59 billion), €31 billion were held by retail investors (Bank of Italy, 2016).

In November 2015, four regional Italian banks in special administration were resolved. Only shareholders and junior bondholders, many of whom were individual savers, pensioners and small and medium-sized enterprises (SMEs), were involved in burden-sharing (write down, BRRD art. 59) (MEF, 2021). The imposition of losses on non-professional investors resulted in heavy political and social repercussions. The loss sharing of investors in bank debt not only ran counter the traditional implicit government guarantee for retail investments, but also revealed large-scale mis-selling practices (Mecatti and Santoro, 2019; Conac, 2018; Enriques and Gargantini, 2017). Also Monte dei Paschi and the two Venetian banks declared failing in 2017 by the ECB had massively sold shares and subordinated instruments to retail investors in violation of the suitability, appropriateness, and conflict of interest rules promulgated under MiFID. Especially bondholders were largely unaware of the risks associated with their investments, and sometimes considered themselves as mere depositors. To quell public outrage and litigation, Italian legislators indemnified bondholders and, later, even shareholders by adopting several compensatory schemes,[1] partly involving public funds (Mecatti, 2021).[2] Despite these measures, numerous mis-selling claims have been brought and critical legal issues will not be resolved before a decision of the Italian Supreme Court. These lawsuits not only have the potential to increase the resolution costs borne by the National Resolution Fund sharply (Bank of Italy, 2022), but further increase politicians' reluctance to inflict losses on retail investors.

When two regional Italian banks were deemed "failing or likely to fail" in June 2017 (ECB, 2017), the undesired consequences of bailing-in senior debtholders determined the choice to carry out an orderly liquidation instead of resolution (Mesnard, Margerit and Magnus, 2017). The tailored wind down, not only involved the injection of public funds and the issuance of government guarantees, but also the burden sharing of mis-sold shares and subordinated bonds, this time and unlike the case of the four banks, provided by an explicit law provision (art. 3, d.l. 99/2017). Despite this explicit rule and the abovementioned compensation schemes, another wave of lawsuits hit, ultimately requiring a high-profile decision of the Constitutional Court.[3]

The precautionary recapitalisation of Banca Monte dei Paschi di Siena (MPS), approved by the European Commission in July 2017, included the conversion of EUR 4.3 billion worth of junior subordinated bonds and a capital injection of EUR 3.9 billion by the Italian government (European Commission 2017; Mesnard, Magnus and Margerit, 2017). The burden sharing hit numerous mis-sold retail investors (Ventoruzzo and Sandrelli, 2020). Therefore, the converted subordinated retail bondholders (now shareholders) were given the opportunity to swap their shares with newly-issued senior bonds, which had the same maturity as those previously converted into equity. The exchange was subject to the condition that investors waived any claim relating to the conversion of the subordinated financial instruments (art. 19, par. 2, d.l. 237/2016, converted in l. 15/2017). Nevertheless, mis-selling claims of shareholders (old and new) and bondholders against MPS are still pending.

In sum, following the traumatic experience of involving retail investors in burden sharing in recent bank resolution episodes, Italian decision makers have gone to great lengths to avoid touching retail investors in bank resolution significantly. These efforts yielded limited success. Most importantly, they did not exclude headline catching litigation from aggrieved retail-bondholders, which further adds to the disincentive to bail-in retail investors.

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1 The Fondo di solidarietà, funded and administered by the Italian interbank deposit protection fund (FITD) reimbursed also the losses incurred by the retail bondholders of the Veneto Banks.

2 Fondo di Ristoro Finanziario (FRF) set by legge 205/2017 and Fondo indennizzo per i risparmiatori (FIR) set up by legge 145/2018. On these funds see also Micossi (2019) and Mecatti (2020).

3 See the request of ruling (ordinanza di rimessione n. 6627/2021) of the Florence Tribunal, https://www.cortecostituzionale.it/schedaOrdinanze.do?anno=2021&numero=179&numero_parte=1. The Constitutional Court (decision n. 225/2022) deemed the requests inadmissible on procedural and substantial grounds, without analysing the questions of Constitutional legitimacy.

2. BAIL-IN, MREL AND REGULATORY MEASURES TO ADDRESS MISSELLING

We start-out by describing which financial instruments are most likely affected by bail-in and are therefore particularly unsuitable for retail investors (section 2.1). We continue by sketching the key characteristics of these instruments which should allow tracing them in the data (section 2.2). Moreover, we outline the regulatory instruments that are supposed to prevent mis-selling of bail-inable debt to unsuitable investors (section 2.3). This prepares the ground for our empirical analysis that surveys the actual holdings of critical securities over time and allows inferences on the overall effectiveness of the regulatory framework.

2.1. Scope of the bail-in tool and MREL

In principle, the bail-in tool as stipulated in art. 44(1) of the Bank Recovery and Resolution Directive (BRRD)[2] and art. 27(1) of the Single Resolution Mechanism Regulation (SRMR)[3] allows resolution authorities to re-engineer the whole liability side of a troubled institution's balance sheet, although some exceptions apply (Tröger, 2018).[4] The order in which equity and debt holders bear losses and, if the bank is not liquidated, contribute to the failed institution's recapitalization, is determined by the waterfall that mirrors bankruptcy priorities (BRRD, art. 48(1)).

The regulatory framework prescribes minimum requirements for own funds and eligible liabilities (MREL), to make sure that banks, at all times, maintain sufficient high-quality loss-absorbing, easy to bail-in liabilities that allow for a meaningful private sector involvement in bank resolution beyond own funds. MREL levels are calibrated in a way that, depending on the preferred strategy foreseen in the resolution plan for the bank or banking group, they allow either the orderly liquidation of the failing bank (loss absorption amount), or its recapitalization (recapitalization amount (BRRD, art. 45c(3)); for details see SRB, 2021). In either case, MREL instruments are earmarked for write-down or conversion in the reorganization of the troubled bank's balance sheet. Therefore, regardless of the resolution strategy, MREL instruments are those that are most likely to be bailed-in after the bank has been declared failing or likely to fail (FOLTF). They thus represent the debt instruments that are least suitable for retail investors.

2.2. Key characteristics of MREL instruments

2.2.1. Requirements for global systemically important institutions (G-SIIs)

For global systemically important institutions (G-SIIs), art. 92a(1) of the Capital Requirements Regulation (CRR)[5] implements the total loss absorption capacity (TLAC) standard of the Financial

[2] Directive 2014/59/EU of the European Parliament and of the Council of 15 May 2014 establishing a framework for the recovery and resolution of credit institutions and investment firms and amending Council Directive 82/891/EEC, and Directives 2001/24/EC, 2002/47/EC, 2004/25/EC, 2005/56/EC, 2007/36/EC, 2011/35/EU, 2012/30/EU and 2013/36/EU, and Regulations (EU) No 1093/2010 and (EU) No 648/2012, of the European Parliament and of the Council, [2014] OJ L173/190.

[3] Regulation (EU) No 806/2014 of the European Parliament and of the Council of 15 July 2014 establishing uniform rules and a uniform procedure for the resolution of credit institutions and certain investment firms in the framework of a Single Resolution Mechanism and a Single Resolution Fund and amending Regulation (EU) No 1093/2010, [2014] OJ L225/1.

[4] Inter alia, covered deposits up to EUR 100,000 are bail-in proof, BRRD, art. 44(2)(a) referring to the definition in art. 2(1)(5), 6 of the Directive 2014/49/EU of the European Parliament and of the Council of 16 April 2014 on deposit guarantee schemes (recast), [2014] OJ L 173/149.

[5] Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and amending Regulation (EU) No 648/2012, [2014] OJ L 176/1.

Stability Board (FSB)[6] and stipulates specific G-SII requirements for MREL which represent the starting point for the institution specific calculation of MREL by the Single Resolution Board (SRB), cf. BRRD, art. 45d(1). Quite importantly for our analysis, the G-SII requirements also follow item 11 of the TLAC standard and stipulate – with some exceptions – a rigid subordination precondition in CRR, art. 72b(2)(d), that is, eligible instruments must be subordinated to ineligible liabilities to facilitate bail-in under the no creditor worse off (NCWO) principle (Tröger, 2022). Within the EU, the new art. 108(2) of the BRRD bolsters the robustness of private ordering solutions to achieve subordination,[7] because harmonized insolvency laws in the Member States shall provide for subordination of eligible debt instruments that are issued with explicit reference to the respective ranking under national implementing provisions. The introduction of this new tranche of (unsecured) senior non-preferred liabilities followed autonomous and thus heterogeneous initiatives in several Member States[8] that sought to minimize the costs of compliance with the G-SII-subordination requirement by relieving their institutions from the need to issue more costly subordinated debt instruments. The respective amendment of the BRRD[9] was already promulgated before the adoption of the Banking Package in 2019 to limit the variation in the solutions Member States had adopted autonomously. Still, the earlier national initiatives require some grandfathering for bond issues pre-dating the European harmonization. In the interim, this leads to some variations in the class of senior non-preferred debt across Member States which creates a challenge for data collection.

2.2.2. Institution specific MREL

The subordination requirement does generally not apply to institution-specific MREL, that is, the requirements that are set either on top of the G-SII minimum or as sole specifications for all other banks. BRRD art. 45b(1)(b) does deliberately not refer to the subordination requirement in Article 72b(2)(d) of the CRR. However, for G-SIIs, institutions that are part of a resolution group with total assets of more than EUR 100 million (tier 1 banks) (BRRD, art. 45c(5)) and institutions whose failure may have systemic implications (fished banks) (BRRD, art. 45c(6)), an indirect subordination requirement may apply from 2024 onward. The respective resolution entities must fulfil MREL in the amount of at least 8 per cent of total liabilities using own funds, subordinated eligible instruments or specified liabilities issued by an EU subsidiary (BRRD, art. 45b(4)). Depending on the own funds endowment of the covered institutions, this 8 percent total liabilities and own funds (TLOF) requirement can translate into a stringent subordination requirement for part of its eligible liabilities. Finally, for all other institutions, resolution authorities may invoke the 8 per cent TLOF requirement and thus also trigger a need to fulfil parts of the institution-specific MREL with subordinated liabilities (BRRD, art. 45b(5)). The critical determination here hinges on both the capital structure of the institution and the preferred resolution strategy because resolution authorities ultimately must determine whether the NCWO principle will be violated in the resolution of the respective institution. The risk that bailed-in senior creditors would incur greater losses in resolution than in insolvency because some pari passu or junior ranking creditors are exempt from bail-in according to BRRD, art. 44(2) and (3), can be eliminated if the MREL cushion consists in sufficient amounts of own funds and subordinated liabilities. By definition, liabilities exempt from bail-

[6] FSB, 2015.

[7] For alternative ways to achieve subordination see CRR, art. 72b(2)(d)(ii) and (iii).

[8] Relevant creditor hierarchy legislation was passed for instance in France (Code monétaire et financier, art L.613-30-3 as amended by Loi No. 2016-1691 du 9 décembre 2016 relative à la transparence, à la lutte contre la corruption et à la modernisation de la vie économique), Germany (Kreditwesengesetz, § 46f(6) as amended by Gesetz zur Ausübung von Optionen der EU-Prospektverordnung und zur Anpassung weiterer Finanzmarktgesetze vom 10 Juli 2018, art 8(10)), Belgium (Wet op het statuut van en het toezicht op kredietinstellingen en beursvennootschappen, art 389/1), and in Italy (Testo unico bancario, art 12-bis as introduced by Legge 27 dicembre 2017, n 205) before the adoption of the EU Banking Package.

[9] Directive (EU) 2017/2399 of the European Parliament and of the Council of 12 December 2017 amending Directive 2014/59/EU as regards the ranking of unsecured debt instruments in insolvency hierarchy, [2017] OJ L345/96.

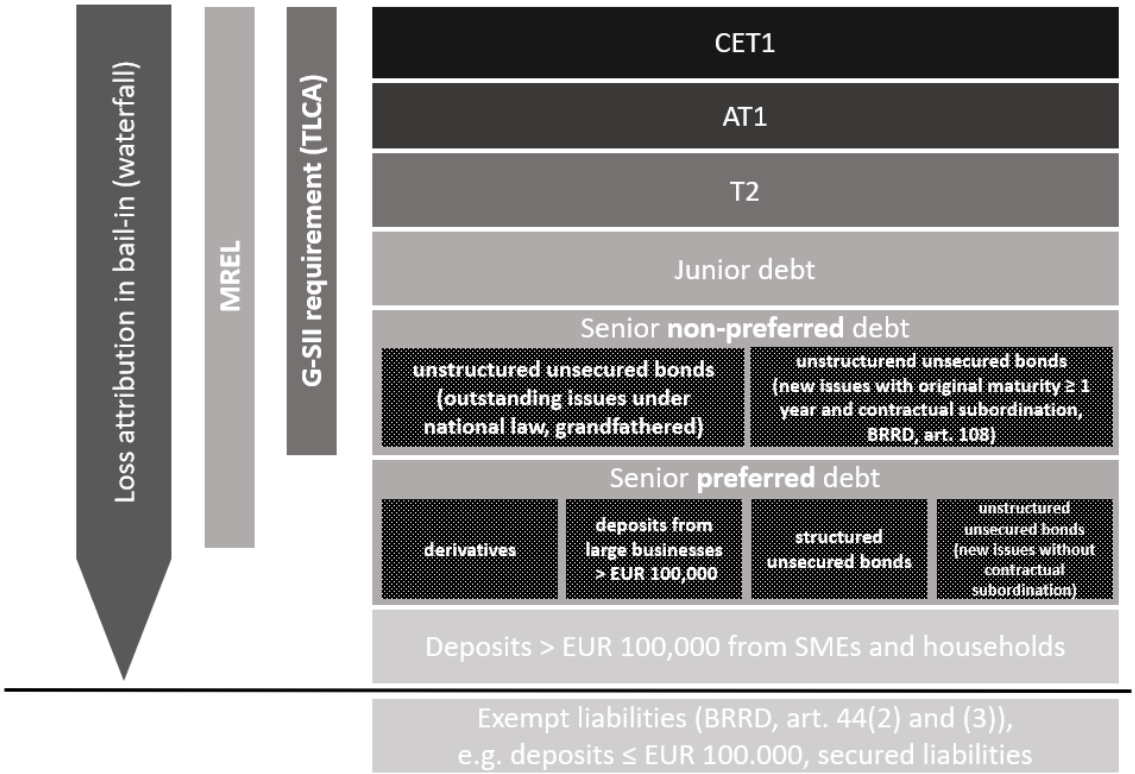
in under BRRD, art. 44(2), can never qualify as MREL (cf. BRRD, art. 2(1) no. 71), and liabilities that resolution authorities can spare at their discretion under BRRD, art. 44(3), will typically also not be counted towards meeting institution specific MREL levels, if such an exemption is foreseen in resolution planning (cf. BRRD, art. 45c(8)). As a result, MREL has a quality that largely alleviates bail-in from the problems that arise at senior debt.

The main take away for our data-analysis is that MREL instruments cannot always be easily identified by looking at a certain class of securities. Under the current regulatory framework, MREL at non-G-SIIs may be fulfilled to significant degrees with non-subordinated debt instruments. Therefore, while resolution authorities receive granular information on the amount and characteristics of outstanding MREL instruments from banks (BRRD, art. 45i(1) and (2)), these characteristics, particularly their ranking in insolvency proceedings, are hard to determine from publicly available data. The relevant pillar 3-disclosures apply currently only to G-SII requirements and thus leave substantial parts of the European banking sector in the dark.[10]

2.2.3. MREL, TLAC, and bail-inability

The reform agenda post GFC focused on bolstering balance sheet positions available for loss absorption rather than pushing for higher equity ratios. The G-SII requirement (TLAC) is the layer of capital available for bail-in foreseen by the FSB for global systemically important banks (G-SIIs) (currently 30 in Europe). MREL is the extensive European implementation of the TLAC standard, required by the BRRD for all institutions in the EU, including smaller banks. Finally, bail-inable debt comprises all debt of a bank that can be used to recapitalize the institution under the BRRD.

Figure 1: Waterfall of payment ranks



[10] See CRR, art. 437a. The disclosure requirement under BRRD, art. 45i(3) will not enter into force before January 1, 2024.

Figure 1 depicts the creditor hierarchy, which determines the order in which bail-in ensues if a bank is resolved under the BRRD. This hierarchy applies, even though individual liabilities of various seniorities may be exempt from bail-in under BRRD, art. 44(2) and (3). Even though the G-SII requirement and MREL primarily absorb losses in a gone concern scenario, private sector involvement does not stop once these balance sheet positions are exhausted.

2.3. Precautions to prevent retail investor holdings of bail-inable debt

While the original resolution framework did not address the retail challenge at all (see Götz and Tröger, 2016; Tröger, 2018), the amendments to the BRRD brought about by the 2019 banking package (BRRD II)[11] introduced BRRD, art. 44a to prevent mis-selling of MREL instruments to unsuitable retail customers, particularly in self-placements of financial institutions. The regulatory strategy which member states had to implement by December 28, 2020 (BRRD II, art. 3), relies primarily on a detailed suitability test that follows the example of MiFID II[12] (BRRD, art. 44a(1)-(4)). Alternatively, member states can also prescribe a minimum denomination of MREL securities to be sold to retail clients of at least EUR 50.000 (BRRD, art. 44a(5)).[13] Quite importantly, both additional requirements only apply to subordinated MREL securities,[14] that is, no specific restrictions apply for primary or secondary market transactions of non-subordinated MREL securities even if the buyer is a retail client. Moreover, even in those member states that opt for a minimum denomination of subordinated MREL securities, European law does not prevented banks from issuing MREL securities with lower denominations, if they do not intend to sell them to retail clients.

[11] Directive (EU) 2019/879 of the European Parliament and of the Council of 20 May 2019 amending Directive 2014/59/EU as regards the loss-absorbing and recapitalisation capacity of credit institutions and investment firms and Directive 98/26/EC, art. 1(16), [2014] OJ L 150/296.

[12] Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU, art. 25, [2014] OJ L 173/349.

[13] Investment firms subject to MiFID II, art. 25, still need to perform a suitability test before selling covered MREL instruments to their clients.

[14] Cf. BRRD, art. 44a(1) that explicitly and without exception refers to all the eligibility requirements in CRR, art. 72a that includes the rigid subordination requirement in CRR, art. 72b(2)(d).

3. WHO IS HOLDING BAIL-INABLE BANK DEBT?

In this section we identify data sources for bail-inable debt and explore, to the extent possible, its owner (holder) structure. We report the process to access those sources, timeliness to grant data access, and the completeness and consistency of different sources (section 3.1.). The holder structure of bail-inable liabilities is important, because it indicates potential challenges to bail-inability: the level percentage of bail-inable debt in the hands of retail customers (the retail challenge), or to fellow banks (the bank challenge). We use public SHSS data and data from the German Federal Financial Supervisory Authority (BaFin) for 25 German banks to analyse the holding structure at the euro area and country level. Furthermore, we are able to present the distribution among the 25 German banks. The distribution is important as the retail and bank challenge can be assessed either on the aggregate level, or the firm level. In addition, we report on indirect measures, in particular minimum denomination restrictions, enacted by the national supervisor, to protect households from acquiring bail-inable liabilities in the first place (section 3.2.). Finally, we highlight the current data limitations (section 3.3.).

3.1. Data Sources and Literature

Securities Holders Statistics by Sector (SHSS)

The SHSS provides information on securities, i.e. tradable financial instruments with an International Securities Identification Number (ISIN), held by euro area residents. The sector definitions are based on European System of National and Regional Accounts (ESA) 2010 and contain the categories households, deposit-taking corporations, insurance corporations, pensions funds, etc. The database was established in 2013 and is available on a quarterly basis with a lag of two months. The data is compiled and owned by the European Central Bank (ECB), while national central banks have access to the database for their country's subset. The SRB and National Resolution Authorities do not have direct access to the raw data. Aggregated data is available via the ECB website, but it does not allow to filter for bail-inable securities or MRELs so that public available data is of less use. Access to the full database is available for visiting researchers upon formal request with the ECB but entails processing time and constraints on what can be seen from the data. As it is, the data is useful for historians, but not for an assessment of the bail-inable debt outstanding in the financial system. To date, a real-time assessment is unattainable not only for market participants but also for the regulators.

The SHSS is constructed as a query of euro area custodians and therefore excludes holdings by euro area residents with security accounts outside of the euro area (EBA and ESMA, 2018). Furthermore, SHSS only comprises tradable instruments (instruments with ISIN). Therefore, the database is not sufficient to identify the complete set of holders of bail-inable securities or MRELs. This is obviously true for deposits above EUR 100,000, but to our best knowledge also for promissory notes (Schuldscheindarlehen in Germany), which, depending on their specific characteristics, also belong to similar payment rank as bonds (e.g. senior non-preferred).[15] Thus, SHSS data provides an incomplete picture of the holder structure.

In spite of these short-comings, researchers exploited this database to evaluate holder structures. ECB (2016) used Q1 2016 data and found that households only hold 1.3% bail-inable debt relative to their financial assets in the euro area and that bail-inable debt held by households decreased from 2013 to 2016. Pigrum et al. (2016) from the Austrian National Bank (OeNB) found that 67% of bail-inable debt lies within the Euro Area, while for Italy even 86% lies within Italy. This finding stresses the home bias

[15] This claim is based on our understanding of discussions about bail-inable debt data with supervisory agencies and is also backed up by Figure 4. Nevertheless, with the data at hand this is not fully verifiable.

difficulty. After the Italian experience between 2015 and 2017 (see Box 1), EBA and ESMA (2018) published a joint statement on the treatment of retail holdings of bail-inable debt. Via SHSS, they find that 12.7% (EUR 262.4 bn) of senior and subordinated liabilities are held by retailers in Q3 2017. Additionally, they find high concentrations in some countries: Out of EUR 262.4 bn retail holdings within the euro area, EUR 132.3 bn lie in Italy, followed by Germany (EUR 49.4 bn) and France (EUR 31.7 bn). National retail holdings as a fraction of issued senior and subordinated debt by banks in Q3 2017 presents Italy (36.9%) and Austria (35.8%) among the highest.

Liability Data Report (LDR)

The LDR is based on a template filled out by a subset of European banks[16] on a yearly basis and separates liabilities by holders like SHSS. In contrast to the SHSS, information is gathered from the issuer side of the liability. The SRB collects the LDR in collaboration with the national banking authorities. The database is essential for the identification of bail-inable liabilities because this is to our knowledge the only source where banks report all their liabilities by payment rank and by ISIN. Unfortunately, the database is not public and to our knowledge not accessible for visiting researcher.

A weakness of LDR is that banks may not always know the current holder of their tradable liabilities and are reporting a best estimate of the type of investor holding their securities. On the other hand, banks typically know the holders of their non-tradable liabilities, which the LDR, in contrast to the SHSS, covers as well. The usage of LDR for analysing the holder structure is therefore imprecise as accuracy depends on the share of tradable liabilities in total liabilities. In addition, not all banks have to file the LDR, which means that there is no data for smaller banks.

Bundesbank (2019) is the only source we could find that reports MREL holdings of German banks in 2018 based on LDR data (and partially extended by SHSS). According to this study, households held 7% of the outstanding instruments, while banks held 44%.

Household Finance and Consumption Survey (HFCS)

The HFCS is prepared by the Central Statistic Office (CSO) every three years and reports asset holdings of households. The HFCS is a survey and therefore less accurate and less frequent. It has four waves, but the 2020 wave is not published yet so that the most frequent available wave is still from 2017. Publicly available data is of less use. The only available variable of interest is the percentage of households who hold bonds (bank, government or corporate) which was only 3.2% in the Euro Area (10% in Italy) in 2017 (ECB, 2020). Lindner and Redak (2017) from the Austrian National Bank (OeNB) had access to the full dataset and looked at households holding assets that might be bail-inable. Bail-inability is only broadly defined in this paper as bank bond holdings, deposits above EUR 100,000 and fund holdings (funds predominantly investing in bonds and the money market). They find that 2.2% of euro area households hold bank bonds and 8.3% hold assets that might be bail-inable (at least one of the three categories). The strength of the HFCS is that it also covers household wealth. The authors find that holders mainly belong to the richest 10% of households and most of them are well diversified.

Public sources: Bloomberg and Refinitv Eikon

Financial data sources like Bloomberg and Refinitv Eikon are the best-known commercial providers of bond data. They cover tradable securities issued by banks, allowing to filter for MREL, TLAC, bail-inability and seniority type, and allow to analyse bond characteristics, like minimum denomination,

[16] The requirement to file LDR applies to all Resolution entities and non-resolution entities that fulfil one of the following criteria: 1. The non-resolution entity is a Relevant Legal Entity; 2. The non-resolution entity is an Intermediate Entity.

maturity, amount issued, issue year etc. The Bloomberg and Refinitiv Eikon databases do not provide full coverage.

Identifying bail-inable bonds in the Bloomberg database can be done by filtering by the "bail-inability" criterium or by bail-inable payment ranks (subordinated, senior non-preferred, senior preferred or (senior) unsecured). For Italy, using the first filter, we only find 107 bonds, while using the second filter we find 2,148.

Refinitiv Eikon does not allow to filter by bail-inability, but only by bail-inable payment ranks, which results in 2,497 bonds in Italy. Comparing the output extracted from the Refinitiv Eikon and Bloomberg for bail-inable bonds in Italy, we find that only around 1,000 bonds match within the categories (junior) subordinated, (senior) unsecured, senior non-preferred and senior preferred. Bloomberg misses around 600 bonds of Refinitiv's bonds and Refinitiv misses around 250 of Bloomberg's bonds. The biggest discrepancy lies between (senior) unsecured in Refinitiv and senior preferred in Bloomberg with a mismatch of around 900 bonds. We see further mismatches between all other categories, which add up to around 150.

Due to incomplete coverage and inconsistencies, use of these databases must be done with caution. Moreover, like for SHSS these databases only comprise tradable instruments.

3.2. Holding descriptives

3.2.1. Public SHSS data[17]

As stated in 3.1., public SHSS does not allow to filter for bail-inable debt. Nevertheless, according to the waterfall (see Figure 1), the majority of debt securities besides secured liabilities are bail-inable. Exemplary, we checked outstanding bonds for Italian banks and find that around 10% of outstanding bank bonds are secured. The other weaknesses of SHSS remain also valid, namely that it only covers debt securities with ISINs and holdings within the euro area. Furthermore, on a national level, the public available data does only present domestic holdings (e.g. Italian household holdings of Italian bank debt).

[17] Table 1 of the annex presents the holder structure by bail-inable liability types issued by euro area banks for Dec 2021. Euro area banks are separated by Significant Institutions (SIs) and Less Significant Institutions (LSIs). Liability types are based on LDR filings, holder types are based on ESA 2010. The SHSS data was provided by the ECB via SRB. Unfortunately, we only had access to the percentages of the holder structure by liability type and not to the outstanding volumes, which prevents conclusions about the economic magnitude.

Figure 2: Euro area holder structure of debt securities issued by euro area banks in Q1 2022

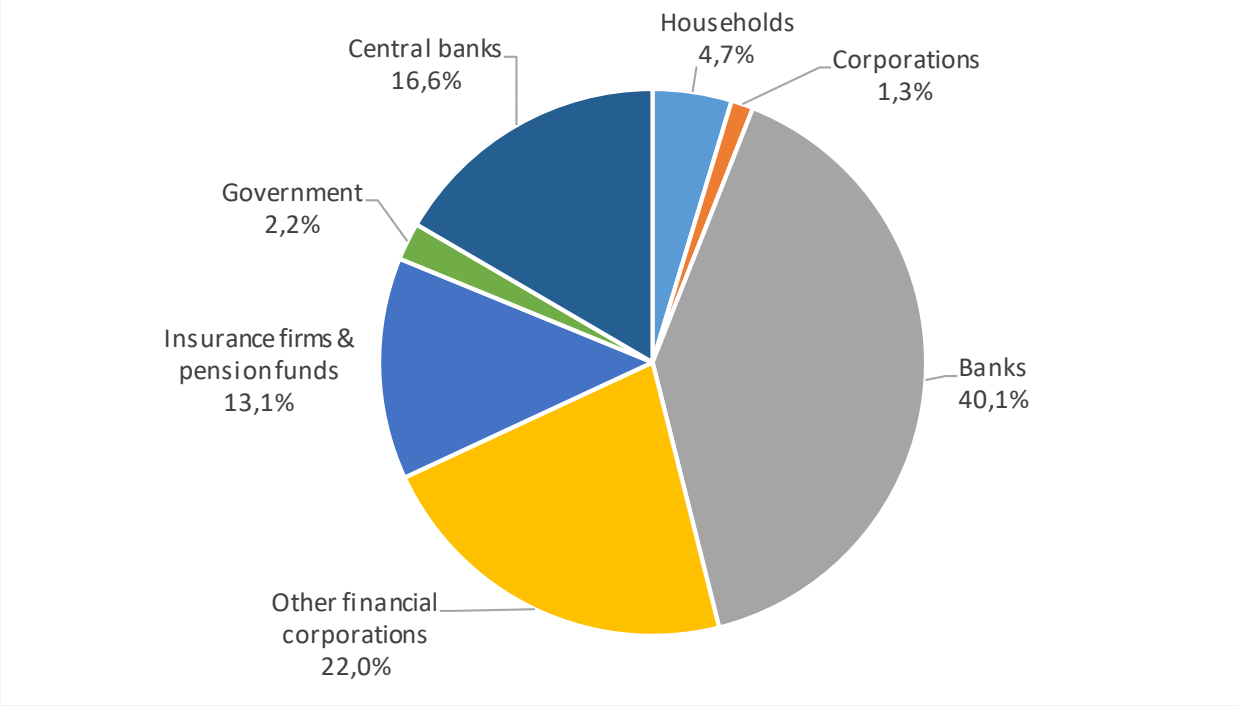


Figure 2 presents the euro area holder structure of debt securities issues by euro area banks (deposit-taking corporations except the central bank) in Q1 2022. Note that this graph covers all debt securities issued by banks and not just bail-inable debt securities.

Source: ECB SHSS

Figure 2 presents the overall euro area holder structure of debt securities of euro area banks in Q1 2022. We see that households only hold 4.7% on the aggregated level. While the average holdings of bail-inable debt by households appears to be moderate, we cannot make a final assessment without its distribution (see Figure 8). However, what does not appear to be moderate are bank holdings (40.1%). This surprisingly large number should be watched carefully. It signals a certain likelihood of wider contagion after a particular bail-in event and raises systemic risk and financial stability concerns.

Figure 3: Household holdings of debt securities issued by domestic banks as a share of total debt securities issued by domestic banks in Q1 2022

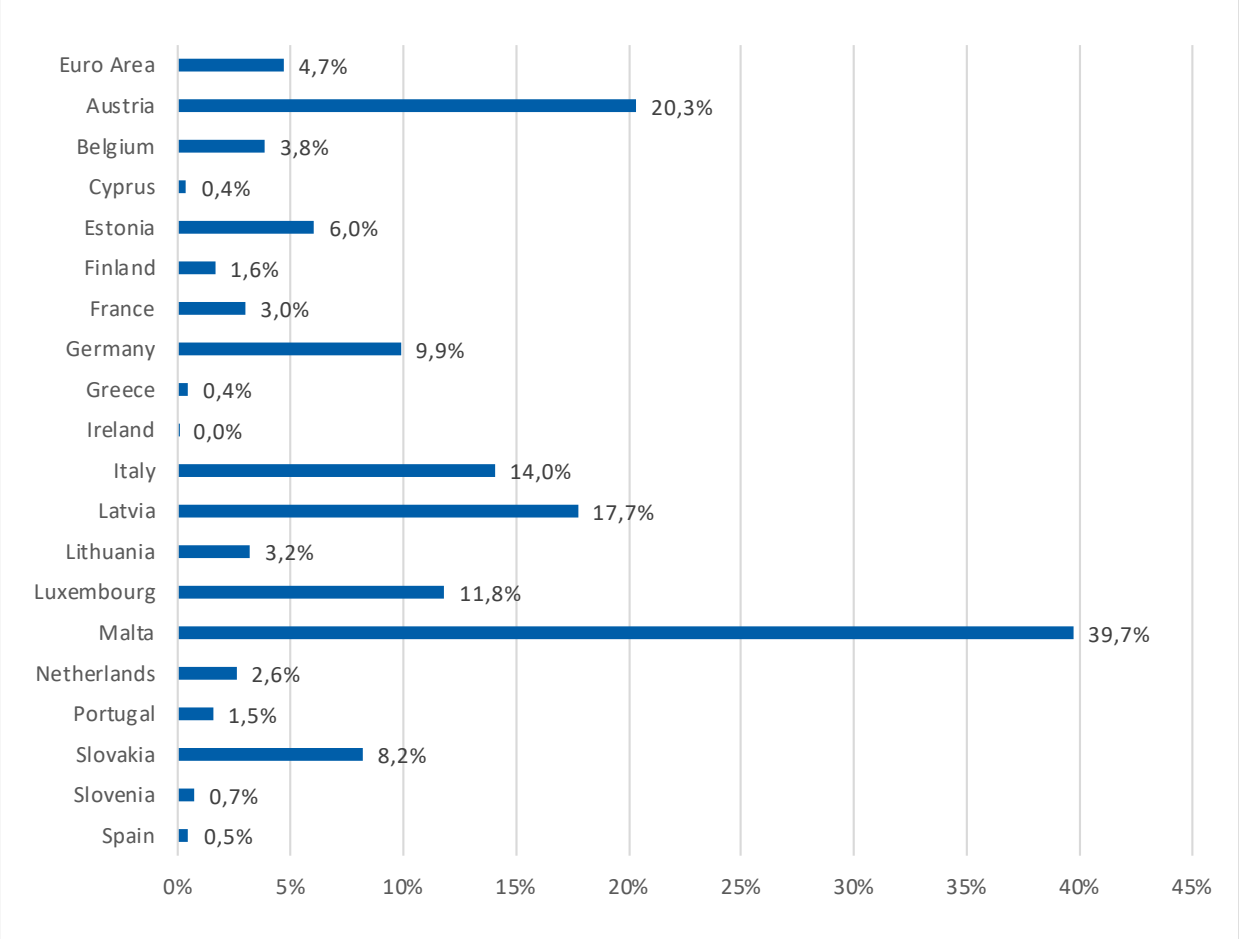


Figure 3 presents household holdings of debt securities issued by domestic banks (deposit-taking corporations) as a share of total debt securities issued by banks (deposit-taking corporations) in Q1 2022. Note that this graph covers all debt securities issued by banks and not just bail-inable debt securities. Also note, that the euro area holdings are not fully comparable with the holdings on a country level. Country level holdings only cover the holding within the country. For instance, ECB holdings are part of euro area holdings, but not of country level holdings.

Source: ECB SHSS

As stressed by EBA and ESMA (2018), retail holding differed substantially among euro area countries in 2017. Figure 3 displays household holding of debt securities at the country level. Note that euro area holdings (4.7%) are not fully comparable with the holdings on a country level. Country level holdings only cover the holdings within the country. ECB holdings, for instance, are part of euro area holdings, but not part of country level holdings. On average, this should result in higher holding figures at the country level. Figure 3 shows that there are still substantial differences among countries in terms of household holdings, but besides Malta no extreme outliers.

3.2.2. Holder Structure in Germany

BaFin provided a data set of 25 German banks, with 21 significant institutions (SIs) under the SSM and four large less significant institutions (LSIs).

The data is mainly based on LDR and „Meldebögen gemäß DVO 2018/1624“[18] (same structure as LDR, but not on ISIN level) and partially extended by the German subset of SHSS „Statistik über Wertpapierinvestments (Halterinformationen für Wertpapiere)“. In contrast to the public SHSS data, this data set focuses exclusively on bail-inable debt. Unfortunately, BaFin could not provide data more recent than 2018 and, given that the system is still in a transition phase of MREL build-up, the picture portrayed by the data must be read with care. Also note that the database does not contain smaller banks. It is conceivable that issuing bail-inable bonds is harder for smaller banks due to worse access to capital markets. If that is the case, they are also more likely to hand over their liabilities to the less informed investors like households. We cannot investigate this issue with the available data.

Figure 4: Share of bail-inable liabilities by payment rank and by type of liability

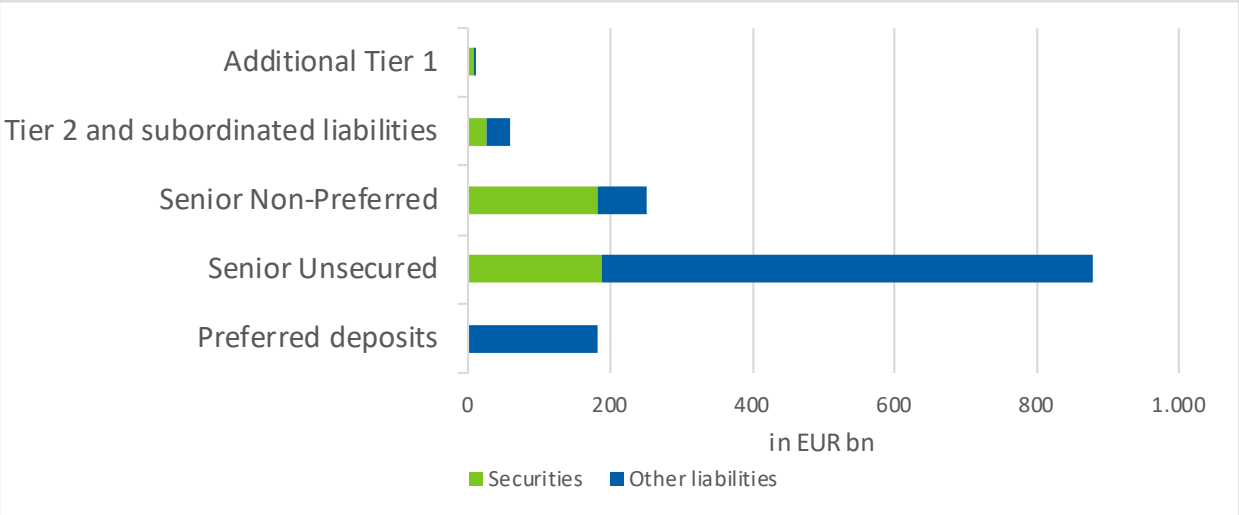


Figure 4 shows the share of bail-inable liabilities by payment rank and by type of liability for 25 German banks for the year 2018. The y-axis shows the payment ranks sorted from more to less junior. The x-axis shows the amount of bail-inable liabilities in EUR bn. Securities (tradable liabilities) are presented in green, other liabilities (non-tradable liabilities) are presented in blue.

Source: Meldebögen gemäß DVO 2018/1624, LDR, SHSS, BaFin's calculations

Figure 4 presents the share of bail-inable liabilities by payment rank and by the type of liabilities, which is either securities (tradable liabilities) or non-tradable liabilities (other liabilities). Outstanding volumes for Additional Tier 1 (AT1) are EUR 10 bn, for Tier 2 and subordinated liabilities EUR 58 bn, for senior non-preferred (SNP) EUR 251 bn, for senior unsecured (SU), also known as senior preferred (SP), EUR 880 bn and for preferred deposits EUR 181 bn.

Figure 4 shows that bail-inable debt consists mostly of other liabilities (non-tradable liabilities). Thus, statistics relying solely on (tradable) securities data leave out more than two thirds of all eligible instruments. More than 50% of Tier 2 and subordinated liabilities, around one-fourth of senior non-preferred, more than 75% of senior unsecured liabilities, and all preferred deposits are non-tradable. Overall, even by excluding preferred deposits, non-tradable liabilities make up around two-third of bail-inable liabilities.

[18] All banks in Germany have to file Meldebögen gemäß DVO 2018/1624; while the requirement to file LDR applies to all Resolution entities and non-resolution entities that fulfil one of the following criteria: 1. The non-resolution entity is a Relevant Legal Entity; 2. The non-resolution entity is an Intermediate Entity.

Figure 5: Holder Structure of bail-inable liabilities (AT1, Tier2/Subordinated, SNP and SU)

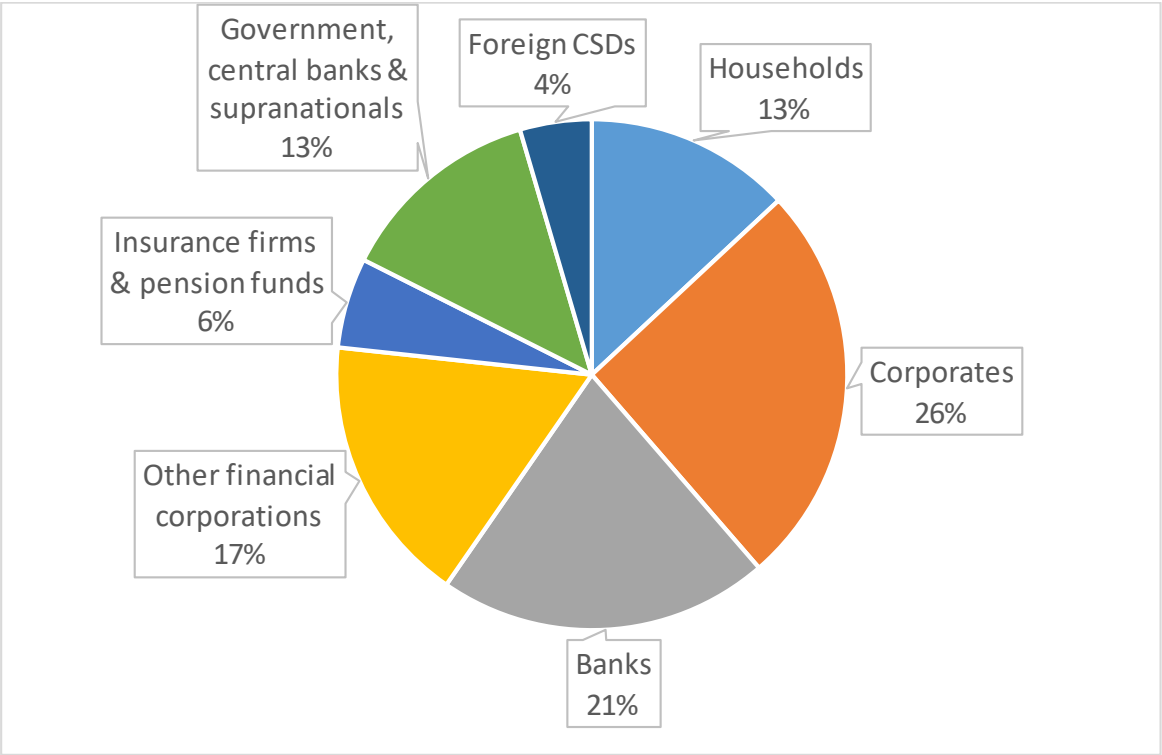


Figure 5 presents the holder structure of bail-inable liabilities for 25 German banks for the year 2018. The covered payment ranks are AT1, Tier 2 and subordinated liabilities, senior non-preferred and senior unsecured (senior preferred) debt instruments. Foreign CSDs stands for foreign Central Securities Depositories.

Source: Meldebögen gemäß DVO 2018/1624, LDR, SHSS, BaFin's calculations

Figure 5 gives a first overview about the holder structure for the aggregate of securities and other liabilities for the payment ranks AT1, Tier2 and subordinated liabilities, senior non-preferred (SNP) and senior unsecured (SU). Households hold 13%, while corporates hold 26% and banks hold 21%. The overall outstanding volume is EUR 1,200 bn so that households hold EUR 156 bn.

Figure 6: Holder Structure of bail-inable liabilities (AT1, Tier2/Subordinated and SNP, excluding SU)

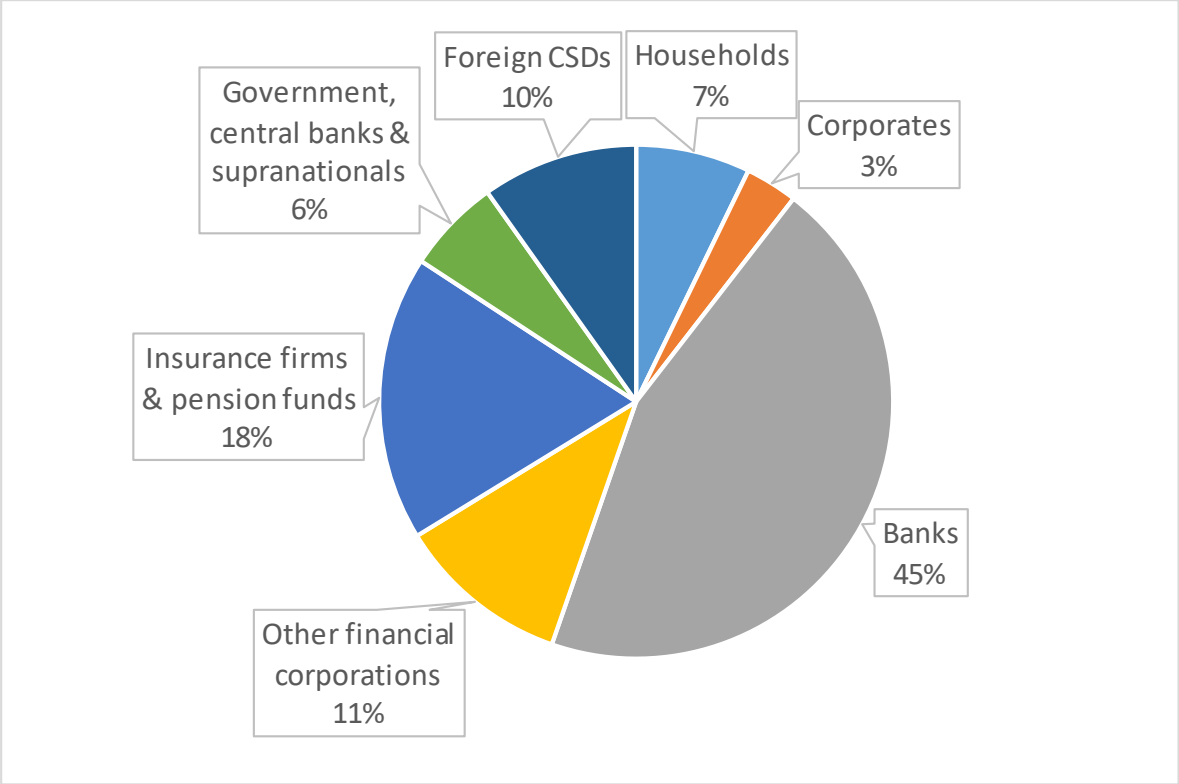


Figure 6 presents the holder structure of bail-inable liabilities for 25 German banks for the year 2018. The covered payment ranks are AT1, Tier 2 and subordinated liabilities and senior non-preferred, but excludes the less junior senior unsecured debt instruments. Foreign CSDs stands for foreign Central Securities Depositories.

Source: Meldebögen gemäß DVO 2018/1624, LDR, SHSS, BaFin's calculations

As described in 2.3, the regulator created a special payment rank "senior non-preferred" to allow for a new seniority rank, separate from the category "senior unsecured". Otherwise, the NCWO principle would not allow for any differences within this group during a bail-in. The establishment of "senior non-preferred" as a separate seniority class has lowered bail-in risk for senior preferred debt. Therefore, it is worth replicating Figure 5 by excluding senior unsecured/preferred liabilities. Figure 6 focuses on the bank capital layers most prone to bail-in, that is including senior non-preferred and excluding senior unsecured debt. Holdings of bail-inable debt by households is now reduced to 7% (vs. 13% in Figure 5). The overall outstanding volume is EUR 319 Bn so that households hold EUR 22 bn. Figure 6 presents similar results at the German level than Figure 2 at the euro area level: Household holdings appear moderate, while bank holdings (45% vs. 21% in Figure 5) appear worryingly high and raise concerns about contagion effects. Again, for a full assessment of household holdings we need more information about its distributions (see Figure 8).

Figure 7: Breakdown of holders by liability claim

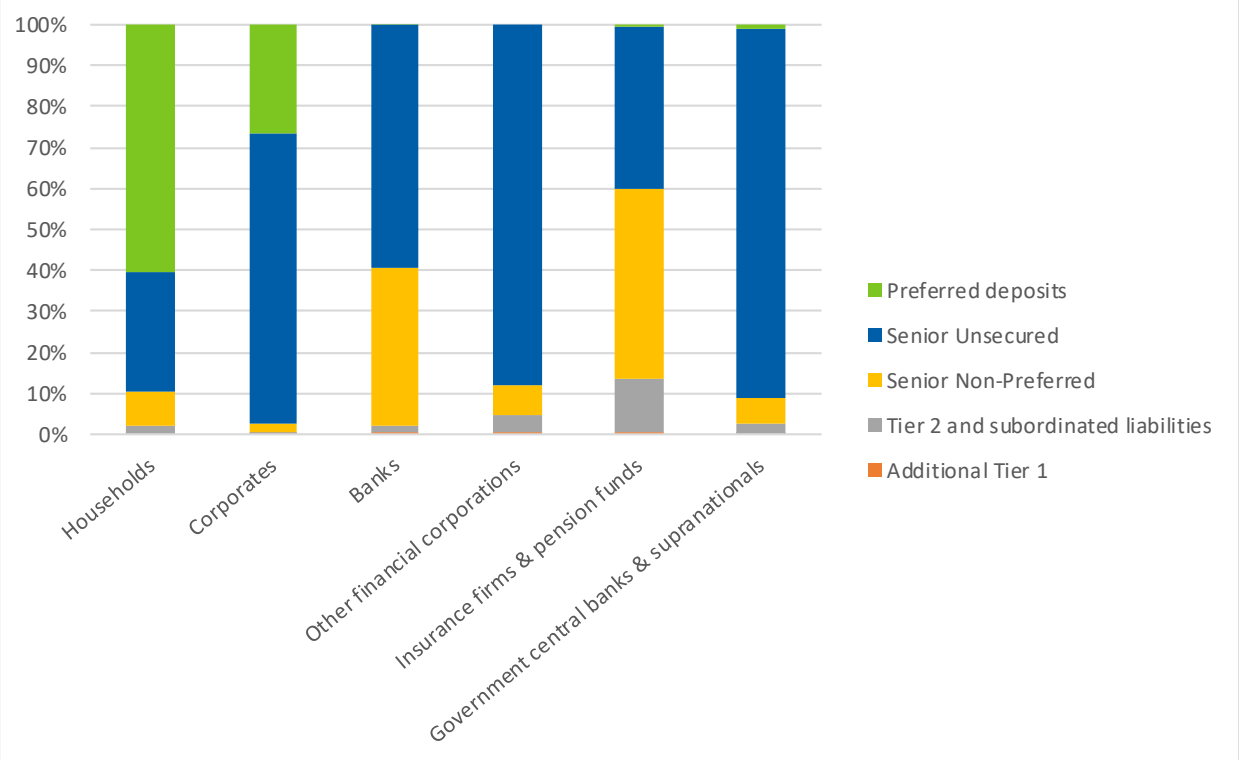


Figure 7 presents a breakdown of holders by liability claim for 25 German banks for the year 2018. The holdings for every holder type are set to 100% so that the y-axis can be set in percentage terms. The x-axis shows the holder type.

Source: Meldebögen gemäß DVO 2018/1624, LDR, SHSS, BaFin's calculations

Figure 7 shows the breakdown of holders by liability claim. The biggest category for households is deposits (above EUR 100,000) with 60% of their overall holdings. Senior unsecured bonds make up around 30% and Senior Non-Preferred bonds around 8%. Insurance Companies & Pension Funds hold the riskiest portfolio in terms of the payment rank, which is considered as a good thing as they are the best category to handle losses. Banks hold proportionally less subordinated debt than insurance firms & pension funds, but around 40% of senior non-preferred liabilities.

Figure 8: Distribution by holders within AT1, Tier2/Subordinated and SNP

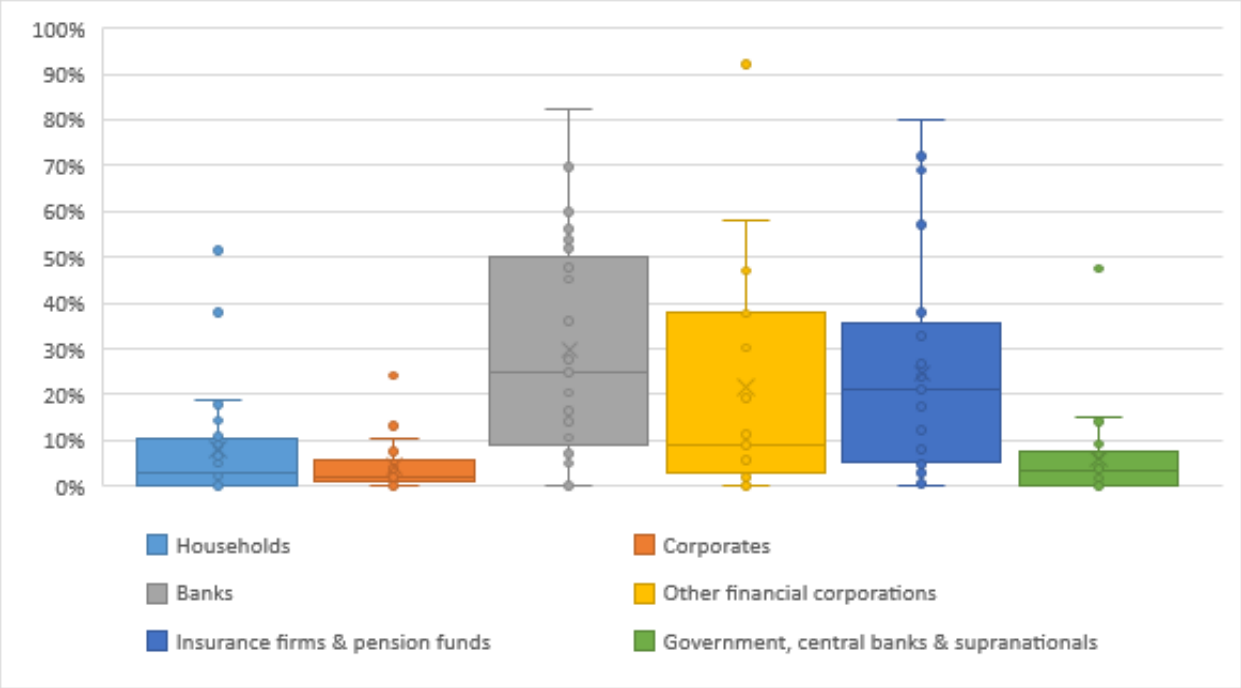


Figure 8 shows is a box plot (of the distribution) by holder types within the payment ranks AT1, Tier2 and subordinated and senior non-preferred. Every dot represents one of the 25 covered German banks for the year 2018. The box represents the second and third quartile (interquartile range), the middle line of the box displays the median and the x presents the average. The whiskers are defined as 1.5 times the interquartile range. The y-axis shows the holdings in percentage and the x-axis show the holder type.

Source: Meldebögen gemäß DVO 2018/1624, LDR, SHSS, BaFin's calculations

Figure 8 presents the distribution by holders within the riskier payment ranks. Every dot represents one bank. The box represents the second and third quartile of the distribution (interquartile range), the middle line of the box displays the median and the x shows the average. The household median lies at 2.8%, while the unweighted average lies at 8.2% (light blue). The average and median are only partially informative without a close look at potential outliers. The two blue dots represent two banks with household holdings of 38% and 51.4% respectively. This finding is a red flag and raises concerns about the distribution of smaller banks, which are not part of the sample.

We see that more than 50% of the bail-inable debt of five out of 25 banks is held by other banks (grey), which heavily increases the likelihood of contagion effects. This is what we call the bank challenge to resolution.

3.2.3. Retail Protection

As explained in section 2.3., national regulators may set a minimum denomination amount of at least EUR 50,000 for MRELs (Article 44a (5) BRRD II). A EUR 50,000 minimum denomination should reduce household holdings, especially for less wealthy households. We use Refinitiv Eikon to check to what extend that threshold is applied to outstanding bail-inable bonds. We separate these bonds by the EUR 50,000 minimum denomination threshold and construct a ratio of bonds of at least EUR 50,000 denomination over all bail-inable bonds. Our findings should be read with caution given the data concerns raised in section 3.1. Besides data inconsistency and coverage issues, the data covers only tradable securities.

We differentiate between more junior (more likely to get bailed in) and less junior (less likely to get bailed in) payment ranks. The first category covers subordinated and senior non-preferred bonds, while the second category covers (senior) unsecured and senior preferred bonds. As of October 2022, we

identify 44,123 outstanding bail-inable debt securities within the euro area, whereas 6,008 belong to the riskier category and 38,115 to the less risky category. Subordinated and senior non-preferred debt securities do therefore contribute less than 20% of the outstanding bail-inable bonds. Outstanding debt securities for the more junior bonds are highly clustered. We find that four countries within the Euro Area cover around 90% of the outstanding bonds: Germany (3822), France (745), Italy (423) and Austria (421).

Figure 9: Outstanding bail-inable debt securities with denomination of at least EUR 50,000 by different payment ranks

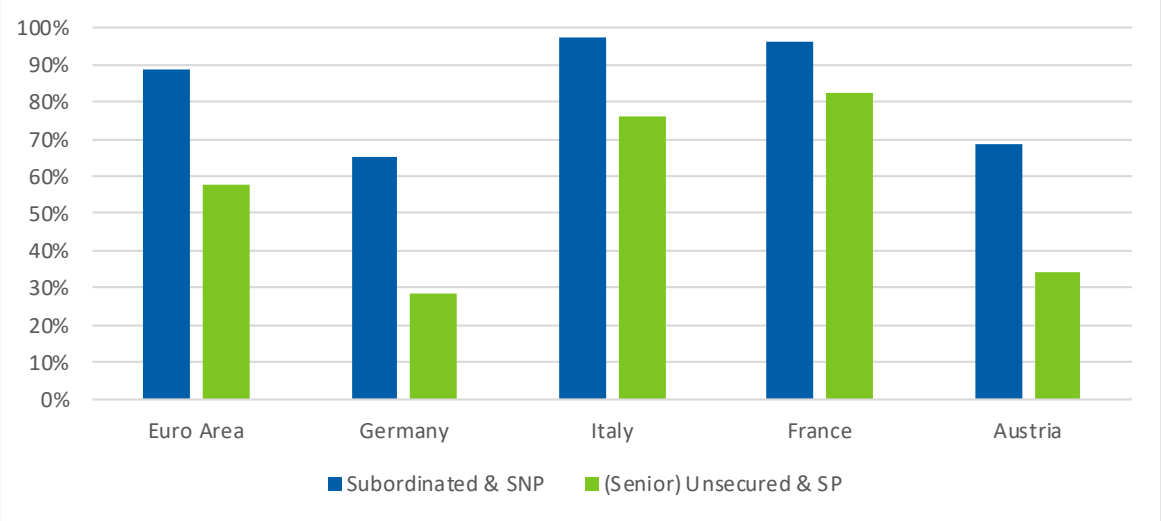


Figure 9 presents the fraction of outstanding bail-inable debt securities with a minimum denomination of at least EUR 50,000. The percentage on the y-axis presents the share of the amount issued with minimum denomination of at least EUR 50,000 over the total amount issued. This fraction is presented for the Euro Area, Germany, Italy, France and Austria. The fraction is calculated for a more junior payment rank category (subordinated and senior non-preferred bonds) and for a less junior payment rank category ((senior) unsecured and senior preferred).

Source: Refinitiv Eikon, authors' calculations

Figure 9 shows the outstanding bail-inable debt with denomination of at least EUR 50,000 over all bail-inable debt by the amount issued. 100% therefore means that a country issued exclusively bonds with minimum denominations of at least EUR 50,000. We see that overall subordinated and senior non-preferred bonds are more likely to be issued with a minimum denomination above EUR 50,000. Around 90% of the first category have been issued above the threshold, while less than 60% reached the threshold for the payment ranks (senior) unsecured or senior preferred bonds.

As banks have issued bail-inable bonds before the introduction of Article 44a (5) BRRD II, we have a closer look at the bond issuance in 2022.

Figure 10: Bail-inable debt securities with denomination above EUR 50,000 issued in 2022

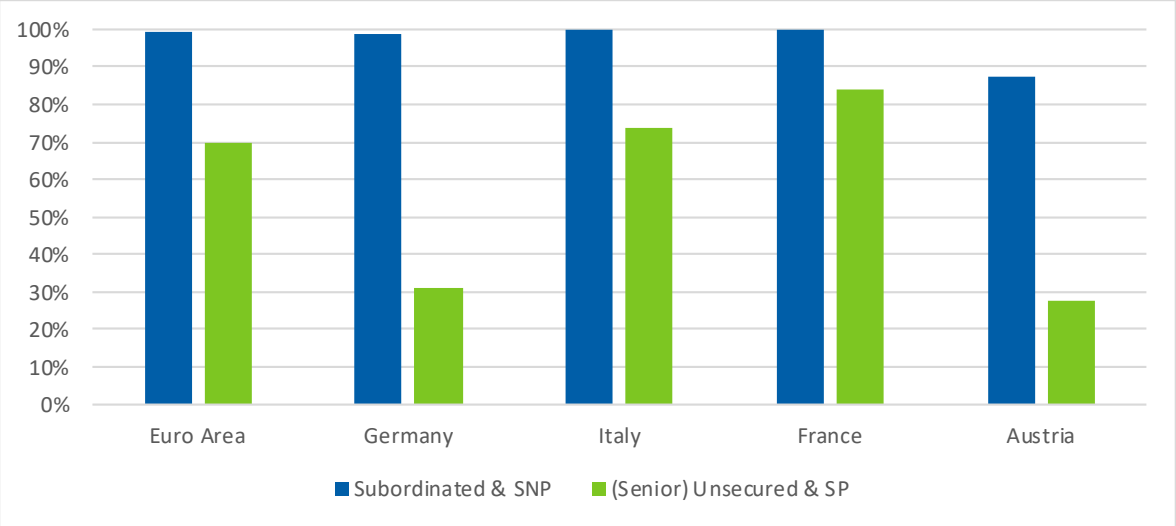


Figure 10 presents outstanding bail-inable debt securities issued in 2022. The percentage on the y-axis presents the share of the amount issued with minimum denomination of at least EUR 50,000 over the total amount issued. This fraction is presented for the Euro Area, Germany, Italy, France and Austria. The fraction is calculated for a more junior payment rank category (subordinated and senior non-preferred bonds) and for a less junior payment rank category ((senior) unsecured and senior preferred).

Source: Refinitiv Eikon, authors' calculations

Figure 10 presents the outstanding bail-inable debt securities issued in 2022 in terms of the amount issued with denomination of at least EUR 50,000. We see that within our presented countries only Austria is not reaching levels close to 100% for the first category. The second category is more diverse. 70% of (senior) unsecured or senior preferred bonds have adopted the threshold within the euro area, while Germany and Austria lie only at around 30% and France above 80%. In conclusion we see that for subordinated and senior non-preferred bonds the threshold is mainly effective, but not so for the much larger category of (senior) unsecured and senior preferred bonds.

Denomination is not solely driven by MREL regulation. Banks are firstly free to choose high denominations and secondly, G-SIIs may be driven by regulations of other jurisdictions. G-SIIs are regulated by the FSB and asked to issue TLACs. For instance, Hong Kong has set the minimum denomination for TLACs to EUR 200,000 and Japan to JPY 10 mn (around EUR 70,000).

Our findings are in line with national regulation. Germany (§65b WpHG) and France (Art. L. 613-30-3 CMF) introduced the EUR 50,000 threshold on 28.12.2020. Italy introduced a minimum denomination of EUR 200.000 for subordinated instruments and EUR 150,000 for senior non-preferred instruments (12-ter d.lgs. 385/93 "Testo unico bancario") on 8.11.2021 (decreto legislative n. 193/2021). Austria has not implemented any minimum denomination, but implemented a different protection based on Article 44a BRRD II. Retail clients with a portfolio value of less than EUR 500,000 are not allowed to invest in bail-inable liabilities of more than 10% of their portfolio and need invest at least EUR 10,000 (Para. 86a BaSAG).

It is striking that Austria presented the highest household holdings (20.3%) after Malta in Figure 3. In contrast, Italy, which presented the highest holdings in 2017 (EBA and ESMA, 2018), is now ranked in the middle among euro area countries (14.0%). Although we cannot imply causality, we see the minimum denomination restriction as an important protection measure for households. Neither the issuer (banks), nor the holder (households) can circumvent the rule, which makes it highly effective. A focused regulation based on retail client specific characteristics makes the verifiability by the market (and also the supervisor) more difficult.

The three largest issuers, Germany, France and Italy are currently in a transition period where expiring bonds are getting rolled over by bonds with the denomination rule, so that the overall size of bonds with protection will further increase in the euro area during the next years. The roll over in Germany will be substantial during the next years as the regulator classified already existing bank bonds ex post as senior non-preferred bonds. Nevertheless, not all euro area countries implemented this rule, which means that the euro area market will remain fragmented in terms of a minimum denomination. Italian or German households are for instance still able to buy Austrian bonds with low minimum denomination. As shown in Figure 10, the threshold is binding for subordinated and senior non-preferred bonds, but not so for (senior) unsecured and senior preferred bonds. Although the first category is more likely to be bailed in, the second category is still bail-inable. The likelihood of a bail-in of the second category depends on the outstanding volume of the first group. As this information is not available for the public, regulators should either extend the minimum denomination rule to (senior) unsecured and senior preferred bonds or should classify this category as not bail-inable.

3.3. Access to information and data limitations

Stakeholders in bail-in face a variety of issues related to access to information and data limitations. Thus, we describe separately the problems we identified for retail investors, for non-retail investors and regulators. They motivate our recommendations on disclosure policies and data transparency (section 4).

Retail investors

It is expected that A large fraction of retail investors seems unaware of the differences between the category "Senior Non-Preferred" and "Senior Preferred", so that retail investors face risks they might not be aware of. In addition, it is impossible to estimate the amount of issued debt of more junior payment rank in the bail-inable hierarchy. That is what determines the likelihood of being bailed in. The same holds for deposits above EUR 100,000. If bank A has issued more senior non-preferred securities than bank B, deposit holdings above EUR 100,000 are less risky in bank A. In conclusion, bank customers do not have enough access to information about the risk they are facing, be it deposits or more risky liabilities. Therefore, they could not be expected to exert the market discipline that bail-in should provide. Moreover, their lack of knowledge provides a reason to object to the bail-in process altogether, as the Italian experience in Box 1 describes.

Non-retail investors

Non-retail investors have access to Bloomberg or Refinitiv Eikon and are able to read the prospectus. They should therefore be aware of the payment rank, which helps to determine the associated risk. Nevertheless, they can only see tradable debt securities. Non-tradable promissory notes can be for instance senior non-preferred or senior preferred. Therefore, the investor does not know the overall volume of a certain payment rank, which is essential to fully determine the associated risk. As discussed in section 3.1., Bloomberg and Refinitiv Eikon lack data coherence, which prevents investors of getting a clear picture.

Regulators

The major data limitation from a regulatory point of view is that the LDR and the SHSS have different data owners. Fast access to both data bases is nearly impossible due to confidentially issues and the process to grant data access. The SRB and national banking authorities need to set up specific requests to the ECB for the SHSS and have no access to the full data set. This separation becomes also apparent in the literature about the holders of bail-inable debt. For instance, ECB (2016), EBA and ESMA (2018)

and Pigrum et al. (2016) from OeNB only use SHSS data. The availability of data on tradable and non-tradable liabilities is essential for a full picture of the bail-in topic. On top of this, merging SHSS and LDR is not a straightforward task as the sources are differently structured and have different types of issuer and holder coverage.

A second issue is the time delay and the frequency of the data. The LDR is filled out by banks at the end of every year. The deadline for banks to hand in data is end of March. This means that regulators have to use more than a year-old data if they want to analyse the situation in the beginning of a year. The frequency for SHSS is quarterly with an additional two-month lag for full availability of the data. Prior to resolution, the more informed investors might front-run the event and load off the bail-inable securities to less informed investors like households, while regulators and policy makers are analysing the now outdated SHSS data.

In conclusion, the data limitation presents a challenge for the SRB to achieve its mission "to ensure an orderly resolution of failing banks, protecting taxpayer from state bail-outs, which is promoting financial stability"[19]. As discussed in Box 1 when a significant amount of bail-inable debt is in the hands of retail investors, there is a large temptation to bail them out.

[19] https://www.srb.europa.eu/en/about

4. POLICY RECOMMENDATIONS

4.1. Why transparency around bail-inable debt is the key to market discipline in banking

Following the financial crisis 2008-2010, the European banking regulation was redesigned, as was explained in greater detail in the first part of this paper. The main idea, or concept, was to terminate once and for all the automatic bailout of large institutions that were deemed to be too big to fail (TBTF). Ending the TBTF regime for large financial institutions was tied to legal innovations that resulted in a European insolvency regulation for large banks, the BRRD.

Under the new regime, banks were required to increase loss absorbing capital significantly, consisting of equity plus bail-inable debt, often in the newly created form of *senior non-preferred*. Moreover, the new regime established a resolution mechanism that is supposed to facilitate the reorganization or resolution of large financial institutions in a crisis, including preparatory work in normal times, like setting up a bank testament.

Given loss absorbing capital, some of which is in the form of bonds, increasing asset risk of banks will raise the costs of funding. Bank management is said to be disciplined by market pricing as funding costs correspond to the bank's risk exposure. Market discipline is supposed to work particularly via the pricing of bail-inable debt.[20]

Other forms of debt may also qualify as bail-inable, and the (national) definition of MRELs relies on instruments defined in national markets. Institutions were given time until 2024 to fully build up the required minimum level of equity and bail-inable debt.

From 2024 onwards, market discipline should be fully operative. Will it be?

That is the question posed and tentatively answered in this paper. As a starter, we observe that for the market discipline to be effective, investors who are purchasing bail-inable debt ought to know from the start that their investment does not fall under any implicit government guarantee. In fact, their investment is explicitly included in the list of bail-inable debt, be they deposit-like contracts or tradable securities. The question whether bail-in debt is truly functional really asks whether there are implicit impediments to a bail-in practice during a crisis.

We know today that there are several such impediments and, to the extent that they are foreseeable, an effective bail-in regime will strictly avoid falling in any such implicit-guarantee trap. The literature has identified two major traps, or challenges, for bail-in: One is the allocation of bail-in debt to consumers and retail investors. As our case study of Italy (Box 1) has shown, retail investors will fight for their rights, and often can claim they did not know, or did not understand the implications. In this case, bailing-in households etc. risks a political backlash that eventually will result in a bailout – exactly the situation that was to be avoided.

The other trap, or challenge, relates to the investment of other banks, notably of the same country, in bail-inable debt of a given financial institution. The interconnection of banks is accentuated if they mutually invest in each other's bail-in debt, thereby creating a potential systemic risk. Once again, to the extent that a systemic risk is resulting, a government bailout can be expected – and the intention of the BRRD, and the effectiveness of market discipline is thwarted.

[20] See Cutura (2021) for empirical support of the notion of market discipline.

Note that both challenges are reinforcing each other, leading to the general statement that for bail-in to work as intended, neither retail investors nor peer banks should be prominently among the investor base of banks' loss absorbing capital, including bail-in liabilities.

In this paper, we look into the holding structure of banks in Germany, where we have access to more granular data for the pre-pandemic year 2018. Findings are summarized in section 3.3. They show, in a nutshell, that there is only a minor retail challenge if one looks at national averages only. With more granular data we find a significant cross-sectional variation of retail holdings, with some institutions facing a strong challenge, with up to 50% in the hands of retail clients, while others face no such challenge.

Regulators are aware of the risks of a retail challenge, which led to the introduction of BRRD, art. 44a to prevent mis-selling of MREL instruments to unsuitable retail customers. We analyze outstanding bail-inable bonds, a subset of all bail-inable instruments, in the Euro Area via Refinitiv Eikon and evaluate to what extent the minimum denomination of (at least) EUR 50,000 (BRRD, art. 44a(5)) is fulfilled. We find that (1) not all countries have decided to implement this rule, and (2) that this threshold is met mainly for subordinated and senior non-preferred bonds, but not so for less junior bail-inable payment ranks like (senior) unsecured and senior preferred bonds.

Furthermore, we find other banks to play a major role in the holding of bail-in debt, both on average and on a more granular, institution-by-institution level. When compiling the data of bail-in debt holdings, we noted serious difficulties in identifying data sources. Much to our surprise, there is no national or European data repository which discloses the bail-in debt holding structure for all banks, and in real time. After all, without this information the mechanism of debt market pricing is unlikely to function smoothly.

Moreover, and even more disturbingly, the supervisory agencies in Europe, like SRB, BaFin or Bundesbank, have themselves only limited access to these data. Even worse, an institution like the SRB which is supposed to prepare the ground for a potential future bail-in, has apparently event-restricted data access only – namely in an ongoing crisis, but not before.

When there is no wide-spread information about holding structures available, how can a market distinguish between more or less sustainable holding structures, and how can it differentiate prices accordingly? We believe that enhancing today's data policies in the directions spelled out in our recommendations 1-6 have the potential to greatly improve the effectiveness of market discipline as the instrument of choice in Europe's banking regulation.

4.2. Recommendations

Our recommendations on data disclosures and regulatory refinements follow closely our empirical findings. We recommend:

Data disclosure

Recommendation 1: Specific disclosure policy

As documented in this study, it is extremely difficult to find credible data about retail holdings of bail-in debt in the public domain; the same is true for bank holdings. Even when contacting supervisory agencies, the responsibility and access rule for data sets, even for data several years back, are opaque,

and extremely access-restricted. On the other hand, we do not see any economic or legal reasoning justifying the concealment of these data points.

We therefore recommend creating the preconditions for full holding data disclosure. We see a major precondition in a generalized (standardized) labelling convention of bail-in debt. It should be easily visible to all investors whether a particular financial instrument, e.g., a subordinate bond issued by bank X is included in its bail-in liabilities or not. If the liability comes in the form of tradable bonds, the marking can rely on the ISIN numbers. In case of a non-tradable deposit, or other MREL instrument, an explicit "flag" has to be attached to the instrument in a mandatory way. E.g., a red flag to be widely known as signalling bail-in ability.

Recommendation 2: General disclosure policy

A Europe-wide effort is needed to standardize, collect, and disclose the holding statistics of banks, making them available to investors in real time, and at bank level. For example, the European Data Warehouse could take over the task of data management and disclosure (via their website: https://eurodw.eu).

Recommendation 3: Data sharing among supervisors

Supervisory agencies, in their day-to-day work, are supposed to prepare the resolution of banks as a precautionary measure, but their data access is highly restricted, and there is apparently only free access *during* a crisis, *not before*. Even then the access is only partial. We have discussed at some length that this is a data access policy defying the purpose of the agency.[21] Therefore, we recommend changing the rules of data access among regulatory institutions in the euro area.

One possibility is to set up a joint or common data repository that aggregates institution-level data on bail-in debt holdings (and possibly other data as well), and to grant equal access rules to all supervisory institutions. This joint facility will be run as a separate entity, the data pool, granting access to central banks, national supervisors, and SSM and SRB.

Regulatory refinements

Recommendation 4: Creating a well-defined boundary between bailing-in and not to bail-in

A well-defined upper limit for any bail-in activity is needed (Götz, Krahnen and Tröger, 2017). Such an upper limit would remove the ambiguity that nowadays prevails in the market for intermediate (mezzanine) bank liabilities, i.e. debt claims that do not fall under the MREL category, nor are they protected by the existing deposit insurance. The ambiguity puts banks at risk of a run. Therefore, clearly separating bail-in from not-bail-in improves the credibility of the no-bailout commitment by the government and central banks, as far as MREL instruments are concerned.

Recommendation 5: Restricted access of retail investors to bail-inable debt

We are sceptical that suitability assessments are an efficient way to prevent mis-selling of MREL instruments in the run-up to a crisis. The resources that would have to be invested into such assessments and their supervisory review to make a true difference outweigh their benefits in the steady state. The risk of creating a lot of ineffective red tape looms large and is well-familiar from the MiFID experience. Instead, meaningful minimum denominations for such instruments provide a cheap

[21] An analogy that comes to mind is the fire fighter squad that is denied a street plan up until a fire breaks out.

and easy to administer restriction that makes it significantly harder for banks to sell bail-inable debt to their retail clients. We therefore recommend requiring all member states to prescribe a minimum denomination of EUR 50,000 for any MREL instruments, that is, to turn the option in BRRD, art. 44a para. 5 into the binding rule. This would leave only wealthy individuals and larger asset management firms as investors, neither of which poses a retail challenge.[22]

Recommendation 6: Threshold values for bank investors

Supervisory institutions should be encouraged to develop a policy of publicly recommended maximum holdings (concentration limits) at the level of the individual institution for bank investors. The recommended maximum holdings are based on the risk of establishing implicit government guarantees and target a level that diminishes bailout incentives.

To sum up our recommendations, we propose to tear down the existing walls around bail-in relevant information about retail and bank challenges to market functionality. While such an open access system is common in the US (see the EDGAR open data system), it is still lacking in Europe – much to the detriment of its financial sector.

[22] Note that the restrictive divisibility condition is no remedy against the bank challenge.

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ANNEX

Table 1: Holder structure by bail-inable liability types issued by euro area banks

Liability Type	Issuer Type	Households	Banks	Government	Non-financial corporation	Other financial institutions	Outside of EA
Capital instruments/ share capital (CET1)	SI	15,1%	2,4%	3,1%	3,8%	30,2%	45,5%
	LSI	n/a	n/a	n/a	n/a	n/a	n/a
Subordinated liabilities recognised as own funds (AT 1)	SI	2,6%	1,9%	1,0%	0,9%	52,3%	41,3%
	LSI	3,5%	2,3%	0,4%	0,7%	58,9%	34,1%
Subordinated liabilities recognised as own funds (Tier 2)	SI	4,3%	3,6%	1,1%	1,2%	49,9%	39,9%
	LSI	5,1%	2,1%	1,4%	3,3%	27,8%	60,4%
Subordinated liabilities (not recognised as own funds)	SI	9,2%	3,0%	0,6%	1,9%	60,8%	24,5%
	LSI	48,7%	8,6%	0,8%	8,0%	24,2%	9,7%
Senior non-preferred liabilities	SI	2,9%	18,0%	1,3%	1,2%	36,3%	40,3%
	LSI	0,9%	7,0%	0,6%	0,7%	76,3%	14,4%
Senior unsecured liabilities	SI	1,5%	35,8%	1,6%	0,6%	25,6%	34,9%
	LSI	3,6%	28,4%	1,8%	1,2%	24,7%	40,2%
Structured notes	SI	20,3%	11,6%	0,5%	2,2%	17,6%	47,8%
	LSI	n/a	n/a	n/a	n/a	n/a	n/a
Uncollateralized secured liabilities	SI	0,3%	42,0%	3,0%	0,1%	16,6%	38,1%
	LSI	0,3%	9,9%	2,4%	0,7%	53,3%	33,4%

Table 1 presents the holder structure by bail-inable liability types issued by euro area banks for Dec 2021. Euro area banks are separated by Significant Institutions (SIs) and Less Significant Institutions (LSIs). Liability types are based on LDR filings, holder types are based on ESA 2010.
Data source: ECB SHSS, SRB

To ensure the credibility of market discipline induced by bail-in, neither retail investors nor peer banks should appear prominently among the investor base of banks' loss absorbing capital. Empirical evidence on bank-level data provided by the German Federal Financial Supervisory Authority raises a few red flags. Our list of policy recommendations encompasses disclosure policy, data sharing among supervisors, information transparency on holdings of bail-inable debt for all stakeholders, threshold values, and a well-defined upper limit for any bail-in activity.
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