

## WORKING PAPER 224

Bail-in and Legacy Assets: Harmonized rules  
for targeted partial compensation to  
strengthen the bail-in regime

Philipp Poyntner, Thomas Reininger

The *Working Paper series of the Oesterreichische Nationalbank* is designed to disseminate and to provide a platform for discussion of either work of the staff of the OeNB economists or outside contributors on topics which are of special interest to the OeNB. To ensure the high quality of their content, the contributions are subjected to an international refereeing process. The opinions are strictly those of the authors and do in no way commit the OeNB.

The Working Papers are also available on our website (<http://www.oenb.at>) and they are indexed in RePEc (<http://repec.org/>).

**Publisher and editor** Oesterreichische Nationalbank  
Otto-Wagner-Platz 3, 1090 Vienna, Austria  
PO Box 61, 1011 Vienna, Austria  
[www.oenb.at](http://www.oenb.at)  
[oenb.info@oenb.at](mailto:oenb.info@oenb.at)  
Phone (+43-1) 40420-6666  
Fax (+43-1) 40420-046698

**Editorial Board  
of the Working Papers** Doris Ritzberger-Grünwald, Ernest Gnan, Martin Summer

**Coordinating editor** Martin Summer

**Design** Communications and Publications Division

**DVR 0031577**

**ISSN 2310-5321 (Print)**  
**ISSN 2310-533X (Online)**

© Oesterreichische Nationalbank, 2018. All rights reserved.

# Bail-in and Legacy Assets: Harmonized rules for targeted partial compensation to strengthen the bail-in regime

Philipp Poyntner,  
Thomas Reininger<sup>1</sup>

*In the wake of the global financial crisis, several large bank rescues by governments further entrenched bail-out expectations in the wider public. Then, following a problematic ad-hoc bail-in in Cyprus early 2013, EU rules introduced provisions for 'bail-in', that is, the administrative power to require write-down or conversion into equity of non-equity claims – a significant regime change to deal with banks failing or likely to fail. This paper focuses on the implications of this regime change for consumer/investor protection, especially for socially more vulnerable households, and on the resulting risk for political acceptance and the achievement of the bail-in objective. Therefore, it reviews these rules and their application in recent cases, focusing on the treatment of retail bond holders. Moreover, it explores the distribution of retail holders of bank bonds across economy-wide income quantiles in the euro area and various euro area countries. We find that neither the share of below-median-income households with bank bonds in the total number of households with bank bonds nor the relative vulnerability to 'bail-in' of these households that tend to have higher levels of financial illiterateness are negligible. Recent applications of bail-in-rules, while diverse with respect to legal basis, scope and purpose, have barely gone beyond the write-down and conversion of capital instruments, thus excluding senior bonds. Nevertheless, in all these cases, some sort of compensation scheme for retail investors was deemed necessary and implemented, varying in design, but mostly benefiting almost all retail holders. In two prominent cases there was no effective bail-in of retail holders. In conclusion, following a lesser-known example from Italy, we propose EU harmonized partial compensation rules for socially more vulnerable retail holders of bank debt securities acquired before 2016. They would render implementation of bail-in socially more acceptable, politically more feasible and economically more efficient. During the transition period until household investment behaviour will have fully adjusted to the new world of bail-in, the proposed compensation rules would help avoid effective non-application of bail-in that otherwise results from excluding senior bonds and/or granting excessive compensation.*

JEL classification: D14, D18, D31, D63, E44, G21, G28, H81.

Keywords: banking regulation, bail-in, retail holders, consumer protection, income distribution, HFCS.

---

<sup>1</sup>Vienna University of Economics and Business, [philipp.poyntner@wu.ac.at](mailto:philipp.poyntner@wu.ac.at), and Oesterreichische Nationalbank (OeNB), Foreign Research Division, [thomas.reininger@oenb.at](mailto:thomas.reininger@oenb.at). Opinions expressed in this paper do not necessarily reflect the official viewpoint of the OeNB or of the Eurosystem.

## Non-technical summary

### Research question and topical background

Any orderly judicial liquidation of a failing bank involves indirect economic costs, like knock-on effects, on top of the initial losses. In view of the overall economic costs, large banks have been considered as ‘too-big-to-fail’ for several decades, and governments have embarked on sizeable bail-out packages to replenish the capital and to take over that share of initial losses that otherwise creditors would have had to bear. While preserving financial stability, bail-out implies an at least upfront burden for public finances and adverse incentive effects, leading investors to speculate on further bail-outs in the future, called moral hazard.

In view of these shortcomings and after further large bank rescues in the wake of the global financial crisis 2007-2009 that further entrenched bail-out expectations in the wider public, regulatory policy shifted towards ‘bail-in’ – introducing the administrative power to require write-down or conversion into equity of non-equity claims. This means a significant change how to deal with banks failing or likely to fail, embarking on a middle ground between liquidation and bail-out. This paper focuses on (i) implications of this change for consumer and investor protection, especially for lower-income households, given bond holdings acquired prior to bail-in rules; (ii) the resulting risk for political acceptance and achievement of the bail-in objective; (iii) possible complementary improvements of these rules.

### Findings of this paper and policy proposal

In the euro area on aggregate and in the individual euro area countries under study, there is a considerable share of households with bank bonds that belong to the lower half of all households in the economy (in terms of gross income) within the total number of households with bank bonds. These lower-income households with bank bonds tend to have higher levels of financial illiterateness and, measured by the ratio of their bond holdings to their annual gross income, they tend to be more exposed to ‘bail-in’ than households belonging to the economy’s quarter of highest-income households.

In all the recent applications of bail-in-rules, some sort of compensation scheme for retail investors was deemed necessary and implemented, varying in design, but mostly benefiting almost all retail holders. In two cases, there was no effective bail-in of retail holders.

To minimize the risk of further effective non-application of bail-in resulting from excluding senior bonds and/or granting excessive compensation, we propose EU harmonized partial compensation rules for socially more vulnerable retail holders of bank bonds acquired before 2016. These rules would render implementation of bail-in socially more acceptable and politically more feasible and help preserve the bulk of its economic benefit.

## Introduction

It is one of the basic principles of capitalism that those who invest should earn the return on their investment, receive the profit or bear the loss, conform to the causation principle. Hence, when making an investment, both entrepreneurs and financial investors, including banks, take a risk that may materialize in a loss. If losses emerge that are larger than the paid-in equity, orderly judicial liquidation shall ensure that these losses are distributed according to the order and the limits established by law, primarily to the owners, the holders of capital, and then to the creditors, the holders of debt liabilities, in a fair manner that preserves the equal treatment principle. However, in addition to the initial losses as directly distributable costs, any liquidation involves indirect economic costs, in particular costs of the proceedings and costs resulting from knock-on effects that may even lead to a chain of further liquidation cases. A significant adverse impact on the real economy would also hit the public sector and thus the taxpayer. The more sizeable and the more inter-connected the company or bank of the initial liquidation case and the larger the initial losses, the higher indirect economic costs tend to be.

Therefore, to limit the indirect and thus overall economic costs of bank failures, large banks have been considered as ‘too-big-to-fail’ for several decades, and governments have embarked on sizeable bail-out packages to replenish the capital wiped-out by initial losses and to take over that share of initial losses that otherwise creditors would have had to bear. On the one hand, this approach serves to eliminate or at least contain contagion effects, adverse effects on financial stability. On the other hand, first, bail-out implies an at least upfront burden for the general government budget and debt, the socialization of directly distributable losses on private investments that are often undertaken by investors which previously received positive returns like interest payments on their investments. Thus, it amounts to a sharp deviation from the causation principle. At the same time, the extent to which upfront public expenditure could be recovered thereafter varies widely, and so does the comparison of the final fiscal effect with that under liquidation. Second, bail-out causes adverse incentive effects, future moral hazard – and this leads to an accumulation of indirect economic costs over time.

In view of these shortcomings and after further large bank rescues in the wake of the global financial crisis 2007-2009 that further entrenched bail-out expectations in the wider public, regulatory policy shifted towards ‘bail-in’. Loosely spoken, bail-in consists in exercising the power to require write-down or conversion into equity of non-equity claims. The Financial Stability Board developed a set of principles (FSB, 2011b) with the aim of ensuring that failing systemically important financial institutions could be resolved in an orderly manner

without burdening taxpayers: *“The objective of bail-in is to reduce the loss of value and the economic disruption associated with insolvency proceedings for financial institutions, yet ensure that the costs of resolution are borne by the financial institutions’ shareholders and unsecured creditors”* (FSB, 2011a). The bail-in approach aims at achieving the overarching objective of minimizing overall economic costs by developing a middle-ground between liquidation and bail-out. Compared to bail-out, it shifts the burden of directly distributable losses from the taxpayers back to the creditors, conform to the causation principle, and it reduces moral hazard. However, it increases the risk of contagion again, albeit not to levels as high as under liquidation, and thus of an indirect fiscal burden.<sup>2</sup> The framework to implement bail-in is ‘resolution’, designed as a fast-track procedure that replaces a protracted, several years long ‘judicial liquidation’ process under normal insolvency proceedings.

Corresponding to the global regulatory policy shift and following the actual handling of the financial crisis in Cyprus in March 2013, the European Union introduced bail-in rules through the European Commission’s Banking Communication 2013 (July 2013) as well as the Bank Recovery and Resolution Directive (BRRD) (May 2014) and the Single Resolution Mechanism Regulation (SRMR, July 2014) of the European Parliament and the Council. These rules develop bail-in as a compromise solution: On the one hand, in line with the liquidation approach, they contain the resolution principles that creditors of the institution under resolution bear losses after the shareholders in accordance with the order of priority of their claims under normal insolvency proceedings; that creditors of the same class are treated in an equitable manner; and that no creditor shall incur greater losses than would have been incurred if the institution had been wound up under normal insolvency proceedings (no-creditor-worse-off NCWO principle as a kind of Pareto criterion). Moreover, they stipulate the minimization of reliance on extraordinary public financial support and the maintenance of market discipline as part of the resolution objectives. On the other hand, in line with the bail-out approach, these rules contain the further resolution objectives to ensure the continuity of critical functions; to protect client assets; to minimize the cost of resolution; and to avoid a significant adverse effect on the financial system, in particular by preventing contagion (Art.31(2), 34(1) BRRD, Art.14(2), 15(1) SRMR). To achieve these objectives, provisions ensure the administrative (non-judicial) power to require write-down or conversion into equity of eligible non-equity claims; and they ensure ex-ante resolution planning and the setting of a minimum requirement of own funds and eligible liabilities.

---

<sup>2</sup> For an overview on criticism highlighting the risks and weaknesses of the bail-in approach see Pigrum et al. 2016, for a discussion of the large bail-in in Cyprus in March 2013, Brown et al., 2018a.

Against this background, the holder structure of bank debt securities gained attention. For an empirical overview for euro area countries see Pigrum et al. (2016). Several authors focus on financial stability implications and the potential size of contagion effects, like, for instance, Götz and Tröger (2016) who point out that households are suboptimal investors in such securities from a financial stability viewpoint, and Pigrum et al. (2016) who highlight the issue of cross-holdings within the banking sector.

In the present paper, our focus is different, as we deal with two closely related issues: First, the potential implications of the regime change from bail-out to bail-in for consumer/investor protection and, in particular, socially more vulnerable households. Second, the policy compatibility and political acceptance of newly established bail-in rules as a major resolution constraint. The lack of political acceptance for unexpected regime change implications could jeopardize the successful implementation of bail-in and, hence, put at risk achieving the objective of minimizing overall economic costs. For our investigation, we look closely at the retail holdings of bank debt securities, making use of survey data provided by the Household Finance and Consumption Survey (HFCS) for most euro area and some non-euro area EU countries. In this way, we explore the potentially differentiated impact on retail holders.

A recent paper evaluated the HFCS data with respect to potential implications of bail-in for financial stability (Lindner and Redak, 2017). As expected, they confirm for most EA countries that (a) only a small minority of all households hold bank debt securities; (b) retail holdings of bank debt securities are concentrated at the right-end of the distribution; and (c), on average(!), households holding bank bonds have higher income and wealth than all households. Our complementary approach distinguishes itself by focusing on main quantiles of the distribution and on the relevance that retail holdings of bank debt securities have for the holders within these different segments. In particular, we do not look primarily at the mean or median values of all households owning bank bonds, but rather focus on the question which fraction of all households holding bank bonds belong to the lower half of all households in an economy in terms of gross income, and what characterizes their position.

In addition, we evaluate recent applications of bail-in-rules, focusing on the treatment of retail bond holders. After discussing economic policy options, we include our own proposal for EU harmonized partial compensation rules for socially more vulnerable retail holders of bank debt securities acquired before 2016. They would help avoid effective non-application of bail-in that otherwise results from excluding senior bonds and/or granting excessive compensation.

Section 1 presents basic features of the main EU legal provisions for bail-in. Section 2 sketches the HFCS. Section 3 evaluates the HFCS data with respect to the retail holdings of bank debt securities. Section 4 summarizes recent applications of bail-in rules, focusing on the implications for retail holders. Section 5 discusses economic policy options including our policy proposal, and Section 6 concludes.

## **1 Basic features of the main EU legal provisions for 'bail-in'**

In a strict sense, bail-in can be defined as the statutory imposition of losses on liabilities of a financial institution where such liabilities are not designed, by their terms, to absorb such losses outside of an insolvency procedure (Jennings-Mares 2016).

Thus, the write-down or conversion of capital instruments, hybrid debt instruments (including CoCos, contingent convertible bonds) or subordinated loans with loss-absorbing capacity that are recognized as Additional Tier 1 (AT1) or Tier 2 (T2) instruments (Art.2(1.69, 73 and 74) BRRD), in short, the so-called write-down or conversion of capital instruments (WDCC), is not a bail-in in the strict sense. The power to exercise WDCC may be used either independently of any resolution action or in combination with (that is, immediately before or together with) the application of a resolution tool (Art.59(1) BRRD).

By contrast, bail-in as defined in the strict sense comprises the imposition of losses on senior non-preferred bank bonds and possibly on senior unsecured bank bonds and uninsured deposits. Bail-in in the strict sense can take place under resolution only.

Outside resolution, only WDCC can take place, not both WDCC and bail-in in the strict sense. In July 2013, the European Commission's Banking Communication 2013 introduced a new set of temporary state aid rules to assess public support to financial institutions. It contains a burden-sharing requirement in the form of WDCC as a condition for state aid. However, it stipulates an exception to this requirement of burden-sharing where implementing such measures would endanger financial stability or lead to disproportionate results, which could cover cases where the aid amount to be received is small in comparison to the bank's risk weighted assets and the capital shortfall has been reduced significantly in particular through capital raising measures.

The EU Bank Recovery and Resolution Directive (BRRD), adopted on 15 May 2014, entering into force on 2 July 2014 and requiring transposition of its bail-in rules into national law by 1 January 2016, and the Banking Union's/Euro area's Single Resolution Mechanism Regulation (SRMR), adopted by the European Parliament and the Council on 15 July 2014, require



WDCR outside resolution in two cases (Jennings-Mares 2016, Freudenthaler 2016, Art.37(2) and Art.59 BRRD, Art.22(1) and Art.21 SRMR):

- (a) The appropriate authority determines that otherwise the bank will no longer be viable; that is, the viability may be preserved only via WDCR as a necessary (but possibly not sufficient) condition for viability (Art.59(3)(b),(c),(d) BRRD, Art.21(1)(b),(c),(d) SRMR).
- (b) Extraordinary public financial support is required by the institution (Art.59(3)(e) BRRD, Art.21(1)(e) SRMR), except for the case of precautionary recapitalisation. This requirement reflects the burden sharing requirement by the Banking Communication 2013 for state aid.

In the case of a precautionary recapitalisation, that is, support measures limited to injections necessary to address capital shortfall established in stress tests or asset quality reviews conducted by appropriate authorities, the BRRD/SRMR do not require WDCR (Art.32(4)(d)(iii) BRRD, Art.18(4)(d)(iii) SRMR). However, in general the Commission's Banking Communication 2013 requires burden sharing via WDCR also in this case as a condition for receiving state aid in the form of recapitalization support.

For resolution, the BRRD, the SRMR or a national law provide the legal basis. In addition, the Commission's Banking Communication 2013 continues to lay down the necessary conditions for state aid (in the form of liquidation aid) also in this context, whereby the term state aid includes payouts like capital injections from a resolution fund. The resolution authority shall take a resolution action if it considers that the resolution conditions are met, namely (a) the institution is failing or is likely to fail, as assessed by the supervisory authority after consulting the resolution authority or vice versa; (b) there is no reasonable prospect that any alternative private sector measures, including measures by an institutional protection scheme (IPS), or supervisory action, including early intervention measures or WDCR (in accordance with Article 59(2) BRRD) would prevent the failure of the institution within a reasonable timeframe; (c) the resolution action is necessary in the public interest, that is, it is necessary for the achievement of the resolution objectives and it meets them better than the winding up of the institution under normal insolvency proceedings (Art.32(1) and (5) BRRD, Art.18(1) and (5) SRMR). If an institution meets conditions (a) and (b), it is no longer viable. Under resolution, the resolution authority may apply "the bail-in tool" (Art.43 BRRD, Art.27 SRMR) (a) to recapitalize an institution to the extent sufficient to restore its ability to comply with the conditions for authorization and to sustain sufficient market confidence in the institution; or (b) to reduce the principal amount of debt to be transferred to a bridge institution or under the sale of business tool or the asset separation tool. Recapitalization via bail-in may only be applied if there is a reasonable prospect that the application of that tool

together with other relevant measures (e.g. business reorganization plan) will restore the institution to financial soundness and long-term viability. The resolution action has to observe, inter alia, the principles that (a) the shareholders of the institution under resolution bear first losses; and (b) the creditors of the institution under resolution bear losses after the shareholders in accordance with the order of priority of their claims under normal insolvency proceedings (Art.34(1) BRRD, Art.15(1) SRMR). Thus, the scope of the bail-in tool encompasses at least WDCC and, in addition, possibly a bail-in in the strict sense.

The legal provisions on the bail-in tool relate primarily to the type of liabilities and instruments, and not to the type of holders of such liabilities. The main exception is the establishment of the category of “preferred deposits” (within the bail-in waterfall) that relates to two groups of holders, namely natural persons and micro, small and medium-sized enterprises. There is no differentiation between types of holders of bank debt securities, whether subordinated or senior unsecured bank debt securities. In particular, retail bond holders or certain segments of retail bond holders are not dealt with as a separate category.

For the resolution decision in the national context, the BRRD provisions transposed into national law generally require the national resolution authority to perform its own public interest test, also within the banking union.<sup>3</sup>

## **2 The Household Finance and Consumption Survey, HFCS**

The Household Finance and Consumption Survey (HFCS) is a joint project of the national central banks of the Eurosystem and several national statistical institutes (HFCS 2016a). The HFCS provides detailed household-level data on various aspects of household balance sheets and related economic and demographic variables, including income, private pensions, employment and measures of consumption. All variables are provided by the respondents of the survey. In the second survey wave, most of the data collected has 2014 as reference period and has been collected in a harmonized way in 20 EU Member States for a sample of more than 84,000 households. We focus on an aggregate of 17 countries of which the large majority

---

<sup>3</sup> Moreover, independent from any resolution, the orderly judicial liquidation by applying the provisions of the national insolvency procedure coupled with the insolvency hierarchy could lead to wiping out specific subordinated liabilities. For judicial liquidation, it will generally not be sufficient that a bank is likely to fail, but provisions require rather that the bank is failing or has failed already. The wiping-out of subordinated liabilities may imply fulfilling the burden-sharing requirement for public support as another form of applying liquidation aid according to the Commission’s Banking Communication 2013. This, in turn, would limit loss absorption to the amount of these wiped-out liabilities, hence preventing the pro-rata loss absorption of senior non-preferred bonds et cetera. This type of ‘liquidation with limited loss absorption due to public support’, as one may call it, could appear as just another type of bail-in, but it is not a bail-in according to the strict definition as it does not take place outside an insolvency procedure. Rather, it is a pseudo bail-in. The legal basis for this would be the national insolvency law coupled with the Commission’s Banking Communication 2013.

belongs to the euro area, denoted as EA-17 in the present study. EA-17 comprises a sample of more than 70,000 households and includes all countries for which data on households with bank bonds are available<sup>4</sup>. The country sample sizes range from 1,284 (The Netherlands), which is lower than the sample in Cyprus (1,289) and Malta (1,384), to 8,156 (Italy) and 11,030 (Finland), which are considerably larger than the sample in Germany (4,460). Estimation weights are applied such that figures are representative of the population of households living in the respective country. Our analysis draws on analyzing population groups in quantiles of total gross income in their respective countries, using the group below the median (<50%), the third quartile and the fourth ('upper') quartile (>75%), and the segment of the lower 60% of households as a robustness check for the lower half of households in several countries. The description of the data in our study predominantly consists of estimates of the mean or median of the target variables for those subpopulations.

In the following paragraph, a short description of the typical estimation process is provided for clarity and transparency.

In Table 1 (at the end of Section<sup>o</sup>3), the cell of the first line of the 11th column, which takes the value 41,988, describes the mean of bond wealth of EA-17 households with bank bonds, which have an income below the median in their respective countries ("Average bond wealth of households with bank bonds, mean per quantile, in Euro"). This value is simply the estimation of the mean of bond wealth of the subpopulation, i.e. households with bank bonds that are in the lower half of the income distribution in their respective countries. To account for the survey structure, the estimate takes into account survey weights. All questions on income, consumption and wealth that households could not or did not want to answer have been imputed using a multiple imputation technique estimating a distribution of possible values. This allows accounting for the uncertainty in the imputation(see HFCS 2016b for details). As a result of this process, we have five datasets with different values estimated for missing values. Finally, the HFCS data also includes bootstrap replicates for variance estimation. We use 1,000 replicates and use Stata for the calculations. All this information is included in our estimates to account for the uncertainty associated with weighting and missing information.

---

<sup>4</sup> This aggregate includes all 28 EU countries except for those that do not participate in the HFCS survey (Denmark, Sweden, United Kingdom, Czech Republic, Bulgaria, Romania, Croatia; Lithuania) or do not provide data on households with bank bonds (France, Latvia, Estonia). In other words, EA-17 comprises all current EA countries (except for France and the Baltic countries) plus Hungary and Poland.

### 3 The structure of retail holders of bank bonds in selected EU countries

In this Section, we present main results of our evaluation of bond holdings of households holding bank bonds on the basis of HFCS data for a limited EU aggregate and seven euro area countries. To be precise, the term ‘bank bond’ comprises bonds issued by banks (that is, deposit taking corporations) or other financial institutions.

Table 1 (at the end of this Section) presents the distribution of households holding bank bonds (in short: households with bank bonds) in terms of gross income, that is, by gross income quantiles of all households in the national economy or euro area aggregate, respectively.

In this table, we show the number of observations to make the limitations of the data set fully transparent, and we highlight data based on less than 25 observations by means of gray shading, given the fact that in the publications of the HFCS (e.g. HFCS 2016a) calculations are not performed if fewer than 25 observations are available. In view of these limitations, we take the following safeguard measures:

First, we focus on the analysis of the EA-17, the aggregate of 17 countries of which the large majority belongs to the euro area.

Second, to get deeper insight, we have our complementary focus on the country-specific level. In this respect, whenever country data for the lower 50% of households by gross income rely on fewer than 30 observations, the table includes additionally an evaluation for the lower 60% of households by gross income as a robustness check, with the number of observations for this segment being higher than or very close to 30 for these countries except Finland. Besides, within the survey, about 30 or more observations constitute a non-negligible share of all observations on households with bank bonds in most countries. We refer explicitly to the results for the lower 60% of households if these are not roughly in line with those for the lower 50%.

Third, we add the 95% confidence interval for two main variables to allow a better assessment of the uncertainty inherent in the estimated results. We do so also for the below-60% quantile, in which case we thus have about 30 or more observations as the basis for the distribution.

In sum, these results stem from the best available data set on the distribution of households with bank bonds and provide quite a reliable view on the aggregate of EA-17 countries and on several important distributional aspects in individual countries.

### *The share of households with bank bonds in the total number of households*

In the EA-17, about 2.9 million of households hold bank bonds. This corresponds to 2.2% of all households. On a country level, *the share of the number of households with bank bonds in the number of all households* varies between these countries, ranging from 0.9% in Spain and Finland to about 2.5% in Austria, Belgium and Germany, almost 5.5% in Italy and even 12% in Malta. Clearly, bank bond holdings are an issue for a minority of households (see also Lindner and Redak, 2017).

### *The structure of the number of households with bank bonds by income and wealth levels*

*In the EA-17, within the total number of households with bank bonds*, about 25% have gross income below the respective national median gross income levels of all households (Table 1), while the share of households with bank bonds that have below-national-median gross income levels is at the lower level of 14% in Italy. In the other countries, this share is close to 30% in Austria, Belgium and Germany, and about 40% in Spain and Malta – with these results being corroborated by the values for the share of households with bank bonds that have below-national-60% gross income levels (see Charts 1a and 1b further below).

Thus, while bank bond holdings are an issue for a small minority of households, a non-negligible share of these households has total gross income below the median of all households. This finding may be explained by a substantial number of households of pensioners or elder people that have a comparatively low income (via the social security system) but at the same time some stock of gross wealth (via accumulated savings, including bank bond holdings) for their retirement period.

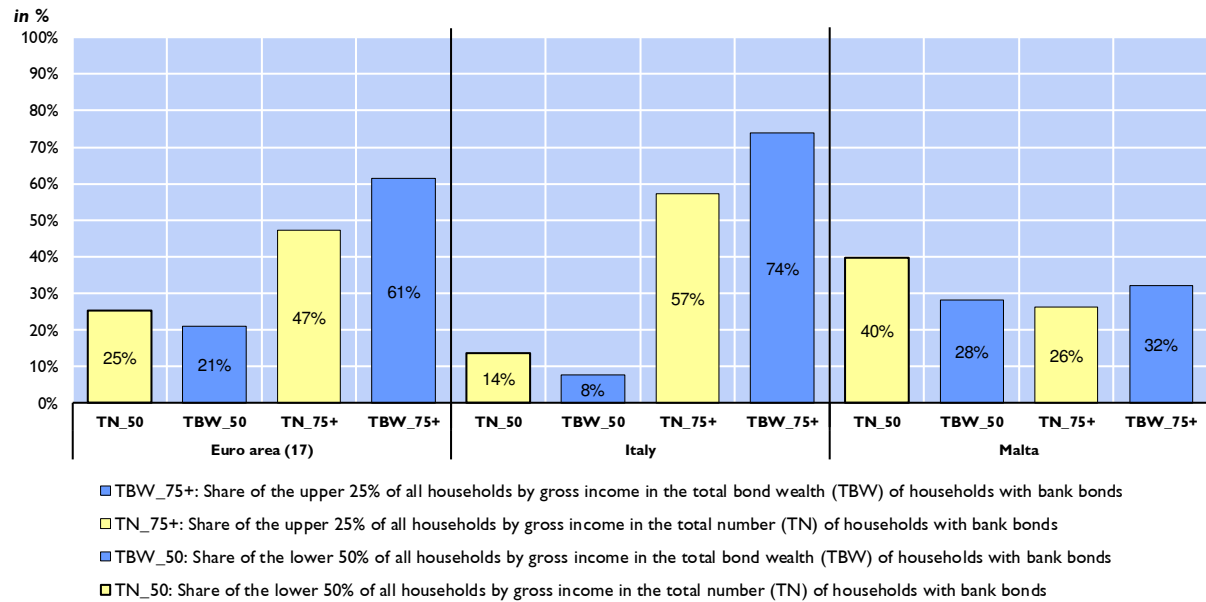
### *The structure of aggregate bond wealth of households with bank bonds by income*

In the EA-17, the *aggregate amount of bond wealth held by the aggregate of households with bank bonds that have below-national-median gross income levels* amounts to about 21% of the total volume of outstanding bonds held by all households with bank bonds. The corresponding share is below this average value in Italy and Spain, while it is above average in Malta and Germany – with the results for Spain and Germany being corroborated by the values for the share of households with bank bonds that have below-national-60% gross income levels (see Charts 1a and 1b here below).

Chart 1a and 1b:

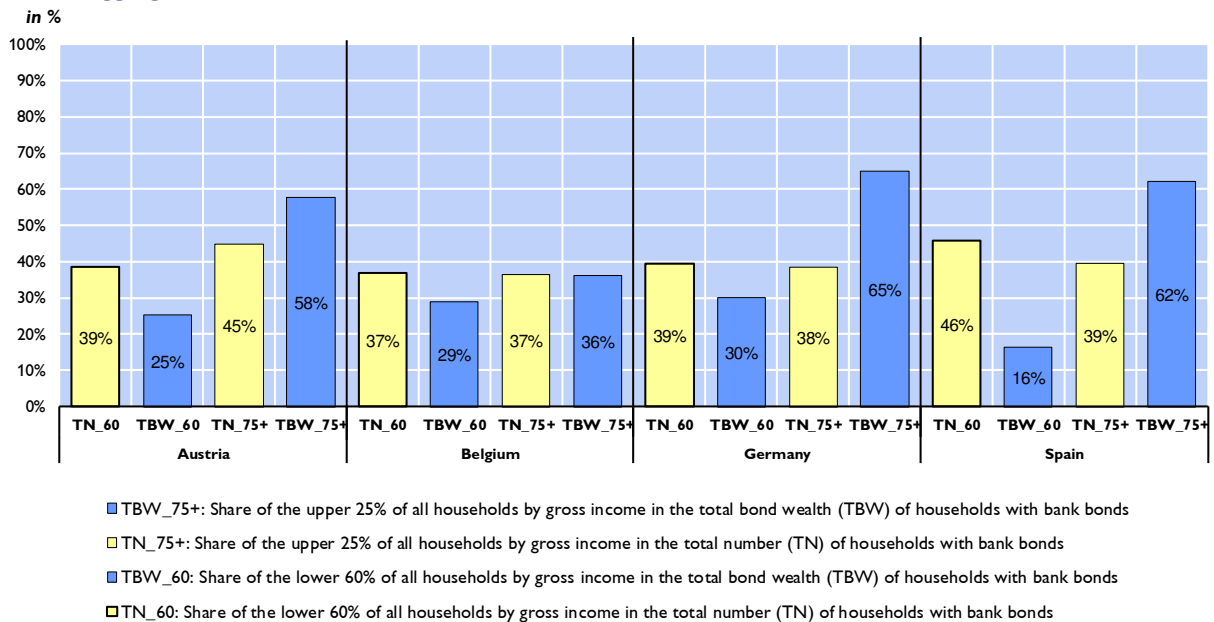
Structure of households with bank bonds by economy-wide income quantiles

**Share of the lower 50% and the upper 25%, respectively, of all households by gross income in the aggregate of households with bank bonds**



Source: HFCS 2016. Own calculations. Note: Countries where the number of observations for below-national-median-income households exceeds 30. For the Euro area, the income quantiles result from households belonging to the respective national income quantiles in their country.

**Share of the lower 60% and the upper 25%, respectively, of all households by gross income in the aggregate of households with bank bonds**



Source: HFCS 2016. Own calculations. Note: Countries where the number of observations for below-national-60%-income-level households is about 30.

### Relative importance of bond holdings of households with bank bonds by income

It is important to look at the relative significance that the average bond wealth has for households with bank bonds within the different quantiles of gross income of all households in the EA-17 and in the individual countries.

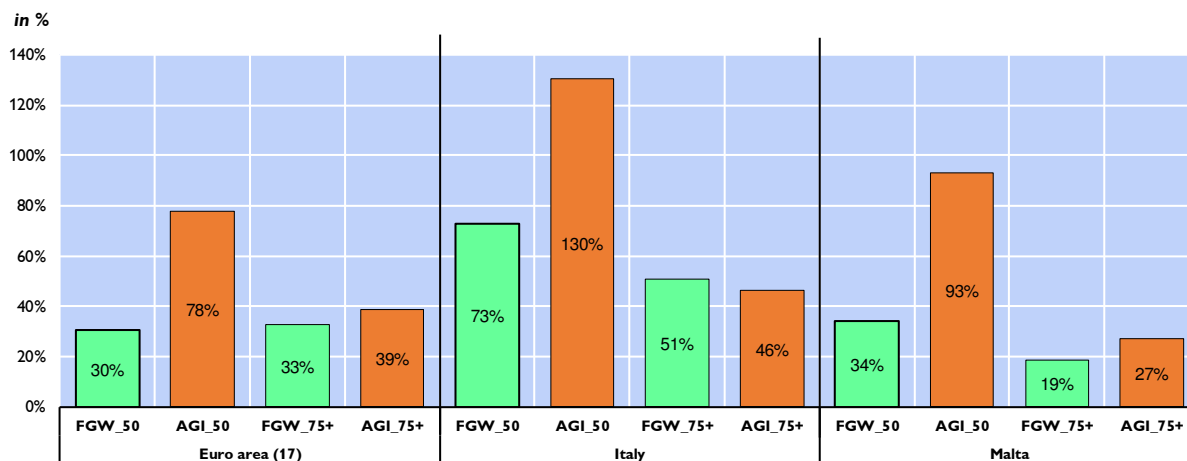
Looking at the income distribution (Table 1), in the EA-17 as well as in each individual country, it is striking that, *for those households with bank bonds that have below-national-median gross income levels, the share of their bond wealth in their financial gross wealth is on average (as measured by their median share) not negligible at all. Indeed, in the EA-17, for these households, bond wealth is a roughly equally as important part of total or financial gross wealth than for households with bank bonds that belong to the upper quartile of the respective national gross income distribution, reaching close to one third in both segments. In Italy and Spain, with a share of more than two thirds, bond wealth is an even more important part of financial gross wealth for below-median-income households with bank bonds than for upper-quartile-income households with bank bonds.*

At least as striking is the fact that in the EA-17 *the median of the ratio of bond wealth to annual gross income for below-median-income households with bank bonds stands at 78%. It is, hence, far higher than the corresponding median ratio of 39% for upper-quartile-income households with bank bonds. In Malta and Italy, for below-median-income households with bank bonds, the median ratio is as high as 93% and 130%, respectively, again higher than the respective median ratio for the upper-quartile-income households. In the other countries, for below-median-income households with bank bonds, the median ratio ranges from roughly 40% to 55%, each being much higher than the respective median ratio for the upper-quartile-income households with bank bonds, similar to the finding for the EA-17. The only exception is Germany where that ratio is roughly similar in both segments and relatively low at about 20%, when using for this comparison the statistically more reliable segment of households with bank bonds that belong to the lower national 60% of all households measured by gross income. See Charts 2a and 2b here below for an overview. Also these findings suggest that, among households with bank bonds, there is a substantial number of households (presumably of pensioners or elder people) that have comparatively low income (that is, gross income below the median of all households in the respective country), but at the same time a considerable stock of total gross wealth, including bank bond holdings, accumulated for their retirement period. Their stock of total gross wealth or financial gross wealth may be even larger than the respective national median levels.*

Chart 2a and 2b:

Vulnerability of households with bank bonds by economy-wide income quantiles

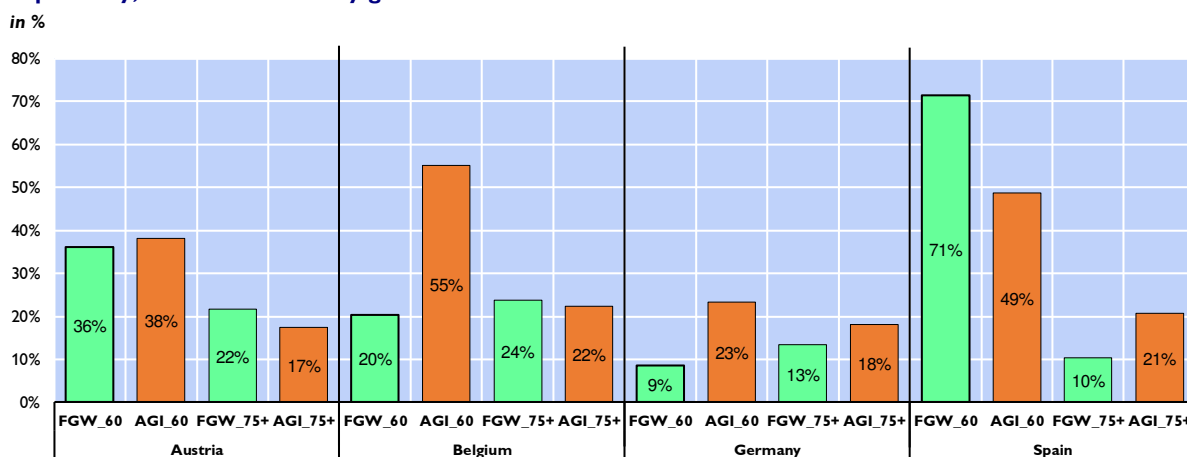
**Relative vulnerability of households with bank bonds that belong to the lower 50% and the upper 25%, respectively, of all households by gross income**



- AGI\_75+: Median ratio of bond wealth to annual gross income (AGI) of HH with bank bonds belonging to the upper 25% of all HH by gross income
- FGW\_75+: Median share of bond wealth in financial gross wealth (FGW) of HH with bank bonds belonging to the upper 25% of all HH by gross income
- AGI\_50: Median ratio of bond wealth to annual gross income (AGI) of HH with bank bonds belonging to the lower 50% of all HH by gross income
- FGW\_50: Median share of bond wealth in financial gross wealth (FGW) of HH with bank bonds belonging to the lower 50% of all HH by gross income

Source: HFCS 2016. Own calculations. Note: Countries where the number of observations for below-national-median-income households exceeds 30. For the Euro area, the income quantiles result from households belonging to the respective national income quantiles in their country.

**Relative vulnerability of households with bank bonds that belong to the lower 60% and the upper 25%, respectively, of all households by gross income**



- AGI\_75+: Median ratio of bond wealth to annual gross income (AGI) of HH with bank bonds belonging to the upper 25% of all HH by gross income
- FGW\_75+: Median share of bond wealth in financial gross wealth (FGW) of HH with bank bonds belonging to the upper 25% of all HH by gross income
- AGI\_60: Median ratio of bond wealth to annual gross income (AGI) of HH with bank bonds belonging to the lower 60% of all HH by gross income
- FGW\_60: Median share of bond wealth in financial gross wealth (FGW) of HH with bank bonds belonging to the lower 60% of all HH by gross income

Source: HFCS 2016. Own calculations. Note: Countries where the number of observations for below-national-60%-income-level households is about 30.



### Bond wealth

However, all the results presented above suffer from the shortcoming that the *HFCS output does generally not allow splitting the bond wealth held by households with bank bonds by the type of bonds* in order to distinguish between bank bonds, government bonds and corporate bonds.

*Fortunately, for Italy*, data on the average level of *bank* bond wealth held by households with bank bonds are available. Accordingly, average *bank* bond wealth amounts to about 90% of the average level of *total* bond wealth held by below-median-income households with bank bonds. The corresponding figure for households that belong to the upper quartile is only about two-third. This suggests that in particular below-median-income households that decided to invest into bank bonds (after ill advice) did not perceive any major difference between bank bonds and sovereign bonds in terms of safety and credit risk and thus made a very unidirectional bond asset allocation (see also Merler 2016a, 2016b).

#### Box 1: Households holding *only* bank bonds

Both in the EA-17 and in the individual countries the share of households with bank bonds that hold only bank bonds (and no other type of bonds, like in particular government bonds) within the total number of households with bank bonds is around 75%, except for Malta and Austria where it is around 50%.

Moreover, among households below the median level of gross income of all households in the respective national economies, the share of households that hold only bank bonds within the total number of households with bank bonds is not lower but rather slightly higher than for all income segments together in the EA-17 as well as in countries for which sufficient numbers of observations are available for statistically more reliable statements (Italy, Malta, Belgium, Spain).

The average level of bank bond wealth in households that hold only bank bonds amounts to between 70% and 95% of the average level of total bond wealth in households with bank bonds, except for Malta with a ratio of 45%. Looking at the distribution, the evidence for the EA-17 as well as Italy, Malta, Belgium and Spain shows that within the segment below the median level of gross income of all households in the respective national economies, this ratio is even higher than for all income segments together.

The non-negligible role of bank bonds for below-median-income households with bank bonds may be the result of insufficient financial education. The negative relation between income level and financial illiterateness has been shown for example by Silgoner et al. 2015. It is quite probable that some insufficiently informed clients have perceived bank bonds that banks offered to them as just another type of certified deposit or savings certificates, albeit certainly only a small minority of all insufficiently informed clients and of all below-median-income households have fallen into this trap (see also Eurointelligence 2015, Fubini 2015). Moreover, there are good reasons to believe that the widespread lack of risk perception with respect to (large) banks in the world before the effective regime change that was introduced by the bail-in rules was particularly strong among households with below-median income and hence higher financial illiterateness. Even more so, when considering the fact that there was quite some media coverage on the state-sponsored rescue of troubled banks in the wake of the global financial and economic crisis.

In this context, it follows that it is quite probable that the bank bond holdings of below-median-income households have a higher concentration on bonds issued by just one bank than bank bond holdings of upper-quartile-income households. As their bank bond holdings are likely to be insufficiently distributed across various banks, the below-median-income households tend to be more vulnerable than the upper-quartile-income households *ceteris paribus* – in particular, at the same ratio of bank bond wealth to financial gross wealth or gross income.

Finally, we note that the presented results relate only to direct holdings of bonds. One may argue that especially households with lower income tend to hold rather shares in pension funds or mutual funds than bonds. Their additional exposure resulting from the bank bond investment of these funds is not covered by the presented results. However, given the general degree of diversification of pension funds and mutual funds, the vulnerability of below-median-income households to these indirect bank bond holdings appears to be rather of secondary order.

Table 1: Bond holdings of households with bank bonds by economy-wide income quantiles

Table 1: Bond holdings by gross income quantiles													
		Number of observations on households with bank bonds	Number of households with bank bonds			Percentage of households with bank bonds relative to total number of households	Distribution structure: Share of quantile in total number of households with bank bonds	Distribution structure: Share of quantile in total bond wealth of households with bank bonds, total per quantile	Average bond wealth of households with bank bonds, mean per quantile, in Euro			Median share of BOND wealth in FINANCIAL gross wealth of households with bank bonds, per quantile	Median ratio of BOND wealth to gross INCOME of households with bank bonds, per quantile
			95%CI_low	Mean	95%CI_top				95%CI_low	Mean	95%CI_top		
EA	< 50%	295	551.479	745.770	940.061	1,1%	25%	21%	25.790	41.988	58.186	30,4%	77,7%
	>75%	798	1.210.683	1.389.680	1.568.718	4,2%	47%	61%	51.021	65.611	80.201	32,9%	38,7%
	Sum	<b>1.457</b>	<b>2.626.295</b>	<b>2.938.814</b>	<b>3.251.495</b>	<b>2,2%</b>	<b>100%</b>	<b>100%</b>	<b>42.168</b>	<b>50.556</b>	<b>58.944</b>	<b>31,8%</b>	<b>43,9%</b>
IT	< 50%	71	130.774	181.423	232.060	1,5%	14%	8%	20.648	27.896	35.144	72,7%	130,3%
	>75%	297	647.340	765.502	883.664	12,4%	57%	74%	46.949	63.506	80.063	50,8%	46,3%
	Sum	<b>528</b>	<b>1.199.690</b>	<b>1.335.335</b>	<b>1.470.979</b>	<b>5,4%</b>	<b>100%</b>	<b>100%</b>	<b>39.600</b>	<b>49.277</b>	<b>58.954</b>	<b>57,7%</b>	<b>58,8%</b>
MT	< 50%	48	5.758	7.742	9.725	9,7%	40%	28%	13.203	22.364	31.526	34,0%	93,2%
	>75%	35	3.671	5.135	6.600	12,9%	26%	32%	22.303	38.217	54.132	18,8%	27,0%
	Sum	<b>121</b>	<b>16.529</b>	<b>19.535</b>	<b>22.541</b>	<b>12,3%</b>	<b>100%</b>	<b>100%</b>	<b>23.743</b>	<b>31.293</b>	<b>38.844</b>	<b>31,2%</b>	<b>52,7%</b>
AT	< 50%	21	13.445	27.420	41.395	1,4%	30%	10%	3.275	13.265	23.254	19,3%	41,0%
	< 60%	28	19.842	35.175	50.510	1,5%	39%	25%	6.694	26.070	45.446	36,0%	38,2%
	>75%	31	23.617	40.837	58.057	4,2%	45%	58%	-3.772	51.388	106.548	21,7%	17,5%
	Sum	<b>70</b>	<b>65.624</b>	<b>91.113</b>	<b>116.598</b>	<b>2,4%</b>	<b>100%</b>	<b>100%</b>	<b>11.184</b>	<b>39.915</b>	<b>68.645</b>	<b>24,1%</b>	<b>32,4%</b>
BE	< 50%	28	19.053	36.698	54.340	1,5%	31%	19%	14.547	39.150	63.753	19,3%	62,5%
	< 60%	34	25.550	44.190	62.833	1,5%	37%	29%	22.308	48.757	75.206	20,4%	55,2%
	>75%	26	17.231	43.773	70.313	3,7%	37%	36%	8.813	61.305	113.797	23,8%	22,4%
	Sum	<b>72</b>	<b>76.487</b>	<b>119.676</b>	<b>162.865</b>	<b>2,5%</b>	<b>100%</b>	<b>100%</b>	<b>30.751</b>	<b>62.095</b>	<b>93.438</b>	<b>18,3%</b>	<b>22,6%</b>
DE	< 50%	20	140.643	314.009	487.376	1,6%	33%	29%	11.380	36.723	62.065	16,8%	80,1%
	< 60%	29	178.446	369.617	560.811	1,6%	39%	30%	10.496	32.565	54.633	8,6%	23,2%
	>75%	100	236.914	360.923	484.933	3,6%	38%	65%	34.293	72.299	110.305	13,3%	18,1%
	Sum	<b>154</b>	<b>678.539</b>	<b>938.183</b>	<b>1.197.786</b>	<b>2,4%</b>	<b>100%</b>	<b>100%</b>	<b>24.669</b>	<b>42.821</b>	<b>60.972</b>	<b>10,8%</b>	<b>14,5%</b>
ES	< 50%	26	11.219	68.788	126.366	0,8%	42%	15%	5.800	15.409	25.018	72,8%	49,8%
	< 60%	30	16.206	74.289	132.361	0,7%	46%	16%	6.691	15.524	24.356	71,4%	48,6%
	>75%	86	27.659	63.990	100.321	1,5%	39%	62%	13.300	68.611	123.921	10,4%	20,7%
	Sum	<b>132</b>	<b>92.465</b>	<b>162.272</b>	<b>232.078</b>	<b>0,9%</b>	<b>100%</b>	<b>100%</b>	<b>19.085</b>	<b>43.562</b>	<b>68.038</b>	<b>39,8%</b>	<b>38,9%</b>
FI	< 50%	14	1.616	4.104	6.593	0,3%	18%	6%	9.688	16.838	23.989	24,0%	74,5%
	< 60%	23	3.241	6.418	9.595	0,4%	28%	12%	12.579	22.642	32.705	24,0%	62,6%
	>75%	102	10.055	13.393	16.731	2,0%	58%	86%	37.979	78.898	119.817	11,8%	16,1%
	Sum	<b>141</b>	<b>18.216</b>	<b>23.088</b>	<b>27.961</b>	<b>0,9%</b>	<b>100%</b>	<b>100%</b>	<b>28.499</b>	<b>53.268</b>	<b>78.037</b>	<b>14,7%</b>	<b>20,4%</b>

Note: "EA" relates to an aggregate of 17 countries mostly from the euro area (see text).

Gray shaded cells: As a result of the relatively low number of observations (below 25), these values cannot be considered as statistically fully reliable.

Source: Household Finance and Consumption Survey (HFCS), 2nd wave. Own calculations.

#### 4 Selected features of some recent applications of “bail-in rules”

In recent years, there were several cases of applications of “bail-in rules”. Here, we briefly look at some recent prominent cases:

- Four small cooperative banks: Banca Marche, Cassa di Risparmio (Cari) Ferrara, Banca Popolare dell’ Etruria, Cari Chieti, Italy, in November 2015<sup>5</sup>
- Two small cooperative banks: Banca Popolare di Vicenza and Veneto Banca, Italy, June 2017
- Monte dei Paschi di Siena (MPS), Italy, in December 2016 to July 2017
- Banco Popular de España (BPE), Spain, in June 2017

Only in the case of MPS a precautionary recapitalization was conducted. It included state aid in the form of recapitalization support after burden-sharing via WDCC under state aid rules (European Commission 2017d, MPS 2017a, MPS 2017b).

To both the four small banks and to Banca Vicenza and Banca Veneto resolution under national law was applied, involving the bridge bank and AMV (asset management vehicle) tools in the former and the sale-of-business tool in the latter case. Both received state aid in the form of liquidation aid after burden-sharing via WDCC, conform to state aid rules and BRRD provisions. Regarding the assessment whether the resolution conditions were fulfilled in the case of Banca Vicenza and Banca Veneto, there was a striking difference between the SRB conclusion highlighting the lack of critical functions and the low risks to financial stability and the Italian authorities’ assessment of a serious adverse impact on the regional economy. It may be explained in such way that the SRB takes primarily a look at the levels of the euro area aggregate and the whole economy of any individual member state, while the national resolution authority focuses on the regional level, too. Moreover, the SRB had to take its decision with respect to the individual bank and its specific role, while the Italian authorities took into consideration the combined simultaneous (‘systemic’) effect. Based on this assessment, Banca d’Italia decided in favour of resolution under national law (‘Liquidazione Coatta Amministrativa’, Compulsory Administrative Liquidation) and considered national state aid necessary to facilitate it (European Commission 2015 and 2017b, Merler 2016a, Eurointelligence 2015, Fubini 2015; SRB 2017d, 2017e).

---

<sup>5</sup> Moreover, in July 2015, Banca Romagna Cooperativa (BRC), Italy, seems to have undergone orderly judicial liquidation, with losses limited to shares and capital instruments by receiving state aid in the form of liquidation aid (pseudo bail-in in terms of the footnote on page 7). All junior bonds were held by retail depositors. However, in a next step, these retail bondholders were reimbursed in full by the Italian mutual sector’s Institutional Guarantee Fund (IGF), which became, thus, the senior creditor of the liquidation estate (Merler 2016a).

In the case of BPE, the first-time-resolution action by the SRB involved the sale-of-business tool after WDCC under SRMR provisions, while no state aid had to be granted.

In all these cases, compensation payments were granted to quite a diverging extent. In the case of MPS, retail holders of junior bonds hit by the WDCC could apply for compensation if “they are victims of mis-selling and fulfil certain eligibility criteria”. The compensation consisted in the exchange of those shares that were received in the prior conversion of the subordinated Upper T2 floating rate bonds under the burden-sharing into fixed-interest senior MPS bonds. Each tenderer received the final pro rata allocation ratio of 92.3% of its nominal share value as senior debt securities on 24 November 2017 (European Commission 2017c, 2017d, MPS 2017a, 2017b, 2017c).

For the four small cooperative banks, an ex-post compensation mechanism was set up by the government under PM Matteo Renzi for retail investors in junior bonds hit by the WDCC. These retail investors were given the option to ask for a reimbursement of 80% of the sum spent to buy their junior bonds, provided that (a) they had bought before 12 June 2014; (b) they owned less than € 100 000 in property assets at the end of 2015; and (c) their 2014 annual income was below € 35 000. Thus, there was the offer by the government of a conditional partial compensation. The main motivation for the government to present such a tailored offer was the issue of mis-selling that can be interpreted as a shared responsibility of investors, banks and state institutions (Merler 2016b). Similarly, retail holders of junior bonds issued by Banca Vicenza and Banca Veneto and then hit by the WDCC were said to receive compensatory reimbursement “as in Etruria & co.” (Merler 2017).

By contrast, in the case of BPE, on 13 July 2017, the purchaser, Banco Santander, announced a €1.0 billion voluntary scheme to compensate retail investors, in view of all the legal and litigation issues involved. So-called ‘fidelity bonds’ would be issued, at no cost for them, to customers who (a) acquired BPE shares during a rights issue in May/June 2016, or (b) bought subordinated debt issued in 2011. Further conditions were that the customers (i) had their investments deposited in BPE or Banco Santander at the time of resolution; and (ii) agreed to waive the right to pursue legal actions against Banco Santander and to pledge to keep their deposits at the bank for seven years. The maximum nominal amount to be paid in form of loyalty bonds would be equivalent to the size of the investments, less the interest received in case of the subordinated debt securities. That is, for investments up to €100,000, made by some 99% of BPE clients who purchased shares in the May/June 2016 period and on aggregate covered nearly the total volumes issued, the compensation would amount to 100%.

These ‘fidelity bonds’ would pay 1 per cent interest annually and would be perpetual but redeemable after seven years, subject to the approval of the ECB (Eurointelligence 2017a, 2017b, Banco Santander 2017a, FT 2017c, 2017d). Thus, this compensation offer was quite comprehensive as it covered even CET1 instruments and it comprised most, albeit not all T2 volume outstanding. Until the end of the acceptance period on 7 December, eligible holders of about 78% of the aggregated amount on offer accepted and received ‘fidelity bonds’ on that same day (Banco Santander, 2017b).

## 5 Economic policy options

Our review of several prominent recent cases in which banking resolution law and/or state aid rules have been applied showed that by now “bail-in” in a broader sense as the exercising of power to require write-down or conversion into equity of non-equity claims did barely go beyond WDCC<sup>6</sup>. Thus, almost exclusively, financial instruments specifically designed for loss-absorption and no other liabilities like senior non-preferred bank bonds or senior unsecured bank bonds have been affected up to now. Nevertheless, we find that in all the very different cases under study some sort of compensation scheme for some or all retail investors was deemed necessary.

At a first glance, compensation seems to conflict with the BRRD provisions governing WDCC that explicitly state in Art.60(2): “*Where the principal amount of a relevant capital instrument is written down: no compensation is paid to any holder of the relevant capital instruments*”. In fact, this norm relates literally only to the write down and, hence, not to cases where the principal amount of AT1 or T2 is converted into CET1 shares (with these shares being possibly exchanged against senior bonds thereafter). Moreover, this norm may be interpreted as stating merely that the write-down as such shall not constitute a reason for any compensation. By contrast, in all the cases reviewed, past mis-selling was cited as the

---

<sup>6</sup> However, in March 2013, before the European Commission published its Banking Communication 2013 and the European Parliament and the Council adopted the BRRD and the SRMR, the Cypriot government implemented a significant bail-in of holders of subordinated bonds as well as of uninsured depositors of the two largest banks in Cyprus (Brown et al., 2018a). This unprecedented step was the result of tough negotiations of the government with the Eurogroup. Within two weeks before this bail-in, a proposal to impose a levy on all insured and non-insured deposits was agreed upon, but the parliament refused to implement it. In parallel to the bail-in, capital controls were introduced that limited cash withdrawal and transfers of bank deposits. The financial problems of these two banks resulted not only from the fiscal crisis of the Cypriot sovereign, but also from the impact of the private sector involvement (PSI) for Greek sovereign debt in 2011-2012 that was demanded by Greece’s official creditors. Based on a micro study using anonymized survey data, Brown, Evangelou and Stix (2018a, 2018b) showed that the unexpected bail-in shock to resident depositors had problematic short- and medium run effects.

underlying reason for compensation. At the same time, however, mis-selling was assumed for all or almost all retail holders, precisely to avoid a large number of individual litigations that aim at clarifying whether there was or not a mis-selling in the individual case.

It is striking, however, that there is no common standard as to how a compensation scheme should be designed so that the treatment of retail investors would happen in a comparable and fair manner. Thus, up to now, the drafting of compensation schemes has been primarily on an ad-hoc basis. Moreover, looking at the scope of bail-in in the strict sense, going beyond capital instruments like AT1 and T2 junior bonds, much stronger pressure for compensation has to be expected when a large number of retail holders of senior unsecured bank bonds will be involved. As shown in this study, the total volume of holdings of bail-in-able bonds by households is concentrated at a relatively small number of high-income and wealthy households, while a significantly large number of households with below-median income holds a relatively small part of the total volume – and for them these holdings are often not negligible in economic terms. Against this background, what should be the consequences for economic policy of having these vulnerable households as investors in bank bonds, given the objectives and conditions set out at the beginning?

*Several reasons speak in favor of addressing this issue and not to take a wait-and-see attitude*

First, there is a sizeable legacy stock of bank bonds that will not disappear so quickly: As of mid-2018, roughly 50% (or about € 1,050 billion) of the outstanding volume of non-covered euro area bank bonds was issued before 1 January 2016 and had a residual maturity of more than a year, mostly comprising several years (Bloomberg, 2018). Moreover, the next couple of years will be decisive whether negative cases of precedence with longer-lasting impact will emerge in the area of bank resolution.

Second, the application of later introduced bail-in rules to investments that were undertaken by these households prior to the entering in force of these rules is quite problematic, to say the least. For decades a completely different public perception and understanding with respect to the standing of banks and to the government's responsibility when banks are failing have prevailed. This public perception was significantly reinforced by governments' bank bail-outs in the wake of the global financial crisis 2008-2009, so that in particular households with higher levels of financial illiterateness undertook under-informed investments when being promised higher interest rates amidst an environment of low or even negative rates. In this setting, declaring their knowledge about the possibility of loss in one of the several forms they had to sign under MiFID I (if this Directive was effectively implemented at all across the

individual banks in the euro area), had a different meaning and implication than ex post in the world of real bail-in. It will probably take some time until the regime change towards bail-in will have trickled-down into risk-awareness and investment behavior by households so that they do not consider bank bonds as similarly safe as government bonds – contrary to corporate stocks. Thus, active re-positioning by these households in response to the introduction of bail-in rules cannot be expected either. In this context, it is not at all surprising that compensations have taken place in all cases under study, even though with quite a heterogeneous design and vastly differing scope (see Section 4).

Third, any wait-and-see attitude implies sizeable risks for the bail-in concept, because without having addressed properly the issue of below-median-income households with bank bonds, the risk is higher that: (a) Authorities aim at avoiding the application of bail-in, in particular of bail-in in the strict sense including senior unsecured bonds. (b) Any actual implementation of bail-in leads to a large public outcry by media and politics so that ultimately excessive compensation payments and no effective bail-in result – driven by the interest of top-tail households and populist politicians. (c) Case-specific diverging compensation schemes and thus very heterogeneous effective applications of bail-in rules emerge across the Banking Union, undermining the principle of equal treatment. (d) Negative cases of precedence and heterogeneous compensation schemes may provoke a large number of litigations, resulting in higher costs and undermining the rationale of resolution as a legal ‘fast-track procedure’.

The risk that authorities aim at avoiding the application of bail-in rules may not only materialize on an ad-hoc basis. Rather, it may materialize even as an element of the resolution planning phase, in which resolution authorities assess the feasibility and credibility of the resolution strategy put forward by an individual bank. In particular, the resolution authority should assess whether or not, in the event of bail-in, an exemption based on Art.44(3) of the BRRD or Art.27(5) of the SRM can be applied to the retail instruments (EBA & ESMA, 2018). According to Art.44(3)(c) BRRD, the resolution authority may exclude certain liabilities (like e.g. bank bonds held by retail investors) from the application of the write-down and conversion powers. The Commission Delegated Regulation 2016/860 provides further guidance by specifying the circumstances where such exclusion from bail-in is necessary under Art.44(3) BRRD. In Art.8(2)(b), it contains the following element that may be of particular importance when assessing a potential exemption for retail holdings: *‘the number of natural persons directly and indirectly affected by the bail-in, visibility and press coverage of the resolution action, insofar as that has a significant risk of undermining overall confidence in the banking or broader financial system’* (European Commission, 2016; EBA &



ESMA, 2018). Exempting *all* retail bank bonds from bail-in would not only be quite questionable from a social point of view and raise questions related to moral hazard and the deviation from the causation principle. In most cases, it would imply a size of exemption that would increase the risk that, in order to cover the expected loss, the resolution authority would be forced to resort to liabilities ranking more senior than or *pari passu* with the retail holdings, and that this would lead to a breach of the NCWO (no creditor worse off than under normal insolvency proceedings) principle. This would render the resolution strategy not credible. Hence, to preserve observation of the NCWO principle and achieve the objective of resolvability despite exemption of retail holdings, the resolution authority in its resolution plan would have to require often quite substantial amounts of additional issuance of MREL-eligible liabilities to other than retail investors (EBA & ESMA, 2018). Thus, exempting *all* retail bank bonds from bail-in when planning resolution would put that individual bank under additional funding stress and competitive disadvantage.

*Pro-active economic policy options how to address this issue*

First: Exemption from bail-in of banks bonds owned by vulnerable retail investors in the framework of resolution planning at the bank-specific level. According to Art.44(3)(c) BRRD the resolution authority may also *partially* exclude certain liabilities from bail-in if certain conditions are met, as specified by Art.8(2)(b) of the Commission Delegated Regulation 2016/860 cited above (European Commission, 2016; EBA & ESMA, 2018). Exempting retail bank bonds from bail-in *only partially*, namely to the extent that these are held by vulnerable households, would generally imply a considerably lower excluded aggregate volume of bank bonds and thus a far lower risk of breaching the NCWO principle than exempting *all* retail bank bonds from bail-in, as shown by our findings in Section<sup>3</sup>. As a precondition of this approach, resolution authorities would have to ensure that proper information on who the holders of particular bank liabilities are is readily available. The joint EBA and ESMA statement of May 2018 encourages them to do so (EBA & ESMA, 2018).

However, this option has some disadvantages. The complete exclusion from bail-in of bank bonds held by vulnerable households is not fully appropriate as it negates any type of co-responsibility of these households. Moreover, this bank-specific approach with tailor-made exemptions casts doubts on whether a uniform implementation for all vulnerable households in all EU member states would ultimately emerge. Even more so, as the current legal basis for this approach leaves quite substantial room for differing interpretations, and thus any decision faces non-negligible litigation risks.

Second: In a joint statement in May 2018, EBA and ESMA proposed that banks should apply MiFID II disclosure requirements, in particular Art.46(4) of the MiFID II Delegated Regulation, to address the legacy stock – investments in financial instruments undertaken before the resolution regime entered into force. The statement considers important that existing clients who already hold relevant financial instruments receive information on the potential treatment of such investments in resolution or insolvency by the initially distributing entity in written form (EBA & ESMA, 2018).

However, also this option faces several question marks and shortcomings. First, one may well doubt whether written communication with relatively difficult legal explanations is really sufficient to actually raise the risk awareness of less sophisticated investors and induce appropriate dispositions by households that are typically not actively-managing investors who change their bond positions prior to maturity. Second, we would like to pose a question mark on whether a uniform implementation in all EU member states by all banks that have issued bank bonds is fully realistic. Among other things, it is questionable whether all banks have sufficient data on the retail investors into their bank bonds and/or on the retail investors to which they initially distributed bank bonds in order to send such information letters. Third, spreading the information about the new risks of losses inherent to bank bonds, may provoke also uncertainty that goes beyond the client segment holding bank bonds. Thus, banks may be quite reluctant to actively pursue this approach.

*Proposal: Common rules on partial compensation to vulnerable households for legacy assets*

As an alternative policy option, we propose to include a targeted partial compensation scheme into the burden-sharing provisions in the Commission’s Banking Communication 2013 and into the BRRD/SRMR bail-in regime. For such set of additional harmonized rules, this proposal takes the compensation scheme applied in the case of the four small cooperative banks in Italy as a role model (see Section 4) and, thus, has the following salient features:

- First, the proposed compensation is a compensation for the loss resulting from the bail-in of bank debt securities that initially were purchased on the basis of an under-informed investment decision. Thus, it aims at safeguarding consumer protection.

However, the question arises how to verify the presence of under-informed investment decisions without triggering thousands of costly litigations, which, moreover, especially less wealthy investors are hardly capable of doing. We suggest introducing the legal assumption that investors that dispose of gross annual income and wealth below certain country-specific levels on a harmonized basis shall be deemed to have

been insufficiently financially educated to appropriately assess the higher risks of bank bonds when purchasing bank bonds in the prevailing regulatory and policy setting before the regime change towards bail-in. These investors would be given the right for compensation of such loss. Indeed, the negative relation between income level and financial illiterateness has been confirmed by various studies, like, for instance, by Silgoner et al. 2015.

The respective country-specific income level could be the median (50%-quantile) income level. Alternatively, it could be an even higher level, like the 60%-quantile, if the size of compensation is designed on a diminishing scale implying lower compensation with higher income to avoid cliff-effects (see the second bullet point here below). The respective country-specific wealth level could be four times the country-specific median income. As a result, the proposed compensation is a means-tested compensation that would be socially acceptable. Moreover, it would be economically efficient, as it would reduce total economic costs involved by large numbers of possible litigations. Thus, it would preserve the essence of resolution as a fast-track procedure that quickly (re-)establishes legal certainty, as opposed to normal insolvency proceedings.

- Second, it is a partial compensation as it takes into account a moderate haircut of, for instance, 20% on the nominal principal amount of any bank bond that was bailed-in. Thus, compensation would be given only to the extent that the loss on this bond resulting from the bail-in exceeds this haircut. This haircut should reflect first an assumed minimum degree of co-responsibility of the investor and second the fact that the investment into bank bonds has generally provided higher interest payments than bank deposits. The precise design of any eventual compensation scheme may include, in particular, a stepwise increase of the haircut with increasing income levels in order to avoid any cliff-effects. For instance, above the 40%-quantile, the haircut could start rising until the maximum country-specific income level under which a right for compensation will be granted is reached.
- Third, it is a compensation exclusively for holdings acquired before 1 January 2016 when the bail-in tool of the BRRD entered into force. Thus, this compensation aims at smoothing the regime change by tackling the issue of legacy assets. In this way, it helps managing the transition to the new world of bail-in. This exclusively backward application of the compensation should substantially reduce moral hazard. Certainly, it does not completely eliminate the possibility of moral hazard, as some holders

potentially benefiting from the compensation scheme may deliberately forego the management or timely sale of their bank bond holdings. However, the potential beneficiaries of compensation mentioned above do typically not belong to the type of active investors that speculate on compensation due to moral hazard considerations.<sup>7</sup>

From our point of view, on the one hand, such a well-targeted partial compensation scheme that is fixed ex-ante and delivers ex-post bail-in would have the advantage to save the bulk of the economic benefit of bail-in, as the vast majority of outstanding bank bond volumes are held by investors that would not qualify for this compensation scheme. The volumes of compensation would be relatively low when compared to the considerable larger volumes of total bail-in or to the volumes of bailed-in holdings for which no compensation may be granted. They are even less significant when compared to the sizeable volumes of public money potentially required for bail-out. On the other hand, such a compensation scheme would mitigate the social consequences of applying the bail-in tool and, hence, significantly enhance the political feasibility of its implementation. As a result, introducing such a compensation scheme into the Commission's Banking Communication burden-sharing provisions and into the BRRD provisions on resolution would not weaken the bail-in regime. Quite the contrary, it would strengthen the bail-in regime by facilitating its application through making the bail-in rules more acceptable in social and political terms, while preserving the bulk of their economic benefit. In other words, incorporating such a targeted partial compensation into the general bail-in approach would serve well achieving the overarching objective of minimizing overall economic costs in expected value terms, as it would reduce the political risk or likelihood of having an effective bail-out for all retail investors as an alternative outcome. In this vein, it is worth noting that strong advocates of bail-in, like Financial Times commentator Martin Sandbu in its column 'Free Lunch' on the challenge posed by the banking sector for the new Italian government, see an extended version of the compensation scheme put in place under Matteo Renzi as a necessary complementary element of the bail-in approach (Sandbu 2018).

Such a compensation scheme would not blur the 'fundamental difference' (Merler 2016b) between financial investments and deposits, which enjoy a comprehensive 100% coverage up to €100,000 by the DGS. Moreover, it would not imply continuing permanently 'a developing European tradition that privileges a group of investors not because of where they stand in a

---

<sup>7</sup> An anonymous referee suggested not limiting compensation to legacy assets. While it is true that insufficiently financially educated people do rather not take moral hazards deliberately, they may follow ill advice. From our point of view, for extending the proposed targeted compensation beyond legacy assets, we would see at least the necessary condition that the minimum haircut mentioned under the second bullet point would be set substantially higher to prevent moral hazard.

company's capital structure but because of who they are' (FT 2017d). Rather, there would be, first, a bail-in according to the position in the bank's capital structure and, second, a limited compensation not granted permanently to all retail investors, but transitory (as it relates only to holdings acquired before 2016) and targeted (as it is means-tested on a well-founded basis).

Turning to the question how to finance the compensation pay-outs, one may argue that there was often a co-responsibility of public institutions for the ancien régime of government-sponsored bank bail-outs and the lack of resolution tools for a viable alternative route. This environment has been conducive to under-informed investment decisions in the past. From this point of view, there is a case for public money to get involved. In particular, accumulated contributions by banks to the resolution fund may serve as financing source. Financing of compensation could be made dependent on the type of burden sharing or resolution tool. While public money could play a role in the case of burden sharing for precautionary recapitalisation under state aid rules, the compensation amount could be included in the purchaser's transfer price when applying the sale-of-business tool under resolution.

Looking forward, we do see a role for retail investors in the bank bond market, even though an investment in bank bonds bears generally a higher level of risks than an investment in government bonds. Why should retail investors be prevented from buying bank bonds when they are allowed buying bank shares? However, transparent and comprehensive information on potential risks of these instruments is needed already at the point of investment. Together with the general trickle-down of knowledge and understanding of the new regime of bail-in, this would contribute to prevent further wide-spread taking of under-informed investment decisions by retail investors. For this purpose, the statement published by ESMA in June 2016 on how credit institutions and investment firms (with respect to their portfolio management activities) should inform clients on the risks inherent in bail-in-able instruments was already helpful (ESMA, 2016). Moreover, the entering into force of MiFID II on 1 January 2018 and the joint EBA and ESMA statement highlighting the implications of MiFID II provisions for new issuances of bail-in-able instruments to retail investors should make a difference.

Finally, while we are convinced that the proposed well-targeted partial compensation rules with respect to legacy assets would help facilitate an efficient application of the bail-in tool, there are certainly also other potential hurdles to bail-in that have to be tackled. The most prominent example would be the issue of cross-holdings within the banking sector. This could be addressed, for instance, by broadening the limits for bank holdings of bail-in able bank debt securities issued by G-SIBs to those issued by non-G-SIBs (at least, O-SIIs).

## 6 Conclusions

Our empirical investigation shows that in the euro area the number of households with bank bonds that have income levels below the median income of all households in their respective country is not at all negligible – it amounts to about 25% of the total number of households with bank bonds. Nor is the relative vulnerability to bail-in of these below-national-median-income households negligible, as in the euro area the share of their bond wealth in their financial gross wealth is on average about one third, with even considerably higher figures for individual countries. In addition, for these below-national-median-income households with bank bonds in the euro area, the median of the ratio of bond wealth to annual gross income stands at close to 80%. It is, hence, far higher than the corresponding median ratio of close to 40% for households with bank bonds that belong to the upper quartile of the respective national gross income distribution. At the same time, these below-median-income households with bank bonds tend to have higher levels of financial illiterateness. Their share in total bond holdings of households with bank bonds is comparatively low.

Our stock-taking of current rules involving a requirement of some type of ‘bail-in’ and their application in recent cases in Italy and Spain, with a focus on the treatment of retail bond holders, shows that by now bail-in has barely gone beyond the write-down and conversion of capital instruments, given the exclusion of senior bonds. Otherwise, these recent applications of bail-in-rules were quite diverse with respect to legal basis, scope and purpose (precautionary recapitalisation, resolution, liquidation). Even so, in all these cases, some sort of compensation scheme for retail investors was implemented, varying widely in design, but mostly benefiting almost all retail holders. Hence, in two most prominent cases, there was no effective bail-in of retail holders.

Against this background, we discuss potential consequences in terms of economic policy options and, following a lesser-known example from Italy, we propose EU harmonized partial compensation rules for socially more vulnerable retail holders of bank debt securities acquired before 2016. Our proposal would render implementation of bail-in socially more acceptable, politically more feasible and economically more efficient, preserving the bulk of its economic benefit. During the time of transition until household investment behaviour concerning bank bonds will have fully adapted to the new world of bail-in, the proposed compensation rules would help avoid effective non-application of bail-in that otherwise results from excluding senior bonds and/or granting excessive compensation. In this way, we think that the European bail-in regime can learn from Italy in a comprehensive manner, namely from both what went wrong and what went well in Italy.

## References

**Banco Santander. 2017a.** Santander announces a commercial action for retail customers affected by the resolution of Banco Popular. July 13.

**Banco Santander. 2017b.** Material Fact – Results of the Public Tender Offer. December 15.

**Bloomberg. 2018.** Amount outstanding of non-covered bank bonds issued by euro area banks, filtered by issue date and maturity date.

**Brown, M., I. Evangelou, H. Stix. 2018a.** Banking Crises, Bail-ins and Money Holdings. Central Bank of Cyprus Working Paper. January.

**Brown, M., I. Evangelou, H. Stix. 2018b.** Banking Crises, Bail-ins and Money Holdings. VOX, CEPR's Policy Portal. February.

**Eurointelligence. 2015.** How far is Italy away from a full-blown banking crisis? December 14.

**Eurointelligence. 2017a.** The Popular law suits. June 29.

**Eurointelligence. 2017b.** How much was Popular really worth?. July 3.**European Banking Authority (EBA) and European Securities and Markets Authority (ESMA). 2018.** Statement of the EBA and ESMA on the treatment of retail debt holdings of debt financial instruments subject to the Bank Recovery and Resolution Directive. May 30.

**European Central Bank (ECB). 2017.** Opinion on a proposal for a directive of the European Parliament and of the Council on amending Directive 2014/59/EU as regards the ranking of unsecured debt instruments in insolvency hierarchy (CON/2017/6), 8.3.2017.

**European Commission. 2015.** State aid: Commission approves resolution plans for four small Italian banks Banca Marche, Banca Etruria, Carife and Carichieti. Press Release. November 22.

**European Commission. 2016.** Commission Delegated Regulation (EU) 2016/860 of 4 February 2016 specifying further the circumstances where exclusion from the application of write-down or conversion powers is necessary under Article 44(3) of Directive 2014/59/EU of the European Parliament and of the Council establishing a framework for the recovery and resolution of credit institutions and investment firms. February 4.

**European Commission. 2017a.** State aid: Commission approves the sale of three Italian bridge banks to UBI Banca. Daily News. May 2.

**European Commission. 2017b.** State aid: Commission approves aid for market exit of Banca Popolare di Vicenza and Veneto Banca under Italian insolvency law, involving sale of some parts to Intesa Sanpaolo. Press Release. June 25.

**European Commission. 2017c.** Statement on Agreement in principle between Commissioner Vestager and Italian authorities on Monte dei Paschi di Siena (MPS). Press Release. June 1.

**European Commission. 2017d.** State aid: Commission authorises precautionary recapitalisation of Italian bank Monte dei Paschi di Siena. Press Release. July 4.

**European Union (EU). 2014a.** Bank Recovery and Resolution Directive.

**European Union (EU). 2014b.** Single Resolution Mechanism Regulation.

**European Securities and Markets Authority (ESMA). 2016.** Statement on MiFID practices for firms selling financial instruments subject to the BRRD resolution regime. ESMA/2016/902. June 2.

**Financial Stability Board (FSB). 2011a.** Consultative Document. Effective Resolution of Systemically Important Financial Institutions. Recommendations and Timelines. July 19.

**Financial Stability Board (FSB). 2011b.** Key Attributes of Effective Resolution Regimes for Financial Institutions. October..

**Financial Stability Board (FSB). 2014.** Key Attributes of Effective Resolution Regimes for Financial Institutions. Update. 15 October 2014.

**Financial Stability Board (FSB). 2015.** Principles on Loss-absorbing and Recapitalisation Capacity of G-SIBs in Resolution. Total Loss-absorbing Capacity (TLAC) Term Sheet. November 9.

**Financial Times (FT). 2017c.** Santander launches €1bn scheme to cover retail investors' Banco Popular losses. <https://www.ft.com>. July 13.

**Financial Times (FT). 2017d.** Santander: the drowned and the saved. <https://www.ft.com>. July 14.

**Freudenthaler, D. 2016.** Write-down or conversion of capital (WDCC) instruments. In: World Bank Group Financial Sector Advisory Center (FinSAC): Understanding bank recovery and resolution in the EU – A guidebook to the BRRD. 99-103.

**Freudenthaler, D. and P. Lintner. 2016.** Conditions for Taking Resolution Action and the Adoption of a Resolution Scheme. In: World Bank Group Financial Sector Advisory Center



(FinSAC): Understanding bank recovery and resolution in the EU – A guidebook to the BRRD. 104-110.

**Fubini F. 2015.** Obbligazioni bancarie. In: Corriere della Sera. December 13, p.11.

**Götz, M. and T. Tröger. 2016.** Should the marketing of subordinated debt be restricted/different in one way or the other? What to do in the case of mis-selling? White Paper No. 35. SAFE – Sustainable Architecture for Finance in Europe. Goethe University.

**Household Finance and Consumption Survey (HFCS). 2016a.** The Household Finance and Consumption Survey: results from the second wave. Statistics Paper 18. European Central Bank.

**Household Finance and Consumption Survey (HFCS). 2016b.** The Household Finance and Consumption Survey: methodological report for the second wave. Statistics Paper 17. European Central Bank.

**Jennings-Mares, J. 2016.** The bail-in tool. In: World Bank Group Financial Sector Advisory Center (FinSAC): Understanding bank recovery and resolution in the EU – A guidebook to the BRRD. 111-120.

**Lindner, P. and V.-M. Redak. 2017.** The resilience of households in bank bail-ins. In: OeNB Financial Stability Report 33. 88-101.

**Merler, S. 2016a.** Four small banks: Resolution via bridge bank and asset management vehicle tools to avoid full bail-in (2015). In: World Bank Group Financial Sector Advisory Center (FinSAC): Bank Resolution and “Bail-in” in the EU: Selected Case Studies Pre and Post BRRD. 38-44.

**Merler, S. 2016b.** Italy’s bail-in headache. Blog Post. In: <http://bruegel.org/2016/07>. Retrieved on July 20, 2016.

**Merler, S. 2017.** A tangled tale of bank liquidation in Venice. Blog Post. In: <http://bruegel.org/2017/06>. Retrieved on June 28, 2017.

**Metz, V., K. Richter, P. Weiss, B. Rottensteiner, D. Unterkofler, J. Langthaler and P. Pechmann. 2016.** Minimum requirement for own funds and eligible liabilities (MREL) – initial assessment for Austrian banks and selected subsidiaries in the EU. In: OeNB Financial Stability Report 31. 82–95.

**Monte dei Paschi di Siena (MPS). 2017a.** Press release: BMPS: European Commission approves the 2017-2021 Restructuring Plan. 5 July.

**Monte dei Paschi di Siena (MPS). 2017b.** Press release: BMPS: The Ministry of Economy and Finance issues burden-sharing and capital increase measures for the precautionary recapitalization. 29 July.

**Monte dei Paschi di Siena (MPS). 2017c.** Press release: BMPS: Voluntary partial public offering for exchange and settlement – Final results. 23 November.

**Pigrum, C., T. Reininger and C. Stern. 2016.** Bail-in: who invests in noncovered debt securities issued by euro area banks? In: OeNB Financial Stability Report 32. 101-119.

**Sandbu, M. 2018.** Why Five Star should love bail-in. Free Lunch – your global economics briefing. Financial Times. March 19.

**Silgoner, M., B. Greimel-Fuhrmann and R. Weber. 2015.** Financial literacy gaps of the Austrian population. In: Monetary Policy & The Economy. Q2/15. p.43.

**Single Resolution Board (SRB). 2017a.** The Single Resolution Board adopts resolution decision for Banco Popular. June 7.

**Single Resolution Board (SRB). 2017b.** Notice summarising the effects of the resolution action taken in respect of Banco Popular Español pursuant to Article 29(5) SRMR. June 7.

**Single Resolution Board (SRB). 2017c.** Decision of the Single Resolution Board in its Executive Session of 7 June 2017 concerning the adoption of a resolution scheme in respect of Banco Popular Español, S.A., ... addressed to FROB. Non-confidential version. June 7.

**Single Resolution Board (SRB). 2017d.** Notice summarising the effects of the resolution action taken in respect of Veneto Banca S.p.A. June 23.

**Single Resolution Board (SRB). 2017e.** Notice summarising the effects of the resolution action taken in respect of Banca Popolare di Vicenza S.p.A. June 23.

**Vermeulen, P. 2016.** Estimating the Top Tail of the Wealth Distribution. American Economic Review. Vol. 106, No 5. 646-650.

## **Index of Working Papers:**

June 15, 2015	Anil Ari	202	Sovereign Risk and Bank Risk-Taking
June 15, 2015	Matteo Crosignani	203	Why Are Banks Not Recapitalized During Crises?
February 19, 2016	Burkhard Raunig	204	Background Indicators
February 22, 2016	Jesús Crespo Cuaresma, Gernot Doppelhofer, Martin Feldkircher, Florian Huber	205	US Monetary Policy in a Globalized World
March 4, 2016	Helmut Elsinger, Philipp Schmidt- Dengler, Christine Zulehner	206	Competition in Treasury Auctions
May 14, 2016	Apostolos Thomadakis	207	Determinants of Credit Constrained Firms: Evidence from Central and Eastern Europe Region
July 1, 2016	Martin Feldkircher, Florian Huber	208	Unconventional US Monetary Policy: New Tools Same Channels?
November 24, 2016	François de Soyres	209	Value Added and Productivity Linkages Across Countries
November 25, 2016	Maria Coelho	210	Fiscal Stimulus in a Monetary Union: Evidence from Eurozone Regions
January 9, 2017	Markus Knell, Helmut Stix	211	Inequality, Perception Biases and Trust
January 31, 2017	Steve Ambler, Fabio Rumler	212	The Effectiveness of Unconventional Monetary Policy Announcements in the Euro Area: An Event and Econometric Study
May 29, 2017	Filippo De Marco	213	Bank Lending and the European Sovereign Debt Crisis
June 1, 2017	Jean-Marie Meier	214	Regulatory Integration of International Capital Markets

October 13, 2017	Markus Knell	215	Actuarial Deductions for Early Retirement
October 16, 2017	Markus Knell, Helmut Stix	216	Perceptions of Inequality
November 17, 2017	Engelbert J. Dockner, Manuel Mayer, Josef Zechner	217	Sovereign Bond Risk Premiums
December 1, 2017	Stefan Niemann, Paul Pichler	218	Optimal fiscal policy and sovereign debt crises
January 17, 2018	Burkhard Raunig	219	Economic Policy Uncertainty and the Volatility of Sovereign CDS Spreads
February 21, 2018	Andrej Cupak, Pirmin Fessler, Maria Silgoner, Elisabeth Ulbrich	220	Exploring differences in financial literacy across countries: the role of individual characteristics and institutions
May 15, 2018	Peter Lindner, Axel Loeffler, Esther Segalla, Guzel Valitova, Ursula Vogel	221	International monetary policy spillovers through the bank funding channel
May 23, 2018	Christian A. Belabed, Mariya Hake	222	Income inequality and trust in national governments in Central, Eastern and Southeastern Europe
October 16, 2018	Pirmin Fessler, Martin Schürz	223	The functions of wealth: renters, owners and capitalists across Europe and the United States
October 24, 2018	Philipp Poyntner, Thomas Reininger	224	Bail-in and Legacy Assets: Harmonized rules for targeted partial compensation to strengthen the bail-in regime