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Shifts in the portfolio holdings
of euro area investors
in the midst of COVID-19:
looking-through investment funds

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Abstract

We study the impact of the COVID-19 shock on the portfolio exposures of euro area investors. The analysis "looks-through" holdings of investment fund shares to first gauge euro area investors' full exposures to global debt securities and listed shares by sector at end-2019 and to subsequently analyse the portfolio shifts in the first and second quarters of 2020. We show important heterogeneous patterns across asset classes and sectors, but also across euro area less and more vulnerable countries. In particular, we find a broad-based rebalancing towards domestic sovereign debt at the expense of extra-euro area sovereigns, consistent with heightened home bias. These patterns were strongly driven by indirect holdings – via investment funds – especially for insurance companies and pension funds, but levelled off in the second quarter. On the contrary, for listed shares we find that euro area investors rebalanced away from domestic towards extra-euro area securities in both the first and the second quarter, which may be associated with better relative foreign stock market performance. Many of these shifts were only due to indirect holdings, corroborating the importance of investment funds in assessing investors' exposures via securities, in particular in times of large shocks. We also confirm the important intermediation role played by investment funds in an analysis focusing on the large-scale portfolio rebalancing observed between 2015 and 2017 during the ECB's Asset Purchase Programme.

Non-technical summary

The unprecedented health measures introduced in the first quarter of 2020 to contain the COVID-19 pandemic unleashed a severe financial shock. The latter had a striking impact on euro area financial markets, with far-reaching consequences across countries and sectors. Against this background, this paper studies the portfolio shifts and rebalancing of euro area investors' holdings and exposures in the first two quarters of 2020. In order to achieve this goal, the paper proposes a method of "looking-through" the holdings of investment fund shares by euro area investors, so that a clearer picture of their full exposures is attained.

There are two main reasons why looking through investment funds is a relevant exercise. First, from a structural point of view, as some euro area sectors have large holdings of investment fund shares. Second, euro area investment funds played an important role in the developments in financial flows amidst the COVID-19 shock, with a stark retrenchment in their cross-border holdings in the first quarter of 2020, followed by an almost equally sized rebound in the second quarter. Additionally, almost all euro area sectors reduced their exposures to other securities via investment funds in the first quarter of 2020, while increasing it again in the second quarter.

The COVID-19 shock unleashed intra-euro area fragmentation dynamics in March, on account of safe haven and flight-to-quality behaviour, whereby sizeable outflows from debt securities issued by more vulnerable euro area countries – Greece, Italy, Portugal and Spain – were recorded, while less vulnerable countries – i.e. Austria, Belgium, Finland, France, Germany and the Netherlands – experienced significant inflows. Furthermore, less vulnerable countries generally resort heavily to domestic investment funds, whereas more vulnerable countries transact more with those based in other euro area countries. Considering these differences between the two groups, the analysis focuses on less and more vulnerable euro area countries, presenting their direct – i.e. attained without recourse to investment funds – and indirect – i.e. attained via investment funds – exposures to securities at the end of 2019, before delving into the changes in the first two quarters of 2020, amid the COVID-19 shock.

In broad terms, our estimates show that euro area investors tend to resort proportionally more to investment fund shares when they invest in listed shares than to debt securities. Moreover, they highlight a high heterogeneity across sectors regarding their direct and indirect exposure structure. On the one hand, a significant share of pension funds', insurance companies' and households' overall exposures are attained via investment fund shares, which for the latter may be the result of the lower level of investor sophistication typically associated to this sector; on the other hand, banks' exposures are mostly via

direct holdings, especially when it comes to debt securities.

To assess the shifts in exposures of the different sectors in the first and second quarters of 2020, we use a regression approach, which combines a set of gravity variables, standard in the literature, with a battery of geography and issuer sector dummies. Focusing on debt securities and starting with the shifts observed in the first quarter of 2020, there was a widespread re-orientation towards domestic sovereigns at the expense of extra-euro area sovereigns, strongly driven by indirect holdings for some sectors, in both less and more vulnerable euro area countries, in an environment of a general sell-off of the latter securities by foreign investors. In the second quarter of 2020, however, these shifts came to a halt and for some sectors investment in non-domestic debt securities resumed, against the backdrop of the stabilisation seen in financial markets. In listed shares, euro area investors rebalanced away from domestic towards extra-euro area securities in the first quarter of 2020, which is the opposite of what was observed for debt securities, and was strongly driven by indirect holdings. In contrast to debt securities, these investment patterns largely continued in the second quarter of 2020.

What can explain the difference in rebalancing patterns between debt securities and listed shares? On the one hand, the rebalancing from non-euro area securities towards domestic debt securities is consistent with heightened home bias and a reduction in foreign currency risk in times of crises. It is well documented that home bias tends to be higher in debt securities than equities – in part due to foreign currency risk. Furthermore, investors may have an incentive to buy domestic debt to the extent they are positively discriminated vis-à-vis foreign investors, since they have a lower probability of being negatively affected in a default episode; domestic investors may also buy domestic debt due to moral suasion. On the other hand, the rebalancing towards non-euro area listed shares may have been driven by the better relative stock market performance in non-European indices (in particular in the US) and the fact that, in the second half of the first quarter of 2020, Europe was at the centre of the pandemic's developments with strong containment measures being enacted. Moreover, the literature suggests that mutual funds, when facing returns below average, tend to retrench from those countries in which they are positioned overweight.

In a final exercise, we apply our "look-through" framework to the rebalancing observed during the most intense phase of the ECB's Asset Purchase Programme (APP) from early-2015 to end-2017. The results of this exercise show that euro area investors increased their exposure to securities issued by non-residents, which was heavily driven by indirect holdings for most sectors. Thus, the main vehicle to increase exposures to extra-euro area debt during the APP period, was precisely the one used to reduce these exposures during the COVID-19 shock: indirect holdings via investment fund shares.

1 Introduction

The unprecedented health measures introduced in the first quarter of 2020 to contain the COVID-19 pandemic unleashed a severe financial shock. The latter had a striking impact on euro area financial markets, with far-reaching consequences across countries and sectors. Against this background, this paper studies the portfolio shifts and rebalancing in euro area investors' holdings and exposures in the first two quarters of 2020. In order to achieve this goal, the paper proposes a method of "looking-through" the holdings of investment fund shares by euro area investors, so that a clearer picture of their full exposures is attained.

There are two main reasons why looking through investment funds is a relevant feature. First, from a structural point of view, looking through the holdings of investment funds to assess the exposures of euro area sectors is relevant as some sectors have large holdings of investment fund shares. Figure 1 displays the proportion of investment fund shares in the aggregate security portfolios of euro area sectors: pension funds are the sector with the highest allocation in investment fund shares, followed by insurance companies and households, as well as investment funds themselves. In contrast, banks, other financial intermediaries and non-financial corporations exhibit relatively low allocations.

Second, euro area investment funds played an important role in the developments in financial flows amidst the COVID-19 shock, with a stark retrenchment in their cross-border holdings in the first quarter of 2020, followed by an almost equally sized rebound in the second quarter. Figures 2a and 2b display Securities Holding Statistics (SHS) data, which, unlike balance of payments data, also include domestic transactions. Starting with the asset side, these show that most of the pro-cyclical deleveraging and the subsequent rebound were carried by investment funds followed, by a long distance, by insurance companies. In terms of instruments, investment funds executed net sales of debt securities, listed shares and investment fund shares in the first quarter of 2020, and made net purchases of these instruments with very similar magnitudes in the second quarter. Banks, on the other hand, had a counterbalancing effect in the first quarter, taking on both foreign and domestic debt securities. In the second quarter these net purchases by banks increased even further. Moving to the liability side of investment funds, Figure 2b focuses solely on transactions of euro area residents in investment fund shares. It shows that all euro area sectors – with the exception of pension funds – reduced their exposures to other securities via investment funds in the first quarter of 2020, while increasing it again in the second quarter. In turn, this points to the usefulness of trying to determine the indirect exposures via investment funds of other euro area sectors, in order to be able to have a better idea of how these portfolio shifts took

place.[1] Figure 2b also shows that the overwhelming portion of the transactions were in investment funds shares issued in the euro area, either domestically or in other euro area countries, mainly in Ireland and Luxembourg. Transactions in non-euro area investment fund shares by euro area investors were mostly residual, which is to be expected, given the low relative exposure of euro area investors to investment funds located outside the euro area.

Monthly balance of payments data highlight the intra-euro area fragmentation dynamics set off in March, on account of safe haven and flight-to-quality behaviour, whereby sizeable outflows from debt securities issued by more vulnerable euro area countries – Greece, Italy, Portugal and Spain – were recorded, while less vulnerable countries – i.e., Austria, Belgium, Finland, France, Germany and the Netherlands – experienced significant inflows – see Figure 3b. These debt inflows persisted and grew even larger in the second quarter, while more vulnerable countries' debt outflows declined in April, before turning into net inflows in June.

On the asset side, net sales of equity, which also encompass investment fund shares, were recorded for both groups of countries in March and were particularly large in the case of the less vulnerable countries – see Figure 3a. In both groups of countries, net purchases of equity were recorded since April, while net purchases of debt were recorded in March and throughout the second quarter. As regards the asset side, SHS data offer a more complete picture: Figures 4 and 5 – broken down by less and more vulnerable investor countries – show the role of euro area investment funds in the retrenchment-rebound dynamic in the first half of 2020, both in terms of the size of flows in investment fund shares and in that most of these flows were vis-à-vis euro area-based investment funds. However, there are clear differences between the two groups of countries, including the fact that less vulnerable countries resorted heavily to domestic investment funds, whereas more vulnerable countries transacted more with those based in other euro area countries, which also reflects the fact that more vulnerable countries have, on average, much lower shares of exposure to domestic investment funds (around a third in end-2019, whereas that of less vulnerable countries was closer to two thirds). Considering the aforementioned differences between the two groups, the analysis focuses on less and more vulnerable euro area countries, presenting their direct and indirect exposures to securities at the end of 2019, before delving into the changes in the first two quarters of 2020, amid the COVID-19 shock.[2]

In broad terms, our analysis shows that investors tend to resort proportionally more to investment fund shares when they invest in listed shares than in debt securities. Moreover, they highlight a high

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[1]This prominent role of investment funds is corroborated by Bergant et al. (2020), who find that, in response to the Eurosystem's APP, some sectors, of which households stand out, rebalanced their portfolios from domestic and other euro area debt securities towards foreign debt via their holdings of investment fund shares.

[2]See Lane (2020a), Lane (2020b) and Lane (2020c).

heterogeneity across sectors regarding their direct and indirect exposures structure. On the one hand, a significant share of pension funds', insurance companies' and households' overall exposures are attained via investment fund shares, which for the latter may be the result of the lower level of investor sophistication typically associated to this sector; on the other hand, banks' exposures are mostly via direct holdings, especially when it comes to debt securities. These idiosyncratic differences point to the need to explore the patterns of exposures at the sectoral level instead of at the aggregate level. The latter is further reinforced by the differentiated behaviour that sectors have in response to returns – see, for instance, Adrian and Shin (2010), Adrian and Shin (2013), Timmer (2018) and Bergant and Schmitz (2020) – as well as the need to comply with certain regulatory requirements, which apply to some sectors. [3]

To assess the shifts in exposures of the different sectors in the first and second quarter of 2020, we use a regression approach, which combines a set of gravity variables, standard in the literature, with a battery of geography and issuer sector dummies. There are a number of interesting general points to be made from the results. First, a "reversion to the mean" effect is present, especially in the case of debt securities, whereby the larger exposures at the end of 2019 were the most reduced during the first quarter of 2020. Second, many of the observed portfolio shifts were only due to the component of indirect exposures, corroborating the importance of investment funds in providing exposure of sectors to securities and in adjusting those exposures.

Third, focusing on debt securities and starting with the shifts observed in the first quarter of 2020, there was a widespread re-orientation towards domestic sovereigns at the expense of extra-euro area sovereigns, strongly driven by indirect holdings for some sectors, in both less and more vulnerable euro area countries, in an environment of a general sell-off of the latter securities by foreign investors. The picture is not so clear-cut when it comes to securities issued by banks and non-financial corporations (NFC), with some sectors reducing their exposures to securities issued by foreign banks and increasing to securities issued by NFC, across the different geographies. In the second quarter of 2020, however, these shifts came to a halt and even, in the case of some sectors, investment in non-domestic debt securities resumed, against the backdrop of the stabilisation seen in financial markets.

Fourth, moving to listed shares, euro area investors rebalanced away from domestic towards extra-euro area securities in the first quarter of 2020, which is the opposite of what was observed for debt securities, and was strongly driven by indirect holdings. In contrast to debt securities, these investment

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[3]For other studies, which explore sectoral patterns, see, for instance, Bergant et al. (2020), Giofré (2013), Roque and Cortez (2014), Galstyan et al. (2016), Boermans and Vermeulen (2019) and Galstyan and Velic (2018).

patterns largely continued in the second quarter of 2020. What can explain the difference in rebalancing patterns between debt securities and listed shares? On the one hand, the rebalancing from non-euro area securities towards domestic debt securities is consistent with heightened home bias and a reduction in foreign currency risk in times of crises. It is well documented that home bias tends to be higher in debt securities than equities – in part due to foreign currency risk (Fidora et al., 2007). Furthermore, Broner et al. (2014) argue that investors may have an incentive to buy domestic debt to the extent they are positively discriminated vis-à-vis foreign investors, since they have a lower probability of being negatively affected in a default episode; domestic investors may also buy domestic debt due to moral suasion.[4] On the other hand, the rebalancing towards non-euro area listed shares may have been driven by the better relative stock market performance in non-European indices (in particular in the US) and the fact that, in the second half of the first quarter of 2020, Europe was at the centre of the pandemic's developments with strong containment measures being enacted. What is more, this behaviour is in line with Broner et al. (2006), who find that mutual funds, when facing returns below average, tend to retrench from those countries in which they are positioned overweight.

In a final exercise, we apply our "look-through" framework to the rebalancing observed during the most intense phase of the ECB's Asset Purchase Programme (APP) from early-2015 to end-2017. The results of this exercise show that euro area investors increased their exposure to securities issued by non-residents, which was heavily driven by indirect holdings for most sectors. Thus, the main vehicle to increase exposures to extra-euro area debt during the APP period, was precisely the one used to reduce these exposures during the COVID-19 shock: indirect holdings via investment fund shares.

The remainder of the paper is organised as follows: Section 2 presents the methodology used to look through the holdings of investment fund shares and Section 3 shows the descriptive results of the look-through approach. Our empirical approach is introduced in Section 4, the results of the regression exercise are discussed in Section 5; Section 6 focuses on the period of the ECB's APP; finally, Section 7 concludes.

2 Estimation of indirect portfolio exposures

The method to look through investment fund holdings of euro area investors broadly follows Carvalho (2020). While in this study the focus was on the geography of holdings, we extend the focus to also include the issuer sectors of securities as well as their currency of denomination.

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[4]See also Broner et al. (2010) and Altavilla et al. (2017).

For that purpose, the Eurosystem's Securities Holdings Statistics (SHS) by sector are used, which contain highly granular security-level information on the holdings, valued at market prices, of debt securities, listed shares and investment fund shares of euro area investors, aggregated by institutional sectors.[5] It should be noted that this dataset represents a subset of euro area sectors' complete portfolio, to the extent that it does not include unlisted shares – in this sense, listed shares are taken as a proxy for the whole of the equity instrument class. [6]

The following sectors are considered and their holdings are accordingly aggregated at the euro area country-sector level: deposit taking corporations except central banks, which corresponds to banks (B); money market and non-money market investment funds (IF); insurance corporations (IC); pension funds (PF); other financial institutions excluding financial vehicle corporations (OFI); non-financial corporations (NFC) and households (HH).

The first step towards "looking-through" is to compute the distribution of holdings by investment funds. Money-market and non-money market funds are pooled together into a single investment fund sector.[7]

This is done for the holdings of each instrument class and gives $w_{hc,IF,t}^{ic,a,is,c}$, i.e., the weight of asset class a, denominated in currency c, issued by issuer sector is of issuer country ic, in total investment fund (IF) holdings resident in euro area country hc, in period t. It should be noted that investment funds also hold investment fund shares (funds of funds) and therefore, in this step, these weights are computed for debt securities, listed shares, and also investment fund shares.

The second step is to compute the IF share holdings of each sector, in each euro area country and in each period of time. These are given by $h_{hc,hs,t}^{ic,IFS,IF,c}$, where hs stands for holder sector, the asset is investment fund shares (IFS), and the remaining super- and subscripts have the same interpretation as before. There is, however, one element which is unknown: the holdings of investment funds which are resident outside the euro area. In order to allocate these amounts, it is assumed that the distribution of these holdings corresponds to the average of that of Luxembourgian and Irish resident investment funds, which tend to be representative of global investment funds. Accordingly, that average is given by $\bar{w}_{hc,IF,t}^{ic,IFS,IF,c}$, where hc includes Luxembourg and Ireland.[8]

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[5] Data for other EU countries that do not belong to the euro area are also available; however, these countries participate only on a voluntary basis, as opposed to euro area countries, for which the collection of this data is compulsory. In practical terms, the availability of data for the EU countries not belonging to the euro area is more restricted and, in general, of inferior quality.

[6] For more information on the SHS, see (ECB, 2015)

[7] In this pooled investment fund sector non-money market investment funds accounted for 92% of the overall holdings at end-2019.

[8] The potential bias introduced by this assumption is deemed not to be significant since the vast majority of investment fund shares held by euro area sectors is issued by investment funds resident in the euro area, for which the distribution is

For this reason, one needs to separate the investment fund share holdings of a euro area country-sector vis-à-vis other euro area countries — $h_{hc,hs,t}^{ic=EA,IFS,IF,c}$, which we allocate on issuer-country by country basis — and non-euro area countries — $h_{hc,hs,t}^{ic \neq EA,IFS,IF,c} = \sum_{ic \notin EA} h_{hc,hs,t}^{ic,IFS,IF,c}$, which we allocate as single block of non-euro area issuer countries.

With all these elements, the estimated holdings of a given holder country hc of asset class a, denominated in currency c, issued by issuer sector is, vis-à-vis issuer country ic, in period t, is given by:

$$\hat{h}_{hc,hs,t,1}^{ic,a,is,c} = h_{hc,hs,t}^{ic=EA,IFS,IF,c} \times w_{hc,IF,t}^{ic,a,is,c} + h_{hc,hs,t}^{ic \neq EA,IFS,IF,c} \times \bar{w}_{hc,IF,t}^{ic,IFS,IF,c} \tag{1}$$

Due to the existence of funds of funds, this process is not able to distribute the whole investment fund shares holdings of a given country-sector pair in a single go. Therefore, a residual is attained, which is the difference between the observed holdings of investment fund shares per holding country-sector pair and the estimated figures, i.e. $\widehat{RES}_{hc,hs,t,1}^{ic,IFS,IF,c} = \sum_{ic} h_{hc,hs,t}^{ic,a,is,c} - \hat{h}_{hc,hs,t,1}^{ic,a,is,c}$. For this reason, the procedure is repeated, this time allocating only the residual:

$$\hat{h}_{hc,hs,t,2}^{ic,a,is,c} = \widehat{RES}_{hc,hs,t,1}^{ic=EA,IFS,IF,c} \times w_{hc,IF,t}^{ic,a,is,c} + \widehat{RES}_{hc,hs,t,1}^{ic \neq EA,IFS,IF,c} \times \bar{w}_{hc,IF,t}^{ic,IFS,IF,c} \tag{2}$$

This process is repeated until the residual is minimal — in practice, five rounds are sufficient to arrive at a residual which is about 0.1% of the original investment fund share holdings of each country-sector pair. Finally, the total estimated figures for debt instruments and listed shares are given by

$$\hat{h}_{hc,hs,t}^{ic,a,is,c} = h_{hc,hs,t}^{ic,a,is,c} + \hat{h}_{hc,hs,t,1}^{ic,a,is,c} + ... + \hat{h}_{hc,hs,t,5}^{ic,a,is,c} \tag{3}$$

We refer to $h_{hc,hs,t}^{ic,a,is,c}$ as the direct component of the investment of a given holding country-sector pair in asset class a (i.e., excluding the exposures held via investment funds) and $\hat{h}_{hc,hs,t,1}^{ic,a,is,c} + ... + \hat{h}_{hc,hs,t,5}^{ic,a,is,c}$ as the indirect component (i.e., the exposures held via investment funds).

There are two caveats to our approach: the first is that the information in SHS data does not cover all investment fund assets, but only their portfolio investment holdings. For instance, SHS has no information on non-financial assets (such as real estate) held by euro area investment funds. Nevertheless, the instrument classes that are covered by the SHS make up for the bulk of the assets held by investment funds. In fact, according to the ECB's investment fund statistics, at the end of 2019, the share of debt

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known. In fact, at end-2019, the average non-euro area share in total investment fund share holdings of euro area country-sectors was under 11%. For the countries which feature most prominently in this study – on the one hand, Austria, Belgium, Finland, France, Germany, the Netherlands and, on the other hand, Greece, Italy, Portugal and Spain – the share was even less than 6%.

securities, equities and investment fund shares in the aggregate balance sheet of euro area investment funds was slightly above 85%, with loans and deposits, non-financial assets and other assets accounting for the remainder.

The second caveat relates to the assumption that investors across euro area countries have the same preferences across issuing countries of investment fund shares, in terms of those funds' portfolio allocations. In practice this means that for investment fund shares issued by investment funds resident in Luxembourg, we need to assume that German investors hold fund shares issued by investment funds with the same asset composition as those held by French residents. The same applies for the different sectors, i.e., banks may invest predominantly in certain Irish investment funds, which are distinct from the choices of Irish investment funds made by pension funds. The concerns raised by these assumptions are partially alleviated by the findings in Monti and Felettigh (2008), who report that estimates of indirect holdings are not significantly affected by the assumption that they follow the overall distribution of Irish and Luxembourgian investment funds, compared to a more detailed estimation, where the investment strategy of the individual investment funds in which Italian residents invest is known.

3   Descriptive evidence on direct and indirect holdings

Direct and indirect holdings of less and more vulnerable euro area countries to debt securities are displayed, respectively, in Figures 6a and 6b, and listed shares in Figures 7a and 7b.

In general, indirect exposures tend to be more relevant in the case of listed shares than for debt securities. To the extent that home bias is lower in equity investment (see Fidora et al. (2007) on the reasons for lower home bias in equity as opposed to debt securities) it may render it more efficient to rely on investment funds to enter more distant markets/securities which carry higher information costs. Analogously, the lower information costs associated with bonds and in particular for sovereigns (which are present in fixed income markets only) may explain higher levels of direct exposures. Moreover, indirect exposures are much higher for foreign securities, in particular extra-euro area instruments. This implies that traditional estimates of home bias tend to be overestimated, as they do not take into account exposures via indirect holdings.

At the sectoral level, it is evident that those sectors with higher proportions of investment fund shares in their total portfolio have, mechanically, higher shares of indirect exposures. This is, for instance, the case for households which, in less vulnerable countries, have indirect exposures to debt securities which dwarf their direct exposures. The latter is in line with the relatively lower level of sophistication of this

sector, which implies a higher propensity to resort to investment funds to attain international portfolio diversification. In the same vein, insurance companies, in both groups of countries, have larger indirect than direct exposures to listed shares, while pension funds from less vulnerable countries rely heavily on investment funds to obtain exposure to foreign debt securities and listed shares. On the contrary, banks have relatively small holdings of investment fund shares, which is why their indirect exposures are only a fraction of the direct holdings.

4 Empirical approach

We focus on the geography and issuer sector dimension of euro area portfolio investments. Accordingly, we use the following empirical approach, based on Galstyan and Lane (2013), but in a more dis-aggregated fashion:

$$\Delta ln(h_{hc,hs}^{ic,a,is}) = ln(h_{hc,hs}^{ic,a,is}) + \alpha_{hc}^1 + \alpha_{ic,is}^2 + \beta^1 \gamma_{hc,ic} + \beta^2 \eta_{hi} + \varepsilon_{hi,t} \tag{4}$$

where $\Delta ln(h_{hc,hs}^{ic,a,is})$ is the difference in the log of the direct, indirect or estimated exposures, of holder country hc and holder sector hs to asset class a, of issuer country ic, issued by issuer sector is.

We consider two different periods to analyse the impact of the COVID-19 episode: (i) from end-2019 to the end of the first quarter of 2020 ("shock period") and (ii) from the end of the first quarter to the end of the second quarter of 2020 ("rebound period"). We control for host country, source country and issuer sectors: holder country (α_{hc}^1) and issuer country/sector ($\alpha_{ic.is}^2$) dummies are included, in order to remove common trends and valuation effects, thereby ensuring that what remains is only the country-sector bilateral variation.[9]

In addition, three sets of controls are included in the regressions:

- $ln(h_{hc,hs}^{ic,a,is})$ is the log of the outstanding direct, indirect or estimated exposure at end-2019 and used to control for the pre-existing (i.e. before the COVID-19 shock) level of a sector's investment.

- a set of gravity variables γ_{hi}, including the logarithms of bilateral distance and bilateral imports, as well as dummies for shared language (definitions and sources of these data are described in the appendix).

- a set of dummies η_{hi}, controlling for domestic exposures – i.e., whenever the holder country coincides

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[9]In order to focus only on non-trivial holdings, as well as to avoid potential bias, exposures smaller than €1 million were excluded.

with the issuer country – exposures vis-à-vis euro area less vulnerable countries – i.e, whenever the issuer countries are Austria, Belgium, Finland, France, Germany and the Netherlands, and excluding domestic exposures – exposures vis-à-vis euro area more vulnerable countries – Greece, Italy, Portugal and Spain – and exposures to the remaining non-euro area countries. Due to the lack of gravity variables, the portfolio exposures to some territories were reclassified and included within larger ones – the list of reclassifications is also provided in the appendix – and, for the same reason, exposures to debt issued by international organisations was excluded. In most cases, these exposures are relatively small, except for the cases of non-EU European financial centres (such as Guernsey, Jersey and Lichtenstein), territories vis-à-vis which euro area residents tend to have larger exposures.

5 Results: portfolio shifts during the COVID-19 pandemic

This section present the results obtained for the COVID-19 period, first for debt securities and then listed shares. In both cases, it starts by looking at the COVID-19 shock period for the whole set of the euro area countries, investors resident in less vulnerable countries and those resident in the more vulnerable countries, followed by an equivalent analysis for the "rebound" period.

5.1 Debt securities: shock period

5.1.1 All euro area countries

The estimation results for debt securities are presented across the different holding sectors, i.e. banks, OFI, IC, PF, NFC and HH and show the drivers of shifts in direct, indirect and total exposures during the first quarter of 2020. While the main focus is on the results for sector-geographical dummies (i.e. issuance by banks, governments and non-financial corporations, respectively, resident in the domestic economy, euro area less vulnerable and more vulnerable countries as well as outside the euro area, respectively), we first present the findings for the control variables outlined in equation (4).

Table 1 shows the results for all euro area countries for shifts in holdings of debt securities. In line with Galstyan and Lane (2013) and Mehl et al. (2019) for the global financial crisis, there is a significant "reversion to the mean" effect across almost all exposures and investor sectors, implying that those positions that were larger at the end of 2019, were most reduced during the first quarter of 2020; moreover, there is evidence that distance matters, in particular for direct holdings: banks, OFI, IC and HH reduced positions more in remote locations. Interestingly, shifts in indirect positions were also

negatively affected by distance in the case of banks, OFI and PF.

As regards geography and issuer sectors, the striking general feature emerges that rebalancing patterns were more significant once shifts in indirect exposures are included in the analysis. The strongest rebalancing in 2020Q1 affected sovereign debt securities: all euro area sectors rebalanced towards domestic sovereign debt which, in the case of banks and HH, was driven by direct exposures, while for OFI and NFC this pattern only emerges once indirect exposures are considered. Similarly, all euro area sectors rebalanced away from sovereign debt issued outside the euro area, which was driven by indirect holdings for banks, OFI and NFC, while for all other sectors indirect exposures were also significant. Hence, the re-orientation towards domestic sovereigns at the expense of extra-euro area sovereign debt was a remarkable feature of the rebalancing observed during the first quarter of 2020, and goes even beyond the patterns predicted by gravity. Plausibly, this pattern was driven by flight-to-safety considerations (Lane, 2020a), home and familiarity biases as well as anticipation of valuation gains from an increased size of asset purchases programmes by the ECB (as observed before the APP, see Bergant et al. (2020)). Furthermore, Broner et al. (2014) argue that investors may have an incentive to buy domestic debt to the extent they are positively discriminated vis-à-vis foreign investors, since they have a lower probability of being negatively affected in a default episode; domestic investors may also buy domestic debt due to moral suasion.[10]

Less clear-cut pictures are found for issuance by banks and NFC: OFI and HH rebalanced away from debt securities issued by banks resident outside the euro, and consistently so across direct and indirect holdings. There is some evidence of a rebalancing into debt securities issued by NFC, in particular for IC (into domestic and other euro area debt, driven by indirect exposures) and for NFC (across all geographic locations and partly due to indirect exposures).

5.1.2 Less vulnerable euro area countries

Next, we zoom in on portfolio shifts in debt securities of the less vulnerable euro area countries (Table 2). Increased total exposures to domestic sovereign debt is found for most sectors, with the exception of banks and NFC. For the other sectors this is driven by indirect exposures, while for HH also direct exposures contribute. Moreover, there was a shift towards sovereign debt issued in other euro area countries (both vulnerable and less vulnerable countries) for all sectors, except for banks. In the cases of OFI, IC, PF and NFC this was exclusively due to indirect holdings. A rebalancing away from non-euro area sovereign debt is found for most sectors (except for NFC and HH) and driven by indirect exposures for banks and

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[10]See also Broner et al. (2010) and Altavilla et al. (2017).

IC.

Investors from less vulnerable countries (except for banks) also increased significantly their exposures to domestic and less vulnerable euro area countries' banks. Again this is driven by indirect holdings. For debt securities issued by NFCs, HH and IC increased their total exposures significantly across all geographical dimensions (mainly due to indirect holdings), while banks, NFC and OFI concentrated their expansion on domestic and other NFC debt of less vulnerable countries.

5.1.3 More vulnerable euro area countries

Compared to the less vulnerable countries, there is generally less evidence of significant rebalancing in debt securities during 2020Q1 for the more vulnerable countries, as can be seen in Table 3. Shifts in exposures were mainly focused on sovereign debt. Most strikingly, exposures to domestic sovereign debt increased across the board (largely via indirect holdings), in an environment of a general sell-off of these securities by foreign investors (see Figure 3b). Exposures to other euro area sovereign debt increased only for IC (directly towards debt issued by less vulnerable countries) and HH (via indirect holdings both for less and more vulnerable countries). As for the less vulnerable countries, there was a reduction in exposures to sovereign debt issued outside the euro area (mainly via indirect for banks, IC, PF and NFC as well as directly and indirectly for HH).

As regards holdings of debt issued by banks, the clearest results are found for HH: exposures to domestic and less vulnerable bank debt increased, while those toward extra-euro area banks declined (all driven by indirect holdings). Among debt securities issued by NFC, mainly PF were active, by rebalancing into domestic and less vulnerable securities, while reducing exposures to extra-euro area NFCs (the latter entirely due to indirect exposures).

5.2 Debt securities: rebound period

There are stark differences between the shock and the rebound period, when financial conditions eased markedly compared to the initial COVID-19 shock of the first quarter. Specifically, there is no longer a common discernible pattern indicative of increased home bias or flight-to-safety (Table 4). Having said this, it is striking that euro area investors exposures to euro area sovereign debt remained roughly unchanged during this quarter, in spite of the large-scale net purchases by the ECB, possibly induced by the large volume of net issuance of euro area sovereign debt to finance governments' crisis response.

At the same time, HH and IC increased their exposure to extra-euro area sovereign debt – partly via indirect holdings – and thereby reversing some of the rebalancing undertaken in the first quarter, and also

to extra-euro area debt securities issued by NFC. A common feature across sectors is, to some extent, a decreasing exposure to debt securities issued by non-euro area resident banks, largely via direct holdings.

In less vulnerable countries (Table 5) the most significant shifts are visible for OFI and HH, which increase their non-domestic exposures to bank and NFC debt, as well as sovereign, in the case of OFI. Importantly, these increases are due to indirect holdings. As regards more vulnerable countries, mostly IC, and to a lesser extent HH, display the same rebound patterns as for the euro area as whole, namely towards non-euro area sovereign and NFC debt (Table 6).

All in all, this evidence is in line with the significant improvement observed in financial markets in the second quarter of 2020, against the backdrop of the comprehensive measures undertaken by fiscal and monetary authorities. Regarding the latter, the deployment of the ECB's Pandemic Emergency Purchase Programme (PEPP) proved instrumental in restoring the functioning of markets and considerably reducing heightened risk aversion (Lane, 2020b).

5.3 Listed shares: shock period

5.3.1 All euro area countries

Starting with all euro area countries, Table 7 shows a significant "reversion to the mean" effect in listed shares (as also found for debt securities). However, in the case of listed shares, it is only significant for shifts in total exposures (for banks, OFI and PF). Moreover, distance matters less than for debt as it only affected the total holdings of IC (via direct exposures).

In terms of issuing sectors, only banks and NFC are relevant for listed shares. For both issuing sectors, there is evidence of a rebalancing away from domestic towards extra-euro area securities, which is the opposite of the general trend observed for debt securities. Banks are the only holding sector for which this rebalancing is exclusively driven by shifts in direct holdings. For other sectors reducing exposures to domestic banks and domestic NFC is at least partly driven by shifts in indirect holdings (IC, PF, NFC, HH). At the same time, there was a strong rebalancing by all sectors (except for banks) towards extra-euro area bank shares, sometimes solely driven by indirect holdings (OFI, NFC and HH). Even more so, this is visible in the rebalancing towards non-euro area shares issued by NFC, to which exposures increased for all sectors, which was driven by indirect holdings for banks, OFI, NFC and HH.

The rebalancing towards non-euro area listed shares may have been driven by the better relative stock market performance in non-European indices (in particular, in the US) and the fact that, in the second half of the first quarter of 2020, Europe was at the centre of the pandemic's developments with strong

containment measures being enacted. What is more, this behaviour is in line with Broner et al. (2006), who find that mutual funds, when facing returns below average, tend to retrench from those countries in which they are positioned overweight.

5.3.2 Less vulnerable euro area countries

Table 8 presents the equivalent results for investors from the less vulnerable euro area countries. Interestingly, for these countries there was a broad-based rebalancing by all sectors (except for banks) into the listed shares of domestic banks (i.e. the opposite of what was found in Table 7 for the entire universe of euro area investors) and into shares issued by banks from other less vulnerable euro area countries. In both cases these are almost exclusively driven by indirect holdings. At the same time, all sectors also increased their exposures to shares of banks resident outside the euro area, which for OFI, IC, NFC and HH was entirely driven by indirect holdings. Banks, on the other hand, increased their exposure to banks' shares issued by more vulnerable euro area countries, while OFI and IC reduced their exposure to these institutions.

Investors from the less vulnerable euro area countries, strongly rebalanced into listed shares issued by non-domestic NFC. For banks, OFI, IC, NFC and HH this was exclusively driven by indirect holdings, while for PF also direct holdings contributed. At the same time, HH and IC rebalanced away from domestic NFCs (if indirect holdings are included).

5.3.3 More vulnerable euro area countries

Table 9 shows the rebalancing in listed shares during 2020Q1 for the more vulnerable euro area countries. As regards bank shares, IC, PF and HH rebalanced away from domestic banks (due to indirect holdings), while the same sectors plus NFC increased their exposures to less vulnerable euro area and extra-euro area bank shares.

All these sectors also rebalanced into non-domestic NFC listed shares (both euro area and extra-euro area). As for the less vulnerable countries, this was largely due to indirect holdings, in particular for IC and NFC.

5.4 Listed shares: rebound period

In listed shares, the overarching patterns observed in the first quarter are also visible in the rebound period. The results for all euro area countries (Table 10) show that the large majority of sectors continued to increase their exposures to non-euro area listed shares (both issued by banks and NFC) at the expense

of domestic listed shares. These patterns are once more driven to a large degree by indirect holdings, in particular for NFC and HH. At the country group level, the results are very much in line, with only few changes compared to the first quarter.[11]

6   Results: portfolio shifts during the 2015-2017 APP episode

The analysis presented in the previous section offered a granular and nuanced view of the rebalancing patterns observed amid the COVID-19 shock and in the subsequent "rebound" quarter, particularly highlighting investor heterogeneity and the large role played by indirect holdings via investment funds. The question, emerges if similar patterns can also be observed by "looking-through" the large-scale portfolio rebalancing observed in response to the ECB's Asset Purchase Programme (APP) in the period 2015Q1 to 2017Q4 (Coeure, 2017).

The ECB announced, on 18 March 2020, the Pandemic Emergency Purchase Programme (PEPP), to counter the risks to the monetary policy transmission mechanism and the deterioration of the outlook for the euro area posed by the COVID-19 shock outburst. The first purchases took place on 26 of March, very close to the end of the first quarter (four working days). Although PEPP is similar, in nature, to the Asset Purchase Programme (APP), announced in early-2015 to support the monetary policy transmission mechanism and provide the amount of policy accommodation needed to ensure price stability, there are, however, important differences. On the one hand, the universe of eligible assets under PEPP is wider, as it includes (i) securities issued by the Greek Government; (ii) non-financial commercial paper (iii) public sector securities with a residual maturity of ranging from 70 days up to a maximum of 30 years and 364 days, while the APP, initially, only included securities with 2-year residual maturity (later extended to one year, at end-2016). Further to these differences in the universe of eligible assets, PEPP also differs from APP in that, despite the fact that the benchmark allocation across jurisdictions is also the capital key in the ECB of the national central banks, purchases are, however, conducted in a more flexible manner. This allows for fluctuations in the distribution of purchase flows over time, across asset classes and among euro area jurisdictions.

Table 11 displays for all euro area countries the results for the change in holdings in the period from end-2014 to 2017Q4, i.e., immediately before the largest component of the APP – the Public Sector Purchase Programme (PSPP) – was announced and up until the tapering off of purchases, which started in January 2018. The results for the euro area as a whole underscore very clearly that euro area investors,

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[11]These results are available upon request.

almost across the board, increased their exposure to securities issued by non-residents, while in many instances they decreased their exposure to domestic securities, issued by the government sector and banks. The latter is broadly in line with studies which specifically focused on the portfolio balance effects of the APP – see, for instance, Bergant et al. (2020). Strikingly, the rebalancing towards foreign debt securities is heavily driven by indirect holdings for IC, PF, NFC and HH. Thus, the main vehicle to increase exposures to extra-euro area debt during the APP period, was precisely the one used to reduce these exposures during the COVID-19 shock: indirect holdings via investment fund shares. These broad patterns are also visible among the more and less vulnerable country groups.[12]

7 Conclusion

This paper has provided an in-depth perspective of the portfolio shifts brought about by the severe financial strains unleashed by the COVID-19 shock. It showed the different ways in which euro area sectors were exposed to debt securities and listed shares at the end of 2019, and how they rebalanced their portfolios, in the first quarter of 2020, characterised by financial market turmoil, and, subsequently, in the second quarter, when market functioning was restored.

More generally, the analysis in this paper highlights the important role that investment funds play for the exposures of most euro area sectors, as can also be observed for the large-scale rebalancing during the APP period from 2015 to 2017. It stresses the importance of bypassing and looking through holdings of investment fund shares, in order to be able to proper identify the ultimate underlying exposures of investors, in particular in times of large financial shocks.

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[12]These results are available upon request.

A Data appendix

A.1 Country aggregates

- **Euro area less-vulnerable countries** – Austria, Belgium, Finland, France, Germany, the Netherlands

- **Euro area more-vulnerable countries** – Greece, Italy, Portugal, Spain

A.2 Issuer country reclassifications due to the lack of gravity variables

- **Switzerland** – includes Liechtenstein

- **United Kingdom** – includes Guernsey, Jersey, Isle of Man, Gibraltar and the Virgin Islands

- **United States** – includes Puerto Rico, Guam, American Samoa, the US Virgin Islands and Minor Outlying Islands

A.3 Sources of gravity variables

- **Bilateral distance and shared language** – Data are taken from the GeoDist database, compiled by the Centre d'Études Prospectives et d'Informations Internationales (CEPII) – see Mayer and Zignago (2011) for details

- **Bilateral imports** – Data are from Eurostat and are four-quarter moving sums.

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Figure 1: Proportion of investment fund shares in the aggregate portfolio of euro area sectors
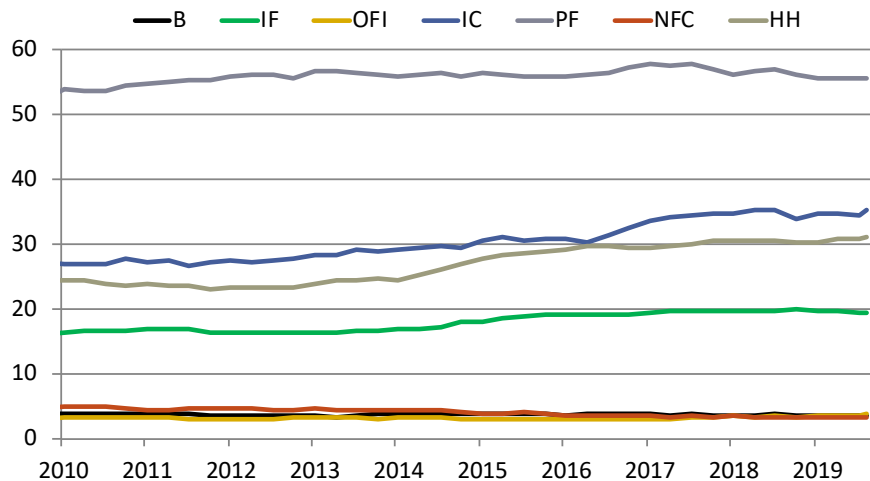
Source: ECB.

Figure 2: Portfolio investment flows by sector in 2020Q1 and 2020Q2 *(quarterly flows in % of euro area GDP)*
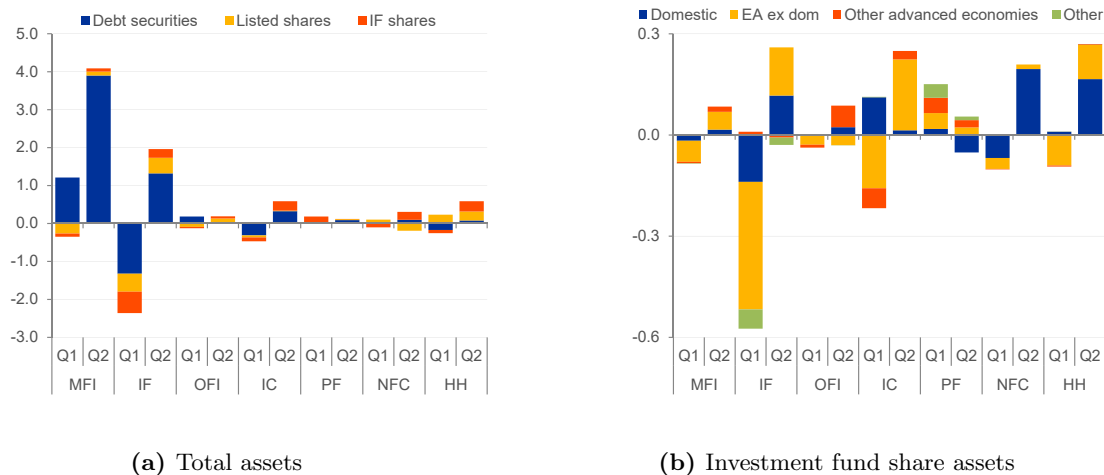
(a) Total assets

(b) Investment fund share assets

Source: ECB and Eurostat. "Domestic" refers to cases where the holder country is the same as the issuer country; "EA ex dom" refers to cases where the euro area holder country is not the same as the issuer country; "Non-EA" are all other countries. "MFI" and monetary financial institutions; "IF" are investment funds; "OFI" are other financial intermediaries; "IC" are insurance companies; "PF" are pension funds; "NFC" are non-financial corporations; "HH" are households. Conceptually, SHS and b.o.p. data are not fully compatible, to the extent that the latter do not include domestic flows.

Figure 3: Portfolio flows by country group *(monthly flows in % of euro area GDP)*

(a) Assets

(b) Liabilities
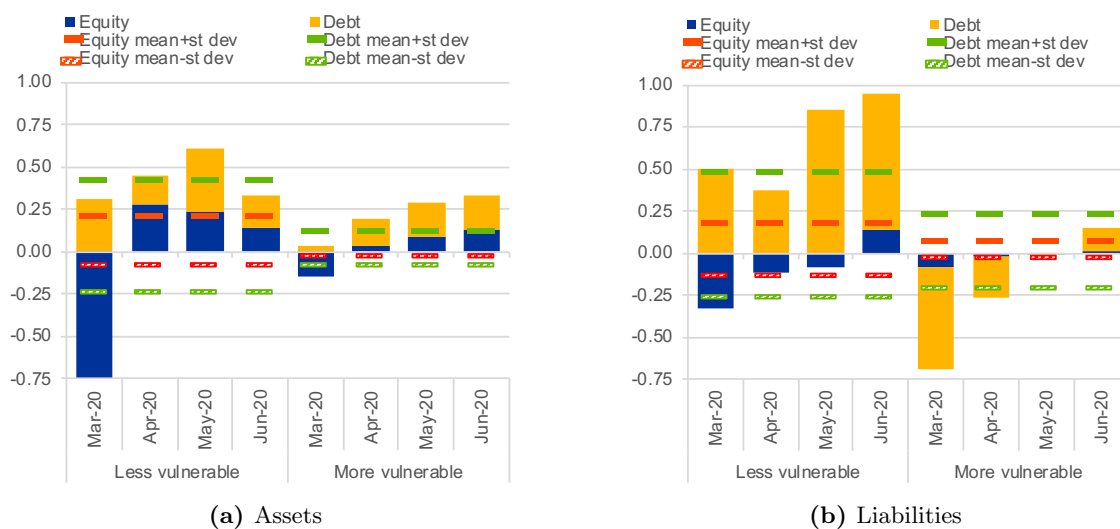
Source: ECB and Eurostat. Notes: Averages and standard deviations calculated from January 2008 to June 2020. "Less vulnerable" countries are Austria, Belgium, Finland, France, Germany and the Netherlands; "more vulnerable" countries are Italy, Greece, Portugal and Spain.

Figure 4: Portfolio investment flows by sector in 2020Q1 and 2020Q2 - less vulnerable countries *(quarterly flows in % of euro area GDP)*
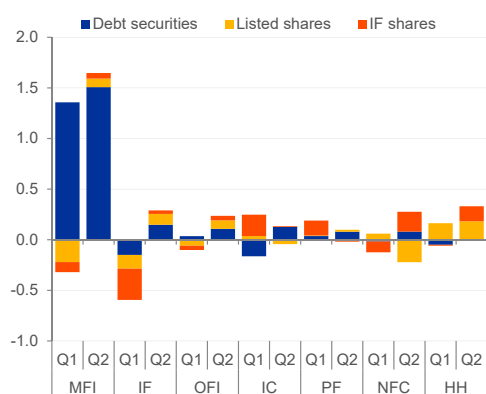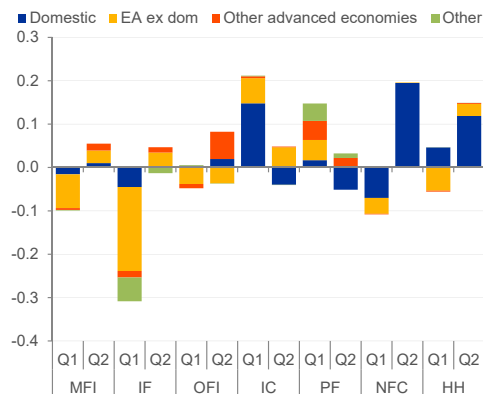
(a) Total assets

(b) Investment fund share assets

Figure 5: Portfolio investment flows by sector in 2020Q1 and 2020Q2 - more vulnerable countries *(quarterly flows in % of euro area GDP)*
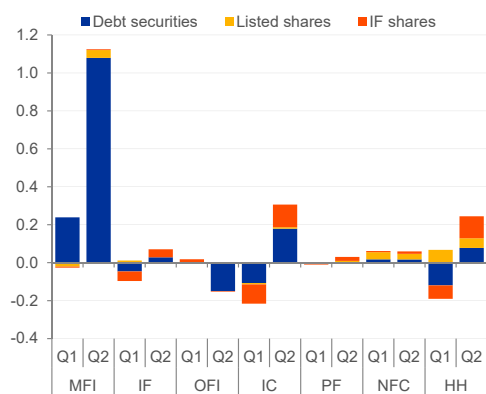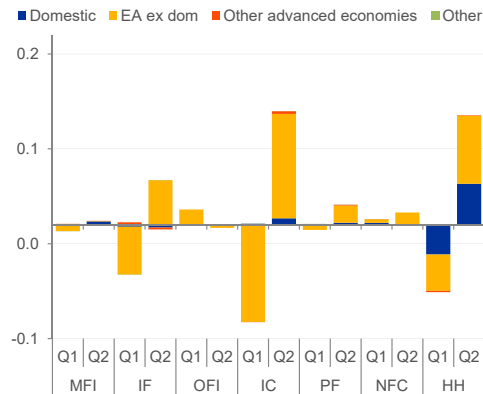
(a) Total assets

(b) Investment fund share assets

Source: ECB and Eurostat. "Domestic" refers to cases where the holder country is the same as the issuer country; "EA ex dom" refers to cases where the euro area holder country is not the same as the issuer country; "Non-EA" are all other countries. "MFI" and monetary financial institutions; "IF" are investment funds; "OFI" are other financial intermediaries; "IC" are insurance companies; "PF" are pension funds; "NFC" are non-financial corporations; "HH" are households. Conceptually, SHS and b.o.p. data are not fully compatible, to the extent that the latter do not include domestic flows. "Less vulnerable" countries are Austria, Belgium, Finland, France, Germany and the Netherlands; "more vulnerable" countries are Italy, Greece, Portugal and Spain.

Figure 6: Direct and indirect exposures of euro area investors to debt securities *(EUR bn, 2019-Q4)*

(a) Less vulnerable

(b) More vulnerable
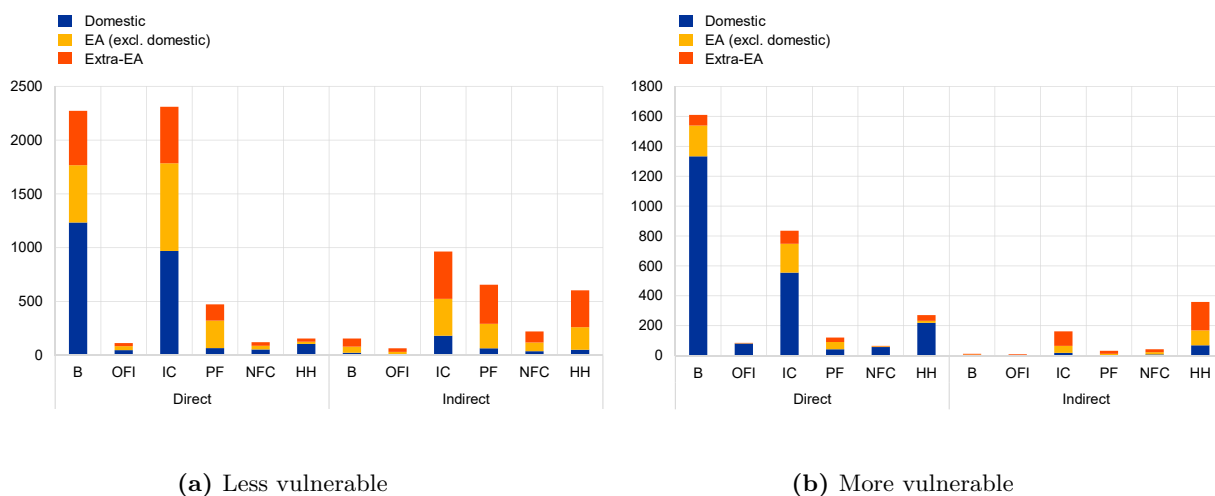
Figure 7: Direct and indirect exposures of euro area investors to listed shares *(EUR bn, 2019-Q4)*

(a) Less vulnerable
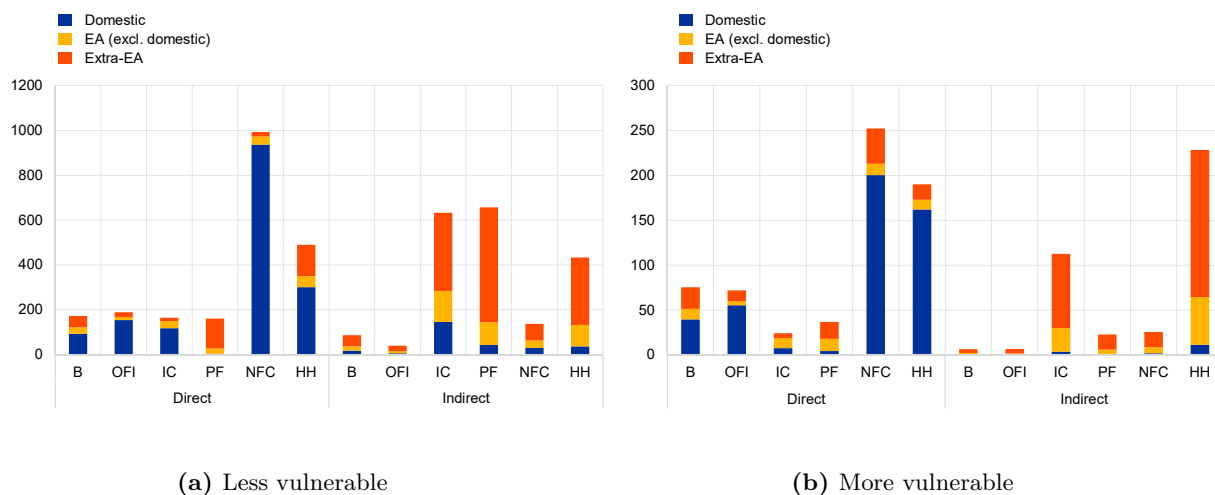
(b) More vulnerable

Source: Securities statistics, ECB, SHS and author's calculations. Notes: "Less vulnerable" countries are Austria, Belgium, Finland, France, Germany and the Netherlands; "more vulnerable" countries are Italy, Greece, Portugal and Spain. "Domestic" refers to cases where the holder country is the same as the issuer country; "EA excl. domestic" refers to cases where the euro area holder country is not the same as the issuer country; "Extra-EA" are all other countries. "B" are deposit-taking corporations; "OFI" are other financial intermediaries; "IC" are insurance companies; "PF" are pension funds; "NFC" are non-financial corporations; "HH" are households.

Table 1: All euro area countries - debt securities - 2019Q4-2020Q1

	(1) B.dir	(2) B.ind	(3) B.tot	(4) OFI.dir	(5) OFI.ind	(6) OFI.tot	(7) IC.dir	(8) IC.ind	(9) IC.tot	(10) PF.dir	(11) PF.ind	(12) PF.tot	(13) NFC.dir	(14) NFC.ind	(15) NFC.tot	(16) HH.dir	(17) HH.ind	(18) HH.tot
$ln(h_{hc,hs}^{ic,a,is})$	-0.03***	-0.07***	-0.03***	-0.17***	-0.05***	-0.16***	-0.03***	-0.02***	-0.03***	-0.05***	-0.03***	-0.04***	-0.07***	-0.02*	-0.06***	-0.03***	-0.01	-0.02**
	(0.01)	(0.01)	(0.01)	(0.03)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Distance	-0.05**	-0.07***	-0.04*	-0.22***	-0.02*	-0.14***	-0.02	-0.01*	-0.01*	-0.02	-0.01*	-0.02	-0.04	-0.00	-0.04*	-0.05**	-0.01	-0.02***
	(0.02)	(0.02)	(0.02)	(0.05)	(0.01)	(0.03)	(0.01)	(0.01)	(0.01)	(0.04)	(0.00)	(0.02)	(0.04)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)
Imports	0.00	-0.00	0.00	-0.00	-0.01**	0.01	0.00	0.00	-0.00	0.03	-0.00	0.01	0.01	0.00	0.00	0.00	0.00	-0.00
	(0.01)	(0.01)	(0.01)	(0.02)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.02)	(0.00)	(0.01)	(0.02)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
Com. language	-0.03	-0.16***	-0.03	-0.11	0.10***	-0.03	0.02	0.01	0.02**	-0.12***	0.02**	0.01	0.14	-0.01	0.02	-0.02	0.01	-0.00
	(0.05)	(0.04)	(0.05)	(0.10)	(0.02)	(0.06)	(0.02)	(0.01)	(0.01)	(0.04)	(0.01)	(0.01)	(0.10)	(0.01)	(0.03)	(0.03)	(0.01)	(0.01)
B-DOM	0.60	0.11	0.49*	0.58*	-0.24	-0.06	-0.01	0.37**	-0.41***	0.17	0.22	-0.11	0.22	-0.40	-0.53**	0.05	0.17	0.03
	(0.42)	(0.11)	(0.28)	(0.32)	(0.38)	(0.14)	(0.06)	(0.18)	(0.12)	(0.10)	(0.34)	(0.14)	(0.36)	(0.51)	(0.23)	(0.14)	(0.24)	(0.15)
B-LESSVUL	0.04	0.09	-0.04	-1.43***	-0.73*	-1.24**	-0.11	0.18	-0.23*	-0.17	0.02	-0.22	-0.09	-0.58	-0.17	-0.26	-0.07	-0.16
	(0.12)	(0.10)	(0.11)	(0.64)	(0.38)	(0.52)	(0.07)	(0.18)	(0.12)	(0.10)	(0.33)	(0.16)	(0.26)	(0.51)	(0.24)	(0.16)	(0.22)	(0.14)
B-MOREVUL	0.02	0.19***	-0.04	-1.16***	-0.66*	-1.93*	-0.02	0.17	-0.18	-0.11	-0.01	-0.12	0.01	-0.65	-0.15	-0.35**	-0.04	-0.19
	(0.18)	(0.06)	(0.13)	(0.34)	(0.38)	(0.97)	(0.09)	(0.18)	(0.11)	(0.13)	(0.33)	(0.15)	(0.25)	(0.51)	(0.24)	(0.14)	(0.22)	(0.14)
B-NEA	-0.56	-0.08	-0.48*	-1.19***	-0.45***	-0.38***	-0.00	-0.17***	0.24***	0.02	-0.18***	0.07	0.27	-0.15***	0.60***	-0.24*	-0.23***	-0.23***
	(0.40)	(0.07)	(0.26)	(0.29)	(0.06)	(0.11)	(0.06)	(0.04)	(0.04)	(0.18)	(0.05)	(0.10)	(0.32)	(0.04)	(0.07)	(0.13)	(0.07)	(0.07)
GG-DOM	0.52*	0.19	0.92***	-0.09	0.35*	0.29	0.48***	0.35***	0.36***	0.56***	0.37***	0.39***	0.46	0.61***	0.38***	0.51***	0.28***	0.31***
	(0.29)	(0.23)	(0.23)	(0.38)	(0.21)	(0.30)	(0.07)	(0.06)	(0.06)	(0.15)	(0.06)	(0.12)	(0.29)	(0.16)	(0.09)	(0.13)	(0.11)	(0.10)
GG-LESSVUL	0.24	-0.17	0.19	-0.35	-0.44**	-0.06	0.06	-0.01	0.10	-0.31*	-0.11	-0.14	0.54	0.12	0.14	0.11	-0.18	-0.10
	(0.19)	(0.23)	(0.18)	(0.55)	(0.21)	(0.48)	(0.10)	(0.08)	(0.09)	(0.18)	(0.12)	(0.09)	(0.56)	(0.19)	(0.35)	(0.09)	(0.14)	(0.11)
GG-MOREVUL	0.27*	-0.31	0.20	-0.75***	-0.47***	-0.47*	-0.04	-0.13	0.01	-0.10	-0.14	-0.05	-0.31	-0.02	-0.26**	0.08	-0.20	-0.03
	(0.16)	(0.24)	(0.16)	(0.37)	(0.24)	(0.26)	(0.07)	(0.10)	(0.05)	(0.20)	(0.09)	(0.14)	(0.23)	(0.18)	(0.13)	(0.11)	(0.14)	(0.07)
GG-NEA	-0.39***	-0.43***	-0.74***	-0.28	-0.69***	-0.36*	-0.41***	-0.31***	-0.29***	-0.37***	-0.35***	-0.34***	-0.14	-0.35***	-0.31***	-0.41***	-0.36***	-0.35***
	(0.24)	(0.01)	(0.17)	(1.91)	(0.05)	(0.22)	(0.05)	(0.04)	(0.04)	(0.08)	(0.04)	(0.08)	(0.22)	(0.03)	(0.04)	(0.10)	(0.07)	(0.07)
NFC-MOREVUL	0.60***	0.02	0.47**	-0.28	0.24	-0.01	0.22	-0.06	0.14**	0.74***	0.09*	0.06	0.88***	0.21	0.78***	-0.09	0.17*	-0.11
	(0.23)	(0.13)	(0.22)	(1.96)	(0.14)	(0.60)	(0.14)	(0.05)	(0.07)	(0.22)	(0.05)	(0.14)	(0.31)	(0.13)	(0.24)	(0.24)	(0.10)	(0.26)
NFC-LESSVUL	0.21	0.15	0.20	-0.74	-0.20	-0.27	0.12	-0.12**	0.14**	-0.08	0.02	-0.08	0.28	0.09	0.64***	-0.56**	0.08	-0.20
	(0.18)	(0.13)	(0.17)	(0.46)	(0.15)	(0.36)	(0.09)	(0.04)	(0.07)	(0.17)	(0.05)	(0.11)	(0.23)	(0.14)	(0.24)	(0.24)	(0.08)	(0.26)
NFC-MOREVUL	0.03	0.09	0.10	-0.37	-0.10	-0.07	0.13	-0.20***	0.17**	-0.23*	-0.03	-0.11	0.86**	0.02	0.94***	-0.47***	0.06	-0.15
	(0.22)	(0.11)	(0.20)	(0.47)	(0.16)	(0.35)	(0.09)	(0.04)	(0.07)	(0.12)	(0.05)	(0.11)	(0.34)	(0.14)	(0.27)	(0.23)	(0.09)	(0.25)
NFC-NEA	-0.39***	0.07	-0.24*	-0.24	-0.33***	-0.00	-0.02	-0.01	0.04	-0.62***	-0.01	-0.05	-0.10	-0.04	0.07	-0.28***	-0.07	-0.06
	(0.15)	(0.09)	(0.14)	(1.91)	(0.05)	(0.49)	(0.11)	(0.04)	(0.04)	(0.05)	(0.04)	(0.08)	(0.22)	(0.03)	(0.06)	(0.07)	(0.07)	(0.07)
Constant	0.52**	0.42***	0.37	2.28***	0.49***	1.54***	0.24*	-0.05	-0.00	0.02	-0.05	0.03	0.33	-0.11	0.20	0.34	-0.02	0.13
	(0.24)	(0.15)	(0.22)	(0.54)	(0.08)	(0.30)	(0.14)	(0.06)	(0.08)	(0.51)	(0.05)	(0.21)	(0.50)	(0.09)	(0.17)	(0.26)	(0.08)	(0.10)
Observations	1,694	1,280	2,118	999	1,858	2,084	2,412	3,484	3,838	1,270	2,470	2,641	802	1,953	2,107	1,171	3,183	3,312
R-squared	0.31	0.89	0.34	0.43	0.93	0.45	0.37	0.87	0.61	0.40	0.88	0.68	0.33	0.84	0.49	0.43	0.87	0.78

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses, clustered at holder and issuer country-sector level. B-DOM, B-LESSVUL, B-MOREVUL and B-NEA are dummy variables for exposures to debt securities issued by banks resident, respectively, in the domestic economy, other less vulnerable euro area countries, other more vulnerable euro area countries and non-euro area countries. GG-DOM, GG-LESSVUL, GG-MOREVUL, GG-NEA, NFC-DOM, NFC-LESSVUL, NFC-MOREVUL, NFC-NEA are equivalent dummy variables for securities issued by the general government sector and NFCs.

Table 2: Less vulnerable euro area countries – debt securities – 2019Q4-2020Q1

	(1) B_dir	(2) B_ind	(3) B_tot	(4) OFI_dir	(5) OFI_ind	(6) OFI_tot	(7) IC_dir	(8) IC_ind	(9) IC_tot	(10) PF_dir	(11) PF_ind	(12) PF_tot	(13) NFC_dir	(14) NFC_ind	(15) NFC_tot	(16) HH_dir	(17) HH_ind	(18) HH_tot
$ln(h^{ic,qs}_{hc,hs})$	-0.01	0.00	0.00	-0.30***	-0.02*	-0.33***	-0.05***	-0.03***	-0.04***	-0.03	-0.03**	-0.05***	-0.03	-0.02**	-0.10**	-0.02*	-0.03***	-0.04***
	(0.02)	(0.02)	(0.02)	(0.06)	(0.01)	(0.04)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.03)	(0.01)	(0.04)	(0.01)	(0.01)	(0.01)
Distance	-0.01	0.00	0.01	-0.38***	-0.01	-0.29***	-0.06***	-0.00	-0.02	-0.09*	-0.01	-0.08***	-0.09	0.03*	-0.05	-0.05	-0.00	-0.01
	(0.01)	(0.02)	(0.02)	(0.12)	(0.01)	(0.06)	(0.02)	(0.01)	(0.01)	(0.05)	(0.01)	(0.03)	(0.09)	(0.02)	(0.04)	(0.03)	(0.02)	(0.02)
Imports	0.01	-0.01	0.00	0.03	-0.01*	0.00	-0.00	-0.00	-0.00	0.01	-0.00	-0.00	-0.01	0.00	0.00	-0.00	0.00	0.00
	(0.05)	(0.02)	(0.04)	(0.12)	(0.01)	(0.06)	(0.02)	(0.01)	(0.01)	(0.05)	(0.00)	(0.00)	(0.03)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
Com. language	0.04	-0.02	0.03	-0.18	0.03*	-0.20*	-0.01	0.03	0.05**	-0.21***	0.02	0.05*	0.18	0.02	0.07	0.07*	0.03*	0.04**
	(0.13)	(0.03)	(0.10)	(0.25)	(0.02)	(0.10)	(0.04)	(0.02)	(0.02)	(0.07)	(0.02)	(0.03)	(0.19)	(0.02)	(0.06)	(0.04)	(0.02)	(0.02)
B-DOM	0.81	0.35**	0.74	0.81	0.47***	1.34**	-0.05	0.40***	0.28***	-0.53**	0.37***	0.23	0.24	0.48***	0.72***	0.18	0.44***	0.39***
	(0.68)	(0.16)	(0.50)	(0.82)	(0.08)	(0.54)	(0.14)	(0.08)	(0.09)	(0.23)	(0.07)	(0.16)	(0.49)	(0.08)	(0.20)	(0.18)	(0.09)	(0.10)
B-LESSVUL	0.35	0.23*	0.01	-0.85	-0.12*	0.73**	0.02	0.33***	0.41***	-0.31*	0.22***	0.08	-0.00	0.26***	0.52***	-0.17	0.34***	0.30***
	(0.32)	(0.13)	(0.22)	(0.56)	(0.07)	(0.32)	(0.14)	(0.10)	(0.12)	(0.17)	(0.09)	(0.14)	(0.37)	(0.08)	(0.20)	(0.12)	(0.12)	(0.10)
B-MOREVUL	-0.25	0.19***	-0.28	-1.31**	-0.23***	-0.21	-0.27	0.12	0.14	-0.63*	-0.04	-0.08	-0.23	0.13*	0.12	-0.02	0.18**	0.21***
	(0.48)	(0.07)	(0.17)	(0.52)	(0.03)	(0.27)	(0.25)	(0.11)	(0.12)	(0.33)	(0.17)	(0.16)	(0.30)	(0.05)	(0.13)	(0.08)	(0.08)	(0.07)
B-NEA	-0.37	-0.22**	-0.65	-0.62	-0.59***	0.20	0.06	-0.05	0.16*	0.24***	-0.15*	-0.11	-0.04	-0.12***	0.14	-0.23**	-0.04	-0.01
	(0.72)	(0.10)	(0.47)	(0.40)	(0.05)	(0.15)	(0.07)	(0.06)	(0.09)	(0.08)	(0.07)	(0.10)	(0.33)	(0.04)	(0.14)	(0.12)	(0.07)	(0.06)
GG-DOM	-0.01	0.59***	0.50*	0.97	0.55***	0.78*	0.31	0.60***	0.57***	0.31	0.68***	0.56***	0.22	0.77***	0.77	0.71***	0.65***	0.67***
	(0.50)	(0.13)	(0.28)	(0.83)	(0.09)	(0.43)	(0.31)	(0.11)	(0.12)	(0.25)	(0.14)	(0.17)	(1.27)	(0.13)	(0.67)	(0.21)	(0.15)	(0.12)
GG-LESSVUL	0.35	0.24**	0.02	-1.22**	-0.12**	0.54**	0.03	0.31***	0.41***	-0.28	0.18**	0.07	0.39	0.25***	0.57	0.34*	0.34***	0.37***
	(0.33)	(0.10)	(0.21)	(0.61)	(0.06)	(0.27)	(0.13)	(0.09)	(0.12)	(0.22)	(0.09)	(0.15)	(1.03)	(0.08)	(0.48)	(0.20)	(0.12)	(0.09)
GG-MOREVUL	0.86**	0.27***	0.51*	-0.76	-0.10	0.67**	0.19	0.33***	0.47***	-0.19	0.17**	0.15	0.03	0.24***	0.51***	0.36	0.40***	0.41***
	(0.38)	(0.12)	(0.30)	(0.99)	(0.06)	(0.33)	(0.12)	(0.08)	(0.11)	(0.13)	(0.07)	(0.11)	(0.30)	(0.06)	(0.17)	(0.23)	(0.10)	(0.08)
GG-NEA	0.24	-0.46***	-0.61***	-1.73***	-0.64***	-0.25**	-0.35	-0.21***	-0.18***	-0.49***	-0.34***	-0.34***	-0.38	-0.33***	-0.27***	-0.37***	-0.18**	-0.16**
	(0.51)	(0.02)	(0.15)	(0.40)	(0.03)	(0.13)	(0.25)	(0.07)	(0.07)	(0.07)	(0.06)	(0.10)	(0.27)	(0.04)	(0.07)	(0.08)	(0.07)	(0.07)
NFC-DOM	0.72***	0.31*	0.47*	0.03	0.29***	0.24	-0.16	0.33***	0.36***	0.13	0.27***	0.06	-0.07	0.46***	0.60***	0.39***	0.32***	0.37***
	(0.27)	(0.18)	(0.25)	(1.13)	(0.09)	(0.88)	(0.16)	(0.08)	(0.09)	(0.30)	(0.07)	(0.17)	(0.55)	(0.08)	(0.19)	(0.16)	(0.10)	(0.09)
NFC-LESSVUL	0.41	0.27**	0.10	-0.34	-0.13**	0.87***	0.09	0.33***	0.46***	-0.44***	0.21***	0.04	-0.12	0.27***	0.44***	-0.02	0.33***	0.33***
	(0.35)	(0.11)	(0.20)	(0.61)	(0.06)	(0.21)	(0.12)	(0.09)	(0.11)	(0.17)	(0.08)	(0.14)	(0.37)	(0.08)	(0.16)	(0.10)	(0.11)	(0.08)
NFC-MOREVUL	-0.00	0.15*	-0.25	-0.65	-0.27***	0.14	-0.27**	0.17***	0.20**	-0.56***	0.03	-0.07	-0.33	0.10*	0.08	-0.16	0.20**	0.21***
	(0.47)	(0.08)	(0.28)	(0.44)	(0.04)	(0.17)	(0.11)	(0.07)	(0.09)	(0.24)	(0.06)	(0.11)	(0.37)	(0.06)	(0.15)	(0.11)	(0.09)	(0.07)
NFC-NEA	-0.14	-0.11*	-0.22**	0.05	-0.44***	0.93	0.25***	0.07	0.15**	-0.71***	-0.01	-0.07	0.04	-0.05*	0.13	-0.25***	0.08	0.08*
	(0.33)	(0.06)	(0.11)	(1.00)	(0.03)	(0.79)	(0.04)	(0.06)	(0.07)	(0.09)	(0.06)	(0.07)	(0.34)	(0.03)	(0.10)	(0.06)	(0.05)	(0.05)
Constant	-0.36	-0.08	-0.16	3.58***	0.42***	2.88***	0.60***	-0.16	-0.05	0.89*	-0.06	0.60**	0.83	-0.39***	0.32	0.27	-0.18	-0.09
	(0.66)	(0.18)	(0.36)	(1.29)	(0.09)	(0.59)	(0.19)	(0.13)	(0.13)	(0.48)	(0.09)	(0.27)	(1.04)	(0.14)	(0.33)	(0.33)	(0.15)	(0.15)
Observations	705	762	974	433	1,114	1,141	967	1,651	1,669	523	1,148	1,153	475	1,242	1,260	546	1,505	1,521
R-squared	0.41	0.88	0.49	0.57	0.97	0.65	0.47	0.84	0.75	0.72	0.89	0.84	0.41	0.85	0.52	0.64	0.90	0.87

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses, clustered at holder and issuer country-sector level. B-DOM, B-LESSVUL, B-MOREVUL and B-NEA are dummy variables for exposures to debt securities issued by banks resident, respectively, in the domestic economy, other less vulnerable euro area countries, other more vulnerable euro area countries and non-euro area countries. GG-DOM, GG-LESSVUL, GG-MOREVUL, GG-NEA, NFC-DOM, NFC-LESSVUL, NFC-MOREVUL, NFC-NEA are equivalent dummy variables for securities issued by the general government sector and NFCs.

Table 3: More vulnerable euro area countries – debt securities – 2019Q4-2020Q1

	(1) B_dir	(2) B_ind	(3) B_tot	(4) OFI_dir	(5) OFI_ind	(6) OFI_tot	(7) IC_dir	(8) IC_ind	(9) IC_tot	(10) PF_dir	(11) PF_ind	(12) PF_tot	(13) NFC_dir	(14) NFC_ind	(15) NFC_tot	(16) HH_dir	(17) HH_ind	(18) HH_tot
$ln(h_{hc,hs}^{ic,a,is})$	-0.04*	-0.08***	-0.03*	-0.24**	0.04*	-0.11*	-0.01	-0.02	-0.01	-0.04*	-0.02*	-0.04**	-0.19*	0.02	-0.01	-0.04*	0.00	-0.05**
	(0.02)	(0.02)	(0.02)	(0.09)	(0.02)	(0.06)	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.10)	(0.01)	(0.03)	(0.02)	(0.01)	(0.02)
Distance	-0.08	-0.07**	-0.12**	-0.18	0.05	-0.22	0.02	-0.03***	0.02	-0.05	-0.01	-0.01	-0.16	-0.01	-0.07	-0.05	-0.00	-0.02*
	(0.08)	(0.03)	(0.06)	(0.19)	(0.03)	(0.19)	(0.04)	(0.01)	(0.03)	(0.05)	(0.01)	(0.03)	(0.28)	(0.02)	(0.05)	(0.06)	(0.01)	(0.01)
Imports	-0.00	-0.02**	-0.01	0.02	-0.00	0.06	0.00	0.00	-0.00	0.00	0.00	0.01	-0.05	0.01	-0.01	0.00	-0.00	-0.00
	(0.02)	(0.01)	(0.01)	(0.06)	(0.01)	(0.05)	(0.02)	(0.00)	(0.01)	(0.02)	(0.00)	(0.01)	(0.05)	(0.00)	(0.01)	(0.03)	(0.00)	(0.00)
Com. language	-0.21	0.00	-0.04	-0.23	0.03	0.31	-0.01	-0.00	-0.00	-0.10	0.00	-0.07*	-0.08	-0.01	-0.03	-0.03	-0.02	-0.04**
	(0.20)	(0.05)	(0.16)	(0.48)	(0.05)	(0.43)	(0.05)	(0.01)	(0.02)	(0.12)	(0.01)	(0.04)	(0.17)	(0.01)	(0.03)	(0.11)	(0.01)	(0.02)
B-DOM	0.00	0.03	0.13	0.19	0.22**	0.81	-0.08	0.22***	-0.17	-0.21	0.23***	-0.14	-0.13	0.21***	-0.72***	0.24	0.16***	0.35**
	(0.27)	(0.15)	(0.34)	(1.04)	(0.11)	(1.03)	(0.23)	(0.04)	(0.15)	(0.23)	(0.07)	(0.17)	(0.58)	(0.09)	(0.20)	(0.24)	(0.05)	(0.15)
B-LESSVUL	-0.05	-0.00	-0.05	0.00	0.33***	-0.43	0.27***	0.13	0.09	0.13	0.13***	0.17***	-0.28	0.19***	0.03	0.18	0.01	0.27***
	(0.16)	(0.08)	(0.11)	(0.63)	(0.12)	(0.33)	(0.09)	(0.09)	(0.10)	(0.09)	(0.02)	(0.06)	(0.62)	(0.04)	(0.11)	(0.28)	(0.07)	(0.13)
B-MOREVUL	-0.01	-0.38***	-0.07	-0.34	0.22	-1.23	0.31	-0.01	0.08	-0.17	-0.06	-0.14	-0.81	0.10	-0.17	-0.28	-0.13***	0.01
	(0.30)	(0.12)	(0.26)	(0.65)	(0.15)	(1.01)	(0.29)	(0.05)	(0.20)	(0.17)	(0.06)	(0.13)	(0.72)	(0.08)	(0.20)	(0.23)	(0.05)	(0.08)
B-NEA	-0.05	-0.59***	-0.44	0.41	0.01	-0.33	0.40**	-0.28***	0.21**	0.01	-0.28***	0.03	-0.53	-0.08	0.46	-0.18	-0.33***	-0.28***
	(0.18)	(0.14)	(0.28)	(0.61)	(0.11)	(0.33)	(0.20)	(0.07)	(0.11)	(0.21)	(0.04)	(0.15)	(0.82)	(0.06)	(0.30)	(0.35)	(0.05)	(0.04)
GG-DOM	0.55	0.53***	0.32	0.52	0.78***	0.14	0.24	0.66***	0.60***	0.33	0.77***	0.75***	0.52	0.71***	0.65**	0.68*	0.71***	0.72***
	(0.50)	(0.17)	(0.35)	(1.11)	(0.25)	(0.82)	(0.29)	(0.19)	(0.17)	(0.41)	(0.11)	(0.25)	(1.13)	(0.15)	(0.31)	(0.36)	(0.17)	(0.15)
GG-LESSVUL	-0.03	-0.06	-0.08	-0.44	0.37***	-1.04*	0.42***	0.11	0.21**	0.02	0.14***	0.02	-0.50	0.25***	0.09	0.23	0.05	0.28**
	(0.20)	(0.10)	(0.16)	(0.84)	(0.13)	(0.58)	(0.11)	(0.07)	(0.10)	(0.22)	(0.03)	(0.17)	(0.59)	(0.07)	(0.14)	(0.27)	(0.06)	(0.11)
GG-MOREVUL	0.18	0.09	0.10	-0.05	0.42*	-0.80	0.31***	0.10	0.11	0.21	0.16*	0.19	-0.27	0.31***	0.11	0.11	0.06	0.17
	(0.23)	(0.12)	(0.21)	(0.78)	(0.22)	(0.80)	(0.12)	(0.15)	(0.12)	(0.24)	(0.07)	(0.17)	(0.59)	(0.10)	(0.18)	(0.17)	(0.11)	(0.12)
GG-NEA	-0.47	-0.46***	-0.46**	-0.28	-0.21	-0.64	0.17*	-0.43***	-0.45***	-0.16	-0.44***	-0.54***	-0.21	-0.21***	-0.46**	-0.44*	-0.51***	-0.44***
	(0.43)	(0.12)	(0.26)	(0.44)	(0.13)	(0.50)	(0.09)	(0.04)	(0.05)	(0.16)	(0.05)	(0.10)	(0.42)	(0.08)	(0.22)	(0.23)	(0.02)	(0.04)
NFC-DOM	0.06	-0.23	-0.23	-0.49	0.08	-0.06	0.03	0.09	0.14	-0.36	0.05	0.14	0.13	-0.00	-0.01	0.33	0.01	0.02
	(0.27)	(0.22)	(0.22)	(1.08)	(0.15)	(0.70)	(0.28)	(0.07)	(0.18)	(0.25)	(0.05)	(0.13)	(1.20)	(0.10)	(0.43)	(0.44)	(0.09)	(0.13)
NFC-LESSVUL	0.33	-0.15*	0.16	0.77	0.27*	-0.04	0.36***	0.04	0.15	0.19*	0.05	0.15***	-0.37	0.12**	-0.02	0.09	-0.06	0.18
	(0.30)	(0.09)	(0.20)	(0.74)	(0.14)	(0.55)	(0.11)	(0.08)	(0.11)	(0.10)	(0.03)	(0.05)	(0.61)	(0.05)	(0.11)	(0.15)	(0.06)	(0.12)
NFC-MOREVUL	-0.22	-0.32**	-0.26	-0.30	0.15	-0.86	0.30**	-0.06	0.08	-0.09	-0.11**	-0.08	0.68	0.06	0.57	-0.25	-0.19***	-0.09
	(0.24)	(0.15)	(0.17)	(0.80)	(0.17)	(0.53)	(0.12)	(0.07)	(0.09)	(0.14)	(0.05)	(0.08)	(1.08)	(0.08)	(0.54)	(0.20)	(0.05)	(0.08)
NFC-NEA	-0.11	-0.18**	-0.04	0.80	0.14	-0.34	0.29***	-0.07	-0.10**	0.29***	-0.09**	-0.14	-0.10	0.13*	-0.03	-0.37*	-0.16***	-0.01
	(0.16)	(0.09)	(0.13)	(0.61)	(0.12)	(0.33)	(0.07)	(0.05)	(0.04)	(0.05)	(0.05)	(0.09)	(0.34)	(0.07)	(0.15)	(0.20)	(0.04)	(0.06)
Constant	0.92	0.70**	1.17*	1.82	-0.30	2.06	-0.45	0.17*	-0.22	0.36	-0.01	0.06	2.57	-0.28	0.68	0.34	0.08	0.31**
	(0.78)	(0.29)	(0.60)	(1.82)	(0.32)	(1.75)	(0.49)	(0.09)	(0.28)	(0.52)	(0.11)	(0.29)	(2.45)	(0.20)	(0.62)	(0.76)	(0.12)	(0.13)
Observations	413	428	548	179	339	376	519	800	845	388	624	666	191	591	608	359	972	990
R-squared	0.62	0.86	0.59	0.71	0.93	0.57	0.67	0.97	0.72	0.63	0.98	0.83	0.64	0.93	0.77	0.62	0.95	0.91

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses, clustered at holder and issuer country-sector level. B-DOM, B-LESSVUL, B-MOREVUL and B-NEA are dummy variables for exposures to debt securities issued by banks resident, respectively, in the domestic economy, other less vulnerable euro area countries, other more vulnerable euro area countries and non-euro area countries. GG-DOM, GG-LESSVUL, GG-MOREVUL, GG-NEA, NFC-DOM, NFC-LESSVUL, NFC-MOREVUL, NFC-NEA are equivalent dummy variables for securities issued by the general government sector and NFCs.

Table 4: All euro area countries – debt securities – 2020Q1-2020Q2

	(1) B_dir	(2) B_ind	(3) B_tot	(4) OFI_dir	(5) OFI_ind	(6) OFI_tot	(7) IC_dir	(8) IC_ind	(9) IC_tot	(10) PF_dir	(11) PF_ind	(12) PF_tot	(13) NFC_dir	(14) NFC_ind	(15) NFC_tot	(16) HH_dir	(17) HH_ind	(18) HH_tot
$ln(h^{c,a,ts}_{hc,hs})$	-0.06***	-0.05***	-0.06***	-0.10***	-0.11***	-0.10***	-0.03***	-0.04***	-0.03***	-0.05***	-0.02**	-0.06***	-0.06***	-0.05***	-0.03***	-0.02**	-0.05***	-0.03***
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
Distance	-0.08***	0.00	-0.07**	-0.04	-0.02	-0.05**	-0.02	-0.01	-0.03**	-0.01	0.01**	-0.01	-0.03	0.00	-0.02	-0.03	0.00	-0.01
	(0.03)	(0.01)	(0.03)	(0.04)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.03)	(0.01)	(0.01)	(0.03)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)
Imports	-0.00	0.01*	-0.00	-0.01	0.01***	0.00	-0.00	0.01***	0.00	-0.00	0.00**	0.01	-0.01	0.01	-0.00	-0.00	0.00	-0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Com. language	-0.05	-0.02	-0.01	0.14*	-0.10***	-0.01	0.02	-0.00	0.01	0.13*	0.00	0.03	-0.08	0.01	-0.02	0.01	0.01	0.01
	(0.04)	(0.02)	(0.05)	(0.07)	(0.02)	(0.05)	(0.02)	(0.01)	(0.01)	(0.07)	(0.01)	(0.02)	(0.08)	(0.01)	(0.02)	(0.03)	(0.01)	(0.01)
B-DOM	0.29	0.33**	0.23	0.66**	0.09	0.07	0.29***	-0.17	0.31***	0.67***	-0.06	0.13	0.13	0.22	0.17*	-0.03	-0.09	-0.00
	(0.25)	(0.16)	(0.21)	(0.30)	(0.48)	(0.19)	(0.07)	(0.11)	(0.09)	(0.25)	(0.14)	(0.17)	(0.35)	(0.14)	(0.09)	(0.17)	(0.09)	(0.08)
B-LESSVUL	-0.51*	0.05	-0.52**	0.14	0.48	0.09	0.03	-0.02	0.04	0.28	-0.03	0.24*	-0.35	0.11	-0.23*	-0.28*	0.12*	-0.05
	(0.27)	(0.07)	(0.26)	(0.73)	(0.48)	(0.43)	(0.08)	(0.07)	(0.06)	(0.23)	(0.07)	(0.15)	(0.31)	(0.10)	(0.14)	(0.16)	(0.07)	(0.09)
B-MOREVUL	-0.23	-0.11	-0.23	-0.49*	0.18	-0.43	0.08	-0.12	-0.02	0.25	-0.16**	0.13	-0.31	-0.07	-0.25**	-0.22	-0.05	-0.13
	(0.23)	(0.10)	(0.26)	(0.28)	(0.49)	(0.27)	(0.08)	(0.09)	(0.07)	(0.22)	(0.08)	(0.15)	(0.34)	(0.11)	(0.12)	(0.19)	(0.08)	(0.09)
B-NEA	-0.41**	-0.15	-0.32**	-0.75***	0.46***	0.08	-0.25***	0.21***	-0.25***	-0.36***	0.08	0.17	-0.47***	-0.06	-0.29***	-0.20*	0.23***	-0.03
	(0.17)	(0.15)	(0.12)	(0.27)	(0.07)	(0.09)	(0.05)	(0.08)	(0.08)	(0.12)	(0.12)	(0.11)	(0.20)	(0.12)	(0.05)	(0.11)	(0.08)	(0.04)
GG-DOM	0.01	0.59**	0.00	1.26**	-0.13	-0.05	-0.02	-0.09	-0.04	0.14	0.18	-0.03	0.03	0.21**	0.05	-0.02	-0.12	-0.30***
	(0.25)	(0.25)	(0.18)	(0.50)	(0.22)	(0.40)	(0.11)	(0.10)	(0.12)	(0.22)	(0.13)	(0.18)	(0.23)	(0.10)	(0.13)	(0.18)	(0.10)	(0.09)
GG-LESSVUL	-0.06	0.45*	-0.08	0.06	0.17	0.07	0.11	0.09	0.07	0.03	0.21**	-0.08	-0.23	0.24**	-0.01	0.15	0.15*	0.01
	(0.14)	(0.26)	(0.13)	(0.55)	(0.22)	(0.42)	(0.11)	(0.08)	(0.09)	(0.26)	(0.10)	(0.17)	(0.27)	(0.12)	(0.15)	(0.16)	(0.09)	(0.07)
GG-MOREVUL	-0.17	0.18	-0.20	-0.60	-0.14	-0.31	0.08	-0.07	-0.03	-0.22	-0.00	-0.36**	-0.28	0.02	-0.24	-0.07	-0.04	-0.27***
	(0.13)	(0.27)	(0.13)	(0.56)	(0.26)	(0.43)	(0.12)	(0.14)	(0.10)	(0.21)	(0.12)	(0.18)	(0.23)	(0.15)	(0.17)	(0.13)	(0.11)	(0.09)
GG-NEA	-0.02	-0.11***	0.01	-1.33***	0.39***	0.20	0.16***	0.21***	0.15*	-0.08	0.02	0.06	-0.06	0.07	-0.04	0.03	0.28***	0.23***
	(0.22)	(0.04)	(0.16)	(0.27)	(0.04)	(0.14)	(0.05)	(0.08)	(0.08)	(0.11)	(0.11)	(0.10)	(0.13)	(0.05)	(0.04)	(0.13)	(0.07)	(0.07)
NFC-DOM	-0.20	0.14	-0.20	2.44*	-0.20	0.39	-0.22*	-0.11	-0.12	0.40*	-0.09	0.31**	-0.67	0.19	-0.05	-0.03	-0.09	0.09
	(0.25)	(0.10)	(0.20)	(1.31)	(0.17)	(0.51)	(0.11)	(0.10)	(0.10)	(0.21)	(0.11)	(0.15)	(0.91)	(0.21)	(0.24)	(0.23)	(0.11)	(0.26)
NFC-LESSVUL	0.17	0.13*	0.13	0.18	0.13	0.20	-0.01	0.06	0.04	0.39**	-0.15***	0.30**	-0.10	0.19	-0.04	0.10	0.15	0.37
	(0.19)	(0.07)	(0.18)	(0.27)	(0.18)	(0.25)	(0.09)	(0.07)	(0.06)	(0.17)	(0.05)	(0.14)	(0.17)	(0.25)	(0.22)	(0.25)	(0.13)	(0.27)
NFC-MOREVUL	-0.14	0.05	-0.17	-0.37	-0.01	-0.50	0.08	0.07	0.08	0.41**	-0.12	0.33**	0.05	0.22	0.13	0.11	0.00	0.25
	(0.18)	(0.08)	(0.16)	(0.71)	(0.17)	(0.68)	(0.12)	(0.10)	(0.07)	(0.17)	(0.10)	(0.14)	(0.17)	(0.24)	(0.16)	(0.26)	(0.17)	(0.30)
NFC-NEA	0.09	0.02	0.09	-2.25*	0.35***	-0.17	0.17**	0.19***	0.14*	-0.08	-0.04	0.03	0.75	0.05	0.16	0.08	0.28***	0.23***
	(0.19)	(0.08)	(0.12)	(1.29)	(0.05)	(0.46)	(0.07)	(0.07)	(0.07)	(0.09)	(0.11)	(0.09)	(0.89)	(0.06)	(0.20)	(0.05)	(0.04)	(0.03)
Constant	0.94***	0.01	0.75***	0.90**	0.02	0.38*	0.16	0.05	0.28**	0.28	0.07	0.25*	0.66*	0.09	0.36***	0.31	-0.06	0.11
	(0.31)	(0.15)	(0.24)	(0.41)	(0.11)	(0.23)	(0.12)	(0.08)	(0.12)	(0.36)	(0.11)	(0.14)	(0.38)	(0.11)	(0.13)	(0.20)	(0.08)	(0.08)
Observations	1,712	1,329	2,153	1,073	1,902	2,150	2,408	3,462	3,824	1,277	2,458	2,631	806	1,918	2,077	1,162	3,180	3,309
R-squared	0.32	0.74	0.24	0.33	0.83	0.39	0.22	0.82	0.59	0.32	0.77	0.48	0.37	0.80	0.57	0.41	0.81	0.76

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses, clustered at holder and issuer country-sector level. B-DOM, B-LESSVUL, B-MOREVUL and B-NEA are dummy variables for exposures to debt securities issued by banks resident, respectively, in the domestic economy, other less vulnerable euro area countries, other more vulnerable euro area countries and non-euro area countries. GG-DOM, GG-LESSVUL, GG-MOREVUL, GG-NEA, NFC-DOM, NFC-LESSVUL, NFC-MOREVUL, NFC-NEA are equivalent dummy variables for securities issued by the general government sector and NFCs.

Table 5: Less vulnerable euro area countries – debt securities – 2020Q1-2020Q2

$ln(h^{ic,a,is}_{hc,hs})$	(1) B_dir	(2) B_ind	(3) B_tot	(4) OFI_dir	(5) OFI_ind	(6) OFI_tot	(7) IC_dir	(8) IC_ind	(9) IC_tot	(10) PF_dir	(11) PF_ind	(12) PF_tot	(13) NFC_dir	(14) NFC_ind	(15) NFC_tot	(16) HH_dir	(17) HH_ind	(18) HH_tot
	-0.06**	-0.08***	-0.05***	-0.11**	-0.12***	-0.17***	-0.04***	-0.06***	-0.06***	-0.01	-0.02	-0.00	-0.10***	-0.05***	-0.05**	-0.01	-0.06***	-0.03***
	(0.02)	(0.02)	(0.02)	(0.04)	(0.01)	(0.04)	(0.01)	(0.01)	(0.01)	(0.03)	(0.01)	(0.02)	(0.03)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)
Distance	-0.06	-0.03	-0.04	-0.07	-0.02	-0.10**	-0.02	-0.03**	-0.06***	0.07	0.01	-0.00	-0.08	0.00	-0.04	-0.02	-0.02	-0.01
	(0.05)	(0.02)	(0.03)	(0.09)	(0.02)	(0.04)	(0.02)	(0.01)	(0.02)	(0.07)	(0.01)	(0.02)	(0.08)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)
Imports	-0.02	0.01*	0.00	-0.02	0.01*	0.00	-0.02	0.01***	0.00	0.02	0.01*	0.01	-0.00	0.00	0.00	0.00	0.00	-0.00
	(0.01)	(0.01)	(0.01)	(0.03)	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)	(0.02)	(0.00)	(0.00)	(0.02)	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)
Com. language	-0.07	0.05**	-0.08	0.14	-0.00	0.12	-0.02	0.00	-0.02	0.07	-0.00	-0.00	-0.01	0.01	-0.01	0.05	0.01	-0.00
	(0.06)	(0.01)	(0.06)	(0.20)	(0.02)	(0.08)	(0.04)	(0.01)	(0.02)	(0.09)	(0.02)	(0.02)	(0.13)	(0.02)	(0.04)	(0.05)	(0.01)	(0.01)
B-DOM	1.03***	0.13	0.86***	-1.43	0.08	0.04	0.85	0.07	0.24*	0.51	-0.05	-0.16	0.30	0.07	0.40	-0.08	-0.02	0.03
	(0.33)	(0.15)	(0.25)	(1.27)	(0.14)	(0.70)	(0.72)	(0.10)	(0.14)	(0.31)	(0.10)	(0.10)	(0.38)	(0.12)	(0.35)	(0.22)	(0.08)	(0.11)
B-LESSVUL	0.26	0.06	0.24	-1.08	0.45***	0.27	0.23***	0.07	0.11	0.10	-0.19	-0.29*	-0.22	0.02	0.04	-0.16	0.25***	0.16*
	(0.20)	(0.15)	(0.19)	(0.70)	(0.10)	(0.39)	(0.08)	(0.11)	(0.11)	(0.24)	(0.15)	(0.15)	(0.27)	(0.08)	(0.17)	(0.22)	(0.08)	(0.09)
B-MOREVUL	0.05	-0.01	0.10	-0.86*	0.23***	-0.43	0.05	0.03	-0.01	-0.19	-0.23	-0.29**	-0.46**	-0.01	-0.06	-0.01	0.18***	0.11*
	(0.31)	(0.08)	(0.21)	(0.45)	(0.05)	(0.62)	(0.08)	(0.11)	(0.09)	(0.21)	(0.14)	(0.15)	(0.23)	(0.07)	(0.09)	(0.06)	(0.06)	(0.06)
B-NEA	-0.44	0.08	-0.13	-0.04	0.50***	0.49***	-0.77	0.09	-0.13	-0.23	-0.04	-0.10	-0.46**	-0.01	-0.22	-0.01	0.27***	0.16**
	(0.29)	(0.12)	(0.10)	(0.47)	(0.10)	(0.17)	(0.72)	(0.12)	(0.15)	(0.19)	(0.14)	(0.14)	(0.21)	(0.10)	(0.27)	(0.10)	(0.06)	(0.08)
GG-DOM	-0.13	0.22	0.04	-1.80**	0.27**	0.53	0.03	0.03	0.08	0.14	-0.05	-0.14	-0.06	0.07	0.00	-0.42**	0.07	-0.05
	(0.54)	(0.14)	(0.35)	(0.84)	(0.11)	(0.43)	(0.15)	(0.11)	(0.13)	(0.33)	(0.13)	(0.11)	(0.66)	(0.09)	(0.18)	(0.17)	(0.13)	(0.13)
GG-LESSVUL	0.03	0.09	0.02	-0.48	0.50***	0.68***	0.26***	0.14	0.14	0.16	-0.08	-0.19	-0.57	0.09	-0.04	-0.07	0.33***	0.19***
	(0.30)	(0.12)	(0.28)	(0.62)	(0.07)	(0.24)	(0.07)	(0.10)	(0.11)	(0.26)	(0.14)	(0.14)	(0.39)	(0.07)	(0.13)	(0.10)	(0.08)	(0.07)
GG-MOREVUL	0.10	0.02	0.12	-1.12	0.36***	0.38***	0.16***	0.04	0.11	-0.01	-0.20	-0.25	-0.33*	-0.02	-0.14	-0.04	0.15	0.06
	(0.18)	(0.14)	(0.15)	(0.68)	(0.08)	(0.18)	(0.07)	(0.12)	(0.11)	(0.16)	(0.15)	(0.16)	(0.18)	(0.08)	(0.14)	(0.10)	(0.09)	(0.09)
GG-NEA	0.06	-0.09**	0.03	1.20**	0.35***	0.35**	0.11	0.16	0.09	0.15	0.02	-0.01	-0.20	0.03	-0.01	0.25***	0.23***	0.17
	(0.48)	(0.04)	(0.19)	(0.47)	(0.07)	(0.15)	(0.09)	(0.11)	(0.11)	(0.17)	(0.14)	(0.13)	(0.34)	(0.04)	(0.07)	(0.08)	(0.08)	(0.11)
NFC-DOM	-0.54	0.21	-0.30	0.41	0.31**	1.05	-0.11	0.09	0.09	0.41	0.09	0.02	-0.77	0.20**	0.12	-0.20*	0.11*	-0.02
	(0.48)	(0.16)	(0.34)	(0.48)	(0.14)	(0.83)	(0.14)	(0.08)	(0.10)	(0.34)	(0.10)	(0.09)	(1.42)	(0.08)	(0.43)	(0.11)	(0.07)	(0.06)
NFC-LESSVUL	-0.16	0.22*	-0.10	-0.56	0.58***	0.51***	0.37***	0.25***	0.26***	0.29	0.02	-0.07	-0.24	0.20***	0.23	-0.05	0.41***	0.27***
	(0.27)	(0.13)	(0.20)	(0.49)	(0.08)	(0.20)	(0.07)	(0.10)	(0.11)	(0.26)	(0.14)	(0.14)	(0.28)	(0.07)	(0.18)	(0.09)	(0.07)	(0.07)
NFC-MOREVUL	0.17	0.05	0.25	-0.87*	0.37***	0.32***	0.47	0.26***	0.25*	0.30	0.12	0.09	-0.35	0.12***	0.07	0.01	0.37***	0.28***
	(0.38)	(0.08)	(0.33)	(0.47)	(0.06)	(0.11)	(0.31)	(0.12)	(0.15)	(0.39)	(0.18)	(0.18)	(0.28)	(0.06)	(0.08)	(0.12)	(0.07)	(0.07)
NFC-NEA	0.18	0.08	0.13	-0.98*	0.38***	-0.33	0.32***	0.18*	0.15	0.01	-0.05	-0.10	0.89	0.03	0.32	0.13**	0.27***	0.21***
	(0.45)	(0.10)	(0.24)	(0.46)	(0.07)	(0.70)	(0.05)	(0.10)	(0.09)	(0.10)	(0.13)	(0.13)	(1.37)	(0.04)	(0.32)	(0.05)	(0.05)	(0.05)
Constant	0.84	0.20	0.46	1.48	0.11	0.93***	0.30	0.28*	0.67***	-0.63	0.08	0.17	1.22	0.10	0.50**	0.17	0.15	0.16
	(0.56)	(0.16)	(0.31)	(1.04)	(0.17)	(0.44)	(0.25)	(0.14)	(0.20)	(0.67)	(0.17)	(0.18)	(0.83)	(0.12)	(0.22)	(0.25)	(0.11)	(0.11)
Observations	714	758	971	446	1,152	1,177	959	1,644	1,660	524	1,143	1,149	470	1,216	1,235	540	1,511	1,525
R-squared	0.51	0.85	0.41	0.48	0.89	0.53	0.35	0.78	0.65	0.61	0.74	0.73	0.48	0.86	0.63	0.60	0.87	0.86

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses, clustered at holder and issuer country-sector level. B-DOM, B-LESSVUL, B-MOREVUL and B-NEA are dummy variables for exposures to debt securities issued by banks resident, respectively, in the domestic economy, other less vulnerable euro area countries, other more vulnerable euro area countries and non-euro area countries. GG-DOM, GG-LESSVUL, GG-MOREVUL, GG-NEA, NFC-DOM, NFC-LESSVUL, NFC-MOREVUL, NFC-NEA are equivalent dummy variables for securities issued by the general government sector and NFCs.

Table 6: More vulnerable euro area countries – debt securities – 2020Q1-2020Q2

	(1) B_dir	(2) B_ind	(3) B_tot	(4) OFI_dir	(5) OFI_ind	(6) OFI_tot	(7) IC_dir	(8) IC_ind	(9) IC_tot	(10) PF_dir	(11) PF_ind	(12) PF_tot	(13) NFC_dir	(14) NFC_ind	(15) NFC_tot	(16) HH_dir	(17) HH_ind	(18) HH_tot
$ln(h^{tc,a,ts}_{hc,hs})$	-0.09***	-0.05*	-0.06***	-0.16	-0.05*	-0.13	-0.04**	-0.03	-0.03**	0.01	-0.03	-0.05***	-0.13***	-0.05***	-0.06**	-0.03	-0.04**	-0.02
	(0.03)	(0.03)	(0.02)	(0.12)	(0.02)	(0.09)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(0.04)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Distance	-0.11	0.04	-0.06	-0.02	-0.00	-0.21	-0.05	0.02	-0.02	0.09	0.01	0.02	-0.30**	0.02	-0.06*	-0.10	0.04*	0.01
	(0.07)	(0.05)	(0.06)	(0.22)	(0.03)	(0.17)	(0.05)	(0.02)	(0.03)	(0.06)	(0.01)	(0.03)	(0.14)	(0.03)	(0.03)	(0.08)	(0.02)	(0.02)
Imports	-0.02	0.02	-0.01	0.02	0.00	-0.00	-0.00	0.01	0.01	-0.03**	0.01	0.00	0.04*	0.02	-0.00	0.04	0.01	0.01
	(0.02)	(0.02)	(0.02)	(0.07)	(0.01)	(0.03)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.03)	(0.01)	(0.01)	(0.03)	(0.01)	(0.01)
Com. language	0.06	0.02	0.04	0.01	-0.04	-0.05	-0.04	-0.01	-0.04	-0.15	0.02**	0.11	-0.39	0.00	0.00	-0.07	0.01	-0.00
	(0.15)	(0.03)	(0.11)	(0.20)	(0.06)	(0.13)	(0.11)	(0.01)	(0.04)	(0.12)	(0.01)	(0.07)	(0.31)	(0.02)	(0.03)	(0.10)	(0.02)	(0.02)
B-DOM	0.48	0.72**	0.57	0.19	0.20	-0.02	0.34**	0.07	0.40***	0.21	0.10	0.22	0.22	0.51	0.41***	-0.28	0.52**	0.24
	(0.31)	(0.44)	(0.39)	(1.11)	(0.13)	(0.43)	(0.17)	(0.13)	(0.11)	(0.22)	(0.12)	(0.19)	(0.32)	(0.33)	(0.13)	(0.52)	(0.21)	(0.15)
B-LESSVUL	0.19	-0.07	0.24	0.12	-0.14*	-0.38	-0.18**	0.14	0.18	-0.02	-0.12***	-0.14**	-0.52*	-0.13***	-0.22***	-0.22	0.28*	0.13
	(0.19)	(0.07)	(0.26)	(0.89)	(0.07)	(0.36)	(0.08)	(0.16)	(0.12)	(0.11)	(0.04)	(0.06)	(0.27)	(0.05)	(0.07)	(0.14)	(0.15)	(0.15)
B-MOREVUL	-0.20	-0.06	-0.05	-0.09	-0.11	-0.71	-0.13	0.12	0.25**	0.16	-0.12	-0.15	-0.87	-0.20**	-0.31*	-0.72	0.29***	0.17**
	(0.27)	(0.13)	(0.20)	(0.80)	(0.12)	(0.56)	(0.14)	(0.10)	(0.11)	(0.15)	(0.12)	(0.10)	(0.53)	(0.09)	(0.16)	(0.50)	(0.10)	(0.09)
B-NEA	-0.48**	-0.32	-0.47	0.36	-0.17**	-0.52	-0.51**	0.30***	-0.03	-0.19*	-0.00	-0.18	-0.72	-0.32	-0.58***	-0.21	0.13	0.11*
	(0.24)	(0.39)	(0.35)	(0.86)	(0.09)	(0.36)	(0.20)	(0.11)	(0.09)	(0.10)	(0.12)	(0.13)	(0.56)	(0.29)	(0.21)	(0.33)	(0.18)	(0.07)
GG-DOM	0.51	0.40	0.46	0.73	-0.12	-0.24	-0.03	-0.04	0.09	-0.02	-0.09	0.38	-0.20	0.15	0.00	0.07	0.16	0.04
	(0.44)	(0.31)	(0.33)	(1.41)	(0.18)	(0.82)	(0.17)	(0.19)	(0.18)	(0.28)	(0.16)	(0.24)	(0.54)	(0.22)	(0.19)	(0.37)	(0.18)	(0.16)
GG-LESSVUL	-0.47**	-0.07	-0.32*	0.75	-0.06	0.06	-0.20**	0.22	0.19	0.28	-0.04	0.11	-1.05***	-0.12**	-0.25***	-0.30*	0.34***	0.20
	(0.22)	(0.10)	(0.18)	(0.92)	(0.10)	(0.42)	(0.09)	(0.13)	(0.13)	(0.19)	(0.06)	(0.15)	(0.32)	(0.06)	(0.09)	(0.16)	(0.13)	(0.12)
GG-MOREVUL	0.16	-0.13	0.21	-0.74	-0.18	-1.15	-0.08	0.11	0.29**	0.15	-0.21**	0.01	-0.71	-0.22***	-0.37***	-0.24	0.23*	0.13
	(0.20)	(0.12)	(0.17)	(1.06)	(0.12)	(0.80)	(0.09)	(0.17)	(0.13)	(0.11)	(0.09)	(0.08)	(0.43)	(0.08)	(0.14)	(0.18)	(0.13)	(0.13)
GG-NEA	-0.40	-0.07	-0.26	-0.10	0.09	-0.40	-0.01	0.38***	0.36***	0.10	0.10	-0.16	0.04	-0.00	-0.15	-0.02	0.41***	0.32***
	(0.35)	(0.07)	(0.26)	(0.54)	(0.13)	(0.56)	(0.06)	(0.06)	(0.04)	(0.09)	(0.16)	(0.14)	(0.19)	(0.11)	(0.18)	(0.19)	(0.07)	(0.05)
NFC-DOM	0.32	0.34	0.08	1.92	0.07	1.05	-0.34*	0.11	0.04	0.02	0.11	0.31	-0.71	0.25	-0.13	-0.03	0.48**	0.22
	(0.38)	(0.30)	(0.27)	(1.71)	(0.17)	(1.23)	(0.18)	(0.15)	(0.12)	(0.25)	(0.13)	(0.20)	(0.49)	(0.22)	(0.13)	(0.47)	(0.21)	(0.16)
NFC-LESSVUL	-0.12	0.07	0.02	-0.18	0.04	-0.41	-0.01	0.30**	0.36***	0.21**	0.05	0.04	-0.46	0.00	-0.09	-0.13	0.43***	0.30**
	(0.26)	(0.09)	(0.22)	(1.12)	(0.08)	(0.44)	(0.10)	(0.14)	(0.13)	(0.11)	(0.06)	(0.06)	(0.28)	(0.05)	(0.08)	(0.14)	(0.14)	(0.13)
NFC-MOREVUL	-0.06	0.11	-0.07	1.04	0.13	0.03	-0.13	0.37***	0.30***	0.38***	0.13	0.11	-0.53	0.05	-0.11	-0.18	0.49***	0.37***
	(0.40)	(0.13)	(0.25)	(1.60)	(0.14)	(0.89)	(0.12)	(0.11)	(0.10)	(0.14)	(0.13)	(0.09)	(0.33)	(0.07)	(0.11)	(0.27)	(0.12)	(0.11)
NFC-NEA	-0.41*	0.01	-0.09	0.37	-0.01	-0.32	0.14***	0.27***	0.28***	0.08	0.02	-0.20*	0.27*	-0.08	-0.10	0.03	0.33***	0.26***
	(0.24)	(0.09)	(0.16)	(0.90)	(0.10)	(0.40)	(0.03)	(0.07)	(0.04)	(0.06)	(0.13)	(0.11)	(0.15)	(0.08)	(0.12)	(0.14)	(0.07)	(0.07)
Constant	1.63**	-0.43	0.91	0.39	0.14	2.48	0.82*	-0.32	0.08	-0.48	0.04	0.23	2.87**	0.08	0.96**	0.72	-0.56**	-0.21
	(0.80)	(0.49)	(0.65)	(1.99)	(0.31)	(1.74)	(0.48)	(0.21)	(0.24)	(0.54)	(0.22)	(0.31)	(1.30)	(0.30)	(0.43)	(0.90)	(0.26)	(0.21)
Observations	416	427	547	190	343	378	523	798	844	386	621	661	193	582	602	355	970	988
R-squared	0.54	0.70	0.60	0.48	0.92	0.48	0.44	0.95	0.68	0.47	0.93	0.60	0.69	0.90	0.79	0.58	0.88	0.85

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses, clustered at holder and issuer country-sector level. B-DOM, B-LESSVUL, B-MOREVUL and B-NEA are dummy variables for exposures to debt securities issued by banks resident, respectively, in the domestic economy, other less vulnerable euro area countries, other more vulnerable euro area countries and non-euro area countries. GG-DOM, GG-LESSVUL, GG-MOREVUL, GG-NEA, NFC-DOM, NFC-LESSVUL, NFC-MOREVUL, NFC-NEA are equivalent dummy variables for securities issued by the general government sector and NFCs.

Table 7: All euro area countries – listed shares – 2019Q4-2020Q1

	(1) B_dir	(2) B_ind	(3) B_tot	(4) OFI_dir	(5) OFI_ind	(6) OFI_tot	(7) IC_dir	(8) IC_ind	(9) IC_tot	(10) PF_dir	(11) PF_ind	(12) PF_tot	(13) NFC_dir	(14) NFC_ind	(15) NFC_tot	(16) HH_dir	(17) HH_ind	(18) HH_tot
$ln(h_{hc,hs}^{ic,a,is})$	-0.15***	-0.09***	-0.11***	-0.08***	-0.04*	-0.06***	-0.07***	-0.01	-0.01*	-0.03*	-0.01	-0.01	-0.07***	0.00	0.00	-0.03**	0.00	0.00
	(0.05)	(0.03)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Distance	-0.03	-0.09***	-0.01	-0.10	-0.01	-0.02	-0.07**	-0.00	-0.01	-0.02	0.01	-0.01	-0.13**	0.00	0.01	-0.04	-0.00	-0.01
	(0.16)	(0.04)	(0.07)	(0.08)	(0.01)	(0.05)	(0.04)	(0.01)	(0.01)	(0.03)	(0.01)	(0.01)	(0.05)	(0.01)	(0.02)	(0.03)	(0.01)	(0.01)
Imports	0.00	0.00	-0.00	-0.02	-0.01**	0.00	-0.01	-0.00	-0.00	0.00	0.01**	0.00	0.00	0.01*	-0.00	0.01	-0.00	0.01*
	(0.04)	(0.01)	(0.02)	(0.03)	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.02)	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)
Com. language	0.03	-0.18**	0.09	-0.00	0.14***	0.14**	0.10*	0.01	0.00	0.00	0.00	0.01	-0.02	-0.04**	0.06	0.02	0.00	-0.00
	(0.34)	(0.07)	(0.17)	(0.10)	(0.03)	(0.05)	(0.05)	(0.01)	(0.01)	(0.05)	(0.01)	(0.02)	(0.09)	(0.02)	(0.04)	(0.03)	(0.01)	(0.01)
B-DOM	-2.34***	-0.30*	-0.80**	-0.60	0.29**	-0.15	-0.09	-0.00	-0.04	-0.47***	-0.01	-0.34***	-0.19	-0.25***	-0.23	0.94***	-0.31***	-0.19***
	(0.84)	(0.16)	(0.40)	(0.66)	(0.12)	(0.41)	(0.19)	(0.05)	(0.07)	(0.15)	(0.06)	(0.13)	(0.27)	(0.05)	(0.14)	(0.10)	(0.05)	(0.06)
B-LESSVUL	-2.46*	-0.30**	-1.11*	-0.92	-0.19	-0.94**	0.29	0.20***	0.10	0.08	0.13*	-0.10	-0.68***	-0.10	-0.16	-0.24**	-0.06	-0.15*
	(1.07)	(0.15)	(0.60)	(0.57)	(0.12)	(0.38)	(0.27)	(0.06)	(0.08)	(0.18)	(0.06)	(0.13)	(0.29)	(0.07)	(0.15)	(0.11)	(0.06)	(0.08)
B-MOREVUL	-2.20**	-0.14	-0.68**	-0.48	-0.03	-0.49	0.22	0.29***	0.12	-0.13	0.18***	-0.18	-0.23	-0.03	0.02	-0.21**	0.02	-0.09**
	(0.90)	(0.12)	(0.39)	(0.55)	(0.15)	(0.42)	(0.21)	(0.06)	(0.08)	(0.17)	(0.04)	(0.13)	(0.33)	(0.05)	(0.15)	(0.09)	(0.03)	(0.05)
B-NEA	0.76***	0.15	0.43**	-0.37*	-0.39***	-0.48***	0.40***	0.24***	0.24***	0.51***	0.26***	0.26***	-0.08	0.25***	0.26***	-0.89***	0.26***	0.24***
	(0.10)	(0.11)	(0.19)	(0.21)	(0.11)	(0.12)	(0.06)	(0.01)	(0.02)	(0.03)	(0.03)	(0.03)	(0.13)	(0.02)	(0.03)	(0.03)	(0.02)	(0.01)
NFC-DOM	-0.52	-1.80***	-1.22***	0.15	0.01	0.89**	-0.53***	-1.33***	-1.28***	-0.61***	-1.18***	-1.24***	0.84**	-0.37***	-0.38**	0.10	-1.38***	-1.34***
	(0.95)	(0.36)	(0.42)	(0.52)	(0.13)	(0.39)	(0.18)	(0.10)	(0.12)	(0.21)	(0.04)	(0.08)	(0.47)	(0.08)	(0.16)	(0.10)	(0.07)	(0.09)
NFC-LESSVUL	-0.52	0.14	0.05	0.19	-0.24*	0.39	-0.14	0.05	0.07	-0.03	-0.03	-0.05	0.37	-0.04	-0.05	-0.13	-0.05	-0.11*
	(0.88)	(0.19)	(0.28)	(0.33)	(0.13)	(0.37)	(0.13)	(0.06)	(0.07)	(0.13)	(0.03)	(0.06)	(0.38)	(0.05)	(0.18)	(0.10)	(0.05)	(0.06)
NFC-MOREVUL	-0.52	0.29	0.14	0.23	-0.09	0.52	-0.17	0.07	0.04	-0.16	-0.03	-0.13*	0.36	-0.04	0.16	-0.25	0.01	-0.07
	(0.85)	(0.23)	(0.27)	(0.34)	(0.14)	(0.39)	(0.19)	(0.06)	(0.07)	(0.12)	(0.07)	(0.07)	(0.26)	(0.09)	(0.16)	(0.20)	(0.07)	(0.07)
NFC-NEA	0.75	1.93***	1.68***	-0.06	-0.17***	-0.21***	0.40***	1.39***	1.38***	0.65***	1.22***	1.20***	-0.44	0.38***	0.39***	-0.04	1.34***	1.34***
	(0.47)	(0.23)	(0.32)	(0.34)	(0.05)	(0.08)	(0.10)	(0.09)	(0.09)	(0.17)	(0.03)	(0.04)	(0.44)	(0.04)	(0.06)	(0.06)	(0.06)	(0.05)
Constant	-1.23	-0.03	-0.81	0.85	0.10	0.30	-0.26	-0.71***	-0.68***	-0.74**	-0.84***	-0.65***	0.75	-0.80***	-0.77***	0.50*	-0.79***	-0.70***
	(1.38)	(0.29)	(0.64)	(0.85)	(0.22)	(0.48)	(0.33)	(0.06)	(0.08)	(0.36)	(0.07)	(0.13)	(0.58)	(0.12)	(0.21)	(0.27)	(0.05)	(0.09)
Observations	353	616	723	515	900	1,010	587	1,787	1,821	496	1,238	1,306	423	955	1,022	838	1,669	1,798
R-squared	0.54	0.88	0.35	0.41	0.94	0.63	0.49	0.92	0.88	0.66	0.95	0.90	0.58	0.88	0.60	0.44	0.94	0.84

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses, clustered at holder and issuer country-sector level. B-DOM, B-LESSVUL, B-MOREVUL and B-NEA are dummy variables for exposures to debt securities issued by banks resident, respectively, in the domestic economy, other less vulnerable euro area countries, other more vulnerable euro area countries and non-euro area countries. NFC-DOM, NFC-LESSVUL, NFC-MOREVUL, NFC-NEA are equivalent dummy variables for securities issued by NFCs.

Table 8: Less vulnerable euro area countries – listed shares – 2019Q4-2020Q1

	(1) B_dir	(2) B_ind	(3) B_tot	(4) OFI_dir	(5) OFI_ind	(6) OFI_tot	(7) IC_dir	(8) IC_ind	(9) IC_tot	(10) PF_dir	(11) PF_ind	(12) PF_tot	(13) NFC_dir	(14) NFC_ind	(15) NFC_tot	(16) HH_dir	(17) HH_ind	(18) HH_tot
$ln(h^{ic,a,is}_{hc,hs})$	-0.18**	0.01	-0.11***	-0.06	0.04***	-0.09***	-0.09***	-0.04**	-0.04***	-0.03	-0.04***	-0.02	-0.07**	-0.05***	-0.01	-0.05*	-0.03	-0.02*
	(0.08)	(0.04)	(0.04)	(0.04)	(0.01)	(0.03)	(0.04)	(0.02)	(0.01)	(0.04)	(0.01)	(0.01)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.01)
Distance	-0.04	-0.02	0.06	-0.03	0.01	0.05	-0.12*	-0.01	-0.02	0.12	-0.00	0.00	-0.20**	-0.02	-0.02	-0.05	-0.02*	-0.01
	(0.30)	(0.03)	(0.12)	(0.03)	(0.01)	(0.05)	(0.06)	(0.01)	(0.02)	(0.20)	(0.01)	(0.02)	(0.08)	(0.02)	(0.02)	(0.06)	(0.01)	(0.01)
Imports	-0.06	0.01	0.02	-0.00	0.00	0.01	-0.04	0.00	0.00	0.01	0.01	0.01*	-0.01	0.01	0.01	-0.00	-0.00	0.00
	(0.10)	(0.01)	(0.03)	(0.03)	(0.00)	(0.02)	(0.02)	(0.01)	(0.01)	(0.04)	(0.01)	(0.01)	(0.02)	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)
Com. language	0.33	-0.13***	-0.08	-0.06	-0.00	0.11	0.10	-0.00	-0.06	0.03	0.02	0.03	0.04	-0.07***	-0.02	0.00	-0.02	-0.01
	(0.51)	(0.05)	(0.32)	(0.03)	(0.00)	(0.09)	(0.10)	(0.02)	(0.04)	(0.11)	(0.03)	(0.03)	(0.11)	(0.02)	(0.03)	(0.04)	(0.02)	(0.02)
B-DOM	-0.25	0.33	1.32*	0.71	0.21**	1.10***	-1.23*	0.32***	0.29**	0.62	0.35***	0.27**	0.12	0.37***	0.40***	0.87***	0.21***	0.54***
	(1.91)	(0.26)	(0.68)	(0.78)	(0.09)	(0.32)	(0.60)	(0.09)	(0.11)	(0.91)	(0.12)	(0.10)	(0.36)	(0.08)	(0.09)	(0.23)	(0.06)	(0.13)
B-LESSVUL	0.40	0.40***	0.72	0.46	0.22**	-0.10	-1.46**	0.45***	0.35***	0.91	0.40***	0.41***	-0.25	0.48***	0.40***	-0.25	0.45***	0.54***
	(1.54)	(0.15)	(0.51)	(0.72)	(0.09)	(0.30)	(0.63)	(0.06)	(0.08)	(0.92)	(0.06)	(0.06)	(0.34)	(0.05)	(0.06)	(0.25)	(0.04)	(0.12)
B-MOREVUL	1.73**	0.23	0.93***	-1.23***	-0.08*	-1.35***	-1.25***	-0.16***	-0.14***	0.74	0.04	0.11**	-0.36	0.35***	0.24***	-0.84***	-0.06	0.01
	(0.74)	(0.14)	(0.37)	(0.46)	(0.05)	(0.22)	(0.27)	(0.05)	(0.05)	(0.49)	(0.07)	(0.05)	(0.25)	(0.06)	(0.09)	(0.11)	(0.05)	(0.04)
B-NEA	0.82***	0.16	0.49***	-0.27	0.02	-0.57***	-0.17	0.25***	0.25***	0.61***	0.29***	0.32***	-0.21	0.28***	0.28***	-0.89***	0.28***	0.24***
	(0.17)	(0.14)	(0.19)	(0.35)	(0.07)	(0.17)	(0.24)	(0.02)	(0.02)	(0.14)	(0.04)	(0.04)	(0.14)	(0.03)	(0.04)	(0.04)	(0.03)	(0.02)
NFC-DOM	0.64	0.22	1.16**	0.30	0.23***	1.00***	1.15***	-0.32**	-0.34***	0.84	-0.24*	-0.43***	0.36	0.33***	0.24	0.13	-0.47***	-0.45***
	(1.56)	(0.21)	(0.54)	(0.93)	(0.09)	(0.28)	(0.28)	(0.14)	(0.12)	(1.05)	(0.14)	(0.13)	(0.78)	(0.08)	(0.16)	(0.15)	(0.16)	(0.10)
NFC-LESSVUL	1.30	0.53***	1.10**	0.23	0.25***	0.16	-0.29	0.73***	0.71***	1.35	0.75***	0.65***	-0.33	0.79***	0.51***	-0.15	0.70***	0.61***
	(0.98)	(0.18)	(0.47)	(0.60)	(0.05)	(0.16)	(0.22)	(0.08)	(0.07)	(0.82)	(0.07)	(0.08)	(0.36)	(0.08)	(0.10)	(0.10)	(0.08)	(0.05)
NFC-MOREVUL	1.16*	0.78***	1.04***	0.08	0.42***	-0.19	-0.57*	0.73***	0.71***	0.96**	0.73***	0.70***	-0.13	0.79***	0.67***	-0.97	0.67***	0.37
	(0.68)	(0.14)	(0.33)	(0.37)	(0.07)	(0.26)	(0.34)	(0.07)	(0.06)	(0.40)	(0.07)	(0.08)	(0.21)	(0.07)	(0.07)	(0.72)	(0.07)	(0.24)
NFC-NEA	0.90	0.36**	0.55*	-0.04	0.00	-0.26**	-1.65***	1.13***	1.13***	0.73**	1.14***	1.23***	-0.87	0.57***	0.45***	-0.16**	1.19***	1.21***
	(0.66)	(0.15)	(0.29)	(0.45)	(0.04)	(0.11)	(0.31)	(0.04)	(0.05)	(0.34)	(0.05)	(0.04)	(0.54)	(0.06)	(0.07)	(0.07)	(0.06)	(0.04)
Constant	-0.72	-0.59**	-1.62	0.05	-0.53***	-0.17	1.15*	-0.65***	-0.55***	-2.11	-0.78***	-0.87***	1.62*	-0.63***	-0.62***	0.67	-0.60***	-0.67***
	(2.78)	(0.28)	(1.07)	(1.52)	(0.15)	(0.57)	(0.64)	(0.13)	(0.17)	(1.90)	(0.15)	(0.15)	(0.84)	(0.14)	(0.21)	(0.53)	(0.10)	(0.12)
Observations	218	362	406	285	534	571	239	851	857	208	576	581	257	593	615	417	780	818
R-squared	0.60	0.87	0.48	0.56	0.98	0.77	0.62	0.88	0.86	0.86	0.96	0.96	0.66	0.88	0.84	0.46	0.94	0.87

*** $p<0.01$, ** $p<0.05$, * $p<0.1$. Robust standard errors in parentheses, clustered at holder and issuer country-sector level. B-DOM, B-LESSVUL, B-MOREVUL and B-NEA are dummy variables for exposures to debt securities issued by banks resident, respectively, in the domestic economy, other less vulnerable euro area countries, other more vulnerable euro area countries and non-euro area countries. NFC-DOM, NFC-LESSVUL, NFC-MOREVUL, NFC-NEA are equivalent dummy variables for securities issued by NFCs.

Table 9: More vulnerable euro area countries – listed shares - 2019Q4-2020Q1

	(1) B.dir	(2) B.ind	(3) B.tot	(4) OFI.dir	(5) OFI.ind	(6) OFI.tot	(7) IC.dir	(8) IC.ind	(9) IC.tot	(10) PF.dir	(11) PF.ind	(12) PF.tot	(13) NFC.dir	(14) NFC.ind	(15) NFC.tot	(16) HH.dir	(17) HH.ind	(18) HH.tot
$ln(h^{zc,a,t8}_{h,c,h,s})$	-0.24**	-0.09***	-0.06	-0.09	0.06***	-0.06**	-0.08	0.00	-0.00	0.02	0.03	0.00	-0.11*	0.01	-0.02	-0.06***	-0.02	0.01
	(0.11)	(0.02)	(0.04)	(0.09)	(0.02)	(0.03)	(0.06)	(0.02)	(0.02)	(0.03)	(0.02)	(0.01)	(0.06)	(0.03)	(0.02)	(0.02)	(0.01)	(0.02)
Distance	0.27	-0.07*	-0.01	-0.46	0.07	-0.08	-0.20	-0.01	-0.05**	-0.00	0.03*	-0.01	-0.22	0.01	-0.06	-0.16*	0.00	-0.02
	(0.78)	(0.04)	(0.17)	(0.55)	(0.06)	(0.11)	(0.26)	(0.02)	(0.02)	(0.11)	(0.01)	(0.03)	(0.25)	(0.04)	(0.06)	(0.09)	(0.01)	(0.02)
Imports	-0.04	-0.05***	0.04	-0.17	-0.05**	-0.02*	0.05	-0.02***	-0.03***	0.00	-0.01***	-0.01	0.03	-0.01*	-0.02	0.01	-0.01***	0.00
	(0.34)	(0.02)	(0.07)	(0.14)	(0.02)	(0.01)	(0.08)	(0.01)	(0.01)	(0.02)	(0.00)	(0.01)	(0.06)	(0.00)	(0.02)	(0.02)	(0.00)	(0.01)
Com. language	-0.40	0.14***	-0.39*	0.37	0.07	0.04	0.31	0.02	0.04	-0.12	0.02**	-0.01	0.04	0.02	-0.00	-0.06	0.04*	0.02
	(0.29)	(0.05)	(0.23)	(0.41)	(0.07)	(0.07)	(0.29)	(0.02)	(0.03)	(0.08)	(0.01)	(0.05)	(0.20)	(0.02)	(0.06)	(0.09)	(0.02)	(0.02)
B-DOM	1.04	-1.09***	-0.03	-2.54	-0.39	-0.20	-0.10	-0.47***	-0.53***	-0.14	-0.10	-0.30	0.00	-0.30**	-0.29	-0.39	-0.31***	-0.20
	(6.01)	(0.24)	(1.08)	(2.90)	(0.29)	(0.29)	(1.42)	(0.09)	(0.11)	(0.44)	(0.07)	(0.21)	(1.24)	(0.12)	(0.26)	(0.46)	(0.07)	(0.19)
B-LESSVUL	-1.00	-0.73***	0.04	-0.62	0.29**	-0.45	0.13	0.52***	0.55***	0.22	0.16**	-0.09	-0.54	0.05	-0.19	0.42	0.54***	0.40***
	(0.99)	(0.15)	(0.66)	(1.09)	(0.12)	(0.31)	(0.81)	(0.04)	(0.13)	(0.32)	(0.08)	(0.13)	(0.45)	(0.13)	(0.14)	(0.51)	(0.04)	(0.05)
B-MOREVUL	-0.79	-0.95***	-0.48	-0.44	-0.17	-0.54	-0.65	0.01	-0.06	-0.29	-0.11*	-0.52***	-0.79	-0.42**	-0.63***	-0.02	0.03	0.01
	(1.89)	(0.15)	(0.84)	(0.82)	(0.15)	(0.35)	(0.61)	(0.04)	(0.07)	(0.32)	(0.06)	(0.18)	(0.56)	(0.17)	(0.20)	(0.48)	(0.07)	(0.04)
B-NEA	-0.25	-0.32***	0.41	-0.26	-0.04	-0.57**	-0.09***	0.22***	0.18***	-0.08	-0.11	-0.22***	-0.25	-0.20	-0.42***	0.62	0.26***	0.23***
	(0.73)	(0.10)	(0.73)	(0.52)	(0.09)	(0.25)	(0.02)	(0.02)	(0.02)	(0.21)	(0.08)	(0.08)	(0.18)	(0.13)	(0.12)	(0.48)	(0.01)	(0.03)
NFC-DOM	1.61	-0.22	0.56	-2.99	0.00	-0.02	0.13	0.05	-0.14	0.89**	0.20*	0.20	0.38	0.15	-0.12	-0.24	-0.64***	-0.93***
	(5.81)	(0.25)	(1.05)	(2.92)	(0.32)	(0.32)	(1.03)	(0.10)	(0.13)	(0.44)	(0.11)	(0.18)	(1.06)	(0.18)	(0.30)	(0.32)	(0.11)	(0.30)
NFC-LESSVUL	0.98	0.11	0.67	0.14	0.30***	0.16	0.07	0.69***	0.67***	0.36*	0.24***	0.23***	0.09	0.18***	0.12	0.83*	0.80***	0.54***
	(1.37)	(0.08)	(0.71)	(0.94)	(0.10)	(0.39)	(0.36)	(0.08)	(0.11)	(0.20)	(0.02)	(0.05)	(0.40)	(0.06)	(0.10)	(0.47)	(0.08)	(0.11)
NFC-MOREVUL	0.52	-0.18	0.46	-0.47	0.30***	-0.20	0.03	0.65***	0.60***	0.31	0.23***	0.13	0.02	0.09	-0.00	0.62	0.72***	0.57***
	(1.76)	(0.12)	(0.78)	(1.02)	(0.12)	(0.29)	(0.64)	(0.06)	(0.09)	(0.32)	(0.09)	(0.12)	(0.57)	(0.16)	(0.14)	(0.47)	(0.06)	(0.08)
NFC-NEA	0.04	-0.44***	0.36	0.71**	-0.09	-0.22	0.24	0.38***	0.38***	-0.56**	-0.06*	-0.08*	0.16	-0.11*	-0.16*	0.98*	1.30***	1.41***
	(0.39)	(0.07)	(0.63)	(0.29)	(0.06)	(0.19)	(0.86)	(0.05)	(0.07)	(0.28)	(0.03)	(0.05)	(0.67)	(0.07)	(0.07)	(0.52)	(0.06)	(0.05)
Constant	-1.16	0.88**	-0.95	5.53	-0.30	1.11	1.19	-0.56***	-0.08	-0.61	-0.66***	-0.23	1.62	-0.40	0.61	0.42	-0.64***	-0.53**
	(9.39)	(0.44)	(1.99)	(6.37)	(0.58)	(1.13)	(2.81)	(0.17)	(0.25)	(1.05)	(0.18)	(0.30)	(2.72)	(0.41)	(0.67)	(1.00)	(0.09)	(0.26)
Observations	95	191	227	76	166	185	109	402	404	166	311	326	99	281	286	188	497	511
R-squared	0.84	0.93	0.72	0.89	0.96	0.87	0.72	0.98	0.96	0.76	0.99	0.88	0.73	0.95	0.72	0.71	0.99	0.96

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses, clustered at holder and issuer country-sector level. B-DOM, B-LESSVUL, B-MOREVUL and B-NEA are dummy variables for exposures to debt securities issued by banks resident, respectively, in the domestic economy, other less vulnerable euro area countries, other more vulnerable euro area countries and non-euro area countries. NFC-DOM, NFC-LESSVUL, NFC-MOREVUL, NFC-NEA are equivalent dummy variables for securities issued by NFCs.

Table 10: All euro area countries – listed shares – 2020Q1-2020Q2

	(1) B_dir	(2) B_ind	(3) B_tot	(4) OFI_dir	(5) OFI_ind	(6) OFI_tot	(7) IC_dir	(8) IC_ind	(9) IC_tot	(10) PF_dir	(11) PF_ind	(12) PF_tot	(13) NFC_dir	(14) NFC_ind	(15) NFC_tot	(16) HH_dir	(17) HH_ind	(18) HH_tot
$\ln(h^{ic,a,is}_{hc,hs})$	-0.10**	0.01	-0.06**	-0.07***	-0.09***	-0.04***	-0.04**	0.01	-0.00	-0.00	-0.01	0.00	-0.04***	-0.01	-0.02***	-0.03***	0.01	0.00
	(0.04)	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
Distance	-0.02	-0.00	-0.11	-0.05	-0.03	-0.03	-0.04	0.00	-0.01	-0.03	-0.00	-0.02	-0.05	0.00	-0.04**	-0.03*	0.00	-0.01
	(0.24)	(0.02)	(0.08)	(0.06)	(0.02)	(0.03)	(0.04)	(0.01)	(0.01)	(0.03)	(0.01)	(0.01)	(0.03)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)
Imports	0.04	0.00	0.00	-0.03	0.01	-0.01	-0.02*	-0.00	-0.00	0.01	-0.00	0.00	-0.02	0.00	-0.00	-0.01*	-0.00	-0.00
	(0.09)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)
Com. language	-0.37	-0.03	-0.23*	0.07	-0.17***	-0.06	0.09*	0.01	0.02**	0.24***	0.03**	0.11***	0.02	0.02	0.00	0.02	0.02***	0.02*
	(0.37)	(0.02)	(0.12)	(0.11)	(0.04)	(0.04)	(0.05)	(0.01)	(0.01)	(0.06)	(0.01)	(0.02)	(0.05)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)
B-DOM	-0.76	0.07	-1.22***	0.73	0.62***	0.56	-0.27	-0.48***	-0.48***	-0.21*	0.49***	-0.36***	0.17	0.16***	-0.53***	0.04	0.32***	-0.43***
	(1.18)	(0.11)	(0.35)	(0.51)	(0.16)	(0.37)	(0.27)	(0.05)	(0.04)	(0.11)	(0.07)	(0.11)	(0.16)	(0.06)	(0.06)	(0.08)	(0.12)	(0.06)
B-LESSVUL	-0.90	0.78***	-0.42	-0.04	-0.05	0.46	0.78**	0.05	0.08*	0.05	1.02***	0.03	0.15	0.64***	0.03	0.06	0.78***	0.01
	(1.10)	(0.08)	(0.38)	(0.51)	(0.12)	(0.53)	(0.33)	(0.04)	(0.04)	(0.20)	(0.10)	(0.08)	(0.16)	(0.05)	(0.08)	(0.08)	(0.12)	(0.08)
B-MOREVUL	-0.85	0.62***	-0.59**	0.03	-0.24	0.02	0.68**	-0.09	-0.05	-0.14	0.87***	-0.01	0.08	0.58***	-0.13	0.02	0.69***	-0.04
	(0.98)	(0.11)	(0.29)	(0.43)	(0.20)	(0.34)	(0.30)	(0.12)	(0.10)	(0.20)	(0.14)	(0.09)	(0.17)	(0.14)	(0.12)	(0.07)	(0.09)	(0.09)
B-NEA	0.52***	0.68***	0.83***	-0.54***	-0.54***	-0.37***	0.99***	0.49***	0.51***	0.52***	0.52***	0.51***	-0.16**	0.58***	0.56***	0.00	0.46***	0.42***
	(0.19)	(0.06)	(0.12)	(0.21)	(0.09)	(0.09)	(0.06)	(0.02)	(0.03)	(0.02)	(0.10)	(0.09)	(0.06)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
NFC-DOM	-2.44	-1.66***	-3.10***	0.26	-0.48**	-0.78***	-1.47***	-1.18***	-1.26***	-0.62***	-0.45***	-0.49***	0.30	-0.73***	-0.87***	0.16***	-1.08***	-1.07***
	(1.92)	(0.19)	(0.73)	(0.60)	(0.19)	(0.18)	(0.18)	(0.18)	(0.18)	(0.13)	(0.10)	(0.11)	(0.23)	(0.11)	(0.09)	(0.07)	(0.13)	(0.13)
NFC-LESSVUL	-2.59	0.14	-1.14	-0.16	-0.05	-0.13	-0.26*	0.04	-0.05	-0.10	-0.02	-0.00	0.10	0.05	-0.13	-0.01	0.01	-0.00
	(1.77)	(0.09)	(0.71)	(0.32)	(0.18)	(0.17)	(0.13)	(0.04)	(0.05)	(0.08)	(0.03)	(0.07)	(0.11)	(0.10)	(0.14)	(0.06)	(0.05)	(0.05)
NFC-MOREVUL	-2.88	0.07	-1.43**	-0.38*	-0.25	-0.36***	-0.31*	0.04	-0.08*	-0.06	-0.03	-0.03	-0.03	0.03	-0.13	-0.09	-0.02	-0.08*
	(1.76)	(0.06)	(0.71)	(0.22)	(0.18)	(0.14)	(0.14)	(0.03)	(0.04)	(0.13)	(0.04)	(0.09)	(0.20)	(0.10)	(0.10)	(0.07)	(0.05)	(0.05)
NFC-NEA	0.43**	1.74***	1.93***	-0.47	0.49***	0.63***	1.17***	1.19***	1.18***	0.69***	0.43***	0.47***	-0.32	0.82***	0.85***	-0.22***	1.05***	1.01***
	(0.19)	(0.18)	(0.26)	(0.53)	(0.10)	(0.11)	(0.10)	(0.18)	(0.18)	(0.06)	(0.10)	(0.09)	(0.21)	(0.04)	(0.04)	(0.05)	(0.12)	(0.12)
Constant	-0.53	-0.60***	0.15	1.09*	0.82***	0.71**	-0.55*	-0.47***	-0.39***	-0.23	-0.49***	-0.37**	1.02***	-0.57***	-0.21	0.51***	-0.44***	-0.28***
	(2.45)	(0.18)	(0.75)	(0.57)	(0.22)	(0.30)	(0.32)	(0.07)	(0.07)	(0.32)	(0.11)	(0.16)	(0.39)	(0.11)	(0.16)	(0.17)	(0.06)	(0.08)
Observations	341	625	714	521	903	1,014	568	1,760	1,791	491	1,221	1,289	423	940	1,010	846	1,646	1,780
R-squared	0.50	0.88	0.36	0.33	0.82	0.45	0.31	0.83	0.80	0.47	0.90	0.73	0.42	0.88	0.71	0.53	0.89	0.81

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses, clustered at holder and issuer country-sector level. B-DOM, B-LESSVUL, B-MOREVUL and B-NEA are dummy variables for exposures to debt securities issued by banks resident, respectively, in the domestic economy, other less vulnerable euro area countries, other more vulnerable euro area countries and non-euro area countries. NFC-DOM, NFC-LESSVUL, NFC-MOREVUL, NFC-NEA are equivalent dummy variables for securities issued by NFCs.

Table 11: All euro area countries – debt securities – 2014Q4-2017Q4

	(1) B_dir	(2) B_ind	(3) B_tot	(4) OFI_dir	(5) OFI_ind	(6) OFI_tot	(7) IC_dir	(8) IC_ind	(9) IC_tot	(10) PF_dir	(11) PF_ind	(12) PF_tot	(13) NFC_dir	(14) NFC_ind	(15) NFC_tot	(16) HH_dir	(17) HH_ind	(18) HH_tot
$ln(h^{tc,a,ts}_{hc,hs})$	-0.31*** (0.03)	-0.35*** (0.04)	-0.31*** (0.02)	-0.41*** (0.05)	-0.30*** (0.03)	-0.40*** (0.04)	-0.35*** (0.02)	-0.36*** (0.02)	-0.36*** (0.02)	-0.30*** (0.03)	-0.32*** (0.02)	-0.26*** (0.02)	-0.41*** (0.05)	-0.41*** (0.03)	-0.44*** (0.04)	-0.20*** (0.03)	-0.25*** (0.03)	-0.29*** (0.02)
Distance	-0.37*** (0.07)	-0.19*** (0.03)	-0.35*** (0.06)	-0.06 (0.09)	-0.16*** (0.03)	-0.27*** (0.06)	-0.23*** (0.04)	-0.12*** (0.02)	-0.21*** (0.03)	-0.32*** (0.06)	-0.05* (0.02)	-0.16*** (0.04)	-0.23** (0.11)	-0.21*** (0.03)	-0.28*** (0.06)	-0.23*** (0.06)	-0.09*** (0.02)	-0.16*** (0.03)
Imports	-0.02 (0.03)	0.04*** (0.01)	-0.00 (0.03)	-0.07* (0.04)	0.02*** (0.01)	-0.00 (0.02)	0.02 (0.02)	0.01 (0.01)	0.01 (0.01)	0.01 (0.02)	0.00 (0.01)	0.03* (0.01)	0.04 (0.05)	0.01 (0.01)	0.01 (0.02)	-0.03 (0.02)	0.00 (0.01)	0.00 (0.01)
Com. language	-0.05 (0.11)	-0.06 (0.06)	0.02 (0.12)	0.49*** (0.18)	-0.02 (0.03)	0.10 (0.13)	0.13 (0.09)	0.00 (0.03)	0.11** (0.05)	0.08 (0.14)	-0.05 (0.03)	-0.07 (0.05)	-0.00 (0.18)	-0.10** (0.04)	-0.12** (0.07)	-0.00 (0.12)	-0.03 (0.02)	-0.07** (0.03)
B-DOM	0.52 (0.83)	1.34*** (0.38)	0.66 (0.82)	-2.59** (1.07)	0.66*** (0.24)	-3.00*** (0.65)	0.38 (0.75)	-2.61*** (0.49)	-2.47*** (0.53)	-1.42*** (0.38)	-2.20*** (0.46)	-2.63*** (0.62)	2.31*** (0.81)	-1.49*** (0.25)	-2.85*** (1.09)	0.48 (0.53)	-0.34 (0.97)	-1.35*** (0.19)
B-LESSVUL	-0.20 (0.79)	-0.08 (0.38)	-0.19 (0.81)	-1.01 (1.06)	-0.35 (0.23)	-1.40* (0.64)	-0.97* (0.57)	-1.03* (0.46)	-0.41 (0.46)	-2.69*** (0.28)	-0.80*** (0.29)	-1.89*** (0.38)	-0.25 (0.72)	0.51 (0.32)	-1.42 (1.08)	0.72 (0.52)	0.96 (0.97)	0.06 (0.28)
B-MOREVUL	-2.14** (1.06)	0.27 (0.49)	-1.94** (0.97)	-1.20 (1.05)	0.47** (0.23)	-1.54** (0.73)	-0.95* (0.53)	-0.85 (0.58)	-0.23 (0.42)	-2.52*** (0.41)	-0.41 (0.44)	-1.43*** (0.42)	-0.83 (0.78)	0.92*** (0.23)	-1.67 (1.09)	0.13 (0.49)	1.68* (1.01)	0.11 (0.25)
B-NEA	-0.32 (0.40)	-0.86*** (0.23)	-0.27 (0.30)	2.07*** (0.46)	-0.74*** (0.15)	2.04*** (0.40)	-0.98* (0.57)	1.95*** (0.21)	2.36*** (0.40)	-1.06*** (0.19)	1.80*** (0.39)	1.27*** (0.51)	-1.28*** (0.43)	2.21*** (0.13)	2.22*** (0.26)	0.17 (0.26)	1.50*** (0.14)	1.50*** (0.12)
GG-DOM	0.34 (0.73)	2.49** (1.22)	1.39*** (0.44)	-0.96 (0.66)	0.65*** (0.20)	-1.65*** (0.51)	1.19*** (0.43)	-1.86*** (0.52)	-1.91*** (0.50)	0.92*** (0.35)	-2.32*** (0.51)	-0.68 (0.52)	2.27*** (0.84)	0.89*** (0.23)	-0.56 (0.59)	-1.14** (0.48)	0.02 (0.23)	-0.65* (0.34)
GG-LESSVUL	-0.28 (0.30)	1.02 (1.15)	-0.13 (0.31)	-0.74 (0.55)	-0.44** (0.17)	-0.45 (0.68)	-1.01*** (0.38)	-0.26 (0.48)	-0.76* (0.43)	-0.10 (0.30)	-1.10*** (0.34)	0.16 (0.25)	-0.83 (0.70)	2.70*** (0.27)	0.80 (0.80)	0.71 (0.46)	1.16*** (0.22)	0.84** (0.34)
GG-MOREVUL	-0.75* (0.41)	0.41 (1.22)	-0.33 (0.39)	-1.39* (0.79)	-0.30 (0.32)	-1.68* (0.83)	-1.76*** (0.61)	-1.06 (0.67)	-1.13*** (0.55)	0.49 (0.41)	-1.36*** (0.44)	-0.04 (0.33)	-0.69 (0.86)	2.35*** (0.18)	0.11 (0.67)	-0.67 (0.55)	1.11*** (0.28)	-0.07 (0.57)
GG-NEA	-0.40 (0.66)	-1.11*** (0.27)	-1.04*** (0.34)	1.28*** (0.36)	-0.99*** (0.20)	1.56*** (0.20)	-1.30*** (0.23)	1.79*** (0.22)	1.98*** (0.32)	-0.67*** (0.22)	1.52*** (0.39)	1.17** (0.50)	-1.35*** (0.47)	1.88*** (0.14)	1.91*** (0.20)	1.39*** (0.28)	1.33*** (0.14)	1.38*** (0.13)
NFC-DOM	1.93*** (0.72)	0.94*** (0.34)	0.66 (0.84)	-2.84* (1.47)	0.93*** (0.19)	-1.68 (1.25)	3.23*** (0.92)	-1.69*** (0.25)	-0.46 (0.57)	1.43*** (0.49)	0.52 (0.57)	0.74 (0.67)	1.77** (0.99)	0.52*** (0.19)	-0.53 (0.86)	0.23 (0.55)	0.29 (1.13)	0.46 (0.62)
NFC-LESSVUL	-1.08 (0.72)	-1.22*** (0.35)	-0.72 (0.77)	-1.14 (1.50)	-0.69*** (0.23)	-0.10 (1.25)	-0.07 (0.37)	-0.94*** (0.25)	0.16 (0.49)	0.31 (0.51)	1.17*** (0.45)	0.92* (0.48)	-0.92 (0.84)	1.88*** (0.28)	0.56 (0.90)	0.33 (0.50)	0.88 (1.14)	1.39** (0.63)
NFC-MOREVUL	-1.84*** (0.67)	-1.05*** (0.33)	-1.62** (0.74)	-1.41 (1.53)	-0.35* (0.18)	-0.40 (1.30)	-0.28 (0.36)	-0.87* (0.46)	0.32 (0.50)	0.66 (0.50)	1.40*** (0.45)	1.21** (0.54)	-1.50* (0.85)	1.81*** (0.13)	0.55 (0.85)	-0.20 (0.49)	1.06 (1.14)	1.66*** (0.63)
NFC-NEA	-2.91*** (0.29)	-1.48*** (0.25)	-1.13*** (0.43)	1.85*** (0.50)	-1.33*** (0.17)	1.61*** (0.30)	-2.72*** (0.85)	1.22*** (0.21)	1.19*** (0.33)	-1.03*** (0.17)	1.08*** (0.39)	0.57 (0.52)	-1.54*** (0.47)	1.63*** (0.14)	1.77*** (0.17)	-0.09 (0.27)	0.84*** (0.14)	0.95*** (0.16)
Constant	4.51*** (0.81)	3.19*** (0.41)	4.47*** (0.72)	-1.07 (0.86)	3.42*** (0.31)	1.82*** (0.60)	4.09*** (0.48)	0.67*** (0.27)	1.29*** (0.40)	3.76*** (0.66)	0.08 (0.42)	1.13* (0.62)	3.18*** (1.27)	0.76*** (0.25)	1.39*** (0.55)	2.36*** (0.67)	0.85*** (0.22)	1.50*** (0.26)
Observations	1,353	1,155	1,776	769	1,349	1,571	1,612	2,504	2,794	954	1,824	2,006	643	1,532	1,648	981	2,500	2,624
R-squared	0.49	0.82	0.50	0.47	0.89	0.49	0.62	0.93	0.79	0.58	0.84	0.68	0.60	0.86	0.71	0.54	0.88	0.80

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses, clustered at holder and issuer country-sector level. B-DOM, B-LESSVUL, B-MOREVUL and B-NEA are dummy variables for exposures to debt securities issued by banks resident, respectively, in the domestic economy, other less vulnerable euro area countries, other more vulnerable euro area countries and non-euro area countries. GG-DOM, GG-LESSVUL, GG-MOREVUL, GG-NEA, NFC-DOM, NFC-LESSVUL, NFC-MOREVUL, NFC-NEA are equivalent dummy variables for securities issued by the general government sector and NFCs.

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