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Household finance and income inequality in the euro area

Oliver Denk,

Alexandre Cazenave-Lacroutz

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HOUSEHOLD FINANCE AND INCOME INEQUALITY IN THE EURO AREA

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By Oliver Denk and Alexandre Cazenave-Lacroutz

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ABSTRACT/RÉSUMÉ

Household finance and income inequality in the euro area

The size and composition of assets and liabilities of households differ vastly across the income distribution in euro area countries. This paper shows that differences between income groups in household finance on both sides of the balance sheet contribute to income inequality. The distribution of household credit is two times as unequal and the distribution of stock market wealth four times as unequal as the distribution of household income. Larger credit and stock markets may thus widen income inequality by providing people with high incomes with better investment opportunities and raising the returns on their savings. In addition, financial institutions help people protect their consumption against temporary changes in their income. But they do so unevenly across the distribution, as a household is more likely to be denied credit if it has a low income. No evidence is found of discrimination in credit provision against women or immigrants.

JEL classification: D14; D63; E21; E51; G2; J16.

Keywords: Household finance, income inequality, euro area, household credit, consumption smoothing, stock market, wealth inequality, discrimination, women, immigrants, income quintile.

Financement des ménages et inégalités de revenu dans la zone euro

La taille et la composition de l'actif et du passif des ménages sont très variables sur la distribution des revenus dans les pays de la zone euro. Ce document montre que les différences entre quintiles de revenu dans le financement des ménages, de part et d'autre du bilan, contribuent aux inégalités de revenu. La distribution du crédit aux ménages est deux fois plus inégale et la distribution du patrimoine boursier quatre fois plus inégale que la distribution des revenus des ménages. L'expansion des marchés du crédit et d'actions pourrait ainsi contribuer aux inégalités de revenu en offrant aux plus hauts revenus de meilleures possibilités d'investissement et une meilleure rentabilité de leur épargne. Par ailleurs, les établissements financiers aident les ménages à protéger leur consommation en période de fluctuations temporaires de leur revenu. Or, ils le font de manière inégale sur la distribution des revenus puisqu'un ménage a plus de risques de se voir opposer un refus si ses revenus sont faibles. Aucun élément ne vient corroborer l'idée d'une discrimination de l'offre de crédit à l'encontre des femmes ou des personnes issues de l'immigration.

Classification JEL : D14 ; D63 ; E21 ; E51 ; G2 ; J16.

Mots-clés : Financement des ménages, inégalités de revenu, zone euro, crédit aux ménages, lissage de la consommation, marché boursier, inégalités de richesse, discrimination, femmes, immigrés, quintile de revenu.

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HOUSEHOLD FINANCE AND INCOME INEQUALITY IN THE EURO AREA

Oliver Denk and Alexandre Cazenave-Lacroutz[1]

1. Introduction and main findings

1. Income inequality has increased in OECD countries over the past decades (OECD, 2008, 2011, 2015). A large literature has identified important channels behind this development, such as skill-biased technological change and reforms to the tax and transfer systems. A companion paper to this study highlights financial expansion as an additional factor that tends to raise income inequality in OECD countries (Denk and Cournède, 2015). Higher financial sector credit and stock market capitalisation have been associated with greater income inequality.

2. This paper uses household-level data from euro area countries to explore mechanisms related to household finance which can link financial expansion with a more unequal income distribution.[2] The size and composition of the assets and liabilities of households are found to differ strongly across the income distribution. The distribution of household credit and of stock market wealth is considerably more unequal than the distribution of household income. This matters since larger credit and stock markets may thus fuel income inequality by providing people with high incomes with better investment opportunities and with more capital income, i.e. dividends and capital gains, compared with low- and middle-income households.

3. The study is part of a larger OECD project on finance and inclusive growth, with other project papers stressing additional factors affecting the ways in which financial expansion is linked with increased inequality. Denk (2015) analyses the strong presence of financial sector employees at the top of the income distribution. Denk et al. (2015) focus on the beneficiaries of too-big-to-fail guarantees by public authorities for large financial institutions, arguing that they are often high-income households. Cournède et al. (2015a) summarise the overall findings of the project in a non-technical manner.

1. Oliver Denk: Economics Department, OECD. Alexandre Cazenave-Lacroutz: Ecole Polytechnique, Paris. Corresponding author: Oliver Denk (email: Oliver.Denk@oecd.org). This paper is part of the OECD project on "Finance and Inclusive Growth" that was prepared for the Working Party No. 1 of the Economic Policy Committee. We are grateful to Boris Cournède, Peter Hoeller, Sebastian Schich, Jean-Luc Schneider and members of the Working Party No. 1 of the Economic Policy Committee for valuable comments and suggestions.

2. The household-level data used come from the Eurosystem Household Finance and Consumption Survey. The results published and the related observations and analysis may not correspond to results or analysis of the data producers.

4. The main finding of this paper is that differences between income groups in household finance on both sides of the balance sheet contribute to income inequality:

- Credit, which public authorities often support through, for example, implicit subsidies for too-big-to-fail lenders, helps households smooth consumption and undertake investment, but these benefits accrue disproportionately to high-income households:
  - In most countries, household credit is more than twice as unequally distributed as household disposable income.
  - On average, three to four times as many credit-seeking households in the bottom 20% of the income distribution are credit-constrained as in the top 20%. One reason is the much larger probability of low-income households to experience a negative income shock, which significantly increases the likelihood of seeking credit (probably related to the desire to smooth consumption) and being credit-constrained.
- The immediate beneficiaries of the long-term expansion of stock markets have been individuals at the upper end of the income distribution: On average, stock market wealth is four times as unequally distributed as household disposable income, with two-thirds of all stocks in the hands of the top 20% income earners.

5. By contrast, the following two transmission channels, which could link differences in household credit with income inequality, are rejected by the data:

- Lending rate differentiation does not seem to reinforce income inequality: Interest rates on mortgage credit do not vary systematically across the income distribution.
- Financial institutions do not discriminate against vulnerable social groups: Women and immigrants are not less likely to borrow than men and native-borns (conditional on observable characteristics).

6. The remainder of the paper is organised as follows. The next section examines the distribution of household liabilities, essentially credit, across income groups. Sections 3 and 4 continue with a focus on the consumption smoothing role of credit and an investigation into the presence of discriminatory practices in credit provision. The final section is devoted to the distributional consequences of differences in the size and composition of household assets, with a particular focus on stock ownership.

2. Household liabilities and income inequality

7. The allocation of household credit can have substantial distributional implications. An uneven allocation of credit across income groups could:

- Entrench inequality and reduce social mobility as credit availability shapes the opportunity to undertake financial and human capital investments.
- Concentrate the private gains of credit overextension (Cournède and Denk, 2015) associated in particular with too-big-to-fail guarantees (Schich et al., 2014) on some groups of borrowers who benefit disproportionately from abundant credit at too low interest rates.

- Reflect targeted lending to individuals with good investment prospects, but it may also mean that some people with excessive leverage are more financially vulnerable, while others face difficulty undertaking investments.

- Allow some households to smooth consumption more effectively than others over the life-cycle and in the face of income shocks.

8. Until recently, the scarcity of internationally comparable individual-level data on household income and balance sheets impeded a cross-country analysis of the role of household finance for income inequality. However, the new Eurosystem Household Finance and Consumption Survey (HFCS) now facilitates an exploration of these questions in most euro area countries, 12 of which are members of the OECD. The HFCS interviewed 62 000 households during 2010-11, and oversampling of wealthy and high-income households implies that the top 5% and top 10% income earners are well represented.[3] Related studies on other countries and time periods depict patterns that are broadly similar to those found here (for overviews, see Campbell, 2006; Guiso and Sodini, 2013), although their primary focus is usually the wealth, not the income distribution. With its emphasis on the liabilities side of households' balance sheets, this paper complements evidence from the OECD Wealth Distribution database in OECD (2015).

9. This section investigates the role that household credit has for income inequality using data from the HFCS. The analysis is based on annual household gross income (which accounts for labour earnings, capital income and social transfers)[4] and weights observations to make the sample representative of the actual population. The following statistics rank households according to their income and divide them into five income quintiles to study the relationship between credit variables and the income distribution.

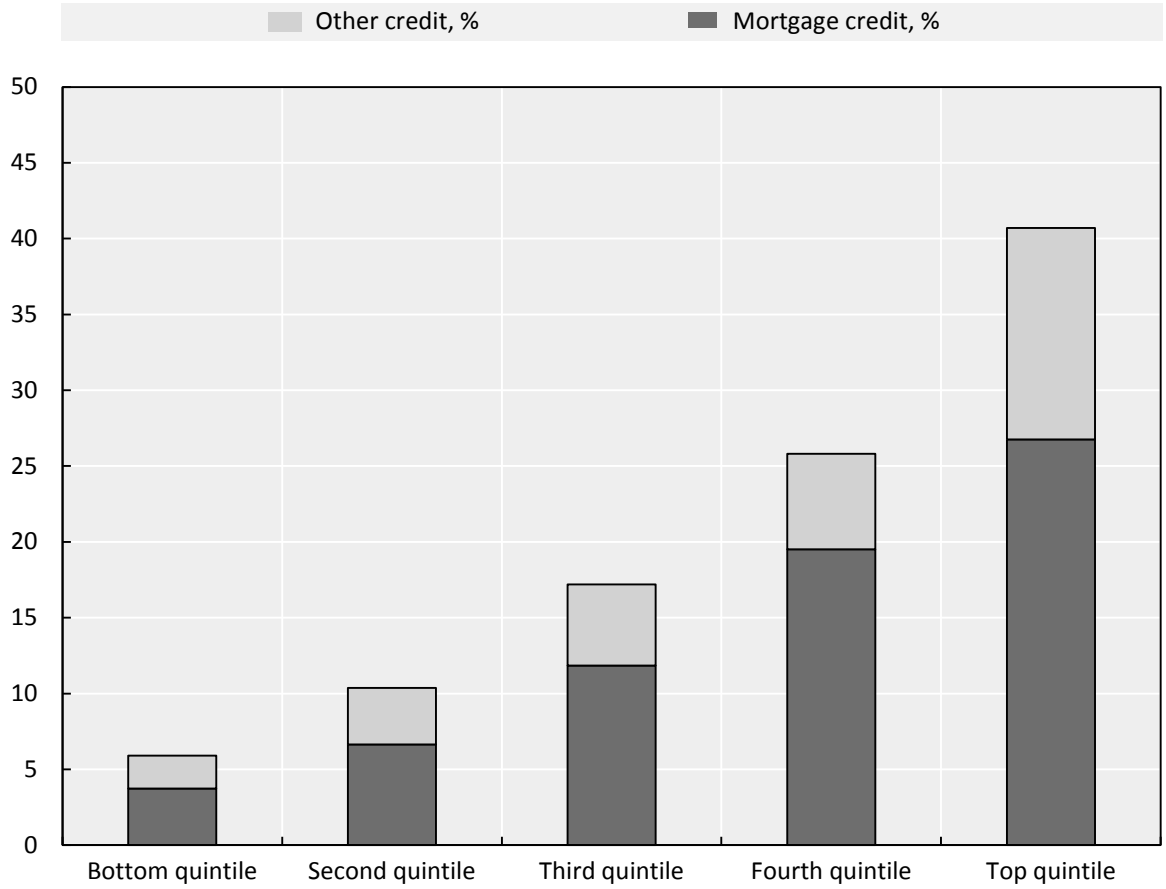
10. Well-off households hold a large share of total household credit. The top 40% hold 65% of all household credit and the top 20% hold 40%, on average in the euro area (Figure 1). The pattern is very similar across countries, with the credit share rising along the income distribution (Figure 2). These differences in the size of credit between income groups are not related with differences in broad indicators of credit composition. Two-thirds of total household credit are main residence loans. But the proportion of mortgage credit on a household's main residence in the quintile's overall credit share is about the same across the income distribution. Other credit comprises mortgage credit on other properties of the household, credit card debt, credit line or overdraft and non-collateralised loans.

3. Some caveats, although not that important, need to be kept in mind. For example, persons living in collective households or in institutions and the homeless are generally excluded, and for several variables missing values are imputed. Details are provided in Eurosystem Household Finance and Consumption Network (2013a).

4. The precise components of annual household gross income are: gross cash employee income, including bonuses; self-employment income; income from public, occupational and private pension plans and other social transfers, including unemployment benefits; private transfers; gross income from real estate property; gross income from financial investment; gross income from private business other than self-employment; and gross income from other sources.

Figure 1. The distribution of household credit

Euro area countries, 2010



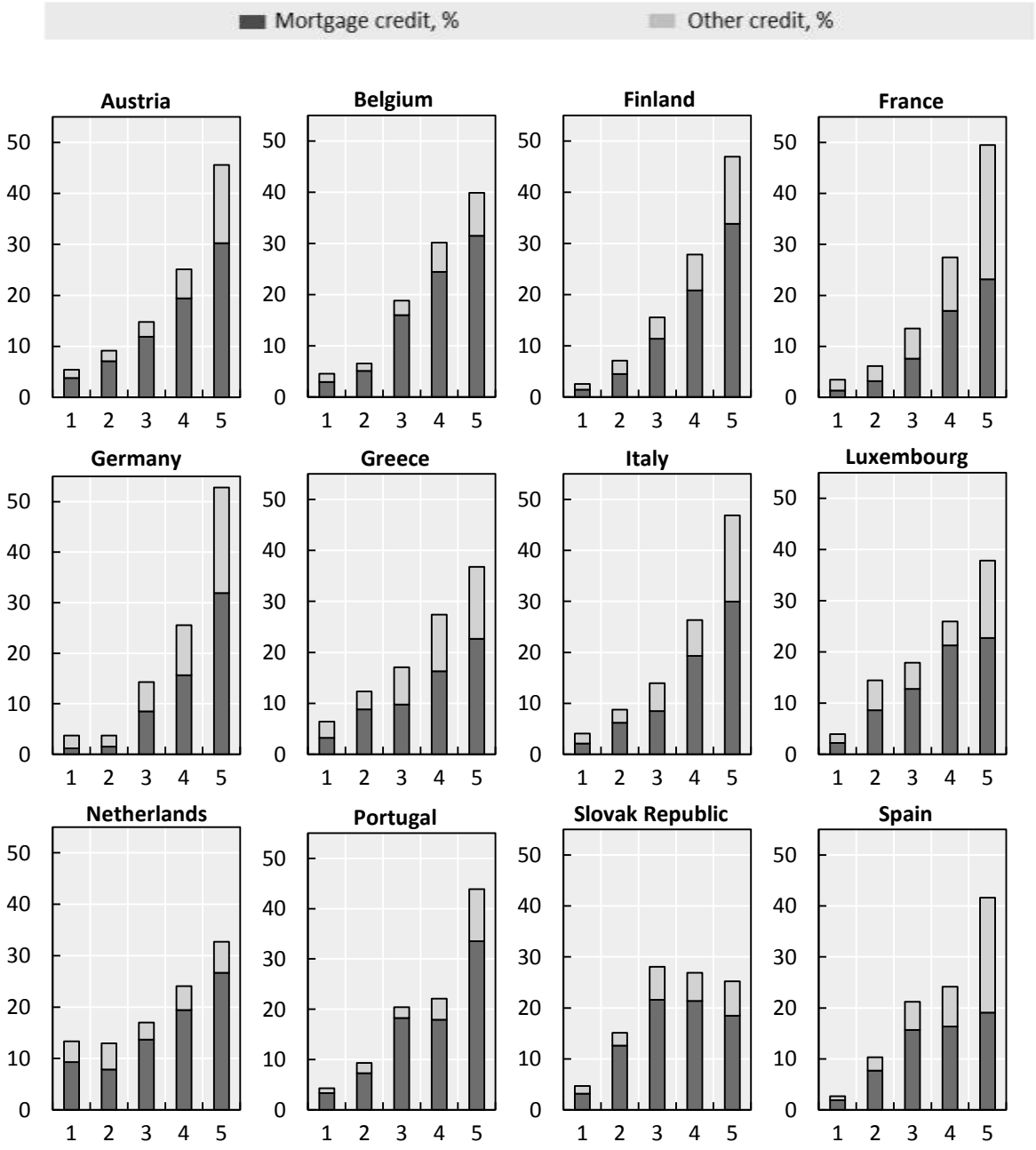
Note: Mortgage credit is mortgage credit on households' main residence for an income quintile as a share of total credit. Other credit is mortgage credit on households' other properties, credit card debt, credit line or overdraft and non-collateralised loans for an income quintile as a share of total credit. Income quintiles are based on annual household gross income. The figure depicts the simple average of OECD countries which belong to the euro area and for which data are available.

Source: OECD Secretariat calculations using Eurosystem Household Finance and Consumption Survey.

11. Further analysis indicates that financial depth is uncorrelated with the share of credit going to the poor (Figure 3). Financial depth is measured as credit by banks and other financial institutions to the non-financial private sector, or intermediated credit, relative to GDP. No systematic link appears between the size of intermediated credit and the share of credit going to the 20% of households with the lowest incomes, or to the next 20% in the income distribution. This statistical pattern of the data suggests that this possible pro-poor channel of financial expansion is not operating in the euro area. However, the sample refers to a rather narrow group of countries for a single year. More definitive assessments would require further analysis over more countries and time periods, which the euro area dataset used for this study does not permit.

Figure 2. The distribution of household credit across income quintiles

2010

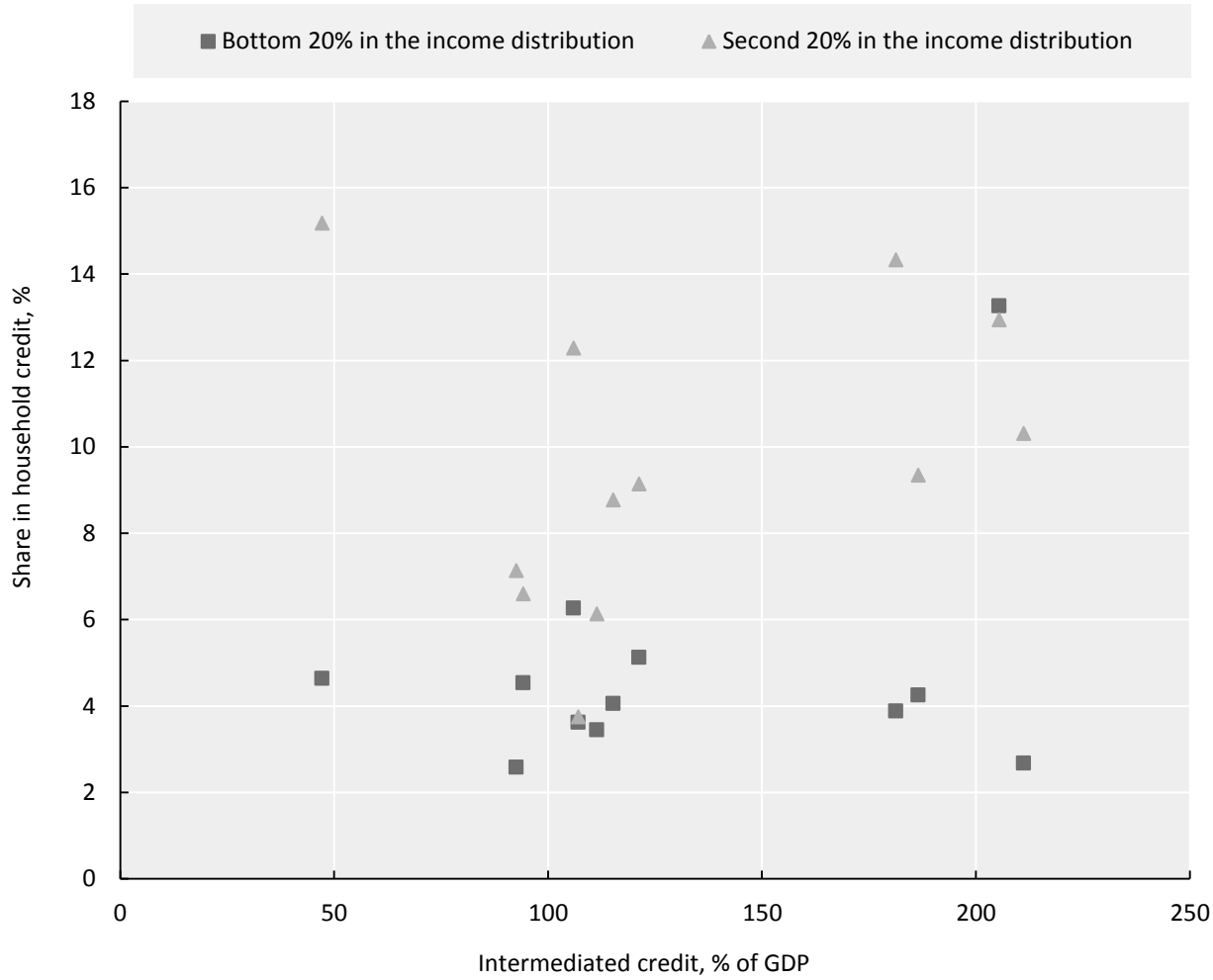


Note: Mortgage credit is mortgage credit on households' main residence for an income quintile as a share of total credit. Other credit is mortgage credit on households' other properties, credit card debt, credit line or overdraft and non-collateralised loans for an income quintile as a share of total credit. Income quintiles are based on annual household gross income.

Source: OECD Secretariat calculations using Eurosystem Household Finance and Consumption Survey.

Figure 3. Financial depth and credit to low-income households

Euro area countries, 2010



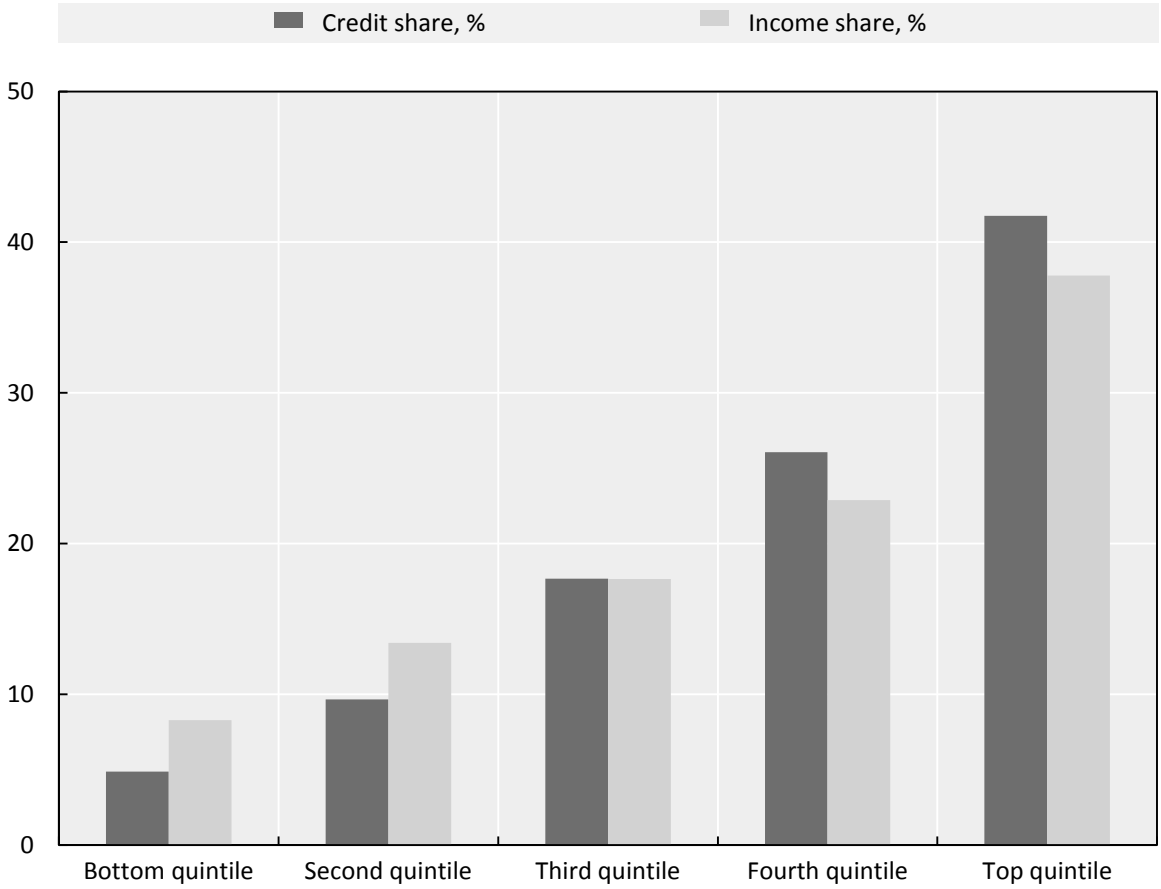
Note: Intermediated credit is credit to the non-financial private sector by financial institutions. Income quintiles are based on annual household gross income.

Source: OECD Secretariat calculations using World Bank Global Financial Development database; Eurosystem Household Finance and Consumption Survey.

12. The consequences of the unequal benefits from overextended, and thus likely underpriced, credit (Cournède and Denk, 2015) and credit availability for income inequality need to be judged from the relative dispersion of credit and disposable income, not from the distribution of credit alone. If too-big-to-fail guarantees and hence implicit subsidies were curbed, interest expenses would rise more for high- than low-income households, but not necessarily relative to their income. Similarly, the disposable income of households should affect the amount of credit banks make available to them. On average in the euro area, household credit is more unequally distributed than disposable income (Figure 4). The ratio of the top 20% credit share to the bottom 20% credit share is two times as high as the ratio of the top 20% income share to the bottom 20% income share. The cross-country average is significantly influenced by data from the Netherlands, where low-income households have more credit, relative to their income, than high-income households and where the credit share of the bottom 20% is an outlier (Figure 5). However, in a majority of countries, credit is more than two times as unequally distributed as income. In these countries, reducing household credit would be conducive to a more equal distribution of income, consumption and investment opportunities, and often as well to higher economic growth.

Figure 4. The distribution of household credit and household income

Euro area countries, 2010

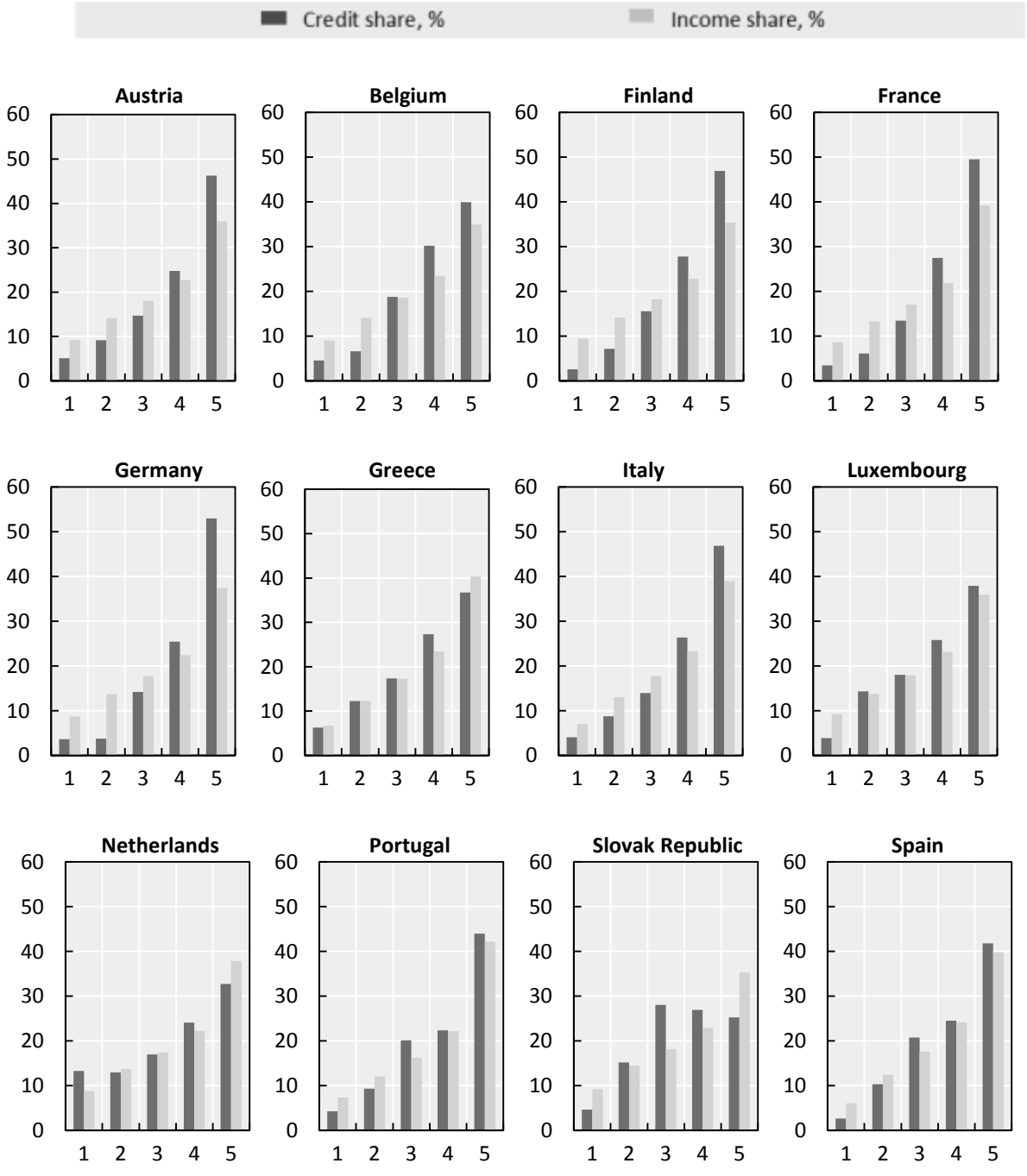


Note: Income quintiles are based on annual household gross income for household credit and on disposable income for household income. The figure depicts the simple average of OECD countries which belong to the euro area and for which data are available.

Source: OECD Secretariat calculations using Eurosystem Household Finance and Consumption Survey; OECD Income Distribution and Poverty database.

Figure 5. The distribution of household credit and household income across income quintiles

2010



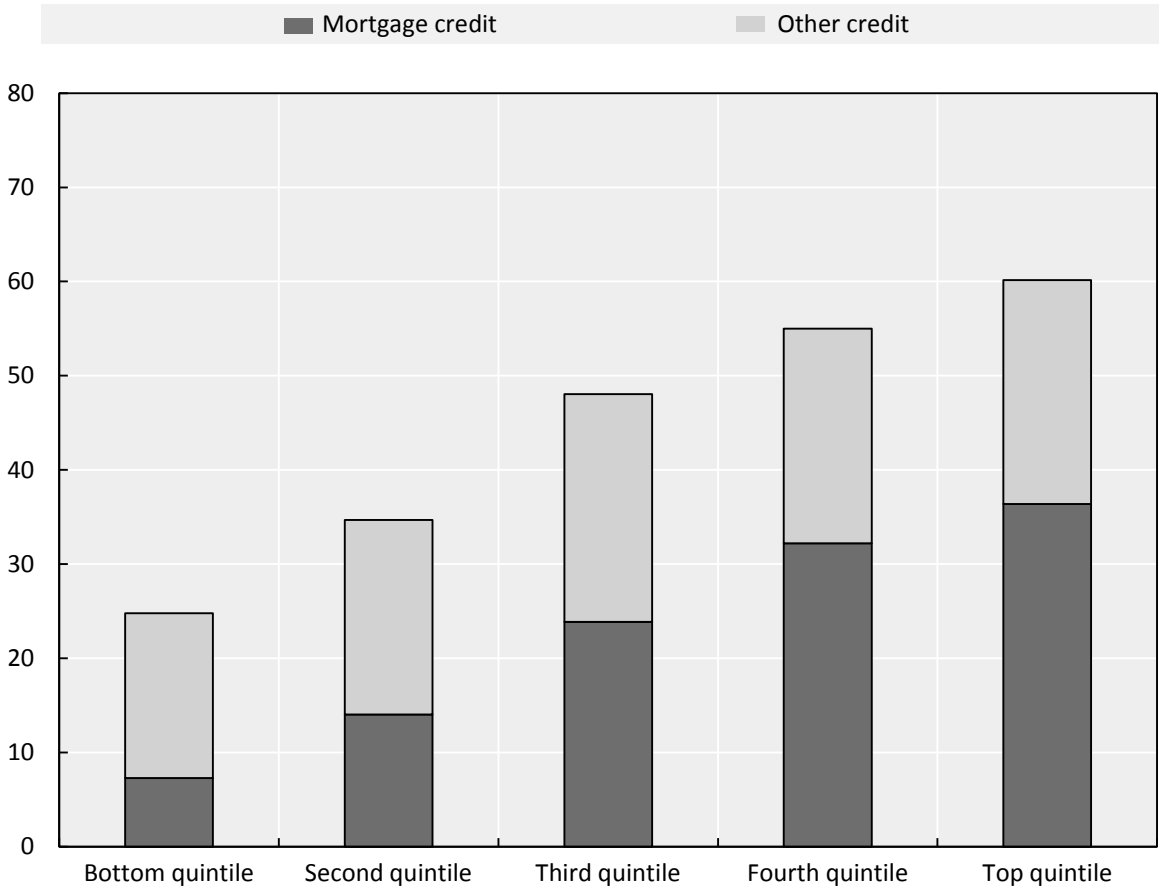
Note: Income quintiles are based on annual household gross income for household credit and on disposable income for household income.

Source: OECD Secretariat calculations using Eurosystem Household Finance and Consumption Survey; OECD Income Distribution and Poverty database.

13. Credit uptake, defined as the share of households who have a credit, is much lower at the bottom of the income distribution than at the top. On average in euro area countries, 150% more households in the top 20% have a credit as households in the bottom 20% (Figure 6). Yet, household credit, relative to disposable income, is only 50% higher for the top 20% as opposed to the bottom 20%. Hence, compared with other income quintiles some low-income households have no credit, while others are highly leveraged. The high leverage of some low-income households in Europe resonates with US evidence (Mian and Sufi, 2014). It may be due to targeted lending to people with good investment prospects, but it could also reflect their undue exposure to financial vulnerabilities and a higher likelihood of experiencing a precarious situation. Other low-income households, by contrast, have difficulty undertaking financial and human capital investments. While average credit participation is quite different across countries, the distributional pattern within countries is fairly similar (Figure 7). Lending to low-income households takes less frequently the form of a mortgage credit on their main residence, probably because they are less likely to be home owners.

Figure 6. Share of households having a credit across the income distribution

Per cent, euro area countries, 2010

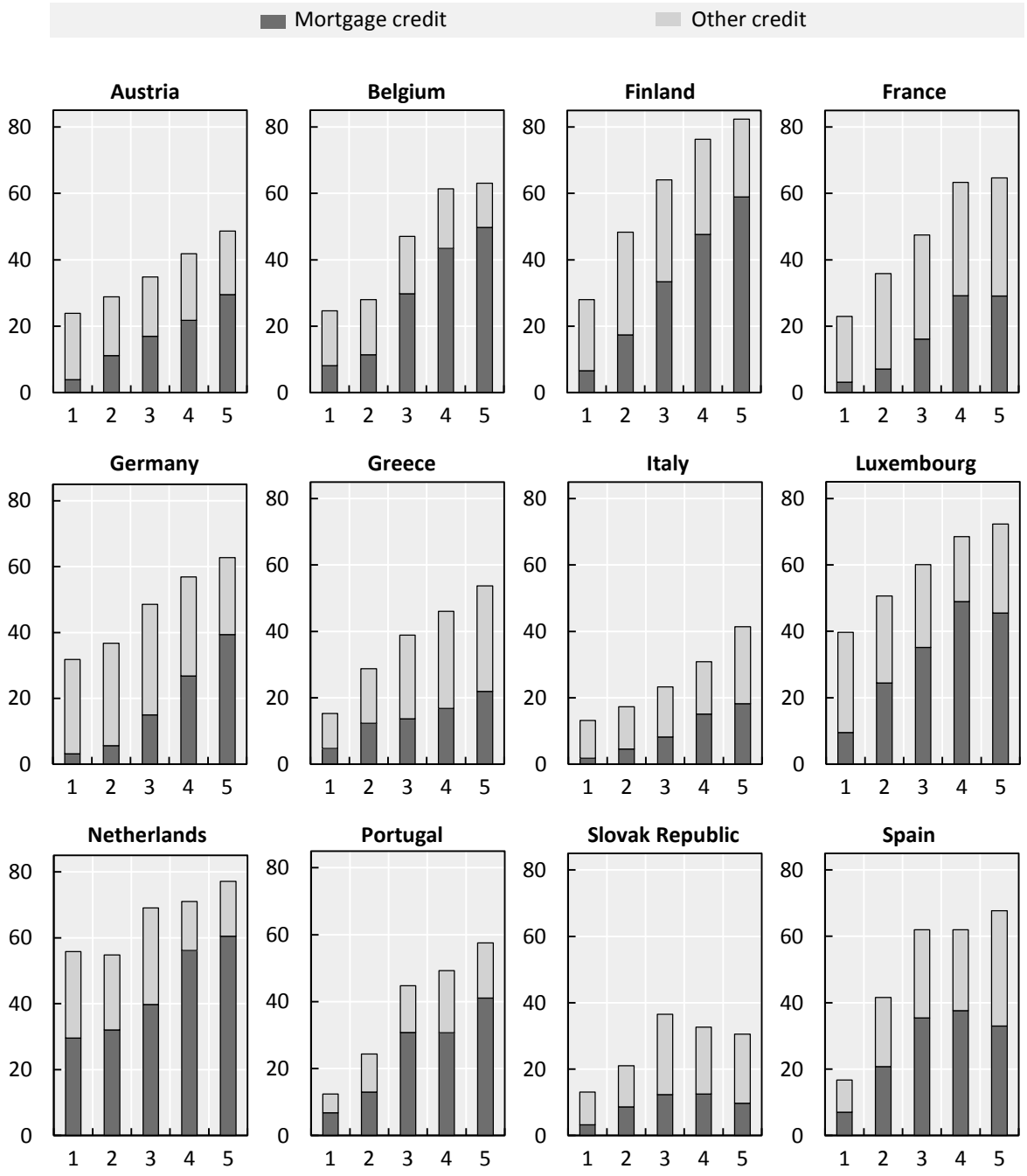


Note: Mortgage credit is the percentage of households in the income quintile who have a mortgage credit on their main residence. Other credit is the percentage of households in the income quintile who have no mortgage credit on their main residence but a mortgage credit on other properties, credit card debt, a credit line or overdraft or non-collateralised loans. Income quintiles are based on annual household gross income. The figure depicts the simple average of OECD countries which belong to the euro area and for which data are available.

Source: OECD Secretariat calculations using Eurosystem Household Finance and Consumption Survey.

Figure 7. Share of households having a credit by income quintile

Per cent, euro area countries, 2010



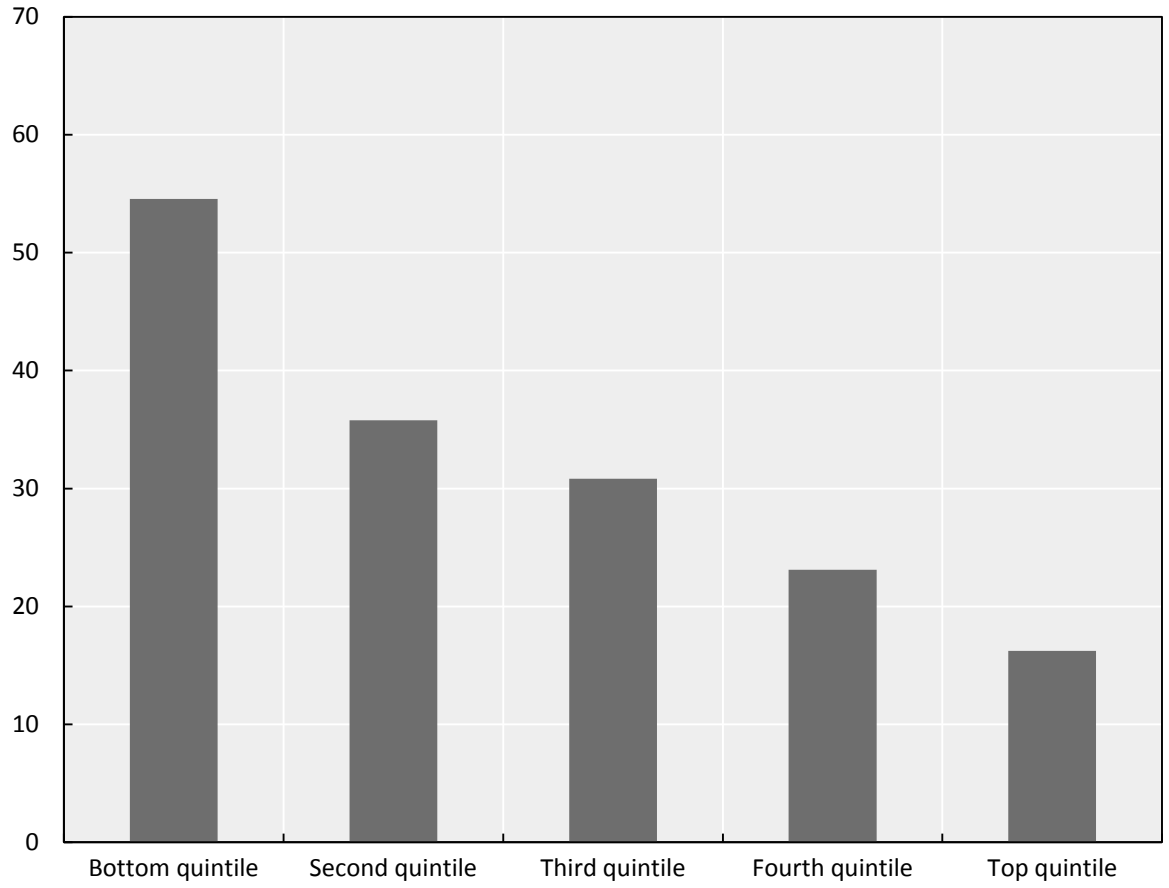
Note: Mortgage credit is the percentage of households in the income quintile who have a mortgage credit on their main residence. Other credit is the percentage of households in the income quintile who have no mortgage credit on their main residence but a mortgage credit on other properties, credit card debt, a credit line or overdraft or non-collateralised loans. Income quintiles are based on annual household gross income.

Source: OECD Secretariat calculations using Eurosystem Household Finance and Consumption Survey.

14. These credit participation statistics have the drawback of reflecting supply and demand factors. To better isolate supply considerations, the HFCS allows calculating credit rejection and acceptance rates among households that applied, or wanted to apply, for credit during the three years prior to the survey (for related work, see Le Blanc et al., 2014). Following Eurosystem Household Finance and Consumption Network (2013b), a household is defined to be credit-constrained if during the three years prior to the survey: *i)* the household applied for credit but was turned down and did not report a successful later reapplication; *ii)* the household applied for credit and was given some but less than desired; or *iii)* the household did not apply because it thought it would be unsuccessful. The data show that low- and middle-income households face greater difficulty in obtaining credit than the well-off. On average across the euro area, 3½ times as many households report being credit-constrained among the bottom 20% than the top 20% income earners (Figure 8). This pattern is quite similar in all countries (Figure 9). The loans that low- and middle-income households would like to have may exhibit riskier profiles, which possibly justifies their higher rejection rates. But the higher rejections could also indicate an undue reluctance by financial institutions to lend to low- and middle-income households. Further research on the characteristics of credit applicants across the income distribution would be necessary to derive more definitive conclusions.

Figure 8. Credit-constrained households among all households seeking credit across the income distribution

Per cent, euro area countries, 2010

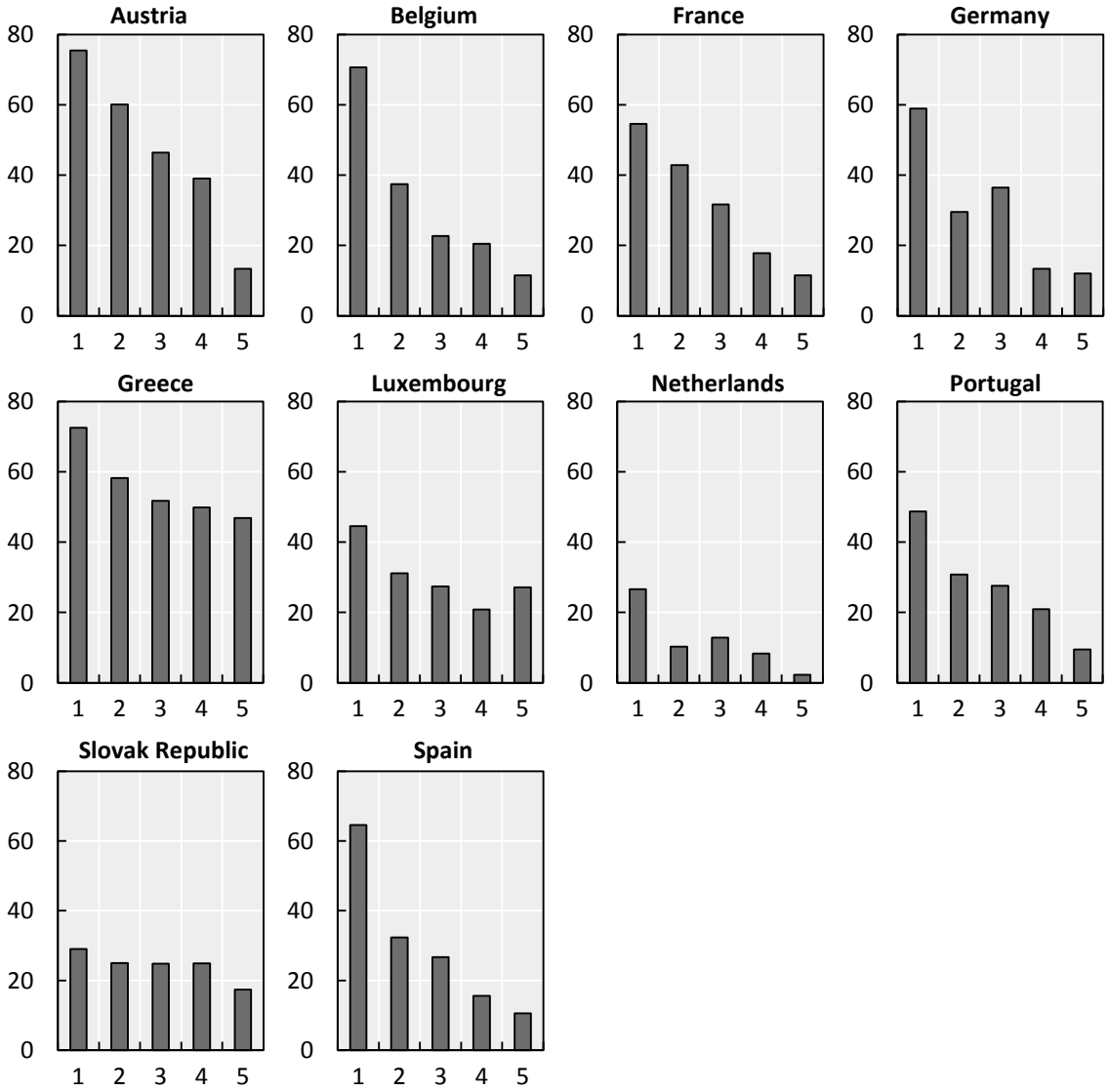


Note: A household is defined to be credit-constrained if during the three years prior to the survey: *i)* the household applied for credit but was turned down and did not report a successful later reapplication; *ii)* the household applied for credit and was given credit but less than desired; or *iii)* the household did not apply for credit because it thought it would be unsuccessful. Income quintiles are based on annual household gross income. The figure depicts the simple average of OECD countries which belong to the euro area and for which data are available.

Source: OECD Secretariat calculations using Eurosystem Household Finance and Consumption Survey.

Figure 9. Credit-constrained households among all households seeking credit by income quintile

Per cent, 2010



Note: A household is defined to be credit-constrained if during the three years prior to the survey: *i)* the household applied for credit but was turned down and did not report a successful later reapplication; *ii)* the household applied for credit and was given credit but less than desired; or *iii)* the household did not apply for credit because it thought it would be unsuccessful. Income quintiles are based on annual household gross income.

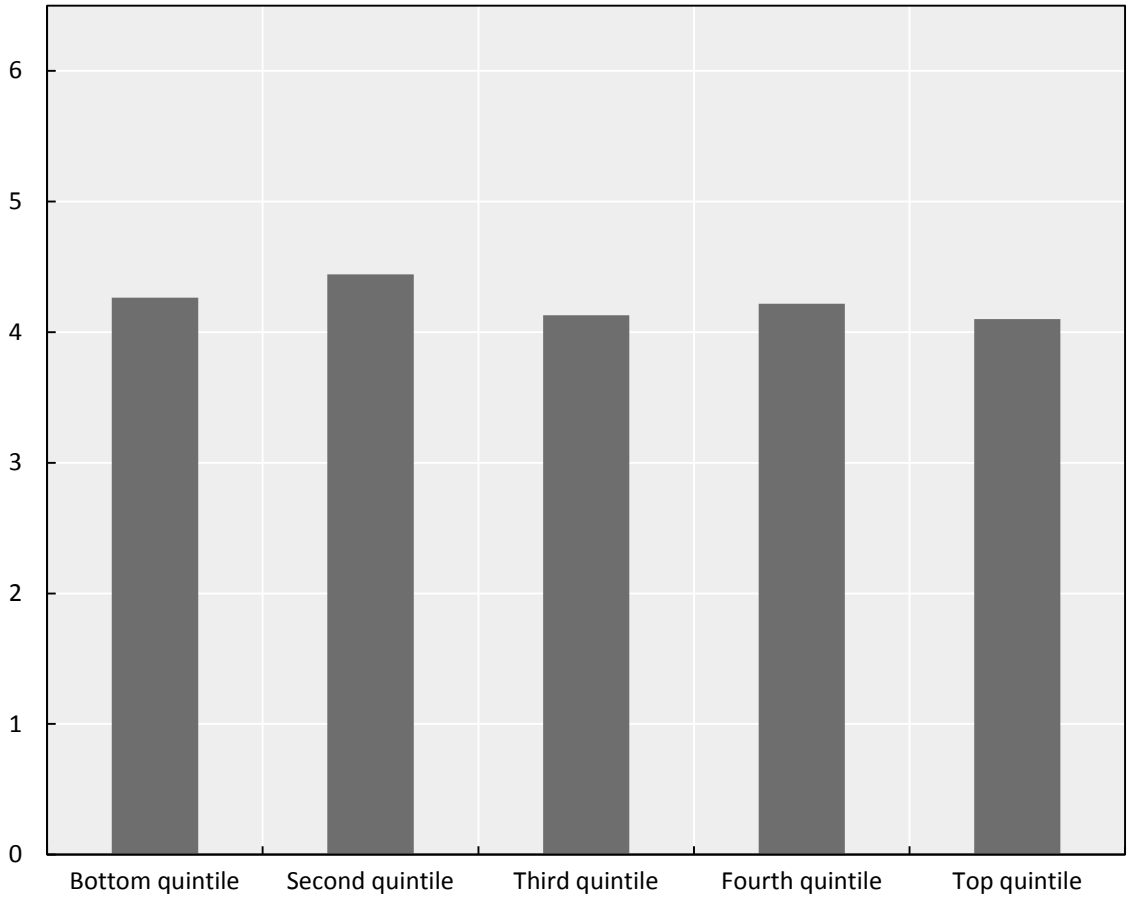
Source: OECD Secretariat calculations using Eurosystem Household Finance and Consumption Survey.

15. Another channel through which rents to financial consumers could affect economic inequality across income groups is if the associated interest rate reduction is larger for high- than low-income earners. The relationship between household income and credit interest rates is, for example, relevant for consumption inequality, as comparatively higher loan repayments would mean households have fewer resources to spend on goods and services. While the rate reduction is not observable in the data, the interest rate on the mortgage credit of a household's main residence is. A high interest rate may be indicative of a small rate reduction. On average across euro area countries, however, credit interest rates do not vary systematically across the income distribution (Figure 10). They are a little higher for the lower income

quintiles in some countries (Figure 11), which may be related to longer repossession periods for assets in these countries (Bover et al., 2014). The data do not allow comparing interest rates for other types of credit along the income distribution.

Figure 10. Interest rate on mortgage credit across the income distribution

Per cent, euro area countries, 2010



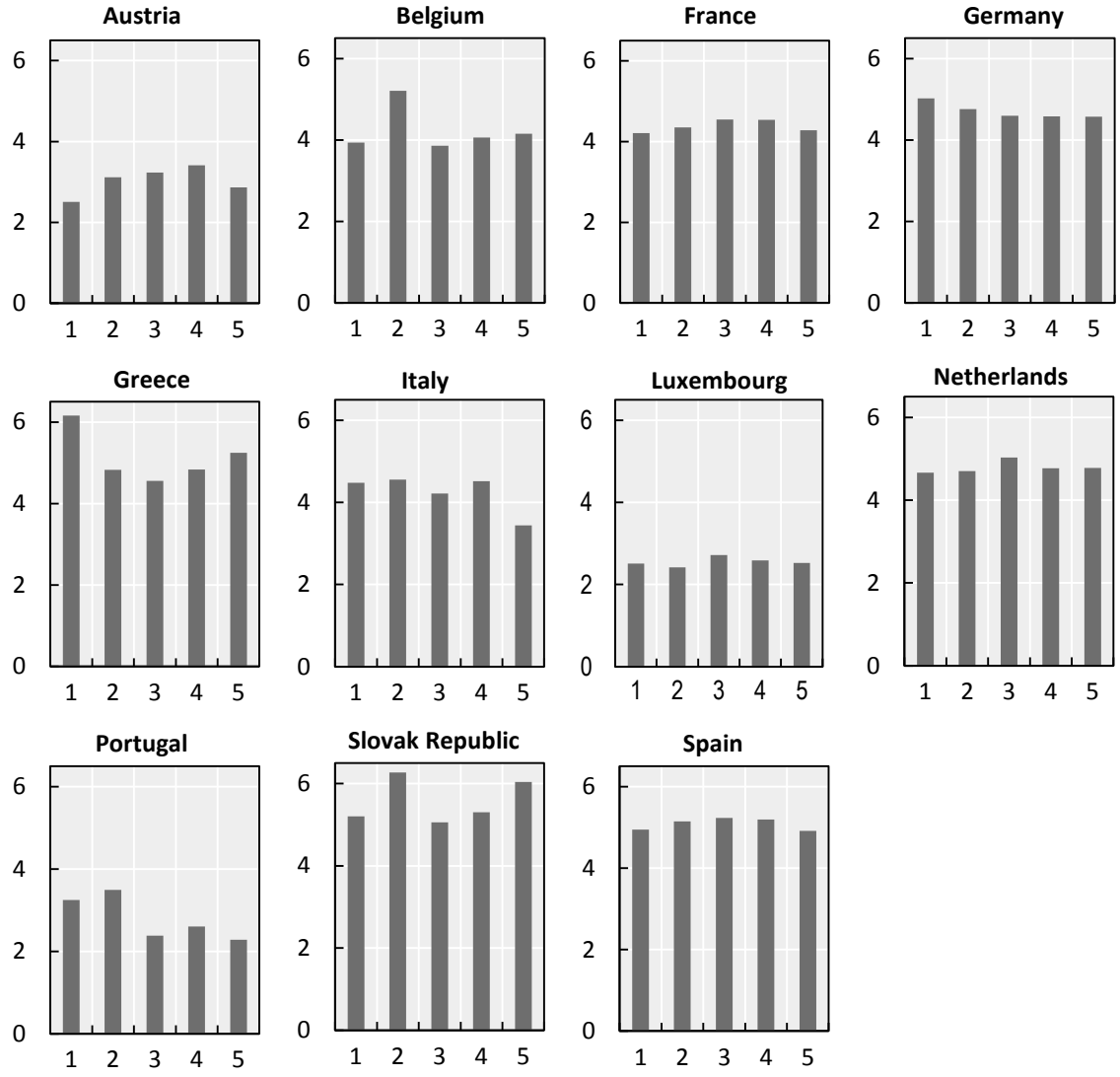
Note: Interest rate is the interest rate on the first mortgage credit on the household's main residence on average in the income quintile. Income quintiles are based on annual household gross income. The figure depicts the simple average of OECD countries which belong to the euro area and for which data are available.

Source: OECD Secretariat calculations using Eurosystem Household Finance and Consumption Survey.

16. The results in this section suggest that the benefits from the likely underpricing of credit risk accrue disproportionately to high-income households. In addition, a comparatively large fraction of low-income households have no credit at all. In several cases, this is because they face a credit constraint. These households receive no implicit interest rate subsidies and experience more difficulty in undertaking financial and human capital investments. By contrast, low-income households who have credit receive a large implicit interest rate subsidy. They also tend to be highly leveraged, which could be desirable if they have good investment prospects, but it could also make them more vulnerable to income shocks.

Figure 11. Interest rate on mortgage credit by income quintile

Per cent, 2010



Note: Interest rate is the interest rate on the first mortgage credit on the household's main residence on average in the income quintile. Income quintiles are based on annual household gross income.

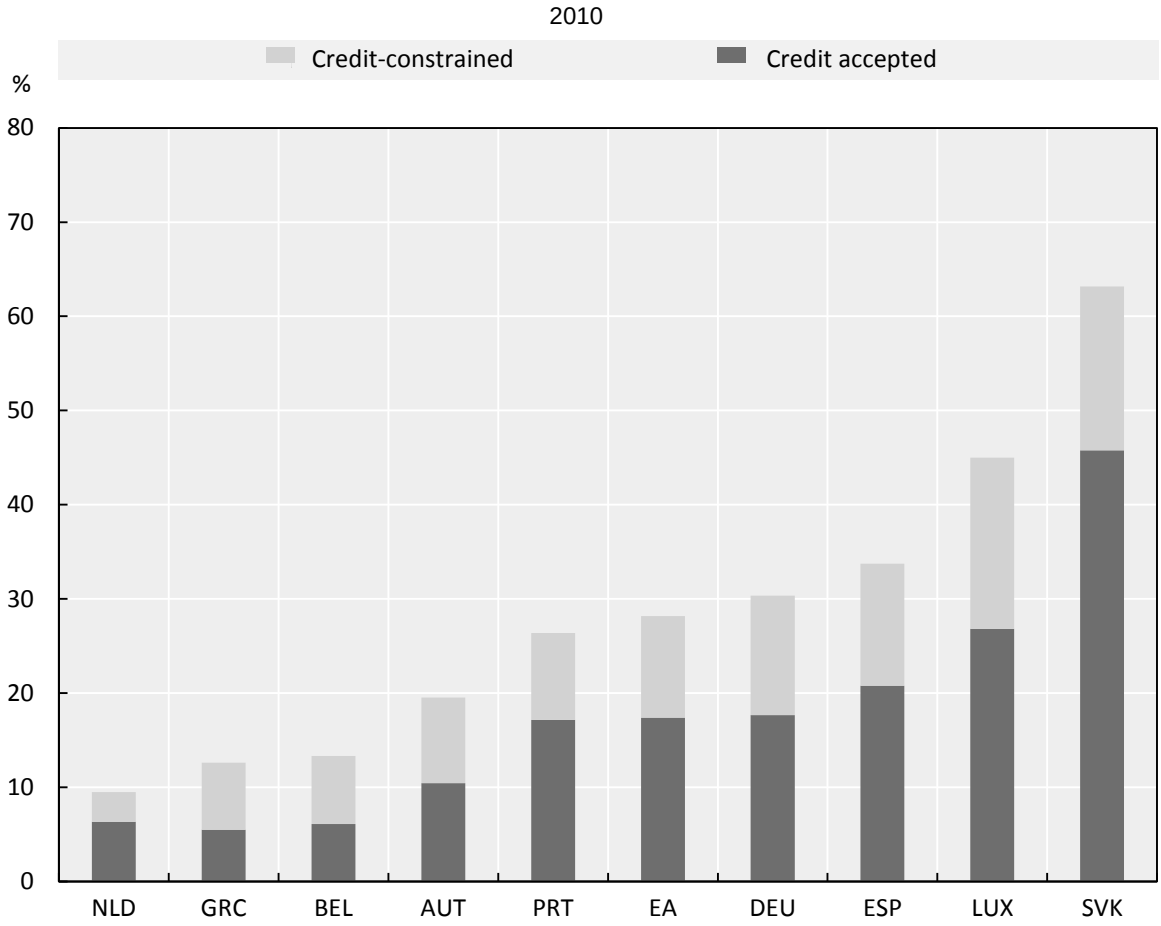
Source: OECD Secretariat calculations using Eurosystem Household Finance and Consumption Survey.

3. Household liabilities and consumption smoothing

17. An essential role of the financial sector is to enable individuals to smooth their consumption over the life-cycle and in the face of income volatility. Consumption smoothing opportunities are likely to influence an individual's economic welfare, even for the same levels of income and inequality inequality (Cournède et al., 2015b). In particular, in many cases the welfare loss from a temporary, negative income shock could be reduced when the household obtains a loan, so that consumption would not fall as much as income. To investigate these issues, a question from the HFCS is used which asks whether the household's income in the reference year was below normal. Of those hit by a negative income shock, 28% say they

applied, or wanted to apply, for credit during the three years prior to the survey, on average in euro area countries (Figure 12). The equivalent rate is 23% among households not hit by a negative income shock. Among those who looked for credit after a negative income shock, two-thirds had their credit application accepted, while the others were credit-constrained. Regressions based on micro-level data and including country fixed effects indicate that households looking for credit were 20% more likely to be credit-constrained if they had experienced a negative income shock (statistically significant at the 0.1% level).

Figure 12. Households seeking credit among all households experiencing below-normal income



Note: A household is defined to have below-normal income if it reports that its income in the reference year was below normal. A household is defined to be credit-constrained if during the three years prior to the survey: *i)* the household applied for credit but was turned down and did not report a successful later reapplication; *ii)* the household applied for credit and was given credit but less than desired; or *iii)* the household did not apply for credit because it thought it would be unsuccessful. EA is the simple average of OECD countries which belong to the euro area and for which data are available.

Source: OECD Secretariat calculations using Eurosystem Household Finance and Consumption Survey.

18. The evidence shows that households with income below normal in a given year are more likely to seek credit and be credit-constrained than others. Nevertheless, many households appear to obtain credit or shield themselves from volatile consumption by dissaving or other means. This suggests that financial institutions generally perform their role as intermediary to help people smooth consumption, but not in a perfect manner. Further research would be warranted to investigate the extent to which the stronger presence of credit constraints among households with temporarily lower income may be justified by worse risk profiles. As well, the definition of reference periods – the past year for the income shock versus the past three years for credit applications – needs to be taken into account when interpreting the estimates. Finally, the analysis of negative income changes provides one explanation for the much higher presence of

credit constraints among low-income households. The likelihood that a household in the bottom 20% experiences a negative income shock is more than twice as high as for a household in the top 20%. This in turn raises the probability of seeking credit (arguably related to the desire to smooth consumption) and being credit-constrained.

4. No evidence for discrimination in credit provision against women or immigrants

19. Discrimination in credit provision against vulnerable social groups, such as women or ethnic minorities, could reinforce income inequality. In the area of corporate credit, recent evidence suggests that in some European countries female entrepreneurs face tighter conditions to obtain a bank loan than their male counterparts (Alesina et al., 2013; Muravyev et al., 2009; Stefani and Vacca, 2015). Similarly, ethnic minorities and also immigrants have been found to have more difficulty obtaining business credit (Aldén and Hammarstedt, 2014; Asiedu et al., 2012; Blanchard et al., 2008). Findings are more mixed regarding household credit. Dymski (2006) concludes that empirical results for women and other vulnerable groups are scarce and ambiguous, despite earlier findings of racial discrimination in credit provision (Munnell et al., 1996). In a recent study with US data, Firestone (2014) identifies signs of discrimination against particular ethnic groups in the provision of credit card debt.

20. This section takes a fresh look at the provision of household credit to women and immigrants using the HFCS data. It regresses the indicator variable, $Credit_{ic}$, equalling unity if household i in country c has a credit (the same as for Figure 7) on a set of household characteristics:

$$Credit_{ic} = \beta Group_{ic} + \gamma \ln(Income_{ic}) + \delta Age_{ic} + \rho_c + \varepsilon_{ic}.$$

The coefficient of interest is β on $Group_{ic}$ which is an indicator variable for either women or immigrants. The gender regression restricts the sample to households with one core member (i.e. reference persons with no partner) to have a clean comparison between men and women. A household is defined as immigrant if at least one of its core members was born in a different country than where the survey took place. Immigrants who arrived when they were at least 20 years old are removed from the sample, as they are unlikely to be suitable counterfactuals for native-borns. The specification also controls for the natural logarithm of household income and the age of the oldest core member of the household. ρ_c are country fixed effects which account for cross-country differences in credit participation. Controlling for education shows that households with more education are more likely to have credit. Education is nonetheless omitted in the regressions, as it does not influence the findings. The regression results are presented for OLS, but they are very similar for logit and probit specifications. Robust standard errors are used to account for heteroscedasticity, and observations are weighted to make the sample representative of the actual population.

4.1. Women

21. Women are as likely to have a credit as men (Table 1), conditional on observable characteristics. Fewer women have a credit than men without control variables (Column 1) and even when conditioning on household income (Column 2). Household income is itself positively related with having a credit. Once age is controlled for, however, the coefficient on the female dummy shrinks to almost zero and becomes statistically insignificant. This is because women live longer and older people generally borrow less. Hence, without controlling for age the female dummy inadvertently picks up some of the negative correlation between age and credit participation. Women are more likely to have a credit, statistically significant at the 10% level, in Belgium, Spain, Greece and Italy (in declining order of the size of the coefficient). The opposite holds for Luxembourg and the Slovak Republic. No significant difference is established for Austria, Germany, Finland, France, the Netherlands, Portugal and Slovenia.

Table 1. Testing for discrimination against women and immigrants in credit provision

2010

Dependent variable:	**Credit participation**						
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Woman	-0.060*** (0.015)	-0.042*** (0.015)	0.008 (0.015)	-	-	-	-
Immigrant	-	-	-	0.148*** (0.028)	0.149*** (0.027)	0.082*** (0.025)	-
Immigrant euro area	-	-	-	-	-	-	0.082 (0.050)
Immigrant EU	-	-	-	-	-	-	0.0004 (0.041)
Immigrant non-EU	-	-	-	-	-	-	0.130*** (0.034)
ln(Household income)	-	0.086*** (0.010)	0.069*** (0.009)	-	0.115*** (0.008)	0.083*** (0.008)	0.084*** (0.008)
Age: 16-34	-	-	-0.077*** (0.028)	-	-	-0.056*** (0.025)	-0.058** (0.025)
Age: 45-54	-	-	-0.061*** (0.028)	-	-	-0.039** (0.021)	-0.039** (0.021)
Age: 55-64	-	-	-0.147*** (0.026)	-	-	-0.167*** (0.020)	-0.167*** (0.020)
Age: 65+	-	-	-0.366*** (0.022)	-	-	-0.383*** (0.018)	-0.382*** (0.018)
R-squared	0.045	0.066	0.157	0.052	0.093	0.191	0.192
Observations	22 012	21 791	21 791	35 570	35 362	35 362	35 362

Note: All regressions are OLS and contain country fixed effects. Robust standard errors, which are shown in brackets, are lower bound estimates of the weighted sample in the dataset, since they do not account for the imputation of some observations. *** indicates significance at the 1% level, ** at the 5% level and * at the 10% level. Credit participation is an indicator variable that equals unity if the household has a credit. The woman regressions restrict the sample to households with one core member. The immigrant regressions remove immigrants who arrived when they were at least 20 years old. A household is defined as immigrant if at least one of its core members is born in a different country than where the survey took place. The sample covers 12 (Columns 1-3) and 9 (Columns 4-7) OECD countries which belong to the euro area.

Source: OECD Secretariat calculations using Eurosystem Household Finance and Consumption Survey.

4.2. Immigrants

22. Immigrants are more likely to have a credit than native-borns: without observable characteristics (Column 4) and also when conditioning on household income (Column 5) and age (Column 6). The probability to have a credit is 8% higher for immigrants than native-borns. The data allow distinguishing immigrants by their country of birth: another euro area country, another EU country (outside the euro area) or a country outside the European Union. Immigrants from countries outside the European Union are the most likely to have a credit, and the associated coefficient is the only one of the three which is statistically significant at conventional levels (Column 7). According to further regressions (not shown), credit participation is high (compared with native-borns) among immigrants up to age 54 and with relatively high education. The relationship is statistically significant for the Slovak Republic, Portugal, Germany, Belgium, Luxembourg and Finland; it is insignificant for Austria, Slovenia, Italy and Greece.

5. Household assets and income inequality

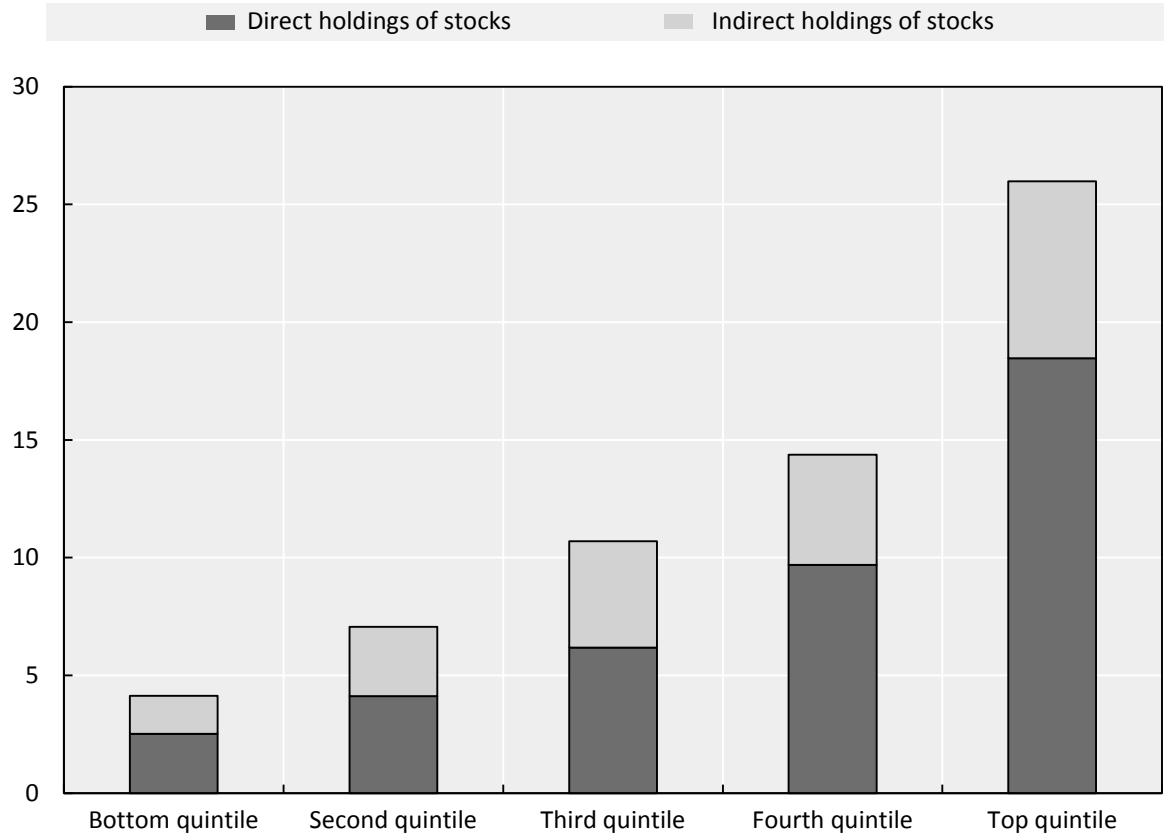
23. The size and composition of household assets is likely to matter for the relationship between finance and income inequality. Greater wealth inequality mechanically increases income inequality, as capital income enters disposable income. Another example is that certain assets, especially stock holdings, tend to deliver a higher rate of return over the long term than other assets. If ownership of these assets is unequally distributed across income groups, this will influence income inequality. Over time, higher rates of return on capital for some households would reinforce the mechanisms explaining wealth inequality that are described in Piketty (2014). They would also influence consumption inequality by generating more resources available to certain groups for consumption. Previous research documented that high-earning households generally obtain a higher rate of return on their assets (Campanale, 2007; Denk et al., 2013). The HFCS data are not suited to directly compare rates of return across the income distribution. But they have detailed information on stock market participation and holdings which can be important factors for inequality. For example, Guvenen (2006) shows that allowing only some households to participate in the stock market can replicate the level of wealth inequality observed in the United States.

24. Stock ownership is much more prevalent among high- than low-income households. On average in euro area countries, less than 10% of households in the bottom half of the income distribution invest either directly or indirectly (through mutual funds) in stocks (Figure 13). This contrasts with a stock market participation of more than 25% for the top 20%. The distributional pattern holds separately for direct and indirect stock holdings. It is also quite similar in all euro area countries, while cross-country differences in average stock market participation are rather large (Figure 14). The result of a positive link between stock ownership and household income resonates with earlier findings by Guiso et al. (2003). Fixed costs to investing in stocks have been put forward as one cause for the below-average stock market participation of low earners (Peress, 2005); other explanations are surveyed in Guiso and Sodini (2013).

25. Stock market wealth is even more unequally distributed across incomes than participation as high-income earners tend to own more stocks. On average across euro area countries, two-thirds of all stocks are in the hands of the top 20% (Figure 15). Relative to their disposable income, the top 20% have four times as much stock market wealth as the bottom 20%. This picture is quite similar everywhere in the euro area (Figure 16), even though in some countries under-reporting of wealth in the household survey is likely to be a particularly acute problem for high earners (Vermeulen, 2014). The concentrated distribution of stock holdings, combined with a relatively high rate of return on stocks, means that the immediate beneficiaries of the long-term expansion of stock markets have been high-income earners. This trend has reinforced income inequality, as stock market wealth is much more unequally distributed than disposable income.

Figure 13. Percentage of households holding stocks across the income distribution

Euro area countries, 2010

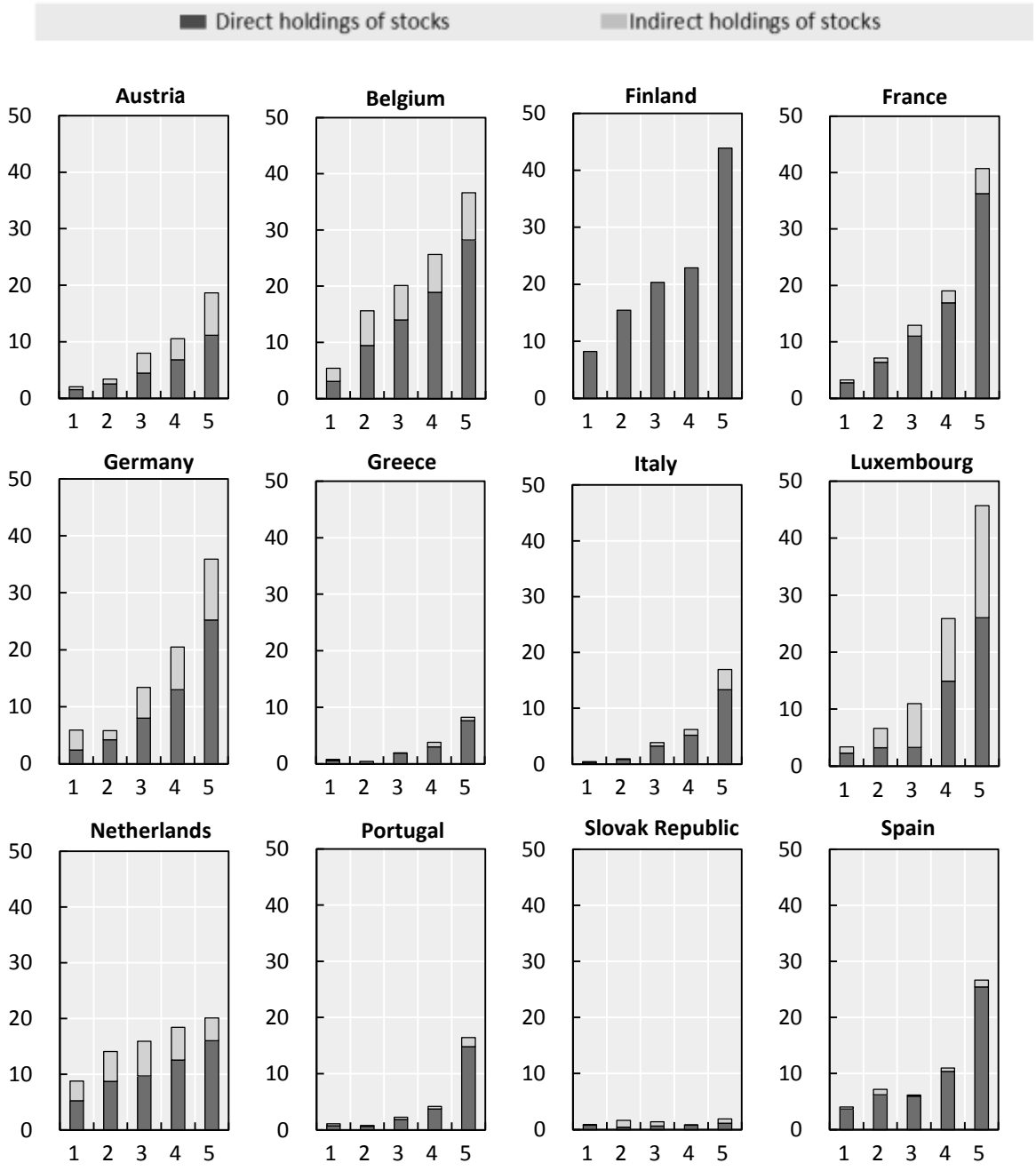


Note: Direct holdings of stocks is the percentage of households in the income quintile who directly participate in the stock market through owning publicly traded stocks. Indirect holdings of stocks is the percentage of households in the income quintile who do not directly participate in the stock market but indirectly through owning mutual funds which predominantly invest in stocks. Income quintiles are based on annual household gross income. The figure depicts the simple average of OECD countries which belong to the euro area and for which data are available.

Source: OECD Secretariat calculations using Eurosystem Household Finance and Consumption Survey.

Figure 14. Percentage of households holding stocks by income quintile

2010

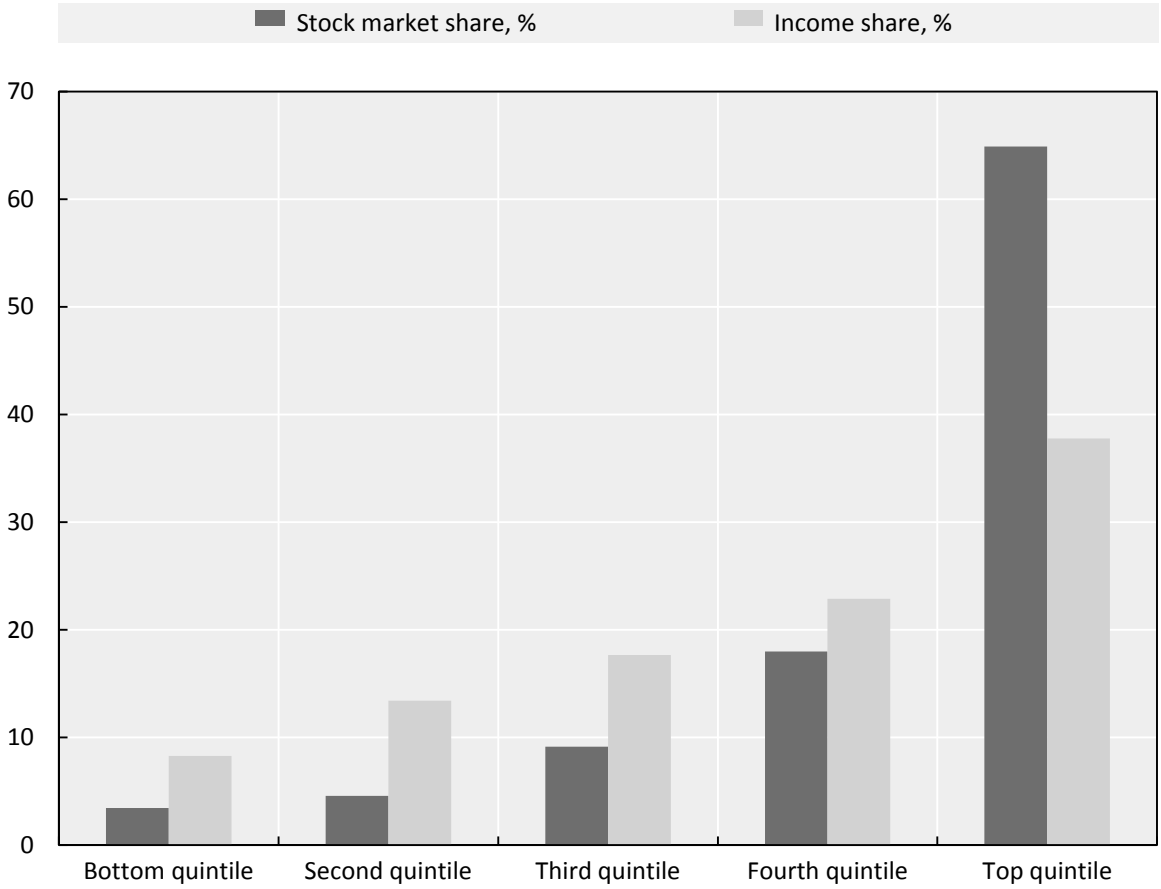


Note: Direct holdings of stocks is the percentage of households in the income quintile who directly participate in the stock market through owning publicly traded stocks. Indirect holdings of stocks is the percentage of households in the income quintile who do not directly participate in the stock market but indirectly through owning mutual funds which predominantly invest in stocks. Income quintiles are based on annual household gross income. Indirect holdings of stocks is not available for Finland.

Source: OECD Secretariat calculations using Eurosystem Household Finance and Consumption Survey.

Figure 15. The distribution of stock market wealth and household income

Euro area countries, 2010

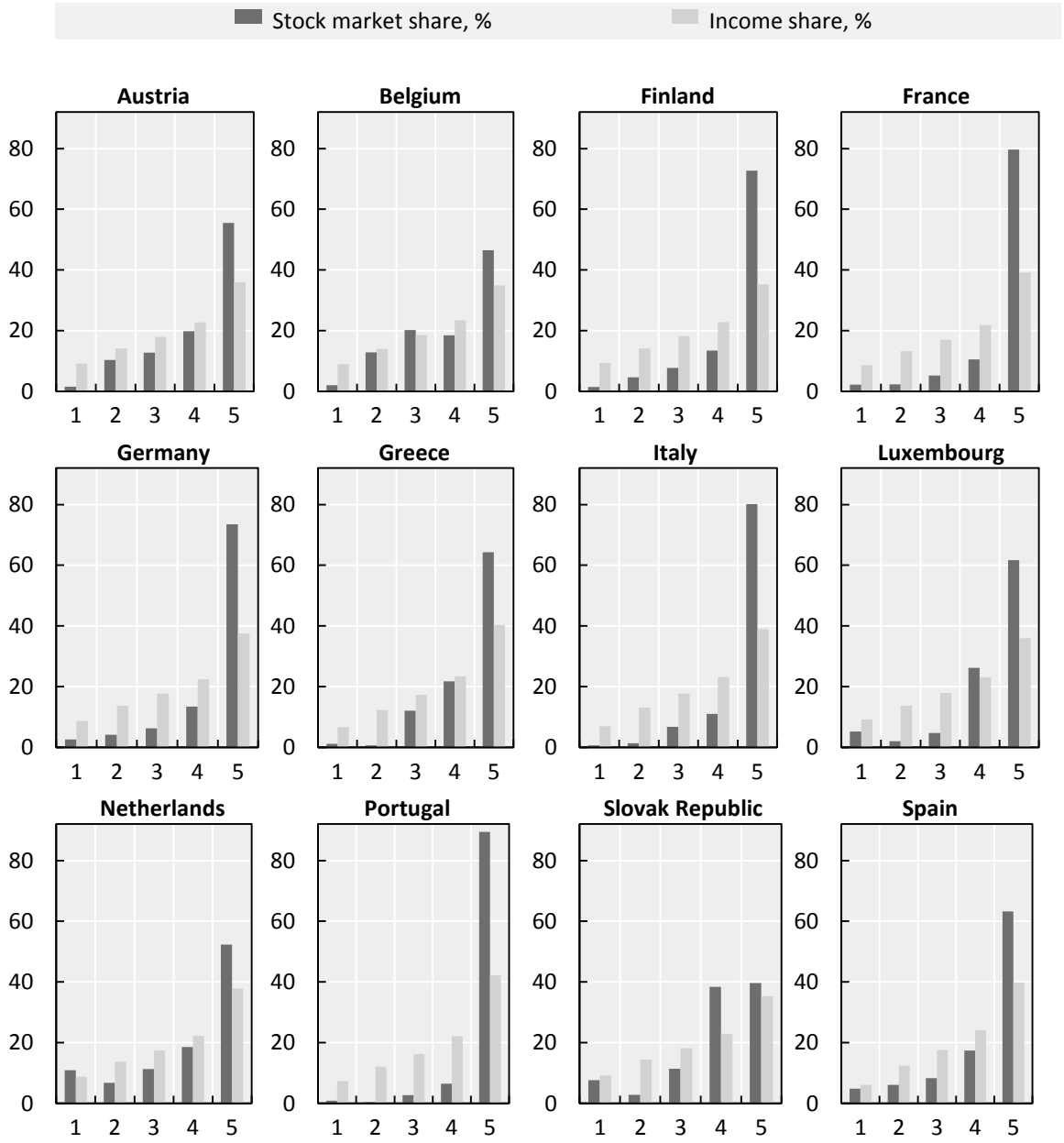


Note: Stock market wealth includes direct and indirect holdings of stocks. Income quintiles are based on annual household gross income for stock market wealth and on disposable income for household income. The figure depicts the simple average of OECD countries which belong to the euro area and for which data are available.

Source: OECD Secretariat calculations using Eurosystem Household Finance and Consumption Survey.

Figure 16. The distribution of stock market wealth and household income across income quintiles

2010



Note: Stock market wealth includes direct and indirect holdings of stocks. Income quintiles are based on annual household gross income for stock market wealth and on disposable income for household income.

Source: OECD Secretariat calculations using Eurosystem Household Finance and Consumption Survey.

BIBLIOGRAPHY

Aldén, L. and M. Hammarstedt (2014), "Discrimination in the Credit Market? Survey Based Evidence of Access to Financial Capital among Self-Employed Immigrants", Linnaeus University.

Alesina, A. F., F. Lotti and P. E. Mistrulli (2013), "Do Women Pay More for Credit? Evidence from Italy", *Journal of the European Economic Association*, 11(1), pp. 45-66.

Asiedu, E., J. A. Freeman and A. Nti-Addae (2012), "Access to Credit by Small Businesses: How Relevant are Race, Ethnicity, and Gender?", *American Economic Review: Papers & Proceedings*, 102(3), pp. 532-537.

Blanchard, L., B. Zhao and J. Yinger (2008), "Do Lenders Discriminate against Minority and Woman Entrepreneurs?", *Journal of Urban Economics*, 63(2), pp. 467-497.

Bover, O., J. M. Casado, S. Costa, P. Du Caju, Y. McCarthy, E. Sierminska, P. Tzamourani, E. Villanueva and T. Zavadil (2014), "The Distribution of Debt across Euro Area Countries: The Role of Individual Characteristics, Institutions and Credit Conditions", *ECB Working Paper Series*, No. 1639.

Campanale, C. (2007), "Increasing Returns to Savings and Wealth Inequality", *Review of Economic Dynamics*, 10(4), pp. 646-675.

Campbell, J. Y. (2006), "Household Finance", *Journal of Finance*, 61(4), pp. 1553-1604.

Cournède, B. and O. Denk (2015), "Finance and Economic Growth in OECD and G20 Countries", *OECD Economics Department Working Papers*, No. 1223, OECD Publishing, Paris.

Cournède, B., O. Denk and P. Hoeller (2015a), "Finance and Inclusive Growth", *OECD Economic Policy Papers*, No. 14, OECD Publishing, Paris.

Cournède, B., P. Garda and V. Ziemann (2015b), "Effects of Economic Policies on Microeconomic Stability", *OECD Economic Policy Papers*, No. 13, OECD Publishing, Paris.

Denk, O. (2015), "Financial Sector Pay and Labour Income Inequality: Evidence from Europe", *OECD Economics Department Working Papers*, No. 1225, OECD Publishing, Paris.

Denk, O. and B. Cournède (2015), "Finance and Income Inequality in OECD Countries", *OECD Economics Department Working Papers*, No. 1224, OECD Publishing, Paris.

Denk, O., R. Hagemann, P. Lenain and V. Somma (2013), "Inequality and Poverty in the United States: Public Policies for Inclusive Growth", *OECD Economics Department Working Papers*, No. 1052, OECD Publishing, Paris.

Denk, O., S. Schich and B. Cournède (2015), "Why Implicit Bank Debt Guarantees Matter: Some Empirical Evidence", *OECD Journal: Financial Market Trends*, 107, OECD Publishing, Paris.

Dymski, G. A. (2006), "Discrimination in the Credit and Housing Markets: Findings and Challenges", in: W. M. Rodgers III (ed.), *Handbook on the Economics of Discrimination*, Edward Elgar, Cheltenham.

Eurosystem Household Finance and Consumption Network (2013a), "The Eurosystem Household Finance and Consumption Survey: Methodological Report for the First Wave", *ECB Statistics Paper Series*, No. 1.

Eurosystem Household Finance and Consumption Network (2013b), "The Eurosystem Household Finance and Consumption Survey: Results from the First Wave", *ECB Statistics Paper Series*, No. 2.

Firestone, S. (2014), "Race, Ethnicity and Credit Card Marketing", *Journal of Money, Credit and Banking*, 46(6), pp. 1205-1224.

Guiso, L., M. Haliassos and T. Jappelli (2003), "Household Stockholding in Europe: Where Do We Stand and Where Do We Go?", *Economic Policy*, 18(36), pp. 123-170.

Guiso, L. and P. Sodini (2013), "Household Finance: An Emerging Field", *Handbook of the Economics of Finance*, 2(B), pp. 1397-1532.

Guvenen, F. (2006), "Reconciling Conflicting Evidence on the Elasticity of Intertemporal Substitution: A Macroeconomic Perspective", *Journal of Monetary Economics*, 53(7), pp. 1451-1472.

Le Blanc, J., A. Porpiglia, F. Teppa, J. Zhu and M. Ziegelmeyer (2014), "Household Saving Behaviour and Credit Constraints in the Euro Area", *DNB Working Papers*, No. 428, De Nederlandsche Bank.

Mian, A. and A. Sufi (2014), *House of Debt: How They (and You) Caused the Great Recession, and How We Can Prevent it from Happening Again*, University of Chicago Press, Chicago.

Munnell, A. H., G. M. B. Tootell, L. E. Browne and J. McEneaney (1996), "Mortgage Lending in Boston: Interpreting HMDA Data", *American Economic Review*, 86(1), pp. 25-53.

Muravyev, A., O. Talavera and D. Schäfer (2009), "Entrepreneurs' Gender and Financial Constraints: Evidence from International Data", *Journal of Comparative Economics*, 37(2), pp. 270-286.

OECD (2008), *Growing Unequal? Income Distribution and Poverty in OECD Countries*, OECD Publishing, Paris.

OECD (2011), *Divided We Stand: Why Inequality Keeps Rising*, OECD Publishing, Paris.

OECD (2015), *In It Together: Why Less Inequality Benefits All*, OECD Publishing, Paris.

Peress, J. (2005), "Information vs. Entry Costs: What Explains US Stock Market Evolution?", *Journal of Financial and Quantitative Analysis*, 40(3), pp. 563-594.

Piketty, T. (2014), *Capital in the Twenty-First Century*, Harvard University Press, Cambridge, MA.

Schich, S., M. Bijlsma and R. Mocking (2014), "Improving the Monitoring of the Value of Implicit Guarantees for Bank Debt", *OECD Journal: Financial Market Trends*, 106, OECD Publishing, Paris.

Stefani, M. L. and V. Vacca (2015), "Small Firms' Credit Access in the Euro Area: Does Gender Matter?", *CESifo Economic Studies*, 61(1), pp. 165-201.

Vermeulen, P. (2014), "How Fat Is the Top Tail of the Wealth Distribution?", *ECB Working Paper Series*, No. 1692.

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