

Financial Sector Pay and Labour Income Inequality: Evidence from Europe¹

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Public questioning about the role of finance has been fuelled by the perception that financial sector pay is an important factor behind high economic inequalities. This paper is the first to provide a comprehensive analysis of the level of earnings in finance and the implications for labour income inequality across 18 European countries. Financial sector workers are shown to make up 20% among the top 1% earners, although the overall employment share of finance is 4%. Nonetheless, the relatively small size of the sector limits the contribution that financial sector pay has on income inequality to a small, but noticeable amount. Simulations indicate that most of this contribution is explained by financial institutions paying salaries and bonuses which are above what employees with similar profiles receive in other sectors. Estimations that allow for heterogeneity across workers reveal that this wage premium is more than twice as high for financial sector workers at the top of the earnings distribution than at the bottom.

JEL classification: D63; G21; G22; J16; J24; J31

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1 Introduction

Income inequality has increased in OECD countries over the past decades (OECD, 2008, 2011, 2014). A popular sentiment is that finance has been an important factor in this evolution, through both very high financial sector pay and the global financial crisis. This is, for example, reflected by the slogan “we are the 99%”, i.e. the bottom 99% in the income distribution, that was coined by the Occupy Wall Street movement in New York. Yet, knowledge about the position of financial sector employees in the income distribution of OECD countries and their earnings compared with workers in other sectors is surprisingly scarce, with the few available studies each examining a single country.

This paper is the first study to fill this gap by providing a comprehensive look at the data for a large set of European countries. It makes three distinct contributions. First, it analyses the share of financial sector workers at different points in the distribution of labour income, with a particular focus on top earners. Second, after confirming previous findings that financial sector workers receive substantial wage premia, or earnings in excess of their profile, the paper then extends the existing literature by relating these wage premia to the position of financial sector workers in the overall earnings distribution. Third, it quantifies the importance of financial sector employment and financial sector wage premia for labour income inequality.

While an analysis of the strong presence of financial sector employees at the top of the income distribution is interesting in itself, it provides at the same time one channel behind the negative relationship between finance and income equality established in Denk and Cournède (2015). Factors shaping pay in the financial sector can be seen as channels that directly contribute to higher income inequality. Additional transmission mechanisms from more finance to more inequality are likely to be at work, too. Such indirect channels include the distribution of household credit and of household wealth which is investigated in the companion paper by Denk and Cazenave-Lacroutz (2015).²

The main findings of the paper are:

- Financial sector employees are strongly concentrated at the upper end of the earnings distribution: This concentration creates a link from higher financial sector employment to greater labour income inequality.
- Financial institutions pay their employees significantly above the levels that workers with similar observable characteristics (such as age, gender, education or experience) earn in other sectors. These so-called “wage premia” may reflect underlying labour-market imperfections.
- Financial sector wage premia benefit the better-off disproportionately:
 - Two-thirds of financial sector wage premia go to financial sector employees who belong to the 10% of all workers with the highest earnings.
 - Wage premia account for most of the contribution of financial sector employment to labour income inequality.
- Back-of-the-envelope calculations suggest that the concentration of financial sector employees at the upper end of the earnings distribution and sizeable wage premia for financial sector workers, especially for top earners, explain about half of the overall negative relationship between finance and income equality.

2. Cournède et al. (2015) provide a non-technical summary of the findings in this and the papers mentioned.

- The financial sector labour market shows other symptoms of underlying imperfections:
 - Men employed in finance earn on average a 22% higher income than women with similar profiles, similar to what is found for other sectors. This wage gap between men and women employed in finance increases with income and is higher than in other sectors at the top.
 - Financial sector workers are tentatively estimated to be 2-3 percentage points more likely to be overskilled than workers in other sectors. The estimated incidence of overskilling is largest in finance among all sectors for literacy and fourth largest for numeracy.

The rest of the paper is organised as follows. The next section describes the data, and examines the share of financial sector employees at different points in the earnings distribution and the dispersion of labour income within finance compared with other sectors. Section 3 quantifies financial sector wage premia and the distribution of rents, that manifest themselves in these wage premia, across different income groups in the overall population. It then simulates the influence of these rents on labour income inequality and investigates issues of gender inequality. The final section takes a brief look at the degree of overskilling in finance.

2 The position of financial sector employees in the earnings distribution

This section begins with a summary of the existing literature and description of the data used for the analysis. It then studies the share of financial sector employees at different points in the income distribution and the dispersion of incomes within finance compared with other sectors.

2.1 What is known and the approach taken in the present report

Evidence on the contribution of strong increases in top incomes to the long-term rise of income inequality is compelling, especially in the United States and United Kingdom (Autor et al., 2008; Atkinson et al., 2011; Förster et al., 2014). Few papers have, however, analysed the role of professions in general, and finance in particular, for explaining this phenomenon. One reason is the scarcity of publicly available data on sector affiliation and occupation of the very top earners.³ To address this issue, Bakija et al. (2012) rely on tax return data for the United States, in which they identify a sizeable proportion of financial sector employees among the top 1% (13%) and top 0.1% (18%). They also find a steady increase in the share of income received by financial professionals. Using US household-survey data, Philippon and Reshef (2012) estimate that finance accounted for 15% of the rise in income inequality between 1970 and 2005. Bell and Van Reenen (2014) analyse the dispersion of wages at the top end of the income distribution in the United Kingdom. They conclude that over three-quarters of the rise in the income share of the top 1% over the ten years to 2008 went to the financial sector, mainly through bonus payments. Godechot (2012) shows that in France one quarter of the top 0.1% earners works in finance and that financial sector employees captured about half of the rise in the income share of this group during 1996-2007.

The next subsection studies the position of financial sector employees in the earnings distribution of European OECD countries. It uses the Eurostat Structure of Earnings Survey (SES), the largest source with harmonised data across countries, for 2010. The focus is on workers in the financial sector which includes banks, insurance companies and firms engaging in auxiliary financial activities. The SES contains individual-level data on the characteristics of employees, including earnings, their employers and jobs in 18 countries of the European Economic Area: 17 from the European Union and Norway. Data for Germany

3. For example, Kaplan and Rauh (2010), using various publicly available data sources, can identify merely 26% of individuals in the top income brackets in the United States, even after making assumptions on the distribution of incomes and applying extrapolation methods.

are from the 2006 edition of the SES, the most recent version available for this paper. The analysis in this section was, in addition, performed for all countries with the SES from 2006, before the global financial crisis, which showed qualitatively and also quantitatively similar results. The nature of the findings is thus not predicated on the state of the economy and the labour market during the crisis.

The SES is an employers' survey, hence the information on earnings and hours worked are likely to be much more reliable than those from household surveys, which have been more widely used in the literature.⁴ The present focus is on gross annual earnings, which include labour income taxes and social security contributions. Annual data include "any periodic, irregular, ad-hoc and exceptional bonuses and other payments that do not feature every pay period" (European Commission, 2010), which is potentially of particular importance for financial sector employees. The sample includes only full-time, full-year equivalent employees to exclude working time effects on earnings.⁵ Observations are weighted to make the sample representative of the actual population. Administrative records (e.g. tax return data), used in some of the related literature, are not harmonised across countries and were not available for this paper.

Nonetheless, the SES also has potential drawbacks which must be kept in mind when interpreting the results. The most important caveat is the absence of self-employed persons from the sample. Kaplan and Rauh (2010) find that partners in private equity funds and law firms represent a substantial share of top earners in the United States. Furthermore, by definition, the survey does not cover non-employed persons (unemployed, youth, retired and other groups outside the labour force). Therefore, the survey documents the distribution of labour incomes among employees and not the distribution of income in the entire population. In addition, despite the large sample (8 million observations) the coverage of sectors in the survey is not comprehensive. For example, a large share of public-sector employment is missing for several countries. However, the implied bias for within-country comparisons along the income distribution is unlikely to be large, and excluding these sectors even for countries where they are available does not fundamentally alter the cross-country comparisons.⁶ A final consideration is "top-coding", i.e. the statistical practice of censoring data by removing incomes above a certain threshold to ensure anonymity. The SES data appear to be top-coded only for Germany (for observations with annual incomes exceeding EUR 1 million), which makes the problem much less pronounced than in many other individual-level surveys.

2.2 The strong concentration of financial sector employees among top earners

The new empirical evidence highlights how strongly the location of financial sector employees in the earnings distribution is skewed towards the top. Figure 1 depicts the average share of financial sector employees in total employment for each percentile of the earnings distribution. The employment share of finance rises continuously from 1% among the bottom 1% earners to 19% among the top 1%. A

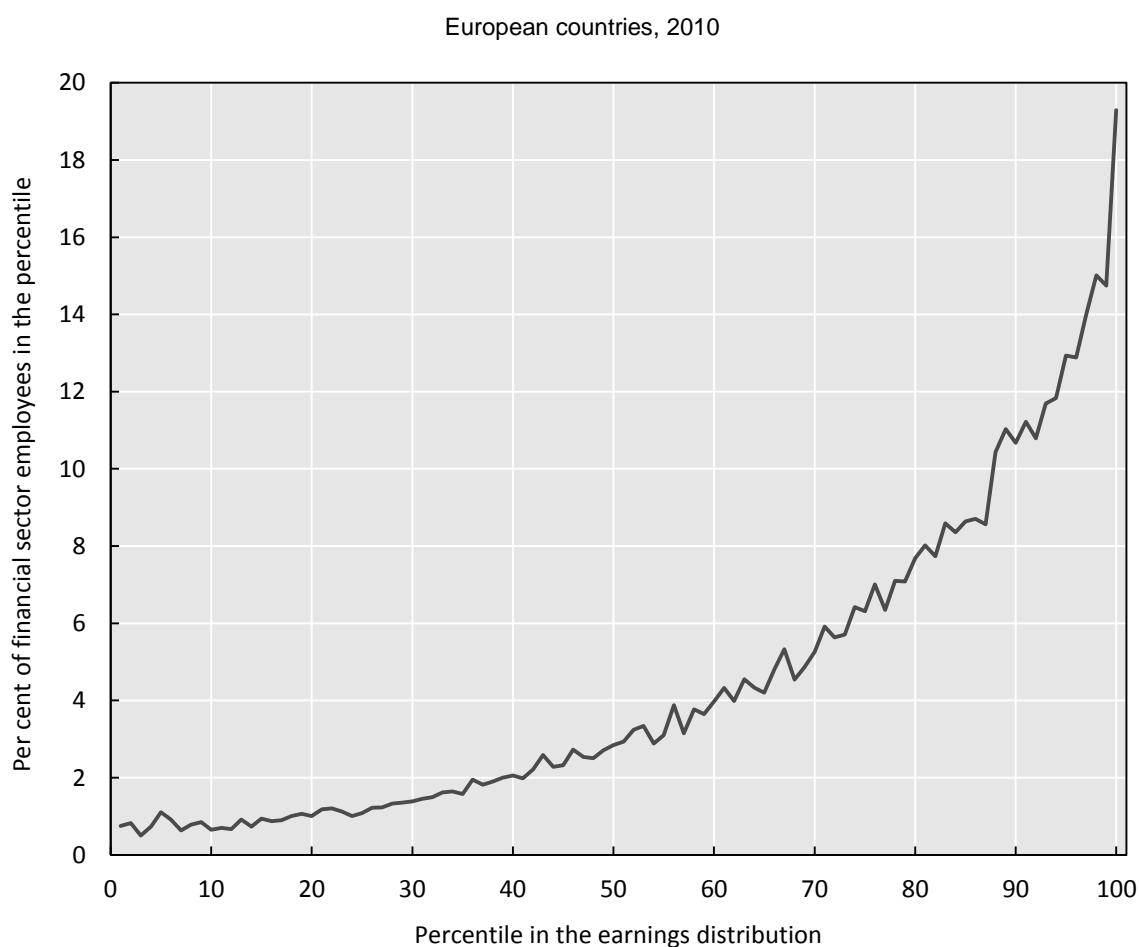
4. For example, the Eurostat household survey European Union Statistics on Income and Living Conditions (EU SILC) is available annually while the SES is conducted every four years. However, besides the higher reliability of information, the SES also has the advantage of a significantly larger sample size which in particular allows analysing the very top end of the income distribution.

5. Full-time employees are "those whose normal working hours are the same as the collectively agreed or customary hours worked in the local unit under consideration" (European Commission, 2010). For full-time employees working less than one year but more than 30 weeks, earnings are adjusted to their full-year equivalent. This effectively assumes that they earned the same wage with their previous employer and that they have not been unemployed between the two jobs. Full-time employees working less than 30 weeks are excluded from the analysis.

6. The database does not include information on a few sectors for any country (agriculture, fishing, activities of households and extra-territorial organisations). But as their shares in total employment and income are very small this should have little influence on the results.

remarkably similar pattern emerges across countries, with the presence of financial sector workers rising with labour income, in many cases at an increasing rate (Figure 2). Finance tends to be particularly prevalent in the top 1% (relative to other percentiles) in many countries: the Czech Republic, Finland, France, Germany, Greece, Hungary, the Netherlands, Norway, Poland, Sweden and the United Kingdom. Figure 3 shows the percentage of workers in finance among the top 10%, top 1% and top 0.1% earners. While the employment share of the financial sector is 4.4% on average in Europe, this ratio increases from 13% in the top 10% to 19% in the top 1% and even 26% in the top 0.1%. The presence of finance among the very top earners is highest in the United Kingdom, Luxembourg, Greece and Norway.⁷

Figure 1. Share of financial sector employees in each percentile across the earnings distribution

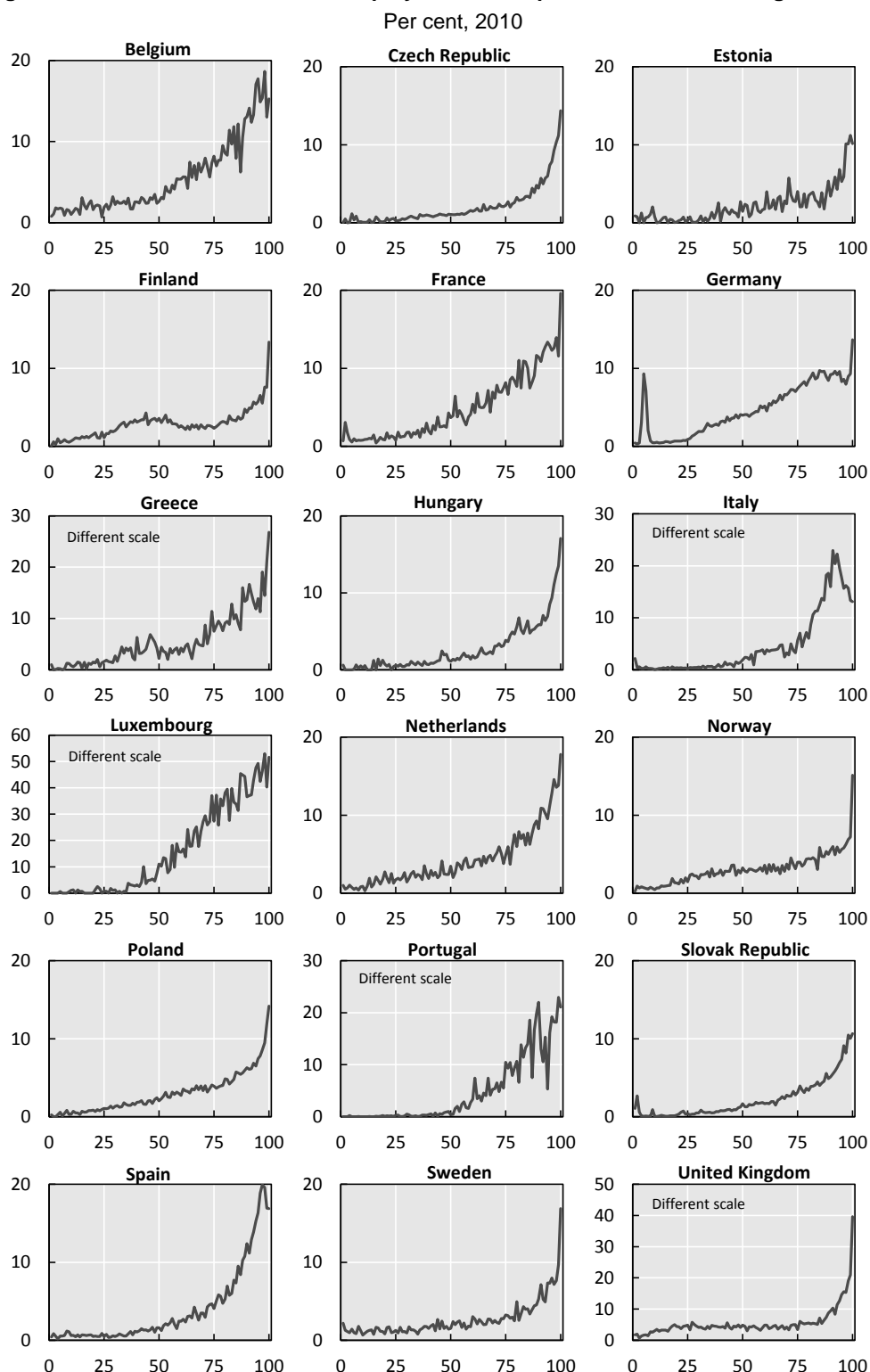


Note: The figure depicts the simple average of OECD countries which belong to the European Economic Area and for which data are available. Data for Germany relate to 2006. The sample includes only full-time, full-year equivalent employees to exclude working time effects on earnings. Observations are weighted within countries to make the sample representative of the actual population. The coverage of sectors is not exactly the same for all countries, and the sample size varies considerably across countries.

Source: OECD Secretariat calculations using Eurostat Structure of Earnings Survey.

7. Although in general the sample size of the SES is sufficiently large to analyse the sector affiliation of even the top 0.1% earners, the number of observations in this part of the income distribution is quite small for a few countries, particularly Luxembourg. However, given the importance of finance for its economy, the share of financial sector employees at the top of the income distribution is likely high in Luxembourg, as the findings from the small sample suggest.

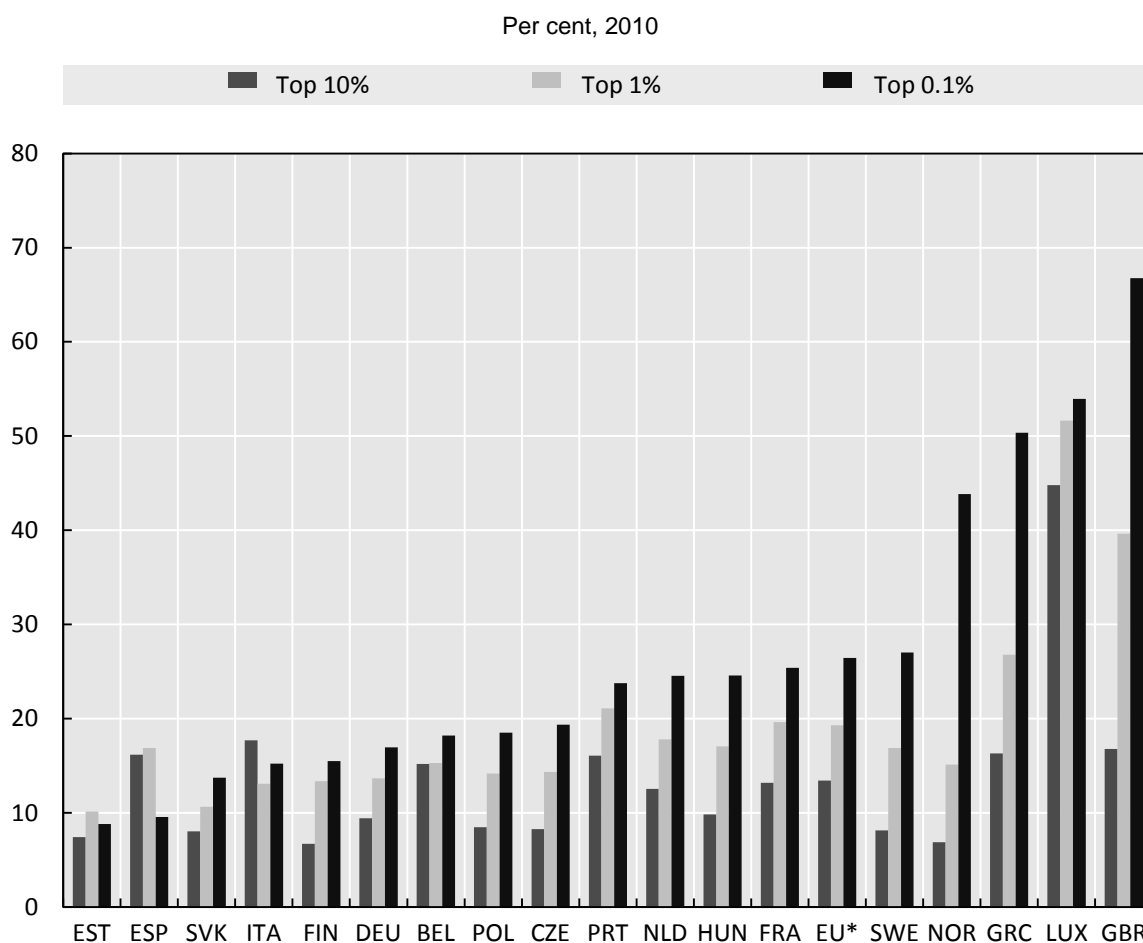
Figure 2. Share of financial sector employees in each percentile of the earnings distribution



Note: As in Figure 1, the horizontal axis is the percentile in the earnings distribution and the vertical axis the per cent of financial sector employees in the percentile. The sample includes only full-time, full-year equivalent employees to exclude working time effects on earnings. Observations are weighted to make the sample representative of the actual population. The coverage of sectors is not exactly the same for all countries, and the sample size varies considerably across countries. Data for Germany relate to 2006.

Source: OECD Secretariat calculations using Eurostat Structure of Earnings Survey.

Figure 3. Share of financial sector employees among the top 10%, top 1% and top 0.1% earners



Note: Countries are ranked according to the share of financial sector employees among the top 0.1%. EU* is the simple average of OECD countries which belong to the European Economic Area and for which data are available. Data for Germany relate to 2006. The sample includes only full-time, full-year equivalent employees to exclude working time effects on earnings. Observations are weighted to make the sample representative of the actual population. The coverage of sectors is not exactly the same for all countries, and the sample size varies considerably across countries.

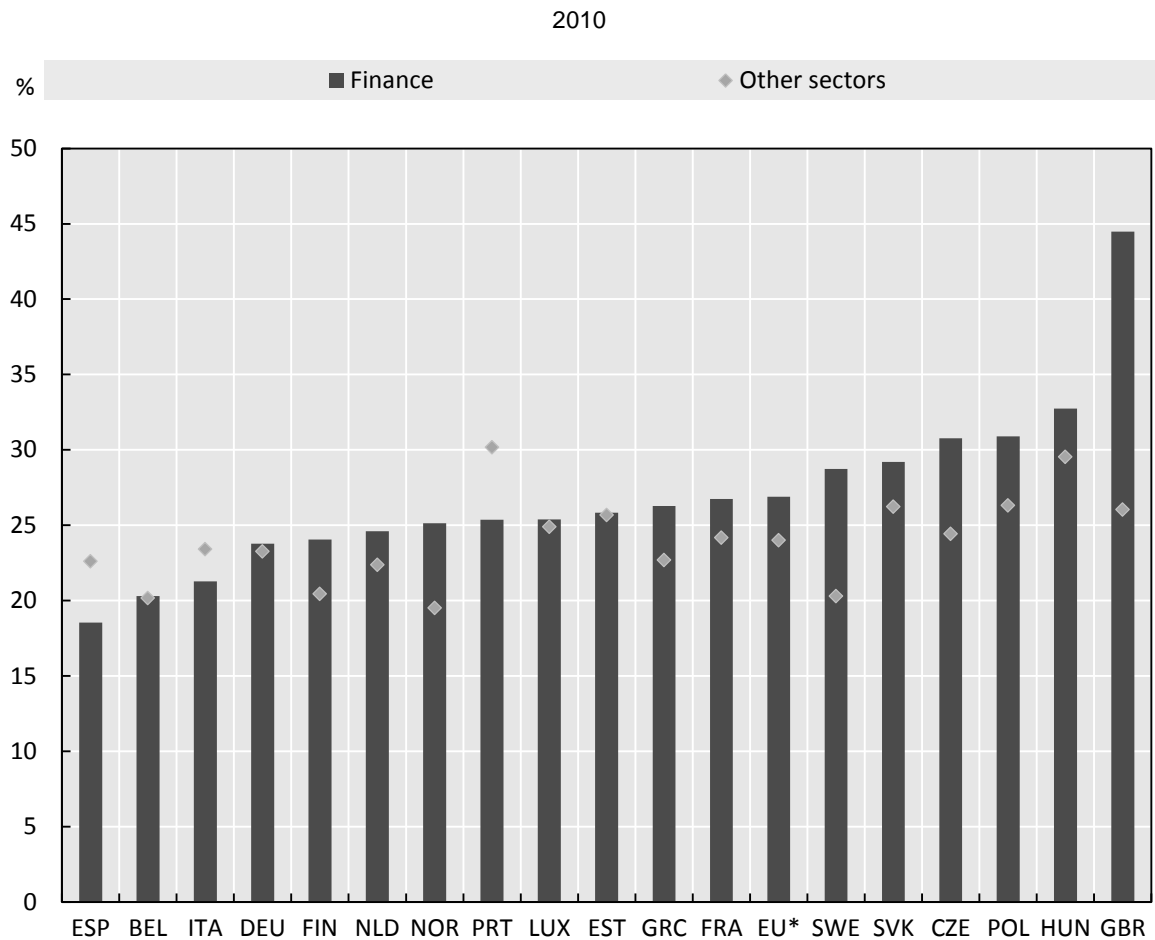
Source: OECD Secretariat calculations using Eurostat Structure of Earnings Survey.

The strong presence of financial professionals among top earners significantly exceeds the share of finance in both total employment and GDP. But it is important to recognise that a high prevalence of top financial sector workers is not undesirable as a matter of principle since it could for instance be justified by disproportionately high productivity (and therefore high skill intensity) in finance. However, compared with the other two private sectors in which tertiary graduates represent a large fraction of people employed in the sector – real estate, renting and business activities, as well as electricity, gas and water supply – the presence of earners in the top 1% relative to the sector’s overall employment share is particularly large in finance. Building on these descriptive insights, the next section employs regression analysis to determine the extent to which high financial sector wages reflect individual characteristics that are correlated with productivity. Complementary analysis (not shown) reveals that the earnings share of finance increases along the distribution in a similar fashion as its employment share.

2.3 The dispersion of earnings within finance

The previous subsection showed the strong increase in the number of financial sector employees towards the top end of the distribution. This suggests that the dispersion of labour earnings in finance is higher than in other sectors. To investigate this, two statistics are provided: the ratio of top 10% earners' incomes to total income in finance and the same ratio for the rest of the economy (Figure 4). Wage dispersion in finance varies significantly across European countries. It is particularly high in the United Kingdom where 44% of all incomes in finance accrue to the top 10% in the sector. On average, incomes are more dispersed in finance than in other sectors (statistically significant at the 5% level), especially in the United Kingdom and Sweden. The finding of a relatively high dispersion of earnings in finance is in line with recent evidence based on other data sources (Thewissen et al., 2013). It may be due to large differences in the productivity of financial sector workers, but it could also be that rents boost top wages in finance by more than lower down the income distribution. This is an issue that Section 3 investigates in detail.

Figure 4. Ratio of the top 10% earners' incomes to total income in finance and in the rest of the economy



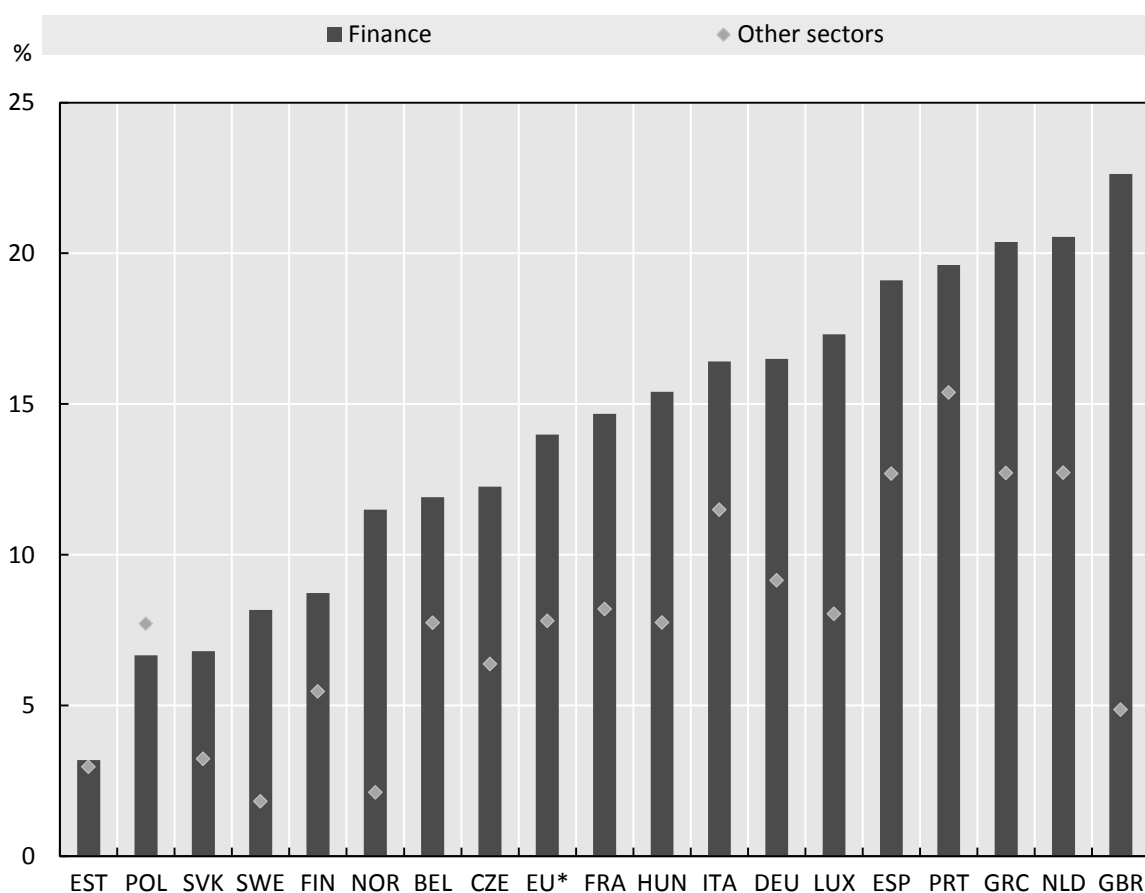
Note: EU* is the simple average of OECD countries which belong to the European Economic Area and for which data are available. Data for Germany relate to 2006. The sample includes only full-time, full-year equivalent employees to exclude working time effects on earnings. Observations are weighted to make the sample representative of the actual population. The coverage of sectors is not exactly the same for all countries, and the sample size varies considerably across countries.

Source: OECD Secretariat calculations using Eurostat Structure of Earnings Survey.

One type of remuneration contributing to the high dispersion of earnings within finance is bonus payments. These encompass Christmas and holiday bonuses, 13th and 14th month payments, occasional commissions, productivity bonuses, etc. Figure 5 displays the share of bonus payments in earnings for employees in finance and in the rest of the economy. On average, bonuses account for 14% of earnings in finance and 8% in other sectors (statistically different at the 0.1% level). In a few countries (the United Kingdom, the Netherlands and Greece), their share in finance exceeds 20%. Many bonuses are paid to employees at the top of the income distribution for whom they make up a much larger fraction of total remuneration (23% of the top 1% earners' incomes in finance and 17% in the rest of the economy). This finding is consistent with existing evidence (Bell and Van Reenen, 2014). As bonus payments represent variable pay, adjusting financial sector pay to account for employees' risk aversion (i.e. the difference between their actual pay and the certainty equivalent) is relatively more significant than in other sectors. Bonuses can be viewed as a form of remuneration through which firms improve incentives while transferring some of their profitability risks to employees. However, they are frequently tied to short-term performance without claw-back provisions and may therefore come at the expense of firm-level stability with particularly damaging consequences in the case of systemically-important financial institutions.

Figure 5. Share of bonus payments in total earnings in finance and in the rest of the economy

2010



Note: EU* is the simple average of OECD countries which belong to the European Economic Area and for which data are available. Data for Germany relate to 2006. The sample includes only full-time, full-year equivalent employees to exclude working time effects on earnings. Observations are weighted to make the sample representative of the actual population. The coverage of sectors is not exactly the same for all countries, and the sample size varies considerably across countries.

Source: OECD Secretariat calculations using Eurostat Structure of Earnings Survey.

3 Economic rents to financial sector employees and labour income inequality

The strong presence of financial sector workers among top earners documented in Section 2 may not be undesirable if their very high earnings can be explained by very high productivity. One concern, however, is that the very high incomes not only reflect productivity but also rents accruing to financial sector employees. Financial institutions which benefit from highly valuable public support, especially government guarantees, or barriers to entry can create economic rents. These rents may be shared among consumers through the overextension of credit and underpricing of risk, employees in the form of higher wage-productivity differentials and other stakeholders involved in banks' business (Denk et al., 2015). The transmission of some of the financial sector rents to employees requires bargaining power on the part of financial sector workers, since otherwise financial institutions would pay the competitive wage.

Rents can be transmitted to financial sector workers in two ways: wage premia and overskilling. Wage premia are analysed in this section, overskilling is the subject of the next section. Wage premia refer to the notion that financial sector workers receive compensation in excess of their productivity, estimated by what people with similar characteristics obtain in other sectors. They can widen income inequality by channelling funds to high-earning financial sector employees. While the earnings of overskilled financial sector workers equal their potential productivity, they are greater than their actual productivity on the job. Overskilling is unlikely to have a large influence on income inequality. But it could widen differences in welfare between households when overskilled financial sector workers benefit from relatively less demanding job requirements, even though this could also be a source of lower job satisfaction. In addition, wage premia and overskilling are likely to lower overall income growth, which would particularly affect the welfare of individuals with the lowest incomes.

Financial sector wage premia are the main focus of the analysis, given the strong evidence found in their support. The section quantifies financial sector wage premia in Europe and the distribution of rents to financial sector employees across different income groups in the overall population. It then simulates the influence of these rents on labour income inequality and examines issues of gender inequality in finance.

3.1 Analysing average wage premia in finance using individual-level data

In a competitive labour market, wages should be close to the marginal revenue product of workers. If wages reflect productivity differences, captured, for instance, by measures of human capital and demographics,⁸ they should be the same across sectors for comparable workers. Yet, many empirical studies, starting with Slichter (1950), have produced robust estimates of cross-sector residual wage differentials. Several hypotheses have been advanced to reconcile these results with the competitive market benchmark, including differences in the work environment (e.g. working-time schedule, health risks) and the role of unobserved worker characteristics (Carruth et al., 2004; Purse, 2004). But the disparity of wages across sectors remains even when accounting for these factors (Krueger and Summers, 1988). In rankings of sectors based on wage premia, the financial sector commonly features at the top (e.g. Magda et al., 2011; Martins, 2004).

Appendix 1 studies wage differences between employees in the financial sector and in the rest of the economy based on sector-level data. Wages in finance are found to be 50% higher than in other sectors on average across OECD countries, when controlling in a relatively imprecise way for cross-sector labour characteristics (three age brackets, three education levels, gender). These sector-level data, available over a long time period, are suited to study the dynamics of wage premia and their links with employment and

8. Most empirical studies of wage determination are based on the earnings equation by Mincer (1974) and model the natural logarithm of earnings as a linear function of [years of?] age, gender, education, experience, etc.

other forms of financial sector rents. However, besides serving as a useful robustness check on the sector-level results, the advantage of the individual-level data from the SES used in the previous section is that they contain a much wider set of employee, employer and job characteristics. Moreover, estimating the average wage premium in these individual-level data should be seen as a first step towards the estimation of wage premia that are allowed to vary along the income distribution, an issue that cannot be addressed with sector-level data.

The baseline specification is inspired by the original work of Mincer (1974) and similar to those in other empirical studies on wage determination. However, each observable characteristic is allowed to be related with the wage in a different manner for financial sector employees than workers in other sectors. The purpose is twofold: *i*) to pursue a particularly strong test on the existence of financial sector wage premia, and *ii*) to identify heterogeneity in wage premia across financial sector workers as the first step towards the estimation of wage premia that are allowed to vary along the income distribution. Hence, the following OLS equation is estimated:

$$\ln(w_i) = x_i\gamma^{NF} + (Fin_i \times x_i)\gamma^F + y_i\delta^{NF} + (Fin_i \times y_i)\delta^F + z_i\theta^{NF} + (Fin_i \times z_i)\theta^F + \varepsilon_i,$$

where the dependent variable is the natural logarithm of w_i , the gross annual earnings of full-time full-year equivalent worker i , and Fin_i is an indicator variable equalling one if individual i works in finance. The idiosyncratic disturbances are denoted by ε_i .

The analysis considers three groups of control variables: the first, x_i , relates to employee characteristics (age, gender, highest level of education, years of experience in the firm and their square), the second, y_i , to employer characteristics (employees in the firm, type of financial control, level of wage bargaining and geographical location) and the last, z_i , to job characteristics (type of employment contract, occupation and number of overtime hours paid).⁹ The percentage wage premium of individual i working in finance is derived from a standard exponential transformation of the log-difference between the wage predicted for individual i in finance and the wage predicted for the same individual in other sectors, based on observable characteristics. This transformation allows to express the wage premium in exact percentage points, rather than relying on a weak approximation entailed by the log-difference alone. The mean wage premium averages the wage premia across all individuals while applying sample weights. The standard errors used to determine the significance of the estimates and confidence intervals are derived from the weighted sample averages of individual wage premia at the country-level. To examine the relevance of the observable characteristics, the percentage difference in the raw data between average earnings in finance

9. Age brackets: 14-19; 20-29; 30-39; 40-49; 50-59; 60+. Education categories: primary education; lower secondary education; upper secondary education; first stage of tertiary education (practical); first stage of tertiary education (theoretical); second stage of tertiary education. Employees in the firm: 1-49; 50-249; 250+. Types of financial control: public; private. Levels of wage bargaining: national; industry or industries in individual regions; firm or local unit; other; no collective agreement. Types of employment contract: indefinite duration; fixed duration; apprentice. Occupations: legislators, senior officials and managers; professionals; technicians and associate professionals; clerks; service workers, shop and market sales workers; skilled agricultural and fishery workers; craft and related trades workers; plant and machine operators and assemblers; elementary occupations; armed forces. Employees in the firm for Estonia and level of wage bargaining for Germany and Luxembourg have country-specific categories. Employees in the firm and type of financial control for Belgium and Luxembourg and level of wage bargaining and type of employment contract for Sweden are excluded since they are not available for any or a sufficient number of observations. Geographical location of the firm is reported at NUTS1 units for most countries, except for the Czech Republic, Estonia, Finland, Norway, Portugal and the Slovak Republic which have one each. The twelve units for the United Kingdom have been regrouped into six, based on geographical contiguity and economic similarity.

and other sectors is computed, too. Since wage premia depend on observable characteristics, the approach allows quantifying the contribution of individual characteristics to the wage premium.

Some caveats are to be kept in mind even if wage equations have been extensively used in the empirical labour literature. On the one hand, the wage premium could be overestimated if unobserved characteristics (such as specific profit-generating skills) are positively correlated with both the likelihood of working in finance and the productivity of the worker. In addition, earnings in finance tend to exhibit high volatility (as is evident in the large share of bonus payments), which financial sector workers may be compensated for. Moreover, higher financial sector compensation could in part remunerate longer working time than in other sectors in a way that the estimation does not fully take into account. The wage premia in principle control for effective working time because they adjust for paid overtime, but in practice overtime is unlikely to be well reported in the data and may not be explicitly paid especially for professional-level staff. On the other hand, the coefficient could also underestimate the true wage premium. Some observed characteristics (such as occupation) are correlated with the likelihood of working in finance while having potentially too few counterfactuals, and for Germany the data appear to be top-coded (for annual earnings above EUR 1 million).

The European wage premium in finance is 28% on average (in 2010), but the variation across countries is large (Figure 6). It is positive in all countries except the Netherlands, where it is -0.5%, and rises up to 52% in Italy. The wage premium is estimated to be significantly different from zero at the 99.9% statistical confidence level in all countries. In many cases, the wage difference in the raw data (on average 65%) is substantially reduced by the observable characteristics. Replacing the interaction terms between finance and other observables with a single financial sector dummy yields wage premia that are somewhat larger than these ones. This suggests that the observable characteristics exert more predictive power for the wage setting in finance compared with other sectors and that the composition of financial sector employees is skewed towards those who generally earn more (middle-aged, man, highly-educated, etc.).¹⁰ Employee, employer and job characteristics tend to be all powerful in explaining the financial sector wage premium. Relying on sector-level data, Appendix 1 shows that the average wage premium in Europe stayed at about the same level over the past 40 years, while the premia in individual countries generally converged to the average, probably due to factors related to international financial integration and labour mobility.

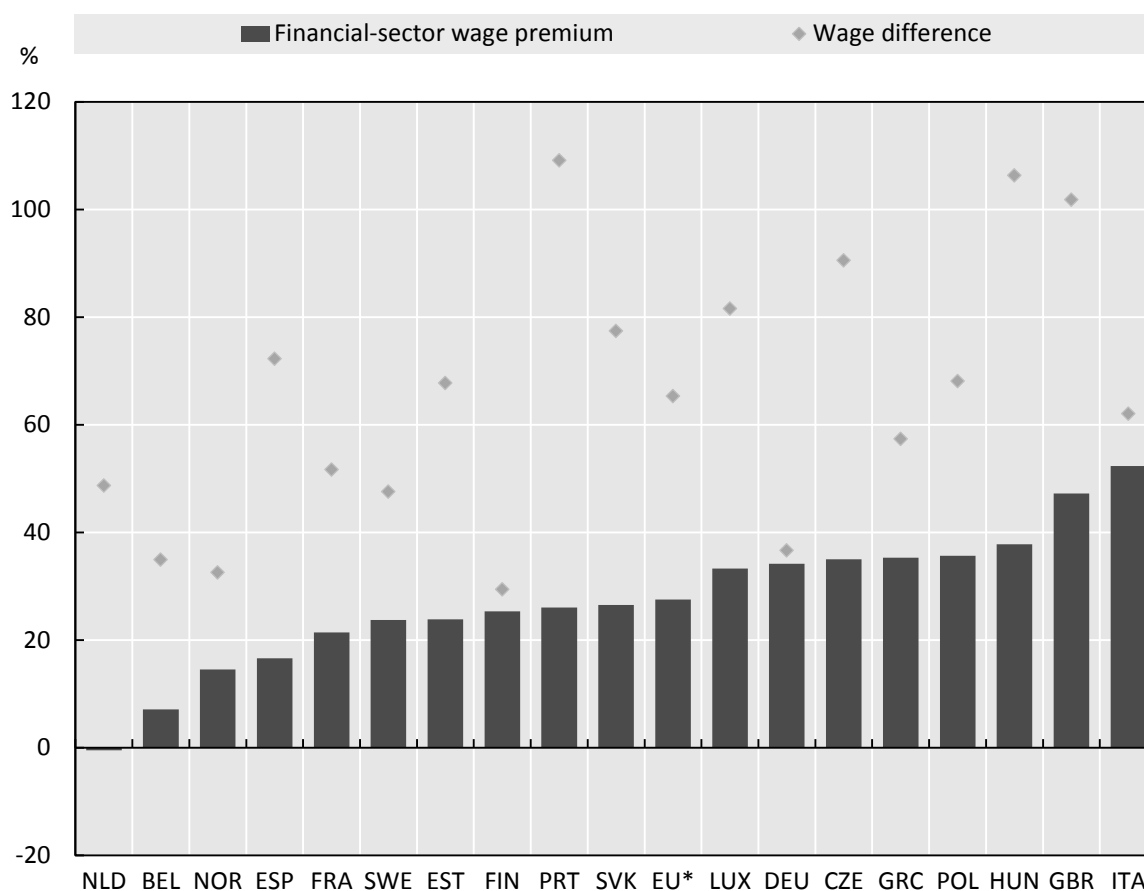
The wage premium estimates are broadly in line with those obtained by others. In particular, Du Caju et al. (2010), relying on European data from the 2002 SES, find that the wage premium in finance (excluding insurance) ranges from 6% in Germany to 36% in Italy. Overall, the results contrast somewhat with those based on sector-level data in Appendix 1, where for the same set of countries the average wage premium is twice as high (50%), while the average wage difference is virtually identical.¹¹ This suggests that both differences in the source data and a stronger explanatory power of the exogenous covariates in the individual-level regressions are at play. In related work, other authors argue that economic rents in the form of financial sector wage premia are particularly large for financial professionals at the very top of the income distribution (Bivens and Mishel, 2013), an issue to which the analysis turns next. Moreover, the estimates based on the 2010 data are very close to the ones based on the 2006 data, both qualitatively and quantitatively. This suggests that the results reflect structural labour market characteristics rather than temporary phenomena related to the global financial crisis.

10. For example, if working in finance is correlated with being a man and the male wage premium is larger in finance than elsewhere, then replacing the interactions between finance and other observables with a single financial sector dummy will overestimate the true financial sector wage premium.

11. Even though the averages of the wage differences in Appendix 1 and this section are virtually identical, the wage difference is weakly correlated across countries in the two data sources.

Figure 6. The wage premium in finance

2010



Note: The wage difference is the percentage by which gross annual earnings of weighted full-time full-year equivalent employees in finance exceed those in other sectors. The financial sector wage premium is obtained from regressions of the log wage on age, gender, highest level of education, years of experience in the firm and their square, employees in the firm, geographical location of the firm, type of financial control, level of wage bargaining, type of employment contract, number of overtime hours paid and occupation. See the text for the technical details. The wage difference in the raw data of 65% is on average 6 percentage points larger than when the wage difference is estimated with the logarithmic specification of the wage regression. EU* is the simple average of OECD countries which belong to the European Economic Area and for which data are available. Data for Germany relate to 2006. The coverage of sectors is not exactly the same for all countries, and the sample size varies considerably across countries.

Source: OECD Secretariat calculations using Eurostat Structure of Earnings Survey.

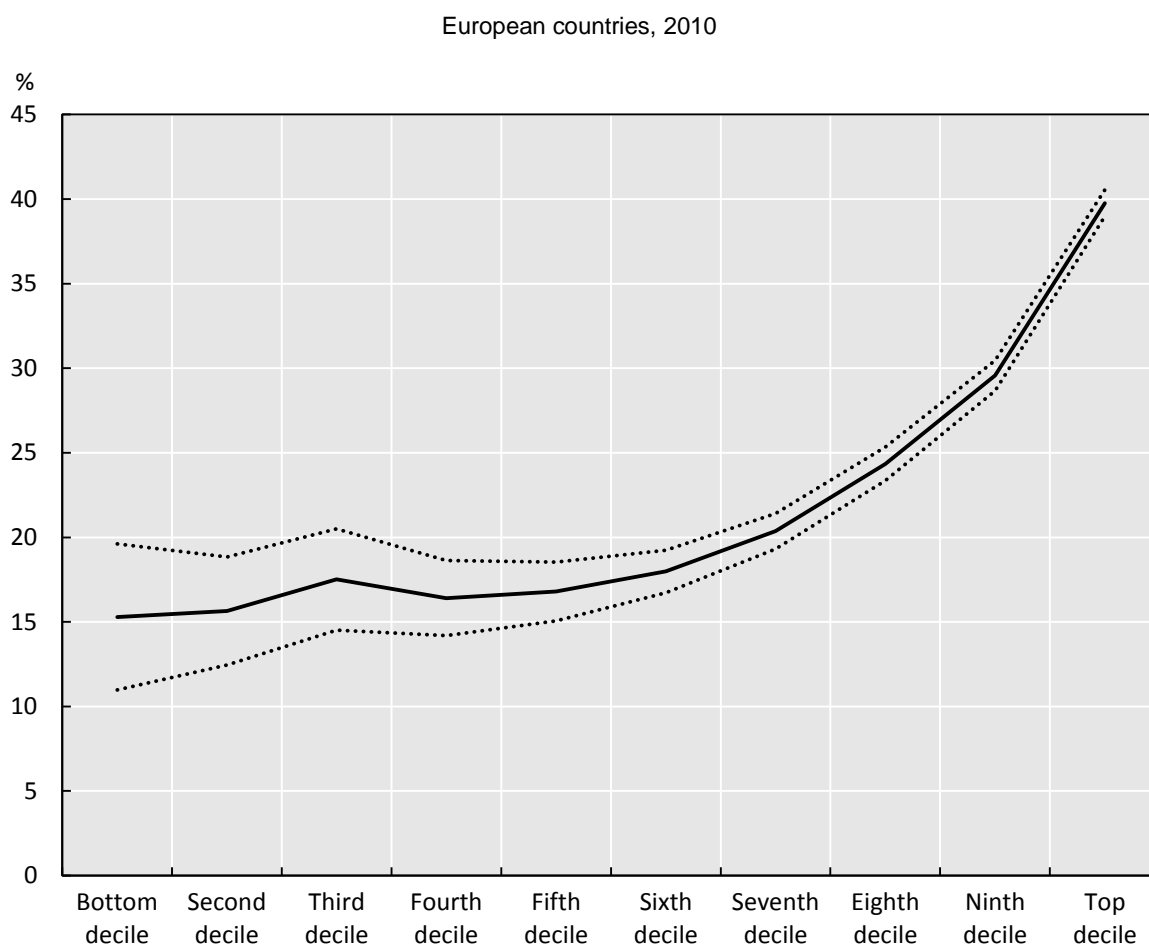
3.2 Rents to financial sector employees tend to accrue at the top of the earnings distribution

The objective of this subsection is to characterise the distribution of rents to financial sector employees across incomes. There are good reasons to conjecture that such rents may be concentrated at the top of the distribution. For one, even if wage premia (in %) were independent of the wage earned, rents (in absolute amounts) would be larger for individuals with high earnings. This channel is reinforced, as documented, by the strong concentration of financial sector employees in the top percentiles. In addition, the wage premium itself may vary along the income distribution. To this end, the mean wage premium is computed for each decile in the overall income distribution and then averaged across countries (Figure 7).¹²

12. This exploits the heterogeneity in wage premia across financial sector workers that stems from the interactions of the observed characteristics with the financial sector dummy. An alternative approach would be to use quantile regressions. However, conditional quantile regressions yield estimates for financial sector wage premia across an income distribution that is conditional on the observed

It is essentially flat for workers in the lower two-thirds of the income distribution at 15-20%. The wage premium then rises continuously throughout the income distribution, reaching 40% for the top decile. It is statistically significant for all deciles. The individual country charts reveal a somewhat more irregular pattern for a few countries (Figure 8), which likely has to do with the small number of financial sector employees sampled in several deciles.

Figure 7. The wage premium in finance across the earnings distribution



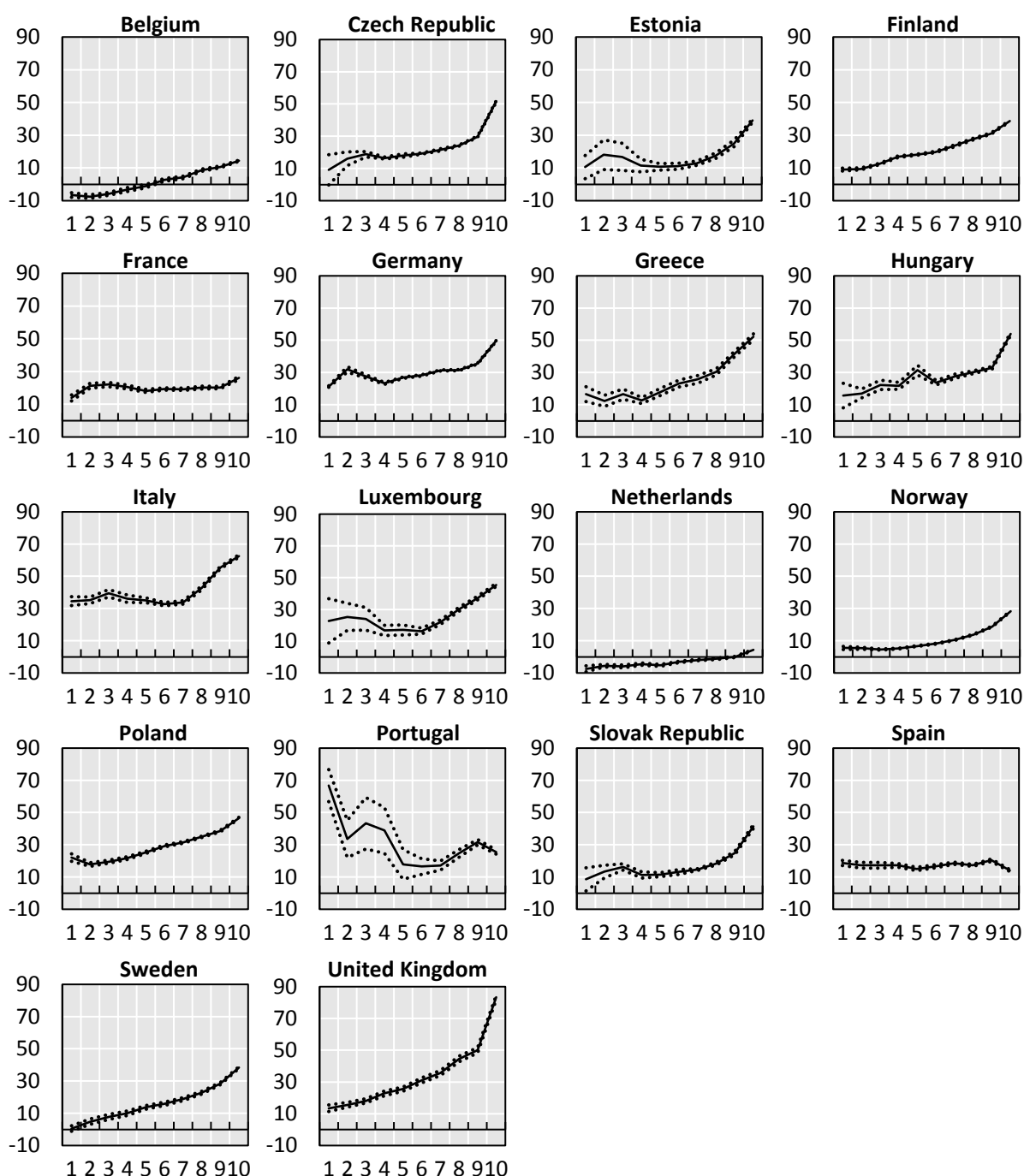
Note: The financial sector wage premium is the percentage by which gross annual earnings of weighted full-time full-year equivalent employees in finance exceed those in other sectors. It is obtained from regressions of log wage on age, gender, highest level of education, years of experience in the firm and their square, employees in the firm, geographical location of the firm, type of financial control, level of wage bargaining, type of employment contract, number of overtime hours paid and occupation. See the text for the technical details. The figure depicts the simple average of OECD countries which belong to the European Economic Area and for which data are available. Data for Germany relate to 2006. The dotted lines represent the 90% confidence band. The coverage of sectors is not exactly the same for all countries, and the sample size varies considerably across countries.

Source: OECD Secretariat calculations using Eurostat Structure of Earnings Survey.

characteristics, and unconditional quantile regressions are not designed to yield estimates for financial sector wage premia.

Figure 8. The wage premium in finance by income decile

Per cent, 2010



Note: The financial sector wage premium is the percentage by which gross annual earnings of weighted full-time full-year equivalent employees in finance exceed those in other sectors. It is obtained from regressions of log wage on age, gender, highest level of education, years of experience in the firm and their square, employees in the firm, geographical location of the firm, type of financial control, level of wage bargaining, type of employment contract, number of overtime hours paid and occupation. See the text for the technical details. The dotted lines represent the 90% confidence band. The coverage of sectors is not exactly the same for all countries, and the sample size varies considerably across countries. Data for Germany relate to 2006.

Source: OECD Secretariat calculations using Eurostat Structure of Earnings Survey.

Another way of illustrating the size of the rents financial sector employees obtain through wage premia is to express them as shares of the labour income of persons working in finance. Since the wage premium varies with labour income, its share in labour income increases along the earnings distribution. On average in Europe, the rent share would be 16% for financial sector employees in the bottom 90% of the overall earnings distribution and 27% for those in the top 10% (Table 1).

Table 1. Estimated shares of economic rent in financial sector pay

Per cent of labour income, 2010

	Rent share: bottom 90% (1)	Rent share: top 10% (2)
Belgium	0	13
Czech Republic	16	34
Estonia	13	28
Finland	16	28
France	16	21
Germany	22	33
Greece	18	34
Hungary	20	35
Italy	28	38
Luxembourg	19	31
Netherlands	-4	4
Norway	8	22
Poland	21	32
Portugal	24	20
Slovak Republic	13	29
Spain	15	12
Sweden	12	28
United Kingdom	22	45
European Union*	16	27

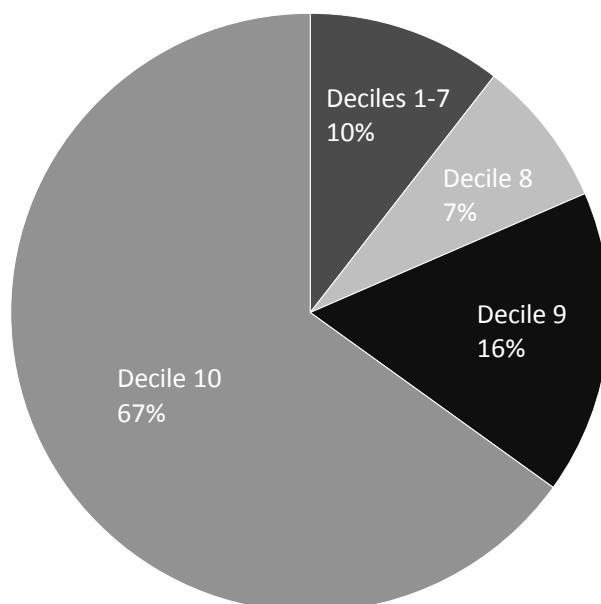
Note: The sample includes only full-time, full-year equivalent employees to exclude working time effects on earnings. Observations are weighted to make the sample representative of the actual population. The bottom 90% and top 10% refer to the overall income distribution. European Union* is the simple average of OECD countries which belong to the European Economic Area and for which data are available. Data for Germany relate to 2006.

Source: OECD Secretariat calculations using Eurostat Structure of Earnings Survey.

The analysis of the distribution of rents accruing to financial sector employees is pursued in four steps. First, the difference between the earnings of an individual and her earnings divided by the decile-specific wage premium (in %) is calculated. Second, the resulting individual-specific rents (in absolute amounts) are summed over all financial sector employees in each decile. Third, the share of each decile in total rents to financial sector employees is computed. Fourth, these shares are averaged across all countries in the sample. Figure 9 depicts the result. The bottom seven deciles receive very little of the rents; the bottom five deciles receive essentially zero. In contrast, 67% of the rents go to the top 10%. Practically all countries in the sample share a similar pattern (Figure 10). Overall, the results document the detrimental effect of rents to financial sector employees on social welfare and labour income inequality. Their origin is likely related to too-big-to-fail guarantees to financial institutions and imperfections in the financial sector labour market. In an extension, the next subsection uses numerical simulations to estimate the contribution of these rents to labour income inequality.

Figure 9. The distribution of rents to financial sector employees across the earnings distribution

European countries, 2010

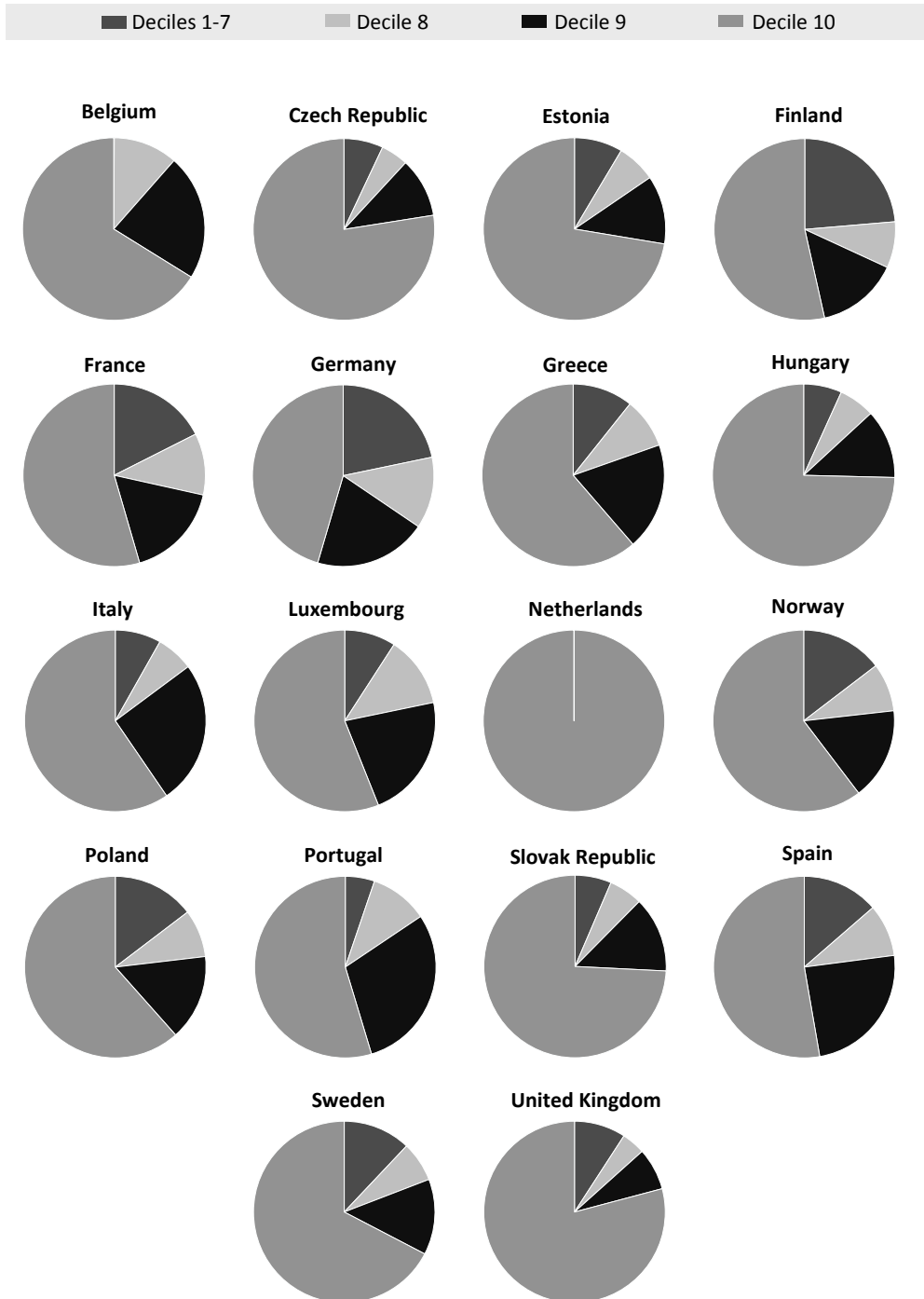


Note: The rents to financial sector employees in a particular decile are the sum of all individual-specific rents in this decile. The individual-specific rent is obtained from the difference between the earnings of a financial sector employee and her earnings divided by the decile-specific wage premium (in %) from Figure 8. See the text for the technical details. The chart depicts the simple average of OECD countries which belong to the European Economic Area and for which data are available. Data for Germany relate to 2006. The sample includes only full-time, full-year equivalent employees to exclude working time effects on earnings. Observations are weighted to make the sample representative of the actual population. The coverage of sectors is not exactly the same for all countries, and the sample size varies considerably across countries.

Source: OECD Secretariat calculations using Eurostat Structure of Earnings Survey.

Figure 10. The distribution of rents to financial sector employees across income deciles

2010



Note: The rents to financial sector employees in a particular decile are the sum of all individual-specific rents in this decile. The individual-specific rent is obtained from the difference between the earnings of a financial sector employee and her earnings divided by the decile-specific wage premium (in %) from Figure 8. See the text for the technical details. The sample includes only full-time, full-year equivalent employees to exclude working time effects on earnings. Observations are weighted to make the sample representative of the actual population. The coverage of sectors is not exactly the same for all countries, and the sample size varies considerably across countries. Data for Germany relate to 2006.

Source: OECD Secretariat calculations using Eurostat Structure of Earnings Survey.

3.3 Simulating the role of financial sector employees for labour income inequality

This subsection examines the contribution of financial sector employment to the level of overall labour income inequality. The Gini coefficient is used. It expresses the overall degree of inequality across the whole earnings distribution in a single number and ranges from 0 (perfect equality) to 1 (perfect inequality). The Gini in this subsection is based on labour earnings of employees, i.e. an income concept that does not include the payment of taxes and the receipt of transfers and refers to individuals (excluding the non-employed and self-employed) rather than households. This is not a drawback analytically since the objective here is to provide illustrative insights into the effects of experimental changes to the financial sector labour market on labour income inequality. Averaged across all countries in the sample, the Gini coefficient for the whole earnings distribution is 0.28.

A first approach looks at the effects on the Gini coefficient when all financial sector employees are excluded from the sample. It indicates the degree of income inequality that would prevail if wage dispersion was the same in finance and the rest of the economy. The results can be interpreted as measuring the raw contribution of financial sector employment to labour income inequality. A second approach adjusts earnings of each financial sector employee to the level explained by observable characteristics. Hence, it wipes out financial sector wage premia (using the decile-by-country estimates from the previous subsection). Both approaches study partial equilibria by design; for instance, the elimination of the cross-subsidisation of financial sector wages may influence wage dispersion in other sectors.

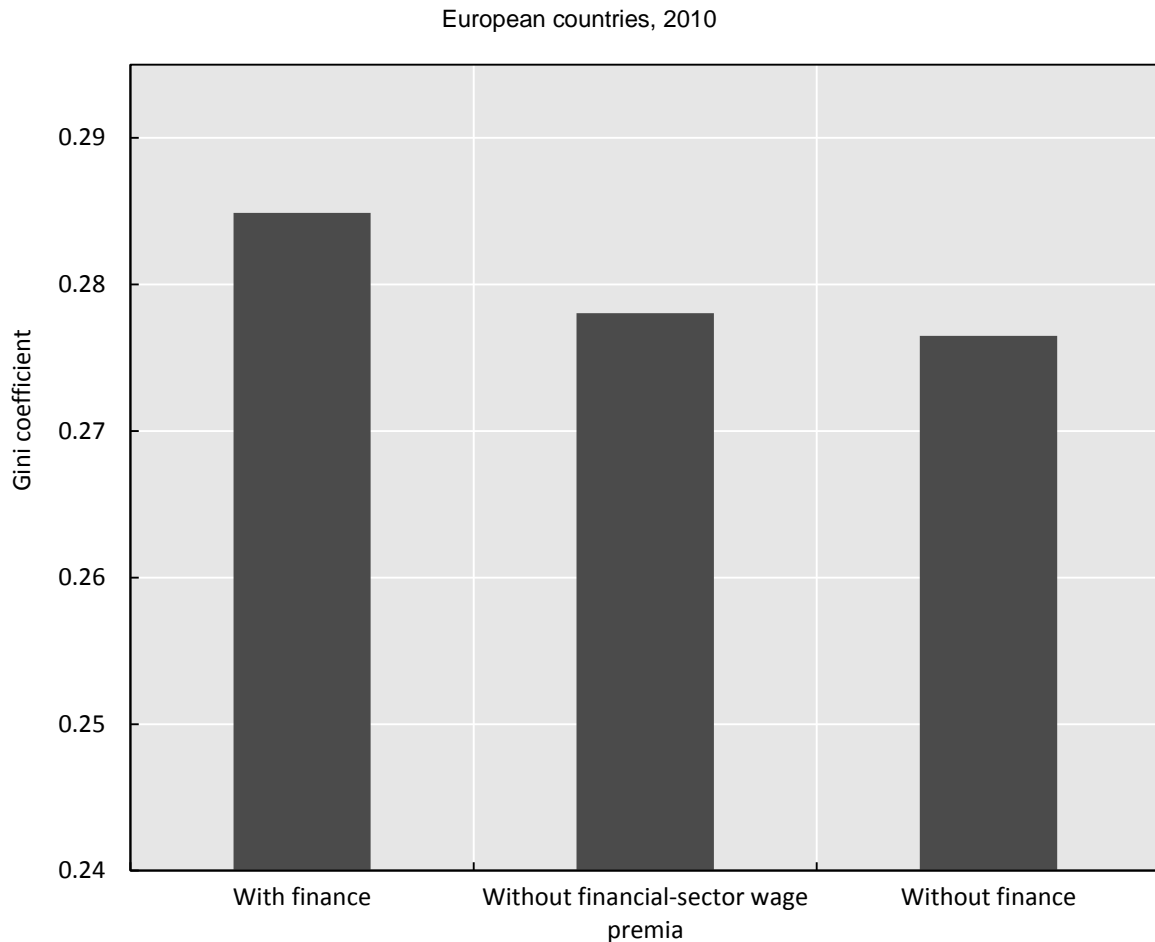
The empirical analysis shows that workers in the financial sector contribute a small but noticeable amount to economy-wide labour income inequality. Financial sector wage premia make up most of this contribution. In all countries, financial sector employment contributes to higher labour income inequality, on average raising the Gini coefficient by 0.8 Gini points (Figure 11). The difference between the Gini coefficients with and without financial sector employees is especially large in Luxembourg and the United Kingdom: 2.9 and 2.6 Gini points, respectively (Table 2). Overall, the influence of financial sector employment on labour income inequality is insufficient to materially affect country rankings of income inequality. Nevertheless, in many countries removing financial sector wage premia would go most of the way towards avoiding the negative role that financial sector employment has for labour income inequality. It would reduce the Gini coefficient by 0.6-0.7 points on average and again the most in Luxembourg and the United Kingdom.

Back-of-the-envelope calculations suggest that financial sector employment accounts for a significant part of the overall negative relationship between finance and inequality estimated in Denk and Cournède (2015). According to the results from the baseline regression in their Table 2, an increase in intermediated credit by 10% of GDP is associated with an increase in the Gini coefficient by 0.13 Gini points. For the sample of European countries in this section, 10% of GDP were equivalent to 8% of intermediated credit in 2010. According to Table 9 in turn, a rise of financial sector employment by 8% is linked with a rise of the Gini coefficient by 0.07 Gini points. This suggests that 54% of the overall negative relationship between finance and equality is accounted for by the raw contribution of financial sector employment.¹³ These calculations mix estimates for the finance and inequality relationship that are based on panel data for disposable income in the entire population from OECD countries with estimates for the role of financial sector employment which are from 2010, apply to labour earnings and use European countries only. They assume, too, that changes in intermediated credit are proportional to changes in financial sector employment and that if financial sector employees did not work in finance their wage distribution would

13. The same calculations using stock market capitalisation instead of intermediated credit indicate that the entire overall negative relationship between finance and equality would be accounted for by the raw contribution of financial sector employment.

be the same as for people outside finance. These estimates thus need to be viewed as indicative rather than precise.¹⁴

Figure 11. Financial sector employment, wage premia and labour income inequality



Note: Labour income is defined as gross annual earnings of weighted full-time full-year equivalent employees. “With finance” is the Gini coefficient in the raw data. “Without finance” is the Gini coefficient when all financial sector employees are removed from the sample. “Without financial sector wage premia” is the Gini coefficient when the earnings of all financial sector employees are corrected for the wage premium. See the text for the technical details. The figure depicts the simple average of OECD countries which belong to the European Economic Area and for which data are available. Data for Germany relate to 2006. The length of the vertical axis is equal to the standard deviation of the Gini coefficient “With finance”. The coverage of sectors is not exactly the same for all countries, and the sample size varies considerably across countries.

Source: OECD Secretariat calculations using Eurostat Structure of Earnings Survey.

14. Alternatively, financial sector employment could be used directly in the regressions of Denk and Cournède (2015). However, such employment data are only available for a limited number of years. In these years, the relationship of the Gini coefficient with intermediated credit and stock market capitalisation is not statistically significant.

Table 2. Financial sector employment, wage premia and labour income inequality

2010

	Gini coefficient: with finance (1)	Gini coefficient: without financial sector wage premia (2)	Gini coefficient: without finance (3)
Belgium	0.211	0.207	0.206
Czech Republic	0.295	0.290	0.289
Estonia	0.327	0.323	0.323
Finland	0.220	0.217	0.217
France	0.273	0.269	0.266
Germany	0.293	0.289	0.291
Greece	0.259	0.249	0.248
Hungary	0.370	0.363	0.361
Italy	0.261	0.251	0.254
Luxembourg	0.313	0.285	0.284
Netherlands	0.266	0.265	0.261
Norway	0.204	0.201	0.200
Poland	0.322	0.318	0.317
Portugal	0.383	0.376	0.374
Slovak Republic	0.307	0.303	0.302
Spain	0.271	0.268	0.265
Sweden	0.209	0.205	0.202
United Kingdom	0.344	0.326	0.318

Note: Labour income is defined as gross annual earnings of weighted full-time full-year equivalent employees. “With finance” is the Gini coefficient in the raw data. “Without finance” is the Gini coefficient when all financial sector employees are removed from the sample. “Without financial sector wage premia” is the Gini coefficient when the earnings of all financial sector employees are corrected for the wage premium. See the text for the technical details. The coverage of sectors is not exactly the same for all countries, and the sample size varies considerably across countries. Data for Germany relate to 2006.

Source: OECD Secretariat calculations using Eurostat Structure of Earnings Survey.

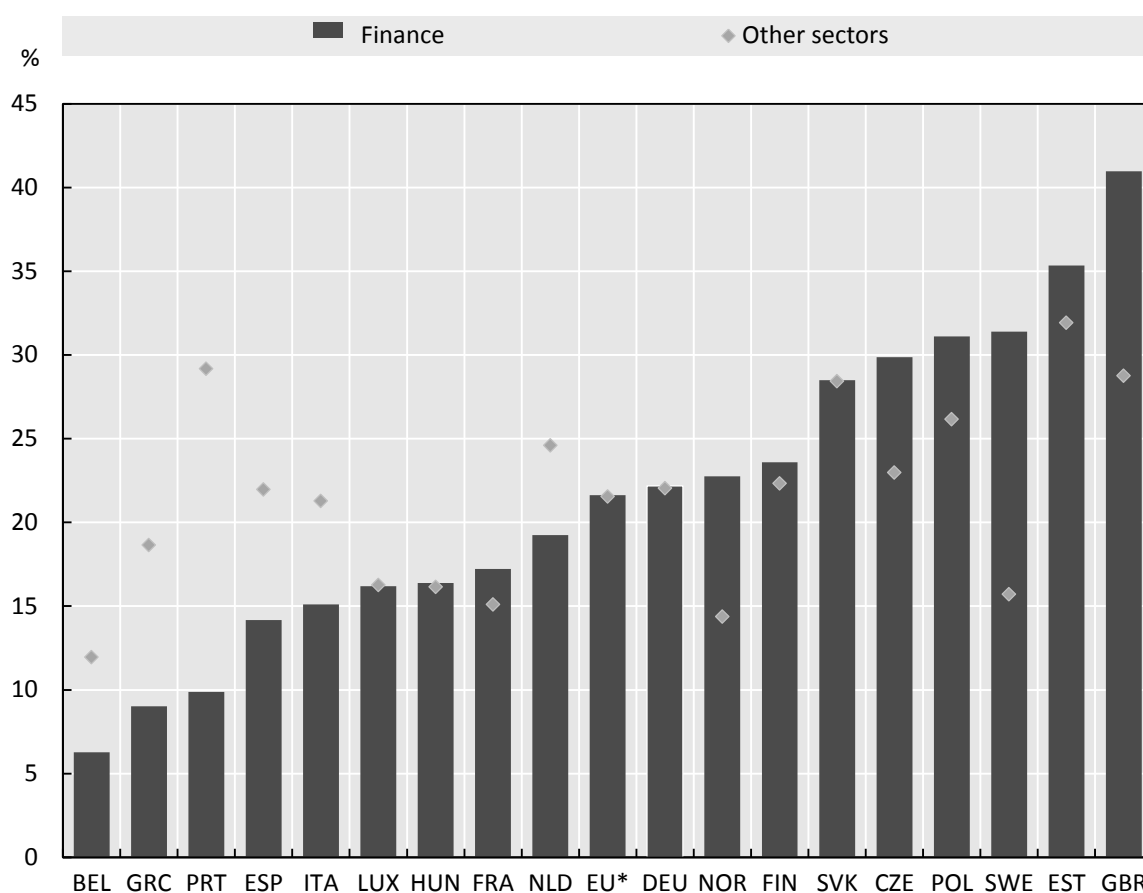
3.4 Finance and gender inequality

Several studies have documented a sizeable wage gap between men and women in many OECD economies (Blau and Kahn, 2000; OECD, 2012). Gender discrimination contributes to labour income inequality as women are less well represented among high earners. Gender wage gaps also matter for economic welfare, as they are likely to reduce income and thus consumption growth. This paper defines men’s wage premia (or gender wage gaps) as the percentage difference in predicted earnings of men in the sample compared with counterfactual women who have the same characteristics as men except gender. The premium is estimated with a modified version of the empirical framework for the financial sector wage premium. In particular, besides interacting each characteristic with a financial sector dummy, these interactions are further interacted with a gender dummy. This way differences between male wage premia in finance and in other sectors and also changes in their relative and absolute magnitudes over the income distribution can be examined.

The average country estimates show a wider variation of the male wage premium in finance than in other sectors (Figure 12): it varies between 6% in Belgium and 41% in the United Kingdom for finance, while in the other sectors it ranges from 12% in Belgium to 32% in Estonia. The estimates are statistically significant in all countries at the 1% level. Averaged across countries, however, the gender wage gap in finance, at 21.6%, is not significantly different from the gap in other sectors, at 21.5%.

Figure 12. Men's wage premium in finance and other sectors

2010

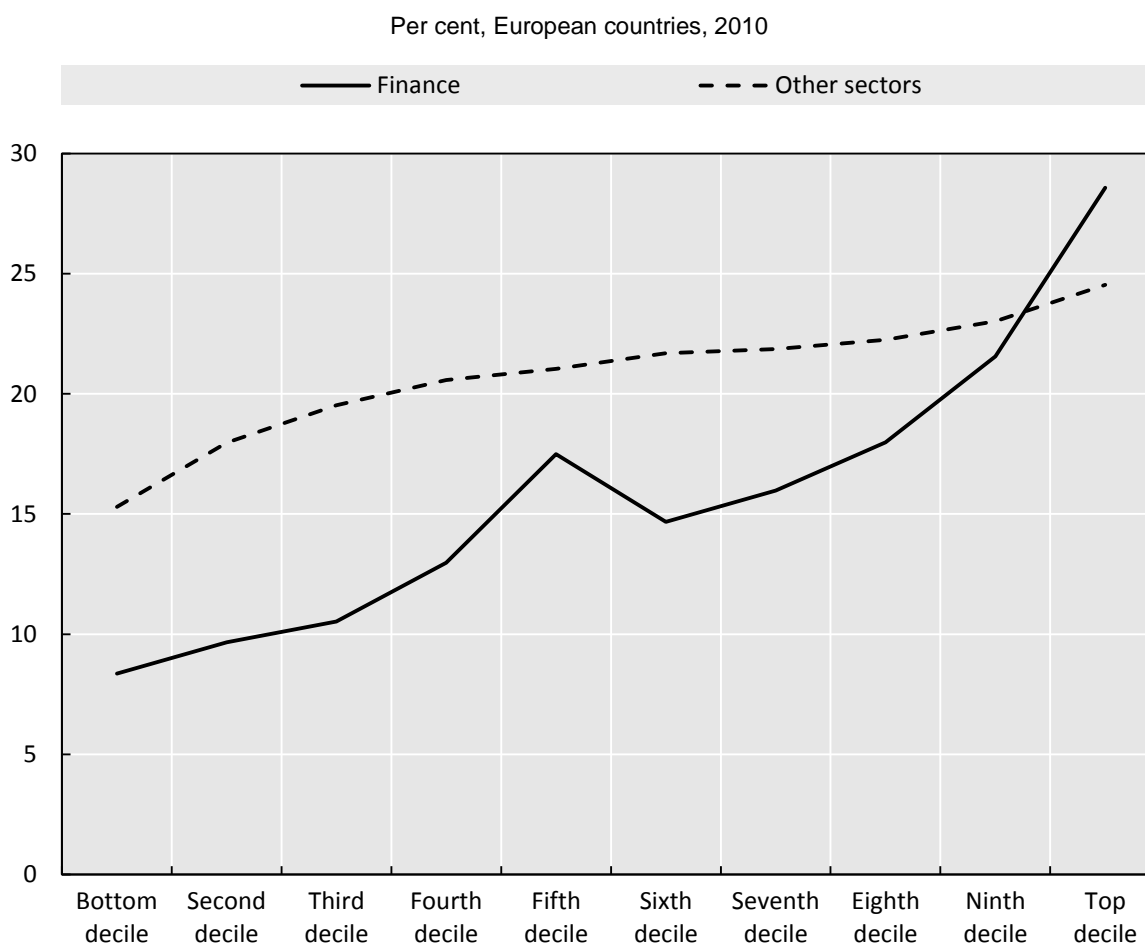


Note: Men's wage premium is defined as the percentage by which gross annual earnings of weighted full-time full-year equivalent male employees exceed those of women. It is obtained from regressions of log wage on age, highest level of education, years of experience in the firm and their square, employees in the firm, geographical location of the firm, type of financial control, level of wage bargaining, type of employment contract, number of overtime hours paid, occupation, and gender and their interactions with gender. See the text for the technical details. EU* is the simple average of OECD countries which belong to the European Economic Area and for which data are available. Data for Germany relate to 2006. The coverage of sectors is not exactly the same for all countries, and the sample size varies considerably across countries.

Source: OECD Secretariat calculations using Eurostat Structure of Earnings Survey.

The gender wage gap in finance, similarly to what is observed for other sectors, tends to increase along the income distribution (Figure 13). This indicates that men generally earn more than women with similar characteristics, but that this pattern is more pronounced in better-paid positions. The income decile-specific wage gap in the financial sector is smaller than that of other sectors for a large part of the income distribution. In the top decile, however, men working in finance earn a premium, at 29%, that is four percentage points higher than the premium for men in other sectors. Thus, the wage gap, overall but especially in finance, is highest precisely in that part, the top, of the distribution where women are already represented the least. This pattern, albeit not universal, holds for a majority of countries (Figure 14). It may indicate gender-based discrimination in highly paid positions that is particularly strong in the financial sector.

Figure 13. Men's wage premium in finance and other sectors across the earnings distribution

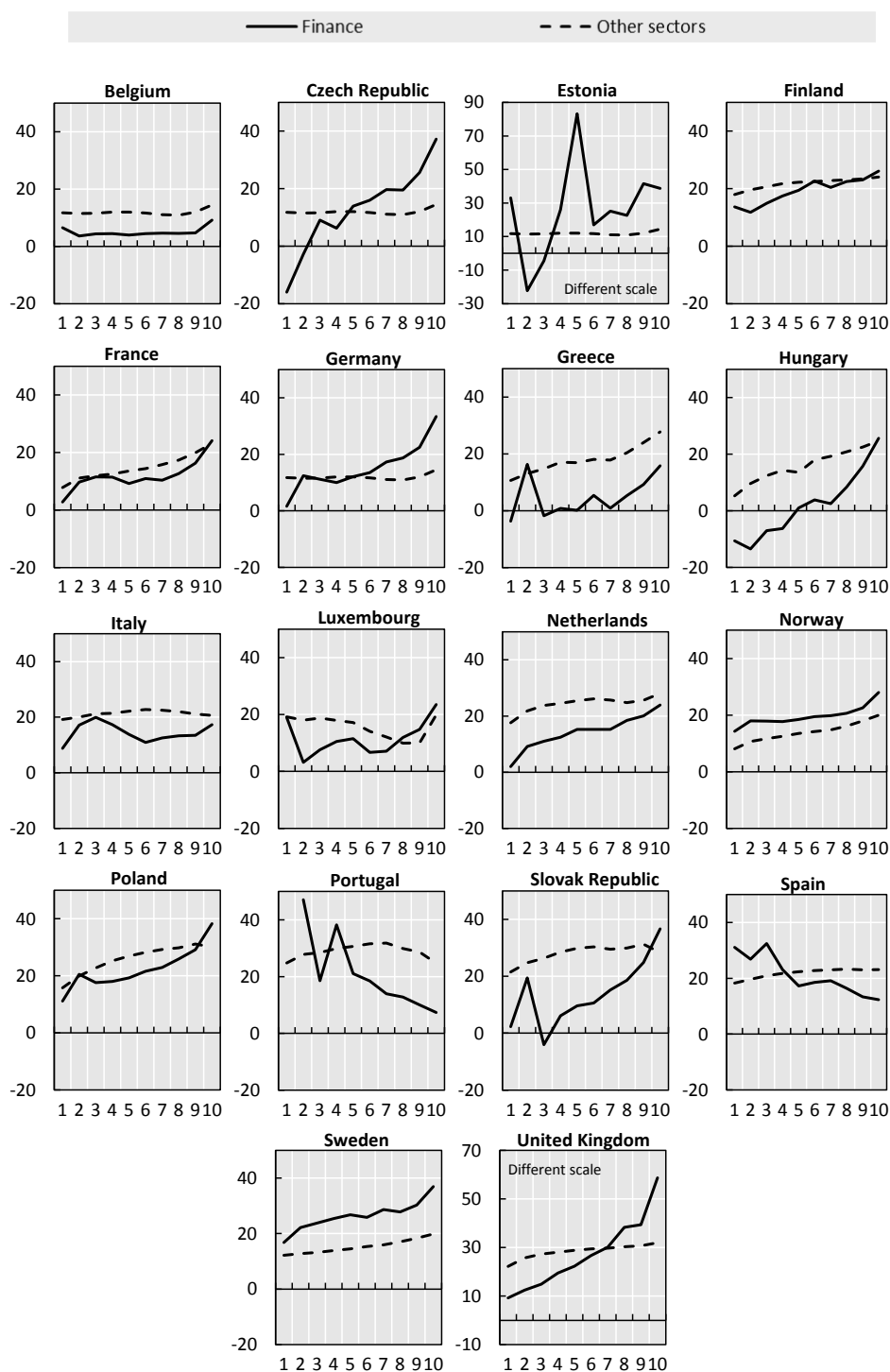


Note: Men's wage premium is defined as the percentage by which gross annual earnings of weighted full-time full-year equivalent male employees exceed those of women. It is obtained from regressions of log wage on age, highest level of education, years of experience in the firm and their square, employees in the firm, geographical location of the firm, type of financial control, level of wage bargaining, type of employment contract, number of overtime hours paid, occupation, and gender and their interactions with gender. See the text for the technical details. The chart depicts the simple average of OECD countries which belong to the European Economic Area and for which data are available. The average excludes Portugal for which an insufficient number of observations is available. Data for Germany relate to 2006. The coverage of sectors is not exactly the same for all countries, and the sample size varies considerably across countries.

Source: OECD Secretariat calculations using Eurostat Structure of Earnings Survey.

Figure 14. Men's wage premia in finance and other sectors across income deciles

Per cent, 2010



Note: Men's wage premium is defined as the percentage by which gross annual earnings of weighted full-time full-year equivalent male employees exceed those of women. It is obtained from regressions of log wage on age, highest level of education, years of experience in the firm and their square, employees in the firm, geographical location of the firm, type of financial control, level of wage bargaining, type of employment contract, number of overtime hours paid, occupation, and gender and their interactions with gender. See the text for the technical details. The coverage of sectors is not exactly the same for all countries, and the sample size varies considerably across countries. Data for Germany relate to 2006.

Source: OECD Secretariat calculations using Eurostat Structure of Earnings Survey.

4 Tentative evidence on overskilling in finance

Overskilling is another channel which could transmit rents to financial sector employees. OECD data from the Programme for the International Assessment of Adult Competencies (PIAAC) can be used to investigate whether overskilling is more pronounced in finance than in other sectors. Averaged across 22 participating countries, 84% in finance and also 84% in other sectors responded “Yes” to the question: “Do you feel that you have the skills to cope with more demanding duties than those you are required to perform in your current job?” Similarly, 63% in finance and 67% in other sectors responded “No” to the question: “Do you feel that you need further training in order to cope well with your present duties?” The descriptive statistics for these two questions would suggest that financial sector workers are not more likely to be overskilled than others.

One concern with these descriptive statistics is that they may be subject to reporting bias arising from, for instance, overconfidence. Reflecting this concern, OECD (2013) and Pellizzari and Fichen (2013) develop a more sophisticated approach which also uses PIAAC proficiency scores to measure overskilling. It classifies workers as well-matched whose proficiency is between the 5th and 95th percentile scores observed among all workers in the same occupation class who answered “No” to both questions in the preceding paragraph. In other words, the proficiency score of an overskilled worker exceeds the 95th percentile score of self-reported well-matched workers. Averaged across 22 participating countries, 12% are overskilled in finance versus 9% in other sectors applying this measure to literacy, and 11% versus 9% for numeracy. Of 19 sectors in total, the proportion of overskilled is the highest in finance for literacy and the fourth highest for numeracy.

The overall evidence would thus tentatively indicate comparatively high overskilling in finance. The more sophisticated approach should be superior to the simple measures as it aims to reduce reporting bias whereby a vast majority of workers describe themselves as overskilled. But it may suffer from an upward bias induced by relatively high job requirements and therefore skills in finance for the same occupation class. The differences in percentage points between finance and other sectors appear small even with the sophisticated method, for example compared with the wage premia estimates. As a whole, this represents tentative evidence of more overskilling in finance than elsewhere in the economy, while the magnitudes involved are not large.

APPENDIX 1. WAGE PREMIA IN FINANCE OVER TIME

This appendix provides estimates for the development of wage premia in finance across time in OECD countries. Sector-level data from the EU-KLEMS and WORLD-KLEMS databases are used as no worker-level data are available over an equally long time period. The dataset covers 20 countries between 1970 and 2005. Besides the sector, observable characteristics are three age brackets, three education levels and gender.¹⁵ The age brackets are 15-29, 30-49, and 50 and over. High-skilled workers are university graduates, and medium-skilled workers have completed secondary education (but not more than this).

The measure of wage provided refers to hourly labour cost, or gross earnings, i.e. includes labour income taxes and social security contributions paid by employees and employers as well as fringe benefits. In particular, it accounts for bonuses and executive compensation. One part of executive compensation that is, however, imperfectly captured relates to restricted securities and stock options with employment or performance conditions.¹⁶

Wage premia are calculated as the average of the wage premium for each triplet consisting of one age bracket, one education level and the gender, weighted by the number of financial sector employees in the triplet. More precisely, for each worker with the characteristics of triplet i the wage premium in finance relative to other sectors for country c in year t can be defined as:

$$w_{cit}^F = \frac{L_{cit}^F / H_{cit}^F}{L_{cit}^{NF} / H_{cit}^{NF}} - 1,$$

where L_{cit}^F and L_{cit}^{NF} are total labour compensation (i.e. earnings including labour income taxes and social security contributions) of workers with the characteristics of triplet i in finance and other sectors. H_{cit}^F and H_{cit}^{NF} represent total hours worked by triplet i workers in finance and other sectors.

These wage premia are then summed up to obtain the aggregate wage premium in finance per country and year as follows:

$$w_{ct}^F = \sum_i \frac{H_{cit}^F}{H_{ct}^F} \times w_{cit}^F,$$

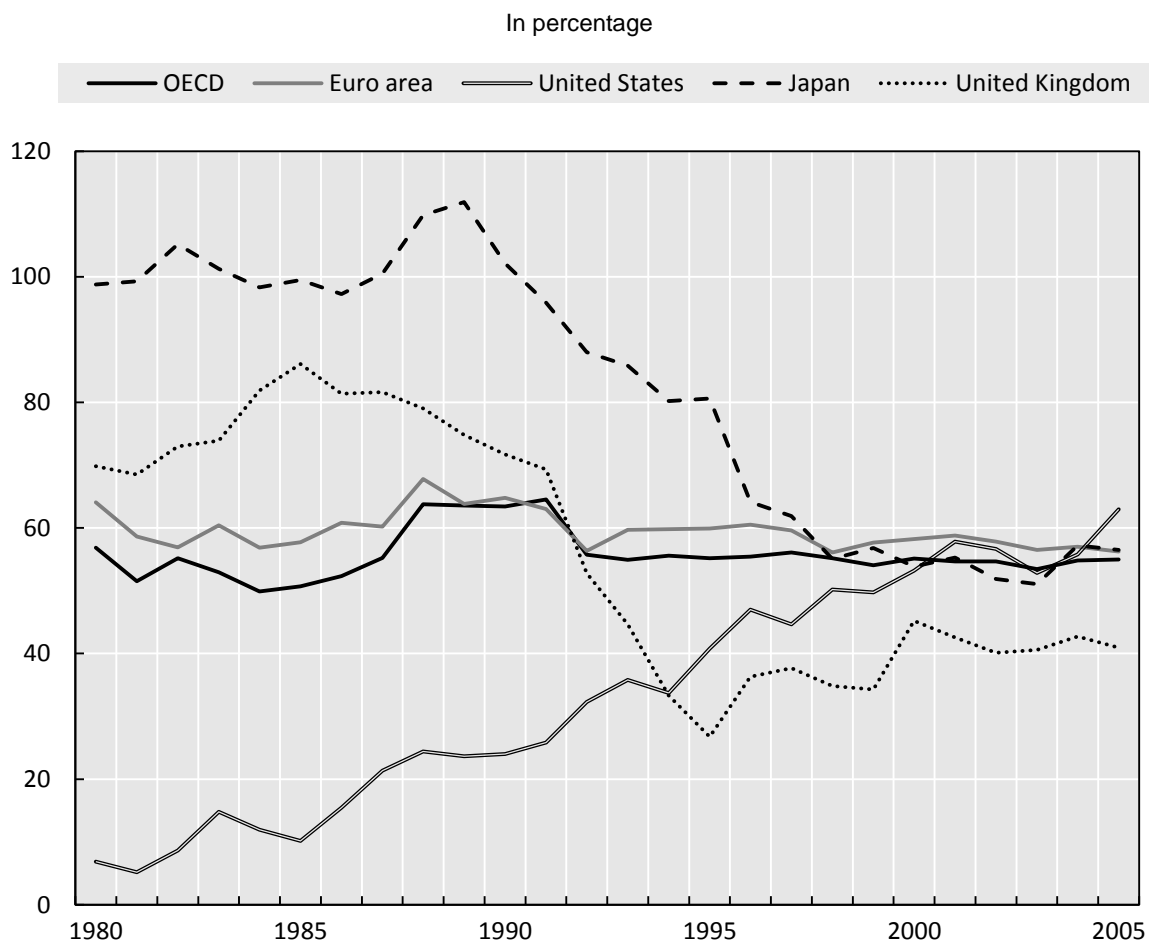
where H_{ct}^F is total hours worked in finance. Hence, the aggregate measure uses the relative frequency of financial sector employees in the different triplet categories.

15. For the United States, observable characteristics are eight age brackets, six education levels and gender. No breakdown by age is available for Slovenia.

16. While restricted securities and stock options are included in the data used here, they are valued at the time of issuance with a discount reflecting the employment or performance conditions. Compensation data do not incorporate subsequent capital gains on these securities, even though they can be seen as a form of remuneration because the realisation of the gains is conditional on remaining with the same employer and meeting performance criteria if applicable.

The wage premium in finance was approximately 50% on average in OECD countries in 2005. It stayed at about the same level over the past 30 years, while the financial sector wage premia in individual countries converged to the OECD average (Figure 15), probably due to factors related to international financial integration and labour mobility. Figure 16 presents the time series of the wage premia in finance for each OECD country.

Figure 15. The wage premium in finance over time

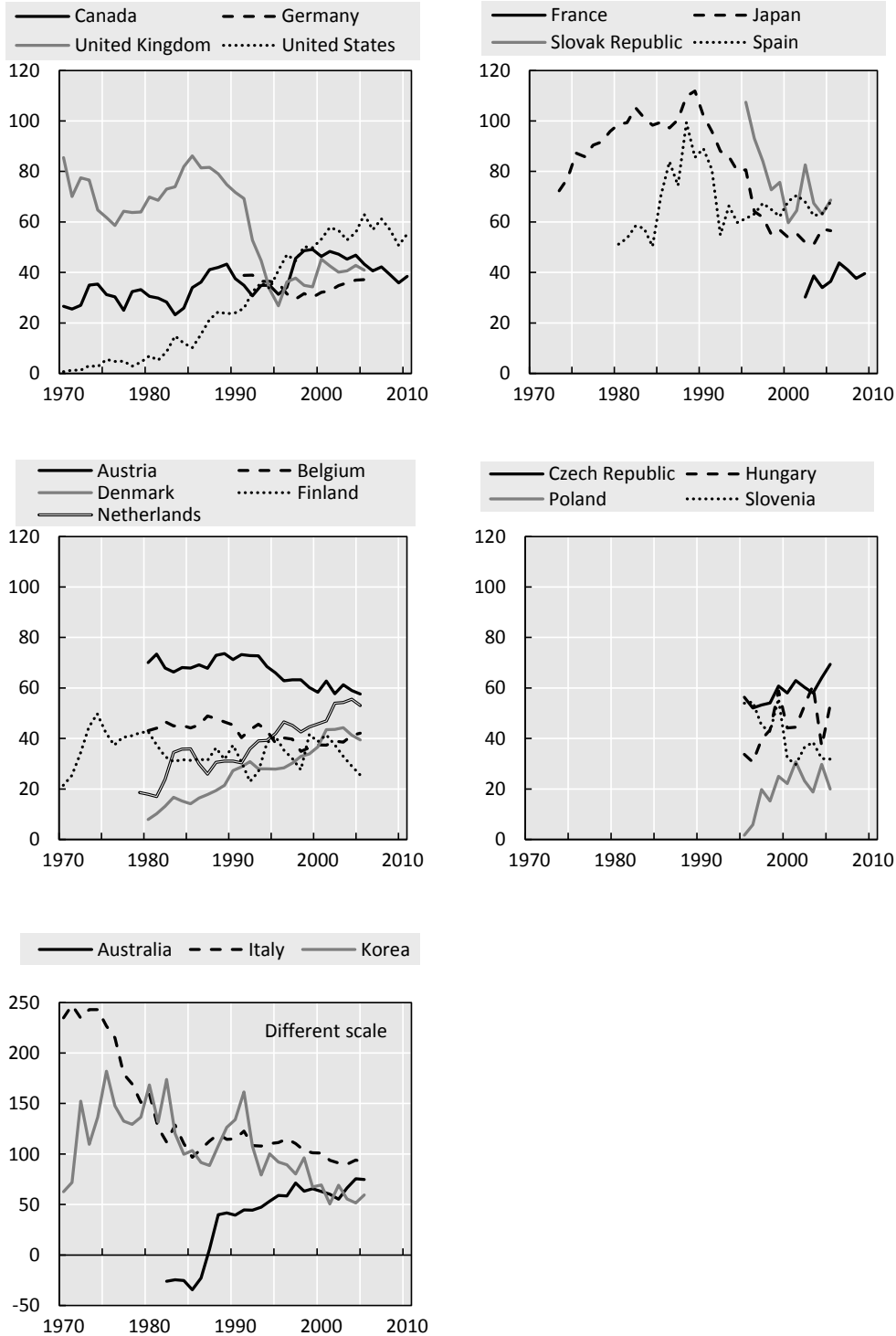


Note: OECD is the simple average of Australia, Austria, Belgium, Canada, Denmark, Finland, Italy, Japan, Korea, the Netherlands, Spain, the United Kingdom and the United States. Euro area is the simple average of those countries that belong to the euro area. The 1980-81 data points for Australia have been linearly extrapolated. The financial sector wage premium is the percentage by which the average hourly labour cost in finance exceeds the average hourly labour cost in other sectors, when differences across sectors are accounted for by three age brackets, three education levels and gender.

Source: OECD Secretariat calculations using EU-KLEMS database; WORLD-KLEMS database.

Figure 16. The wage premium in finance in OECD countries over time

In percentage



Note: The financial sector wage premium is the percentage by which the average hourly labour cost in finance exceeds the average hourly labour cost in other sectors, when differences across sectors are accounted for by three age brackets, three education levels and gender. The exception is France for which the labour cost per person is available instead.

Source: OECD Secretariat calculations using EU-KLEMS database; WORLD-KLEMS database.

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