

Oliva, Nicolás; Jara, H. Xavier; Rattenhuber, Pia

Working Paper

What explains the gender gap in top incomes in developing countries? Evidence from Ecuador

WIDER Working Paper, No. 2021/109

Provided in Cooperation with:

United Nations University (UNU), World Institute for Development Economics Research (WIDER)

Suggested Citation: Oliva, Nicolás; Jara, H. Xavier; Rattenhuber, Pia (2021) : What explains the gender gap in top incomes in developing countries? Evidence from Ecuador, WIDER Working Paper, No. 2021/109, ISBN 978-92-9267-049-8, The United Nations University World Institute for Development Economics Research (UNU-WIDER), Helsinki, <https://doi.org/10.35188/UNU-WIDER/2021/049-8>

This Version is available at:

<https://hdl.handle.net/10419/243435>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



WIDER Working Paper 2021/109

What explains the gender gap in top incomes in developing countries?

Evidence from Ecuador

Nicolás Oliva,¹ H. Xavier Jara,² and Pia Rattenhuber³

June 2021

Abstract: Based on tax records data from Ecuador, we analyse gender differences in top income groups from 2008 to 2017. Ecuador represents an interesting case as it shares many trends with other countries in the region in terms of women’s status in the labour market. While we observe a significant increase in the share of women at the top of the income distribution during this period, women remain underrepresented in top income groups, at 38.7 per cent in the top 10 per cent income group and 22.8 per cent in the top 0.1 per cent income group. The composition of total income—labour, business, and capital income—is broadly similar for men and women at the top, with the importance of business and capital increasing at the very top. However, while women’s capital income is more concentrated on rental income from real estate, men are more likely to earn capital income from dividends and financial returns, and to figure as majority shareholders. In terms of observable characteristics, having (private) tertiary education is more important for women than men. In contrast, the effect of having a spouse who belongs to a top income group is more important for men than women. Finally, we observe a high degree of persistence in top incomes across gender, with around 80 per cent of individuals in the top 10 per cent group remaining in this group from year to year.

Key words: top incomes, gender inequality, tax records, capital incomes, Ecuador

JEL classification: D13, D31, J16, J31

Acknowledgements: We are extremely grateful to the Ecuadorian tax revenue office (Servicio de Rentas Internas) for authorizing access to the tax records database as part of Nicolás Oliva’s PhD research project. The findings and their interpretation in this paper do not necessarily reflect the views of the Servicio de Rentas Internas. We are also grateful to Anne Boschini for providing the underlying data points of the figures in Bobilev et al. (2020) and Boschini et al. (2020). We thank Carlos Gradin, Maria Lo Bue, Simone Schotte, Kunal Sen, and participants in UNU-WIDER’s brown bag seminar for their valuable comments and suggestions.

¹ Universitat Autònoma de Barcelona, Spain, corresponding author: nicolasolivap@gmail.com; ² Institute for Social and Economic Research, University of Essex, Colchester, UK; ³ UNU-WIDER

This study has been prepared within the UNU-WIDER project [Women’s work – routes to economic and social empowerment](#).

Copyright © UNU-WIDER 2021

UNU-WIDER employs a fair use policy for reasonable reproduction of UNU-WIDER copyrighted content—such as the reproduction of a table or a figure, and/or text not exceeding 400 words—with due acknowledgement of the original source, without requiring explicit permission from the copyright holder.

Information and requests: publications@wider.unu.edu

ISSN 1798-7237 ISBN 978-92-9267-049-8

<https://doi.org/10.35188/UNU-WIDER/2021/049-8>

Typescript prepared by Joseph Laredo.

United Nations University World Institute for Development Economics Research provides economic analysis and policy advice with the aim of promoting sustainable and equitable development. The Institute began operations in 1985 in Helsinki, Finland, as the first research and training centre of the United Nations University. Today it is a unique blend of think tank, research institute, and UN agency—providing a range of services from policy advice to governments as well as freely available original research.

The Institute is funded through income from an endowment fund with additional contributions to its work programme from Finland, Sweden, and the United Kingdom as well as earmarked contributions for specific projects from a variety of donors.

Katajanokanlaituri 6 B, 00160 Helsinki, Finland

The views expressed in this paper are those of the author(s), and do not necessarily reflect the views of the Institute or the United Nations University, nor the programme/project donors.

1 Introduction

Income inequality and the role of top incomes have become ever more topical in research and policy debates since the seminal work of Piketty (2001, 2003) and Piketty and Saez (2003) two decades ago. Since then, the body of literature on the evolution of top income shares has greatly expanded for developed countries (Atkinson et al. 2011; Piketty 2015; Piketty and Zucman 2014) as well as for developing countries (Alvaredo and Gasparini 2015; Alvaredo and Londoño Vélez 2013; Burdín et al. 2014; Cano 2018).¹ However, as noted in recent studies by Atkinson et al. (2018) and Boschini et al. (2020), evidence on the gender gap in top income groups and its evolution over time remains scarce, in particular for developing countries.

One of the root causes of this lack of evidence about gender differences in top incomes is data limitations. Household survey data, the main source of information for studying income inequality across the entire distribution, suffer from undercoverage of top incomes and small sample size problems. Consequently, in most cases, analysis of gender differences at the top end of the income distribution based on survey data is severely limited or impossible. In contrast, administrative data from tax records are not affected by the aforementioned limitations. However, administrative data generally do not contain information about gender and other socioeconomic characteristics.

In this paper, we take advantage of exceptionally rich administrative data from Ecuador to study the evolution of the gender gap in top incomes between 2008 and 2017. Ecuador is an interesting case as it has a lot of similarities with other countries in the region in terms of trends in female labour force participation, education (also relative to men), and inequality, amongst other things. Combining tax records with other sources of administrative data, our data contain not only information on income from labour, business income, and capital income (income from real estate, dividends, and financial returns) but also on the proportion of shares a taxpayer holds in firms listed in Ecuador and various socioeconomic indicators, such as sector of economic activity, age, gender, marital status, and education. It also contains information for married taxpayers' partners if they themselves declare taxes.

Our study addresses a number of gaps in the scarce literature on the gender divide in top incomes. We study the top of the income distribution by gender, looking at income from the three most important income sources. We illustrate how top-income women differ from top-income men, particularly in terms of the different types of capital income received and shareholdings. To the best of our knowledge, this study is the first to analyse gender differences in top incomes on the basis of rich administrative data for a developing country that has many similarities with other countries in the region, thus presenting an interesting point of reference.

The main findings of our study are the following. First, women remain underrepresented in top income groups in Ecuador, despite an important increase in the share of women at the top over time. From 2008 to 2017, the share of women in the top 10 per cent income group increased from 34.0 per cent to 38.7 per cent, while the share of women in the top 0.1 per cent income group increased from 16.5 per cent to 22.8 per cent.

¹ Furthermore, geographic coverage and coverage across time of the pertinent inequality indicators in the World Income Inequality Database (WIID) (UNU-WIDER 2021) and the World Inequality Database (WID) have steadily increased.

Second, the composition of total income is broadly similar for men and women at the top, labour income being the major income source for total income in the top 10 per cent and top 1 per cent groups. The income composition in the top 0.1 per cent group differs quite markedly from the lowest top groups, with business and capital income contributing relatively more to total income and becoming even more important over time.

Third, different types of capital income are more prevalent for women than men. Specifically, rental income from real estate is more prevalent for women than men, while income from dividends and financial returns is more important for men. Top-income women are also less likely to be shareholders than top-income men, and out of all shareholders men are more likely to be majority shareholders.

Fourth, top-income women and men also differ in some key characteristics. Tertiary education, and particularly private tertiary education, increases the probability of being in the top 10 per cent group, with a slightly larger effect for women. For men, being married is more strongly associated with the probability of belonging to the top 10 per cent of the income distribution than for women. In contrast, the marginal effect of being divorced is larger for top income women than men. In terms of industries, public administration and defence, education, health, and social work are the sectors most strongly associated with the probability of belonging to the top income groups for both women and men. Working in the mining, manufacturing, and utilities sector increases the probability of being a top income earner for men, but it has a negative effect for women.

Fifth, for both married women and men, we find a positive and significant association between having a partner in the top p90–99 or p99–100 and oneself being part of the top 10 per cent group. This effect is slightly larger for married men than for married women but has strongly increased over time for both groups.

Finally, we observe a high degree of persistence in top incomes across gender, with around 80 per cent of individuals in the top 10 per cent and over 60 per cent of individuals in the top 1 per cent group remaining in this group from year to year.

The rest of the paper is organized as follows. Section 2 discusses related literature on top incomes and gender. Section 3 provides some background on the situation of women in Ecuador, describes the data, and provides basic descriptive statistics. Section 4 discusses the evolution of the share of women in top income groups, gender differences in the income composition at the top, and the role of capital income. Section 5 studies the characteristics associated with the probability of being a top income earner across gender. Section 6 studies gender differences in top income mobility. Finally, Section 7 concludes.

2 Related literature

The pioneering work by Piketty (2001) on top incomes has highlighted that studying income groups at the top of the distribution using administrative data greatly improves our understanding of the evolution of income inequality. Since then, research on the evolution of top income shares over time has expanded to cover an extensive number of countries in the developed and developing world (Atkinson 2005; Piketty and Atkinson 2007, 2010). Yet, despite this progress, the gender dimension of top incomes remains understudied, and particularly so for low- and middle-income countries.

The scarceness of evidence on gender differences in top incomes largely has to do with the nature of tax records data as the main and most reliable data source for the study of top incomes. First and foremost, tax data usually contain only information necessary for the collection and administration of taxes and therefore provide limited information about personal, family, and labour market characteristics. Second, since each country's tax legislation determines which types of income and tax units are included in tax records (Atkinson et al. 2018; Bobilev et al. 2020), detailed information on incomes at the individual level might be available only in countries where income is taxed at the individual level.

For low- and middle-income countries, two additional considerations are worth bearing in mind. First, access to tax records data is more restricted and less common than in high-income countries. Second, tax records in developing countries fail to capture the often large share of the population working in the informal sector. The latter factor strongly limits the possibilities for analysis across the entire population based on tax data. However, this is of limited concern when studying the top of the income distribution, as the population active in the informal economy is typically located at the lower end of the income distribution.

Recent literature on the gender dimension of top incomes using administrative data has, for the above reasons, concentrated on developed countries with individual taxation. Atkinson et al. (2018) studied the gender composition of top incomes in eight developed countries with individual taxation between 2006 and 2013. Across these countries, women account for less than 25 per cent of individuals in the top 1 per cent income group (see Table 1 in Section 4.1). While the share of women in top income groups has increased over time in all countries studied, the magnitude of this increase varies across countries and becomes smaller at the very top. Spain ranks higher than Denmark, Norway, and Sweden in terms of the share of women in top income groups despite higher levels of overall income inequality and gender disparity in those countries. Atkinson et al. (2018) relate this finding to the prevalence of women in the economies' highest-paying sectors; in Norway, a third of the top-paying jobs are found in manufacturing, a sector that exhibits a relatively small female labour force—so that more males pick up these top-paying jobs. In Spain, by contrast, the largest share of high-paying jobs falls in the health and social care sector, where there is a comparatively larger female labour force (Denk 2017). Atkinson et al. (2018) further underline the importance of looking beyond earnings for the analysis of gender inequalities, as investment income plays a larger role for women at the top of the income distribution.

Boschini et al. (2020) studied gender differences in top incomes in Sweden over the period 1917–2017, exploiting rich administrative panel data including information on individual and family characteristics. While the share of women in top income groups has increased over time, women remain underrepresented, accounting for 19 per cent of individuals in the top 1 per cent group in 2017. While men and women in the top 1 per cent group have become more similar over time, differences remain, with women less likely to be married than men, and women more likely to have a top income partner than men. In terms of mobility, women are more likely to move out of top income groups but differences have decreased over time. Ravaska (2018) conducted a similar analysis for Finland over a shorter period, 1995–2012, with largely similar findings. Additionally, Ravaska (2018) analysed the characteristics associated with the probability of being in the top 10 per cent group. Not only individual but also partner characteristics, such as having a partner at the top of the distribution, influence the probability of being at the top. Burkhauser et al. (2020) found similar results based on survey data for the UK.

Evidence on gender differences in top income groups in low- and middle-income countries deriving from administrative data is scarce. For Latin America, most studies have focused on gender gaps in earnings using survey data. Atal et al. (2009) used survey data from 18 Latin American countries to look at wage gaps by gender and ethnicity. They found that men earn 9 per

cent to 27 per cent more than women, with large cross-country variation. Similarly, Hoyos and Ñopo (2010) found that the overall gender earnings gap fell by 7 percentage points between 1992 and 2007, with a drop of 3–4 per cent in the unexplained component depending on the characteristics used as controls. Most recently, Burdín et al. (2020) added to the literature with an analysis of income inequality and income mobility in Uruguay between 2009 and 2016, comparing tax records data with household survey data. While the focus of their analysis is on the gender divide more generally, they also provide some information on gender disparities at the top of the distribution. Specifically, they show that the share of women in p90–99 of the income distribution is around 40 per cent, declining to about 30 per cent for the top 1 per cent group. Year-to-year persistence rates for the top 1 per cent group are stable at around 80 per cent and only slightly lower for women than for men.

In a comparative study of 28 countries including Mexico and Paraguay, Bobilev et al. (2020) analysed gender differences in top income groups using survey data from the Luxembourg Income Study (LIS) (see Table 1 in Section 4.1). While the nature of the data obviously limits the analysis, particularly at the very top, they find that the share of women in the top 10 per cent group of the labour income distribution increased for Mexico and Paraguay between the 1980s and 2015 from around 12 per cent to around 30 per cent.

3 Background, data, and descriptive statistics

3.1 Background and context

Statistics in a comparative perspective

According to the 2020 World Economic Forum (WEF) Global Gender Gap Report (World Economic Forum 2019), Ecuador is ranked 48 out of 153 countries. It improved its score in the composite index from 0.71 in 2008 (World Economic Forum 2007) to 0.73. When compared with other Latin American countries Ecuador ranks in the middle, behind Nicaragua, Costa Rica, Mexico, Argentina, and Cuba. Latin America as a world region ranks in the middle in comparison with other world regions but has nearly caught up with Eastern Europe and Central Asia. For comparison at a global level: Norway ranked second and Finland third with scores of 0.88 and 0.83, respectively.

Two of the four subindices of the overall index are particularly relevant to this study. The first is the subindex on economic participation, the second the subindex on educational attainment.

The subindex on economic participation is composed of the labour force participation gap, the remuneration gap, and the advancement gap, which capture gender differences in top jobs and technical and professional occupations.² In this subindex Ecuador performs less well, but its score also improved over our period of study (from 0.62 to 0.68).

While male labour force participation has been fluctuating in Ecuador, female labour force participation has been increasing—from 48.4 per cent in 2000 to 58.0 per cent in 2018 (ILO 2021a). Although this trend has been seen across the region during that time, female participation rates in South America and Ecuador are higher than in Central America; compared with the larger

² See World Economic Forum (2019: appendix B) for more information.

economies in the region female labour force participation in Ecuador sits in the middle, close to that of Colombia, Brazil, Argentina, and Mexico, but below Peru at 73.3 per cent in 2018.

For both men and women, Ecuador is also in step with the region in the reduction of the informal employment rate (ILO 2021b), yet in the most recent years the reduction has slowed for Ecuador relative to the average across the Caribbean and South America. In 2018, the female informal employment rate stood at 65.4 per cent in Ecuador, similar to Colombia (61.6 per cent), but higher than in Argentina and Brazil (48.7 per cent and 48.1 per cent, respectively) and lower than in Peru (73.3 per cent).

As in other parts of the region, Ecuador has experienced a trend of falling inequality since the turn of the century, with a Gini of 54.8 in 2000 falling to 44.2 in 2018 (UNU-WIDER 2021). Inequality levels in Ecuador are lower than in Brazil and Colombia but higher than in Argentina. The same patterns hold for the 20/20 ratio—comparing the top 20 per cent of the population with the bottom 20 per cent. Recent evidence from De Rosa et al. (2020) based on the WID methodology confirms a decline in inequality since 2000 for a number of countries in Latin America, including Ecuador, but finds an increase, for example, in Brazil.³ Yet, the authors also point out challenges when estimating top income shares for Ecuador, such as the need to extrapolate information for years when tax data are not available or due to the fact that some income components are not disaggregated in the national accounts.⁴

The second subindex of the WEF Global Gender Gap index that is of specific interest for our analysis is the subindex on educational attainment. This captures gaps in educational enrolment and literacy rates. In this subindex Ecuador ranks 56th, thus slightly lower than in the overall index (World Economic Forum 2019). In terms of tertiary education, gross female enrolment rates have increased over time, to 48.4 per cent in 2015, the last point in time for which data are available for Ecuador (World Bank 2021).⁵ This mirrors the general upward trend in female education in the region. Interestingly, enrolment rates are higher for women than men in Ecuador, as in most other countries in the region, including Argentina, Brazil, Colombia, and Peru.

Tax policies

In terms of tax policies, personal income tax is assessed at the individual level in Ecuador and levied jointly on labour and capital income according to a progressive tax schedule ranging from 0 to 35 per cent (Asamblea Constituyente 2007). Personal income tax is automatically withheld and reported by employers for employees with no other sources of income than employment. Employees with other sources of income and the self-employed are required to file a tax return consolidating all their sources of income, i.e. employment and self-employment income and capital income (excluding capital gains). The 2008 personal income tax reform increased the top tax rate from 25 per cent to 35 per cent and several new deduction items were introduced (Asamblea

³ The methodology consists of three steps. First, undercoverage of top incomes in household surveys is corrected using information from tax records. Second, different income components are scaled proportionally to match aggregates from national accounts. Third, income from the corporate sector and general government is imputed to the income distribution in household surveys.

⁴ Note that the analysis of De Rosa et al. (2020) is based on tax data from 2008 to 2011 for Ecuador, whereas we use tax data for the period 2008–17.

⁵ Universities in Ecuador may be public, private, or co-financed, the last type of university receiving some financial support from government. In 2013, nearly two thirds of university students were enrolled in the public system, a little more than 11 per cent in the private system, and about 27 per cent in co-financed universities (Sánchez et al. 2017).

Constituyente 2007). A major taxpayer awareness and registration campaign was also launched in 2008 (Aparicio et al. 2011).

In the context of our study, it is important to distinguish two types of capital income. The first type of capital derives from dividends, financial returns (i.e. returns from savings accounts or investment accounts), or rental income from real estate. The second type of capital income stems from realized capital gains when a person sells part of their capital (stocks or real estate) and obtains a profit due to the difference between the purchase price and the sale price over time. Over our period of analysis, Ecuador passed two important tax reforms related to capital income. The first reform made dividends taxable from 2010. As dividends were not part of taxable income before the reform, they might suffer from underreporting in tax records prior to 2010 (Hidalgo 2017). The second reform stipulated that realized capital gains obtained from the sale of shares become taxable as of 2015. However, for the three years following the reform, realized capital gains are likely not fully captured in tax records data as full implementation of the administrative processes related to the new documentation requirements lagged behind. Capital gains are not taken into account in our analysis.

Finally, there is no wealth tax in Ecuador, except for a one-time tax payment equal to 0.9 per cent of wealth levied on individuals with assets above US\$1 million in the wake of the 2016 earthquake.⁶

3.2 Data

Our data come from administrative records collected by the Ecuadorian tax administration (Servicio de Rentas Internas, SRI) for tax purposes, and are complemented by additional information from other administrative sources. The SRI's tax records cover the universe of taxpayers and firms that file tax returns in Ecuador. For our analysis we use the universe of natural person taxpayers (aged 18 and above) between 2008 and 2017.

The tax information we use is that which is reported on the following tax forms: (1) tax form 107, which reports income stemming from an individual's formal dependent employment; (2) tax forms 102 and 102A, which contain information about self-employment income and capital income, including details of the business itself, salaries, and other income sources related to that business;⁷ and (3) an annex form known as Anexo de Participación Societaria (APS), on which firms report who their shareholders are (including their unique identifiers) and the proportion of shares held by each. This annex form is an important source of information for the tax office, enabling it to cross-check information provided by individuals on their personal income tax returns.⁸

The above data are complemented by data from the Single Taxpayer Register (Registro Unico de Contribuyentes, RUC), which contains further information related to the nature of the taxpayer, including information on whether the taxpayer is a firm or a natural person, their geographic location and economic activity (by industry code), the date of start of the economic activity, and

⁶ For more information see: [https://www.sri.gob.ec/web/guest/contribucion-solidaria#:~:text=a\) per cent20En per cent20el per cent20caso per cent20de,patrimonio per cent20ubicado per cent20en per cent20el per cent20pa per cent20C3 per cent20ADs](https://www.sri.gob.ec/web/guest/contribucion-solidaria#:~:text=a) per cent20En per cent20el per cent20caso per cent20de,patrimonio per cent20ubicado per cent20en per cent20el per cent20pa per cent20C3 per cent20ADs) (in Spanish).

⁷ Taxpayers must file tax form 102 if they are required to keep accounts and form 102A if they are not. Taxpayers are required to keep accounts when they meet one or more of the following conditions: (i) they own capital greater than US\$180,000; (ii) they have annual gross income above US\$300,000; (iii) their annual costs and expenses are greater than US\$240,000.

⁸ The APS annex and tax form 102 or 102A are independent sources of information that can be merged using the tax records' unique identifiers.

whether the activity has been suspended. In recent years, additional databases have been integrated into the RUC, such as information from the Civil Register, which allows the age, gender, marital status, place of birth, and education (primary, secondary, or tertiary) of the taxpayer to be identified. The RUC also includes information from the country's higher education database, which is continuously updated by the Secretaria de Educación Superior, Ciencia, Tecnología e Innovación (SENESCYT). It thus also shows the taxpayer's level of tertiary education and which institution (including whether a public or private university) issued the degree. However, it is important to note that education data from SENESCYT are not structured as a series of yearly cross-sectional datasets but rather as a single data file containing information about the highest level of tertiary education obtained at the date when the data were accessed—in our case March 2016. Finally, the structure of the data further allows us to match married individuals and observe in which part of the income distribution the partner is located, provided the partner files tax returns and thus is present in our data.

We define income as the total of incomes received from labour, self-employment (net of deductions related to the business activity), and capital. We exclude realized and unrealized capital gains from our income variable because this information is not fully captured in our data over the period of analysis. We further do not consider income from bequests. Throughout the analysis we focus on three top income groups: the top 10 per cent (p90–100), top 1 per cent (p99–100), and top 0.1 per cent (p99.9–100). Finally, we start our analysis with the year 2008, as there is evidence that the taxpayer awareness and registration campaign of that year might have affected the composition of taxpayers (Aparicio et al. 2011).

Our data are thus very rich and include several variables beyond the usual scope of information covered by tax records. Nevertheless, some limitations apply. First, individuals are obliged to file tax returns, and will thus show in our data, only if their total income is greater than the personal income tax (PIT) exemption threshold as defined by the Domestic Tax Law (Asamblea Nacional 2014).⁹ Second, in Ecuador, as in most developing countries, the informal sector, which is not captured in tax records, is large, as discussed above. These two limitations mean that our data do not capture the whole working age population; the inactive, the unemployed, and low-income and/or informal workers are excluded. As our study focuses on the top income groups, these missing records for the lower end of the income distribution are of little relevance. These limitations mainly affect our analysis when looking at partners' income position and then only for those whose partners happen to belong to one of the aforementioned groups.

The third potential limitation of our data is that tax records might be biased by tax avoidance and evasion, a problem that has been previously discussed in the top incomes literature (Atkinson et al. 2011, 2018) and in the context of Ecuador by Roca (2010) and Villacreses (2017). A fourth possible limitation is that studying gender differences in top incomes might be affected by strategic income splitting between partners to reduce the global tax burden of the couple, artificially allocating part of total income to the partner who earns less (Atkinson et al. 2018). Finally, while our data are rich, some factors that likely are important determinants for belonging to top income groups, such as family structure, labour market history, hours worked, training, and work experience, are not covered in our data.

We also compare our data with survey data for additional context. Figure A1 in the Appendix compares average labour income (from employment and self-employment) from the tax records data used in this analysis with the same income variables in the National Survey of Employment,

⁹ The exemption threshold is high in Ecuador, as in many countries in Latin America. In 2017, it was US\$11,290, which is equal to 2.5 times the value of the annualized minimum wage.

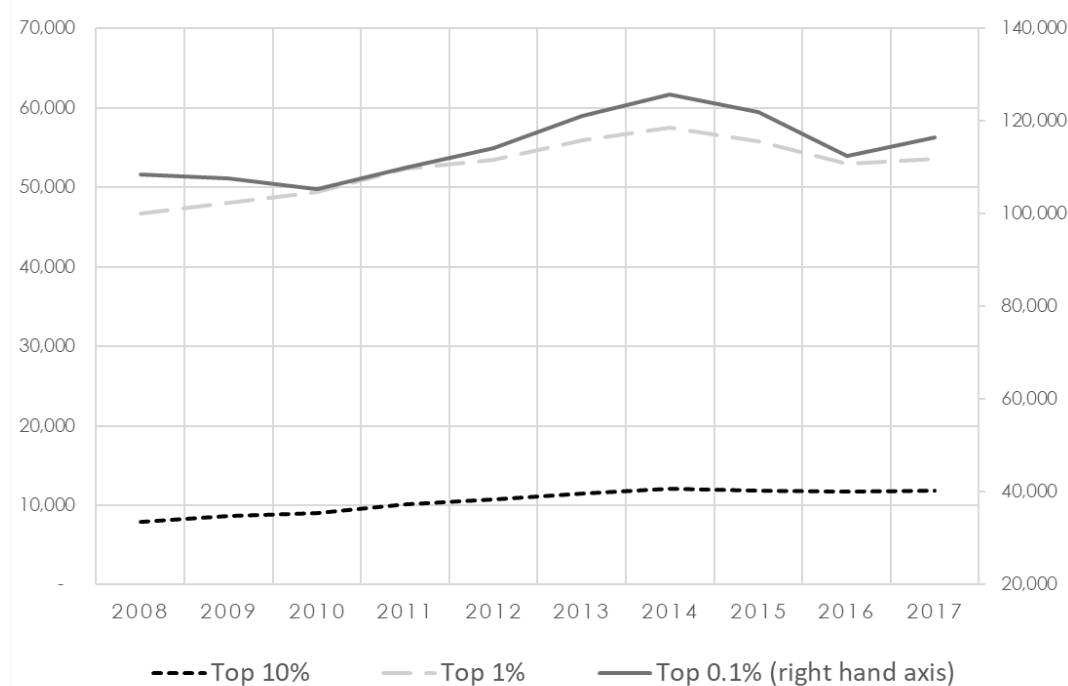
Unemployment and Underemployment of Urban and Rural Households (ENEMDU) (INEC 2021). For consistency across data sources, we consider only workers (employees and self-employed) in formal employment in ENEMDU. The figures show that the survey data consistently underestimate average labour income, which might be related to income underreporting and top income undercoverage in survey data, as documented by Cano (2015) and Jara and Oliva (2018) for the case of Ecuador. The survey data seem to capture fairly well the increase in labour income over time. According to ENEMDU results, labour income increased by 86 per cent between 2008 and 2017, compared with 81 per cent according to tax records.

3.3 Descriptive statistics

Our overall sample consists of nearly 2 million observations in 2008 and increases to more than 3.2 million in 2017 (see Table A1 in the Appendix).¹⁰ As discussed above, this increase is in line with the general trend of increasing formalization across the economy, with the strongest growth seen in the group of taxpayers between the minimum wage and the PIT exemption threshold.

Figure 1 shows how the income thresholds for the different top income groups evolved over the period of analysis. A minimum income of US\$11,813 per year is required to belong to the top 10 per cent group in 2017.¹¹ This amounts to 2.6 times the annualized value of the minimum wage. For the top 1 per cent group the threshold is US\$41,847, and for the top 0.1 per cent it amounts to US\$116,415.

Figure 1: Income thresholds for top income groups, 2008–17 (in 2017 prices, USD)



Source: authors' elaboration based on administrative data.

¹⁰ For comparison, the overall population amounted to roughly 14.5 million in 2008 and had increased to nearly 16.8 million by 2017 (<https://databank.worldbank.org/source/world-development-indicators>).

¹¹ Since 2000 the US dollar has been the official currency of Ecuador.

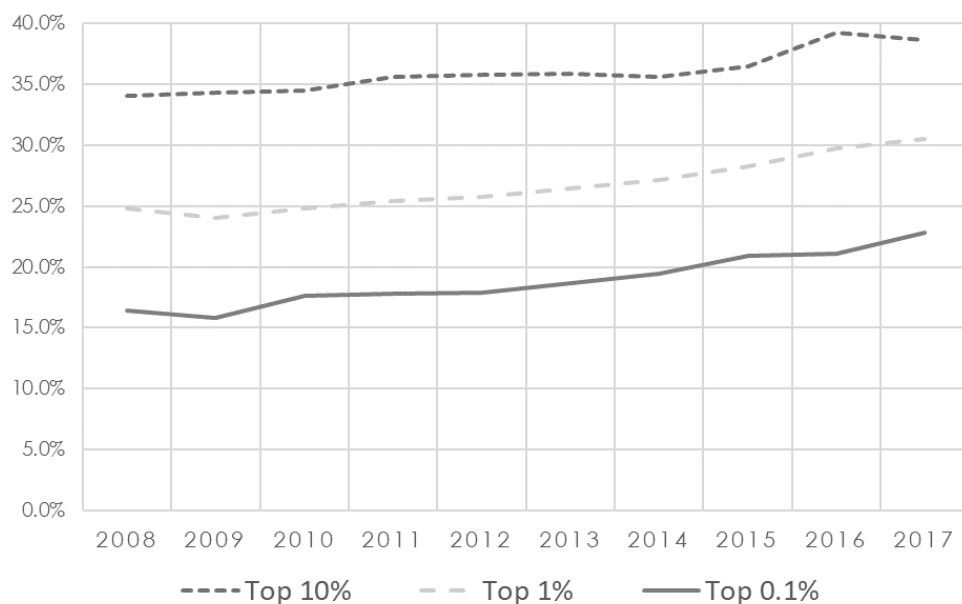
4 Top incomes and gender in Ecuador 2008–17

This section starts by looking at the evolution of the gender composition of top income groups in Ecuador over the period 2008–17. We then turn to the variation in the composition of total income in top income groups across gender and/or over time.

4.1 Share of women in top income groups

Figure 2 shows the evolution of the share of women in different top income groups in Ecuador over the period 2008–17. At the beginning of our period of analysis, the share of women in the top 10 per cent income group was 34 per cent. The share of women becomes smaller higher up in the distribution, being 24.8 per cent and 16.5 per cent for the top 1 per cent and 0.1 per cent income groups, respectively. Over time, the share of women in the top income groups increased significantly, particularly at the very top. From 2008 to 2017, the share of women in the top 10 per cent income group increased by 4.7 percentage points to 22.8 per cent, which equals an increase of 13.7 per cent. In the top 1 per cent income group it increased by 5.7 percentage points to 30.5 per cent, thus an increase of 22.9 per cent; and in the top 0.1 per cent income group the 6.4 percentage point increase in the share of women to 22.8 per cent represents an increase of 38.7 per cent.

Figure 2: Share of women in top income groups, 2008–17



Source: authors' elaboration based on administrative data.

Evidence on the gender divide in top income groups based on administrative data is scarce and particularly so for low- and middle-income countries. To put our results into perspective, in Table 1 we compare our findings with recent evidence from high-income countries based on administrative data (Atkinson et al. 2018; Boschini et al. 2020; Ravaska 2018), choosing a time frame during which information is available across all the relevant countries. For comparison, we also show information for two Latin American countries based on LIS (survey) data (Bobilev et al. 2020).

Table 1: International comparison of the share of women in top income groups in 2008 and 2013

	2008			2013			Difference		
	Top 10%	Top 1%	Top 0.1%	Top 10%	Top 1%	Top 0.1%	Top 10%	Top 1%	Top 0.1%
Ecuador	34.0	24.8	16.5	35.8	25.1	18.9	1.8	0.3	2.4
Australia	25.9	20.2	16.1	25.7	20.3	17.2	-0.2	0.1	1.1
Canada	28.8	20.3	13.4	29.8	22	15.9	1.0	1.7	2.5
Denmark	26.3	14.3	11	30.9	16.2	10.8	4.6	1.9	-0.2
Finland ¹	27.4	17.6	17.0	29.5	19.6	19.2	2.1	2.0	2.2
Italy	27.2	17.0	12.0	28.5	19.1	13.4	1.3	2.1	1.4
Norway	21.2	13.2	11.8	21.5	13.7	13.6	0.3	0.5	1.8
New Zealand	29.7	18.9	-	29.3	18.2	-	-0.4	-0.7	-
Spain	31.2	20.7	18.3	34.8	24.9	19.8	3.6	4.2	1.5
Sweden	24.6	15.1	11.5	27.0	17.8	13.5	2.4	2.7	2.0
UK ²	26.4	16.2	10.8	28.0	18.0	10.8	1.6	1.8	0.0
Mexico ^{1,3}	29.1	17.0	-	30.1	22.6	-	1.0	5.5	-
Paraguay ^{2,3}	27.7	24.6	-	31.0	21.3	-	3.3	-3.3	-

Note: 1) 2013 information is not available for Finland and Mexico; 2012 data are used for these countries.

2) 2008 information is not available for the UK and Paraguay; 2007 data are used for both countries.

3) LIS survey data are used for Mexico and Paraguay.

Source: authors' elaboration based on administrative data for Ecuador, Ravaska (2018) for Finland, Boschini et al. (2020) for Sweden, and Atkinson et al. (2018) for all other countries except Mexico and Paraguay, where estimates are from Bobilev et al. (2020).

Three findings stand out when putting our results in context with evidence for other countries. First, large differences in overall income inequality and gender disparities exist between Ecuador and the high-income countries,¹² for which results are based on administrative data, as shown in Table 1. Nonetheless, the share of women in the top 10 per cent and top 1 per cent income groups in 2008 and 2013 is higher in Ecuador than in any of the other countries shown here. In terms of the share of women in the top 0.1 per cent group, Ecuador ranks third in 2013 behind Spain and Finland. Second, Ecuador also ranks high in terms of growth in the share of women at the very top. The share of women increased across all three groups over time, and particularly in the top 0.1 per cent group, with an increase of 2.4 percentage points, which equals an increase of nearly 15 per cent.

Finally, the comparatively high shares of women observed for Ecuador are closest to the results found for Spain (results also based on administrative data) and for Mexico and Paraguay (based on survey data). Breaking the data down further, we find that, in comparison with the full sample of individuals in the top income groups, a higher share of individuals can be found in the following three sectors combined: public administration, defence, education, health, and social work; financial intermediation, real estate, and professional services; and wholesale and retail trade, hotels, and restaurants (see Figure A2 in the Annex).¹³ While the public sector is dominant in the top 1 per cent group, the financial sector and trade and services are dominant in the top 0.1 per cent group. Within these three sectors the shares of women are higher than in the other sectors of

¹² Income inequality measured by the Gini coefficient amounted to 48.5 per cent in Ecuador in 2013 (INEC 2020), compared with 33.7 per cent in Spain (the highest in our group of countries) and 22.7 per cent in Norway (the lowest in our group) (Eurostat 2021).

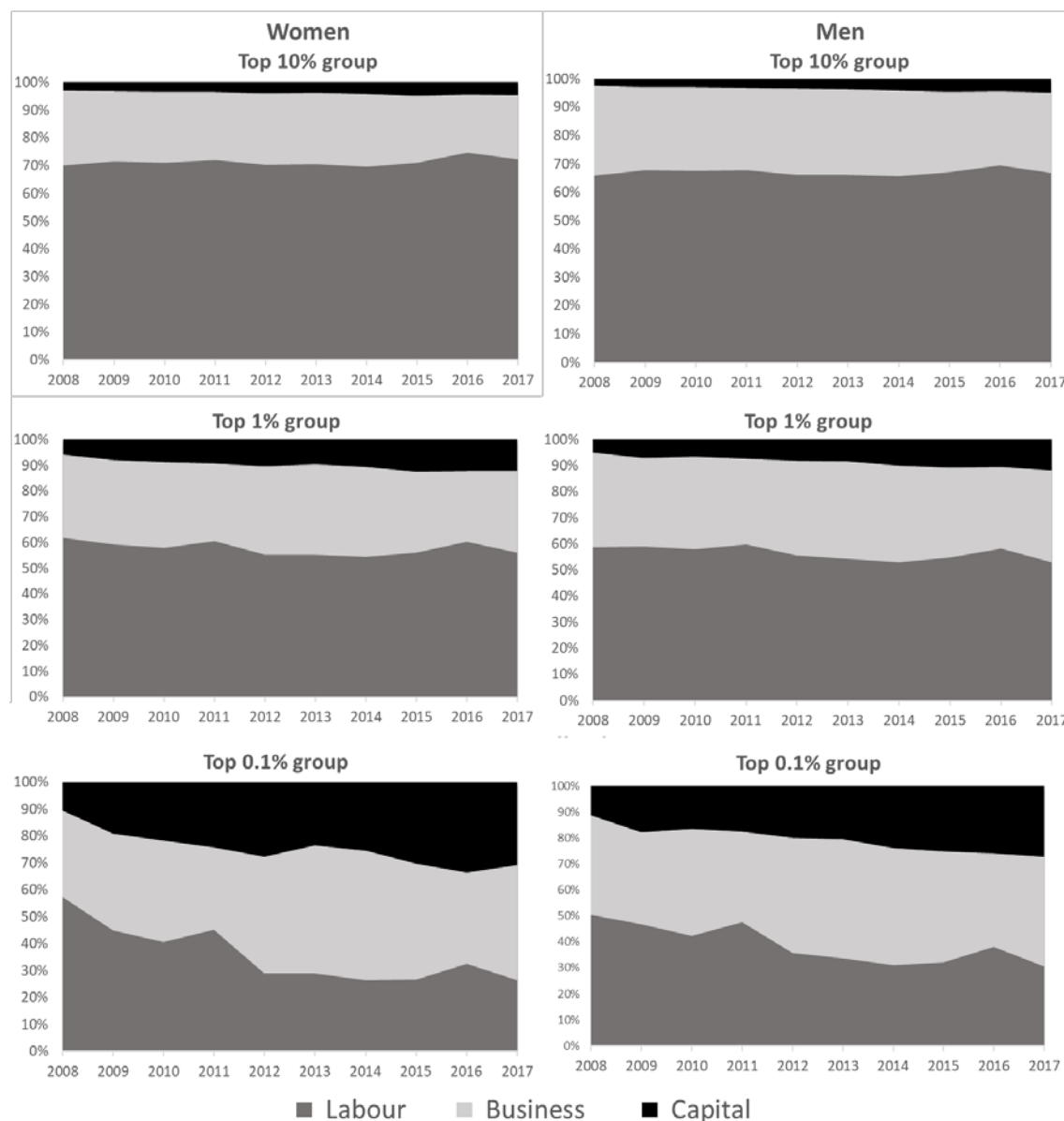
¹³ For brevity we show results for 2017 only. Results for 2008 are similar and available from the authors on request.

the economy (see Figure A3 in the Annex). In the public administration, education, health, and social work sector the share of women increased from 43 per cent to 50 per cent between 2008 and 2017.¹⁴ In a nutshell, women are thus concentrated in sectors of the economy with the relatively higher paying jobs, a finding similar to those of Atkinson et al. (2018) for Spain and Norway.

4.2 Gender differences in the composition of income at the top

Next, we turn to the decomposition of total incomes for the three top income groups across time by gender (Figure 3).

Figure 3: Gender differences in income composition for top income groups, 2008–17



Source: authors' elaboration based on administrative data.

¹⁴ For brevity we show results for 2017 only. Results for 2008 are otherwise similar and available from the authors upon request.

Specifically, we decompose total income into (i) labour income, which includes employment income and pension income; (ii) business income, which includes self-employment income; and (iii) capital income, which includes income sources such as interests, dividends, and rents.

For both men and women, labour income accounts for the majority of total income in the top 10 per cent and top 1 per cent groups, followed by business income. Labour income makes up a larger share and business income a smaller share for women compared with men in both groups and across time. In 2017, labour income on average accounted for 72.4 per cent (66.8 per cent) of total income in the top 10 per cent and for 56.0 per cent (53.0 per cent) in the 1 per cent income groups for women (men). Over the period of analysis the share of labour income slightly increased for the top 10 per cent group but decreased by roughly 6 percentage points in the top 1 per cent group for both women and men.

At the same time, the importance of business income decreased for both men and women in the top 10 per cent and the top 1 per cent. In 2008, business income accounted for around 27.1 per cent (31.2 per cent) of total income in the top 10 per cent group and for 32.3 per cent (36.1 per cent) in the top 1 per cent group for women (men). By 2017, these shares had decreased to 23.1 per cent (28.3 per cent) of total income in the top 10 per cent group and to 31.9 per cent (35.3 per cent) in the top 1 per cent group for women (men).

The decrease in the share of labour and business income is offset accordingly by a strong increase in the share of capital income across both income groups and gender. Starting from 2.8 per cent (2.3 per cent) in 2008, the share of capital income increased to 4.5 per cent (4.9 per cent) in 2017 for women (men) in the top 10 per cent group. In the top 1 per cent group the capital income shares increased even more markedly, more than doubling from 5.9 per cent (5.0 per cent) to 12.1 per cent (12.0 per cent) for women (men). While our period of observation is different from most of the literature except for the study by Boschini et al. (2020), our findings are similar in that they confirm the growing importance of capital income at the very top of the income distribution for a developing country such as Ecuador.

While the main patterns discussed above also hold for the top 0.1 per cent income group, some additional observations stand out. First, while in 2008 labour income was the major income source, business income was the largest contributor to total income by 2017. Business income accounted for 32.1 per cent (38.2 per cent) in 2008 for women (men), and for 42.8 per cent (42.5 per cent) in 2017. Second, the prevalence of capital income increased sharply from 10.5 per cent to 30.8 per cent for women, and 11.4 per cent to 27.1 per cent for men.

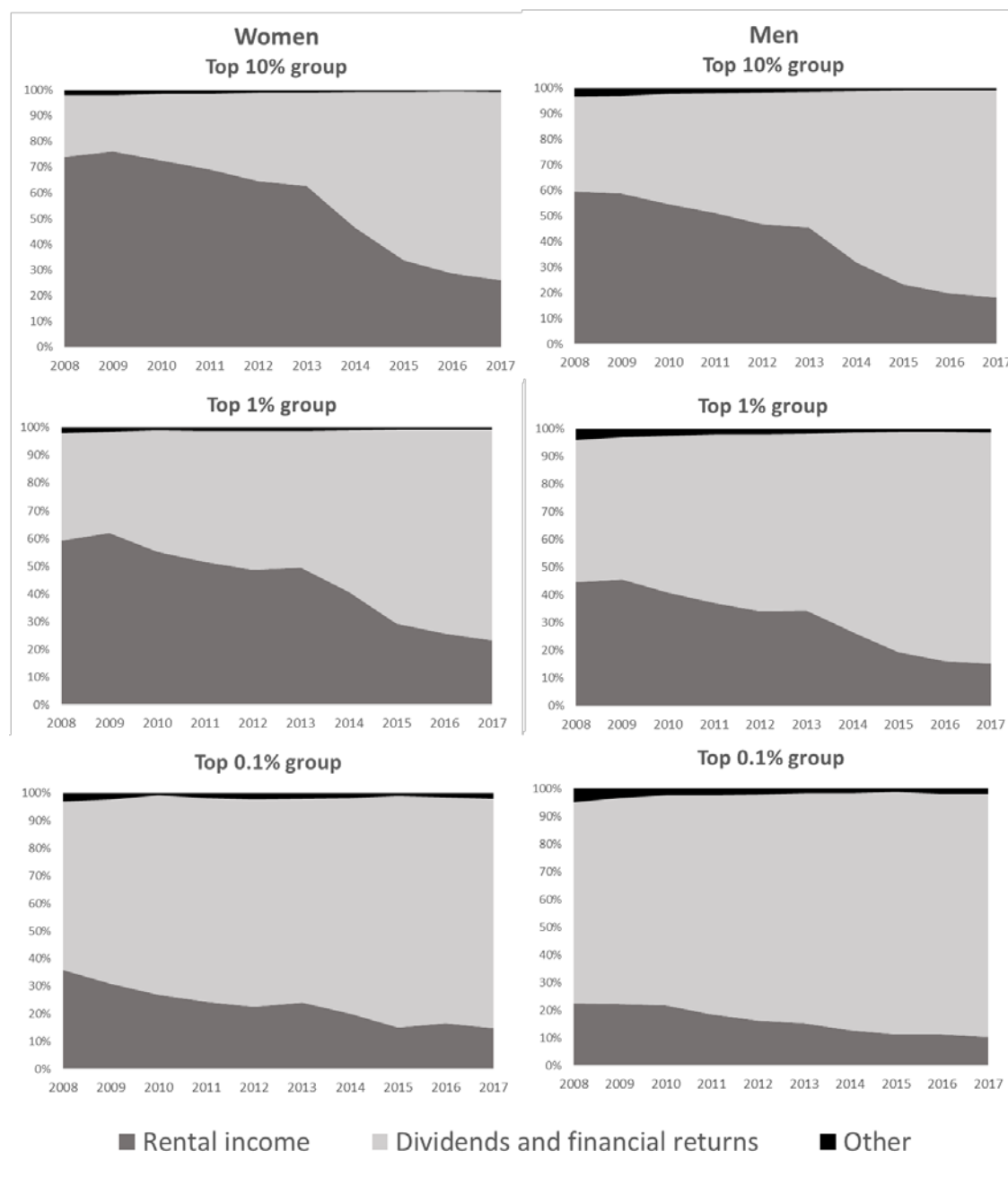
Finally, Figure A4 in the Annex breaks top income groups down into mutually exclusive combinations of the different income sources. This exercise shows that, when compared with the full sample, fewer people rely exclusively on labour income in the top 10 per cent income group as the combination of labour and business income is more prevalent. This observation holds even more prominently for the top 1 per cent and top 0.1 per cent groups, while the group of taxpayers with business and capital income but no labour income becomes more relevant. While labour income as the sole source of income applies to less than a quarter of observations, the share of taxpayers reporting all three types of income is the second largest subgroup in the top 0.1 per cent group in 2017. The above patterns are similar across genders.

A closer look at capital income

As shown above, the role of capital income has become significantly more important in Ecuador over time, a finding in line with the literature for other countries (see for example, Atkinson et al. (2018) and Boschini et al. (2020)). Thanks to our rich data, we can explore this development in

more detail. Specifically, we break down capital income into three components: (i) rental income; (ii) income from dividends and financial returns; and (iii) other capital income (Figure 4).

Figure 4: Gender differences in the composition of capital income for different top income groups, 2008–17



Source: authors' elaboration based on administrative data.

Across all the top income groups, the importance of rental income starkly decreased over time and the share of income from dividends and financial returns increased accordingly. For women, the ratio of rental income to income from dividends and financial returns practically reversed in the top 10 per cent income group. In 2008, rental income accounted for 74.0 per cent (59.6 per cent) of capital income for women (men) in that group, while in 2017 income from dividends and financial returns accounted for 73.5 per cent (81.1 per cent). While this development is not as marked for the other income groups, it is still pronounced. The contribution of rental income to capital income in the top 0.1 per cent group is lower altogether, at 14.8 per cent for women and

10.2 per cent for men for 2017 (down from 35.9 per cent and 22.6 per cent in 2008). In this context it is also worth bearing in mind that for the top 10 per cent and top 1 per cent groups capital income represents less than 12 per cent of total income over the period of analysis. However, for the top 0.1 per cent group it represents around 30 per cent of total income by the end of the period of analysis.

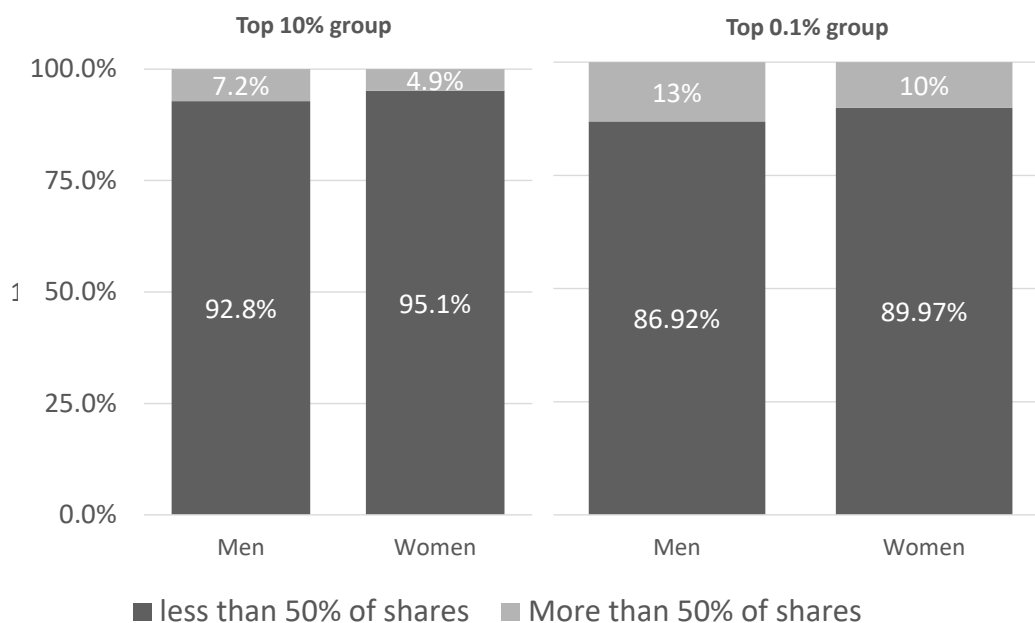
Compared with men, women receive a larger share of their capital income from rental income. Nevertheless, the increasing importance of income from dividends and financial returns across gender discussed above is even more pronounced for women than for men. While the share of income from dividends and financial transactions more than doubled for men in the top 10 per cent income group, it more than tripled for women.

We also analyse the extent to which average incomes from these different sources of capital income have changed over time (see Figure A6 in the Annex). This shows that average rental incomes are consistently higher for women than men and decrease over time for both groups. In contrast, average dividends and financial returns increase over time and are higher for men than women in the top 10 per cent and top 1 per cent groups. However, this gap narrows for the 0.1 per cent group.

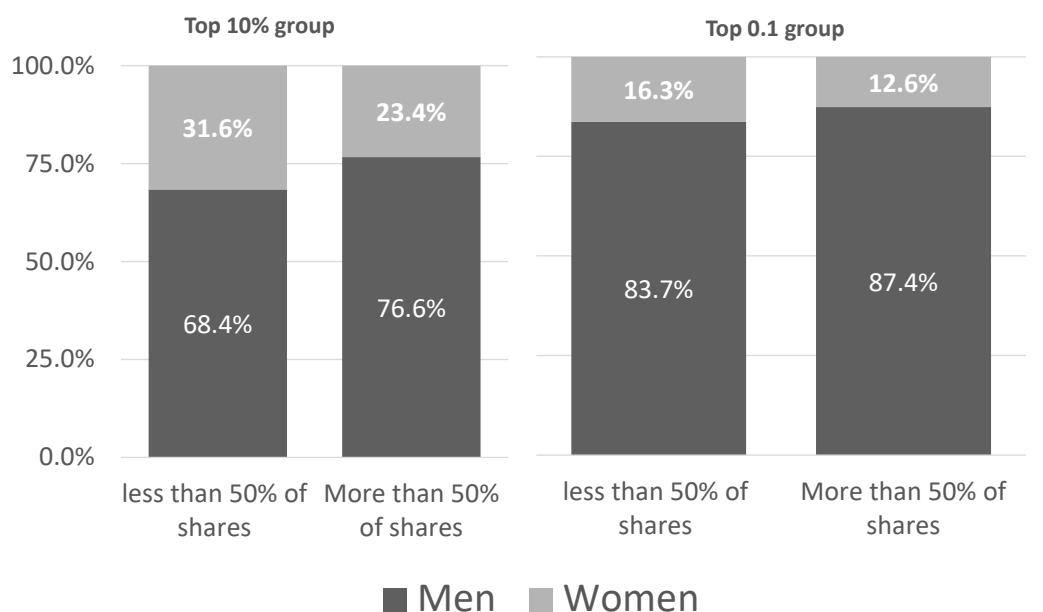
Finally, we use our exceptionally rich data to analyse how women shareholders differ from male shareholders. Figure 5 presents information about majority shareholders by gender and top income groups for 2015, the last year for which annex APS is available.

Figure 5: Majority stakeholders across income groups and gender, 2015

Panel A: Majority stakeholders, by gender and top income group



Panel B: Gender composition of majority shareholders in top income groups



Source: authors' elaboration based on administrative data.

Three findings stand out: First, as for capital income in general and income from dividends and financial transactions specifically, women are less likely to be shareholders.¹⁵ This holds across the entire distribution but becomes more evident at the top. Second, across gender the share of majority shareholders increases with income (Figure 5, Panel A). In the top 10 per cent group only a small share of taxpayers are majority shareholders, with 3.5 per cent of women and 5.7 per cent of men holding 50 per cent or more of the shares of one company, although these values are higher than in the whole distribution (2.8 per cent and 4.3 per cent, respectively). In the top 0.1 per cent group these shares are considerably higher, at 9.1 per cent for women and 21.7 per cent for men. Third, women are less likely to hold the majority of shares of one company than men and thus have less influence over the companies they own shares in than men (Figure 5, Panel B). Figure A6 in the Annex shows the same results broken down into smaller categories, reaffirming this last finding.

5 What explains the gender gap in top incomes in Ecuador?

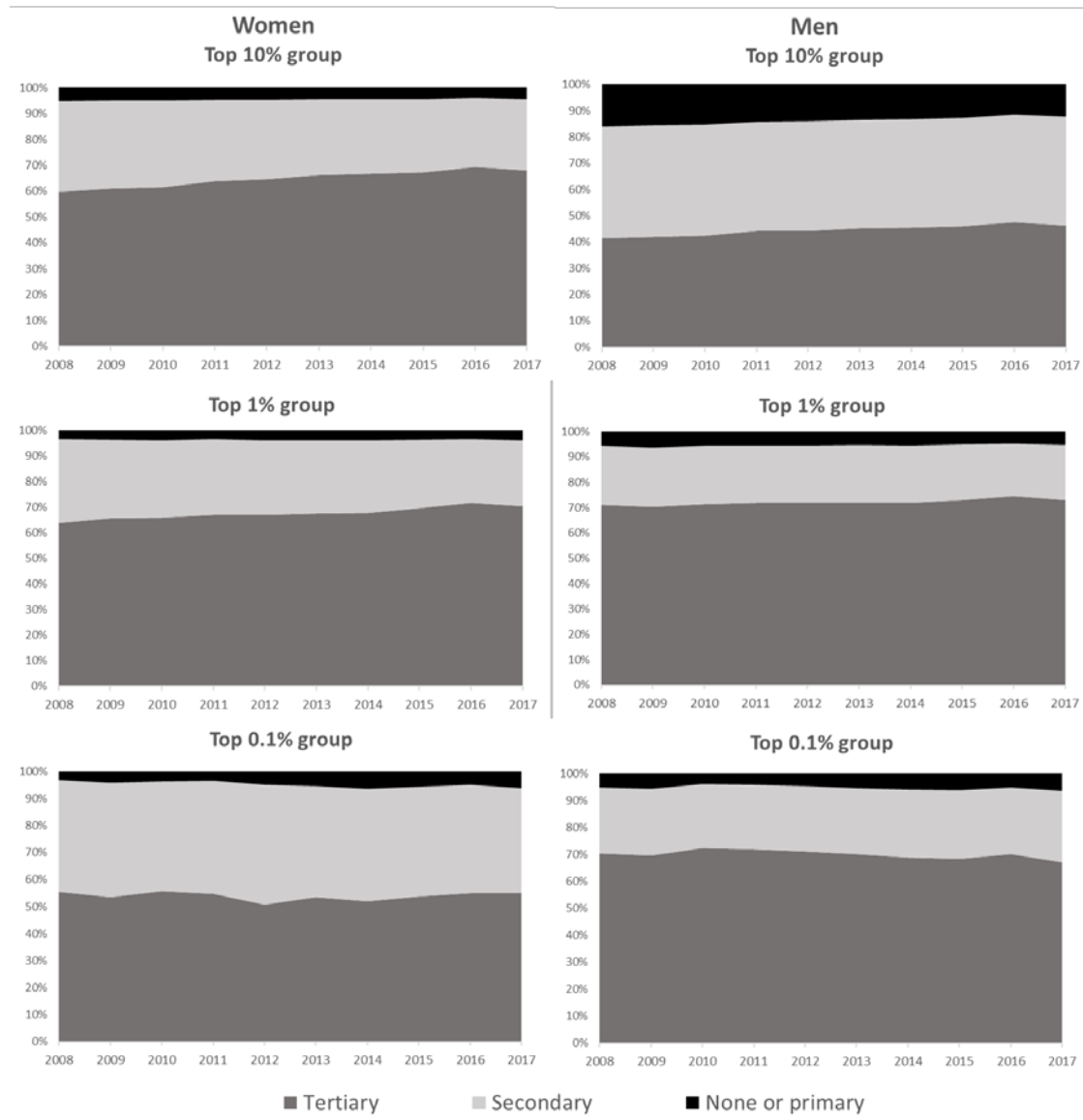
Which characteristics are then associated with the probability of belonging to top income groups in Ecuador? We answer this question by illustrating gender differences in key characteristics of the top income groups, such as education, age, marital status, and the presence of partners in top income groups. We complement these results by estimating the probability of belonging to the top 10 per cent income groups, controlling for the wide range of variables available in our data.

¹⁵ Results not shown for brevity but available from the authors on request.

5.1 Gender differences in age, education, marital status, and partner’s status in top incomes

Across the full sample of taxpayers, women are more educated than men: while 51 per cent of women have completed tertiary education, this holds for only 28 per cent of men in 2015.¹⁶ As expected, we also find that educational achievement is clearly associated with belonging to a top income group and that men and women in the top 10 per cent group are on average more educated than those in lower income groups. Yet, educational attainment is not uniform across the top income groups and gender. Figure 6 breaks top income groups down by three education categories (primary or no education, secondary, and tertiary education) and gender.

Figure 6: Education level of women and men in top income groups, 2008–17



Source: authors’ elaboration based on administrative data.

¹⁶ Results not shown here for brevity but available from the authors on request.

In the top 10 per cent group, the majority of women have tertiary education, and this share increased from 59.3 per cent in 2008 to 68.0 per cent in 2017. By contrast, less than half of the men in the top 10 per cent group have tertiary education. While the share of highly educated men increased, this increase was less pronounced than for women (from 41.4 per cent to 46.4 per cent). Moreover, despite a significant decline in the share of men with primary or no education, the prevalence of this group remains higher amongst men than amongst women in the top 10 per cent income group at the end of the period (12.1 per cent compared with 4.3 per cent).

The differences in educational attainment described above for the top 10 per cent group are reversed in the top 1 per cent and the 0.1 per cent groups. In the top 1 per cent group the share of men with tertiary education equals roughly 70 per cent and remains quite stable over time, whereas the share of women with tertiary education rises from 63.7 per cent in 2008 to 70.4 per cent in 2017. This pattern becomes even more pronounced in the top 0.1 per cent group: the share of women with tertiary education amounts to only 54.9 per cent in 2017, a little below the 2008 level of 55.5 per cent. In contrast, men with tertiary education dominate in the 0.1 per cent income group, representing 67.1 per cent in 2017—a slight decline from 70.5 per cent in 2008.

Our data also show that highly educated individuals at the very top received their tertiary degree more usually from a private university than individuals in the lower part of the distribution. Women are even more likely to have received their degree from a private institution, particularly at the very top, half of the top 1 per cent women with high education having graduated from a private university. This equals more than a third of all women in the top 1 per cent group.¹⁷

Age is another key characteristic and, while the age structure changes across the income distribution, differences across gender are small (see Figure A7 in the Annex). The majority of men and women in the top income groups are of prime working age—between 31 and 50 years. The prevalence of this age category remains stable over time for the top 10 per cent and top 1 per cent groups. In the top 0.1 per cent group, the 31–50 age group is also the largest, but its share has slightly decreased over time and the 51–65 and 65+ age groups have accordingly increased their share. In terms of gender differences, we observe that the share of young women (aged 30 and younger) is more pronounced than that of young men across all income groups but particularly so for the top 10 per cent (18.0 per cent amongst women vs 4.2 per cent amongst men).

Across income groups married individuals are prevalent but more so among men than among women, and particularly so at the very top (see Figure A8 in the Annex). The share of married men decreased over the period of observation in all groups, from 72.6 per cent (81.5 per cent/85.1 per cent) to 61.3 per cent (77.0 per cent/82.6 per cent) in the top 10 per cent (1 per cent/0.1 per cent) group. By contrast, the share of married women developed unevenly across groups; in the top 10 per cent group, the share of married women decreased from 54.9 per cent to 50.3 per cent, whereas it increased from 57.6 per cent (59.5 per cent) to 58.1 per cent (62.0 per cent) in the top 1 per cent (0.1 per cent) income group.

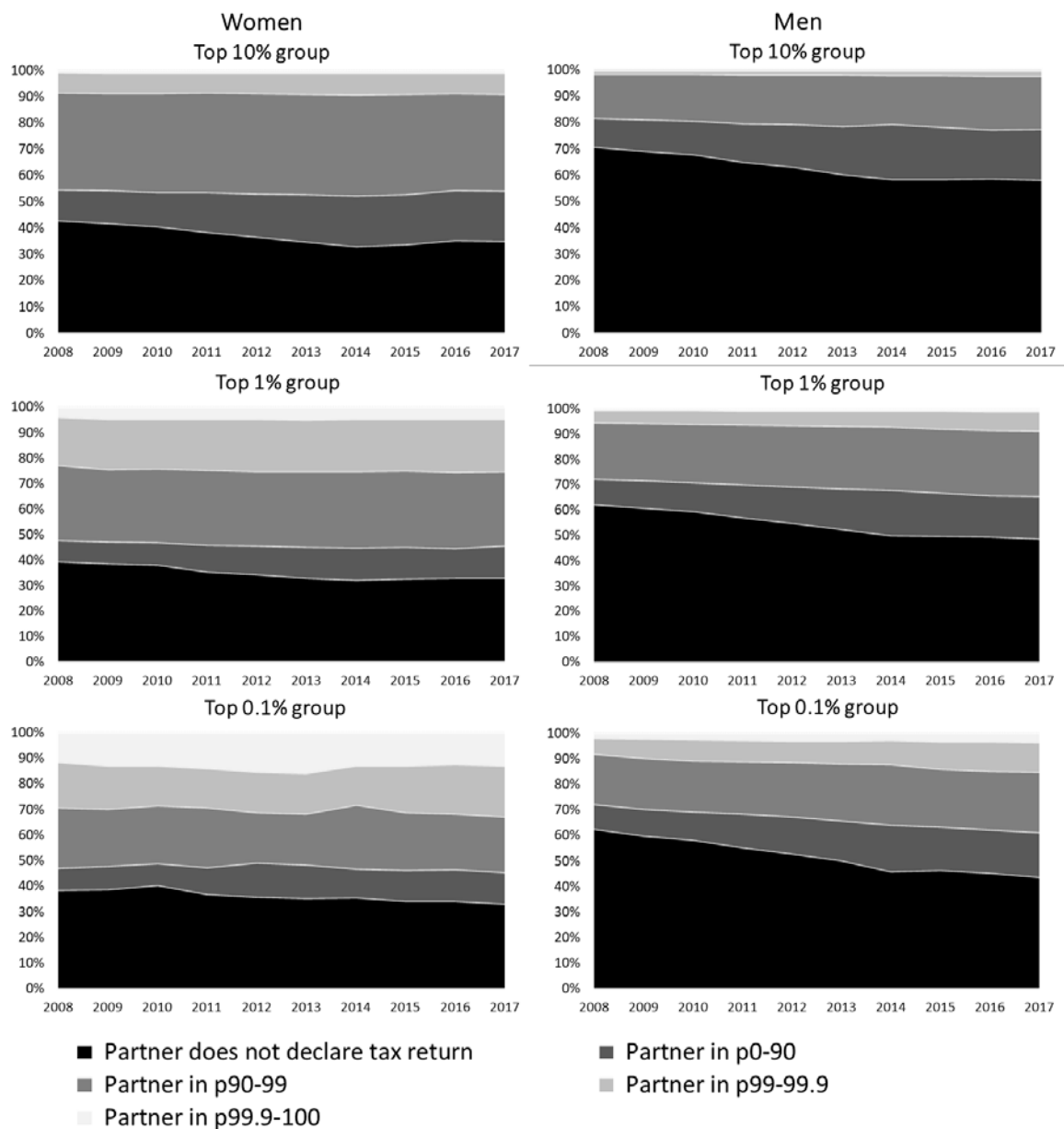
More top-income women are single than men, with an upturn in the share of singles across men and women but more so for women over the period of observation in the top 10 per cent and 1 per cent groups. Finally, the share of divorced men and widowers remains low and stable over time and across income groups, representing around 8–9 per cent and 1–2 per cent, respectively, on average. Conversely, the share of divorced women and widows is higher at around 15–18 per cent and 3–5 per cent, with a decreasing trend over time. Like Boschini et al. (2020), we thus find marriage to be the most common marital status for top-income women. Yet, contrary to the

¹⁷ Results for 2015. Full results not shown here for brevity but available from the authors on request.

Swedish experience, increasingly few top income women are married; the share of single women has increased in Ecuador between 2008 and 2017.

In addition to the information on marital status, our data allow us to match married individuals with their partners and assess where the partner sits in the income distribution. As discussed in Section 3.1, individuals not filing taxes are not covered in our data. Yet, such individuals typically either earn below the PIT exemption threshold or are inactive, unemployed, or informal workers with likely very low or zero income. Figure 7 depicts how partners of individuals in top income groups are spread over the income distribution, splitting the income distribution into five groups: p0–90, p90–99, p99–p99.9, p99.9–100, and a group for those partners not filing taxes.

Figure 7: Income groups of women’s (left) and men’s (right) partners in top income groups, 2008–17



Source: authors’ elaboration based on administrative data.

Figure 7 clearly shows that, compared with men, married top-income women are more likely to have a partner belonging to a top income group as well. On average, around 45 per cent of married women in the top 10 per cent group have a partner in the same group compared with around only 20 per cent of married men. These gender differences prevail for the top 1 per cent and 0.1 per cent income groups, married women's partners clustering even higher up in the income distribution. However, the share of men in top income groups with partners also in a top income group has increased over time (from 27.5 per cent to 34.4 per cent and from 27.7 per cent to 38.5 per cent in the top 1 per cent and top 0.1 per cent income groups, respectively), whereas the situation of married women has remained broadly stable at a higher level.¹⁸

Similarly, across all the top income groups, the share of top income men married to a partner who does not file a tax return is substantially higher than the share of married women with a non-tax-filing partner. In 2008, this group represented 70.9 per cent (62.7 per cent) of married men in the top 10 per cent (0.1 per cent) group, whereas it amounted only to 42.9 per cent (38.7 per cent) of married women in the top 10 per cent (0.1 per cent) group. While the share of non-tax-filing partners decreased for both men and women, it remained substantially higher for married men than women in 2017 (35.3 per cent for married women vs 58.3 per cent for married men).

5.2 Gender differences in the probability of being at the top

The descriptive analysis in the previous section highlights differences in the characteristics of men and women in top income groups. Therefore, we now estimate probit models to look at the characteristics associated with the probability of belonging to top income groups. Here we focus on the probability of being in the top 10 per cent income group, as regression results for higher income groups, i.e. the top 1 per cent and 0.1 per cent groups, are liable to be affected by small sample bias. We include as regressors a wide range of variables available in our data, such as age (and age squared), education (dummies for public and private tertiary education), marital status (dummies for being married, divorced, or widowed), types of income the person receives (dummies for combinations of labour income, self-employment income, and capital income), sector of activity (industry dummies), region (province dummies), and whether the person has a partner in a top income group (if the partner is present in the data).

Table 2 presents the estimated marginal effects of our probit models for 2008 and 2017, the first and last years available for our analysis. The models are estimated separately for men and women to assess differences in the characteristics associated with the probability of being in the top 10 per cent group at the beginning and the end of the period of analysis. We restrict our sample to individuals over 30 years old to mitigate the problem that information about the level of education is based on the highest level of education achieved by March 2016 (date when SENESCYT data were accessed), assuming therefore that individuals observed in tax records in 2008 would have achieved by 2008 the level of education reported in 2016.

¹⁸ The patterns depicted here are quite similar to the findings of Boschini et al. (2020) for Sweden despite the obviously large differences between Sweden and Ecuador. Yet, in Sweden the concentration of women's partners in top incomes is even more salient, about 75 per cent of top-income women having a partner above p90.

Table 2: Marginal effects of probit regression of the probability of being in the top 10 per cent group

	B. Men				C. Women			
	2008		2017		2008		2017	
	Coeff.	St. err.	Coeff.	St. err.	Coeff.	St. err.	Coeff.	St. err.
Age	0.0105***	(0.000408)	0.00237***	(0.000366)	0.0235***	(0.000592)	0.00847***	(0.000467)
Age ²	-9e-05***	(4.18e-06)	-5e-05***	(3.76e-06)	-0.00016***	(6.17e-06)	-6e-05***	(4.85e-06)
Secondary educ. or lower (ref.)	ref.		ref.		ref.		ref.	
Public tertiary educ.	0.154***	(0.00133)	0.229***	(0.00124)	0.151***	(0.00180)	0.250***	(0.00143)
Private tertiary educ..	0.178***	(0.00218)	0.292***	(0.00213)	0.182***	(0.00234)	0.295***	(0.00194)
Single (ref.)	ref.		ref.		ref.		ref.	
Married	0.128***	(0.00165)	0.116***	(0.00123)	0.0380***	(0.00211)	0.0229***	(0.00162)
Divorced	0.109***	(0.00200)	0.105***	(0.00215)	0.0712***	(0.00250)	0.0619***	(0.00225)
Widowed	0.0894***	(0.00393)	0.0933***	(0.00590)	0.0372***	(0.00395)	0.0491***	(0.00432)
Employment income only (ref.)	ref.		ref.		ref.		ref.	
Self-employment income only	0.0821***	(0.00136)	0.284***	(0.00136)	-0.0372***	(0.00214)	0.239***	(0.00192)
Employment and self-employment income, no capital income	0.375***	(0.000941)	0.491***	(0.00101)	0.379***	(0.00136)	0.477***	(0.00123)
Self-employment and capital income, no employment income	0.237***	(0.00310)	0.290***	(0.00277)	0.184***	(0.00469)	0.224***	(0.00330)
Employment, self-employment and capital income	0.318***	(0.000859)	0.501***	(0.00113)	0.332***	(0.00166)	0.483***	(0.00132)
Wholesale and retail trade, hotels, and restaurants (ref.)	ref.		ref.		ref.		ref.	
Agriculture and fishing	-0.0378***	(0.00256)	-0.0689***	(0.00206)	-0.0855***	(0.00472)	-0.0406***	(0.00345)
Mining, manufact., and utilities	0.0501***	(0.00199)	0.0696***	(0.00183)	-0.0143***	(0.00363)	-0.0304***	(0.00292)
Construction	0.0575***	(0.00331)	-0.000184	(0.00310)	0.0230*	(0.0122)	0.0402***	(0.00848)
Transport and communication	0.112***	(0.00180)	0.0558***	(0.00199)	0.138***	(0.00365)	0.109***	(0.00353)
Financial intermediation, real estate, and professional services	0.0484***	(0.00181)	0.0499***	(0.00174)	0.0956***	(0.00229)	0.0970***	(0.00200)
Public administration and defence, education, health and social work	0.217***	(0.00143)	0.253***	(0.00155)	0.145***	(0.00212)	0.177***	(0.00181)
Other	0.105***	(0.00199)	0.0539***	(0.00215)	0.0960***	(0.00289)	0.0594***	(0.00268)
No partner or partner in p0–90 (ref.)	ref.		ref.		ref.		ref.	
Partner in p90–99	0.0978***	(0.00237)	0.111***	(0.00217)	0.0875***	(0.00250)	0.0978***	(0.00218)
Partner in p99–100	0.127***	(0.00750)	0.171***	(0.00708)	0.0984***	(0.00461)	0.134***	(0.00425)
Pseudo R ²		0.188		0.238		0.189		0.228
Sample size		704,803		1,141,712		374,613		697,272

Note: ref. = reference category. Province dummies included in the regression. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Source: authors' elaboration based on administrative data.

Our analysis shows a number of interesting findings. First, for both men and women, having tertiary education increases the probability of being at the top and the effect of education has increased over time. The effect of having private tertiary education on the probability of being at the top is larger than that of having public tertiary education. Although the effect of tertiary education has increased over time, the gap between the effect of public and private tertiary education has widened. The result might point to a widening in the (perceived) quality of education between public and private institutions but also to access to networks for future employment and business opportunities.

Second, we observe gender differences in the effect of marital status on the probability of being at the top. For men, being married is more strongly associated with the probability of being at the top than for women, whereas the marginal effect of being divorced is larger in the case of women. Recent research by Folke and Rickne (2020) for Sweden shows that promotion to top jobs increases the probability of divorce for women due to stressful renegotiation of tasks in the household or a violation of traditional social norms. It remains unclear whether this would explain the effect observed in Ecuador, as we might expect to observe an increasing effect of divorce on the probability of being at the top as more women have access to top jobs over time.

Third, perceiving jointly income from different sources increases the probability of being at the top for men and women. More precisely, the categories of individuals perceiving ‘employment, self-employment, and capital income’ and ‘employment and self-employment but no capital income’ are associated with a higher probability of being in the top 10 per cent group and the effect has strongly increased over time for men and women. Interestingly, perceiving self-employment income only (compared with the reference category of employment income only) has a negative effect on the probability of being at the top for women in 2008 but this effect has reversed by the end of the period of analysis.

In terms of industries, public administration and defence, education, health, and social work is the sector the most strongly associated with the probability of being at the top for men and women, followed by transport and communication. Across genders, agriculture and fishing is the sector that most decreases the probability of being in the top 10 per cent group. Some interesting gender differences are observed for the sector of mining, manufacturing, and utilities, which increases the probability of being at the top for men but has a negative effect for women. For men, working in the construction sector had a positive and significant effect on the probability of being in the top 10 per cent group in 2008, but the effect has reversed over time.

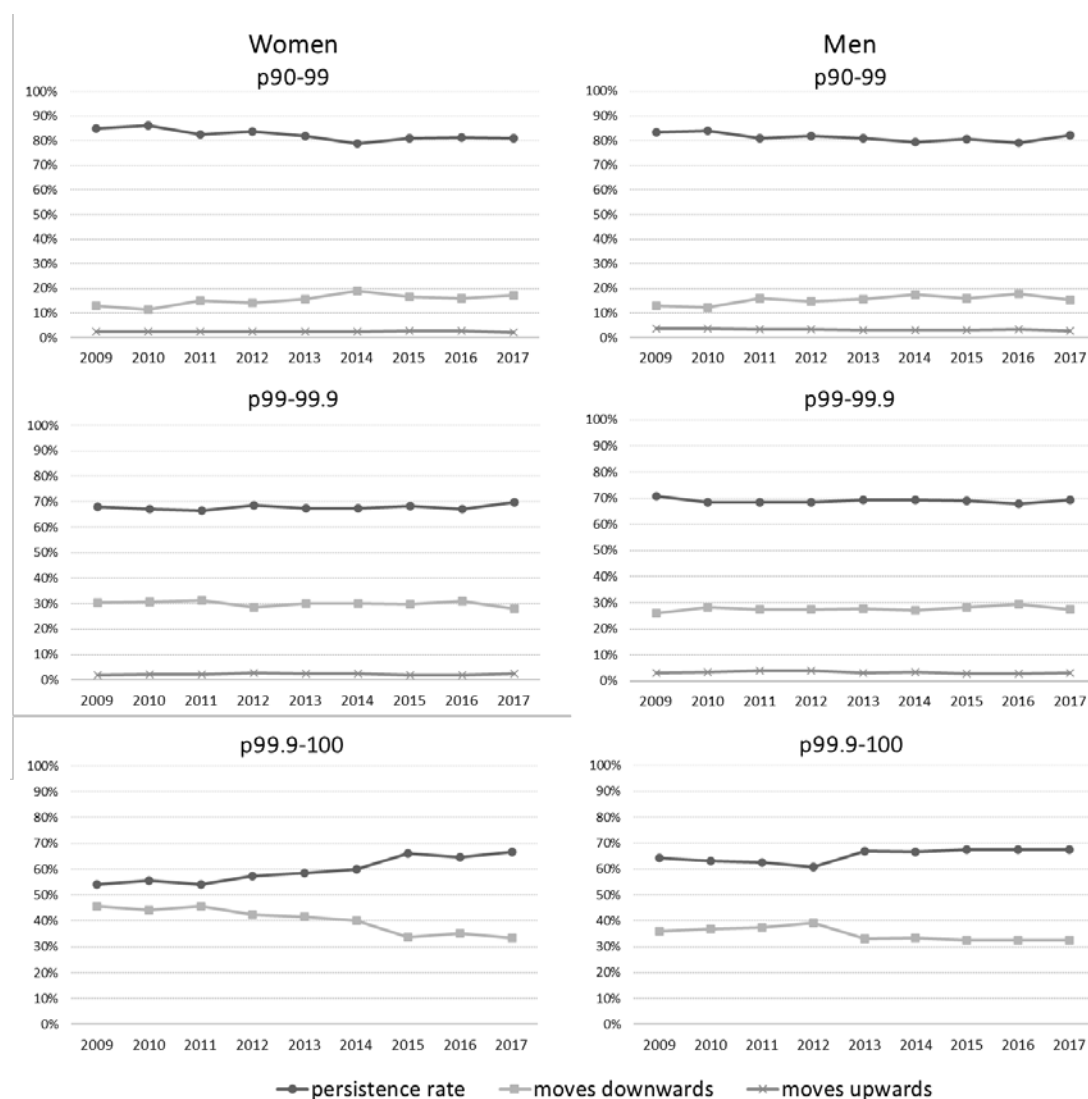
Finally, the last rows of Table 2 show the association between having a partner who belongs to a top income group (conditional on having a partner) and an individual’s own probability of being in the top 10 per cent group. For both men and women, we observe a positive and significant association between having a partner in p90–99 or p99–100 and being in the top 10 per cent group. The effects are slightly larger for men than for women and have increased strongly over time for both groups. The association between a partner’s position at the top of the income distribution and the probability of being at the top is in line with findings from recent studies. Based on administrative data for Finland, Ravaska (2020) finds a strong association between having a spouse at the top of the income distribution and the probability of being in the top 10 per cent group. As in our case, Ravaska (2020) observes that the effect is larger for men than for women. Based on survey data for the UK, Burkhauser et al. (2020) find that the probability of belonging to the top 1 per cent group is higher for individuals with a partner who belongs to the top 1 per cent group. The association of being at the top and having a partner at the top of the income distribution might be explained by the presence of assortative mating but also by within-family portfolio choices (Burkhauser et al. 2020).

6 Top income mobility and gender in Ecuador

Our analysis so far has concentrated on the gender differences in the income composition and factors associated with being at the top of the income distribution. In this section, we exploit the longitudinal nature of our data to assess whether and to what extent mobility at the top differs by gender. Due to the short period available for the analysis, we concentrate on year-to-year transitions.

Figure 8 presents year-to-year persistence rates for women and men in three discrete top income groups: p90–99, p99–99.9 and p99.9–100. Persistence rates are defined as the percentage of individuals in a top income group in year t who remain in this group in year $t+1$ (Jenderny 2016). Figure 8 further complements these persistence rates with indicators for downward and upward mobility that track the share of individuals moving respectively into a lower or higher ranked income group. More precisely, for each top income group, the downward (upward) mobility indicator shows the percentage of individuals in that income group in year t who are observed in the income groups below (above) in year $t+1$.

Figure 8: Year-to-year mobility rates of women and men in top income groups, 2008–17



Source: authors' elaboration based on administrative data.

Persistence rates are high, fairly similar for both women and men, and broadly stable over time in the p90–99 and p99–99.9 groups. For the p90–p99 group, women’s persistence rates decline from 84.8 per cent to 80.9 per cent over the period of analysis, whereas men’s persistence rates fluctuate around 81 per cent. More pronounced changes and gender differences can be observed in persistence rates for the p99.9–100 group. At the beginning of the period, year-to-year persistence rates amounted to 64.1 per cent for men and 54.2 per cent for women. Over time, persistence rates increased and particularly so for women: at the end of the period, year-to-year persistence rates amounted to 67.4 per cent (a 5 percentage points increase) for men and 66.7 per cent for women (a 13 percentage points increase).

In terms of upward and downward mobility, women are slightly more likely to move downwards than men, particularly in the top 0.1 per cent group. But as women’s persistence rates in this group have slightly increased over time, as previously mentioned, the downward mobility rates between women and men have converged to similar levels. In general, downward mobility is more prevalent than upward mobility and most of those moving downwards usually move to the group just below.¹⁹ For those in the p99.9–100 group, the probability of moving to the p99–99.9 group has decreased over time and slightly more so for women. At the same time, women in the top 0.1 per cent group have also experienced a greater likelihood of falling out of the top 10 per cent (i.e. moving into the p0–90 group).

7 Conclusion

Despite recent efforts to assess gender disparities at the top of the income distribution (Atkinson et al. 2018; Bobilev et al. 2020; Boschini et al. 2020; Ravaska 2018), evidence remains scarce and particularly so for low- and middle-income countries. Data limitation is one of the major factors preventing research from advancing in this area. On the one hand, household survey data are affected by undercoverage of top incomes and small sample size problems. On the other hand, administrative data from tax records generally do not contain information about gender and other socioeconomic characteristics.

This paper contributes to the literature on the gender gap in top incomes using rich administrative data from Ecuador for the period 2008 to 2017. In particular, our data allow us to look at the evolution in the share of women in top income groups, gender differences in the composition of income (e.g. labour income, business income, and capital income), the characteristics of women at the top of the distribution, and gender mobility at the top. Additionally, we are able to illustrate differences between male and female shareholders.

Our results show that, despite a significant increase in the share of women at the top of the income distribution, women remain underrepresented in top income groups, representing 38.7 per cent in the top 10 per cent income group and 22.8 per cent in the top 0.1 per cent income group. The composition of total income out of labour, business, and capital income is broadly similar across gender at the top. The prevalence of business and capital income increases at the very top, with a substantial increase in the contribution of capital income over time. However, we observe gender differences in the composition of capital income. Rental income is more prevalent among women, whereas men are more likely to earn income from dividends and financial returns and to figure as majority shareholders.

¹⁹ Results available from the authors on request.

In terms of observable characteristics, having capital income in addition to employment and self-employment income is associated with a higher probability of being at the top for men and women. Having (private) tertiary education has a slightly higher effect on the probability of being at the top for women than for men. In contrast, the effect of having a spouse who belongs to a top income group is greater for men than women. Finally, we observe a high degree of persistence in top incomes across gender, with around 80 per cent of individuals in the top 10 per cent group remaining in this group from year to year.

Several directions for future research could be considered on the basis of the analysis presented in this paper. First, more evidence is needed on the gender gap in top incomes in low- and middle-income countries. Our analysis has put into context our results by comparing them with those of high-income countries. For instance, the share of women in top income groups is higher in Ecuador than in many high-income countries. Further research could confirm whether this pattern holds for other low- and middle-income countries and discuss the factors that might explain the observed differences. Second, gender differences in the composition of capital income in low- and middle-income countries deserve more attention. Rental income is more prevalent among women, which could indicate strategic income allocation among couples or households. Finally, the determinants and mechanisms driving the probability of top-income individuals having partners in similar ranks of the income position deserve more attention.

References

- Alvaredo, F., and L. Gasparini (2015). ‘Recent Trends in Inequality and Poverty in Developing Countries’. In A.B. Atkinson and F. Bourguignon (eds), *Handbook of Income Distribution*, Vol. 2: 697–805. Amsterdam: Elsevier. <https://doi.org/10.1016/B978-0-444-59428-0.00010-2>
- Alvaredo, F., and J. Londoño Vélez (2013). ‘High Incomes and Personal Taxation in a Developing Economy: Colombia’. CEQ Working Paper. Tulane University, New Orleans, LA: Commitment to Equity Assessment Institute. <https://doi.org/10.35648/20.500.12413/11781/ii182>
- Aparicio, G., P. Carrillo, and M.S. Emran (2011). ‘Taxes, Prisons, and CFOs: the Effects of Increased Punishment on Corporate Tax Compliance in Ecuador’. Working Paper 2011-02. Washington, DC: The George Washington University, Institute for International Economic Policy. <https://doi.org/10.2139/ssrn.1808945>
- Asamblea Constituyente (2007). ‘Ley Reformativa para la Equidad Tributaria’ [‘Equity Tax Reform Act’] [Spanish only]. 29 December. Ecuador: Government of Ecuador.
- Asamblea Nacional (2014). ‘Ley de Régimen Tributario Interno’ [‘Internal Tax Law’] [Spanish only]. 24 January. Ecuador: Government of Ecuador.
- Atal, J.P., H. Ñopo, and N. Winder (2009). ‘New Century, Old Disparities. Gender and Ethnic Wage Gaps in Latin America’. Research Department Working Paper 109. Washington, DC: Inter-American Development Bank. <https://doi.org/10.2139/ssrn.1815933>
- Atkinson, A.B. (2005). ‘Top Incomes in the UK over the 20th Century’. *Statistics in Society*, 168(2): 325–43. <https://doi.org/10.1111/j.1467-985X.2005.00351.x>
- Atkinson, A.B., T. Piketty, and E. Saez (2011). ‘Top Incomes in the Long Run of History’. *Journal of Economic Literature*, 49(1): 3–71. <https://doi.org/10.1257/jel.49.1.3>
- Atkinson, A.B., A. Casarico, and S. Voitchovsky (2018). ‘Top Incomes and the Gender Divide’. *Journal of Economic Inequality*, 16(2): 225–56. Available at: https://ideas.repec.org/a/kap/jecinq/v16y2018i2d10.1007_s10888-018-9384-z.html (accessed 28 May 2021).

- Bobilev, R., A. Boschini, J. and Roine (2020). ‘Women in the Top of the Income Distribution: What Can We Learn From LIS-Data?’. *Italian Economic Journal*, 6(1): 63–107. <https://doi.org/10.1007/s40797-019-00108-w>
- Boschini, A., K. Gunnarsson, and J. Roine (2020). ‘Women in Top Incomes: Evidence from Sweden 1971–2017’. *Journal of Public Economics*, 181: 104115. <https://doi.org/10.1016/j.jpubeco.2019.104115>
- Burdín, G., F. Esponda, A. Vigorito, F. Alvaredo, V. Amarante, M. Bucheli, J.C. Gómez Sabaini, et al. (2014). ‘Inequality and Top Incomes in Uruguay: a Comparison Between Household Surveys and Income Tax Micro-Data’. The World Top Incomes Database Working Paper 2014/1. London: Department for International Development.
- Burdín, G., M.D. Rosa, A. Vigorito, and J. Vilá (2020). ‘Was Falling Inequality in All Latin American Countries a Data-Driven Illusion? Income Distribution and Mobility Patterns in Uruguay 2009–2016’. IZA Discussion Paper 13070. Bonn: Institute of Labor Economics.
- Burkhauser, R.V., N. Herault, S.P. Jenkins, and R. Wilkins (2020). ‘What Accounts for the Rising Share of Women in the Top 1%?’. NBER Working Paper 27397. Cambridge, MA: National Bureau of Economic Research. <https://doi.org/10.31235/osf.io/wdt2r>
- Cano, L. (2015). ‘Income Mobility in Ecuador. New Evidence from Personal Income Tax Returns’. Working Paper 2015/040. Helsinki: UNU-WIDER. <https://doi.org/10.2139/ssrn.2688576>
- Cano, L. (2018). ‘Personal Income Tax and Income Inequality in Ecuador between 2007 and 2011’. CEPAL Review 123. Santiago: Economic Commission for Latin America and the Caribbean. <https://doi.org/10.18356/f31c2017-en>
- De Rosa, M., I. Flores, and M. Morgan (2020). ‘Inequality in Latin America Revisited: Insights from Distributional National Accounts’. World Inequality Lab, Issue Brief 2020/09. Available at: https://wid.world/document/inequality-in-latin-america-revisited-insights-from-distributional-national-accounts-world-inequality-lab-issue-brief-2020_09/ (accessed 28th May 2021).
- Denk, O. (2017). ‘Who Are the Top 1% Earners in Europe?’. 14th EUROFRAME Conference on Economic Policy Issues in the European Union, June. Available at: <https://www.euroframe.org/conferences.html> (accessed 28 May 2021).
- Eurostat (2021). ‘Gini Coefficient of Equivalised Disposable Income – EU-SILC Survey’. Available at: https://ec.europa.eu/eurostat/databrowser/view/ilc_di12/default/table?lang=en (accessed March 2021).
- Folke, O., and J. Rickne (2020). ‘All the Single Ladies: Job Promotions and the Durability of Marriage’. *American Economic Journal: Applied Economics*, 12(1): 260–87. <https://doi.org/10.1257/app.20180435>
- Hidalgo, P. (2017). ‘Caso del Impuesto a la Renta de los Dividendos: comportamiento tributario’. Notas de Reflexión 47. Centro de Estudios Fiscales, SRI. Government of Ecuador [Spanish only]. Available at: https://cef.sri.gob.ec/pluginfile.php/32891/mod_page/content/93/NR_1747.pdf (accessed 28 May 2021).
- Hoyos, A., and H. Ñopo (2010). ‘Evolution of Gender Gaps in Latin America at the Turn of the Twentieth Century: an Addendum to “New Century, Old Disparities”’. Research Department Working Paper 176. Washington, DC: Inter-American Development Bank. <https://doi.org/10.2139/ssrn.1817290>
- ILO (2021a). ‘Labour Force Participation Rate by Sex and Age (%)’. Annual Series ID: EAP_DWAP_SEX_AGE_RT_A. Geneva: International Labour Organization. Available via ILOSTAT explorer at: <https://ilostat.ilo.org/data/#>.
- ILO (2021b). ‘Informal Employment Rate by Labour Force Participation Rate by Sex (%)’. Annual Series ID: EMP_NIFL_SEX_RT_A. Geneva: International Labour Organization. Available via ILOSTAT explorer at: <https://ilostat.ilo.org/data/#>.
- INEC (2020). ‘Tabulados de Pobreza – Diciembre 2020’ [‘Poverty Tabulations - December 2020’] [Spanish only]. Quito: Instituto Nacional de Estadística y Censos. Available at: <https://www.ecuadorencifras.gob.ec/pobreza-diciembre-2020/> (accessed March 2021).

- INEC (2021). 'Encuesta Nacional de Empleo, Desempleo y Subempleo (ENEMDU)' [Spanish only]. Quito: Instituto Nacional de Estadística y Censos. Available at: <https://www.ecuadorencifras.gob.ec/empleo-febrero-2021/> (accessed 28 May 2021).
- Jara, H.X., and N. Oliva (2018). 'Top Income Adjustments and Tax Reforms in Ecuador'. WIDER Working Paper 2018/165. Helsinki: UNU-WIDER.
- Jenderny, K. (2016). 'Mobility of Top Incomes in Germany'. *Review of Income and Wealth*, 62(2): 245–65. <https://doi.org/10.1111/roiw.12184>
- Piketty, T. (2001). *Les hauts revenus en France au 20ème siècle*. Paris: Grasset.
- Piketty, T. (2003). 'Income Inequality in France, 1901–1998'. *Journal of Political Economy*, 111(5). <https://doi.org/10.1086/376955>
- Piketty, T. (2015). 'Putting Distribution Back at the Center of Economics: Reflections on Capital in the Twenty-First Century'. *Journal of Economic Perspectives*, 29(1): 67–88. <https://doi.org/10.1257/jep.29.1.67>
- Piketty, T., and A. Atkinson (eds) (2007). *Top Incomes over the Twentieth Century: a Contrast between Continental European and English-Speaking Countries*. Oxford: Oxford University Press.
- Piketty, T., and A.B. Atkinson (2010). *Top Incomes: A Global Perspective*. Oxford: Oxford University Press.
- Piketty, T., and E. Saez (2003). 'Income Inequality in the United States, 1913–1998'. *Quarterly Journal of Economics*, 118(1): 1–41. <https://doi.org/10.1162/00335530360535135>
- Piketty, T., and G. Zucman (2014). 'Capital Is Back: Wealth–Income Ratios in Rich Countries 1700–2010'. *Quarterly Journal of Economics*, 129(3): 1255–1310. <https://doi.org/10.1093/qje/qju018>
- Ravaska, T. (2018). 'Top Incomes and Income Dynamics from a Gender Perspective: Evidence from Finland 1995–2012'. Working Paper 469. Palma di Mallorca: ECINEQ, Society for the Study of Economic Inequality. Available at: <https://ideas.repec.org/p/inq/inqwps/ecineq2018-469.html> (accessed 28 May 2021).
- Roca, J. (2010). 'Ecuador: la tributación directa, evasión y desafíos'. In J.P. Jiménez, J.C. Gómez Sabaini, and A. Podestá (eds), *Evasión en América Latina*. Santiago: Comisión Económica para América Latina y el Caribe (CEPAL) [in Spanish only]. Available at: <https://www.cepal.org/es/publicaciones/3762-evasion-equidad-america-latina> (accessed 28 May 2021).
- Sánchez, M., S. Rojas, and C. Vasquez (2017). 'Comparative Analysis Between the Higher Education Systems of Ecuador and Bolivia'. *INNOVA Research Journal*, 2(10): 70–83. <https://doi.org/10.33890/innova.v2.n10.2017.291>
- UNU-WIDER (2021). World Income Inequality Database (WIID), Version 31, March 2021. Helsinki: UNU-WIDER. Available at: <https://www.wider.unu.edu/project/world-income-inequality-database-wiid> (accessed 28 May 2021).
- Villacreses, N. (2017). 'Una mirada a la subdeclaración de ingresos de personas naturales'. Notas de Reflexión 41. Centro de Estudios Fiscales, SRI. Government of Ecuador [in Spanish only]. Available at: https://cef.sri.gob.ec/pluginfile.php/32891/mod_page/content/93/NR_1741.pdf (accessed 28 May 2021).
- World Bank (2021). 'School Enrolment, Tertiary, by Gender, Gross (%)'. Series ID: SE.TER.ENRR.FE. Available at <https://data.worldbank.org/indicator/SE.TER.ENRR.FE>.
- World Economic Forum (2007). 'Global Gender Gap Report 2008'. Geneva: World Economic Forum.
- World Economic Forum (2019). 'Global Gender Gap Report 2020'. Geneva: World Economic Forum.

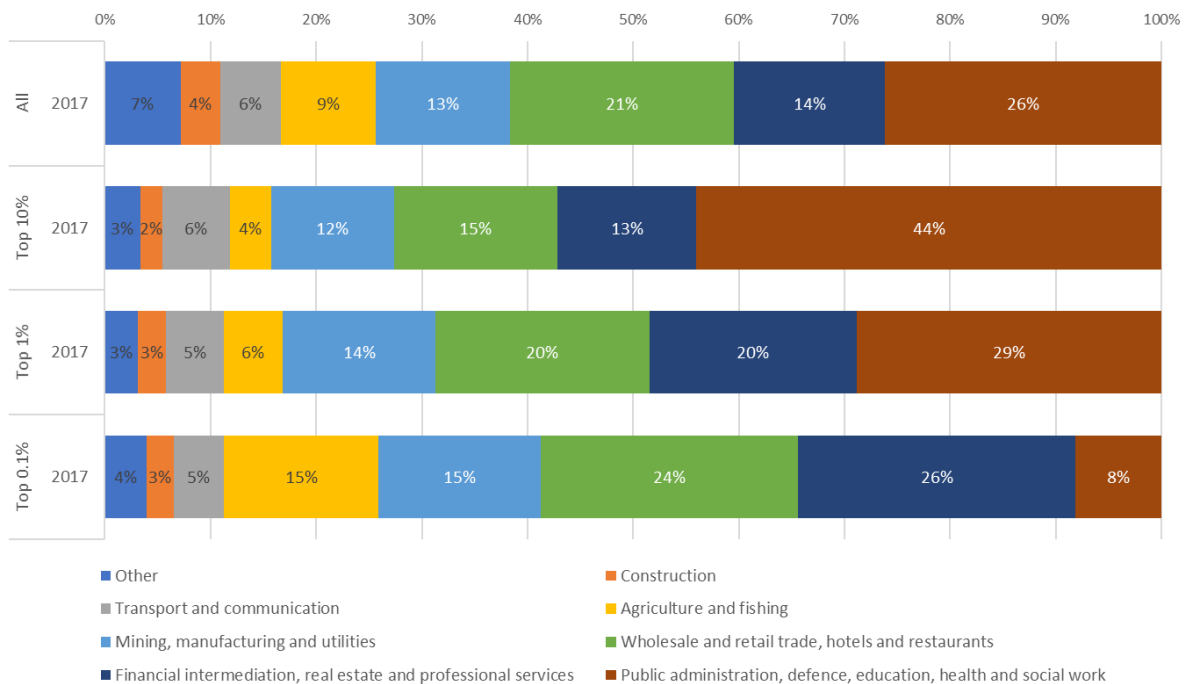
Appendix

Figure A1: Mean earnings from survey data versus tax records, 2008–17 (in 2017 prices, USD)



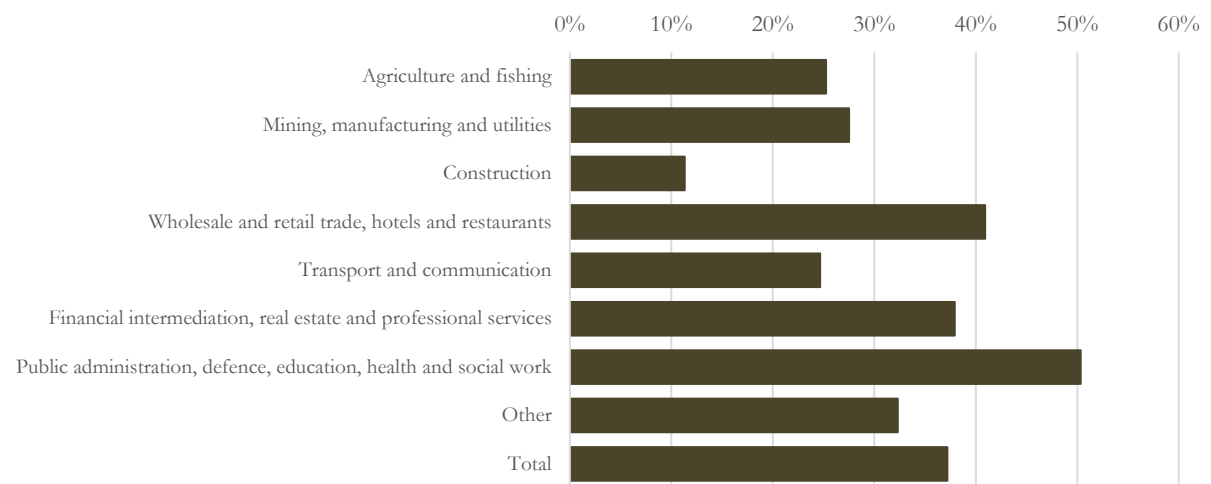
Source: authors' elaboration based on ENEMDU administrative data.

Figure A2: Industry composition of the whole sample by top income groups, 2017



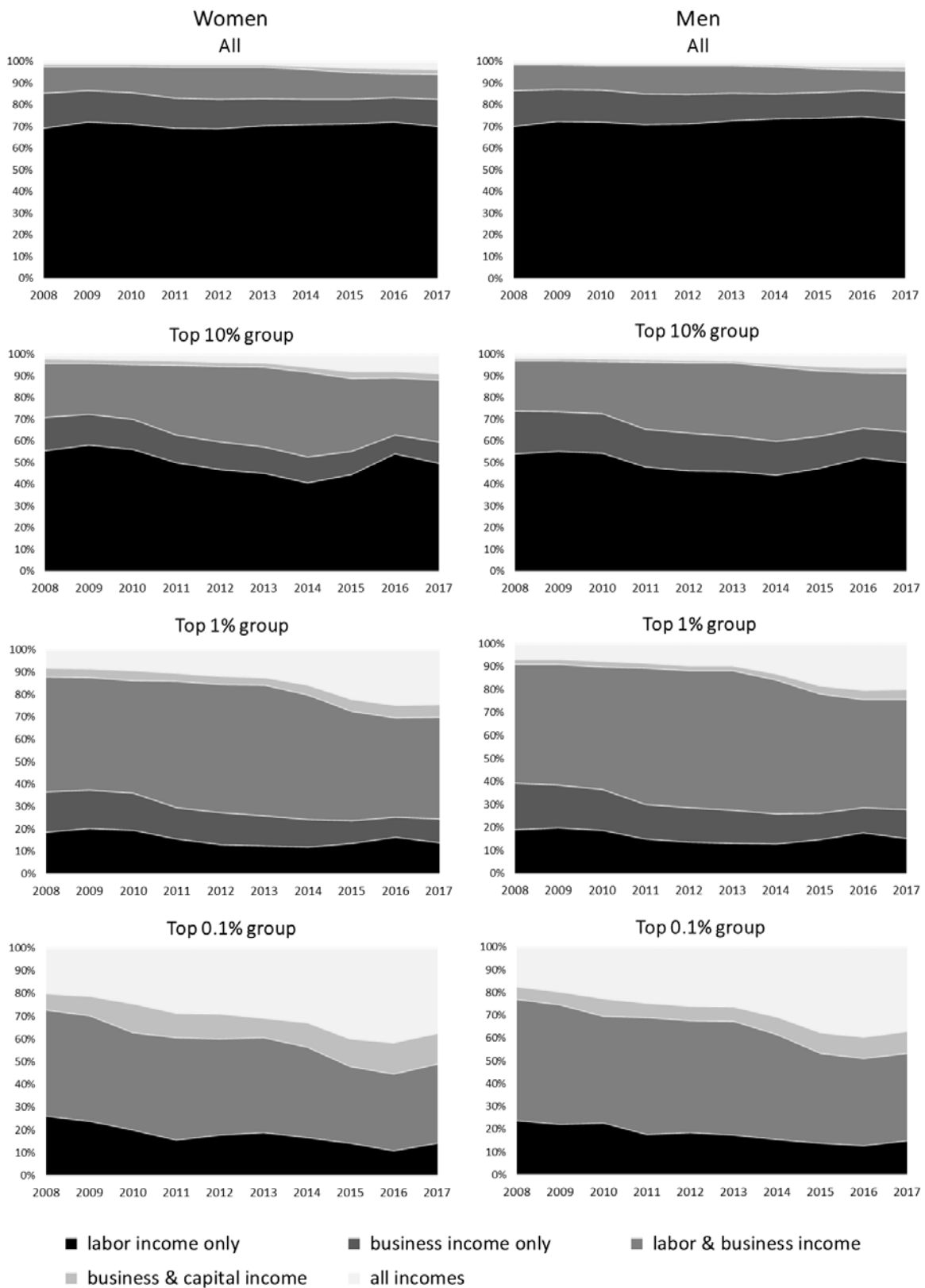
Source: authors' elaboration based on administrative data.

Figure A3: Share of women by industry in 2017, whole sample



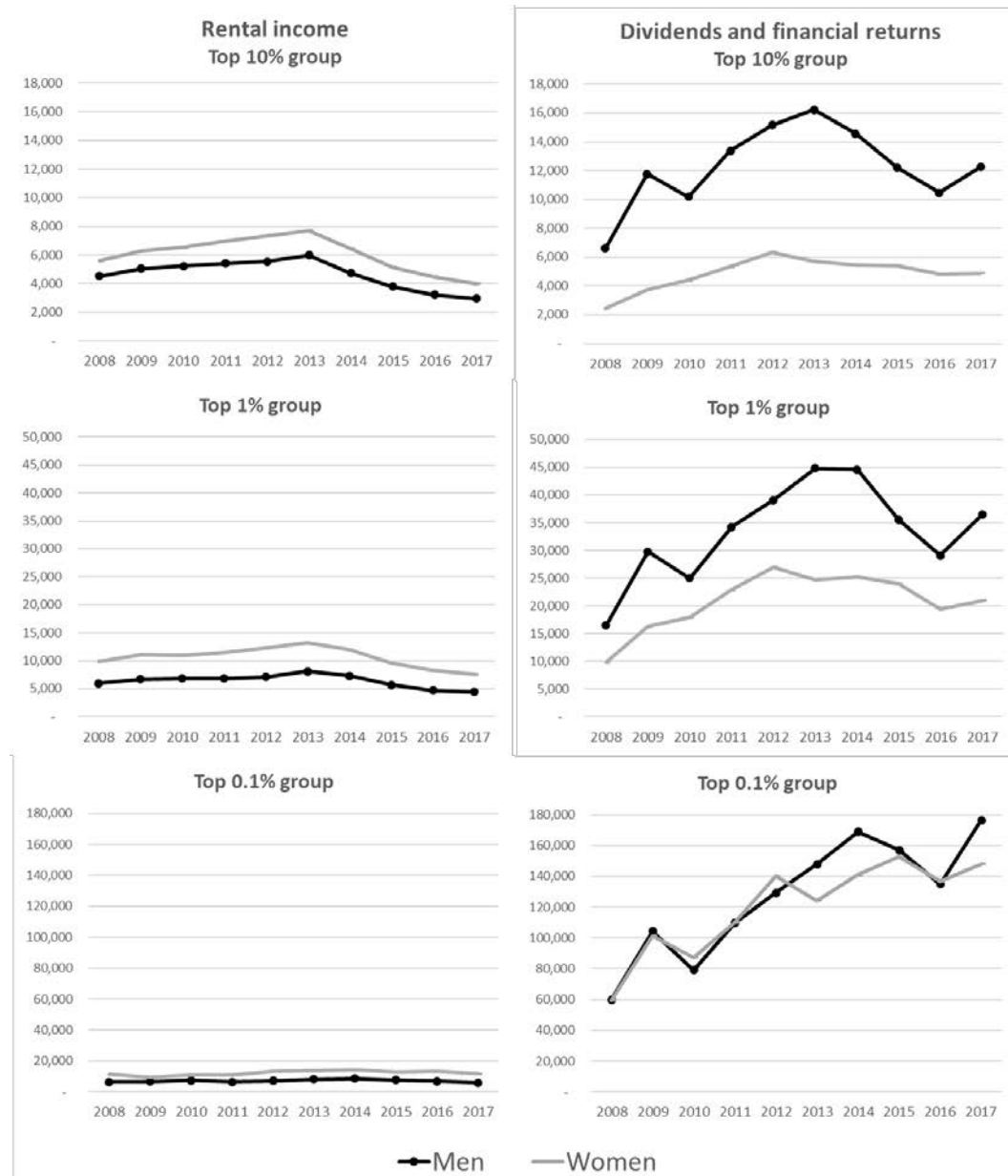
Source: authors' elaboration based on administrative data.

Figure A4: Income categories of women and men in the whole sample and in top income groups, 2008–17



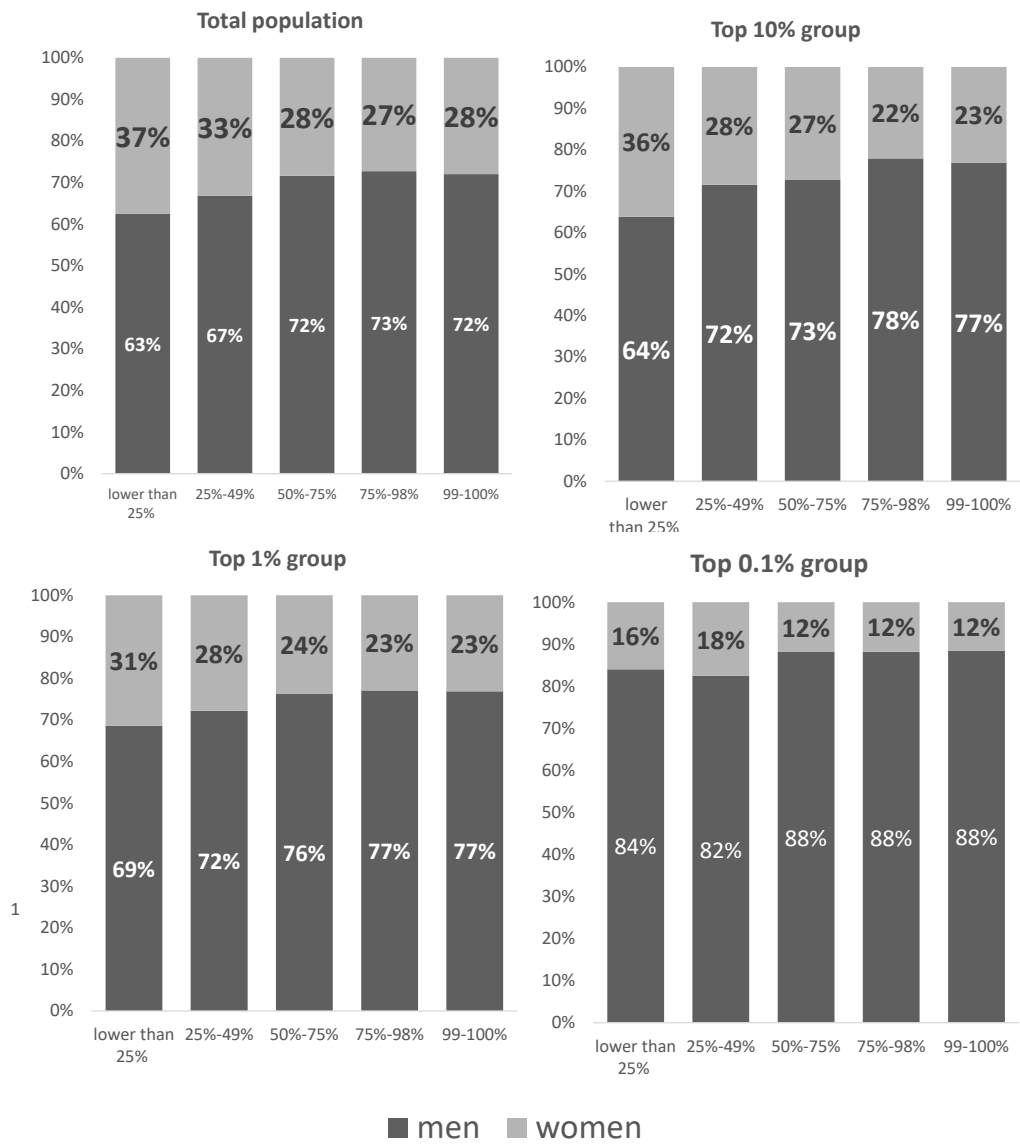
Source: authors' elaboration based on administrative data.

Figure A5: Average rental incomes and dividends and financial returns, 2008–17 (in 2017 prices, USD)



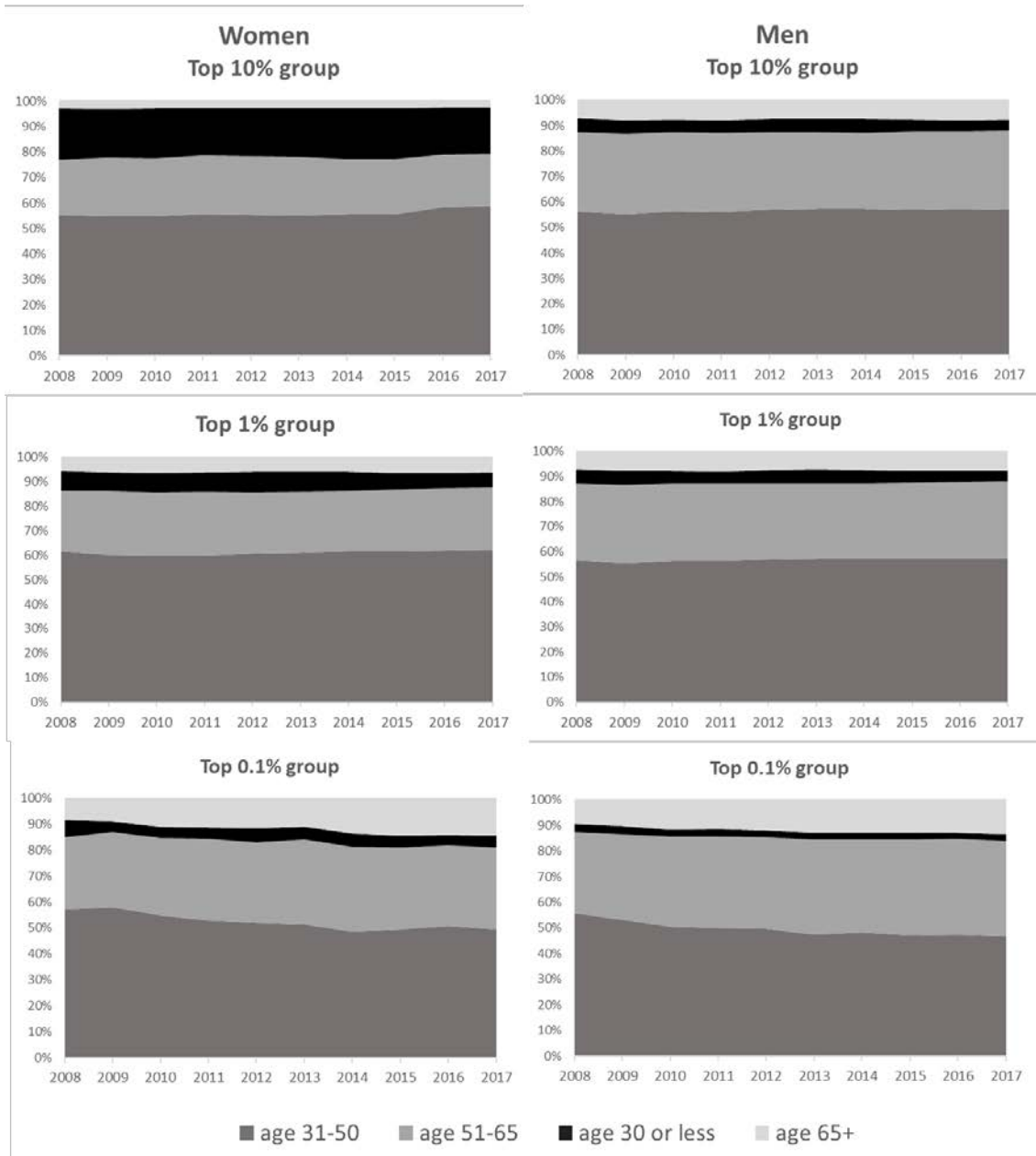
Source: authors' elaboration based on administrative data.

Figure A6: Average proportion of shares owned by women and men (2012–16)



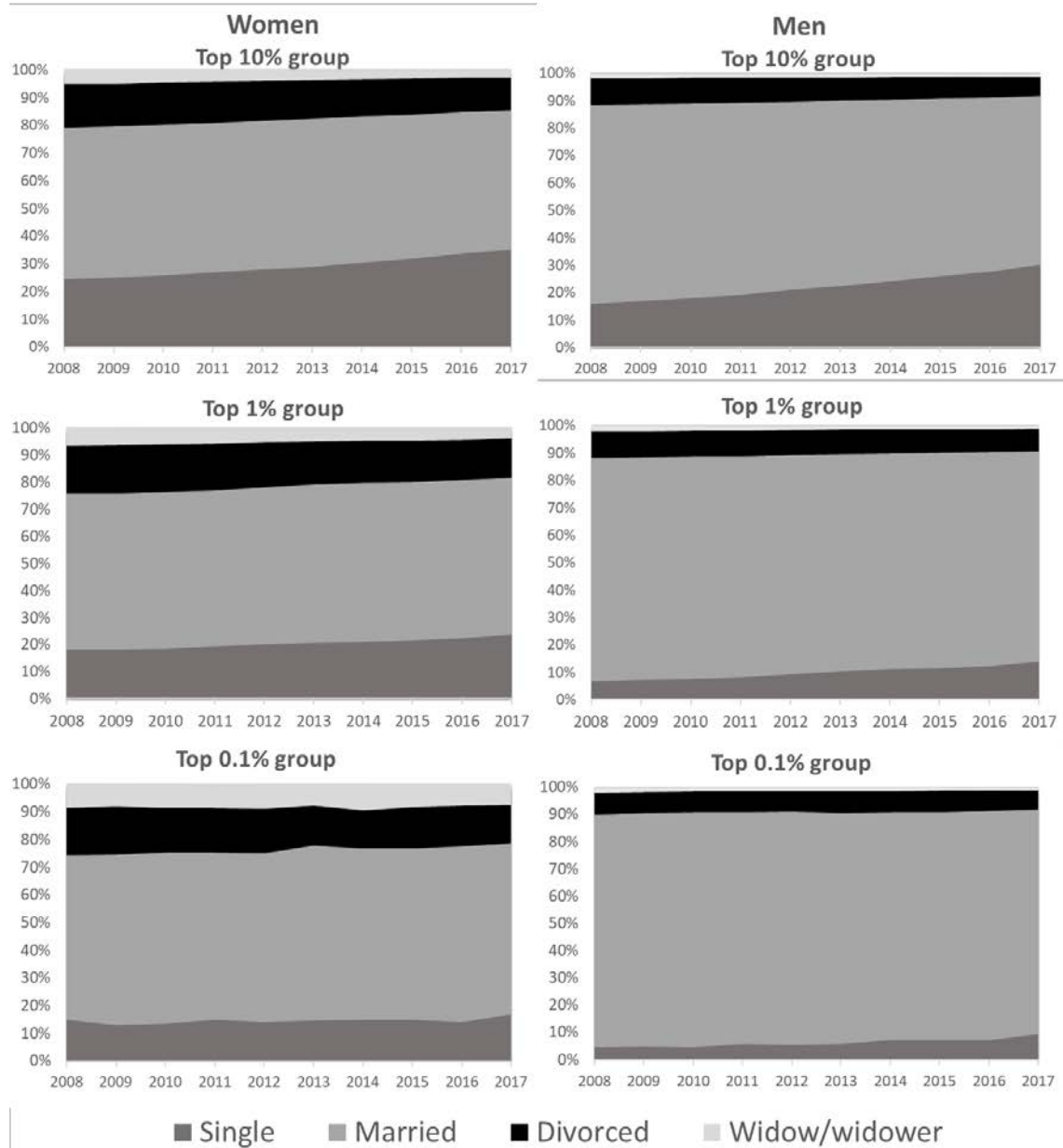
Source: authors' elaboration based on administrative data.

Figure A7: Age of women and men in top income groups, 2008–17



Source: authors' elaboration based on administrative data.

Figure A8: Marital status of women and men in top income groups, 2008–17



Source: authors' elaboration based on administrative data.

Table A1: Number of individuals included in the tax records data by level of income, 2008–17

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Below minimum wage	820,885	958,530	999,506	1,016,893	1,108,684	1,250,956	1,333,185	1,336,194	1,287,198	1,288,503
Between minimum wage and PIT exemption threshold	447,730	459,644	484,451	647,288	724,554	817,698	901,710	861,400	845,522	856,106
Above PIT exemption threshold	649,220	691,981	738,625	864,166	931,849	994,900	1,077,035	1,120,171	1,065,382	1,118,457
Total	1,917,835	2,110,155	2,222,582	2,528,347	2,765,087	3,063,554	3,311,930	3,317,765	3,198,102	3,263,066

Source: authors' elaboration based on administrative data.