



Asymmetric effects of macro policies on women’s and men’s incomes. An empirical investigation of the eurozone crisis in a gender perspective

Valeria Cirillo¹ · Marcella Corsi² · Carlo D’Ippoliti² · Lucio Gobbi³

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Abstract

We study how macro policies affected women’s and men’s incomes during the financial crisis in Europe. We consider the monetary stance, proxied by benchmark interest rates, and the fiscal stance, measured by the variation in public expenditures and public revenues, and investigate how they are associated to women’s and men’s labor and capital incomes, using microdata for 27 European countries between 2008 and 2016. We individualize household-level data by considering four scenarios of intra-household sharing of resources. We also explore how and to what extent macro-policies affect the distribution of labour incomes for men and women by applying a conditional quantile regression approach. Results highlight that the ECB’s expansionary policies had a positive effect on both labor and capital incomes for both men and women, while austerity policies had a mixed impact. Reductions in public expenditure had the effect of reducing labor incomes for both men and women, particularly at the median of the wage and labor distributions. In contrast, increases in public revenues benefited capital incomes, for all income quantiles.

Keywords Europe · Gender · Personal and functional distribution of incomes · Monetary policy · Austerity

JEL Classification D31 · D33 · E51 · J3

✉ Valeria Cirillo
valeria.cirillo@uniba.it

¹ University of Bari Aldo Moro, Piazza Cesare Battisti, 1, 70121 Bari, Italy

² Sapienza University of Rome, Rome, Italy

³ University of Trento, Trento, Italy

1 Introduction

The debate on the distributive impact of fiscal and monetary policy has increasingly taken center stage in the last decade as most advanced economies – in keeping with the policy consensus built on mainstream economics – have relied significantly more on central banks than on national governments in trying to jump-start growth and avoid the trap of secular stagnation. In this work we contribute to the empirical evidence on the distributive consequences of the macroeconomic policy mix by considering the case of the European Union (EU) during the sovereign debt and eurozone crises. We tackle this issue by considering both the possible gender and class dimensions of personal income (re)distribution.

Beside the historical relevance – some European countries, notably Greece and Italy, still had not recovered their 2007 levels of GDP, when Covid hit in 2020 – this episode is instructive because it allows observing a wide variability of fiscal and monetary policy stances and their effects on a harmonized dataset of microdata, suitable for both temporal and cross-country comparisons. Indeed, the variety of fiscal and monetary policy stances, and their sudden changes in a short time, inspired a large public debate on the distributional impact of the eurozone crisis in geographic terms, i.e. between “core” and “periphery” eurozone countries. Over time, studies have emerged on the intra-country distributional impacts too, as reviewed in Section 3. However, to our knowledge ours is the first attempt to synthetically consider the whole EU experience over the global financial crisis and then the sovereign debt crisis by looking empirically at the distributive impact in terms of both class and gender.

From a class perspective, in the sense of functional income distribution, austerity policies have been denounced as especially damaging for the working class, whereas quantitative easing by the central bank has been connected to asset inflation and thus to regressive income redistribution. From a gender perspective, scholars have developed the narrative of a two-stage European crisis (Bettio et al., 2013): in a first stage, the so-called “he-cession”, men would have been hit the most by the economic recession induced by the financial crisis, which in Europe affected the export sectors and the most pro-cyclical industries. Then, at the beginning of the subsequent “she-austerity” stage, it was thought that women would have suffered the heaviest burden of the fiscal retrenchment measures.

Most of the studies that put forward these hypotheses, however, have been limited to one or few countries, they were based on macro data only, and often they considered only a class perspective or a gender perspective, and not the two jointly. In this work we consider both perspectives using individual data and we thus consider the eurozone crisis as a relevant case study of the distributive impacts of monetary and fiscal policy. To investigate these issues, we use microdata from the European Union Statistics on Income and Living Conditions (EU-SILC) database to explore the link between individual sources of income (rents, profits, wages, and public transfers) and incomes during the crisis, distinguishing between men and women. To do that, we apply a specific individualization procedure to those incomes that are only recorded at the household level by

EU-SILC. Building on Botti et al. (2016), we consider four different scenarios of intra-household sharing of resources: full equal distribution, winner takes all, proportional distribution, and proportional sharing. We compare how men's and women's incomes from different sources correlate with different macroeconomic policies, summarized by changes in the interest rate on the country's long-term public bonds (as a measure of monetary policy), and public revenues and expenditures as a share of GDP (as measures of fiscal policy). While several possible channels might be at work, in a causal chain from the policy change to men's and women's incomes, here we synthetically consider the overall result, conditional on a few observable individual and household characteristics. Accordingly, our results do not necessarily falsify any causal link posited by the extant literature, but they provide an overall balance of the net result in the historical case of the European countries in the recent past.

More in detail, the application of multi-way fixed effects models (Correia, 2016) highlights that monetary and fiscal policies displayed opposite effects. Specifically, the ECB's "unconventional" monetary policies had a positive effect on labor and capital incomes of both men and women, while austerity policies had a more mixed impact. Reductions in public expenditure had the effect of depressing the labor incomes of both men and women, whereas increases in public revenues reduced labor incomes (for men) but not capital incomes. These results are broadly confirmed when looking at social stratification in the form of income quantiles, both for wages and labour incomes including the mixed incomes of self-employed workers.

The rest of the paper is organized as follows: Section 2 briefly summarizes the main evolution of the eurozone crisis and its two main stages; Section 3 sketches some stylized facts relevant for our analysis of the asymmetric effects of macro policies; Section 4 introduced the most relevant issues in a gender perspective; Section 5 presents the data and the empirical method; Section 6 details the main results of our analysis; and Section 7 draws some conclusions.

2 A brief sketch of the eurozone crisis

The first impact of the 2007–8 subprime crisis on the European economy came in the form of a sudden credit crunch, due to the financial crisis of cross-border large banking groups, and a fall in exports especially for those countries that traded more with the USA (e.g., with a recession of -5% between 2008 and 2009 in Italy and Germany). At this stage, most member states engaged in expansionary fiscal policy with an average fiscal deficit for the eurozone as a whole of more than 6% of GDP (therefore 1/3 lower than in the USA). However, this expansion was not coordinated at the EU level, and the size of fiscal stimulus varied among countries.

Then, especially after the shock of the ex-post revision of Greece's national accounts and government finance statistics, since 2010 all member states simultaneously entered a stage of fiscal consolidation (for a review of policies see, among

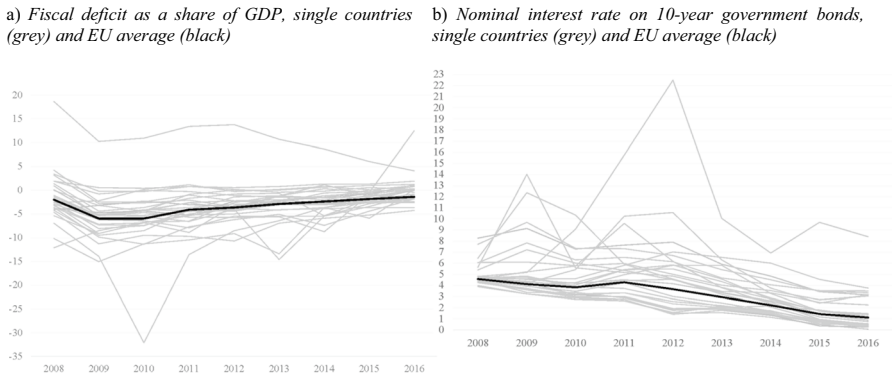


Fig. 1 Divergence and then convergence in macroeconomic policy in the EU. Source Eurostat, *National accounts*; and *Interest rates statistics*

others, Theodoropoulou & Watt, 2011). Austerity packages differed in terms of size and structure,¹ but most of them included higher tax revenues and reductions in expenditure, especially public investments, often including freezes in public sector wages and employment (Perugini et al., 2016).

The immediate result of this strategy, especially in the eurozone periphery, was a “double dip” and prolonged depression, with soaring unemployment seen by official institutions as a bitter pill for the goal of improving the cost competitiveness of deficit countries. Overall, the EU pursued an export-driven growth strategy through both restrictive fiscal policy, which succeeded in squeezing imports in most member states and boosting the current account surplus of the eurozone, and labor market reforms that increased labor market flexibility and suppressed wage growth especially in the less competitive “peripheral” eurozone countries (Stockhammer et al., 2020). Like the first, this second phase was also not well coordinated at the European level, in the sense that it was not established, for example, that deficit countries would consolidate their public finances while surplus countries would increase their deficits; thus, rather than a coordination effort, it is more properly to be considered a phase of fiscal policy convergence (see Fig. 1, panel a).

Under this approach, monetary policy had to avoid mitigating the impact—even assuming it could have done so—so that the austerity pill would not do its job of convincing recalcitrant voters of the importance of fiscal “prudence” and radical reforms and restoring cost competitiveness through wage deflation in the periphery. In particular, the European Central Bank strongly defended its self-imposed position of not interfering with markets’ pricing of risk and not giving rise to moral hazard for governments of European Monetary Union (EMU) member states, such that it was not its policy to try to influence interest rate differentials among EMU countries (Eichacker, 2022).

¹ For a review see Okeke et al (2021)

However, when economic and financial divergences pushed the EMU to the brink of collapse in 2012, the European Central Bank changed course with the famous “*whatever-it-takes*” approach. It engaged in a more accommodative policy (less so for Greece), which produced a slow convergence of monetary conditions among countries, as shown in Fig. 1, panel (b). Thus, while at an early stage of the crisis the yields on government bonds of the various member states diverged dramatically, after 2012 they converged again to comparable levels—although interest rate differentials never returned to the practically zero values of before 2007, reflecting the fact that in practice monetary and financial conditions remained differentiated throughout the period. Significantly, since 2012, interest rates in all countries (with sporadic temporary deviations) have declined, as has the average for the area. Thus, while fiscal policy was expansionary in the beginning and restrictive for the rest of the period, monetary policy was neutral or even restrictive in an early phase and expansionary in a second phase of the crisis.²

Commentators often perceive the mid-2010s as conventionally the end of the eurozone crisis, if anything because the survival of the common currency was no longer in question even though, as mentioned, some member states never recovered even until the Covid-crisis hit their economies again.

3 Some stylized facts

3.1 Personal and functional distribution of income

Several strands of heterodox economics have typically focused on social classes and the functional distribution of income – e.g., post-Keynesians, Sraffians, Marxists, and several institutionalists – while relatively less attention has been paid to the distribution of personal income, with the notable exceptions of feminist economics and the capabilities approach.

With the ongoing research process of cross-fertilizing, if not integrating, various heterodox strands (Jo et al., 2017), analyses based on class, gender, race, and other personal characteristics, or intersectionality analyses, increasingly take an empirical approach and embrace different schools of thought.

In this paper, we follow a similar approach to that of Cirillo et al. (2017), considering the sources of household income, both their level and composition, to focus on the functional distribution of income at the microeconomic (individual) level; in addition, we consider men and women separately to account for gender as a crucial dimension of personal income inequality. In this way, we innovate the literature on the effects of monetary and fiscal policy on income inequality, which, as we will see later, has mainly focused on the distribution of personal income.

² For an overview of the ECB’s monetary policy, see Rostagno et al (2019).

3.2 Monetary policy

Since the Great Financial Crisis, central banks in major economies have been engaged in extraordinary operations aimed at stabilizing real and financial markets. To achieve this goal, central banks have used conventional and unconventional monetary policy instruments (Fawley & Neely, 2013; Bhattarai & Neely, 2016; Westelius, 2020).

Focusing on the European case, it should be recalled that the main objective of the European Central Bank (ECB) stipulated in its founding statute is price stability. This objective is considered fundamental to achieving economic growth and a sustained level of employment.

However, it is not obvious that price stability should be the main objective of monetary policy, especially when looking at income inequality and its functional distribution. For example, from a Minskian perspective, periods of prolonged price stability are those in which risk perception decreases and systemic risk increases, triggering a boom phase. The recessionary period that follows boom phases of the financial cycle tends to have a negative impact on employment levels, increasing wealth and income inequality (Minsky, 1982).³

To analyze the effects of monetary policy on the distribution of income and wealth, it is then necessary to define the main channels of transmission. First, it should be noted that if interest rates are adjustable, a change in them has a different impact on debtors and creditors. The former benefit from the easing of their debt repayments, while the latter see diminishing returns on their assets. As argued by Auclert (2019), to analyze distributional effects, it is useful to look at what is the unhedged interest rate exposure (net exposure to interest rate change) of households. Households with negative exposure will benefit from the interest rate reduction, while those with positive exposure will reduce their income. In a European context, a majority of households will have a positive net wealth; however, the composition of individual portfolios could be different, so that individuals' ability to benefit from interest rate changes could be very different. This may be especially relevant in a gender perspective, since a growing body of experimental articles claim to find strong evidence that women are more risk-averse than men (Bacon et al., 2023), while others question this claim (Nelson, 2015).

Overall the weight of capital income for women has decreased since the 1960s in most advanced economies (Atkinson et al., 2018; Bobilev et al., 2020; Coelho et al., 2022) which contrasts with the rising capital share of income at the top of the distribution for the whole population since the 1980s (Saez & Zucman, 2016). However from an empirical standpoint, it is crucial to acknowledge the heterogeneous composition of capital incomes ranging from rents and private pensions to capital gains.

³ There are conflicting empirical results on whether monetary policy has indeed widened the level of inequality in income and wealth distribution (e.g., Villarreal, 2014; Davtyan, 2016; Inui et al., 2017; Casiraghi et al. 2018; Furceri et al., 2018; Guerello, 2018; Samarina and Nguyen, 2024). Recent empirical literature has mainly focused on the effect of monetary policies on household (personal) income and wealth distributions (for a review see Kappes, 2023).

Finally, one of the indirect effects of an interest rate reduction is the possible increase in aggregate investment and/or consumption of durable goods. If active, this effect will increase aggregate demand and employment, positively affecting labor incomes. However, it may also generate inequality among workers: for example, because men and women earn different wages on average, due to the gender pay gap.

In conclusion, we can say that there are two main channels through which ECB policy can influence income distribution in EU countries: the financial channel, and the macroeconomic channel. The former channel is captured by capital gains and financial asset yields, while the latter by wages and employment income inequality (Francese *nt rate*. Both are ambiguous *a priori*, but they seem to work in the same direction in terms of household incomes, with interest rate reductions being linked to increases in both labor and capital incomes. However, in both channels there is a suspect that relevant gender differences might play out.

3.3 Fiscal policy

With regard to tax policy, direct and indirect effects that impact personal and functional income inequality can also be identified. More specifically, to study the direct effect of tax policy one must look at the difference between gross and net income, while for the indirect effect one focuses on the social and economic impact resulting from government spending.

The European Commission (EC) identified a growing trend in income inequality in the EU from 1980 to 2014; from 2000 onward, gross income inequality reached that of the United States. However, considering net incomes, the level of inequality has remained almost stable and is still the lowest among advanced economies (European Commission, 2018). In terms of indirect effects, the spending categories that had the greatest impact on income inequality were those related to spending on education and health, as well as sickness, disability, family and child benefits (European Commission, 2018).

Although long-term dynamics seem to show the substantial resilience of the European welfare model to the challenges posed by globalization, analysis focusing on the period of fiscal consolidation shows an opposite trend. Following the 2008 financial crisis, many European countries implemented austerity policies, mainly based on fiscal consolidation programs (European Commission, 2010; 2012; 2014; 2016). Influential empirical studies have supported austerity policies on the grounds that excessive debt is detrimental to growth (among others, Reinhart & Rogoff, 2009), or that fiscal consolidation could have an expansionary effect (Alesina & Ardagna, 2019). However, these studies have been deeply criticized by a number of subsequent empirical works that have demonstrated the negative effect of austerity in terms of both economic growth and inequality.⁴ This wave of studies criticizing the implementation of austerity measures has focused on the

⁴ See Born et al., 2020; Brinca et al., 2020; Castro, 2018; Herndon et al., 2014; Kinsella, 2012; Considine and Duffy, 2016; Donald et al., 2014. Among others, Mott et al. (1994), Commendatore et al. (2011), Seguino (2012), Dutt (2013), Palley (2013), Hein (2016), and Hein et al. (2023) have studied the effects of income distribution and government spending on several macroeconomic variables, such as capital accumulation, labor productivity, inflation, and government debt.

distributional consequences of adopting fiscal consolidation plans, suggesting that they are typically associated with increased poverty (Smeeding, 2000), worse health outcomes (Rajmil et al., 2020; Stuckler et al., 2017) or income inequality (Francese & Mulas-Granados, 2015; Agnello & Sousa, 2014; IMF, 2017; Klein & Winkler, 2019; Brinca et al., 2020).

Some studies have further distinguished between fiscal consolidation programs by differentiating the composition of fiscal consolidation: expenditure-based versus tax-based (Ball et al., 2013). Many mainstream authors argue that tax-based consolidations are more distortionary than spending-based ones and therefore more restrictive in the medium term (Devries et al., 2011). Similarly, most of the direct redistributive impact of tax policy in advanced economies has been achieved through the expenditure side of the budget (Bastagli et al., 2012).

Most empirical contributions have focused on the employment effects of austerity policies that, in the European periphery, have exacerbated the consequences of deteriorating industrial structures leading to massive unemployment (Cirillo & Guarascio, 2015). Along these lines, several contributions have discussed the consequences of implementing austerity measures from a gender perspective.

On the one hand, there are recent empirical studies that focus on the consequences of austerity measures on gender equality, and on the other hand, there are studies that investigate how and to what extent austerity policies affect income inequality. The aim of our paper is to bridge between these two literatures and analyze the extent to which the implementation of fiscal consolidation measures has affected heterogeneous households characterized by different sources of income.

4 Monetary policy, austerity, and gender equality

The direct and feedback effects of macroeconomic policies are not gender neutral. This is true for both monetary and fiscal policy (Doepke & Tertilt, 2016; Agenor and Agenor, 2014; Cavalcanti & Tavares, 2016; Hein et al., 2023).

As seen in the previous section, the transmission channels of monetary policy are multiple. The impact these can have on gender inequality can be very heterogeneous across countries. Braunstein and Heintz (2008) analyze the effects of inflationary monetary policies for a sample of developing countries, finding a greater negative impact on female employment than on male employment. Heintz and Seguino (2010) show how an increase in Fed funds in the United States has more negative effects for blacks and women than for whites and men.

In general, the financial crisis followed by austerity policies has been found to deeply affect gender equality in Europe (Rubery, 2015). Several theoretical and empirical contributions have attempted to untangle the channels through which the previous financial crisis and subsequent austerity policies may have affected gender equality in Europe. Périvier (2018), using Eurostat's Quarterly Labor Force Data (QLFD) on the working population and employment by sector, showed that the 2008 economic crisis affected women's employment less than men's, while austerity affected women profoundly, arguing—at least for some countries—the thesis of a two-stage phenomenon: “from recession to she-austerity”. The latter was advanced by Karamessini and Rubery (2014a,

2014b) to describe the differential impact that the 2008 economic crisis and subsequent austerity measures had on male and female occupations. Male employment was particularly affected during the recession – men were overrepresented in the sectors with the highest rates of job destruction (construction and manufacturing) – while austerity programs affected female employment, which was more concentrated in the sectors targeted by austerity policies. According to EIGE (2015), in some countries austerity measures have directly affected pensions by penalizing access to early retirement and postponing the retirement age, affecting income support for old age whose main beneficiaries are women.

Shifting the focus from employment to wages, another strand of studies analyzes the effect of austerity on wage inequality by considering the gender wage gap. From this perspective, the prevalence of precarious jobs among male occupations reduces gender gaps in part-time and temporary work (Addabbo et al., 2015; Gonzales Gago & Segales, 2014), perhaps explaining the narrowing of the gender wage gap over the period and the widening of wage inequality during austerity. Overall, evidence on the impact of austerity measures on gender pay inequality is still scarce. Fulton (2011) highlighted the profound consequences on the gender pay gap in Latvia and Romania, where public sector wages were reduced, and public employment was restructured. According to Rubery and Raferty (2014), some indirect effects of austerity emerge from fiscal consolidation policies that have an impact on the quality of work provided by women and thus on the income received. In this regard, cuts in family allowances, reduction in baby and pregnancy benefits may cause, on the one hand, single mothers to increase their efforts to find a job—because of the reduction in benefits; on the other hand, second earners in couples may find it more difficult to participate in the labor market. If austerity measures adopted after the economic crisis have led to a compression of the welfare state and long-term care services, it is expected that women’s labor market participation will also change. Along these lines, Perugini et al. (2016) analyze the extent to which austerity measures have affected women’s labor market participation and the wages they receive, influencing women’s chances of being employed in better-paid sectors and gaining access to high-paid jobs. Using individual data from the EU-SILC survey (28 EU member states) over the period 2010–2013, the authors support the idea that austerity could be detrimental to gender equality by affecting wage inequality and fostering discriminatory practices; they also point out that tax increases compress household disposable income, leading to a strengthening of the male breadwinner model with a sharp deterioration in women’s bargaining power and employment positions. More recently, Perugini et al. (2019) provide evidence on the relationship between the implementation of austerity measures and gender inequality in Europe highlighting that fiscal consolidation policies impacted asymmetrically on women.

5 Data and empirical method

In order to investigate how macro policy contributes to shaping personal and functional income distribution of men and women in the European Union during the Eurozone crisis, we use data from EU-SILC, a harmonized dataset on households

Table 1 Definition of individual and household incomes by source**Labour income**

Available in EU-SILC at the individual level (employed persons only): employee cash or near cash income, and income from self-employment.

Available in EU-SILC at the household level: total value of both kinds of income over all household members below 16 years old. This value is treated in the main analysis as the other collective forms of incomes (i.e., akin to public transfers or capital incomes); individuals below 16 years old are not analysed in this work.

of which, wages:

Available in EU-SILC at the individual level (employees only): net employee cash or near cash income (i.e., it excludes income from self-employment).

Capital income

Available in EU-SILC at the individual level: income from private pensions.

Available in EU-SILC at the household level: total value over all household members of: interests received; dividends; profits from ownership of unincorporated businesses; income from rental of a property or land.

Public transfers

Available in EU-SILC at the individual level: unemployment benefits; old-age benefits; disability benefits; survivor' benefits; sickness benefits.

Available in EU-SILC at the household level: family and/or children related allowances; housing allowances; minimum income schemes and social exclusion benefits not elsewhere classified.

All incomes considered in the main analysis are computed net of taxes and other compulsory contributions

and individuals' incomes and living conditions provided by Eurostat. We consider nine cross-sectional waves for the years 2008–2016,⁵ obtaining information on more than 3,500,000 individuals in 27 member states of the EU.⁶

In the EU-SILC dataset it is possible to separately identify each household member's income from labor, mixed income from self-employment, some forms of capital income for which individual entitlement is more easily identified (such as private pension plans), and some forms of social transfers (such as old-age benefits, unemployment benefits or education-related benefits). Other forms of capital income (such as profit or interest from accumulated wealth), family-based social transfers (such as housing or care-related benefits), and net tax payments (both income

⁵ Ideally, this exercise would benefit from the use of a longitudinal dataset, but the panel component of EU-SILC (the only up to date representative survey harmonized across all EU countries) only includes a same household for up to four years. Besides, longitudinal data is not provided for Germany, the largest country in the sample.

⁶ The countries included in the analysis are Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Germany, Denmark, Greece, Spain, Finland, France, Croatia, Hungary, Ireland, Italy, Lithuania, Luxembourg, Latvia, Malta, the Netherlands, Poland, Portugal, Romania, Sweden, Slovenia, the Slovak Republic, and the United Kingdom (UK). Due to limitations in the availability of data on the macro variables, in what follows we exclude Estonia; conversely, we include the UK because it left the EU after the period considered in this work.

taxes and property taxes) are only recorded for the household as a whole (for a full description, see Table 1).⁷

Taken as is, these data would require allocating the entire household to a social class. Such procedure, however, is highly dissatisfactory. On the one hand, because it obviously hides all processes of intra-family redistribution of income and the associated risk of dependency for the single individuals (Botti et al., 2016). On the other hand, since most families are composed of an equal number of adult men and women, empirically gender imbalances would only emerge from those few families where the number of men is different from that of women (single adults, single parents, same-sex couples, and co-living adults).

To overcome these empirical limitations, we proceed to individualize those variables that within the EU-SILC are only collected at the family level, by comparing the relative impact of different hypotheses on the degree of redistribution within families. Specifically, we consider four scenarios, aimed at providing a plausible floor and a ceiling for the degree of redistribution within the household, and two intermediate situations. In our *full sharing scenario*, we assume that everyone contributes all her income to the family pool, from which each family member draws an equal share. Individual income is thus obtained as the total family income divided by the number of family members. We contrast this egalitarian sharing rule with the other extreme: in our *winner-takes-all scenario*, everyone retains all her personal income for herself, and the person earning the highest individual income in the family draws the entire collective family incomes for herself. Individual income is thus equal to one's own income for all family members, and for the own income plus all collective family incomes for the highest paid family member. Finally, in the two intermediate cases, we assume that each individual retains her own income for herself, and each draws an equal share of the family resources, in the *equal sharing scenario*; or a share of the family resources proportional to the own income, in the *proportional sharing scenario*.

Evidently, none of these scenarios necessarily represents the actual sharing rule of any specific European family. However, a comparison across scenarios can give a sense of the range within which each individual family member's income might lie. In this sense, we regard our empirical exercise as exploratory and we share Botti et al.'s (2016) comment, that more research should be put into the issue of intra-household distribution of resources, as well as a greater effort on the side of statistical agencies would be welcome, toward individualizing as many questions in their surveys as possible.

Building on a Classical Political Economy approach, we distinguish individuals by their main income sources (Cirillo et al., 2017). More in detail, in Table 1 we define individual and household incomes by source by distinguishing between: (i) labor income (from both employment and self-employment); (ii) employee wages;

⁷ Among capital incomes we do not include imputed rents since these are defined and estimated with different methods (and different levels of reliability) across countries over the period considered (Junto and Reijo, 2010). Indeed, even Eurostat does not include imputed rents in its definition of disposable income obtained from EU-SILC data, although it enters in other measures of wellbeing.

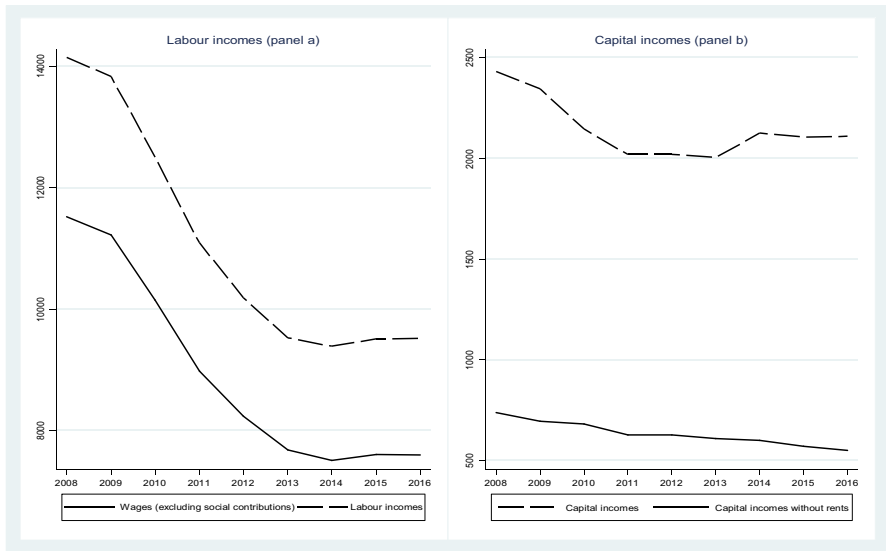


Fig. 2 Average individual labour and capital incomes over time. Source: Own elaboration on EU-SILC cross-sectional data, various years. Household weights applied. *Note:* all incomes are expressed in euros at 2016 prices

(iii) capital incomes, individualized following the procedure described above; and (iv) public transfers, which contribute to total income but are not analyzed in depth here. We convert all incomes of non-eurozone countries using the average exchange rate during the relevant year, and we inflate all incomes for the years 2009–2015 using the harmonized consumer price index, in order to express all values in euros at 2016 prices. All incomes considered in the main analysis are computed net of taxes and other compulsory contributions. From this point of view, we consider disposable incomes defined as income net of taxes plus public transfers.

Figure 2 shows the evolution over time of individual annual total incomes in Europe, dissected by labour (panel a) and capital (panel b) incomes.

As clearly highlighted by the Figure, in real terms labour incomes have drastically fallen between 2008 and 2011. From 2011 onwards, they have been on average flat and have started to grow again after 2013. However, in 2016 the average individual income at the EU level was still, in real terms, below the 2008 level. The trend in capital incomes has been flatter compared to that in labour incomes, although slightly decreasing from 2008 to 2011. The distance between the solid and dashed lines in panel b is explained by the income generated through rents.

Overall, the period considered here is a time of reduction and stagnation of incomes, with the beginning of a new (limited) expansion stage after 2014.

To understand how the different sources of incomes did change for women and men over the period, Table 2 shows the distribution of the different sources of income by gender and over time, under the four different scenarios. Regardless of the type of income considered, women earned always less than men. The unconditional gender pay gap – proxied by the difference of earnings between women and

Table 2 Average net incomes by type and gender over time, in 2016 euros

	Year	Men		Women		Difference	
		mean	s.e	mean	s.e	t	
Labour incomes	2008	15,429.99	51.49	9141.28	34.04	6288.71	101.86
	2009	14,956.61	50.48	9079.52	33.66	5877.08	96.85
	2010	13162.06	47.06	8259.414	31.10	4902.64	86.89
	2011	11468.54	40.98	7237.97	27.47	4230.56	85.73
	2012	10477.74	38.02	6711.10	25.43	3766.63	82.34
	2013	9713.67	35.83	6274.707	24.29	3438.96	79.43
	2014	9503.09	35.24	6219.51	24.19	3283.58	76.79
	2015	9451.05	35.12	6270.16	23.90	3180.89	74.87
	2016	9255.82	32.62	6205.13	22.75	3050.68	76.7
Wage	2008	12165.44	41.81	7261.55	27.64	4903.89	97.84
	2009	11774.20	40.95	7193.48	27.24	4580.72	82.52
	2010	10355.34	38.43	6550.32	25.48	3805.02	82.52
	2011	9031.43	33.44	5752.65	22.56	3278.78	81.29
	2012	8225.88	30.97	5323.55	20.88	2902.33	77.71
	2013	7623.33	29.14	4970.07	19.90	2653.26	75.21
	2014	7369.51	28.27	4878.61	19.67	2490.90	72.33
	2015	7308.76	28.15	4901.74	19.44	2407.03	70.37
	2016	7106.03	26.05	4811.94	18.42	2294.09	71.91
Capital income (full sharing)	2008	509.41	5.57	474.20	5.05	35.21	4.68
	2009	491.76	5.55	451.87	4.56	39.89	5.55
	2010	478.67	5.65	433.12	4.44	45.55	6.34
	2011	422.17	4.63	396.91	4.41	25.26	3.95
	2012	430.43	4.82	398.14	4.26	32.29	5.01
	2013	422.42	4.43	395.07	4.05	27.35	4.56
	2014	425.18	4.71	407.24	4.60	17.94	2.72
	2015	415.88	4.53	387.55	3.96	28.34	4.71
	2016	397.70	4.66	373.66	3.96	24.04	3.93
Capital income (winner-takes-all)	2008	733.47	9.00	343.80	5.67	389.67	36.62
	2009	728.16	9.18	307.65	5.00	420.51	40.22
	2010	705.51	9.22	303.52	5.30	401.99	37.82
	2011	618.26	7.38	273.73	4.78	344.53	39.19
	2012	630.42	7.38	278.14	4.68	352.28	40.32
	2013	611.39	7.09	282.17	4.60	329.21	38.94
	2014	614.84	7.31	292.70	5.14	322.14	36.04
	2015	590.79	6.92	288.68	4.50	302.11	36.62
	2016	566.11	7.23	280.56	4.09	285.55	34.39

Table 2 (continued)

	Year	Men		Women		Difference	
		mean	s.e	mean	s.e	t	
Capital income (proportional)	2008	661.67	8.11	389.05	5.27	272.62	28.18
	2009	658.43	8.36	353.93	4.97	304.51	31.32
	2010	637.78	8.75	344.94	4.69	292.84	29.49
	2011	553.35	6.55	317.28	4.42	236.07	29.90
	2012	563.33	6.51	322.26	4.35	241.07	30.79
	2013	550.05	6.40	321.84	4.22	228.22	29.74
	2014	552.26	6.62	333.40	4.49	218.86	27.36
	2015	534.11	6.07	322.45	3.93	211.66	29.29
Capital income (equal sharing)	2008	509.41	5.57	474.20	5.05	35.21	4.68
	2009	491.76	5.55	451.87	4.55	39.89	5.55
	2010	478.67	5.65	433.12	4.44	45.55	6.34
	2011	422.17	4.63	396.91	4.41	25.26	3.95
	2012	430.42	4.82	398.14	4.27	32.29	5.01
	2013	422.42	4.43	395.07	4.05	27.35	4.56
	2014	425.18	4.71	407.24	4.60	17.94	2.72
	2015	415.88	4.53	387.55	3.96	28.34	4.71
	2016	397.71	4.66	373.66	3.96	24.04	3.93

Values are deflated using Eurostat's Harmonised Consumer Price index. For a definition of income types, See Table 1

men – was particularly high in labor incomes and wages, suggesting that there are major differences between the genders in the extent and quality of the participation to the labor market (for example in terms of type of contract, occupation, sector of activity, as well as due to discrimination). Such pay gap seems to narrow over time, as men's labor incomes fell more than women's throughout the period, but the gap remained significant until the end of the period considered.⁸

The gender income gap in capital incomes too seem to narrow over the period, again due to a larger decrease of men's incomes than women's, but again this converge does not lead to equality until the end of the period. The estimate of the gap in capital incomes evidently changes in the four scenarios, but even in the

⁸ Figure 5 in the Appendix illustrates the distribution of wages for men and women over time using a kernel density. The examination of the distribution reveals a bimodal shape characterized by two peaks, one in very low incomes and another in medium–high incomes. Notably, only the latter has partially shifted to the right, indicating that very poor individuals appear to have not experienced any discernible improvement over time. Furthermore, during the years of the crisis, the wage distribution has significantly shifted to the left, mostly for women. Additionally, the wage distribution for women is much more dispersed compared to men.

a) Average share of labour incomes within total household income

b) Average share of individual incomes within total household income

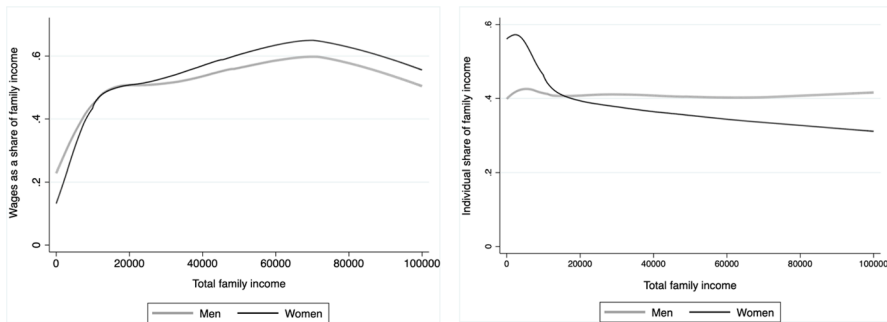


Fig. 3 Composition of total household incomes. Source: Elaboration on EU-SILC cross-sectional data, various years. *Note:* the labour and capital shares of household incomes do not sum to one because of the existence of public transfers; and the individual sources of income do not sum to one due to collective incomes (incomes that are only recorded at the household level)

most egalitarian one (the full sharing scenario) the difference in average incomes is always statistically significant at the conventional thresholds. In all scenarios, the difference in average incomes is lower than for labor incomes, in absolute terms. But in relative terms this is not always the case: at the extreme, in the most unequal scenario (the winner takes all one), men's capital incomes are on average more than double women's ones.

To complete the descriptive analysis of men and women incomes over the crisis, Fig. 3 shows the relative importance of labor incomes for women and men, in terms of the share of wages in the total household budget, on the left side (panel a). On the right side (panel b), the figure reports the average share of individual incomes (as opposed to collective income) on the total household income. Panel a) shows that wages tend to represent roughly half of households' incomes: state transfers represent a crucial source of income for low-income households (those below 10,000 euros of total yearly income, in 2016 prices). As the total income increases, wages first gain then lose weight in the budget (for men more than for women); this is because above 70,000 euros, capital incomes become an increasingly important share of income. Furthermore, as shown panel b), low-income households are more likely to heavily depend on the income of an individual (women, for incomes below 20,000 euros, then more likely a man), whereas in high-income families men tend to contribute around 40% of the total budget, and women increasingly less.

However, several factors can simultaneously affect the distribution of labor and capital incomes of men and women. In what follows we propose an econometric estimation of the relationship between macro policies and different sources of incomes by simultaneously controlling for observable individual and household characteristics. More in detail, to explore how and to which extent monetary and fiscal policies might have affected individual incomes, we estimate a multi-way fixed effect model (Correia, 2016) allowing us to simultaneously cluster standard errors

by household and including fixed effects for years and countries. The estimates have been weighted by including EU-SILC individual cross-sectional weights. The implemented econometric specification is as follows:

$$Y_{i,h,j,t} = \alpha + \beta X_{i,h,j,t} + \gamma Z_{h,j,t} + \delta P_{j,t} + u_j + \lambda_t + \varepsilon_{i,h,j,t} \quad (1)$$

where $Y_{i,h,j,t}$ is the log of the income individual i , living in household h in country j at time t ; $X_{i,h,j,t}$ is a set of individual i 's characteristics at time t and in country j ; $Z_{h,j,t}$ is a set of household characteristics at time t and in country j ; $P_{j,t}$ is a set of country characteristics at time t and in country j , in which we consider the monetary stance and the fiscal stance; u_j is a vector of country fixed effects; and λ_t is a vector of year dummy variables.

Concerning individual characteristics, we estimate an extended Mincer equation in which we consider: the highest educational attainment (in categorical classes), age (linear and quadratic), sex, and the occupation of each individual in the household. At the household level, we consider the number of income earners, and the number of children in the household. Concerning contextual variables, we consider three broad macroeconomic policy indicators: the yearly average interest rate on 10-years public bonds, in percentage points; and the change in general government total revenues, and total expenditure, both as a percentage of GDP.

As a robustness check, we also estimate Eq. 1 by relying on alternative measures for fiscal policy, namely the change in expenditure and revenues in euros per capita rather than as a percentage of GDP. The latter would allow to control for automatic changes in fiscal measures simply driven by a fall or increase in GDP, when expenditure is unchanged. These alternative estimates are reported in the Appendix (Tables 7 and 8).

Moreover, to further explore how macro-policies can affect the distribution of incomes for men and women, we also estimate Eq. 1 by applying a quantile regression approach. The latter, originally developed by Koenker and Bassett (1978), provides an understanding of the relationship between individual, job characteristics, macro policies and incomes, along the entire labour and wage distributions, and more specifically at chosen quantiles $\theta = 0.25, 0.50, 0.75$ of the outcome variable. Within this econometric framework, we perform a quantile regression with robust and clustered standard errors to control for heteroscedasticity and autocorrelation within households in the same country and for the same year along the distribution (Parente and Santos-Silva, 2016).⁹

⁹ In this paper we apply the STATA command *qreg2* estimating quantile regression and reporting robust standard errors and t-statistics. We compute standard errors that are also robust to intra-cluster correlation (Parente and Santos Silva, 2016).

Table 3 Individual earnings and macroeconomic policies

	Labour incomes			Wages (excluding social contributions)		
	(1)	(2)	(3)	(4)	(5)	(6)
	Pooled	M	W	Pooled	M	W
Interest rates	-0.0465*** [0.00270]	-0.0508*** [0.00359]	-0.0413*** [0.00388]	-0.0255*** [0.00302]	-0.0299*** [0.00412]	-0.0213*** [0.00402]
Δ pub. expenditure/ GDP	0.0203*** [0.00204]	0.0246*** [0.00277]	0.0149*** [0.00285]	0.0174*** [0.00221]	0.0234*** [0.00308]	0.0117*** [0.00291]
Δ pub. revenues/GDP	-0.0132*** [0.00353]	-0.0264*** [0.00471]	-0.00138 [0.00499]	-0.0139*** [0.00393]	-0.0291*** [0.00543]	-5.83e-05 [0.00519]
Woman	-0.960*** [0.00758]			-0.539*** [0.00801]		
Individual characteristics	YES	YES	YES	YES	YES	YES
Household characteristics	YES	YES	YES	YES	YES	YES
Country dummies	YES	YES	YES	YES	YES	YES
Time dummies	YES	YES	YES	YES	YES	YES
Observations	2,618,001	1,276,666	1,341,335	2,624,945	1,280,474	1,344,471
R-squared	0.470	0.498	0.440	0.399	0.401	0.400

Robust standard errors in brackets. Weighted regressions and clustered standard errors

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: elaboration on EU-SILC cross-sectional data, various years

Standard errors in brackets are robust to clustering at the household level; all estimates are based on a logarithmic transformation of (1 + the deflated value of income). For the definition of incomes, see Table 1. Control variables include: age (linear and quadratic terms), sex, highest educational attainment, and occupation, at the individual level; and number of income earners, and number of children, at the household level

6 Main results

The main results of our analyses on labor incomes and capital incomes are reported in Table 3 and 4, respectively. For all specifications we run a pooled regression including a “woman” dummy variable, and separate regressions. The sign and statistical significance of the woman dummy variable, in the pooled regressions, clearly suggests the presence of a strong gender pay gap that remains unexplained even after controlling for individual and household characteristics. Separate estimations allow for at least part of this unexplained residual to be captured by different returns to observable characteristics (e.g. education).

Table 3 highlights that an increase in interest rates reduces individual earnings, considering both wages and labor incomes. In other words, the observed trend toward an expansionary monetary policy over the period considered here seems to be associated *ceteris paribus* with an increase in incomes. Specifically, a one-point

Table 4 Capital incomes (under different scenarios) and countries' macroeconomic policies

Capital income												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Equal distribution			Winner takes all			Proportional distribution			Proportional sharing		
	Pooled	M	W	Pooled	M	W	Pooled	M	W	Pooled	M	W
Interest rates	[0.00251]	-0.0168***	-0.0146***	-0.00860***	-0.0135***	-0.00416**	-0.0177***	-0.0198***	-0.0157***	-0.0167***	-0.0146***	-0.0189***
	[0.00251]	[0.00286]	[0.00261]	[0.00144]	[0.00240]	[0.00181]	[0.00210]	[0.00267]	[0.00221]	[0.00251]	[0.00287]	[0.00261]
Δ pub. expenditure/GDP	-0.0156***	-0.0145***	-0.0165***	-0.00768***	-0.00635***	-0.00884***	-0.0106***	-0.00921***	-0.0118***	-0.0156***	-0.0145***	-0.0165***
	[0.00151]	[0.00174]	[0.00162]	[0.000920]	[0.00154]	[0.00119]	[0.00131]	[0.00170]	[0.00141]	[0.00152]	[0.00175]	[0.00162]
Δ pub. revenues/GDP	0.0430***	0.0420***	0.0458***	0.0228***	0.0249***	0.0213***	0.0351***	0.0356***	0.0351***	0.0439***	0.0420***	0.0458***
Woman	[0.00307]	[0.00360]	[0.00329]	[0.00194]	[0.00326]	[0.00252]	[0.00275]	[0.00356]	[0.00296]	[0.00308]	[0.00362]	[0.00329]
	-0.0309***			-1.093***			-0.459***			-0.0351***		
	[0.00332]			[0.00503]			[0.00374]			[0.00334]		
Constant	2.476***	2.843***	2.118***	0.482***	-0.437***	0.279***	1.022***	0.949***	0.667***	2.472***	2.843***	2.111***
	[0.0279]	[0.0348]	[0.0320]	[0.0195]	[0.0325]	[0.0262]	[0.0258]	[0.0340]	[0.0298]	[0.0280]	[0.0349]	[0.0321]
Individual characteristics	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Household characteristics	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	3,560,847	1,678,175	1,882,672	3,573,872	1,682,984	1,890,888	3,520,998	1,662,098	1,858,900	3,560,847	1,678,175	1,882,672

Table 4 (continued)

	Capital income											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
R-squared	0.331	0.328	0.334	0.243	0.266	0.210	0.323	0.333	0.309	0.330	0.327	0.334

Robust standard errors in brackets. Weighted regressions and clustered standard errors.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: elaboration on EU-SILC cross-sectional data, various years

Standard errors in brackets are robust to clustering at the household level; all estimates are based on a logarithmic transformation of (1 + the deflated value of income). For the definition of incomes, see Table 1. Control variables include: age (linear and quadratic terms), sex, highest educational attainment at the individual level; and number of income earners, and number of children, at the household level

decrease in the interest rate is roughly associated with a 4.6% increase in labor incomes (defined as the earnings of both employees and self-employed workers) and to a 2.5% increase in wages (always excluding compulsory social contributions).¹⁰ Dissecting these results by gender, our estimates show that changes in interest rates are more strongly correlated with labor incomes and wages for men – ranging from 5% (column 2) to 3% (column 5) – than for women – for whom the coefficient ranges between 4% (column 3) and 2% (column 6).

As expected, fiscal expansion, proxied by the annual change in public expenditure over GDP, is positively associated with labor incomes, by 2%, and wages, by 1.7%. The positive effect of increases in expenditures is stronger for men than women, although the difference is almost negligible both in the cases of labor incomes and wages.

In contrast, fiscal consolidation, proxied by the annual change in public revenue over GDP, exerts a negative pressure on both labor incomes and wages for males (2%), whereas it loses significance when we focus on females. This is probably due to the fact that women earn on average lower wages than men (as shown in Table 2), therefore a tax increase affects women's labor incomes proportionally less since they pay lower marginal tax rates (recalling that all European countries exhibit some sort of progressive tax systems).

Overall, our estimates support the hypothesis that, from a class perspective in the sense of functional income distribution, austerity policies based on fiscal consolidation can be especially damaging for the working class.

Results are robust with respect to alternative measures of macroeconomic policies, such as changes in public expenditures and public revenues computed as euros per capita (Table 7 in the Appendix). A one-point increase in public expenditure is associated with a 0.4% increase in labour incomes and wages, whereas fiscal restrictive policies lead to a 1% contraction of labour incomes and wages.

Concerning capital incomes (Table 4) we find that the various scenarios on intra-household distribution of the collective incomes do not qualitatively change the main results, in the sense that the coefficients of macroeconomic variables exhibit some changes across scenarios but never sign reversals or too large discrepancies.

We find that capital incomes too are negatively affected by a restrictive monetary stance, and therefore they benefited from the expansionary monetary policy that prevailed in the period considered here. A one-point decrease in the benchmark interest rate is associated to an increase in capital incomes of the order of 1–2% in all scenarios. Women's capital incomes seem to be more affected than men's by changes in interest rates (in the equal distribution and proportional sharing scenarios). This result might be linked to the composition of assets and capital incomes, but EU-SILC data does not allow testing this hypothesis.

Contrary to what was found for labor incomes and wages, an increase in public expenditure is negatively associated with capital incomes both for men and women. This holds true even when considering changes in public expenditures and revenues as per capita expressed in euros instead of as percentage of GDP (see Appendix).

¹⁰ In the Appendix we show the same estimates on wages including social contributions. Sign and magnitude of coefficients do not significantly change.

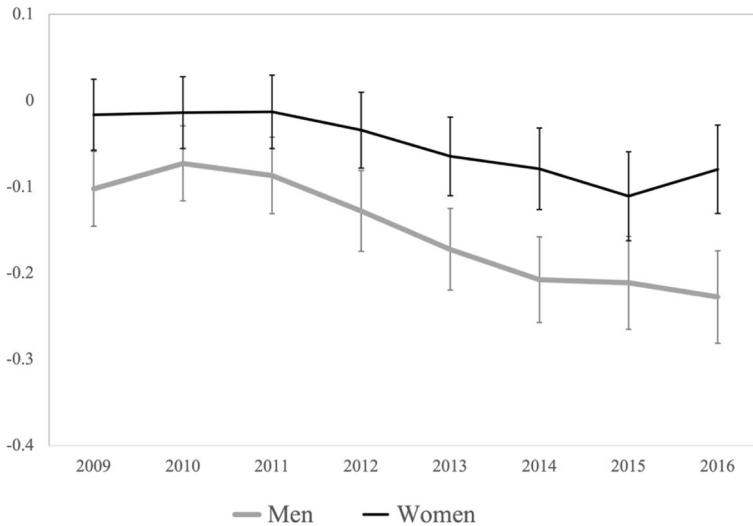


Fig. 4 Year fixed effects (unexplained difference with respect to year 2008): labour incomes. Source: authors' elaboration on EU-SILC cross-sectional data, various years. Based on the regressions reported in Table 2, columns 2 and 3

Conversely, increases in public revenues are positively associated with capital incomes both for men and women, regardless of the intra-household distribution of resources. While changes in public expenditure seem to exert a stronger impact on labor incomes than changes in public revenues, for capital incomes the opposite appears to be true.

All in all, our estimates suggest that fiscal consolidation does have a heterogeneous impact between the two main income sources: increases in public expenditure are associated with higher labor incomes, whereas they negatively affect capital incomes. Similarly, tax hikes that negatively affect labor incomes may benefit capital incomes. Therefore, our estimates support the hypothesis of an asymmetric effect of macro policies on wage and capital earners. At least in the specific period considered here, expansionary fiscal policies appear to be beneficial for workers but not for capital earners, while an expansionary monetary stance benefits everyone.

From a gender perspective, our estimates suggest that the positive effect of interest rate reductions on labor incomes is larger for men than for women, while women can be more affected by public expenditure contractions than increases in taxes.

Finally, to better understand the possible relevance of the two-stages theory of the gender impact of the crisis, that is, of a “he-cession” followed by a “she-austerity” (Bettio et al., 2013), we show in Fig. 4 the coefficients of the year dummies with respect to the baseline (year 2008).

When controlling for household and individual characteristics and the macro environment, as done here, it emerges that there is still an unexplained average residual in both women’s and men’s incomes. This average year effect declined over the period, reflecting the reduced incomes over time, in real terms, for reasons that our individual-level analysis cannot explain. However, during the years 2009–2011

women's income remains almost flat with respect to 2008, while men's declines sharply between 2010 and 2014. Over the whole period, men's incomes appear to be lower than their 2008 level, more than women's are with respect to their 2008 level. Therefore, we do not find clear evidence of a two-stages crisis from a gender perspective.

6.1 Dissecting the effects of macro policies along the personal distribution of earnings

Finally, we dissected the effects of macro policies on the distribution of individual labour incomes and wages for women and men. Indeed, capital incomes are substantially concentrated in the EU-SILC sample, and a majority of both men and women has zero capital incomes; in contrast, earnings (both wages and gross labour incomes) span a much larger range of individual incomes, including both relatively high and relatively low values. Therefore, for earnings it is worthwhile to ask whether the impact of macro policies could be different across different strata of the personal distribution of income. We compare in particular the impact of fiscal and monetary policy on median incomes and on the 25th and 75th percentiles of the distribution, denoting loosely speaking 'low' and 'high' earnings.

By means of quantile regression, we find that the impact of policies on median earnings (reported in Table 5) is very similar to that on average wages seen in Table 3, with the exception of the case of public revenues changes, which do not exert a statistically significant impact on men's median earnings.

As shown in Table 5, we confirm the finding that changes in public expenditure exert a higher impact on men's earnings than women's, both considering employee wages and labour incomes including the mixed incomes of self-employed workers. However, while for men's labour incomes the coefficient is broadly similar along the income distribution, for women's labour incomes and for both men's and women's wages the impact is estimated to be very small for lower individual earnings, it grows considerably around the median earnings, and it only slightly decreases for the higher incomes. Interestingly, a similar pattern is found for the impact of monetary policy: for men's labour incomes the effect is broadly flat along the distribution, while for women's labour incomes and for both men's and women's wages it is significantly smaller for the lower incomes. Combined, these findings suggest that there could be a problem of mobility for the lower incomes (a sticky floor) that demand-side policies affect with only limited effectiveness.

7 Conclusions

The European experience in the late 2000s and 2010s offers a unique example of large-scale policy experimentation, with fast and significant swings in both the monetary and fiscal stance. On the one hand, this has produced a wide debate, both academic and in the political arena, on the (re)production of inequalities within the European Union: first geographical inequality between countries and areas of the

Table 5 Individual incomes and countries' macroeconomic policies by main percentiles of the distribution

Percentile	Labour incomes						Wages					
	Men	Men	Women	Women	Men	Men	Women	Women	Men	Men	Women	Women
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
25th	0.08***	0.08***	0.06***	0.01**	0.07***	0.05***	0.01**	0.09***	0.07***	0.01**	0.07***	0.06***
50th	0.02]	0.02]	0.01]	0.00]	0.02]	0.01]	0.00]	0.02]	0.02]	0.00]	0.02]	0.01]
75th	0.01	0.01	0.01	0.01	0.01	0.02	-0.01	-0.03	-0.00	0.00	-0.01	0.00
25th	0.10***	-0.12***	-0.09***	-0.01***	-0.10***	-0.09***	-0.02***	-0.12***	-0.11***	-0.01***	-0.09***	-0.09***
50th	0.02]	0.02]	0.02]	0.00]	0.02]	0.01]	0.00]	0.02]	0.01]	0.00]	0.01]	0.01]
75th	0.08***	0.08***	0.06***	0.01**	0.07***	0.05***	0.01**	0.09***	0.07***	0.01**	0.07***	0.06***
25th	0.02]	0.02]	0.01]	0.00]	0.02]	0.01]	0.00]	0.02]	0.02]	0.00]	0.02]	0.01]
50th	-0.03	0.01	0.01	0.01	0.01	0.02	-0.01	-0.03	-0.00	0.00	-0.01	0.00
75th	0.04]	0.04]	0.02]	0.01]	0.03]	0.02]	0.01]	0.04]	0.03]	0.00]	0.03]	0.02]
Individual characteristics	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Household characteristics	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Constant	8.1***	3***	1.3***	18.1***	6.2***	2.3***	16.8***	5.1***	2.1***	14.2***	8.6***	2.8***
R-squared	0.469	0.477	0.462	0.224	0.423	0.400	0.206	0.386	0.359	0.199	0.385	0.361
Observations	1,276,681	1,276,681	1,276,681	1,341,351	1,341,351	1,341,351	1,280,489	1,280,489	1,280,489	1,344,487	1,344,487	1,344,487

Robust standard errors in brackets. Weighted regressions and clustered standard errors

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: elaboration on EU-SILC cross-sectional data, various years

Standard errors in brackets are robust to clustering at the country and year levels; all estimates are based on a logarithmic transformation of (1 + the deflated value of income). For the definition of incomes, see Table 1. Control variables include: age (linear and quadratic terms), sex, highest educational attainment, and occupation, at the individual level; and number of income earners, and number of children, at the household level

EU, then inequalities within countries, with respect to income redistribution, class, and gender. On the other hand, as data has slowly become available for the single countries and then for the EU as a whole, this historical event gave rise to the opportunity to empirically test various hypotheses on the distributive impact of monetary and fiscal policy.

In the literature, scholars have addressed the narrative of a two-stage European crisis. In a first stage, the so-called “he-cession”, men would have been hit the most by the economic recession induced by the financial crisis, which affected most heavily the activity sectors where relatively more men are employed. Then, in the “she-austerity” stage, women would have suffered the heaviest burden of the fiscal retrenchment measures. This assumption was based on the notion that austerity would mostly encompass public sector cuts (where women are more often employed), increases in indirect taxes (that proportionally weigh more on lower income households), and retrenchments in social expenditure. This narrative, however, partly contrast with that on the distributive impact from a class perspective (or at least that of the inequality in personal incomes): according to which austerity exerted perhaps its major impact on employment. It remains for future research to understand how much this finding depends on the fact that austerity in Europe turned out to be more about tax increases and reductions in public investments than social expenditure cuts (Alari et al., 2017).

Several possible transmission channels of both monetary and fiscal policy will determine their ultimate impact on income distribution and inequality. In this work, we consider the overall impact in terms of ex post robust conditional correlation of individual incomes with selected measures of the monetary and fiscal policy stances.

We find that both men and women have suffered large losses in terms of labor incomes. For women, the first stage of the crisis is slightly associated with higher average incomes, but on the whole, there is no strong evidence to either support or reject the abovementioned narrative on the gendered impact of the crisis. Among the possible causes for such results is a composition of fiscal retrenchment programs possibly different from what had been expected at the peak of the crisis. However, in light of the empirical evidence available it appears that a stronger emphasis on pre-existing structural gender equality may be warranted.

In terms of income sources, we find that interest rate increases exert a negative impact on both labor and capital incomes for both men and women, especially at top of the distribution, while the total public expenditure is positively correlated exclusively with labor income. Similarly, tax hikes appear to be negatively associated with labor incomes and wages, mainly at the median of the distribution, and positively with capital incomes along the entire distribution.

A precise understanding of what channels prove decisive in determining these final net outcomes is left for future research. However, our robust methodology allows us to find conclusive evidence about the sign of these associations between policies and incomes. In turn, this raises further questions in terms of the political economy of the EU – and possibly of comparable cases in other advanced economies. Specifically, it is an open question if there is a correlation

between the fact that the EU decided to adopt a policy mix heavily based on expansionary monetary policy and restrictive fiscal policy, and the empirical finding that monetary is found to benefit both capital and labor incomes, whereas reducing public expenditure is found to damage mainly labor incomes, whereas increasing taxes (as indeed happened in most EU countries) benefits capital but hurts labor.

Appendix

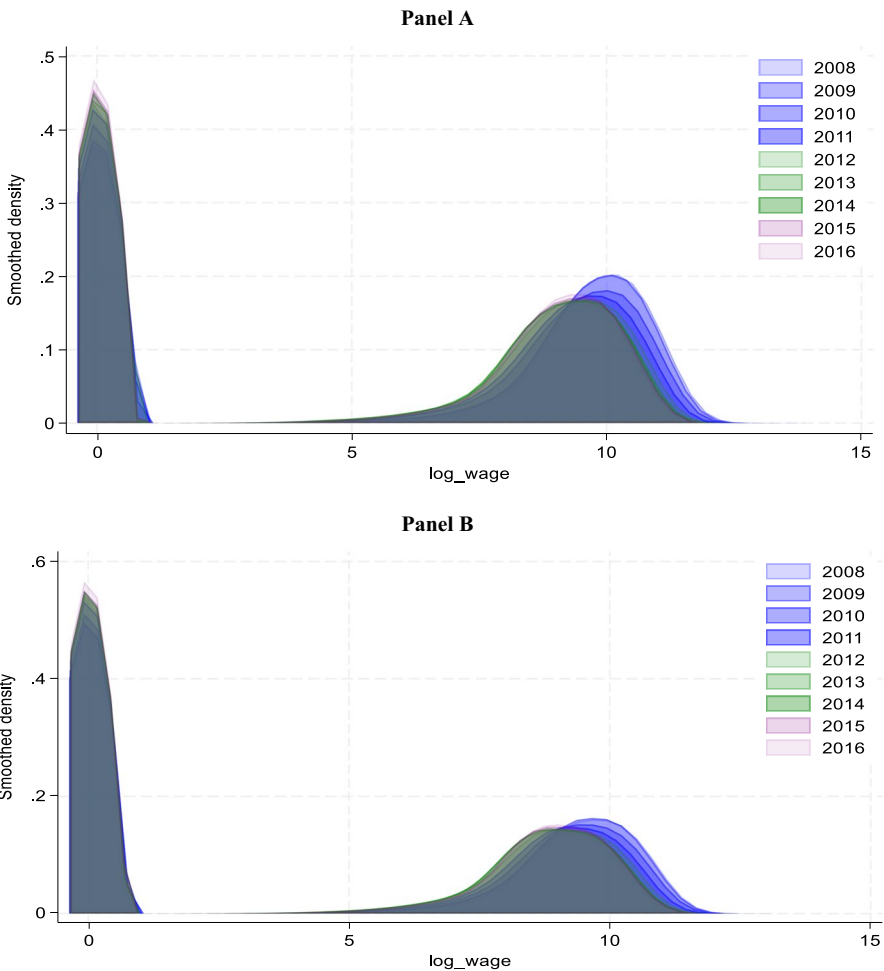


Fig. 5 Wage (in logarithm) distribution for men (panel A) and women (panel B) over time

Table 6 Wages (including social contributions) and countries' macroeconomic policies

	(1)	(2)	(3)
	Pooled	M	W
Interest rates	-0.0274*** [0.00310]	-0.0320*** [0.00423]	-0.0229*** [0.00412]
Δ pub. expenditure/GDP	0.0180*** [0.00226]	0.0243*** [0.00315]	0.0119*** [0.00297]
Δ pub. revenue/s/GDP	-0.0142*** [0.00400]	-0.0299*** [0.00554]	0.000212 [0.00528]
Woman	[0.00817]		
Individual characteristics	YES	YES	YES
Household characteristics	YES	YES	YES
Country dummies	YES	YES	YES
Time dummies	YES	YES	YES
Observations	2,624,945	1,280,474	1,344,471
R-squared	0.400	0.401	0.401

Robust standard errors in brackets. Weighted regressions and clustered standard errors

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: elaboration on EU-SILC cross-sectional data, various years

Standard errors in brackets are robust to clustering at the household level; all estimates are based on a logarithmic transformation of (1 + the deflated value of income). For the definition of incomes, see Table 1. Control variables include: age (linear and quadratic terms), sex, highest educational attainment, and occupation, at the individual level; and number of income earners, and number of children, at the household level

Table 7 Individual incomes and countries’ macroeconomic policies (alternative measures)

	Labour incomes			Wages (excluding social contributions)		
	(1)	(2)	(3)	(4)	(5)	(6)
	Pooled	M	W	Pooled	M	W
Interest rates	-0.0312*** [0.00313]	-0.0378*** [0.00428]	-0.0250*** [0.00416]	-0.0293*** [0.00305]	-0.0356*** [0.00417]	-0.0235*** [0.00406]
Δ pub. Expenditure (euro)	0.00449*** [0.00104]	0.00879*** [0.00146]	0.000312 [0.00137]	0.00428*** [0.00102]	0.00844*** [0.00143]	0.000266 [0.00134]
Δ pub. Revenues (euro)	-0.0120*** [0.00124]	-0.0170*** [0.00173]	-0.00730*** [0.00163]	-0.0117*** [0.00122]	-0.0165*** [0.00170]	-0.00727*** [0.00160]
Woman	-0.554*** [0.00817]			-0.540*** [0.00801]		
Individual characteristics	YES	YES	YES	YES	YES	YES
Household characteristics	YES	YES	YES	YES	YES	YES
Country dummies	YES	YES	YES	YES	YES	YES
Time dummies	YES	YES	YES	YES	YES	YES
Observations	2,624,945	1,280,474	1,344,471	2,624,945	1,280,474	1,344,471
R-squared	0.400	0.401	0.401	0.399	0.401	0.400

Robust standard errors in brackets. Weighted regressions and clustered standard errors by household
 *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: elaboration on EU-SILC cross-sectional data, various years

Standard errors in brackets are robust to clustering at the household level; all estimates are based on a logarithmic transformation of (1 + the deflated value of income). For the definition of incomes, see Table 1. Control variables include: age (linear and quadratic terms), sex, highest educational attainment, and occupation, at the individual level; and number of income earners, and number of children, at the household level

Table 8 Capital incomes (under different scenarios) and countries' macroeconomic policies (alternative measures)

Capital income												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Interest rates	Equal distribution			Winner takes all							Proportional sharing	
	Pooled	M	W	Pooled	M	W	Pooled	M	W	Pooled	M	W
	-0.00762***	-0.00524*	-0.00989***	-0.00362**	-0.00647***	-0.000976	-0.00981***	-0.0105***	-0.00904***	-0.00752***	-0.00511*	-0.00982***
	[0.00253]	[0.00289]	[0.00264]	[0.00146]	[0.00243]	[0.00183]	[0.00213]	[0.00270]	[0.00224]	[0.00253]	[0.00290]	[0.00264]
Δ pub. Expenditure (euro)	-0.00903***	-0.00827***	-0.00974***	-0.00438***	-0.00332***	-0.00534***	-0.00632***	-0.00524***	-0.00734***	-0.00902***	-0.00825***	-0.00973***
Δ pub. Revenues (euro)	[0.000757]	[0.000882]	[0.000805]	[0.000467]	[0.000786]	[0.000607]	[0.000669]	[0.000867]	[0.000718]	[0.000759]	[0.000886]	[0.000806]
	0.0153***	0.0153***	0.0153***	0.00776***	0.00893***	0.00680***	0.0114***	0.0120***	0.0109***	0.0154***	0.0154***	0.0153***
Woman	[0.000948]	[0.00111]	[0.00101]	[0.000596]	[0.00101]	[0.000787]	[0.000851]	[0.00110]	[0.000918]	[0.000951]	[0.00112]	[0.00102]
	-0.0308***			-1.093***			-0.458***			-0.0350***		
	[0.00332]			[0.00503]			[0.00374]			[0.00334]		
Constant	2.450***	2.816***	2.093***	0.467***	-0.460***	0.271***	0.998***	0.919***	0.648***	2.446***	2.815***	2.085***
	[0.0280]	[0.0349]	[0.0321]	[0.0196]	[0.0326]	[0.0262]	[0.0259]	[0.0341]	[0.0299]	[0.0281]	[0.0350]	[0.0322]
Individual characteristics	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Household characteristics	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 8 (continued)

	Capital income											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Observations	3,560,847	1,678,175	1,882,672	3,573,872	1,682,984	1,890,888	3,520,998	1,662,098	1,858,900	3,560,847	1,678,175	1,882,672
R-squared	0.331	0.328	0.334	0.243	0.266	0.210	0.323	0.333	0.309	0.330	0.327	0.334

Robust standard errors in brackets. Weighted regressions and clustered standard errors by household

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

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Declarations

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