UNIVERSITY OF SIENA, FLORENCE AND PISA

Joint PhD Program in Economics of the Tuscan Universities

Scientific-disciplinary sector: SECS-P/02

XXXV Cycle

Thesis submitted for the degree of Doctor of Philosophy in
ECONOMICS

*Three Essays on Intrahousehold Inequality and Separation Outcomes:
a European Perspective*

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Academic year 2023/2024

Final examination date
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A te che non hai mai lasciato la mia mano, papà.

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A woman must have money and a room of her own,
if she is to write fiction.

Virginia Woolf, A room of one's own

Single women have a dreadful propensity for being poor,
which is one very strong argument in favor of matrimony.

Jane Austen, Letters 1817

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Introduction

In 1929, Virginia Woolf wrote in one of her essays that "*a woman, if she wants to write a novel, must have money and a room of her own*". From an economic perspective, what women need for production are their own endowments and an even playing field. Endowments represent women's economic independence, their engine of personal and economic wellbeing.

Inequality in income and wealth endowments is a constraint that women often face, and a source of cumulative disadvantages, especially if they are mothers. From a gender perspective, adding unbalanced endowments to an uneven playing field means perpetuating gender inequalities over the life cycle.

Negative events, or in economic terms negative shocks, may reinforce pre-existing gender inequality in personal endowments for women, hampering their wellbeing and exposing them to a higher risk of poverty.

This dissertation is about the mechanisms that perpetuate inequality in relation to negative shock experienced in the lifetime. Separation and divorce have been identified in the literature as events that increase gender inequality. Few studies, however, focused on the role of pre-separation intrahousehold inequality in determining gendered outcomes after separation and divorce; yet, intrahousehold inequality takes a key role in engendering disparities in income dynamics between men and women (Gehringer et al., 2015). The dissertation contributes to filling the gap in the literature by studying the impact of separation on the growth path of income and earnings for separated women and men, embedding in the analysis the role played by intrahousehold inequality between former partners.

All the three chapters can be read as stand-alone papers, although they are closely related. The first chapter has a more introductory nature and relies on descriptive statistics to document the central hypothesis common to the three chapters, namely that inequalities in the aftermath of a separation are driven by pre-existing disparities in the intrahousehold distribution of personal income and earnings between men and women. Using data from the longitudinal component of the Household Finance and Consumption Survey (HFCS)[1] in 2014 and 2017, this chapter

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[1] This dissertation uses data from the Eurosystem Household Finance and Consumption Survey. The results published and the related observations and analysis may not correspond to results or analysis of the data producers.

provides a comparative overview on post-separation outcomes in a gender perspective in four European countries: France, Italy, Germany and Spain.

The findings reveal gendered patterns in the aftermath of dissolution, with separated individuals experiencing losses in both household income and wealth following the dissolution. They also show that separated women experience greater losses in household income and financial wealth compared to separated men in all countries.

Overall, these preliminaries results support the hypothesis that pre-separation intrahousehold inequality in term of personal income strongly influences post-dissolution changes in household income. A specific finding worth noting is that women with higher shares of personal income during the relationship tend to experience positive changes in post-separation household income in all countries.

Additional findings draw attention to the role of the legal and institutional set up concerning marriage. In particular, partnerships are more gender equal than formal marriages, and couple under the separation of property regime display lower intrahousehold inequality than those under the community regime.

The chapter contributes to the existing literature by offering a comparative longitudinal perspective for Europe, using the unique source of data that jointly provides both income and wealth data for European countries. By exploiting this source, moreover, it adds to the analysis the role that specific institutional factors - marital property and family laws - play across Europe in post-separation outcomes for men and women.

The second chapter goes beyond descriptive analysis by using econometric analysis to test hypothesis emerged in the first chapter. Specifically, the analysis combines propensity score matching techniques with difference in differences regressions (Heckman et al., 1997; 1998) to causally identify outcomes for separated versus non separated individuals.

The primary aim is to validate the role played by pre-separation within couple inequality in shaping gender differences in post-separation household income. To this purpose, measures were constructed of within-couple inequality in terms of personal income, individual earnings, and personal wealth. In order to further comparative analysis within Europe, moreover, the chapter investigates how the impact of separation varies depending on the national specificities of marital property regime and marital status.

The results confirm indications from the literature that a separation penalty for women exists for women in all countries, except in Spain. They also validate the hypothesis that the impact of separation varies with the degree of pre-separation within-couple inequality in personal

income and in earnings. Specifically, the separation penalty exists for secondary earners in previous partnerships, men or women. With respect to wealth inequality, the findings go against expectations since the effect of separation is found to be larger for the wealthiest women. However, this may be due to the fact that individual wealth is measured on the assumption of equal splitting of assets recorded at household-level rather than being based on individually recorded assets. Finally, the chapter provides evidence on the joint effect of within couple inequality and the country's legal or institutional arrangements: the main finding here is that women who were less economically independent during the relationship may experiences more severe consequences if their previous partnership fell outside more 'protective' arrangements like legal marriage and community of assets.

The chapter contributes to the literature is three ways. First, it introduces a joint investigation of the within-couple income and wealth inequalities as main determinants of post-separation gendered outcomes. Second, it does so adopting a comparative perspective for four European countries that differ by socio-economic and institutional characteristics. Finally, it is the first contribution in this strand of literature that uses the longitudinal component of a dataset providing harmonized information for several European countries on both income and wealth.

Like the second chapter, the third one investigates the causal impact of separation on earnings trajectories in the aftermath of the dissolution, but it focuses specifically on earnings as outcome of labour supply choices at the intensive and the extensive margin. The main hypothesis of this chapter is that earnings trajectories are influenced by pre-separation intrahousehold inequality in labour supply, both in terms of labour market participation (extensive margin) and time spent on the market (intensive margin). The role of labour supply inequalities is investigated per se and in conjunction with the pre-separation marital property regime and marital status. The same combination of pscore matching and difference-in-difference regression adopted in chapter 2 is used here to obtain unbiased causal effects of separation on individual earnings. The analysis is carried out using the longitudinal component of Household Finance and Consumption Survey (HFCS) for France between 2014 and 2017. France was chosen because its HFCS has richer information on the institutional and legal arrangements.

The results add to the findings from the previous chapters in several respects. While it is confirmed that the impact of separation on earnings following the couple dissolution is gendered, the latter is found to depend on pre-separation intrahousehold inequality in terms of earnings but also working hours. Unlike income, however, earnings follow opposite trajectories for men and women, with the latter experiencing an increase and the former negative or, more

frequently, no change. This gender asymmetry is especially noticeable among secondary earners and raises questions that find only partial answers in the literature.

The analysis also shows that the casual impact of separation on earnings is influenced by institutional features. Dissolution has a positive impact on earnings for women who were previously in couples under the separation regime and who were previously in unregistered partnerships. When moreover, institutional characteristics are interacted with intrahousehold inequality results show that the effect of separation is stronger for women at both ends of intra-household inequality in the previous relationship, namely secondary or primary earners.

The main contribution of the third chapter to the literature is the link it provides between causal effects of separation on earnings and labour market behaviours. The chapter also contributes additional evidence on how the interplay between pre dissolution intra-household inequality and institutional/legal arrangements regulating partnerships shape earnings trajectories after separation takes place.

Chapter 1

Intrahousehold inequality as drivers of breakup outcomes: insights from HFCS data in four countries

1.1   Introduction

Intrahousehold inequality is a key dimension for explaining gender differences (Gehringer et al., 2015). Differences in individual income and earnings, as well in personal wealth, may impact economics outcomes of women following a separation. Women generally experience large and persistent losses of income and greater poverty risk after separation, as largely underlined by the literature (Andreß et al., 2016; Uunk 2004; Hauser et al., 2016; de Vaus et al., 2017; Aassve et al.,2007; Smock et al., 1999; Di Prete and McManus, 2000). These further increases gender inequality.

The aim of this chapter is understanding the determinants that shape post-separation gender inequalities in household income. The main hypothesis suggested concerns the fact that gender inequalities in household income in the aftermath of a separation are driven by pre-existing differences in intrahousehold distribution of personal income and earnings between men and women.

Using data from the longitudinal component of the Household Finance and Consumption Survey (HFCS) in 2014 and 2017, this chapter provides a comparative overview on post-separation outcomes in a gender perspective in four European countries: France, Italy, Germany and Spain.

The results highlight the existence of gendered patterns in the aftermath of dissolution, showing that separated individuals tend to experience losses in household income following the dissolution, with separated women experiencing greater losses compared to separated men in all countries. This result holds both considering household income before and after social transfers. Similarly, separated household experience losses in total household wealth in all countries, except in Germany. However, separated women displays greater losses in terms of financial wealth compared to separated men in all countries.

 Furthermore, the results support the hypothesis that pre-separation intrahousehold inequality in term of personal income may drives the changes in household income. Particularly, the

partner with the lower share of pre-separation personal income tend to worse off in terms of post-separation household income, regardless of gender. This finding holds for all countries, while the evidence for Spain appears weak. In contrast, when women during the relationship owned more than the 60% of personal income, they tend to experience positive changes in post-separation household income in all countries. Lastly, the analysis of intrahousehold inequality shows that partnerships tend to be more gender equal than marriages in terms of personal income in all countries. Similarly, in France, couples that opted for the separation of property regime show lower levels of intrahousehold inequality than couples who opted for the community of property.

This chapter contributes to the literature providing a comparative longitudinal perspective for Europe, using the unique source of data that jointly provides both income and wealth data for European countries. This introduces the comparative analysis of the role of different institutional settings of marital property and family laws across Europe in defining post-separation outcomes for men and women.

1.2 Intrahousehold inequality as drivers of breakup outcomes: theoretical framework and related literature

1.2.1 Theoretical framework

Intrahousehold inequality is a key dimension to consider when explaining gender differences (Gehringer et al., 2015) since household is the primary unit that shapes differences among men and women, both in marital and cohabiting unions (Lundberg, 2008). However, differently from how postulated by unitary household models (Samuelson 1956; Becker 1974), household is not a unique decision maker with unitary rational preferences. Household preferences are often determined by within-couple relationships of power (Manser and Brown, 1980; McElroy and Horney, 1981; Lundberg and Pollak, 1994), which in turn depends on individual income, wealth, wages, human capital and distribution factors (Chiappori and Mazzocco, 2017). Intrahousehold inequality in terms of final allocations substantially depends on relative income and accumulation of wealth (Browning et al., 1994; Iyigun and Walsh, 2007). Relative to separation and divorce, the existence of asymmetries or power imbalances (Chiappori, 1988; Vermeulen 2000) are largely due to within-couple differences in premarital endowments (Chiappori and Meghir, 2015). According to Lundberg (2008), asymmetries in bargaining

power within the household stem from gender division of labour and motherhood. As primary children caregiver, women have lower potential market wages because they lost both experience and the possibility of job tenure and face discrimination on the job market based on reduced productivity. Moreover, institutions on the division of property rights and of resources between former partners, as well as family-related policies, can exacerbate gender inequality. In particular, property rights impact post-divorce allocation of household's resources while divorce laws provide a distortion in choices on within-couple accumulation of assets and on labour supply of women (Voena, 2015).

1.2.2   Related literature

The decline in household income for women after separation is a consistent finding in the empirical literature (de Vaus et al. 2015; Leopold 2018; Andreß, et al. 2006; Uunk 2004; van Damme et al. 2009). This decline undermines the economic wellbeing of women, increasing their risk of poverty (Aassve et al. 2007). The negative impact of divorce or separation on household income for women have been observed both in the U.S. and in the E.U. (Smock et al., 1999; Di Prete and McManus, 2000; Andreß et al., 2016; Uunk 2004; Hauser et al., 2016). A part of the literature underlined that the reasons of the decline in income observed for women is due to gender inequalities in the labour market, to the degree of marital specialization and to motherhood (Bonnet et al. 2021; van Damme et al., 2009). Mothers tend to display sharper decline in household income in Europe (Andreß et al., 2006; Aassve et al., 2007; Jenkins, 2008; Boll and Schuller, 2021) and in the U.S. (Bianchi et al., 1999).

Intrahousehold inequality stems from women's lower rates of employment, gender structural differences in the labour market, unequal time spent in childcare and in marital specialization. The degree of household specialization, which defines the economic independence of women within the couple prior to separation, influences the economic outcomes after separation (Bianchi, 1999; Bonnet et al., 2021; Bradbury and Katz, 2002). Some studies show that an unequal distribution of earnings between partners before the separation determines negative outcomes for the partner who displayed less economic autonomy (Andreß et al., 2006; Mc Manus and DiPrete, 2001; Endeweld et al., 2022; Bonnet et al., 2021). Another study shows the same result defining the economic independence as also related to the income provided by the welfare (Hogendoorn, 2022).

Another strand of the literature focus on cohabiting unions. Cohabiting women tend to experience moderate losses compared to married women (Avellar and Smock, 2005; Fisher and Low, 2012; Bonnet et al.2021). This can be due to the fact that they also show more equal division of paid labour (Tach and Eads, 2015).

1.3   Data and definition of measures

1.3.1   Data and choice of the analytical sample

The analysis was conducted using the longitudinal component for the second (2014) and third wave (2017) of the Eurosystem Household Finance and Consumption Survey (HFCS) provided by the European Central Bank (ECB). This survey owns a collection of ex-ante harmonized data on income and wealth for 22 countries in the European Union. Measures of income and wealth are provided at the household level, nevertheless the survey also contains measures at the individual. The data structure allows to relate each person to household.

Countries included in this analysis are four, namely France, Italy, Germany and Spain. The choice of these countries is based on their survey design that allow for tracing split-offs. An issue common in studies based on divorced or separated sample, is panel attrition. Attrition arises from the inability to follow individuals that leave the family home once they separated. For this reason, it may concern more separated men (Jarvis and Jenkins, 1999; McManus and DiPrete, 2001; Jenkins, 2008) enabling to be present in the following waves of a panel.

The HFCS contains multiple imputed microdata. The use of multiple imputation enables to solve possible problems of item non-response that arise in presence of data on income and especially wealth (HFCN, 2016; 2020). Multiple imputation implemented in HFCS uses 5 implicates for each observation. This implies that each dataset provided for a given country has 5 implicates, hence 5 different datasets. France as well as Italy do not have multiple imputed data while Germany and Spain do. I present for the latter two countries the results based on the first implicate.[2]

The sample consists of panel individuals from the second (2014) and third (2017) waves. First, I construct a unique panel identifier for the individuals present in both waves through the combination of household and panel identifiers from corresponding cross-sections. Then, I

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[2] The other implicates show similar results, descriptive tables available upon request.

proceed constructing a partner identifier for each individual in the sample, since a partner identifier is not provided in the original datasets. This latter identifier was constructed exploiting information provided by the variables that indicate the relationship with the household' reference person and the marital status of the individuals within each household. This passage allows me to construct a couple identifier for each couple present at the baseline.

The event of interest is separation, namely the moment at which the household is split. Separation can be considered the actual point in time for defining future economic outcomes.[3] The exact moment of the separation is not directly observed in the data due to the three-years span between the two waves, but it can be inferred by comparing information on the personal variables of individuals in the two waves. The sample was constructed using the following scheme.

Let us assume that separation occurred at time t_0 and that the panel baseline is defined at time t-1. For the baseline, all the individuals who resulted in a partnership (whether they were married, in a consensual union or in cohabitation) and whose partner was also followed in the survey was selected. Let us define as time t+1, the period of observation after the eventual separation. For this period all the individuals who resulted continuously in a partnership or experienced a split during the three years between the two observed point in time was selected. This means that a sufficient condition for being in the sample is at least one of partner is followed in the next wave. These two groups represent the control and the treated groups, respectively.

Individuals observed in the panel therefore do not represent therefore couples but all the individuals who were in couple at t-1 and are continuously observed in the panel at t+1. The sufficient condition for sample constructing is that at least one of the partners is followed up in the next wave. Given the problem of panel attrition described above, imposing as a condition the observation of both partners would have been led to a smaller sample size (Jarvis and Jenkins, 1999; Jenkins, 2008).

Furthermore, all the individuals aged 19-85 was selected, to account for possible differences in impact of separation across cohorts. The literature, in fact, highlighted as dissolution could be more detrimental for older individuals both in terms of income, since they have less possibilities to resort to the labour market to cope with the dissolution-induced economic shock (van Damme

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[3] According to Aassve et al.(2007), separation is associated with a significant financial shock.

et al., 2009), and wealth, since they tend to decumulated resources (Frémeaux and Leturcq, 2022).

The analytical sample sizes obtained thus includes 5736 individuals (2683 men and 2693 women) for France, 4392 individuals (2205 men and 2187 women) for Italy, 4121 individuals (2061 men and 2060 women) for Germany and 4741 individuals (2377 men and 2364 women) for Spain. The dissolution rate is found higher in France (4.02%) compared to the other countries (Germany and Spain approximately 3% and Italy below the 2%).

1.3.2 Definition of measures

Outcome variable

The outcome variable is represented by the annual gross total equivalized income, adjusted for household size using the OECD-modified equivalence scale, deflated using the Harmonized indices of Consumer Prices by Eurostat (HICP -Eurostat) and top and bottom coded at 1% of the distribution (OECD, 2013).

Moreover, I construct a measure of household income before social transfers. This measure calculates household income excluding regular social transfers as family and child allowances supplied by the welfare, but it includes replacement income like unemployment benefits or private transfers. This measure has been used for sensitivity analysis.

Gross household income is composed by the sum of : income from labour (employee and self-employment), rental income, income from financial assets, income from pensions, regular social and private transfers and income from other sources. The use of gross income does not allow me to control for the redistribution effects of taxes on household income, implying that the measure can be imprecise with respect to the disposable household income, especially considering higher quintiles of the income distribution. However, I am interested here in the impact of a dissolution on household income for individuals at the bottom and in the middle of the distribution i.e. individuals whose income is more welfare and labour-related, thus have a less impact coming from taxation scheme compared to higher levels of income.

Also, the equivalence scale used as benchmark is the OECD-modified one that assign weights to household components equal to 1 for the first adult, 0.5 for the second adult and 0.3 for each child. However, the choice of the equivalence scale in measuring living standards of individual has been found to be sensitive to the equivalence factor used (Jenkins 2008; Bonnet et al. 2021;

Brüggmann & Kreyenfeld 2023). In the sensitivity analysis other methodologies have been used to check the robustness of the choice of the equivalence scale.

Explanatory variables

Income and wealth measures

To have a more comprehensive picture of the impact of a breakup on household living standards, I also used or construct some measures regarding the household income components.

Private transfers are defined by yearly income from regular private transfers that includes compulsory and voluntary alimonies and child support alimonies received by the household.

Social transfers are gross income from regular social transfers received by the household during the year and they include family, children, housing and education related allowances provided by the welfare. Both private and social transfers have been equivalized and deflated as the other household incomes.

Unemployment benefits cover the annual individual unemployment benefits (full or partial). They are included as income component is the analysis in relation to labour market attachment pre and post dissolution.

Wealth is defined by total household assets (excluding public and occupational pensions) minus total household liabilities, i.e. net wealth. It includes the total amount of real assets (value of household main resident, other real estate, vehicles, valuables and self-employment business) and of financial assets (deposits, mutual funds, bonds, shares, managed accounts and non-self-employment business, money owned, voluntary pension and life insurance and other assets) net of liabilities (collateralized or non-collateralized).

Net wealth is further divided in net housing wealth (the value of housing wealth net of secure and unsecured debts) and net financial wealth. Financial wealth is constructed as financial assets -excluding pensions – minus the total outstanding of household (collateralized or unsecured) liabilities. All these measures have been deflated exactly as the income variables. This disaggregation enables to study the impact of different component of wealth in coping with the negative shock due to a dissolution. In addition, I included a categorical variable for homeowners to control for housing status.[4] Another measure related to wealth included in the analysis is the possibility that the household received an inheritance or a gift. In the literature it

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[4] In particular, homeownership takes value 1 for homeowners and 2 for non-homeowners.

has been highlighted as inheriting wealth narrow the within-couple gender wealth gap (Grabka et al. 2015), helping women in accumulating wealth.

Personal income and women's share of income and earnings

The main set of explanatory variables measures personal income for each individual at pre-separation levels. Personal income is defined as the annual gross total personal income at the individual level, from labour-related or replacement incomes (unemployment benefits or pensions). Both private and welfare transfers are supplied at the household level, thus I cannot control for individual shares of the amounts transferred, and they are not included in the computation of personal income. Earnings are instead defined for those individuals who have market-related labour income from employment or self-employed, i.e. for those who are active in the labour market. Both measures have been bottom and top-coded at 1% and 99% of the distribution and deflated in accordance with other monetary measures.

Using the definition of individual measures of income and earnings, I constructed a measure to detect the within-couple (or intrahousehold) relative difference in terms of income and earnings between partners for each couple. Specifically, this difference measures the woman's share of the couple's income (or earnings), as follows:

$$woman's\ share = \frac{total\ personal\ income\ (earnings)_f}{sum\ of\ total\ personal\ income\ (earnings)_{m,f}}$$

The share of the couple's income (earnings) attributable to women, is then classed in 3 main groups. The first group of women have a share between 0 and 40% and therefore lower income(earnings) than their partner. The share of the second group is included in 40% and 60% indicating a relative parity within the couple and lastly in the third group women have a share of 60% higher than their male counterparts.

This classification roughly corresponds to marital specialization models of male bread-winner model, dual earner model and female bread-winner model, respectively.

This share is not defined if both members of the couple have zero income or earnings.

Socio-demographic variables

A set of socio-demographic measures have been introduced in the analysis to control demographic and social heterogeneity.

Firstly, I defined a set of measure regarding the specific conditions of couples. The type of union is a categorical variable based on the pre-separation marital status of the individual i.e., if they come from an unregistered partnership, from a consensual union on a legal basis or from a marriage.

France is the only country in the study that allow to allocate the division of resources within the couple, thus, only for this country, I defined a measure of the type of marital property regime chosen by the former couple during their partnership. It is based on information provided by the data about the legal arrangements defined for marriage or consensual union with legal bases. Since it is defined only for married individuals (that have a contract to enforce), I applied the default regime to the other partnerships: in France this is the separation regime. This assumption is based on the idea that the opportunity cost to stipulate an enforceable marital contract on the allocations of assets is negative for these types of unions since their default regime ensure to keep resources separated at no cost. Therefore, they may not have incentive to change a de facto situation. (Frémeaux and Leturcq, 2018; Fraboni and Vitali, 2022). The marital property regime is classed in two categories: separation and community of property. Additionally, the marital status before separation is categorized in three groups: marriage, registered partnerships and unregistered partnerships.

Moreover, a set of demographic characteristics has been used as controls, including gender (dummy), age (continuous and categorized), migration background (dummy), number of children within the household (children under 18 years, categorical), belonging to a household with children (dummy), repartnering (dummy). A variable aimed to identify custodial parents (dummy) have been constructed exploiting the information provided by the number of dependent children and the household size embedded in the OECD-modified equivalence scale.

Another set of controls concern human capital and labour-market attachment. In particular, attained education (ISCED standardization, 3 categories), employment status (3 categories: employed, unemployed, not in the labour force), retirement (dummy), years of working experience (continuous), time spent in main job (continuous) and weekly working hours (continuous) have been considered.

1.4   Understanding individual paths by groups and over time

Tables 1.1a-d in Appendix A.1 provide main descriptive statistics for each country separately, comparing pre- and post-treatment descriptive statistics for the all sample, as well as for the two sub-samples of treated and control individuals.

Income and wealth components

In all countries separated individuals experienced a decrease in equivalized household income.

In France (Table 1.1a), the average equivalized household income increased over time for all sample and for continuously partnered individuals,[5] whereas it decreased (-12%) for individuals who experienced a couple's breakup between 2014 and 2017. In both years of observation, the average equivalized household income differs between continuously partnered and separated individuals. However, the gap between the two widened in the post-treatment period.

A similar pattern is found in Spain (Table 1.1d), where the average equivalized household income increased by about 18% for all sample between the two waves. The growth is mainly driven by continuously partnered household. In contrast, separated households experienced a decrease in their equivalized household income (-6%) compared to the pre-treatment period, which widened the pre-existing difference between the two groups. For both Germany and Italy (Tables 1.1c and 1.1b, respectively), the average equivalized household income remained relatively stable over time for all sample and control group. Treated groups in both countries showed a higher average income compared to the other groups in pre-treatment period. However, in the post-treatment period, these groups experienced a larger drop in household income (-21.3% in Germany and -13% in Italy)

In all countries, income before social transfers followed a pattern over time that was similar to that of household income after social transfers. In France, treated households experienced the larger average difference between household income before and after social transfers concerned treated household (917.29 on average) compared to control households (73.66 on average) in the pre-treatment period. In the post-treatment period, the welfare contribution to household income increased for both groups, but, on average, the increase was larger for treated than for control group (1215.91 and 567.2, respectively). In Germany, the incidence of social transfers was similar across both groups before the event (950. 95 for control and 903.95 for treated)

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[5] The average increase corresponds to 7.3% between 2014 and 2017, which is slightly higher than the increase in mean gross income in the Euro Area found out by the ECB. See HFCS (2020) - Results from for the 2017 wave.

while it slightly increased for the sample of treated sample after the event (806.23 for treated and 718.08 for control). The average welfare contribution to household income decreased over time for all groups in Italy. However, in the post-treatment period, the control group had on average a higher contribution compared to the treated group. In Spain, average social transfers increased for all groups between the two waves except for the treated group, whose household income before social transfers remained relatively stable over time (96.35 in the first period and 97.72 in the second period).

Private transfers increased over time in France for all groups in the sample. The treated group, which had a lower level of transfers on average in the pre-treatment period, experienced the largest increase in the post-treatment period. This result may be due to the fact that private transfers include alimonies and child-support payments. Similarly, all groups in Italy experienced an increase in average private transfers between the two time periods. However, the treated group, which had a higher pre-treatment average of private transfers compared to the whole and control samples, experienced a larger increase compared to the other groups in the post-treatment period. In Germany and Spain, a different pattern was found. Private transfers decreased over time for all groups in Germany, except for the treated group which had a higher average amount of transfers in both periods. In Spain, the treated groups showed an increase in average transfers over time compared to the control group.

The average amount of social transfers increased between the two waves for the whole sample in all countries. However, in the pre-treatment period, the treated group had a higher level of transfers compared to the control group in France, Germany, and Spain, while in Italy they had lower levels. In the post-treatment period, the average amount received by the welfare increased for the control sample in all countries. Conversely, the average transfers received by the treated group decreased in all countries except for France.

Personal income of individuals increased over time in France and Spain whereas it remained stable in Germany and Italy, for the whole and the control sample. In France, treated individuals show lower levels of personal income in both periods compared to the control group. In contrast, in Italy, treated individuals show a higher personal income in both periods. Conversely, in Germany and Spain, treated group show a higher average level of personal income than other groups before the event. Nevertheless, personal income increased for the treated sample in France, Italy and Spain, while it decreased in Germany after the separation took place.

The distribution of earnings followed a slightly different path compared to that of personal income. Across the whole sample, a small increase was observed in France and Spain between the two waves, while a moderate decrease was observed in Germany and Italy. This trend is often driven by the sample of treated individuals. In particular, this latter group experienced an increase in their average earnings in France, Spain and Italy (+11.24%, + 5.93% and + 5.10%, respectively) while they experienced a sizeable decreased in Germany (-23.63%). The control sample experienced an increase in average earnings in France (+1.87%) and Spain (+3.86%), but a decrease in Germany (-4.17%) and in Italy (-4.01). The percentage change is always larger for treated group compared to control group, for both positive and negative values.

On average, in all countries under analysis, treated individuals showed higher levels of income from unemployment before the separation. Average unemployment benefits increased over time in France and Italy for the whole sample and for control. A reversed pattern was found for treated individuals, whose benefits decreased significantly, highlighting the possibility that many of them entered the labour market after the breakup. In Germany and Spain, all groups experienced a reduction in unemployment benefits between the two waves, but the treated sample experienced a larger decrease compared to the other groups.

The distribution of net wealth slightly increased or remained relatively stable over time for the whole sample in all countries.[6] However, wealth was unequally distributed between the two sub-samples of separated and partnered individuals in the baseline period. In France, treated individuals owned almost half the wealth of their untreated counterparts in the pre-treatment period, and this gap widened in the post-treatment period. Moreover, while untreated individuals increased their net wealth over time (+6.56%), treated individuals experienced a further decrease after the separation (-25.71%). A similar pattern was observed in Spain: the treated group had in initial period almost half the wealth of the untreated group and experienced a decrease (-18.97) following the separation. In contrast, the untreated group increased their average wealth over time (+27.60). The initial gap in wealth was also observed in Germany but both groups experienced a slight increase in wealth (+11.92% for untreated and +13.83 for treated, respectively) in post-treatment period. Conversely in Italy, the average wealth decrease for all groups, with separated individuals experiencing a more significant decline (-28.52%) compared to their partnered counterparts (-3.87%).

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[6] Net wealth remained stable in Euro area across the two waves. See HFCS (2020) - Results from for the 2017 wave.

When analysing the effects of a dissolution, it is important to consider which component of wealth may drive the behaviour of total net wealth. This work considers the two major components of wealth, namely housing and financial wealth.

Housing wealth represents the primary component of household wealth in all countries except Spain. In France, housing wealth followed the same pattern as total wealth showing an increase across waves for the whole and control sample and a decrease for the treated sample. The initial distribution of housing wealth was unequal among groups, with the treated owned roughly half of the untreated housing wealth. In Italy, the initial gap between the two groups was smaller, and the average housing wealth decreased for all groups. However, the decrease was larger for the treated group (-13%). In contrast, in Germany all groups increased their average housing wealth across waves and the initial gap between the two groups remained stable over time. In Spain, the average wealth increased over time for the whole sample, driven by the average wealth of the untreated group while the treated group experienced a decline in the post-separation period.

Financial wealth is the most unequally distributed component of wealth across groups. In all countries there exists a substantial initial financial wealth gap between individuals who separated and those who remained partnered. This gap is in favour of the untreated group in all countries, except for Germany. Besides, the gap in financial wealth widened over time, since to an increase of financial resources for the untreated groups corresponded a decrease for the treated group in France, Italy, and Spain. Only for Germany it was observed a proportional increase of financial wealth for all groups. Overall, these findings are consistent with previous empirical evidence that suggests a wealth penalty for separated individuals, often due to a decline in housing wealth (Bortien and Lersh, 2020; Lin and Brown, 2020; Watson and Baxter, 2022).

On average, continuously partnered individuals received more inheritance or gifts compared to separated individuals, both in the initial and in the post-separation periods in France and Spain. In Germany, both groups had similar percentages in the initial period, while in the post-treatment period the untreated group had lower percentages compared to the treated group. Conversely in Italy, a higher percentage of treated individuals received inheritance or gifts in the pre-treatment period. Italy has no data about received inheritance or gifts for 2017 wave, hence the comparison over time was not possible.

Homeownership rate is higher for continuously partnered individuals across periods in all countries. Over time, the rate increased (France, Germany) or remained stable (Italy and Spain) for the control group and decreased (France, Germany, and Italy) or remained stable (Spain) for the treated group.

Individual and demographic characteristics

The degree of marital specialization within the household can be roughly defined by examining the shares of women's income and earnings. These shares are only defined for the pre-treatment period, since they referred to couples. Across all countries, the treated group has higher average shares of personal income and earnings for women compared to the control group.

In France, the average women's income share is 35%. This is driven by the control group while the treated group shows a higher share of 41%. This indicates the existence of a gap between the two groups, with treated individuals coming from couples that were closer to the dual earners model. This finding is confirmed also for the share of earnings which exhibits a smaller gap across groups. A lower average share of income for women can be observed for Germany (30%), with a slightly higher share for the treated group (33%). Earnings share is more equally distributed across groups (about 35-36%). All couples in Germany were closer to the male bread-winner model.

Italian women exhibit the lowest average income and earnings shares (25% and 31% respectively). However, there exists a sizeable gap between the treated and the control. The treated group had an average income share of 34% and earnings share of 37%, while the control group had an average income share of 25% and average earnings share of 31%. Hence, Italian couples also were closer to the male breadwinner model. Nevertheless, individuals in the treated group belonged on average to couple closer to the dual earners model. A similar pattern was found in Spain, where the average income share was on average 27% for the control group and 37% for the treated group. Earnings were more equally distributed between partners, with an average earning share in the control group of 36% and of 44% in the treated group. Therefore, also Spain exhibits a dual scheme within the whole sample. Continuously partnered individuals in the control group can be associated with the male breadwinner model while individuals in the treated group were closer to the dual earners model in terms of pre-separation intrahousehold inequality.

Most individuals in all countries were married at the baseline, with percentages of 85% in France, 98% in Italy, 94% in Germany, and 95% in Spain. Across all countries, most separations

occurred in marriages rather than unregistered or registered partnerships, with percentages of 61% in France, 81% in Italy, 79 % in Germany, and 71 % in Spain.

Only in France was it possible to observe the marital property regime chosen by the couple. The data shows that 20.80% of individuals were in a partnership that opted for separation regime while 79.20% opted for community of property regime. However, the proportion of individuals that opted for separation of property regime is higher in the treated group than in the control group.

In terms of demographic characteristics, the average age around separation is lower for the treated sample, at around 45-50 years on average. This trend was observed in France, Italy and Spain, while in Germany the average age across both groups is more similar (57.12 for the control group and 55.62 for the treated group). The literature underlined as breakups more often occur in mid-life nevertheless the share of 'grey divorces' is rising (Brown and Lin, 2012).

Moreover, the treated group shows a higher percentage of women in France and Germany but a lower percentage in Italy and Spain. This difference may be due to panel attrition, which may affect the proportion of men or women who remained in the panel after the breakup (Jarvis and Jenkins, 1999; Jenkins 2008).

In France, Italy, and Spain, the average number of children was generally higher for the treated sample in both periods compared to the control group. However, in Germany, the treated group had a lower average number of children.

Treated individuals had higher levels of education on average in all countries except for Germany when compared to control sample.

The proportion of employed individuals in France decreased over time for both the whole and the control samples, whereas the proportion of employed individuals increased for the treated group, which had the higher proportion of employed in both periods. The same trend was found in Italy where labour market attachment slightly decreased over time due to a higher proportion of unemployed ort people outside the labour force in the control sample. However, the proportion of employed individuals was higher for the treated group in both waves. Similarly, in Germany, the proportion of employed individuals decreased over time for all groups but the proportion of employed individuals was higher for treated sample in all periods. In contrast, in Spain, the proportion of employed individuals decreased over time, driven by a decrease in the

control group. However, the proportion of employed individuals in the treated group increased in the post-treatment period.

On average, in France individuals have 27.16 years of work experience in initial period with lower years (21.36) for the treated group due to their younger age. In Germany, the work experience was 31 years for both the whole and the control groups while it was 28.95 years for the treated group. In Italy, the average work experience ranges from about 29 years for the control group to 24.63 years for the treated group. Data at the baseline on work experience was not available in Spain, therefore relying on data from the 2017 wave the average number of years spent in employment are 28.53 for the control group and 24.28 for the treated group.

Working hours per week were similar across groups in France, with an average of slightly over 33 hours per week. However, while they remained relatively constant over time for the whole and control groups, they increased in the post-separation period for individuals who experienced a breakup. The same trend was observed in Germany, where both the whole and control samples worked slightly more than 34 hours on average in both periods. Treated individuals increased their hours from 33.60 to 35.25 after the separation. In contrast, in Italy working hours remained stable over time for all groups but treated individuals exhibited a higher average of around 38 hours in both periods compared to control individuals. The average working hours for all groups in Spain was around 39 hours per week. While control individuals decreased their hours in the following period, treated individuals kept their average relatively stable across periods.

Rate of retirement was higher in all countries for the whole and control sample compared to treated which is composed by younger individuals. Larger differences among groups are found in France, Italy and Spain while in Germany average is more similar.

In France, individuals with a migration background accounted for 12% of the population, while in Germany and Italy, the figures were 10% and 5%, respectively. However, while proportion are similar across groups in France and Germany, Italy shows higher heterogeneity in the sub-sample in terms of individuals with migration background: 5% in the whole and control sample and 12% in the treated sample. No data on migration are available for Spain.

Measures regarding the proportion of custodial parents and the rate of repartnering are only calculated for the post-separation period. On average, custodial parents are more prevalent in the treated group, which, as previously noticed, had a higher number of dependent children. Specifically, the proportion of custodial parents represent the 48% in France, 37% in Italy, 30%

in Germany and 50% in Spain. Finally, the rate of repartnering among separated individuals is higher in Spain and Italy (58% and 47% respectively) and lower in France and Germany (25% and 29% respectively).

1.5 Post-separation gendered differences

In this section, I provide a descriptive analysis of statistics for the treated sample, differentiating by gender. The aim is to understand what happened to individuals after the breakup, depending on their gender.

Tables 1. 2a-d provides gendered statistics of the post-treatment period by country.

In all countries, separated women have lower levels of post-separation equivalized household income compared to separated men. The largest difference is found in Germany: 19789.74 euros on average. In France the difference was 7686.91 euros, in Spain 5935.38 euros and in Italy 3923.42 euros. Average household income before social transfers as well was higher for men than for women in all countries. However, the average gender difference widened in France and Germany, while it remained stable in Italy and in Spain.

Private transfers - which may include marital and child-support alimonies - are higher for female-headed households in France. However, only one male-headed households received this type of transfers. Similarly, in Italy the only male household that received transfers received more than the average of female households while in Germany the comparison was not possible since no male household received these transfers. In Spain the trend appears reversed, with male-headed households receiving more transfers than female headed households (3714.54 euros and 2680.62 euros, respectively). These findings may be due to the fact that female households are more often the recipients of alimonies as women tend to be the weaker spouse and custodial parents. Also, the small number of observations may play a role.

Income transfers received by welfare are balanced between separated households in France, with women receiving 2902.27 euros and men receiving 2574.03 euros on average, while in Italy, women receive twice as much as men, with 200.25 euros compared to 104.13 euros. In Germany, women receive more than men, with 2853.05 euros compared to 1496.91 euros. In Spain, women receive less than men, with 1116.02 euros compared to 688.80 euros.

Following the separation, men display higher personal income than women in all countries, with average gender gaps of 22435.21 euros in Germany, 9749.88 euros in France, 7196.75 euros in Italy and 9757.04 euros in Spain. The same pattern is found for earnings, but the raw gap of earnings is narrower compared to the raw gap in personal income. Men gained on average more than women after the separation in France (+7074.97 euros), in Italy (+4792.99 euros), in Germany (21786.53 euros) and Spain (+5339.46 euros).

Unemployment benefits are larger for men compared to women in France, Italy (where any woman received benefits) and in Spain.[7] In contrast, Germany shows similar average levels of unemployment benefits between men and women.

These latter findings are consistent with those related to education, employment status and weekly working hours. In France, men display a higher average level of education than women. However, the rate of employment is slightly higher for women while men tend to work more hours per week on average (34.89 hours compared to and 33.59 hours for women). Women tend to be more educated and show higher employment rate compared to men in Italy. However, on average, women work fewer hours per week (35.27 hours compared to 40.61 hours for men). Similarly in Spain, men display higher levels of education but women in the sample are more likely to be employed even if they work fewer hours per week (37.52 hours compared to 40.91 hours for men). Conversely, in Germany men show higher levels of education and a higher employment rate compared to women. In addition, there is a considerable gender difference in working hours, with women working 26.13 on average compared to 44.06 hours for men. This finding explains large gender gaps in personal income and earnings found in Germany.

Presence of children as well as being a custodial parent can influence the previous findings on personal income, earnings and labour market attachment. In all countries the proportion of separated households with children is higher for women than for men, as well as the number of children within the household. In particular, the proportion of custodial mothers is 62% in France, 51% in Italy, 33% in Germany and 61% in Spain. Regarding repartnering rates, women tend to repartner more than men in Italy (51% compared to 44%) and Spain (61% compared to 56%) and less than men in France (23% compared to 28%) and Germany (23% compared to 37%).

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[7] Unemployment benefits are provided in the data at the individual level and are not included in the aforementioned social transfers, which are provided at the household level.

A key feature to consider when studying partnership dissolution is the division of resources, and in particular the distribution of household wealth and its components. On average, post-separation household net wealth is similar for both female and male households in France, Italy and to some extent, in Spain. Conversely, in Germany there exists a large gap in household wealth between female and male households.

The distribution of housing wealth follows a different path. In France, men display higher housing wealth than women, while in Italy, women have higher housing wealth than men. Conversely, in Germany and Spain men and women display equal average levels of housing wealth. Higher average housing wealth in Italy may depend on the fact that custodial parent keeps the family house. These findings are also reflected in the higher homeownership rate for women in Italy and Germany, while in France and Spain women show lower homeownership rates compared to men.

However, there are considerable gender differences in the distribution of financial wealth. Separated women have approximately half the financial assets of separated men in France, while in Spain there is a large gap between men and women. In Germany, the distribution of financial assets across gender is more equal, whereas in Italy the gap is wider, with separated women displaying a negative average value of financial wealth.

Lastly, in post-separation period, the proportion of female households that received inheritance and gifts is higher in only in France.[8] Conversely, this proportion is higher for men in Germany and Spain while no data are available for Italy.

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[8] In all countries this type of assets belongs to individual property even during the marriage, thus they are considered available personal resources.
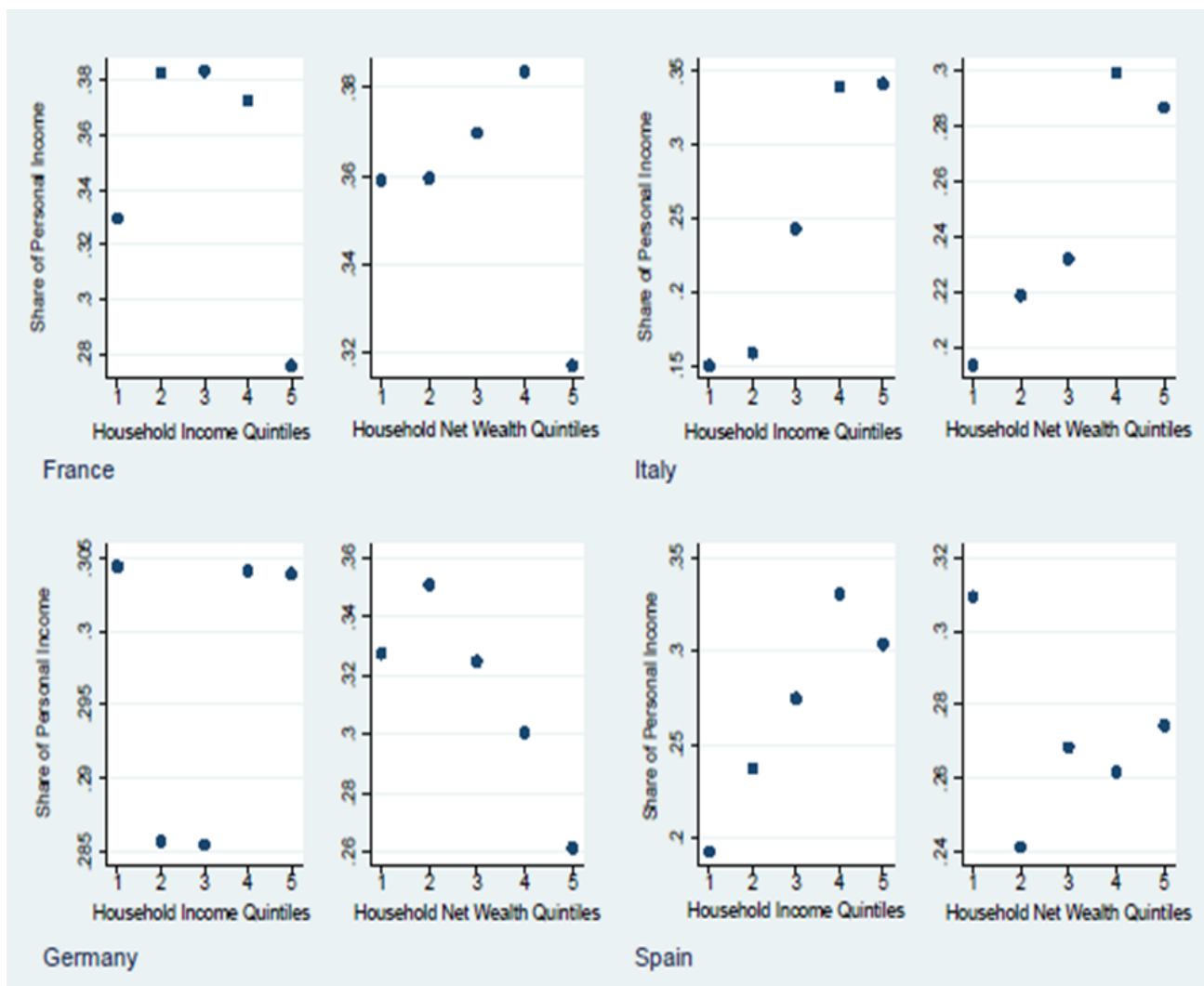
Figure 1.1 Share of woman's personal income by quintiles of pre-separation household income and wealth.

1.6 Intrahousehold gender inequality

Women's share of income and earnings can be also analysed according to a set of individual characteristics that contribute to determine them.

Tables 1.3a-d illustrate the distribution of shares by pre-separation income and wealth quintiles, by some demographic characteristics that are relevant for the present study as labour market attachment and property regime chosen by the couple to which individual belonged.

The distribution of personal income shares by quintiles of pre-separation household income and wealth are also graphically showed in Figure 1.1. For France, the average income share appears to follow an inverted u-shaped pattern both for household income and wealth quintiles. Income share is lower for first quintile, increases in the middle of the distribution and decreases for

highest quintiles. Earnings share (Table 1.3a) follows a similar pattern. Household in the middle of the income and wealth distributions appear more gender equal compared to poorer or richer households.

In Italy, the distribution of the share of income is lower for the first three quintiles and progressively increases for the fourth and fifth quintiles of household income and wealth. The same trend, with a slight decrease in the fifth wealth's quintile, is observed for the share of earnings in Table 1.3b. Therefore, women's share increases with income and wealth quintiles. This implies that poorer households exhibit sizeable gap of resources between partners, depicting the latter as the most gender unequal households.

In Germany, income shares are more gender equal for the first and last quintiles of household income, while in households belonging to the second and third quintiles women display lower share of individual income compared to their partners. Moreover, income shares differentiate along the wealth distribution with households at the bottom being more gender equal than households at the top of the distribution (fourth and fifth quintile), which show lower shares of women's personal income. The earnings shares do not follow the same pattern across income and wealth distributions. More gender equal households belong to the first and last quintiles of household income. On the contrary, considering household wealth, more gender equal households belong to the middle of the distribution.

Figure 1.1 shows that, in Spain, considering household income quintiles, the share of income increases up to the fourth quintiles and slightly decreases in the fifth quintile, while considering wealth quintiles, more equal household are those at the bottom of the distribution. Earnings shares follow the same patterns of individual income considering household income while, considering wealth, more gender equal households belong to the extremes of the distribution.

Tables 1.3a-d also show how that, in France, personal income and earnings shares tend to distribute across age cohorts for women similarly to a reversed u-shaped pattern. Income shares as well as earnings shares increase with age until middle age (50-60 years) and decrease afterwards, reaching a peak during working age in France. Thus, older women experience higher intrahousehold inequality. In contrast, in Italy, income shares are lower for younger cohorts, increase during 20-30s and decrease until retirement age. A slight increase is visible for older cohorts (over 70 years). Earnings shares follow a similar trend but with sizeable increase for the 50-60 years cohort and a decrease for older cohort. Declines in individual income and, particularly in labour earnings during fertility age, are likely related to a

motherhood penalty. Similarly, in Germany, income shares are higher for younger cohorts and 50-60 cohorts, while they are lower during fertility and retirement age. The increase following fertility age is greater considering earnings, highlighting also for Germany the possibility of a motherhood penalty. There exists in Spain a negative linear relationship between income shares and age (Table 1.3d). Income share declines with age and younger cohorts are those that have more individual income share compared to women in older cohorts. Conversely, earnings follow a reversed u-shaped distribution across age cohorts. Specifically, earnings increase during working age and decline afterwards.

In all countries, the share of income and earnings increases linearly with women's educational achievements. Overall, more educated women tend to have more personal economic resources. These results hold also considering employment status of women. Employed women have higher shares of both of individual income and earnings compared to unemployed or out-of-the-labor-force women, in all countries. Furthermore, employed women show shares above the mean, especially considering earnings. Tables 1.3a-d show that women working under permanent contract have higher shares of income and earnings compared to women under temporary contracts.

Finally, marital specialization - proxied by women's shares of individual income and earnings-can be also analysed according to the marital status of individuals, and the marital property regime chosen by the couple.

Unregistered and registered partnerships in France (Table 1.3a) are more gender equal than marriages, both in terms of personal income (44% and 33% respectively) and earnings (45% and 39% respectively). Furthermore, French data allow us to observe within-household distribution of income-related resources across marital status. Women in couples that opted for separation regime display have higher average shares of personal income (41%) and earnings (44%) compared to women in community regime (34% and 39% respectively). Women in separation regime have roughly equal resources to those of their male partners. In Italy (Table 1.3b) in unregistered partnerships income-related resources are distributed more gender equally than in marriages (38% of personal income in partnerships against 25% in marriages, and 39% of earnings in partnership against 31% in marriages). The same pattern is found for Germany (Table 1.3c) and Spain (Table 1.3d). All partnerships in Germany are more gender equal than marriages. In marriages, women have 29% of income share and 35% of earnings share on

average, while shares are higher than 40% in all partnerships. Similarly in Spain, unregistered and registered partnerships are more gender equal than marriages.

Belonging to a partnership, especially when unregistered, is related to a within distribution of income-related resources more favourable to women. In these types of partnerships, the default regime is the separation of property in France, Italy and Spain. In Germany, only unregistered partnerships are subject to the separation regime. Moreover, it has been observed for France couple that opted for separation regime display higher levels of income resources for women.

1.7   Before and after separation changes in household income for men and women

Figures 1.3a-d present sets of kernel density distributions which illustrate changes in equivalized household income occurred between the two waves for the treated sample, specifically individuals who experienced a couple's dissolution. The outcome variable is the growth rate of equivalized household income for the individual i between the pre-treatment period t-1 and the post-treatment period t+1. The comparison is made by gender. The upper part of the panel displays changes in outcome by gender on the left and changes in outcome by the pre-separation women's share of personal income on the right. The bottom part shows changes in outcome by the presence of dependent children within the household and by repartnering.

Kernel distribution functions explain the proportion of individuals who experienced a change in outcome between the two periods. A mass beyond 0 indicates a positive growth (i.e. an increase over time in equalized household income) while a mass around zero means that individual did not experience any or little change over time. Lastly, a mass below 0 and around -1 indicates a high proportion of individuals who experienced a loss in a household income after the dissolution (Bonnet et al. 2021; Jenkins 2008).

France

In France (Figure 1.2a), a higher proportion of men experienced an increase in their household income after separation compared to the proportion of women. The mode of women's distribution is below the zero while that of men is around zero or beyond. Therefore, fewer men than women had a loss of income in the aftermath of dissolution. When considering woman's

share of pre-separation income, the Kernel distribution shifts to the left if the woman had an income share between 0 and 40% compared to her former partner, widening the distance between the two distributions. This happens because household income grew for a higher proportion of men while higher proportion of women experienced income losses. For a more gender-equal distribution of pre-separation personal incomes, between 40% and 60%, the distributions are similar and almost overlap. This means that when there was a similar amount of income-based personal resources within the former couple, the living standards of men and women after separation result similar. When, conversely, a woman had more than 60% of the personal income compared to her former partner, the distribution shifts on the right, indicating that a higher proportion of women experienced positive change in their level of household income after the dissolution, while the proportion of men who experience a positive income growth decreased. Overall, these results highlight that the partner with a lower share of pre-separation personal income tends to worse off after the breakup.

The presence of dependent children within the household outlines a different situation for men and women. Mothers' distribution is more shifted to the left compared to that of fathers, indicating that presence of children within the household implies that a higher proportion of mothers incur in a loss of income compared to fathers. Conversely, the distribution of childless individuals is similar for both genders. Furthermore, repartnering appears to moderate the impact of separation on household income changes, equalizing to some extent the outcome between men and women. On the contrary, non-repartnered women still experience greater losses compared to non-repartnered men.
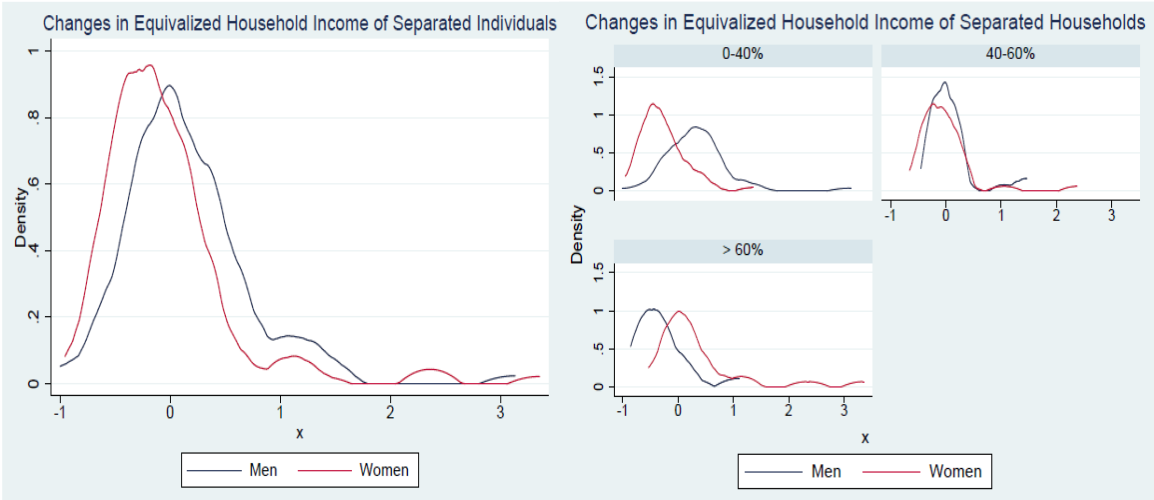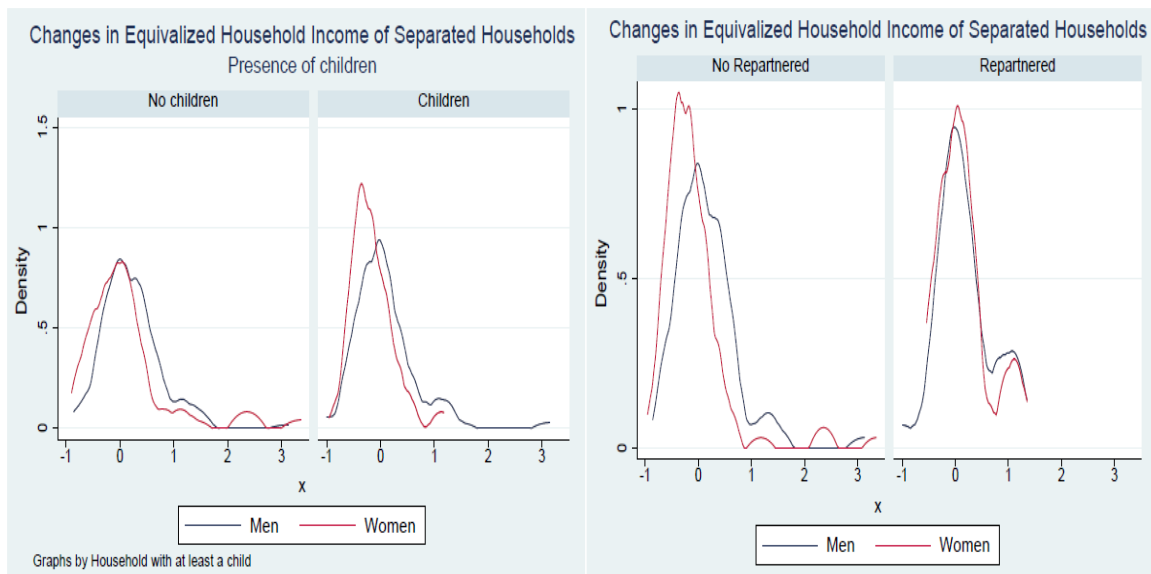
Figure 1.2a Changes in equivalized household income by gender in France. The top part of the panel concerns changes by gender and by woman's share of pre-separation income. The bottom part illustrates changes by presence of dependent children and by repartnering. Data from HFCS for 2014 and 2017 waves. Own elaboration.

Italy

A similar pattern is observed in Italy (Figure 1.2b). The proportion of women who experienced a loss after separation is greater than that of men. The distribution of women is shifted to the left (the Kernel peaks at zero and below zero) compared to that of men. The woman's share of pre-separation personal income provides heterogeneity in the impact of breakup also in Italy. When woman's income share was below 40%, the distribution for men shifts to the right while the distribution for women shifts on the left, resulting in a higher proportion of women experiencing a loss in household income. When individuals were in couples where the distribution of resources was more equal between partners, the two curves tend to overlap, indicating a similar post-separation outcome for men and women.
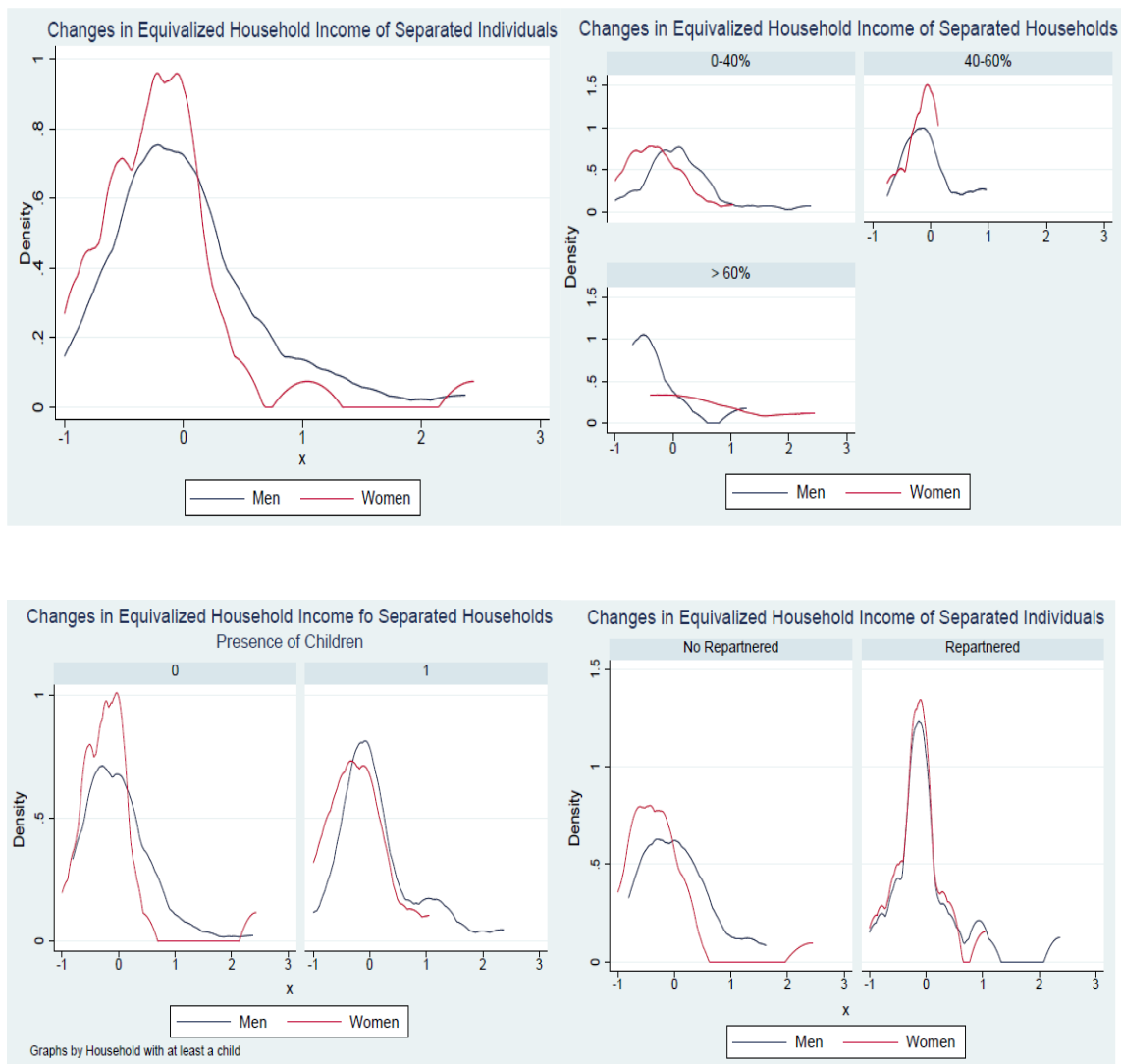
Figure 1.2b Changes in equalized household income by gender in Italy. The top part of the panel concerns changes by gender and by woman's share of pre-separation income. The bottom part illustrates changes by presence of dependent children and by repartnering. Data from HFCS for 2014 and 2017 waves. Own elaboration.

Conversely, when women had more than 60% of personal income compared to their former partner, women's distribution moved on the left, indicating that a higher proportion of women experienced a positive change in household income across waves. In Italy, the presence of children does not change the outcome for women: both mothers and childless women suffer a loss of income after separation compared to men. Conversely, repartnering appears as an effective coping mechanism since it enables women to equalize post-separation outcomes to men, compared to non-repartnered women.

Germany

A larger proportion of separated women experience household income losses compared to their male counterparts also in Germany (Figure 1.2c). The mode of Kernel distribution for men is in fact beyond the zero, indicating a positive change in household income across waves. Woman's share of personal income defines heterogeneous outcomes: the higher the share of personal income owned before separation, the lower the loss of household income associated with the event for women. Both men and women who were not the main income provider within the couple tend to lose more. Moreover, separated women in Germany experience negative changes in household income, regardless of whether they are mothers or childless. However, a lower proportion of mothers seems to experience income losses compared to women without children. Fathers, on the other hand, appear to better off compared to childless men. As in the other countries, repartnering can help to reduce gender differences in income losses.
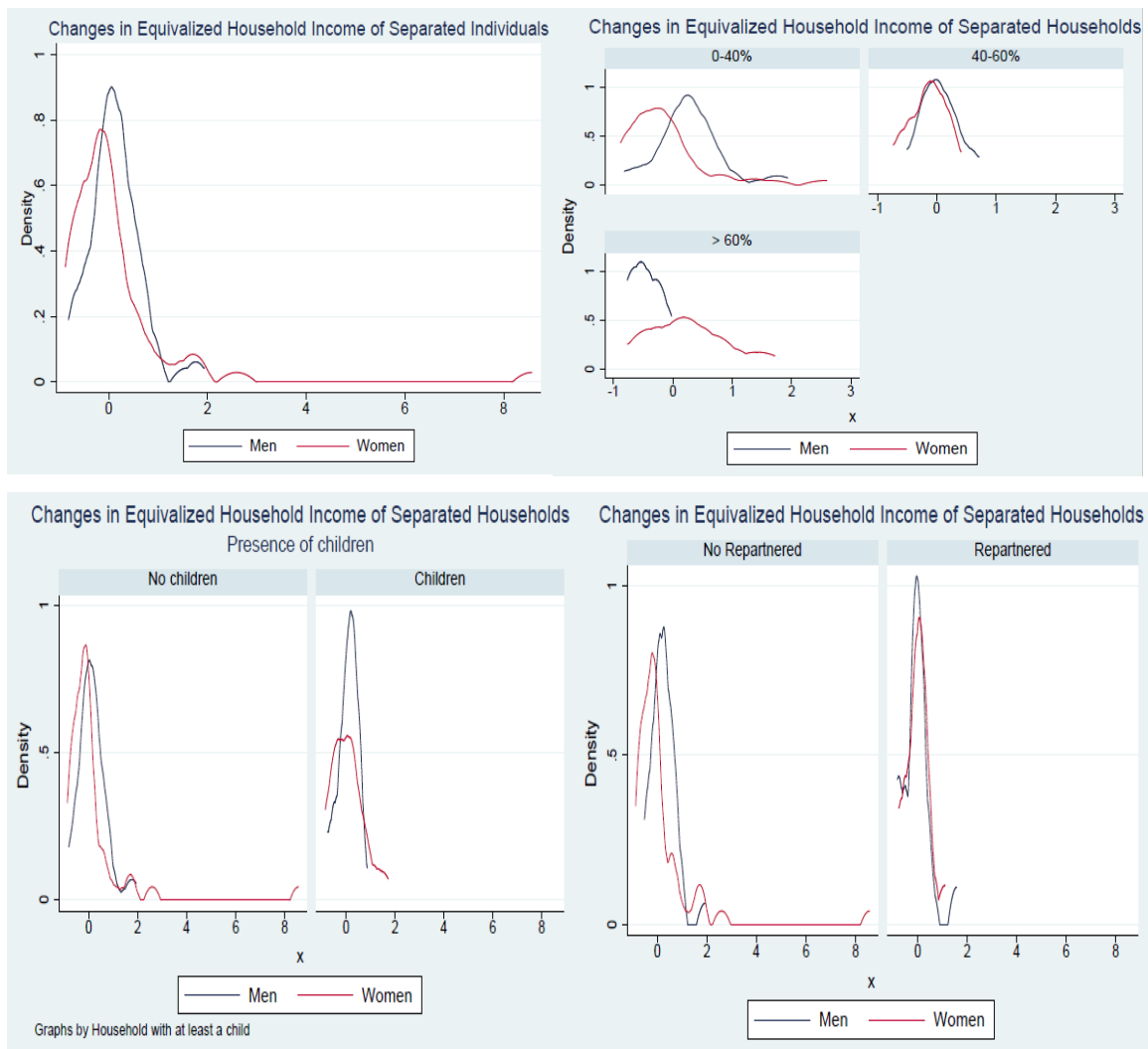
Figure 1.2c Changes in equivalized household income by gender in Germany. The top part of the panel concerns changes by gender and by woman's share of pre-separation income. The bottom part illustrates changes by presence of dependent children and by repartnering. Data from HFCS for 2014 and 2017 waves (first implicate). Own elaboration.

Spain

The overview is different in Spain (Figure 1.2d). Men and women distributions tend overlap almost perfectly. Both distributions peak around the zero, indicating a small change in income over time, regardless of gender. The only case in which distributions show a difference is when woman owned more than 60% of personal income compared to the former partner. In this case, women's distribution shifts to the right suggesting that a lower proportion of women experienced a negative income loss. Neither presence of children nor repartnering seem to have

a strong impact on changes in household income in Spain: both distributions tend to overlap in each of these cases.
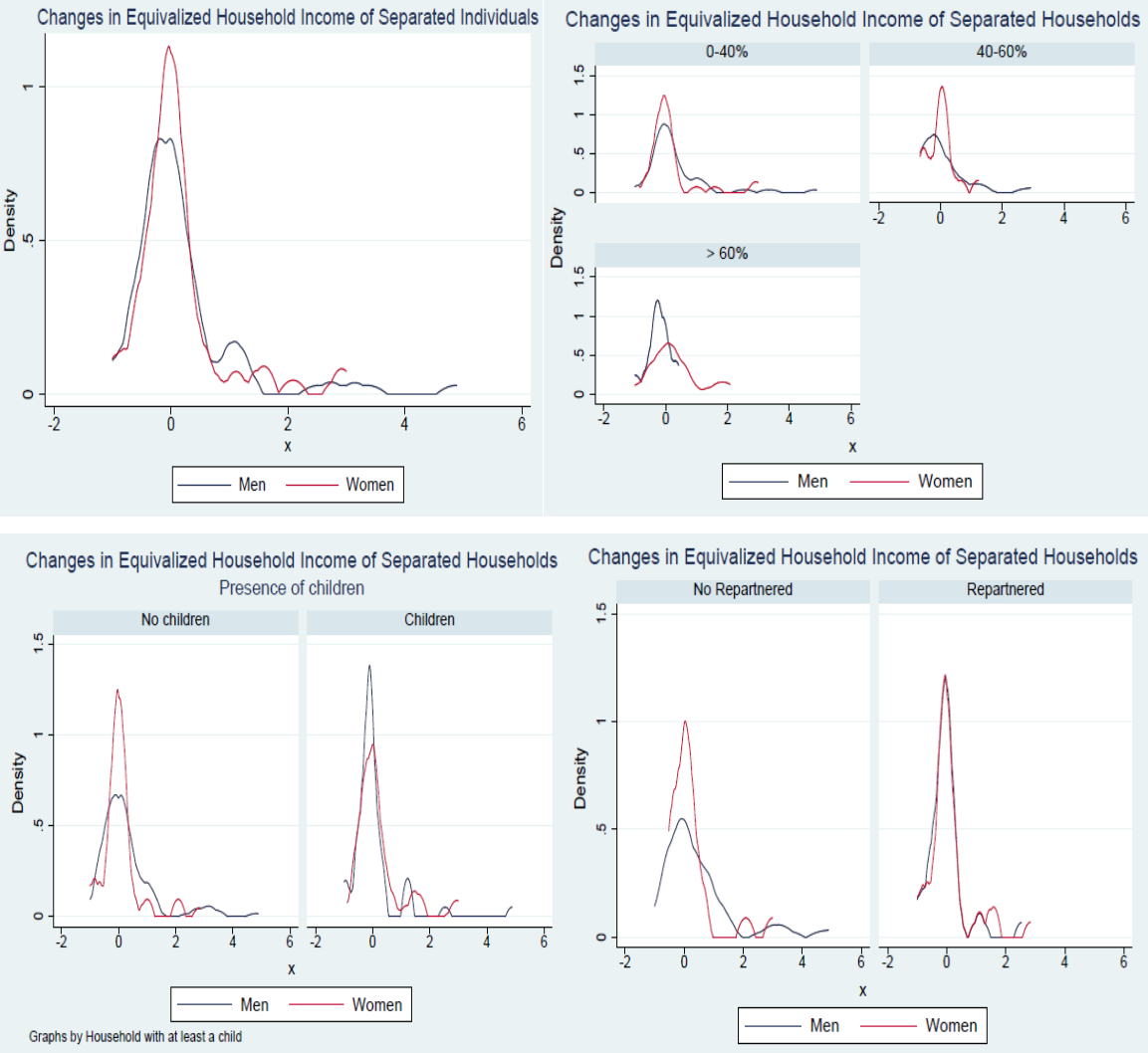
Figure 1.2d Changes in equivalized household income by gender in Spain. The top part of the panel concerns changes by gender and by woman's share of pre-separation income. The bottom part illustrates changes by presence of dependent children and by repartnering. Data from HFCS for 2014 and 2017 waves (first implicate). Own elaboration.

1.8   Discussion and conclusions

This chapter investigated the effect of separation on post-separation outcomes. First, it included the comparison of continuously partnered individuals with those who separated, and then the comparison of separated individuals by gender, with a focus on changes in equivalized household income for separated men and women.

Using data from the longitudinal component of the Household Finance and Consumption Survey (HFCS) in 2014 and 2017 for four countries (France, Italy, Germany and Spain), it provided descriptive empirical evidence on post-separation gendered outcomes in the aftermath of dissolution.

The main hypothesis discussed in the chapter concerned the role of intrahousehold inequality in terms of personal income and individual earnings, in driving different outcomes for men and women.

A first set of results concerned the comparison of continuously partnered and separated individuals, both in the two periods and over time. Overall, the findings showed that separated individuals experienced a decrease in equivalised household income in all countries, both if income was considered pre and post social transfers. In addition, separated household displayed a decrease in average wealth after the separation in all countries, except in Germany. These findings were consistent with the literature.

Moreover, for separated individuals both personal income and earnings increased in all countries, except in Germany. Similarly, the rate of employment of separated individuals increased in France, Italy and Spain, decreasing the average level of unemployment benefits.

A second set of results concerned the comparison of post-separation statistics for separated in a gender perspective. The results of this analysis underlined a larger loss in terms of household income of female-headed post-separation equivalized household income compared to that of male-headed separated men, both pre and post social transfers. Post-separation average wealth appeared similar across genders in all countries, except in Germany that showed a large gap between men and women. Considering main wealth components, housing wealth were lower for women in France and Spain, while in Germany separated men and women showed similar average levels. In contrast, in Italy, female-headed households owned, on average, higher housing wealth. Financial wealth was lower for separated women in all countries, except in France. The findings for Germany were consistent with previous empirical evidence for this country. (Bortien and Lersch, 2020; Kapelle and Baxter, 2020). Moreover, levels of personal

income and earnings were lower for women in all countries, albeit men showed an increase in unemployment benefits in all countries.

A third set of results regarded how personal income and earnings shares were distributed with respect selected individual characteristics of women. Overall, with respect to age, countries displayed different patterns. Intrahousehold inequality was found higher for older cohorts in France and for working age cohorts in Italy and Germany, while inequality increase with age in Spain. Also, intrahousehold inequality showed a positive relation with women's education and labour market attachment in all countries. Lastly, both unregistered and registered partnerships displayed lower intrahousehold inequality was found lower in partnerships compared to marriages, and for couples who opted for separation of property regime compared to couples who opted for community of property.

The last set of results graphically analysed the distribution of the changes in equivalized household income for separated individuals by gender. The results outlined greater losses in household income for women in all countries, while the difference by gender was less pronounced in Spain. Taking into account pre-separation intrahousehold inequality in terms of personal income, the results showed that women whose share was less than the 40% during the relationship faced greater penalties in all countries, except Spain. Moreover, women whose share was above the 60% experienced positive changes in household income in all countries. Overall, the partner with lower share of pre-separation personal income tended to worse off after separation. in addition, in France there existed a motherhood penalty for mothers, while in Germany and Italy both childless women and mothers tended to experience negative changes in household income after the dissolution of the former couple. Repartnering appeared an effective coping strategy in all countries, except in Spain.

Taking together, these descriptive findings confirmed previous findings on gender trajectories in post- separation household income, showing that women tend to experience greater losses than men. Furthermore, they supported the initial hypothesis that gendered outcomes were driven by the pre-separation intrahousehold inequality in terms of personal income and earnings, showing different patterns for men and women depending on their pre-separation share of personal income.

The next step of the analysis will consist in the empirical validation of the suggested hypothesis through econometrics techniques.

Appendix A

A.1   Descriptives statistics

Table 1.1a Descriptive results for France: pre and post-treatment

	Pre-treatment			Post-treatment		
	All sample	**Control**	**Treated**	**All sample**	**Control**	**Treated**
Income and Wealth Components						
Eq. Household Income	40425.24	40842.99	30445.73	43372.30	44065.85	26804.28
	(54302.83)	(54730.50)	(41705.53)	(59986.99)	(60939.08)	(23774.37)
Income before social transfers	40317.70	40769.33	29528.64	42779.04	43498.65	25588.37
	(58992.74)	(59557.93)	(42032.22)	(60209.74)	(61147.75)	(24520.44)
Private transfers	1655.05	1693.47	1338.69	1982.65	1910.93	2360.85
	(1255.81)	(1253.34)	(1268.97)	(2039.32)	(1438.75)	(3951.88)
Social transfers	1325.66	1307.47	1650.75	1787.26	1731.59	2794.02
	(1516.60)	(1506.51)	(1660.23)	(2154.11)	(2062.25)	(3268.78)
Personal Income	26711.48	26910.39	21959.89	28351.15	28510.90	24535.00
	(36950.42)	(37481.22)	(20000.76)	(33270.33)	(33654.37)	(21911.13)
Earnings	19373.17	19431.30	17984.55	19802.95	19794.47	20005.73
	(34466.49)	(34913.02)	(21167.55)	(32011.12)	(32330.12)	(23171.82)
Unemployment benefits	593.79	562.99	1329.58	621.88	609.45	918.97
	(3307.13)	(3220.41)	(4899.45)	(3779.25)	(3744.19)	(4537.13)
Net wealth	696447.09	712341.51	318233.89	738074.65	759074.79	236404.86
	(1464944.13)	(1485861.85)	(728706.99)	(1574640.92)	(1600592.69)	(500311.98)
Housing wealth	205758.04	209306.81	120981.92	216145.7	221464.73	89079.958
	(250202.85)	(253313.65)	(133360.84)	(256110.09)	(258743.2)	(128327.59)
Fin. wealth	168153.05	173398.41	41774.19	187761.53	194248.54	32974.22
	(833583.96)	(843753.37)	(518254.3)	(877312.67)	(892589.48)	(316441.59)
Inheritance & Gifts	0.60	0.61	0.41	0.64	0.65	0.37
	(0.49)	(0.49)	(0.49)	(0.48)	(0.48)	(0.48)

Homeownership	1.16	1.16	1.29	1.15	1.13	1.43
	(0.37)	(0.36)	(0.46)	(0.35)	(0.34)	(0.50)

Individual and Demographic Characteristics

Income Share	0.35	0.35	0.41	.	.	.
	(0.23)	(0.23)	(0.25)	(.)	(.)	(.)
Earnings Share	0.40	0.40	0.43	.	.	.
	(0.31)	(0.31)	(0.31)	(.)	(.)	(.)
Marital status	1.96	1.97	1.75	.	.	.
	(0.39)	(0.39)	(0.58)	(.)	(.)	(.)
Property regime	1.79	1.80	1.60	.	.	.
	(0.41)	(0.40)	(0.49)	(.)	(.)	(.)
Age	52.74	53.07	44.82	55.67	56.00	47.75
	(13.92)	(13.81)	(14.34)	(13.84)	(13.73)	(14.24)
Gender	1.50	1.50	1.55	1.50	1.50	1.55
	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)
# of children	0.72	0.71	1.03	0.66	0.66	0.75
	(1.03)	(1.03)	(1.02)	(1.00)	(1.00)	(0.98)
Education	2.25	2.25	2.33	2.23	2.22	2.32
	(0.75)	(0.75)	(0.70)	(0.76)	(0.76)	(0.72)
Employment status	1.75	1.76	1.53	1.82	1.84	1.48
	(0.95)	(0.95)	(0.82)	(0.97)	(0.97)	(0.82)
Total time in employment	27.16	27.41	21.36	30.99	31.26	24.53
	(12.32)	(12.24)	(12.75)	(11.52)	(11.41)	(12.25)
Working hours	33.48	33.48	33.53	33.45	33.42	34.17
	(5.31)	(5.33)	(4.90)	(5.36)	(5.45)	(3.23)
Migration background	0.12	0.12	0.11	0.12	0.12	0.11
	(0.32)	(0.33)	(0.31)	(0.32)	(0.33)	(0.31)
Retired	0.28	0.29	0.15	0.33	0.34	0.18
	(0.45)	(0.45)	(0.36)	(0.47)	(0.47)	(0.38)
Custodial parent	0.00	0.00	0.00	0.43	0.43	0.48
	(0.00)	(0.00)	(0.00)	(0.50)	(0.50)	(0.50)
Repartnering	0.00	0.00	0.00	0.01	0.00	0.25
	(0.00)	(0.00)	(0.00)	(0.10)	(0.00)	(0.43)
N	5376	5160	216	5376	5160	216

Note. Unweighted descriptive statistics for the whole sample, the control, and the treated sample before and after

the separation period. Source: HFCS second (2014) and third (2017) wave data. Own calculations.

Table 1.1b Descriptive results for Italy: pre and post-treatment

	Pre-treatment			Post-treatment		
	All sample	**Control**	**Treated**	**All sample**	**Control**	**Treated**

Income and Wealth Components

Eq. Household	18265.62	18231.07	20059.23	18341.73	18358.84	17453.28
Income	(13693.19)	(13699.60)	(13313.46)	(14627.92)	(14642.58)	(13900.80)
Income before	18234.56	18200.42	20006.98	18321.01	18337.84	17447.20
social transfers	(13678.49)	(13683.64)	(13369.12)	(14626.81)	(14641.35)	(13906.77)
Private	1480.99	1464.11	1953.66	2119.01	2053.02	2712.87
transfers	(1216.15)	(1235.00)	(0)	(1781.08)	(1756.63)	(2171.74)
Social transfers	1175.98	1200.70	722.71	1300.28	1350.97	168.21
	(2124.72)	(2163.20)	(1249.28)	(1937.21)	(1965.13)	(156.99)
Personal	15271.70	15241.81	16823.41	15181.49	15141.47	17259.19
Income	(15966.85)	(16006.72)	(13732.98)	(16209.46)	(16232.05)	(14932.59)
Earnings	9428.82	9340.06	14036.82	9074.84	8965.47	14752.85
	(15964.35)	(15972.65)	(14904.37)	(16090.40)	(16073.62)	(16035.95)
Unemployment	50.41	47.63	194.68	74.10	74.27	65.23
benefits	(547.67)	(539.45)	(866.98)	(737.08)	(740.54)	(530.93)
Net wealth	246940.94	248077.63	187928.94	236515.12	238483.34	134333.83
	(318213.9)	(320195.62)	(180097.80)	(316620.78)	(318606.79)	(156271.69)
Housing wealth	144638.8	145429.67	103580.1	138912.1	139851.05	90165.61
	(147020.6)	(147523.73)	(111145.62)	(146973.4)	(147530.6)	(103887.29)
Fin. wealth	21096.60	21446.27	2,675.73	24052.85	24539.43	-2637.64
	(110674.1)	(110795.66)	(103061.34)	(102197.5)	(102939.58)	(37278.11)
Inheritance &	0.23	0.23	0.25	.	.	.
Gifts	(0.42)	(0.42)	(0.44)	(.)	(.)	(.)
Homeownership	1.21	1.21	1.20	1.21	1.20	1.36
	(0.41)	(0.41)	(0.41)	(0.41)	(0.40)	(0.48)

Individual and Demographic Characteristics

Income Share	0.25	0.25	0.34	.	.	.
	(0.25)	(0.25)	(0.25)	(.)	(.)	(.)
Earnings Share	0.31	0.31	0.37	.	.	.
	(0.34)	(0.34)	(0.31)	(.)	(.)	(.)
Marital status	1.98	1.98	1.82	.	.	.
	(0.15)	(0.14)	(0.39)	(.)	(.)	(.)
Age	58.24	58.39	50.83	60.21	60.35	52.78
	(12.88)	(12.83)	(13.14)	(12.83)	(12.78)	(13.02)
Gender	1.50	1.50	1.42	1.50	1.50	1.42
	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)
# of children	0.47	0.47	0.64	0.41	0.41	0.48
	(0.82)	(0.82)	(0.89)	(0.78)	(0.78)	(0.82)
Education	1.60	1.60	1.84	1.60	1.59	1.86
	(0.70)	(0.70)	(0.74)	(0.70)	(0.70)	(0.73)
Employment status	2.12	2.13	1.52	2.17	2.18	1.55
	(0.97)	(0.96)	(0.83)	(0.96)	(0.96)	(0.87)
Total time in employment	28.79	28.92	24.63	33.24	33.33	29.07
	(10.58)	(10.55)	(10.56)	(11.44)	(11.40)	(12.51)
Working hours	37.47	37.45	38.24	37.37	37.34	38.25
	(10.33)	(10.36)	(9.50)	(9.93)	(9.92)	(10.23)
Migration background	0.05	0.05	0.12	0.05	0.05	0.12
	(0.23)	(0.22)	(0.33)	(0.23)	(0.22)	(0.33)
Retired	0.32	0.33	0.16	0.35	0.35	0.16
	(0.47)	(0.47)	(0.37)	(0.48)	(0.48)	(0.37)
Custodial parent	0.00	0.00	0.00	0.36	0.36	0.37
	(0.00)	(0.00)	(0.00)	(0.48)	(0.48)	(0.49)
Repartnering	0.00	0.00	0.00	0.01	0.00	0.47
	(0.00)	(0.00)	(0.00)	(0.09)	(0.00)	(0.50)
N	4392	4309	83	4392	4309	83

Note. Unweighted descriptive statistics for the whole sample, the control, and the treated sample before and after the separation period. Source: HFCS second (2014) and third (2017) wave data. Own calculations.

Table 1.1c Descriptive results for Germany: pre and post-treatment

	Pre-treatment			Post-treatment		
	All sample	Control	Treated	All sample	Control	Treated

Income and Wealth Components

Eq. Household Income	41855.57	41700.97	47100.06	41259.41	41382.92	37069.41
	(41651.68)	(40996.57)	(59775.62)	(40111.74)	(40295.35)	(33158.61)
Income before social transfers	40905.98	40750.02	46196.95	40538.81	40664.84	36263.18
	(40357.04)	(39643.43)	(59718.31)	(40210.55)	(40389.29)	(33450.87)
Private transfers	3122.68	3029.23	4898.19	2727.86	2257.86	5480.69
	(3771.04)	(3666.61)	(5827.05)	(3638.22)	(2648.43)	(6824.61)
Social transfers	1953.11	1938.57	2421.97	2039.56	2029.99	2378.40
	(1564.58)	(1544.15)	(2089.84)	(1895.46)	(1875.34)	(2513.29)
Personal Income	30540.51	30422.91	34530.19	30310.96	30322.36	29924.26
	(39308.60)	(38669.34)	(56981.60)	(37163.56)	(37379.02)	(29041.83)
Earnings	22286.26	22142.53	27161.99	21205.19	21218.81	20742.95
	(38978.40)	(38272.19)	(58083.40)	(37863.82)	(38039.53)	(31456.71)
Unemployment benefits	175.96	173.27	267.08	92.56	93.60	57.26
	(1382.83)	(1386.71)	(1245.97)	(894.26)	(904.99)	(380.67)
Net wealth	448034.96	451290.10	337608.55	501624.53	505083.35	384288.46
	(898439.57)	(906267.21)	(564118.54)	(891884.65)	(890688.59)	(927841.67)
Housing wealth	178248.7	179975.1	119683.78	211949.8	214117.52	138413.86
	(232448.1)	(233858.27)	(168644.33)	(250651.7)	(251358.85)	(213557.32)
Fin. wealth	60527.05	59686.64	89022.71	71504.24	70651.29	100410.28
	(292165.4)	(284471.09)	(486758.58)	(290898.5)	(276168.69)	(608195.14)
Inheritance & Gifts	0.27	0.27	0.26	0.16	0.16	0.24
	(0.45)	(0.45)	(0.44)	(0.37)	(0.36)	(0.43)
Homeownership	1.28	1.28	1.36	1.25	1.25	1.38
	(0.45)	(0.45)	(0.48)	(0.44)	(0.43)	(0.49)

Individual and Demographic Characteristics

Income Share	0.30	0.30	0.33	.	.	.
	(0.23)	(0.23)	(0.25)	(.)	(.)	(.)
Earnings Share	0.35	0.35	0.36	.	.	.
	(0.32)	(0.32)	(0.31)	(.)	(.)	(.)
Marital status	1.95	1.95	1.79	.	.	.
	(0.23)	(022)	(0.41)	(.)	(.)	(.)
Age	57.08	57.12	55.62	60.03	60.07	58.43
	(13.94)	(13.86)	(16.47)	(13.87)	(13.79)	(16.19)
Gender	1.50	1.50	1.56	1.50	1.50	1.56
	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)
# of children	0.44	0.44	0.40	0.42	0.42	0.39
	(0.87)	(0.87)	(0.74)	(0.87)	(0.87)	(0.75)
Education	2.40	2.40	2.34	2.38	2.39	2.28
	(0.59)	(0.59)	(0.65)	(0.60)	(0.59)	(0.64)
Employment status	1.92	1.92	1.89	2.00	2.00	1.97
	(0.99)	(0.99)	(0.98)	(0.99)	(0.99)	(0.99)
Total time in employment	30.56	30.61	28.95	32.27	32.33	30.23
	(13.10)	(13.06)	(14.59)	(12.77)	(12.72)	(14.31)
Working hours	34.27	34.29	33.60	34.19	34.15	35.25
	(15.21)	(15.25)	(13.95)	(14.60)	(14.61)	(14.38)
Migration background	0.10	0.10	0.08	0.09	0.10	0.07
	(0.30)	(0.30)	(0.27)	(0.29)	(0.29)	(0.25)
Retired	0.35	0.35	0.33	0.41	0.41	0.37
	(0.48)	(0.48)	(0.47)	(0.49)	(0.49)	(0.49)
Custodial parent	0.00	0.00	0.00	0.28	0.28	0.30
	(0.00)	(0.00)	(0.00)	(0.45)	(0.45)	(0.46)
Repartnering	0.00	0.00	0.00	0.01	0.00	0.29
	(0.00)	(0.00)	(0.00)	(0.09)	(0.00)	(0.45)
N	4121	4003	118	4121	4003	118

Note. Unweighted descriptive statistics for the whole sample, the control, and the treated sample before and after the separation period. Source: HFCS second (2014) and third (2017) wave data (First implicate). Own calculations.

Table 1.1d Descriptive results for Spain: pre and post-treatment

	Pre-treatment			Post-treatment		
	All sample	Control	Treated	All sample	Control	Treated
Income and Wealth Components						
Eq. Household Income	25255.44	25334.55	22636.30	30891.44	31181.04	21303.39
	(36526.66)	(36765.34)	(27450.35)	(53558.21)	(54212.69)	(21029.15)
Income before social transfers	25184.73	25264.61	22539.95	30774.28	31063.29	21205.67
	(36531.18)	(36769.24)	(27479.81)	(53575.35)	(54229.62)	(21082.63)
Private transfers	1311.37	1281.86	1488.44	1779.18	1227.39	2956.33
	(1032.66)	(1081.02)	(738.98)	(2610.65)	(1184.87)	(4135.76)
Social transfers	940.30	934.31	1116.02	1192.87	1205.04	849.01
	(1799.84)	(1819.09)	(1129.94)	(2869.98)	(2912.41)	(1130.25)
Personal Income	16975.64	16928.91	18522.84	19076.12	19083.86	18820.15
	(24269.90)	(24192.27)	(26762.92)	(29255.59)	(29438.33)	(22459.19)
Earnings	12441.04	12378.97	14496.22	12930.45	12857.21	15355.21
	(23706.36)	(23706.53)	(23694.14)	(28566.11)	(28711.57)	(23195.98)
Unemployment benefits	299.79	296.84	397.48	186.02	185.75	195.23
	(1432.49)	(1428.81)	(1551.81)	(915.49)	(919.92)	(757.17)
Net wealth	1269760.59	1291574.93	547533.54	1612755.16	1648066.14	443682.07
	(4241235.81)	(4299197.4)	(1035866.9)	(7240527.6)	(7344416.64)	(932059.53)
Housing wealth	199024.7	200402.16	153420.08	216592.02	218802.61	143403.97
	(268872.53)	(267400.15)	(311422.25)	(303628.51)	(304945.87)	(246110.96)
Fin. wealth	320363.28	327593.19	81100.05	465566.54	477854.07	58929.01
	(1428088.2)	(1448084.4)	(279547.73)	(3337267.1)	(3386331.7)	(229165.97)
Inheritance & Gifts	0.45	0.45	0.29	0.51	0.52	0.29
	(0.50)	(0.50)	(0.46)	(0.50)	(0.50)	(0.46)
Homeownership	1.09	1.09	1.22	1.09	1.09	1.21
	(0.29)	(0.29)	(0.41)	(0.29)	(0.28)	(0.41)

Individual and Demographic Characteristics

Income Share	0.27	0.27	0.37	.	.	.
	(0.26)	(0.25)	(0.29)	(.)	(.)	(.)
Earnings Share	0.36	0.36	0.44	.	.	.
	(0.35)	(0.34)	(0.37)	(.)	(.)	(.)
Marital status	1.99	1.99	2.10	.	.	.
	(0.21)	(0.20)	(0.53)	(.)	(.)	(.)
Age	57.17	57.44	48.12	60.17	60.44	51.13
	(13.12)	(13.03)	(12.70)	(13.06)	(12.97)	(12.72)
Gender	1.50	1.50	1.46	1.50	1.50	1.46
	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)
# of children	0.57	0.56	0.86	0.48	0.48	0.71
	(0.91)	(0.91)	(1.04)	(0.86)	(0.86)	(1.07)
Education	2.06	2.06	2.09	2.08	2.08	2.08
	(0.90)	(0.90)	(0.89)	(0.90)	(0.90)	(0.91)
Employment status	1.96	1.97	1.58	2.03	2.04	1.56
	(0.95)	(0.95)	(0.84)	(0.96)	(0.96)	(0.84)
Total time in employment	.	.	.	28.40	28.53	24.28
	(.)	(.)	(.)	(13.95)	(13.99)	(12.13)
Working hours	39.15	39.15	39.33	38.64	38.62	39.09
	(11.56)	(11.57)	(11.34)	(12.18)	(12.21)	(11.56)
Migration background						
Retired	0.26	0.26	0.14	0.31	0.32	0.14
	(0.44)	(0.44)	(0.34)	(0.46)	(0.47)	(0.35)
Custodial parent	0.00	0.00	0.00	0.38	0.38	0.50
	(0.00)	(0.00)	(0.00)	(0.49)	(0.49)	(0.50)
Repartnering	0.00	0.00	0.00	0.02	0.00	0.58
	(0.00)	(0.00)	(0.00)	(0.13)	(0.00)	(0.49)
N	4741	4602	139	4741	4602	139

Note. Unweighted descriptive statistics for the whole sample, the control, and the treated sample before and after the separation period. Source: HFCS second (2014) and third (2017) wave data (First implicate). Own calculations.

A.2 Post-separation gendered statistics

Table 1.2a Post-separation descriptives statistics by gender: France

	Men	Women
Eq.Household Income	31039.20	23352.29
	(26030.40)	(21256.50)
Income before social transfers	30216.57	21815.80
	(26587.21)	(22100.94)
Private transfers	1,770.56	2,388.96
	(.)	(4,047.22)
Social transfers	2,574.03	2,902.27
	(4,222.28)	(2,713.85)
Personal Income	29906.46	20156.58
	(24543.83)	(18482.85)
Earnings	23903.51	16828.54
	(27110.38)	(18912.90)
Unemployment benefits	1,378.28	544.57
	(6,465.78)	(1,783.49)
Net wealth	250214.4	225148.3
	(481673.2)	(516758.5)
Housing wealth	97122.19	82524.52
	(139616.7)	(118533.2)
Financial wealth	11415.62	50547.20
	(298857.8)	(330291.6)
Inheritance & gifts	0.36	0.38
	(0.48)	(0.49)
Homeownership	1.36	1.49
	(0.48)	(0.50)
Age	49.47	46.34
	(14.30)	(14.10)
# of children	0.43	1.01
	(0.78)	(1.06)
Household with children	0.28	0.55
	(0.45)	(0.50)
Education	2.36	2.29
	(0.70)	(0.74)
Employment status	1.49	1.47
	(0.84)	(0.80)
Working hours	34.89	33.59
	(0.84)	(4.21)
Custodial parent	0.31	0.62
	(0.46)	(0.49)
Repartnering	0.28	0.23

	(0.45)	(0.42)
N	97	119

Note. Unweighted descriptive statistic for the treated sample after the separation period by gender. Source: HFCS third wave (2017) data. Own calculations.

Table 1.2b Post-separation descriptives statistics by gender: Italy

	Men	Women
Eq. Household Income	19107.74	15184.32
	(14366.99)	(13097.12)
Income before social transfers	19105.57	15172.88
	(14369.93)	(13106.31)
Private transfers	4,806.00	2,015.15
	(.)	(2,038.11)
Social transfers	104.13	200.25
	(.)	(207.68)
Personal Income	20293.96	13097.21
	(15477.48)	(13259.00)
Earnings	16773.99	11981.00
	(17555.43)	(13434.35)
Unemployment benefits	112.79	0.00
	(697.36)	(0.00)
Net wealth	134545.43	134043.64
	(157406.1)	(156993.79)
Housing wealth	88410.41	92572.75
	(103382.29)	(106039.52)
Financial wealth	2,313.48	-9290.71
	(37133.26)	(37005.32)
Inheritance & gifts	.	.
	(.)	(.)
Homeownership	1.38	1.34
	(0.49)	(0.48)
Age	53.54	51.74
	(13.40)	(12.59)
# of children	0.40	0.60
	(0.76)	(0.88)
Household with children	0.25	0.37
	(0.44)	(0.49)
Education	1.77	1.97
	(0.78)	(0.66)
Employment status	1.56	1.54
	(0.87)	(0.89)

Working hours	40.61	35.27
	(6.98)	(12.80)
Custodial parent	0.27	0.51
	(0.45)	(0.51)
Repartnering	0.44	0.51
	(0.50)	(0.51)
N	48	35

Note. Unweighted descriptive statistic for the treated sample after the separation period by gender. Source: HFCS third (2017) wave data. Own calculations.

Table 1.2c Post-separation descriptives statistics by gender: Germany

	Men	Women
Eq.Household Income	48138.25	28348.51
	(39587.35)	(23963.14)
Income before social transfers	47735.24	27224.58
	(39694.89)	(24281.34)
Private transfers	.	5,480.69
	(.)	(6,824.61)
Social transfers	1,496.91	2,853.05
	(438.35)	(3,014.06)
Personal Income	42472.77	20037.56
	(35990.36)	(16632.20)
Earnings	32928.63	11142.10
	(40457.75)	(16866.42)
Unemployment benefits	57.05	57.43
	(411.37)	(357.85)
Net wealth	492561.7	298982.3
	(1122014)	(738288.2)
Housing wealth	138470	138369.6
	(232827.5)	(198894.9)
Financial wealth	113308.5	90248.05
	(647897.3)	(579849.8)
Inheritance & gifts	0.25	0.23
	(0.44)	(0.42)
Homeownership	1.42	1.35
	(0.50)	(0.48)
Age	57.65	59.05
	(16.97)	(15.65)
# of children	0.29	0.47
	(0.61)	(0.85)
Household with children	0.21	0.27

	Men	Women
	(0.41)	(0.45)
Education	2.42	2.17
	(0.64)	(0.63)
Employment status	1.79	2.13
	(0.98)	(0.98)
Working hours	44.06	26.13
	(6.84)	(14.51)
Custodial parent	0.25	0.33
	(0.44)	(0.48)
Repartnering	0.37	0.23
	(0.49)	(0.42)
N	52	66

Note. Unweighted descriptive statistic for the treated sample after the separation period by gender.

Source: HFCS third (2017) wave data (First implicate). Own calculations.

Table 1.2d. Post-separation descriptives statistics by gender: Spain

	Men	Women
Eq. Household Income	24036.23	18100.85
	(23767.59)	(16906.87)
Income before social transfers	23946.95	17993.23
	(23822.46)	(16958.43)
Private transfers	3,714.54	2,680.62
	(5,929.01)	(3,617.57)
Social transfers	1,116.02	688.80
	(1,495.24)	(900.54)
Personal Income	23312.60	13555.56
	(26454.16)	(15189.25)
Earnings	17813.67	12474.21
	(28120.52)	(15301.40)
Unemployment benefits	262.14	116.83
	(888.86)	(562.34)
Net wealth	472646.7	409739.2
	(933493.6)	(936596.3)
Housing wealth	145377.2	141091.6
	(242996.3)	(251617.5)
Financial wealth	69469.59	46576.77
	(252590.9)	(199519)
Inheritance & gifts	0.32	0.27
	(0.47)	(0.45)
Homeownership	1.19	1.23
	(0.39)	(0.43)
Age	52.91	49.05

	(12.79)	(12.41)
# of children	0.59	0.84
	(1.07)	(1.07)
Household with children	0.33	0.50
	(0.47)	(0.50)
Education	2.17	1.97
	(0.89)	(0.93)
Employment status	1.75	1.34
	(0.92)	(0.70)
Working hours	40.91	37.52
	(11.20)	(11.74)
Custodial parent	0.40	0.61
	(0.49)	(0.49)
Repartnering	0.56	0.61
	(0.50)	(0.49)
N	75	64

Note. Unweighted descriptive statistic for the treated sample after the separation period by gender.

Source: HFCS third (2017) wave data (First implicate). Own calculations.

A.3 Within-household gender inequality

Table 1.3a Income and earnings shares: France

	Income Share	Earnings Share	N
Pre-separation Income Quintiles			
Q1	0.33	0.39	932
	(0.31)	(0.38)	
Q2	0.38	0.46	1129
	(0.21)	(0.30)	
Q3	0.38	0.42	1084
	(0.19)	(0.27)	
Q4	0.37	0.41	1112
	(0.20)	(0.27)	
Q5	0.28	0.33	1050
	(0.22)	(0.32)	
Pre-separation Wealth Quintiles			
Q1	0.36	0.38	503
	(0.29)	(0.35)	
Q2	0.36	0.40	713
	(0.23)	(0.28)	
Q3	0.37	0.44	824
	(0.21)	(0.29)	
Q4	0.38	0.44	1181
	(0.20)	(0.29)	
Q5	0.32	0.37	2041
	(0.21)	(0.33)	
Age cohort			
20-28	0.35	0.34	102
	(0.25)	(0.28)	
29-38	0.39	0.40	426
	(0.23)	(0.25)	
39-48	0.40	0.41	624
	(0.24)	(0.27)	
49-58	0.34	0.42	648
	(0.24)	(0.32)	
59-69	0.32	0.42	580
	(0.21)	(0.44)	
Over 70	0.27	0.19	293
	(0.19)	(0.39)	
Education			
Primary and secondary	0.31	0.42	528
	(0.23)	(0.38)	
Upper education	0.33	0.38	923
	(0.22)	(0.31)	
High education	0.39	0.41	1168
	(0.23)	(0.28)	

Employment status			
Employed	0.42	0.48	1572
	(0.21)	(0.27)	
Unemployed	0.29	0.24	119
	(0.24)	(0.31)	
Not in the labor force	0.24	0.13	982
	(0.22)	(0.30)	
Type of contract			
Permanent	0.43	0.49	1232
	(0.19)	(0.25)	
Temporary	0.37	0.46	101
	(0.25)	(0.32)	
Marital status			
Unregistered partnership	0.44	0.45	261
	(0.26)	(0.31)	
Marriage	0.33	0.39	2248
	(0.23)	(0.32)	
Registered partnership	0.44	0.45	164
	(0.20)	(0.24)	
Property Regime			
Separated assets	0.41	0.44	1088
	(0.24)	(0.30)	
Common assets	0.34	0.39	4219
	(0.23)	(0.31)	

Note. Women's share of personal income and earnings according to individual characteristics. Source: HFCS second (2014) wave data. Own calculations.

Table 1.3b Income and earnings shares: Italy

	Income Share	Earnings Share	*N*
Pre-separation Income Quintiles			
Q1	0.15	0.18	732
	(0.30)	(0.36)	
Q2	0.16	0.15	817
	(0.22)	(0.24)	
Q3	0.24	0.31	894
	(0.23)	(0.31)	
Q4	0.34	0.41	889
	(0.22)	(0.32)	
Q5	0.34	0.41	943
	(0.20)	(0.33)	

Pre-separation Wealth Quintiles			
Q1	0.19	0.22	648
	(0.28)	(0.33)	
Q2	0.22	0.26	708
	(0.24)	(0.30)	
Q3	0.23	0.29	892
	(0.25)	(0.33)	
Q4	0.30	0.38	929
	(0.25)	(0.34)	
Q5	0.29	0.36	1098
	(0.22)	(0.33)	
Age cohort			
20-28	0.17	0.17	13
	(0.20)	(0.20)	
29-38	0.27	0.28	157
	(0.28)	(0.30)	
39-48	0.24	0.25	415
	(0.25)	(0.26)	
49-58	0.24	0.32	574
	(0.27)	(0.35)	
59-69	0.25	0.44	591
	(0.24)	(0.43)	
Over 70	0.27	0.22	380
	(0.22)	(0.41)	
Education			
Primary and secondary	0.19	0.21	1106
	(0.23)	(0.34)	
Upper education	0.30	0.35	736
	(0.25)	(0.33)	
High education	0.39	0.43	288
	(0.21)	(0.28)	

Employment Status			
Employed	0.44	0.52	727
	(0.20)	(0.28)	
Unemployed	0.04	0.04	85
	(0.14)	(0.18)	
Not in the labor force	0.16	0.01	1318
	(0.21)	(0.10)	
Type of contract			
Permanent	0.45	0.54	535
	(0.19)	(0.27)	
Temporary	0.37	0.42	81
	(0.25)	(0.30)	
Marital Status			
Unregistered partnership	0.38	0.39	48
	(0.27)	(0.32)	
Marriage	0.25	0.31	2082
	(0.25)	(0.34)	

Note. Women's share of personal income and earnings according to individual characteristics. Source: HFCS second (2014) wave data. Own calculations.

Table 1.3c Income and earnings shares: Germany

	Income Share	Earnings Share	*N*
Pre-separation Income Quintiles			
Q1	0.30	0.37	750
	(0.28)	(0.41)	
Q2	0.29	0.33	774
	(0.22)	(0.34)	
Q3	0.29	0.33	841
	(0.22)	(0.30)	
Q4	0.30	0.36	877
	(0.22)	(0.30)	
Q5	0.30	0.35	846
	(0.23)	(0.29)	
Pre-separation Wealth Quintiles			
Q1	0.33	0.35	385
	(0.27)	(0.35)	
Q2	0.35	0.39	486

	(0.24)	(0.35)	
Q3	0.32	0.37	567
	(0.23)	(0.29)	
Q4	0.30	0.38	1022
	(0.22)	(0.33)	
Q5	0.26	0.31	1628
	(0.22)	(0.31)	

Age cohort

20-28	0.31	0.31	55
	(0.29)	(0.29)	
29-38	0.29	0.29	208
	(0.23)	(0.24)	
39-48	0.28	0.29	369
	(0.23)	(0.26)	
49-58	0.33	0.37	483
	(0.25)	(0.31)	
59-69	0.31	0.43	553
	(0.23)	(0.41)	
Over 70	0.27	0.35	378
	(0.20)	(0.43)	

Education

Primary and secondary	0.23	0.30	172
	(0.25)	(0.38)	
Upper education	0.28	0.33	1133
	(0.23)	(0.33)	
High education	0.34	0.39	728
	(0.23)	(0.31)	

Employment Status			
Employed	0.37	0.43	1006
	(0.23)	(0.29)	
Unemployed	0.31	0.28	38
	(0.26)	(0.34)	
Not in the labor force	0.23	0.16	937
	(0.22)	(0.33)	
Type of contract			
Permanent	0.36	0.42	917
	(0.23)	(0.29)	
Temporary	0.33	0.39	81
	(0.23)	(0.32)	
Marital Status			
Unregistered partnership	0.42	0.43	103
	(0.23)	(0.28)	
Marriage	0.29	0.35	1941
	(0.23)	(0.33)	
Registered partnership	0.50	.	2
	(0.26)	(.)	

Note. Women's share of personal income and earnings according to individual characteristics. Source: HFCS second (2014) wave data (first implicate). Own calculations.

Table 1.3d Income and earnings shares: Spain

	Income Share	Earnings Share	*N*
Pre-separation Income Quintiles			
Q1	0.19	0.31	846
	(0.28)	(0.40)	
Q2	0.24	0.31	884
	(0.25)	(0.34)	
Q3	0.27	0.38	949
	(0.25)	(0.33)	
Q4	0.33	0.43	966
	(0.24)	(0.32)	
Q5	0.30	0.38	1021
	(0.24)	(0.33)	

Pre-separation Wealth Quintiles

Q1	0.31	0.37	436
	(0.28)	(0.37)	
Q2	0.24	0.34	539
	(0.25)	(0.35)	
Q3	0.27	0.33	635
	(0.25)	(0.32)	
Q4	0.26	0.36	814
	(0.23)	(0.33)	
Q5	(0.27	0.38	2242
	(0.26)	(0.35)	

Age cohort

20-28	0.35	0.27	18
	(0.31)	(0.29)	
29-38	0.33	0.33	233
	(0.23)	(0.28)	
39-48	0.31	0.35	467
	(0.26)	(0.31)	
49-58	0.31	0.37	609
	(0.28)	(0.35)	
59-69	0.23	0.41	616
	(0.24)	(0.42)	
Over 70	0.18	0.33	390
	(0.23)	(0.47)	

Education

Primary and secondary	0.20	0.32	922
	(0.24)	(0.38)	
Upper education	0.26	0.35	466
	(0.27)	(0.35)	
High education	0.35	0.40	943
	(0.25)	(0.32)	

Employment Status			
Employed	0.43	0.51	1003
	(0.21)	(0.29)	
Unemployed	0.20	0.23	235
	(0.22)	(0.35)	
Not in the labor force	0.14	0.07	1095
	(0.21)	(0.23)	
Type of contract			
Permanent	0.47	0.54	606
	(0.19)	(0.26)	
Temporary	0.32	0.38	157
	(0.21)	(0.34)	
Marital Status			
Unregistered partnership	0.39	0.45	59
	(0.24)	(0.32)	
Marriage	0.27	0.36	2230
	(0.26)	(0.35)	
Registered partnership	0.36	0.45	44
	(0.28)	(0.38)	

Note. Women's share of personal income and earnings according to individual characteristics. Source: HFCS second (2014) wave data (First implicate). Own calculations.

Chapter 2

Within-couple inequality and breakup outcomes: a comparative perspective in the EU

2.1   Introduction

Union dissolution may promote gender inequality and this feature represents a social issue that especially involves female-headed households and single mothers. A large proportion of income inequality within the European Union is driven by levels of income of these households (Gehringer et al., 2015).

Empirical literature concerning breakup outcomes has shown that women tend to experience large and persistent losses of income and are exposed to higher poverty risk in the aftermath of a separation (Aassve et al. 2007; de Vaus et al. 2015; Leopold 2018; Andre et al. 2006; Uunk 2004; van Damme et al. 2009; Vignoli et al. 2018). These results mainly hold in the short-to-the-medium run. Different explanations and several working mechanisms have been proposed to explain these stylized facts, at the micro and macro level.

The main idea of the present study is that gender inequality after separation is driven by pre-existing within-couple differences in terms of personal endowments. In particular, I hypothesize that differences in the distribution of personal income and individual wealth prior to separation, strongly influence the gendered outcomes underlined in the literature.

Structural differences in the labour market between men and women determine the well-known gender earnings gap. Men tend to have higher earnings ceteris paribus than women. They also tend to stay longer in the labour market and to not experience career interruptions, thus increasing their work experience and labour income which in turn allow them to accumulate more wealth over the life cycle. Conversely, women are often employed part-time and in low-earning sectors of the economy. Women, and especially mothers, tend to experience career-disruptions after maternity and a motherhood penalty in the labour market, due to inadequate motherhood-supporting policies and family-career reconciliation policies. Taken together all these elements undermine women's levels of personal income and accumulation of individual wealth. In the perspective of this study, the gender wealth gap between partners is also a potential source of explanation of the negative outcomes experienced by women in the aftermath of a separation, since individual wealth defines women's financial autonomy and their economic security in the short and long run.

Introducing wealth in the analysis of the economic consequences of union dissolution appears crucial for several reasons. First, the existence of ex-ante differences in personal wealth owned drives accumulation during the relationship, exacerbating possible gaps. Secondly, wealth represents a collateral for maintaining pre-separation standards of living. Furthermore, wealth inequalities are exacerbated by separation or divorce due to marital property regimes that rule the division of household wealth after a divorce. In general, analysis that only embodies only income could underestimate gender inequalities following a dissolution (Bortien and Lersh, 2020).

Consequently, in this framework income and wealth represent both key elements that enable individuals to cope with a dissolution-induced negative shock.

The main aim of the chapter is the empirical validation of the role played by pre-separation within couple inequality in shaping gendered outcomes of the separation on the dynamics of post-separation household income. To enable the analysis, measures of within-couple inequality in terms of personal income, individual earnings and personal wealth are constructed. Furthermore, it aims to analyse how the impact of separation varies depending on cross-country institutional characteristics as marital property regime and marital status, accounting for a comparative perspective across the European countries included in the analysis.

To understand the impact of separation and the possible role played by income and wealth inequalities on household income of separated individuals, I used data from Household Finance and Consumption Survey (HFCS) by the European Central Bank between 2014 and 2017 of four countries, namely France, Italy, Germany and Spain.

The study was conducted implementing a combination of Propensity Score Matching – Difference in Differences (PSM-DID) approach that allow to isolate the unbiased separation effect on the economic wellbeing of separated households.

The results show that a separation penalty exists for women in all countries, except in Spain. However, the impact of separation is moderated by pre-separation within-couple inequality. The higher the share of personal income owned compared to the former partner during the relationship, the lower the loss in post-separation household income. Moreover, separation penalty is also observed for men but only when they were not the primary earner within the couple. The more heterogeneous effect of wealth, measured by potential personal wealth, generally associates higher loss in household income to higher relative pre-separation wealth, especially for women. The effects of marital property regime, marital status and parenting differ across the degree of within-couple inequality in personal income and earnings. In particular, the

results on the role of legal arrangements, also in combination with within-couple inequality, show that women who were less economically independent during the relationship may experiences more severe consequences depending on the legal disposition that concern division of property and family law. Furthermore, repartnering is an effective coping mechanism at work in all countries but it does not overcome the effect of within-couple inequality.

The contribution to the literature is threefold. The first novelty is a joint investigation of income and wealth as two main determinants of gendered economic outcomes in post-separation living standards. An additional novelty is the comparative longitudinal perspective for European countries. The literature only recently started to investigate the role of wealth in marital dissolution and most contributions focus on a single outcome that is generally household income or wealth, often analysing a single country. In this study wealth is used as determinant and not as an outcome.

Lastly, this study exploits the longitudinal component of the unique dataset for the European Union that embeds both income and wealth data for several European countries to enable cross-country comparison of the role that marital property regimes play in defining post-separation outcomes in four European countries.

The rest of the chapter is organized as follows. The next section presents the literature review on the impact of separation and gender inequality on economic wellbeing with a focus on women. Section 3 provides a comparative overview of the institutional setting for the countries in the analysis. Section 4 illustrates the research hypothesis. Sections 5 and Section 6 provides data description and methodological strategy. Empirical results and sensitive analysis are provided in Section 7 and in Section 8, respectively. Finally, in Section 9 I discuss the results pointing out limitation of the analysis and draw the conclusions.

2.2   Literature review

2.2.1   Impact of breakups on women's economic wellbeing

The literature on the economic consequences of relationship breakups underlined that women generally experience large and persistent losses of income and greater poverty risk after separation. Lone parenthood, in particular, represents a situation associated with a greater fall in income and a higher risk of poverty, especially for mother who are often primary custodial parent of the children. Although most studies find similar results, the magnitude of the losses

associated with separation differs substantially, within and across countries (Mortelmans, 2020).

In order to quantify the impact of breakups on the economic well-being of individuals, most studies focus on the percentage difference in income from the year before the breakup to one year after the separation took place, namely a short-run analysis. Another strand of the literature focus on the long-run and life-cycle perspective finding the same results with different rates of recovery: while in the U.S. the effects appear permanent (Tach and Eads, 2015) instead in other OECD countries effects appear temporary (Thielemans and Mortelmans, 2022)

Few studies so far focus on the dissolution of cohabiting unions. Cohabiting unions have different path and rules with respect to marriage and legal unions. They generally feature partners who are more educated and more active in the labour market, also they tend to have more equal division of paid work and fewer children on average (Tach and Eads, 2015; Bonnet et al.,2021). Considering all these characteristics, individuals in cohabiting unions are less dependent on welfare and private transfers (Bonnet et al., 2021; Mortelmans 2020).

Researchers find larger financial losses associated to divorce for women compared to men in the U.S. (Smock et al., 1999; Di Prete and McManus, 2000; de Vaus et al., 2017; Hauser et al., 2016). The results for European countries largely display the same trend (Andreß et al., 2016; Uunk 2004; Hauser et al., 2016; de Vaus et al., 2017; Aassve et al.,2007). Moreover, in some cases men seem to gain relatively or lose less from divorce (Hauser et al., 2016; de Vaus et al., 2017; Andreß et al., 2016). In cohabiting unions women experience lower losses compared to married women (Avellar and Smock, 2005; Fisher and Low, 2012; Bonnet et al.2021) while cohabiting men have a greater fall of income than married men in the U.S. (McManus and DiPrete, 2001; Avellar and Smock, 2005). Similar results are found for cohabiting unions in Europe (de Regt et al.,2012). This pattern could be due to several reasons. Cohabiting unions tend to keep individual resources separated during the relationship enabling individual to maintain their financial independence in relation to their partner. Besides, cohabiting individuals tend to be at the bottom of the income distribution with respect to married couple in the U.S. (Tach and Eads, 2015) so that lower household income could imply less separation-driven losses. Another reason could lie in the fact that cohabiting unions exhibit higher and faster rates of repartnering compared to marriage.

Institutional factors play a key role in determining the effects of couple dissolution. Many studies underscored how income-related, employment-related and family policies may exacerbate or moderate the effects of a separation for women (de Vaus et al. 2017). In particular, measures of income provision have a stronger positive impact on post-separation income

trajectories of women than impacts related to childcare support (Mortelmans 2020). Another institutional feature that could shape divorce and separation outcomes is marital property regime that often differs across country. Marital property regime rules the way in which marital resources, especially wealth, would be split in case of separation or divorce (Deere et al., 2018). One of the first comparative studies for European countries, Aassve et al. (2007), pointed out how partnership's dissolution has larger negative effects on poverty status and relative income for women than for men. This result mainly holds in the short-to-the-medium run. Authors identify three main reasons behind the fall of household income: lower participation rate and lower earnings that women face in the labour market, women are more often custodial parents and lastly the inadequacy of social welfare measure for single female households. Their results in fact exhibit different patterns across country and, highlight that northern countries display narrower impacts compared to southern country (Mortelmans 2020). Separation outcomes are driven by differences in institutional framework, especially by social welfare policies put in place. In the same vein, de Vaus et al. (2015) found for six OECD countries larger and persistent negative consequences of divorce for women compared to men. Their results appear to be influenced by social welfare system, country-specific labour market and family laws. In particular, they argue that the combination of institutional arrangements and social welfare policies influence the effect on income.

Several contributions in the literature proposed further explanations and mechanisms that possibly drove these results, both at the micro and macro level.

The mechanisms examined in this study focus on intra-household inequality in term of individual income and wealth and how they interconnect with labour market behaviour, rate of repartnering and custodial arrangements.

2.2.2   The role of intra-household inequality of income and wealth on economic wellbeing

Impact of union dissolution on economic wellbeing is moderated by intrahousehold inequalities in terms of individual income and wealth. Accounting for intrahousehold inequality among former partner provide heterogeneous results on the individual income dynamics (McManus and DiPrete, 2001; Bonnet et al., 2021; Endelweld et al., 2022; Chanda 2022).

Differences in individual income among partners are driven by women's higher rates of household specialization and childbearing, and consequently by lower rate of labour market attachment. Even when women stay in the labour market, they tend to face segregation, lower wages and career interruptions following childbirth. The within-couple income gap at the time of divorce is found to be larger than the initial gap at the time of marriage (Bonnet et al. 2021).

Therefore, even if some mechanism of assortative matching was present when the relationship began, during the relationship the above mechanisms widen the initial gender differences.

According to some studies the reason for gendered effect of couple's dissolution may lie in marital specialization and in restricted earnings capacities due to horizontal segregation into the labour market (Bonnet et al. 2021; van Damme et al., 2009; Thielemans and Mortelmans, 2018), in their interaction or in individual capacity to rely on different sources of income as social welfare transfers (Hogendoorn, 2022).

The impact of intrahousehold inequality has been studied both at the macro and micro level. Andreß et al. (2006) showed that the unequal distribution of cost of separation are ascribable to the gender-specific division of labour within a couple. The higher the economic autonomy of women in a country, the more equally income changes are distributed between men and women after separation. McManus and DiPrete (2001) outlined as in the U.S. expected loss in post-separation household income for men is shaped by within- couple pre-separation relative income contribution. Similarly, Endeweld et al. (2022) showed that the effects of separation in Israel are largely negative for men with lower pre-divorce levels of earnings while women tend to face losses regardless the pre-divorce income levels. Conversely, for France, Bonnet et al. (2021) highlighted that the impact of divorce is heavier for second-earner partner, regardless of gender, because women tend to take on larger share of unpaid work. According to the authors, compensating mechanisms as child-support payments and spouse alimony are not sufficient to balance within-couple marital investment and to equalize standard of living of former partners. Similarly, welfare transfers or repartnering transitions play a minor role in determining poverty risk of women, especially mothers. Using Dutch data, Hogendoorn (2022) found that the impact of welfare policies is moderated by the pre-dissolution independence with respect to the former partner, conceptualizing how independence not only concerns the degree of individual's labour market attachment but also the share of household income provided by welfare redistribution.

The relationship between intrahousehold wealth inequality and union dissolution outcomes progressively received more attention by scholars in last years. Wealth is acknowledged self-assuring mechanism that enable individuals to cope with negative life course events as separation in the very long run. The effect of wealth is presumably stronger than income effect (Grabka et al.2015).

The dynamics that rule the distribution of wealth among former partners impact wealth inequalities determining larger wealth gap for women (Fremeaux and Leturcq, 2020). The gap plunges its roots in women's lower accumulation rates due to labour market outcomes (Sierminska 2010; Chang 2010; Scheneebaum et al., 2018) and in individualization of wealth.

In turn, the latter is determined by premarital individual endowments, share of inherited wealth and marital property regime chosen by the couple (Grabka et al., 2015; Fremeaux and Leturcq, 2020). Inheritance in particular, represents the main mechanism that determines within-couple wealth gap in community property regime while the within-relationship accumulation's process determines the gap for couple in separation regime (Fremeaux and Leturcq, 2020).

Empirical evidence, largely focused on German context, pointed out the existence of a separation penalty in terms of wealth for both partners, especially in terms of housing wealth (Bortien and Lersh, 2020; Kapelle and Baxter, 2020; Lin and Brown 2020; Watson and Baxter, 2022). According to this line of research, within-couple wealth inequality in favour of men exists before the beginning of the relationship (Sierminska, 2010; Kapelle and Baxter, 2020) and remains throughout, without further amplify within-couple wealth inequality (Kapelle and Lersch, 2020). This persistent disadvantage for women reduces their ability to leave marriage, extending inequality beyond the relationship (Kapelle and Baxter, 2020; Lin and Brown, 2020). This persistency may underscore how differently income and wealth contribute to recovery after a separation, highlighting the role played by stock of wealth in buffering post-separation outcomes for women.

Separation outcomes in wealth appear strongly driven by marital property regime and by pre-separation level of individual wealth. While in previously married couples both partners bear the cost of separation, the dissolution of cohabiting unions displays a gendered pattern with women experiencing heavier losses in wealth than their male partners (Bortien and Lersch, 2020). This is largely due to pre-separation individual level of wealth, since in most countries legal obligations related to separation and divorce do not apply for cohabiting unions, not entitling partners to claim share of marital wealth accumulated during the relationship.

2.2.3 The role of socio-demographic characteristics: children and repartnering rates

Presence and number of children within the household can exacerbate results of breakup outcomes, especially for the custodial parent who is often the mother (Mortelmans 2020; Thielemans and Mortelmans, 2022).

Motherhood has been associated with higher losses in household income and higher risk of poverty in the U.S. (Bianchi et al., 1999; Chanda, 2022) as well as in Europe (Jenkins 2008; Andreß et al., 2006; Aassve et al., 2007; Brewer and Nandi, 2014; Bonnet et al., 2021; Boll and Schuller, 2021).

Main drivers of these gendered outcomes are primarily the sole physical custody of couple's children that limit women's labour market participation and earnings capacity, inadequate

compensation mechanisms for former partner income as alimony and child maintenance and the extent of welfare state support for lone parents. Custodial mothers face motherhood penalty in the job market because childbearing is a constraint to their labour supply, both at the extensive and intensive margin. Moreover, they have higher expenditure compared to non-residential fathers (Aassve et al., 2007) that often are not fully compensated by former partner transfers. Recent studies for Europe underlined as joint physical custody boosts economic wellbeing and labour supply of separated mothers (Boll and Schuller, 2022; Bonnet et al., 2022). Attachment to the labour market and in-work benefits have a positive effect on post-separation outcomes of mothers with dependent children (Jenkins 2008; Mortelmans 2020). Similarly, the extent of income-related and employment-related policies targeted to lone mothers and promoted by the welfare determine heterogeneous outcomes found across European countries (Andreß et al., 2006; Aassve et al., 2007; Jenkins 2008).

A strand of the literature pointed out as separation-driven motherhood penalty is also shaped by the degree pre-separation economic independence of women.

For the U.S., Bianchi et al. (1999) show that custodial mothers tend to experience larger loss than their former partner, but the loss gap is reduced once they account for woman's labour supply and level of earnings: women with higher earnings and full-time workers reduce their gap with former husbands. Bonnet at al. (2021) show that children have a larger impact on post-divorce well-being once accounted for within-couple earnings inequality. In particular, the changes in women' living standards in France increase with the number of children but this effect is overcome by within-couple inequality.

Repartnering represents a coping strategy[9] put in place to smooth consequences of the negative shock due to separation (Dewilde and Uunk, 2008; Bonnet et al.,2021; Lin and Brown 2020). The literature identifies repartnering as a coping strategy able to counterbalance the negative effects following separation because it enables individual to reinstate economies of scale lost with the breakup. Positive impact of repartnering is found heterogeneous across women' pre-separation levels of income and at the same time larger fall of income increases the likelihood of repartnering for women, with stronger effect for women that exhibit lower pre-separation income levels (Dewilde and Uunk, 2008; Bonnet et al., 2021).

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[9] Other coping strategies in divorce and separation context are for instance anticipatory behaviour or returning to the parental home. See Mortelmans (2020) for more extensive description.

The literature also points out as there exist imbalances in the rates of repartnering among separated men and women. Women tend to exhibit lower rates of repartnering compared to men especially because of age at separation and presence of children within the household, while for men starting a new relationship is positively correlated with higher level of income and earnings and education (Mortelmans, 2020; Gałęzewska et al., 2017).

Rates of repartnerning are country-specific across Europe, exhibiting a north-south gradient due to the influence of context-related factors like individual and country economic situation, cultural stigma on separated women or first-union characteristics (Gałęzewska et al., 2017). Besides, pre-separation marital status had a role in determining the likelihood of repartnering with cohabiting women in Europe repartern more frequently that divorced women because of specific characteristics of cohabitations compared to marriages, but in France where previously cohabitating individuals have lower repartnering rates (Gałęzewska et al. 2017). Moreover, women' repartnering rates are influenced by the combined effect of country-specific social welfare support and individual-specific income support (Dewilde and Uunk, 2008).

2.3   Comparative institutional background

2.3.1   Institutional context: family, children-related and maintenance laws and policies[10]

Country-specific institutional contexts should be considered in analysing cross-countries differences of post-separation wellbeing. This section provides an overview of the family laws (e.g. child support and spousal maintenance), family policies (e.g. single parent allowances) for each country included in the study.

Family law and children-related laws

In France, family allowances depend on number and age of children and on income thresholds. Single mothers in France have high unemployment rates compared to partnered mothers but tend to work more full-time. Non-working lone parents in France can access to social benefits

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[10] This section is partially based on three main sources: the European e-justice portal (https://e-justice.europa.eu) which provide detailed information about laws and judicial systems across Eu's countries on several topic like family matters, the OECD Family database (https://www.oecd.org/els/family/database.html) and the Mutual Information System on Social Protection-MISSOC database comparative tables (https://www.missoc.org/missoc-database).

provided for grant them to reach a minimum income threshold and to tax reduction based on household characteristics, while working parents receive also in-work benefits (Bonnet et al., 2022). In Italy family allowances depend on family unit means (ISEE) and are mainly directed toward low-income and large families (Ongaro et., 2009). Family benefits for lone parents are in-work benefits, i.e. conditional on labour market participation (Vignoli et al.2018) but all parents have a tax reduction for dependent children. Female labour force participation rate is one of the lowest among the EU (slightly more than 50% according to Eurostat data at 2020) with higher shares of unpaid work. This is mainly driven by the lack of effective work-family reconciliation policies.

German family can receive fixed amount of family benefits that are not mean tested, and the law provides tax allowance for families with children and tax breaks for childcare. Moreover, there have been changes in family policies since 2007 aimed to improve women reconciliation of family and work schedule. In particular, policies on childcare and parental leave have been put in place to boost women participation rates in the labour market and increase of the full-time schedule (Bruggman and Kreyenfeld, 2023) contrasting motherhood penalty experienced by German mothers.

Family benefits in Spain are not mean tested but depend on household income, age and number of children. Also, Spain has a low rate of women participation in the labour market and large share of women in part-time schedule (Avram and Popova, 2022).

Maintenance regulations

In France decisions on child-support is upon parents but ratified by the Court that also decide on the transfer's amount. There are no precise rules about the amount and the enforcement is upon the Court. For France Bonnet et al. (2022) pointed out as type of custody determines the probability and the amount of child alimonies, highlighting as sole custody mothers received more children alimony payments compared to mothers that have shared custody. However, this result is driven by pre-separation income levels. Often non-residential fathers do not pay alimonies, therefore there exists a guaranteed child support scheme through which the government aims to compensate the lack of child support alimonies.

Spousal maintenance is established as ad interim measure until the settlement of divorce. Decision on maintenance is upon the court and does not depend on the marital regime. Spousal maintenance is aimed at compensating potential differences in post-divorce standards of living among partners, in particular due to the degree of marital household specialization before

separation (Fremeaux and Leturcq, 2020). Similarly, after divorce a lump-sum compensatory payment may be claimed by the low-income partner, in liquid or illiquid form, more often provided in form of capital assets.

In Italy, the court lays down upon and enforce maintenance. The court also decides upon the amount of the child support on the basis of child needs, parent's income capacity and time spent with each parent. In particular, children have the right to economic support and the right to keep living in the family house, that for this reason is often assigned to the custodial parent (Fiori, 2019). There exists a state fund that compensate for lacking payments by the non-custodial parent. The court decide on maintenance for former partners during legal separation and divorce. The main principle of the law is the obligation for the economically stronger partner to pay alimony to the economically weaker partner. However, in practice, court judgments tend to grant the maintenance only to partners who face some constraints that prevent them from being economically independent (for instance health issues or caring for young children) (Fiori, 2019; Ongaro et al.,2009). In 2016, around 60% of separated women in 2016 received economic maintenance (Fiori, 2019).

In Germany parents or court decide upon the child-support transfer after a couple's dissolution. Child alimony should be paid by the non-residential parent. The amount is subject to discretion of the parts but often the criteria is the income of the non-residential parent (Bruggmann and Kreyenfeld, 2023). Shared legal custody is not very spread among German parents, and children reside more often with their mothers. Moreover, often (around 40%) of non-residential parents do not fulfil their maintenance payments (Kapelle and Baxter 2020; Bruggmann and Kreyenfeld, 2023). In these cases, the law provides for an advance maintenance allowance for economically constrained non-residential parents. However, before the introduction of the maintenance law reform in 2008, arrangements differed among children between married and unmarried parents[11], while after the reform maintenance conditions have been equalized across marital status. The guide principle of the former law in Germany was the protection of the economically weaker spouse, whereas the new law is more direct towards the economic independence of former partners. Separation alimony payments are granted to support the economically weaker partner, while for post-divorce maintenance, the reform establishes that spouse maintenance payments are temporary measure paid under given circumstances: up to 3

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[11]Married custodial parent received alimony until the 8th birthday of a child and unmarried parent until the 3rd birthday. See on this point Boll and Schuller (2021) and Bruggmann and Kreyenfeld (2022).

years after divorce, in presence of young children until they age 3, in case of inability to work, for longer marriages or in case of severe unequal division of labour (Bayaz-Ozturk et al., 2018; Bortien and Lersch, 2020; Boll and Schuller 2021; Bruggmann and Kreyenfeld, 2023).

In Spain, decisions on child maintenance are made by the parents and enforced by the Court. The amount is determined by judicial discretion without following any fixed rule. The non-residential parent has the legal responsibility to provide child maintenance and, in case of non-compliance of the payments, it is possible to claim through a civil procedure. Low-income households can also claim from a state fund established to provide at least a temporal and minimum payments of the entitled child support (Cordero-Coma et al., 2023). The prevalent child arrangement in Spain is sole custody by the mother, but since 2005 there has been a progressively increase in share custody arrangements (Cordero-Coma et al., 2023). According to recent studies, less than 40% of custodial mothers in Spain receive child-support and the probability of receiving payment are higher for formerly married mothers compared to mothers in other forms of partnerships (Hakovirta and Mesiäislehto, 2022; Cordero-Coma et al., 2023). Spousal maintenance is regulated at the regional level. In general, the duty of maintenance is not mandatory but judicial courts can decide to assign maintenance and compensation in cases of significant economic and financial imbalance between the former partners.

2.3.2 Institutional context: the role of marital property regimes and tax system

Marital property regime can be defined as the set of rules that define the modality through which economic resources and in particular wealth, are divided in case of separation or divorce (Deere, Kanbur and Stewart 2018). These rules on the division of property upon separation and divorce have an impact on individual's behaviour and can shape the outcomes of these events (Chiappori et al., 2002). Therefore, marital property regimes must be taken into account to understand the impact they have on accumulation of economic resources within marriage and consequently the way in which they shape economic well-being of partners in case of separation and divorce (Voena, 2015). Both default property regimes and marital contracts (largely used in some countries, e.g. France and not allowed in other countries e.g. Italy) can change the relative economic position of partners, even reinforcing pre-existing within-couple inequalities. For instance, Fremeaux and Leturcq (2022) showed that couple in separation regime (both married and civil union) accumulate more assets than couples in community regime, displaying larger gender gaps in wealth.

Property regimes differs across European countries[12]. The most widespread marital regime is the community property or community of acquisition. This regime is the default in France, Spain (with regional variation for Catalunia and Baleari) and Italy. Under this regime, properties and inheritances owned before marriage are considered as separate properties, while all the properties accumulated during the relationship are joint properties. At the event of separation or divorce, joint properties are equally split between partners.

German default property regime is the community of accrued gains (Nutz et al.,2022; Kapelle and Baxter, 2020). Under this regime, all personal wealth -regardless the moment of acquisition- remains in personal ownership during the relationship and in case of separation of divorce. In consequence of these events, when the property regime ends, the surplus gains of properties jointly accumulated during marriage are equally divided between partners (Nutz et al.,2022; Kapelle and Baxter, 2020). Both community and separation regimes aim to protect the economically weaker partner, especially in presence of children (Nutz et al., 2022; Fraboni and Vitali, 2019).

The default regime varies according to the type of marital status. In France, the default regime for married couples is the community property, however couples can opt for separate property regime through a prenuptial agreement before a notary that imply a cost. Conversely, since 2007 the default regime for civil unions (PACS) and unregistered cohabitation couples is separate property. Civil unions can opt for the other regime contextually the sign of the PACS contract (Fremeaux and Leturcq, 2022). Upon separation, couples in community property must share equally all joint assets (and debts) aside from the contribution of the acquisition. In separate property regime, individual assets are still in individual property of owners while jointly acquired assets must be shared. The main difference among regimes is that differently from married, partners in civil union or in unregistered partnership cannot claim for spousal maintenance or alimony.

In Italy, the default regime for married couples is the community property with the possibility to opt for the separation of property regime, at no cost for spouses (Bayot and Voena, 2014). The default regime for cohabitation is the separate regime, since until 2016 registered partnerships were not established by the law[13]. Fraboni and Vitali (2019) highlighted a sharp

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[12] In this analysis, I consider only the property regimes of the countries included in the study.

[13] Consensual unions (Unioni di fatto) were introduced into the Italian juridical system in 2016 (Law n. 76/2016).

decline of the choice of community property in favour of separate property. Prenuptial agreements are not allowed in Italy because the Italian law upon separation is based on principle of obligations toward the most vulnerable partner. However, married couples can choose to stipulate a formal contract on the regulation of money and properties before a notary paying the relative fee. Also, cohabitation can enforce a similar contract with the possibility to choose the assignment of properties acquired during the relationship, the use of family house, obligations and alimony in case of dissolution. Differently from France, spousal alimony can be claimed regardless the marital status.

In Germany, married couples can choose to opt for separation or community property regime through a formal contract. According to Nutz et al. (2022), only 5% of couples opt-out of the community of accrued gains. Registered partnerships are subject to the same property regime of married couples with the possibility to choose during the stipulation of the registered partnership contract. In contrast, the property regime for cohabitations is separation regime since cohabiting partners are considered as single individuals. Therefore, there is no equalizing mechanism provided for cohabiting couples after dissolution. Former spouse maintenance depends upon marital status: individuals from cohabiting unions have limited possibilities to claim to alimony (e.g. in presence of children) or to claim economic compensation (Bortien and Lersch, 2020).

Regional differences exist in the default property regime in Spain. The default property regime is for community property in all regions with the exception of Catalunia and Baleari Islands, where separate property is the default. For both regimes, spouses may opt for the other regime through the enforcement of a marital contract (Brassiolo, 2013) before a notary. This contract implies a cost, and can be signed both as a prenuptial agreement and during the marriage. The regulation of registered partnerships occurs at regional level, with some Autonomous Communities providing for the legal registration of these partnerships. Property regime rules for marriage do not apply to non-marital partnerships. However, these couples can choose to have personal arrangements through an agreement that must comply with the provisions of the law. In particular, it is not possible to set out arrangements that could be harmful for one partner or that do not provide equal rights to both former partners. This personal agreement may however contain some form of compensation for the more disadvantaged partner. In some regions (e.g. Catalonia), compensation mechanisms must be also ratified by a Court.

Another element to consider is the income tax system applied to couples with different marital statuses, which may influence labour market behaviours and the accumulation of resources for women (Lersch et al., 2022; Fremeaux and Leturcq, 2020). In France, married and civil union couples can file a family income's declaration with lower income tax while for unregistered partnerships taxation is individual. Similarly, in Germany married partners have by default joint filing and income splitting options but they can also opt for individual taxation. Cohabiting couples are taxed individually. In Spain, taxation is individual but married couples can opt for joint taxation. Taxation is individual regardless the marital status for Italian couples. However, joint taxation is possible for married couples only when one of the partners has a low annual income level.

2.4   Research hypotheses

Several factors determine post-separation economic outcomes by gender. Personal income and wealth endowments assume a primary role in shaping economic wellbeing of women after separation. Within-couple inequality results from the degree of marital specialization and the labour market penalties faced by women when they are employed. Lower levels of accumulation of resources may undermine the economic wellbeing of women in the event of couple dissolution. Intrahousehold decisions-making process is in turn influenced by the laws regulating separation and divorce, as well as their economic consequences.

Hypothesis 1. Within-couple inequality in income and earnings affect post-separation outcomes. Women tend to be more penalized when they were less economically independent before the dissolution of the couple. Therefore, they may experience larger losses in household income when they belonged to male breadwinner couples. In contrast, women that were more economically independent and had higher labour market attachment, as those in dual earners or in female breadwinner couples, may experience lower losses in household income after separation.

Hypothesis 2. Relative levels of pre-separation wealth impact post-separation income outcomes. Women with higher levels of personal wealth may experience lower losses in household income after separation because they may tend to smooth negative consequences through their stock of wealth. Under the assumption of intrahousehold equal division of wealth, women who were in couples positioned at the highest levels of the wealth distribution may

experience smaller decrease in household income due to their larger share of household resources after the dissolution. Higher levels of financial wealth, as a readily available resource, may help women to cope with the economic shock in the aftermath of the dissolution.

Hypothesis 3. Marital property regime changes the incentives related to the accumulation of resources and to decisions on labour market supply. As underlined by the literature, the consequences of separation in terms of income may be heavier for women who have a low degree of economic independence. Women who were in couples that opted for separation regime know that upon separation they would be not entitled to receive shares of partner resources and may adapt their labour market behaviour accordingly. In contrast, the community regime may modify individual behaviours, distorting incentives to participate in the labour market. As a result, the community regime may exacerbate within-couple inequalities during the relationship and extend inequalities upon the dissolution when compensating mechanisms do not fully offset economic losses. In both regimes, more economically dependent women suffer the heavier losses.

Hypothesis 4. Former marital status impacts post-separation economic resources through the system of regulation upon separation. Different marital statuses are subject to different forms of regulation regarding alimony and property division of household resources. Therefore, regulation systems that can change individual behaviours may extend inequalities following the separation in partnerships as marriage, and civil unions when regulated similarly to marriage.

2.5 Data

2.5.1 Data description

To conduct the analysis of the impact of a breakup on living standards, I used longitudinal data from the Eurosystem Household Finance and Consumption Survey (HFCS) conducted by the European Central Bank (ECB). This survey collects data on income and wealth for several European countries at the household level, but it also provides a subset of data at the individual level.

The HFCS data are ex-ante harmonized in order to enable cross-country comparability. However, some differences across countries remain[14], so the present work will consider each country separately. Differences will be illustrated within the analysis of the single country used.

This chapter uses longitudinal component[15] for the second and the third waves for four countries: France, Italy, Germany and Spain.

HFCS contains multiple imputed microdata to address item non-response issues, providing five implicates (m) for every single dataset. France and Italy do not use multiple imputation methods, whereas Germany and Spain do. Given the complexity of the methodological framework, the analysis for the latter two countries has been run separately on each complete dataset. The estimated results were then pooled using the Rubin's rule (Rubin, 1987), i.e., they represent the mean over the five implicates.

A well-known problem in using survey data analysing breakups is panel attrition, that makes complex following individuals nested within households once the household is, at least partially, dissolved (Jarvis and Jenkins, 1999; McManus and Di Prete, 2001; Jenkins 2008). This common issue generally translates in low number of observations retrieved using survey data. All the selected countries trace split-offs therefore the problem should be smaller.

2.5.2 Selection of the sample

The analysis has been carried on merging data of panel households across the second and the third wave of HFCS survey (2014 and 2017, respectively).

Primarily, I constructed a unique panel identifier for each individual across waves, combining information from the household and personal identifiers provided in the cross-sectional datasets.

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[14] For general details on HFCS data see Household Finance and Consumption Survey (HFCS) (europa.eu) where it is possible to find Methodological reports of the three waves.

[15] In the last release of the HFCS survey, 12 countries have a panel component (Belgium, Germany, Italy, Spain, France, Estonia, Poland, Cyprus, Malta, Latvia, Slovakia, Finland). Information on comparability across country and the panel component of each country can be retrieved for the 2017 wave Methodological Report. See, in particular Table 1 (p.6) and Table 9 (p.28).

Secondly, the original datasets provided by the ECB do not contain variables about the partner identifier within the household. Therefore, to enable couple-level analysis, I constructed a variable for partner identifier, crossing information provided by the relationship with the reference person and the marital status of the individuals within each household. Lastly, I create a couple identifier for each couple present in the sample.

The obtained analytical sample is composed by two sub-samples of individuals: treated and controls. It has been constructed as follows. Let us define t_0 the exact time of dissolution of the couple. The latter cannot be observed in the data, given the three-years' timespan between the collection of the data. At time t-1 (the first year of observation) I selected all the individuals that result married or in a consensual union (with or without a legal basis) whose partner is followed in the survey as well. Thus, at time t+1 (the second year of observation), I selected all the individuals that experienced a breakup of a marriage or of a union during the three years. This sub-sample represents the treatment sample. For the second sub-sample, the control sample, I selected instead individuals continuously married or in a union during all the duration of the survey's length.

The construction of the sample required that at least one of the ex-partners remains in the panel. Given panel attrition issues in survey data studying split-ups, observe both ex-partners appear a strict constraint leading to very low numbers of observation[16].

In the first part of the analysis, I considered individuals in 19-85 age cohort, whereas in the sensitivity analysis I restricted the sample to individuals which age range from 19 years to 64 years. The aim in using a sample that include younger and older individuals is understanding the effect of couple's dissolution also for older cohorts. A strand of the literature outlined as dissolution for older individual may be more detrimental compared to younger cohorts, since they tend to have more static levels of income since when retired they cannot cope with market mechanism (van Damme et al., 2009) and tend to erode their stock of wealth (Frémeaux and Leturcq, 2022)[17].

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[16] Administrative data are more suitable for follow the same couples across dissolution paths. See Brüggmann & Kreyenfeld (2023).

[17] The statutory pension age was settled in 2017 at 65 years in France, Germany and Spain while in Italy was almost at 67 years in Italy (Eurofound, 2017). Also retrievable at: Ageing Europe - statistics on working and moving into retirement - Statistics Explained (europa.eu).

Table 2.1 present the resulting sample size and the relative percentage of dissolutions for the four countries considered in the study.

Table 2.1 Sample size and union dissolutions rate by country

	SAMPLE SIZE	UNION DISSOLUTIONS RATE
France	5376	4.02
Italy	4392	1.89
Germany	4121	2.86
Spain	4741	2.93

Note Own calculations on HFCS data (2014, 2017).

France has the largest sample size with 5736 individuals - including 2683 men and 2693 women - of which the 4.02% experience a dissolution between 2014 and 2017. For Spain the sample size consists of 4741 individuals - 2377 men and 2364 women – who in 2.93% of case experiences a dissolution. For Germany, the sample size is composed by 4121 individuals (2061 men and 2060 women) with a union dissolution rate equal to 2.86%. Lastly, Italy has the lowest dissolution rate (1.89%) and a sample size of 4392 individuals of which 2205 men and 2187 women.

2.5.3 Measures

The HFCS offers the possibility to jointly analyse income and wealth according to a large set of socio-demographic characteristics of the population.

The outcome variable is represented by the annual gross total equivalized income, adjusted for household size using the OECD-modified equivalence scale and deflated using the Harmonized indices of Consumer Prices by Eurostat (HICP -Eurostat). It has been also top and bottom coded at 1% of the distribution (OECD, 2013) in order to exclude the presence of extreme values.

Gross household income represents the sum of income from labour (employee and self-employment), rental income, income from financial assets, income from pensions, regular social and private transfers and income from other sources.

Using gross income instead of disposable income does not allow to control for the redistributive effects of taxes on household income[18]. However, the larger differences between the two concern the top of the distribution (OECD, 2013). Since the focus of this study is the impact of

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[18] In the HFCS only Italy has data for income after taxes but for comparability reasons I used the gross incomes for all countries in constructing the measures.

a dissolution on household income for individuals mainly at the bottom and in the middle of the distribution (i.e. individuals whose main source of income is from labour or welfare), the impact of redistribution effect can be expected to be smaller.

The equivalence scale used for household size adjustment is the OECD-modified scale. This equivalence scale assigns weights equal to 1 for the first adult, 0.5 for the second adult and 0.3 for each child. Nevertheless, in the literature has been underlined as the choice of the equivalence scale in measuring living standards may be sensitive to the equivalence factor used (Jenkins 2008; Bonnet et al. 2021; Brüggmann & Kreyenfeld 2023). Thus, other equivalence factors as the square root equivalence scale have been used to check the robustness of the estimates.

Additionally, I constructed a measure of household income before social transfers, namely household income excluding regular social transfers as family and child allowances supplied by the welfare but including replacement income like unemployment benefits or private transfers. This measure has been used for sensitivity analysis[19]. It has been adjusted for household size, deflated and top and bottom coded as household income including social transfers.

Measures of wealth are provided in the HFCS both before and after taxes. The measure include in this study are all after taxes. Net wealth is composed by the sum of total household assets (excluding public and occupational pensions) minus total household liabilities. In particular, it includes the total amount of real assets (value of household main resident, other real estate, vehicles, valuables and self-employment business) and of financial assets (deposits, mutual funds, bonds, shares, managed accounts and non-self-employment business, money owned, voluntary pension and life insurance and other assets) net of liabilities (collateralized or non-collateralized).

Net wealth is then disaggregated by its main components: net housing wealth (the value of housing wealth net of secure and unsecured debts) and net financial wealth (financial assets - excluding pensions – minus the total outstanding of household -collateralized or unsecured- liabilities). Considering wealth by components allow to analyse possible heterogenous impacts on economic wellbeing in the aftermath of the dissolution. All wealth measures have been deflated using Harmonized indices of Consumer Prices provided by Eurostat (HICP -Eurostat).

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[19] A more detailed explanation for this variable is provided in section 9.2.

In addition, other wealth-related variables have been considered in the analysis. The first variable concerns homeownership (dummy), while the second variable concerns the household's receipt of intergenerational transfers, like inheritance or gifts (dummy). Intergenerational transfers have been identified as a narrowing factor of the within-couple gender wealth gap in favour of women (Grabka et al. 2015). These transfers help women to accumulate wealth, which in turn, can help buffer against economic losses caused by dissolution.

The key set of explanatory variables are the pre-separation personal income and the individual earnings. Personal income is the sum of annual gross total personal income at the individual level. It includes both labour-related or replacement incomes, as unemployment benefits and pension[20].

Individual earnings are defined for those individuals who have market-related labour income from employment or self-employed, and thus who are active in the labour market in the pre-separation period. Both measures of personal income and earnings have been bottom and top coded at 1% and 99% of the distribution, and deflated according to the other monetary measures.

The definition of individual measures of income and earnings enable the construction of the main explanatory variables of interest: the woman's share of personal income (or earnings). This variable identifies the within-couple (or intrahousehold) relative difference in terms of income (or earnings) between partners, and it is measured as follows:

$$woman's\ share = \frac{total\ personal\ income\ (earnings)_f}{sum\ of\ total\ personal\ income\ (earnings)_{m,f}}$$

Woman's share can range from 0 to 1. Exploiting this property, it has been divided in 3 main categories. In the first groups, share's values are included between 0 and 40%, indicating that women earn less of income than their partner. In the second group, the value of the share ranges between 40% and 60% indicating relative parity between partners within the couple and lastly in the third group, the share for women is higher than 60% compared to their male partner.

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[20] Private transfers and social benefits are not included in the computation of personal incomes because they are provided at the household level in the HFCS. Therefore, it was not possible to accurately attribute the amount of these transfers to the individual who received them.

These categories proxy the marital specialization models identified by the literature (Becker, 1981) in male bread-winner model, dual earner model and female bread-winner model, respectively. Also, this measure has been used in previous studies on dissolution (Brüggmann and Kreyenfeld, 2022; Bonnet et al., 2021).

The measure of share is not defined if both partners have zero income or earnings.

Potential wealth at the personal level

The HFCS data do not enable the construction of intrahousehold measures of wealth since wealth variables are provided only at the household level. Therefore, I defined a measure of relative wealth within the couple, starting from the initial level of household wealth measured at t-1 and equally dividing it by the two partners. This measure represents *potential* division of wealth among the ex-partners after the dissolution and therefore a potential amount of wealth available for them once the household is split. The literature warns that the assumption of equal wealth splitting may lead to underestimate the actual intrahousehold gender inequality (Schneebaum et al. 2018; Frèmeaux and Leturcq 2020; Grabka et al. 2015; Sierminska et al. 2010). However, it is less arbitrary that it may first sound since most of couples in the sample come from marriage contracts in countries where the default property marital regime is the community of property. France is the only country in the study that allow to allocate the actual division of resources within the couple. Defining the intrahousehold potential wealth is also useful in this context because I cannot observe the exact moment of the split and it is unknown in which part of the dissolution process the individual is located (Kapelle and Baxter, 2020).

Another set of measures regarding the specific conditions of couples has been defined. The first concerns the type of union of the former couple. It is based on the pre-separation marital status of the individual and it has been grouped in three categories: unregistered partnership (or cohabitations), marriage and consensual union on a legal basis. Marital status is subject to different marital property regimes in most countries. However, in the data it is possible to observe the legal arrangement for the definition of within-couple marital property exclusively for France. Thus, I define for the latter country a measure concerning the type of marital property regime chosen by spouses during their partnership. This measure is constructed upon legal arrangements information for married couples, while the default regime defined by the French law, namely separation of property, is applied to cohabitations and consensual unions with legal basis (PACS). According to a strand of the literature on marital property regimes, in fact, individuals in these partnerships may not have incentive to enforce costly marital contracts

to change the separated allocations of assets provided without any cost by the default law. The will to keep personal resources separate is implicitly embedded in the choice of constituting these partnerships (Frémeaux and Leturcq, 2018; Fraboni and Vitali, 2022)[21].

The analysis also includes control for demographic individual characteristics as gender (categorical), age (continuous and categorized), migration background (dummy), repartnering (dummy) and also household characteristics as number of children under 18 years within the household (continuous), household with children (dummy), being custodial parent (dummy). In addition, proxy variables to control for human capital and labour-market attachment are provided. Specifically, these variables are: levels of attained education (3 categories based on ISCED classification), employment status (3 categories: employed, unemployed, not in the labour force), retirement (dummy), years of working experience (continuous) and time spent in main job (years, continuous).

2.6 Descriptive statistics

Descriptive statistics at the baseline are provided in Tables 2.2a-d in Appendix B.1 separately for each country. The tables include the comparison between the whole sample, the control and the treated sample on selected characteristics.

Equivalized household income is lower for the treated sample in France and Spain while treated individuals display higher levels of equivalized household income in Germany and Italy compared to the control sample. The higher gap between the groups is found in France and Germany. Similarly, household income before social transfers follows the same pattern. On average, treated individuals show higher levels of personal income compared to the control in all countries except in France. The same pattern is displayed by the average level of earnings. The larger difference between the treated and the control group in terms of personal income is observed in Germany while the larger difference in terms of earnings is observed both in Germany and in Italy.

The treated group show on average lower levels of wealth in all countries. However, both in Spain and in France, there exists a sizeable difference in wealth levels between the two groups, with the control group doubling the levels of the treated group. Levels of housing wealth are

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[21] These studies also pointed out the progressive increase in opting for separation of property across countries and thus a tendency towards a progressive individualization of wealth within couples (Frémeaux and Leturcq, 2018; Fraboni and Vitali, 2022).

also lower on average for the treated groups in all countries but the differences between the two groups are narrower. Similarly, the rate of homeownership is found lower for the treated group in all countries. The treated group also display on average lower levels of financial wealth compared to the control group in all countries except Germany where the treated group own more financial resources than the control group. Moreover, Italy shows a considerable difference between the two groups.

The proportion of household that received up to three before the baseline interview intergenerational transfers is lower for the treated groups compared to the control group in France and Spain, while is similar in Germany and higher for the treated group in Italy.

The share of personal income and earnings that proxy intrahousehold marital specialization follow country-specific patterns. In France, individuals in the control group come from couples whose intrahousehold specialization is closer to the male breadwinner model, with an average share of 35%. In contrast, individuals in the treated group come from couples closer to the dual earners model, with an average share of 41%. Conversely, individuals belonging to both groups come from partnerships closer to the male breadwinner model in Germany, Italy and Spain. However, the average share of personal income owned by women in the control group is considerably low in Italy (25%) and in Spain (27%). The share of earnings displays narrower differences between the two groups in all countries except in Spain. The prevalent specialization models considering earnings share are the dual earners model for both groups in France, the male breadwinner model for both groups in Germany and Italy, while in Spain the control group is closer to the male breadwinner compared to the treated groups who is closer to dual earners model[22].

Marriage is the most common form of partnership across all countries and groups. However, France stands out as the only country with a higher proportion of other types of partnerships. The choice of marital property regime, which can be observed from the data only in France, indicates a higher proportion of individuals who chose the community of property regime over the separation of property. This is also due to the fact that community of property is the default regime for married couples in all countries under analysis. Nevertheless, the proportion of

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[22] These findings are consistent with Eurostat's 'Gender overall earnings gap' composite indicator (Eurostat, 2023) for 2014. The indicator shows a higher gender gap in Germany, Italy, and Spain (43%, 45%, and 35%, respectively) and a lower gap in France (29.6%).

individuals in couples who opted for separation of property is higher in the treated group than in the control group.

Moreover, in France and Spain separated individuals tend to be younger on average than those who are continuously partnered countries, whereas in Germany and Italy, the average age for both groups is over 50 years. France and Germany have a slightly higher proportion of women in the treated group, while Italy and Spain have a higher proportion of men. This may be related to panel attrition issues mentioned above. The treated group displays a higher average number of children than the control group in France, Italy and Spain while the average is lower for the treated group in Germany.

Regarding human capital characteristics, treated individuals in France and Italy show higher levels of education on average than those in the control group, while in Spain they show similar levels and in Germany lower levels in Germany. Similarly, the proportion of employed individuals in higher in the treated group in all countries, except for Italy and Spain, which display larger differences between the two groups. The rate of retirement is lower for the treated group in all countries.

Additionally, Italy shows a higher proportion of treated individuals with a migration background while the control group shows a lower the proportion than the average in the other countries[23].

2.7 Empirical strategy

The analysis is carried out comparing separated individuals before and after the breakup to individuals in stable partnerships with similar characteristics. The aim is to identify the treatment effect of separation. The latter is defined as the moment in time whereby the household is split into different households. Separation is the starting point for future economic outcomes, and it is associated with a significant economic shock (Aassve et al. 2007).

2.7.1 Combination of DID and matching approach

The methodological strategy to identify causal effects, given certain initial conditions, is the combination of the difference-in-differences with matching techniques (Heckman et al. 1998). The combination of Propensity score matching (PSM) with a Difference in Differences estimator allows to control for selection bias of separated couples (Heckman et al. 1998; Aassve

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[23] Data on migration background were not available for Spain in the second wave of HFCS.

et al. 2007; Ongaro et al. 2009; Bonnet et al.2021; Hogendoorn 2022). Selection bias arises in the context analysis of the impact of separation because separated couples can be qualitatively different from couple who did not experience a breakup[24].

The implementation of PSM approach allows to net out the casual effect of separation from the confounding effect deriving from other observed covariates (Aaasve et al. 2007), while the 2x2 DID estimator allows to control for confounding effects of treatment on outcomes driven by unobservable time-invariant characteristics.

Specifically, PSM isolates the causal effect of separation, conditioning on the computed propensity score (Rosembaum and Rubin, 1983) and ruling out unobserved heterogeneity. The causal impact is obtained by the comparison of the potential outcomes of treated group (separated individuals) and comparison group (individuals still married or in cohabiting union). The key assumption in order to obtain unbiased estimates for the impact of separation is the so-called *conditional independence assumption* (CIA) that states that the exposure to treatment must be independent of potential outcome, conditional on a set of observed covariates X:

$$Y_0 \perp D | X \tag{1}$$

Since the dimensionality of X entails a computational problem, the matching procedure can be based on the so-called *propensity score* (Rosembaum and Rubin, 1983). The propensity score represents the probability of receiving treatment, conditional on a set of observable covariates X:

$$p(X_i) = Pr\ (D_i = 1 | X_i) \tag{2}$$

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[24] For instance, separated and continuously married individuals could exhibit different characteristics in levels of education, labor market attachment, income or intra-household allocation resources.

When the dimensionality of the conditional expectations has been reduced in this synthetic indicator, it is possible to obtain the parameter of interest, the so-called *Average treatment effect on treated* (ATT)[25] as follows:

$$ATT = E_{p(x)}[E(Y_i|D = 1, p(X) - E(Y_0|D = 0, p(X))]|D = 1 \qquad (3)$$

Once the matching procedure is completed, the application of DID estimator (Heckman 1997, 1998) provides the unbiased causal effect of treatment if unobservable characteristics do not vary over time.

The 2X2 setup of DID allow for the comparison of two different groups – treated and never treated – in two different time periods. In this context, it compares the average change in household income from period 1 (pre-separation period) to period 2 (post-separation period) of the group of individuals who experience a couple dissolution (treatment group) with the average change of the group of individuals that still be in a relationship (control group). This can be estimated using a DID-PSM estimator[26] as:

$$DID - PSM = E_{p(x)}[E(\Delta_i|D = 1, p(X) - E(\Delta_0|D = 0, p(X))]|D = 1 \qquad (4)$$

The double advantage of DID-PSM technique is: (i) use a set of pre-separation individual characteristics to construct a comparison group with the same propensity to separate of the treatment group in PSM step, (ii) control for unobserved heterogeneity through the implementation of the DID setup.

2.7.2 Matching

The matching procedure has been conducted through the combination of coarsened exact matching and nearest neighbour propensity score matching. In the first step. I used coarsened exact matching based on three pre-treatment individual characteristics: age, gender, and number of children. Using exact matching before implementing other matching techniques ensure common support according to the matching characteristics chosen (Blackwell et al.2009).

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[25] On this point see Heckman et al. (1998), Aassve et al. (2007), Ongaro et al. (2009).

[26] See Aassve et al. (2007), Ongaro et al. (2009), Bonnet et al. (2021).

In the second step concerning the probabilistic matching, I used nearest neighbour propensity score matching approach to obtain further comparability between individual that experience a breakup and individual that instead still in a relationship. The propensity score, namely the probability of experience separation has been calculated using 1 neighbour with replacement and a caliper of width equal to 0.20 of the standard deviation of the logit of the propensity score. The set of pre-treatment covariates used for the matching is similar for all countries but not identical to account for cross-country sample heterogeneity and to allow separated analysis of each country.

A broader set of pre-separation covariates includes age, gender, number of children, household income, net household wealth, personal income, woman's share of personal income, education attainment, employment status, received inheritance and gifts, homeownership, retirement status, type of couple union, marital property regime, presence of children within the household and migration background.

In presence of multiple imputed data, PSM can produce biased estimates of the ATT (Rosembaum & Rubin, 1984; Ling et al. 2020; de Vries and Groenwold, 2017). The strategy that followed for countries that have multiple imputed data (namely Germany and Spain in this study) was the so-called *within integration* approach (Ling et al. 2020; de Vries and Groenwold, 2017, Granger et al. 2019). The latter approach consists in implementing PSM within each of the *m* multiple imputed datasets, estimating *m* different average treatment effects that would be averaged across imputed datasets in a second step. This strategy enables to achieve more covariates balance in matching procedure and introduce less bias due to the presence of missing data (Ling et al. 2020).

The quality of the matching is provided by checking balance of covariates and overlapping assumption. Tables 2.3 a-d in Appendix B.2. describe means, standard deviations and standardized differences for all the covariates used in the procedure. For Germany and Spain, the tables report the matching results for all 5 imputed datasets. The rule of thumb for the standardized difference cut-off is below 0.25 (Rubin, 2001). This value ensures non statistically significant differences between the groups through the balance of pre-treatment covariates. In Tables 2.3 a-d all the standardized difference are below the cut-off, therefore it is possible to conclude that in all countries the two sample of treatment and control group have statistically similar means.

Moreover, Figures 2.1 a-d use box and density plots to provide graphical confirmation that balance has been achieved by comparing of the propensity score of the data before and after the matching. The bottom part of Figures 2.1 a-d shows the overlap distribution of the propensity

scores of the two groups, verifying the overlapping assumption. Balance and overlapping have been reached in all countries.

Further details of the matching procedure can be found in Appendix B.2.

2.7.3   Econometric model

The aim of this study is to compare within-individual average change in equivalized household income between pre and post-separation periods for treated and control individuals. In this framework this can be done by means of the following individual fixed effect panel model:

$$lnY_{it} = \alpha_i + \delta T_t + \beta T_t X_i + u_{it} \qquad (5)$$

where the outcome variable Y_{it} represents equivalized household income for individual i in period t (that takes values 0 for pre-separation period and 1 in post-separation), T_t is the treatment dummy (that takes value 1 for separated individuals in post-treatment period and 0 otherwise), X_i represents the treatment group, a_i is the time-invariant unobserved individual fixed effects and u_{it} is the stochastic error term.

First-differencing model in equation (5)[27] provides the following first difference (FD) model:

$$lnY_{i1} - lnY_{i0} = \delta + \beta X_i + (u_{i1} - u_{i0}) \qquad (6)$$

where the time invariant fixed effects have been cancelled out by the FD transformation. For T=2, the implementation of first differencing reduces model in equation (5) to T-1 period model for each individual i as in equation (6) (Wooldridge, 2010)[28].

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[27] See Wooldridge (2010) and Bonnet et al. (2021) on first differencing fixed effect panel models.

[28] Moreover, for T=2, fixed effects and first difference model produce identical estimates, See Wooldridge (2010) p. 283.

The dependent variable in equation (6) represents the growth rate of equalized household income[29] for each individual i between the before separation period t-1 (0) and after separation period t (1). The impact of the separation on changes in household income is captured by β which represents the *Average treatment effect on treated* (ATT).

Sample weights from period t+1 (i.e., post-treatment period) are used to weight all estimates presented. Standard errors are robust and clustered at the individual level.

2.8   Results: searching for the causal effect of a breakup

Tables 2.4 a-d show the estimated impact of separation on changes in equalized household income for men and women separately in the countries of interest. The estimated impact represents the average treatment effect on treated (ATT), namely the causal effect of couple's dissolution on household income dynamics for separated individuals compared to their counterparts still in a partnership.

To capture heterogeneity of treatment effects, I also considered several baseline characteristics that may provide different effects on individual well-being through separation. These characteristics include women's share of personal income, potential personal wealth, marital status and the presence of children within the household. In the case of France, which is the only country where this type of data is available in the HFCS, I also added the baseline marital property regime.

France

Separated women in France experience a 20% loss in equalized household income after couple's dissolution compared to women who remained partnered (Table 2.4a, Panel A). Conversely, the impact of separation for men is not statistically different from zero, i.e., the dynamics of household income for men are comparable to those of their partnered counterparts.

In Panel B of Table 2.4a, pre-separation woman's share of personal income has been introduced to assess heterogeneity in effects due to within-household inequality. The results confirm hypothesis 1, pointing out how the effect of separation is heterogeneous across different pre-treatment share of her personal income. Accounting for within-household inequality shed light

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[29] The growth rate of a variable can be approximated by the difference of logs between the initial period of observation and the subsequent period.

on the fact that initial income distribution at the personal level shapes the post-dissolution economic outcomes.

Considering income share (Table 2.4a, Panel B, Columns 1 and 2), French women experience greater loss of their household income when their pre-separation share of personal income was under 40% with respect to their male partner. The magnitude of the loss is lower when shares of income were more equally distributed across partners (-44% and -25%, respectively). Moreover, when she earned more than 60% of personal income with respect to her former partner, the change in household income is positive (19%) but not statistically significant. It means that the positive change is not different from that experienced by still partnered women. Men instead, experience a significant loss in household income (-86%) compared to their partnered counterparts when they were not the main income providers within the household. The same pattern is found considering share of earnings (Table 2.4a, Panel B, Columns 3 and 4). Women in male breadwinner couples experience a loss in household income of 33% compared to partnered women, while women in dual earners couples display a loss of 22%. Women who were in female breadwinner couples display a gain in income of 18%, although this is not statistically significant. Also in the case of earnings share, when man was not the primary earner within the couple, he show a loss of 61% in post-separation household income compared to his partnered counterpart.

Losses in household income are slightly narrower when considering the share of earnings compared to the share of personal income.

The impact of pre-separation relative wealth is showed in Panel C of Table 2.4a. The first column concerns pre-separation net household wealth quintiles, while columns 2 and 3 concern its main components, net housing and net financial wealth. As illustrated in section 5.3, these measures reflect the hypothesis that after the breakup, household wealth is equally divided between former partners, representing the 'potential' personal wealth they may own after separation.

Considering wealth, separation displays heterogenous effects on equivalized household income's dynamics. However, the effect of separation is opposite compared to that hypothesized in Hypothesis 2. For men, it is statistically relevant only for the Q4. Men positioned in fourth quantile in the wealth distribution experience a negative change in household income of 22%. Women, instead experience a progressive loss in income as their relative position in wealth increases (-34%, -45% and -52% for Q3, Q4, Q5, respectively). The higher the relative wealth

position during the relationship, the higher the loss in household income after the breakup for women.

These negative effects are driven for women by housing wealth. The loss in household income significantly changes with pre-separation relative housing wealth position. The amount of the loss follows an inverted U-shaped pattern, with increasing negative changes up to Q4, while they decrease for Q5. Conversely, considering financial wealth shows significant effects at the extremes of the distribution: financially poorer and richer female separated households experience a household income reduction of about of 40% compared to their partnered counterparts.

Housing and financial wealth have no statistically significant effects for men, meaning that there are no relevant differences between separated and continuously partnered men.

Table 2.4a Regression estimates of changes in equivalized household income for France.

Panel A: Average treatment effect on treated.

	Men	Women
treatment	-0.076	-0.20**
	(0.093)	(0.085)
Cons.	0.094***	0.13***
	(0.033)	(0.021)
N	487	647

Panel B: Average treatment effect by share of income and earnings

	Income share		Earnings share	
	Men	Women	Men	Women
treatment				
0-40%	0.12	-0.44***	0.19	-0.33***
	(0.11)	(0.12)	(0.11)	(0.094)
40-60%	-0.014	-0.25***	-0.048	-0.22**
	(0.11)	(0.080)	(0.14)	(0.096)
> 60%	-0.86**	0.19	-0.61**	0.18
	(0.36)	(0.18)	(0.27)	(0.19)
N	487	647	429	563

Panel C: Average treatment effect by quintiles of wealth

treatment	Net Household Wealth		Housing Wealth		Financial Wealth	
	Men	Women	Men	Women	Men	Women
Q1	0.045	-0.0020	0.068	0.026	-0.28	-0.41***
	(0.20)	(0.16)	(0.15)	(0.12)	(0.30)	(0.11)
Q2	-0.19	-0.10	-0.22	-0.31*	-0.21	-0.16
	(0.22)	(0.15)	(0.25)	(0.18)	(0.14)	(0.12)
Q3	-0.068	-0.34**	-0.038	-0.31**	0.25	-0.16
	(0.078)	(0.17)	(0.11)	(0.12)	(0.16)	(0.15)
Q4	-0.22**	-0.45***	-0.37	-0.69***	-0.11	0.012
	(0.099)	(0.14)	(0.32)	(0.20)	(0.13)	(0.22)
Q5	0.060	-0.52***	-0.061	-0.45***	0.047	-0.44*
	(0.19)	(0.14)	(0.11)	(0.12)	(0.13)	(0.23)
N	487	647	487	647	485	647

Panel D: Average treatment effect by presence and number of children

treatment	Presence of children	
	Men	Women
No children	-0.045	-0.15
	(0.11)	(0.15)
Children	-0.31**	-0.26***
	(0.12)	(0.083)
N	487	647

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. $^*p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Also, the presence of children can change the impact of the separation on household income dynamics (Table 2.4a Panel D). In France, separated households with children face larger losses of household income, while separated household without children display any significant effect. The magnitude of the loss is greater for separated male-headed households (-31%) compared to that of female households (-26%). This finding may be driven for women by child support payments from the ex-partner, family allowances provided by the welfare system, but they may be also related to in-work benefits received from labour market participation.

Childless households do not significantly differ from non-separated households[30]. This latter finding may be related to the fact that childless women are less economically constrained than mothers. Moreover, childless women may face fewer constraints in (re)entering the labour market or expanding their labour supply compared to separated mothers, who tend to experience the so-called motherhood penalty (Mortelmans, 2020).

Table 2.5a Regression estimates of changes in equivalized household income by marital property regime for France.

	Separation Regime		Community regime	
	Men	Women	Men	Women
treatment	-0.079	-0.11	-0.094	-0.30***
	(0.15)	(0.12)	(0.11)	(0.10)
Cons.	0.16**	0.20***	0.053*	0.077***
	(0.068)	(0.036)	(0.031)	(0.021)
N	178	264	309	383

	Income Share			
	Men	Women	Men	Women
treatment				
0-40% share	0.23	-0.13	0.048	-0.61***
	(0.14)	(0.13)	(0.15)	(0.12)
40-60% share	0.033	-0.33***	-0.099	-0.18*
	(0.18)	(0.12)	(0.084)	(0.11)
> 60% share	-0.96**	0.14	-0.72	0.24**
	(0.47)	(0.29)	(0.59)	(0.12)
N	178	264	309	383

	Earnings Share			
	Men	Women	Men	Women
treatment				
0-40% share	0.28*	-0.21*	0.094	-0.54***
	(0.15)	(0.11)	(0.16)	(0.097)

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[30] These findings also hold considering the number of children. Tables are not shown but are available for all countries.

40-60% share	0.11	-0.32*	-0.15	-0.13
	(0.23)	(0.17)	(0.11)	(0.10)
> 60% share	-0.70**	0.19	-0.50	0.19
	(0.34)	(0.38)	(0.44)	(0.12)
N	168	243	261	320

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.5a (continued). Regression estimates of changes in equivalized household income by couple type for France.

	Unregistered Partnership		Marriage		Registered Partnership	
	Men	Women	Men	Women	Men	Women
treatment	-0.026	-0.069	-0.094	-0.31***	-0.23	-0.44***
	(0.12)	(0.14)	(0.11)	(0.10)	(0.49)	(0.12)
Cons.	0.18**	0.24***	0.054*	0.083***	0.080**	0.11***
	(0.082)	(0.051)	(0.030)	(0.019)	(0.034)	(0.026)
N	128	167	318	434	41	46

Income Share						
	Men	Women	Men	Women	Men	Women
treatment						
0-40%	0.22	-0.13	0.048	-0.63***	0.29**	-0.53***
	(0.17)	(0.14)	(0.15)	(0.12)	(0.11)	(0.044)
40-60%	-0.081	-0.26*	-0.097	-0.18*	0.32	-0.53***
	(0.21)	(0.14)	(0.084)	(0.11)	(0.27)	(0.14)
> 60%	-0.44	0.18	-0.72	0.25**	-1.97***	-0.16
	(0.27)	(0.32)	(0.59)	(0.12)	(0.33)	(0.11)
N	128	167	318	434	41	46

Earnings Share						
	Men	Women	Men	Women	Men	Women
treatment						
0-40%	0.18	-0.16	0.094	-0.57***	0.61***	-0.77***
	(0.17)	(0.11)	(0.16)	(0.095)	(0.19)	(0.060)
40-60%	0.18	-0.28	-0.15	-0.13	0.038	-0.47***
	(0.30)	(0.22)	(0.11)	(0.10)	(0.068)	(0.041)

> 60%	-0.34*	0.24	-0.50	0.21*	-2.03***	-0.19***
	(0.18)	(0.43)	(0.44)	(0.12)	(0.25)	(0.068)
N	120	159	268	359	41	45

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Marital property regime chosen by the couple during the relationship may affect dissolution outcomes, influencing individual behaviours. The property regime may also proxy a possible gap in personal wealth between partners since the separation regime, differently from the community of property, does not provide for equal sharing of resources accumulated during the relationship upon separation.

The results are presented in Table 2.5a. Women experience a significant loss in household income (-30%) under the community regime, while women that were under the separation regime show a negative but not significant effect. For men, treatment effects of separation controlling for marital property regime are also not significant. There is no difference between separated and partnered men once controlled for property regime. These findings confirm hypothesis 3.

Secondly, when considering the combined effect of property regime and marital specialization, the impact of dissolution differs across pre-separation degrees of marital specialization. Under community regime, women losses in household income decrease with the increase of personal income owned during the relationship. Up to 40% of owned personal income during the relationship, women lose 61% of household income, while the loss is around 18% where they owned a share between 40% and 60% with respect to their former partner. In contrast, the change in household income is positive when she was the primary income provider. This finding confirms hypothesis 3.

No significant difference is found for men under the community regime, while under separation regime men who were secondary income provider experience a significant loss in household income of about 96% compared to their partnered counterparts.

Considering earnings share (shown in bottom panel of Table 2.5a), the pattern is slightly different. Under the separation regime, men gain 28% in household income after the dissolution when they were in male breadwinner couples, while those who were in female breadwinner couples they lose about 70%. Conversely, women experience loss of about 21% when they were in male breadwinner couples and 32% in dual earners couple. For women who come from female breadwinner couple, the income change is positive but not significant. Under

community regime, no significant effect is found for men, while women that belonged to male breadwinner couples still experience a significant loss in income.

In addition, the effect of separation by marital status is considered. There is not significant impact for unregistered partnership, namely in cohabitation, regardless of gender. In contrast, women who were married or in PACS show a negative change in household income of 31% and 44%, respectively.

These findings confirm Hypothesis 4.

Accounting for within-couple inequality in terms of personal income (last two panel of Table 2.5a) indicate that the effect of separation is heterogeneous across marital status. Women in unregistered partnerships who were in dual earners couples, experience significant and negative change. Married women experience a loss when they owned up to 60% of personal income, while they show a positive change (+25%) when they were primary breadwinner. Similarly, a significant loss is found for women in registered partnerships (-53%).

Only men from PACS show significant impact. Particularly, they experience positive changes in household income when they were main income providers and negative changes when they were secondary income providers.

Considering earnings share partly confirms these results, pointing out heavier losses in household income for women who were in PACS. The magnitude of the loss decreases as the earnings share increases.

Taken together these results may highlight two main points. First, women who were in cohabitations tend to experience less negative effect than married women and women who were in PACS. However, under French law, both cohabitation and PACS are subject to the same property regime, the separation of property. Additionally, neither of them is entitled to claim marital compensation upon dissolution. One possible explanation for the difference in outcomes could be the high level of commitment within PACS couples, which may be similar to that of marriage and can be supported by legal features as tax credits. However, in this type of partnerships, the loss of economies of scale and the degree of household specialization may be not compensated by any post-dissolution economic compensation.

Italy

Italian women also experience a separation penalty (Table 2.4b, Panel A). In Italy, separated women suffer a 41% decrease in household income after the dissolution event, compared to women who remained in a partnership. Conversely, Italian men are not affected by the

dissolution event since they do not show significant changes compared to their partnered counterparts.

Controlling for within-household inequality (Table 2.4b, Panel B), the separation penalty is larger for women who were in male breadwinner couples (-67% for income share and -63% for earnings share). No significant effect is associated with shares above 40% , although shares above 60% appear to show a gain in post-treatment household income. In contrast, men in Italy experience an income loss of 79% when they were secondary income provider and an increase in household income (+27%) when they were in dual earner couples.

The role played by personal 'potential' wealth in moderating post-separation household income (Table 2.4b Panel C) appears to be nonlinear and heterogeneous across quintiles of the wealth distribution. Men experience a significant positive change in household income when they were at the bottom of the wealth distribution (+85%), but a negative change when they were in Q2 (-37%). Women have negative and significant changes where they were at the bottom (-53%) and at the top of the distribution (-88%). Therefore, in contrast to hypothesis 2, a higher position in the distribution of pre-separation personal wealth is associated with larger losses in post-treatment household income, particularly for women.

Negative effects found for women appear different considering housing wealth. The pattern for women in this case, although not significant for all quintiles, show that the size of the impact is lower for higher quintiles. Financial wealth does not appear to be significant for men, while for women it tends to reproduce patterns of total wealth.

Presence of children (Table 2.4b Panel C) highlights a larger loss in household income for female-headed childless households (-58%) while households with children do not significantly differ from partnered households with children. Male-headed households as well have no significant impact controlling for the presence of children. This opposite effect may be related to the lack of public or private child allowance for childless women. However, they are less constrained in using labour market for compensation of income losses. Their post-dissolution household income may depend entirely on their level of labour market attachment or on welfare benefits, which in turn may not offset the income decrease. Additionally, spouse alimonies, often unpaid may play a role. Conversely, men are less often custodial parents after separation, which may result in less economically constraints and adjust their labour supply accordingly.

Table 2.5b reports the average effects by pre-separation marital status. The results show that separated women experience a 44% decrease in unregistered partnerships and a 47% decrease in marriage. Thus, the loss is slightly higher for women who were in married couples.

These effects can also be associated with the property regime, since community of property is the default regime for marriage and the separation regime is the default for cohabitations. This finding is in line with hypothesis 3 and 4.

Distinguishing by income and earnings shares (bottom panels of Table 2.5b), women who were in male breadwinner couples experience greater losses in unregistered partnerships than in marriage. Formerly married women in dual earners couple display a narrower loss of -18%. Finally, women who were in female breadwinner couples, show a positive but not significant treatment effect if formerly married and a small but significant loss if formerly cohabiting.

The sample size of individuals in unregistered partnerships is quite low, and no results are provided by the estimation for men. Regarding formerly married men, those who were not main income earner before separation experience a significant loss, while those formerly in dual earner couples gain (+29%) in terms of post-separation household income.

Table 2.4b Regression estimates of changes in equivalized household income for Italy

Panel A: Average treatment effect on treated.

	Men	Women
treatment	-0.027	-0.41**
	(0.21)	(0.19)
Cons.	-0.11	0.013
	(0.12)	(0.044)
N	160	150

Panel B: Average treatment effect by share of income and earnings

	Income Share		Earnings Share	
	Men	Women	Men	Women
treatment				
0-40%	0.070	-0.67***	0.062	-0.63**
	(0.32)	(0.25)	(0.34)	(0.25)
40-60%	0.19	0.020	0.27*	0.061
	(0.15)	(0.11)	(0.14)	(0.11)

> 60%	-0.79**	0.55	-0.79**	0.38
	(0.35)	(0.49)	(0.35)	(0.46)
N	160	150	137	127

Panel C: Average treatment effect by quintiles of wealth

	Net Household Wealth		Housing Wealth		Financial Wealth	
	Men	Women	Men	Women	Men	Women
treatment						
Q1	0.85*	-0.015	0.53	-0.069	-0.046	-0.31
	(0.50)	(0.34)	(0.53)	(0.29)	(0.20)	(0.33)
Q2	-0.37*	-0.53**	-0.34*	-0.82***	0.054	-0.79***
	(0.20)	(0.26)	(0.19)	(0.26)	(0.14)	(0.20)
Q3	-0.69	-0.026	-0.40	-0.46	-0.64	-0.090
	(0.53)	(0.29)	(0.45)	(0.70)	(0.56)	(0.14)
Q4	0.12	-0.68	-0.0049	-0.70*	0.12	-0.046
	(0.13)	(0.59)	(0.15)	(0.36)	(0.13)	(0.14)
Q5	-0.12	-0.88**	0.091	-0.23	0.059	-0.83
	(0.13)	(0.34)	(0.15)	(0.26)	(0.15)	(0.67)
N	160	150	160	150	154	147

Panel D: Average treatment effect by presence and number of children

	Presence of children	
	Men	Women
treatment		
No children	0.0056	-0.58***
	(0.33)	(0.18)
Children	0.094	-0.22
	(0.17)	(0.38)
N	160	150

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.5b Regression estimates of changes in equivalized household income by couple type for Italy.

	Unregistered Partnership		Marriage	
	Men	Women	Men	Women
treatment	-0.37	-0.44**	0.013	-0.47*
	(0.36)	(0.17)	(0.23)	(0.27)
Cons.	-0.024	0.20**	-0.12	0.0053
	(0.16)	(0.077)	(0.12)	(0.045)
N	12	14	148	136

Income share

	Unregistered Partnership		Marriage	
	Men	Women	Men	Women
treatment				
0-40% share		-0.82***	0.063	-0.67**
		(0.082)	(0.33)	(0.32)
40-60% share		0.048	0.21	-0.18*
		(0.096)	(0.15)	(0.10)
> 60%share	-0.51		-1.00***	0.55
	(0.47)		(0.37)	(0.49)
N	12	14	148	136

Earnings share

	Unregistered Partnership		Marriage	
	Men	Women	Men	Women
treatment				
0-40% share		-0.84***	0.053	-0.61*
		(0.084)	(0.36)	(0.33)
40-60% share		0.048	0.29**	-0.091
		(0.10)	(0.14)	(0.095)
> 60% share	-0.51	-0.10**	-0.98**	0.44
	(0.47)	(0.031)	(0.38)	(0.51)
N	12	14	125	113

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Germany

The separation penalty for German women is around 30%. (Table 2.4c Panel A) compared to non-separated women, while men do not show any impact. Thus, in Germany, post-dissolution household income dynamics of separated men do not differ from those of non-separated men. Considering income and earnings shares provide a more complete picture of the underlined mechanisms linked to pre-separation intra-household inequality. Men seem to display a pattern similar to that found in France and Italy. However, none of these impacts are significant. In contrast, German women experience a significant reduction in household income when they were in male breadwinner couples, both in terms of income and earnings share.

The effect of separation on household income, controlling for wealth, is largely not significant for men. Conversely, women who were positioned at the top of the wealth distribution during the relationship, show a significant and negative change in household income of about 82%. The same results are found considering housing wealth (-98%) and financial wealth (-66%). This finding contradicts Hypothesis 2.

Female-headed childless households show a larger and significant effect with loss of income around -44% (Table 2.4c Panel D) compared to their partnered counterparts. The effect is negative but not significant for mothers. Men do not display significant effects.

When considering pre-separation marital status (Table 2.5c), separation does not have a significant impact on men's post-separation income. However, it confirms the idea that the negative impact of separation found for women is driven by previously married women in male breadwinner couples. Women who were the primary income providers experience moderated losses, but these are not statistically significant. This result appears consistent with hypotheses 3 and 4, since cohabitations and marriages differ in marital property regime are subject to different property regimes.

Table 2.4c Regression estimates of changes in equivalized household income for Germany.

Panel A: Average treatment effect on treated.

	Men	Women
treatment	-0. 0074	-0. 3019*
	(0.1941)	(0.1552)

118

Cons.	0.0002	0.0578
	(0.1207)	(0.0684)
N	276	355

Panel B: Average treatment effect by share of income and earnings

	Income Share		Earnings share	
	Men	Women	Men	Women
treatment				
0-40% share	0.2180	-0. 5265***	0.1639	-0. 6339***
	(0.2051)	(0.1901)	(0.2663)	(0.2135)
40-60% share	-0. 0563	-0. 0412	-0. 0385	-0. 0024
	(0.2135)	(0.1817)	(0.239142)	(0.2223)
>60%share	-0. 7217	-0. 2615	-0. 7226	-0. 2725
	(0.6775)	0.5219	(0.7381)	(0.4489)
N	276	355	206	251

Panel C: Average treatment effect by quintiles of wealth

	Net household wealth		Housing wealth		Financial wealth	
	Men	Women	Men	Women	Men	Women
treatment						
Q1	-0. 2147	-0. 5217	-0. 0016	-0. 2134	-0. 4515	-0. 4178
	(0.3020)	(0.3487)	(0.2082)	(0.2202)	(0.3156)	(0.2865)
Q2	-0. 0357	0.2020			0.0181	-0. 0033
	(0.3126)	(0.3638)			(0.3929)	(0.4420)
Q3	0.1650	-0. 3495	0.0676	0.1266	0.1588	-0. 1650
	(0.2987)	(0.4169)	(0.3623)	(0.3133)	(0.2695)	(0.2256)
Q4	0.1077	-0. 4890	0.1367	-0. 4190	-0. 0907	-0. 4720
	(0.5433)	(0.3603)	(0.3256)	(0.2958)	(0.4515)	(0.3737)
Q5	-0. 1097	-0. 8215**	-0. 2637	-0. 9786***	0.4967	-0. 6551*
	(0.4387)	(0.3779)	(0.5096)	(0.3627)	(0.4381)	(0.3651)
N	276	355	276	355	276	355

Panel C: Average treatment effect by presence and number of children

	Presence of children	
	Men	Women
treatment		
No children	0.1241	-0. 4424**
	(0.1763)	(0.1888)

Children		-0. 3860		-0. 1682
		(0.3854)		(0.2424)
N		276		355

Table 2.5c Regression estimates of changes in equivalized household income by couple type for Germany.

	Unregistered partnership		Marriage	
	Men	Women	Men	Women
treatment	-0. 1445	-0. 5220	0.0000	-0. 2714
	(0.3342)	(0.3322)	(0.2366)	(0.1971)
Cons.	0.1862	0.2567	-0. 0273	0.0354
	(0.3115)	(0.3073)	(0.1258)	(0.0658)
N	27	31	250	324

Income share

	Unregistered partnership		Marriage	
	Men	Women	Men	Women
treatment				
0-40% share	-0. 0945	-0. 6649	0.3016	-0. 5376**
	(0.4863)	(0.4180)	(0.2243)	(0.2400)
40-60% share	-0. 1567	-0. 5815	-0. 0279	0.0446
	(0.6553)	(0.7238)	(0.2028)	(0.1791)
>60% share	0.0070	-0. 1040	-1. 0542	-0. 3126
	(1.1717)	(0.5248)	(0.9687)	(0.7621)
N	27	31	250	324

Earnings share

	Unregistered partnership		Marriage	
	Men	Women	Men	Women
treatment				
0-40% share	-0. 1051	-0. 7327	0.2477	-0. 6629**
	(0.5143)	(0.4291)	(0.3041)	(0.2964)
40-60% share	-0. 1488	-0. 5842	-0. 0130	0.1502
	(0.6987)	(0.7268)	(0.2219)	(0.1954)

>60% share	-0. 2702	-0. 1075	-1. 1272	-0. 3300
	(0.7941)	(0.5303)	(1.0747)	(0.6082)
N	24	29	182	223

Spain

Neither Spanish men nor Spanish women experience any significant loss in equivalized household income after separation, as shown in Table 2.4d Panel A). The sign of the coefficient is negative in both cases, pointing out a loss, neither of them statistically differ from men and women who are still in partnership. The reason may lie in the high rate of repartnering (above 50%) observed in Spain (Table 1.1d in Chapter 1). The rate of repartnering among separated women was above the 60% (Table 1.2d in Chapter 1). Repartnering may offset the effects of dissolution by restoring economies of scale for separated individuals.

However, the pattern of gains and losses is similar to that of other countries but is not supported by statistical significance except in one case (Table 2.4d Panel B). Independently of whether the income or the earnings share are used, men experience a loss in income when their partner was the primary earner. In mirror patterns, women previously in male breadwinner partnerships experience losses in post-separation household income while the opposite holds for those previously in dual earners couple. However, none of these results appear to be statistically significant.

The impact of separation considering pre-separation wealth (Table 2.4d Panel C) displays a less clear pattern in Spain compared to the other countries. However, the impacts of separation for women appear positive at the bottom of the distribution and negative at top, except considering financial wealth.

Also, the effect of separation considering the presence of children within the household (Table 2.4d Panel D) display any significant result. However, childless men and women as well as fathers display negative signs.

Similarly, when considering pre-separation marital status (Table 2.5d), the impact of separation is not significant. Although these results are all not statistically significant, the pattern drawn by these effects for women is similar to those found for France, except for the unregistered partnerships. They in fact, display a positive sign, even when considering both marital status

and within-couple inequality (bottom panels of Table 2.5d). Conversely, women who were married or in a PACS tend to exhibit negative signs and their patterns across degrees of within-couple inequality appear similar to those found in the other countries.

Table 2.4d Regression estimates of changes in equivalized household income for Spain.

Panel A: Average treatment effect on treated.

	Men	Women
treatment	-0. 18522	-0. 03051
	(0.130119)	(0.130695)
Cons.	0.233315***	0.161369
	(0.055453)	(0.099426)
N	404	354

Panel B: Average treatment effect by share of income and earnings

	Income Share		Earnings share	
	Men	Women	Men	Women
treatment				
0-40% share	-0. 06401	-0. 17176	0.041658	-0. 12619
	(0.158997)	(0.141808)	(0.166393)	(0.190255)
40-60% share	-0. 2941	0.176606	-0. 33901	0.273732
	(0.256055)	(0.26086)	(0.309747)	(0.193216)
>60% share	-0. 51284	-0. 00881	-0. 633***	-0. 13325
	(0.336906)	(0.199703)	(0.211978)	(0.189003)
N	404	354	336	304

Panel C: Average treatment effect by quintiles of wealth

	Net household wealth		Housing wealth		Financial wealth	
	Men	Women	Men	Women	Men	Women
treatment						
Q1	-0. 08025	0.218836	-0. 06955	0.28633*	-0. 33305	-0. 17977
	(0.26626)	(0.20429)	(0.217072)	(0.169921)	(0.225189)	(0.154097)
Q2	-0. 27675	-0. 32799	-0. 49588**	-0. 60348*	-0. 52498**	-0. 22981
	(0.309136)	(0.250399)	(0.199119)	(0.294219)	(0.242349)	(0.238216)
Q3	-0. 07647	-0. 01612	-0. 41264*	-0. 23546	0.243488	0.356272
	(0.249511)	(0.256174)	(0.225403)	(0.194556)	(0.239525)	(0.304466)

Q4	-0. 35443	-0. 28269	-0. 14971	0.033393	-0. 08937	-0. 05274
	(0.226513)	(0.193208)	(0.218283)	(0.224702)	(0.246226)	(0.238407)
Q5	-0. 41815**	-0. 09184	-0. 2854	-0. 28192	-0. 4134*	-0. 2967
	(0.171236)	(0.156392)	(0.246915)	(0.216191)	(0.231178)	(0.193833)
N	404	354	404	354	404	354

Panel D: Average treatment effect by presence and number of children

	Presence of children	
	Men	Women
treatment		
No children	-0. 21418	-0. 17691
	(0.164453)	(0.163841)
Children	-0. 25028	0.095382
	(0.210866)	(0.184002)
N	404	354

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.5d Regression estimates of changes in equivalized household income by couple type for Spain.

	Unregistered partnership		Marriage		Registered partnership	
	Men	Women	Men	Women	Men	Women
treatment	-0. 17969	0.373827	-0. 162651	-0. 12538	-0. 32306	-0. 4733
	(0.193442)	(0.284277)	(0.16804915)	(0.132508)	(0.612074)	(0.792414)
Cons	0.297156	0.112151	0.2239794***	0.151294	0.29979	0.580048
	(0.175883)	(0.202425)	(0.05549904)	(0.107328)	(0.530353)	(0.78426)
N	25	26	358	311	21	17

Income share

	Unregistered partnership		Marriage		Registered partnership	
	Men	Women	Men	Women	Men	Women
treatment						
0-40% share	0.054172	0.378128	0.02233574	-0. 21031	-0. 3116	-0. 47283
	(0.298767)	(0.636559)	(0.20289258)	(0.145907)	(0.658463)	(0.911677)

40-60% share	-0. 41001	0.367738	-0. 2884264	-0. 03015	-0. 17725	-0. 23962
	(0.344469)	(0.413447)	(0.31268176)	(0.300369)	(0.518049)	(0.523295)
> 60% share	-0. 26037	-0. 02094	-0. 881986***	-0. 00601	-0. 00875	-0. 09318
	(0.30878)	(0.198282)	(0.18770326)	(0.234242)	(0.573522)	(0.71881)
N	25	26	358	311	21	17

Earnings share

	Unregistered partnership		Marriage		Registered partnership	
	Men	Women	Men	Women	Men	Women
treatment						
0-40% share	0.162194	0.215763	0.1873722	-0. 17641	-0. 42773	-0. 39068
	(0.299658)	(0.598691)	(0.20895488)	(0.194812)	(0.67236)	(1.014136)
40-60% eshare	-0. 82792**	0.397886	-0. 2658504	0.119429	-0. 17884	-0. 21019
	(0.351513)	(0.487285)	(0.3553494)	(0.264693)	(0.469227)	(0.278511)
> 60% share	-0. 21932	0.12468	-0. 802153***	-0. 22532	0.121336	-0. 25638
	(0.281903)	(0.248289)	(0.24424954)	(0.244859)	(0.280521)	(0.545132)
N	23	25	293	262	19	16

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

2.9 Sensitivity analysis

This section illustrates the sensitivity analysis implemented to check the sensitiveness of the results obtained by the PSM-DID framework. For the sensitivity analysis I consider in this section: (i)sensitivity of household income with respect to the use of alternative equivalence scale, (ii) sensitivity of the results using as main outcome household income before rather than post-social transfers, (iii) effects of repartnering on post-separation economic wellbeing, (iv) heterogeneity due to custodial parent status, (v) presence of anticipatory behaviours and finally (vi) sample restriction to only working-age individuals.

2.9.1 Sensitivity of the equivalence scale

The first check concerns the choice of the equivalence scale used to study changes in equivalent household income before and after the separation, since the measurement of these changes may

be sensitive to the type of equivalence factor applied (Jenkins, 2008)[31] to adjust for the household size.

As emphasized in the literature on dissolution, the problem stems from to the reduction in size following the household split. This reduction is generally larger for men who are more often non-custodial parents (Jarvis and Jenkins 1999). The OECD-modified scale, often used as a benchmark, accounts for shared custody of children, by dividing equally the weight of the children among parents but it fails to account for economies of scale of lone parents in terms of actual economic needs (Bonnet et al. 2021). Thus, using an equivalent factor based on the square root of household size may yields a more realistic picture of custodial parent households. The square root scale in fact, account for the actual amount of resources needed by this type of households since it assigns equal weights to adults and children [32](OECD, 2013).

Tables 2.6a-d in Appendix B.3. show the causal impact of separation on household income equivalized with square root equivalence scale. For France (Table 2.6a) the results are similar to those found for previous estimates (henceforth benchmark results) in Table 2.4a. While for men the treatment effect is still not significant, for women the effect is significantly negative and larger (-28%) (Table 2.6a Panel A) compared to that found for benchmark estimates (Table 2.4a Panel A). Accounting for within household inequality in terms of income and earnings shares (Table 2.6a Panel B), the results are also very similar to those found for benchmark results with women previously in male breadwinner and or in dual earners households experiencing losses. Similarly, men experiencing losses when they were in female breadwinner couples. The main difference is larger in magnitude treatment effects for both men and women. Also, considering pre-separation wealth position (Table 2.6a Panel C) and the presence of children (Table 2.6a Panel D) also changes very little replacing the OECD-modified scale, except for the higher order of magnitude of the estimated effects.

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[31]According to Jenkins (2008), the choice of the equivalence scale influences both the size and the direction of the changes examined.

[32] For example, the calculation of the economies of scale for a custodial parent with one child is generally 1.3 using OECD-modified scale and 1.4 using the square root scale, while it is 1.5 using the OECD-modified scale and 1.4 using the square root for a childless household composed by two adults. The implication here is that, according to the OECD-modified scale, economic needs for two adults are larger than those of a single parent household with a child. As underlined by Bonnet et al., (2021) this assumption may not hold in all situations.

These results also largely hold for Italy (Table 2.6b), Germany (Table 2.6c) and Spain (Table 2.6d). Treatment effects are, again, larger in magnitude compared to benchmark results in all specification except for Germany where the impacts related to wealth are smaller.

2.9.2   Household income before social transfers

In order to understand the role played by welfare benefits on the amount of post-separation household income, the outcome variable in benchmark regressions in section 8 was replaced by the gross equivalized household income before social transfers[33].

Welfare transfers, and particularly direct measure of income support, have been found in the literature to positively associated with post-separation income of women and especially lone parents (Jarvis and Jenkins, 1999; Uunk 2004; de Vaus et al.2015; AndreB et al.2006; Bonnet et al.,2021; Hogendoorn, 2022) but also to reduce the differential in outcomes between men and women (Hauser et al., 2016). Public transfers reduce men's income especially when they are not custodial parents (McManus and DiPrete, 2001; Bonnet et al., 2021). However, the importance of these transfers is influenced by institutional factors at the country level. Uunk (2004) found that the decline in income following a separation is higher for women in countries that belongs to a welfare regime where single parents' social transfers are comparatively lower than those in countries with other type of regimes. Therefore, the negative impact of separation on household income excluding social transfer may be larger for women compared to the impact in benchmark estimates.

Results are provided in Tables 2.7 a-d in Appendix B.3.

In France (Table 2.7a), the impact of separation on women's household income net of social transfers is 10pp larger compared to benchmark results. Also, and with reference to intrahousehold inequality, women's losses increase in magnitude compared to benchmark results, doubling for women that were in male breadwinner couples, while for men the impact of separation becomes not significant. For wealth and presence of children, results follow the same pattern as benchmark estimates. However, the presence of children implies for women a loss larger than 20pp compared to benchmark results.

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[33] Social transfers generally include child and family allowances and, in most countries, target lone parents. See section 3.1.

Unlike France, Italy (Table 2.7b) shows identical results, even in terms of magnitude, to the benchmark ones across specifications.

Germany (Table 2.7c) displays larger treatment effects for women compared to benchmark results. Moreover, all the treatment effects by shares of personal income or earnings are larger in magnitude compared to benchmark results, whereas they are similar by wealth quintiles and presence of children.

In the case of Spain (Table 2.7d), treatment effects remain not significant though often larger in magnitude compared to benchmark results.

Overall, these findings underline the importance of welfare in weakening the negative impact experienced by women in the aftermath of separation. The implication is that in lack of these transfers, separated households depend more on the market, both in terms of labour market and maintenance and compensation systems (Jarvis and Jenkins, 1999), resulting in more severe economic consequences of separation, especially for lone mothers.

2.9.3 Estimated treatment effect for repartnered individuals

As illustrated in section 2.3, repartnering is a coping mechanism put in place to deal with the negative shock brought by the separation (Mortelmans 2020; Bonnet et al.2021; Watson and Baxter 2022). Repartnering is a potentially relevant coping mechanism to consider analysing changes in household income for separated households since it may offset the cost of separation, maintaining living standards close to the pre-separation levels (Dewild and Uunk 2008: Mortelmans and Defeur 2018; Bonnet et al. 2021). In this section, both men and women who repartnered are considered.

Treatment effects by repartnering are displayed in Tables 2.8 a-d in Appendix B.3.

Repartnering is an effective coping mechanism in France (Table 2.8a) where only non-repartnered women experience a loss in household income after separation, while the treatment effect is not significant for repartnered women and for men. However, pre-treatment within-household inequality appears a key determinant of outcome results. With respect to personal income inequality (Table 2.8a Panel B), non-repartnered men and women show the same pattern of the benchmark results, while repartnered men who were secondary earners experience a positive effect of separation on household income as well as women who were primary earners. With respect to earnings inequality, repartnered individuals show any significant impact while

among the repartnered the results do not differ from benchmark estimates except for men who were primary earners who display a positive and significant effect.

In Italy (Table 2.8b) too repartnering turns out to be an effective coping strategy. Non-repartnered women show a significant loss in household income while there is no evidence of significant effect for repartnered women and men. However, the results differ across income and earnings shares. With respect to income share, men who were secondary earners show a loss, regardless of whether they repartnered. Non-repartnered women experience a loss if they were secondary earners and a gain in income if they were primary earners in the former couple. With respect to earnings share, a positive effect on income is display also by men who were in dual earner couples while the positive effect for women who were primary earners underlined above becomes not significant.

In Germany, by contrast, repartnering does not represent an effective coping strategy. The effect of treatment does not differ across repartnering status in Germany (Table 2.8c) except in association with pre-separation within-couple inequality. Non-repartnered man display a positive change in income when they were in male breadwinner couples while repartnered men experience a negative change when they were secondary earners in the former couple. Women who were in male breadwinner couples show a negative effect, regardless of whether they repartnered. Women who were primary earners display a positive and significant effect when non-repartnered and a sizeable negative effect when they repartnered. This latter result hold also considering earnings share. Repartnering seems to hamper the possibilities of income recovery for women who were more economically independent with respect to their former partners.

Finally, it is hardly surprising that repartnering has no significant impact in Spain (Table 2.8d), given that hardly any significant effect of separation has been found. However, there are few exceptions that concerns only men. Men who were in dual earners couples display a negative effect if non-repartnered and men who were secondary earners experience a loss in income if repartnered.

Taken together, these findings provide evidence that repartnering can be an effective coping strategy in some countries. However, often, it is unable to offset pre-existing within-couple inequalities in terms of personal income and earnings.

2.9.4 Estimated treatment effects for custodial parents

Considering custodial parenthood can change the picture drawn up to now. The amount of welfare provisions and private transfers received by the household may offset or worsen the post-separation living standards of lone parents with dependent children (Bonnet et al. 2021; Jarvis and Jenkins 1999; Uunk 2004) and the distinction between custodial and not parenthood is relevant in this respect. Analysing data for France, Bonnet et al. (2021), find that the number of children and the degree of pre-separation marital specialization are positively related since women tend to specialize in household tasks. Post-separation custody of children affects her earnings capacity (Bonnet et al., 2022) since care time is often subtracted to working time. This tend to be aggravated by the fact that the former partner does not frequently comply with payment of child allowances, or the latter may not be enough to compensate for income losses due to dissolution (Boll and Schuller, 2021; Leopold and Kalmin 2016).

Using EU-SILC data from 2017-2018, Hakovirta and Mesiäislehto (2022) found that the probability of receiving support is higher for previously married mothers than those in non-marriage partnerships, but, on average, the share of custodial mothers receiving actual child support from non-residential fathers tends to be low: about 40 percent in Italy, lower than 40 percent in Spain and 25 percent in France.

Estimated treatment effects for custodial and non-custodial men and women are reported in Tables 2.9 a-d Appendix B.3. In France (Table 2.9a) custodial parents, both men and women, tend to lose more after separation than non-custodial (-26% and -24% respectively) in terms of equivalized household income. Conversely, in Italy (Table 2.9b) and Germany (Table 2.9c) those who experience loss in household income are non-custodial women (-56% and -42%, respectively). In Spain (Table 2.9d) no significant impact is found, however the magnitude of the effects is consistent with the possibility that non-custodial individuals and custodial fathers lose more.

Considering within-couple inequalities, in France (Table 2.9a Panels B and C), both custodial mothers and fathers from male breadwinner couples suffer income losses. In contrast, for non-custodial individuals, men experience a significant increase in household income while women experience a larger loss. Concerning former dual earners couples, the negative impact concerns only custodial mothers. Similarly, men from female breadwinner couples, experience a loss in post-separation household income, regardless of whether they are custodial or not.

In Italy (Table 2.9b Panel B), non-custodial women from male breadwinner couples experience a loss in income while and women from female breadwinner couples experience a gain. Using earnings to gauge intrahousehold inequality (Table 2.9b Panel C) yields to worst outcome for custodial mother who were primary earners in the former couple.

In Germany, negative changes in household income affect non-custodial women (Table 2.9c Panel A). However, considering intrahousehold inequality in term of income (Table 2.9c Panel B) and earnings (Table 2.9c Panel C), women who were in male breadwinner couples show a negative impact of separation on household income, regardless of whether they are custodial mothers or not.

No significant effect is found for Spain (Table 2.9d Panel A), except when controlling for intrahousehold inequality (Table 2.9d Panels B and C). Custodial fathers experience a decrease in household income regardless of their share of personal income within the former couple, while custodial mothers show a significant and positive change if they were in dual earners couples. Non-custodial individuals who were previously in dual earners couples suffer a drop in household income, regardless of gender.

Taken together, these results indicate that the economic consequences of separation differ across custodial status. In France, negative impact brought by the dissolution mainly affects custodial parents in the other countries concerns non-custodial women. This difference may depend on country-specific characteristics – women's labour market participation rates or childcare provisions - but also on individual characteristics - child support payments or custody arrangements. However, the pre-separation level of within-couple inequality moderates the consequences of lone motherhood, as well as, for childless women.

2.9.5 Anticipatory effect

Some individuals may forecast the dissolution of their household, putting in place anticipatory behaviours before the event. Specifically, a number of studies (Vignoli et al. 2018; Brugmann 2020; Bonnet et al., 2021) found that separated women tend to increase their labour supply at both the intensive and extensive margins, one year or more years before the split.

Anticipatory effects challenge the causal impact of dissolution on income or earnings, which represents larger components of household income. The data allow me to gauge potential anticipatory effects at the extensive margin by using as indicator job continuity. My assumption

is that if a worker does not change job up to three years before the baseline observation at t-1 (the year of the first observation), anticipatory effects are likely to be weak. I, therefore, re-ran the treatment effect on the subsample of workers with high job continuity and infer a negligible anticipatory effect if the results are close to the benchmark findings. Since the data's time windows is three years, this implied restricting the sample to workers with job seniority of a least 1, 2, or 3 years at the time of the first interview, i.e., at time t-1. In addition, I controlled for the effect of within-couple inequality by restricting the sample to workers who were in the same job at least 3 years (the more distant time window used to restrict the sample) in the same job at the time of the first interview (Tables 2.10 a-d Panel B).

Results are presented in Tables 2.10 a-d in Appendix B.3., and they do not reveal any significant differences between the benchmark results and those obtained under the aforementioned restrictions for any of the countries included in the analysis.

2.9.6 Working age sample

Lastly, I restricted the sample to working age individuals, namely those individuals who still are (or potentially still are) in the labour market, restricting the sample to individuals under 65 years. The assumption behind this restriction is controlling for possible heterogeneous impacts across age cohorts.
Results are provided in Tables 2.11 a-d in Appendix B.3.

Considering the working age sample, separation penalty decreases for women in France and Italy (Table 2.11a and 2.11b in Appendix B.3., respectively) compared to the benchmark effects. Also, with respect to intrahousehold inequality in terms of income and earnings, the effects do not show any relevant differences to those in the benchmark estimates. In contrast, in Germany (Table 2.11c) separation penalty for working age women is higher compared to the effect found in the benchmark estimates, even when considering intrahousehold inequality in terms of income. Separation penalties are still not significant for Spain (Table 2.11d).

Overall, these results may indicate that at least for women in France and Italy, larger losses could be associated with retirement because older individuals out of the labour force have lower possibilities to cope with negative shock caused by the separation through the labour market mechanisms. On the contrary, in Germany larger losses concern younger women and could be due to the degree of labour market attachment.

2.10 Discussion and conclusions

This chapter analysed the impact of separation on equivalized household income, using data from the longitudinal component of the Household Finance and Consumption Survey (HFCS) in 2014 and 2017 for four countries: France, Italy, Germany and Spain.

The analysis was carried out comparing separated individuals before and after the breakup to individuals in stable partnerships with similar characteristics, through the combination of the Difference-in-differences with matching techniques (Heckman et al. 1998). This combination of Propensity score matching (PSM) with a Difference in Differences allowed to isolate the unbiased separation effect on separated household economic wellbeing.

The aim of the chapter was three-fold. Primarily, it aimed to assess whether gendered outcomes of separation could be driven by pre-separation within-couple inequality in terms of personal income and individual wealth. To check this hypothesis, I constructed measures of within-couple inequality in terms of personal income and earnings, which proxy for pre-separation marital specialization models. In addition, I constructed a measure of potential personal wealth to proxy post-separation wealth. Due to the lack of personal wealth data, this measure was constructed based of equal share assumption.

Furthermore, this chapter aimed to analyse how the impact of separation varies for different cross-country institutional characteristics, namely marital property regime and partnership legal settings. The role of these institutional characteristics in relation to pre-separation within-couple inequality was also analysed.

Empirical findings showed that a separation penalty for women existed in all countries under analysis, except in Spain. However, this result is consistent with the literature that pointed out a gendered effect of separation on economic wellbeing (Andreß et al., 2006; Uunk, 2004; Bonnet et al., 2021). Moreover, the magnitude of the effects was comparable to those previously found in the literature for some of the countries included in the analysis (Bonnet et.al, 2021; Andreß et al., 2006; Uunk, 2004; Hauser et al., 2016; de Vaus et al., 2007).

Secondly, the findings confirmed that the effect of separation was heterogeneous across different pre-separation degree of within-couple inequality. With respect to inequality of personal income and earnings, a separation penalty existed for the partner who was not the primary breadwinner in the couple, regardless of gender. This result held for all countries, except for Spain. However, although the finding for Spain were not significant, they displayed a pattern similar to that of the other countries. Moreover, this result is in line with prior research on divorce and separation that also accounted for within-couple inequality (McManus and

DiPrete, 2001; Bonnet et al., 2021; Chanda 2022; Bradbury and Katz, 2002). Thus, the within-couple endowments of personal income and earnings shaped post-separation economic wellbeing.

With respect to inequality in term of pre-separation personal wealth, the effect of separation yielded mixed evidence about a convergence pattern, similar to what was previously found for household income (Hogendoorn, 2022). Overall, the results showed that the higher the wealth position in the distribution before separation, the greater the loss experienced in household income after separation, particularly for women. However, there was an exception: in Italy, housing wealth appeared to moderate the negative effects of separation on the household income of separated women.

These finding on the moderating role of wealth contrasted with the initial hypothesis, and this may depend on the measure used to gauge the effect of separation which was constructed based on levels of household wealth rather than personal wealth.

Thirdly, the results showed that legal arrangements regarding marital property regimes and types of partnership played a role on the separation outcomes also through pre-separation marital specialization, determining different outcomes for women. With respect to property regime, in France, negative effects of separation were found to be significant under the community regime. Furthermore, the impact was found positive for women who were the primary earners in the former couple.

With respect to former marital status, negative effects of separation were found to be significant for marriage and PACS in France, significant and larger for marriage in Italy, while not significant in Germany and Spain. However, the impacts differed by degree of marital specialization in all countries, except Spain. This finding provided some evidence for the initial hypothesis regarding the legal features and their effect on post-separation wellbeing through specialization. It highlighted that women who were less economically independent before the separation experience heavier negative consequences, also depending on the legal dispositions that rule division of property and family law.

Additional results provided in the analysis concerned the presence of children and the role of repartnering.

The effect considering the presence and the custodial status of children differed across countries. In France, both separated mothers and fathers, as well as custodial parents, were the more penalized in terms of losses in household income. In Germany and Italy, significant

penalties were found for childless and non-custodial women. No significant impact was found for Spain.

The results for France are consistent with the existing literature that has found larger losses in household income for separated mothers (Thielemans and Mortelmans, 2022; Jenkins, 2008; Andreß et al., 2006; Aassve et al., 2007; Bonnet et al., 2021; Boll and Schüller, 2022; Bianchi et al., 1999). Similarly, the findings for Germany and Italy are in line with some of the results in Bonnet et al. (2021) that found larger income losses for separated childless women compared to their married counterparts. However, the difference in impacts may be due to the fact that childless women tend to compensate for separation-induced losses through the labour market and/or relying on alimony paid by the former partner and on welfare. However, due to the barriers that women often face in the labour market and unmet paid alimony, these women may not be able to be self-reliant and fully compensate for their loss in income through these mechanisms, experiencing more consequences.

Repartnering represented an effective coping strategy to deal with the negative effect of dissolution, especially in France and Italy when compared to Germany. Spain did not show any significant results, despite the Spanish sample included a large proportion of repartnered individuals. However, often repartnering is unable to fully offset the role of pre-existing within-couple inequalities in income and earnings.

The analysis evidenced a pattern of losses for women similar across countries. However, it also revealed important differences across countries in the magnitude of the impact of dissolution on the household income of separated households. In particular, the analysis showed how in some countries heavier losses are suffered by childless households (Italy, Germany), in others by households with children (France).

 These mixed results may depend on a complex interplay of country-specific features related to institutional arrangements and the structure of the labour market. On the one side, the results are influenced by differences in female labour force participation rates across countries, since separation-induced losses are higher in countries where fewer women work (e.g. Italy). Allowances for unemployed mothers push in the same direction in countries where the level of guaranteed minimum income for inactive or unemployed women disincentivize them from expanding or entering the labour market (e.g. France). On the opposite side, social transfers in the guise of in-work benefits or social assistance contribute to reducing the poverty risk of

separated households, especially those with children. As shown by France, moreover, this poverty reduction effect can be reinforced by availability of childcare facilities and allowances. Post-separation maintenance, pre-separation asset ownership and taxation rules applying during the partnership also form a complex structure of incentives and disincentives to work that affects post-separation losses. The analysis showed that women experienced greater losses both in countries where the protection of the economically weaker partner is stronger, but taxes are levied on individuals (Italy) and in countries where joint taxation is the default for married couples, but post-separation maintenance is guided by the principle of independence for the ex-spouses (Germany). The type of partnership chosen by the couple adds an additional layer to this complex incentive structure, thus increasing the heterogeneity of the results.

This study may suffer from three main limitations. The first limitation was due to the small sample size of treated individuals. The low number of separated individuals is linked to the problem of attrition in survey panel data. This issue is particularly pronounced in case of divorce or separation (de Vaus et al.,2017; Thielemans ad Mortlemans, 2022; Jenkins 2008?) because generally one of the former partners (often the male partner) leaves the family home, reducing the probability that they will remain in the survey panel. Attrition issues challenge in this sense the representativeness of the samples used for the analysis (Brewer and Nandi, 2014). To address this issue, I included in the analysis countries whose panel design was constructed in order to follow individuals rather than being based on family address. Moreover, the results appeared consistent with most findings in the literature and, in particular, with those research that used administrative data to gauge impact of separation.

A second limitation was the lack of data at the individual level on wealth. The literature emphasized that using household-level data may result in downward bias on intrahousehold inequality. To address this issue, I used a measure of potential individual wealth. This measure, that assumes equal distribution of resources, given the lack of data in the survey, was aimed to capture the potential amount that each partner could own once the relationship ends. However, potential personal wealth was accurately proxies only in the case of married partners under the community property regime, which represented the larger part of individuals within the sample in all countries. Future research could implement analysis using wealth data at the personal level to construct a more precise measure of within-couple wealth gap. These data are currently only available for few countries (e.g., German SOEP; U.S.' PSID).

Another limitation could be given by the use of gross measures of income instead of net-of-taxes measures. This could have represented a problem for the highest quintiles of the income

distribution. However, in this chapter I focused more on the entire distribution, with the specific aim of understanding changes in economic wellbeing for individuals that were situated at the bottom or in the middle of the income distribution, namely the poorest individuals and the working middle-class.

A last limitation regards that it was not possible to study the long-run effects of separation using the HFCS longitudinal component because it is relatively new survey, and also the rotating design of many countries prevent the observation of the same individuals over longer period. The impacts presented are valid to the short to medium run since the time span is three years.

Finally, the analysis showed that the effect of within-couple inequality in terms of personal income and earnings tend to overcome any other mechanism in shaping gender outcomes due to separation.

The overall implications that I would draw is that, despite clear evidence from the present research that welfare transfers can mitigate the negative effects of dissolution on women wellbeing, priority should be given to boosting female participation to the labour force and reducing gender inequality therein. Reducing gender differences at both margins of the labour supply may increase women's incentives to work and their work schedule thus boosting their financial ability to protect themselves from negative life events that hamper their economic security.

This implies prioritizing measures that target the gender earnings gap and effectively implement work-family reconciliation, by for example expanding formal childcare coverage in preference to distributing cash allowances. Poverty measures aimed to sustain and protect women and children from the risk of poverty ought to be in place but should be so designed as to preserve incentives for women to work.

Appendix B

B.1 Descriptives statistics

Table 2.2a Pre-separation descriptive statistics for France

	All sample	Control	Treated
Eq. Household Income	40425.24	40842.99	30445.73
	(54302.83)	(54730.50)	(41705.53)
Income before social transfers	40317.70	40769.33	29528.64
	(58992.74)	(59557.93)	(42032.22)
Personal Income	26711.48	26910.39	21959.89
	(36950.42)	(37481.22)	(20000.76)
Earnings	19373.17	19431.30	17984.55
	(34466.49)	(34913.02)	(21167.55)
Net wealth	696447.09	712341.51	318233.89
	(1464944.13)	(1485861.85)	(728706.99)
Housing wealth	205758.04	209306.81	120981.92
	(250202.85)	(253313.65)	(133360.84)
Fin. wealth	168153.05	173398.41	41774.19
	(833583.96)	(843753.37)	(518254.3)
Inheritance & Gifts	0.60	0.61	0.41
	(0.49)	(0.49)	(0.49)
Homeownership	1.16	1.16	1.29
	(0.37)	(0.36)	(0.46)
Income Share	0.35	0.35	0.41
	(0.23)	(0.23)	(0.25)
Earnings Share	0.40	0.40	0.43
	(0.31)	(0.31)	(0.31)
Marital status	1.96	1.97	1.75
	(0.39)	(0.39)	(0.58)
Property regime	1.99	2.00	1.69
	(0.63)	(0.63)	(0.63)
Age	52.74	53.07	44.82

	(13.92)	(13.81)	(14.34)
Gender	1.50	1.50	1.55
	(0.50)	(0.50)	(0.50)
# of children	0.72	0.71	1.03
	(1.03)	(1.03)	(1.02)
Household with children	0.40	0.39	0.58
	(0.49)	(0.49)	(0.49)
Education	2.25	2.25	2.33
	(0.75)	(0.75)	(0.70)
Employment status	1.75	1.76	1.53
	(0.95)	(0.95)	(0.82)
Migration	0.12	0.12	0.11
background	(0.32)	(0.33)	(0.31)
Retired	0.28	0.29	0.15
	(0.45)	(0.45)	(0.36)
N	5376	5160	216

Note. Baseline unweighted descriptive statistics for the whole sample, the control, and the treated sample.

Source: HFCS second (2014) wave data. Own calculations.

Table 2.2b Pre-separation descriptive statistics for Italy

	All sample	**Control**	**Treated**
Eq. Household Income	18265.62	18231.07	20059.23
	(13693.19)	(13699.60)	(13313.46)
Income before social transfers	18234.56	18200.42	20006.98
	(13678.49)	(13683.64)	(13369.12)
Personal Income	15271.70	15241.81	16823.41
	(15966.85)	(16006.72)	(13732.98)
Earnings	9428.82	9340.06	14036.82
	(15964.35)	(15972.65)	(14904.37)
Net wealth	246940.94	248077.63	187928.94
	(318213.89)	(320195.62)	(180097.80)
Housing wealth	144638.8	145429.67	103580.1
	(147020.6)	(147523.73)	(111145.62)
Fin. wealth	21096.60	21446.27	2,675.73

	(110674.1)	(110795.66)	(103061.34)
Inheritance &	0.23	0.23	0.25
Gifts	(0.42)	(0.42)	(0.44)
Homeownership	1.21	1.21	1.20
	(0.41)	(0.41)	(0.41)
Income Share	0.25	0.25	0.34
	(0.25)	(0.25)	(0.25)
Earnings Share	0.31	0.31	0.37
	(0.34)	(0.34)	(0.31)
Marital status	1.98	1.98	1.82
	(0.15)	(0.14)	(0.39)
	58.24	58.39	50.83
Age			
	(12.88)	(12.83)	(13.14)
Gender	1.50	1.50	1.42
	(0.50)	(0.50)	(0.50)
# of children	0.47	0.47	0.64
	(0.82)	(0.82)	(0.89)
Household with children	0.29	0.29	0.41
	(0.46)	(0.45)	(0.49)
Education	1.60	1.60	1.84
	(0.70)	(0.70)	(0.74)
Employment status	2.12	2.13	1.52
	(0.97)	(0.96)	(0.83)
Migration	0.05	0.05	0.12
background	(0.23)	(0.22)	(0.33)
Retired	0.32	0.33	0.16
	(0.47)	(0.47)	(0.37)
N	4392	4309	83

Note. Baseline unweighted descriptive statistics for the whole sample, the control, and the treated sample.

Source: HFCS second (2014) wave data. Own calculations.

Table 2.2c Pre-separation descriptive statistics for Germany

	All sample	Control	Treated
Eq. Household Income	41855.57	41700.97	47100.06
	(41651.68)	(40996.57)	(59775.62)
Income before social transfers	40905.98	40750.02	46196.95
	(40357.04)	(39643.43)	(59718.31)
Personal Income	30540.51	30422.91	34530.19
	(39308.60)	(38669.34)	(56981.60)
Earnings	22286.26	22142.53	27161.99
	(38978.40)	(38272.19)	(58083.40)
Net wealth	448034.96	451290.10	337608.55
	(898439.57)	(906267.21)	(564118.54)
Housing wealth	178248.7	179975.1	119683.78
	(232448.1)	(233858.27)	(168644.33)
Fin. wealth	60527.05	59686.64	89022.71
	(292165.4)	(284471.09)	(486758.58)
Inheritance & Gifts	0.27	0.27	0.26
	(0.45)	(0.45)	(0.44)
Homeownership	1.28	1.28	1.36
	(0.45)	(0.45)	(0.48)
Income Share	0.30	0.30	0.33
	(0.23)	(0.23)	(0.25)
Earnings Share	0.35	0.35	0.36
	(0.32)	(0.32)	(0.31)
Marital status	1.95	1.95	1.79
	(0.23)	(022)	(0.41)
Age	57.08	57.12	55.62
	(13.94)	(13.86)	(16.47)
Gender	1.50	1.50	1.56
	(0.50)	(0.50)	(0.50)
# of children	0.44	0.44	0.40
	(0.87)	(0.87)	(0.74)
Education	2.40	2.40	2.34
	(0.59)	(0.59)	(0.65)

Employment status	1.92	1.92	1.89
	(0.99)	(0.99)	(0.98)
Migration background	0.10	0.10	0.08
	(0.30)	(0.30)	(0.27)
Retired	0.35	0.35	0.33
	(0.48)	(0.48)	(0.47)
N	4121	4003	118

Note. Baseline unweighted descriptive statistics for the whole sample, the control, and the treated sample.

Source: HFCS second (2014) wave data (First implicate). Own calculations.

Table 2.2d Pre-separation descriptive statistics for Spain

	All sample	Control	Treated
Eq. Household Income	25255.44	25334.55	22636.30
	(36526.66)	(36765.34)	(27450.35)
Income before social transfers	25184.73	25264.61	22539.95
	(36531.18)	(36769.24)	(27479.81)
Personal Income	16975.64	16928.91	18522.84
	(24269.90)	(24192.27)	(26762.92)
Earnings	12441.04	12378.97	14496.22
	(23706.36)	(23706.53)	(23694.14)
Net wealth	1269760.59	1291574.93	547533.54
	(4241235.81)	(4299197.4)	(1035866.9)
Housing wealth	199024.7	200402.16	153420.08
	(268872.53)	(267400.15)	(311422.25)
Fin. wealth	320363.28	327593.19	81100.05
	(1428088.2)	(1448084.4)	(279547.73)
Inheritance & Gifts	0.45	0.45	0.29
	(0.50)	(0.50)	(0.46)
Homeownership	1.09	1.09	1.22
	(0.29)	(0.29)	(0.41)
Income Share	0.27	0.27	0.37
	(0.26)	(0.25)	(0.29)

Earnings Share	0.36	0.36	0.44
	(0.35)	(0.34)	(0.37)
Marital status	1.99	1.99	2.10
	(0.21)	(0.20)	(0.53)
Age	57.17	57.44	48.12
	(13.12)	(13.03)	(12.70)
Gender	1.50	1.50	1.46
	(0.50)	(0.50)	(0.50)
# of children	0.57	0.56	0.86
	(0.91)	(0.91)	(1.04)
Education	2.06	2.06	2.09
	(0.90)	(0.90)	(0.89)
Employment status	1.96	1.97	1.58
	(0.95)	(0.95)	(0.84)
Migration background	.	.	.
	(.)	(.)	(.)
Retired	0.26	0.26	0.14
	(0.44)	(0.44)	(0.34)
N	4741	4602	139

Note. Baseline unweighted descriptive statistics for the whole sample, the control, and the treated sample.

Source: HFCS second (2014) wave data (First implicate). Own calculations.

B.2 Matching

Matching procedure consisted in a combination of coarsened exact matching and propensity score matching as illustrates in section 2.7.2. The comparison between individuals that experiences a breakup in the treatment group and individuals that stay continuously in a relationship in the control group imply accounting for selection into treatment that may derive from any dynamics that affect the probability of experiencing a relationship's breakup (e.g. anticipation effects, lower income at the baseline).

The first step of matching was the implementation of coarsened exact match (CEM) on three variables taken at the baseline values: age, gender and number of children, categorized or coarsened.

CEM algorithm assumes a stratified random sampling for the data generating process, namely the random sampling concerns strata or partitions. In turn, strata are defined within the reference population according to variables chosen for exact matching (Negri, 2023). In a first step, data are sorted into strata and secondly the algorithm drops all observations that do not have at least one observation for each unique value of the treatment variables within any stratum. This two-step procedure enables to comply common support assumption.

This property allows to apply CEM algorithm before running another matching approach so that data already have common support according to the variables chosen for the exact matching CEM algorithm (Blackwell et al., 2009), that on our case are pre-treatment categories of individuals' age, gender, and number of children.

The quality of the matching can be tested in this framework comparing the initial imbalance between groups and the achieved balance after the implementation of CEM algorithm. The reference statistic λ takes value 0 in case of perfect (global) balance and value 1 in case of complete imbalance. Also difference in means and balance of the empirical quantiles of the distribution of these groups are provided.

France had an initial imbalance of 0.34 and a final balance of 0.068, with 5071 control and 216 treated observations matched. 89 observations were discarded because they were outside the common support. Similarly, Italy passed from an imbalance of 0.39 to a balance of 0.11, with 3984 control and 83 treated matched. 325 observations were discarded. For German sample, the average initial imbalance was 0.27 while the final balance reached was 0.08. 3871 control and 114 treated observations on average were matched while 132 observation that were not on common support were discarded. Lastly for Spain the initial imbalance was 0.36 while the

balance reached after the implementation of CEM was 0.074 with 66 observations discarded because they were outside the common support and 4536 control and 139 treated matched.

In the second step, probabilistic matching has been conducted through nearest neighbour propensity score with one neighbour and some replacement so that each control is used in the procedure more than once. I use also a caliper (i.e., the max distance between the propensity scores) of width equal to 0.20 of the standard deviations of the logit of the propensity score, to improve calibration between units and further ensure common support assumption.

Matching technique based on propensity score has been developed by Rosembaum and Rubin (1983). This approach has been used in this framework by Aassve et al. (2007), Ongaro et al. (2009), Bonnet et al. (2021). The propensity score represents in this context, the probability to experience a separation conditional on the pre-treatment covariates selected for the matching (Negri, 2023). Conditioning on a given number of baseline individual's characteristics between treatment and control group enables to state a similar propensity to separation among them, mitigating the presence of selection bias (Rosembaum and Rubin, 1987; Ling et al., 2021).

To consider country-specific sample characteristics and heterogeneity across countries, the set of pre-treatment covariates chosen for the implementation of the propensity score is similar but no identical for each country. This allows also to satisfy the balancing requirements (Aassve et al. 2007).

Specifically, the set of covariates used are, for:

- **France**: age, gender, number of children, pre-separation household income, pre-separation net household wealth, personal income, woman's share of personal income, education attainment, employment status, received inheritance and gifts, homeownership, retirement, type of marital union, marital property regime, presence of children within the household, migration background.
- **Italy**: age, gender, number of children, pre-separation household income, pre-separation net household wealth, personal income, woman's share of personal income, education attainment, employment status, received inheritance and gifts, homeownership, retirement, presence of children within the household, migration background.
- **Germany**: age, gender, number of children, pre-separation household income, pre-separation net household wealth, personal income, woman's share of personal income, received inheritance and gifts, retirement.

- **Spain**: age, gender, number of children, pre-separation household income, pre-separation net household wealth, personal income, woman's share of personal income, education attainment, employment status, received inheritance and gifts, homeownership, retirement.

The implementation of propensity score on multiple imputed data implies the possibility that the subsequent estimation of the ATT may suffer from bias due to missingness in the data (Rosenbaum and Rubin, 1984; Ling et al., 2021). The preferred strategy in the literature to address this issue is the so-called *within-integration approach* (Ling et al., 2021; de Vries and Groenwold, 2017; Granger et al., 2019). Following this approach, the propensity score matching is applied to each m imputed dataset separately. In a second step, m different treatment effect estimates are obtained through standard regression methods. The estimates are then summarized using the Rubin's rules (Rubin, 1987). The within-approach showed optimality in reducing bias deriving from multiple imputation and more ability in balancing matching covariates (Ling et al., 2021; de Vries and Groenwold, 2017; Granger et al., 2019) [34].

For country that use multiple imputed data, Germany and Spain, I performed propensity score matching procedure separately on each imputed dataset. The results are provided in Table 2.3c and 2.3 d, for Germany and Spain, respectively.

The quality of the matching is assessed by checking means of covariates and their overall distribution.

Tables 2.3 a-d provide mean, standard deviation and standardized difference in means of each baseline covariate used in the matching. Standardized differences indicate balance among the covariates of the treatment and control samples. Differences between the two groups are not significantly different from zero when their post-matching means are below the 0.25 cut-off (Rubin 2001).

Standardized differences are all below this threshold in France (Table 2.3a), in Italy (Table 2.3b) and in Germany across all implicates (Table 2.3c), pointing out that all matching covariates are well balanced between treatment and control group.

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[34] The alternative approach, called *across-integration*, instead implies performing propensity score procedure on each m multiple imputed datasets and then averaging the results obtaining a unique propensity score before estimate the ATT (Ling et al., 2021; de Vries and Groenwold, 2017; Granger et al., 2019).

Furthermore, balance is graphically displayed in top panel of Figures 2.1 a-d. Both balance plots, box and kernel density functions, show that covariates are balanced over treatment compared to pre-matching values.

Another requirement of propensity score methodology concern the so-called overlapping assumption (or common support assumption). The latter assumption holds if for each individual in the treatment group, it is possible to observe an individual with similar characteristics in the control group. Bottom panel of Figures 2.1 a-d, show that the propensity score distribution of treated and control overlap in each country.

The resulting post-matching sample sizes consist of N= 1135 for France, N=312 for Italy, N=634 and N=763 on average across implicates for Germany and Spain, respectively.

Table 2.3a Means and standard deviations of covariates at the baseline after matching for France

	Control Sample	Treated Sample	Standardized differences in means
Eq. Household Income	30251.77	30813.22	-0.08
	(35415.92)	(42388.04)	
Personal Income	22973.65	22272.36	-0.13
	(28811.96)	(20114.03)	
	(2473.10)	(4986.86)	
Net wealth	367400.63	325626.47	-0.02
	(792736.18)	(739497.21)	
Inheritance & gifts	0.43	0.41	-0.02
	(0.50)	(0.49)	
Homeownership	1.25	1.28	-0.01
	(0.43)	(0.45)	
Income share	0.40	0.40	-0.02
	(0.24)	(0.24)	
Marital status	1.83	1.75	0.02
	(0.54)	(0.58)	
Property regime	1.74	1.68	0.04
	(0.67)	(0.63)	
Age	45.70	44.52	-0.05
	(12.86)	(14.23)	
Gender	1.57	1.55	-0.03
	(0.49)	(0.50)	
# of children	1.03	1.06	0.02
	(1.03)	(1.02)	

Household with child	0.59	0.60	0
	(0.49)	(0.49)	
Education	2.30	2.34	-0.08
	(0.72)	(0.70)	
Employment status	1.53	1.51	0.10
	(0.84)	(0.80)	
Migration background	0.12	0.11	-0.05
	(0.32)	(0.31)	
Retired	0.16	0.14	0.01
	(0.36)	(0.35)	
N	927	208	

Figure 2.1a Balance and overlapping for France.

Table 2.3b Means and standard deviations of covariates at the baseline after matching for Italy

	Control	Treated	Standardized differences in means
Eq. Household Income	19565.15	20193.86	-.044
	(12592.12)	(12762.10)	
Personal Income	16789.53	16868.10	-.088
	(14072.85)	(13309.48)	
Net wealth	202077.58	193508.64	.052
	(247633.34)	(180736.92)	
Inheritance & gifts	0.28	0.26	-.028
	(0.45)	(0.44)	
Homeownership	1.23	1.19	-.151
	(0.42)	(0.39)	
Income share	0.34	0.34	.017
	(0.26)	(0.25)	
Age	50.59	50.95	.002
	(11.70)	(13.33)	
Gender	1.50	1.43	.051
	(0.50)	(0.50)	
# of children	0.60	0.64	-.013
	(0.84)	(0.89)	
Household with child	0.41	0.41	.051
	(0.49)	(0.50)	
Education	1.92	1.85	.052
	(0.74)	(0.73)	
Employment status	1.50	1.51	.045
	(0.84)	(0.84)	
Migration background	0.14	0.13	0
	(0.35)	(0.33)	
Retired	0.12	0.16	.034
	(0.32)	(0.37)	
N	232	80	
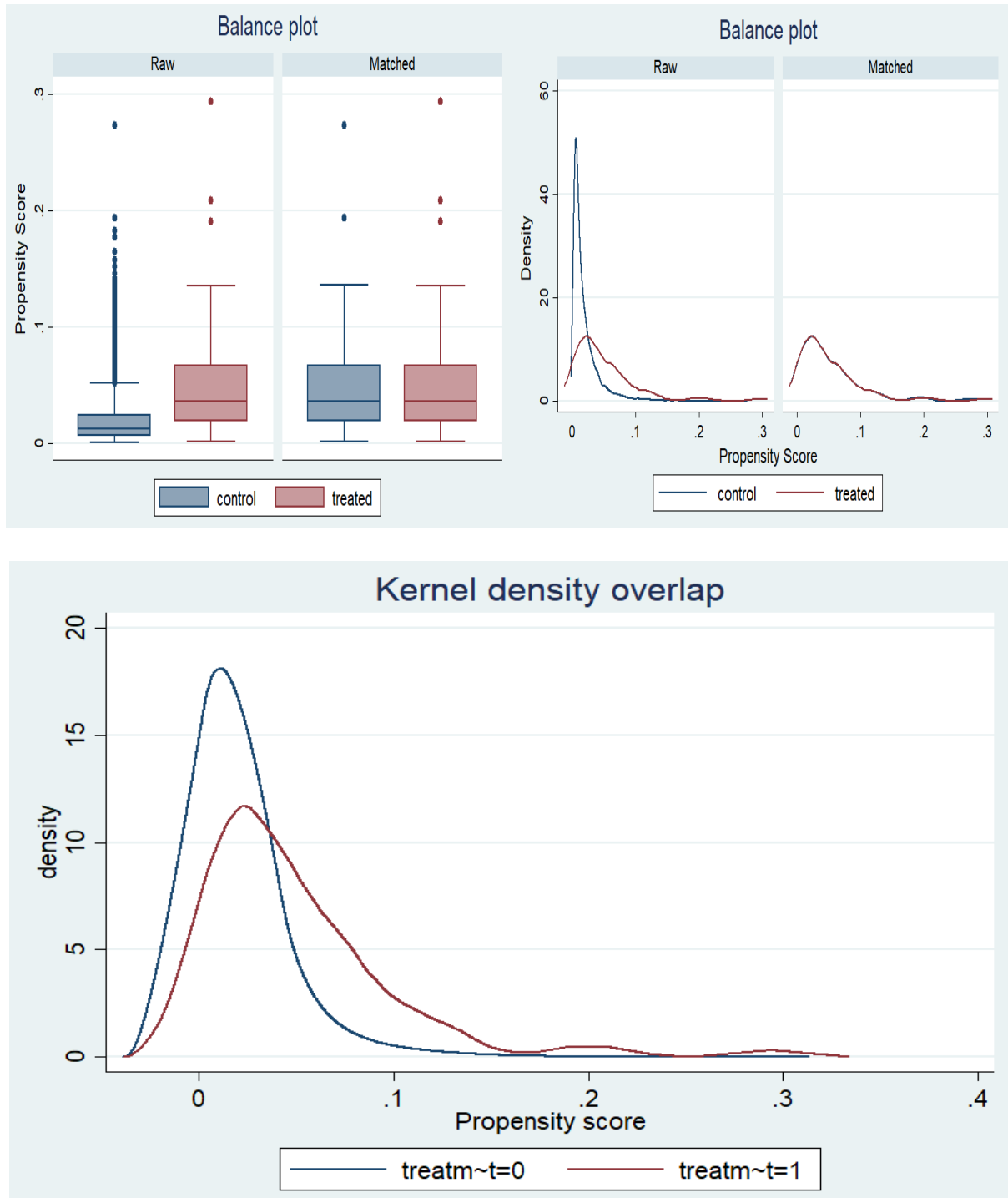
Figure 2.1b Balance and overlapping for Italy.

Table 2.3c Means and standard deviations of covariates at the baseline after matching for Germany

m=1

	Control	Treated	Standardized differences in means
Eq. Household Income	44411.54	44941.28	-.010
	(51849.80)	(57153.02)	
Personal Income	29205.92	33790.44	.066
	(34539.67)	(55366.98)	
Net wealth	423734.72	335361.98	.006
	(1096166.96)	(571796.43)	
Inheritance & gifts	0.25	0.25	-.061
	(0.43)	(0.44)	
Income share	0.33	0.33	-.025
	(0.25)	(0.25)	
Age	56.00	56.06	-.056
	(14.20)	(16.59)	
Gender	1.59	1.57	.108
	(0.49)	(0.50)	
# of children	0.44	0.41	-.012
	(0.76)	(0.76)	
Retired	0.34	0.35	-.111
	(0.47)	(0.48)	
N	550	111	

m=2

	Control	Treated	Standardized differences in means
Eq. Household Income	42165.68	45838.48	-.062
	(43879.44)	(57906.54)	
Personal Income	30902.82	34028.07	-.110
	(46007.60)	(55764.06)	
Net wealth	334792.19	331027.55	.044
	(612934.07)	(578391.55)	
Inheritance & gifts	0.22	0.25	.134
	(0.42)	(0.44)	
Income share	0.34	0.33	.026
	(0.24)	(0.25)	
Age	56.24	55.54	-.010
	(13.94)	(16.53)	
Gender	1.54	1.57	.037
	(0.50)	(0.50)	
# of children	0.43	0.43	.062
	(0.75)	(0.77)	
Retired	0.34	0.34	.034
	(0.48)	(0.47)	
N	513	107	

m=3

	Control	Treated	Standardized differences in means
Eq. Household Income	41330.42 (35418.59)	45454.40 (58103.79)	.011
Personal Income	30534.58 (40012.92)	33413.77 (55886.56)	.069
Net wealth	346853.14 (549817.92)	345456.13 (583567.18)	.131
Inheritance & gifts	0.26 (0.44)	0.26 (0.44)	.205
Income share	0.33 (0.25)	0.33 (0.25)	.250
Age	55.00 (14.49)	55.11 (16.25)	.065
Gender	1.57 (0.50)	1.58 (0.50)	.057
# of children	0.39 (0.70)	0.43 (0.77)	-.109
Retired	0.32 (0.47)	0.33 (0.47)	.020
N	527	106	

m=4

	Control	Treated	Standardized differences in means
Eq. Household Income	43008.43 (52397.70)	45211.81 (57538.36)	.064
Personal Income	31334.52 (43003.46)	33108.87 (55421.02)	-.057
Net wealth	373932.53 (728502.30)	338578.84 (580410.45)	.034
Inheritance & gifts	0.26 (0.44)	0.26 (0.44)	.064
Income share	0.34 (0.24)	0.33 (0.25)	-.025
Age	54.58 (15.02)	54.59 (16.28)	-.0996
Gender	1.54 (0.50)	1.57 (0.50)	.055
# of children	0.45 (0.77)	0.42 (0.76)	.101
Retired	0.33 (0.47)	0.32 (0.47)	-.190
N	541	109	

m=5

	Control	Treated	Standardized differences in

			means
Eq. Household Income	43148.03	46189.31	.080
	(44529.30)	(59378.87)	
Personal Income	31947.58	34958.86	-.059
	(44202.01)	(58179.03)	
Net wealth	413051.04	344743.19	-.014
	(1101193.78)	(591505.37)	
Inheritance & gifts	0.25	0.25	-.066
	(0.43)	(0.44)	
Income share	0.32	0.32	-.094
	(0.25)	(0.24)	
Age	55.17	54.54	-.069
	(14.65)	(16.16)	
Gender	1.57	1.57	.116
	(0.50)	(0.50)	
# of children	0.41	0.45	-.086
	(0.75)	(0.78)	
Retired	0.32	0.31	-.202
	(0.47)	(0.47)	
N	502	103	
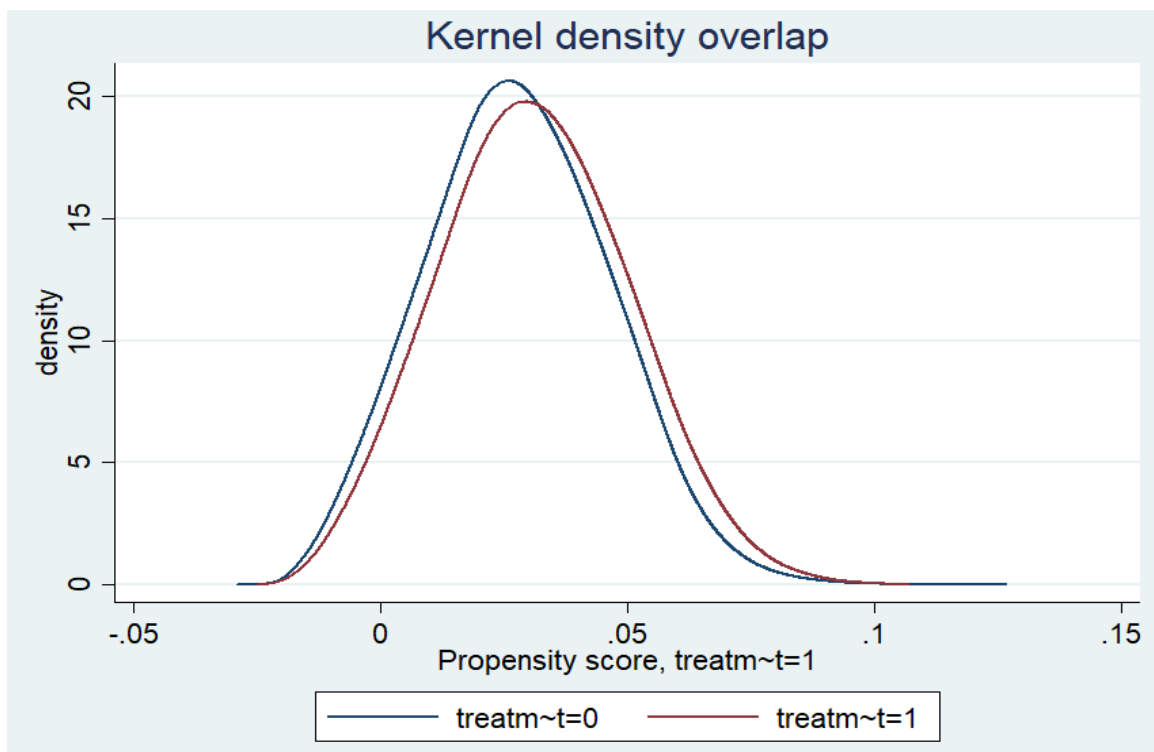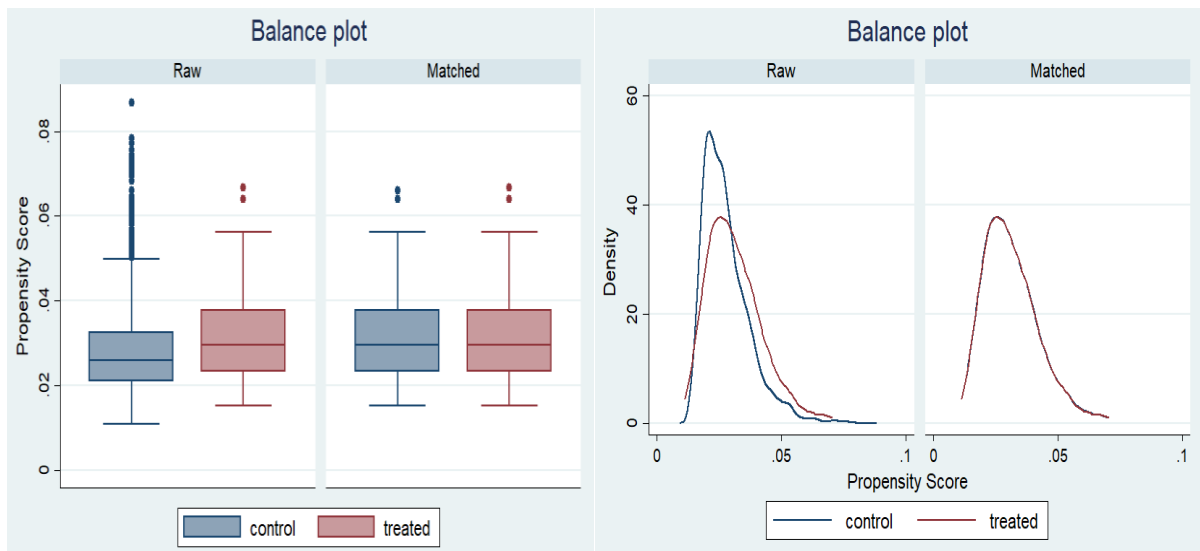
Figure 2.1c Balance and overlapping for Germany.

Table 2.3d Means and standard deviations of covariates at the baseline after matching for Spain.

m=1

	Control	Treated	Standardized differences in means
Eq. household Income	22660.92	23131.82	0.00
	(23571.34)	(27546.42)	
Personal Income	17352.58	18931.43	-.0422824
	(20855.32)	(26914.28)	
Net wealth	1007766.71	561025.79	-.0337975
	(4299586.79)	(1043226.40)	
Inheritance & gifts	0.31	0.30	-.0940615
	(0.46)	(0.46)	
Homeownership	1.17	1.21	.0547396
	(0.38)	(0.41)	
Income share	0.35	0.37	-.0595679
	(0.26)	(0.29)	
Age	49.05	48.32	.0356686
	(12.32)	(12.76)	
Gender	1.49	1.46	.0886126
	(0.50)	(0.50)	
# of children	0.79	0.79	-.1284334
	(0.88)	(0.91)	
Education	2.18	2.11	.0579667
	(0.89)	(0.88)	
Employment status	1.55	1.55	.0896637
	(0.83)	(0.83)	
Retired	0.13	0.14	.0656714
	(0.33)	(0.35)	
N	624	136	

m=2

	Control	Treated	Standardized differences in means
Eq. Household Income	23334.83	23230.47	.0292116
	(28525.04)	(27477.74)	
Personal Income	16842.49	19052.34	.1927475
	(21420.53)	(27188.54)	
Net wealth	850729.28	575540.67	-.0681474
	(2897726.46)	(1101490.14)	
Inheritance & gifts	0.33	0.30	-.1247988
	(0.47)	(0.46)	
Homeownership	1.17	1.21	.0180007
	(0.38)	(0.41)	
Income share	0.35	0.37	.0984236
	(0.26)	(0.29)	
Age	49.52	48.32	.0190594
	(12.57)	(12.76)	

	Control	Treated	Standardized differences in mean
Gender	1.48	1.46	-.0880341
	(0.50)	(0.50)	
# of children	0.78	0.79	.0165668
	(0.88)	(0.91)	
Education	2.11	2.11	-.0416472
	(0.90)	(0.88)	
Employment status	1.60	1.55	-.0873056
	(0.86)	(0.83)	
Retired	0.16	0.14	-.0209046
	(0.37)	(0.35)	
N	631	136	

m=3

	Control	Treated	Standardized differences in mean
Eq. Household Income	22628.05	23332.67	-.0841112
	(32347.45)	(28369.30)	
Personal Income	16604.28	18855.34	-.0050504
	(18507.87)	(26950.42)	
Net wealth	746803.55	563619.98	.0048687
	(2351405.30)	(1063644.02)	
Inheritance & gifts	0.30	0.30	-.078594
	(0.46)	(0.46)	
Homeownership	1.17	1.21	.0735119
	(0.38)	(0.41)	
Income share	0.34	0.37	-.1263306
	(0.26)	(0.30)	
Age	49.35	48.32	-.0231018
	(12.86)	(12.76)	
Gender	1.44	1.46	.0441682
	(0.50)	(0.50)	
# of children	0.78	0.79	.1089472
	(0.93)	(0.91)	
Education	2.08	2.11	-.1588488
	(0.91)	(0.88)	
Employment Status	1.59	1.55	-.0610051
	(0.85)	(0.83)	
Retired	0.17	0.14	-.0413787
	(0.37)	(0.35)	
N	633	136	

m=4

	Control	Treated	Standardized differences in mean
Eq. Household Income	23122.09	23292.01	-.1275869
	(33582.65)	(27908.94)	
Personal income	17291.02	18906.07	-.0723358

	(21973.66)	(27002.37)	
Net wealth	834361.33	576665.66	-.1902202
	(3440403.28)	(1095938.80)	
Inheritance & gifts	0.29	0.30	-.01591
	(0.46)	(0.46)	
Homeownership	1.18	1.21	.0735119
	(0.39)	(0.41)	
Income share	0.32	0.37	.2437038
	(0.25)	(0.29)	
Age	49.36	48.32	.0524198
	(12.63)	(12.76)	
Gender	1.46	1.46	-.0733578
	(0.50)	(0.50)	
#of children	0.78	0.79	-.039957
	(0.89)	(0.91)	
Education	2.08	2.11	-.0751965
	(0.89)	(0.88)	
Employment status	1.58	1.55	-.0173918
	(0.84)	(0.83)	
Retired	0.14	0.14	0
	(0.35)	(0.35)	
N	628	136	

m=5

	Control	Treated	Standardized differences in mean
Eq. Household Income	22669.54	23023.95	.0196333
	(26760.97)	(27340.15)	
Personal income	17479.69	18911.15	.0312001
	(23416.81)	(26993.84)	
Net wealth	962114.94	567433.86	-.0480026
	(4186406.90)	(1080613.57)	
Inheritance & gifts	0.33	0.30	.0813761
	(0.47)	(0.46)	
Homeownership	1.17	1.21	.0547396
	(0.37)	(0.41)	
Income share	0.32	0.37	.0821094
	(0.26)	(0.29)	
Age	48.73	48.32	.0078915
	(12.67)	(12.76)	
Gender	1.47	1.46	.0147003
	(0.50)	(0.50)	
# of children	0.80	0.79	-.0639323
	(0.89)	(0.91)	
Education	2.18	2.11	-.0503734
	(0.89)	(0.88)	
Employment status	1.57	1.55	.0534958
	(0.84)	(0.83)	
Retired	0.14	0.14	.0213706

	(0.34)	(0.35)
N	620	136
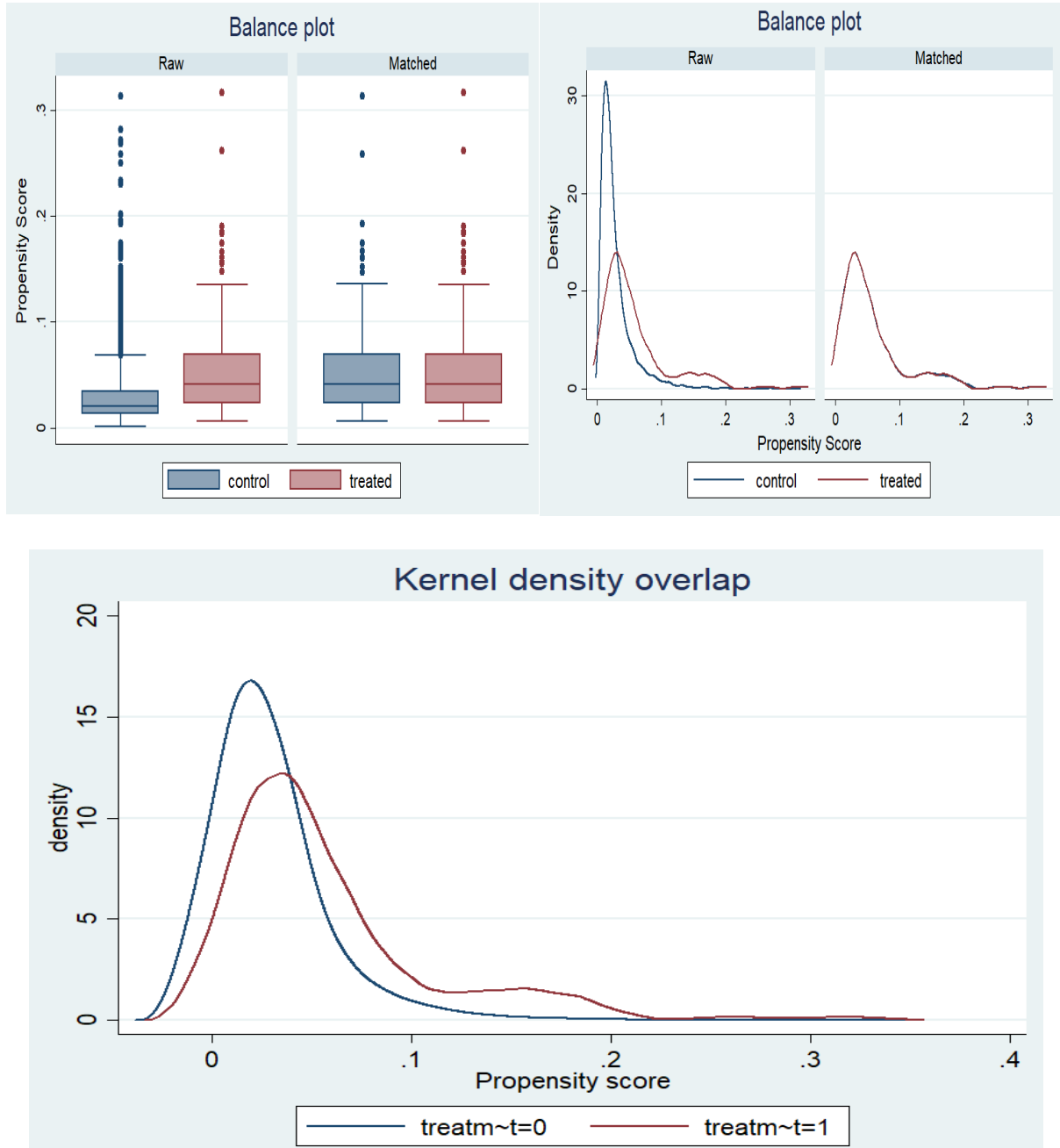
Figure 2.1d Balance and overlapping for Spain.

B.3 Sensitivity analysis

Table 2.6a Regression estimates of changes in equivalized household income (Square root equivalence scale) for France.

Panel A: Average treatment effect

	Men	Women
treatment	-0.14	-0.28***
	(0.092)	(0.085)
Cons.	0.098***	0.14***
	(0.033)	(0.021)
N	487	647

Panel B: Average treatment effects by share of income and earnings

	Income share		Earnings share	
	Men	Women	Men	Women
treatment				
0-40%	0.073	-0.51***	0.12	-0.41***
	(0.11)	(0.12)	(0.11)	(0.096)
40-60%	-0.084	-0.32***	-0.11	-0.28***
	(0.10)	(0.084)	(0.15)	(0.10)
> 60%	-0.94***	0.085	-0.69***	0.091
	(0.35)	(0.18)	(0.26)	(0.19)
N	487	647	429	563

Panel C: Average treatment effect by quintiles of wealth

	Net household wealth		Housing wealth		Financial wealth	
	Men	Women	Men	Women	Men	Women
treatment						
Q1	-0.043	-0.079	-0.015	-0.056	-0.32	-0.51***
	(0.20)	(0.16)	(0.16)	(0.12)	(0.30)	(0.11)
Q2	-0.25	-0.19	-0.26	-0.37**	-0.31**	-0.27**
	(0.22)	(0.15)	(0.25)	(0.19)	(0.14)	(0.12)
Q3	-0.13	-0.42**	-0.11	-0.42***	0.17	-0.23
	(0.079)	(0.17)	(0.100)	(0.11)	(0.15)	(0.15)
Q4	-0.26***	-0.53***	-0.43	-0.74***	-0.15	-0.042
	(0.096)	(0.14)	(0.32)	(0.20)	(0.13)	(0.22)

Q5	0.0045	-0.61***	-0.097	-0.52***	0.0078	-0.51**
	(0.18)	(0.14)	(0.10)	(0.12)	(0.13)	(0.23)
N	487	647	487	647	485	647

Panel D: Average treatment effect by presence and number of children

	Presence of children	
	Men	Women
treatment		
No children	-0.11	-0.20
	(0.11)	(0.15)
Children	-0.34***	-0.35***
	(0.13)	(0.082)
N	487	647

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.6b Regression estimates of changes in equivalized household income (Square root equivalence scale) for Italy.

Panel A: Average treatment effect on treated

	Men	Women
treatment	-0.076	-0.46**
	(0.21)	(0.20)
Cons.	-0.12	0.016
	(0.12)	(0.044)
N	160	150

Panel B: Average treatment effects by share of income and earnings

	Income Share		Earnings Share	
	Men	Women	Men	Women
treatment				
0-40%	0.026	-0.73***	0.015	-0.70***
	(0.32)	(0.26)	(0.35)	(0.27)
40-60%	0.15	-0.011	0.23*	0.032
	(0.14)	(0.10)	(0.13)	(0.10)
> 60%	-0.88**	0.49	-0.87**	0.32

	(0.36)	(0.45)	(0.36)	(0.42)
N	160	150	137	127

Panel C: Average treatment effect by quintiles of wealth

	Net Household Wealth		Housing Wealth		Financial Wealth	
	Men	Women	Men	Women	Men	Women
treatment						
Q1	0.81	-0.069	0.49	-0.11	-0.099	-0.37
	(0.50)	(0.36)	(0.53)	(0.30)	(0.21)	(0.34)
Q2	-0.44**	-0.59**	-0.44**	-0.91***	0.028	-0.89***
	(0.21)	(0.29)	(0.21)	(0.30)	(0.14)	(0.22)
Q3	-0.73	-0.073	-0.42	-0.51	-0.67	-0.12
	(0.54)	(0.28)	(0.46)	(0.69)	(0.56)	(0.14)
Q4	0.100	-0.72	-0.023	-0.75**	0.069	-0.043
	(0.12)	(0.60)	(0.14)	(0.37)	(0.14)	(0.15)
Q5.	-0.20	-0.91**	0.0055	-0.26	-0.0021	-0.86
	(0.16)	(0.36)	(0.19)	(0.29)	(0.16)	(0.68)
N	160	150	160	150	154	147

Panel D: Average treatment effect by presence and number of children

	Presence of children	
	Men	Women
treatment		
No children	-0.043	-0.63***
	(0.33)	(0.19)
Children	0.056	-0.26
	(0.19)	(0.40)
N	160	150

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.6c Regression estimates of changes in equivalized household income (Square root equivalence scale) for Germany.

Panel A: Average treatment effect on treated

	Men	Women
treatment	-0.0483	-0.3573**
	(0.1942)	(0.1507)
Cons.	0.0019	0.0608
	(0.1234)	(0.0681)
N	276	355

Panel B: Average treatment effects by share of income and earnings

	Income share		Earnings share	
	Men	Women	Men	Women
treatment				
0-40% share	0.1699	-0.5860***	0.1198	-0.6922***
	(0.2027)	(0.1909)	(0.2610)	(0.2122)
40-60% share	-0.1139	-0.1041	-0.0997	-0.0589
	(0.2237)	(0.1960)	(0.2525)	(0.2397)
>60% share	-0.7016	-0.3030	-0.6937	-0.3253
	(0.6629)	(0.4877)	(0.7174)	(0.4210)
N	276	355	206	251

Panel C: Average treatment effect by quintiles of wealth

	Net household wealth		Housing wealth		Financial wealth	
	Men	Women	Men	Women	Men	Women
treatment						
Q1	-0.2628	-0.5713	-0.0518	-0.2867	-0.4589	-0.4283
	(0.2988)	(0.3493)	(0.2095)	(0.2139)	(0.2909)	(0.2657)
Q2	-0.0847	0.0972			-0.0231	-0.0888
	(0.3203)	(0.3495)			(0.3829)	(0.4353)
Q3	0.1160	-0.3693	0.0261	0.0840	0.1122	-0.2049
	(0.2968)	(0.4252)	(0.3738)	(0.3232)	(0.2805)	(0.2429)
Q4	0.0718	-0.5656	0.1019	-0.4848	-0.1477	-0.5766
	(0.5478)	(0.3524)	(0.3276)	(0.2968)	(0.4482)	(0.3637)
Q5	-0.1323	-0.8096**	-0.2820	-0.9616***	0.4310	-0.7100*

	(0.4152)	(0.3496)	(0.4777)	(0.3431)	(0.4460)	(0.3645)
N	276	355	276	355	276	355

Panel D: Average treatment effect by presence and number of children

	Presence of children	
	Men	Women
treatment		
No children	0.0816	-0. 4902***
	(0.1778)	(0.1887)
Children	-0. 4107	-0. 2410
	(0.3745)	(0.2308)
N	276	355

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.6d Regression estimates of changes in equivalized household income (Square root equivalence scale) for Spain.

Panel A: Average treatment effect on treated.

	Men	Women
treatment	-0. 21554	-0. 05238
	(0.13512)	(0.137639)
Cons.	0.237419***	0.164821
	(0.05637)	(0.100686)
N	404	354

Panel B: Average treatment effects by share of income and earnings

	Income share		Earnings share	
	Men	Women	Men	Women
treatment				
0-40% share	-0. 10073	-0. 19579	0.010534	-0. 14925
	(0.158112)	(0.141642)	(0.166148)	(0.190749)
40-60% share	-0. 31566	0.169042	-0. 34885	0.297785
	(0.278271)	(0.282428)	(0.345139)	(0.215176)
> 60% share	-0. 542	-0. 0531	-0. 67851***	-0. 19615

	(0.330366)	(0.199593)	(0.213102)	(0.186994)
N	404	354	336	304

Panel C: Average treatment effect by quintiles of wealth

	Net household wealth		Housing wealth		Financial wealth	
	Men	Women	Men	Women	Men	Women
treatment						
Q1	-0. 10179	0.233747	-0. 09536	0.298744	-0. 37525	-0. 19243
	(0.278674)	(0.216553)	(0.226843)	(0.182899)	(0.227418)	(0.157838)
Q2	-0. 33723	-0. 41808	-0. 52757**	-0. 61533*	-0. 53984**	-0. 27883
	(0.329662)	(0.267322)	(0.204867)	(0.295888)	(0.243276)	(0.228177)
Q3	-0. 1036	-0. 02401	-0. 44442*	-0. 28802	0.225446	0.362649
	(0.249559)	(0.256107)	(0.228789)	(0.189553)	(0.260469)	(0.322758)
Q4	-0. 39641*	-0. 34115*	-0. 1662	-0. 03849	-0. 13046	-0. 06298
	(0.217221)	(0.192599)	(0.208934)	(0.230758)	(0.24878)	(0.234496)
Q5	-0. 4491**	-0. 16588	-0. 33064	-0. 30811	-0. 44167*	-0. 35014*
	(0.180351)	(0.157779)	(0.246135)	(0.231992)	(0.23552)	(0.193954)
N	404	354	404	354	404	354

Panel D: Average treatment effect by presence and number of children

	Presence of children	
	Men	Women
treatment		
No children	-0. 25507	-0. 21888
	(0.166287)	(0.167532)
Children	-0. 25108	0.088359
	(0.230835)	(0.195975)
N	403.8	354

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. $^{*} p < 0.10$, $^{**} p < 0.05$, $^{***} p < 0.01$.

Table 2.7a Regression estimates of changes in equivalized household income before social transfers for France.

Panel A. Average treatment effect

	Men	Women
treatment	-0.10	-0.30**
	(0.14)	(0.13)
Cons.	0.067	0.10*
	(0.073)	(0.053)
N	484	646

Panel B: average treatment effect by share of income and earnings

	Income share		Earnings share	
	Men	Women	Men	Women
treatment				
0-40%	-0.011	-0.80***	-0.0052	-0.68***
	(0.21)	(0.20)	(0.22)	(0.19)
40-60%	-0.049	-0.24***	-0.0026	-0.22**
	(0.11)	(0.075)	(0.16)	(0.10)
> 60%	-0.48	0.46	-0.33	0.40
	(0.57)	(0.34)	(0.44)	(0.33)
N	484	646	426	562

Panel C: Average treatment effect by quintiles of wealth

	Net Household wealth		Housing wealth		Financial wealth	
	Men	Women	Men	Women	Men	Women
treatment						
Q1	-0.069	-0.025	0.016	0.0052	-0.30	-0.48***
	(0.46)	(0.30)	(0.32)	(0.21)	(0.30)	(0.13)
Q2	-0.11	-0.42	-0.20	-0.33*	-0.46	-0.54*
	(0.22)	(0.39)	(0.26)	(0.20)	(0.29)	(0.28)
Q3	-0.049	-0.35**	-0.064	-0.74*	0.50	-0.12
	(0.075)	(0.17)	(0.14)	(0.40)	(0.33)	(0.33)
Q4	-0.22**	-0.49***	-0.36	-0.74***	-0.16	0.031
	(0.098)	(0.15)	(0.32)	(0.20)	(0.17)	(0.27)
Q5	-0.11	-0.58***	-0.056	-0.46***	0.061	-0.45**
	(0.19)	(0.15)	(0.11)	(0.12)	(0.14)	(0.23)

N	484	646	484	646	482	646

Panel D: Average treatment effect by presence of children

	Presence of children	
	Men	Women
treatment		
No children	-0.15	-0.13
	(0.15)	(0.17)
Children	-0.13	-0.46***
	(0.15)	(0.17)
N	484	646

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.7b Regression estimates of changes in equivalized household income before social transfers for Italy.

Panel A. Average treatment effect on treated

	Men	Women
treatment	-0.022	-0.40**
	(0.21)	(0.19)
Cons.	-0.11	0.015
	(0.12)	(0.044)
N	160	150

Panel B: Average treatment effect by share of income and earnings

	Income Share		Earnings Share	
	Men	Women	Men	Women
treatment				
0-40%	0.079	-0.67***	0.071	-0.63**
	(0.32)	(0.25)	(0.34)	(0.26)
40-60%	0.19	0.019	0.27*	0.060
	(0.15)	(0.11)	(0.14)	(0.11)
> 60%	-0.80**	0.62	-0.79**	0.44
	(0.35)	(0.47)	(0.35)	(0.44)
N	160	150	137	127

Panel C: Average treatment effect by quintiles of wealth

	Net Household Wealth		Housing Wealth		Financial Wealth	
	Men	Women	Men	Women	Men	Women
treatment						
Q1	0.87*	-0.0062	0.54	-0.062	-0.041	-0.31
	(0.50)	(0.35)	(0.53)	(0.29)	(0.21)	(0.33)
Q2	-0.37*	-0.53**	-0.34*	-0.82***	0.059	-0.80***
	(0.20)	(0.26)	(0.19)	(0.26)	(0.14)	(0.20)
Q3	-0.69	-0.026	-0.40	-0.46	-0.64	-0.054
	(0.53)	(0.29)	(0.45)	(0.70)	(0.56)	(0.15)
Q4	0.12	-0.69	-0.0027	-0.71**	0.12	-0.046
	(0.12)	(0.59)	(0.15)	(0.36)	(0.13)	(0.14)
Q5	-0.10	-0.86**	0.10	-0.20	0.067	-0.83
	(0.13)	(0.35)	(0.14)	(0.26)	(0.14)	(0.67)
N	160	150	160	150	154	147

Panel D: Average treatment effect by presence of children

	Presence of children	
	Men	Women
treatment		
No children	0.0067	-0.57***
	(0.33)	(0.18)
Children	0.11	-0.22
	(0.17)	(0.39)
N	160	150

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** p < 0.01.

Table 2.7c Regression estimates of changes in equivalized household income before social transfers for Germany.

Panel A. Average treatment effect on treated

	Men	Women
treatment	-0. 0219	-0. 4413**
	(0.1964)	(0.1984)
Cons.	0.0144	0.0658

	(0.1244)	(0.0955)
N	276	355

Panel B: average treatment effect by share of income and earnings

	Income share		Earnings share	
	Men	Women	Men	Women
treatment				
0-40% share	0.2079	-0. 7678**	0.1712	-0. 9633**
	(0.1964)	(0.3048)	(0.2687)	(0.3859)
40-60% share	-0. 0314	-0. 0957	-0. 0138	-0. 1546
	(0.2195)	(0.1860)	(0.2478)	(0.2425)
>60% share	-0. 8080	-0. 2990	-0. 8262	-0. 3046
	(0.7424)	(0.5794)	(0.8259)	(0.5135)
N	276	355	206	251

Panel C: Average treatment effect by quintiles of wealth

	Net household wealth		Housing wealth		Financial wealth	
	Men	Women	Men	Women	Men	Women
treatment						
Q1	-0. 2420	-0. 9315	-0. 0291	-0. 4414	-0. 4520	-0. 5390**
	(0.3267)	(0.7014)	(0.2085)	(0.3544)	(0.3180)	(0.2696)
Q2	-0. 0901	0.1363			-0. 0747	-0. 4481
	(0.2847)	(0.4033)			(0.4650)	(0.7679)
Q3	0.1950	-0. 5240	0.0785	-0. 0240	0.1769	-0. 1902
	(0.3321)	(0.4115)	(0.3840)	(0.3187)	(0.2926)	(0.2617)
Q4	0.0972	-0. 5448	0.1339	-0. 4293	-0. 0518	-0. 4910
	(0.5442)	(0.3821)	(0.3328)	(0.2933)	(0.4801)	(0.3779)
Q5	-0. 1148	-0. 8182**	-0. 2767	-0. 9746***	0.4928	-0. 6338*
	(0.4429)	(0.3814)	(0.5151)	(0.3656)	(0.4433)	(0.3687)
N	276	355	276	355	276	355

Panel D: Average treatment effect by presence of children

	Presence of children	
	Men	Women
treatment		
No children	0.1050	-0. 4522**
	(0.1749)	(0.1881)

Children	-0. 3930	-0. 4273
	(0.4079)	(0.3515)
N	276	355

Table 2.7d Regression estimates of changes in equivalized household income before social transfers for Spain.

Panel A. Average treatment effect on treated

	Men	Women
treatment	-0. 18369	-0. 04111
	(0.137466)	(0.135831)
Cons.	0.239395***	0.163494
	(0.057544)	(0.102184)
N	403	354

Panel B: average treatment effect by share of income and earnings

	Income share		Earnings share	
	Men	Women	Men	Women
treatment				
0-40% share	-0. 05509	-0. 2023	0.056238	-0. 14967
	(0.172277)	(0.15444)	(0.182903)	(0.200514)
40-60% share	-0. 29187	0.189578	-0. 34331	0.269798
	(0.255483)	(0.259035)	(0.309629)	(0.193458)
> 60% share	-0. 52451	-0. 00714	-0. 63742***	-0. 13349
	(0.350627)	(0.200057)	(0.223552)	(0.193505)
N	403	354	335	304

Panel C: Average treatment effect by quintiles of wealth

	Net household wealth		Housing wealth		Financial wealth	
	Men	Women	Men	Women	Men	Women
treatment						
Q1	-0. 0953	0.162854	-0. 03984	0.26394	-0. 335	-0. 23617
	(0.282734)	(0.225201)	(0.22782)	(0.174754)	(0.253415)	(0.181749)
Q2	-0. 29569	-0. 34958	-0. 56127**	-0. 67753**	-0. 53233**	-0. 22773
	(0.311387)	(0.265368)	(0.206396)	(0.29919)	(0.244607)	(0.241685)

Q3	-0. 04008	-0. 0093	-0. 40458	-0. 20614	0.277687	0.316778
	(0.270753)	(0.255198)	(0.244026)	(0.196674)	(0.242181)	(0.313668)
Q4	-0. 3316	-0. 23565	-0. 14533	0.059756	-0. 09116	-0. 039
	(0.230771)	(0.190309)	(0.220088)	(0.227125)	(0.247328)	(0.24407)
Q5	-0. 40765**	-0. 04086	-0. 28481	-0. 29091	-0. 38579	-0. 232
	(0.170831)	(0.1579)	(0.246482)	(0.22043)	(0.233658)	(0.188477)
N	403	354	403	354	403	354

Panel D: Average treatment effect by presence of children

	Presence of children	
	Men	Women
treatment		
No children	-0. 19892	-0. 16911
	(0.175842)	(0.169069)
Children	-0. 27748	0.070556
	(0.217111)	(0.191741)
N	403	354

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.8a Regression estimates of changes in equivalised household income by repartnering for France.

Panel A. Average treatment effect by repartnering

	Men	Women
No repartnered	-0.094	-0.22**
	(0.11)	(0.10)
Repartnered	-0.012	-0.095
	(0.094)	(0.092)
N	487	647

Panel B: Income shares

	Men			Women		
	0-40%	40-60%	>60%	0-40%	40-60%	>60%
No repartnered	0.17	-0.0036	-1.04***	-0.48***	-0.31***	0.17
	(0.12)	(0.13)	(0.36)	(0.14)	(0.099)	(0.19)

	Men			Women		
	0-40%	40-60%	>60%	0-40%	40-60%	>60%
Repartnered	-0.045	-0.046	0.45***	-0.21	-0.092	0.44***
	(0.17)	(0.063)	(0.12)	(0.15)	(0.068)	(0.087)
N	226	189	72	306	232	109

Panel C: Earnings shares

	Men			Women		
	0-40%	40-60%	>60%	0-40%	40-60%	>60%
No repartnered	0.22*	-0.011	-0.85***	-0.37***	-0.22*	0.21
	(0.13)	(0.17)	(0.32)	(0.11)	(0.12)	(0.22)
Repartnered	0.035	-0.16	0.027	-0.13	-0.20	0.067
	(0.16)	(0.15)	(0.18)	(0.12)	(0.13)	(0.22)
N	200	139	90	261	176	126

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. $^*\,p < 0.10$, $^{**}\,p < 0.05$, $^{***}\,p < 0.01$.

Table 2.8b Regression estimates of changes in equivalised household income by repartnering for Italy.

Panel A: Average treatment effect on treated

	Men	Women
No repartnered	-0.20	-0.72***
	(0.28)	(0.23)
Repartnered	0.20	0.015
	(0.18)	(0.17)
N	160	150

Panel B: Income shares

	Men			Women		
	0-40%	40-60%	>60%	0-40%	40-60%	>60%
No repartnered	-0.12	0.23	-0.81**	-1.16***	0.077	1.09***
	(0.43)	(0.16)	(0.38)	(0.25)	(0.12)	(0.33)
Repartnered	0.29	0.17	-0.61*	-0.011	-0.057	-0.27
	(0.27)	(0.21)	(0.33)	(0.22)	(0.14)	(0.17)
N	89	51	20	80	49	21

Panel C: Earnings shares

	Men			Women		
	0-40%	40-60%	>60%	0-40%	40-60%	>60%

No repartnered	-0.15	0.40***	-0.81**	-1.06***	0.11	0.73
	(0.45)	(0.14)	(0.38)	(0.22)	(0.12)	(0.48)
Repartnered	0.32	0.21	-0.58	-0.00086	0.0046	-0.29
	(0.29)	(0.20)	(0.34)	(0.25)	(0.13)	(0.17)
N	72	45	20	58	38	31

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.8c Regression estimates of changes in equivalised household income by repartnering for Germany.

Panel A. Average treatment effect on treated

	Men	Women
No repartnered	0.1748	-0. 2859
	(0.2203)	(0.19162)
Repartnered	-0. 3632	-0. 3290
	(0.2605)	(0.2325)
N	276	355

Panel B: Income shares

	Men			Women		
	0-40%	40-60%	>60%	0-40%	40-60%	>60%
No repartnered	0.3559*	-0. 1058	0.4781	-0. 5828**	-0. 2041	0.5672**
	(0.1969)	(0.2485)	(1.6026)	(0.2368)	(0.2495)	(0.2640)
Repartnered	-0. 2038	0.1059	-0. 9368*	-0. 3621**	0.1618	-0. 9159*
	(0.2396)	(0.2764)	(0.5527)	(0.1609)	(0.2022)	(0.5446)
N	175	64	37	207	98	50

Panel C: Earnings shares

	Men			Women		
	0-40%	40-60%	>60%	0-40%	40-60%	>60%
No repartnered	0.3851	-0. 0947	0.5228	-0. 781***	-0. 3445	0.2781
	(0.2433)	(0.2698)	(1.2822)	(0.2971)	(0.2621)	(0.3583)
Repartnered	-0. 2350	0.1325	-0. 9428	-0. 3648**	0.2026	-0. 8896*
	(0.2767)	(0.3093)	(0.5728)	(0.1720)	(0.2214)	(0.5345)
N	123	40	44	137	56	58

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.8d Regression estimates of changes in equivalised household income by repartnering for Spain.

Panel A: Average treatment effect on treated

	Men	Women
No repartnered	-0. 16353	-0. 00671
	(0.173343)	(0.126998)
Repartnered	-0. 20731	-0. 04989
	(0.176329)	(0.180801)
N	404	354

Panel B: Income shares

	Men			Women		
	0-40%	40-60%	>60%	0-40%	40-60%	>60%
No repartnered	0.065167	-0. 4748**	-0. 25217	-0. 19635	0.180492	0.09894
	(0.196314)	(0.196877)	(0.741351)	(0.151541)	(0.226586)	(0.211763)
Repartnered	-0. 19896	-0. 0327	-0. 6117**	-0. 15639	0.172282	-0. 10715
	(0.209436)	(0.414816)	(0.242105)	(0.171585)	(0.432771)	(0.24766)
N	221	127	56	197	110	46

Panel C: Earnings shares

	Men			Women		
	0-40%	40-60%	>60%	0-40%	40-60%	>60%
No repartnered	0.202962	-0. 7699***	-0. 5092	-0. 26172	0.189314	0.061247
	(0.163169)	(0.106733)	(0.480605)	(0.202478)	(0.219581)	(0.159323)
Repartnered	-0. 1134	0.100055	-0. 6839***	-0. 07614	0.348429	-0. 31563
	(0.233944)	(0.33385)	(0.216022)	(0.214658)	(0.25459)	(0.260998)
N	172	89	75	154	84	66

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. $^{*}\,p < 0.10$, $^{**}\,p < 0.05$, $^{***}\,p < 0.01$.

Table 2.9a Regression estimates of changes in equivalised household income by custodial parent for France.

Panel A. Average treatment effect by custodial parent

	Men	Women
treatment		
Non-custodial	-0.062	-0.16
	(0.12)	(0.17)
Custodial	-0.26**	-0.24***
	(0.11)	(0.075)
N	487	647

Panel B. Income Share

	Custodial		Non-custodial	
	Men	Women	Men	Women
treatment				
0-40% share	-0.30*	-0.42***	0.24***	-0.47**
	(0.17)	(0.087)	(0.085)	(0.22)
40-60% share	-0.053	-0.29***	-0.057	-0.12
	(0.064)	(0.088)	(0.15)	(0.13)
>60% share	-0.95***	0.047	-0.87**	0.37
	(0.096)	(0.14)	(0.44)	(0.32)
N	269	413	218	234

Panel C: Earnings Share

	Custodial		Non-custodial	
	Men	Women	Men	Women
treatment				
0-40% share	-0.27*	-0.40***	0.38***	-0.22
	(0.16)	(0.090)	(0.096)	(0.18)
40-60% share	-0.069	-0.28***	-0.19	-0.17
	(0.11)	(0.071)	(0.23)	(0.25)
>60% share	-0.50*	-0.012	-0.61*	0.45
	(0.27)	(0.15)	(0.33)	(0.32)
N	266	408	163	155

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. $^*p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 2.9b Regression estimates of changes in equivalised household income by custodial parent for Italy.

Panel A: Average treatment effect on treated by custodial parent

	Men	Women
treatment		
Non- custodial	0.061	-0.56***
	(0.43)	(0.20)
Custodial	0.11	-0.29
	(0.15)	(0.32)
N	160	150

Panel B: Income share

	Custodial		Non-custodial	
	Men	Women	Men	Women
treatment				
0-40% share	0.12	-0.42	0.46	-1.01***
	(0.19)	(0.41)	(0.76)	(0.23)
40-60% share	0.042	0.0065	0.12	0.0071
	(0.15)	(0.15)	(0.19)	(0.13)
>60% share	-0.63	-0.30	-0.98***	1.21***
	(0.48)	(0.19)	(0.24)	(0.43)
N	75	80	85	70

Panel C: Earnings share

	Custodial		Non-custodial	
	Men	Women	Men	Women
treatment				
0-40% share	0.13	-0.42	0.66	-1.00***
	(0.19)	(0.43)	(0.99)	(0.16)
40-60% share	0.035	0.012	0.32*	0.12
	(0.14)	(0.14)	(0.16)	(0.15)
>60% share	-0.63	-0.33*	-0.97***	0.74
	(0.48)	(0.18)	(0.25)	(0.51)
N	75	80	62	47

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. $^{*} p < 0.10$, $^{**} p < 0.05$, $^{***} p < 0.01$.

Table 2.9c Regression estimates of changes in equivalised household income by custodial parent for Germany.

Panel A: Average treatment effect by custodial parent

	Men	Women
treatment		
Non-custodial	0.1405	-0. 4263**
	(0.1847)	(0.2061)
Custodial	-0. 3517	-0. 2104
	(0.3379)	(0.2263)
N	276	355

Panel B: Income share

	Custodial		Non-custodial	
	Men	Women	Men	Women
treatment				
0-40% share	0.0491	-0. 4445**	0.2659	-0. 5919**
	(0.2922)	(0.2216)	(0.1985)	(0.2703)
40-60% share	0.1260	0.1715	-0. 1448	-0. 2409
	(0.2731)	(0.2492)	(0.2661)	(0.3221)
>60%share	-1. 1566	-0. 4331	0.4902	0.2019
	(0.6869)	(0.6639)	(1.7095)	(0.5431)
N	80	112	196	243

Panel C: Earnings share

	Custodial		Non-custodial	
	Men	Women	Men	Women
treatment				
0-40% share	0.0651	-0. 5341**	0.2260	-0. 7299**
	(0.3148)	(0.2612)	(0.2758)	(0.3344)
40-60% share	0.0857	0.2574	-0. 1464	-1. 0519**
	(0.2604)	(0.2125)	(0.3164)	(0.4495)
>60% share	-1. 1884*	-0. 4570	0.2766	-0. 0765
	(0.6831)	(0.6606)	(1.7591)	(0.3504)
N	78	110	128	141

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.9d Regression estimates of changes in equivalised household income by custodial parent for Spain.

Panel A: Average treatment effect by custodial parent

	Men	Women
treatment		
Non-custodial	-0. 21622	-0. 24075
	(0.175347)	(0.177256)
Custodial	-0. 26988	0.091649
	(0.202092)	(0.173003)
N	404	354

Panel B: Income share

	Custodial		Non-custodial	
	Men	Women	Men	Women
treatment				
0-40% share	-0. 36323***	-0. 14905	0.00574	-0. 22902
	(0.10511)	(0.178536)	(0.2451)	(0.270932)
40-60% share	-0. 13183	0.279143	-0. 61838**	-0. 4872*
	(0.350894)	(0.294818)	(0.275295)	(0.268451)
> 60% share	-0. 60835*	0.295193	-0. 54375	-0. 2396
	(0.320668)	(0.191573)	(0.388653)	(0.259838)
N	215	206	189	148

Panel C: Earnings share

	Custodial		Non-custodial	
	Men	Women	Men	Women
treatment				
0-40% share	-0. 26743**	-0. 08452	0.028995	-0. 21111
	(0.109921)	(0.220057)	(0.286403)	(0.388818)
40-60% share	-0. 12151	0.372403*	-0. 99956***	-0. 46459*
	(0.338192)	(0.198164)	(0.114713)	(0.280303)
> 60% share	-0. 89589***	-0. 03248	-0. 55346**	-0. 20429
	(0.28274)	(0.261319)	(0.256781)	(0.21224)
N	207	201	129	103

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. $^{*} p < 0.10$, $^{**} p < 0.05$, $^{***} p < 0.01$.

Table 2.10a Regression estimates of changes in equivalised household income controlling for anticipation effect for France.

	1 year		2 years		3 years	
	Men	Women	Men	Women	Men	Women
treatment	-0.064	-0.25***	-0.068	-0.26***	-0.078	-0.25***
	(0.10)	(0.083)	(0.11)	(0.086)	(0.10)	(0.089)
Cons.	0.047	0.11***	0.050*	0.11***	0.062***	0.11***
	(0.030)	(0.018)	(0.030)	(0.019)	(0.023)	(0.019)
N	408	551	398	531	381	515

	Income Share		Earnings Share	
	Men	Women	Men	Women
treatment				
0-40% share	0.12	-0.34***	0.18	-0.33***
	(0.11)	(0.10)	(0.11)	(0.094)
40-60% share	0.034	-0.25***	-0.048	-0.22**
	(0.14)	(0.085)	(0.14)	(0.096)
>60% share	-0.86**	0.23	-0.86**	0.21
	(0.36)	(0.19)	(0.35)	(0.20)
N	422	567	410	550

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.10b Regression estimates of changes in equivalised household income controlling for anticipation effect for Italy.

	1 year		2 years		3 years	
	Men	Women	Men	Women	Men	Women
treatment	-0.039	-0.41**	-0.039	-0.41**	-0.022	-0.41**
	(0.23)	(0.19)	(0.23)	(0.19)	(0.23)	(0.20)
Cons.	-0.11	0.020	-0.11	0.014	-0.13	0.014
	(0.12)	(0.044)	(0.12)	(0.045)	(0.12)	(0.045)
N	150	145	150	143	149	142

	Income share		Earnings share	
	Men	Women	Men	Women
treatment				
0-40% share	0.12	-0.67***	0.11	-0.64**

	(0.34)	(0.25)	(0.38)	(0.26)
40-60% share	0.080	0.11	0.17	0.15
	(0.14)	(0.089)	(0.14)	(0.091)
>60% share	-0.86**	0.61	-0.85**	0.43
	(0.40)	(0.53)	(0.40)	(0.49)
N	149	142	126	120

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. $^* p < 0.10$, $^{**} p < 0.05$, $^{***} p < 0.01$.

Table 2.10c Regression estimates of changes in equivalised household income controlling for anticipation effect for Germany.

	1 year		2 years		3 years	
	Men	Women	Men	Women	Men	Women
treatment	0.0586	-0.3160*	0.0632	-0.3233*	0.0368	-0.3243*
	(0.1815)	(0.1910)	(0.1823)	(0.1935)	(0.1750)	(0.1931)
Cons.	-0.0375	0.0654	-0.0421	0.0728	-0.0157	0.0738
	(0.1054)	(0.0783)	(0.1069)	(0.0830)	(0.0989)	(0.0822)
N	247	313	242	301	235	296

	Income share		Earnings share	
	Men	Women	Men	Women
treatment				
0-40% share	0.2158	-0.5507**	0.1692	-0.7688**
	(0.1640)	(0.2349)	(0.2193)	(0.3105)
40-60% share	-0.0641	-0.1351	-0.0177	-0.1499
	(0.2988)	(0.2285)	(0.3534)	(0.3013)
>60% share	-0.5117	-0.2637	-0.4764	-0.2603
	(0.6366)	(0.5397)	(0.6921)	(0.4518)
N	235	296	166	192

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. $^* p < 0.10$, $^{**} p < 0.05$, $^{***} p < 0.01$.

Table 2.10d Regression estimates of changes in equivalised household income controlling for anticipation effect for Spain.

	1 years		2 years		3 years	
	Men	Women	Men	Women	Men	Women
treatment	-0. 05639	0.083867	-0. 05478	0.098993	-0. 09147	0.124615
	(0.137092)	(0.158097)	(0.141874)	(0.159216)	(0.144216)	(0.162701)
Cons.	0.21414***	0.179924	0.212298***	0.173267	0.196078***	0.16987
	(0.063424)	(0.114612)	(0.065623)	(0.108234)	(0.070351)	(0.11239)
N	350	297	342	286	330	274

	Income share		Earnings share	
	Men	Women	Men	Women
treatment				
0-40% share	0.097286	-0. 19462	0.130829	-0. 15988
	(0.152432)	(0.263674)	(0.172951)	(0.310195)
40-60% share	-0. 52676***	0.303374	-0. 55436***	0.417642**
	(0.190436)	(0.19383)	(0.148044)	(0.171999)
> 60% share	-0. 58669	0.06258	-0. 64245**	0.097792
	(0.473927)	(0.218963)	(0.254813)	(0.144491)
N	330	274	267	227

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. $^{*} p < 0.10$, $^{**} p < 0.05$, $^{***} p < 0.01$.

Table 2.11a Regression estimates of changes in equivalised household income: working age population for France.

	Working age sample	
	Men	Women
treatment	-0.075	-0.15*
	(0.11)	(0.084)
Cons.	0.100***	0.14***
	(0.037)	(0.023)
N	422	567

	Income Share		Earnings Share	
	Men	Women	Men	Women
treatment				

0-40% share	0.12	-0.34***	0.18	-0.33***
	(0.11)	(0.10)	(0.11)	(0.094)
40-60% share	0.034	-0.25***	-0.048	-0.22**
	(0.14)	(0.085)	(0.14)	(0.096)
>60% share	-0.86**	0.23	-0.86**	0.21
	(0.36)	(0.19)	(0.35)	(0.20)
N	422	567	410	550

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.11b Regression estimates of changes in equivalised household income: working age population for Italy.

	Working age sample	
	Men	Women
treatment	0.0095	-0.37*
	(0.23)	(0.19)
Cons.	-0.13	0.025
	(0.12)	(0.044)
N	130	133

	Income share		Earnings share	
	Men	Women	Men	Women
treatment				
0-40% share	0.090	-0.62**	0.093	-0.63**
	(0.35)	(0.25)	(0.36)	(0.25)
40-60% share	0.29*	0.040	0.27*	0.061
	(0.15)	(0.10)	(0.14)	(0.11)
>60% share	-0.79**	0.58	-0.77**	0.33
	(0.37)	(0.53)	(0.37)	(0.46)
N	130	133	128	126

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.11c Regression estimates of changes in equivalised household income: working age population for Germany.

	Working age sample	
	Men	Women
treatment	-0. 062	-0. 343[*]
	(0.245)	(0.176)
Cons.	0.003	0.064
	(0.150)	(0.080)
N	186	262

	Income share		Earnings share	
	Men	Women	Men	Women
treatment				
0-40% share	0.1742	-0. 5738[***]	0.1622	-0. 6364[***]
	(0.2686)	(0.1920)	(0.2734)	(0.2169)
40-60% share	-0. 0520	-0. 0718	-0. 0503	-0. 0018
	(0.2477)	(0.2088)	(0.2488)	(0.2244)
>60% share	-0. 7525	-0. 2789	-0. 7691	-0. 2902
	(0.7708)	(0.5560)	(0.7539)	(0.4595)
N	186	264	179	238

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. [*] $p < 0.10$, [**] $p < 0.05$, [***] $p < 0.01$.

Table 2.11d Regression estimates of changes in equivalised household income: working age population for Spain.

	Working age sample	
	Men	Women
treatment	-0. 16627	-0. 02883
	(0.13446)	(0.130111)
Cons.	0.243042***	0.161937
	(0.058175)	(0.099412)
N	318	312

	Income share		Earnings share	
	Men	Women	Men	Women
treatment				
0-40% share	-0. 06182	-0. 17484	0.042905	-0. 12543
	(0.165656)	(0.146031)	(0.166973)	(0.189222)
40-60% share	-0. 24252	0.179648	-0. 33967**	0.271146
	(0.273414)	(0.264274)	(0.310118)	(0.193626)
> 60% share	-0. 54784	-0. 00576	-0. 59578	-0. 1305
	(0.344348)	(0.194947)	(0.259413)	(0.189334)
N	318	309	302	292

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Chapter 3

Intrahousehold inequality and the impact of separation on individual earnings: a tale from France

3.1 Introduction

Couple dissolution may impact individual economic well-being through labour market behaviour. In the economic analysis of dissolution, labour market behaviour plays a dual role. Maintaining high levels of labour market attachment during the transition from partnership to separation can help to mitigate the impact of the negative economic shock caused by the dissolution (Bonnet et al., 2021; Brüggmann and Kreyenfeld, 2023; Hogendoorn, 2022; Bradbury and Katz, 2002). After dissolution, individuals, particularly women, tend to (re) enter the labour market or intensify their effort as a coping strategy to deal with the loss of economies of scale and economic well-being (Mortelmans, 2020; Ongaro et al., 2009).

A large body of literature suggests the existence of a positive relationship between employment and dissolution, pointing out an increase in labour market participation rates and in average earnings for women (van Damme et al., 2009: Thielemans and Mortelmans, 2019; Tamborini et al., 2015; Bonnet et al., 2021; Brüggmann and Kreyenfeld, 2023). Few studies, however, have focused on the role played in this context by pre-separation intrahousehold inequality, arising from marital specialization and differences in earner role between former partners (Bonnet et al., 2021; Brüggmann and Kreyenfeld, 2023; Radenacker, 2020). These studies show that the positive effect of dissolution on women's labour market outcomes varies depending on the degree of marital specialization within the couple prior to separation.

The aim of this chapter is to understand the factors that determine earnings trajectories in the aftermath of a dissolution, for both men and women. The main hypothesis is that earnings trajectories are influenced by pre-dissolution within-couple inequality in labour supply both in terms of labour market participation (extensive margin) and time spent on paid labour (intensive margin). These inequalities may result in different patterns for separated individuals. Furthermore, I hypothesise heterogeneous effects depending on the pre-separation marital property regime chosen by the couple and their pre-separation marital status. Different marital statuses are subject to different marital property regimes by the law, which may influence the incentives to participate in the labour market as well as the extent of participation.

The analysis in this chapter relies on the French longitudinal component of the Household Finance and Consumption Survey (HFCS), carried out by the European Central Bank, for 2014 and 2017. French data allow to observe labour supply inequalities at both the extensive and intensive margins in conjunction with differences in partnership and marital property regime in the pre-separation period.

The econometric strategy is a combination of Propensity score matching with a Difference in differences approach (Heckman et al. ,1997; 1998).

The results confirm the expectation of differential impact on earnings trajectories for men and women depending on the share of earnings and hours worked before the separation, namely on the degree of marital specialization. Separation largely impacts the earnings of the secondary earner within the former partnership, regardless of gender. However, earnings trajectories proceed in oppositive directions for men and women. Women with lower levels of labour market attachment prior to the separation, experience a significant increase in their earnings during the transition compared to their non separated counterparts. Conversely, separated men who were secondary earners before dissolution experience a large decrease in earnings compared to men of other marital specialization status.

Moreover, the impact varies across marital property regime and marital status. When controlling for the marital property regime, the positive effect on earnings for women is driven by those in couples that opted for separation of property while no significant effect emerges for women who were in community of property. When controlling for marital status, in addition to property regimes, the impact appears to be driven by women who were in cohabitation.

Quantitively, past statuses of secondary or primary earner for women, especially the former, are dominant drivers.

Other complementary findings concern the existence of a penalty in earnings for separated custodial mothers and a marginal role of repartnering compared to that of pre-separation inequality. Anticipatory behaviours do not appear to affect the results, which are also robust to restricting the sample to continuously employed individuals and widening the definition of labour earnings including unemployment benefits.

Overall, these results represent a three-fold addition to the literature. They add evidence to the strand of literature that analyses the role of separation and divorce in shaping the gendered post-dissolution labour market behaviour. Moreover, they provide fresh evidence that post-separation gender inequality is strongly influenced by pre-dissolution intrahousehold inequality. Lastly, they document the interconnections between employment related

intrahousehold inequality of separated individuals on one hand and marital property regimes and family laws on the other hand.

The chapter is organized as follows. Section 2 presents a review of the literature on the effects of dissolution on labour market outcomes. Section 3 sets out the institutional context of the study. Data description and methodological strategy are illustrated next in Section 4 and Section 5, respectively, while the empirical results and a set of robustness checks are reported in Sections 6 and 7. The final section discusses the results and draws the conclusions.

3.2   Literature review

3.2.1   Effects of separation on earnings and labour supply

The finding that household dissolution has stronger negative impact on the economic well-being of women than men has been evidenced by large part of the literature (Smock et al.,1999; de Vaus et al., 2017; Bonnet et al.,2021; Hogendoorn 2022), which also highlight a higher risk of falling into poverty (Aassve et al., 2007; Thielemans and Mortelmans,2022).

The primary channel through which dissolution affects household income is labour market behaviour, both before and after the event, since labour income constitutes the largest share of the income of separated household (Tamborini et al., 2012). In some cases, women may increase their labour supply in anticipation of separation event (Vignoli et al., 2018; Tamborini et al., 2015; Thielemans and Mortelmans., 2019).

In the analysis of the economic consequences of dissolution, employment plays a dual role. It can mitigate economic losses caused by the negative shock of separation and it acts as a coping strategy following separation (Mortelmans, 2020; Ongaro et al., 2009).

Most empirical evidence suggests a positive impact of separation on women's labour supply (van Damme et al.,2009; Thielemans and Mortelmans, 2019; Bonnet et al.,2021) as well as earnings (Tamborini et al.,2015; Chanda,2022; Bradbury and Katz, 2002; Radenacker, 2020). Women tend to increase their participation in the labour market at both extensive and the intensive margins, particularly in countries with lower levels of female labour force participation (van Damme et al.,2009; Bradbury and Katz, 2002). Furthermore, this pattern is consistent across Europe (Bonnet et al., 2021; Hogendoorn, 2022; van Damme et al.,2009 Thielemans and Mortelmans 2019; Brüggmann and Kreyenfeld, 2023) and the US (Tamborini

et al.,2015; Tamborini et al., 2012; Bradbury and Katz, 2002; Chanda 2022), while negative impacts are found for the UK (Jarvis and Jenkis, 1999; Jenkins 2008).

For the US, Tamborini et al. (2015) found a long-run positive effect for divorced women compared to those who remained married while Chanda (2022) emphasises the persistence of a gender earnings gap between separated partners, despite similarity in labour market participation rates. According to Bradbury and Katz (2002), the increase in women's earnings they found for the US was driven by an increase in working hours, while the findings for Europe indicate that change occurs prevalently at the extensive margin. In a comparative study of European countries, van Damme et al., (2009) found that on average the employment rate of separated women had risen; in particular, their results indicate an increase in employment rate around 9% for France with a significant proportion of women entering the market after separation while women who were already employed tended on average to maintain their pre-separation work schedule. Studies for France (Bonnet et al., 2021), Netherlands (Hogendoorn, 2022); Germany (Radenacker, 2020; Brüggmann and Kreyenfeld, 2023) and Belgium (Thielemans and Mortelmans, 2019) documented the same pattern.

A limited number of studies focused on the impact of dissolution for men. Overall, the evidence highlights that dissolution reduces earnings and employment rates of men. Kalmijn (2005) found a negative effect on labour market mobility as well as an increased risk of unemployment for separated men. Bonnet et al. (2021) found a positive probability for previously inactive men of entering the labour market but, on average, the earnings of separated men drop by around 2%. They also evidenced an increased risk of unemployment for separated compared to married men.

The reason behind these negative effects for men may lie in lowering commitment to labour market as they no longer feel the pressure to fulfil their breadwinner role (Kalmijn 2005; Bonnet et al., 2021). However, McManus and DiPrete (2001) attribute the decrease in household income of low-income men to lack of ability to compensate for the mutual support provided by former partners.

Even when separated women use employment as a buffer against the negative consequences of a dissolution, they face additional barriers in the labour market. Structural differences between men and women in the market, horizontal occupational segregation and career interruptions determine the gender earnings gap (Blau and Kahn, 2017). The earnings gap may arise also out of the gap in hours worked between men and women (Canon et al., 2021). In turn, the latter may be influenced by the traditional gender division of labour (Blau and Kahn, 2017) within

the household. Goldin (2014) suggests that wage penalties for women may result from the higher incidence of part-time in working schedules of women but also from the existence of a convex relationship between earnings and hours worked.[35] The existence of the earnings gap implies that even when women re-enter or decide to expand their commitment to paid work, they may not be able to self-sustain and fully compensate for separation-induced losses through market mechanism.

A prevalent finding across most studies is the existence of a motherhood penalty for separated mothers which limits the extent of their participation in the labour market (Mortelmans, 2020). This penalty concerns both the extensive margin (participation and career opportunities) and the intensive margin (part-time schedule and few number of hours) of the labour supply. Findings show that mothers exhibit similar patterns in Europe (van Damme et al., 2009; Bonnet et al., 2021) and in the US (Chanda 2022; Tamborini et al, 2012; Harkness 2022).

The reduced earnings capacity of separated mothers is partly due to institutional set up and post-separation childcare arrangements. Policies aimed to single mothers have different effects on incentives related to the decision to working. Social welfare provisions tend to discourage mothers from (re)entering the market while employment-related policies (e.g. childcare availability, parental leave, work-family reconciliation measures) positively increase employment rates (Uunk, 2004; van Damme et al., 2009). In prevalent post-separation childcare arrangements, on the other hand, mothers are more often the custodial parents in sole custody of children. Sole custody is not only financially costly for households, but it also constrains mothers time on the labour market. Using administrative data for France, Bonnet et al. (2022), show that shared custody increases the employment rate of separated mothers compared to those in sole custody. The impact is found stronger for women who were not in the labour force during the relationship and those with lower attachment to paid work.

Child-support payments by non-custodial parents may also reduce the incentive to work for custodial mothers. However, several studies underlined that only a low proportion of mothers receive allowances (Hakovirta and Mesiäislehto, 2022) and even when they are supplied, they do not offset the drop in income due to separation (Boll, C., Schüller, 2022; Leopold and Kalmijn, 2016).

Education and work experience positively impact labour market outcomes for women after separation. Higher education and longer market experience positively affect earnings and careers opportunities (Tamborini et al., 2015; van Damme et al., 2009; Herbst and Kaplan,

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[35] Goldin (2014) specifically analysed highly educated workers in high-skill occupations in the latter case.

2016). Conversely, repartnering decreases the economic incentive to work or expand commitment on the market (van Damme et al., 2009; Tamborini et al., 2015).

3.2.2 Within-couple inequality and impact on earnings and labour supply

Gender differences in separation outcomes largely depend on the pre-separation economic independence between former partners, hence on the degree of marital specialization (Bianchi, 1999; Bonnet et al., 2021; Chanda 2022; Bradbury and Katz, 2002; Tamborini et al., 2012).

Few studies have addressed the impact of pre-separation within-couple inequality on earnings and on labour supply (Bonnet et al., 2021; Hogendoorn 2022; Brüggmann and Kreyenfeld (2023).

Brüggmann and Kreyenfeld (2023) analysed the relationship between the earner model prevailing during marriage and the earnings' trajectories for divorcees using German data. Their findings highlight an increase at the extensive margins of women's labour supply as well as an average increase of women earnings. The effect they found is heterogeneous across different marital breadwinning model. Specifically, their findings reveal that women that were in male breadwinner or dual earner partnerships experience larger increase in earnings, while no effect was found for female breadwinners. They also found evidence of the existence of a divorce penalty in earnings for men who were primary breadwinners or dual earners.

Radenacker (2020) too found out a positive relationship between pre-divorce earnings levels and earnings outcomes after divorce for German mothers.

Similarly, Bonnet et al. (2021) found that, in France, a significant share of inactive women who enter the labour market the year after divorce while employed women experience an average increase in earnings of 12%. However, the magnitude of the increase depends on the pre-separation degree of marital specialization: women who were secondary earners experience an increase up to 28%. Conversely, women who were primary breadwinners during the relationship experience a drop in earnings (around 7%).

Finally, Bradbury and Katz (2002) show that women's high pre-separation labour market attachment has a positive effect on household income mobility in the US and that, in post-separation period, the increase in financial well-being for these households is driven by increases in earnings and especially in working hours.

3.2.3 Effects of the marital property regime and marital status on labour market behaviour

Both marital property regimes and marital status can influence labour market behaviour before and after the separation.

Marital property regimes govern how economic resources are divided upon separation or divorce (Deere et al., 2018) while marital status implies different levels of economic protection at the end of the relationship.

The prevailing marital property regimes are separation and community of property, respcetively. Under the first regime, both partners retain personal ownership of resources throughout the relationship and upon separation. Community of property, on the other hand, provides for a redistribution of resources between former partners upon separation, regardless the actual ownership of the resources.

According to the collective household model (Manser and Brown, 1980; McElroy and Horney, 1981; Browning et al., 1994; Chiappori et al., 2002) divorce laws can be considered as distributional factors that may influence the within-household bargaining power (Chiappori et al., 2002). Hence, the marital property regime which governs the division of property upon separation also represents a distributional factor (Browning et al., 1994). Marital regimes that aim at an equal redistribution between former partners change the bargaining power within the couple, in favour of the partner that have lower resources and lower earnings capacity, who generally is the women. The shift in bargaining power in turn changes labour market incentives of spouses during the relationship (Chiappori et al., 2002; Voena, 2015; Lluis and Pan,2020). The protection mechanism implied by community of property creates an insurance against the negative impact of separation for the weaker spouse who decides to reduce his or her labour supply. Conversely, separation of property does not involve any redistribution mechanism and therefore it does not distort labour market incentives during the relationship (Voena, 2015) but it can positively influence women labour market participation (Bayot and Voena, 2015).

Empirical evidence supports the collective models' perspective that the redistribution provided by divorce law and a community property regime reduces women's labour supply (Voena, 2015; Chiappori et al., 2002; Brassiolo, 2013; Lluis and Pan, 2020).

Marital status also affects the labour market behaviour of couples as it often provides for different levels of protection after separation (Goussé and Leturcq, 2022). Marriage, cohabitation, and civil partnerships are often regulated differently by family law with regards to dissolution rights, alimony, and property regimes in most countries. Marital partnerships are typically the only ones granting alimonies upon separation or divorce, as opposed to non-marital

partnerships. Besides, married couples are subject to the default marital regime of community of property, while cohabiting partners fall under the separation regime. The possibility to redistribute income streams through alimony from the primary earner to the more disadvantaged partner implies a shift in bargaining power within the household. Therefore, family law and divorce law can both be considered as distributional factors. These redistribution effects lead to a decrease in earnings and labour supply for the partner with lower resources, typically women, while increasing labour supply of the partner with more resources, typically men (Goussé and Leturcq, 2022; Chiappori et al., 2017).

In this perspective, institutional characteristics influence the allocation of resources and decisions on labour supply within the household through the law. Equal sharing property regimes and maintenance provisions are put in place to reduce the economic vulnerability of the more disadvantaged partner upon separation. As a flip-side effect, however, they tend to increase within-couple inequality in earnings and hours worked during the relationship (Goussé and Leturcq, 2022).

3.3   The French institutional set up

The institutional context shapes the effect of post-separation outcomes in labour market behaviours. In particular, the role of women's employment, family policies and laws that regulate separation and divorce may play a role (Brüggmann and Kreyenfeld, 2023).

According to Eurostat data, the rate of female employment for women aged 20 to 64 in France was slightly higher than the average across European countries. It was 67% in 2014 and it increased by 1 percentage point in 2017 (Eurostat, 2023). During the same period, the share of women in part-time employment slightly decreased from 31.7% to 30.6%. Since the 2010, the overall gender earnings gap calculated by Eurostat for France (Eurostat, 2023) remains below the average recorded for the EU, which by contrast increased from 31.1% to 36.2% between 2014 and 2018. The gender overall earnings gap is a composite indicator measuring the combined disparity between men and women (whether employed or not employed) arising from differences in hourly earnings, in the monthly average of the number of hours paid and in the employment rate[36].

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[36] For further details see https://ec.europa.eu/eurostat/web/products-datasets/-/teqges01.

France exhibits one of the highest shares of single parents across the European Union, with 21% of all households with children in 2020 being headed by a single parent (Eurostat, 2021[37]). According to Bonnet et al. (2022) single mothers in France exhibit higher unemployment rate compared to partnered mothers; however, employed mothers work more often on a full-time schedule. Non-working single mothers may claim minimum income benefits – the so-called *Revenu de solidarité active, RSA* - and benefit from tax reductions depending on household characteristics. Working parents received in-work benefits.[38] Family allowances are granted until children are 20 years old, and the parental leave is paid up to 33 moths (Gehringer and Klasen,2017).

Upon separation, ad interim spousal maintenance until the settlement of divorce can be decided by the Court. This measure is aimed at compensating differences in post-separation economic well-being between former partners and it is also based on the duration of marriage and the repercussion of marital specialization on labour market outcomes (Frémeaux and Leturcq,2020). Moreover, after divorce, the economically disadvantaged partner may be entitled to claim a lump-sum compensatory benefit. However, this benefit is only available to those who were formally married.

Similarly, the amount of post-separation child-support benefits is decided and enforced by the Court on the basis of the principle of equal contribution to custody, according to the income levels of parents (Bonnet at al., 2021). Shared custody between separated parents in France concerns only small proportion of the total custody arrangements[39] (Bonnet et al., 2022, 2021), with mothers being the custodial parent more often. However, the share of custodial mothers who receive child allowances is around 25% (Hakovirta and Mesiäislehto, 2022).

The analysis of the French institutional set up offers the opportunity to study the effect of separation across different marital legal status as well as marital property regime (Frémeaux and Leturcq, 2022). The default marital regime for married couples is the community of property, but partners may opt out of the default regime signing a pre-nuptial agreement before a notary. The cost depends also upon the amount of wealth owned by the partners at the time of marriage (Frémeaux and Leturcq, 2018). The default regime for cohabitations and civil union (*PACS - Pacte civil de solidarité*) is separation of property, but partners can opt for another

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[37] [How many single-parent households are there in the EU? - Products Eurostat News - Eurostat (europa.eu)](#)

[38] Source: The Mutual Information System on Social protection -MISSOC database (https://www.missoc.org/missoc-database).

[39] Bonnet et al. (2022) report that approximately the 21% of child living arrangements involve share custody.

regime while signing their PACS agreement (Frémeaux and Leturcq, 2022). The main difference between these three legal statuses concerns the fact that only married individuals can claim for compensation upon separation while both married and PACS can benefit from joint income taxation.

3.4   Data and measures

3.4.1   Data and construction of the sample

The impact analysis has been implemented using data from the second and third wave of the Household Finance and Consumption Survey (HFCS) compiled by the European Central Bank (ECB). Microdata collected through this survey include both measures of income and wealth at the household and at the individual level, along with several socio-demographic measures.

France was chosen for the analysis due to its rich longitudinal component and unique feature in the survey that allows observation of the marital property regime chosen by a couple. Additionally, the data report the marital status of individuals - married, unregistered and registered partnerships – with a sufficiently large number of observations in each status. Registered partnerships are the so-called PACS which represent around 7% of total partnerships in France (Frémeaux and Leturcq, 2022).

The first step in setting up the data was the construction of a longitudinal sample with base-year 2014 and follow-up in 2017, corresponding respectively to the second and third waves of the HFCS. This required defining a unique panel identifier to link individuals across the two waves. I constructed this unique identifier using household and personal identifier 's information that are provided in the cross-sectional release. In addition, I constructed a partner identifier which is not supplied by the survey, cross-checking variables for the reference person and their relatives with their marital status within all households. This allowed me to compute within-couple indicators at the baseline year.

In the second step, I identified the time of separation (generically referred as time t). Separation is defined as the actual moment in which the household is split, and individuals start to follow different trajectories, including in economic terms (Aassve et al., 2007). The exact moment of separation is not recorded by the survey, but it can be inferred from the comparison of the same individuals across the two waves.

The sample thus constructed includes individuals that were in a relationship during the first period of observation (t-1) and that continued to be part of the panel in period of observation t+1. In this second period observation include two subgroups, respectively individuals still in a

partnerships and individuals that dissolved the partnership. These two subgroups represent the control and the treatment group, respectively. The obtained sample size consists of 10752 person-year observations.

Since the focus of the study is on labour market behaviours, I restricted the sample to individuals aged 20 to 64 years at the baseline year, i.e., the working age population. The working sample includes 8424 person-year observations: 4088 men and 4336 women.

Attrition is a well-known issue for dissolution studies that use longitudinal survey data, and the sample used in this study is no exception. In particular, the risk of panel attrition is higher for men (McManus and Di Prete, 2001; Jarvis and Jenkins, 1999). Attrition mainly arises from the complexity of following the same individuals for several waves. In most surveys, individuals are nested in household and the tracing rules defined by the panel design may follow household or individuals. In the first case, recontacting individuals from a split household entails several difficulties. In order to avoid a large reduction in the sample size due to panel attrition, the construction of the sample here followed the rule that at least one of the former partners should be observable throughout, and not necessarily both former partners (Jarvis and Jenkins, 1999).

3.4.2 Measures

The outcome of interest is individual earnings. The latter is defined as the sum of annual earnings from employment and self-employment. All earnings components are before taxes (HFCS, 2020) and deflated using the Harmonized indices of Consumer Prices by Eurostat (HICP -Eurostat). Earnings are set to zero for those who do not have any labour market income, and top and bottom coded at 1% and 99% of the distribution in order to exclude extreme values. The main explanatory variable is woman's share of individual earnings. This measure is taken for each couple at pre-separation levels. It gauges the difference in labour-related income between former partners, measured as follows:

$$eshare = \frac{e_f}{(e_m + e_f)} \qquad (1)$$

where e_f represents the share of individual earnings accruing to the female partner in ratio to the sum of individual earnings of both partners $(e_m + e_f)$. The eshare measure is calculated only when at least one of the partners is on the labour market, whereas it is not defined for low-income couples where both partners are inactive and outside of the labour force.

The eshare value has been treated as both a continuous variable in the interval 0-1 and a categorical variable. In the latter case, values are grouped into three main categories that proxy

marital specialization within the household. The first category includes women whose share of earnings pre-separation went from 0 (maximum specialization) to 0.40 (high specialization) and it corresponds to the male breadwinner model where women allocate all or most of their time in unpaid work. The second category includes women with a share of earnings was between 0.40 and 0.60, indicating moderate specialization and corresponding to the dual earner model. In this case both partners are in the labour market. The third category comprises women whose share was above 0.60, indicating low specialization in household work and therefore high labour market attachment with most time spent on paid work. This categorization has been used in other studies on the effect of dissolution on individual earnings (Bonnet et al., 2021; Brüggmann, and Kreyenfeld, 2022).

The measure of earnings share, eshare, captures within-couple differences originating at both the intensive and at the extensive margins of the labour supply. In order to capture differences originating solely on the intensive margin, I constructed a measure that accounts for the share of hours worked, using the work-time schedule of the partners. The measure was computed when at least one of the partners has positive working hours and it was constructed as a fourfold categorical variable proxying marital specialization. The first category corresponds to a male breadwinner case and includes women do not work or work few hours compared to their partner. The second and the third categories proxy a dual earners model and comprise individuals with similar work-time schedule, respectively part-time or full-time. The fourth category considers couples where the woman works more hours than her partner and corresponds to female breadwinning.[40] While the share of hours can be used to delve deeper into the analysis of intra-household specialization, caution is needed in interpreting the data because in France hours of work are capped at 35 per week consistently with the legal duration of the working week.

An additional explanatory variable used in the analysis is the marital property regime. This measure defines the type of marital property regime chosen by the couple during their partnership. France is the only country in the second wave of HFCS data that provides information about the legal arrangements for all married and recognized partnerships in the

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[40] Due to the sample size, women who do not work and part-time employed women were considered in the same category.

sample.[41] The marital property regime has been categorized in two main categories: separation and community of property regime.[42]

Since the ex-ante condition is that a marriage contract has been enforced, I assigned to each couple the property regime defined by the original variable in the survey while to the others I assigned the default regime in force for the marital status to whom each couple belongs. It means that unregistered partnerships and PACS have been assigned to separation regime if no other information is available. The underlying assumption is that couples without a formal enforceable contract whose default regime is separation property have a negative opportunity cost to stipulate a marital contract to define common ownership of assets.[43]

The final explanatory variable used here is marital status which categorizes the type of union to whom the couple belongs before separation occurred. It takes three categories: unregistered partnership (consensual union without legal basis), marriage and registered partnership (consensual union with legal basis).

Proxies for human capital and labour market participation are represented by level of education attained, employment status and work experience. Education is divided in three categories: primary and secondary education, upper education and high education (tertiary and higher). Employment status considers three categories: employed, unemployed and individuals not in the labour force. Work experience instead, considers total time in years spent by the individual in employment. It takes five categories: under 5 years, 5-9, 10-19, 20-29, over 30 years of experience. To refine the measurement of labour supply engagement at the intensive margin I also consider weekly working hours and share of part-time employment. Part-time is defined by less than 30 hours per week in main job threshold (OECD 2023).

A set of economic variables is also used in the analysis to control for economic heterogeneity across households. These include pre-treatment household income is annual total equivalized

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[41] The variables that enable to define the marital property regime are non-core variables PNA0850 and PNA0851. The first concerns the existence of some form of legal arrangements in the partnership while the second provides 4 categories for the arrangements (e.g., separated or common ownership of household assets).

[42] Following Frémeaux and Leturcq (2022), I combined under the same category of community of property regime, both the community of acquisitions and the full community regimes, as the latter represents less than 2% of couples in France.

[43] According to Frémeaux and Leturcq (2018), cohabitations and PACS represent a de facto choice to opt for separation of property; in this sense, these couples have no incentive to change the default marital status. Similarly, Fraboni and Vitali (2022) suggest that individuals in cohabitations have no or lower incentive to legally regulate property differently from separate ownership which is the default option for them.

household income before taxes considered in quintiles at the baseline value. Pre-treatment wealth is annual net wealth owned by the household before separation measured in quintiles. Private transfers represent annual regular transfers received by the household. This variable contains both compulsory and voluntary alimonies and child support alimonies. Social transfers are annual regular social transfers received by the household by the welfare. It includes family, children, housing and education related allowances. Unemployment benefits are instead, before taxes individual income from unemployment. All monetary variables have been deflated with Harmonized indices of Consumer Prices by Eurostat (HICP -Eurostat) and top and bottom coded at 1% and 99% of the distribution (OECD, 2013). All income variables at the household level have been also equivalized using OECD-modified equivalence scale. Two additional wealth-related variables considered for the analysis are inter-household transfers in form of inheritance or gifts (dummy) and the rate of homeownership (dummy).

Other socio-demographic variables accounting for individual characteristics include age (both continuous and categorical), gender (categorical) and migration background (dummy). Furthermore, I also considered presence (dummy) and number of children within the household under 18 years (categorical) and a variable constructed to identify custodial parent status (dummy). This measure has been constructed exploiting both information by the presence of dependent children within the household and the weights assigned by the OECD equivalising scale in the post-treatment period. The latter measure does not distinguish between shared and sole custody. For the above reasons, it should be interpreted with caution.

3.4.3 Descriptive statistics

Table 3.1 sets out descriptive results for the whole sample as well as the treatment and control sub-samples, comparing selected individual covariates of interest before and after separation. To provide information on the composition of the sample, table 3.23 in Appendix C.7 cross-tabulates the main variables identifying the subgroups that will be used to estimate the effects of separation.

Concerning demographic, individuals in the treated sub-sample tend to be younger and include a slightly higher number of women. This compositional effect is mainly driven by sample attrition, which affects separated household, with men who leave the family dwelling more frequently after separation. Both presence and number of children are higher for the treated sample before separation but become more similar across sub-samples once the event took place. Furthermore, the share of custodial parents in the treated sample exceeds 50%. The rate of re-partnering is around 26%. For both subsamples the prevalent pre-separation marital status

is marriage[44] but treated group features a slightly higher proportion of individuals who were in unregistered partnerships (around 32%). Similarly, most individuals were in partnerships that opt for the community of property regime (76%). However, the proportion of individuals with separated assets is larger for the treated sample (around 42%).

With respect to human capital and labour supply, the whole sample have a high proportion of individuals that achieved tertiary education and beyond, particularly in the treated sample. Most individuals are employed in both samples, but the proportion changed over time in both groups following different patterns. The rate of employment tends to decrease over time for the control group while treated individuals increase their participation in the labour market. This is illustrated by the drop in unemployment benefits received in post-separation as well as by earnings trajectories. In the pre-separation period, the amount of earnings was higher for the control group but the increase in the post-separation period was higher for treated individuals, narrowing the gap between the two groups. Besides, weekly hours worked were similar in the pre-treatment period in the two sub-samples, but the increase was higher for the treated group. Overall, these descriptive results indicate an increase in labour supply of separated individuals both at the extensive and at the intensive margin which is in line with the literature (Bonnet et al., 2021; Tamborini et al., 2015; van Damme et al., 2009). Furthermore, the proportion of employed individuals with a part-time work schedule decreased over time and became similar between in the two sub-samples in post-treatment period.

Table 3.1 Descriptive statistics: before and after separation results

	Before separation			After separation		
	All	Control	Treated	All	Control	Treated
Age (years)	47.47	47.76	41.35	50.43	50.72	44.28
	(10.42)	(10.31)	(10.84)	(10.42)	(10.31)	(10.74)
Gender (1=male)	1.51	1.51	1.56	1.51	1.51	1.56
	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)
# of children (cont.)	0.92	0.91	1.16	0.84	0.84	0.84
	(1.08)	(1.09)	(1.02)	(1.06)	(1.06)	(1.01)
Household with	0.51	0.50	0.65	0.46	0.46	0.48
Children (1=children)	(0.50)	(0.50)	(0.48)	(0.50)	(0.50)	(0.50)
Marital status (1-3)	1.96	1.97	1.76	1.96	1.97	1.76

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[44] In particular, 80.22% of individuals in the whole sample were married, while 7.88% were in PACS and 11.88%. were in unregistered partnerships (cohabitations). Tables available.

	(0.44)	(0.43)	(0.59)	(0.44)	(0.43)	(0.59)
Education (1-3)	2.30	2.30	2.38	2.28	2.28	2.37
	(0.72)	(0.72)	(0.67)	(0.73)	(0.73)	(0.69)
Employment	1.43	1.43	1.36	1.51	1.52	1.29
Status (1=Employed)	(0.79)	(0.79)	(0.68)	(0.85)	(0.85)	(0.65)
Part-time(1=yes)	0.10	0.10	0.09	0.09	0.09	0.08
	(0.30)	(0.30)	(0.29)	(0.29)	(0.29)	(0.27)
Work	24.64	24.89	19.36	28.26	28.54	22.50
Experience (years)	(11.39)	(11.34)	(11.17)	(10.98)	(10.91)	(10.92)
Working hours (weekly)	25.40	25.39	25.49	24.17	23.98	28.12
	(15.05)	(15.06)	(14.97)	(15.66)	(15.73)	(13.40)
Migration	0.12	0.12	0.11	0.12	0.12	0.11
background (1=yes)	(0.32)	(0.32)	(0.31)	(0.32)	(0.32)	(0.31)
Earnings(annual)	23652.13	23835.17	19819.71	24456.41	24552.70	22440.36
	(34636.98)	(35146.51)	(21032.42)	(32163.43)	(32520.25)	(23451.38)
Unemployment	753.10	717.63	1,495.78	792.77	781.26	1,033.84
Benefits (annual)	(3,713.92)	(3,626.61)	(5,174.07)	(4,253.45)	(4,225.84)	(4,801.3)
Household	35416.87	35674.88	30014.90	38808.79	39417.41	26065.83
Income (annual)	(46014.9)	(46122.4)	(43466.2)	(51543.7)	(52428.4)	(23749.3)
Private	1,644.46	1,685.07	1,338.69	2,002.03	1,930.27	2,360.85
Transfers (annual)	(1,299.5)	(1,302.95)	(1,268.97)	(2,083.4)	(1,475.4)	(3,951.9)
Social transfers	1,323.57	1,304.83	1,650.75	1,769.91	1,713.81	2,789.59
(annual)	(1,500.93)	(1,489.55)	(1,660.23)	(2,136.86)	(2,040.26)	(3,304.02)
Net household	541808.7	554630.23	274906.86	581596.4	600213.27	191805.67
Wealth (annual)	(1273998.5)	(1296185)	(602972.2)	(1350114.7)	(1376221.8)	(417885.9)
Inheritance &	0.55	0.55	0.39	0.60	0.61	0.34
Gifts (1=yes)	(0.50)	(0.50)	(0.49)	(0.49)	(0.49)	(0.48)
Homeownership(1=yes)	1.19	1.18	1.32	1.17	1.15	1.47
	(0.39)	(0.39)	(0.47)	(0.37)	(0.36)	(0.50)
Property regime	1.76	1.77	1.58	.	.	.
	(0.43)	(0.42)	(0.49)	(.)	(.)	(.)
Earnings share(cont.)	0.40	0.40	0.42	.	.	.
	(0.30)	(0.30)	(0.30)	(.)	(.)	(.)

Hours share (1-4)	2.51	2.51	2.64	.	.	.
	(1.01)	(1.01)	(1.01)	(.)	(.)	(.)
Custodial(1=yes)	0.00	0.00	0.00	0.55	0.55	0.53
	(0.00)	(0.00)	(0.00)	(0.50)	(0.50)	(0.50)
Repartnered(1=yes)	0.00	0.00	0.00	0.01	0.00	0.26
	(0.00)	(0.00)	(0.00)	(0.11)	(0.00)	(0.44)
N	4212	4020	192	4212	4020	192

Note. Unweighted descriptive statistics for whole sample, control and treated sample for pre-treatment and post-treatment period. Source: HFCS data of second (2014) and third wave (2017). Own calculations.

Turning now to the central variable of interest -within-couple inequality- its distribution is similar across sub-samples both in terms of earnings and hours shares. The prevalent household specialization model is, on average, the male breadwinner model (Table 3.23 Appendix C.7). Mean household income and wealth differ between sub-samples. Continuously married individuals were on average richer and wealthier at the baseline. Both their household equivalized income and net wealth increased over time while those of separated individuals dropped in the aftermath of separation. This widened the gap between the two groups. Furthermore, the household income of separated households included higher shares of both private and welfare transfers in post-separation period.

A graphical analysis of the change in individual earnings between pre-separation and post-separation periods is provided below to gain further insights from descriptive statistics on the drivers of earnings trajectories.

3.4.4 Before and after separation changes in individual earnings

Figures 3.1, 3.2 and Figure 3.3 in Appendix C.1. display sets of kernel density distribution of the outcome variable by gender (blue curve for men and red curve for women). Kernel density distributions show the proportion of individuals that experience a negative or positive change in individual earnings across the two periods. A negative change is indicated by a mass point below zero while a positive change by a mass point beyond zero or positive values. Peaks of the distribution at zero outline no sizeable differences over time.

The top panel of Figure 3.1 displays the change of earnings by gender. The distributions appear similar, however the tails of two distribution differs: a higher proportion of women increased their earnings while a larger proportion of men experienced a decrease. In the bottom panel, changes account for the within-couple inequality of earnings. Larger positive increases are associated with a pre-separation share below the 40% and beyond 60%, while a high proportion

of women in dual earner couples experienced a decrease in earnings and their distribution partially overlap with that of men. Conversely, men seem to experience a decrease in earnings in each category but in dual earner couple where a high proportion of men also experienced an increase. Looking at the within-couple inequality in terms of hours, the increase for women in both male breadwinner and female breadwinner is more marked while for individuals in dual earner couples the two distributions tend to overlap.

Figure 3.2 considers instead the type of marital property regime. Considering property regimes, a larger proportion of women increased their earnings when they were under both regimes while men show peaks at zero or below zero, i.e., larger proportion of men decreased or experienced no sizable changes in their earnings. The bottom panel provides a more detailed picture, showing changes across regimes and earnings shares. Women that were not main earners within the couple increase their earnings under both regimes while in the same category larger proportion of men experienced a decrease or no changes in both regimes. Individuals that were in dual earners couple, show similar distribution but men tend to increase earnings in separation while both men and women seems to experience a decrease in community property regime. The most prominent difference is displayed by the category where women were breadwinner within the couple. In this category the situation differs between gender with women that increased their earnings while men decreased them under separation regime. Under community regime, larger proportion of both men and women experienced instead a decrease.

These descriptive results highlight that the presence of heterogeneity both across gender and across shares and regimes may lead to different outcomes.

Figure 3.3 in Appendix C.1 show the changes in earnings for custodial and non-custodial parent. Both custodial and non-custodial women experienced an increase of their earnings over time, however a larger proportion of custodial women experienced no changes. Among custodial parents, increases in earnings were larger for women compared to men who experienced larger decrease or no changes.

Overall, insights from descriptive statistics tell a story of markedly different post-separation earnings trajectories depending on individual, household and institutional characteristics and raise expectations of strong heterogeneity of outcomes in the analysis to come.
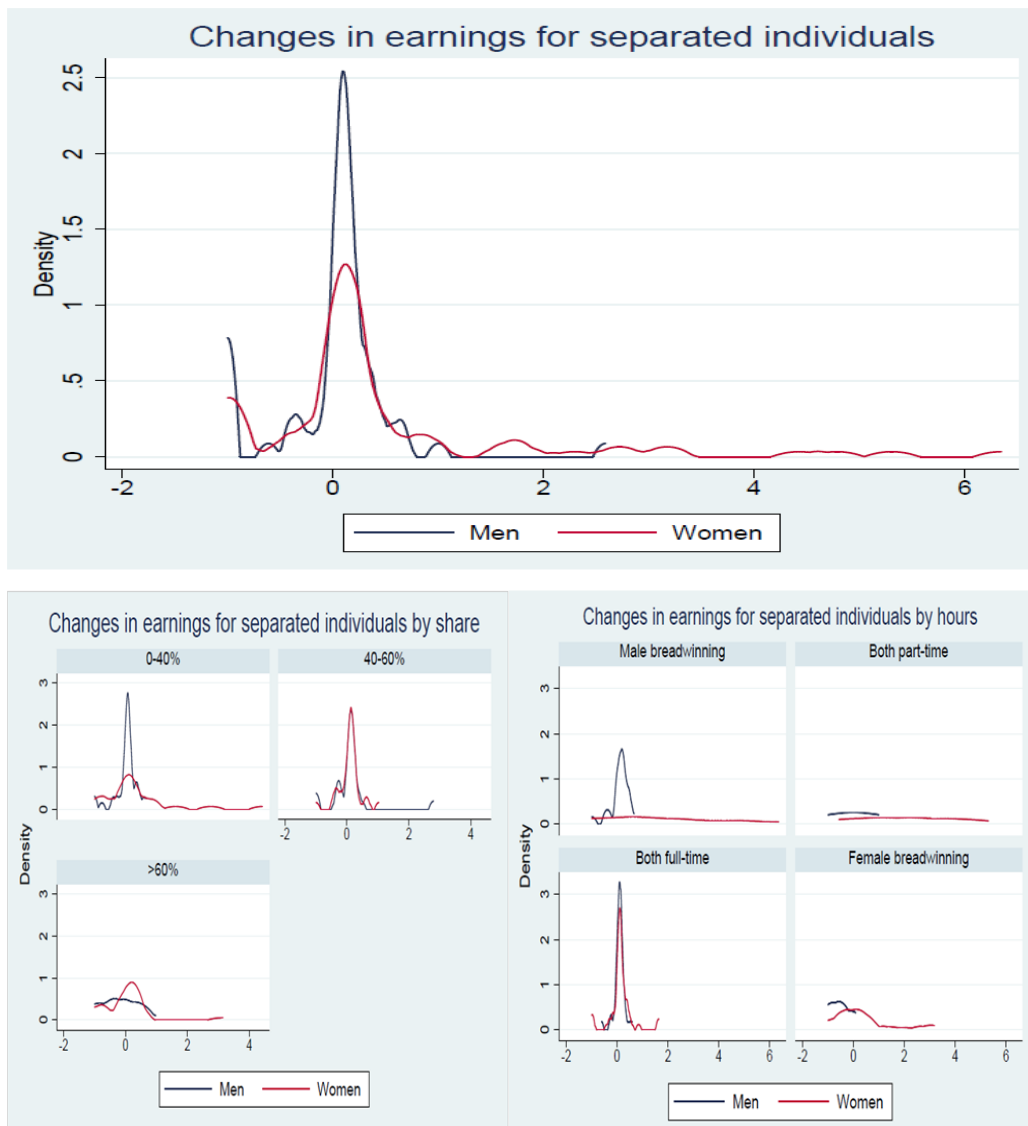
Figure 3.1 Changes in individual earnings between pre and post separation period by gender and pre-separation within-couple inequality. Blue kernel densities refer to men while red kernel densities refer to women. The top panel shows changes in individual earnings for separated individuals by gender. Bottom panels on the left show change in earnings by gender and by woman's share of pre-separation earnings, and those on the right changes in individual earnings by gender by woman's share of weekly worked hours. The figure displays distributions top coded at 99%.

Data from HFCS for 2014 and 2017 waves. Own elaboration.

Changes in earnings for separated individuals by property regime

| Separated assets | Common assests |

Changes in earnings for separated individuals by regime and share

| Separated assets, 0-40% | Separated assets, 40-60% | Separated assets, > 60% |
| Common assests, 0-40% | Common assests, 40-60% | Common assests, > 60% |
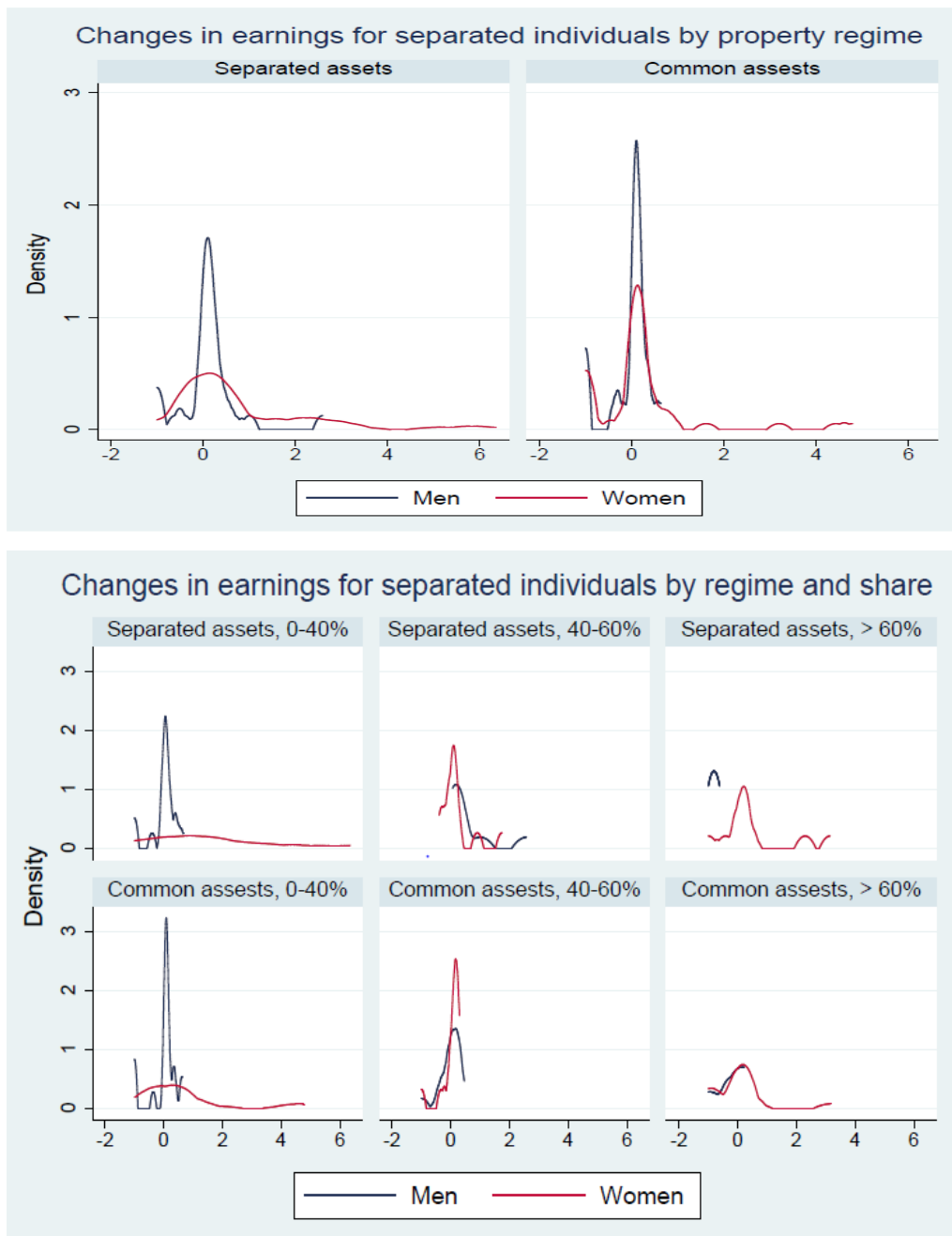
Men — Women

Figure 3.2 Changes in individual earnings between pre and post separation period by gender, pre-separation marital property regime and within-couple inequality. Blue kernel densities refer to men while red kernel densities refer to women. The top panel shows changes in individual earnings for separated individuals by marital property regime while bottom panels display changes in earnings by regime and the woman's share of pre-separation earnings. The figure displays distributions top coded at 99%.

Data from HFCS for 2014 and 2017 waves. Own elaboration.

3.5   Methodology

To identify the treatment effect of separation on individual earnings, the methodology implemented was the Propensity score matching (PSM) combined with a Difference in Differences approach. Combining difference-in-differences approach with matching techniques (Heckman et al. ,1997; 1998), enables to compare the before-and- after outcomes of separated individuals with those of individuals who remains in a partnership, conditional on the assumption the two subgroups have similar baseline characteristics. If, in fact, their characteristics differ, a problem of selection bias may arise, thus biasing the estimated treatment effect. This implies therefore accounting for selection into treatment that may result from any dynamics affecting the probability of separation.

In the first step of the approach, the PSM isolates the causal effect of separation, conditional on the propensity score (Rosembaum and Rubin, 1983), i.e. the probability of experiencing dissolution estimated using observable characteristics under the assumption that separated (treated) and continuously in a partnership (control) individuals differs only in observable characteristics. This allows to rule out unobserved heterogeneity (Aaasve et al. 2007). In the second step, the implementation of DID estimator controls for confounding effects of treatment on outcomes due to unobservable characteristics, conditional on the fact they are time-invariant. This two-steps procedure yields an unbiased causal effect of separation computed by comparing potential outcomes of the two groups of interest, the treated and the control group.

In a standard DID with two groups and two time periods, the average change in outcome between first and second period of the treated group is compared with the average change in outcome of the control group for the same period. Hence, the DID-PSM estimator can be written as:

$$DID - PSM = E_{p(x)}[E(\Delta_i | D = 1, p(X) - E(\Delta_0 | D = 0, p(X))] | D = 1 \qquad (2)$$

where $p(X)$ represents the propensity score, i.e., the probability of separate, conditional on observable individual characteristics X.

This methodology has been largely implemented in the empirical literature on the causal effect of separation (Aassve et al. 2007; Ongaro et al. 2009; Bonnet et al.2021; Hogendoorn 2022).

3.5.1 Matching procedure

The matching procedure consists of a two-steps approach. In the first step coarsened exact matching (CEM) is implemented. The use of the exact matching provides common support according to the set of key variables chosen for the exact matching (Blackwell et al., 2009) and before implementing other probabilistic matching techniques.

The CEM algorithm balances data by sorting them into strata and dropping all observations that, within each stratum, do not have at least one observation for each unique value of the treatment variables. This means removing observations outside the common support.

Exact matching was run on three pre-treatment individual characteristics: age, gender, and number of children. The effectiveness of the matching can be assessed by the comparison of the initial and the final balance gauged by the statistic λ. The latter takes value 0 in case of perfect (global) balance and value 1 in case complete imbalance exists. The initial imbalance for my sample was 0.32 and reached a final balance of 0.07 after applying CEM algorithm. This involved discarding 85 observations which were found to be outside of the common support.

The second step in matching procedure involves probabilistic matching, based on all observable characteristics that may influence selection into treatment, i.e. the probability of dissolution. Here it was implemented using nearest neighbour propensity score matching approach. The propensity score is the synthetic indicator that represents the probability of experiencing dissolution, conditional on the set of pre-treatment individual characteristics selected for the matching (Negri, 2023). Obtaining a sample of individuals with the same probability of separating allows to control for selection bias (Rosembaum and Rubin, 1987; Aassve et al., 2007; Ling et al., 2021).

The propensity score has been computed using 1 neighbour with replacement and a caliper of width equal to 0.20 of the standard deviation of the logit of the propensity score.

Specifically, the set of covariates taken at pre-treatment values includes: age (continuous), gender (categorical), number of children, logarithm of equivalized household income, quintile of household net wealth, quintile of individual earnings, within-couple inequality in earnings (categorical), education attainment (categorical), employment status (categorical), received inheritance and gifts (categorical), homeownership (dummy), marital status (categorical), marital property regime (categorical), presence of children within the household (dummy) and migration background (dummy).

The evaluation of the quality of matching involves checking the means of covariates and their overall distribution. Table 3.2 in Appendix C.2 shows that there are no significant differences between the matched treated and the control subgroups estimated by the propensity score

matching, since the standardised differences in means of all the covariates are below the 0.25 threshold which is the cut-off value suggested by Rubin (2001). This ensures perfect balance between the covariates. A graphical representation of the balance of the covariates after matching is also provided in Figure 3.4 in Appendix C.2, using balance box plots and kernel density functions. In addition, the bottom panel of Figure 3.4 graphically illustrates the overlap (or common support) assumption, indicating that the propensity scores of the two groups overlap.

The final sample size obtained after the implementation of matching consists of N=845 individuals, of which 160 in treatment group and 685 in the control group.

3.5.2 Econometric model

Estimating the impact of separation on individual earnings involves estimating the following individual fixed effect panel model:

$$ln \, E_{it} = \alpha_i + \delta T_t + \beta T_t X_i + \varepsilon_{it} \qquad (3)$$

where the outcome variable E_{it} represents earnings for individual i in period t (t takes values 0 for pre-separation period and 1 in post-separation), T_t is the treatment dummy (that takes value 1 for separated individuals in post-treatment period and 0 otherwise), X_i represents the treatment group, α_i is the time-invariant unobserved individual fixed effects and ε_{it} is the stochastic error term.

Taking the first difference between pre and post-treatment to obtain the average change across periods, the model in equation (3)[45] can be re-written as the following first difference (FD) model:

$$lnE_{i1} - lnE_{i0} = \delta + \beta X_i + (\varepsilon_{i1} - \varepsilon_{i0}) \qquad (4)$$

where the time invariant fixed effects have been cancelled out by the FD transformation and β represents the coefficient of interest, namely the *Average treatment effect on treated (ATT)*, obtained by the difference between the expected value of treatment and control group.

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[45] See Wooldridge (2010), Cameron and Trivedi (2022) and Bonnet et al. (2021) on first differencing fixed effect panel models.

The dependent variable in equation (4) can be interpreted as the growth rate of individual earnings[46] for each individual i between the before separation period t-1 (0) and after separation period t+1 (1). The impact of the separation on changes in earnings is therefore captured by the coefficient β.

For t =2, the implementation of first differencing reduces model in equation (3) to T-1 period model for each individual i as in equation (4) (Wooldridge, 2010; Rabe-Hesketh and Skrondal, 2022).[47]

All the regressions presented are weighted using sample survey weights from period t+1 (i.e., post-treatment period). Standard errors are robust and clustered at the individual level.

3.6   Empirical results

3.6.1   Gendered effects of separation on individual earnings

The impact of separation on earnings differed by gender. The estimated coefficients seem to suggest opposite trajectories for men and women (Table 3.3). The average treatment effect on treated was negative and not significant for men while it was positive and significant for women. On average, women experience a 40% increase in earnings following separation. These results imply that the impact for men does not significantly differ from their counterparts continuously in a relationship. Conversely, separated women experience a larger increase in earnings than their counterparts.

A clearer picture emerges by considering within sample characteristics other than gender.

Table 3.3 Average treatment effects on earnings by gender.

	Men	Women
treatment	-0.15	0.40***
	(0.11)	(0.14)
Cons.	0.30***	0.27***
	(0.078)	(0.047)

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[46] The growth rate of a variable can be approximated by the difference of logs between the initial period of observation and the subsequent period.

[47] Moreover, for t =2, the fixed effects and the first difference model produce identical estimates, See Wooldridge (2010) p. 283.

N	347	437

Note. The outcome variable is changes in individual earnings. The treatment is separation.

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses.

$^{*} p < 0.10, ^{**} p < 0.05, ^{***} p < 0.01.$

3.6.2 Separation effects on earnings by pre-separation within-couple inequality

The introduction in the analysis of within-couple inequality provides a more heterogeneous picture of the results. Consider, first, within-couple inequality in individual earnings (Table 3.4 first two columns). The impact of separation is not statistically significant for men previously in male breadwinner or dual earner couples. The trajectories of their earnings are similar to those of men who remained in partnership. Conversely, men who were in female breadwinner couples experienced a significant decrease in earnings along the separation transition.

An opposite trajectory has been found for women's earnings. Women formerly in male breadwinner couples exhibit an increase in earnings after separation, differently from women in other breadwinner couples that show no significant effects compared to their partnered counterparts.

The effects of intrahousehold inequality at the intensive margin of the labor supply (Table 3.4, third and fourth columns) show that both women with lower and higher share of hours worked compared to their former partner increase their earnings after separation, while for women with a similar working schedule to that of their partner the effects are not significant. Men show a drop in earnings when they were not primary breadwinner.

These results suggest that the transition from partnership to separation has a stronger impact on the earnings of the secondary earner in former couple. The direction of the effect is reversed relative to gender: negative for men and positive for women. The within-couple inequality at the intensive margin shows even stronger effects.

Mechanisms at work may concern different incentives to labour market participation for men and women. After separation, women tend to (re) enter the labour market or expand their labour supply at the intensive margin. Incentives to (re) join the market are higher for women who had lower attachment to the market compared to their partners or were previously unemployed or inactive. Conversely, men who had high commitment to paid work may reduce the time they spend in the labour market when they separate because the constraint of family sustainment are relaxed. Therefore, the reduction in labour market commitment can be related to the end of specialization role (Kalmijn 2005). Men who instead were secondary earners within the couple further decrease their labour market commitment. This may be due a higher probability of

became unemployed or inactive after separation, as suggested by Bonnet et al. (2021), but it may also indicate a strategic behaviour aimed at non-compliance with income-based child support payments by the non-residential parent.

Table 3.4 Average treatment effects on earnings by pre-separation within-couple inequality

	Earnings share			Hours' share	
	Men	Women		Men	Women
treatment					
0-40%	-0.0058	0.75***	Male	-0.035	0.97***
	(0.089)	(0.22)	breadwinning	(0.13)	(0.32)
40-60%	0.077	-0.027	Both part-time	-0.18	0.71
	(0.19)	(0.10)		(0.45)	(0.50)
> 60%	-1.73***	0.31	Both full-time	-0.069	0.092
	(0.41)	(0.24)		(0.068)	(0.13)
			Female	-1.60**	0.50**
			breadwinning	(0.72)	(0.23)
N	347	437		337	427

Note. The outcome variable is changes in individual earnings. The treatment is separation.

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses.

$^{*} p < 0.10$, $^{**} p < 0.05$, $^{***} p < 0.01$.

3.6.3   Separation effects on earnings by pre-separation marital property regime and marital status

Marital property regimes play a role in determining post-separation outcomes in earnings as shown in Table 3.5 Panel A, where the treatment effect is estimated distinguishing between separation and community of assets regimes. Women who were in a couple that opt for separation regime during the relationship experience an increase in earnings compared to their partnered counterparts under the same regime. The impact of separation for women who were previously in community regime is instead negative and statistically not significant compared to partnered women under same regime. Men show no significant effect under either property regime. The intersection between marital property regime and within-couple inequality in

earnings (Table 3.5 Panel B) suggests that the increase in earnings for women is largely driven by women who were both under separation regime and who were secondary earners and primary earners within the former couple. The mechanisms at work for these women differ according to the pre-separation property regime and the relative economic position held within the household.

Separation regime does not provide for the equalization of property after the breakup, but assets remain in ownership of their legal owner. Furthermore, separation of property, which is the default regime for cohabitation and registered partnerships, does not provide for any compensation mechanism upon separation, as illustrated in section 3. In this setting, women who were secondary earners within the couple have positive incentives to cope with the loss of economies of scale following separation. Women who were primary earners also have incentives to extend their presence on the labour market to substitute compensation mechanism. Under community regime instead, the default regime for married couples, the possibility of claiming for some form of compensation may influence labour market outcomes of separated women. Furthermore, in case of extended absence from the job market, the ability of these women to re-enter or enter for the first time, may be negatively affected by factors as motherhood, age, education and years of work experience.

The negative impact on earnings for secondary earner men is found significant under both regimes. This suggest that lower income men may be unable to cope with the loss of economies of scale, but it also raises the possibility that the decrease may be driven by lower commitment to the market resulting from lower financial constraints. The effect of inequality for men appears larger than the effect of the property regime.

 A more detailed picture of these effects can be drawn by the analysing the role played by pre-separation marital status. The role of the marital property regime in shaping the effect of separation on earnings is complementary to that of the marital property regime. As illustrated before, in France cohabitation and PACS default property regime is separation of property while marriage is undergone under community of property with the possibility for partners to opt-out for separation regime.[48] Therefore, analysing the impact of different marital status under different property regime may provide a deeper understanding of the effects of separation on

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[48] In 2018, approximately 20% of married couples chose the separation regime instead of the community of property (Frémeaux and Leturcq, 2018).

individual earnings. Table 3.6 Panel A provides the results. Women in cohabitation are likely to drive the increase in earnings found in the previous sections, as no significant effect has been found for other marital statuses.

This may be partially explained by the fact that, differently from married women, women previously in non-marital relationships cannot claim alimonies or compensatory allowances. Women who were in cohabitation have incentives to (re)enter the market or expand their labour supply in the event of separation to restore economic well-being. Women who were previously married have a positive probability to receive financial compensation upon separation, and they may lack the same incentives to change their position in the labour market. The impact of separation for those women is found in fact almost negligible and not statistically different from that of women who are still married.

Table 3.5 Average treatment effects on earnings by pre-separation marital property regime

Panel A

	Separation Regime		Community Regime	
	Men	Women	Men	Women
treatment	-0.32	0.66***	-0.092	0.083
	(0.21)	(0.19)	(0.097)	(0.16)
Cons.	0.60***	0.26***	0.13*	0.27***
	(0.15)	(0.065)	(0.074)	(0.068)
N	111	177	236	260

Panel B

	Men	Women	Men	Women
treatment				
0-40%	-0.19	0.89***	0.071	0.41
	(0.19)	(0.26)	(0.076)	(0.33)
40-60%	0.30	-0.0018	-0.11	-0.055
	(0.29)	(0.20)	(0.13)	(0.084)
60%	-2.94***	0.65*	-1.27*	0.020
	(0.53)	(0.34)	(0.67)	(0.27)
N	111	177	236	260

Note. The outcome variable is change in individual earnings. The treatment is separation.

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Similarly, no significant effect is found also for women who were previously in PACS. However, the negative sign may suggest a different pattern for these women. They may have a degree of household specialization similar to that of married women, but they cannot rely on any legal claim upon the dissolution of the couple. A high degree of specialization during the relationship may limit their labour market opportunities after the relationship ends. Similarly, no significant impact is found for men in any marital status.

Breakdowns by within-couple earnings inequality (Table 3.6 Panel B) show a significant increase in earnings for former cohabiting women who were lower earners and for those who were primary earners. No effects are found for women in marriage or registered partnerships. Former married men who were secondary earners within the couple experience a significant and sizeable drop in earnings after separation both in cohabitation and marriage. These may be due to mechanisms explained in section 6.2.

Table 3.6 Average treatment effects on earnings by pre-separation marital status

Panel A

	Unregistered partnership		Marriage		Registered partnership	
	Men	Women	Men	Women	Men	Women
treatment	-0.36	0.71***	-0.090	0.080	-0.28	-0.097
	(0.24)	(0.20)	(0.096)	(0.16)	(0.32)	(0.081)
Cons.	0.67***	0.30***	0.13*	0.27***	0.42	0.11
	(0.18)	(0.090)	(0.074)	(0.063)	(0.32)	(0.079)
N	77	110	241	290	29	37

Panel B

	Men	Women	Men	Women	Men	Women
treatment						
0-40%	-0.25	0.83***	0.071	0.40	0.038	-0.23
	(0.22)	(0.29)	(0.076)	(0.32)	(0.16)	(0.14)
40-60%	0.39	-0.034	-0.11	-0.056	0.18	0.048
	(0.31)	(0.25)	(0.13)	(0.084)	(0.11)	(0.14)
> 60%	-3.02***	0.66*	-1.13*	0.054		-0.00013
	(0.68)	(0.36)	(0.63)	(0.27)		(0.031)
N	77	110	241	290	29	37

3.6.4 Separation effects on earnings by socio-economic individual characteristics

The analysis of the effects of separation on earnings is integrated introducing a set of socio-economic characteristics. The results can be found in Appendix C.3.

The presence of children, and in particular their legal custody, impacts the extent of women's labour supply. In this analysis it is not possible to control for joint or sole custody of children, since the data do not contain any specific variable for legal custody. However, the information can be retrieved by the presence of children in the household and by the weights assigned to the equivalence factor of separated households. According to Table 3.1, 53% of separated individuals are in custody of children. Further breakdowns of the data suggest that 71% out of them are custodial mothers. Table 3.7 illustrates that separation positively and significantly impact only earnings of non-custodial mothers while custodial fathers experience a decrease. These results are consistent with the findings of Bonnet et al. (2022), who used French administrative data.

When accounting for within-couple earnings inequality, both custodial and non-custodial fathers who were secondary earners, experience a significant drop in earnings. This reduction could be due to a reduction in time spent in the labour market and a higher risk of unemployment for both groups, and to strategic behaviour for non-custodial fathers. However, the lower magnitude of the estimated coefficient for custodial fathers may suggest that they may tend to keep high level of commitment to the labour market compared to non-custodial fathers, but also that in-work benefits may play a role in reducing the magnitude of the loss.

Conversely, non-custodial mothers who were secondary earners within the couple increase their earnings, while custodial mothers do not differ from partnered counterparts. These results suggest that non-custodial mothers may face fewer constraints in joint the labour market or expanding their labour supply compared to custodial mothers, particularly if the latter have sole custody of children.

Table 3.8 show the impact on earnings controlling for repartnering. Women who do not repartner significantly increase their earnings in the aftermath of a separation, while men who

repartner experience a drop. This result is consistent with previous literature,[49] as repartnering may reduce the financial needs and restore the economies of scale for separated women. In a second specification the role of repartnering is analysed along with within-couple inequality in earnings (Table 3.8 Panel B). Men who were secondary earners have a significant and negative impact on earnings after separation, regardless of whether they repartner or not. The decrease is more pronounced for those without a new partner. Women who were in male breadwinner couples, instead, increase their earnings, regardless of whether they repartner. However, the impact is larger for those who repartner. Pre-separation inequality for women has a stronger impact than the effect of repartnering, while the latter may mitigate the extent of the loss in earnings for men.

The gendered impacts of separation have been also analysed while controlling for pre-separation age, education and work experience (Table 3.9 Panel A). The results indicate that younger separated women in the 20-28 and those in 49-58 cohorts experience a positive effect on earnings. The latter result could be attributed to a high level of work experience, which, however, is significant only for those with less experience in the market. Highly educated women show an increase in earnings after separation. This result is in line with previous empirical evidence that highlighted a positive relationship between higher education and earnings for separated women (Tamborini et al.,2015; van Damme et al.,2009). However, these works found also a positive and significant effect on earnings and employment rate of women with more work experience, while in this analysis the coefficients for women are positive but not significant.[50]

Age has instead a negative significant impact on earnings for separated men in several cohorts, as well as work experience for younger cohorts. A negative impact on earnings for men is found for those with lower levels of education.

Pre-separation quintile of household income and wealth do have an impact on earnings, although the results vary between men and women. For poorer households, the effect appears to be positive for women and negative for men, while for richer households, the effect is negative and not significant for women and strongly positive and significant for men. These results indicate a significant gendered effect on earnings, which is consistent with those found

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[49] Tamborini et al. (2015) finds systematic decrease in earnings for divorced women that remarriage. Bonnet et al. (2022) finds a similar null effects on probability of employment for repartnered mothers.

[50] I considered only linear effects of age and work experience on earnings.

by Bonnet et al. (2021).[51] Separation seem to have a positive impact on earnings for women regardless their relative position in the wealth distribution. However, the only significant effect is found for the second quintile. This may result from the fact that women at the bottom of the distribution (both in terms of household income and wealth) need to work to cope with losses due to separation, while women who were at the top of these distribution may have incentive to work or extend their working schedule to maintain previous living standards.[52] This result is similar to those of van Damme et al. (2009) who find that women who own income from capital or property income are more likely to enter the labour market; however, they attribute this result to the fact that women with high levels of non-labour income may not be eligible to receive social transfers as they are often mean-tested benefits.

3.7   Robustness checks

This section presents four different types of robustness checks to test the benchmark results in section 6. In next subsection the benchmark estimates will be run restricting the sample only to individuals continuously employed. Subsection 7.2 provides estimates of the impact of separation on individual earnings considering labour income that includes unemployment benefits. In subsection 7.3, estimates are tested for anticipatory behaviours and, finally subsection 7.4 presents the results of a placebo test using a fictional treatment.

3.7.1   Sample restriction to individuals continuously employed

The first robustness check replicates the estimates considering only individuals who were continuously employed. This subsample includes all the individuals who were and remained in the labour market during the transition from partnership to separation. Restricting the sample to continuously employed individuals exclude changes in labour supply at the extensive margin, i.e., excluding those who were previously inactive or unemployed and (re)enter and those who leave the labour market after separation thus concentrating on changes at the intensive margins of the labour supply. For continuously employed individuals in fact, a positive (negative) impact

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[51] However, this result differs from those of Bonnet et al. (2021) for the top tail of the income distribution, since they find a negative significant effect for women from the last quintile of the distribution and a positive but not significant effect for men in the same quintile.

[52] A similar argumentation can be found in van Damme et al. (2009).

on earnings could be due to extended (reduced) hours in paid work or to higher (lower) hourly wages. The first channel is also analysed below.

The results are presented in Tables 3.10, 3.11 and 3.12. The estimates are robust to sample restriction. However, the magnitude of the effects appears to be smaller compared to benchmark estimates. An exception is represented by the impact on women who were primary breadwinners when considering within-couple inequality in earnings, which becomes significant. The increase in earnings for these women confirms the positive impact of separation also for women who were continuously employed during the transition. Conversely for men, the impact of separation is negative although lower in magnitude.

Another exception is the effect of separation taking into account within-couple inequality in terms of hours worked (Table 3.10 Panel B). In this case, the impact for both men and women that were secondary earners became not significant. This suggests that the impact is partially driven by individuals who had larger differences in term of hours worked with their former partners, i.e., individuals who were in couples where one partner did not work or worked only few hours per week.

The impact of separation can be disentangled by examining changes at the intensive margin of the labour supply. Table 3.13 replicates the main effect by categorising individuals into three main groups: those who maintained their number of hours, those who increased their time in the labour market and those who reduced their hours. A significant and positive effect of separation on earnings is observed for women who do not change and those that increase their labour supply at the intensive margin. The magnitude of the effect is larger of the latter category. There is no significant effect for men in any category. However, few individuals changed their work schedule, particularly among men.

Table 3.10 Average treatment effects on earnings for continuously employed individuals.

Panel A. Average treatment effects by gender

	Men	Women
treatment	-0.028	0.29**
	(0.067)	(0.13)
Cons.	0.16***	0.20***
	(0.051)	(0.035)

Panel B. Average treatment effects by pre-separation within-couple inequality

	Earnings share			Hours' share	
	Men	Women		Men	Women
treatment					
0-40%	-0.023	0.54**	Male	-0.054	0.53
	(0.087)	(0.22)	breadwinning	(0.13)	(0.35)
40-60%	0.076	-0.055	Both part-time	0.22***	0.59
	(0.098)	(0.064)		(0.061)	(0.90)
> 60%	-0.64**	0.40*	Both full-time	-0.033	0.11
	(0.31)	(0.23)		(0.064)	(0.14)
			Female	-0.14	0.57**
			breadwinning	(0.24)	(0.25)
N	311	371		311	371

Note. The outcome variable is change of individual earnings. The treatment is separation. Sample includes only individuals continuously employed. Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3.11 Average treatment effects on earnings for continuously employed individuals by pre-separation marital property regime

Panel A

	Separation Regime		Community Regime	
	Men	Women	Men	Women
treatment	-0.16	0.41**	0.042	0.18
	(0.14)	(0.20)	(0.051)	(0.16)
Cons.	0.32***	0.24***	0.070	0.17***
	(0.11)	(0.064)	(0.043)	(0.035)
N	102	145	209	226

Panel B

	Men	Women	Men	Women
treatment				
0-40%	-0.15	0.57**	0.032	0.44
	(0.20)	(0.23)	(0.070)	(0.42)
40-60%	0.059	-0.18	0.082	0.041
	(0.18)	(0.12)	(0.080)	(0.032)
60%	-1.78***	0.65*	-0.19**	0.18
	(0.43)	(0.34)	(0.075)	(0.25)
N	102	145	209	226

Note. The outcome variable is change of individual earnings. The treatment is separation. Sample includes only individuals continuously employed. Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3.12 Average treatment effects on earnings for continuously employed individuals by pre-separation marital status

Panel A

	Unregistered partnership		Marriage		Registered partnership	
	Men	Women	Men	Women	Men	Women
treatment	-0.27	0.42**	0.044	0.17	0.14	-0.043
	(0.17)	(0.21)	(0.050)	(0.16)	(0.095)	(0.063)
Cons.	0.43***	0.31***	0.068	0.18***	-0.0032	0.043
	(0.13)	(0.090)	(0.043)	(0.035)	(0.082)	(0.062)

| N | 70 | 85 | 214 | 252 | 27 | 34 |

Panel B

	Men	Women	Men	Women	Men	Women
treatment						
0-40%	-0.22	0.46*	0.032	0.41	0.038	-0.058
	(0.23)	(0.27)	(0.070)	(0.41)	(0.16)	(0.062)
40-60%	0.056	-0.25	0.082	0.032	0.18	0.048
	(0.24)	(0.16)	(0.080)	(0.032)	(0.11)	(0.13)
> 60%	-2.06***	0.63*	-0.10	0.22		
	(0.55)	(0.35)	(0.085)	(0.25)		
N	70	85	214	252	27	34

Note. The outcome variable is change in individual earnings. The treatment is separation. Sample includes only continuously employed individuals. Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

3.7.2 Earnings considering unemployment benefits

This section presents a robustness check that tests the sensitivity of the benchmark estimates to the inclusion of unemployment benefits in the calculation of labour income.[53] This implied a change in the outcome variable and in all the variables concerning earnings, including the computation of the propensity score. The results of this matching procedure can be found in Appendix C.4, Table 3.14.

The results show that the impact of separation on women's earnings (Table 3.15 Panel A) remains robust even when accounting for income from unemployment, although the magnitude of the effect is smaller. Similarly, the results regarding within-couple earnings inequality (Table 3.15 Panel B) are also robust and smaller in magnitude. Considering hours inequality (Panel B) all the effects remain robust except for the impact for women who were primary breadwinners that becomes not significant. Moreover, the effects appear to be robust when considering both marital property regime and marital status (Panels D and E). However, the impacts are larger compared to those in the benchmark estimates for women who were in male breadwinner couples. Similarly, the impact for men in female breadwinner couple is no longer significant

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[53] In Bonnet et al. (2021), they include unemployment benefits in the calculation of individual earnings.

while men in dual earner couples show a positive impact of separation on their earnings. A negative significant impact is instead found for men who were in PACS.

Table 3.15 Average treatment effects on earnings by gender and pre-separation within-couple inequality: labour earnings including unemployment benefits.

Panel A

	Men	Women
treatment	-0.066	0.24[*]
	(0.10)	(0.14)
Cons.	0.18[***]	0.19[***]
	(0.061)	(0.037)
N	389	427

Panel B

	Earnings share			Hours' share	
	Men	Women		Men	Women
treatment					
0-40%	0.083	0.60[*]	Male	0.20	0.89[**]
	(0.074)	(0.32)	breadwinning	(0.13)	(0.39)
40-60%	0.13	-0.025	Both part-time	0.45[**]	0.15
	(0.17)	(0.079)		(0.20)	(0.66)
> 60%	-1.10[**]	0.23	Both full-time	-0.037	-0.052
	(0.43)	(0.18)		(0.054)	(0.13)
			Female		
			breadwinning	-1.32[***]	0.26
				(0.44)	(0.22)
N	389	427		366	405

Note. The outcome variable is change in individual earnings. Earnings includes individual labour income from employment, self-employment and unemployment. The treatment is separation.

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. [*] $p < 0.10$, [**] $p < 0.05$, [***] $p < 0.01$.

Table 3.16 Average treatment effect on earnings by pre-separation marital property regime: labour earnings including unemployment benefits

Panel A

	Separation Regime		Community Regime	
	Men	Women	Men	Women
treatment	0.014	0.52***	-0.14	-0.12
	(0.17)	(0.19)	(0.10)	(0.14)
Cons.	0.28**	0.19***	0.10	0.19***
	(0.11)	(0.063)	(0.066)	(0.041)
N	142	178	247	249

Panel B

	Men	Women	Men	Women
treatment				
0-40%	-0.020	1.17***	0.14	-0.099
	(0.084)	(0.34)	(0.100)	(0.40)
40-60%	0.55*	0.049	-0.12	-0.14
	(0.33)	(0.12)	(0.10)	(0.096)
60%	-0.56	0.51*	-1.16***	-0.090
	(0.46)	(0.27)	(0.41)	(0.13)
N	142	178	247	249

Note. The outcome variable is change in individual earnings. Earnings includes individual labour income from employment, self-employment and unemployment. The treatment is separation.

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3.17 Average treatment effect on earnings by pre-separation marital status: labour earnings including unemployment benefits

Panel A

	Unregistered partnership		Marriage		Registered partnership	
	Men	Women	Men	Women	Men	Women
treatment	-0.020	0.55**	-0.14	-0.12	-0.0013	0.041
	(0.23)	(0.21)	(0.10)	(0.14)	(0.060)	(0.10)
Cons.	0.35**	0.26***	0.10	0.19***	0.14***	0.022
	(0.16)	(0.082)	(0.065)	(0.040)	(0.037)	(0.092)
N	94	119	252	274	43	34

Panel B

	Men	Women	Men	Women	Men	Women
treatment						
0-40%	-0.011	1.11***	0.14	-0.11	-0.12***	-0.16
	(0.096)	(0.36)	(0.100)	(0.39)	(0.028)	(0.19)
40-60%	0.92**	-0.0070	-0.13	-0.14	0.063	0.16
	(0.41)	(0.17)	(0.10)	(0.096)	(0.055)	(0.13)
> 60%	-0.86	0.50*	-1.13***	-0.069		0.081
	(0.55)	(0.27)	(0.40)	(0.13)		(0.051)
N	94	119	252	274	43	34

Note. The outcome variable is change in individual earnings. Earnings includes individual labour income from employment, self-employment and unemployment. The treatment is separation.

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3.13 Average treatment effects on earnings for continuously employed individuals by changes of number of weekly hours worked.

	No change in hours		Hours increase		Hours decrease	
	Men	Women	Men	Women	Men	Women
treatment	-0.045	0.24[*]	-0.034	0.70[**]	0.14	-0.10
	(0.069)	(0.14)	(0.28)	(0.32)	(0.19)	(0.070)
Cons	0.16[***]	0.19[***]	0.33	0.23[**]	0.16	0.22[***]
	(0.053)	(0.045)	(0.21)	(0.088)	(0.19)	(0.067)
N	297	279	9	43	5	49

Note. The outcome variable is change of individual earnings. The treatment is separation. Sample includes only individuals continuously employed. Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses. [*] $p < 0.10$, [**] $p < 0.05$, [***] $p < 0.01$.

3.7.3 Anticipatory behaviour

In this section, the possible presence of anticipatory behaviours related to changes in employment is tested. Anticipatory behaviours refer to all the changes that individuals may put in place to modify their labour supply in anticipation of the separation before it takes place. The average treatment effect can be biased by the presence of anticipatory behaviours (Bonnet et al., 2021). To perform this robustness check, I used information on the number of years an individual spent in the same job, since the data do not report own earnings for the years preceding the dissolution (Tamborini et al., 2015; Bonnet et al., 2021; Vignoli et al., 2018). Therefore, I restrict the sample to individuals who have not changed their main job up to three years before the baseline observation at t-1. The results for the average treatment effect remain robust across all specifications, albeit slightly smaller in magnitude (Table 3.18 Panel A, Appendix C.5). When considering within-couple inequality in earnings and hours, the impacts are robust and often larger in magnitude for women (Table 3.18 Panel B). Similarly, the results for both marital property regime and marital status, which are presented for 3 years prior to the baseline observation in Table 3.19 (Appendix C.5), are also robust.

3.7.4 Placebo test: construction of a fictional treatment

As a final robustness check, I ran placebo test by means of a randomly assigned treatment. The treatment was designed to replicate the actual proportions of control and treated subsamples in the study, with treatment imposed on a quartile of the sample. The original sample consisted of 685 control and 160 treated individuals, with a total sample size of 845. With the fictional treatment, the sample consisted of 634 control and 211 treated individuals.

The purpose of this exercise is to ensure that the treatment, namely separation, underlies the average treatment effect on treated, namely the differences in earnings between those who remain in a partnership and those who are separate. I expect to find any significant effect relative to the randomly assigned treatment.

With the exception of a few coefficients that are significant in the same category but with opposite signs to the benchmark effects, the results (Tables 3.20-22 in Appendix C.6) indicate that none of the coefficients in the benchmark are significant for the fictional treatment. Changing the chosen quartile does not change the results of the placebo test.

Additionally, I repeated the estimates by restricting the sample to control individuals[54], but , again, no significant effect emerged where it was expected.

3.8 Discussion and conclusions

This chapter analysed the effects of separation on individual earnings in France using data from the longitudinal component of the Household Finance and Consumption Survey (HFCS) conducted by the European Central Bank (ECB) in 2014 and 2017.

The main aim of the chapter was ascertaining the presence of heterogeneous effects by gender driven by pre-separation intrahousehold inequality in terms of earnings and hours spent in the labour market. Additionally, the chapter aimed to analyse how the impact of separation varies for different institutional characteristics, namely marital property regime and partnership legal setting, established by the French law. Therefore, it analysed the institutional framework in relation to pre-separation intrahousehold inequality in earning between former partners.

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[54] Bonnet et al. (2022) and Brüggmann and Kreyenfeld (2023) have also employed similar exercises of 'intention-to-threat'.

France provides an ideal institutional framework for this analysis since different marital statuses are subject to different marital property regimes by the law. Moreover, HFCS data for France in the second wave offers the unique possibility in the survey to observe the property regime chosen by the couple.

The descriptive analysis indicated that, on average, separated individuals increased their earnings in post-treatment period, experienced an increase in hours worked and a decrease in unemployment benefits. Women with lower levels of earnings and fewer hours worked before the dissolution often increased their earnings following separation. This finding was also valid for women who were the primary earners in their previous partnership.

The estimates yielded by the PSM-DID econometric strategy largely confirmed these results. The impact of separation varied by gender. Women experienced a positive impact on their earnings while the impact for men was not statistically significant. The positive effect on earnings differed across gender particularly by the pre-separation degree of household specialization, considered both in terms of differentials in earnings and hours worked. The results highlighted that separation had the stronger impact on the earnings of the secondary earner in the former couple, regardless of gender. Nevertheless, the direction of the impact was opposite: positive for women and negative for men who separated. This may be due to different labour market incentives facing separated men and women. Women, particularly when they were secondary earners within the former couple, have strong incentives to counter the negative shock due to the dissolution through the market, especially in absence of redistribution or compensation mechanisms. Conversely, men who had high commitment do not need to increase and may even reduce the time spent in the labour market since the separation eases the pressure to be a breadwinner. This does not hold for men who were secondary earners who may not be able to cope with the negative shock of separation, leading to reduced commitment or to experience a higher risk of unemployment, as highlighted by Bonnet et al. (2021).

Marital property regime and marital status played a role in shaping the impact of separation on labour market individual behaviour of women. Women in couples who opted for separation of property exhibited a significant increase in earnings, in contrast with those who were in couples who opted for community of property. Considering pre-separation marital status highlight that this result may be driven by women who were in cohabitations before the dissolution, since the default property regime for cohabitations in France is separation of property. However, the impact for women in PACS, which are subject to the same regime under the law, showed a

negative coefficient although it was not statistically significant. Intersecting marital regime and marital status with intrahousehold inequality in earnings confirmed that the positive effect of separation concerned both women who were primary and secondary earners under the separation regime. These results support the collective household models' perspective on the effect of marital property and family law on women's labour supply. This implies that the institutional setting may influence women's labour market decisions not only during the relationship but also after separation.

The analysis of the impact of separation in France also highlighted the existence of a motherhood penalty for separated mothers who, differently from non-custodial mothers, did not experience, an increase in earnings following the separation. This confirmed previous literature findings that suggested that mothers may face more barriers when trying to cope with the dissolution through market mechanisms. Policies aimed at reconciling work and family time could help to close the gap between women without children and mothers. Moreover, the implementation of shared custody between separated parents could also be beneficial, as suggested by Bonnet et al. (2022)

The results were confirmed by several robustness checks. In particular, restricting the sample to continuously employed individuals, the analysis revealed that for employed women the positive impact of separation became significant also for women who were primary breadwinner in the former couple. Moreover, the positive impact was larger for women who increased their working hours in the labour market.

The main limitation of the study was the small sample size on account of sample attrition issue in panel survey data for separated and divorcee. To maintain proper sample size for the estimates, many breakdowns in the data had to be prevented. Future research should focus on using a combination of administrative and survey data to enable more complete and in-depth analysis.

The analysis therefore suggests overall opposite trajectories of earnings for men and women, with a positive impact of separation for women. However, it is important underlining that even when women (re) enter or expand their participation in the labour market, the constraints they face within the market do not allow them to fully outweigh the negative consequences of the dissolution. The existence of gender gap in earnings and wages, as well as reduced hours in paid work often due to motherhood may hamper their earning capacity in the short as well in

the long run. This could explain the separation penalty they face in economic well-being in the aftermath of separation.

Separated women, particularly mothers, still belong to the most economically vulnerable groups in society. Whatever policy responses may be given to this vulnerability, they should ensure consistency with the goal of sustaining and possibly increasing women's labour market participation along the entire life cycle. This means addressing those market distortions and societal mechanisms that contribute to the gender gaps in wages and in overall earnings. Affordable and accessible childcare as well as shared parental leaves are examples of policies that unambiguously go in this direction. Monetary transfers in the guise of social benefits have more ambiguous effects and should therefore be designed to support women's economic wellbeing without reducing their labour market attachment, e.g. by combating "in-work poverty".

Furthermore, divorce and marital property laws as well as taxation rules ought to (re)consider in a life cycle perspective the risk of flip-side effects on the economic wellbeing of individuals. Special attention should be given to possible distortive effects on labour market preferences within the couple that may favour unequal allocation of resources between partners through direct and indirect channels.

The disadvantage that women tend to experience over the life cycle is the cumulative result of disparities occurring at single life stages. This is why inequality in endowments should be prevented at all stages in life, including before and after couple's dissolution.

Appendix C

C.1 Univariate descriptive results
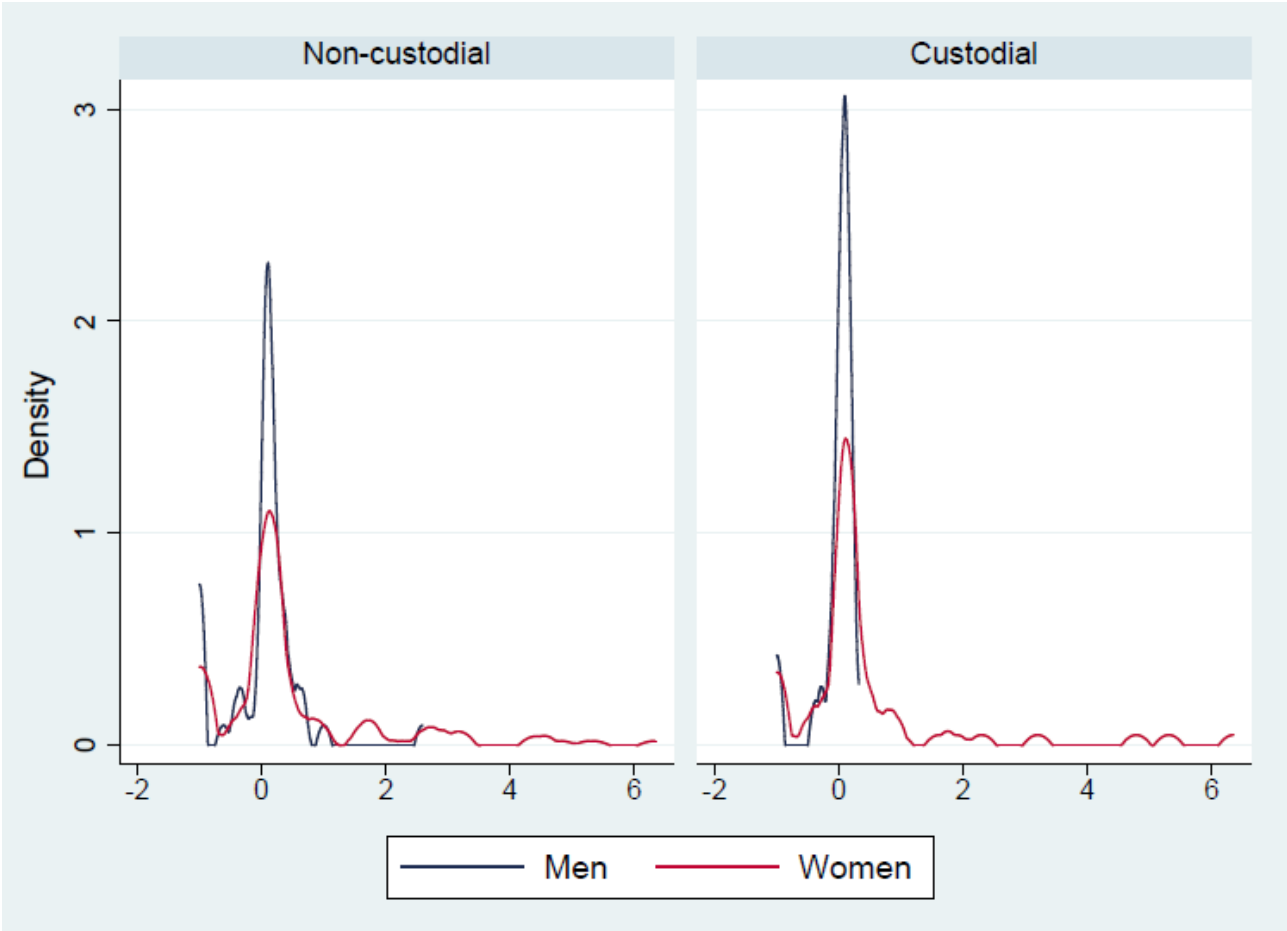
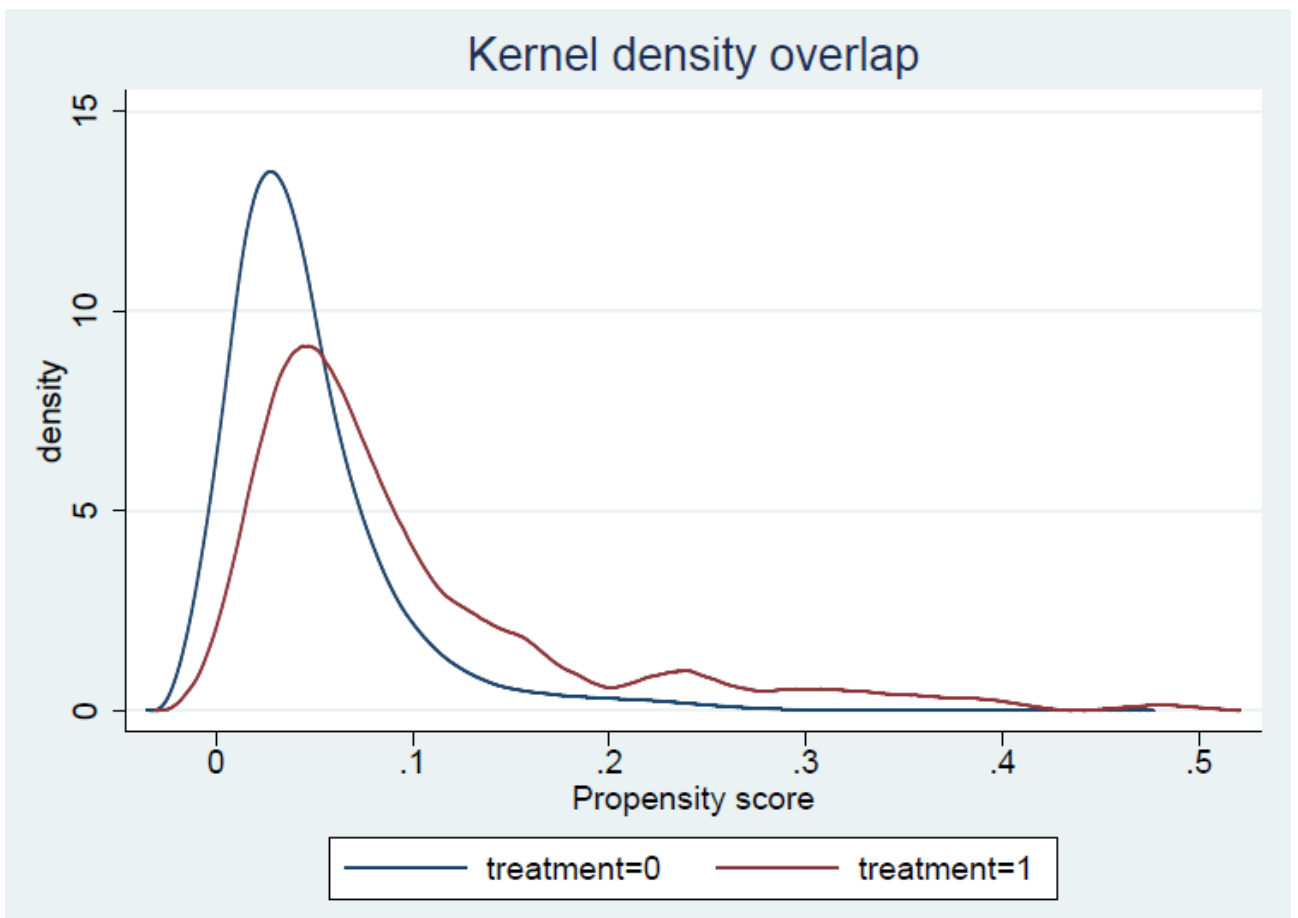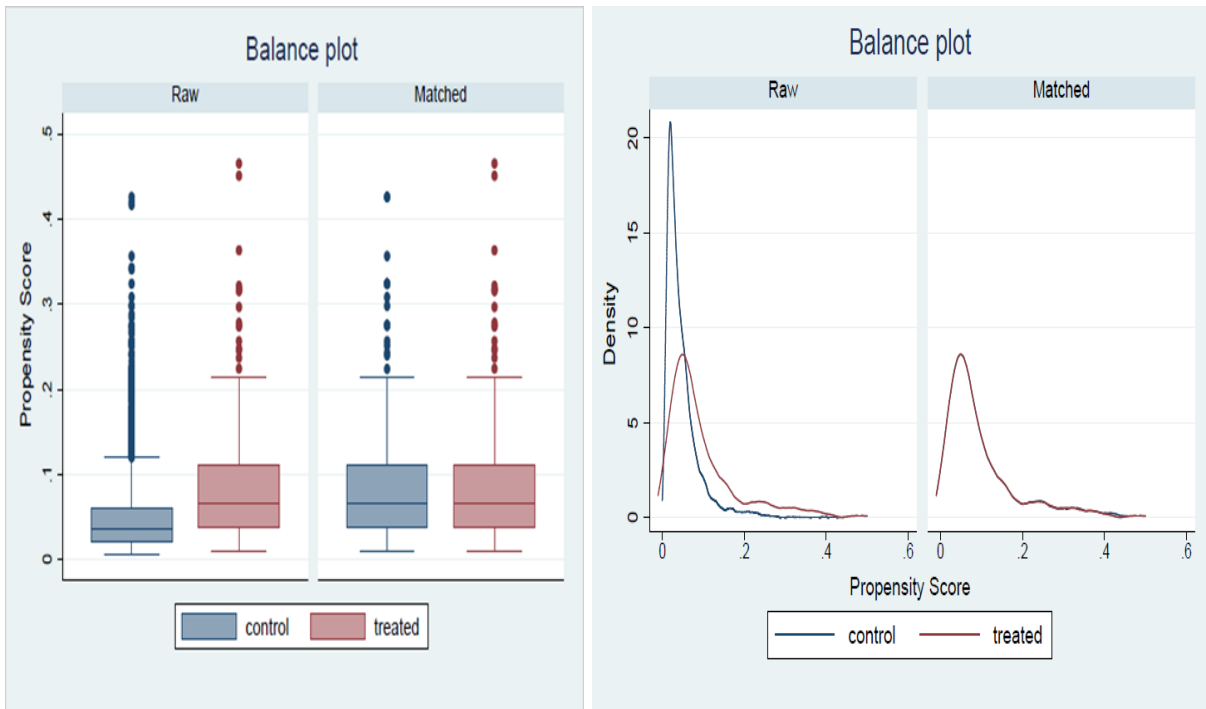**Figure 3.3** Changes in individual earnings between pre and post separation period by gender and custody of children. Blue kernel densities refer to men while red kernel densities refer to women. The panel on the left shows changes in earning for non-custodial parents while panel on the right for custodial parents. The figure displays distributions top coded at 99%. Data from HFCS for 2014 and 2017 waves. Own elaboration.

C.2 Matching procedure

Table 3.2 Means and standard deviations of covariates at the baseline after matching.

	Control sample	Treated sample	Standardized differences in means
Age	40.96	39.93	-.0510101
	(9.14)	(10.19)	
Gender	1.55	1.55	-.0376557
	(0.50)	(0.50)	
# of children	1.31	1.23	.0061886
	(1.03)	(1.01)	
Household with children	0.71	0.69	.0267429
	(0.45)	(0.46)	
Marital Status	1.87	1.75	.0746608
	(0.53)	(0.59)	
Education	2.41	2.41	-.0775219
	(0.67)	(0.66)	
Employment status	1.17	1.21	-.0450916
	(0.50)	(0.53)	
Migration background	0.12	0.09	.0217045
	(0.32)	(0.29)	
Earnings	24952.23	23339.77	-.0152742
	(31482.56)	(21023.19)	
Household income	27412.39	25804.60	-.1256444
	(23082.95)	(15704.79)	
Net household wealth	282476.82	188488.26	-.0870637
	(597126.2)	(192938.85)	
Inheritance & gifts	0.41	0.39	-.0507599
	(0.49)	(0.49)	
Homeownership	1.24	1.29	.0414424
	(0.43)	(0.46)	
Regime	1.65	1.58	.0377817
	(0.48)	(0.49)	
Earnings share	0.42	0.41	.0240092
	(0.24)	(0.26)	
N	685	160	

Figure 3.4 Balance and overlapping of propensity score for baseline covariates.

C.3 Additional results

Table 3.7 Average treatment effects on earnings by custody of children

Panel A

	Men	Women
treatment		
Non-custodial	-0.35	0.82***
	(0.22)	(0.25)
Custodial	-0.17*	0.17
	(0.088)	(0.14)
N	347	437

Panel B

	Custodial parent		Non-custodial parent	
	Men	Women	Men	Women
treatment				
0-40%	-0.073	0.35	-0.039	1.57***
	(0.091)	(0.23)	(0.14)	(0.36)
40-60%	0.024	-0.029	-0.029	-0.072
	(0.077)	(0.047)	(0.31)	(0.33)
60%	-1.42***	0.18	-2.15***	0.51
	(0.49)	(0.24)	(0.75)	(0.40)
N	241	336	106	101

Note. Outcome variable is change in individual earnings. Treatment is separation.

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3.8 Average treatment effects on earnings by repartnering

Panel A. Average treatment effect by repartnering

	Men	Women
treatment		
Non-repartnered	-0.14	0.42***
	(0.13)	(0.16)
Repartnered		
	-0.20**	0.32
	(0.091)	(0.27)
N	347	437

Panel B. Average treatment effects by pre-separation share of earnings

	Non-repartnered		Repartnered	
	Men	Women	Men	Women
treatment				
0-40%	0.0065	0.69***	-0.052	1.09**
	(0.098)	(0.23)	(0.10)	(0.53)
40-60%	0.090	-0.0090	0.019	-0.074
	(0.23)	(0.13)	(0.096)	(0.064)
60%	-1.87***	0.38	-1.66***	0.0030
	(0.47)	(0.27)	(0.42)	(0.066)
N	347	437	347	437

Note. Outcome variable is change in individual earnings. Treatment is separation.

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3.9 Average treatment effects on earnings by socio-demographic characteristics

Panel A. Average treatment effects by pre-separation age, education and work experience

	Age			Education			Work experience	
	Men	Women		Men	Women		Men	Women
20-28	-0.15	0.92***	Low	-0.91**	0.27	< 5	-0.017	0.70**
	(0.30)	(0.25)		(0.41)	(0.34)		(0.32)	(0.29)
29-38	-0.30*	0.061	Upper	-0.16	-0.0004	5-9	-0.66**	0.056
	(0.17)	(0.17)		(0.11)	(0.16)		(0.30)	(0.54)
39-48	-0.28*	0.21	High	0.046	0.78***	10-19	-0.20	0.24
	(0.15)	(0.22)		(0.16)	(0.22)		(0.15)	(0.18)
49-58	0.12	0.43*				20-29	-0.29	0.10
	(0.11)	(0.26)					(0.18)	(0.093)
59-64	-0.60***	-0.34				>= 30	-0.048	0.61
	(0.066)	(0.46)					(0.11)	(0.50)
N	347	437		347	437		347	437

Panel B. Average treatment effects by pre-separation household income and wealth

	Household Income			Household Wealth	
	Men	Women		Men	Women
Q1	-0.33	0.59**		-0.34	0.36
	(0.26)	(0.25)		(0.33)	(0.25)
Q2	-0.29**	0.12		-0.21	0.86**
	(0.14)	(0.15)		(0.18)	(0.43)
Q3	0.13	0.31		-0.022	0.20
	(0.091)	(0.28)		(0.093)	(0.26)
Q4	0.11	-0.056		-0.15*	-0.054
	(0.068)	(0.060)		(0.082)	(0.085)
Q5	0.13**	0.011		0.15	0.29
	(0.057)	(0.23)		(0.22)	(0.47)
N	347	437		347	437

Note. Outcome variable is change in individual earnings. Treatment is separation.

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

C.4 Matching results for labour income including unemployment benefits

Table 3.14 Means and standard deviations of covariates at the baseline after matching.

	Control sample	Treated sample	Standardized differences in means
Age	41.94	40.57	.011228
	(9.69)	(10.51)	
Gender	1.52	1.55	.0828111
	(0.50)	(0.50)	
# of children	1.24	1.20	.0059374
	(1.01)	(1.00)	
Household with children	0.70	0.68	-.0511469
	(0.46)	(0.47)	
Marital Status	1.85	1.76	.0694772
	(0.56)	(0.61)	
Education	2.36	2.38	.0348499
	(0.67)	(0.67)	
Employment status	1.22	1.26	.0620494
	(0.57)	(0.57)	
Migration background	0.08	0.09	.0428165
	(0.27)	(0.29)	
Earnings	24745.44	23791.52	-.0291417
	(25168.32)	(20370.35)	
Household income	27976.89	25697.54	.0724236
	(23909.05)	(15640.24)	
Net household wealth	307930.05	216491.12	.0042624
	(761846.29)	(418558.03)	
Inheritance & gifts	0.40	0.38	.0722324
	(0.49)	(0.49)	
Homeownership	1.26	1.31	.078074
	(0.44)	(0.46)	
Regime	1.62	1.56	-.0119007
	(0.49)	(0.50)	
Earnings share	0.44	0.43	.0077013
	(0.24)	(0.24)	
N	697	169	

C.5 Anticipatory behaviours

Table 3.18 Average treatment effects on earnings by gender and pre-separation within-couple inequality: anticipatory behaviours

Panel A. Average treatment effects by gender

	1 year before		2 years before		3 years before	
	Men	Women	Men	Women	Men	Women
treatment	-0.12	0.32**	-0.086	0.33**	-0.12	0.33*
	(0.11)	(0.14)	(0.11)	(0.16)	(0.13)	(0.18)
Cons	0.27***	0.24***	0.28***	0.25***	0.30***	0.25***
	(0.077)	(0.046)	(0.084)	(0.049)	(0.091)	(0.052)
N	338	424	312	394	286	366

Panel B. Average treatment effects by pre-separation within-couple inequality in earnings

	1 year before		2 years before		3 years before	
	Men	Women	Men	Women	Men	Women
treatment						
0-40%	0.0024	0.73***	0.0051	0.89***	-0.046	0.95***
	(0.084)	(0.25)	(0.087)	(0.30)	(0.099)	(0.34)
40-60%	0.15	0.029	0.26	0.040	0.25	0.038
	(0.18)	(0.091)	(0.16)	(0.097)	(0.18)	(0.10)
> 60%	-1.64***	0.11	-1.71***	0.12	-1.72***	0.12
	(0.43)	(0.19)	(0.46)	(0.19)	(0.46)	(0.20)
N	338	424	312	394	286	366

Panel C. Average treatment effects by pre-separation within-couple inequality in hours

	1 year before		2 years before		3 years before	
	Men	Women	Men	Women	Men	Women
treatment						
Male breadwinning	-0.067	1.02***	-0.052	1.15***	-0.11	1.16***
	(0.13)	(0.39)	(0.14)	(0.40)	(0.16)	(0.41)
Both part-time	-0.18	0.26	-0.18	0.26		0.24
	(0.45)	(0.57)	(0.45)	(0.57)		(0.59)
Both full-time	0.021	0.13	0.036	0.063	0.035	0.074
	(0.046)	(0.13)	(0.048)	(0.15)	(0.048)	(0.16)
Female	-1.60**	0.32	-1.32*	0.32	-1.32*	0.17

breadwinning	(0.72)	(0.21)	(0.73)	(0.21)	(0.73)	(0.22)
N	328	414	302	384	276	356

Note. The outcome variable is change in individual earnings. The treatment is separation.

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses.

$^{*}\,p < 0.10,\,^{**}\,p < 0.05,\,^{***}\,p < 0.01$.

Table 3.19 Average treatment effects on earnings by pre-separation marital property regime and marital status: anticipatory behaviours

Panel A: Marital property regime

	Separation Regime		Community Regime	
	Men	Women	Men	Women
treatment	-0.37	0.63**	-0.046	0.088
	(0.27)	(0.30)	(0.092)	(0.19)
Cons.	0.61***	0.24***	0.15*	0.27***
	(0.21)	(0.065)	(0.083)	(0.077)
N	82	141	204	225

Panel B: Marital status

	Unregistered partnership		Marriage		Registered partnership	
	Men	Women	Men	Women	Men	Women
treatment	-0.40	0.76**	-0.044	0.089	-0.36	-0.21***
	(0.33)	(0.32)	(0.091)	(0.19)	(0.39)	(0.065)
Cons.	0.67***	0.24**	0.15*	0.26***	0.52	0.21***
	(0.25)	(0.095)	(0.082)	(0.070)	(0.39)	(0.063)
N	55	86	208	249	23	31

Note. The outcome variable is change in individual earnings. The treatment is separation.

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses.

$^{*}\,p < 0.10,\,^{**}\,p < 0.05,\,^{***}\,p < 0.01$.

C.6 Placebo test results

Table 3.20 Average treatment effects on earnings by gender and pre-separation within-couple inequality: randomly assigned treatment

Panel A. Average treatment effects by gender

	Men	Women
treatment	0.25	0.031
	(0.22)	(0.11)
Cons.	0.22***	0.33***
	(0.060)	(0.054)
N	347	437

Panel B. Average treatment effects by pre-separation within-couple inequality

	Earnings share			Hours' share	
	Men	Women		Men	Women
treatment					
0-40%	0.0013	0.19	Male	-0.17	0.13
	(0.14)	(0.20)	breadwinning	(0.23)	(0.31)
40-60%	-0.12	-0.011	Both part-time	0.40	-0.42
	(0.15)	(0.066)		(0.62)	(0.30)
> 60%	1.39*	-0.26*	Both full-time	0.19	-0.033
	(0.84)	(0.14)		(0.15)	(0.073)
			Female	0.41	0.10
			breadwinning	(1.35)	(0.22)
N	347	437		337	427

Note. The outcome variable is change in individual earnings. The treatment is randomly assigned.

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3.21 Average treatment effects on earnings by pre-separation marital property regime: randomly assigned treatment

Panel A

	Separation Regime		Community Regime	
	Men	Women	Men	Women
treatment	0.25	0.12	0.23	-0.083
	(0.38)	(0.19)	(0.25)	(0.095)
Cons.	0.47***	0.37***	0.069	0.30***
	(0.12)	(0.074)	(0.042)	(0.078)
N	111	177	236	260

Panel B

	Men	Women	Men	Women
treatment				
0-40%	-0.11	0.41	0.060	-0.17
	(0.16)	(0.27)	(0.17)	(0.21)
40-60%	-0.25	-0.081	-0.050	0.048
	(0.25)	(0.13)	(0.14)	(0.046)
60%	0.42	-0.45*	2.92***	-0.082
	(1.10)	(0.23)	(0.53)	(0.12)
N	111	177	236	260

Note. The outcome variable is change in individual earnings. The treatment is randomly assigned.

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses.

$^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 3.22 Average treatment effects on earnings by pre-separation marital status: randomly assigned treatment

Panel A

	Unregistered partnership		Marriage		Registered partnership	
	Men	Women	Men	Women	Men	Women
treatment	0.43	0.084	0.23	-0.060	-0.62	-0.11
	(0.44)	(0.23)	(0.25)	(0.091)	(0.41)	(0.10)
Cons.	0.48***	0.47***	0.069	0.30***	0.46	0.12
	(0.14)	(0.095)	(0.042)	(0.073)	(0.30)	(0.085)

N	77	110	241	290	29	37

Panel B

treatment	Men	Women	Men	Women	Men	Women
0-40%	-0.16	0.32	0.060	-0.11	-0.048	-0.62***
	(0.18)	(0.31)	(0.17)	(0.20)	(0.13)	(0.16)
40-60%	-0.20	-0.21	-0.050	0.045	-0.30	0.16
	(0.31)	(0.17)	(0.14)	(0.043)	(0.31)	(0.12)
> 60%	0.81	-0.57**	2.43***	-0.055		-0.062
	(1.31)	(0.27)	(0.92)	(0.13)		(0.040)
N	77	110	241	290	29	37

Note. The outcome variable is change in individual earnings. The treatment is randomly assigned.

Source: HFCS data (II and III wave). Robust and clustered at the individual level standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

C.7 Descriptive statistics for women by pre-separation earnings share

Table 3.23 Descriptive statistics for women by earnings share, marital property regime and marital status

Panel A. Earnings share and marital property regime.

	Separation regime	Community regime	*N*
0- 40%	261	709	970
40-60%	175	394	569
> 60%	106	311	417
N	542	1414	1956

Panel B. Earnings share and marital status.

	Unregistered partnerships	Marriage	Registered partnerships	*N*
0- 40%	111	798	61	970
40-60%	70	425	74	569
> 60%	58	333	26	417
N	239	1556	161	1956

Note. Unweighted descriptive statistics for women by marital property regime (Panel A) and marital status (Panel B). Earnings share is calculated when at least one of the partners is on the labour market. Source: HFCS data of second wave (2014). Own calculations.

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