Topics in Applied Labour Economics

Filippos Maraziotis

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Declaration of Authorship

I, Filippos Maraziotis, declare that this thesis entitled "Topics in Applied Labour Economics" is a presentation of my own original work. This work has not previously been presented for an award at this, or any other, University. All sources are acknowledged as references.

Chapter 1 is a single-author paper. An earlier version of this paper was presented in 2021 at the HILDA Survey User Virtual Colloquium, the Western Economic Association International Conference, the Australian Gender Economics Workshop, and the Research Students Workshop in York; and in 2022 at the 24th Applied Economics Meeting in Palma and the Annual Meeting of the Society of Economics of the Household in London.

Chapter 2 is a single-author paper. An earlier version of this paper was presented in 2021 at the Annual Meeting of the Society of Economics of the Household, the Workshop on Labour and Family Economics in York, the Workshop on Gender and the Labour Market in Trier, the Young Economists' Meeting in Brno, and the Asian and Australasian Labour Economics Conference; and in 2022 at the Annual Conference of the Royal Economic Society.

Chapter 3 is a single-author paper.

"Inequality is expensive for two reasons,
one connected with justice and one with efficiency."

Jean Tirole,
Economics for the Common Good, p.160

Abstract

This thesis contributes to applied labour economics, spanning gender and spousal partnership. The first chapter shows that partnered women who work more hours than their spouse report lower life satisfaction. The data, collected from a sample of Australian women, suggest that this decrease in well-being is primarily interpreted as women's non-compliance with traditional gender roles. This effect is more prevalent among women with less education, older women, and women living in regions with more traditional values. However, a decomposition analysis reveals that the impact of these well-being losses on female labour supply is minor and only plays a supplementary role in explaining the slow convergence of gender in the labour market. The second chapter investigates the wage dynamics of partners with similar careers by analysing a sample of Australian couples using a quasi-experimental design. The findings suggest that women experience significant positive wage effects when they have an occupational association with their partner, while men do not see significant effects. These positive wage effects are particularly pronounced among women who work part-time while their partner works full-time and among women whose partner switches into their occupation. These effects are also stronger for partners with a university degree, and partners' wages increase progressively with the number of years they remain work-related. The third chapter examines the effect of flexible working time arrangements on the gender gap in working hours among women using data from the German Socio-Economic Panel (SOEP). The study finds that flexibility has a positive impact on reducing the gender gap in hours worked among women who choose flexible contracts, especially among full-time working women and women after childbirth. These results indicate that flexibility allows women to better balance work and family responsibilities during periods of increased family duties and highlights the importance of flexible working time arrangements in promoting gender equality in employment.

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To my parents . . .

Introduction

There is a strong body of research in economics and sociology highlighting the continued need to address gender inequalities in the labour market. Despite significant progress in closing the gap between men and women in employment outcomes, significant disparities still exist in terms of labour force participation, working hours, occupations, and earnings. A comprehensive analysis of the factors contributing to these inequalities is necessary to fully understand and address this important social and economic issue.

The seminal paper by Claudia Goldin (2014) highlights the outstanding progress in the convergence of men's and women's roles over the last century. Women's labour force participation and educational attainment have increased remarkably, and, in some societies, women are now on average better educated than men. Moreover, women show a greater willingness to reconcile family life and professional career, while more and more women are obtaining leadership positions. Despite gender convergence in the labour market, remaining gender gaps in wages, employment levels, and the tasks men and women perform in their jobs appear remarkably persistent (Olivetti and Petrongolo, 2016).

Past literature on gender differences in the labour market, summarised in Altonji and Blank (1999), has mainly emphasised differences between men and women in the accumulation of human capital and discrimination as the two main sources of gender differences in wages, working hours, and occupational choices. However, differences in years of education and accumulated labour market experience have narrowed and legislation is addressing direct discrimination. Therefore, more recently, new factors are being identified as determinants of the remaining gender inequalities in the labour market.

A new and growing strand of work on women's labour force participation has highlighted the key role of social norms and gender identity for women's employment decisions. The seminal work of Bertrand, Pan, and Kamenica (2015) finds that gender identity, expressed as a reluctance for the wife to earn more than the husband, negatively affects the wife's labour force participation and earnings. Their findings, which are consistent with those of Alesina et al. (2013), suggest that slow-moving identity norms shape women's behaviour in the labour market because deviating from the prescribed behaviour is inherently costly for them.

One of the most compelling drivers of the existing gender inequality in employment also emphasises the crucial role that childbearing plays in explaining the remaining gender gap in labour market outcomes, the so-called motherhood penalty (Kleven, Landais, and Søgaard 2019). Many women reduce their labour supply when their first child is born. This includes leaving the labour force or switching to part-time work. For many mothers, it is difficult to reconcile full-time employment, and many prefer to give up their career aspirations. In addition, the period of motherhood leads to a disruption in the accumulation of human capital through women's work experience, reducing their income over the life cycle.

Finally, the newest strand of literature examines wage dynamics among couples who are employed in similar jobs. The educational and occupational homogamy and assortativity seen in many advanced societies is a phenomenon that increases the likelihood of two partners having the same occupation and working in the same industry or even for the same employer (Kirkebøen, Leuven, and Mogstad, 2021). Despite the very sparse evidence on the behaviour of these couples, Hennecke and Hetschko (2021) suggest that being work-linked increases satisfaction with life as well as income and job satisfaction. These findings are consistent with positive assortative matching and mutual career support between work-linked partners. Within this context, work-related couples may enjoy further gains from marriage expressed as higher earnings or better career prospects.

Inspired by the literature streams above, this thesis explores the influence of various factors highlighted in the current literature on the remaining gender gaps in employment, to greater understand the sources of inequalities that act as barriers to gender convergence in the labour market.

The rest of this introduction outlines the overall thesis and summarises the three chapters included. Each of the three chapters is then presented as a self-contained paper in the thesis. Chapter 1 investigates the relationship between women's labour supply and their gender identity expressed as the social prescription that women should not work more than their male partners. Chapter 2 narrows the topic to work-related couples and delves into the wage dynamics developed within partners who are employed in similar occupation. Chapter 3 shifts the attention to flexibility in the workplace, by focusing on the influence of flexible working time arrangements on women's gap in working hours. Finally, the thesis concludes with a review of the three chapters, discussing the contributions to the extant literature and outlining potential extensions for future research.

Chapter 1 empirically investigates the extent to which partnered women's wellbeing decreases when they go beyond traditional gender roles in the labour market. In addition, Chapter 1 introduces a mechanism through which to understand the barriers to female employment, by examining wellbeing losses caused by the enforcement of gender norms through wellbeing losses. My hypothesis is based on the existence of gender roles, such as the male breadwinner paradigm, which determine women's behaviour in the labour market. This chapter uses data sources from the Household and Income Dynamics in Australia (HILDA) database. In particular, it analyses a panel of married or cohabiting women, using both linear and non-linear fixed effects estimation methods on women's life satisfaction. The main results suggest that there are high and statistically significant well-being losses when women work more than their partners. Several heterogeneity analyses suggest that these effects are driven by women without a university degree, women from older generations, and women living in more socially conservative regions. Finally, this chapter provides a comprehensive analysis of the impact of gender roles on women's hours in the labour market through the wellbeing losses. Wellbeing losses due to gender norms are found to have a small negative impact on women's labour supply, slightly constraining women's labour market outcomes.

The insights obtained on working couples in Chapter 1 inspired the research question for Chapter 2. Here the attention is restricted to work-related couples to analyse the impact on spousal productivity of employment in an occupation similar to that of one's partner, and to identify causal effects on real hourly wages. Working in similar occupations can affect partners' productivity in different ways. The main hypothesis is based on the existence of productivity effects that might develop between partners with similar occupations. Economists have long argued that spillover effects arise between people who communicate with each other in the workplace. These effects may be knowledge effects (Cornelissen et al., 2017; Herbst and Mas, 2015; Azoulay et al. 2010; Jackson and Bruegmann, 2009). These results could reasonably be applied to couples with the same occupation. Partners who share common experiences both at home and at work are very likely to share similar problems at work, and to advise or encourage each other on career issues. In addition, the success of one partner can trigger the efforts of the other partner. The accumulated experience, working methods, and human capital could be a public good in a household where free-riding exists. The analysis takes advantage of the extensive information available from the Household, Income and Labour Dynamics in Australia (HILDA) longitudinal survey, focusing on dual-earner couples. The main results suggest that couples in the same occupation see a positive effect on wages due to similar specialisation in the labour market. For men there is a marginal positive effect on their hourly wage, while for women this effect is much larger and highly statistically significant. Most of these positive effects on women's wages are driven by highly educated women, women who work part-time while their partners work full-time, and women whose partners switch jobs. Both partners appear to have cumulative effects from work-linkage, as the estimated positive effects on wages increase progressively with the number of years in the same occupation. Finally, gender gaps in pay and time use within partners, as well as the discrepancy between hours preferred and hours worked by women, seem to be amplified by the association in the labour market with their partners. Overall, the focus of this research is on stable couples where marital gains already exist, nevertheless the evidence suggests that similar employment and specialisation in the labour market add further value to these marital gains.

Chapter 3 addresses the influence of flexible working time arrangements on gender gaps in employment, focusing on working hours. As Goldin (2014) and Bertrand (2020) posit, flexibility is the key factor that could satisfy women's demand for more control over their working hours, as they face greater pressure to balance work and family life. For example, the gender gap in employment peaks in the child-rearing phase of the life cycle, as working women seek to reconcile competing demands on their time at work and at home, especially when household responsibilities include childcare. As a result, working women's autonomy over their working hours could be a key factor in maintaining their employment contracts. The investigation assesses the impact of flexible working time arrangements on the working time differential between women and male workers' average, drawing on the German Socio-Economic Panel (SOEP), one of the most comprehensive and detailed longitudinal surveys in Europe. The empirical results suggest that flexible working time arrangements have a moderately negative effect on the gap between women's working hours and the average working hours of male employees. This result remains stable even over the sensitivity analyses performed. Flexibility is found to have a stronger impact on women in full-time employment, better educated women and women after the birth of a child. Further analysis reveals that women who switch from fixed working hours to flexitime do not adjust their contractual working hours but increase their actual working hours through paid overtime. Finally, flexitime is not associated with more housework, but it is found to slightly increase childcare hours.

The three chapters of the thesis examine multiple aspects regarding employment outcomes of both men and women, critically analysed with a gender perspective. A variety of econometric methods are implemented to provide rigorous empirical evidence for the different research questions and to address specific econometric issues encountered. The first chapter adopts a thorough decomposition analysis, which provides convincing empirical evidence that women who do not conform to the traditional male breadwinner paradigm face well-being costs which, in turn, are translated into small restrictions in their labour supply. To ensure the causal interpretation of the mediation analysis, an instrumental variable approach is implemented. The second chapter implements a quasi-experimental design to provide convincing evidence on the impact of job association on partners wage rates. Lastly, in the third chapter, a novel approach introduced by Beckman et al. (2017) is applied by constructing firm-employee fixed effects and controlling for all aspects of potential endogeneity concerns due to selection on observed and unobserved characteristics of both employers and employees. The choice of the dataset varies depending on the research questions and the relevant econometric challenges. The first and the second chapter use survey data from the Household, Income and Labour Dynamics in Australia (HILDA) longitudinal survey, which is exceptional in providing a rich set of information about cohabiting working couples both on individual and on household level. The third chapter uses longitudinal data from Germany, using the German Socio-Economic Panel which enables the linking of each working woman to her firm, and contains several useful information at the firm level. To the best of my knowledge, these are the most appropriate datasets currently available for the respective studies undertaken in the thesis.

The concluding chapter highlights the research questions addressed in the thesis, and the use of different data and analytical methods to gain a fuller and more critical understanding of the existing differences in employment outcomes between men and women. Gender gaps in the labour market are considered one of the last major aspects of inequality that most advanced societies suffer from. My research in the thesis aims to contribute to the existing body of knowledge and to stimulate further research in the growing literature on gender inequalities in employment as well as in labour economics, in general.

Chapter 1

Assessing the Cost to Women of Deviating from Traditional Gender Roles

Abstract

This study shows that partnered women whose working hours exceed those of their spouses report lower life satisfaction. According to detailed information on a sample of Australian women, these wellbeing losses are better interpreted as a cost to women resulting from not conforming to gender norms. Most of these effects are driven by less educated women, women from older generations, and women living in regions with more traditional beliefs. Findings from a decomposition analysis suggest that the impact of wellbeing losses on female labour supply is minor and it operates as a supplementary mechanism of explaining the delayed gender convergence in the labour market.

1.1 Introduction

In recent decades, there have been remarkable changes in the labour force, mainly due to the increasingly central role of women in the economy. Not only have female employment and education increased sharply (Black and Juhn, 2000; Goldin and Katz, 2002), but there has also been a fundamental shift from work as a necessity to an emphasis upon career development (Goldin, 2006). Women are now spending more hours in the labour market in well-paid and highly skilled jobs, and their contribution to household income is increasing. Despite these advances, women still earn less and work fewer hours than men (Blau and Kahn, 2006, 2017; Bertrand et al., 2015; Olivetti and Petrongolo, 2017). One possible explanation is that partnered women face direct wellbeing costs once they go beyond traditional gender roles.

Gender inequalities matter not only for reasons of justice but also for reasons of efficiency in the labour market. Recent literature argues that economists should focus on gender norms, cultural values, and beliefs to explain women's employment outcomes (Giuliano, 2020), since longstanding and tenacious stereotypes may shed light on remaining gender gaps (Bertrand, 2020). Fernandez, Fogli, and Olivetti's (2004) and Fortin's (2005) studies introduce the idea that gender norms inherited from parents, as well as gender attitudes, influence women's labour force participation. Recent studies suggest that a number of socio-psychological factors related to cultural background may explain the observed gender differences in labour market outcomes (Bertrand, 2011; Fernandez, 2011). Bertrand, Kamenica, and Pan's (2015) seminal study shows a sharp decline in female participation in the labour force once they outperform their husbands, a result that is best explained by gender norms. Boelmann, Raute, and Schonberg (2021) provide further evidence to support the idea that the culture of a society is an important predictor of women's employment outcomes. Other studies emphasise the strong influence of inherited norms and peer norms on mothers' behaviour in the labour market (Olivetti, Patacchini, and Zenou, 2020; Cortes and Pan, 2020; Cavapozzi, Francesconi, and Nicoletti, 2021). Gender and cultural norms are also associated with a variety of other outcomes, from the likelihood of divorce and marital stability (Bertrand, Kamenica, and Pan, 2015; Cooke, 2006) to domestic abuse[1] (Gonzalez and Rodríguez-Planas, 2021; Zhang and Breunig, 2021), while several studies show that norms are the main determinants of observed gender differences in STEM (Bertrand, 2020; Nollenberger et al., 2016; Guiso et al, 2008).

[1]Gonzalez and Rodríguez-Planas (2021) find that gender norms may play an important role in explaining violence against partnered women across Europe. Zhang and Breunig (2021) examine Australian couples and find that women who deviate from traditional gender norms are more likely to be victims of domestic violence — a mechanism that outweighs all other intra-household bargaining processes.

The principal aim of this paper is to empirically investigate the extent to which partnered women's wellbeing decreases when they do not conform to traditional gender roles in the labour market. In addition, this research introduces a mechanism through which to understand the barriers to female employment, by examining labour supply restrictions caused by the enforcement of gender norms through wellbeing losses. My hypothesis is based on the existence of gender roles, such as the male breadwinner paradigm, which determine women's behaviour in the labour market. The roots of gender stereotypes originate from longstanding beliefs transmitted through culture across centuries. Boserup's (1970) study was the first to examine the principal role of agriculture in pre-industrial societies in the formation of gender stereotypes. In particular, the choice between ploughing and shifting cultivation was assumed to be the main determinant of rising gender differentiation, since the former is a more capital-intensive process, which requires physical strength[2]. This assumption is confirmed empirically by Alesina et al. (2013), while Giuliano (2015) suggests that contemporary societies with a plough-led tradition have still less gender-equitable beliefs. Persistent and deeply-rooted gender norms and stereotypes are also present in, and transmitted through, language (Dryer and Haspelmath, 2013; Galor et al., 2020) or through family practises such as patrilocality and customs such as dowry or bride price (Alesina and Giuliano, 2014; Ashraf et al., 2020). Finally, gender norms are also shaped by factors exogenous to societal tradition. For instance, Grosjean and Khattar (2019) indicate that the historical sex-ratios in Australia strongly influence local culture in relation to gender issues in different regions. The regions that ended-up with excessive male-biased sex ratios due to convicts' settlement two centuries ago are today more conservative towards the role of women in the labour market.

These stereotypes and cultural norms are inherently persistent because they are both passed down from parents to children and are part of the focal culture (Fernandez et al., 2013; Fernandez et al., 2014). Social psychologists suggest that these stereotypes are not only descriptive but also strongly prescriptive (Prentice and Carranza, 2002). This idea was introduced into economics by the seminal work of Akerlof and Kranton (2000, 2010) on identity as a key parameter for different economic outcomes. Gender norms dictate what men and women should do and imply conformism according to societal perceptions and expectations. Women's choices may be determined by their identity and the gender roles and principles inscribed therein. Thus, actions that go beyond societal conformity, such as a woman working more hours than her partner and/or for more pay, lead directly to wellbeing losses. As a result, these identity-related wellbeing costs may

[2] Boserup (1970) claims that shifting agriculture is more labour intensive and both men and women were equally involved in it. On the other hand, the use of the plough required physical strength and the role of women was gradually confined indoors. Capital-intensive ploughing agriculture survived and was dominant, so that the first organised societies restricted the role of women to the household.

affect women's behaviour in the labour market, providing a plausible explanation for the remaining barriers and lags in women's employment outcomes.

Fleche, Lepinteur, and Powdthavee's (2020) paper addresses issues relevant to the above. In particular, they analyse and compare partnered individuals from America, the UK, and Germany to investigate whether individuals who work more hours than their partners suffer losses in wellbeing. Their main conclusions suggest that women who work more than their male partners have significantly lower levels of life satisfaction. Moreover, they demonstrate that the propensity to leave the labour market increases significantly when a woman's working hours exceed those of her partner. Their interpretation focuses on the theory of fairness, which states that women's wellbeing decreases mainly due to the unequal distribution of total time and secondarily due to gender norms and identity. In other words, their main conclusion is not that women face a disutility effect because they work more than their partners per se, but because their partners do not provide enough help at home. The few other studies of note include Booth and van Ours (2008, 2013), who analyse British and Dutch couples and conclude that women have an aversion to long working hours and a preference for part-time work, while Stevenson and Wolfers (2009) show that there is a strong negative correlation between partnered women's life satisfaction and their wages and working hours, both in absolute terms and relative to those of men.

This paper uses data sources from the Household and Income Dynamics in Australia (HILDA) database. In particular, it analyses a panel of married or cohabiting women aged between 24 and 64, using both linear and non-linear fixed effects estimation methods on women's life satisfaction. The main results suggest that there are high and statistically significant wellbeing losses when women work more than their partners. Several heterogeneity analyses suggest that these effects are driven by women without a university degree, women from older generations, and women living in more socially conservative regions. Finally, this paper uses an instrumental variables approach to provide a comprehensive analysis of the impact of gender roles on women's hours in the labour market through the wellbeing losses. Interestingly, wellbeing losses due to gender norms are found to have a small negative impact on women's labour supply and to slightly constrain women's labour market outcomes.

This paper makes three contributions to the existing literature. The analysis provides a comprehensive study of the role of cultural and gender role norms on women's wellbeing. To the best of my knowledge, only Fleche et al. (2020) have examined how working time allocations affect women's wellbeing. In doing so, I add to the sparse literature that examines how time-use divisions between spouses are associated with wellbeing costs when women do not conform to traditional gender roles. This is an important topic that can provide answers to questions raised by trends observed in the labour market.

In addition to providing insights into the overall impact of deviating from traditional gender norms on women's wellbeing, this study also conducts a detailed heterogeneity analysis to examine the relative contribution of different sources of cultural and inherited norms and stereotypes. While this analysis sheds light on which sources may be more influential, it is important to note that there may be other factors that are not accounted for and may operate as key factors of the heterogeneity of the findings. Therefore, further research is needed to better understand the complexity of women's identity and decision-making and to develop targeted interventions at the institutional level.

Finally, this paper not only examines the psychological effects upon women's wellbeing of not showing traditional gender conformity but —to the best of my knowledge—is the first to provide an economic interpretation of these psychological costs; a mechanism by which some of the remaining gaps in the labour market can be explained by psychological mechanisms that originate in identity and gender norms. More specifically, the labour market outcomes of partnered women are explained by a direct pathway called the career pathway, and an indirect pathway: the wellbeing loss caused by gender norms. The first path leads to gender convergence in the labour market, while the indirect path partially explains the incompleteness of this convergence.

Overall, this study attempts to provide a detailed empirical investigation of women's wellbeing and its association with gender roles, highlighting different sources of heterogeneity. While the study provides evidence that the negative effects on women's wellbeing might be better interpreted as a consequence of deviating from traditional gender norms, there are limitations to the study that must be acknowledged, and include the inability to capture all potential factors that could affect women's life satisfaction.

The rest of the paper is organised as follows. Section 2 presents the methodology and the empirical strategy, while Section 3 describes the data sources. Section 4 presents and analyses the results of the empirical investigation of the relationship between women's life satisfaction and the indicator that they work more than their partners, together with a series of sensitivity and heterogeneity analyses. In addition, this section presents the limitations of the empirical study, and the results of the mediation analysis and discusses the relevant implications. Section 5 concludes.

1.2 Methodology

1.2.1 Measuring the effect on women's wellbeing of working more than their partner

To assess the impact of this, the following model is considered:

$$W_{it} = \beta_0 + \beta_1 D_{i,t} + \beta X_{it} + \alpha_i + \gamma_j^i + \lambda t + \varepsilon_{it} \tag{1.1}$$

where W_{it} denotes woman i's subjective wellbeing at time t. D_{it} is an indicator variable that takes value 1 if woman i works more than her partner at time t, otherwise $D_{it} = 0$. X_{it} is a vector of covariates that includes woman i's time-varying characteristics such as age, age squared [3], years of work experience, an indicator of having a full-time job, an indicator of being currently unemployed, the weekly hours for housework, childcare, and caring for a disabled family member. Time-varying partner's characteristics are also included, such as annual earnings, weekly hours in the labour market, and an unemployment indicator variable. Other household-level characteristics are also used as controls, such as the logarithm of the household's annual disposable income and the number of children in the household. Overall, vector X_{it} controls for any possible time-varying heterogeneity across partnered women. This vector is based on Fleche et al. (2020) and Booth and van Ours (2013), while additionally incorporating more extensive information about women's time use.

The time-invariant component α_i is a fixed-effect that captures woman i's unobserved characteristics such as personality traits and identity. Moreover, λ parameter captures the effect of year t, with $t\epsilon[2001, 2018]$, while γ_j^i captures traditional and cultural characteristics of i's region j. Lastly, ε_{it} is the error term with $\mathrm{E}(\varepsilon) = 0$.

The indicator of whether women work more or less than their partners, D_{it}, is assumed to be uncorrelated with the error term ε_{it}, conditional on all time-varying variables and fixed controls. More specifically, women's choice to work more than their partners is explained by the vector X_{it}, which accounts for time-varying heterogeneity at both the individual and household levels, as well as individual, regional, and time fixed effects. The latter fixed effects adequately capture unobserved heterogeneity due to social norms, culture, and personality. Therefore, the coefficient β_1 is assumed to represent the causal effect on women's wellbeing of working more than their partners.

[3] The quadratic relationship between wellbeing and age has been discussed and empirically explored in several seminal studies (see Blanchflower 2020, 2009).

1.2.2 Estimation method

Following the informal consensus adopted by social science researchers on the best way to treat subjective well-being measures in applied research (Gebers, 1998; Ferrer-i-Carbonell and Frijters, 2004), Equation 1.1 is estimated using linear fixed-effects regression.

My analysis also takes into account criticisms of the use of linear methods to analyse ordinal dependent variables recently made by Schröder and Yitzhaki (2017) and Bond and Lang (2019). According to both papers, the main limitation in performing mean analysis on ordinal variables is that ranking any statistic between ordinal variables is only meaningful if that ranking is stable for all increasing transformations. Schröder and Yitzhaki (2017) and Bond and Lang (2019) point out that when the statistic of interest is the mean, the latter condition is satisfied only if there is first-order stochastic dominance (FOSD). When the analysis targets the conditional mean (as in OLS regression), the sufficient condition is the existence of second-order stochastic dominance (SOSD). Scröder and Yitzhaki (2017) give examples of several situations in which the order of life satisfaction, as measured by the mean or the conditional mean, can be arbitrarily changed. Bond and Lang (2019) go a step further by pointing out that even ordered response models have some severe limitations and are often inappropriate. They emphasise that ordered response models can satisfy FOSD when two latent variables drawn from the same distribution have the same variances. They review nine famous results from the economics of happiness literature and systematically reject the equal variance hypothesis. Their conclusion states that ordered response estimates are not appropriate for extracting results based on average marginal effects.

Chen et al. (2019) acknowledge that Scröder and Yitzhaki's (2017) and Bond and Lang's (2019) criticisms are valid. They agree that treating ordinal variables as cardinal is conceptually and methodologically flawed, as problems such as arbitrary labelling cannot yield reliable estimates. However, they go on to restore credibility to ordered response models and, in particular, ordered probit/logit estimates. More specifically, they propose the median instead of the mean as the statistic of interest because the median is stable and unaffected by transformations. Interestingly, the median and mean are identical for both normal and lambda distributions. Therefore, ordered probit/logit models still provide estimates that are valid and interpretable.[4] Therefore, I further

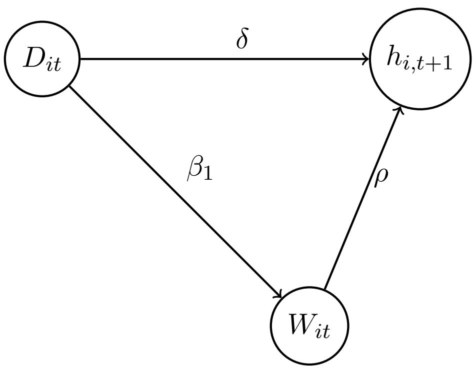
[4]Moreover, the Commission on the Measurement of Economic Performance and Social Progress lead by Stiglitz, Sen, and Fitoussi highlights the importance of using life satisfaction measures more frequently in policy making and wellbeing measurement. Diener, Inglehart, and Tay (2013) suggest that subjective wellbeing measures still remain useful proxies of individuals' satisfaction and can be used in applied research as indicators of general trends in a society. Recent papers continue analysing subjective wellbeing performing linear estimation methods (e.g see Perugini and Vladisavljević (2019), Neumann-Böhmeet al. (2021), Hennecke and Hetschko (2021).

use a fixed-effect ordered-logit specification of Equation 1.1 proposed by Baetschmann et al. (2011, 2015)[5]. Although several fixed-effect estimators have been proposed for ordered-response models, Monte Carlo simulations suggest that this is one of the most consistent and unbiased estimators, as it eliminates the efficiency losses by blowing-up the sample size generating clones of each observation, and by clustering for these repeated observations (Baetschmann et al., 2015; Riedl and Geishecker, 2014).

1.2.3 A mechanism to explore the impact of psychological costs on women's labour supply

The following analysis provides a potential mechanism through a mediator effect to explain how the wellbeing costs act as barriers to female employment. To be more specific, two different pathways are examined, as Figure 1.1 shows. The first is the direct one — the so-called *career path* — captured by δ. This path suggests that women who work more than their partners at time t have already embarked on a career path that improves their labour market outcomes at time t+1, so that the expected value of δ is positive. On the other hand, there is an indirect path via the wellbeing costs, which acts as a mediator effect. When women work more hours than their partners, it may contradict the traditional gender roles that are ingrained in their identity, and this can lead to negative effects on their wellbeing. These losses in turn constrain women's labour supply at time t+1. The indirect path is captured by the product $\beta_1\rho$, and is expected to be negative, creating barriers to women's employment and explaining incomplete convergence in the labour market.

FIGURE 1.1: A Representation of the Total Effect of Working More Than Partner on Female Labour Supply.



Note: See the text for an explanation of the notation.

[5]Hence, Equation 1.1 becomes a non-linear specification, that is $W_{it} = \Lambda(\beta_0 + \beta_1 D_{i,t} + \beta X_{it} + \alpha_i + \gamma_{it} + \lambda_t + \varepsilon_{it})$, where $\Lambda(\cdot)$ denotes the logistic cumulative distribution function.

To estimate both direct and indirect effects, I conduct a mediation analysis. The effect of working more than their partners on women's wellbeing, β_1, is extracted by the estimation of Equation 1.1. To estimate the direct effect of working more, δ, and the effect of wellbeing, ρ, on female labour supply in the next period, the following equation is introduced:

$$h_{i,t+1} = \mu_0 + \rho D_{it} + \delta W_{it} + \mu_1 X_{i,t+1} + \alpha_i + \theta(t+1) + \zeta_j^i + u_{i,t+1} \tag{1.2}$$

where $h_{i,t+1}$ denotes women's working hours at time t+1, while the rest of the variables have already presented in Equation 1.1. In particular, W_{it} denotes woman i's subjective wellbeing at time t, D_{it} is the indicator variable that takes the value 1 if woman i works more than her partner at time t, otherwise $D_{it} = 0$. Note that time-varying characteristics of Equation 1.1 are now expressed at time t+1 in Equation 1.2.

Women's wellbeing, as well as their choice to work more than their partners, may potentially be correlated with unobserved factors that also influence women's labour supply decisions in the next period. For instance, a woman's mental health or the physical health of a family member could be omitted variables that invalidate the causal interpretation of the ρ and δ parameters in Equation 1.2.

To address this potential endogeneity issue, an instrumental variables approach is used, instrumenting both women's wellbeing and the indicator that they work more than their partners. It has been long well-established that parental divorce implies a long-run and important negative influence on adults' mental health and wellbeing (Cherlin et al., 1998; Rodgers, 1994; Amato and Keith, 1991), while no direct linkage has been found between parental divorce and adults' earnings and income (Corak, 2001) or adolescents' earnings (Herbst-Debby et al, 2023). Hence, a new indicator variable is introduced that takes the value of 1 if the woman's parents decide to divorce or separate at time t. Since my analysis focuses on active partnered women between the ages of 24 and 60 who have already left the parental household and are not financially dependent on their parents, the exclusion restriction applies, while women's wellbeing appears to be sensitive to the possibility of parental divorce. In other words, a woman's working time in the next period is expected to be affected only by the psychological impact of parental divorce on her wellbeing, while there is no direct causal path linking these two aspects.

To address the second endogeneity problem, I introduce another instrument, namely a shock to this year's difference in working hours averaged across the respondent woman's industry and her partner's industry. This approach follows the methodology proposed by Fleche, Lepinteur, and Powdthavee (2020) to address similar endogeneity concerns. Specifically, they use the lag differences between working hours averaged across the respondent's occupation and the partner's occupation as an instrumental variable for partners' relative working hours. Building on this, my approach uses an unexpected shock of the lagged difference as an instrumental variable to further strengthen the identification strategy. To construct this instrument, I take the linear projection of the difference between average hours worked in the woman's industry and her partner's industry on the first lag and on the first lead difference, keeping the residuals of this linear projection. Therefore, the residual differences between women's average hours worked in their industry and their partners' average hours are, by definition, independent of the next year's differences and are interpreted as a shock to hours worked in the industry. This strategy relies on two assumptions: First, that there are significant differences in relative hours worked between spouses at the industry level, which in turn affects the probability that a woman works more than her partner (first stage). Second, the residual differences in hours worked, averaged across the industries of the female respondent and partner, are orthogonal to factors that could directly affect the female respondent's labour supply in the next year, conditional on the vector of controls. This claim holds because, by construction, residual differences are not correlated with next-year differences, and shocks to hours worked in industries appear to be beyond the influences of the working women or their partners. An unexpected one-time increase in the difference between a woman's average hours worked in the industry and her partner's average hours worked in the industry that does not affect the difference in partners' hours worked in the industry in the next year does not directly affect women's labour supply in the next year, but only indirectly through the probability of working more.

By applying a two-stage least squares (2sls) fixed effects method to women's hours worked in the next period using the above instruments, I ensure the causal interpretation of the ρ and δ parameters.

1.3 Data

This paper uses data sources from the Household and Income Dynamics in Australia (HILDA) database, which is a representative panel survey of Australian households and individuals[6], spanning the period 2001-2018. The HILDA database is unique for the purposes of this research since it contains detailed information on time use that relates to both the labour market and household production, while it allows to match a sufficiently large number of partnered individuals and thus also allows for available

[6]The HILDA Project was initiated and is funded by the Australian Government Department of Social Services (DSS) and is managed by the Melbourne Institute of Applied Economic and Social Research (Melbourne Institute). The findings and views reported in this paper, however, are those of the author and should not be attributed to either DSS or the Melbourne Institute.

information on the characteristics and outcomes of male partners to be used. In addition, Australia is a highly diversified country with different economic and cultural backgrounds in different regions, so the sample is likely to have sufficient variation and heterogeneity in perceptions and beliefs.

The restricted sub-sample used in the analysis includes partnered women, either married or defacto spouses, aged between 24 and 64 years old. I further focus on women who participate in the labour market — either employed or not — excluding inactive women[7]. The maximum working hours in all jobs for each woman are limited to 70 hours per week. To avoid any outliers both at the lower and higher end of the distribution of households' income, households with annual disposable income of less than \$10,000 and more than \$700,000 per year are removed[8]. These restrictions yield an unbalanced panel of 41,315 observations of 6,681 partnered women.

Table 1.1: Summary Statistics

Variable	Obs	Mean	Std. Dev.
Life Satisfaction	41,315	8.00	1.22
Age	41,315	41.94	10.41
Weekly working hours	41,315	30.61	13.95
Partner's weekly working hours	41,315	39.75	16.08
Full-time employment	41,315	0.49	0.49
Unemployed	41,315	0.03	0.02
Weekly housework hours	38,139	15.01	10.27
Weekly hours with children	36,047	11.95	18.51
Weekly hours with disabled	34,209	0.90	5.27
Number of children	41,315	1.11	1.14
Unemployed partner	41,315	0.08	0.28
Partner's annual earnings	37,180	67452.28	43486.03
Household's annual income	41,315	103837.40	53649.57
Labour market share	40,980	0.44	0.21
Works more than partner	41,315	0.24	0.42

Data source: HILDA Release 18.

Table 1.1 summarises the main variables of the analysis. Life satisfaction is a wellbeing index constructed from the following question: 'All things considered, how satisfied are you with your life? Pick a number between 0 (=completely dissatisfied) and 10 (=completely satisfied) to indicate how satisfied you are'. Both the mean and the median are 8, suggesting that the average Australian woman is rather satisfied with life, overall. Moreover, the average partnered woman of the sample is 42 years old and she works around 31 hour per week, while male partners work on average 9 hours more. Half of the women work in full-time jobs while 3% are unemployed. Looking at women's time-use, it can be seen that they spend in household chores, childcare, and caring for

[7] See Table A.1 in Appendix A.

[8] Roughly the bottom and top 5% of income distribution.

disabled family members, on average, 15, 12, and 1 hour per week, respectively. The average number of children living in the household is 1.12, and 8% of women are married with currently unemployed partners. Male partners earn on average $67,452.28 per year, and the average household disposable income[9] is $103,837 per year.

I also construct women's labour market share as a fraction of their own weekly labour market hours divided by the sum of both partners' labour market hours[10]. The average of this share is 0.44, indicating labour market differentiation between partnered individuals in Australia. This differentiation appears to be small and does not support the traditional split between primary and secondary earners. Finally, using the proportion of women in the labour market, I introduce an indicator variable that takes the value 1 if the proportion of partnered women's hours in the labour market is greater than 0.5, otherwise, it takes the value zero. From Table 1.1 it can be seen that almost 1/4 of women work more than their partners.

Figure 1.2 shows the histogram of women's share in the labour market. The chart on the left includes all active women, both employed and unemployed, while the chart on the right includes only the distribution of women from working couples. The first chart is consistent with Table 1.1 in that 3% of the sample are unemployed women and 8% of them have unemployed partners. Both graphs in Figure 1.2 indicate that women's share of hours increases gradually up to a value of 0.5 and then follows a sharp decline, suggesting that few women work more than their partners. Most female shares are between 0.35 and 0.5, suggesting that the majority of female partners are not employed as secondary earners, supplementary to their partners.

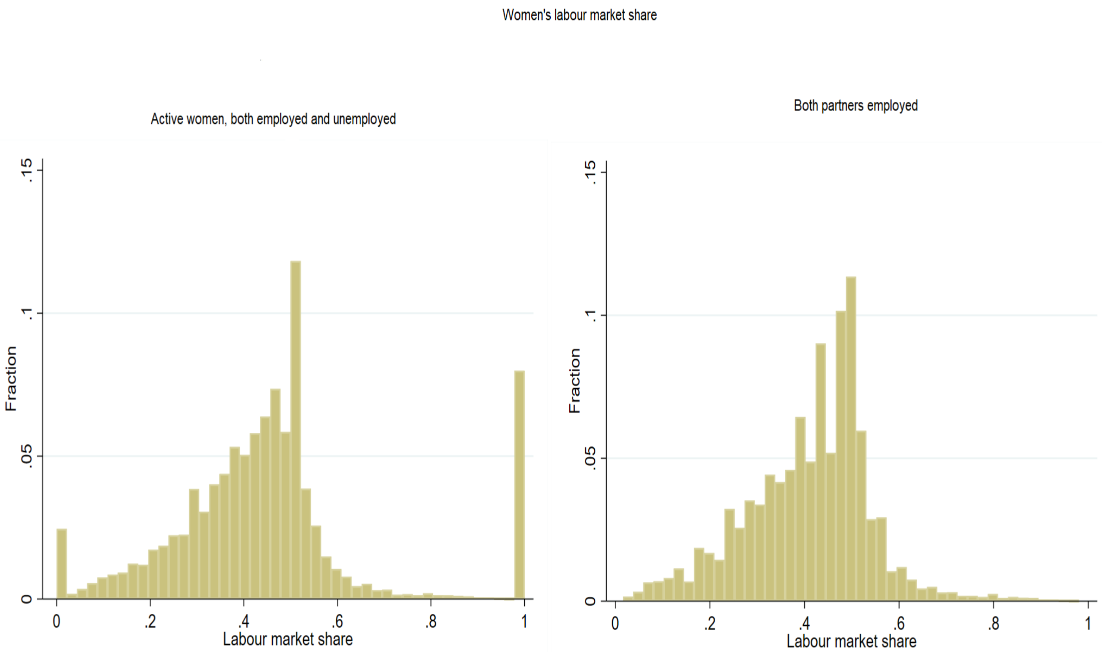
The indicator variable indicating whether a woman works more than her partner, as well as the proportions of women's hours in the labour market, vary by region and year[11]. Women's labour market share ranges from 0.39 in Western Australia to 0.49 in Tasmania, and in most Australian regions the average share is around 0.45. In addition, in Western Australia 17% of women work more than their partners, while in Tasmania 29% work more. In Victoria and South Australia, the proportion of women working more than their partners is also below 0.2. On the other hand, in several regions — Sydney, New South Wales, Brisbane, Adelaide, Northern Territory, Australian Capital Territory, and of course Tasmania - at least 25% of women work more than their partners. The heterogeneity across Australia suggests that different perceptions, related to a variety of socio-economic factors, are associated with different employment behaviours in different

[9]Partner's earnings aggregate the total labour income from all jobs during the last financial year, while the disposable income of the household returns the available income during the last financial year from all source, after tax. Both types of income are constructed by the HILDA providers, namely the Melbourne Institute.

[10]Labour market share $= \frac{\text{woman's working hours}}{\text{woman's working hours + man's working hours}}$.

[11]See Table A.2 in Appendix A for a detailed presentation.

Figure 1.2: Histogram of Women's Labour Market Share



Notes: The women's labour market share is calculated as the ratio of each woman's weekly hours in the labour market to the sum of her own hours and her partner's hours, averaged across all women in the sample. Data Source: HILDA Release 18.

regions. Over the years, there has been significant progress in women's labour market outcomes. More specifically, in 2001, women's average labour market share was 0.42 and 20% worked more than their partners. In 2010, the values of these variables were 0.45 and 24%, respectively, while in 2018, the share of women in the labour market was 0.46 and 26% worked more than their partner. The average share of women cannot reach 0.5, suggesting that there are some obstacles to further progress in women's labour market outcomes.

Next, it is worthwhile to look at the frequency of the life satisfaction index.[12] The percentage of women who report at most being neither satisfied nor dissatisfied with their lives is 2.66%, while 9% report being completely satisfied. The median level is 8, while most women choose categories 7, 8, and 9 with percentages of 19.8%, 37.9%, and 14.6%, respectively. Overall, most Australian women are satisfied with their lives - indicating at least level 8, with only a small minority choosing the lower levels of satisfaction. The distribution of women's life satisfaction, grouped by working more and less than their partners, is shown in Table 1.2.

According to Table 1.2, 2.56% of women who work less than their partners are at most neither satisfied nor dissatisfied with their lives, while the same percentage is about 3% for women who work more than their partners. In general, women who work less than

[12]The distribution table can be found in Appendix A.

Table 1.2: Life Satisfaction by Relative Working Hours

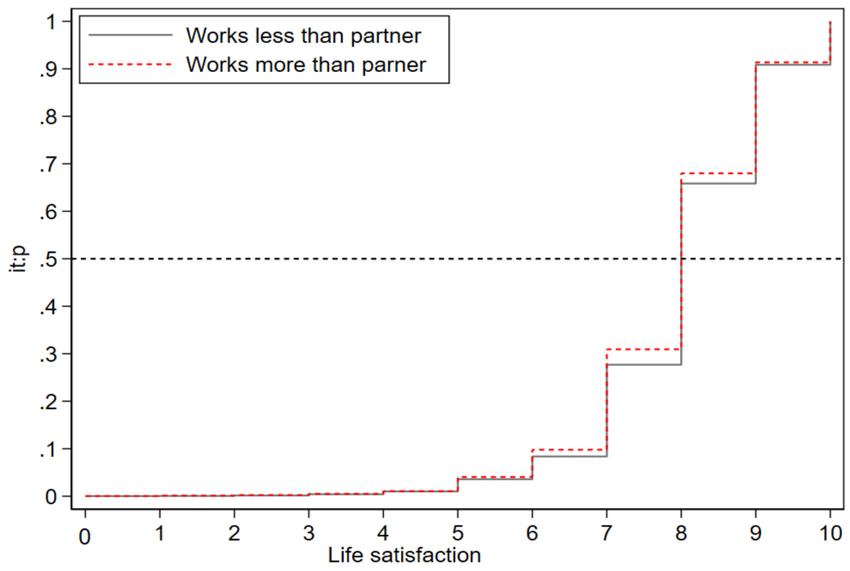
	Percent		Ho: Diff = 0
Life Satisfaction	Works less than partner	Works more than partner	p.value
Totally dissatisfied	0.03	0.03	1.000
1	0.04	0.10	0.025
2	0.11	0.12	0.800
3	0.24	0.26	0.724
4	0.61	0.55	0.500
Neither satisfied nor dissatisfied	2.56	2.99	0.020
6	4.79	5.74	0.000
7	19.32	21.15	0.000
8	38.17	37.06	0.020
9	25.00	23.36	0.001
Totally satisfied	9.14	8.63	0.121
Total	100.00	100.00	

Notes: Columns 2 and 3 show the proportions of women who work less and more than their partners, by each level of life satisfaction. The last column tests the null hypothesis that the difference in proportions between women who work more than their partners and those who work less is equal to zero. A two-sample test of proportions (z-test) is used to compare these groups across different categories of life satisfaction scores (rows). The p-value of each test is displayed in the last column. A p-value less than 0.05 indicates that the null hypothesis is rejected at a 5% significance level, meaning that the proportions of the two groups are statistically different from each other. Data source: HILDA Release 18.

their partners appear to be more satisfied with their lives overall. In particular, when calculating the cumulative percentage of women who are more likely to be satisfied (categories 8, 9, and 10), it can be seen that the underlined percentages are 72.3% and 69% for women who work less and women who work more than their partners respectively. Thus, women who work less than their partners choose the higher levels of the satisfaction scale by 3.3 percentage points more than women who work more than their partners. Furthermore, Table 1.2 reports the p-values for testing whether the proportions of women who work less than their partners are statistically different from the proportions of women who work more, at each level of life satisfaction. As shown in Table 1.2, the proportions between the two groups of women are statistically different in 6 out of 11 levels of life satisfaction.

Figure 1.3 plots the cumulative distribution functions (cdf) of women's life satisfaction, grouped by working more or less than their partners. The black line represents the distribution of women who work less than their partners and the dotted line shows the distribution of women who work more. Comparing these two lines, it can be seen immediately that both categories have the same median life satisfaction score of 8. Moreover, the cdf of women who work less than their partners is everywhere at or below the cdf of women who work more than their partners. Thus, following Allison and Foster (2004), there is clear evidence of first-order dominance of women who work less than their partners, implying, on average, a higher level of wellbeing on the life satisfaction

FIGURE 1.3: Cumulative Distribution Functions for Women's Life Satisfaction



Notes: The figure shows the CDFs for the two groups of women, those who work less than their partners and those who do not. The dotted line, which runs parallel to the x-axis, intersects with the CDFs at the median category for each distribution. In both groups, the median is level 8. Data Source: HILDA Release 18.

scale[13].

1.4 Results

1.4.1 Main results

Table 1.3 shows the estimated coefficients for the parameters of Equation 1.1. The first column contains the estimates obtained from a fixed effects linear regression, while the second column shows the nonlinear estimates from the ordered logit fixed effects estimation proposed by Baetchmann et al. (2015). Both estimations account for repeated observations and the standard errors are adjusted for clustering. The estimates of individual-specific, regional, and yearly effects are not presented.

According to the first column, working more than a spouse leads to considerable well-being losses for the average partnered woman in the sample. Specifically, women's life satisfaction decreases by 0.058 — statistically significant at the 1% level — when their working hours exceed their partner's hours of work in the labour market. The relationship between age and women's life satisfaction appears to have a U-shaped relationship,

[13]To investigate dominance further, I follow Jenkins (2021) and plot the H+ and H- curves in Appendix A. These curves satisfy the Hammond transfer criterion and further ensure that the group of women who work less than their partners dominates in the first order.

Table 1.3: Main Results

	(1) life satisfaction	(2) life satisfaction
works more than partner	-0.0579***	-0.146***
	(-2.71)	(-2.72)
age	-0.0378***	-0.0887***
	(-3.11)	(-2.76)
age square	0.000305**	0.000739**
	(2.25)	(2.31)
housework hours	-0.000294	-0.00110
	(-0.33)	(-0.52)
childcare hours	0.000564	0.00126
	(1.19)	(1.01)
caring hours	-0.00737***	-0.0168***
	(-3.39)	(-3.44)
unemployed	-0.156***	-0.336***
	(-2.74)	(-2.80)
full-time job	-0.0609***	-0.148***
	(-3.06)	(-3.01)
partner's working hours	-0.00141	-0.00335
	(-1.47)	(-1.43)
unemployed partner	-0.0251	-0.0624
	(-0.53)	(-0.55)
log of partner's earnings	0.00842	0.0160
	(0.69)	(0.52)
number of children	-0.0763***	-0.195***
	(-5.00)	(-5.19)
log of household's income	0.0869***	0.209***
	(3.41)	(3.27)
Observations	29147	53468

Notes: Column (1) reports estimates from a linear fixed-effect regression and column (2) shows the non-linear estimates from the ordered logit specification with fixed effects. Both specifications include individual-specific, region-specific, and year fixed effects. t statistics in parentheses are obtained by robust standard errors correcting for clustering across individuals. Life satisfaction is an eleven-level scale measure of subjective wellbeing. All variables of hours measure the weekly reported hours of the respective individual. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. The main sample includes all partnered women aged between 24 and 64 years old who participate in the labour market either employed or unemployed. Data source: HILDA Release 18.

a finding consistent with the literature that suggests there is a nadir of wellbeing at midlife (Blanchflower, 2020 and 2009). Moreover, weekly hours spent on housework and hours spent caring for disabled family members have strong disutility effects, while women's wellbeing is positively related to weekly hours spent on childcare. These effects are not sizeable while only the latter effect related to women's caregiving responsibilities is statistically significant at the 1% level. Unemployed women report systematically lower life satisfaction than women working part-time, while the latter are also on average more satisfied than full-time employed women. This result is consistent with the findings of Booth and van Ours (2009) on Australian women's preferences for part-time work. Male partners' labour market outcomes appear to be of little importance as determinants of women's wellbeing. Specifically, women's life satisfaction is negatively related to male partners' weekly labour supply and positively related to their labour income, although both estimated coefficients are not statistically significant at the 10% level. In addition, women with unemployed partners report lower life satisfaction on average, but this result is also not statistically different from zero. Finally, a household's total disposable income and the number of children are strong determinants of women's well-being, as they affect life satisfaction positively and negatively, respectively. In particular, the estimated coefficient of the logarithm of household disposable income is about 0.09, while one more child reduces women's wellbeing by 0.08 on average. Both estimates are statistically significant at the 1% level.

Column (2) in Table 1.3 shows the estimates obtained from the specification of the ordered logit with fixed effects. The reported coefficients cannot be interpreted as partial effects because they are generated by a nonlinear likelihood function. Therefore, the coefficients in column (2) can be discussed according to the standard interpretation of log-odds. More precisely, all estimates are qualitatively and statistically similar to the corresponding linear estimates of column (1). Thus, working more hours than a partner implies, on average, a large loss in wellbeing for partnered women, which reduces the log-odds of their life satisfaction by 0.146. This estimate is statistically significant at the 1% level. The direction of the effect is not enough to understand the intensity of this effect, and only its magnitude would show how strong the impact on women's wellbeing is. To measure the magnitude, the average marginal effects above the median are calculated. Table 1.4 includes the marginal effects of moving from median level 8 to life satisfaction levels 9 and 10, holding all other factors constant. It turns out that a woman's probability of moving from median level 8 to 9 and then to 10 decreases by about 2.2 and 1 percentage points, respectively, when working more than her partner. Both marginal effects are statistically significant at the 1% level.

Overall, the estimates for Equation 1.1 in Table 1.3 and Table 1.4 suggest statistically significant wellbeing losses for women who work more than their partners. The linear

Table 1.4: Marginal Effects - Ordered Logit Specification

	(1) Marginal Effect
life satisfaction level 9	-0.02178***
	(0.008)
life satisfaction level 10	-0.0104***
	(0.004)
Observations	53468

Notes: Column (1) reports the marginal effects obtained from the ordered logit specification with fixed effects. Robust standard errors correct for clustering across individuals are given in parenthesis. The reported marginal effects show the impact on the probabilities of moving above the median level of life satisfaction, that is level 8, for those women who work more than their partners, keeping all other factors constant. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18.

estimates yield a loss of 0.058, while the nonlinear estimates yield decreases of 2 and 1 percentage points, respectively, in the probability of being one and two steps above the median. In the analyses that follow, a series of sensitivity analyses are conducted to ensure the robustness of the estimated effects of working more hours on women's wellbeing.

1.4.2 Sensitivity Analyses

To consider the robustness of the above results, this section includes estimates obtained using different estimation techniques, different specifications, and different subsamples of partnered women. Table 1.5 summarises the estimated effect of working more than a partner on women's life satisfaction under different robustness tests[14]. Details of all the regressions conducted in this section can be found in the Appendix.

1.4.2.1 Alternative estimation techniques

Equation 1.1 is estimated using both a fixed effects linear regression and the fixed effects ordered logit specification proposed by Baetchmann et al. (2015). This estimator

[14]Columns (4) - (13) of Table 1.5 show the underlined effect obtained from linear models with fixed effects. Appendix A also reports the corresponding non-linear estimates obtained from fixed-effect ordered response specifications.

is known as the blow-up and cluster (buc) method because it generates multiple clones of its observation and then performs multiple logistic regression for each possible dichotomisation of the dependent variable, clustering the repeated observations. In the first robustness check, Equation 1.1 is re-estimated using buc estimation under the assumption of constant thresholds, which is known as the buc-τ estimator.[15] Column (1) in Table 1.5 shows the nonlinear estimates as well as the respective above-median marginal effects of working more than a partner.[16] The estimated coefficients, as well as the marginal effects, of working more than partner are comparable to the main results. More specifically, women who work more than their partner suffer highly statistically significant losses in wellbeing, expressed as a 2.8% and 1.2% lower likelihood of reporting one and two levels of life satisfaction above the median, respectively.

In the same spirit, a dichotomous variable of life satisfaction is also created. The new binary variable is dichotomised at the median level 8, i.e. it takes the value 1 if a woman's wellbeing is above 8, otherwise it remains 0. A conditional logistic estimation, called the Chamberlain estimation, is then applied. Both a fixed-effects linear probability estimate and a nonlinear fixed effects logistic estimation of Equation 1.1 are performed. Life satisfaction is dichotomised at level 8 because most of the sampled women report this level at least once. This serves to reduce efficiency losses as much as possible.[17] The Chamberlain estimates — presented in columns (2) and (3) of Table 1.5 — are robust to the previous results. In particular, the linear fixed-effects probability model suggests that working more than a partner reduces the partnered women's probability of being above the median by 2.6 percentage points on average, a result that is statistically significant at the 1% level. The marginal effects of the conditional logistic regression shown in column (3) of Table 1.5 indicate that female partners who work more than their husbands have, on average, a 4.9% lower probability of being above the median on the wellbeing scale. Conditional fixed effects logistic regression yields robust standard errors using the observed information matrix method, indicating a statistically significant effect at the 1% level.

1.4.2.2 Focusing on different sub-samples

As a second category of robustness checks, Equation 1.1 is estimated for various restricted subsamples to account for crucial characteristics that may influence perceived

[15]The buc-τ estimator is less flexible than the general buc estimator because the assumption of constant thresholds for all individuals is very restrictive.

[16]Detailed estimates of all regressions discussed in the sensitivity analysis are provided in Appendix A.

[17]The Chamberlain estimator is known as the first unbiased estimation method for ordered response models with unobserved heterogeneity, but it remains inefficient because it does not account for all available information from the sample. This is because it captures the behaviour of these individuals with shifts in wellbeing similar to the dichotomisation.

wellbeing losses in different directions. First, column (4) in Table 1.5 shows the estimated effect of working more than a partner on a woman's life satisfaction from a linear fixed effects estimation[18] from Equation 1.1 only for couples who are currently employed, excluding unemployed partners. The underlined linear estimate suggests that women's wellbeing decreases by 0.052. The estimated effect is statistically significant at the 5% level.

The same analysis is done for the subsample of women who are employees in the labour market, excluding self-employed women and women employed in family businesses[19]. The estimated effect, shown in column (5), indicates that women's wellbeing decreases by 0.061. Finally, the analysis restricted to active couples only — both employed and unemployed — indicates the robustness of the previous results, as shown in column (6).

All estimates presented in this subsection do not differ from the main estimates in both magnitude or statistical significance.

1.4.2.3 Pro-equality couples

Another constraint relates to couples' overall time allocation, i.e., the hours they spend in the labour market and in the household. A crucial robustness check is to examine separately the couples with a more equal division of total time, the so-called pro-egalitarian couples. Any wellbeing losses for women who work more than their partners are not due to the unequal division of total working time in this category but would be better interpreted as a cost of going beyond traditional roles in the labour market.

The first restricted sample includes women who spend a total of more than 80% and less than 120% of their partners' total hours, as the sum of the working hours and the housework.[20] Column (7) in Table 1.5 shows that among couples with more egalitarian preferences, women who work more than their partners have 0.073 lower life satisfaction, a result that is statistically significant at the 5% level.

Similarly, I distinguish between couples with male partners contributing above and below the median hours for household management. Column (8) in Table 1.5 shows the estimated effect for women whose husbands contribute at least 5 hours per week to household chores, and column (9) shows the corresponding effect for women whose husbands contribute less than 5 hours per week to household chores. Comparing the underlined effects in these two columns shows little difference between the two subgroups. Women

[18] Nonlinear estimates resulting from a fixed effects model with ordered response are presented in the Appendix.

[19] See Table A.1 in the Appendix.

[20] In the Appendix it is also analysed a second category that is even more restrictive, as it includes women who spend a total of 85% - 115% of their partner's total hours.

in both categories experience statistically significant losses at the 5% level when they work more than their partners.

Overall, for couples that advocate equality, with a fairly equal distribution of total time, and for women whose partners contribute relatively more to household management, the wellbeing losses remain significant and systematically large when women work more than their partners. Consequently, the unequal share of total time when a woman works more than her partner is not considered to be the main cause of the observed wellbeing losses, as they exist independently of the partners' shares.

1.4.2.4 Using women's labour market shares

Next, the indicator of working more than a partner is replaced by the share of women's hours in the labour market. This allows to determine whether wellbeing losses increase progressively and continuously with the share in the market or whether there is a discontinuity in losses once the share exceeds 0.5. Various indicators of the ranges of women's labour market shares are constructed to capture the nonlinear effects of labour market shares on women's wellbeing. Five different ranges of shares are constructed: 0-0.30, 0.30-0.50, 0.50-0.55, 0.55-0.70, and more than 70%, with the first range used as the baseline.

Column (10) in Table 1.5 clearly shows that there is a slight negative impact on women's welfare once their proportion is between 35% and 50% compared to the baseline. However, the estimate is not considered as statistically different from zero. Once the proportion of the woman's share slightly exceeds 50% (0.50-0.55), a wellbeing loss of 0.08 is observed, which is statistically significant at the 5% level. Thereafter, the wellbeing loss increases slightly to 0.11 within the range of 0.55-0.70 and then further to 0.19 when the share of women's hours in the labour market exceeds 70%.

Losses in wellbeing occur when women's share in the labour market exceeds only 50%, and remain at a comparable level at higher shares. Losses rise to a higher level only when the share of women's hours increases excessively.

Table 1.5: Sensitivity Analyses

	(1) τ-buc	(2) Chamberlain (linear probability)	(3) Chamberlain (logit)	(4) working couples	(5) only employees	(6) active partners	(7) pro-equality couples (time-use share: 0.8-1.2)
works more than partner	-0.188*** (-3.29)	-0.0266*** (-2.98)	-0.208*** (-3.09)	-0.0525** (-2.41)	-0.0616*** (-2.76)	-0.0550** (-2.54)	-0.0732** (-2.25)
above-median marginal effects	-0.0285*** (0.0086) -0.0126*** (0.0038)		-0.0492*** (0.0159)				
	(8) above-median male partners' housekeeping hours	(9) below-median male partners' housekeeping hours	(10) labour market shares	(11) controlling for woman's working hours	(12) controlling for lag of life satisfaction	(13) controlling for lag of satisfaction with partner	
works more than partner	-0.0638** (-2.23)	-0.0803** (-2.21)	-0.0740** (-2.23) -0.118*** (-2.91) -0.196*** (-2.70)	-0.0474** (-2.12)	-0.0578*** (-2.63)	-0.054** (-2.40)	

Notes: All specifications include as cofounders age, age squared, housework hours, childcare hours, caring hours, indicators of unemployment and full-time jobs, partner's working hours, partner's logarithm of earnings, partner's unemployment dummy, number of children and the logarithm of household disposable income. Moreover, individual, regional, and year fixed effects are also included. All estimates are obtained from fixed effects linear regressions. t statistics in parentheses are obtained by robust standard errors correcting for clustering across individuals. Standard errors in column (3) are obtained using the observed information matrix. Life satisfaction is an eleven-level measure of subjective wellbeing. The dependent variable in columns (2) and (3) is an indicator from the dichotomisation of life satisfaction at level 8. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18

1.4.2.5 Adding further cofounders

In addition, Equation 1.1 is again estimated after controlling for women's working hours. More precisely, instead of controlling for part-time and full-time employment, non-linear effects of women's working hours are introduced in Equation 1.1. The baseline indicator takes the value of one if a woman's weekly working hours do not exceed 20 hours, capturing women who are employed part-time. By adding three indicators for 21-30, 31-39, and more than 39 hours per week, respectively, this specification allows to control for nonlinearities in the impact of labour supply on women's wellbeing. According to column (11) in Table 1.5, the underlined effect of working more than a partner is -0.047, which is statistically significant at the 5% level.

Another robustness issue is to include the lag of women's wellbeing in the vector of controls and re-estimate Equation 1.1. One could imagine that some women are unhappy at home and choose to work longer hours than their partners to avoid being at home. This possible mechanism could bias the estimated effect of interest. Adding the lag of women's subjective wellbeing and the lag of satisfaction with their partners as additional controls militates against this potential bias. Columns (12) and (13) in Table 1.5 suggest that the results remain highly statistically significant and neither estimated effect is different from the main estimates.

1.4.2.6 Asymmetry with male partners

The final exercise is to examine whether men's wellbeing is influenced by working more in the labour market than their partners. The rationale behind this analysis is that any asymmetry between men and women in terms of the influence of who works more on their wellbeing would highlight the significance of traditional gender norms and would enhance the interpretation of the main results. Therefore, to investigate this question, Table A.24 displays the estimates from three different regressions on men's life satisfaction. Across all columns, the underlined estimated coefficient of working more than a partner is not statistically significant and lacks a meaningful effect size. To be specific, the fixed effect regression of Column (1) displays a coefficient of -0.007 with a p-value of 0.732, indicating that the difference in life satisfaction between men who work more than their partners and those who do not, is not statistically significant. Comparing this result with the corresponding result for women, Column (1) of Table 1.3 displays a wellbeing loss of 0.058 for women who work more than their partners, with a p-value less than 0.01. This contrast indicates an asymmetry between men and women in the extent to which working more than a partner influences their wellbeing. The absence of evidence for men in this analysis confirms that men's wellbeing is not significantly influenced by working more than their partners.

1.4.2.7 Limitations

Despite the robustness checks performed, the interpretation of the observed decrease in women's wellbeing as a cost of deviating from traditional gender norms may not capture other relevant factors that influence women's life satisfaction. For instance, the study does not account for unobserved marital problems that are not captured by the satisfaction with partner variable. Although the satisfaction variable is widely used in the literature, it has limited variation within individuals and might not fully capture the complexity of relationships between partners. Furthermore, the study does not directly measure the household environment and how joyful this is for a woman. Instead, the analysis relies on proxy measures such as the division of housework, which may not fully capture the nuances of the household dynamics. Moreover, the relationship with other household members or with colleagues at work might be factors that influence working women's wellbeing but are unobserved due to a lack of available data. Lastly, the study only examines one aspect of gender roles, namely the relative division of labour between partners, while other factors such as the cultural norms surrounding gender roles, women's perceived control over their lives, and the societal expectations of women's roles in the workplace, could also affect women's wellbeing. Therefore, the results should be interpreted with caution, and further research is needed to understand the full extent of the impact of deviating from traditional gender norms on women's wellbeing.

To conclude, the detailed sensitivity analyses[21], account for a variety of specification, sample selection, and estimation issues, and the estimates obtained remain remarkably stable and survive sensitivity analyses. The underlined estimates are unrelated to women's share of total hours, partners' contribution to housework, or women's working hours. The losses in wellbeing are better interpreted as the costs of not conforming to traditional gender roles in the labour market, rather than dissatisfaction due to an unfair distribution of total hours, as Fleche, Lepinteur, and Powdthavee (2020) suggest. Moreover, the present findings are consistent with Bertrand et al.'s (2015) assertion

[21] In the Appendix can be found the reported results of all the regressions discussed in this section, as well as the corresponding nonlinear estimates. In addition, an analysis focusing on the indicator of earning more than a partner is also presented there. It assumes that earning more than a partner is another indicator of deviation from traditional gender roles in the labour market, and this leads to similar conclusions for variation in women's wellbeing.

that the sharp decline in women's income share beyond the 0.5 threshold, which occurs when women's income exceeds that of their partners, can be attributed to gender identity norms that prescribe men to earn more than women. However, recent critiques have challenged this interpretation, arguing that the discontinuity just to the right of 0.5 may be due to co-working spouses who report identical incomes. These critiques suggest that same-income earners are typically self-employed or couples working in the same profession, and their position at the 0.5 threshold is unrelated to gender norms (Zinovyeva and Tverdostup, 2018). The present study addresses these critiques in two ways. First, it focuses on the share of working hours rather than earnings, and a 50% share in working hours barely coincides with an exactly similar share in earnings. Second, through thorough sensitivity analyses, self-employed partners and partners working in family businesses are excluded, providing further support for the robustness of the empirical results. Doumbia and Goussé (2022) also examine the validity of Bertrand et al.'s (2015) interpretation in light of the aforementioned critiques and find their main interpretation to be robust.

Lastly, as already mentioned above, the limitations of the current study should be acknowledged and must be taken into consideration.

1.4.3 Heterogeneity Analyses

This section uncovers the heterogeneity of wellbeing loss in the context of various socioeconomic and regional factors that are found to be determinants of existing gender norms and stereotypes. More specifically, the heterogeneity analysis considers women's educational attainment, birth cohort, and their mother's employment status during underlined women's adolescence, as well as each region's historical sex ratio at the beginning of the 20th century. Table 1.6 distinguishes between positive and negative sample selection in terms of gender roles and reports the impact of working more than a partner on women's wellbeing within each category[22].

1.4.3.1 Level of education

Women with higher levels of education are less likely to adhere to gender stereotypes and norms, while they are more likely to enter the labour market with career ambitions (Fernandez, Fogli and Olivetti, 2004; Olivetti, Patacchini and Zenou, 2020). An analysis focusing on well-educated women is likely to yield lower wellbeing losses if the education

[22] Detailed information on the regressions discussed in this section can be found in the Appendix. Moreover, non-linear estimates obtained from an ordered-response model are also presented in the Appendix.

Table 1.6: Heterogeneity Analyses

	Negatively selected to gender roles	Positively selected to gender roles	
1. Level of education	with college degree	without college degree	
	-0.0291	-0.0724**	
	(-1.04)	(-2.31)	
2. Birth Cohort	millennials (1976 or later)	generation X (1965 - 1975)	baby boomers (1945 - 1964)
	-0.0244	-0.0687*	-0.0712**
	(-0.66)	(-1.84)	(-1.96)
3. Mother's background	mother was employed	mother was not employed	mother was not employed, birth cohort: 1945 - 1975
	-0.0590**	-0.0540*	-0.140*
	(-2.16)	(-1.65)	(-1.62)
4. Before childbirth		women below 40 without children	
		-0.0954**	
		(-2.45)	
5. Regional differences	neutral historical sex ratios	male-biased historical sex ratios	
	-0.0273	-0.113***	
	(-1.03)	(-3.13)	

Notes: All specifications include as cofounders age, age squared, housework hours, childcare hours, caring hours, indicators of unemployment and full-time jobs, partner's working hours, partner's logarithm of earnings, partner's unemployment dummy, number of children and the logarithm of household disposable income. Moreover, individual, regional, and year fixed effects are also included. All estimates are obtained from fixed effects linear regressions. t statistics in parentheses are obtained by robust standard errors correcting for clustering across individuals. Life satisfaction is an eleven-level measure of subjective wellbeing. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18

process acts as a shift in long-standing and inherited norms. The first row in Table 1.6 shows the linear estimates within partnered women with at least a college degree and within women without a college degree. As the results suggest, the estimated effect of working more than a partner is -0.029 and is not statistically different from zero at the 10% level among women with a college degree. At the same time, the corresponding effect in the group of less educated women exceeds -0.07, which is statistically significant at the 5% level. Wellbeing losses are more pronounced among women with lower educational attainment, a result that is related to the stricter gender norms that prevail in this category.

1.4.3.2 Birth cohort

Another source of variation is seen in the birth cohort of women, as common perceptions shape the beliefs of each generation and social change creates differentiations between cohorts (Giuliano, 2020). Three generations of sufficiently large size can be formed from the main sample: the baby boomer subsample, which includes women born between 1945 and 1965; the Generation X group, with women born in the decade 1965 - 1975; and the late X and Millennials group, which includes women born after 1975. Societal progress toward equality suggests that gender norms will moderate across generations and that younger people will therefore be less affected by traditional gender roles and differences.

The second line in Table 1.6 compares the estimates across generations. The results show that the impact of working more than a partner on women's wellbeing decreases across generations, both in terms of magnitude and statistical significance. The impact within Boomers exceeds 0.07, then drops slightly to 0.068 for Generation X, and then drops to 0.02 for Millennials. The wellbeing loss is statistically significant at the 5% and 10% levels for Boomers and Generation X, respectively. The small effect within the younger cohorts (Millennials) cannot be considered statistically different from zero. Social change appears to be producing important differentiations between generations as younger women adopt more progressive beliefs that challenge traditional gender norms and roles.

1.4.3.3 Mother's background

The literature suggests that the mother's employment status during adolescence influences women's identity and personality traits in maturity. In particular, maternal employment status appears to predict women's labour market behaviour remarkably well, as mothers are role models for their daughters and shape their gender ideologies (Blau et al., 2013; Johnston et al., 2014). As a result, the impact of working more than a partner on women's wellbeing might differ according to their mothers' past employment status.

The results suggest that the estimates do not differ between these two groups. In particular, the third line in Table 1.6 suggests that the wellbeing losses are similar in the two categories. A more detailed analysis shows that the results are robust to the existing literature once the group of Millennials — a higher educated generation on average, with more progressive perceptions — is excluded. To be more precise, partnered women in the Boomer and Generation X sample, who were born between 1945 and 1975 and work more than their partners, report strong wellbeing losses if their mothers were not working during their adolescence. The effect is estimated at -0.14, which is statistically significant at the 10% level. On the other hand, the wellbeing losses for women born between 1945 and 1975 whose mothers were in the labour market are small and not statistically different from zero.

1.4.3.4 Before childbirth

Ciminelli et al. (2021) suggest that gender norms and stereotypes are the main cause of the observed gender differences and inequalities in the pre-birth period. In addition, the impact of gender norms on women's wellbeing is expected to be greater in the pre-birth period, as the financial needs of the household are lower compared to those after childbirth. Consequently, an analysis that focuses only on younger women without children is expected to reveal greater reductions in wellbeing due to gender roles.

The fourth row in Table 1.6 isolates those women who are less than 40 years old and do not have children. The analysis confirms the above hypotheses by suggesting that these women experience greater losses in wellbeing, approaching 0.1 and significant at the 1% level.

1.4.3.5 Regional differentiations

Finally, regional culture is also a determinant that influences the identity of individuals through various channels. Grosjean and Khattar (2019) show that historical sex ratios in Australia have a strong influence on regional perceptions of gender roles and culture — both directly and indirectly[23]. In particular, they suggest that regions with male-biased historical sex ratios have long held to more conservative ideas about gender that have carried over into contemporary local societies.

Using available information from the Australian Bureau of Statistics, I highlight the States with the lowest sex ratios between women and men in the first half of the 20th century.[24] I then distinguish between States with a neutral historical sex ratio and States with a male-biased sex ratio. The effects of working more than a partner on women's wellbeing are shown in the last row in Table 1.6. There is a clear difference between States with male-biased and neutral historical sex ratios. The losses in women's wellbeing in regions with male-biased populations between 1900 and 1950 are more than 0.11, which is significant at the 1% level, while the same impact in other regions is estimated to be about -0.027, which is not statistically different from zero. Geography is another important determinant that should also be considered in the literature to examine the existing gender roles and their impact on women's perceptions and choices.

[23]Note that historical gender conservative notions not only affect the ideologies of contemporary individuals through the direct route of inherited culture, but that these notions also influence regional institutions, perceptions of women, and local customs. Moreover, historical male-biased sex ratios might be related to strong gender differentiation, which in turn has pushed women with more equitable and egalitarian tastes out of these regions.

[24]Table A.33 in Appendix A shows the sex ratio between women and men by State in the first half of the 20th century, as well as the 50-year average.

The heterogeneity analysis accounts for existing gender norms and finds that losses in wellbeing are greater in more traditional groups, while less significant in more progressive groups. Geographical and generational differences contribute to the observed heterogeneity, indicating that regional culture, beliefs, social change, and progress play important roles. However, this section examines just a fraction of possible sources of heterogeneity. For instance, other cultural and social factors, such as a woman's religious background or social class, may play a role in shaping her identity and decision-making. Additionally, individual differences in personality traits, such as resilience, or risk-taking tendencies, could influence how women behave when they do not conform to traditional gender norms. Moreover, contextual factors, such as the availability of social support, the quality of relationships with co-workers, or the organisational culture, may also differentiate the effect of deviating from traditional gender norms on women's wellbeing. Therefore, while the heterogeneity analysis provides important insights into the underlying mechanisms of the observed effects, further research is needed to explore the complexity and nuances of women's experiences in different contexts and to design effective interventions that address their unique needs and challenges.

1.4.4 A Potential Mechanism for Women's Barriers in Employment

This section focuses explicitly on the relationship between gender roles and women's labour market outcomes. More specifically, it introduces and estimates a potential mechanism that aims to explain women's lag in employment as an indirect result of norms and stereotypes. Recall that Figure 1.1 introduces two paths, the direct path capturing the effect δ of working more than a partner on women's labour supply, and the indirect effect through the cost to wellbeing as a consequence of the deviation from traditional gender roles. The indirect path is measured by the product of the parameters β_1 and ρ. The estimate of the parameter β_1 from the linear fixed effects specification of Equation 1.1 is 0.058, as shown in Section 4.1. In this section, the estimates for the parameters δ and ρ, obtained from a two-stage linear fixed effects regression on Equation 1.2, are presented. To obtain unbiased estimates for δ and ρ, an instrumental variables approach is combined with fixed effects estimation to control for both time-varying and time-constant unobserved heterogeneity in the next period female labour supply equation.

To begin with, partnered women's wellbeing is instrumented using parental divorce or separation as well as the one-off shock in the difference between the average hours in women's and husbands' industries as instrumental variables. The first-stage regressions on women's wellbeing are shown in Table 1.7. Column (1) reports the first-stage regression on all active women's life satisfaction, while column (2) shows the first-stage estimates for working women, solely. Column (3) shows the respective first-stage results

Table 1.7: First - Stage Regressions: lag of life satisfaction

	(1)	(2)	(3)	(4)	(5)	(6)
lag of parental divorce	-0.453***	-0.522***	-0.585***	-0.453	-0.522	-0.585
	(-2.70)	(-3.02)	(-3.35)	(-1.27)	(-1.38)	(-1.51)
lag of shock	-0.00174***	-0.00154**	-0.00241***	-0.00174***	-0.00154**	-0.00241***
	(-2.85)	(-2.48)	(-3.58)	(-2.65)	(-2.28)	(-3.51)
age	-0.0474***	-0.0434***	-0.0397***	-0.0474***	-0.0434**	-0.0397*
	(-3.92)	(-3.57)	(-3.10)	(-3.14)	(-2.84)	(-2.45)
age square	0.000510***	0.000480***	0.000420***	0.000510***	0.000480**	0.000420*
	(3.84)	(3.58)	(2.96)	(3.11)	(2.88)	(2.37)
housework hours	0.000822	0.000581	0.000730	0.000822	0.000581	0.000730
	(0.82)	(0.57)	(0.70)	(0.74)	(0.50)	(0.62)
childcare hours	0.00156***	0.00157***	0.00128**	0.00156***	0.00157**	0.00128*
	(2.79)	(2.77)	(2.24)	(2.61)	(2.60)	(2.13)
caring hours	-0.00401**	-0.00386**	-0.00312	-0.00401	-0.00386	-0.00312
	(-2.04)	(-1.96)	(-1.30)	(-1.68)	(-1.60)	(-1.08)
unemployed	-0.0864			-0.0864		
	(-1.60)			(-1.32)		
full-time job	-0.0348	-0.0402	-0.0420	-0.0348	-0.0402	-0.0420
	(-1.66)	(-1.91)	(-1.93)	(-1.49)	(-1.71)	(-1.75)
partner's working hours	-0.000800	-0.000776	-0.000455	-0.000800	-0.000776	-0.000455
	(-0.79)	(-0.76)	(-0.42)	(-0.74)	(-0.72)	(-0.41)
unemployed partner	0.0496	0.0410		0.0496	0.0410	
	(0.95)	(0.78)		(0.92)	(0.74)	
log of partner's earnings	-0.000748	0.00177	0.000434	-0.000748	0.00177	0.000434
	(-0.05)	(0.12)	(0.02)	(-0.05)	(0.12)	(0.02)
number of children	-0.0375**	-0.0404***	-0.0401**	-0.0375**	-0.0404**	-0.0401**
	(-2.54)	(-2.72)	(-2.59)	(-2.03)	(-2.15)	(-2.01)
log of household's income	0.0255	0.0203	0.0417	0.0255	0.0203	0.0417
	(0.84)	(0.66)	(1.26)	(0.76)	(0.59)	(1.10)
Observations	17020	16613	15605	17020	16613	15605

Notes: Columns (1) and (4) report the estimates from the regression on all active women, columns (2) and (5) show the estimates on working women, and columns (3) and (6) report estimates for working couples. Columns (1) - (3) do not cluster for repeated observations, and columns (4) - (6) report t statistics in parentheses obtained from clustered standard errors. There are two IVs: the lag of parental divorce is an indicator variable that takes value 1 if the respondent woman's partners divorced or separated in the previous year. The lag of shock is the lag residual difference between the average hours of woman's and husband's industries obtained from the liner projection on the previous and the next year average differences. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18 within couples in which both partners are currently employed. Partnered women's wellbeing is negatively associated with the indicator of a parental divorce or separation, as expected. In particular, within the general sample of all active women, a parental divorce or separation is related to a wellbeing drop of 0.45, which is significant at the 1% level. In the cases of working women and working couples, the estimated coefficients of the parental divorce slightly increase to 0.52 and 0.58, respectively. In addition, the shock on industry hours implies strong negative effects on women's life satisfaction, significant at 1% level across all sub-samples. The magnitude of the corresponding estimates vary from -0.0017 in column (1) to -0.0024 in column (3). Moreover, columns (4), (5) and (6) account for clustering observations across repeated partnered women. The estimate for the shock in industry hours remains highly statistically significant, while the respective estimates for the parental divorce are statistically significant only at the 15% level.

The second endogeneity concern focuses on the indicator of partnered women working more than their spouses. Table 1.8 presents the first-stage regressions on the highlighted indicator of working more than a partner. Columns (1) - (3) report the first-stage regression on the probability of working more than a partner for all active women (column (1)), within the sub-sample of working women (column (2)) and within working couples (column (3)), respectively. Across all columns, partnered women's probability of working more than their partners is negatively associated with the indicator of a parental divorce or separation and positively related to the shock in industry hours. To give an idea of the magnitudes, parental divorce or separation decreases the probability of working more than a partner for the average woman by 0.07 - 0.091, while the estimate for the industry shock ranges between 0.0048 and 0.0064. Note that the parental divorce yields hardly statistically significant estimates (significant only at the 20% level), while the estimates related to the industry hours are statistically significant at the 1% level. Looking at columns (4), (5), and (6), which account for clustering observations across repeated observations of partnered women, no changes in the magnitude or in the statistical significance are observed.

Finally, the second-stage regressions are shown in Table 1.9. The results for the main sample of all active women are presented in column (1). The two-stage estimate for women who worked more than their partners in the previous year suggests that they supply on average 3.4 hours per week more in the labour market the following year, compared to those women whose past working hours did not exceed their spouses' hours. The estimated effect is statistically significant at the 1% level. In addition, a wellbeing improvement by one unit increases partnered women's labour supply by 2.8 hours per week in the next year, on average. The latter effect is statistically significant only at the 25% level. The cofounding variables are jointly statistically significant at the 1% level, providing sufficient support to the underlined effects of interest. The same conclusions

Table 1.8: First - Stage Regressions: lag of working more

	(1)	(2)	(3)	(4)	(5)	(6)
lag of parental divorce	-0.0770	-0.0705	-0.0910	-0.0770	-0.0705	-0.0910
	(-1.20)	(-1.06)	(-1.37)	(-0.86)	(-0.75)	(-0.95)
lag of shock	0.00643***	0.00645***	0.00481***	0.00643***	0.00645***	0.00481***
	(27.78)	(26.94)	(18.76)	(21.74)	(21.13)	(16.36)
age	-0.00911**	-0.00863*	-0.00367	-0.00911	-0.00863	-0.00367
	(-1.98)	(-1.84)	(-0.75)	(-1.52)	(-1.42)	(-0.59)
age square	0.000150***	0.000146***	0.0000553	0.000150**	0.000146**	0.0000553
	(2.96)	(2.84)	(1.02)	(2.25)	(2.16)	(0.80)
housework hours	-0.000612	-0.000547	-0.000593	-0.000612	-0.000547	-0.000593
	(-1.60)	(-1.39)	(-1.49)	(-1.59)	(-1.36)	(-1.45)
childcare hours	-0.000216	-0.000217	-0.000268	-0.000216	-0.000217	-0.000268
	(-1.01)	(-1.00)	(-1.23)	(-0.93)	(-0.91)	(-1.13)
caring hours	0.00112	0.00114	0.00172*	0.00112	0.00114	0.00172*
	(1.50)	(1.51)	(1.88)	(1.49)	(1.49)	(1.91)
unemployed	0.00855			0.00855		
	(0.42)			(0.49)		
full-time job	0.0763***	0.0772***	0.0833***	0.0763***	0.0772***	0.0833***
	(9.58)	(9.52)	(10.05)	(8.68)	(8.65)	(9.27)
partner's working hours	-0.00398***	-0.00400***	-0.00427***	-0.00398***	-0.00400***	-0.00427***
	(-10.33)	(-10.17)	(-10.43)	(-8.11)	(-7.95)	(-8.04)
unemployed partner	-0.0329*	-0.0285		-0.0329	-0.0285	
	(-1.66)	(-1.40)		(-1.21)	(-1.02)	
log of partner's earnings	-0.0750***	-0.0767***	-0.0790***	-0.0750***	-0.0767***	-0.0790***
	(-13.73)	(-13.76)	(-11.54)	(-9.93)	(-9.87)	(-8.48)
number of children	-0.0337***	-0.0338***	-0.0363***	-0.0337***	-0.0338***	-0.0363***
	(-5.99)	(-5.91)	(-6.17)	(-5.16)	(-5.07)	(-5.28)
log of household's income	0.0403***	0.0371**	0.0624***	0.0403**	0.0371**	0.0624***
	(3.47)	(3.12)	(4.94)	(2.87)	(2.59)	(4.20)
Observations	17020	16613	15605	17020	16613	15605

Notes: Columns (1) and (4) report the estimates from the regression on all active women, columns (2) and (5) show the estimates on working women, and columns (3) and (6) report estimates for working couples. Columns (1) - (3) do not cluster for repeated observations, and columns (4) - (6) report t statistics in parentheses obtained from clustered standard errors. There are two IVs: the lag of parental divorce is an indicator variable that takes value 1 if the respondent woman's partners divorced or separated in the previous year. The lag of shock is the lag residual difference between the average hours of woman's and husband's industries obtained from the liner projection on the previous and the next year average differences. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18 are also extracted from column (4), which analyses the same sample after clustering for repeated observations.

Columns (2) and (3) in Table 1.9 report the estimates only within employed women and within working couples, respectively. The impact of working more than a partner on women's future working hours is 4.1 within employed women, and 6.8 within working couples. Both estimates are statistically significant at the 1% level. Notice that the estimated impact increases remarkably within working couples. This finding supports the working hypothesis of the direct career pathway. Both estimates remain statistically significant at the 1% level once the analysis uses robust standard errors (columns (5) and (6)). Looking at life satisfaction estimates in columns (2) and (3), it is found that a one-unit wellbeing improvement increases the following year's working hours by 2.74 per week among employed women and by 1.475 per week within working couples. It is worth stressing that within working couples, the psychological impact becomes less sizeable and not statistically different from zero. In other words, the psychological path within this sub-sample does not generate strong implications in relation to women's working hours, since both partners are expected to have a stable and constant participation in the labour market as dual-earners. The control variables remain jointly statistically significant at the 1% level across all columns in Table 1.9.

Now that the causal parameters of Figure 1.1 have been estimated, a mediation analysis allows to measure both the direct effect of working more than a partner on the woman's labour supply in the following year, i.e. the career path measured by δ, and the indirect path of wellbeing costs measured by the product of β_1 and ρ.

The estimates obtained from a two-stage fixed effects estimation suggest that women who work more than their partners work on average 3.4 hours more per week in the following year[25]. In other words, the direct positive effect on future working hours of women who have worked more than their partners in the past means that these women have already entered an upward spiral called a career path.

The second element of this decomposition analysis consists of the indirect effect of women's loss of wellbeing. Women who work more than their partners report lower life satisfaction on average. This in turn affects working hours in the following year. The estimated indirect effect is the product of -0.058 and 2.8. In other words, women who work more than their partners reduce their labour supply by 0.16 hours per week on average.[26] Thus, the psychological indirect path has a small effect on women's working

[25]The main sample includes all active women. When the analysis focuses on working women and working couples, the same effect jumps to 4.1 and 6.8 hours per week, respectively.

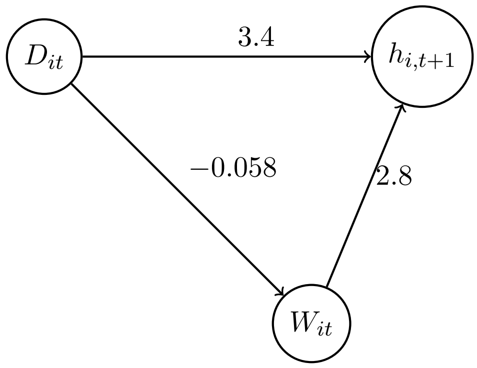
[26]The psychological (indirect) effect on women's labour supply for working women and working couples is -0.15 and -0.08, respectively.

Table 1.9: Women's Labour Market Outcomes: working hours - 2SLS

	(1)	(2)	(3)	(4)	(5)	(6)
lag of working more than partner	3.413***	4.122***	6.828***	3.413**	4.122***	6.828***
	(3.43)	(4.47)	(4.79)	(1.83)	(2.52)	(2.49)
lag of life satisfaction	2.833	2.738	1.475	2.833	2.738	1.475
	(1.06)	(1.13)	(0.71)	(0.46)	(0.47)	(0.29)
age	0.993***	0.993***	0.869***	0.993***	0.993***	0.869***
	(6.14)	(6.85)	(6.70)	(2.88)	(3.21)	(3.31)
age square	-0.0121***	-0.0123***	-0.0105***	-0.0121***	-0.0123***	-0.0105***
	(-6.81)	(-7.58)	(-7.42)	(-3.17)	(-3.51)	(-3.67)
housework hours	-0.0839***	-0.0854***	-0.0836***	-0.0839***	-0.0854***	-0.0836***
	(-10.83)	(-10.91)	(-10.60)	(-8.94)	(-9.15)	(-8.99)
childcare hours	-0.0729***	-0.0753***	-0.0719***	-0.0729***	-0.0753***	-0.0719***
	(-12.51)	(-13.29)	(-14.64)	(-6.53)	(-6.92)	(-8.65)
caring hours	0.00689	0.00455	-0.00682	0.00689	0.00455	-0.00682
	(0.39)	(0.26)	(-0.37)	(0.25)	(0.18)	(-0.32)
unemployed	-19.82***			-19.82***		
	(-42.40)			(-28.83)		
full-time job	16.22***	15.96***	15.46***	16.22***	15.96***	15.46***
	(94.32)	(89.07)	(82.58)	(59.51)	(55.49)	(55.19)
partner's working hours	0.0548***	0.0596***	0.0783***	0.0548***	0.0596***	0.0783***
	(5.78)	(6.45)	(7.46)	(3.58)	(4.15)	(4.64)
unemployed partner	0.653	0.794		0.653	0.794	
	(1.60)	(1.93)		(1.20)	(1.49)	
log of partner's earnings	-0.335**	-0.290**	-0.478***	-0.335*	-0.290*	-0.478*
	(-2.41)	(-2.12)	(-2.63)	(-1.75)	(-1.68)	(-1.81)
number of children	-0.456***	-0.442***	-0.411**	-0.456	-0.442	-0.411
	(-2.78)	(-2.75)	(-2.48)	(-1.45)	(-1.42)	(-1.32)
log of household's income	2.154***	2.297***	2.138***	2.154***	2.297***	2.138***
	(8.53)	(9.27)	(7.15)	(5.72)	(6.49)	(4.32)
Observations	17020	16613	15605	17020	16613	15605

Notes: Columns (1) and (4) report the estimates from the regression on all active women, columns (2) and (5) show the estimates on working women, and columns (3) and (6) report estimates for working couples. Columns (1) - (3) do not cluster for repeated observations, and columns (4) - (6) report t statistics in parentheses obtained from clustered standard errors. The lags of working more than partner and of life satisfaction are instrumented using two IVs: the lag of parental divorce is an indicator variable that takes value 1 if the respondent woman's partners divorced or separated in the previous year. The lag of shock is the lag residual difference between the average hours of woman's and husband's industries obtained from the liner projection on the previous and the next year average differences. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18 hours, slightly delaying women's career progression, and only partially explaining the remaining employment gaps.

FIGURE 1.4: A Representation of the Estimated Total Effect of Working More Than a Partner on Female Labour Supply.



In summary, the decomposition analysis shows that Australian women who work more than their partner have already embarked on a career path that systematically increases their labour force participation on average. Gender roles through wellbeing costs only inhibit this path to a small extent. The intra-women psychological mechanism through wellbeing losses explains only part of the lagged gender convergence, as substantial wellbeing costs do not translate into strong employment costs that reverse women's labour supply. Thus, the lagged gender convergence could also be the result of other factors — internal or external to women's psychology and traits. For example, Cavapozzi, Francesconi and Nicoletti (2021) focus on the influence of peers, Olivetti, Patacchini and Zenou (2020) examine the maternity penalty, and Goldin (2014) suggests that the structure of jobs requires more flexibility to promote equal opportunities in the labour market.

1.5 Conclusion

Gender convergence in jobs and economic roles in the second half of the 20th century was remarkable in most advanced societies (Goldin, 2014), although there is increasing evidence of delayed convergence in recent years. Despite substantial gains in women's education and labour force participation, there are still significant barriers to women's advancement in the labour market. This paper shows that gender norms can have an impact on women's wellbeing once they go against traditional gender roles, and these costs to wellbeing may partly explain this delay.

The main contribution of this study is the evidence that women who choose to work longer hours than their partners systematically show lower life satisfaction. This finding emerges from both linear and non-linear regressions taking into account individual, year, and regional fixed effects. After several sensitivity analyses and robustness tests, the estimated loss can be justified by the costs of not conforming to traditional gender roles. However, other factors might also be taken into consideration in further analysis to ensure that the observed wellbeing loss emerges solely due to gender norms. Moreover, the heterogeneity analyses indicate strong wellbeing losses only within groups positively selected on traditional gender roles, while no effects are observed within more progressive subcategories. Overall, the results suggest that gender roles have a negative impact on wellbeing only among less educated women, women of older generations, and in regions with more conservative beliefs on gender issues.

Moreover, this paper measures the impact of these wellbeing losses on women's labour supply through a decomposition analysis of the impact of working more than a partner on women's labour supply in the next year. The decomposition analysis shows that women who choose to work longer hours than their partners increase their labour supply by an average of 3.4 hours per week. The effect mediated by the loss of wellbeing is negative, but not sizeable. The analysis suggests that while gender roles influence women's wellbeing, they do not strongly influence women's labour market decisions through this channel, and make only a minor contribution to labour market inequalities.

The internal mechanism based on women's own psychological costs seems to partially explain the remaining gender gaps in employment, as the negative effects on women's employment are small. The delayed gender convergence in the labour market could also be explained by other causes, such as the maternity penalty and the interrupted accumulation of human capital, as well as the structure of jobs, underlined working time arrangements and employers' stereotypes. Finally, gender roles and norms could affect women's employment decisions through other indirect channels, in addition to psychological costs.

Chapter 2

Partnering for Success: An Investigation of Occupational Association and Wage Effects among Australian Couples

Abstract

Recent trends of assortative matching in marriage markets suggest that several partners pursue similar careers. However, little is known about this category of couples. This study fills this gap by analysing a sample of Australian couples using a quasi-experimental design. The findings indicate that an occupational association with a partner is associated with substantial positive wage effects for women, but does not significantly impact men's wages. The positive wage effects are driven mainly by women who work part-time while their partner works full-time, and by women whose partners switch into their occupation (women whose partners follow them). The wage effects are also stronger for partners with a university degree. Finally, partners' wages increase progressively with the number of years they remain work-related.

2.1 Introduction

An extensive economic literature highlights a notable reversal of a long-standing socioeconomic status in most advanced economies during the last decades: Women's educational and employment outcomes have risen remarkably, leading to declining gender specialisation and less central gender differentiations (Blau and Khan, 2017; Torr, 2011). As a result, patterns of assortative mating by income and education have strengthened significantly in recent decades, leading to greater segmentation of marriage markets (Chiappori et al.,2020; Chiappori et al., 2018; Mansour and McKinnish, 2018; Choo and Sow, 2006). Therefore, attention has been focused on dual-earner couples who share the same occupation, although surprisingly little information has been gathered about these couples to date. This paper breaks new ground by focusing on this recently expanded subcategory within dual-earner couples, to examine and understand the labour market effects of dual-earner couples resulting from their similar career paths.

Marriage fundamentally shapes our societies, and couples who share the same occupation require special attention because, unlike the broader dual-earner category, their similar specialisation may be related to extended labour market or marital outcomes. More specifically, highly educated and higher-paid individuals are known to form more stable relationships than less educated and lower-paid individuals, as has been the case in the past (Yonzan, 2020; Ciscato, 2019; Anderberg and Zhu, 2014; Carbone and Cahn, 2014). Therefore, partners' similar career paths could potentially bring additional benefits to the marriage and contribute to the observed marital stability. Moreover, the empirical literature suggests that partners' wages are an important determinant of the balance of power within the household (Gayle and Shephard, 2019; Cherchye, De Rock, and Vermeulen, 2012; Blundell et al., 2007; Couprie, 2007). The similar specialisation of partners could be related to a shift in bargaining power under a potential mechanism of wage effects that affects household decision-making and consumption, as well as employment outcomes for all household members (Bredemeier, Gravert, Juessen, 2021). A particular focus on this category may also provide better insights into the observed gender wage gap and income inequality, as assortative mating by education and income contributes significantly to between-household inequality (Ciscato and Weber, 2020).

The principal aim of this study is to empirically examine the impact on spousal productivity of employment in an occupation similar to that of one's partner and to identify the causal effects on real hourly wages. Working in similar occupations can affect partners' productivity in different ways. The main hypothesis is based on the existence of productivity effects that might develop between partners with similar occupations. Economists have long claimed that spillover effects arise between people who communicate with each other in the workplace. These effects may be knowledge effects (Herbst and Mas, 2015; Azoulay et al. 2010; Jackson and Bruegmann, 2009), or peer effects as in Beckman et al.2017), and Falk and Ichino (2006), or free-riding (Kandel and Lazear, 1992). The empirical results of Mas and Moretti, (2009), support the hypothesis that strong positive productivity effects emerge between employees, which can be expressed as an increasing function of the frequency of communication and interaction. Similarly, Battisti (2017) finds that employees' skills significantly affect another individual's wage, while wage differences between varying demographics (gender, migrant status, etc) are partly explained by differences in employees' productivity. Bentsen et al. (2019) find significant but small knowledge externalities and spillover effects between coworkers, implying a direct impact on productivity and wages.

These results could reasonably be applied to couples with the same occupation. Partners who share common experiences both at home and at work are very likely to share similar problems at work and to advise or encourage each other on career issues. In addition, the success of one partner can trigger a peer effect that boosts the efforts of the other partner. The accumulated experience, working methods, and human capital could be a public good in a household where free-riding exists. Highly educated partners in particular can be expected to develop stronger knowledge effects, as most are in skilled occupations and free-riding on human capital can occur on a much larger scale.

Applied economists have focused on investigating the reasons individuals match — primarily due to preferences or searching costs — in marriage markets, and the gains from marriage.[1] However, to the best of my knowledge, there is no study that investigates the productivity and wage puzzle of dual-career couples with the same occupation, mainly because of the methodological limitations arising from the partners' endogenous decision to work in a similar occupation. Therefore, this research also speaks to the applied literature that examines gains from marriage, as it focuses on partners who are expected to complement each other, thus generating further benefits due to assortative mating. This behaviour is also supported by the 'power couple' assumption (Hennecke and Hetschko, 2021; Compton and Pollak, 2007; Costa and Kahn, 2000). In particular, according to Costa and Kahn (2000) and Compton and Pollak (2007), power couples are identified as those couples in which both partners hold, at least, a university degree and follow

[1] More specifically, transferable utility matching models in frictionless marriage markets, in the spirit of Chiappori et al. (2002), Choo and Sow (2006), and Chiappori et al. (2017), highlight the significance of education, not only for labour market outcomes but also for marriage outcomes, due to assortative mating in education. Schooling is a main sorting factor according to these models, since individuals wish to share similar culture, attributes, and lifestyle with partners (Jaffe and Weber, 2018; Dupuy and Galichon; 2014; Furtado and Theodoropoulos, 2011). In addition, searching models, assuming that markets are not frictionless, in the sense that individuals do not have unlimited capacity to meet potential partners, also highlight the importance of education. Blossfeld (2009) supports the premise that sorting in education is greater because women's improvements in education make it much more likely to meet there, while Nielsen and Svarer (2009) suggest that systematic search depends mainly on educational institutions. Belot and Francesconi (2013) and Pestel (2016) find that individuals prefer to be exposed to lower search costs and match according to their preferences under these constraints.

their career aspirations imposing high standards. The 'power couple' assumption suggests that these couples are able to combine success in professional life, and wealthier and more stable household formations. In this context, there is a positive role of being work-linked as there is mutual support and influence in relation to the career, as well as a steeper earnings progression.

Groothuis and Gabriel (2008) first introduced a model of intellectual labour augmentation to explain the marriage wage premium and assortative mating in education. Their main hypothesis is that partners are complementary productivity factors, with the education and skills of one spouse increasing the productivity and earnings potential of the other. Based on an analysis of the US Census of Population 2000 and the Current Population Survey 2003, they conclude that positive assortative mating may be due to the labour market effects of the intellectual augmentation of married households. Mansour and McKinnish's (2018) study focuses on couples in the same occupation and examines the matching patterns of partners pursuing similar careers. They test whether searching costs or preferences primarily determine matching among couples with the same occupation, without distinguishing between university or workplace searches. Using data from the 2008-2015 American Community Survey (ACS), they focus on women in the same occupation and compare their partners' wages. Their results suggest that the wages of partners in the same occupation are lower than wages of partners working in other occupations. The difference in partners' wages is more pronounced in occupations where the proportion of men is sufficiently large. They thus underline the importance of searching costs rather than matching based on preferences. Recently, Hennecke and Hetschko's study (2021) focused on the effects of occupationally connected partners on wellbeing, and examined the differences between occupationally connected and non-connected partners in terms of life satisfaction, job satisfaction, income satisfaction, and satisfaction with family and leisure. Using pooled regressions with ordinary least squares (OLS) and instrumental variables (IV) for German couples from the Socio-Economic Panel (SOEP), they find that a professional attachment increases both life and income satisfaction, while there are also significant positive effects on women's job satisfaction. Their findings suggest mutual career support between partners with the same occupation, confirming the assumption of a 'power couple'.

The analysis takes advantage of the extensive information available from the Household, Income and Labour Dynamics in Australia (HILDA) longitudinal survey, focusing on continuously married or cohabiting couples throughout the available waves of the panel, defined as stable[2] dual-earner couples, employed either in full or part-time jobs, between 2001 and 2018. The causal effect of working in a similar occupation on partners' real hourly wages is determined by a generalised difference-in-differences analysis. More specifically, partners working in the same industry and occupation at the same time are considered as treated units, while partners working in other occupations or industries during that time form the control group. In this quasi-experimental design, the counterfactual wages of partners working in the same occupation are identified under the assumption of a common trend between the wages of the treated and control groups before treatment. In this context, this assumption holds when there are no anticipatory effects and when the control group is positively selected for marriage gains. The main results suggest that couples in the same occupation see a positive effect on wages due to similar specialisation in the labour market. For men there is a marginal positive effect on their hourly wage, while for women this effect is much larger and highly statistically significant, ranging from 3.2% to 8.8%. Interestingly, most of these positive effects on women's wages are driven by highly-educated women, women who work part-time while their partners work full-time, and women whose partners switch jobs. Both partners appear to have cumulative effects from work-linkage, as the estimated positive effects on wages increase progressively with the number of years in the same occupation. Finally, gender gaps in pay and time use within partners, as well as the discrepancy between hours preferred and hours worked by women, seem to be amplified by the association in the labour market with their partners. Overall, the focus of this research is on stable couples and marital gains already exist, nevertheless the evidence suggests that similar employment and specialisation in the labour market add value to this marital gains.

This paper contributes to several research directions. A major contribution of this paper is to shed light on the wage dynamics of cohabiting partners with the same occupation, a recently expanded category of dual-career couples. As mentioned earlier, to the best of my knowledge there are only two empirical studies in the economics literature that focus on partners who are in the same occupation. The work of Mansour and McKinnish (2018) is an innovative study that, in contrast to my study, investigates whether women marry husbands with the same occupation who earn less than husbands who work in other occupations due to lower search costs. On the other hand, Hennecke and Hetschko (2021) examine the wellbeing effects when partners are work-linked. So my study is the first to directly address the following question: Are there productivity and wage effects for partners who are employed in the same job, and if so, by what mechanisms? Answering

[2]The restriction of the estimation sample to stable households is not uncommon. Theloudis (2018) and Lise and Yamada (2014) also select a sample of families that do not experience divorce, since wages are key determinants of the bargaining power and divorce patterns. More information on how stable couples are identified can be found in the Data section.

this question contributes to knowledge about the sorting mechanisms of homogamy by expanding the gains from marriage and supporting the 'power couple' hypothesis.

Second, this paper contributes to a large empirical literature that explores the productivity and wage effects that arise when occupationally connected individuals interact in the workplace. This paper presents an environment where life partners may or may not interact at work, but partnership effects arise between them when they follow similar career paths, and these effects impact their productivity at work. These partnership effects make sense because of the partners' similar specialisation in the labour market and their frequent communication at home. Thus, the potential mechanisms of productivity and wage effects are further extended to the household, a contribution that is highly relevant to the recently expanded remote and home working arrangements.

Finally, another contribution of this paper is to examine the role that dynamics within same-occupation couples play in gender gaps. The empirical analysis explores whether same-occupation couples operate in an equality-enhancing context and adopt characteristics that could have an impact not only on labour market outcomes and women's empowerment but also on household production and on the allocation of time.

The remainder of the paper proceeds as follows. Section 2 presents a theoretical framework and the corresponding hypotheses to explain the wage effects developed within same-occupation couples, while Section 3 describes the data sources. In Section 4, I present the empirical method and identification strategy. The results are documented in detail in Section 5, including the main findings, sensitivity analyses, further investigation of possible mechanisms, and discussion of the results. Section 6 provides possible extensions for future research and concludes.

2.2 Theoretical Framework and Hypotheses.

Same-occupation partners are usually seen as a form of positive assortative matching. In marriage markets, positive assortative matching allows couples to achieve higher levels of utility and thus enjoy significant gains from marriage (Becker, 1973). In other words, an individual not only finds a partner with similar tastes and preferences, but their complementarity also leads to additional gains that are expected to be expressed also through the augmentation of earnings. In this context, the question arises whether two partners who are similar because they have the same occupation or work in the same industry tend to develop work-related effects in addition to the typical gains from marriage related to marital stability and household production. These assumptions are also consistent with the power couple hypothesis (Costa and Kahn, 2000; Compton and

Pollak, 2007; Mariotti et al., 2015), i.e. working couples where both spouses have at least a bachelor's degree pursue career development and benefit from the extended gains from marriage. The theoretical analysis that supports the underlined hypotheses can be found in Appendix B. Same-occupation couples are analysed theoretically by reproducing the peer pressure model introduced by Kandel and Lazear (1992).

Hypothesis 1: Same-occupation couples have positive gains from marriage.

Given positive assortative matching and similar specialisation in the labour market, it can be assumed that work-related partners free-ride on each other's skills. Therefore, human capital and skills are a public good in the household and can be used by partners to increase their productivity. Free-riding might be greater among couples who have the same occupation, as their similar tasks in the labour market also require similar skills and working methods. It stands to reason that better-educated partners generate a higher stock of human capital and as a result can end up at a higher level in the workplace hierarchy and earn a higher income than working couples who are not linked.

Hypothesis 2: Human capital, skills, and knowledge are public goods in the household.

Partner association in the workplace can lead to peer effects — similar to the effects that develop among co-workers. Kandel and Lazear (1992) present the conditions under which peer pressure exists in the workplace. They point out that peer pressure always arises when partnerships exist, as individuals tend to show empathy for those whose income is affected by their actions. Following Kandel and Lazear (1992) and Mas and Moretti (2009), the mechanism described above that generates peer pressure in the workplace is also expected to apply to life partners who pursue similar careers in the labour market and can monitor each other's efforts and success in the workplace through their interaction at home.

Hypothesis 3: The success of one partner motivates the effort of the other partner.

Cosaert, Theloudis, and Verheyden, (2020) point out that togetherness is an important component of time use in the household, while time spent together is a major gain from marriage for life partners. Time spent together indicates the frequency of domestic communication among couples with the same occupation, which is a key parameter in this particular framework. More specifically, the extent of each partner's influence on the other partner's productivity is determined by the time spent together at home, as it is during this time that partners can discuss work-related issues in depth and exchange ideas and concerns.

Hypothesis 4: Frequent communication between partners at home is a crucial factor in developing productivity-enhancing effects.

Advice from one partner on work-related issues, mentoring, and mental or technical support on career issues could also increase the productivity and income of the other partner. Given the positive assortative mating and shared work experiences, this mechanism of support might be more pronounced in couples with the same occupation. In particular, mentoring and career support from the male partner are considered key examples of positive masculinities (OECD, 2021; Apospori et al., 2008), which are likely to enhance women's self-confidence, creativity, and career development. Moreover, there are several studies that point to strong network effects on co-worker productivity (Lindquist, Sauermann and Zenou, 2015; Jackson and Bruegman, 2009). Therefore, the social interactions of one partner may generate network effects on the work outputs and hiring decisions of the other partner. In particular, one partner's network could act as an information mechanism that favours the other partner. In any case, partners who have the same occupation are better able to support each other's careers by sharing information and networks, or even by engaging in nepotism, compared to partners who have similar positive gains from marriage and high skill and education levels, but who work in different industries and occupations.

Hypothesis 5: Mentoring, nepotism, and networking develop more easily between partners who share the same profession.

These hypotheses can be rejected for several reasons. The wage gains resulting from job attachment may be limited to situations where career ladders are long, i.e. in highly-skilled occupations. Moreover, the gains due to similar career paths might not be expressed in monetary terms, but only in non-financial benefits such as a better work-life balance or job satisfaction. In this case, the extended positive gains from marriage and the power couple scenario still apply, but these positive influences do not translate into higher income. Finally, gender differences due to gender identity and norms may also limit the expected positive productivity effects of same-occupation partners. There is a large literature demonstrating that societal gender norms are an important determinant of labour market outcomes, especially for women (Cavapozzi, Francesconi and Nicoletti, 2021; Olivetti, Patacchini, and Zenou, 2020; Bertrand, Pan, and Kamenica, 2015;

Alesina, Giuliano, and Nunn, 2013). Gender norms can influence the labour market behaviour of same-occupation partners in a number of ways, two of which are highlighted in this paper. First, in more conservative societies, both spouses may face negative productivity effects if they pursue similar careers. Such a situation not only violates the male breadwinner regime, but also exerts counterproductive social pressure because these couples do not conform to societal gender stereotypes in their career choices and success. On the other hand, in societies with greater gender equality, partners with the same occupations could develop strong support and solidarity mechanisms through women's higher career expectations and salary demands and men's motivation and allying, as described above.

2.3 Data

The empirical analysis is based on the Household, Income, and Labour Dynamics in Australia (HILDA) Survey[3], which is a nationally representative longitudinal survey of private households in Australia, spanning the period 2001-2018. The HILDA database includes detailed information on time use, both in terms of labour market and domestic work, and makes it possible to link a sufficiently large number of partnered individuals with different economic status or educational and cultural backgrounds. In addition, it contains detailed information on the occupation and industry of each worker, thus enabling classification by digits, which makes it possible to associate partners with matching job tasks.

The restricted subsample used in the analysis contains information on (heterosexual) partners who are either married or defacto spouses. The analysis distinguishes between two types of couples: those who remain consistently together[4] throughout the available years of the panel, and those who may divorce or separate during this time. Only the former category, identified as stable couples, is included in the analysis. Specifically, stable couples are defined as those who have registered as a couple from the first year of their formation until the most recent available data, or until the death of one partner. Partners who divorce during the available years or partners who separate and reconnect are not considered stable couples and are excluded from the analysis. This approach aims to exclude couples who may have ceased to enjoy the benefits of their relationship years before their formal divorce or separation. This method of identifying stable couples

[3]The HILDA Project was initiated and is funded by the Australian Government Department of Social Services (DSS) and is managed by the Melbourne Institute of Applied Economic and Social Research (Melbourne Institute). The findings and views reported in this paper, however, are those of the author and should not be attributed to either the DSS or the Melbourne Institute.

[4]Couples who change their status from de facto (cohabiting) partners to married partners are considered within this category.

is based on Theloudis's (2018) approach. The subsample of stable couples seems more appropriate for empirically testing whether there are wage effects among couples with the same occupation, since couples who decided to separate are likely to communicate less at home and not share information about their employment. Because prime-age women must choose between education, work, and family life, the analysis focuses on couples in which the female partner is older than 24. At the same time, individuals older than 60 are not included because their labour market supply, both at the extensive and intensive margins, may be affected by proximity to retirement. Some extreme values are also removed. In particular, the maximum hours worked in the main job for each person are capped at 55 hours per week, eliminating the top 5% of the hours distribution. As of January 1, 2010, in accordance with the Fair Work Act 2009, Australia has a 38-hour working week, with additional hours compensated for as overtime. Outliers working more than 55 hours per week are therefore more likely to have a poor work-life balance with less time at home and consequently less interaction and communication with other family members in the household. To avoid outliers at both the low and high ends of the distribution of hourly wages, individuals at both the high and low 1%[5] of the distribution are removed. The final sample consists of 13,037 observations of working couples.

Table 2.1: Summary Statistics

	Women			Men		
Variable	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Age	13,037	41	9.28	13,037	41.2	9.27
Education	13,037	3.7	1.91	13,037	3.68	1.74
Experience	12,989	19.95	9.07	13,030	25.9	10.5
Full-time contract	13,037	0.496	0.5	13,037	0.926	0.26
Part-time contract	13,037	0.504	0.5	13,037	0.074	0.26
Weekly Working Hours	13,037	30.53	11.84	13,037	41.3	7.9
Real Hourly Wage	13,037	28.6	13.3	13,037	33.6	16.25
Same Occupation	13,037	0.062	0.24	13,037	0.062	0.24

Note: Age is calculated at the year each couple was first recorded. Education is denoted as a seven-scale ordered variable. The lowest level of education is equal to 1 denoting 'year 11 or below', while education equal to 7 is the highest level, that is a master's or doctorate level. Between 1 and 7 there exist the following levels of education: 2: year 12, 3: certificate III or IV, 4: diploma, 5: college degree, and 6: graduate diploma. Education captures the pooled average over the years, which is almost identical to the education level at the year each couple was recorded for first time. More details can be found in Table B.2. Data source: HILDA Release 18.

Table 2.1 summarises the main variables used in the empirical investigation. The average age of the partnered men and women is 41.2 and 41 years respectively, which seems appropriate given that the limited sample ranges from 24 to 60 years old. Education

[5] The low 1% includes hourly wages of less than \$5, while the high 1% of the distribution includes wages of more than \$115 per hour.

is reported as a seven-level ordered variable in HILDA. Specifically, the lowest level of education equals 1 and means 'grade 11 or below', while education equalling 7 is the highest level, i.e. a master's or doctorate level.[6] As shown in Table 2.1, males and females have similar average levels of education, falling between category 3 'Certificate III or IV', and category 4 'Diploma'. Experience measures the total number of years each individual has been employed in their current or previous job. The average Australian male spouse reports 25.9 years of work experience, and has 6 years more experience than the average female spouse. In addition, the division between full-time and part-time jobs is fairly even for female spouses, while men work mainly in full-time jobs and less than 8% of them are employed part-time. Weekly working hours measure the average hours worked per week in the main job. The average weekly working time for women is about 31 hours, while men spend 41.3 hours per week in the labour market. The real hourly wage is calculated by dividing the weekly wage from the main job by the weekly hours worked in the main job and then deflating. The average hourly wages of men and women are \$33.6 and \$28.6 respectively, indicating a significant difference between the average wages of spouses. 'Same occupation' is an indicator variable that takes the value 1 if the two spouses are employed in similar occupations. To construct this indicator, two different variables are combined, namely the Australian and New Zealand Standard Industrial Classification (ANZSIC) in combination with the Australian and New Zealand Standard Classification of Occupations 2006 Edition (ANZSCO 2006), a two-digit classification. This combination provides an accurate and specific definition of occupation, as 950 different occupation types are generated. Therefore, two spouses are considered to be employed in a similar occupation if they hold a similar position in the same industry.[7] ANZSIC includes 19 industry classifications, with most men employed in manufacturing (almost 13.3%), public administration and safety (12.5%), construction (9.3%), professional, scientific, and technical services (8.9%), and education (8.8%). Women are mainly employed in health and social work (26.6%), education (21.4%), retail trade (8.3%), public administration and safety (7%) and professional, scientific, and technical services (6.9%), according to ANZSIC.

The ANZSCO 2006 two-digit classification includes 50 occupational types. Men are mainly employed as specialised managers (13.1%), business, human resources and marketing professionals (7.6%), and education professionals (5.5%), while women are employed as education professionals (12.7%), health professionals (9.7%) and nursing and support workers (8.3%). Table 2.1 shows that 6.2% of couples are employed in similar occupations, according to the above definition. More specifically, spouses with similar occupations are mainly in education (32.3%), health (11.1%), administration (6.6%) and

[6]Between 1 and 7, there are the following levels of education: 2: year 12, 3: certificate III or IV, 4: diploma, 5: university degree and 6: graduate diploma.

[7]This requirement ensures that the occupational roles of the partners are similar.

business, human resources, and marketing (6.6%) according to the 2006 ANZSCO classification, and in education and training (34.9%), health and social assistance (16.1%), public administration and safety (11.2%), and professional, scientific, and technical services (7.8%) according to the ANZSIC industry classification.

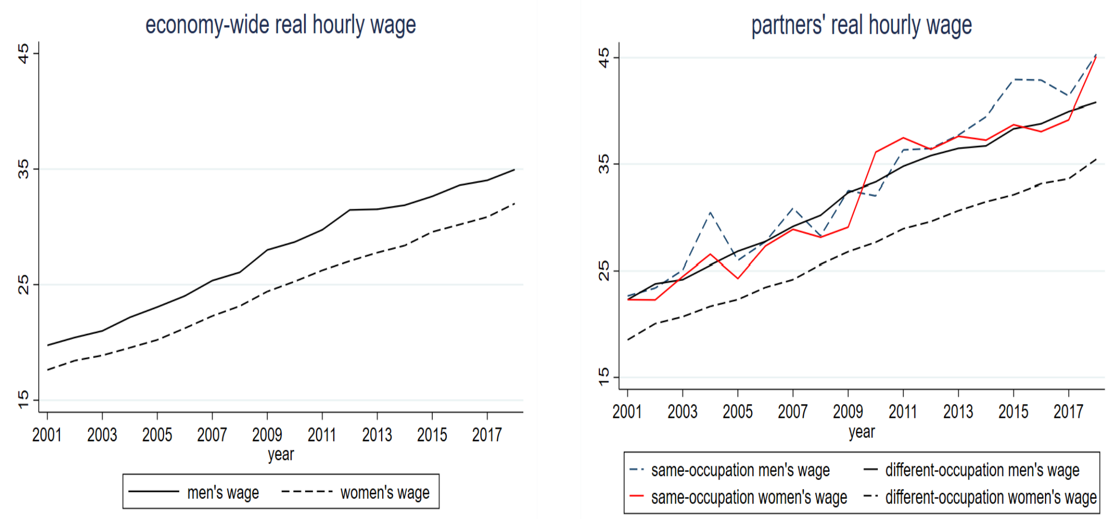
TABLE 2.2: Summary Statistics - Group Comparisons

	Women						Men					
	Same Occupation			Different Occupation			Same Occupation			Different Occupation		
Variable	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Age	805	40.8	10.1	12,232	41	9.9	805	41.2	10.1	12,232	41.2	9.9
Education	802	4.64	1.75	12,232	3.64	1.9	802	4.69	1.6	12,232	3.62	1.72
Experience	805	19.6	8.52	12,187	19.97	9.11	805	23.04	10.75	12,226	25.11	10.47
Full-time contract	805	0.611	0.487	12,232	0.488	0.5	805	0.919	0.28	12,232	0.927	0.26
Part-time contract	805	0.389	0.487	12,232	0.512	0.5	805	0.091	0.28	12,232	0.073	0.26
Weekly Working Hours	805	33.95	11.87	12,232	30.3	11.8	805	40.2	9.06	12,232	41.4	7.81
Real Hourly Wage	805	33.17	14.43	12,232	28.3	13.17	805	34.56	16.25	12,232	33.57	16.08

Note: Age is calculated at the year each couple was first recorded. Education is denoted as a seven-scale ordered variable. The lowest level of education is equal to 1 denoting 'year 11 or below', while education equal to 7 is the highest level, that is a master's or doctorate level. Between 1 and 7 there exist the following levels of education: 2: year 12, 3: certificate III or IV, 4: diploma, 5: college degree, and 6: graduate diploma. Education captures the pooled average over the years, which is almost identical to the education level at the year each couple was recorded for first time. More details on the level of education can be found in Table B.3. Data source: HILDA Release 18.

Table 2.2 compares spouses with the same and different occupations by gender. Demographically, the group of women with the same occupation as their partners is slightly younger than the group of women with different occupations, as the average age of the groups is 40.8 and 41 years respectively. However, Table 2.2 indicates a clear difference in the average level of education. More precisely, the educational level of the women who have a different occupation is between level 3 'Certificate III or IV', and level 4 'Diploma', while the average educational level of the women who have the same occupation is between category 4 'Diploma', and category 5 'University degree', i.e. one educational level higher. And although both groups have the same work experience on average, more than 61% of the women with the same occupation as their partner work full-time, while about 49% of women with different occupations choose this type of contract. This is also reflected in the average weekly working hours, as the average woman with the same occupation works about 2.5 hours more per week than the average woman with a different occupation. Finally, women with the same occupation are on average better paid than women with different occupations, a result that may be related to the educational level and occupational types of the two groups. The average real hourly wage for women with the same occupation is about \$33.2, while women in different occupations receive an average \$28.3 per hour. Comparing male spouses with the same occupation as their female partners and with different occupations shows that male spouses with the same occupation and with different occupations have similar age, on average. In addition, men in the same occupation have a higher level of education than men in different occupations, while the latter group has on average 2 years more experience in the labour market. Both groups work mainly in full-time jobs averaging more than 40 hours per week, and the wage rate of men with the same occupation is on average \$1 higher than the wage rate of men with a different occupation. Interestingly, the differences in experience, hours worked, and wage rate between men and women with the same occupation are much smaller than for spouses with a different occupation. Moreover, on average, spouses with the same occupation appear to form more highly educated and wealthier households.

FIGURE 2.1: Average Real Hourly Wage, 2001-2018



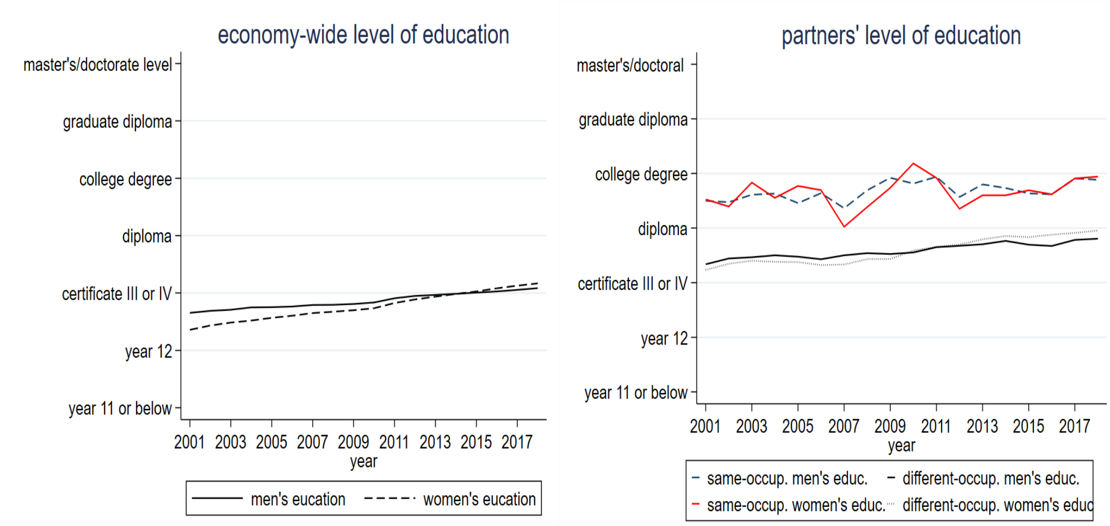
Notes: The economy-wide trends for men and women are calculated as the yearly average of the real hourly wages for all men and women between the ages of 24 and 60, respectively. The gender-specific average wages for partners are distinguished between those who work in the same occupation as their partner and those who work in different occupations, each year. Data Source: HILDA Release 18.

Figure 2.1 shows the time averages of gender-specific real wages per hour for both the whole economy[8] and for the partnered working population. The economy-wide trends indicate that men's and women's wages have increased at similar rates over time, and that the gender wage gap is still a serious problem despite some improvement. Looking at the gender wage rates for partners, some peculiarities can be identified. Partners with the same occupation have received the highest wages over time, while after 2010, women's same-occupation wages seem to exceed those of men with a different occupation. So, after 2010, same-occupation couples are far better paid on average across the economy. Male partners with different occupations also receive higher wages on average than the economy-wide average wage for men. Finally, the gender pay gap appears to be larger for different-occupation spouses than in the economy as a whole, and the wages of women in this group have increased in line with the trend in the whole economy.

Figure 2.2 shows the average level of education over years. The economy-wide trend is consistent with other trends previously described in industrialised countries, suggesting that women's average educational attainment has become higher than men's in recent years. At the beginning of the twenty-first century, the educational gap was still evident, but the difference has narrowed over the years, while women's average educational

[8]The economy-wide data include all individuals aged between 24 and 60 years old.

Figure 2.2: Average Level of Education, 2001-2018



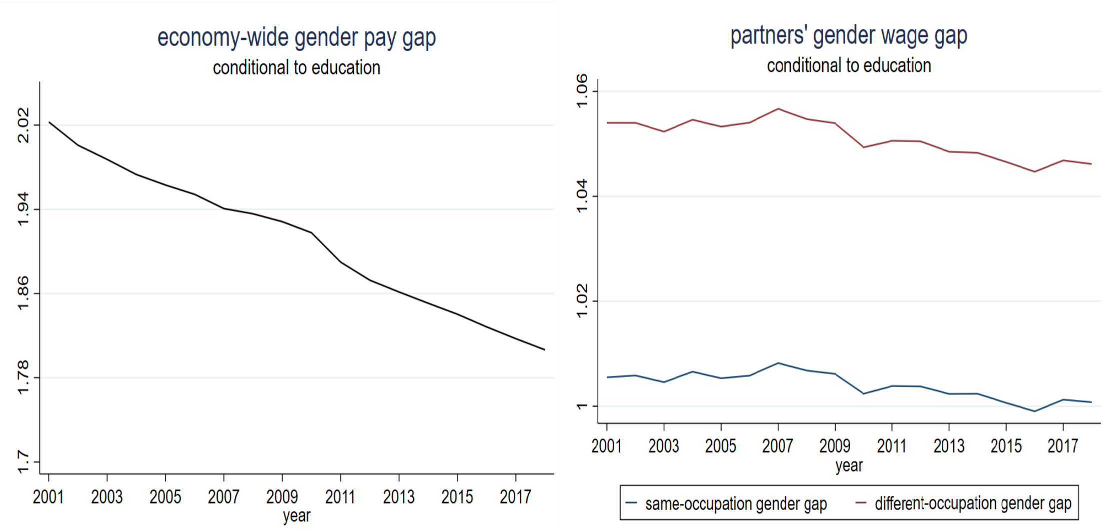
Notes: The economy-wide trends for men and women are calculated as the yearly average of the level of education, expressed in a 7-scale categorical variable, for all men and women between the ages of 24 and 60, respectively. The gender-specific average level of education for partners is distinguished between those who work in the same occupation as their partner and those who work in different occupations, each year. Data Source: HILDA Release 18.

attainment surpassed that of men after 2015. Another important trend in developed economies also applies to Australian society: people living in partnerships are generally more highly educated than single or divorced people. This is consistent with the general trend in the industrialised world for more highly educated people to form stable relationships more easily with others who have a similar educational background. As shown in Figure 2.2, both groups of partners are, on average, more highly educated than the economy-wide gender-specific education level. Moreover, spouses who work in the same occupation are far more highly educated than partners who work in different occupations. In particular, spouses working in similar occupations have an average education level above category 4 'diploma', while the trend for both men and women in this group has been approaching the level of a university degree in recent years. On the other hand, the trends for couples with different occupations are similar to those of the overall economy, with women overtaking men after 2013.

Conditional to the level of education, Figure 2.3 shows the gender wage gap[9] over the years. To calculate the economy-wide wage gap, I forecast the logarithm of hourly wages, separately for men and women, taking into account educational attainment. The female wage share at the economy-wide level is estimated using a Heckman selection model to control for selection bias. As expected, the wage gap in the economy as a whole has declined sharply, but the gap between men's and women's wages in the economy is still large. At the partner level, the predicted gender wage gap suggests a much smaller gap

[9]Constructed as the male-to-female wage ratio.

Figure 2.3: Gender Wage Gap, Conditional to Education, 2001-2018



Notes: The gender pay gap is constructed as the male-to-female wage ratio of each year. The graph shows the ratios conditional to the level of education. To calculate the economy-wide wage gap, the logarithm of gender-specific hourly wages is forecasted, controlling for the level of education. The female wage share at the economy-wide level is estimated using a Heckman selection model to control for selection bias. Data Source: HILDA Release 18.

between the wages of women and men with different occupations, while the gender wage gap for spouses with the same occupation approaches zero, especially in the last three years.[10]

Figure 2.4 shows the distribution of partners' gender-specific wages. As can easily be seen from the density plots, the distribution of wages for women with different occupations to their partners is more right-skewed than same-occupation women's wage distribution. Moreover, the latter category's distribution has a fatter right-side tail, indicating that more same-occupation women are high-paid workers than different-occupation women. The density plots indicate clearly that same-occupation women's wages are a multiple of those of the different-occupation group. The cumulative distribution functions (cdf) plot rejects at a 1% level of significance the assumption of global equality of these two distributions, while the assumption of equality under strong control of FWER at all points is also rejected, except at the very low and very high parts of women's wage distributions.[11] Overall, the distributional analysis of women's wages shows a significant

[10] The estimates for the wage rates of men and women are presented in Table B.1 (Appendix B).

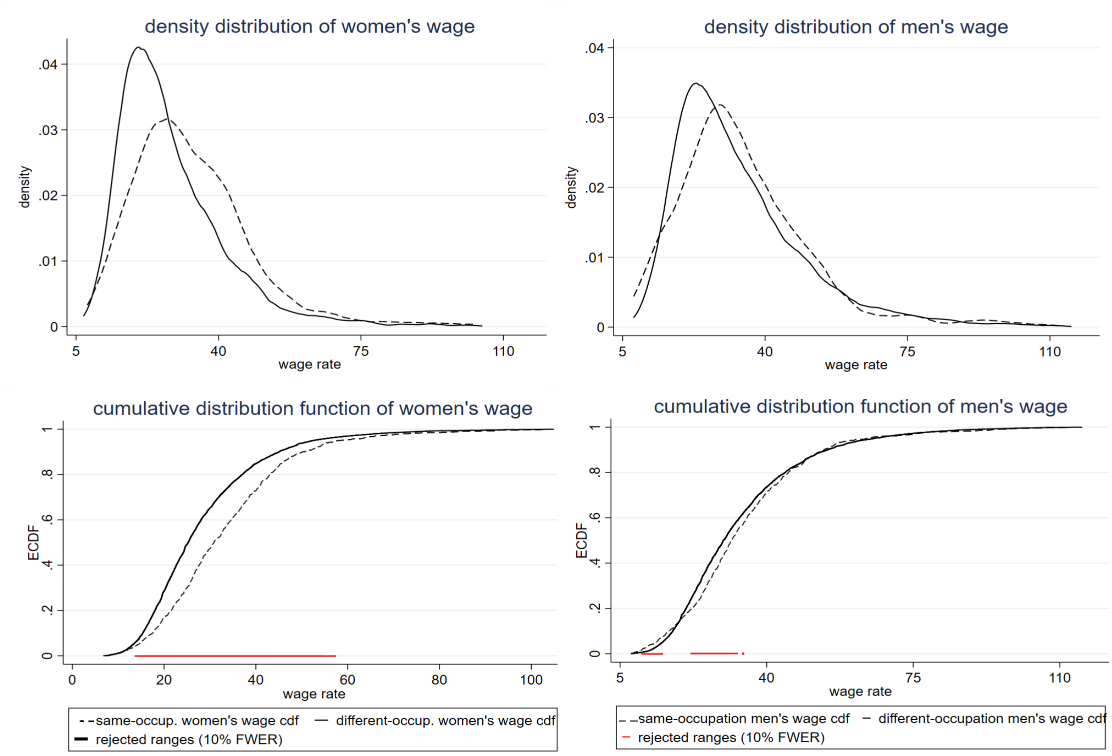
[11] The global equality (GOF) tests the null hypothesis that the two cdfs are identical. This could be false even if the two distributions' means are identical, for example, with normal distributions with the same mean but different standard deviation. The global test results are reported for levels 1%, 5%, and 10%. The methodology is proposed by Goldman and Kaplan (2018) to refine an idea from Buja and Rolke (2006). The second test is multiple testing procedure. The results show ranges of values for which the difference between cdfs is statistically significant, accounting for the multiple testing nature of the procedure (that is, many different points are tested simultaneously). Instead of a single, global equality null hypothesis, there is a set of many null hypotheses. Within the set, each individual hypothesis specifies equality of the two cdfs at a different point. That is, if F($\cdot$) and G($\cdot$) are the two cdfs, then each individual null hypothesis is H_{0x}: F(x) = G(x), and the set of such hypotheses for all possible values of

difference between women with the same occupation as their partners and women with other occupations, with the former category significantly outperforming the latter. On the other hand, despite the observed paths, the distributional comparisons for male partners' wages are similar to those of women, which is less encouraging. The density graphs show that the wage distribution for male partners with the same occupation is also more positive, but the two distributions seem to touch at the right end. Thus, the wages of men with the same occupation are higher in the area between the lower and middle-upper parts of the distribution, while there is no difference in the higher parts of the wage distribution. This is also confirmed by the cdf analysis and tests. The assumption of global equality of the two cumulative distribution functions is clearly rejected, but the assumption of equality under strong control of FWER at all points is rejected only for a small area of the wage distribution. In particular, the black line showing the area rejected by the second test indicates that the distributions of men under strong control of FWER are statistically different in the lower and middle parts of the wage range.

The group of partners with different occupation includes both partners who have never been employed in a similar job (hereafter referred to as the 'never treated group') and those partners who have yet to move from a different to a same-with-partner job (hereafter referred to as the 'previous group'). I distinguish between the different categories within different-occupation couples, and focus on these two subgroups: the before group and the never treated group. Table 2.3 examines the average characteristics of these two groups. Both partners from the before group are on average 3 years younger than the partners from the control group. In addition, the before group is slightly better educated than the control group, while the after group has more labour market experience on average. The proportion of women from the before group who work full-time is 50%, 3.6 percentage points higher than in the same category in the control group. On the other hand, 91% and 88% of men in the never treated and before groups work in full-time jobs, respectively. The average weekly working hours of women do not differ between the groups, while there is a significant difference between the average wage rates, as the average woman from the control group is almost £3 per hour higher than the average woman from the before group. The same trend is observed for the average men in the two groups. Men from the control group work on average less than one hour more and receive an hourly wage that is about £3 higher.

x is considered. The multiple testing procedure rejects equality at certain values of x while controlling for the probability of any type I error (false positive). The probability of any false positive is known as the FWER. This methodology is from Goldman and Kaplan (2018).

FIGURE 2.4: Distribution of Partners' Gender-specific Wage Rates



Notes: The figure displays the density and cumulative distribution functions for gender-specific wage rates among coupled individuals, categorised according to whether spouses work in the same occupation or different occupations. A statistical test proposed by Goldman and Kaplan (2018) is conducted to evaluate the equality of cumulative distribution functions for wage rates between these two groups, with the rejection area highlighted in red. Data Source: HILDA Release 18.

TABLE 2.3: Never-treated Group Versus Before Group

	Women						Men					
	Never-treated			Before			Never-treated			Before		
Variable	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Age	11,221	41.2	9.9	368	39.5	9.05	11,221	41.3	10	368	39.6	9
Education	11,221	3.57	1.89	368	4.32	1.92	11,221	3.56	1.7	368	4.17	1.85
Experience	11,176	19.92	9.15	368	19.35	9.21	11,215	25.23	10.43	368	22.83	11.13
Full-time contract	11,221	0.47	0.49	368	0.65	0.47	11,221	0.927	0.26	368	0.913	0.28
Part-time contract	11,221	0.53	0.49	368	0.35	0.47	11,221	0.073	0.26	368	0.087	0.28
Weekly Working Hours	11,221	30	11.77	368	33.6	11.73	11,221	41.44	7.81	368	40.28	7.84
Real Hourly Wage	11,221	28.1	12.98	368	29.69	14.21	11,221	33.5	16.05	368	32.48	15.65

Note: Age is calculated at the year each couple was first recorded. Education is denoted as a seven-scale ordered variable. The lowest level of education is equal to 1 denoting 'year 11 or below', while education equal to 7 is the highest level, that is a master's or doctorate level. Between 1 and 7 there exist the following levels of education: 2: year 12, 3: certificate III or IV, 4: diploma, 5: college degree, and 6: graduate diploma. Education captures the pooled average over the years, which is almost identical to the education level at the year each couple was recorded for first time. Data Source: HILDA Release 18.

2.4 Empirical Strategy and Identification

A quasi-experimental design is introduced to assess the impact of the same occupation on partners' hourly wages. The aim is to exploit the variation that arises from the different timing of treatment, namely that the period during which both partners are employed in the same occupation varies across couples. The empirical design is based on the potential outcomes framework for causal inference, with a binary treatment indicator indicating whether or not a person works in the same occupation as their partner. The treatment indicator is thus:

$$D_{it} = \begin{cases} 1 & \text{if individual } i \text{ works in same occupation with partner at time } t \\ 0 & \text{otherwise} \end{cases} \tag{2.1}$$

Then, the wage rate of an individual i at time t is denoted as w_{it}, which can be either w_{it}^0 if individual i does not work in the same occupation with partner at time t, or w_{it}^1 if i works in the same occupation. Hence, according to the potential outcomes model, and taking the logarithm of the real hourly wage

$$ln(w_{it}) = ln(w_{it}^0) + D_{it}[ln(w_{it}^1) - ln(w_{it}^0)]$$

the wage effect from treatment is the difference between individual i's potential outcomes. In other words, the treatment effect on i's wage is the difference between the wage if this individual works in the same occupation at time t, and the wage if this individual works in a different occupation at the same time t. A straightforward implication of the above interpretation is the failure to observe both outcomes for the same individual at the same time. In particular, for each individual only one outcome is observable at time t, and the counterfactual outcome is allowed to be constructed if particular identification assumptions hold.

The counterfactual outcome for a person i who works in the same occupation as their partner at time t is extracted from the control group of partners who work in a different occupation. The difference-in-differences estimator (DID) identifies the causal effects under the assumption that there is a parallel trend between the wage levels of the two groups during the pre-treatment period. If this assumption holds, the DID treatment effect is defined as the difference between the mean outcomes of the two groups.

The treatment indicator in this framework is time-varying, i.e. individuals can be treated in different time periods, and the duration and order of treatment also vary. To exploit variation between groups of units treated at different times we rely on an extended framework of DID, which allows for a dynamic treatment design and multiple fixed effects. Similar approaches can be found in Cerulli and Ventura (2019), Borusyak and Joravel (2017), Stevenson and Wolfers (2006), and Autor (2003). The analysis applies the following regression model:

$$\ln(w_{it}) = \sum_{j=1}^{J} D_{it-j}\beta_{-j} + \beta_0 D_{it} + \sum_{k=1}^{K} D_{it+k}\beta_{+k} + \gamma\mathbf{X_{it}} + \alpha_i + \rho^i_{st} + \lambda t + \varepsilon_{it} \qquad (2.2)$$

In Equation 2.2, w_{it} is the real hourly wage rate for individual i at time t. My interest is in the indicator variable D_{it} that equals one when individual i works in the same occupation as their partner, and affects by β_0 this individual's wage rate. The lag D_{it-j} with j ϵ [-1, J] is an indicator variable denoting the period j years before the treatment occurred, and β_{-j} captures the effect of treatment happening at time t j periods before that time. This is called the pre-treatment effect, that is the anticipation effect since it denotes an effect of a treatment which has not been introduced yet In addition, the lead D_{it+k} with k ϵ [1, K] takes value one k periods after the treatment has been introduced, and the parameter β_{+k} measures the post-treatment effect k periods after the treatment period t. $\mathbf{X_{it}}$ is a row vector of cofounders, including individual i's time-varying characteristics (age, age squared, years of experience), and γ is a coefficient vector related to the row vector of cofounders. α_i includes time-invariant, individual-specific characteristics, which enable us to control for selection both on observables and unobservables. Occupation type dummies ρ^i_{st} imply that I control for the specific characteristics of i's occupation type s at time t, λt capture the year effects, and ε_{it} is the idiosyncratic error term. Equation 2.2 is estimated by applying a fixed-effect regression with robust standard errors, clustered by individual i.

2.4.1 Identification

In this quasi-experimental framework, the parameter β_0 in Equation 2.2 has a causal interpretation assuming a parallel trend. In other words, the wages of partners with the same occupation and the wages of partners with different occupations should follow parallel trends before the year of treatment. This assumption states that there are no fundamental differences in the wage structure of partners with the same occupation, and it also ensures that there are no anticipatory effects. The following process follows Cerulli and Ventura's (2019) theoretical considerations.

To start with, since an individual can work in the same occupation as their partner at more than one time over the interval $[t-K, t+J]$, I define the following sequences of possible treatments for each individual,

$$\{\phi^i\} = \{D_{it-J}, ..., Dit, ..., D_{it+K}\} \begin{cases} \phi^1 = (0, ..., 0, ..., 0) \\ \vdots \\ \phi^z = (0, ..., 1, ..., 0) \\ \vdots \\ \phi^Z = (1, ..., 1, ..., 1) \end{cases}$$

The generic sequence is denoted as ϕ^z with $z\epsilon[1, ..., Z]$ and the associated potential outcome as $w(\phi^z)$. Then, the Average Treatment Effect (ATE) between the two potential outcomes $w(\phi^z)$ and $w(\phi^m)$ can be defined as

$$ATE_{zm} = E\{w_{it}(\phi^z) - w_{it}(\phi^m)\} \quad \text{for } \{z, m\}\epsilon[1, ..., Z] \text{ and } z \neq m.$$

Assuming Conditional Mean Independence (CMI) on $\mathbf{X_{it}}$, α_i, ρ^i_{st}, and λt I have

$$\begin{aligned} ATE_{zm} &= E_{\mathbf{X},\alpha_{it},\rho^i_{st},\lambda t}\{ATE_{zm}(\mathbf{X_{it}}, \alpha_{it}, \rho^i_{st}, \lambda t)\} \\ &= E_{\mathbf{X},\alpha_{it},\rho^i_{st},\lambda t}\{E(w_{it}(\phi^z, \mathbf{X_{it}}, \alpha_{it}, \rho^i_{st}, \lambda t)) - E(w_{it}(\phi^m, \mathbf{X_{it}}, \alpha_{it}, \rho^i_{st}, \lambda t))\} \end{aligned} \tag{2.3}$$

Equation 2.3 indicates that the Average Treatment Effect of sequence z against a counterfactual sequence m is given by ATE_{zm}. In general, it is trivial to show that $(Z^2 - Z)/2$ possible $ATEs$ are identified. In particular, using Equation 2.2 and the sequences ϕ^z and ϕ^1, it is trivial to show that, for example

$$ATE_{z1} = E(w_{it}|\phi^z) - E(w_{it}|\phi^1) = (\beta_0 + \gamma\bar{\mathbf{X}} + \bar{\alpha} + \bar{\rho_s} + \lambda) - (\gamma\bar{\mathbf{X}} + \bar{\alpha} + \bar{\rho_s} + \lambda) = \beta_0$$

To explain in detail the identification mechanism I will restrict my attention only to the previous two sequences, where ϕ^1 is the control (never-treated) baseline, and ϕ^z represents the sequence (0,...,1,...,0). Assuming $\bar{\alpha} + \bar{\rho_s} + \lambda t \equiv \bar{g}_t$ and performing iteration J periods back and K periods forward, the predicted outcomes, conditional on sequences ϕ^z and ϕ^1, are respectively:

$$\{\phi^z\} \begin{cases} E(w_{it-j}|\phi^z) = \bar{g}_{t-j} + \beta_{-j} + \gamma\bar{\mathbf{X}}_{\mathbf{t-j}}, & \forall k\epsilon[1, J] \\ E(w_{it}|\phi^z) = \bar{g}_t + \beta_0 + \gamma\bar{\mathbf{X}}_{\mathbf{t}} \\ E(w_{it+k}|\phi^z) = \bar{g}_{t+k} + \beta_{+k} + \gamma\bar{\mathbf{X}}_{\mathbf{t+k}}, & \forall j\epsilon[1, K] \end{cases}$$

and

$$\{\phi^1\}\begin{cases} E(w_{it-j}|\phi^1) = \bar{g}_{t-j} + \gamma\mathbf{\bar{X}_{t-j}}, & \forall k\epsilon[1,J] \\ E(w_{it}|\phi^1) = \bar{g}_t + \gamma\mathbf{\bar{X}_t} \\ E(w_{it+k}|\phi^1) = \bar{g}_{t+k} + \gamma\mathbf{\bar{X}_{t+k}}, & \forall j\epsilon[1,K] \end{cases}$$

In general, the assumption of a parallel trend requires that the treated and untreated groups have similar trends before the treatment is applied. In other words, in order to construct the counterfactual case constellation from the control group, it should be argued that the behaviour of both groups is not significantly different in the period before treatment. If this assumption is fulfilled, then the observed effect has a causal interpretation as an average treatment effect. This assumption is generally not testable. Nevertheless, a testing methodology can be developed within this generalised framework. In particular, it is important to focus on the pattern of lags to test for causality. If D_{it} causes w_{it} conditional on the vector of co-founders $\mathbf{X_{it}}$ and the effects α_i, ρ^i_{st} and λt, then the lag values in Equation 2.2 should not jointly be different from zero, i.e. causality requires no anticipatory effects. The test of whether all lags 'β_-' are jointly equal to zero is equivalent to the test of whether the parallel trend assumption holds. Formally this means

$$H_0 : \beta_{-1} = \beta_{-2} = \cdots = \beta_{-J} = 0$$

The necessary condition of assuming a parallel trend is valid if the test does not reject the null hypothesis.

In the present study, the assumption of a parallel trend requires that the individual wage rates - treated at t - follow a similar path as the wage rates of the control group in the years before t. This condition is likely to be met, as wage growth rates over time are determined by general economic conditions and the business cycle, assuming homogeneity of the groups being compared. Despite the differences in the magnitude of wage rates, there are no channels that could lead to systematic differences between the wage growth of the two groups, given the co-foundation factors and the fact that my entire sample is positively selected for marital gains.

2.5 Results

Estimates obtained from Equation 2.2 for partners employed in the same occupation are presented in Figure 2.5 and in Table 2.4 for both female and male partners, with four specifications for each gender-specific wage equation. The first column of the panel for each partner does not include a pre- or post-treatment effect, and then one lag and one lead of the treatment period are gradually added. Column (1) thus considers one pre-treatment effect and one post-treatment effect, column (2) introduces two pre-treatment periods and two post-treatment periods, while the last column (3) specifies three pre-treatment periods and one post-treatment period. In all specifications, time-varying cofounding factors such as age and experience are also reported. In addition, individual- and occupation-specific effects are included as well as a time trend. The estimates in Table 2.4 are from fixed effects regressions, while robust standard errors correcting for clustering across individuals are reported in parentheses.

TABLE 2.4: Main Results

	Women				Men			
Variables	(0)	(1)	(2)	(3)	(0)	(1)	(2)	(3)
Same occupation$_{t-3}$	-	-	-	0.014 (0.031)	-	-	-	-0.018 (0.032)
Same occupation$_{t-2}$	-	-	-0.036 (0.030)	0.007 (0.031)	-	-	0.042 (0.026)	0.046 (0.028)
Same occupation$_{t-1}$	-	0.012 (0.019)	0.006 (0.027)	0.009 (0.030)	-	0.038 (0.023)	0.033 (0.026)	0.034 (0.030)
Same occupation	0.035* (0.018)	0.055*** (0.020)	0.071*** (0.026)	0.088*** (0.028)	-0.014 (0.022)	0.010 (0.018)	0.023 (0.020)	0.033 (0.028)
Same occupation$_{t+1}$	-	0.007 (0.020)	0.018 (0.026)	0.026 (0.031)	-	0.002 (0.017)	-0.001 (0.018)	0.018 (0.022)
Same occupation$_{t+2}$	-	-	-0.0002 (0.026)	0.036 (0.035)	-	-	-0.028 (0.022)	-0.022 (0.019)
Same occupation$_{t+3}$	-	-	-	0.028 (0.028)	-	-	-	0.014 (0.025)
Age	0.044*** (0.006)	0.056*** (0.011)	0.066*** (0.016)	0.051** (0.022)	0.035*** (0.006)	0.017 (0.029)	0.014 (0.050)	-0.125* (0.069)
Age square	-0.0002*** (0.00005)	-0.0003*** (0.00008)	-0.0004*** (0.0001)	-0.0004*** (0.0001)	-0.0004*** (0.00005)	-0.0003*** (0.00008)	-0.0004*** (0.0001)	-0.0003* (0.0001)
Experience	0.023*** (0.007)	0.014 (0.011)	0.012 (0.014)	0.026 (0.019)	0.065*** (0.017)	0.092*** (0.029)	0.094** (0.050)	0.201*** (0.066)
Observations	12,985	6,809	3,916	2,275	13,028	6,825	3,928	2,290
Groups	1,985	1,301	842	523	1,973	1,305	842	524
R^2 (within)	0.35	0.34	0.30	0.25	0.41	0.43	0.41	0.35
Prob >F	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: All regressions include individual-specific and occupation-specific fixed effects, and a time trend. Regression (0) does not include any leads or lags, regression (1) includes one lead and one lag, regression (2) includes two leads and two lags, and regression (3) includes three leads and three lags. All estimations are obtained from fixed-effects regressions. Robust standard errors correct for clustering across individuals are given in parenthesis. ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively. Occupation is defined using *ANZSICxANZSCO2* which generates 950 different occupation types. Data source: HILDA Release 18.

Looking at the estimates for women, it turns out that there is a positive effect on their hourly wage if they work in a similar occupation to their partners. This effect is substantial and is estimated to be between 0.032 and 0.088, suggesting that on average women working in the same occupation as their partners earn at most 8.8% more than women with similar characteristics whose partners work in a different occupation. The specification with no pre- and post-treatment period estimates the average treatment effect to be 3.2%, significant at the 10% level, while the effect of working in a similar occupation on women's wages reaches 0.055, significant at the 1% level once a pre- and a post-treatment period are introduced. Both specifications (2) and (3) show that women working in the same occupation earn on average 7.4% and 9.3% more than women working in a different occupation to their partners, respectively, at 1% significance level.

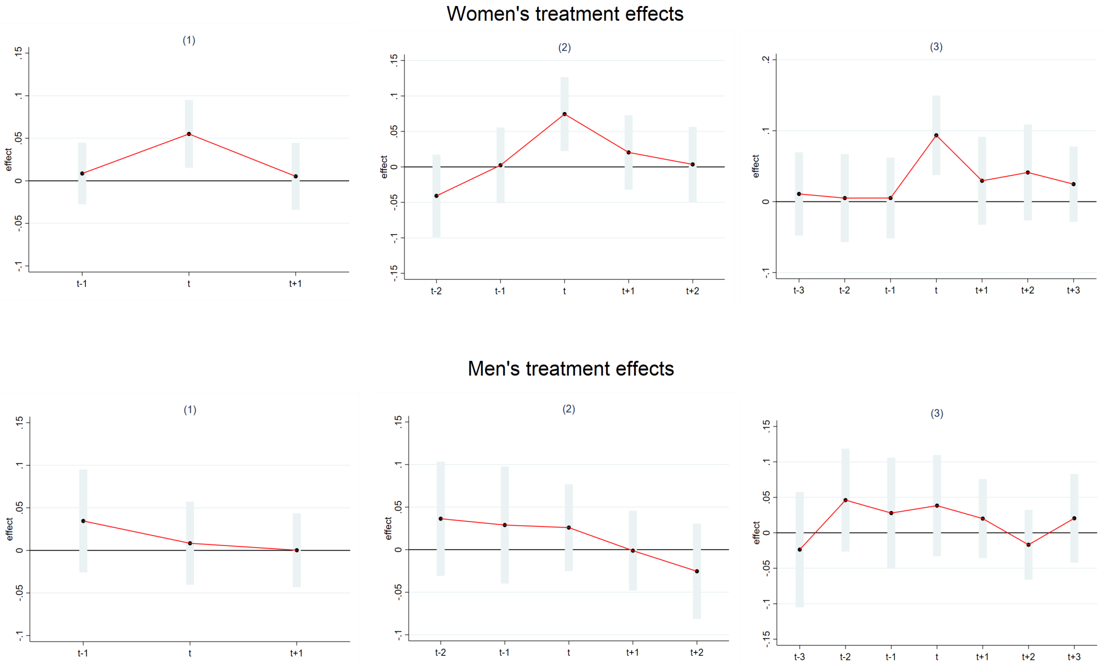
The corresponding effects are shown in Figure 2.5 which shows a significant increase in the wages of women with the same occupation after treatment.

Moreover, all specifications underline a highly statistically significant quadratic relationship between women's wage rates and their age, while years of work experience have a positive impact on women's wages. The specification without pre- and post-treatment years shows that, on average, an additional year of experience leads to a wage rate that is about 2% higher, while the specifications that include the pre- and post-treatment period estimate the same effect between 0.015 and 0.027. However, once the pre- and post-treatment years are included, the coefficient of experience becomes statistically insignificant at the 10% level, mainly because work experience is also captured by the pre- and post-treatment periods. Women's pre-treatment effects in columns (1)-(3) are estimated very close to zero and are highly insignificant, suggesting that there are no anticipatory effects. On the other hand, the post-treatment effects in columns (1)-(3) are positive but also not statistically different from zero. Note that the sample includes partners who change occupations at different times after the year of treatment, so the post-treatment periods capture the wage effects for both those who stay in the same occupation as their partner and those who change occupations.[12] It is also highlighted that the number of observations decreases as the number of pre- and post-treatment periods increases since adding more pre- and post-treatment periods requires labour market participation and information on employment outcomes for both partners over several consecutive years.

The men's panel in Table 2.4 indicates that, on average, the wages of male partners with the same occupation and with a different occupation to their female partners are not significantly different from each other at the 10% level. In particular, in columns (0)-(3), the estimated effect is close to zero, ranging from -0.018 to 0.038. Column (0), excluding pre-treatment and post-treatment periods, suggests that men employed in a similar occupation to their female partner have, on average, a 1.8% lower wage rate. Once lead and lag periods are introduced, the effect becomes positive and ranges from 1% to 3.8%. The reported standard errors are large and the estimated coefficients of the treatment indicator for the same occupation are not statistically significant. Therefore, for all specifications of Table 2.4 for men, the hypothesis that men's wages are not affected when they work in the same occupation as their partners cannot be rejected. Moreover, there is a quadratic relationship between men's wages and their age that is highly significant in the specification without lead and lag. Note that the specification of column (3), which controls for wage effects in seven consecutive periods, suggests that individuals are on the right side of the curve with negative returns to age. As columns (0)-(3) show, work experience is also a strong determinant of men's wages, with an

[12]For the cumulative effects of those who stay treated, see subsection 2.5.3.

FIGURE 2.5: Same-occupation Wage Treatment Effects



Notes: The graph illustrates the average percentage change in the real hourly wage for individuals who begin working in the same occupation as their spouse at time t, compared to those who are employed in different occupations alongside their spouses at the same time. The lags represent the pre-treatment effects, while the leads indicate the after-treatment effects on wages. Data Source: HILDA Release 18.

additional year of experience leading to a 7%-23% higher wage. Columns (1)-(3) in Table 2.4, as well as Figure 2.5, indicate that the effects are close to zero and highly statistically insignificant for men both before and after treatment.

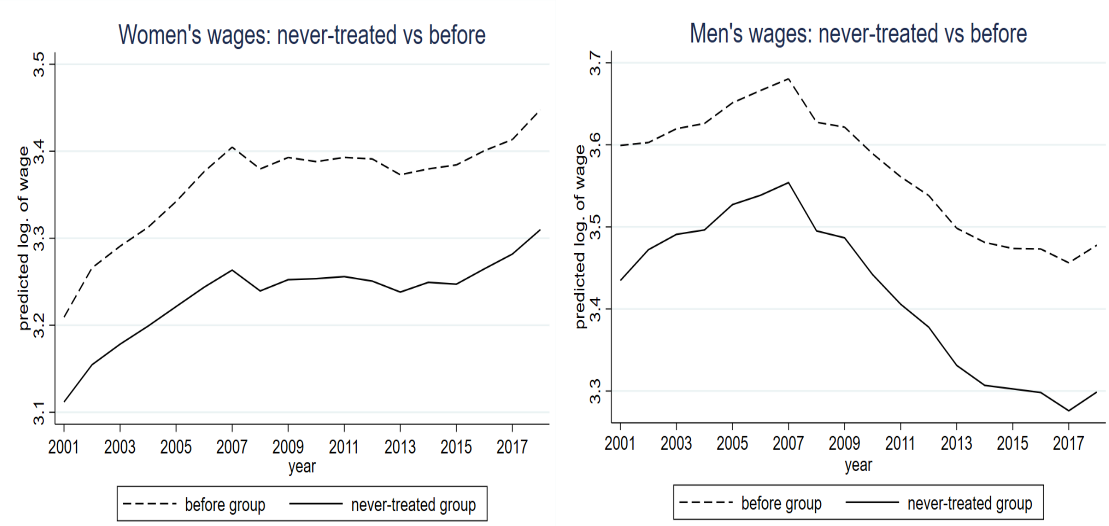
2.5.1 Sensitivity analyses

As a first robustness check, we must stress the sensitivity of my results to the controlling cofounders by relaxing the degree of homogeneity between groups. The analysis without full controls is repeated, including individual fixed effects and a time trend. As can be seen in Panel B of Table B.5 (see Appendix B), the estimated treatment effects for women are very close to the main results in all columns, as the estimated effect on women's wages varies between 3.2% and 8.3%. The specifications for men without full controls in Panel B suggest that the wages of men with the same occupation as their partners are not different from those with other occupations. The estimated effect ranges from -0.02 to 0.031, but is not significantly different from zero at the 10% level. Moreover, Equation 2.2 is re-estimated using industry-specific effects instead of occupation-specific effects. The estimated effect remains robust and roughly unchanged for both genders compared to the main analysis. Panel C in Table B.5 suggests that the treatment effect for women ranges from 3.2% to 9%, significant at 10% and 1% in the specifications of columns (0) and (1)-(3), respectively. The wage effects of male partners working in the same occupation are estimated at -2.2% to 3.6% and remain highly statistically insignificant.

Second, the sensitivity of the results to the definition of occupation is addressed. In the main analysis, occupation is defined by a combination of ANZSIC and ANZSCO2 classifications, yielding 950 different occupations. To further specify the occupation types, two additional definitions are constructed. The first is a combination of the two-digit classification of the International Standard Industrial Classification of All Economic Activities Revision 3.1 (ISIC 3.1) and the two-digit classification of the Australian and New Zealand Standard Classification of Occupations 2006 Edition (ANZSCO 2006), which yields 4,902 different occupational types. Although this definition produces many more occupation types, the percentage of couples in the same occupation remains roughly the same. According to this definition of occupation, the wage effects for women range from 2.8% to 9.6%, while the effects for men are not significantly different from zero, and range from -0.6% to 3%. The second additional definition of occupation combines the two-digit Australian and New Zealand Standard Classification of Industry (ANZSIC2) and the two-digit Australian and New Zealand Standard Classification of Occupations 2006 (ANZSCO 2006). This combination results in 4,250 different occupations and the percentage of pairs with the same occupation drops slightly to 5.8%. Panel E of Table 5 shows that women in the same occupation continue to have a positive wage effect, ranging from 2% to 11.2%, while the effect for men in the same occupation is, again, not different from zero at 10%. All specifications of the additional definitions include time-varying individual characteristics such as age, age squared, experience, as well as individual and occupation-specific effects and a time trend. Estimates are obtained from fixed effects regressions, and robust standard errors that correct for clustering between individuals are reported in parentheses.

Finally, I investigate whether the assumption of a parallel trend holds, by conducting a test for the joint significance of the lags in columns (1)-(3) of all the models specified so far. As shown in Table B.5, across all different models, the test for the joint significance of the lags fails to reject the claim that there are no pre-treatment effects for partners with equal employment at the 10% level. To support the claim that the parallel trend assumption is valid and that the estimates can be interpreted as causal effects, Table B.6 introduces two placebo tests for the parallel trend that complement the joint significance test reported in Table B.5. To perform the placebo tests, the analysis focuses only on the non-treated individuals in each period. Then an indicator variable for the individuals who are treated at some point in the future is generated. So it can be distinguished between the *before-treatment* individuals and the *never-treated*

FIGURE 2.6: Parallel Trend: Never-treated vs Before Groups



Notes: The graph focuses only on the non-treated individuals in each period and distinguishes between the before-treatment individuals and the never-treated individuals. The first category captures spouses who are currently working in different occupations but will be working in a similar occupation at some point in the future, and the second category includes spouses who have never worked in the same occupation during the years of the panel. The gender-specific predicted log wages are obtained from a linear regression on the indicator for belonging to the before-treatment group, a time trend and their interaction, controlling for education, age, age squared, experience, and clustering across individuals. Details can be found in Table B.5. Data Source: HILDA Release 18.

individuals. In other words, the first category captures spouses who are currently working in different occupations but will be working in a similar occupation at some point in the future, and the second category includes spouses who have never worked in the same occupation. First, I regress partners' wages on the indicator for belonging to the *before-treatment* group, a time trend and their interaction, controlling for education, age, age squared, experience, and clustering across individuals. The interaction term is highly statistically insignificant in both the female and male specifications, suggesting that the wages of the *before-treatment* untreated individuals do not evolve differently from those of the *never-treated* group. Second, partners' wage growth is regressed on the indicator for belonging to the *before-treatment* untreated group, again controlling for the same cofounders as before. The estimated coefficient is very close to zero for both genders and highly statistically insignificant, suggesting that *before-treatment* partners' wages do not grow differently from the *never-treated group*. To support the previous assertions graphically, Figure 2.6 shows the predicted gender-specific wage rates, year by year, distinguishing between *before-treatment* untreated and *never- treated* individuals. For both genders, the graphs show that wage rates follow similar paths over the years.

2.5.2 Exploring women's positive effects: a puzzle of mechanisms and dynamics

Here I focus explicitly on the main channels through which women's wages are positively affected when they are employed in a similar occupation to their partners. To estimate these effects Equation 2.2 is considered again. For clarity, the focus is only on the original definition of occupation presented in the main analysis and to the estimated specifications that gradually increase the number of periods before and after the treatment from zero to three, considering two models with and without full controls, respectively.

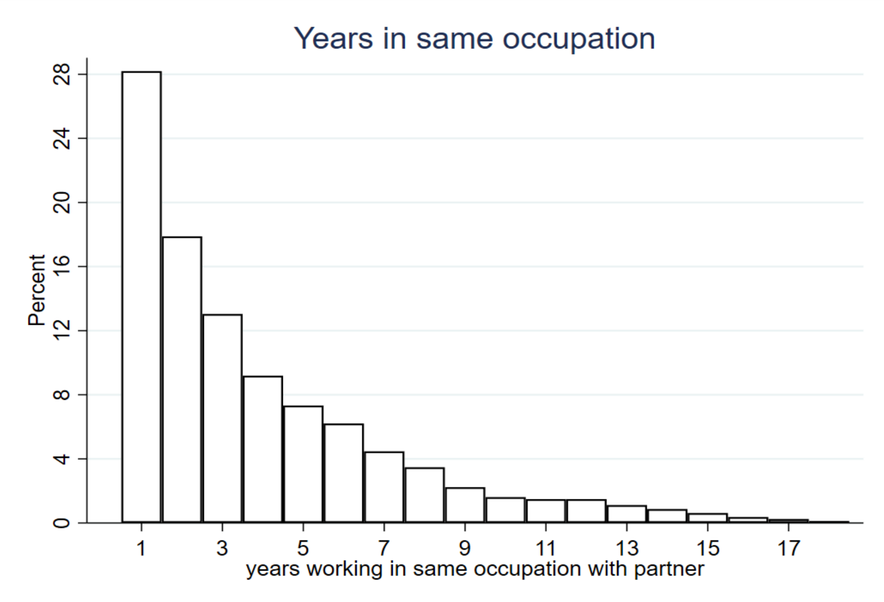
At first, the analysis is restricted to 'college+' couples only, i.e. when both partners have at least a university degree. The main assumption is that knowledge effects and free-riding on human capital are likely to be stronger in the 'college+' group, which could lead to higher wages for women with the same occupation. In addition, wage effects may be stronger in this group, as highly skilled workers may experience steeper wage growth due to the incentives offered by multiple skilled and managerial positions through the offer of piece rates and bonuses associated with effort and productivity. Panel A in Table B.7 shows the estimates when the model is estimated with full controls. For all specifications in Panels A and B, the wages of women with the same occupation are on average 6.2%-12% and 3.6%-11% higher, respectively. Thus, the wage effects for women with the same occupation in the 'college+' group are stronger by almost three percentage points. This result is important evidence that scale effects in human capital and knowledge interaction effects develop between partners with the same occupation.

Second, it is instructive to examine whether the impact of women's wages depends on who follows whom in the labour market. For instance, if nepotism and network effects are present, women who switch to their partner's job are expected to get better contracts and higher wages. The observed positive effects on wages of women who are employed in the same job as their partner can therefore be interpreted through this channel. On the other hand, if women whose partners switch to their occupation benefit more, then the preference to share joint employment experiences could be driving women's effort and wage growth. Another plausible explanation for the latter case could be that women who see their partners moving into similar occupations recognise a potential wage gap and demand higher wages as well. Therefore, it is empirically tested whether women who switch to their partner's occupation have different wage effects than women who stay in their occupation and switch partners. Panels A and B of Table B.8 introduce an indicator variable for female partners who switch occupations while their partners stay in their occupation, and I focus on the interaction term of same occupation with this indicator. Both panels show that women who follow their male partners have less positive effects on their wages, but this effect is not significant. More specifically, women who switch to their husband's occupation have a slightly fewer positive wage effect than the other women who follow the same occupation. However, this difference is not significantly different from zero. On the other hand, panels C and D in Table B.8 indicate that women whose partners follow and meet them in their occupation have much stronger and statistically significant positive wage effects, reaching at most 14% higher wages. These results suggest that nepotism and network effects are not among the main mechanisms explaining the positive wage effect of women with the same job. In contrast, women seem to have a strong positive effect when their partners switch over to their occupation.

Another helpful exercise is to distinguish between couples with children or other dependent family members and childless couples or couples without dependents. In this way, the original assumption that wage effects are positively related to the time that partners spend at home can be tested. Couples with the same occupation and frequent communication at home are more likely to develop peer mechanisms that increase women's wages. It can be assumed that childless couples or couples without dependents have more time available for communication. Panels A and B in Table B.10 show the results for women with and without dependent family members in the household. Women with the same employment without dependents seem to have an additional positive wage effect compared to women with the same employment and one or more dependents, but this additional effect is not significant. On the other hand, panels C and D in Table B.10 indicate that women in the same occupation who have at least one child aged 0-4 experience a slightly less positive effect on wages. Overall, then, it seems that women in the same occupation who are expected to spend more time at home with their partner and therefore communicate more often about work-related issues have a stronger positive wage effect, but this additional effect is marginal and hardly significant.

Finally, there is another piece of the puzzle that distinguishes between full-time and part-time employment contracts. In panels A and B of Table B.9, an indicator variable is introduced that takes the value of one when the female and male partners work part-time and full-time respectively. All specifications highlight that for couples with the same occupation, the positive wage effects of women are small and hardly significant when both partners work full-time. On the other hand, women working part-time in the same occupation receive significantly higher wages on average. The positive wage effects for women in the same occupation as their partner thus mainly result from the latter category.

FIGURE 2.7: Years of Partner-related Employment



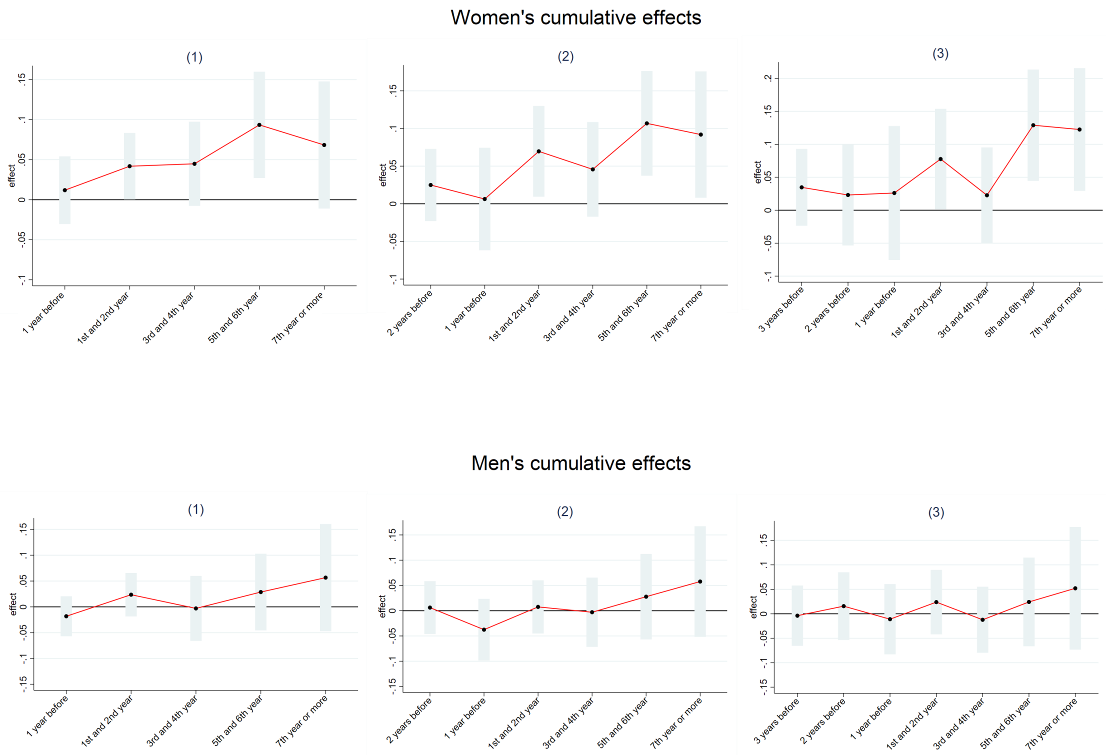
Data Source: HILDA Release 18.

2.5.3 Cumulative effects

So far, the analysis has examined the wage effect at the time the partners are employed in similar occupations, where this was not the case in the previous period. Following this analysis, it is important to empirically investigate whether or not there are cumulative effects arising from the same occupation. In other words, this section aims to examine whether partners experience positive wage effects over the years they work in the same occupation or whether it is just a short-term shock. Such a test would provide useful information to understand the main mechanisms behind wage effects in the same occupation. If wages in the same occupation increase cumulatively over the years, then this is another strong indication that economies of scale develop between partners due to joint specialisation, knowledge effects, and free-riding, as well as influence and support mechanisms.

To begin with, Figure 2.7 shows the distribution of years in which couples with the same occupation remain professionally linked. As can be seen, 28% of partners with the same occupation stay employed together for only one year, while the vast majority stay in the same occupation for three years or fewer (58%). Equation 2.2 is re-estimated both with and without full controls, allowing for non-linear effects across years. The results are presented in Table B.11 (Appendix B), while the effects of the specifications with full controls can also be seen in Figure 2.8. The first column of the panel for each partner, i.e. column (1), covers a pre-treatment period and then measures the impact on wages separately for the first two years, then the third and fourth years, the fifth and sixth years, and finally the seventh year or more of being employed in the same occupation. In columns (2) and (3) I have two and three pre-treatment periods, respectively. Columns (1)-(3) also report time-varying cofounders of age and experience. In addition, individual and occupational effects, as well as a time trend, are included. Columns (4)-(6) show similar specifications without full controls, i.e. only the individual-specific effects and the time trend are used as cofounders. All estimates in Table B.11 are obtained from fixed effects regressions, while robust standard errors that correct for clustering across individuals are reported in parentheses.[13]

FIGURE 2.8: Cumulative Effects



Notes: The graph illustrates the average percentage change in the real hourly wage for individuals who begin working in the same occupation as their spouse at time t, compared to those who are employed in different occupations alongside their spouses at the same time. The lags represent the pre-treatment effects, while the leads indicate the after-treatment effects on wages for those partners who remain work-linked. Data Source: HILDA Release 18.

The female panel in Table B.11 indicates that female partners' wage effects increase progressively with years that the partners are employed in a similar occupation. First, columns (1) and (4) indicate that there is no anticipatory effect one year before treatment, while wages of treated women are 4.2%-4.3% higher in the first two years in the same occupation. For years 3-4, 5-6, and 7 or more in the same occupation with partner, the estimated effects are 4.1%-4.4%, 9.3%-9.7%, and 6.8%-7.5%, respectively. Columns (2), (3), (5), and (6) show that the anticipatory effects remain close to zero and highly

[13] I also perform fixed-effect regressions using industry-type instead of occupation-type effects as well as regressions using the different definitions of occupation. Results are similar across specifications.

insignificant as the number of pre-treatment periods increases. Employment in an occupation similar to that of a partner implies higher wages for women in years 1-2, 3-4, 5-6, and 7 or more, on average, 6.8%-8%, 2%-4.5%, 10.6%-13.1%, and 9.1%-12.9% higher wages for women during years 1-2, 3-4, 5-6, and 7 or more, respectively. The female panel suggests that there are cumulative effects due to the similar specialisation of the partners in the labour market. On average, the effects on female partners' wages increase progressively over the years in the labour force.

As for the men's panel, the analysis shows that there are no causal effects on wages due to employment in the same occupation. For all specifications in the men's panel, anticipatory effects are highly insignificant, while treatment effects are zero in the first four years. As Figure 2.8 also shows, men who remain professionally associated with their female partners appear to experience a positive effect on their wages only after several years of joint specialisation, although the effect remains non-significant.

2.5.4 Wage and hour gaps

Another important consideration is to investigate whether women who are professionally linked to their partners reduce the wage and working time gap within the couple. Occupational linkage could act as a mechanism to reduce the gender gap in wages and working hours observed in the labour market, as partners are employed in the same industry in similar occupations. In addition, career-linked partners could coordinate their working hours more easily so that dual-career couples do not have different working hours and achieve a better work-life balance. Table B.12 shows the fixed effects regressions on the wage and hours gap between partners. The wage gap is expressed as the ratio between the male and female wage rates, and the working time gap is constructed by dividing the male partner's weekly hours by the female partner's hours. Both panels show four different specifications. Column (1) includes the partners' occupational indicators in both panels in addition to the same occupation indicator. Column (2) adds three lags of pre-treatment periods to test for anticipatory effects. Column (3) then adds socio-demographic characteristics of both partners as cofounding factors, and column (4) again tests for pre-treatment effects. Partners working in the same occupation report a lower wage gap of 7.6% - 11%, statistically significant at the 5% level. There appears to be a smaller wage gap among partners who work in the same occupation. Note, this finding is not unexpected, as the difference in wages between genders is partly attributed to the segregation of women in low-paying occupations and industries (Cortés and Pan, 2018). However, when both partners work in the same occupation and industry, the wage disparity cannot be explained by the occupational segregation of women alone, and consequently, it is expected that the wage differentials between partners will be lower in that case. Therefore, when interpreting this finding, it is important to consider the fact that occupational segregation is absent, which in itself contributes to the reduction of the gender pay gap. The working time differential between partners decreases significantly once partners work in the same occupation. In particular, the ratio decreases by 11.5% - 30%, statistically significant at the 10% level. In both cases, the pre-treatment effects are not statistically different from zero, suggesting that the differences between partners decrease due to this link in the labour market.

2.5.5 Discussion

The results presented above show that there is a significant positive causal impact on women's wages when their partner works in a similar occupation. On the other hand, male partners seem to be hardly affected, as the evidence shows small wage effects. Further research shows that the wage effects for women are stronger for couples with tertiary education, while the effects are mainly driven by women who work part-time and whose partners work full-time, and for women whose partners move into their occupations rather than for women who follow their partners into their occupations. Finally, the results suggest that wage effects become stronger when partners remain similarly employed over a greater number of years, especially in the case of female partners.

The main results are consistent with the work of Hennecke and Hetschko (2021). In particular, they find significant positive effects on the well-being of couples who are in a working relationship, for both men and women. However, once they examine job satisfaction, they find significant gender differences, as the positive effects on well-being are stronger for women. Moreover, my findings regarding 'college+' couples also seem robust to the findings of Hennecke and Hetsckho (2021), as they highlight that for couples with a university degree, the positive impact on the well-being of working partners is even greater.

Several explanations point towards a mix of mechanisms and pathways to explain the empirical results. My analysis highlights that partners help each other with work-related issues due to positive assortative matching and that the assumption of a 'power couple' holds. It seems that human capital, knowledge, and accumulated experience are public goods within partners for the same occupation, who use each other's stock of work skills and methods for free. Thus, similar specialisation in the labour market brings mutual support and benefits. Looking more closely at the impact on women, the research shows that nepotism and partner networking must be ruled out as the main explanatory factors. However, this does not mean that these mechanisms do not exist among partners with the same profession. For example, networking and nepotism may be among the most important mechanisms explaining the hiring dynamics of couples with the same occupation, even though wage dynamics do not seem to be influenced by these mechanisms. On the other hand, women's preference for a shared work environment is a pathway that plays an important role and further underpins the assumption of 'power couples'.

Interestingly, women who are employed part-time show greater wage effects when they work in similar occupations to their partners. Many women in Australia prefer part-time employment because it allows them to better balance work and home life and to be able to combine their paid work with the housework for which they are primarily responsible (Booth and van Ours, 2009). A plausible explanation for this result is therefore that women who have the same occupation are able to combine housework and their part-time employment more efficiently. More specifically, women who work part-time have the advantage of benefiting from their partner's skills and professional know-how, which compensates them for the hours they spend doing unpaid housework. Moreover, this result is in line with the human resource theory of occupational wage differentials, which states that workplace flexibility and working time arrangements are seen as the final step in closing the remaining gender wage gap (Goldin, 2014).

Finally, there are two other explanations that clear up most of the puzzle about women's strong wage effects. First, in addition to women's preferences and their ability to make better use of knowledge and skills, another possible explanation could be women's willingness to close the 'gender wage gap'. Since it is easy to compare wages for couples who have the same job, it is also easier for women to see unequal pay for equal work, especially if the partners have similar education. Therefore, women 'run' faster towards closing the gap. This explanation is also consistent with the tunnel effect in Hennecke and Hetschko's (2021) paper, namely that within occupationally connected partners, the low earner benefits the most, as they may perceive the partner's higher earnings as a signal of potentially higher pay. Similarly, being employed in the same occupation as the partner could contribute to increasing women's pay expectations. In particular, there is evidence that women have lower salary expectations, referred to as the 'ask gap' (Briel et al., 2021; Bergerhoff et al., 2019; Reuben, Wiswall and Zafar, 2017). This 'ask gap', which is considered one of the main components of the residual wage gap observed in the labour market (Rousille, 2021), can be eliminated for couples with the same occupation, as women can refer to their partners' wages. Second, women's substantial wage effects could also be influenced by men's influential mentors and career alliances. This is consistent with the role of gender-equitable masculinities (OECD, 2021) in promoting women's empowerment and career development. Overall, these alternative explanations can be combined and considered as a 'confidence effect'.

2.6 Conclusion

This paper is motivated by recent developments in assortative matching, which suggest that multiple dual-earner couples may pursue similar careers. In particular, it examines the wage effects of partners who share the same occupation, using available data on Australian couples. I evidence strong positive wage effects for female partners, while men's wages are hardly affected. The results suggest that women employed in the same occupation as their partners earn on average 3.2%-8.8% higher wages, with these effects becoming larger with the accumulative years that couples remain occupationally linked. These results remain robust when testing different specifications in terms of the number of pre- and post-treatment periods included or in terms of controlling co-founders. Moreover, sensitivity analyses for different definitions of occupation yield similar effects. Finally, various tests for the assumption of a parallel trend are conducted to ensure the causal interpretation of the results.

Further analyses show that the wage effects for women are primarily caused by women who work part-time and by women whose partners switch to their occupations, rather than by women who follow their partners. The education of the partners is also an important factor, as the effects are larger for couples with a university degree. Overall, the results confirm the hypothesis that boosting effects develop between partners with the same occupation, which are differentiated by gender. These effects may be knowledge effects due to free-riding on human capital and qualifications, as well as preferences for shared work experiences and mutual career development. In addition, women seem to experience positive 'influence' or 'trust' effects that increase their wage expectations. The role of men as career mentors may also be an important piece of the puzzle.

My findings can be used in human resource management and applied human resource management as they have implications for hiring practises. In particular, potential employers can support dual career partners who follow similar paths in the labour market by helping them find similar occupations. In addition, human resource management in companies and organisations can consider interaction effects when introducing on-the-job training or teamwork. Finally, the results could be useful for organisational behaviour and industrial organisation when dealing with partners employed in competing companies.

An important direction for future research is to examine whether similar or different effects develop between partners with different degrees of occupational similarity, e.g. when they work in the same team, work for the same employer or for competing firms, etc. Such an extension requires more detailed information on the occupational characteristics of individuals. In addition, the Covid-19 response of partners with the same occupation who both work from home, thereby greatly increasing the frequency of communication and interaction, may extend the current study.

Moreover, my findings open up another research avenue through which occupational homogamy, and more generally evolving marital preferences, influence the balance of power within the household and shift the sharing rule. Furthermore, same-sex couples with the same occupation are a possible extension that can be explored to further clarify the role of preferences, gender norms, and career allies.

Another interesting topic for future research is to examine the contribution of career-allied couples to the observed gender pay gap and income inequality. Several recent studies, for example, emphasise the role of assortative matching in education and income as a major factor in intragenerational inequalities. Another study can measure the contribution of couples who share the same occupation to gender and income inequalities. To motivate this further, Figure B.1 in Appendix B shows that the proportion of couples with the same occupation is associated with both the gender wage gap and income inequality between households.

Chapter 3

Flexibility for Equality: Examining the Impact of Flexible Working Time Arrangements on the Gender Gap in Working Hours

Abstract

This chapter investigates the impact of flexible working time arrangements on the gender gap in working hours among women. Using rich panel data from the German Socio-Economic Panel (SOEP), the study finds that temporal flexibility has a modest, but positive effect on reducing the gender gap in hours worked among women who opt for flexible working contracts. This effect is especially pronounced among full-time working women and women after childbirth, suggesting that flexibility can enable women to more effectively balance work and family responsibilities during periods of increased family duties. These findings highlight the importance of flexible working time arrangements in promoting gender equality in employment outcomes.

3.1 Introduction

Through decades of progress, women have closed the education gap while significantly increasing their participation in the labour market across the OECD (Lundberg and Stearns, 2019; Bertrand, 2020). Despite this progress, women still lag behind men in both earnings and hours worked, suggesting that gender gaps in the labour market persist (Olivetti and Petrongolo, 2016; Blau and Khan, 2017). Recent studies point to several sources to explain the remaining differences, from psychological characteristics to the inconsistent structure of jobs with women's emphasised dual role at work and at home (Ciminelli et al., 2021; Goldin, 2021). Regarding the latter, recent evidence shows that much of the observed variation in employment outcomes can be attributed to how different workers with different work schedule preferences are organised and rewarded in different workplaces (Goldin and Katz, 2011; Goldin, Barth, Kerr, and Olivetti, 2017; Bruns, 2019). As working women want more flexibility in terms of their working hours (Bertrand, 2020), flexible working time arrangements are expected to promote equal opportunities for women and contribute to closing the gender gaps in employment outcomes.

Gender inequalities in the labour market are important not only for reasons of equity but also for reasons of economic efficiency. By combining micro-data from the European Labour Force Survey (LFS) and the Survey on Income and Living Conditions in the European Union (EU-SILC), the European Foundation for the Improvement of Living and Working Conditions (Eurofound, 2016) estimates the monetary costs of the gender employment gap[1] in the European Union (EU) as a whole. In 2009, the cost of the gender employment gap was €368 billion. These costs decreased by 46 billion within 4 years and remained roughly unchanged thereafter. Therefore, in 2018, the cost of gender inequality remains high at around €320 billion. To better understand the relative importance of these costs to the EU economy, consider that the total Gross Domestic Product (GDP) in the EU in 2018 was €13,532.2 billion, according to Eurostat.[2] The underlined cost of the same year corresponds to 2.4% of European GDP, while at the same time the percentage of total GDP allocated to the common EU budget was about 1%, according to the OECD.[3] It is obvious that the existing gender gaps in employment lead to inefficiency by limiting the capacity of the European economy through unreleased potential resources. Understanding the reasons for the persistent gaps and evaluating

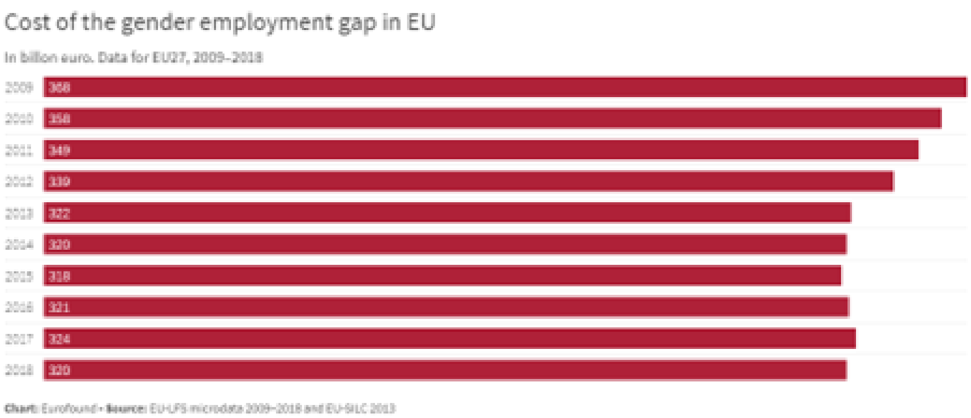
[1]The Eurofound measures the cost of gender employment gap taking into consideration and monetising the gender pay gap, the gender gap in working hours as well as the gender gap in the employment rates. The current research focuses only on gender gaps in working hours, as discussed below.

[2]ec.europa.eu/eurostat/web/national-accounts/data/database.

[3]www.oecd.org/economy/launch-of-economic-surveys-of-eu-and-euro-area-2018.htm.

interventions and policies aimed at addressing gender inequality would improve both fairness and economic efficiency.

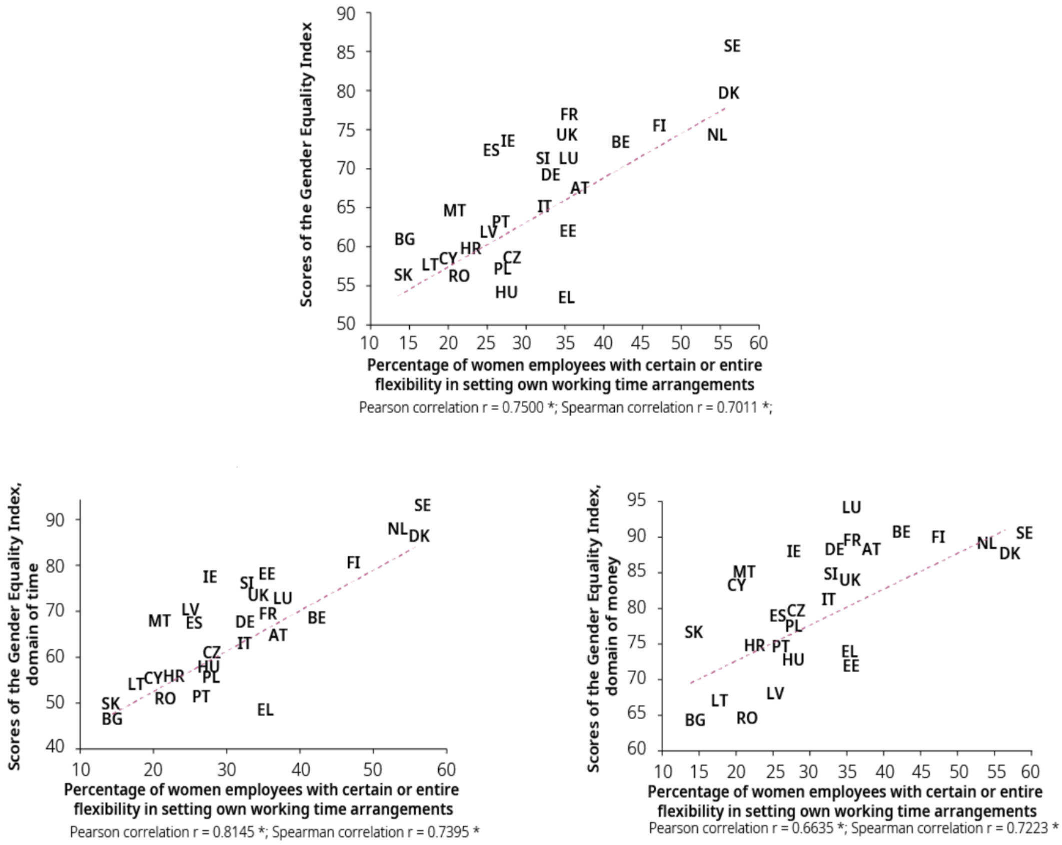
FIGURE 3.1: The Cost of Gender Inequality in the EU



This paper addresses the influence of flexible working time arrangements (also referred to as flexitime or flexibility) on gender gaps in working hours. As Goldin (2014) and Bertrand (2020) suggest, flexibility is the key factor that could satisfy women's demand for more control over their working hours, as they face greater pressure to balance work and family life. For example, the gender gap in employment peaks in the child-rearing phase of the life cycle, as working women have to reconcile competing demands on their time at work and at home, especially when household responsibilities include childcare. As a result, working women's autonomy over their working hours could be a key factor in maintaining their employment contracts. According to the European Institute for Gender Equality's Gender Equality Index 2019 report[4], a cross-national comparison within the European Union (EU) shows a significant positive correlation between the proportion of women working under flexible working arrangements and the Gender Equality Index (GEI). In particular, as Figure 2 shows, there is a clear positive correlation between GEI scores and the percentage of employed women who have some control over their working time. This correlation becomes even stronger when GEI refers only to working hours. The second graph in Figure 2 shows that the positive relationship becomes steeper and the statistical measure of the correlation increases to 0.81. This finding supports the claim that flexible working time arrangements could be an opportunity for women who want to maintain their working hours despite their household responsibilities. On the other hand, the correlation with flexibility weakens once the GEI index is sensitive only to the gender pay gap. As a result, the issue of flexibility has become an important element of European social policy. The above

[4]More information can be found here: eige.europa.eu/gender-equality-index/2019.

FIGURE 3.2: Flexibility and Gender Gap. Cross-country Correlation in the EU



Source: European Institute for Gender Equality's Gender Equality Index 2019 report.

justifies the recent EU Directive (2019)[5] for the right to request flexible working time arrangements, which has been forwarded to all member states' national parliaments. In addition, policy proposals in the United Kingdom (i.e. Making Flexible Working the Default[6]) and from the OECD (Be Flexible, 2016, Employment Outlook, 2019) emphasise the gender dimension of flexibility in the workplace. Overall, there is very recent interest both in the literature and among policymakers in the influence of flexitime on reducing gender inequality in the labour market. In that context, this paper aims to empirically examine the impact of flexible working time arrangements on observed gender gaps in employment, with a focus on working hours, and to extract potential policy implications.

Flexible working time arrangements and the association of this autonomy with workers' behaviour and commitment have been analysed both in the psychological literature (Deci and Ryan, 1987) and from an economic perspective. Aghion and Tirole (1997), Aghion

[5]Parliament and Council Directive 2019/1158/EU of 20 June 2019 on work-life balance for parents and carers and repealing Council Directive 2010/18/EU [2019] OJ L188/79.

[6]www.gov.uk/government/consultations/making-flexible-working-the-default.

and Bolton (2003), Bloom and Van Reenen (2011) and Beckman, Cornelissen and Kräkel (2017) provide theoretical models of flexible working time schedules to emphasise the trade-off between higher motivation due to autonomy and lower performance due to abuse of authority. Flexible working hours have also been widely studied empirically, taking into account various aspects of socio-economic life, such as worker productivity, work attitudes and work effort (Almer and Kaplan, 2002; Eaton, 2003; Bloom and Van Reenen, 2007; Heywood, Siebert, and Wei, 2007; Beckmann, Cornelissen and Kräkel, 2017). Recent economic literature highlights the role of flexibility in promoting work-life balance (Beckman, 2016) or job satisfaction and well-being (Kröll and Nüesch, 2019; Angelici and Profeta, 2020; Xiang et al., 2021). Lastly, the covid-19 pandemic and the lockdowns during that period opened new grounds for applied research on remote working and its influence on job satisfaction and productivity (Gavoille and Hazans, 2022).

Flexible working hours not only make it possible to reconcile professional and private life, but could also accommodate women's time constraints and meet their demand for self-determined working hours. Theoretical analyses on the relationship between flexitime and gender inequality focus mainly on the higher demand and stronger preferences of working women for flexibility in working hours (Goldin, 2014). From this perspective, flexibility not only provides equal opportunities but also improves economic efficiency as women can maintain their working hours during periods of increased household responsibilities (Bertrand, 2020). In addition, other studies focus on the potential trade-off between flexibility and wages, highlighting that companies could meet women's demand for more flexibility by offering them lower wages (Stone and Hernandez, 2013). Finally, flexible working is likely to be used by women for caring tasks (Singley and Hynes 2005), and those who work flexibly are likely to expand their housework because women are expected to do housework and work at the same time (Sullivan and Lewis 2001; Hilbrecht et al. 2013). Clawson and Gerstel (2014) argue that flexible working allows female workers to 'do gender' (West and Zimmerman 1987) by enabling them to fulfil the gender roles prescribed by society.

The current empirical evidence on the impact of working time flexibility on gender gaps in employment is quite inconclusive and limited, as it is mostly based on qualitative research or lacks representativeness and validity (Chung and van der Lippe, 2020). Only very recent studies attempt to identify the causal effects of flexible working hours on gender gaps in their analyses. Goldin (2014) reports that while time flexibility is associated with a lower gender pay gap, this effect is concentrated in scientific and technical occupations, while the author does not find this evidence in other occupations, such as law or business. However, it is likely that flexibility contributes to the motherhood wage penalty, and thus to the gender wage gap because new mothers trade lower wages for greater time flexibility (Gimenez-Nadal et al., 2021). Van der Lippe and Lippényi (2020) argue that flexible working has a greater impact on the wage gap than parental leave and childcare support. Chung and van der Horst (2018) find evidence from the Understanding Society panel survey (2009-2014) that flexible working can help women stay at work after the birth of their first child, and that mothers who use flexitime are less likely to reduce their working hours after the birth of their child. Fuller and Hirch (2019) use Canadian Linked Workplace Employee data to show that flexibility enables mothers to stay in human capital-intensive jobs and higher-wage workplaces during periods of high family demand.

Flexible working arrangements have also been studied in relation to other gender dimensions in the labour market. Munsch (2016) and Chung (2020) show that there is a stigma attached to workers who choose to work flexible hours - the belief that workers who use flexitime are less productive and less committed to the workplace - that is strongly gendered. Men are more likely to discriminate against flexible workers, while women, especially mothers, are more likely to suffer from this discrimination. Bear's (2021) findings from two studies -one correlational and one experimental - show an interaction between gender and time flexibility on women's promotion aspirations. In a sample of working parents with children, flexitime was significantly and positively associated with promotion aspirations for women, while the opposite pattern was found for men. The expected conflict between work and family explained this association. In addition, the Covid 19 pandemic served as a natural experiment to study the effects of remote working, which is considered a special case of flexible working hours. Alon, Coskun, Doepke, Koll and Tertilt (2021) highlight that women who worked from home during the pandemic spent more working time on childcare and experienced greater productivity losses than men, while remote-working mothers were more likely to report feelings of anxiety, loneliness and depression than teleworking fathers (Lyttelton, Zang and Musick, 2021).

In this paper, the effect of flexible working time arrangements on gender gaps in employment focuses explicitly on working hours. To be more specific, the gender gap is determined by comparing the working hours of each woman to the average working hours of men across the entire economy[7]. There are three main advantages to focusing on the relationship between flexible working hours and working time rather than the gender pay gap. First, flexitime could directly help women to maintain their working hours, as flexibility by definition means that workers have control over their working hours. This can mean that workers can adjust when they start and end work, or change the

[7]Additionally, a second measure of the gender gap in working hours is introduced to account for variations in working hours based on specific characteristics of occupations, enterprises, and years. This measure involves comparing group-specific gender gaps in hours.

number of hours they work per day or week. This is also evident in Figure 3.2, which shows that flexibility is more strongly correlated with gender equality in working hours than in pay. Moreover, the relationship between the gender pay gap and flexibility is more dynamic and complex. Flexibility has not been the default condition in working time arrangements, and stigma or stereotypical behaviour may accompany workers who choose to work under these contracts (Chung 2020). Therefore, working under flexible contracts may have been associated with wage deductions or productivity losses due to stigma in the past. The combination of the Covid-19 pandemic and rapid technological change has transformed labour markets, and it is very likely that flexible working will be the rule rather than the exception in many occupations in the future (Deloitte 2018; Adrjan et al., 2021). This is a reason why the wage costs or stigma effects, observed in the pre-pandemic period for workers who opted for flexible working, have already declined and are expected to disappear (McKinsey, 2021). Finally, flexibility - by helping women maintain their position and hours - would also help them overcome the motherhood penalty. In practice, working mothers would be able to avoid human capital disruptions related to childbearing, which is well documented as a major source of the remaining gender inequality in Western Europe (Ciminelli et al., 2021). Through the latter channel, there is a clear link between flexibility and the narrowing of the gender pay gap. However, it is very dynamic and a valid measurement of this effect will only be possible in the future.

The current empirical study assesses the impact of flexible working time arrangements on the working time differential between women and male workers average, drawing on the German Socio-Economic Panel (SOEP), one of the most comprehensive and detailed longitudinal surveys in Europe. The SOEP dataset contains information on a representative sample of individual employed women and on the companies in which they are employed. The main sample of this study includes women who are employed in both full-time and part-time jobs. However, additional analysis is conducted specifically on women who are employed under full-time contracts[8]. To address potential endogeneity issues arising from selection on observed and unobserved characteristics of both employers and employees, the empirical approach of this paper follows an innovative method proposed by Beckmann, Cornelissen, and Kräkel (2017). This method extracts information about each worker's job history to create worker-firm combined spells, which are then utilised as fixed effects, while it takes advantage of the extensive information available in SOEP related to time-varying characteristics of workers as well

[8]For the purposes of this study, women who work in full-time jobs are defined as those who have selected this working status during the interview and whose working hours are not less than 35 hours per week in any case. It is also crucial to differentiate flexible work arrangements from part-time work, as flexibility refers to a worker's autonomy in how to allocate the agreed weekly hours, regardless of the total number of hours worked.

as their employers. These spells are used as fixed effects to control together for employee's and firm's unobserved heterogeneity and the extensive information is used to control for time-varying heterogeneity. In addition, to further enhance the effectiveness of the endogeneity adjustment, a supplementary Instrumental Variables approach is also introduced. The empirical results suggest that flexible working time arrangements have a moderately negative effect on the gap between women's working hours and the average working hours of male employees. This result remains stable even with several sensitivity analyses performed. Flexibility has a stronger impact on women in full-time employment, better-educated women, and women after the birth of a child. Further analysis shows that women who switch from fixed working hours to flexitime do not adjust their contractual working hours, but increase their actual working hours through paid overtime. Finally, flexitime is not associated with more housework, but it is found to slightly increase childcare hours.

This paper contributes to the existing literature on the impact of flexible working time arrangements on gender gaps in employment. To date, the literature has focused on the relationship between flexitime and gender gaps, focusing on the gender pay gap (Goldin, 2014; Fuller and Hirsch, 2019; Gimenez-Nadal et al., 2021). The relationship between flexitime and working time differentials has not been directly studied before. Therefore, to the best of my knowledge, this is the first study to empirically investigate this relationship. Moreover, most studies on the effects of flexible working time arrangements on gender gaps do not explicitly address the problem of endogeneity, and the results can lead to limited implications and conclusions (Chung and van der Lippe, 2020), with the notable exception of the empirical study by Fuller and Hirch (2019), which uses employer-employee fixed effects. Therefore, by addressing endogeneity issues, the current study provides further evidence on the causal effects of working time flexibility on gender gaps in the labour market.

The remainder of the paper proceeds as follows. In Section 2, the empirical method is presented and discussed. Section 3 describes the data sources. The results are documented in detail in Section 4, including the main findings, sensitivity analyses, as well as further empirical investigation. Section 6 discusses the results and concludes.

3.2 Empirical Strategy

To investigate the effect of flexible working time arrangements on the gender gap in working hours, a measure of this gap is introduced. In particular,

$$gap_{it} = 1 - \frac{Hours_{it}}{\frac{1}{N_m}\sum_{j=1}^{j=M} Hours_{jt}} \tag{3.1}$$

where $Hours_{it}$ denotes the actual working hours of woman i at time t, N_m is the number of male employees, and $Hours_{jt}$ refers to the actual working hours of working man j at time t. The main measure of gap uses the average working hours across the whole economy, however in the sensitivity analyses a group-specific gap is also introduced. Therefore, the second component of gap_{it} calculates woman i's relative working hours to the average working hours of male workers. If a female worker works the same hours as the average male worker, the measurement if the gap becomes zero. Positive (negative) values of the gap_{it} indicate that the underlined woman i works less (more) hours than the average male worker. In order to measure the impact of flexible working arrangements on working hours' gap the following fixed effects model is specified:

$$ln(gap_{it}) = \alpha Flex_{it} \ + \mathbf{X}_{it}\beta + \mu_{i,k(it)} + \varepsilon_{it}. \tag{3.2}$$

The dependent variable is the logarithm of the gap_{it} as defined above.[9] The main explanatory variable is the indicator $Flex$ that takes value 1 if woman i works under a flexible working schedule at time t, 0 otherwise. Note that this indicator does not capture the degrees of autonomy. α is the parameter of interest as it captures the influence of flexitime on the dependent variable. To capture the causal impact of flexibility on the measure of the gap in the working hours, and avoid potential bias, the empirical specification must control for both the unobserved and observed characteristics of workers as well as of the firms they are employed in.

The vector X contains a rich set of socio-economic control variables related to the underlined woman i's individual and household characteristics. These characteristics include a cubic function of age[10], years of working experience, indicators of working full-time, being a civil servant, and being married, the disposable income of the household as well as the total number of children in the household and an indicator of having a new child since last year. Moreover, this vector includes time-varying characteristics of the job and the firm woman i is currently employed such as indicators of the size of the firm as well as occupational dummies that capture the job tasks within the same firm. Finally, ε_{it} is the idiosyncratic error term with zero mean and $\mu_{i,k(it)}$ is a worker-firm spell fixed effect, in line with Beckmann, Cornelissen, and Kräkel (2017), which controls for worker fixed

[9] Researchers commonly use logarithmic transformations when ratios are dependent variables, citing outliers as one justification (see, e.g., Gompers, Ishii, and Metrick, 2010). Moreover, Bartlett and Partnoy (2020) highlight further advantages of using the logarithmic transformation of ratios.

[10] As discussed in the following section, after a graphic illustration of women's average working hours over the life cycle.

effects and firm fixed effects as well as for their combination. The worker-firm spell fixed effect $\mu_{i,k(it)}$ is constructed using available information for the employment history of each worker. In this context, the SOEP question, which asks workers whether they have changed employers or started a new job in the past year, is used to create a numerator for the duration of employment for each person. Thus, a numerator is introduced that is increased by one each time a worker has changed employers, but remains at the same value if a worker remains with the same employer. This numerator is then combined with the personal identification number of each employed woman, resulting in a fixed effect at the worker-job spell level. This can be thought of as similar to a fixed effects regression on the worker, except that a worker who changes jobs is treated as if she were now a different worker.

Abowd, Kramarz and Margolis (1999) and Card, Heining and Kline (2013) emphasise the importance of including fixed effects for both the worker and the firm, as unobserved heterogeneity on both sides is important as a determinant of employment outcomes in the workplace. Chatterji, Mumford and Smith (2010) and Beckman (2016) suggest that differences in job characteristics make a significant and substantial contribution to explaining gender differences in employment outcomes, while causality fails when the study does not take into account the unobserved characteristics of the employer. The inclusion of $\mu_{i,k(it)}$ implies that the variation results from changes in the type of employment contract of woman i (change from fixed contracts to flexitime and vice versa) while she is employed in the same company. Technically, this worker-firm spell fixed effect allows the unobserved characteristics of both the worker and the firm to be held constant, thus tackling potential endogeneity due to a possible relationship with the worker's decision to work under a flexible contract. For example, the employee's motivation or the employer's perceptions of human resource management could act as unobserved factors that both correlate with the employee's decision to work flexible hours. If this heterogeneity were not taken into account, the estimates would be biased and the causal interpretation would no longer be valid.

The study by Beckmann, Cornelissen and Kräkel (2017) is the first to introduce fixed effects between worker and period to analyse working time flexibility using available data from the SOEP. They conclude that the combination of fixed effects for the period and controls for the time-varying characteristics is sufficient to ensure exogeneity and causal interpretation of the empirical results. As an additional analysis, they perform an instrumental variables approach (IV) using the lagged choice of the employment contract of each worker and the group-specific share of flexible contracts with respect to the underlined worker's occupation and region per year. For completeness, the same approach is also discussed in Appendix C. They conclude that the fixed effects between worker and region are sufficient for the causal interpretation and that no further concerns about bias arise.

3.3 Data

The empirical analysis is based on data from the German Socio-Economic Panel (SOEP). The SOEP is an annual longitudinal survey of about 22,000 individuals living in about 12,000 households. The survey began in 1984 and initially interviewed only individuals from Western German. The questionnaire covers a wide range of individual characteristics, such as education, occupational information, and personality traits, wellbeing, and living conditions. In addition, extensive information is also collected at the household level. Overall, the SOEP is probably one of the most representative and comprehensive individual-level panel data set not only in Germany but also in Europe. Moreover, Germany is one of the core countries and economies in the European Union, while according to Eurofound and Eurostat[11], the share of employees working under flexible working time arrangements, and the gender gaps in employment are comparable to the EU average. The representativeness of the data as well as the rich information in a longitudinal format, therefore, strengthens both the external and internal validity of the results, and more general conclusions can be drawn at the European level.

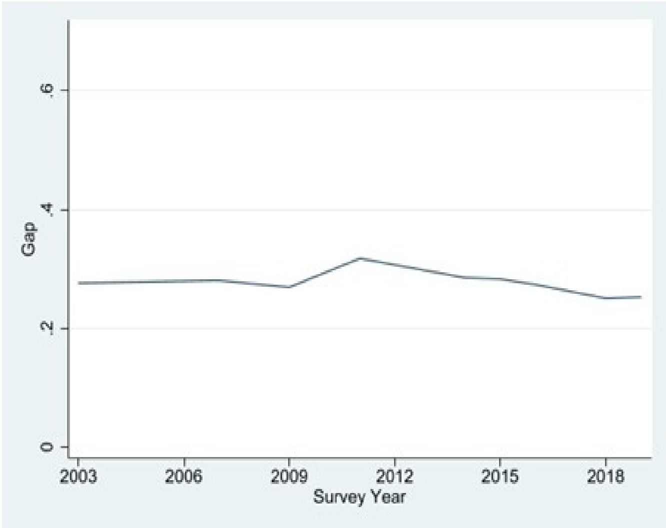
The relationship between flexible working hours and the gender gap in working hours can be examined in the SOEP in 2003, 2005, 2007, 2009, 2011, and 2014-2017 waves, as these panel waves contain information on workers' work autonomy. The present analysis focuses on a sample of currently employed women aged 23-64, excluding the self-employed and women working in small family businesses. Younger women are excluded as they may opt for part-time work or flexible working arrangements to combine education and employment. Self-employed and women working in family businesses are by definition free to choose their working hours and are not part of a company's organisational policy. Finally, obvious outliers are removed from the sample. In particular, workers earning less than 250 euros or more than 15,000 euros per week, and women who reported more than 50 years of work experience are removed. Finally, women who reported less than 900 euros as total monthly household disposable income are also removed from the sample.

Figure 3.3 shows the gender gap in working hours between 2003 and 2018. The gender gap is calculated for each employed woman in the sample using the formula presented in Equation 3.1, averaged for each year. The graph shows that the gender gap in working hours remains at a comparable level between 2003 and 2018. It starts just below 0.3 in 2003 and falls slightly to 0.26 in 2018. There was a significant increase in the gender

[11]For more details: www.eurofound.europa.eu/data/european-working-conditions-survey.

gap during the economic crisis of 2010-2011, which gradually narrowed until it reached post-crisis levels. Figure 3.3 confirms the concern about remaining gender inequalities in the labour market and the slowdown in gender convergence over the last decades.

FIGURE 3.3: The Gender Gap in Hours between 2003 - 2018.

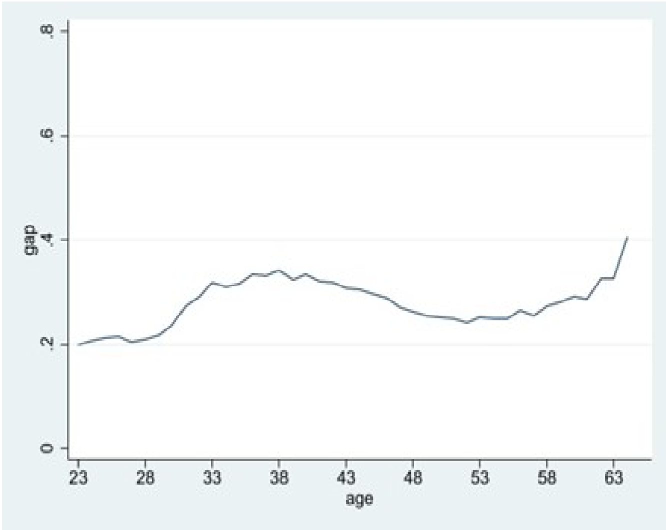


Data from SOEP.

It is evident that the gender gap in employment has remained roughly the same over the past decades. To understand this better, it is important to focus on the life-cycle, as there are certain periods that contribute more to the observed differences between women's and men's labour market outcomes. Figure 3.4 confirms a well-known finding from previous studies (Goldin, Kerr, and Olivetti, 2022); the gender gap in employment starts at a relatively low level at the beginning of working life and gradually increases between the ages of 28-40. This is the time when many women take on more household and family responsibilities and when children are born and demanding childcare is required. As many studies show, the doing gender stereotype still persists in the division of housework (West and Zimmerman, 2009), so these tasks are still mainly the responsibility of women. Consequently, the combination of these tasks becomes incompatible with career development, leading to a conflict between work and family, and many women quit their jobs or reduce their working hours. As shown in the graph, the gender gap narrows for women in middle age and then increases again as they approach retirement.

The SOEP dataset includes four categories of working time arrangements to indicate the different degrees of flexibility and workers' autonomy. In particular, the respondents answer the following survey question: *Which of the following working time arrangement is most applicable to your work?* Respondents are asked to select the most applicable working time arrangement from the following types: *i. Fixed working time*, which refers to a regular time schedule determined by the employer without any variation or employee

Figure 3.4: The Gender Gap in Hours over the Life Cycle.



Data from SOEP.

participation; *ii. Partly fixed working time*, which allows workers to request limited and minor adjustments to the employer's regular time schedule but still involves low worker autonomy; *iii. Certain Flexibility*, which enables employees to vary their daily starting and finishing times within a defined core time; and *iv. Self-Managed Working Time*, which grants employees full control over the duration and distribution of their working hours, including breaks, vacation days, and days off. For the main analysis, fixed and partly fixed working time arrangements are combined as "fixed," while certain flexibility and self-managed working time are grouped as "flexitime"[12]. This categorisation aligns with the EU Directive 2019/1158 on work-life balance for parents and carers, which identifies flexible working arrangements as a broad range of options ranging from limited to complete autonomy and are agreed upon between the employer and employee.

Table 3.1: Incidence of Having a Flexible Working Time Arrangement

Contract type	2003	2005	2007	2009	2011	2014	2015	2016	2017	Total
Fixed	2,803	2,573	2,638	2,615	3,376	4,121	4,127	3,678	4,319	30,250
(percent)	(67.80)	(66.38)	(64.93)	(65.00)	(64.27)	(67.07)	(66.07)	(66.10)	(65.06)	(65.84)
Flexitime	1,332	1,303	1,425	1,408	1,877	2,023	2,119	1,886	2,319	15,692
(percent)	(32.20)	(33.62)	(35.07)	(35.00)	(35.73)	(32.93)	(33.93)	(33.90)	(34.94)	(34.16)
Total	4,135	3,876	4,063	4,023	5,253	6,144	6,246	5,564	6,638	45,942

Data from SOEP.

Table 3.1 shows the share of women who have flexible working time arrangements between 2003 and 2017. In the SOEP dataset, flexible working time arrangements refer to the opportunity for an employee to have a high degree of control over their work schedule. This may include the ability to choose their starting and ending times, break times, and the overall structure of their workday. The table highlights that fixed working

[12]Additional analysis examines each type of working time arrangement separately

Table 3.2: Women's Working Hours and Gaps, by Contract and by Year

Contract type		2003	2005	2007	2009	2011	2014	2015	2016	2017	Total
Fixed	Hours	32.40	31.94	32.18	32.20	30.61	30.67	30.50	31.02	30.75	31.22
	Gap	0.28	0.29	0.29	0.28	0.32	0.29	0.29	0.27	0.28	0.29
Flexible	Hours	35.24	35.45	35.30	35.70	33.60	33.90	34.08	34.00	34.3	34.5
	Gap	0.21	0.21	0.22	0.20	0.25	0.21	0.21	0.20	0.19	0.21
Total		4,135	3,876	4,063	4,023	5,253	6,144	6,246	5,564	6,638	45,942

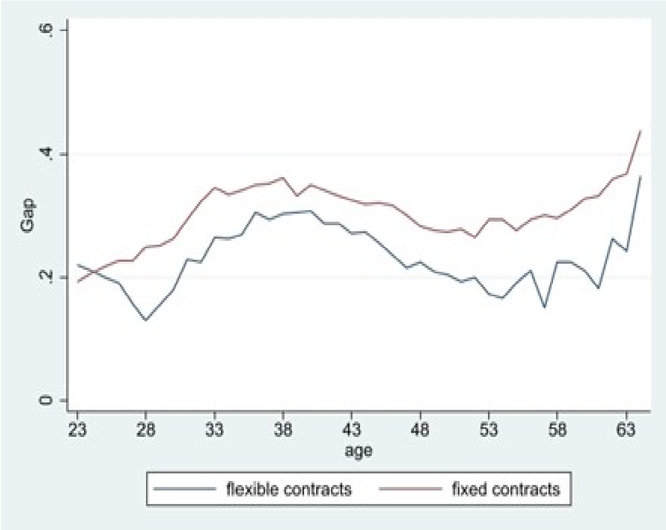
Data from SOEP.

time contracts remain the most common form of working time arrangement among employed women. The proportion of employed women who worked under flexible working contracts was about the same between 2003 and 2018. It appears that flexible working time arrangements have not increased in popularity, but only during pandemic-related closures. Overall, almost two-thirds of women in Germany work on a fixed contract and the remaining third opt for flexitime. Note that flexible working time arrangements increased sharply with the Covid-19 crisis and many companies formally introduced hybrid working time models as conventional contracts in the post-Covid period. However, the current analysis looks at flexibility in the pre-pandemic period.

After discussing the general trends, it is useful to examine the gender differences by type of contract. Table 3.2 provides information on women's actual weekly working hours and the gender gap by working time contracts on an annual basis between 2003 and 2017. The table shows that employed women working under flexitime contracts report working more hours on average. In particular, employed women with fixed working time arrangements work on average 30.5-32.4 hours per week, while the average weekly working hours of women with flexible contracts is between 33.5 and 35.7 hours. The average working time gap is consistently smaller for women on flexible contracts, as it ranges between 0.19 and 0.25, while the gap for women on fixed contracts ranges between 0.27 and 0.32. Note that both gaps reached a maximum in 2011, during the economic crisis. Apart from that year, the values hardly fluctuate; 0.19-0.21 for flexible contracts and 0.27-0.29 for fixed contracts.

Figure 3.5 provides information on the average gender gap over the life-cycle by working time contracts. The gender gap in working hours is calculated as in Figure 3.4, with the only difference being that Figure 3.5 distinguishes between flexible and fixed contracts. First of all, at age 23, there is no significant difference between the contract types. Note that women working on flexible contracts have a slightly higher gender gap. This is probably related to the fact that some women at this age are still primarily studying and working part-time and therefore choose flexibility to combine their job with education. At the age of 24, however, the two groups start to move in different directions. The gender gap for women with flexible working time starts to decrease sharply, while the gap for those on fixed contracts increases slightly. Between the ages of 24 and 28, the gender

FIGURE 3.5: The Gender Gap over the Life Cycle According to the Type of Contract.



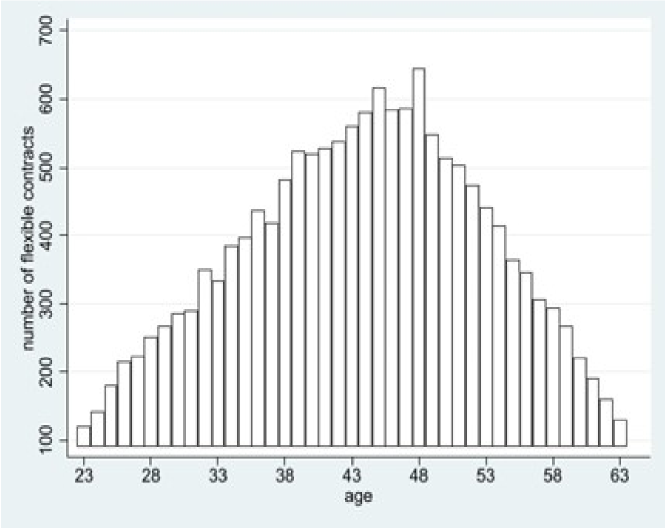
Data from SOEP.

gap is not only smaller for women with flexitime than for women with fixed working time but also decreases substantially. This is well described and explained by Ciminelli et al. (2021), who suggest that the gender gap is better explained by stereotypes at the beginning of working life, but then women start to work towards eliminating the gap. At this stage, which is roughly between the ages of 28-40 in Figure 3.5, the gender gap in working hours increases considerably, regardless of the type of contract. However, the gap in flexitime contracts remains consistently below the gap in fixed-time contracts. At age 44 and over a 10-12 year period, the gap for women on flexible contracts declines more than the modest decline observed for women on fixed contracts over the same period. Note that the gap for women with flexible working arrangements approaches a minimum of 0.15 around age 28, while it falls back below 0.2 at age 52-57.

Finally, Figure 3.6 shows the distribution of women with flexible working time arrangements across age cohorts. The distribution has a clear inverted U-shape with a negative skew. In other words, most women opt for flexible working arrangements between the ages of 38 and 50, which could be related to the increasing family and domestic responsibilities that most women have during this period. Moreover, flexible working time arrangements seem to be less popular in younger cohorts, especially at the age when most women enter the labour market. In that period many women might be more career-motivated and less affected by family responsibilities, thus demand for flexibility might be limited.

The descriptive statistics suggest a first conclusion that women with flexible working time contracts on average have smaller gender gaps in working hours. However, a conclusion

FIGURE 3.6: Number of Women Working under Flexible Schedules by Age.



Data from SOEP.

regarding the impact of flexitime on gender gaps can only be drawn from the empirical analysis that follows.

3.4 Results

The results of the estimated fixed effect specification of Equation 3.2 are shown in Column (FE) of Table 3.3. There are 38,150 observations included in the main specification, and 17,515 groups. Note that in the worker-firm spell fixed effect context, a group refers to a working woman employed in the same company. Once this woman changes company, another group is created. Flexible working time arrangements have a moderate, negative effect on the gap among employed women. More specifically, on average, women working under flexible working time contracts have a 3 percentage point smaller gap with the average working hours of male workers. The estimate is statistically significant at the 95% level of significance.

Looking at women's time-varying characteristics, the cubic functional form of age confirms the graphical representation in Figure 3.4. The estimates suggest that women's working time gap starts from a low level, increases in the early years of working life, reaches a maximum in the 30s, and then follows a u-shaped fluctuation. This functional shape of age is obviously explained by women's time-use and the combination of family and working life. Moreover, one year more work experience is on average associated with a 1.5 per cent smaller working time gap, while the estimates for full-time women and civil servants are -0.82 and -0.018, respectively. However, the latter is not statistically

TABLE 3.3: Baseline Estimates and Instrumental Variables Approach

	FE	FE-IV
flexitime	-0.030**	-0.033
	(0.013)	(0.063)
age	0.104***	0.173
	(0.040)	(0.123)
age square	-0.003***	-0.005**
	(0.0009)	(0.002)
age cube	0.00002***	0.00004**
	(0.000006)	(0.00002)
experience	-0.015*	0.005
	(0.008)	(0.016)
full-time	-0.824***	-0.650***
	(0.022)	(0.043)
civil servant	-0.018	-0.004
	(0.017)	(0.032)
married	0.083***	0.034
	(0.025)	(0.057)
household income	-0.0009***	-0.0009*
	(0.0003)	(0.0005)
number of children	0.033***	0.007
	(0.008)	(0.017)
new birth	0.112**	0.207
	(0.046)	(0.154)
firm size: 21-200	-0.019	0.0005
	(0.016)	(0.027)
firm size: 201 - 2000	-0.025	0.017
	(0.019)	(0.033)
firm size: >2000	-0.018	-0.023
	(0.019)	(0.032)
R-square (within)	0.21	0.16
R-square (overall)	0.40	0.15
Number of obs.	38,150	13,453
Number of groups	17,515	6,720

Notes: Column (FE) shows the estimates obtained from the worker-firm spell fixed effect specification (FE) of Equation 3.2. Column (FE-IV) shows the estimates obtained from an IV estimation with worker-firm spell fixed effects (FE-IV). The first-stage regression can be found in Table C.1 of Appendix C. Flexitime is instrumented by women's earlier choice and the share of workers with flexible working contracts in each woman's occupation, in the same state, and in the same year. Occupational indicators (115 codes) and year effects are also included across all specifications, but not presented. Robust standard errors clustered at the worker-firm spell level are shown in parentheses in Columns (FE) and (FE-IV). *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data from SOEP.

significant at the 5% confidence level. The gap for married women increases by 8.3 percentage points, while it increases by 3.3 percentage points with the number of children. Finally, women who have given birth since last year's survey report an average 11.2% higher gap in working hours.

The company's size, expressed as the total number of employees seems to be of minor importance as a determinant of the gender gap, a result that might be surprising. Column (FE) shows that the larger a firm, the lower the gap in working hours, however, this negative association is neither sizeable nor statistically significant at the 5% level. The explanation behind this result relies on the worker-spell fixed effects. This kind of analysis focuses on changes within a firm, and as a result, the variation of a firm's size expressed in categories is very little.[13] Note that occupational dummies (115 codes) and year effects are also included to capture intra-firm occupational changes that would imply different organisational practices and tasks, as well as the economic environment of that year. For example, a promotion within the same company would be associated with new tasks and new working time arrangements. The overall explanatory power of this specification exceeds 0.41 and the within and between components of the R-squared are 0.2 and 0.41, respectively.

As already mentioned in section 3.2, an additional instrumental variable approach (IV) is conducted to ensure the causal interpretation of the estimated effect. The previous analysis controls for time-constant heterogeneity through the worker-firm fixed effects, and time-varying heterogeneity through the control variables. However, if the control variables do not capture all the time-varying heterogeneity, there are unobservable factors that invalidate the causal interpretation of the results. The IV approach below follows the study by Beckmann, Cornelissen, and Kräkel's (2017), in which two instruments are constructed for the different types of working contracts. First, each worker's previous choice of working time contract, going back one period. Second, they construct a group-specific share of workers opting for flexible working time arrangements. The second stage of the fixed effect IV estimation is presented in Column (FE-IV) of Table 3.3 and full details can be found in Table C.1 of Appendix C. Flexible working time arrangements are instrumented by women's earlier type of contract, and the share of workers with flexible working contracts in each woman's occupation, in the same state, and in the same year. The results confirm the conjecture of Beckmann, Cornelissen, and Kräkel's (2017) that worker-firm spell effects tackle sufficiently the endogeneity concerns, and eliminate the bias. The estimator for the fixed effect IV of the impact of flexitime on women's gap is about 0.033, which corresponds to the average effect estimated from the baseline specification. Note that the sample in Column (FE-IV) decreases substantially

[13]Note that this is restored in the sensitivity analysis when only individual-specific fixed effects are used.

since there are many working women with no available information about their past type of working time arrangement, which is used as the instrumental variable, and the provided estimate is not considered statistically significant. Moreover, the worker-firm FE model has a considerably better model fit compared to the FE-IV model.

The empirical findings suggest that flexible working time arrangements have a negative effect on the gap between women's and men's hours worked after controlling for time-invariant unobserved selection into flexitime and observed time-varying characteristics. This estimate ranges from -0.058 to -0.003 at a 95% confidence level and clearly shows the existence of a negative effect. To put it differently, flexible working time arrangements can be considered as a practice that would promote gender equality since it seems to operate towards reducing the gender gap in working hours. Next, a series of robustness tests are performed to emphasise the sensitivity of the estimated effect.

3.4.1 Sensitivity Analyses

3.4.1.1 The definition of flexibility

As a first robustness check, we need to highlight the sensitivity of the empirical results to the definition of flexibility in working time arrangements. Instead of the indicator for flexitime — using fixed contracts as the baseline — this section introduces three binary variables (and again, the baseline category is the fixed contracts). Starting with the lower levels of flexibility, the following three indicators are introduced: partially fixed, certain levels of flexibility, and self-determined working time arrangements.[14] Then, using these three indicators instead of the flexitime indicator, the Equation 3.2 is re-estimated. The results are shown in Column (1) of Table 3.4.

Column (1) shows that for women opting for partially fixed contracts, the gap with men's average working hours decreases slightly by less than 2 percentage points. For women employed under contracts that allow for more flexibility, the narrowing of the gap becomes more pronounced, exceeding 6 percentage points. Self-determined working time contracts do not have any sizeable and statistically significant impact on the gap in women's working hours. Overall, it seems that women who opt for some degree of flexibility benefit the most. For women with absolutely self-determined working hours, the evidence is mixed, with effects estimated between -0.032 and 0.040. Technically, this implies that there are women in the main sample whose decision to work self-determined hours is driven by motivation and the desire to use flexitime to increase their employment, and other women whose decision is less motivated and career-oriented. The

[14]Note that the binary variable of flexibility used in the main analysis contains the two latter categories, namely the certain levels of flexibility and the self-determined working time arrangements.

rest of the estimates are comparable, both in magnitude and statistical significance, to the main estimates presented in Column (1) of Table 3.3.

3.4.1.2 A group-specific gender gap

The next exercise introduces a more specific measure of the gap in working hours. In the main analysis, the gap is determined with respect to the average hours worked by all male workers in the same year. This is now narrowed down to a more group-specific definition of the gap. The hours worked by each woman are now compared to the average hours worked by male workers in the same occupation, in an enterprise of the same size as each woman's enterprise, and in the same year. This exercise allows to account for particular characteristics of jobs that may also imply differences in the average working hours supplied by workers. The results are shown in Column (2) of Table 3.4. The magnitude of the negative effect of flexible working time arrangements on the group-specific working time gap of women increases slightly to 4 percentage points, again indicating a moderate reduction in the gap due to flexible working time arrangements.

3.4.1.3 Individual-specific fixed effects

Another useful robustness check is to estimate Equation 3.2 using the standard fixed effects estimation instead of the worker-firm spell effects. In this case, only the unobserved heterogeneity of employed women is captured, and any potential endogeneity problems due to the firm's unobserved characteristics arise. This is the reason why an additional control variable is included in Equation 3.2. This is a variable that measures each worker's time in the firm, and counts from zero each time a worker changes firms. Column (3) shows the estimates from a standard estimation with individual fixed effects. Interestingly, the estimated impact of working time flexibility on the female gap is comparable to the specification with worker-firm fixed effects, estimated slightly above 3 percent. Overall, the specification in Column (3) yields estimated effects that are similar to those in the main specification. This can be attributed to the inclusion of the worker's length of stay in the firm, which partially controls for endogeneity and mitigates some of the potential bias. However, it should be noted that while this specification appears to provide comparable estimates, the variable that accounts for the number of years each worker is employed at the underlined firm may not completely address endogeneity concerns. Specifically, this variable fails to capture intra-firm or intra-establishment transfers of an employee, meaning that the time spent at the firm may not necessarily begin from zero. Consequently, any changes in the organisational culture that occurred due to the worker's intra-firm transfer may not be captured.

Table 3.4: Sensitivity Analyses

	(1)	(2)	(3)
flexitime	-	-0.040*	-0.033**
		(0.021)	(0.014)
age	0.102**	0.164**	0.061*
	(0.040)	(0.071)	(0.032)
age square	-0.003***	-0.0003**	-0.001*
	(0.0009)	(0.001)	(0.0007)
age cube	0.00002***	0.00002***	0.000001**
	(0.0000006)	(0.000001)	(0.0000005)
experience	-0.014*	-0.041***	-0.051***
	(0.008)	(0.014)	(0.007)
full-time	-0.230***	-0.787***	-0.797***
	(0.022)	(0.036)	(0.019)
civil servant	-0.018	-0.001	-0.018
	(0.017)	(0.032)	(0.017)
married	0.084***	0.095**	0.111***
	(0.025)	(0.041)	(0.022)
household income	-0.0009***	-0.00001***	-0.000005*
	(0.00003)	(0.000005)	(0.000003)
number of children	0.033***	0.047***	0.060***
	(0.008)	(0.014)	(0.008)
new birth	0.109**	0.170***	0.152***
	(0.046)	(0.061)	(0.038)
firm size: 21-200	-0.019	0.089***	-0.073***
	(0.016)	(0.027)	(0.015)
firm size: 201 - 2000	-0.024	-0.002	-0.087***
	(0.019)	(0.032)	(0.018)
firm size: >2000	-0.017	0.001	-0.086***
	(0.019)	(0.033)	(0.018)
partly fixed	-0.017*	-	-
	(0.010)		
certain flexitime	-0.062***	-	-
	(0.016)		
self-determined	0.003	-	-
	(0.018)		
time at firm	-	-	-0.002
			(0.001)
R-square (within)	0.21	0.14	0.32
R-square (overall)	0.40	0.33	0.47
Number of obs.	38,150	28,200	38,150
Number of groups	17,515	14,515	13,751

Notes: Columns (1) and (2) show the estimates from the worker-firm spell fixed effect specification of Equation 3.2. In Column (1) an indicator for totally fixed contracts is used as the baseline, and three binary variables are introduced: partially fixed, certain levels of flexibility, and self-determined working time arrangements. Column (2) uses as the dependent variable a group-specific definition of the gap. In particular, the hours worked by each woman are compared to the average hours worked by male workers in the same occupation, in an enterprise of the same size as each woman's enterprise, and in the same year. Column (3) shows the estimates from a standard individual-specific fixed effect regression. Occupational indicators (115 codes) and year effects are also included across all specifications, but not presented. Robust standard errors clustered at the worker-firm spell level are shown in parentheses in Columns (1) and (2). Robust standard errors clustered at the individual level are shown in parentheses in Column (3). *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data from SOEP.

To sum up, this section examines the sensitivity of the estimated effect to several factors that could potentially undermine the main results. The negative effect of flexible working hours on the gender gap remains stable across several robustness tests, ensuring its causal interpretation, while the magnitude of the effect does not vary across specifications and ranges between 3 and 4 percentage points.

3.4.2 Heterogeneity Analyses

The empirical analysis so far provides a robust estimate of the average causal impact of flexible working hours on women's working time gap. This section examines the heterogeneity of this effect across different demographic groups, different labour market behaviours, and across different periods in women's life cycle. [15]

3.4.2.1 Full-time working women

The first exercise excludes women with part-time employment, and focuses on the impact of flexitime for women with career ambitions and a more stable presence in the labour market. According to the work-life balance model (Anderson, Binder and Krause, 2003; Boushey, 2008; Damaske et al., 2014), women working full-time are likely to benefit most from flexibility. In this context, the working time gap is calculated in relation to the average hours worked by full-time men.

Column (1) in Table 3.5 shows that the estimated impact of flexitime on the women's hours gap is negative and sizeable. In particular, the estimated value exceeds 0.11, and is statistically significant at the 1% level. Thus, full-time working women who enter into a flexible working time contract have, on average, a reduction of more than 11 percentage points on their hours gap. Column (2) is instructive because it clearly shows that the magnitude of the negative impact on the gap increases progressively with the degree of working time flexibility. More specifically, a partially fixed time contract reduces the average gap by 4 percentage points, while some flexibility leads to a 10 per cent decrease. Self-determined working time has the largest negative impact, leading to a 17.5 percentage point decrease in the average working time gap between women and men.

Overall, there are substantial heterogeneous effects for women working full-time. Flexitime leads to a large decrease in their working time gap. Furthermore, there is also great heterogeneity within this group in terms of the degree of flexibility. The more

[15] The main estimates discussed in this section are presented in Table 3.5. Further details can be found in the Appendix.

TABLE 3.5: Heterogeneity Analyses: Main Estimates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
flexitime	-0.113*** (0.027)	-	-0.044** (0.020)	-0.030** (0.013)	-0.012 (0.016)	-0.057** (0.024)	-0.005 (0.016)	-0.013 (0.027)	-0.057*** (0.017)
partially fixed	-	-0.043* (0.023)	-	-	-	-	-	-	-
certain flexibility	-	-0.103*** (0.027)	-	-	-	-	-	-	-
self-determined	-	-0.180*** (0.045)	-	-	-	-	-	-	-
flexitime*large firm	-	-	-	-	-	-	-0.059*** (0.022)	-	-
large firm	-	-	-	-	-	-	0.007 (0.014)	-	-
flexitime*new birth	-	-	-	-0.157* (0.088)	-	-	-	-	-
new birth	-	-	-	0.207*** (0.064)	-	-	-	-	-
R-square (within)	0.06	0.06	0.23	0.21	0.21	0.24	0.21	0.19	0.14
R-square (overall)	0.03	0.03	0.48	0.40	0.44	0.32	0.43	0.38	0.17
Number of obs.	18,496	18,496	17,436	38,150	24,203	13,947	38,150	13,587	20,469
Number of groups	8,182	8,182	9,346	17,515	11,010	6,521	17,515	7,380	10,155

Notes: Columns (1) and (2) show the main estimates from a worker-firm spell fixed effect regression for the subsample of women who work in full-time jobs. Column (3) shows the main estimates from a worker-firm spell fixed effect regression for the subsample of women aged 30-45, while Column (4) introduces an interaction term between flexibility and a new birth in the main specification of Equation 3.2. Columns (5) and (6) restrict the analysis to women with at most and more than 12 years of schooling, respectively. In Column (7) a new indicator for large firms (more than 200 employees) interacts with flexibility, and Columns (8) and (9) restrict the analysis to the periods 2003 - 2009 and 2014 - 2017, respectively. Robust standard errors clustered at the worker-firm spell level are shown in parentheses. Occupational indicators (115 codes) and year effects are also included across all specifications, but not presented. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Full details can be found in Appendix C. Data from SOEP.

flexible a contract is, the greater the decrease in the underlined gap, which can be up to 18 percentage points if the working woman can determine freely her own working time.

3.4.2.2 Age cohorts and childbirth

According to the work-family balance model (Anderson, Binder and Krause, 2003; Boushey, 2008; Damaske et al., 2014), it is also useful to focus on the age cohorts where the gender gap in employment increases. This is called the parental phase and is shown in Figure 5. In particular, it is between 30 and 45 years of age, and is associated with the dual role of several women in work and household. Therefore, flexitime is considered a family-friendly policy that protects women from work-family conflict, and promotes their career advancement (Johnson and Provan, 1996). Column (3) shows the estimated impact of flexitime on the female gap for the sub-sample comprising working women aged 30-45. The sign remains negative and the magnitude increases to 4.4 percentage points.

In the same vein, a similar analysis focuses on childbirth. Flexible work schedules are expected to help employed women maintain their labour supply after childbirth, and avoid the disadvantage of motherhood (Adda, Dustmann, and Stevens, 2017). To investigate this, an interaction term between flexibility and the variable indicating a new birth since the last interview is created and inserted into Equation 3.2.

Column (4) shows the corresponding estimates. Flexible working time arrangements cause on average a negative decline of 3 percentage points, a result comparable to the total average effect obtained from the main estimates. Looking at the indicator for a new birth, we find that it implies a significant increase in the gap of 20.7 percentage points for those women employed under standard fixed contracts. However, those women who opt for flexitime after childbirth are able to contain this increase almost entirely, as flexible working arrangements result in an overall reduction in the gap for women of 19 percentage points on average. The final increase in the gap is thus less than 2 percentage points for women with flexible working time arrangements, only one-tenth of the increase in the gap for women with fixed working time contracts. Overall, flexible working time arrangements seem to play an important role in protecting working women from labour market disadvantages in times of increased household and family responsibilities.[16]

3.4.2.3 Level of education

Educational attainment is seen as another potential source of heterogeneity that deserves further investigation. Fuller and Hirsch (2019) highlight that flexibility mitigates the wage losses of motherhood, especially for those with higher levels of education. Therefore, I distinguish working women by their education level and form two subsamples. The first comprises women with 12 years or less of schooling, and the second consists of women with more than 12 years of schooling, i.e. women who have attended at least college. The latter group is expected to include women who are employed in more skill-oriented positions, and whose work may be more compatible with flexible working arrangements.

Column (5) shows the effect of estimating Equation 3.2, applied only to the group of women with 12 years or less of schooling. Column (6) highlights the corresponding estimated effect resulting from the group of women with higher levels of education. Comparing the estimated effect of flexitime on women's working time gap in these two columns, it is clear that flexibility implies a larger reduction for women with higher levels of education. In particular, the estimated coefficient is -0.012 for women with 12 years or less of schooling, while it is -0.057 for women with higher levels of education. This shows that flexitime only causes a small reduction in the gap for women with low levels of education, while its impact is substantial and statistically significant for women with higher levels of education.

[16] Appendix C also contains a supplementary analysis that distinguishes between women with at least one child and childless women. Both estimated effects are comparable with the overall average effect of -3 percentage points.

3.4.2.4 Firm's characteristics

Heterogeneity may originate not only from the workers but also from the characteristics of the enterprise in which the underlined worker is currently employed. More specifically, company size, i.e. the number of employees in the company, might be a potential source of heterogeneous effects of flexitime on women's working time differentials. Smaller firms may have fewer resources to offer flexible working arrangements (Kotey and Sharma, 2015) or may be less likely to adopt flexible work schedules and other relevant organisational and HR practices (Kotey and Koomson, 2021).

To examine this source of heterogeneity, an indicator is created for large firms. This dummy variable takes the value 1 if a company has more than 200 employees, while it takes the value 0 for small and medium-sized enterprises (SMEs), namely companies with less than 200 employees. Equation 3.2 is re-estimated by adding this indicator and its interaction with flexitime as additional co-founders. The main results are presented in column (7) of Table 3.5. Women who opt for flexible working arrangements in SMEs experience on average a very limited reduction in their working time gap, not exceeding 0.5 percentage points. On the other hand, women employed under flexible work arrangements in large companies experience an overall reduction that exceeds 6 percentage points on average.

3.4.2.5 Two different decades

Finally, the sample is divided into two temporal sections to examine the different effects of flexible working hours in two different decades. The first sub-sample covers the period between 2003 and 2009, while the second sub-sample ranges from 2014 to 2017. It can be assumed that the perception of flexibility changes over time, and that this organisational practice is gradually seen as mainstream. In addition, the economic crisis of 2010 led many companies to introduce flexible types of employment contracts in response to the economic downturn. [17] Because of this adjustment during this time, many workers and employers were able to overcome potential objections to flexible working arrangements. Overall, flexitime is expected to be less associated with the stigma effect in the mid-2010s than in the previous decade.

Column (8) suggests that flexitime has a small negative effect on the gap which is 1.3 percentage points, and not statistically significant at the 10% level. Over the period

[17] That was a broad practice supported by the German government as a response to the economic crisis. In particular, by introducing flexibility, job sharing, and part-time employment, the German government managed to keep the unemployment rates at low levels (Ehmke and Lindner, 2015).

2014-2017, as shown in column (9), this organisational practice reduces the gap in working hours by 5.7, a result that is statistically significant at the 1% level. The difference between these periods is striking, indicating that flexible working arrangements have gained popularity and acceptance over the years.

3.4.2.6 Separate estimations for West and East Germany

It is also comprehensive to include separate analyses to distinguish between East and West Germany. To be more specific, between 1945 and 1990, Germany was divided into two parts, with East Germany strongly encouraging women to participate in the labour market, while West Germany supported a traditional male-breadwinner model (Rosenfeld, Trappe, and Gornick, 2004). This resulted in significant differences in gender norms and female labour supply, particularly in early motherhood (Campa and Serafinelli, 2019). After reunification, East Germany adopted West Germany's political, economic, and legal institutions, leading to increased social interactions between women raised in different cultures. This 'natural experiment' shows that East Germans exhibit stronger preferences for redistribution and more egalitarian gender attitudes than West Germans (Alesina and Fuchs-Schündeln, 2007; Bauernschuster and Rainer, 2012; Beblo and Görges, 2018), which is empirically confirmed by Boelman, Raute, and Schönberg (2020). Table C.4 in the Appendix shows that the gender gap in working hours is smaller in East Germany while the proportion of working women with full-time jobs is higher in East Germany too, in line with the previous literature. The separate estimations between the two German regions, shown in Table C.5, suggest that flexibility implies a decrease in the gender gap in working hours of 3 percentage points in West Germany, a result which is similar to the baseline estimates. On the other hand, flexibility implies a decrease of less than two percentage points in East Germany, which is not considered statistically significant. This result could be linked to the fact that the gender gap is already narrower in East Germany. Nonetheless, it is essential to note that the sample size in East Germany is significantly smaller since the panel is not balanced between East and West Germany, which could impact the estimated results.

In summary, the heterogeneity analysis points to significant differences in the impact of flexible working time arrangements on women's working time gap. The most favoured groups are full-time workers and women in the period after the birth of a child. These results are related to the supply side of labour, namely working women make use of flexible working time arrangements to achieve a better balance between their work and household duties. Moreover, flexitime leads to a much larger decrease in the working time gap for women working in large companies and women with higher levels of education. As mentioned before, better-educated women are usually employed in managerial and high-skills-oriented positions. The organisational practices are expected to favour flexibility in these types of occupations as well as within large establishments. Lastly, flexibility is found to reduce women's gap to a greater extent in the second half of the 2010 decade than in the previous decade which is believed to be related to the changing attitudes towards flexible working schemes.

3.4.3 Implications on Women's Time Use

Flexible working hours have been shown to significantly reduce women's gap in working hours. Some categories of women seem to benefit more from flexible working arrangements as they are able to achieve a better work-life balance. This section analyses and discusses some important implications related to women's employment, and their time use at home.

3.4.3.1 Working hours

First, it is important to understand the mechanism by which working women reduce the working time gap when employed under flexible working arrangements. The narrowing of the gap could be the result of a readjustment of women's contractual working hours. In other words, it would be the case that working women under flexible working arrangements agree with their employees to increase contractual working hours as compensation for this advantage (Munsch, Ridgeway, and Williams, 2014; Chung and Van der Lippe, 2020). On the other hand, it would be the case that contractual hours do not change, but women working flexitime increase actual hours and exceed contractual hours. The latter category is defined by Beckmann, Cornelissen, and Kräkel (2017) as effort, and is the difference between actual and contractual working hours. In their analysis, flexibility is found to have a positive impact on work effort, and this additional effort measures worker motivation rather than work intensification.

As a first exercise, this section examines the relationship between women's contractual working hours and flexible working arrangements. The underlined estimate is shown in Column (1) of Table 3.6. This estimate results from a worker-firm spell fixed effect regression.[18] According to Column (1), there is no sizeable relationship between flexitime and women's contractual working hours. The specification suggests that contractual weekly working hours decrease by 0.2 per cent on average in regimes with flexible working arrangements. Intuitively, this result indicates that women who change their working

[18] The full details of the regressions discussed in this subsection can be found in Appendix C.

time arrangement from a fixed to a flexible arrangement — within the same firm — do not adjust their contractual working hours. Column (2) shows the relationship between flexitime and work effort, defined as the difference between actual and contractual working hours. A clear positive relationship indicates that workers' effort increases on average by 7 percentage points when they change to flexible working contracts. This result is statistically significant at the 1% level. In other words, women who switch from a fixed to a flexible working schedule are able to manage their time more effectively, and, as a result, work more hours than the contractual hours they used to work under the fixed working schedule.

3.4.3.2 Time use at home

There are concerns in the literature that flexible working arrangements, and in particular these contracts that also allow for working from home, are a setback for gender equality (Hilbrecht et al. 2013; Clawson and Gerstel, 2014), as they reinforce the perception of 'doing gender', a concept first introduced by West and Zimmerman, 1987). In other words, since housework is not a gender-neutral task, and is still mainly done by women, a flexible working contract would have the effect of reinforcing the traditional division of domestic labour, and, as a result, women would take on more housework and childcare (Lott and Chung, 2016). For example, it might be the case that the household members perceive a woman's decision for remote work as an opportunity for her to do more housework, and as a result, they increase their expectations about this behaviour. If the 'doing gender' norm is highly prescriptive for this woman, it might be the case that she shows conformity to this expectation by increasing her housework. However, the evidence is mixed. Chung et al. (2022) recently found that during the first lockdown of the Covid-19 pandemic in the UK, homeworking was associated with more traditional divisions of childcare but not necessarily of housework. Therefore, it would be instructive to examine the relationship between flexible working arrangements and women's time use at home, focusing on housework and childcare hours.

To analyse these two components of time use, an estimation method with individual-specific fixed effects is conducted. Firm's heterogeneity does not rise endogeneity concerns in that case and, as a result, firm effects are not necessary. On the other hand, since the objective requires to extract within variation at the individual level, worker-specific fixed effects are used and not worker-firm effects. Column (3) in Table 3.6 examines the relationship between weekly housework and flexitime. The estimated coefficient is 0.009, which is not statistically significant at the 5% level. In other words, flexible working arrangements are associated with a small increase in weekly housework hours of less than 1%, on average. The hypothesis that flexible working time arrangements are associated

Table 3.6: Implications: Contractual Working Hours, Effort, Housework, and Childcare

	(1)	(2)	(3)	(4)
flexitime	-0.002	0.070***	0.009	0.020
	(0.005)	(0.022)	(0.008)	(0.016)
R-square (within)	0.18	0.03	0.04	0.13
R-square (overall)	0.47	0.02	0.05	0.05
Number of obs.	21,552	21,552	24,509	15,025
Number of groups	10,935	10,935	10,541	6,407

Notes: Column (1) shows the estimated coefficient of flexibility from a worker-firm spell fixed effect regression on women's contractual working hours. Column (2) shows the estimated coefficient of flexibility from a worker-firm spell fixed effect regression on women's difference between actual and contractual working hours. Columns (3) and (4) show the estimated coefficient of weekly housework hours and hours for childcare, respectively. Both estimates in Columns (3) and (4) are obtained from individual-specific fixed-effect regressions. Parentheses in Columns (1) and (2) show robust standard errors clustered at the worker-firm spell level, and parentheses in Columns (3) and (4) show robust standard errors after clustering at the individual level. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Occupational indicators (115 codes) and year effects are also included across all specifications, but not presented. Full details can be found in Appendix C. Data from SOEP.

with an increase in domestic work done by women is not confirmed by the German sample. Note, however, that this result might be different when there is spatial flexibility, i.e. when workers have control over where they work. The same analysis is carried out for women's weekly hours for childcare, restricting the analysis to women with at least one child. The estimated relationship is shown in Column (4) of Table 3.6, and indicates that women who use flexible working arrangements increase weekly hours for childcare by 2 percentage points on average. This result is only statistically significant at the 15% level.

To sum up, flexible working arrangements are chosen by women to support their work-life balance, and to maintain their working hours during periods of increased household responsibilities. However, the literature repeatedly points out the potential risks associated with flexibility (see the previous discussion), which would possibly run counter to gender equality. The empirical results from Germany suggest that flexible working arrangements in terms of time are not related to the domestic work done by women, as the estimated relationship is approximately zero. Moreover, the relationship between flexitime and childcare hours is positive, but also weak. Overall, flexitime seems to have a direct impact on women's work effort as there is clear evidence that they work more overtime once they switch to flexible work contracts.

3.5 Conclusion

This paper contributes to the existing literature on flexible working arrangements, highlighting their advantage beyond work-life balance, focusing on the role of flexibility as means of promoting gender equality in the labour market. In particular, this paper empirically assesses the impact of flexible working arrangements on women's gap in working hours. Using detailed information from the SOEP dataset, the gap is calculated as the fraction of the distance of each woman's working hours from the average working hours of men at the same time. The empirical approach addresses potential endogeneity problems due to selection on observed and unobserved characteristics of both employers and employees. Several notable studies point to the need to include fixed effects for both the employer and the employee, otherwise, the estimation would lead to massively biased results (Abowd, Kramarz and Margolis (1999); Card, Heining and Kline, 2013; Card et al., 2018). Therefore, in line with Beckmann, Cornelissen, and Kräkel (2017), this study introduces worker-firm fixed effects that effectively control for the unobserved time-constant characteristics of employers and employees.

The empirical results suggest a negative and significant relationship between flexible working arrangements and women's working time gap. On average, women's working time gap decreases by 3 percentage points when they opt for flexible working arrangements. This estimate ranges from -0.058 to -0.003 at a 5% confidence level, and clearly shows the existence of this negative influence. Several sensitivity analyses underline the robustness and stability of this estimate. The main conclusion is that flexible working time arrangements can be seen as a practice that helps women to maintain their working hours and narrow the gap with men. This finding is consistent with the work-life balance model (Clark, 2000), which concludes that flexibility would improve workers' labour market outcomes. Moreover, these findings are consistent with the work of Goldin (2014) and Bertrand (2020), which emphasise the importance of flexibility for gender equality in the workplace. Finally, the current study confirms several experimental and qualitative studies (see Chung and van der Lippe (2020) for a detailed review) that also claim that flexibility could have a positive impact on women's employment decisions, as well as recent studies (Chung and Van der Horst, 2018; Fuller and Hirsh, 2019) that suggest that flexible work arrangements can help mothers avoid reducing their working hours.

In addition, a detailed examination of several potential sources of heterogeneity in the impact of flexible work arrangements on the gap among women is conducted. First, women working full-time report a much larger decline in their gap, above 11 per cent, once they opt for flexible working. This finding, along with the complementary evidence that the more flexible the contract, the greater the decline in the hours gap for full-time women, supports the consistency of the results with the work-family balance model. Consistent with Fuller and Hirsch (2019), flexible work arrangements also imply a significantly larger drop for women with more than 12 years of schooling. Better-educated women tend to be employed in professional and managerial positions, where flexibility can be introduced more easily. In addition, high levels of overtime and commitment are expected in these companies (Cha and Weeden, 2014), and such demands are easier to meet in flexible work arrangements for women who face caring responsibilities or excessive household duties. Another important source of heterogeneity is the birth of a child and the period following this life event. The empirical analysis shows that for women with fixed employment contracts, the gap with men's average working hours increases by more than 20 percentage points. Flexible work arrangements almost completely compensate for this disadvantage for women who choose this alternative after childbirth. In the latter category, their gap increases by about 2 percentage points on average, which is only one-tenth of the increase for women with fixed contracts. Moreover, women employed in large companies seem to take more advantage of flexible working arrangements than women employed in small and medium-sized companies. Finally, flexible working arrangements lead to a much greater reduction in the working time gap for women in the second half of the 2010 decade than in the previous decade.

Several studies point out that flexible working arrangements might be used by women for caring tasks (Singley and Hynes, 2005) or to extend their domestic work, based on the 'do gender' hypothesis (West and Zimmerman 1987), namely the perception that gender roles prescribed by society persist and the expectation that women fulfil them (Hilbrecht et al., 2013; Clawson and Gerstel, 2014). The current analysis provides evidence that the average woman in Germany who opts for flexible working arrangements does not increase her hours of work in the household, while there is a small increase in hours of care among women with at least one child. Moreover, women who take advantage of flexible working time arrangements do not adjust their working time contracts either upwards or downwards. They manage to close the gender gap in working hours by increasing non-contracted paid overtime, which is considered extra effort.

The findings of this study provide some important policy implications. There is clear evidence that flexible working arrangements can reduce the gender gap in working hours. The main channel through which this can be achieved is by increasing women's actual working time beyond contractual hours for those employed under flexible work arrangements. Therefore, time flexibility could be considered as a standard organisational practice, especially in firms that have sufficient resources to support it. In addition, public policy can support small firms and companies with poor organisational management or lack of resources to introduce flexibility in the workplace. Finally, flexibility seems to be very beneficial after the birth of a child, and all women who wish to opt for flexible working arrangements after this event should have the opportunity to do so.

Conclusions

This thesis examines the gender perspective of employment outcomes of partnered individuals, with a particular focus on women. By applying different methodological approaches and data settings to answer the research questions, this work provides a greater understanding of gender inequality in the labour market. It focuses on gender identity and norms influencing some women's employment decisions (Chapter 1), wage dynamics among partners employed in similar occupations (Chapter 2), and the role of flexible working time arrangements as a practice promoting gender equality in the workplace (Chapter 3). The conclusion reviews the contributions of this thesis in light of the current relevant literature, outlines the implications of the findings, and discusses possibilities for future research.

Chapter 1 empirically confirmed the hypothesis that partnered women's wellbeing decreases when they do not conform to traditional gender roles in the labour market. In addition, this chapter introduced a mechanism through which to understand the barriers to female employment, by examining labour supply restrictions caused by the enforcement of gender norms through wellbeing losses. Results revealed that there are substantial wellbeing costs when women work more than their partners. Considerable heterogeneity of this finding suggested that these effects are driven by women without a university degree, women from older generations, and women living in more socially conservative regions in Australia. The decomposition analysis implied that Australian women who work more than their partner have already embarked on a career path that systematically increases their labour force participation on average. The non-compliance with gender roles through wellbeing costs only inhibits working hours to a small (and not reversing) extent.

The psychological mechanism through wellbeing losses is found to explain only part of the lagged gender convergence, as substantial wellbeing costs do not translate into strong employment costs that reverse women's labour supply. Thus, the lagged gender convergence could also be the result of other factors such as the motherhood penalty or the structure of jobs. The findings contribute to the sparse literature that examines how time-use divisions between spouses are associated with wellbeing costs when women go beyond traditional gender roles (Fleche et al. 2018). Moreover, this chapter provides an economic interpretation of the wellbeing costs, whereby some of the remaining gaps in the labour market can be explained by wellbeing losses that originate in identity and gender norms.

Chapter 2 investigated the wage effects of partners who share the same occupation. The quasi-experimental design indicated strong positive wage effects for female partners, while men's wages are hardly affected. In particular, women employed in the same occupation as their partners earn higher wages by 3.2 to 8.8 percentage points on average. Interestingly, these effects become larger with the accumulative years that couples remain occupationally linked. Further analyses revealed that the wage effects for women are primarily caused by women who work part-time while their husband is employed full-time, and by women whose partners switch to their occupations, rather than by women who follow their partners. Finally, the education of the partners is also an important factor, as the effects are larger for couples with a university degree. The results are in line with the 'power couple' assumption, namely that partners enjoy further benefits due to positive assortative matching. Moreover, in line with Hennecke and Hatschko's (2021) tunnel effect, women's strongest positive wage effects are associated with their willingness to close the 'gender wage gap'. Since it is easy to compare wages for couples who have the same job, it is also easier for women to see unequal pay for equal work, especially if the partners have similar education. Therefore, women 'run' faster towards closing the gap. The findings of this study also confirmed this hypothesis.

This chapter makes a considerable contribution to the current literature as it sheds light on the wage dynamics of cohabiting partners with the same occupation, a recently expanded category of dual-career couples. Assortativity by education and occupation is expected to increase rapidly in future years; expanding the sparse knowledge of this category of couples is useful both for applied labour economists and for shaping human resource practices. Moreover, this chapter contributes to a large empirical literature that explores the productivity and wage effects that arise when occupationally connected individuals interact in the workplace. This paper presents an environment where life partners may or may not interact at work, but partnership effects arise between them when they follow similar career paths. Thus, the wage effects are further extended to the household, a contribution that is highly relevant to the recently expanded remote and home working arrangements. Finally, another contribution of this paper is to examine the role that dynamics within work-related couples play in gender gaps. The empirical analysis highlighted that these couples operate in an equality-enhancing context and adopt characteristics that could have an impact on labour market outcomes and women's empowerment. An important direction for future research is to examine whether similar or different effects develop between partners with different degrees of occupational similarity (e.g., when they work in the same team, work for the same employer or for competing firms, etc.). Such an extension requires more detailed information on the occupational characteristics of individuals. Another interesting topic for future research is to examine the contribution of career-allied couples to the observed gender pay gap and income inequality as well as how occupational homogamy influences the balance of power within the household.

Chapter 3 estimated the causal impact of flexible working arrangements on women's gap in working hours. Detailed information available in the SOEP dataset allowed me to calculate the gap as the fraction of the distance of each woman's working hours from the average working hours of men at the same time, and to address endogeneity concerns by accounting for both the employer and the employee observed and unobserved heterogeneity. The results revealed a negative relationship between flexible working arrangements and women's working time gap. On average, women's working time gap decreases by 3 percentage points when they opt for flexible working arrangements. Through various heterogeneity analyses, this chapter suggested that women working full-time report a much larger decline in their gap (above 11 per cent) once they opt for flexible working, a result that shows consistency with the work-family balance model. Flexible work arrangements also imply a significantly larger decrease in working hours for women with more than 12 years of schooling, and for women who work in large establishments. Better educated women tend to be employed in professional and managerial positions, where flexibility can be introduced more easily. In addition, high levels of overtime and commitment are expected in these companies, and such demands are easier to meet with flexible work arrangements for women who face caring responsibilities or excessive household duties. Another important source of heterogeneity is the birth of a child and the period following this life event. The empirical analysis indicated flexible work arrangements almost completely compensate for the working hours reduction most women with fixed contracts face. Further empirical investigation highlighted that the average woman in Germany who opts for flexible working arrangements does not increase her hours of work in the household, while there is a small increase in hours of care among women with at least one child. Moreover, women who take advantage of flexible working time arrangements do not adjust their working time contracts either upwards or downwards. They manage to close the gender gap in working hours by increasing non-contracted paid overtime, which is considered extra effort.

To date, the literature in this area has focused on the relationship between flexitime and gender gaps, focusing on the gender pay gap (Goldin, 2014; Fuller and Hirsch, 2019; Gimenez-Nadal et al., 2021). This chapter sheds new light on the relationship between flexitime and working time differentials which has not been directly studied before. Most studies on the effects of flexible working time arrangements on gender gaps do not explicitly address the problem of endogeneity, and the results can only lead to limited implications and conclusions. Therefore, another major contribution of this chapter relies on addressing endogeneity issues and providing further evidence on the causal effects of working time flexibility on gender gaps in the labour market.

To reduce gender inequalities in the labour market, it is necessary to identify the factors and sources that perpetuate these inequalities. Understanding the various components, such as demographic trends, social norms, and organisational practices can help to understand and effectively address the mechanisms that produce unequal employment outcomes, serving both equity and efficiency goals. This work contributes to this understanding by examining the influence of various factors on residual gender inequality and evaluating the practice of temporal flexibility, which is widely seen as a step towards equality. In summary, my research in this thesis adds to our knowledge of this important area and highlights the need for further research to support the design of policies to address gender inequality in the labour market.

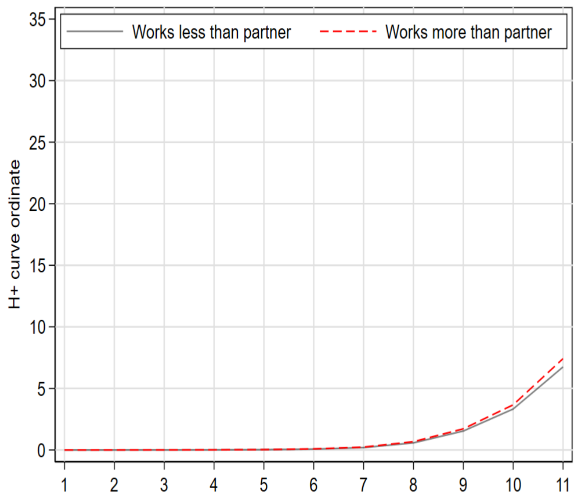
Appendix A

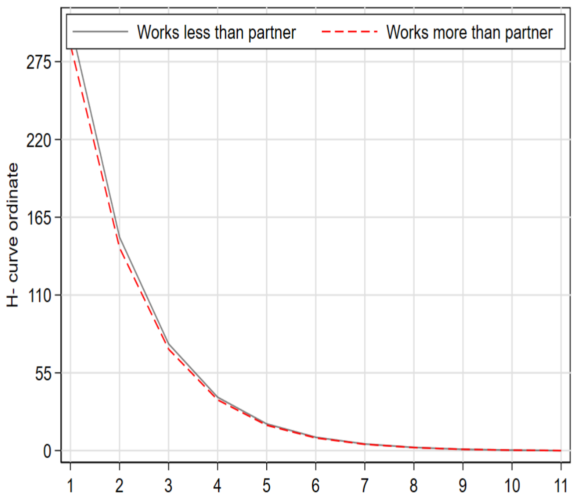
Table A.1: Women's Employment Status

Status		Frequency	Percent
Employed		39,989	70.41
	employee	36,364	
	employer	856	
	self-employee	2,539	
	contributing family member	230	
Unemployed		1,326	2.33
Not in the labour force		15,483	27.26
Total		56,798	100.00

Data Source: HILDA Release 18

Figure A.1: H-plus and H-minus Curve Comparisons for Women's Life Satisfaction





Data Source: HILDA Release 18

Table A.2: Women's Relative Hours, by Region and by Year

Region	Labour market share	Works more than partner
Sydney	0.45	0.25
New South Wales	0.46	0.26
Melbourne	0.44	0.23
Victoria	0.43	0.19
Brisbane	0.45	0.26
Queensland	0.45	0.24
Adelaide	0.46	0.26
South Australia	0.42	0.19
Perth	0.43	0.22
Western Australia	0.39	0.17
Tasmania	0.49	0.29
Northern Territory	0.44	0.25
Australian Capital Territory	0.46	0.25
Year		
2001	0.42	0.20
2002	0.43	0.22
2003	0.43	0.22
2004	0.43	0.20
2005	0.43	0.21
2006	0.43	0.22
2007	0.44	0.23
2008	0.44	0.23
2009	0.45	0.24
2010	0.45	0.24
2011	0.45	0.24
2012	0.46	0.25
2013	0.45	0.26
2014	0.46	0.26
2015	0.46	0.26
2016	0.46	0.27
2017	0.46	0.27
2018	0.46	0.26

Data Source: HILDA Release 18

Table A.3: Life Satisfaction

Life Satisfaction	Frequency	Percent
Totally dissatisfied	13	0.03
1	22	0.05
2	45	0.11
3	102	0.25
4	247	0.60
Neither satisfied nor dissatisfied	1,100	2.66
6	2,047	5.02
7	8,165	19.76
8	15,659	37.90
9	10,164	24.60
Totally satisfied	3,724	9.01
Total	41,315	100.00

Data Source: HILDA Release 18

Table A.4: τ-buc and Chamberlain Estimators

	(1) life satisfaction	(2) life satisfaction	(3) life satisfaction
works more than partner	-0.188***	-0.0266***	-0.208***
	(-3.29)	(-2.98)	(-3.09)
age	-0.0824**	-0.00835*	-0.0743**
	(-2.42)	(-1.85)	(-2.07)
age square	0.000634*	0.0000839*	0.000632*
	(1.84)	(1.67)	(1.95)
housework hours	-0.00178	-0.0000418	-0.000376
	(-0.74)	(-0.12)	(-0.14)
childcare hours	0.00103	0.000367	0.00274
	(0.77)	(1.92)	(1.82)
caring hours	-0.0171**	-0.00112	-0.00958*
	(-3.22)	(-1.44)	(-1.66)
unemployed	-0.354***	-0.0308	-0.237*
	(-2.72)	(-1.56)	(-1.86)
full-time job	-0.151***	-0.0252***	-0.196***
	(-2.81)	(-3.20)	(-3.39)
partner's working hours	-0.00387	-0.000619	-0.00516
	(-1.53)	(-1.63)	(-1.78)
unemployed partner	-0.0520	-0.0145	-0.129
	(-0.42)	(-0.79)	(-0.91)
log of partner's earnings	0.0242	0.00717	0.0553
	(0.74)	(1.39)	(1.47)
number of children	-0.196***	-0.0342***	-0.277***
	(-4.85)	(-5.83)	(-7.08)
log of household's income	0.219***	0.0221**	0.170**
	(3.13)	(2.17)	(2.07)
Observations	255935	29147	16023

Notes: Column (1) the non-linear estimates from the ordered logit specification with fixed effects under the assumption of constant cut-off points across all individuals, known as τ-buc estimator, while columns (2) and (3) report the non-linear estimates from the Chamberlain estimator. Column (2) shows the results from a linear probability regression and column (3) reports the coefficients obtained from a fixed-effects logit model estimated performing a conditional fixed-effects logistic regression. All specifications include individual-specific, region-specific, and year fixed effects. t statistics in parentheses are obtained by robust standard errors correcting for clustering across individuals. Standard errors in column (3) are obtained using the observed information matrix. Life satisfaction is an eleven-level measure of subjective wellbeing. The dependent variable in columns (2) and (3) is an indicator from the dichotomisation of life satisfaction at level 8. All variables of hours measure the weekly reported hours of the respective individual. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18

Table A.5: Marginal Effects - τ-buc and Chamberlain Estimators

	(1) life satisfaction	(2) life satisfaction
life satisfaction level 9	-0.0285***	
	(0.0086)	
life satisfaction level 10	-0.0126***	
	(0.0038)	
dichotomous at level 8		-0.0492***
		(0.0159)
Observations	255935	16023

Notes: Column (1) reports the marginal effects obtained from the ordered logit specification with fixed effects and column (2) shows the marginal effect of the fixed-effects logit specification after dichotomising life satisfaction index at level 8. Robust standard errors correct for clustering across individuals are given in parenthesis. The reported marginal effects in column (1) show the impact on the probabilities of moving above the median level of life satisfaction, that is level 8, for those women who work more than their partners, keeping all other factors constant. The marginal effect of column (2) shows the probability of being above the median level 8. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18

TABLE A.6: Working Couples

	(1) flifesat	(2) flifesat
works more than partner	-0.0525**	-0.135**
	(-2.41)	(-2.42)
age	-0.0295**	-0.0668**
	(-2.37)	(-1.99)
age square	0.000206	0.000525
	(1.46)	(1.54)
housework hours	0.000589	0.00104
	(0.65)	(0.46)
childcare hours	0.0000964	0.0000640
	(0.20)	(0.05)
caring hours	-0.00614**	-0.0139**
	(-2.33)	(-2.43)
full-time job	-0.0617***	-0.153***
	(-3.02)	(-2.94)
partner's working hours	-0.00133	-0.00330
	(-1.35)	(-1.33)
log of partner's earnings	0.0240	0.0563
	(1.55)	(1.39)
number of children	-0.0859***	-0.222***
	(-5.44)	(-5.54)
log of household's income	0.0694**	0.173**
	(2.51)	(2.41)
Observations	26569	46728

Notes: Column (1) reports estimates from a linear fixed-effect regression and column (2) shows the non-linear estimates from the ordered logit specification with fixed effects. Both specifications include individual-specific, region-specific, and year fixed effects. t statistics in parentheses are obtained by robust standard errors correcting for clustering across individuals. Life satisfaction is an eleven-level measure of subjective wellbeing. All variables of hours measure the weekly reported hours of the respective individual. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18.

TABLE A.7: Marginal Effects - Ordered Logit Specification for Working Couples

	(1) Marginal Effect
life satisfaction level 9	-0.0203**
	(0.008)
life satisfaction level 10	-0.0094**
	(0.004)
Observations	53468

Notes: Column (1) reports the marginal effects obtained from the ordered logit specification with fixed effects. Robust standard errors correct for clustering across individuals are given in parenthesis. The reported marginal effects show the impact on the probabilities of moving above the median level of life satisfaction, that is level 8, for those women who work more than their partners, keeping all other factors constant. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18.

Table A.8: Only Employees

	(1) life satisfaction	(2) life satisfaction
works more than partner	-0.0616***	-0.162***
	(-2.76)	(-2.84)
age	-0.0442***	-0.105***
	(-3.41)	(-3.03)
age square	0.000391***	0.00101***
	(2.68)	(2.91)
housework hours	0.000173	-0.0000655
	(0.18)	(-0.03)
childcare hours	0.000369	0.000694
	(0.71)	(0.50)
caring hours	-0.00813***	-0.0208***
	(-3.50)	(-3.71)
full-time job	-0.0505**	-0.124**
	(-2.38)	(-2.33)
partner's working hours	-0.00102	-0.00290
	(-1.00)	(-1.12)
unemployed partner	-0.0289	-0.0792
	(-0.57)	(-0.63)
log of partner's earnings	0.0155	0.0389
	(1.17)	(1.14)
number of children	-0.0807***	-0.210***
	(-4.92)	(-5.12)
log of household's income	0.0566**	0.136*
	(2.01)	(1.88)
Observations	25873	45544

Notes: Column (1) reports estimates from a linear fixed-effect regression and column (2) shows the non-linear estimates from the ordered logit specification with fixed effects. Both specifications include individual-specific, region-specific, and year fixed effects. t statistics in parentheses are obtained by robust standard errors correcting for clustering across individuals. Life satisfaction is an eleven-level measure of subjective wellbeing. All variables of hours measure the weekly reported hours of the respective individual. The sub-sample includes only partnered women who are active in the labour market as employees, excluding self-employed and women working in family businesses. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18.

TABLE A.9: Marginal Effects - Ordered Logit Specification for Employess

	(1) Marginal Effect
life satisfaction level 9	-0.024***
	(0.008)
life satisfaction level 10	-0.0115***
	(0.004)
Observations	53468

Notes: Column (1) reports the marginal effects obtained from the ordered logit specification with fixed effects. Robust standard errors correct for clustering across individuals are given in parenthesis. The reported marginal effects show the impact on the probabilities of moving above the median level of life satisfaction, that is level 8, for those women who work more than their partners, keeping all other factors constant. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18.

Table A.10: Active Partners

	(1) life satisfaction	(2) life satisfaction
works more than partner	-0.0550**	-0.140**
	(-2.54)	(-2.55)
age	-0.0258**	-0.0555*
	(-2.08)	(-1.68)
age square	0.000154	0.000359
	(1.10)	(1.07)
housework hours	0.000231	0.000113
	(0.26)	(0.05)
childcare hours	0.000519	0.00115
	(1.08)	(0.91)
caring hours	-0.00560**	-0.0127**
	(-2.24)	(-2.37)
unemployed	-0.150***	-0.328***
	(-2.57)	(-2.66)
full-time job	-0.0633***	-0.155***
	(-3.16)	(-3.09)
partner's working hours	-0.00171*	-0.00401*
	(-1.73)	(-1.64)
unemployed partner	-0.180**	-0.421***
	(-2.54)	(-2.62)
log of partner's earnings	0.0192	0.0415
	(1.31)	(1.10)
number of children	-0.0886***	-0.226***
	(-5.66)	(-5.80)
log of household's income	0.0883***	0.213***
	(3.31)	(3.13)
Observations	27744	50113

Notes: Column (1) reports estimates from a linear fixed-effect regression and column (2) shows the non-linear estimates from the ordered logit specification with fixed effects. Both specifications include individual-specific, region-specific, and year fixed effects. t statistics in parentheses are obtained by robust standard errors correcting for clustering across individuals. Life satisfaction is an eleven-level measure of subjective wellbeing. All variables of hours measure the weekly reported hours of the respective individual. The sub-sample includes only active partners in the labour market who are both currently employed or unemployed. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18.

TABLE A.11: Marginal Effects - Ordered Logit Specification for Active Partners

	(1) Marginal Effect
life satisfaction level 9	-0.0210**
	(0.008)
life satisfaction level 10	-0.0104**
	(0.003)
Observations	53468

Notes: Column (1) reports the marginal effects obtained from the ordered logit specification with fixed effects. Robust standard errors correct for clustering across individuals are given in parenthesis. The reported marginal effects show the impact on the probabilities of moving above the median level of life satisfaction, that is level 8, for those women who work more than their partners, keeping all other factors constant. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18

Table A.12: Pro-equality Couples

	(1) life satisfaction	(2) life satisfaction	(3) life satisfaction	(4) life satisfaction
works more than partner	-0.0732**	-0.183**	-0.0672*	-0.183**
	(-2.25)	(-2.13)	(-1.84)	(-2.13)
age	-0.0284	-0.0364	0.0187	-0.0364
	(-1.34)	(-0.65)	(0.76)	(-0.65)
age square	0.000170	0.000454	-0.000375	0.000454
	(0.72)	(0.81)	(-1.38)	(0.81)
housework hours	0.00220	0.00521	0.00277	0.00521
	(1.13)	(1.08)	(1.18)	(1.08)
childcare hours	0.000295	0.000267	-0.000136	0.000267
	(0.35)	(0.12)	(-0.14)	(0.12)
caring hours	-0.0000320	0.0000953	0.000259	0.0000953
	(-0.01)	(0.01)	(0.03)	(0.01)
unemployed	0.0334	-0.0297	-0.0276	-0.0297
	(0.14)	(-0.07)	(-0.10)	(-0.07)
full-time job	-0.0146	-0.0224	-0.0180	-0.0224
	(-0.39)	(-0.23)	(-0.40)	(-0.23)
partner's working hours	-0.00548*	-0.0143*	-0.00741**	-0.0143*
	(-2.25)	(-2.33)	(-2.69)	(-2.33)
unemployed partner	0.103	0.269	0.251	0.269
	(0.40)	(0.50)	(0.92)	(0.50)
log of partner's earnings	0.0368	0.105	0.0439	0.105
	(1.58)	(1.57)	(1.60)	(1.57)
number of children	-0.0882**	-0.216**	-0.105**	-0.216**
	(-3.02)	(-3.03)	(-3.27)	(-3.03)
log of household's income	0.0930*	0.232	0.0733	0.232
	(2.06)	(1.91)	(1.39)	(1.91)
Observations	11970	15501	9445	15501

Notes: Columns (1) and (3) report estimates from a linear fixed-effect regression and columns (2) and (4) show the non-linear estimates from the ordered logit specification with fixed effects. All specifications include individual-specific, region-specific, and year fixed effects. t statistics in parentheses are obtained by robust standard errors correcting for clustering across individuals. Life satisfaction is an eleven-level measure of subjective wellbeing. All variables of hours measure the weekly reported hours of the respective individual. Columns (1)-(2) and (3)-(4) include women whose total share of time is between 0.8 and 1.2 and between 0.85 and 1.15 of their husbands, respectively. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18

TABLE A.13: Marginal Effects - Ordered Logit Specification for Pro-equality Couples

	(1) marginal effect	(2) marginal effect
life satisfaction level 9	-0.0273**	-0.0260*
	(0.0128)	(0.0148)
life satisfaction level 10	-0.0128**	-0.0120*
	(0.006)	(0.006)
Observations	15501	15501

Notes: Column (1) reports the marginal effects obtained from the ordered logit specification with fixed effects for women whose total share of time is between 0.8 and 1.2 of their husbands' share and column (2) shows the marginal effect of the fixed-effects logit specification for those women whose total share of time is between 0.85 and 1.15of their partners. Robust standard errors correct for clustering across individuals are given in parenthesis. The reported marginal effects in columns (1) and (2) show the impact on the probabilities of moving above the median level of life satisfaction, that is level 8, for those women who work more than their partners, keeping all other factors constant. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18

Table A.14: Male Partners' Housework

	(1) life satisfaction	(2) life satisfaction	(3) life satisfaction	(4) life satisfaction
works more than partner	-0.0638**	-0.160**	-0.0803**	-0.200**
	(-2.23)	(-2.21)	(-2.21)	(-2.21)
age	-0.0477***	-0.120***	-0.0129*	-0.00962*
	(-3.15)	(-2.82)	(-0.64)	(-0.19)
age square	0.000397**	0.00102**	0.0000414*	0.0000719*
	(2.35)	(2.45)	(0.18)	(0.14)
housework hours	-0.000774	-0.00228	0.0000360	-0.000481
	(-0.60)	(-0.75)	(0.02)	(-0.14)
childcare hours	0.00113	0.00284	0.000180	0.000120
	(1.76)	(1.73)	(0.23)	(0.06)
caring hours	-0.00703**	-0.0155**	-0.0105***	-0.0228***
	(-2.08)	(-2.23)	(-3.01)	(-2.73)
unemployed	-0.0767*	-0.183*	-0.173**	-0.348*
	(-0.91)	(-1.06)	(-2.01)	(-1.90)
full-time job	-0.0483*	-0.119*	-0.0501*	-0.122*
	(-1.90)	(-1.85)	(-1.51)	(-1.50)
partner's working hours	-0.00127	-0.00304	-0.00231	-0.00575
	(-0.95)	(-0.94)	(-1.54)	(-1.55)
unemployed partner	-0.0336	-0.0765	0.111	0.203
	(-0.57)	(-0.53)	(1.27)	(1.04)
log of partner's earnings	0.00536	0.00378	0.0201	0.0400
	(0.35)	(0.10)	(0.90)	(0.72)
number of children	-0.0798***	-0.205***	-0.0753**	-0.194***
	(-4.05)	(-4.18)	(-3.20)	(-3.32)
log of household's income	0.120***	0.311***	0.0496	0.120
	(3.46)	(3.54)	(1.20)	(1.15)
Observations	16551	25878	12596	17709

Notes: Columns (1) and (3) report estimates from linear fixed-effect regressions and columns (2) and (4) show the non-linear estimates from the ordered logit specification with fixed effects. All specifications include individual-specific, region-specific, and year fixed effects. t statistics in parentheses are obtained by robust standard errors correcting for clustering across individuals. Life satisfaction is an eleven-level measure of subjective wellbeing. All variables of hours measure the weekly reported hours of the respective individual. Columns (1)-(2) and (3)-(4) include women whose husbands spend more and less than five hours in housekeeping tasks per week, respectively. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18

Table A.15: Marginal Effects - Ordered Logit Specification, Male Partners' Housework

	(1) marginal effect	(2) marginal effect
life satisfaction level 9	-0.0240**	-0.0297*
	(0.0108)	(0.0137)
life satisfaction level 10	-0.0099**	-0.0162*
	(0.004)	(0.007)
Observations	25878	17709

Notes: Column (1) reports the marginal effects obtained from the ordered logit specification with fixed effects for women whose husbands spend more than five hours per week in housekeeping and column (2) shows the marginal effect of the fixed-effects logit specification for those women whose partners spend less than five hours at housework. Robust standard errors correct for clustering across individuals are given in parenthesis. The reported marginal effects in columns (1) and (2) show the impact on the probabilities of moving above the median level of life satisfaction, that is level 8, for those women who work more than their partners, keeping all other factors constant. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18

Table A.16: Labour Market Shares

	(1) life satisfaction	(2) life satisfaction
Share of total hours: 0.3 - 0.5	-0.0352	-0.0976*
	(-1.53)	(-1.68)
Share of total hours: 0.5 - 0.55	-0.0740**	-0.199**
	(-2.23)	(-2.38)
Share of total hours: 0.55 - 0.75	-0.118***	-0.313***
	(-2.91)	(-3.12)
Share of total hours: more than 0.75	-0.196***	-0.481**
	(-2.70)	(-2.55)
age	-0.0399***	-0.0849***
	(-3.14)	(-2.64)
age square	0.000326**	0.000717**
	(2.31)	(2.24)
housework hours	-0.000498	-0.00161
	(-0.56)	(-0.75)
childcare hours	0.000383	0.00102
	(0.79)	(0.81)
caring hours	-0.00718***	-0.0166***
	(-3.32)	(-3.37)
unemployed	-0.169***	-0.409***
	(-2.66)	(-3.11)
full-time job	-0.0533**	-0.124**
	(-2.54)	(-2.42)
partner's working hours	-0.00227**	-0.00514**
	(-2.10)	(-1.99)
unemployed partner	0.0389	0.0856
	(0.60)	(0.51)
log of partner's earnings	0.00794	0.0122
	(0.64)	(0.39)
number of children	-0.0762***	-0.198***
	(-4.94)	(-5.26)
log of household's income	0.0875***	0.209***
	(3.36)	(3.23)
Observations	28365	53169

Notes: Column (1) reports estimates from a linear fixed-effect regression and panel (2) shows the non-linear estimates from the ordered logit specification with fixed effects. Both specifications include individual-specific, region-specific, and year fixed effects. t statistics in parentheses are obtained by robust standard errors correcting for clustering across individuals. Life satisfaction is an eleven-level measure of subjective wellbeing. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18

Table A.17: Marginal Effects - Ordered Logit Specification of Shares

	(1)	(2)	(3)	(4)
	0.3 - 0.5	0.5 - 0.55	0.55 - 0.75	more than 0.75
life satisfaction level 9	-0.0140*	-0.030**	-0.046***	-0.0718**
	(0.008)	(0.012)	(0.015)	(0.028)
life satisfaction level 10	-0.007*	-0.0142**	-0.022***	-0.034**
	(0.004)	(0.006)	(0.007)	(0.0134)
Observations	53169	53169	53169	53169

Notes: Columns (1) - (4) report the marginal effects obtained from the ordered logit specification with fixed effects. Robust standard errors correct for clustering across individuals are given in parenthesis. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18

Table A.18: Controlling for Working Hours

	(1) life satisfaction	(2) life satisfaction
works more than partner	-0.0474**	-0.119**
	(-2.12)	(-2.12)
working hours: 20-30	-0.0451**	-0.111**
	(-2.01)	(-1.99)
working hours: 30-39	-0.0766***	-0.185***
	(-2.98)	(-2.89)
working hours: more than 39	-0.109***	-0.267***
	(-3.90)	(-3.90)
age	-0.0364***	-0.0858***
	(-2.99)	(-2.67)
age square	0.000287**	0.000697**
	(2.12)	(2.18)
housework hours	-0.000459	-0.00150
	(-0.51)	(-0.70)
childcare hours	0.000414	0.000882
	(0.87)	(0.70)
caring hours	-0.00742***	-0.0170***
	(-3.42)	(-3.46)
unemployed	-0.177***	-0.388***
	(-3.07)	(-3.16)
partner's working hours	-0.00118	-0.00280
	(-1.21)	(-1.18)
unemployed partner	-0.0252	-0.0624
	(-0.53)	(-0.54)
log of partner's earnings	0.00666	0.0120
	(0.55)	(0.39)
number of children	-0.0780***	-0.199***
	(-5.11)	(-5.30)
log of household's income	0.0925***	0.222***
	(3.62)	(3.46)
Observations	29147	53468

Notes: Column (1) reports estimates from a linear fixed-effect regression and column (2) shows the non-linear estimates from the ordered logit specification with fixed effects. Both specifications include individual-specific, region-specific, and year fixed effects. t statistics in parentheses are obtained by robust standard errors correcting for clustering across individuals. Life satisfaction is an eleven-level measure of subjective wellbeing. All variables of hours measure the weekly reported hours of the respective individual. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18.

TABLE A.19: Marginal Effects - Ordered Logit Specification Controlling for Working Hours

	(1) Marginal Effect
life satisfaction level 9	-0.0178**
	(0.008)
life satisfaction level 10	-0.009**
	(0.004)
Observations	53468

Notes: Column (1) reports the marginal effects obtained from the ordered logit specification with fixed effects. Robust standard errors correct for clustering across individuals are given in parenthesis. The reported marginal effects show the impact on the probabilities of moving above the median level of life satisfaction, that is level 8, for those women who work more than their partners, keeping all other factors constant. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18

Table A.20: Controlling for Previous Year's Wellbeing

	(1) life satisfaction	(2) life satisfaction	(3) life satisfaction	(4) life satisfaction
works more than partner	-0.0578***	-0.153***	-0.054**	-0.145**
	(-2.63)	(-2.63)	(-2.40)	(-2.40)
lag of wellbeing	0.0737***	0.126***	0.0557***	0.119***
	(7.04)	(6.95)	(8.63)	(8.55)
age	-0.0350***	-0.0820**	-0.0282**	-0.0721*
	(-2.86)	(-2.31)	(-2.17)	(-1.93)
age square	0.000343**	0.000893**	0.000296*	0.000797**
	(2.51)	(2.46)	(2.05)	(2.18)
housework hours	0.000144	0.000120	-0.000102	-0.000592
	(0.15)	(0.05)	(-0.11)	(-0.25)
childcare hours	0.000562	0.00125	0.000729	0.00159
	(1.17)	(0.94)	(1.46)	(1.14)
caring hours	-0.00565**	-0.0142**	-0.00511***	-0.0122**
	(-2.47)	(-2.66)	(-2.28)	(-2.29)
unemployed	-0.182***	-0.365***	-0.165***	-0.326***
	(-3.02)	(-2.71)	(-2.68)	(-2.71)
full-time job	-0.0695***	-0.185***	-0.0728***	-0.191***
	(-3.48)	(-3.55)	(-3.52)	(-2.71)
partner's working hours	-0.00161	-0.00423	-0.00174	-0.00489
	(-1.62)	(-1.63)	(-1.69)	(-1.81)
unemployed partner	-0.00213	-0.0196	-0.0166	-0.0534
	(-0.04)	(-0.15)	(-0.33)	(-0.41)
log of partner's earnings	0.00538	0.00462	0.00696	0.0128
	(0.42)	(0.13)	(0.52)	(0.35)
number of children	-0.0683***	-0.189***	-0.0631***	-0.173***
	(-4.36)	(-4.61)	(-3.80)	(-3.97)
log of household's income	0.098***	0.265***	0.0856***	0.232***
	(3.80)	(3.78)	(3.23)	(3.24)
Observations	24294	41974	23357	39828

Notes: Columns (1) and (3) report estimates from linear fixed-effect regressions and columns (2) and (4) show the non-linear estimates from the ordered logit specification with fixed effects. All specifications include individual-specific, region-specific, and year fixed effects. t statistics in parentheses are obtained by robust standard errors correcting for clustering across individuals. Life satisfaction is an eleven-level measure of subjective wellbeing. All variables of hours measure the weekly reported hours of the respective individual. The lag of wellbeing in columns (1) and (2) measures women's wellbeing in the previous year while the same variable measures their last year's satisfaction with their partners in columns (3)-(4). *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18.

TABLE A.21: Marginal Effects - Ordered Logit Specification Controlling for Previous Year's Wellbeing

	(1) marginal effect	(2) marginal effect
life satisfaction level 9	-0.0317***	-0.0304***
	(0.008)	(0.009)
life satisfaction level 10	-0.0140***	-0.0136***
	(0.003)	(0.004)
Observations	41974	39828

Notes: Column (1) reports the marginal effects obtained from the ordered logit specification with fixed effects including women's lag of life satisfaction as control and column (2) shows the marginal effect of the fixed-effects logit specification controlling for the lag of the satisfaction with their partners. Robust standard errors correct for clustering across individuals are given in parenthesis. The reported marginal effects in columns (1) and (2) show the impact on the probabilities of moving above the median level of life satisfaction, that is level 8, for those women who work more than their partners, keeping all other factors constant. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18

Table A.22: Earning More

	(1) life satisfaction	(2) life satisfaction
earns more than partner	-0.0343*	-0.0871*
	(-1.67)	(-1.67)
age	-0.0423***	-0.104***
	(-3.32)	(-3.00)
age square	0.000369*	0.000949**
	(2.57)	(2.77)
housework hours	0.0000432	-0.000305
	(0.05)	(-0.13)
childcare hours	0.000324	0.000650
	(0.62)	(0.47)
caring hours	-0.00744***	-0.0188***
	(-3.31)	(-3.35)
full-time job	-0.0667***	-0.166***
	(-3.19)	(-3.17)
partner's working hours	-0.0000964	-0.000406
	(-0.10)	(-0.17)
unemployed partner	-0.0445	-0.117
	(-0.86)	(-0.91)
log of partner's earnings	0.0138	0.0323
	(1.04)	(0.95)
number of children	-0.0811***	-0.211***
	(-5.03)	(-5.24)
log of household's income	0.0549**	0.134*
	(1.96)	(1.84)
Observations	26015	45572

Notes: Column (1) reports estimates from a linear fixed-effect regression and column (2) shows the non-linear estimates from the ordered logit specification with fixed effects. Both specifications include individual-specific, region-specific, and year fixed effects. t statistics in parentheses are obtained by robust standard errors correcting for clustering across individuals. Life satisfaction is an eleven-level measure of subjective wellbeing. All variables of hours measure the weekly reported hours of the respective individual. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18.

Table A.23: Marginal Effects - Ordered Logit Specification of Earning More

	(1) Marginal Effect
life satisfaction level 9	-0.0129*
	(0.008)
life satisfaction level 10	-0.062*
	(0.003)
Observations	45572

Notes: Column (1) reports the marginal effects obtained from the ordered logit specification with fixed effects. Robust standard errors correct for clustering across individuals are given in parenthesis. The reported marginal effects show the impact on the probabilities of moving above the median level of life satisfaction, that is level 8, for those women who earn more than their partners, keeping all other factors constant. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18

Table A.24: Men's life satisfaction

	(1) life satisfaction	(2) life satisfaction	(3) life satisfaction
works more than partner	-0.007	-0.017	-0.015
	(-0.34)	(-0.31)	(-0.67)
age	-0.060***	-0.161***	-0.047***
	(-5.53)	(-1.85)	(-3.87)
age square	0.0005***	0.0015***	0.0004***
	(0.0001)	(5.40)	(3.61)
housework hours	0.0006	0.002	0.0005
	(0.48)	(0.60)	(0.38)
childcare hours	0.0005	0.0013	0.0003
	(0.69)	(0.67)	(0.40)
caring hours	-0.0017	-0.004	-0.002
	(-0.85)	(-0.92)	(-0.84)
unemployed	-0.276***	-0.608***	-
	(-4.86)	(-5.10)	-
full-time job	-0.034	-0.0952*	-0.019
	(-1.56)	(-1.67)	(-0.73)
partner's working hours	-0.0013*	-0.0034*	-0.0018**
	(-1.87)	(-1.86)	(-2.32)
unemployed partner	-0.021	-0.055	-
	-0.87)	(-0.86)	-
log of partner's earnings	0.0144	0.0276	0.022
	(1.22)	(0.95)	(1.54)
number of children	-0.065***	-0.182***	-0.072***
	(-6.07)	(-6.34)	(-5.71)
log of household's income	0.075***	0.207***	0.053**
	(3.46)	(3.65)	(2.03)
Observations	35161	64347	26366

Notes: Columns (1) and (3) show the estimates from the linear specification with fixed effects, while column (2) reports the non-linear estimates from ordered logit specification with fixed effects. All specifications include individual-specific, region-specific, and year fixed effects. t statistics in parentheses are obtained by robust standard errors correcting for clustering across individuals. Life satisfaction measures subjective wellbeing and ranges from 0 to 10. Columns (1) and (2) includes men who are active in the labour market, and Column (3) includes only working couples. All variables of hours measure the weekly reported hours of the respective individual. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18.

Table A.25: Heterogeneity:Level of Education

	(1) life satisfaction	(2) life satisfaction	(3) life satisfaction	(4) life satisfaction
works more than partner	-0.0291	-0.0802	-0.0724**	-0.172**
	(-1.04)	(-1.01)	(-2.31)	(-2.33)
age	-0.0333*	-0.0924*	-0.0472***	-0.107**
	(-1.89)	(-1.76)	(-2.94)	(-2.56)
age square	0.000372*	0.000987*	0.000319*	0.000743*
	(1.88)	(1.81)	(1.80)	(1.83)
housework hours	0.00240*	0.00616*	-0.00113	-0.00309
	(1.74)	(1.65)	(-0.99)	(-1.17)
childcare hours	0.000705	0.00200	0.000130	0.000121
	(1.08)	(1.09)	(0.19)	(0.07)
caring hours	-0.00550***	-0.0136***	-0.00844***	-0.0183***
	(-2.72)	(-2.69)	(-2.82)	(-2.83)
unemployed	-0.0463	-0.106	-0.210***	-0.437***
	(-0.49)	(-0.47)	(-3.06)	(-3.10)
full-time job	-0.0575**	-0.149*	-0.0691***	-0.161**
	(-2.01)	(-1.88)	(-2.60)	(-2.54)
partner's working hours	-0.00000896	-0.000303	-0.00248	-0.00591**
	(-0.01)	(-0.08)	(-1.91)	(-1.96)
unemployed partner	-0.0150	-0.0426	-0.0599	-0.159
	(-0.23)	(-0.24)	(-0.92)	(-1.06)
log of partner's earnings	0.0410**	0.114**	-0.0124	-0.0351
	(2.28)	(2.24)	(-0.78)	(-0.90)
number of children	-0.109***	-0.316***	-0.0665***	-0.162***
	(-5.16)	(-5.06)	(-3.23)	(-3.38)
log of household's income	0.0459	0.124	0.105***	0.236***
	(1.25)	(1.20)	(3.08)	(2.87)
Observations	11419	19260	17728	33026

Notes: Columns (1) and (3) report estimates from linear fixed-effect regressions and columns (2) and (4) show the non-linear estimates from the ordered logit specification with fixed effects. All specifications include individual-specific, region-specific, and year fixed effects. t statistics in parentheses are obtained by robust standard errors correcting for clustering across individuals. Life satisfaction is an eleven-level measure of subjective wellbeing. All variables of hours measure the weekly reported hours of the respective individual. Columns (1) and (2) show the estimates within partnered women with at least a college degree while columns (3) and (4) show the estimates for partnered women without a college degree. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18.

TABLE A.26: Marginal Effects - Ordered Logit Specification for Heterogeneity 1: Level of Education

	(1) marginal effect	(2) marginal effect
life satisfaction level 9	-0.0132	-0.0241**
	(0.013)	(0.0102)
life satisfaction level 10	-0.004	-0.0140**
	(0.004)	(0.006)
Observations	10154	15428

hotes: Column (1) reports the marginal effects obtained from the ordered logit specification with fixed effects for women with at least a college degree and column (2) shows the marginal effect of the fixed-effects logit specification for those women without a college degree. Robust standard errors correct for clustering across individuals are given in parenthesis. The reported marginal effects in columns (1) and (2) show the impact on the probabilities of moving above the median level of life satisfaction, that is level 8, for those women who work more than their partners, keeping all other factors constant. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18

Table A.27: Heterogeneity:Birth Cohort

	(1) l. sat.	(2) l. sat.	(3) l. sat.	(4) l. sat.	(5) l. sat.	(6) l. sat.
works more than partner	-0.0712**	-0.172*	-0.0687*	-0.186**	-0.0244	-0.0627
	(-1.96)	(-1.88)	(-1.84)	(-1.96)	(-0.66)	(-0.64)
age	-0.122***	-0.349***	0.0155	0.140	0.00805	0.0219
	(-3.08)	(-3.43)	(0.36)	(1.37)	(0.22)	(0.21)
age square	0.00110***	0.00296***	-0.000328	-0.00211*	-0.0000252	-0.000191
	(2.89)	(3.16)	(-0.62)	(-1.70)	(-0.04)	(-0.12)
housework hours	-0.00259*	-0.00638*	0.000223	-0.00355	0.00299	0.00747
	(-1.76)	(-1.84)	(0.16)	(-1.07)	(1.59)	(1.54)
childcare hours	-0.00131	-0.00290	0.000694	0.00173	0.000843	0.00199
	(-0.69)	(-0.61)	(0.90)	(0.89)	(1.25)	(1.09)
caring hours	-0.00532**	-0.0125**	-0.0104***	-0.0227**	-0.00806	-0.0181
	(-2.14)	(-2.23)	(-2.67)	(-2.41)	(-0.60)	(-0.64)
unemployed	-0.0564	-0.142	-0.216**	-0.356*	-0.181**	-0.396**
	(-0.62)	(-0.70)	(-2.06)	(-1.75)	(-1.99)	(-2.04)
full-time job	-0.0683*	-0.171*	-0.0664**	-0.118	-0.0327	-0.100
	(-1.79)	(-1.85)	(-2.02)	(-1.41)	(-1.02)	(-1.20)
partner's working hours	-0.00437***	-0.0110***	0.0000625	0.00120	0.00131	0.00393
	(-2.89)	(-2.91)	(0.04)	(0.28)	(0.73)	(0.88)
unemployed partner	-0.0486	-0.144	0.0322	0.185	-0.150	-0.338
	(-0.73)	(-0.87)	(0.34)	(0.82)	(-1.63)	(-1.53)
log of partner's earnings	0.0273	0.0645	0.0124	0.0409	-0.0350	-0.0957
	(1.61)	(1.46)	(0.54)	(0.70)	(-1.34)	(-1.45)
number of children	-0.0574**	-0.149**	-0.0873***	-0.207***	-0.133***	-0.369***
	(-2.46)	(-2.51)	(-3.12)	(-3.21)	(-4.11)	(-4.52)
log of household's income	0.102***	0.240***	0.0714	0.187	0.0849	0.209
	(2.76)	(2.62)	(1.46)	(1.53)	(1.63)	(1.49)
Observations	10235	19878	10193	18173	8719	13240

Notes: Columns (1), (3) and (5) report estimates from linear fixed-effect regressions and columns (2), (4) and (6) show the non-linear estimates from the ordered logit specification with fixed effects. All specifications include individual-specific, region-specific, and year fixed effects. t statistics in parentheses are obtained by robust standard errors correcting for clustering across individuals. Life satisfaction is an eleven-level measure of subjective wellbeing. All variables of hours measure the weekly reported hours of the respective individual. Columns (1) and (2) show the estimates within partnered women born before 1964 (boomers), columns (3) and (4) show the estimates for partnered women born between 1964 and 1975 (generation X), and columns (5) and (6) show the estimates for women born after 1975 (late generation X and millennials). *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18.

Table A.28: Marginal Effects - Ordered Logit Specification for Heterogeneity 2: Birth Cohort

	(1) marginal effect	(2) marginal effect	(3) marginal effect
life satisfaction level 9	-0.0243*	-0.0284**	-0.009
	(0.0129)	(0.014)	(0.0152)
life satisfaction level 10	-0.015*	0.011**	0.004
	(0.008)	(0.005)	(0.006)
Observations	9081	8430	7376

Notes: Column (1) reports the marginal effects obtained from the ordered logit specification with fixed effects for women born before 1964 (boomers), column (2) shows the marginal effects for partnered women born between 1964 and 1975 (generation X), and column (3) shows the estimated effect for women born after 1975 (late generation X and millennials). Robust standard errors correct for clustering across individuals are given in parenthesis. The reported marginal effects in columns (1), (2) and (3) show the impact on the probabilities of moving above the median level of life satisfaction, that is level 8, for those women who work more than their partners, keeping all other factors constant. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18

Table A.29: Heterogeneity:Mother's Employment Status

	(1) l. satisfaction	(2) l. satisfaction	(3) l. satisfaction	(4) l. satisfaction	(5) l. satisfaction
works more than partner	-0.0590**	-0.146**	-0.0540*	-0.140*	-0.092**
	(-2.16)	(-2.08)	(-1.65)	(-1.62)	(-2.32)
age	-0.0301**	-0.0722*	-0.0451**	-0.103*	-0.063**
	(-1.97)	(-1.69)	(-2.22)	(-1.94)	(-2.34)
age square	0.000201	0.000474	0.000359	0.000869*	0.00055*
	(1.17)	(1.11)	(1.60)	(1.67)	(1.95)
housework hours	-0.000300	-0.00137	0.000336	0.000647	-0.00055
	(-0.26)	(-0.48)	(0.23)	(0.19)	(-0.35)
childcare hours	0.000757	0.00161	0.000461	0.00131	-0.00042
	(1.30)	(1.05)	(0.53)	(0.59)	(-0.37)
caring hours	-0.00505*	-0.0122*	-0.00938***	-0.0204***	-0.010**
	(-1.75)	(-1.68)	(-2.97)	(-3.05)	(-2.86)
unemployed	-0.199**	-0.437***	-0.0657	-0.166	-0.060
	(-2.56)	(-2.59)	(-0.74)	(-0.90)	(-0.58)
full-time job	-0.0496**	-0.131**	-0.0835**	-0.196**	-0.077*
	(-2.08)	(-2.13)	(-2.43)	(-2.35)	(-1.95)
partner's working hours	-0.00149	-0.00336	-0.00100	-0.00278	-0.002
	(-1.23)	(-1.10)	(-0.63)	(-0.73)	(-1.71)
unemployed partner	0.0142	0.0423	-0.0373	-0.117	-0.043
	(0.23)	(0.28)	(-0.49)	(-0.63)	(-0.51)
log of partner's earnings	0.0189	0.0403	-0.00474	-0.0178	0.006
	(1.14)	(0.96)	(-0.27)	(-0.38)	(0.32)
number of children	-0.0895***	-0.232***	-0.0562**	-0.144**	-0.043
	(-4.74)	(-4.81)	(-2.23)	(-2.31)	(-1.55)
log of household's income	0.0816**	0.190**	0.105**	0.272***	0.100**
	(2.48)	(2.27)	(2.57)	(2.62)	(2.21)
Observations	17154	30339	11155	20920	8852

Notes: Columns (1), (3) and (5) report estimates from linear fixed-effect regressions and columns (2) and (4) show the non-linear estimates from the ordered logit specification with fixed effects. All specifications include individual-specific, region-specific, and year fixed effects. t statistics in parentheses are obtained by robust standard errors correcting for clustering across individuals. Life satisfaction is an eleven-level measure of subjective wellbeing. All variables of hours measure the weekly reported hours of the respective individual. Columns (1) and (2) show the estimates within partnered women whose mothers were employed during women's age of 14, columns (3) and (4) show the estimates for partnered women whose mothers were not employed during that age, and column (5) shows the estimates for women born before 1975 (boomers and generation X) whose mothers were not in employment at women's age of 14. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18.

Table A.30: Marginal Effects - Ordered Logit Specification for Heterogeneity 3: Mother's Employment Status

	(1) marginal effect	(2) marginal effect
life satisfaction level 9	-0.022**	-0.0205*
	(0.0106)	(0.012)
life satisfaction level 10	-0.010**	-0.0106*
	(0.004)	(0.006)
Observations	15193	9766

Notes: Column (1) reports the marginal effects obtained from the ordered logit specification with fixed effects for women whose mothers were employed during women's age of 1 and column (2) shows the marginal effect of the fixed-effects logit specification for those women whose mothers were not employed during that age. Robust standard errors correct for clustering across individuals are given in parenthesis. The reported marginal effects in columns (1) and (2) show the impact on the probabilities of moving above the median level of life satisfaction, that is level 8, for those women who work more than their partners, keeping all other factors constant. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18

Table A.31: Heterogeneity: Young Women without Children

	(1) life satisfaction	(2) life satisfaction
works more than partner	-0.0954**	-0.261**
	(-2.45)	(-2.45)
age	0.0115	0.0598
	(0.20)	(0.40)
age square	-0.000120	0.0000539
	(-0.13)	(0.02)
housework hours	-0.000233	0.000522
	(-0.07)	(0.06)
childcare hours	-0.00579	-0.0112
	(-1.14)	(-1.16)
caring hours	-0.0240*	-0.0482**
	(-1.68)	(-2.02)
unemployed	-0.414***	-0.877***
	(-2.83)	(-3.19)
full-time job	-0.0750	-0.210
	(-1.38)	(-1.56)
partner's working hours	-0.00269	-0.00603
	(-1.23)	(-1.11)
unemployed partner	-0.136	-0.277
	(-1.22)	(-1.06)
log of partner's earnings	0.000889	0.00563
	(0.02)	(0.06)
log of household's income	0.0817	0.177
	(1.35)	(1.10)
Observations	6057	7103

Notes: Column (1) reports estimates from a linear fixed-effect regression and column (2) shows the non-linear estimates from the ordered logit specification with fixed effects. Both specifications include individual-specific, region-specific, and year fixed effects. t statistics in parentheses are obtained by robust standard errors correcting for clustering across individuals. Life satisfaction is an eleven-level measure of subjective wellbeing. All variables of hours measure the weekly reported hours of the respective individual. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. The sample includes all partnered and childless women aged less than 40 years old. Data source: HILDA Release 18.

TABLE A.32: Marginal Effects - Ordered Logit Specification for Heterogeneity 4: Young Women without Children

	(1) Marginal Effect
life satisfaction level 9	-0.0416**
	(0.0169)
life satisfaction level 10	-0.0168**
	(0.006)
Observations	7103

Notes: Column (1) reports the marginal effects obtained from the ordered logit specification with fixed effects. Robust standard errors correct for clustering across individuals are given in parenthesis. The reported marginal effects show the impact on the probabilities of moving above the median level of life satisfaction, that is level 8, for those women who work more than their partners, keeping all other factors constant. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18

TABLE A.33: Historical Females-to-Males Sex Ratios

Region	1901	1911	1921	1931	1947	1954	Average
NSW ratio	0.47595151	0.479152067	0.489851555	0.493060914	0.500069686	0.497343239	0.489238162
Vic ratio	0.497325905	0.501660521	0.507128677	0.503783249	0.506562269	0.497990288	0.502408485
Qld ratio	0.443913123	0.456092887	0.472243681	0.475251548	0.487108363	0.487011278	0.470270147
SA ratio	0.49140179	0.492463738	0.49861257	0.499160856	0.504651951	0.493280592	0.49659525
WA ratio	0.386962047	0.427305983	0.467204838	0.466934183	0.486395478	0.483630862	0.453072232
Tas ratio	0.48036527	0.489616183	0.496009917	0.494299184	0.497257642	0.491083459	0.491438609
NT ratio	-	0.174018127	0.270493923	0.303505155	0.321126242	0.375311191	0.288890927
ACT ratio	-	0.421236873	0.390746501	0.462948474	0.462170955	0.464654461	0.440351453
Australia	0.475873539	0.480800807	0.491869993	0.492126459	0.498984088	0.494118956	0.488962307

Notes: NSW: New South Wales, Vic: Victoria, Qld: Queensland, SA: South Australia, WA: Western Australia, Tas: Tasmania, NT: Northern Territory, ACT: Australian Capital Territory. Data source: Australian Bureau of Statistics

Table A.34: Heterogeneity: Regional Historical Sex Ratios

	(1) life satisfaction	(2) life satisfaction	(3) life satisfaction	(4) lif satisfaction
works more than partner	-0.0273	-0.0738	-0.113***	-0.286***
	(-1.03)	(-1.09)	(-3.13)	(-3.17)
age	-0.0470***	-0.107***	-0.0194	-0.0547
	(-3.23)	(-2.69)	(-0.88)	(-0.96)
age square	0.000404**	0.000976**	0.0000800	0.000265
	(2.51)	(2.47)	(0.32)	(0.47)
housework hours	-0.00106	-0.00287	0.00224	0.00498
	(-0.99)	(-1.09)	(1.39)	(1.31)
childcare hours	0.0000909	0.000177	0.00101	0.00215
	(0.17)	(0.12)	(1.09)	(0.89)
caring hours	-0.00790***	-0.0179***	-0.00659*	-0.0165*
	(-2.86)	(-2.86)	(-1.88)	(-1.91)
unemployed	-0.0594	-0.140	-0.317***	-0.657***
	(-0.84)	(-0.89)	(-3.38)	(-3.50)
full-time job	-0.0688***	-0.170***	-0.0396	-0.0910
	(-2.88)	(-2.85)	(-1.08)	(-1.00)
partner's working hours	-0.000785	-0.00232	-0.00323**	-0.00723*
	(-0.69)	(-0.80)	(-1.98)	(-1.82)
unemployed partner	-0.0286	-0.0807	0.00447	0.0233
	(-0.47)	(-0.55)	(0.06)	(0.12)
log of partner's earnings	-0.000870	-0.00798	0.0307	0.0765
	(-0.06)	(-0.20)	(1.52)	(1.52)
number of children	-0.0605***	-0.165***	-0.103***	-0.243***
	(-3.53)	(-3.68)	(-3.57)	(-3.58)
log of household's income	0.0858***	0.206***	0.0695	0.142
	(2.79)	(2.58)	(1.56)	(1.27)
Observations	19370	34708	9777	17669

Notes: Columns (1) and (3) report estimates from linear fixed-effect regressions and columns (2) and (4) show the non-linear estimates from the ordered logit specification with fixed effects. All specifications include individual-specific, region-specific, and year fixed effects. t statistics in parentheses are obtained by robust standard errors correcting for clustering across individuals. Life satisfaction is an eleven-level measure of subjective wellbeing. All variables of hours measure the weekly reported hours of the respective individual. Columns (1) and (2) show the estimates within partnered women from regions with average historical females-to-males ratio above the Australian average of the first half of the 20th century (Victoria, South Australia, Tasmania, New South Wales) while columns (3) and (4) show the estimates for partnered women from regions with average historical females-to-males ratio below the Australian average of that period (Australian Capital Territory, Northern Territory, Western Australia, Queensland). *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18.

TABLE A.35: Marginal Effects - Ordered Logit Specification for Heterogeneity 5: Regional Historical Sex Ratios

	(1) marginal effect	(2) marginal effect
life satisfaction level 9	-0.011	-0.042***
	(0.010)	(0.013)
life satisfaction level 10	-0.005	-0.020***
	(0.005)	(0.006)
Observations	16964	8609

Notes: Column (1) reports the marginal effects obtained from the ordered logit specification with fixed effects for women from regions with average historical females-to-males ratio above the Australian average of the first half of the 20th century and column (2) shows the marginal effect of the fixed-effects logit specification for those women living in regions with historical sex ratios below the Australian average. Robust standard errors correct for clustering across individuals are given in parenthesis. The reported marginal effects in columns (1) and (2) show the impact on the probabilities of moving above the median level of life satisfaction, that is level 8, for those women who work more than their partners, keeping all other factors constant. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data source: HILDA Release 18

Appendix B

Tables and Figures

Table B.1: Women's and Men's Wages - Controlling for Education

	Women				Men	
Variables	(1)	(2)	(3)	(4)	(1)	(2)
Education	0.241***	0.361***	0.163***	0.080***	0.122***	0.100***
	(0.002)	(0.013)	(0.004)	(0.002)	(0.007)	(0.001)
Experience	-0.007***	-	0.044***	-	-	-
	(0.0002)		(0.0001)			
Observations	126,029	126,029	24,928	24,928	64,101	19,215
Selected	67,154	-	17,914	-	-	-
Prob >F	0.00	0.00	0.00	0.00	0.00	0.00

Notes: Columns (1) and (3) show the results from women's selection equation using the economy-wide sample and the couples' sample, respectively. The dependent variable in both cases is an indicator of woman's labour participation. Columns (2) and (4) show the results from women's wage equation, after correcting for selection bias. Men's wage equation estimates for the economy-wide sample and the couples' sample are shown in columns (1) and (2), respectively. All estimates are obtained using OLS. Data source: HILDA Release 18.

Table B.2: Level of Education

	Women		Men	
Level of Education	Frequency	Percent	Frequency	Percent
Level 1: Year 11 or below	2,406	18.46	1,751	13.43
Level 2: Year 12	1,835	14.08	1,336	10.25
Level 3: Certificate III or IV	1,935	14.84	3,818	29.29
Level 4: Advanced diploma	1,387	10.64	1,565	12.00
Level 5: Bachelor degree	2,958	22.69	2,494	19.13
Level 6: Graduate diploma	1,549	11.88	1,077	8.26
Level 7: Master's or doctorate degree	967	7.42	996	7.64
Total	13,037	100.00	13,037	100.00

*D*ata source: HILDA Release 18.

Table B.3: Level of Education - Group Comparisons

	Women				Men			
	Same occupation		Different occupation		Same occupation		Different occupation	
Level of Education	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
Level 1: Year 11 or below	68	8.45	2,338	19.11	46	5.71	1,705	13.94
Level 2: Year 12	68	8.45	1,767	14.45	43	5.34	1,293	10.57
Level 3: Certificate III or IV	51	6.34	1,884	15.40	89	11.06	3,729	30.49
Level 4: Advanced diploma	77	9.57	1,310	10.71	119	14.78	1,446	11.82
Level 5: Bachelor degree	289	35.90	2,669	21.82	250	31.06	2,244	18.35
Level 6: Graduate diploma	135	16.77	1,414	11.56	158	19.63	919	7.51
Level 7: Master's or doctorate degree	117	14.53	850	6.95	100	12.42	896	7.33
Total	805	100.00	12,232	100.00	805	100.00	12,232	100.00

Data source: HILDA Release 18.

Table B.5: Robustness and Sensitivity

	Women				Men			
Same occupation	(0)	(1)	(2)	(3)	(0)	(1)	(2)	(3)
ANZSICxANZSCO2	0.035*	0.055***	0.071***	0.088***	-0.014	0.010	0.023	0.033
	(0.018)	(0.020)	(0.026)	(0.028)	(0.022)	(0.018)	(0.020	(0.028)
Observations	12,985	6,809	3,916	2,275	13,028	6,825	3,928	2,290
Groups	1,985	1,301	842	523	1,973	1,305	842	524
R^2 (within)	0.35	0.34	0.30	0.25	0.41	0.43	0.41	0.35
Prob >F	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
parallel trend test (joint significance of lags)	-	yes	yes	yes	-	yes	yes	yes
ISICxANZSCO2	0.030	0.052**	0.065**	0.095**	-0.003	0.022	0.026	0.029
	(0.019)	(0.023)	(0.027)	(0.040)	(0.023)	(0.023)	(0.023)	(0.026)
Observations	14,196	8,006	4,789	2,909	13,627	7,714	4,626	2,807
Groups	2,054	1,508	1,007	679	2,023	1,474	981	661
R^2 (within)	0.35	0.33	0.26	0.30	0.41	0.39	0.35	0.31
Prob >F	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
parallel trend test (joint significance of lags)	-	yes	yes	yes	-	yes	yes	yes
ANZSIC2xANZSCO2	0.021	0.053**	0.070**	0.110**	-0.020	0.007	0.018	0.010
	(0.020)	(0.023)	(0.030)	(0.044)	(0.023)	(0.025)	(0.025)	(0.029)
Observations	14,190	7,998	4,784	2,907	13,625	7,707	4,621	2,803
Groups	2,503	1,508	1,006	678	2,023	1,474	981	661
R^2 (within)	0.34	0.32	0.26	0.20	0.41	0.39	0.35	0.31
Prob >F	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
parallel trend test (joint significance of lags)	-	yes	yes	yes	-	yes	yes	yes
ANZSICxANZSCO2 (no full controls)	0.035*	0.051***	0.063**	0.077***	-0.016	0.008	0.017	0.026
	(0.018)	(0.019)	(0.025)	(0.028)	(0.015)	(0.019)	(0.020)	(0.027)
Observations	13,037	6,834	3,935	2,292	13,037	6,834	3,935	2,292
Groups	1,975	1,306	844	525	1,975	1,306	844	525
R^2 (within)	0.34	0.33	0.29	0.23	0.40	0.42	0.40	0.34
Prob >F	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
parallel trend test (joint significance of lags)	-	yes	yes	yes	-	yes	yes	yes
ANZSICxANZSCO2 (industry effects)	0.031*	0.052***	0.067**	0.090***	-0.022	0.008	0.026	0.035
	(0.018)	(0.019)	(0.026)	(0.028)	(0.023)	(0.019)	(0.020)	(0.027)
Observations	12,989	6,819	3,929	2,290	13,030	6,830	3,933	2,292
Groups	1,958	1,301	842	524	1,973	1,305	843	525
R^2 (within)	0.35	0.34	0.30	0.24	0.41	0.42	0.40	0.34
Prob >F	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
parallel trend test (joint significance of lags)	-	yes	yes	yes	-	yes	yes	yes

Notes: All regressions of the first three definitions include time-variant individual characteristics {age, age squared, experience}, individual-specific and occupation-specific fixed effects, and a time trend. Regression (0) does not include any leads or lags, regression (1) includes one lead and one lag, regression (2) includes two leads and two lags, and regression (3) includes three leads and three lags. All estimations are obtained from fixed-effects regressions. Robust standard errors correct for clustering across individuals are given in parenthesis. ***, ** and * indicate significance at the 1, 5 and 10 percent levels, respectively. ANZSICxANZSCO2 classifications yields 950 different occupations, ISICxANZSCO2 generates 4,902 different job types, and ANZSIC2xANZSCO2 combination generates 4,250. ANZSICxANZSCO2 without full controls drops time-variant cofounders and occupation-specific fixed effects, including only individual-specific fixed effects and a time trend, while ANZSICxANZSCO2 with industry effects use industry-specific instead of occupation-specific fixed effects. *Parallel trend test* denotes a joint significance test of the lags, and *Yes* indicates that the parallel trend assumption is satisfied. Data source: HILDA Release 18.

Table B.6: Placebo Test for Parallel Trend

Variables	Women's wage (1)	Women's wage (2)	Men's wage (3)	Men's wage (4)
Before group	-0.022 (0.049)	0.009 (0.011)	0.015 (0.069)	0.004 (0.013)
Before group * time trend	0.0006 (0.003)	-	-0.003 (0.005)	-
Observations	11,572	8,153	11,614	8,191
R	0.354	0.002	0.30	0.005
Prob >F	0.00	0.00	0.00	0.00

Notes: The placebo test suggests that individuals from the before group do not experience any significantly different wage growth as compared to the never-treated group. All regressions include individual characteristics {age, age squared, experience} and occupation-specific effects. Column (1) is a regression on each gender-specific hourly wage rate, while column (2) shows the regression on wage growth rate. All estimations are obtained from ols regressions. Robust standard errors correct for clustering across individuals are given in parenthesis. Data source: HILDA Release 18.

Table B.7: *College+* Couples: Women's Wage

Variables	panel A (0)	panel A (1)	panel A (2)	panel A (3)	panel B (0)	panel B (1)	panel B (2)	panel B (3)
Same occupation$_{t-3}$	-	-	-	0.012 (0.041)	-	-	-	0.00008 (0.040)
Same occupation$_{t-2}$	-	-	-0.071 (0.043)	-0.018 (0.042)	-	-	-0.072* (0.041)	-0.033 (0.041)
Same occupation$_{t-1}$	-	0.015 (0.025)	-0.001 (0.037)	-0.010 (0.042)	-	0.013 (0.024)	-0.008 (0.037)	-0.023 (0.042)
Same occupation	0.062** (0.029)	0.045 (0.029)	0.067* (0.034)	0.120*** (0.035)	0.060** (0.028)	0.036 (0.027)	0.060* (0.034)	0.110*** (0.036)
Same occupation$_{t+1}$	-	0.020 (0.029)	0.010 (0.040)	0.012 (0.043)	-	0.013 (0.027)	0.003 (0.040)	-0.006 (0.044)
Same occupation$_{t+2}$	-	-	-0.009 (0.036)	0.048 (0.055)	-	-	-0.015 (0.034)	0.031 (0.055)
Same occupation$_{t+3}$	-	-	-	0.031 (0.030)	-	-	-	0.017 (0.031)
Age	0.046*** (0.016)	0.056*** (0.018)	0.074*** (0.021)	-0.13 (0.015)	-	-	-	-
Age square	-0.0004*** (0.00005)	-0.0003** (0.0001)	-0.0003* (0.0001)	-0.0008** (0.0003)	-	-	-	-
Experience	-	-	-	-	-	-	-	-
Observations	3,162	1,663	968	560	3,174	1,666	968	560
Groups	475	314	215	136	479	316	215	136
R^2 (within)	0.34	0.34	0.26	0.16	0.32	0.32	0.24	0.13
Prob >F	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
parallel trend test (joint significance of lags)	-	yes	yes	yes	-	yes	yes	yes

Notes: Panel (A) includes full controls as well as individual-specific and occupation-specific fixed effects, and a time-trend while panel (B) includes only individual-specific fixed effects and a time-trend. Regression (0) does not include any leads or lags, regression (1) includes one lead and one lag, regression (2) includes two leads and two lags, and regression (3) includes three leads and three lags. All estimations are obtained from fixed-effects regressions. Robust standard errors correct for clustering across individuals are given in parenthesis. ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively. Occupation is defined using *ANZSICxANZSCO2* which generates 950 different occupation types. Data source: HILDA Release 18.

Table B.8: Women's Wage Effects: Who Follows Who

Variables	panel A (0)	panel A (1)	panel A (2)	panel A (3)	panel B (0)	panel B (1)	panel B (2)	panel B (3)
Same occupation$_{t-3}$	-	-	-	0.011 (0.029)	-	-	-	0.0003 (0.032)
Same occupation$_{t-2}$	-	-	-0.042 (0.30)	0.004 (0.031)	-	-	-0.041 (0.029)	-0.009 (0.029)
Same occupation$_{t-1}$	-	0.008 0.018)	0.003 (0.027)	0.009 (0.029)	-	0.007 (0.018)	0.007 (0.026)	0.001 (0.028)
Same occupation	0.034* (0.019)	0.058*** (0.021)	0.083*** (0.026)	0.105*** (0.026)	0.032* (0.019)	0.052** (0.020)	0.072*** (0.025)	0.094*** (0.026)
Same occupation$_{t+1}$	-	0.003 (0.021)	0.015 (0.027)	0.020 (0.033)	-	0.0009 (0.020)	0.012 (0.027)	0.010 (0.033)
Same occupation$_{t+2}$	-	-	0.004 (0.027)	0.043 (0.035)	-	-	0.002 (0.026)	0.044 (0.036)
Same occupation$_{t+3}$	-	-	-	0.026 (0.027)	-	-	-	0.024 (0.027)
Woman changes occupation	0.007 (0.007)	0.004 (0.008)	0.006 (0.010)	0.0005 (0.014)	0.009 (0.007)	0.004 (0.008)	0.005 (0.011)	-0.002 (0.014)
Same occupation *woman changes occupation	-0.013 (0.035)	-0.013 (0.040)	-0.046 (0.054)	-0.066 (0.075)	-0.0005 (0.035)	-0.001 (0.040)	-0.035 (0.051)	-0.066 (0.067)
Age	0.043*** (0.007)	0.055*** (0.012)	0.064*** (0.016)	0.050** (0.023)	-	-	-	-
Age square	-0.0002*** (0.00005)	-0.0003*** (0.00008)	-0.0003*** (0.0001)	-0.0004** (0.0001)	-	-	-	-
Experience	0.022*** (0.007)	0.015 (0.012)	0.012 (0.014)	0.028 (0.019)	-	-	-	-
Obs	12,983	6,804	3,911	2,273	13,031	6,819	3,917	2,275
Groups	1,958	1,301	841	522	1,975	1,306	843	523
R^2 (within)	0.35	0.34	0.30	0.24	0.34	0.33	0.29	0.22
Prob >F	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
parallel trend test (joint significance of lags)	-	yes	yes	yes	-	yes	yes	yes

Variables	panel C (0)	panel C (1)	panel C (2)	panel C (3)	panel D (0)	panel D (1)	panel D (2)	panel D (3)
Same occupation$_{t-3}$	-	-	-	0.011 (0.028)	-	-	-	0.0002 (0.031)
Same occupation$_{t-2}$	-	-	-0.035 (0.029)	0.011 (0.029)	-	-	-0.035 (0.029)	-0.002 (0.027)
Same occupation$_{t-1}$	-	0.010 (0.018)	0.006 (0.027)	0.010 (0.029)	-	0.009 (0.018)	0.004 (0.026)	0.002 (0.028)
Same occupation	0.024 (0.019)	0.031 (0.021)	0.043 (0.030)	0.070* (0.035)	0.024 (0.019)	0.028 (0.020)	0.034 (0.028)	0.060* (0.034)
Same occupation$_{t+1}$	-	0.022 (0.022)	0.044 (0.031)	0.052 (0.037)	-	0.018 (0.021)	0.039 (0.030)	0.043 (0.036)
Same occupation$_{t+2}$	-	-	0.011 (0.026)	0.050 (0.033)	-	-	0.009 (0.026)	0.051 (0.034)
Same occupation$_{t+3}$	-	-	-	0.026 (0.025)	-	-	-	0.024 (0.026)
Man changes occupation	0.009 (0.006)	0.014* (0.008)	0.011 (0.010)	0.025* (0.013)	0.011* (0.006)	0.015* (0.008)	0.011 (0.010)	0.027** (0.013)
Same occupation *man changes occupation	0.061* (0.033)	0.106*** (0.037)	0.136** (0.056)	0.113* (0.062)	0.061* (0.033)	0.104*** (0.037)	0.136** (0.054)	0.117* (0.061)
Age	0.043*** (0.007)	0.056*** (0.012)	0.065*** (0.016)	0.051** (0.023)	-	-	-	-
Age square	-0.0002*** (0.00005)	-0.0003*** (0.00008)	-0.0003*** (0.0001)	-0.0004** (0.0001)	-	-	-	-
Experience	0.022*** (0.007)	0.015 (0.012)	0.012 (0.014)	0.027 (0.019)	-	-	-	-
Obs	12,983	6,804	3,911	2,273	13,031	6,819	3,917	2,275
Groups	1,958	1,301	841	522	1,975	1,306	843	523
R^2 (within)	0.35	0.34	0.30	0.24	0.34	0.33	0.29	0.23
Prob >F	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
parallel trend test (joint significance of lags)	-	yes	yes	yes	-	yes	yes	yes

Notes: Panels (A) and (C) include full controls as well as individual-specific and occupation-specific fixed effects, and a time-trend while panels (B) and (D) include only individual-specific fixed effects and a time-trend. Regression (0) does not include any leads or lags, regression (1) includes one lead and one lag, regression (2) includes two leads and two lags, and regression (3) includes three leads and three lags. All estimations are obtained from fixed-effects regressions. Robust standard errors correct for clustering across individuals are given in parenthesis. ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively. Occupation is defined using *ANZSICxANZSCO2* which generates 950 different occupation types. Data source: HILDA Release 18

Table B.9: Women's Wage Effects: Part-time vs Full-time

	panel A				panel B			
Variables	(0)	(1)	(2)	(3)	(0)	(1)	(2)	(3)
Same occupation$_{t-3}$	-	-	-	0.019 (0.029)	-	-	-	0.009 (0.031)
Same occupation$_{t-2}$	-	-	-0.045 (0.030)	-0.001 (0.031)	-	-	-0.045 (0.030)	-0.011 (0.030)
Same occupation$_{t-1}$	-	0.005 (0.017)	-0.001 (0.027)	-0.016 (0.028)	-	0.003 (0.017)	-0.002 (0.026)	0.009 (0.028)
Same occupation	0.003 (0.020)	0.030 (0.024)	0.028 (0.029)	0.055* (0.031)	0.0002 (0.019)	0.025 (0.023)	0.023 (0.027)	0.046 (0.030)
Same occupation$_{t+1}$	-	0.002 (0.020)	0.024 (0.027)	0.040 (0.031)	-	-0.002 (0.020)	0.019 (0.027)	0.031 (0.030)
Same occupation$_{t+2}$	-	-	-0.007 (0.023)	0.032 (0.030)	-	-	-0.008 (0.023)	0.033 (0.030)
Same occupation$_{t+3}$	-	-	-	0.015 (0.025)	-	-	-	0.013 (0.026)
Woman works PT and man works FT	0.088*** (0.008)	0.099*** (0.011)	0.108*** (0.014)	0.119*** (0.021)	0.083*** (0.008)	0.100*** (0.011)	0.111*** (0.015)	0.120*** (0.021)
Same occupation *woman works PT and man works FT	0.077** (0.029)	0.070* (0.041)	0.139** (0.061)	0.106* (0.060)	0.088*** (0.030)	0.072* (0.040)	0.133** (0.059)	0.110* (0.059)
Age	0.033*** (0.007)	0.043*** (0.012)	0.056*** (0.016)	0.038* (0.022)	-	-	-	-
Age square	-0.0002*** (0.00005)	-0.0002** (0.00008)	-0.0003** (0.0001)	-0.0003* (0.0001)	-	-	-	-
Experience	0.025*** (0.007)	0.019 (0.012)	0.013 (0.014)	0.030 (0.019)	-	-	-	-
Observations	12,985	6,809	3,916	2,275	13,037	6,834	3,935	2,292
Groups	1,958	1,301	842	523	1,975	1,306	844	525
R^2 (within)	0.36	0.35	0.32	0.27	0.35	0.35	0.31	0.25
Prob >F	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
parallel trend test 1 (joint significance of lags)	-	yes	yes	yes	-	yes	yes	yes
parallel trend test 2 (time trend test)	yes	yes	yes	yes	yes	yes	yes	yes

Notes: Panel (A) includes full controls as well as individual-specific and occupation-specific fixed effects, and a time-trend while panel (B) includes only individual-specific fixed effects and a time-trend. Regression (0) does not include any leads or lags, regression (1) includes one lead and one lag, regression (2) includes two leads and two lags, and regression (3) includes three leads and three lags. All estimations are obtained from fixed-effects regressions. Robust standard errors correct for clustering across individuals are given in parenthesis. ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively. Occupation is defined using *ANZSICxANZSCO2* which generates 950 different occupation types. Data source: HILDA Release 18.

TABLE B.10: Women's Wage Effects: with and without Dependent Members

	panel A				panel B			
Variables	(0)	(1)	(2)	(3)	(0)	(1)	(2)	(3)
Same occupation$_{t-3}$	-	-	-	0.008 (0.029)	-	-	-	-0.0007 (0.031)
Same occupation$_{t-2}$	-	-	-0.041 (0.30)	0.004 (0.031)	-	-	-0.039 (0.029)	-0.008 (0.030)
Same occupation$_{t-1}$	-	0.008 0.018)	0.002 (0.026)	0.003 (0.029)	-	0.008 (0.018)	0.0008 (0.026)	-0.004 (0.029)
Same occupation	0.023 (0.019)	0.040* (0.023)	0.051* (0.028)	0.090*** (0.029)	0.024 (0.021)	0.037* (0.022)	0.044 (0.027)	0.077** (0.030)
Same occupation$_{t+1}$	-	0.006 (0.020)	0.020 (0.027)	0.029 (0.031)	-	0.002 (0.020)	0.017 (0.027)	0.019 (0.030)
Same occupation$_{t+2}$	-	-	0.005 (0.027)	0.040 (0.034)	-	-	0.004 (0.027)	0.042 (0.035)
Same occupation$_{t+3}$	-	-	-	0.025 (0.027)	-	-	-	0.022 (0.028)
No dependent member	-0.014 (0.010)	-0.003 (0.015)	0.004 (0.010)	0.015 (0.023)	-0.028 (0.009)	-0.027** (0.013)	-0.023 (0.017)	-0.009 (0.022)
Same occupation * no dependent member	0.030 (0.026)	0.052 (0.034)	0.080 (0.053)	0.009 (0.044)	0.025 (0.027)	0.051 (0.033)	0.079 (0.051)	0.022 (0.044)
Age	0.040*** (0.007)	0.056*** (0.013)	0.068*** (0.018)	0.054** (0.023)	-	-	-	-
Age square	-0.0002*** (0.00006)	-0.0003*** (0.00009)	-0.0004*** (0.0001)	-0.0004** (0.0001)	-	-	-	-
Experience	0.023*** (0.007)	0.015 (0.012)	0.011 (0.014)	0.027 (0.019)	-	-	-	-
Obs	12,985	6,809	3,916	2,275	13,037	6,834	3,935	2,292
Groups	1,958	1,301	842	523	1,975	1,306	844	525
R^2 (within)	0.35	0.34	0.30	0.24	0.34	0.33	0.29	0.22
Prob >F	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
parallel trend test (joint significance of lags)	-	yes	yes	yes	-	yes	yes	yes

	panel C				panel D			
Variables	(0)	(1)	(2)	(3)	(0)	(1)	(2)	(3)
Same occupation$_{t-3}$	-	-	-	0.010 (0.030)	-	-	-	-0.001 (0.032)
Same occupation$_{t-2}$	-	-	-0.040 (0.029)	0.004 (0.032)	-	-	-0.040 (0.029)	-0.009 (0.030)
Same occupation$_{t-1}$	-	0.010 (0.018)	0.004 (0.027)	0.004 (0.029)	-	0.008 (0.018)	0.001 (0.026)	-0.005 (0.029)
Same occupation	0.043* (0.019)	0.070*** (0.023)	0.080*** (0.030)	0.089*** (0.033)	0.042** (0.019)	0.066*** (0.022)	0.071** (0.028)	0.077** (0.033)
Same occupation$_{t+1}$	-	0.0058 (0.022)	0.020 (0.027)	0.028 (0.031)	-	0.001 (0.020)	0.015 (0.026)	0.018 (0.030)
Same occupation$_{t+2}$	-	-	0.004 (0.027)	0.040 (0.034)	-	-	0.002 (0.026)	0.041 (0.035)
Same occupation$_{t+3}$	-	-	-	0.025 (0.026)	-	-	-	0.023 (0.027)
Child 0-4	0.043*** (0.009)	0.022* (0.013)	0.001 (0.017)	-0.014 (0.021)	0.046*** (0.009)	0.025* (0.014)	-0.0003 (0.019)	-0.017 (0.023)
Same occupation * child 0-4	-0.048 (0.030)	-0.063* (0.037)	-0.023 (0.044)	0.023 (0.053)	-0.045 (0.031)	-0.063* (0.037)	-0.021 (0.043)	0.024 (0.053)
Age	0.042*** (0.007)	0.055*** (0.012)	0.064*** (0.016)	0.05** (0.023)	-	-	-	-
Age square	-0.0002*** (0.00005)	-0.0003*** (0.00008)	-0.0004*** (0.0001)	-0.0004** (0.0001)	-	-	-	-
Experience	0.023*** (0.007)	0.015 (0.011)	0.012 (0.014)	0.027 (0.019)	-	-	-	-
Obs	12,985	6,809	3,916	2,275	13,037	6,834	3,935	2,292
Groups	1,958	1,301	842	523	1,975	1,306	844	525
R^2 (within)	0.35	0.34	0.30	0.24	0.34	0.33	0.29	0.22
Prob >F	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
parallel trend test (joint significance of lags)	-	yes	yes	yes	-	yes	yes	yes

Notes: Panels (A) and (C) include full controls as well as individual-specific and occupation-specific fixed effects, and a time-trend while panels (B) and (D) include only individual-specific fixed effects and a time-trend. Regression (0) does not include any leads or lags, regression (1) includes one lead and one lag, regression (2) includes two leads and two lags, and regression (3) includes three leads and three lags. All estimations are obtained from fixed-effects regressions. Robust standard errors correct for clustering across individuals are given in parenthesis. ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively. Occupation is defined using *ANZSICxANZSCO2* which generates 950 different occupation types. Data source: HILDA Release 18

Table B.11: Cumulative Effects

	Women						Men					
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(6)
3 years before	-	-	0.034	-	-	0.033	-	-	-0.003	-	-	-0.007
			(0.029)			(0.030)			(0.031)			(0.031)
2 years before	-	0.025	0.023	-	0.023	0.021	-	0.006	0.015	-	0.004	0.015
		(0.024)	(0.039)		(0.024)	(0.038)		(0.026)	(0.035)		(0.027)	(0.036)
1 year before	0.011	0.006	0.026	0.007	0.002	0.017	-0.018	-0.037	-0.011	-0.021	-0.037	0.012
	(0.021)	(0.034)	(0.051)	(0.021)	(0.034)	(0.050)	(0.019)	(0.031)	(0.036)	(0.020)	(0.031)	(0.038)
1st and 2nd year	0.042**	0.069**	0.077**	0.043**	0.068**	0.080**	0.023	0.005	0.024	0.022	0.009	0.027
	(0.020)	(0.030)	(0.039)	(0.021)	(0.030)	(0.039)	(0.021)	(0.026)	(0.033)	(0.022)	(0.027)	(0.033)
3rd and 4th year	0.044*	0.045	0.022	0.041	0.040	0.020	-0.003	-0.003	-0.012	-0.005	-0.0008	-0.012
	(0.026)	(0.032)	(0.037)	(0.026)	(0.031)	(0.036)	(0.032)	(0.035)	(0.034)	(0.032)	(0.035)	(0.034)
5th and 6th year	0.093***	0.106***	0.128***	0.097***	0.108***	0.131***	0.028	0.027	0.024	0.033	0.039	0.025
	(0.033)	(0.035)	(0.043)	(0.033)	(0.034)	(0.041)	(0.037)	(0.043)	(0.046)	(0.038)	(0.042)	(0.045)
7th year or more	0.068*	0.091**	0.122***	0.075*	0.096**	0.129***	0.056	0.057	0.052	0.057	0.059	0.058
	(0.040)	(0.042)	(0.047)	(0.040)	(0.042)	(0.045)	(0.053)	(0.055)	(0.063)	(0.052)	(0.057)	(0.063)
Age	0.046***	0.056***	0.051***	-	-	-	0.004	-0.052	-0.069*	-	-	-
	(0.009)	(0.012)	(0.023)				(0.029)	(0.036)	(0.041)			
Age square	-0.0002***	-0.0002***	-0.0002**	-	-	-	-0.0003***	-0.0002***	-0.0002**	-	-	-
	(0.00006)	(0.00008)	(0.0001)				(0.00006)	(0.00008)	(0.0001)			
Experience	0.018**	0.010	0.009	-	-	-	0.066**	0.115***	0.132***	-	-	-
	(0.009)	(0.012)	(0.019)				(0.029)	(0.035)	(0.041)			
Obs	9,208	6,816	5,146	9,236	6,834	5,159	9,229	6,829	5,155	9,236	6,834	5,159
Groups	1,605	1,301	1,047	1,615	1,306	1,051	1,614	1,305	1,050	1,615	1,306	1,051
R^2 (within)	0.35	0.33	0.29	0.34	0.32	0.28	0.41	0.37	0.36	0.40	0.37	0.35
Prob >F	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: Columns (1)-(3) of both women's and men's panel include full controls as well as individual-specific and occupation-specific fixed effects, and a time-trend while columns(4)-(6) include only individual-specific fixed effects and a time-trend. Columns (1) and (4) include one pre-treatment period, columns (2) and (5) include two pre-treatment periods, and columns (3) and (6) include three pre-treatment periods. All estimations are obtained from fixed-effects regressions. Robust standard errors correct for clustering across individuals are given in parenthesis. ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively. Occupation is defined using *ANZSICxANZSCO2* which generates 950 different occupation types. Data source: HILDA Release 18

FIGURE B.1: Same-occupation Couples and Inequalities

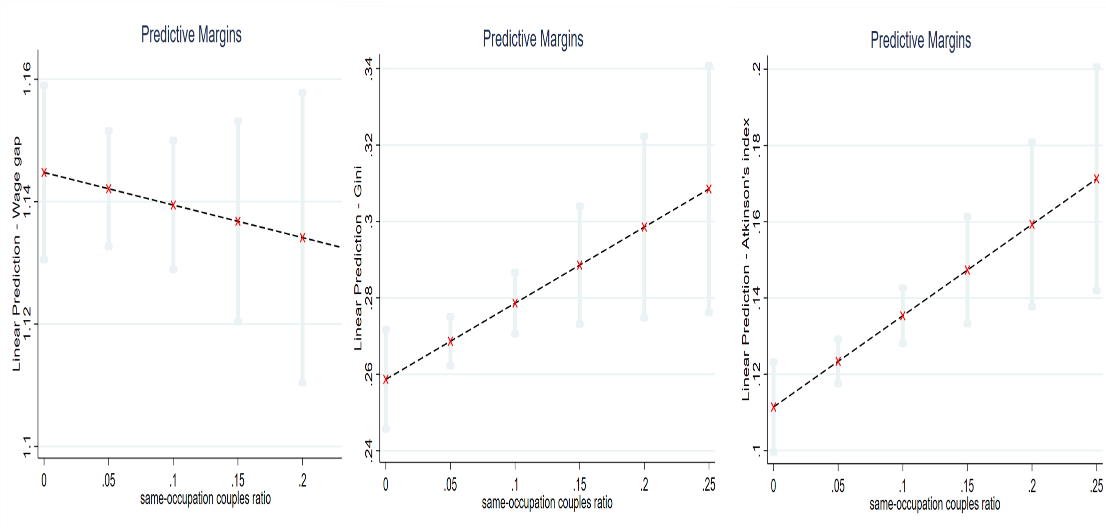


TABLE B.12: Within-partners Labour Market Gaps

	Pay gap				Working hours gap			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Same occupation	-0.0762**	-0.090**	-0.0955**	-0.109**	-0.161*	-0.114	-0.301***	-0.20*
	(0.0368)	(0.0437)	(0.0411)	(0.0447)	(0.088)	(0.088)	(0.104)	(0.106)
Woman's age			-0.074**	-0.152*			0.0739	-0.752
			(0.0374)	(0.091)			(0.128)	(0.906)
Woman's experience			-0.0373**	-0.0133			-0.029	-0.0179
			(0.0179)	(0.040)			(0.064)	(0.0685)
Man's experience			0.114***	0.177**			-0.0336	0.74
			(0.035)	(0.086)			(0.113)	(0.828)
Number of children			0.0118	0.0086			-0.0645	-0.0668
			(0.0137)	(0.0163)			(0.0431)	(0.068)
Age of youngest child			0.0026	-0.0056			-0.0927	-0.0169
			(0.0049)	(0.0083)			(0.0206)	(0.042)
Obs	13,031	5,155	10,501	4,464	13,031	5,155	10,501	4,464
Groups	1,975	1,051	1,639	884	1,975	1,051	1,639	884
R (within)	0.008	0.006	0.014	0.010	0.012	0.007	0.044	0.034
R (between)	0.10	0.075	0.006	0.006	0.031	0.006	0.029	0.001

Notes: Columns (1)-(4) of both panels additionally include household and partners' occupation fixed effects. Columns (2) and (4) also include three pre-treatment periods and the respective coefficients are highly statistically insignificant. All estimations are obtained from fixed-effects regressions. Robust standard errors correct for clustering across households are given in parenthesis. ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively. Data source: HILDA Release 18

Theoretical Framework

Kandel and Lazear's (1992) theoretical analysis on peer pressure externalities and free-riding among working partners can be extended to study the influence between life-partners who are employed in similar occupations. Kandel and Lazear (1992) introduce the conditions under which peer pressure exists in the workplace. They point out that peer pressure is generated whenever partnerships exist since individuals tend to show empathy to those whose income is affected by them. Hence, peer pressure and free-riding are expected to be formed among partners who perform similar tasks because mutual monitoring is more effective. Following the spirit of Kandel and Lazear (1992) and Mas and Moretti (2009), I transfer their analysis on life-partners who are employed in similar jobs. The above conditions which generate peer pressure in the workplace are expected to hold also for life-partners who follow similar careers in the labour market, and as a consequence, their interaction at home is assumed to include a frequent sharing of common experiences from their workplaces.

Let me begin with the baseline situation[19], where partners do not follow similar careers. Partner i is assumed to choose the amount of effort $e_i \geqslant 0$ to devote production. Without externalities among partners, the productivity of partner i depends on their own effort, solely. The level of production is captured by the function $y(e_i)$, which is increasing and concave in effort e_i (y'>0, y''<0). Denoting partner i's human capital stock as θ_i, I assume that there exists a cost function for partner i such that $c(e_i, \theta_i)$, with $\frac{\partial c}{\partial e_i}$>0 and $\frac{\partial^2 c}{\partial e_i^2}$>0 since it is painful to put forth effort, and $\frac{\partial c}{\partial \theta_i}$<0 since the more able an individual, the less the cost of effort is. Hence, partner i's optimisation problem is

$$\max \; y(e_i) - c(e_i, \theta_i) \tag{3.3}$$

with first-order condition

$$y' - \frac{\partial c}{\partial e_i} = 0.$$

Let me now introduce a framework for life-partners who are employed in similar occupations. Under the assumption that externalities between partners who follow similar careers exist due to their communication at home, there exists an additional cost function, which is called the partner pressure function:

$$P(e_i, e_j, \theta_j, \alpha_j).$$

The peer-partner pressure is assumed to be a multidimensional endogenous cost function which captures social and cultural dimensions. To start with, it is a function of i's own

[19] Which is identical to the analysis presented by Kandel and Lazear (1992).

effort e_i. Moreover, there are some characteristics of i's partner, henceforth partner j, which enter the pressure function. At first, i's pressure is also a function of partner j's effort e_j. Partner i cannot observe directly partner j's effort e_j[20], nevertheless, the cost of effort is directly observed at home, and since they work in similar occupations it is assumed that partner i can easily calculate the level of partner j's effort. It is also assumed reasonably that $\frac{\partial P}{\partial e_i}$<0 since if an individual's own effort e_i is high, it turns that the perceived pressure from partner j behaviour is less persistent, while the peer pressure on partner i is larger if partner j puts more effort in the workplace, thus $\frac{\partial P}{\partial e_j}$>0. Partner j's human capital θ_j is also a determinant of partner i's pressure function. To be more specific, a high-educated and high-skilled partner j implies a larger pressure on partner i, hence $\frac{\partial P}{\partial \theta_j}$>0. Moreover, there is partner j's set of possible actions α_j such as advice to partner i on work-related issues, mentoring, and mental or technical support on job issues. These actions are assumed to increase partner i's peer pressure for career success, that is $\frac{\partial P}{\partial \alpha_j}$>0.

Under these conditions, partner i's optimisation problem becomes

$$\max\ y(e_i) - c(e_i, \theta_i) - P(e_i, e_j, \theta_j, \alpha_j). \tag{3.4}$$

The first-order condition of problem (2) is

$$y' - \frac{\partial c}{\partial e_i} - \frac{\partial P}{\partial e_i} = 0.$$

Since $\frac{\partial P}{\partial e_i}$<0, the level of effort that solves partner i's problem under the pressure imposed by the additional cost function, let it be e^*, exceeds the level of effort e' that maximises the baseline problem (1)[21]. Under partner peer pressure, effort is higher than it would be without this partner pressure, which, in turn, leads to higher productivity for partner i. Hence, partners who work in similar occupations develop 'peer' and 'influence' mechanisms which increase their effort and their productivity levels. It is also trivial to show that under strong peer mechanisms, the problem implies that $\frac{\partial e_i^*}{\partial \theta_j}$>0, $\frac{\partial e_i^*}{\partial \alpha_j}$>0, $\frac{\partial e_i^*}{\partial n_j}$>0, $\frac{\partial e_i^*}{\partial t}$>0. In other words, highly-educated partners, partners who discuss a lot work-related issues and exchange ideas at home, or one partner's strong network and social interactions, or partners' frequent communication at home, increase one partner's perceived peer pressure and influence, and, as a consequence, the effort and productivity in the labour market. For example, free-riding on one partner's human capital and accumulated experience could boost the other partner's effort and productivity, while

[20]Except they are co-workers employed in exactly similar posts, which is a particular and very restricted sub-case not examined separately due to lack of available data.

[21]Proof: Denote e^* the solution to Problem (2) and e' as the solution to Problem (1). Then $y'(e^*) - \frac{\partial c}{\partial e^*} - \frac{\partial P}{\partial e^*} = y'(e') - \frac{\partial c}{\partial e'}$. Assume that e^* <e'. Since $\frac{\partial^2 c}{\partial e_i^2}$>0, $y'(e^*) - \frac{\partial c}{\partial e^*}$ ¡ $y'(e')$. Moreover, since $\frac{\partial P}{\partial e_i}$<0, this means that $y'(e^*)$ <$y'(e')$ which violates concavity of $y(e_i)$.

there exists also the case of a partner-mentor who improves the other partner's labour market outcomes through this mentorship and guidance.

Appendix C

TABLE C.1: Fixed Effects Instrumental Variables Estimation

	hours gap	flexitime (1st stage)
flexitime	-0.033 (0.063)	-
age	0.173 (0.123)	-0.081 (0.127)
age square	-0.005** (0.002)	0.001 (0.003)
age cube	0.00004** (0.00002)	-0.00001 (0.00002)
experience	0.005 (0.016)	0.004 (0.019)
full-time	-0.65*** (0.043)	-0.026 (0.020)
civil servant	-0.004 (0.032)	-0.034* (0.020)
married	0.034 (0.057)	0.004 (0.048)
household income	-0.0009* (0.0005)	0.00004 (0.00004)
number of children	0.007 (0.017)	0.032** (0.013)
new birth	0.207 (0.154)	-0.012 (0.021)
firm size: 21-200	0.0005 (0.027)	-0.045* (0.024)
firm size: 201 - 2000	0.017 (0.033)	-0.027 (0.028)
firm size: >2000	-0.023 (0.032)	-0.052** (0.025)
lag flexitime	-	-0.345*** (0.031)
ratio	-	0.377*** (0.042)
R-square (within)	0.16	0.25
R-square (overall)	0.15	0.20
Number of obs.	13,453	6,097
Number of groups	6,720	3,499

Notes: Flexitime is instrumented by women's earlier choice, and the share of workers with flexible working contracts in each woman's occupation, in the same state, and in the same year. Robust standard errors are shown in parentheses. Occupational indicators (115 codes) and year effects are also included across all specifications, but not presented. Data from SOEP.

TABLE C.2: Heterogeneity Analysis

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
flexitime	-0.113***	-	-0.044**	-0.03**	-0.012	-0.057**	-0.005	-0.013	-0.057***
	(0.027)		(0.021)	(0.013)	(0.016)	(0.024)	(0.016)	(0.027)	(0.017)
age	0.047	0.047	0.16	0.102**	0.111**	0.089	0.103***	0.126**	0.0033
	(0.056)	(0.056)	(0.34)	(0.04)	(0.05)	(0.069)	(0.04)	(0.063)	(0.101)
age square	-0.001	-0.001	-0.004	-0.003***	-0.003***	-0.003**	-0.003***	-0.001	-0.002
	(0.001)	(0.001)	(0.009)	(0.0008)	(0.001)	(0.001)	(0.0009)	(0.001)	(0.002)
age cube	0.00001	0.00001	0.00004	0.00002***	0.00002***	0.00002**	0.00002***	0.00001	0.00002
	(0.00009)	(0.00009)	(0.00008)	(0.000006)	(0.000007)	(0.00001)	(0.00006)	(0.00001)	(0.00001)
experience	-0.03*	-0.03*	-0.027*	-0.015*	-0.018*	-0.014	-0.015*	-0.081***	0.017
	(0.016)	(0.016)	(0.015)	(0.008)	(0.01)	(0.014)	(0.008)	(0.023)	(0.016)
full-time	-	-	-0.844***	-0.824***	-0.774***	-0.896***	-0.824***	-0.755***	-0.714***
			(0.036)	(0.022)	(0.028)	(0.037)	(0.022)	(0.036)	(0.035)
civil servant	-0.001	-0.002	0.008	-0.018	-0.038*	0.01	-0.018	0.003	-0.044*
	(0.033)	(0.033)	(0.03)	(0.017)	(0.021)	(0.031)	(0.017)	(0.028)	(0.024)
married	0.025	0.025	0.112***	0.083***	0.08**	0.094**	0.0829***	0.123***	0.05
	(0.037)	(0.037)	(0.031)	(0.025)	(0.032)	(0.04)	(0.025)	(0.042)	(0.042)
household income	-0.0001	-0.0001	-0.00001**	-0.00008**	-0.00009*	-0.000009*	-0.000009*	0.000007	-0.000006
	(0.0006)	(0.0006)	(0.000006)	(0.000003)	(0.000004)	(0.000005)	(0.000005)	(0.000007)	(0.000004)
number of children	0.02	0.02	0.054***	0.033***	0.025*	0.055***	0.033***	0.027**	0.03**
	(0.016)	(0.016)	(0.014)	(0.008)	(0.01)	(0.015)	(0.008)	(0.013)	(0.014)
new birth	0.097	0.092	0.126**	0.207***	0.184***	0.027	0.112**	0.092	0.191**
	(0.093)	(0.094)	(0.054)	(0.064)	(0.07)	(0.059)	(0.046)	(0.073)	(0.09)
firm size: 21-200	-0.076**	-0.078**	-0.017	-0.019	-0.032*	0.0007	-	-0.015	0.002
	(0.037)	(0.037)	(0.025)	(0.016)	(0.018)	(0.034)		(0.028)	(0.022)
firm size: 201 - 2000	-0.092**	-0.092**	-0.063**	-0.025	-0.02	-0.041	-	-0.036	0.028
	(0.039)	(0.039)	(0.03)	(0.019)	(0.021)	(0.042)		(0.035)	(0.026)
firm size: >2000	-0.044	-0.045	0.022	-0.018	-0.021	-0.015	-	-0.010	0.001
	(0.041)	(0.041)	(0.03)	(0.017)	(0.022)	(0.039)		(0.043)	(0.027)
partly fixed	-	-0.043*	-	-	-	-	-	-	-
		(0.022)							
certain flexitime	-	-0.103***	-	-	-	-	-	-	-
		(0.027)							
self-determined	-	-0.181***	-	-	-	-	-	-	-
		(0.045)							
flexitime*new birth	-	-	-	-0.157*	-	-	-	-	-
				(0.088)					
large firm	-	-	-	-	-	-	-0.059***	-	-
							(0.022)		
flexitime*large firm	-	-	-	-	-	-	0.006	-	-
							(0.014)		
R-square (within)	0.06	0.06	0.23	0.21	0.21	0.24	0.21	0.19	0.14
R-square (overall)	0.005	0.003	0.48	0.40	0.44	0.32	0.40	0.38	0.17
Number of obs.	16,496	16,496	17,436	38,150	24,203	13,947	38,150	13,587	20,469
Number of groups	8,182	8,182	9,346	17,515	11,010	6,521	17,515	7,380	10,155

Notes: Columns (1) and (2) show the estimates from a worker-firm spell fixed effect regression for the subsample of women who work in full-time jobs. Column (3) shows the estimated coefficients from a worker-firm spell fixed effect regression for the subsample of women aged 30-45, while Column (4) introduces an interaction term between flexibility and new birth in the main specification of Equation 3.2. Columns (5) and (6) restrict the analysis to women with at most and more than 12 years of schooling, respectively. In Column (7) a new indicator for large firms (more than 200 employees) interacts with flexibility, and Columns (8) and (9) restrict the analysis to the periods 2003 - 2009 and 2014 - 2017, respectively. Robust standard errors clustered at the worker-firm spell level are shown in parentheses. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Occupational indicators (115 codes) and year effects are also included across all specifications, but not presented. Data from SOEP.

TABLE C.3: Implications: Contractual Working Hours, Effort, Housework, and Childcare

	(1)	(2)	(3)	(4)
flexitime	-0.0021	0.07***	0.009	0.02
	(0.005)	(0.022)	(0.008)	(0.016)
age	-0.079***	-0.114**	0.006	0.02
	(0.014)	(0.057)	(0.005)	(0.02)
age square	0.001***	0.002*	0.00006	-0.0003*
	(0.0003)	(0.001)	(0.00004)	(0.0002)
age cube	-0.00001***	-0.00002**	-	-
	(0.000002)	(0.000009)		
experience	0.014***	0.017	-0.014***	-0.038***
	(0.004)	(0.015)	(0.004)	(0.01)
full-time	0.244***	-0.037	-0.072***	-0.154***
	(0.01)	(0.031)	(0.009)	(0.021)
civil servant	0.004	-0.033	0.004	-0.042*
	(0.01)	(0.033)	(0.01)	(0.022)
married	-0.043***	-0.029	0.059***	-0.02
	(0.008)	(0.032)	(0.014)	(0.029)
household income	-0.00002**	0.00003	0.00003	-0.00005
	(0.00001)	(0.00005)	(0.0002)	(0.00005)
number of children	-0.023***	-0.055***	0.015***	0.087***
	(0.004)	(0.015)	(0.005)	(0.013)
new birth	-0.126***	-0.084	0.06**	0.147***
	(0.047)	(0.095)	(0.029)	(0.037)
firm size: 21-200	0.007	-0.022	-	-
	(0.008)	(0.033)		
firm size: 201 - 2000	0.01	-0.049	-	-
	(0.009)	(0.036)		
firm size: >2000	0.01	-0.022	-	-
	(0.009)	(0.038)		
household size	-	-	0.006**	-0.002
			(0.003)	(0.007)
R-square (within)	0.18	0.03	0.04	0.13
R-square (overall)	0.47	0.002	0.05	0.05
Number of obs.	21,996	21,552	24,509	15,025
Number of groups	11,167	10,935	10,541	6,407

Notes: Column (1) shows the estimated coefficients from a worker-firm spell fixed effect regression on women's contractual working hours. Column (2) shows the estimated coefficients from a worker-firm spell fixed effect regression on women's difference between actual and contractual working hours. Columns (3) and (4) show the estimated coefficients from a fixed-effect regression on weekly housework hours and hours for childcare, respectively. Estimates in Columns (3) and (4) are obtained from individual-specific fixed-effect regressions. Parentheses in Columns (1) and (2) show robust standard errors clustered at the worker-firm spell level, and parentheses in Columns (3) and (4) show robust standard errors after clustering at the individual level. Occupational indicators (115 codes) and year effects are also included across all specifications, but not presented. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Data from SOEP.

Table C.4: Average Hours, Women in Full-Time and Flexible Jobs in West and East Germany

	West Germany	East Germany
Women's Weekly Working Hours	30.9	36.8
Men's Weekly Working Hours	43.3	43.8
Percent of Women with Full-Time Jobs	42.8	60.6
Percent of Women with Flexible Contracts	35.6	32.2

Data Source: SOEP

Table C.5: Worker-Firm Fixed Effects Estimation for West and East Germany

	West	East
flexitime	-0.031**	-0.018
	(0.014)	(0.040)
age	0.090**	0.174*
	(0.045)	(0.092)
age square	-0.002***	-0.005**
	(0.00009)	(0.002)
age cube	0.00002**	0.00003***
	(0.000007)	(0.00001)
experience	-0.015*	-0.008
	(0.009)	(0.022)
full-time	-0.85***	-0.75***
	(0.026)	(0.044)
civil servant	-0.019	0.007
	(0.019)	(0.041)
married	0.107***	0.006
	(0.026)	(0.068)
household income	-0.0009**	-0.000008
	(0.00003)	(0.00001)
number of children	0.030***	0.033*
	(0.009)	(0.020)
new birth	0.084*	0.257***
	(0.051)	(0.008)
firm size: 21-200	-0.017	-0.006
	(0.017)	(0.043)
firm size: 201 - 2000	-0.019	-0.022
	(0.021)	(0.046)
firm size: >2000	-0.017	-0.00002
	(0.021)	(0.051)
R-square (within)	0.23	0.20
R-square (overall)	0.42	0.24
Number of obs.	30,378	7,772
Number of groups	14,104	3,434

Notes: Columns (1) and (2) show the estimates from worker-firm spell fixed effect regressions, separately for West and East Germany. Robust standard errors are shown in parentheses. Occupational indicators (115 codes) and year effects are also included across all specifications, but not presented. Data from SOEP.

Bibliography

Aberg, R., 2003. Unemployment persistency, over-education and the employment chances of the less educated. European Sociological Review 19, 199–216.

Abowd, J.M., Kramarz, F. and Margolis, D.N., 1999. High Wage Workers and High Wage Firms. Econometrica 67, 251-333.

Adda, J., Dustmann, C., and Stevens, K., 2017. The Career Costs of Children. Journal of Political Economy 125(2), 293 - 337.

Adrjan, P., et al., 2021. Will it stay or will it go? Analysing developments in telework during COVID-19 using online job postings data. OECD Productivity Working Papers, No. 30, OECD Publishing, Paris.

Aghion, P. and Bolton, P., 2003. Incomplete social contracts. Journal of the European Economic Association 1(1), 38–67.

Aghion, P. and Tirole, J., 1997. Formal and real authority in organizations. Journal of Political Economy 105(1), 1–29.

Akerlof, G.A. and Kranton, R.E., 2010. Identity economics: how our identities shape our work, wages, and well-being. Princeton University Press, Princeton.

Akerlof, G.A. and Kranton, R.E., 2000. Economics and Identity*. Quarterly Journal of Economics 115, 715–753.

Alesina, A. and Giuliano, P., 2014. Family ties. In S. Durlauf and P. Aghion (Eds). Handbook of Economic Growth. Amsterdam: Elsevier.

Alesina, A., Giuliano, P., and Nunn, N., 2013. On the Origins of Gender Roles: Women and the Plough. The Quarterly Journal of Economics 128, 469–530.

Alesina, A. and Fuchs-Schündeln, N., 2007. Good-Bye Lenin (or Not?): The Effect of Communism on People's Preferences. American Economic Review 97, 1507–1528.

Almer, E. D. and Kaplan, S. E., 2002. The effects of flexible work arrangements on stressors, burnout, and behavioral job outcomes in public accounting. Behavioral Research in Accounting 14(1), 1–34.

Alon, T., Coskun, S., Doepke, M., Koll, D., and Tertilt, M., 2022. From mancession to shecession: Women's employment in regular and pandemic recessions. NBER Macroeconomics Annual 36, 83–151.

Amato, P. R. and Keith, B., 1991. Parental Divorce and Adult Well-Being: A Meta-Analysis. Journal of Marriage and Family 53(1), 43–58.

Anderberg, D. and Zhu, Y., 2014. What a difference a term makes: the effect of educational attainment on marital outcomes in the UK. Journal of Population Economics 27, 387–419.

Anderson, D. J., Binder, M., and Krause, K., 2003. The Motherhood Wage Penalty Revisited: Experience, Heterogeneity, Work Effort, and Work-Schedule Flexibility. ILR Review 56(2), 273–294.

Angelici, M. and Profeta, P., 2020. Smart-working: Work flexibility without constraints. SSRN Electronic Journal.

Ashraf, N., Bau, N., Nunn, N., and Voena, A., 2020. Bride Price and Female Education. Journal of Political Economy 128 591–641.

Autor, D.H., 2003. Outsourcing at Will: The Contribution of Unjust Dismissal Doctrine to the Growth of Employment Outsourcing. Journal of Labor Economics 21 1–42.

Azoulay, P., Zivin, J.S.G., Wang, J., 2010. Superstar Extinction. Quarterly Journal of Economics 125, 549–589.

Baetschmann, G., Staub, K. E., and Winkelmann, R., 2015. Consistent estimation of the fixed effects ordered logit model. Journal of the Royal Statistical Society: Series A 178(3), 685-703.

Baetschmann, G., Staub, K., and Winkelmann, R., 2011. Consistent Estimation of the Fixed Effects Ordered Logit Model. IZA Discussion Papers No 5443, Institute of Labor Economics (IZA).

Bartlett, R. P. and Partnoy, F., 2020. The ratio problem. SSRN Electronic Journal.

Battisti, M., Deakins, D., 2017. The relationship between dynamic capabilities, the firm's resource base and performance in a post-disaster environment. International Small Business Journal 35, 78–98.

Bauernschuster, S. and Rainer, H., 2012. Political Regimes and the Family: How Sex-Role Attitudes Continue to Differ in Reunified Germany. Journal of Population Economics 25, 5–27.

Bear, J. B., 2021. Forget the "mommy track": Temporal flexibility increases promotion aspirations for women and reduces gender gaps. Psychology of Women Quarterly 45(3), 294–307.

Beblo, M. and Görges, L., 2018. On the Nature of Nurture. The Malleability of Gender Differences in Work Preferences. Journal of Economic Behavior & Organization 151 19–41.

Beckmann, M., 2016. Working-time autonomy as a management practice. IZA World of Labor.

Beckmann, M., Cornelissen, T., and Kräkel, M., 2017. Self-managed working time and employee effort: Theory and evidence. Journal of Economic Behavior & Organization 133, 285–302.

Belot, M. and Francesconi, M., 2013. Dating preferences and meeting opportunities in mate choice decisions. Journal of Human Resources 48, 474–508.

Bentsen, K.H., Munch, J.R., and Schaur, G., 2019. Education spillovers within the workplace. Economics Letters 175, 57–59.

Bergerhoff, J., Kiessling, L., Pinger, P., and Seegers. P., 2019. Gender Differences in Wage Expectations: Sorting, Children, and Negotiation Styles. IZA, Discussion paper, No.12522

Bertrand, M., 2020. Gender in the Twenty-First Century. AEA Papers and Proceedings 110, 1–24.

Bertrand, M., Kamenica, E., and Pan, J., 2015. Gender Identity and Relative Income within Households. The Quarterly Journal of Economics 130, 571–614.

Bertrand, M., 2011. New Perspectives on Gender, in: Handbook of Labor Economics. Elsevier, pp. 1543–1590.

Black, S.E. and Juhn, C., 2000. The Rise of Female Professionals: Are Women Responding to Skill Demand? American Economic Review 90, 450–455.

Blanchflower, D., 2020. Is Happiness U-shaped Everywhere? Age and Subjective Well-being in 132 Countries, No 26641, NBER Working Papers, National Bureau of Economic Research, Inc.

Blanchflower, D.G., 2009. International evidence on well-being, in Measuring the Subjective Well-Being of Nations: National Accounts of Time Use and Well-Being edited by Alan B. Krueger, 155 - 226, NBER and University of Chicago Press.

Blau, F.D. and Kahn, L.M., 2017. The Gender Wage Gap: Extent, Trends, and Explanations. Journal of Economic Literature 55, 789–865.

Blau, F.D., Kahn, L.M., Liu, A.Y.-H., and Papps, K.L., 2013. The transmission of women's fertility, human capital, and work orientation across immigrant generations. Journal of Population Economics 26, 405–435.

Blau, F.D. and Kahn, L.M., 2006. The U.S. Gender Pay Gap in the 1990S: Slowing Convergence. ILR Review 60, 45–66.

Bloom, N. and Van Reenen, J., 2011. Human resource management and productivity. In Handbook of labor economics, vol. 4, 1697-1767. Elsevier.

Bloom, N. and Van Reenen, J., 2007. Measuring and explaining management practices across firms and countries. The Quarterly Journal of Economics 122(4), 1351–1408.

Blossfeld, H. P., 2009. Educational assortative marriage in comparative perspective. Annual Review of Sociology 35, 513–530.

Blundell, R., Gosling, A., Ichimura, H., and Meghir, C., 2007. Changes in the Distribution of Male and Female Wages Accounting for Employment Composition Using Bounds. Econometrica 75, 323-363.

Boelmann, B., Raute, A., and Schönberg, U., 2020. Wind of Change? Cultural Determinants of Maternal Labor Supply (Working Paper No. 914). Queen Mary University of London, School of Economics and Finance.

Bond, T.N. and Lang, K., 2019. The Sad Truth about Happiness Scales. Journal of Political Economy 127, 1629–1640.

Booth, A.L. and Van Ours, J.C., 2013. Part-time jobs: what women want? Journal of Population Economics 26, 263–283.

Booth, A.L. and Van Ours, J.C., 2009. Hours of Work and Gender Identity: Does Part-time Work Make the Family Happier? Economica 76, 176–196.

Booth, A.L. and Van Ours, J.C., 2008. Job Satisfaction and Family Happiness: The Part-Time Work Puzzle. The Economic Journal 118, F77–F99.

Borusyak, K. and Jaravel, X., 2016. Revisiting Event Study Designs. SSRN Journal.

Boserup, E., 1970. Woman's role in economic development. Allen and Unwin, London.

Boushey, H., 2008. "Opting out?" The effect of children on women's employment in the United States. Feminist Economics 14(1), 1-36.

Bredemeier, C., Gravert, J., and Juessen, F., 2021. Estimating Labor-Supply Elasticities with Joint Borrowing Constraints of Couples. IZA Discussion Paper No. 10267.

Briel, S., Osikominu, A., Pfeifer, G., Reutter, M., and Satlukal, S., 2021. Gender differences in wage expectations: the role of biased beliefs. Empirical Economics.

Bruns, B., 2019. Changes in workplace heterogeneity and how they widen the gender wage gap. American Economic Journal: Applied Economics 11(2), 74–113.

Buja, A. and Rolke, W., 2006. Calibration for Simultaneity: (Re)Sampling Methods for Simultaneous Inference With Applications to Function Estimation and Functional Data. Unpublished.

Campa, P. and Serafinelli, M., 2019. Politico-Economic Regimes and Attitudes: Female Workers under State Socialism. The Review of Economics and Statistics 101(2), 233-48.

Carbone, J. and Cahn, N.R., 2014. Marriage markets: how inequality is remaking the American family. Oxford University Press, USA, Oxford.

Card, D., Cardoso, A. R., Heining, J., and Kline, P., 2018. Firms and Labor Market Inequality: Evidence and Some Theory. Journal of Labor Economics, 36(1), S13 - S70.

Card, D., Heining, J., and Kline, P., 2013. Workplace Heterogeneity and the Rise of West German Wage Inequality. The Quarterly Journal of Economics 128(3), 967–1015.

Cavapozzi, D., Francesconi, M., and Nicoletti, C., 2021. The impact of gender role norms on mothers' labor supply. Journal of Economic Behavior & Organization 186 113–134.

Cerulli, G. and Ventura, M., 2019. Estimation of pre- and post-treatment average treatment effects with binary time-varying treatment using Stata. The Stata Journal 19, 551–565.

Cha, Y. and Weeden, K., 2014. Overwork and the Slow Convergence in the Gender Gap in Wages. American Sociological Review, 79. 457-484.

Chatterji, M., Mumford, K., and Smith P., 2011. The public-private sector gender wage differential in Britain: evidence from matched employee-workplace data. Applied Economics 43(26), 3819-3833.

Chen, L., Oparina, E., Powdthavee, N. and Srisuma, S., 2019. Have Econometric Analyses of Happiness Data Been Futile? A Simple Truth About Happiness Scales, IZA Discussion Paper No. 12152.

Cheng, T. C., Powdthavee, N., and Oswald, A. J., 2017. Longitudinal Evidence for a Midlife Nadir in Human Well-being: Results from Four Data Sets. The Economic Journal 127(599), 126-142.

Cherchye, L., De Rock, B., and Vermeulen, F., 2012. Married with Children: A Collective Labor Supply Model with Detailed Time Use and Intrahousehold Expenditure Information. American Economic Review 102, 3377-3405.

Cherlin, A. J., Chase-Lansdale, P. L., and McRae, C., 1998. Effects of Parental Divorce on Mental Health Throughout the Life Course. American Sociological Review 63(2), 239–249.

Chiappori, P., Fortin, B., and Lacroix, G., 2002. Marriage market, divorce legislation, and household labor supply. Journal of Political Economy 110, 37–72.

Chiappori, P.A., Costa Dias, M., and Meghir, C., 2020. Changes in assortative matching: theory and evidence for the US. SSRN Journal.

Chiappori, P.A., Dias, M.C., and Meghir, C., 2018. The marriage market, labor supply, and education choice. Journal of Political Economy 126, S26–S72.

Chiappori, P.A., Salanié, B., and Weiss, Y., 2017. Partner choice, investment in children, and the marital college premium. American Economic Review 107, 2109–2167.

Choo, E. and Siow, A., 2006. Who marries whom and why. Journal of Political Economy 114, 175–201.

Chung, H., 2020. Gender, flexibility stigma and the perceived negative consequences of flexible working in the UK. Social Indicators Research 151(2), 521–545.

Chung, H. and Van der Horst, M., 2018. Women's employment patterns after childbirth and the perceived access to and use of flexitime and teleworking. Human Relations 71(1), 47–72.

Chung, H. and van der Lippe, T., 2020. Flexible working, work–life balance, and gender equality: Introduction. Social Indicators Research 151(2), 365–381.

Ciminelli, G., Schwellnus, C., and Stadler, B., 2021. Sticky floors or glass ceilings? The role of human capital, working time flexibility and discrimination in the gender wage gap. OECD Economics Department Working Papers No. 1668.

Ciscato, E., 2019. The Changing Wage Distribution and the Decline of Marriage. Working Paper.

Ciscato, E. and Weber, S., 2020. The role of evolving marital preferences in growing income inequality. Journal of Population Economics 33, 307–347.

Clark, S. C., 2000. Work/Family Border Theory: A New Theory of Work/Family Balance. Human Relations 53(6), 747–770.

Clawson, D. and Gerstel, N. R., 2014. Unequal time: Gender, class, and family in employment schedules. Russell Sage Foundation.

Compton, J. and Pollak, R., 2007. Why Are Power Couples Increasingly Concentrated in Large Metropolitan Areas? Journal of Labor Economics 25(3), 475-512.

Cooke, L.P., 2006. "Doing" Gender in Context: Household Bargaining and Risk of Divorce in Germany and the United States. American Journal of Sociology 112, 442–472.

Corak, M., 2001. Death and Divorce: The Long-Term Consequences of Parental Loss on Adolescents. Journal of Labor Economics 19(3), 682–715.

Cornelissen, T., Dustmann, C., and Schönberg, U., 2017. Peer effects in the workplace. American Economic Review 107, 425–456.

Cortés, P. and Pan, J., 2020. Children and the Remaining Gender Gaps in the Labor Market (No. w27980). National Bureau of Economic Research, Cambridge, MA.

Cortés, P. and Pan, J., 2018. Occupation and gender. The Oxford Handbook of Women and the Economy, 425-452.

Cosaert, S., Theloudis, A., and Verheyden, B., 2020. Togetherness in the Household. SSRN Journal.

Costa, D. L., and Kahn, M. E., 2000. Power couples: Changes in the locational choice of the college educated, 1940–1990. Quarterly Journal of Economics 115, 1287–1315.

Couprie, H., 2007. Time allocation within the Family: Welfare implications of life in a couple. The Economic Journal 117, 287-305.

Damaske, S., Smyth, J.M., and Zawadzki, M. J., 2014. Has work replaced home as a haven? Re-examining Arlie Hochschild's Time Bind proposition with objective stress data. Soc Sci Med, 115, 130-138.

Deci, E. L., and Ryan, R. M., 1987. The support of autonomy and the control of behavior. Journal of Personality and Social Psychology, 53(6), 1024–1037.

Deloitte, 2018. Global Human Capital Trends, The rise of the social enterprise. UK.

Diener, E., Inglehart, R., and Tay, L., 2013. Theory and validity of Life Satisfaction Scales. Social Indicators Research 112(3), 497–527.

Doumbia, M. and Goussé, M., 2021. Gender identity and relative income within households: Evidence from Canada. Canadian Journal of Economics/Revue canadienne d'économique 54, 1667-1683.

Dryer, M.S. and Haspelmath, M., 2013. The World Atlas of Language Structures Online. Leipzig: Max Planck Institute for Evolutionary Anthropology.

Dupuy, A. and Galichon, A., 2014. Personality traits and the marriage market. Journal of Political Economy 122, 1271–1319.

Eaton, S.C., 2003. If you can use them: Flexibility policies, organizational commitment, and perceived performance. Industrial Relations 42(2), 145–167.

Ehmke, E. and Lindner, F., 2015. Labour market measures in Germany 2008–13: The crisis and beyond. International Labour Office Research.

Falk, A. and Ichino, A., 2006. Clean evidence on peer effects. Journal of Labor Economics 24, 39–57.

Fernández, R., 2013. Cultural Change as Learning: The Evolution of Female Labor Force Participation over a Century. American Economic Review 103, 472–500.

Fernández, R. and Wong, J.C., 2014. Divorce Risk, Wages and Working Wives: A Quantitative Life-Cycle Analysis of Female Labour Force Participation. The Economic Journal 124, 319–358.

Fernández, R. and Friedrich, C., 2011. Gender Sorting at the Application Interface: Gender Sorting at the Application Interface. Industrial Relations: A Journal of Economy and Society 50, 591–609.

Fernández, R., Fogli, A., and Olivetti, C., 2004. Mothers and Sons: Preference Formation and Female Labor Force Dynamics. The Quarterly Journal of Economics 119, 1249–1299.

Ferrer-i-Carbonell, A. and Frijters, P., 2004. How Important is Methodology for the Estimates of the Determinants of Happiness? The Economic Journal 114, 641–659.

Flèche, S., Lepinteur, A., and Powdthavee, N., 2020. Gender norms, fairness and relative working hours within households. Labour Economics 65, 101866.

Fortin, N.M., 2005. Gender Role Attitudes and the Labour-market Outcomes of Women across OECD Countries. Oxford Review of Economic Policy 21, 416–438.

Fuller, S. and Hirsh, C.E., 2019. “Family-Friendly” Jobs and Motherhood Pay Penalties: The Impact of Flexible Work Arrangements Across the Educational Spectrum. Work and Occupations, 46(1), 3–44.

Furtado, D. and Theodoropoulos, N., 2011. Interethnic marriage: a choice between ethnic and educational similarities. Journal of Population Economics 24, 1257–1279.

Galenianos, M., 2014. Hiring through referrals. Journal of Economic Theory 152, 304–323.

Gavoille, N. and Hazans, M., 2022. Personality traits, remote work and productivity. SSRN Electronic Journal.

Gayle, G.L. and Shephard, A., 2019. Optimal Taxation, Marriage, Home Production, and Family Labor Supply. Econometrica 87, 291-326.

Galor, O., Özak, Ö., and Sarid, A., 2020. Linguistic Traits and Human Capital Formation. AEA Papers and Proceedings 110, 309–313.

Gebers, M., 1998. Exploratory Multivariable Analyses of California Driver Record Accident Rates. Transportation Research Record: Journal of the Transportation Research Board, 1635, 72–80.

Giménez, J. I. and Molina Chueca, J. A., and Sevilla, A., 2021. Temporal flexibility, breaks at work, and the motherhood wage gap. SSRN Electronic Journal.

Giuliano, P., 2020. Gender and culture. Oxford Review of Economic Policy 36, 944–961.

Giuliano, P., 2015. The Role of Women in Society: from Preindustrial to Modern Times. CESifo Economic Studies 61, 33–52.

Goldin, C., Kerr, S. P., and Olivetti, C., 2022. When the Kids Grow Up: Women’s Employment and Earnings Across the Family Cycle. NBER Working Paper No. w30323.

Goldin, C., 2021. Career and family: Women’s century-long journey toward equity. Princeton University Press.

Goldin, C., Kerr, S. P., Olivetti, C., and Barth, E., 2017. The expanding gender earnings gap: Evidence from the lead-2000 census. American Economic Review, 107(5), 110–114.

Goldin, C., 2014. A Grand Gender Convergence: Its Last Chapter. American Economic Review 104, 1091–1119.

Goldin, C. and Katz, L. F., 2011. The cost of workplace flexibility for high-powered professionals. The ANNALS of the American Academy of Political and Social Science, 638(1), 45–67.

Goldin, C., 2006. The Quiet Revolution That Transformed Women's Employment, Education, and Family. American Economic Review 96, 1–21.

Goldin, C. and Katz, L.F., 2002. The Power of the Pill: Oral Contraceptives and Women's Career and Marriage Decisions. Journal of Political Economy 110, 730–770.

Goldman, M. and Kaplan, D.M., 2018. Comparing distributions by multiple testing across quantiles or CDF values. Journal of Econometrics 206, 143–166.

Gompers, P. A., Ishii, J., and Metrick, A., 2010. Extreme governance: An analysis of dual-class firms in the united states. Review of Financial Studies, 23(3), 1051–1088.

González, L., Rodríguez-Planas, N., 2020. Gender norms and intimate partner violence. Journal of Economic Behavior & Organization 178, 223–248.

Grosjean, P. and Khattar, R., 2019. It's Raining Men! Hallelujah? The Long-Run Consequences of Male-Biased Sex Ratios. The Review of Economic Studies 86, 723–754.

Guiso, L., Monte, F., Sapienza, P., and Zingales, L., 2008. Culture, Gender, and Math. Science 320, 1164–1165.

Han, S. and Qian, Y., 2021. Concentration and dispersion: school-to-work linkages and their impact on occupational assortative mating. The Social Science Journal 1–18.

Hennecke, J. and Hetschko, C., 2021. Do You Really Want to Share Everything? The Wellbeing of Work-Linked Couples. IZA Discussion Papers No. 14239.

Herbst, D. and Mas, A., 2015. Peer effects on worker output in the laboratory generalize to the field. Science 350, 545–549.

Herbst-Debby, A., Kaplan, A., Endeweld, M., and Achouche, N., 2023. Adolescent employment, family income and parental divorce. Research in Social Stratification and Mobility 84, p.100772.

Heywood, J. S., Siebert, W. S., and Wei, X., 2006. The implicit wage costs of family friendly work practices. Oxford Economic Papers 59(2), 275–300.

Hilbrecht, M., Shaw, S.M., Johnson, L. C., and Andrey, J., 2013. Remixing work, family and leisure: Teleworkers' experiences of everyday life: Remixing work, family and leisure. New Technology, Work and Employment 28(2), 130–144.

Horváth, G., 2014. Occupational mismatch and social networks. Journal of Economic Behavior & Organization 106, 442–468.

Jackson, C.K. and Bruegmann, E., 2009. Teaching students and teaching each other: the importance of peer learning for teachers. American Economic Journal: Applied Economics 1, 85–108.

Jaffe, S. and Weber, S., 2019. The effect of meeting rates on matching outcomes. Economic Theory 67, 363–378.

Johnson N.B. and Provan K.G., 1996. The relationship between work/family benefits and earnings: A test of competing predictions. The Journal of Socio-Economics 24(4), 571–584.

Johnston, D.W., Schurer, S., and Shields, M.A., 2014. Maternal gender role attitudes, human capital investment, and labour supply of sons and daughters. Oxford Economic Papers 66, 631–659.

Juhn, C. and McCue, K., 2017. Specialization Then and Now: Marriage, Children, and the Gender Earnings Gap across Cohorts. Journal of Economic Perspectives 31, 183–204.

Kandel, E. and Lazear, E.P., 1992. Peer pressure and partnerships. Journal of Political Economy 100, 801–817.

Kotey, B. and Koomson, I., 2021. Firm size differences in financial returns from flexible work arrangements (FWAs). Small Business Economics 56(1), 65-81.

Kotey, B. and Sharma, B., 2019. Pathways from flexible work arrangements to financial performance. Personnel Review, 48.

Kröll, C. and Nüesch, S., 2019. The effects of flexible work practices on employee attitudes: Evidence from a large-scale panel study in Germany. The International Journal of Human Resource Management 30(9), 1505–1525.

Kranton, R.E. and Sanders, S.G., 2017. Groupy versus Non-Groupy Social Preferences: Personality, Region, and Political Party. American Economic Review 107, 65–69.

Lindquist, M.J., Sauermann, J., and Zenou, Y., 2015. Network Effects on Worker Productivity. CEPR Discussion Paper No. DP10928.

Lise, J. and Yamada, K., 2014. Household Sharing and Commitment: Evidence from Panel Data on Individual Expenditures and Time Use. IFS Working Paper W14/05.

Lott, Y. and Chung, H., 2016. Gender Discrepancies in the Outcomes of Schedule Control on Overtime Hours and Income in Germany. European Sociological Review.

Luke, N. and Munshi, K., 2006. New Roles for Marriage in Urban Africa: Kinship Networks and the Labor Market in Kenya. Review of Economics and Statistics 88, 264–282.

Lund, S. et al., 2021. The future of work after COVID-19. McKinsey Global Institute.

Lundberg, S. and Stearns, J., 2019. Women in economics: Stalled progress. Journal of Economic Perspectives 33(1), 3–22.

Lyttelton, T., Zang, E., and Musick, K., 2022. Parents' work arrangements and gendered time use during the COVID -19 pandemic. Journal of Marriage and Family, 12897.

Mansour, H. and McKinnish, T., 2018. Same-occupation spouses: preferences or search costs? Journal of Population Economics 31, 1005–1033.

Mariotti, F., Mumford, K., and Pena-Boquete, Y., 2015. Power-Couples and the Colocation Hypothesis Revisited. IZA Discussion Paper No. 9059.

Mas, A. and Moretti, E., 2009. Peers at work. American Economic Review 99, 112–145.

Mascherini, M., Bisello, M., and Riobóo Lestón, I., 2016. The gender employment gap: Challenges and solutions. Publications Office of the European Union.

Munsch, C. L., 2016. Flexible work, flexible penalties: The effect of gender, childcare, and type of request on the flexibility bias. Social Forces 94(4), 1567–1591.

Munsch, C., Ridgeway, C., and Williams, J., 2014. Pluralistic Ignorance and the Flexibility Bias: Understanding and Mitigating Flextime and Flexplace Bias at Work. Work and Occupation 4, 40-62.

Neumann-Böhme, S., Attema, A.E., and Brouwer, W.B.F., Exel, J.N.J.A., 2021. Life satisfaction: The role of domain-specific reference points. Health Economics 30, 2766–2779.

Nielsen, H.S. and Svarer, M., 2009. Educational homogamy: how much is opportunities? Journal of Human Resources 44, 1066–1086.

Nollenberger, N., Rodríguez-Planas, N., and Sevilla, A., 2016. The Math Gender Gap: The Role of Culture. American Economic Review 106, 257–261.

OECD, 2021. Man Enough? Measuring Masculine Norms to Promote Women's Empowerment. Social Institutions and Gender Index, OECD Publishing, Paris.

OECD, 2020. Oecd employment outlook 2020: Worker security and the covid-19 crisis. OECD.

Olivetti, C., Patacchini, E., and Zenou, Y., 2020. Mothers, Peers, and Gender-Role Identity. Journal of the European Economic Association 18, 266–301.

Olivetti, C. and Petrongolo, B., 2017. The Economic Consequences of Family Policies: Lessons from a Century of Legislation in High-Income Countries. Journal of Economic Perspectives 31, 205–230.

Perugini, C. and Vladisavljević, M., 2019. Gender inequality and the gender-job satisfaction paradox in Europe. Labour Economics 60, 129–147.

Pestel, N., 2017. Marital sorting, inequality and the role of female labour supply: evidence from east and west Germany. Economica 84, 104–127.

Prentice, D.A. and Carranza, E., 2002. What Women and Men Should Be, Shouldn't be, are Allowed to be, and don't Have to Be: The Contents of Prescriptive Gender Stereotypes. Psychology of Women Quarterly 26, 269–281.

Reuben, E., Wiswall, M., and Zafar, B., 2017. Preferences and Biases in Educational Choices and Labour Market Expectations: Shrinking the Black Box of Gender. The Economic Journal 127, 2153–2186.

Riedl, M. and Geishecker, I., 2014. Keep it simple: estimation strategies for ordered response models with fixed effects. Journal of Applied Statistics 41(11), 2358-2374.

Rodgers, B., 1994. Pathways Between Parental Divorce and Adult Depression. Journal of Child Psychology and Psychiatry 35, 1289-1308.

Rosenfeld, R. A., Trappe, H., and Gornick, J. C., 2004. Gender and Work in Germany: Before and After Reunification. Annual Review of Sociology 30(1), 103–24.

Rousille, N., 2021. The Central Role of The Ask Gap in Gender Pay Inequality. Job Market Paper.

Schröder, C. and Yitzhaki, S., 2017. Revisiting the evidence for cardinal treatment of ordinal variables. European Economic Review 92, 337–358.

Shayo, M., 2020. Social Identity and Economic Policy. Annual Review of Economics 12, 355–389.

Singley, S.G. and Hynes, K., 2005. Transitions to parenthood: Work-family policies, gender, and the couple context. Gender & Society 19(3), 376–397.

Stevenson, B. and Wolfers, J., 2009. The Paradox of Declining Female Happiness. American Economic Journal: Economic Policy 1, 190–225.

Stevenson, B. and Wolfers, J., 2006. Bargaining in the Shadow of the Law: Divorce Laws and Family Distress. The Quarterly Journal of Economics 121, 267–288.

Stone, P. and Hernandez, L.A., 2013. The all-or-nothing workplace: Flexibility stigma and “opting out” among professional-managerial women: the all-or-nothing workplace. Journal of Social Issues 69(2), 235–256.

Svarer, M., 2007. Working late: do workplace sex ratios affect partnership formation and dissolution? Journal of Human Resources XLII, 582–595.

Sullivan, C. and Lewis, S., 2001. Home-based telework, gender, and the synchronization of work and family: Perspectives of teleworkers and their co-residents. Gender, Work & Organization 8(2), 123–145.

Theloudis, A., 2018. Wages and Family Time Allocation. SSRN Journal.

Thevenon, O., Adema, W., Bouzol, B., and Clarke, C., 2016. Be Flexible! Background brief on how workplace flexibility can help European employees to balance work and family.

Torr, B.M., 2011. The changing relationship between education and marriage in the United States, 1940–2000. Journal of Family History 36, 483–503.

van der Lippe, T. and Lippényi, Z., 2020. Beyond formal access: Organizational context, working from home, and work–family conflict of men and women in European workplaces. Social Indicators Research 151(2), 383–402.

Verbakel, E. and de Graaf, P.M., 2009. Partner effects on labour market participation and job level: opposing mechanisms. Work, Employment and Society 23, 635–654.

Wang, S.Y., 2013. Marriage Networks, Nepotism, and Labor Market Outcomes in China. American Economic Journal: Applied Economics 5, 91–112.

West, C. and Zimmerman, D.H., 2009. Accounting for Doing Gender. Gender & Society 23(1), 112–122.

West, C. and Zimmerman, D.H., 1987. Doing gender. Gender & Society 1(2), 125–151.

Xiang, N., Whitehouse, G., Tomaszewski, W., and Martin, B., 2022. The benefits and penalties of formal and informal flexible working-time arrangements: Evidence from a cohort study of Australian mothers. The International Journal of Human Resource Management 33(14), 2939–2960.

Yonzan, N., 2020. Assortative Mating and Labor Income Inequality: Evidence from Fifty Years of Coupling in the U.S. (preprint). SocArXiv.

Zhang, Y. and Breunig, R.V., 2021. Gender Norms and Domestic Abuse: Evidence from Australia. IZA Discussion Paper No. 14225.

Zinovyeva, N. and Tverdostup, M., 2018. Gender identity, co-working spouses and relative income within households. American Economic Journal: Applied Economics 13(4), 258–284.