

Breadwinning, Main-earning and Subjective Wellbeing

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Abstract

Previous literature has found a negative association between the woman's contribution to the couples' total incomes and subjective wellbeing, for both women and men. Despite female-breadwinner couples tend to be poorer than other couple types, the mediating effect of absolute incomes on subjective wellbeing has not been tested yet. We aim to fill this gap using longitudinal data from the Understanding Society for the period 2009-2016 for the UK. We also study wellbeing effects of couples' earning arrangements and whether and how subjective wellbeing of women and men in dual-earner couples changes after transitioning to a single-earner couple, depending on the gender of the single earner. Our findings suggest that gender differences in subjective wellbeing by couples' relative incomes disappear when couple-fixed effects are accounted for. Women in male breadwinner (MBW) and female breadwinner (FBW) households are less satisfied with their lives compared to dual earners (DE). We find that income mediates the relationship between breadwinning and wellbeing: while men are generally less satisfied with their lives in FBW households compared to men in other earning arrangements, men in FBW at the top of the couples' income distribution are as satisfied with their lives as men in other couples. Our results shows that woman's wellbeing is negatively affected by becoming a single-earner couple regardless of who becomes non-employed (both direct and spillover effect). For men, we do not find any spillover effect of their partner's non-employment on wellbeing compared to remaining in a DE couple. Our findings suggest that men are significantly more satisfied when they become sole-earners (MBW) compared to forming a FBW household by becoming non-employed.

I. Introduction

Employment is an important determinant of wellbeing for working-age men, however results are mixed for women. On this front, feminist scholars put forward the idea of the “feminine mystique” (Friedan, 1963), according to which housewifery was associated with reduced wellbeing for women. A wealth of studies aimed at testing such hypothesis, with differing results. Studies based on recent data confute the “feminine mystique”. For example, Treas et al. (2011) and Okulicz-Kozaryn and da Rocha Valente (2018) find that housewives and part-timers are happier than full-time working women. Similarly, Booth and Van Ours (2009) find that men reporting highest levels of satisfaction work full-time, and women with highest satisfaction work part-time with a full-time employed partner. Working women's reduced life satisfaction has been interpreted in light

of the fact that women remain responsible for domestic work and family caring. Thus, women are burdened with hours of housework and childcare, which add up to their working hours, limiting their leisure time and creating difficulties to maintain the work-life balance (Wright 1978; Hochschild and Machung, 2012, Mencarini and Sironi, 2012).

Today the “feminine mystique” does not hold, and it is perhaps not surprising given that this idea was conceived at a time when housewifery was normative and opportunities for women in the labour market were limited. As dual earning becomes widespread, socially accepted and is promoted by public policies (Oppenheimer, 1994; Blossfeld and Drobnic, 2001; Lewis 2001; Esping-Andersen, 2009), a more recent strand of literature has focused on differences in wellbeing on the basis of partners’ relative economic resources, in addition to their relative employment (Clark et al 2001; Winkelmann, 2014; Luhmann et al, 2014).

Living in a couple serves as an insurance mechanism for negative labour supply shocks. The cost of such shocks are not only pecuniary with income losses and restrained consumption opportunities, but also non-pecuniary such as mental and physical health problems, loss of confidence, and lower wellbeing. The non-pecuniary costs are not only borne by the individual who become non-employed, but also by their partners, though indirectly. This direct and indirect (spillover) effect would differ by gender, particularly through gender norms and social values attached with division of labour.

To unpack the relationship between earning arrangements and subjective wellbeing, we study couple members’ subjective wellbeing within and across earning arrangements by gender in the United Kingdom.¹ Using the Understanding Society 2009-2016, we define earning arrangements based on couple’s labour market outcomes and woman’s relative income. As we are interested in the perceptions about wellbeing surrounding the individuals in couples, we use overall life satisfaction as a measure of subjective wellbeing rather than mental health. Furthermore, we study whether changes in the breadwinning composition has a direct and spillover effect on couple members’ wellbeing. In doing so, we address the within-couple externalities of changing earning arrangements from dual earner to single earners. To the best of our knowledge, our study is the first to examine the impact of earning arrangements on subjective wellbeing using data from the UK.

¹ In this paper, we use earning arrangements and breadwinning interchangeably.

Our first finding complements previous studies on wellbeing and employment by showing that there is a strong link between earning arrangements and life-satisfaction. Our second finding is that there are gender differences within and across earning arrangements, particularly among single-earner couples: male-breadwinners (MBW) and female-breadwinners (FBW). However, these gender differences within earning arrangements disappear once we control for permanent unobserved factors, which are likely to be correlated with couple formation (assortative mating), labour market outcomes, i.e. earnings arrangements and subjective wellbeing. We find that income is an important determinant for overall life satisfaction for men, but does not have any significant role in women's life satisfaction. Yet, women in FBW couples at the top quintile of couple income distribution are the most satisfied compared to women in FBW at the bottom quintile.

Our third find is that becoming single-earner has a negative impact on women's life satisfaction, but not men. However, when we distinguish between whose non-employment leads to sole-breadwinner (MBW or FBW), we find that men are significantly less satisfied with their lives when they become non-employed (FBW) than when their partner (woman) becomes non-employed (MBW). Thus, for men, while the spillover effect of non-employment is positive, the direct non-employment has a negative influence on their life satisfaction. Compared to women in dual-earner couples, a woman who becomes non-employed (MBW) are less satisfied with their lives, the direct non-employment effect is small and weak, however we find a strong negative spillover effect. In other words, women are on average one-third points less satisfied with their lives overall compared to women in DE couples when their partner become non-employed. Being the sole-earner in the couple adds additional pressure on women and lower their wellbeing.

The rest of the paper is organised as follows: Section II provides a brief literature review and discusses our hypotheses. Section III and IV describe our data and present our key variables. We discuss our methodology in Section V, which is followed by our results in Section VI.

II. Background and Hypotheses

Existing studies find that the higher the woman's contribution to the couple's total income, the lower the wellbeing for both the woman and the man. Men who are out-earned by their wives are more likely to have poorer overall health in later life (Springer et al. 2017). They are also more likely to suffer from erectile dysfunction, while breadwinner wives are more likely to suffer from insomnia and anxiety (Pierce et al. 2012). Hajdu and Hajdu (2018) found a negative and linear association between both women's and men's life satisfaction and the woman's share of the couple's total income. Rogers and DeBoer (2001) instead found that an increase in the woman's

share of the couple's incomes would increase the woman's and reduce the man's psychological well-being. Partners' relative incomes were shown to also influence marital quality, which in turn can affect life satisfaction. Marital quality was found to be lower among women who out-earn their husbands compared to other women (Bertrand et al. 2015) and the highest marital quality was found among women in traditional couples with a breadwinner husband (Wilcox and Nock 2006).

The negative influences on wellbeing of female breadwinning and main earning might be due to the couples' social class. Previous literature has demonstrated that socioeconomic disadvantage (Pickett et al. 2006), unemployment (Flint et al. 2013), and debt (Gathergood 2012) are all associated with poor mental health. Ferree (1984) finds that working-class housewives are less satisfied with their lives than other women. Because couples with a single earner, and especially female-breadwinner couples, tend to be poorer than other couple types (Kowalewska and Vitali 2019), we expect the association between relative incomes and wellbeing to weaken once absolute incomes and other economic resources are controlled for.

The wellbeing penalty associated with female breadwinning and main earning might be due to the social norms linked to the role reversal in breadwinning and as such, they might be moderated by the partners' gender ideology and their identity (Akerlof and Kranton, 2000, Meisenbach, 2010). Kramer and Pak (2018) indeed find that gender ideology moderates the association between partners' relative incomes and depression symptoms among mothers: as the mothers' incomes increase, the depression symptoms increase less if she holds a gender-egalitarian ideology compared to when she holds a traditional gender ideology. The same study did not find a moderating effect of gender ideology when studying the effects of a reduction in fathers' incomes on their depression symptoms. Other studies instead found gender ideology to matter for men too. For instance, Hajdu and Hajdu (2018) find that gender ideology moderates the association between partners' relative incomes and subjective well-being for both men and women. Men who have a conservative masculine ideology tend to suffer from depression symptoms and have a generally low wellbeing when they are out-earned by their partner, while no significant effects were found for men with gender-egalitarian attitudes (Springer 2010; Coughlin and Wade 2012). Gender equality also positively influences marital quality (Wilcox and Nock 2006), which is positively linked to subjective wellbeing. Following this literature, we expect the association between relative incomes and wellbeing to be stronger for those couples with low gender egalitarianism.

We expect the association between relative incomes and women's and men's wellbeing to weaken after controlling for the partners' gender-egalitarian attitudes.

Regarding the comparison of life satisfaction across genders, previous literature provides mixed results (for a recent review, see Batz and Tay, 2018). In an influential paper, Stevenson and Wolfers (2009) show that, whereby women have traditionally scored higher on happiness compared to men, their happiness level has been declining over time in many industrialized countries, both in absolute terms and relative to men's. For Britain, however, Blanchflower and Oswald (2004) find that wellbeing has remained fairly stable over time and that men tend to be slightly less satisfied with life than women. Also, Della Giusta et al. (2011) find no gender differences in life satisfaction of British women and men. They do find, however, differences in the correlates of life satisfaction across genders. In particular, as found in other studies mentioned above, they find that partner's employment is significantly associated with women's life satisfaction, while partner's employment is not significant for men.

In understanding whether partners' wellbeing differ across employment statuses and earning arrangements, one also needs to reflect on whether the current employment/earning arrangements are the outcome of personal choices or whether they are the result of structural barriers e.g. a couple is single earner because one partner is unemployed. To this extent, it is important to understand whether wellbeing changes upon a change in one's own and partner's employment status. Previous literature finds that the partner's unemployment has a negative effect on one's mental health (spillover effect) for both men and women, but the effect is stronger when men lose their jobs (Marcus, 2013; Luhmann et al., 2014; Knabe et al., 2016; Bryce, 2018). Conceptually, our paper is similar to Ayhan and Niklova (2019) as we also investigate spillover effects of a change in labour market outcomes on life satisfaction. The authors find that both men and women in German couples are substantially (negatively) affected by other partner's unemployment as they do from their own job loss. While their data allow for causal identification using exogenous variation from plant closure, which is a limitation in our study. Our identification relies on changes in earning arrangements by controlling for permanent (unobserved) couple characteristics. Unlike Ayhan and Niklova (2019), our study highlights the gender gap in importance of breadwinning on life satisfaction. In other words, unlike just focusing on unemployment, we define breadwinning using couple members' employment status and relative incomes. Instead of focusing on direct and indirect effect of unemployment on wellbeing, we assess the shift in bargaining power within the

couple due to a change in breadwinner status as one partner becomes non-employed. We also control for interaction effects to explore explanations of observed spillover behaviour.

III. Data and variables

We use the Understanding Society from 2009 to 2016 (Waves 1-8) with special license for uncapped income information. The Understanding Society is a nationally representative longitudinal household survey in the UK, which follows individuals annually over time once they enter the sample. Besides having a rich collection of demographic, socioeconomic and labour market information on individuals and households, the Understanding Society also enables matching partners to create a panel with couple-wave (or couple-year) as a unit of observation.

We construct a couples' dataset by matching individuals to their partners using personal identifiers within and across waves. Creating this dataset gives us the advantage of working with information self-reported by each respondent and not reported by their partners. This is particularly important in assessing the spillover effects of unemployment on different aspects of wellbeing. Our dataset is keyed on woman's report on couple information. Our sample includes working age couples (23-59 for women and 23-64 for men, i.e. male partners), who are living together in a couple household with or without children. Neither of the partners is self-employed or retired. We only include uninterrupted couples, i.e. couples who are observed consecutively during the sample period.² The resulting dataset is an unbalanced panel with 8,554 couples and 27,402 couple-wave observations.

Breadwinning and main earning

There are two main approaches in defining the earning composition, i.e. the breadwinners. One approach is to *use relative employment*, such as in "one-and-a-half male breadwinner" models. In these models, pure breadwinners (BW) consist of one full-time employed member whereas 1.5 BW are couples where one partner works full-time and the other works part-time. This type of definition is mostly used to define persisting male-breadwinner models (e.g. Lewis et al, 2008; Hook, 2015), and female-breadwinners are recently suggested to be incorporated in these models (Kowalewska and Vitali, 2019). The alternative definition is to use *relative incomes* (Nock, 2001;

² We acknowledge that those couples who survive, i.e. not dissolve, may have different (unobserved) characteristics than those who do. Only 5% of the couples in our sample dissolve, 0.25 of the women are widowed and for 4.3% partner's observation for the following wave is missing. For 57.9% the couple observation ends because it is the last interview held with individual.

Winkler, 2005; Raley et al, 2006), where relative income of a woman in couple is the proportion of her incomes over the couple's total incomes.

In this paper, we combine these two approaches and define a breadwinning spectrum ranging from pure male-breadwinner (MBW) couples to pure female-breadwinner (FBW) couples to capture the bargaining powers within the household. The two ends of the spectrum adopt the relative employment definition, which helps us to distinguish couples where one partner is employed but does not report any income. Between pure BWs, there are dual-earners that we characterise by the woman's relative income in couple c at time t , $\Omega_{c,t}$ as:

$$\Omega_{c,t} = \frac{Y_{c,t}^f}{Y_{c,t}^m + Y_{c,t}^f}, \quad \Omega_{c,t} \in (0,1)$$

where $Y_{c,t}^f$ and $Y_{c,t}^m$ are net monthly labour incomes of women and men, respectively, in couple c and year t . Instead of using 0.5 threshold to define dual earners (Winkler, 2005), we use an approach similar to Raley et al (2006) and define 3 dual-earner categories: The male main earners (MME) are such that $\Omega_{c,t} \in (0,0.4]$ (i.e., the woman earns 40% or less of the total couple's earnings), the equal-earners (EE) are such that $\Omega_{c,t} \in (0.4,0.6)$ (i.e., the woman earns between 40-60%) and the female-main earners (FME), such that $\Omega_{c,t} \in [0.6,1)$ (i.e., the woman earns 60% or more). Furthermore, we include couples where no one works, and we refer them as no-earners (NE).

Subjective well-being

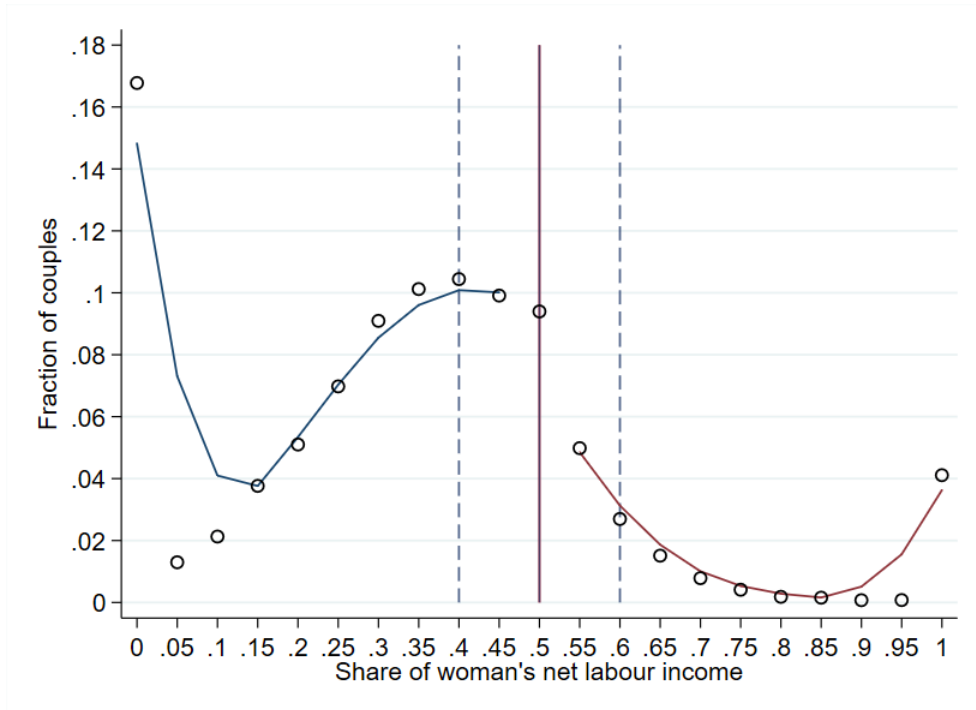
We use each partner's life satisfaction to quantify their subjective wellbeing. In Understanding Society, the following question is asked to measure one's life satisfaction: "Please choose the number which you feel best describes how dissatisfied or satisfied you are with the following aspects of your current situation: Your life overall." Responses are given in a 7-point Likert scale where 1 is "completely dissatisfied" and 7 is "completely satisfied".

IV. Descriptive Statistics

In this section, we provide a description of our sample. The distribution of relative incomes, Ω , is presented in Figure 1. The circles depict the fraction of couples in a 0.05 relative income bin. The red vertical line shows the 50-50 threshold (i.e., equality of incomes between woman and man). As found by Bertrand et al. (2015) and Grow and Van Bavel (2017) on different data for different

countries, we also find a sharp decline/discontinuity in the fraction of couples following the 50% threshold. The dashed vertical lines show our range for EEs. The first and last circle shows the fraction of Male- and Female-Breadwinner couples, in which $\Omega = 0$, respectively.

Figure 1 Distribution of relative income

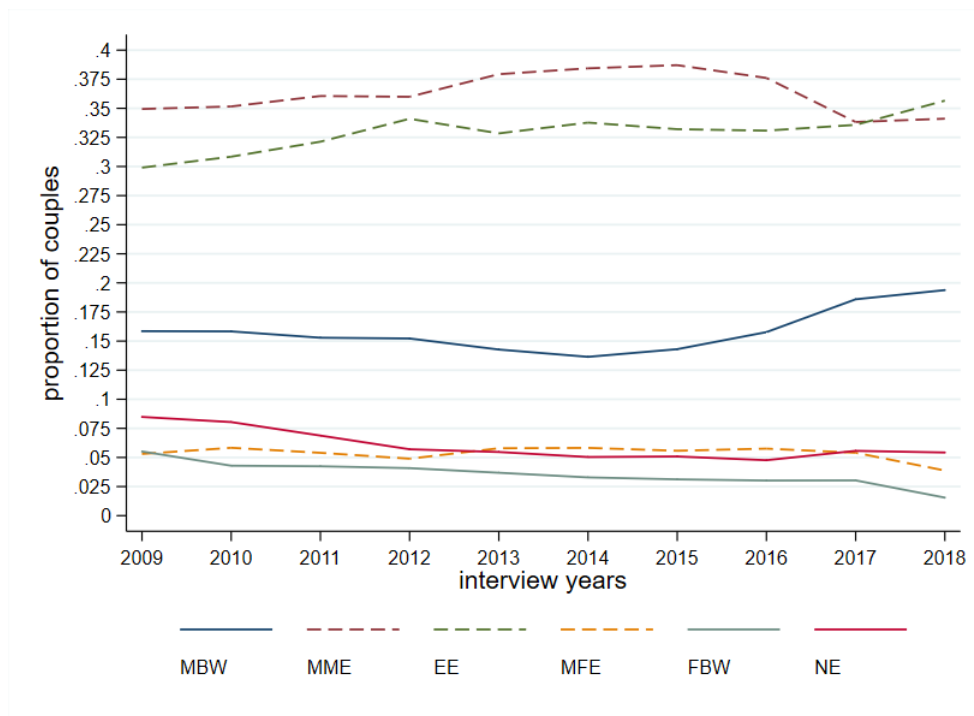


Notes: Authors' calculations from the couples' panel.

Figure 2 reports the yearly composition of the sample in terms of earning arrangements. The figure shows an increase in the proportion of Equal Earners (EE) and of couples with a Man as Main Earners (MME) and a reduction of MBW couples between 2009 until 2014/15. The proportion of FBW and No-Earner (NE) couples decreases over time.

Table 1 reports the transition matrix, i.e. the probability of transitioning to each earning arrangement between two consecutive years. The matrix shows that FBW couples are the most transient couple type, with only 58.5% remaining as FBW in two consecutive waves. FBW couples are more likely to become equal earners and main male-earners as male partners take up a job and start contributing to couple income. In our sample, a couple remains in the FBW status for 1.5 waves, on average, whereas this is 2.3 waves for MME couples, which is the most persistent earning arrangement in our sample, following NEs.

Figure 2 Earning arrangements in the UK, 2009-2018



Notes: Authors' calculations from the couples' panel.

Table 1 Earning arrangements 2009-2018, transition probabilities %

		Earning arrangement at t						N at t-1
		MBW	MME	EE	MFE	FBW	NE	
at t-1	MBW	77.63	14.80	3.51	0.40	0.40	3.25	2,736
	MME	4.51	81.68	11.96	0.69	1.01	0.15	7,125
	EE	2.17	14.31	77.14	4.77	1.48	0.13	6,347
	MFE	1.37	4.20	29.46	60.88	3.71	0.39	1,025
	FBW	3.01	10.94	13.79	9.67	58.48	4.12	631
	NE	10.57	1.22	0.91	0.10	3.56	83.64	984
	N at t	2,720	7,257	6,242	1,049	619	961	18,848

Figure 3 shows average life satisfaction for women and men in each earning arrangement. We can use this figure for comparing life satisfaction of individuals within each gender across different earning arrangements and for comparing life satisfaction across genders within each earning arrangement. In this way, we have a first descriptive answer to research questions 1 and 2,

respectively. The raw differences show that life satisfaction exhibits an inverted U-shape by woman's share of couples' labour incomes. Women and men in dual-earner couples are the happiest. For women, this holds irrespectively of whether the man or the woman earns more or the partners are equal earners; for men, instead, being out-earned by his partner is associated with a reduced life satisfaction compared to equal earning or male main earning. Women and men in jobless couples are, not surprisingly, the most unhappy. Women and men in single-earner couples are in between the two extremes. Here, the gender of the breadwinner appears to matter for life satisfaction, as both women and men in female-breadwinner couples are significantly less satisfied with their life than women and men in male-breadwinner couples. This result is particularly relevant for men.

Looking at the comparison across genders, Della Giusta et al. (2011) found that British women tend to be more satisfied with their lives compared to men. The raw differences presented in Figure 3 show that Della Giusta et al.'s result holds true for all earning arrangements except for MBW couples, where men are more satisfied than women, and in jobless couples, where women and men are equally unhappy. Gender differences are particularly striking in FBW couples, where women are considerably happier than their non-working partners.

Figure 3 Average life satisfaction of men and women by earning arrangements

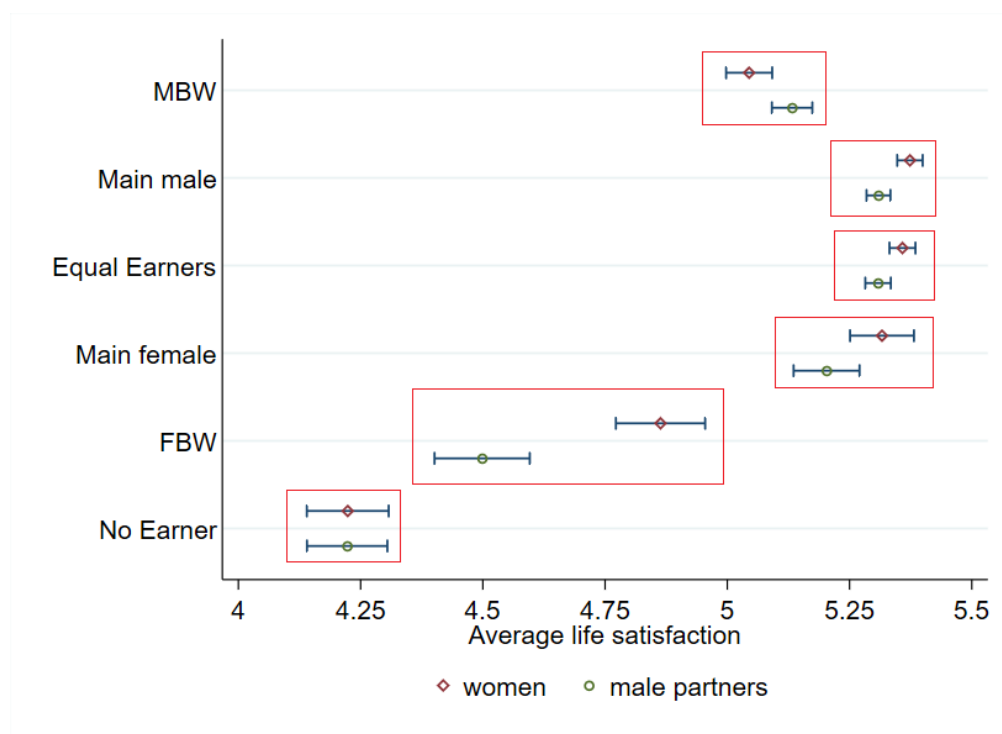
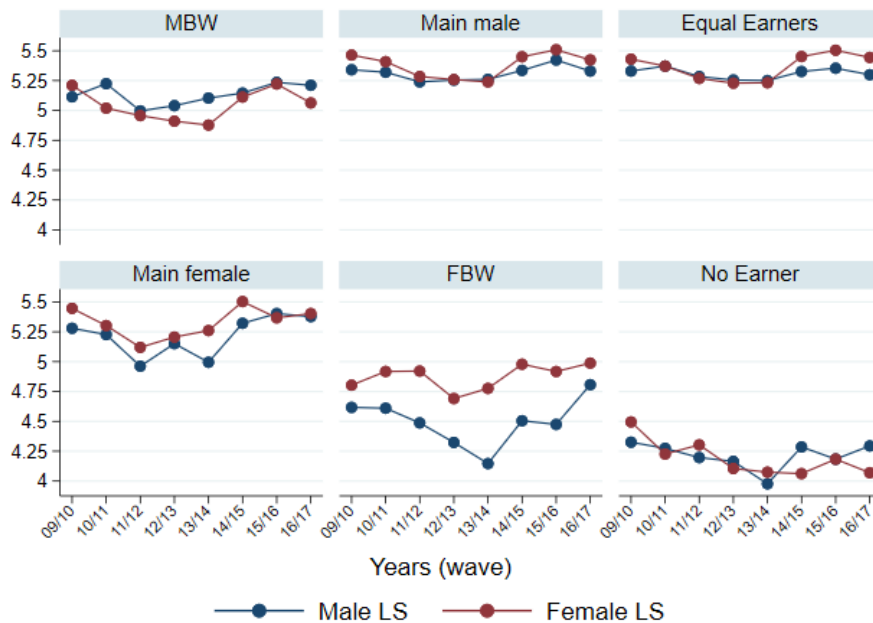


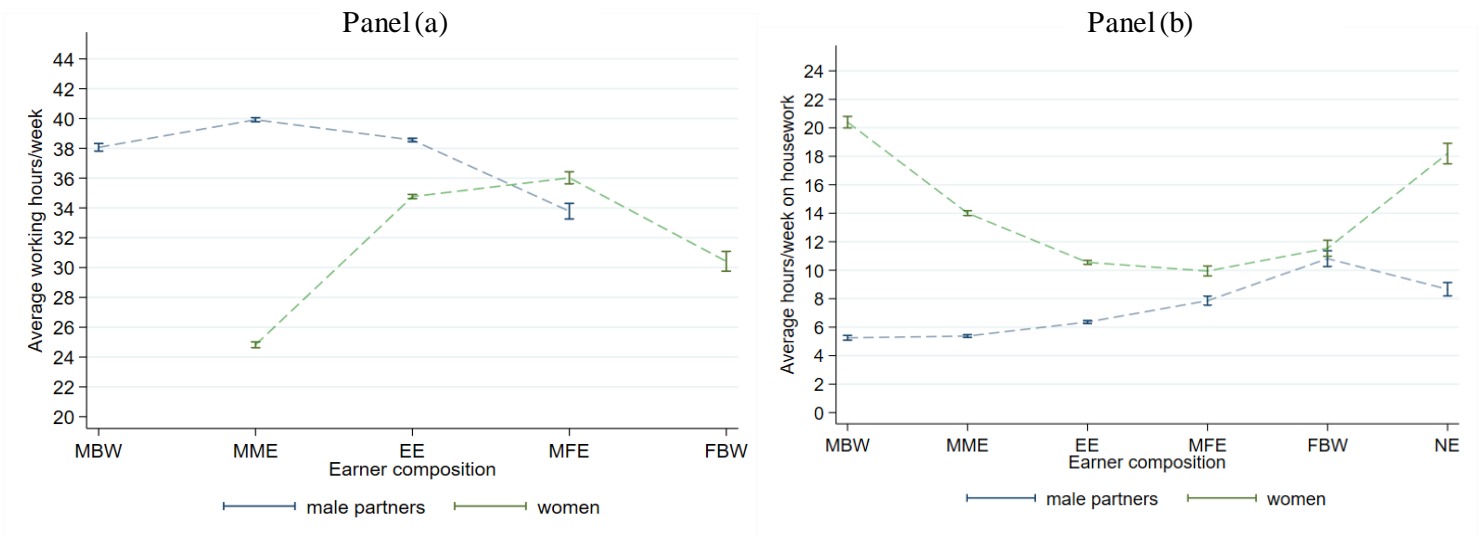
Table 2 presents summary statistics for the sample by earning arrangements. FBW couples appear to be more similar to NE couples than any other couple types. For instance, after NEs, FBWs have the lowest household incomes of the whole sample. Among working couples, i.e. excluding NE, women in FBW has the highest proportion of women who have caring responsibilities. Almost

Figure 4 Average life satisfaction of men and women across waves and couple types



one in three women in FBW care for someone inside or outside their household. It is likely that the care responsibilities include looking after a disabled/ill partner. Indeed, while around 90% of male partners in other working couples are in good health, only two-thirds of the male partners in FBW are in good health. The care activity may contribute in explain the high proportion of women in part-time work in FBW (35%, vs. only 8% for men in MBW couples). Using non-zero job hours, men's usual working hours per week vary little compared to women's. Women in dual-earner couples work significantly less than men with the exception of MFE (see Figure 5 panel (a)). While on average women in MFE couples work 2.22 more hours in a week than their partners, the difference between men and women's working hours is much larger in MME couples with 15.1 hours, suggesting a difference in work-patterns, i.e. full-time vs part-time. More than one-third of the main breadwinner in FBW couples work in part-time employment, compared to 8% of their counterpart (men) in MBW couples. The highest proportion in female-part-time work is in MME couples (58%) and the highest proportion of male-part-time work is observed among MFE couples (20%). The difference between full-time and part-time employment by gender also explains the lower contribution of woman's relative income. Even in equal earner couples, 12% of the women work part-time, while only 3% of men work part-time.

Figure 5 Average working hours (a) and housework (b) per week by earning arrangements



Notes: Working hours for non-employed individuals are set to zero. Excludes individuals who earn income but job hours were reported to be zero. Housework is collected in alternate waves, and missing values are imputed using averages of adjacent waves. Ranges in each point shows 95% confidence intervals.

Table 2 Summary statistics for selected variables, by couples' earning arrangements

	MBW		MME		EE		MFE		FBW		No Earner		OVERALL	
	Mean	St. dev	Mean	St. dev	Mean	St. dev	Mean	St. dev	Mean	St. dev	Mean	St. dev	Mean	St. dev
<i>Woman's characteristics</i>														
Age	37.94	8.05	40.44	8.17	39.33	8.61	40.89	8.24	40.91	8.79	39.07	8.97	39.65	8.43
Low edu: GCSEs and below	0.35	0.48	0.31	0.46	0.18	0.39	0.13	0.34	0.31	0.46	0.48	0.50	0.28	0.45
Med edu: A-levels	0.18	0.39	0.21	0.41	0.18	0.38	0.09	0.28	0.20	0.40	0.11	0.31	0.18	0.39
High edu: First degree and above	0.35	0.48	0.44	0.50	0.63	0.48	0.77	0.42	0.44	0.50	0.14	0.35	0.49	0.50
Part-time work	-	-	0.58	0.49	0.12	0.33	0.09	0.28	0.35	0.48	-	-	0.27	0.44
Good and above health	0.75	0.43	0.90	0.30	0.91	0.29	0.91	0.29	0.83	0.37	0.52	0.50	0.85	0.35
Cares for someone in or out of the hh	0.18	0.39	0.16	0.37	0.14	0.35	0.16	0.36	0.30	0.46	0.41	0.49	0.18	0.38
Hours spent on housework per week*	20.40	11.99	14.01	8.22	10.55	6.43	9.94	6.41	11.54	8.33	18.19	13.29	13.72	9.32
Life satisfaction	5.04	1.55	5.37	1.33	5.36	1.28	5.32	1.30	4.86	1.51	4.22	1.75	5.23	1.42
<i>Partner's characteristics</i>														
Age	40.65	8.37	42.77	8.49	41.42	9.24	43.10	9.43	44.36	9.85	42.54	9.86	42.07	8.97
Low edu: GCSEs and below	0.31	0.46	0.26	0.44	0.26	0.44	0.32	0.47	0.40	0.49	0.42	0.49	0.29	0.45
Med edu: A-levels	0.22	0.41	0.24	0.43	0.24	0.43	0.23	0.42	0.19	0.39	0.16	0.37	0.23	0.42
High edu: First degree and above	0.39	0.49	0.48	0.50	0.47	0.50	0.42	0.49	0.28	0.45	0.15	0.36	0.43	0.50
Part-time work	0.08	0.28	0.02	0.12	0.03	0.16	0.20	0.40	-	-	-	-	0.04	0.19
Good and above health	0.87	0.34	0.91	0.29	0.91	0.29	0.89	0.32	0.65	0.48	0.47	0.50	0.86	0.34
Cares for someone in or out of the hh	0.18	0.38	0.11	0.31	0.11	0.31	0.11	0.32	0.13	0.33	0.35	0.48	0.13	0.34

Hours spent on housework per week*	5.25	4.96	5.38	4.59	6.36	4.76	7.86	5.81	10.81	8.04	8.66	8.50	6.20	5.37
Life satisfaction	5.13	1.36	5.31	1.25	5.31	1.26	5.20	1.34	4.50	1.61	4.22	1.72	5.18	1.36
<i>Couple characteristics</i>														
Cohabiting (vs. married)	0.21	0.41	0.19	0.39	0.26	0.44	0.23	0.42	0.32	0.47	0.39	0.49	0.24	0.43
Couple net labour income (£)	2,029	1,536	3,453	1,689	3,556	1,300	3,595	1,952	1,355	1,928	22	598	2,988	1,821
Household net labour income (£)	2,159	1,589	3,637	1,769	3,713	1,391	3,732	1,980	1,547	1,985	181	769	3,151	1,888
House ownership														
Woman owns	0.03	0.18	0.03	0.17	0.06	0.25	0.10	0.30	0.10	0.31	0.01	0.11	0.05	0.21
Man owns	0.13	0.33	0.10	0.30	0.07	0.25	0.04	0.19	0.04	0.21	0.04	0.20	0.08	0.28
Dual ownership	0.42	0.49	0.70	0.46	0.66	0.47	0.63	0.48	0.36	0.48	0.10	0.31	0.59	0.49
Hh size	4.05	1.26	3.57	1.05	3.08	1.05	3.14	1.05	3.50	1.24	3.98	1.54	3.48	1.18
Number of children in hh	1.68	1.21	1.18	1.04	0.75	0.92	0.80	0.96	0.99	1.15	1.39	1.45	1.10	1.11
Total	4,164		10,052		8,941		1,517		1,047		1,681		27,402	

Notes: *Hours spent on hours work per week are collected in alternate waves. The missing values are imputed by averages from t-1 and t+1. Nevertheless, there are some missing values for this variable. Couple net labour income and household net labour income are deflated using CPI with 2015 as the base year, and rounded to the closest integer.

V. Methodology and empirical specification

We have two separate empirical specifications to address our research questions. Firstly, we are interested in understanding whether there are differences between men's and women's life satisfaction depending on the couple's earning arrangements. To this end, we estimate the following baseline equation for men and women separately:

$$LS_{it} = \alpha + \sum_k \beta_{it,k} BW_{it}^k + \mathbf{X}'_{it} \gamma + \tau_t + \mu_i + \varepsilon_i,$$

where LS_i is the life satisfaction of individual i and BW_i^k are dummies for different earning arrangements, $i =$ woman, men. The time fixed effect is captured by τ_t as the wave of interview. We estimate the model separately for women and men.

Life satisfaction is measured on a 1-7 Likert scale, thus it is an ordinal variable. A 1-point change in the Likert scale from 1 to 2 may be different from a 1-point change from 4 to 5, and the equations above should therefore be estimated by ordinal probit or logit regression. However, treating our dependent variable as a continuous measure and employing OLS (and using couple fixed-effects) has little consequence on the results (Ferrer-i-Carbonell and Frijters, 2004; Ayhan and Niklova, 2019), thus we employ a linear approach to facilitate interpretation and comparison with other studies.

As the literature on subjective life satisfaction widely shows there are many factors that contribute into one's subjective life satisfaction. In the baseline specification (Models 1 and 2, for women and men, respectively), the control vector, X , includes: age, age square, education, cohabiting vs. married, general health, whether couple has (at least one) child by age, whether they are home owners, region dummies. In Models 3 and 4 we also control for couple joint personal incomes (deflated by the Consumer Price Index³) measured in the month before the interview. We use natural logarithm of income, and a positive effect reflects the declining marginal utility obtained from absolute income. In Models 5 and 6 we add a control for gender equality among partners. Unfortunately, Understanding Society does not provide yearly measures of attitudes towards gender equality. As a proxy, we rely on information on the partners' relative time spent in housework activities. We create a variable measuring the woman's share of total couple's housework on the basis of the survey question: "About how

³ We use monthly CPI index with base year 2015 measured by Office of National Statistics (series ID: D7BT).

many hours do you spend on housework in an average week, such as time spent cooking, cleaning and doing the laundry?”. In Models 7 and 8, we further interact earning arrangements with the couple’s total incomes measured in quintiles.⁴

We run a series of robustness checks that we do not report in the paper: we include lagged life satisfaction, LS_{it-1} , in our analysis to see whether there is state dependence, i.e. people who are satisfied with their life may continue to be satisfied; we tried different specifications of the housework variable (total hours spent by woman and men; whether woman spends more time on housework than man).

In a second step, we restrict our attention to dual-earner couples and focus on whether and how becoming a single earner influences the life satisfaction of women and men. A dual-earner couple (for simplicity, DE encompassing MME, EE, and MFE) becomes single-earner when one of the partners becomes non-employed. When the male partner becomes non-employed, either losing his job or becoming inactive, the couple becomes female-breadwinner ($DE_{t-1} \rightarrow FBW_t$), when the woman becomes non-employed, the couples becomes male-breadwinner ($DE_{t-1} \rightarrow MBW_t$). To investigate the life satisfaction spillover of the partner’s job loss, we estimate the following equation:

$$LS_{it} = \alpha + \delta \Delta_t^{bw} + \mathbf{X}'_{it} \gamma + \tau_t + \mu_i + \varepsilon_{it},$$

where Δ_t^{bw} captures the change from dual earner status of couple i at $t-1$ to single-earner at t and μ_i are couple fixed effects.⁵

Voluntarily quitting a job may have a positive effect on wellbeing. On the contrary, a job loss, if unexpected, may put additional stress and increase uncertainty, which would affect one’s wellbeing negatively. To account for such differences, we control for reasons of leaving previous job, which are collected in every wave, yet the variable suffers from item non-response.

⁴ Social environment and life events are also shown to have significant effect on life satisfaction. We do not include them in our analysis due to data limitations. We are able to control for some life events such as changes in the labour market activity in our second analysis. However as our sample is already on couples we cannot control for the effect of couple formation. An alternative would have been to control for a marriage effect but only 5.76% of the couples get married in the sample.

⁵ As discussed in Section V, couples are created by matching partners using individual identifiers. In other words, a couple-wave observation includes information on a pair of individuals. Thus, μ is couple-fixed effects by construction.

As we are interested in the (spillover) effect of becoming a single-earner couple on life satisfaction, we restrict our sample to couples who are dual-earners (DE) at $t-1$, MME, EE, and MFE couples, and those who are in the sample for at least 2 waves. We excluded couples who have ever been No Earner. The estimation sample consists of 4,570 couples. We use pooled OLS and fixed effects regression.

Combined with fixed effects, we identify the subjective life satisfaction spillovers of a change in earnings arrangements from the variation coming from couples in which one partner changes their labour force status. The couple fixed effects capture selection issues concerning permanent characteristics of the couple and its formation such as assortative mating. All models include robust standard errors, clustered at the couple level.

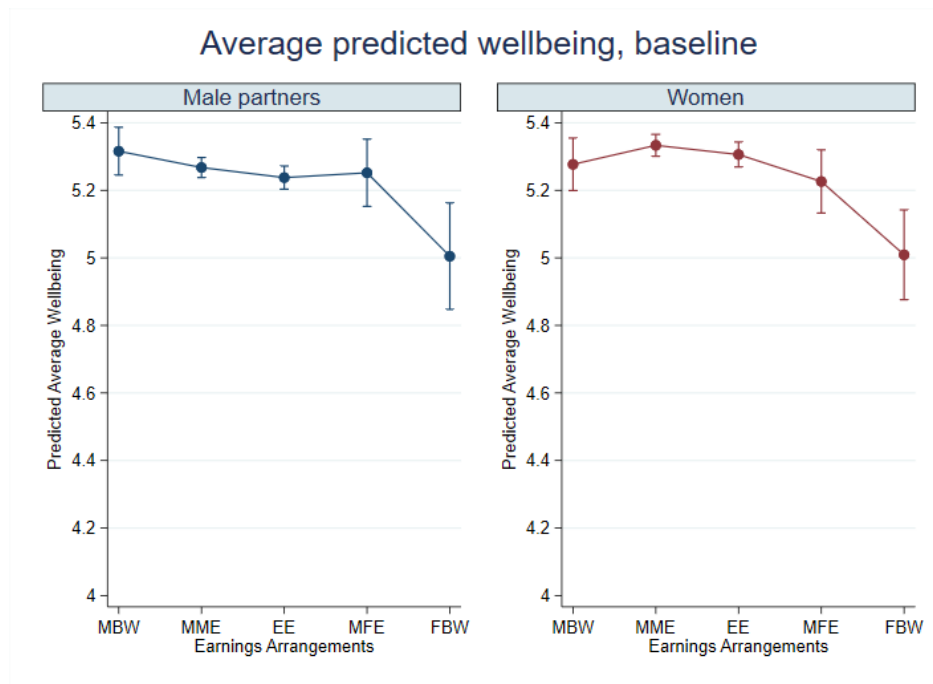
VI. Results

Relationship between earning arrangements and life satisfaction

The first question we seek to answer is whether life satisfaction of individuals differs across different earning arrangements. Table 3 presents the effect of selected factors on women's and man's life satisfaction. Each column adds additional controls to our baseline specifications (Model 1 for women and 2 for men), which includes individual and household characteristics.

Conditional on individual and couple-specific control variables and controlling for unobserved characteristics, the descriptive results shown in Figure 3 no longer hold in full. Looking at the point estimates of the baseline models in Figure 6 (Models 1 and 2 for women and men, respectively), the inverted U-shape in life satisfaction disappears for men. For men, the point estimate is highest among Male-Breadwinner (MBW) couples. For women, life satisfaction remains highest in Man as Main Earner (MME) and Equal-Earner (EE) couples. We still find that female breadwinning decreases life satisfaction for women and men alike, and that life satisfaction is lowest among No-Earner (NE) couples for both men and women. However, now we find no significant difference with Female-Breadwinner (FBW) couples: women and men in female-breadwinner couples are as unhappy as those in couples with no earners.

Figure 6 Predicted life satisfaction by earning arrangements, baseline specification (Models 1 and 2)

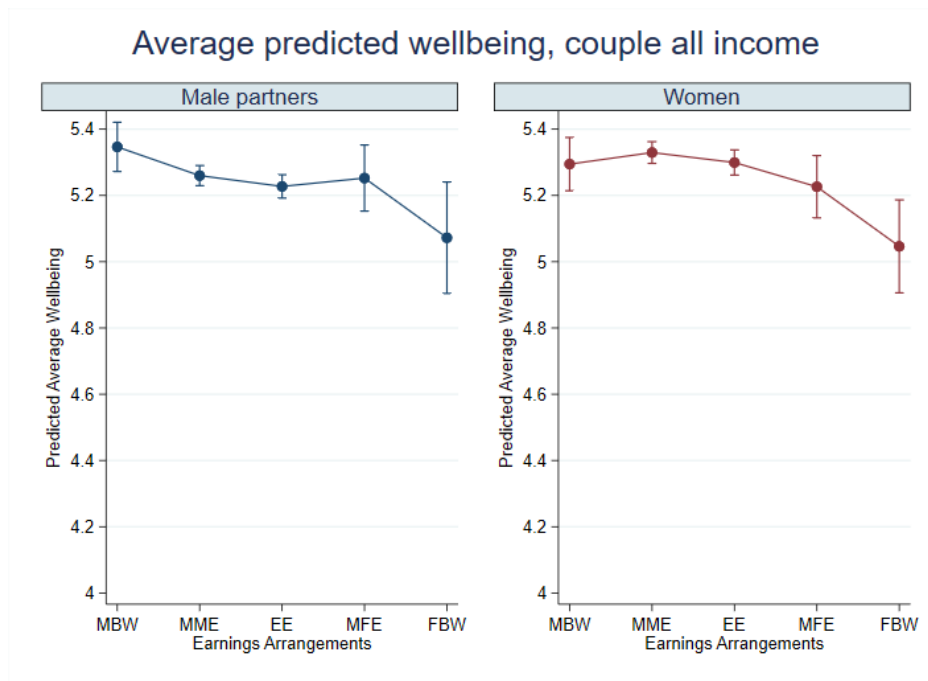


Notes: Predicted life satisfaction by earning arrangements estimated by fixed effects. Controls include age, age squared, education, general health, whether cares for someone outside the home, whether cohabits, whether has children by age, whether is homeowner, region and interview wave. Standard errors are clustered at couple level. Figures also show adjusted 95% confidence intervals for predicted values.

Compared to descriptive results in Figure 3, we furthermore lose any significant gender difference within earning arrangements: in the fixed effects specification with basic controls, for each earning arrangements, partners are more likely to have similar level of life satisfaction.

In a second step, we include a control for total couples' incomes from all sources as a control in our fixed-effects model (Models 3 and 4 in Table 3 and Figure 7). Total couple's incomes result significantly and negatively associated with life satisfaction for men, but not for women. The inclusion of absolute resources reduces the differences in life satisfaction across various earning arrangements that we found in the baseline specification for both women and men (i.e., the estimated coefficients of the earning arrangements is reduced).

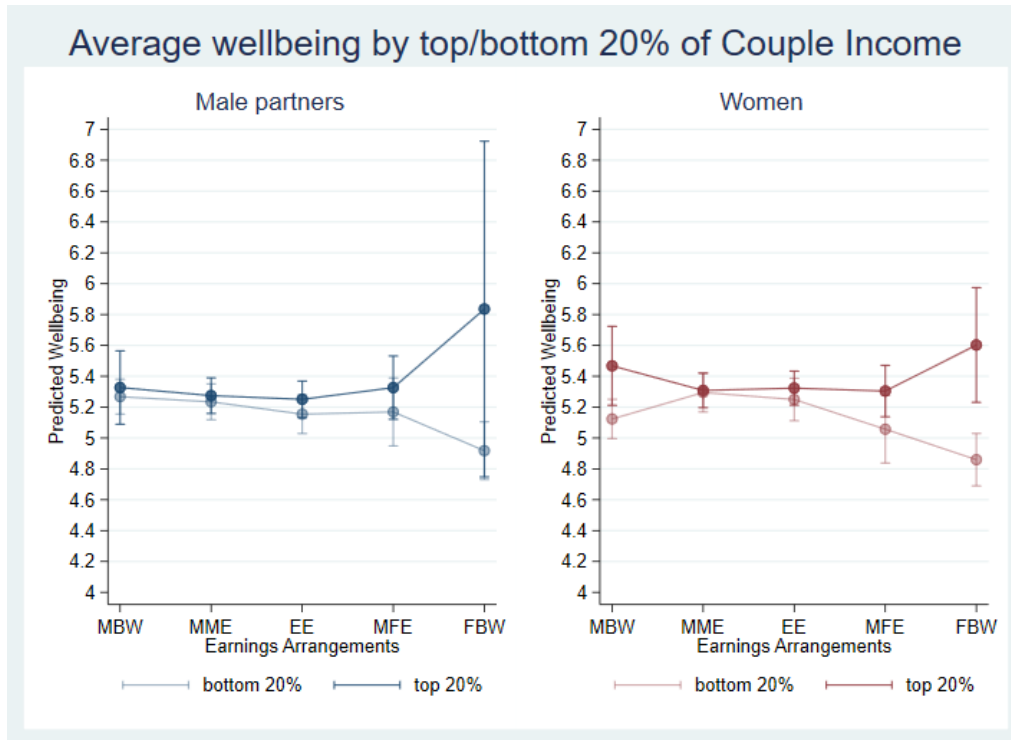
Figure 7 Predicted life satisfaction by earning arrangements, baseline specification and couple's total incomes (Models 3 and 4)



Notes: Predicted life satisfaction by earning arrangements estimated by Fixed Effects. Same baseline controls as in Models 1 and 2 + logarithm of couple's total incomes from all sources (continuous variable). Standard errors are clustered at couple level. Figures also show adjusted 95% confidence intervals for predicted values.

It is possible that the relative incomes or income distribution would have an impact on individuals' life satisfaction. To understand the interplay between earning arrangements and couples' income, we interact couple's total personal income quintiles and the earning arrangements. We report the resulting predicted probabilities in Figure 8. To ease the interpretation, we present the predicted probabilities for the top and bottom 20% incomes only. We find that life satisfaction does not change across different earning arrangements, i.e. within each earning arrangement, individuals at the top and bottom of the income distribution appear to have the same level of life satisfaction, with the exception of individuals in female breadwinner couples. In this case, women and men in the richest couples tend to be happier than those in the poorest couples. The difference, however, is only significant for women.

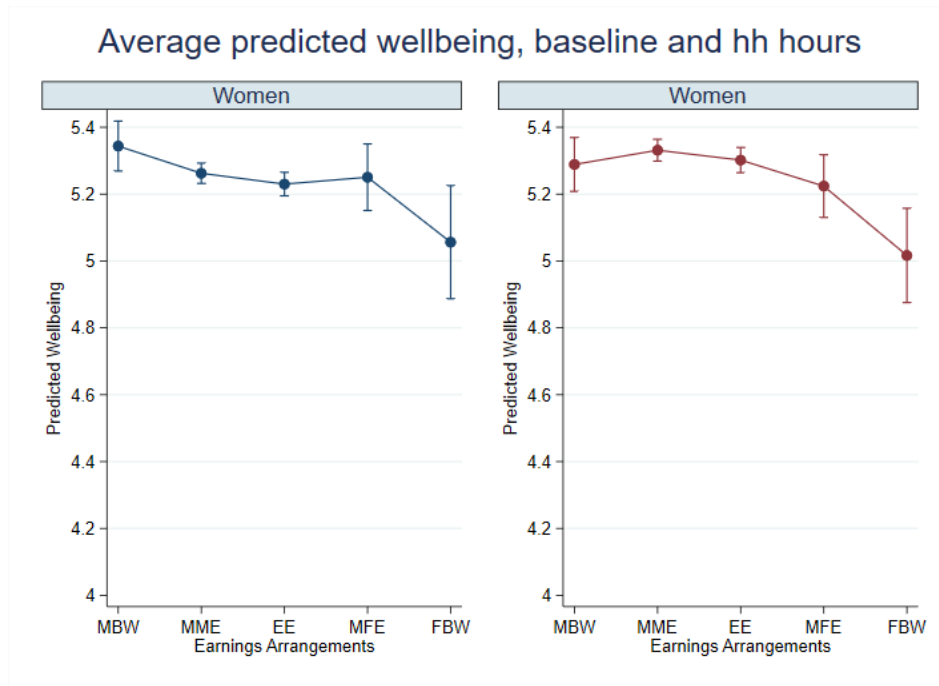
Figure 8 Predicted life satisfaction for 20% top and bottom couple's total incomes by earning arrangements, baseline specification + interaction between couple's incomes (in quintiles) and earning arrangements (Models 7 and 8)



Notes: Predicted life satisfaction by earning arrangements estimated by Fixed Effects. Same baseline controls as in Models 1 and 2 + couple's total incomes from all sources (in quintiles) and interaction between the latter and earning arrangements. Standard errors are clustered at couple level. Figures also show adjusted 95% confidence intervals for predicted values.

In a final step, we include a control for the woman's share of household hours on the total couple's household hours (Model 5 and 6 in Table 3 and Figure 9). The differences in life satisfaction among women and men within each earning arrangement are not statistically different (i.e., on average women in a given earning arrangement are as satisfied as their male partners) with only one exception: in female-breadwinner couples men are significantly less satisfied with their lives than women.

Figure 9 Predicted life satisfaction by earning arrangements, baseline specification + couple's total incomes from all sources (continuous variable) + housework (Models 5 and 6)



Notes: Predicted life satisfaction by earning arrangements estimated by fixed effects. Same controls as in Models 3 and 4 are used with addition of housework. Standard errors are clustered at couple level. Figures also show adjusted 95% confidence intervals for predicted values.

Overall our results show that there is no significant difference in life satisfaction among dual-earner couples. In other words, being out-earned by the partner does not have a significant impact on either partner as compared to equal earning. It is non-employment of the male partner that reduces life satisfaction for both women and men. For men, such effects are partly explained by the fact that FBW couples are on average poorer than other couple types. For women, absolute resources matter less, while the burden of housework, which we interpret as a proxy for gender equality within the couple, explain part of the wellbeing penalty for FBWs.

For what concerns the control variables, compatible with previous studies, we find that the indicator of overall general health is positively associated with reported life satisfaction for both men and women and the presence of a young child aged 0-2 years old is positively associated with life satisfaction of women but not of men. We further find that male respondents living in West Midlands tend to report lower levels of life satisfaction and that life satisfaction appears to be decreasing over time for both men and women.

Table 3 Regression results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	F: baseline	M: baseline	F: baseline + hh hours	M: baseline + hh hours	F: couple all income	M: couple all income	F: baseline + rel hh hours + all inc	M: rel baseline + hh hours + all inc
Breadwinner composition (Ref. FBW):								
Male breadwinner	0.268*** (0.0837)	0.311*** (0.0908)	0.283*** (0.0844)	0.319*** (0.0920)	0.248*** (0.0846)	0.274*** (0.0927)	0.272*** (0.0852)	0.287*** (0.0937)
Male Main Earner	0.324*** (0.0729)	0.263*** (0.0848)	0.337*** (0.0734)	0.269*** (0.0858)	0.283*** (0.0770)	0.188** (0.0909)	0.315*** (0.0773)	0.206** (0.0914)
Equal Earners	0.297*** (0.0711)	0.233*** (0.0855)	0.308*** (0.0717)	0.239*** (0.0864)	0.253*** (0.0760)	0.155* (0.0920)	0.285*** (0.0763)	0.174* (0.0924)
Female Main Earner	0.217*** (0.0800)	0.247*** (0.0921)	0.227*** (0.0804)	0.251*** (0.0927)	0.180** (0.0836)	0.180* (0.0972)	0.207** (0.0836)	0.194** (0.0971)
Woman's characteristics								
Age	0.0220 (0.0485)		0.0227 (0.0488)		-0.0533* (0.0284)		0.0203 (0.0490)	
Age2	0.000431 (0.000341)		0.000416 (0.000342)		0.000489 (0.000344)		0.000441 (0.000343)	
Education (Ref. None):								
Unknown	0.636 (0.701)		0.642 (0.701)		0.622 (0.684)		0.644 (0.700)	
Degree +	-0.198 (0.482)		-0.194 (0.481)		-0.279 (0.473)		-0.196 (0.481)	
A level			-0.213 (0.476)		-0.265 (0.468)		-0.213 (0.477)	
GCSEs & oth	-0.337 (0.479)		-0.330 (0.478)		-0.372 (0.468)		-0.330 (0.479)	
Good and above health	0.324*** (0.0399)		0.326*** (0.0399)		0.320*** (0.0398)		0.325*** (0.0399)	
Cares for someone in/out hh	-0.0122 (0.0347)		-0.0115 (0.0347)				-0.0120 (0.0347)	
Couple's Characteristics								
Cohabiting vs. married	0.0711 (0.0525)	-0.0511 (0.0488)	0.0700 (0.0525)	-0.0459 (0.0486)	0.0616 (0.0528)	-0.0526 (0.0489)	0.0701 (0.0525)	-0.0454 (0.0485)
Has a child aged 0-2	0.0821** (0.0330)	-0.00512 (0.0311)	0.0869*** (0.0330)	-0.00718 (0.0312)	0.0828** (0.0332)	-0.00410 (0.0312)	0.0869*** (0.0330)	-0.00723 (0.0312)
Has a child aged 3-4	0.0155 (0.0315)	-0.0551* (0.0303)	0.0194 (0.0316)	-0.0552* (0.0304)	0.0122 (0.0316)	-0.0562* (0.0304)	0.0198 (0.0316)	-0.0542* (0.0304)
Has a child aged 5-11	-0.0432 (0.0342)	-0.0483 (0.0321)	-0.0419 (0.0343)	-0.0492 (0.0322)	-0.0459 (0.0342)	-0.0508 (0.0320)	-0.0420 (0.0343)	-0.0499 (0.0322)
Home owners	0.0708 (0.0611)	-0.0248 (0.0549)	0.0707 (0.0612)	-0.0263 (0.0551)	0.0871 (0.0618)	-0.0180 (0.0559)	0.0702 (0.0612)	-0.0279 (0.0552)
Male Partner's characteristics								
Age		0.0921** (0.0469)		0.0887* (0.0470)		-0.0117 (0.0263)		0.0827* (0.0471)
Age2		-0.000101 (0.000300)		-0.000104 (0.000300)		-4.37e-05 (0.000302)		-4.34e-05 (0.000301)
Education (Ref. None):								
Unknown		0.309 (0.304)		0.319 (0.308)		0.276 (0.297)		0.324 (0.306)
Degree +		0.255 (0.261)		0.264 (0.268)		0.222 (0.261)		0.265 (0.268)
A level		0.421* (0.254)		0.430* (0.261)		0.405 (0.254)		0.435* (0.262)
GCSEs & oth		0.185 (0.234)		0.195 (0.243)		0.167 (0.234)		0.197 (0.244)
Good health		0.256*** (0.0368)		0.256*** (0.0369)		0.255*** (0.0368)		0.256*** (0.0368)
Cares for someone in/out hh		-0.0150 (0.0374)		-0.0150 (0.0374)				-0.0159 (0.0373)
Woman's share of housework			-0.147 (0.0900)	0.0133 (0.0829)			-0.146 (0.0901)	0.0153 (0.0829)
Couple's Total incomes (log)					0.0995* (0.0538)	0.155*** (0.0529)	0.0434 (0.0535)	0.123** (0.0531)
Observations	21,404	21,404	21,337	21,337	21,404	21,404	21,337	21,337

Number of couples	5,023	5,023	5,001	5,001	5,023	5,023	5,001	5,001
Individual controls	yes	yes	yes	yes	yes	yes	yes	yes
Household controls	yes	yes	yes	yes	yes	yes	yes	yes
Region	yes	yes	yes	yes	yes	yes	yes	yes
Time fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Income	no	no	no	no	yes	yes	yes	yes
Housework	no	no	yes	yes	no	no	yes	yes

Robust standard errors in parantheses. *** p<0.01, ** p<0.05, * p<0.1

Transition models: Gender gap in life satisfaction by becoming a single-earner couple

In the fixed effects analyses we show that there is a negative association between life satisfaction and being in FBW households, which is partly mediated by absolute income. We now would like to understand whether changing earning arrangements has an impact on life satisfaction.

We define dual-earners as couples where both partners work, either full-time or part-time, and we restrict our sample to those who are dual-earners at t-1, who have been in the sample for at least two consecutive waves. We exclude observations where couples are or have become NE.⁶ The estimation sample consists 4,619 couples who were DE at t-1.

There are 677 transitions from dual-earner (DE) couples to single-earners experienced by 639 couples. Almost one third of the transitions are from DE couples to FBW, i.e. male partners become non-employed, and the rest become MBW, i.e. women's labour market outcome changed. It is worth noting that there are gender differences in how couples become FBW and MBW. For women, leaving employment may be related to fertility outcomes or family responsibilities. In our estimation sample, 78.9% of the FBW couples emerge as male partners become unemployed, whereas only in 34.3% of MBW are created due women's unemployment.

Majority of women who were employed in previous wave before being in a MBW couple withdraw from the labour market and become inactive (59.6%).⁷ When we look at finer gradients of labour market outcomes, of 473 transitions into MBW, 24.3% of women become unemployed, 9.3% are in maternity leave, 8% are back into full-time education and 49.3% are taking care of family.

⁶ Notice that, as shown in Table 1, in our sample it is very unlikely that both couple members loses their jobs from one wave to the other, i.e. very low transition probabilities from dual-earners to no-earners.

⁷ 5.5% of men and 6% of women leave employment and report to be long-term sick in the following wave.

While having a baby might increase overall life satisfaction, unemployment or inactivity due to other factors (e.g. taking care of a family member in poor health) are expected to have an opposite effect on subjective wellbeing. While USoc is a rich dataset, our dataset does not include fertility histories, thus we use a dummy variable on presence of young (aged 0-2) children in the household to control a potential positive wellbeing effect from new births. While reasons for leaving is important for our analysis and a causal interpretation, the variable in USoc has many missing values. We use a proxy measure by interacting transition dummy with woman's labour market outcome at t , which also allows us to measure heterogeneous effects.⁸

Regardless of which partner becomes non-employed, on average, becoming a single-earner household is associated with lower overall life satisfaction both for women (-0.34 points) and men (-0.27 points). However, most of the variation is attributable to couple-fixed effects, e.g. factors that are (permanent) unobserved to us but influence both a change in earnings arrangements and subjective wellbeing. When we take such fixed effects into account, the (raw) effect of becoming a single-earner couple drops to -0.23 points and remains significant. On the other hand, for male partners, the (raw) impact of becoming a single earner decrease by 50% and becomes insignificant. Conditional on the individual and couple characteristics (the same $X_{i,t}$ as in Model 1 and 2 of previous Section), we find that women who become single-earners are less satisfied with their lives by one-fifth points compared to women in DE couples. There is a weak positive impact of very young children on women's overall satisfaction, and having older children does not have a significant effect on their wellbeing. As before, male partners' wellbeing is not influenced by becoming a single-earner earner couple or by newly borns.

Before moving onto the gendered wellbeing spillover of the transitions, we would like note that income is an important factor in life-satisfaction. As becoming a single-earner is associated with a loss of income, we examine the impact of income loss on wellbeing coupled with a change in earning arrangement from DE to SE. On average, a dual-earner couple loses £978 pounds net labour income when they become single-earners. This reduction in couple income due to change in earning arrangements would affect life satisfaction negatively. We use change in income to control for income effect.

⁸ We also use information on maternity leave.

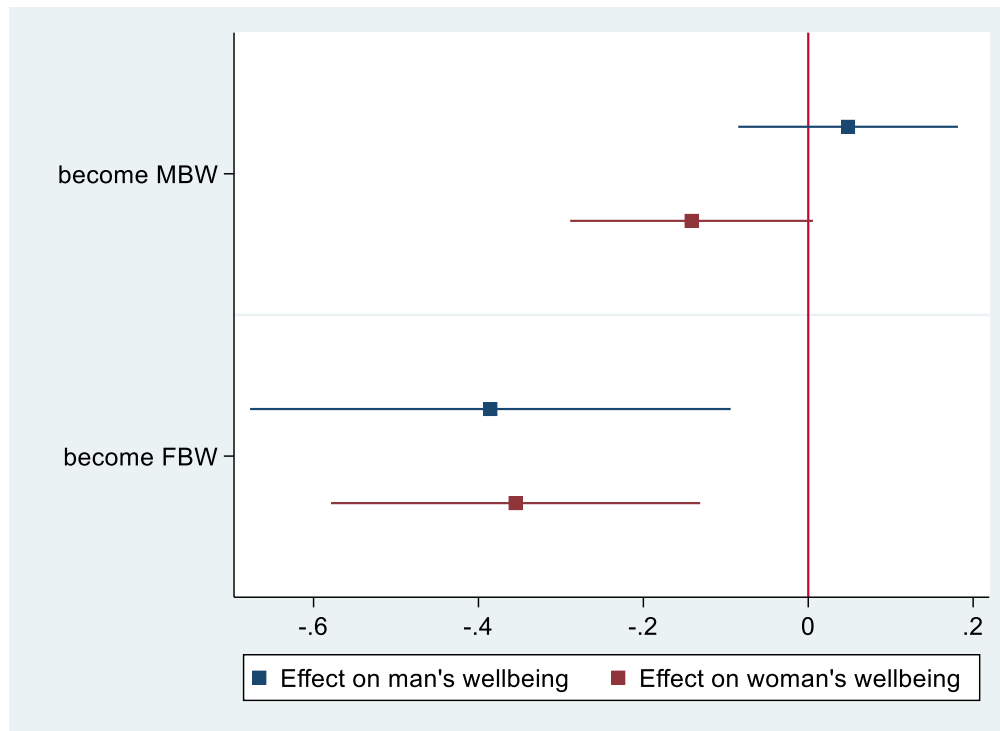
Interacting the transition dummy with an income loss dummy, $I(\Delta\text{coupleincome} < 0)$, we show that unless there is a loss of income, changing from DE to SE does not have a statistically significant impact on women's wellbeing. Given a loss of income, women in couples who become SE have on average a quarter point lower overall life satisfaction than otherwise identical women who remain in DE couples. However, we do not observe the same effect for men. For men, regardless of switching earning arrangements, absolute income remains an important factor for their subjective wellbeing.

Partners' wellbeing may be influenced differently by who becomes non-employed. For example, given the traditional gender norms in the UK, woman's wellbeing may not be affected as negatively as men's when the couple becomes single-earner due to her non-employment. We define a categorical variable, which captures transitions from DE to MBW, i.e. woman becomes non-employed, couple remains DE, and transitions from DE to FBW, i.e. male partner becomes non-employed.

Using the same baseline specification, we find that women whose partner becomes non-employed compared to those whose partner is still employed (i.e. in DE) are 0.35 points less satisfied with their lives. This can be considered as the spillover effect of male-partner's non-employment, which is higher than woman's own non-employment (-0.14 points). However, the gender gap in non-employment, i.e. becoming an MBW or FBW couple is not statistically significant at conventional levels.

In previous section, we show that male partners' wellbeing are not affected by becoming single-earners. The same result holds when their partner (woman) becomes non-employed, i.e. the man continues on working as the couple becomes MBW. On the other hand, when male partners themselves become non-employed (direct effect), i.e. the couple becomes single-earner (FBW), men are significantly less happy with their lives (-0.39 points). We also find that these direct and indirect non-employment effects are significantly different for men. Men are satisfied with their lives significantly more when their partner (woman) becomes non-employed, thus men becomes the sole-earner, than when they become non-employed and form a FBW couple.

Figure 10 Direct and indirect non-employment effects on individual wellbeing, baseline models



Notes: Estimates are obtained from fixed effects regression. We use the same covariate matrix as in Models 3 and 4. Standard errors are clustered at couple level, and the figure shows estimates with 95% confidence intervals.

VII. Conclusion

TBW

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