Job Turnover in Early Career and Fertility Choices

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Abstract

In this analysis, I investigate the impact of job turnover during the labour market early career of British young women on their fertility choices, using retrospective information from the British Household Panel Survey. The sufficiently wide time-span (1959-2006) allows me to evaluate fertility outcomes in the long-run. I also try to disentangle the effect between voluntary and involuntary job turnover, the first being associated to career advancement and the latter to job loss. In order to account for the endogeneity of job experience to fertility, which may be driven by unobservable characteristics and preferences, I instrument job turnover with industry-level historical series of the unemployment rate and the growth in the average earnings drawn from the British Labour Statistics, the Labour Force Survey and the New Earnings Survey. Preliminary estimates suggest a negative, yet imprecise, impact of both types of job turnover during early career on the predicted number of children, which may be driven by future career concerns. In addition, I find a relative predominance of the substitution effect over the income effect in the case of married women. The magnitude of the coefficients implies that the bias stemming from the endogeneity in the model may be due to women with higher preferences for children selecting into more mobile careers, possibly in pursuance of better labour market conditions that can guarantee a more adequate child rearing.

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Keywords: Fertility, Job Turnover, Instrumental Variables, BHPS.

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1 Introduction

As documented in the literature, e.g. by Guinnane (2011) and Strulik and Vollmer (2015), fertility rates in many developed countries have been falling since the second half of the 1800s, with a sharp acceleration in decline after the *Baby Boom* of the 1960s. Ahn and Mira (2002) report that OECD countries in particular have seen a substantial drop in the period 1970-1995, with average fertility going from 2.45 to 1.63 children per woman. Strulik and Vollmer (2015) identify two separate groups of countries: those with a low-fertility regime (mainly Europe and North America), and those with high fertility rates. The first are converging to a predicted equilibrium fertility rate of 1.12, which is largely below the population replacement level; the latter group has also experienced a downward, but not uniform, trend, as these countries seem to be affected mostly by country-specific and time-variant phenomena.[1]

Among the explanations for this decline in fertility rates, together with the drop in child mortality, the extensive use of contraceptive methods and the reduction in the direct costs of having children, is an evolution in the opportunity costs of child-bearing (Guinnane, 2011). Women labour force participation rates have steadily increased in all countries (Hotz et al., 1997; Ahn and Mira, 2002; De La Rica and Iza, 2005; Guinnane, 2011) and, as suggested by theoretical models (Becker, 1960; Butz and Ward, 1979), such changes have resulted in an increment in the demand for children (positive income effect), but also a contemporaneous rise in the opportunity cost of child-bearing (negative substitution effect), especially given the increase in the level of educational attainment of the younger cohorts of women (Joshi et al., 1985).

Also, with the rising participation of women into the labour market, in many countries this has adjusted over time with the aim of allowing an easier match between working duties and family needs: new forms of employment contracts, such as part-time, temporary, etc., have been introduced. On the other hand, the recent empirical literature has found a strong and consistent association between these types of non-standard, and sometimes precarious, employment and fertility choices, particularly for highly-educated women. The dominating channel, in this case, appears to be the one concerning the reduced future career prospects and the lowered employability of women with small children (Huttunen and Kellokumpu, 2012; Del Bono et al., 2012).

The contribution of this paper to the existing literature is threefold. First, I join in the ongoing discussion on the long-term effects of experiencing high rates of job turnover during the crucial years of a worker's early career on various outcomes (see, e.g., Light and McGarry, 1998 and Burgess et al., 2003), focusing specifically on fertility choices of working women.

Second, I aim at evaluating the relative impact of undertaking job separations due to both voluntary and involuntary reasons. To the best of my knowledge, this is the first attempt that distinguishes between the two types of motives and tries to evaluate whether they have a

[1] See also Adserà (2004) and Adserà (2011) for a discussion on the role of institutions and aggregate labour market conditions. Goldstein et al. (2013) evaluates the impact of the Great Recession of the late 2000s on fertility rates in Europe.

different impact on fertility choices in the long run.

Third, I account for the possible presence of endogeneity, which may bias the estimated effect of job turnover on women's fertility choices. In fact, only a few analyses have dealt with this issue (Auer et al., 2013; Del Bono et al., 2015), but none has focused specifically on such long-term mechanisms. In this context, endogeneity issues may arise in a number of cases. It may be that women who plan to invest in child-bearing in the near future may be less attractive to employers because their productivity may be potentially reduced by the need of maternity leave and by family commitments (Del Bono et al., 2012); it may also be that women who have a strong preference for having children self-select into less demanding jobs, which in turn are generally associated with lower returns and higher instability (Booth et al., 2002; Del Bono et al., 2012); at the same time, women who have a comparative advantage in the labour market may choose to invest in their human capital or their career and, hence, postpone child-bearing (Francesconi, 2002); conversely, it may be that women with a preference for children may seek job security and a stable career to reach adequate living standards (Easterlin, 1973).

The empirical analysis is run on a sample of British women who left education in the years 1959-1986. I estimate a Poisson model for count data with endogenous regressors, as suggested by Windmeijer and Santos Silva (1997), where the GMM estimation provides consistent estimates for the parameters of interest. These are associated to the count and the share of all voluntary and involuntary job changes that a woman has experienced during her first ten years in the labour market.

In the baseline model I find a negative and significant association between job turnover and the number of children at the twentieth year of a woman's career, i.e. almost complete fertility. This correlation holds across different specifications, both for voluntary and involuntary turnover. However, when I try to rule out the potential endogeneity in the model with an instrumental variables approach, I find an even stronger, yet imprecisely estimated, negative effect of both voluntary and involuntary job turnover on the number of children born to a woman by her twentieth year in the labour market. Sign and magnitude of the coefficients for the full sample suggest that this negative effect may be due to future career and employability concerns that are associated with childbearing, while married women are characterised by a relatively more prominent substitution effect. The estimated coefficients also imply that the bias that is generated by the endogeneity in the model is perhaps driven by women with stronger preferences for children self-selecting into more mobile career paths, possibly in pursuance of better labour market conditions that can guarantee a more adequate child rearing.

The reminder of this paper is structured as follows: in the next section I briefly go through the existing relevant literature concerning job instability and fertility; then, in section 3, I describe the sample selection process and the data; in section 4 I outline the empirical strategy and in the following two sections (5 and 6) I present the results; section 7 concludes.

2 Job Instability and Fertility Choices in the Literature

There is an extensive literature that tries to identify the medium- and long-term effect of job instability on a number of outcomes. In fact, circumstances at the start of the career may imply a path dependence that causes long-lasting repercussions not only on the individual's occupational status and earnings (Topel and Ward, 1992; Light and McGarry, 1998; Booth et al., 2002; Burgess et al., 2003), but also on family formation choices (De La Rica and Iza, 2005) and health condition (Auer and Danzer, 2015). Job instability, however, is quite a broad definition that encompasses various forms of uncertainty and is often proxied by indicators for job mobility, holding a fixed-term contract, being dismissed or unemployed, etc.

With respect to its consequences in terms of employment-related responses, most analyses find evidence of an immediate reduction in the earnings of workers due to the instability generated by job mobility, particularly when separations are involuntary.[2] This is due to, e.g. higher risks of remaining trapped in fixed-term employment or even becoming unemployed (Gebel, 2010), poorer working conditions (Scherer, 2009), lower investments in training by the employer (Booth et al., 2002; Albert et al., 2005). Nevertheless, if this job turnover takes place at the beginning of the worker's career and eventually allows the worker to find a permanent job, the costs associated to job mobility turn out to be only transitory and workers can catch up to their counterparts who did not experience job instability in the past (Booth et al., 2002).[3] Similar evidence is found by Davia (2005), who argues that a certain amount of job mobility is beneficial to young workers at the start of their career in terms of wage gains. However, she claims that changing jobs too often may turn out to be detrimental, even in case of voluntary turnover. García Pérez and Rebollo Sanz (2005) find instead that voluntary turnover is associated with positive wage gains with respect to job stayers but involuntary changes, which are often followed by an unemployment spell, lead to losses in terms of wages.

With the steep rise in the labour force participation of women after WWII, many authors have focused on the link between female labour supply and fertility decisions. In the theoretical framework, children are assumed to be normal goods Becker (1960), so that higher earnings are associated with a greater demand for children, and child-bearing decisions are taken as a result of a utility maximization problem for the parents. As the male is traditionally seen as the breadwinner in the household, any change in his income levels are positively associated with the demand for children, namely a pure income effect (Butz and Ward, 1979). The case of the woman, however, is not so unambiguously determined. In fact, on the one hand, an increase in her wage levels determines a positive income effect because it yields a rise in the overall household income; on the other hand, it generates a negative substitution effect because of the increase in her opportunity cost of time, under the assumption that children are the wife's time-intensive users. In their piece of work, Butz and Ward (1979) find evidence in support of the substitution effect dominating over the income effect, given a change in female earnings.[4]

[2] Huttunen and Kellokumpu (2012) estimate that job displacement yields a reduction in earnings by 22%.

[3] Booth et al. (2002) find that women manage to fully recover their earnings levels to those who started with a permanent contract, while the compensation is only partial for men.

[4] Although the availability of external child care services is not contemplated in their model, Butz and Ward

More recently, Francesconi (2002) observes that a woman's preferences for children decreases in her level of schooling and in her earnings ability, i.e. "women with a comparative advantage in market work (or, alternatively, whose earnings profiles are the highest) are those with the lowest marginal utility of children; conversely, women with a strong preference for children are those with lower earnings profiles" (p. 374). Analogous conclusions are drawn by Caucutt et al. (2002): they find that, even in the absence of returns to experience in the labour market, high-productivity women delay fertility and have less children: women in the highest wage quintile have 64% of their children at age 27 or older, compared to 42% for women in the lowest wage quintile.[5]

Given its established negative association with earnings, then, job instability may affect the woman's demand for children both negatively (income effect) and positively through a reduction in the opportunity cost of time (substitution effect). In addition to this, Del Bono et al. (2015) identify two further channels. First, the loss in future earnings that a woman with small children may incur as a consequence of her potential unavailability to undertake intensive tasks or training (career effect). Second, employers may be less prone to hire women with small children (employability effect).[6]

The past decade has seen an increasing interest in the relationship between fertility outcomes and labour market status, since job instability is seen as one of the main causes of the recent downward trends in fertility rates.

Several empirical studies look at the role of fixed-term contracts as a source of instability, especially since the spreading of the use of atypical contracts in the 1990s. Although temporary contracts were conceived as a flexible device to foster employment, their association to greater instability on the labour market is perceived as an obstacle to family formation, as, *ceteris paribus*, any worker would prefer a permanent contract to a temporary one (Booth et al., 2002; De La Rica and Iza, 2005).

De La Rica and Iza (2005) estimate the effect of being on a fixed-term contract on the probability of getting married and of giving birth on a sample of young Spanish workers. They find that men are markedly affected by working under temporary contracts in both their likelihood of getting married and of having a child, while women only seem to show the tendency to postpone child-bearing until they can work under a more protective permanent contract. Similarly, Auer et al. (2013) conclude that, although the probability of child-bearing for young women seems to be lowered by working under fixed-term contracts, women in older age groups eventually decide to have a child regardless their job status. Auer and Danzer (2015) investigate the relationship between entering the labour market on a fixed-term contract and both health conditions and the number of children in the medium-run for German young adults. Differently

(1979) recognise that this would partially offset the effects of wage increases on the opportunity cost of child bearing, in terms of foregone earnings. See also Ermisch (1989), Walker (1995), Joshi (1998) and Ahn and Mira (2002).

[5]The model by Caucutt et al. (2002) belongs to the strand of the theoretical literature that recognises a degree of simultaneity of labour supply decisions with marriage and/or fertility choices. This also includes, e.g., Van Der Klaauw (1996), Keane and Wolpin (2002), Francesconi (2002), Sheran (2007).

[6]Huttunen and Kellokumpu (2012) also mention other indirect effects such as the increased risk of divorce and of health deterioration.

from De La Rica and Iza (2005), they find no significant correlations for men, while women do seem to postpone first birth compared to their counterparts who started off their career with a permanent contract.

Other recent empirical papers look at the effect of job displacement on fertility choices. Huttunen and Kellokumpu (2012) estimate that if a woman is displaced, her fertility is immediately reduced and this persists over time, leading to a reduced completed fertility. The effect is much stronger in the case of highly educated women. On the other hand, the authors find no significant effect of the job displacement of men on the couple's decision to have children. They argue that this result suggests that the income effect is not such a relevant element in the couple's fertility choices, while the woman's career concerns are a much more decisive aspect. Accordingly, Del Bono et al. (2012) show that the number of children is significantly reduced in the short- and medium-term following a woman's job loss, particularly in the case of women in white collar occupations. This supports the hypothesis that fertility is negatively affected by job displacement because of career considerations. However, Del Bono et al. (2012) do find evidence of a negative link between the male's job loss and fertility, indicating that income concerns may actually make a difference. The authors also look at the consequences of job displacement more in depth by distinguishing the effect of job separation *per se* from that of being unemployed as a fallout of displacement (Del Bono et al., 2015). They provide evidence for the relevance of career and employability concerns, indicated by the fact that, differently from job displacement, going into unemployment after a job loss does not seem to affect fertility choices in the short-run.[7]

3 Sample Selection and Descriptive Statistics

I run the analysis using data from 18 waves of the BHPS, which is a very detailed and nationally representative survey of private households. The peculiarity of this survey is that it contains a great amount of retrospective information and this allows me to reconstruct the respondents' employment history since they have entered the labour market.

Table 1: Sample Selection

	Individuals	%
Whole sample	32,380	100.00
Leaving school age info non missing	28,792	88.92
Women only	15,023	46.40
Left education in between 1959 - 1986	6,209	19.18
Early career job experience info non missing	6,075	18.76
Fertility info non missing	5,455	16.85
Childless when left edu	5,435	16.78
Out of Labour Force during early career excluded	2,385	7.37
Instrumental variables non missing	2,112	6.52

[7]They consider the fertility outcome as the number of births within the next three and six years. In the case of Del Bono et al. (2012), the number of births is evaluated within three, six and nine years, while Huttunen and Kellokumpu (2012) examine the incidence of job displacement three to eleven years after.

In order to define my sample, I use the main BHPS dataset, to which I match the available retrospective information on educational attainment, marriage, fertility and employment history contained in the related datasets. I first compute the date when individuals leave full-time education; if the date cannot be retrieved, or if the school leaving date is prior to 1959 or after 1986, I drop the individual from the sample. On the grounds of the school leaving date, I reconstruct the employment experience of the individuals in the sample, as well as the variables concerning marriage and fertility.[8] Women who never worked (out of labour force) during the first ten years after leaving full-time education are excluded, as their behaviour may be driven by different mechanisms than those of working women, e.g. women that are particularly prone to child-bearing may decide not to enter the labour market and become stay-at-home mothers, leading to different evaluations of the results.[9]

The final sample is made of 2,112 women who left education between 1959 and 1986 and for whom I have complete information on their job experience during their early career (i.e. their first ten years) and on their fertility at the 20th year since they entered the labour market (see Table 1).

The historical data both on the unemployment rate and the average weekly earnings, which are used as instrumental variables, come from different sources. All data for the years 1959-1975 are drawn from the British Labour Statistics, namely, the *Historical Abstracts 1886-1968* and the *Yearbooks* for the years 1969 to 1975. As for the years following 1975, the unemployment rate is computed using the UK Labour Force Survey, while the average earnings are drawn from the New Earnings Survey tables.[10]

Table 2: Reasons for Changing Job

Voluntary	**44.09%**	**Involuntary**	**13.56%**	**Other**	**42.35%**
of which:		*of which:*		*of which:*	
- Better job	100.00%	- Redundancy	53.87%	- Retired	0.70%
		- Dismissed	9.69%	- Health reasons	4.65%
		- Temp job ended	36.44%	- To have baby	43.29%
				- Family care	14.08%
				- Other	37.28%

Note: 'Better job' includes: left for better job, left for different job, promoted. 'Other' includes: war service (0.42%), moved from area (41.42%), left for FT edu (18.83%), other unspecified reasons (39.33%). These sub-categories, however, are not available for all datasets or waves therefore I pool them together.

As the aim of the analysis is to evaluate the impact of job turnover during early career on long-term fertility outcome, I adopt the following strategy.

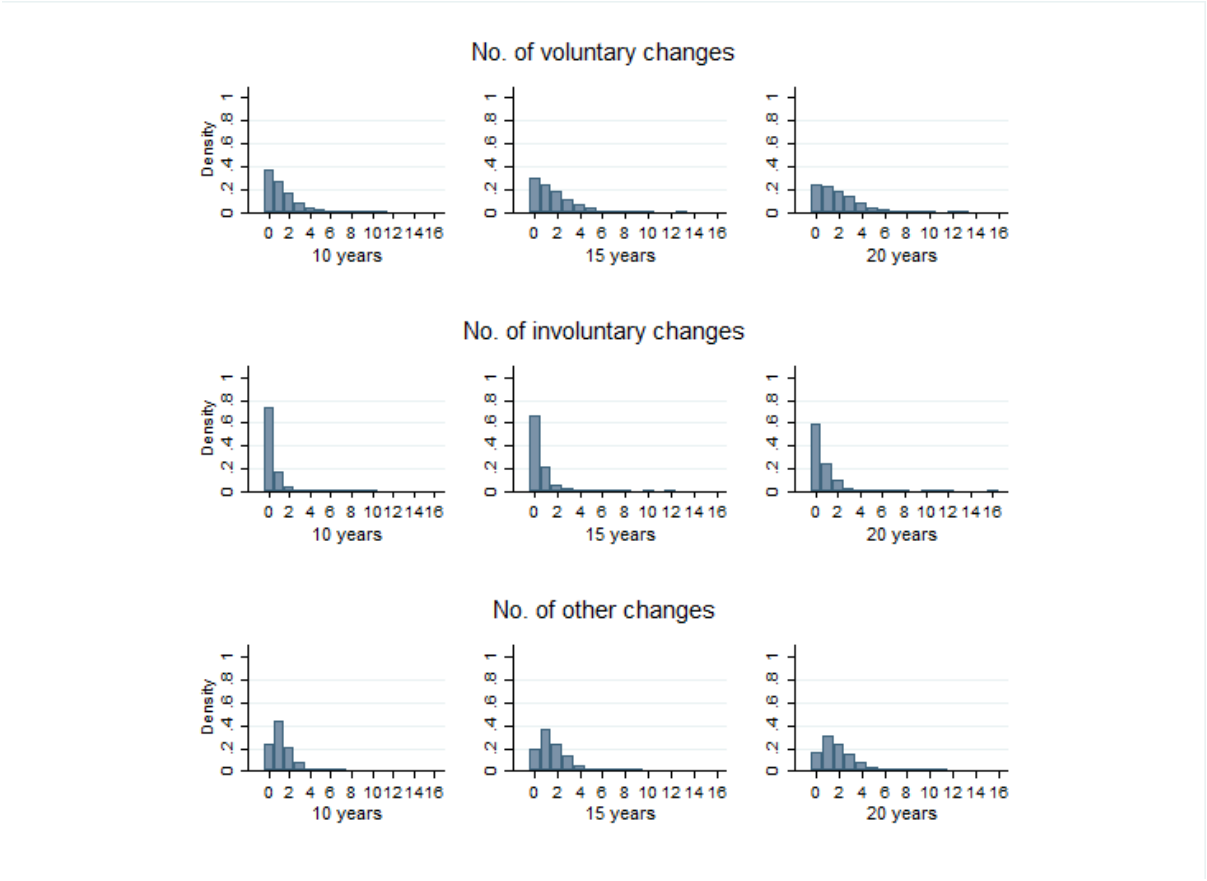
First, following Light and McGarry (1998) and Booth et al. (2002), I measure job turnover as the number of job changes experienced by an individual. Differently from previous analyses, and as a fallout of my contribution to the literature, I do not consider the total number of job

[8] See Appendix B for details on how the individual historical information are produced.

[9] Also, women who gave birth before leaving education are excluded from the sample in order to rule out potential effects of maternity on the educational attainment and, consequently, on the labour supply. In addition, a few observations are excluded because the instrumental variables are missing, due to the fact that the historical series are not available for the corresponding year-Industry (see notes of Figures B.3- B.5).

[10] See Appendix B for details on how the two series are constructed.

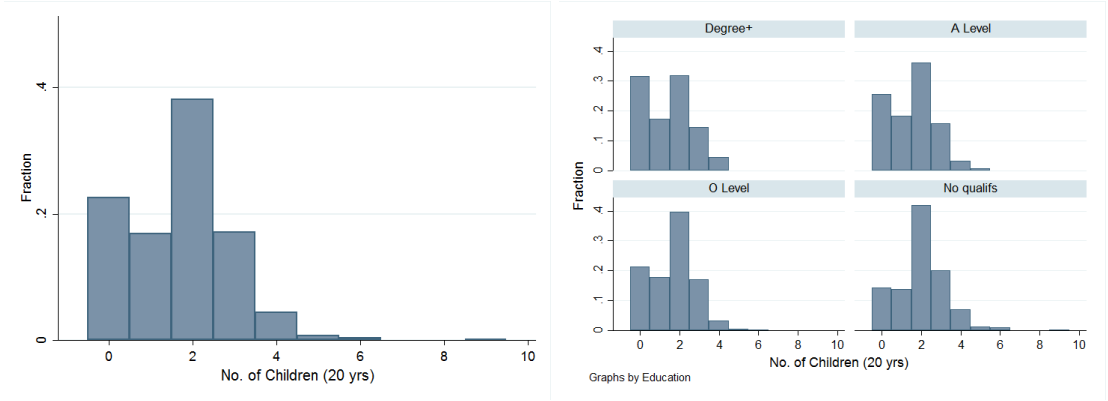
Figure 1: Job Changes at 10th, 15th and 20th Year after FT Education



changes but I choose to distinguish between voluntary, involuntary and other motives that lead to job separation. These three categories are defined on the basis of the self-reported reason why each job ended and are divided as displayed in Table 2: voluntary job changes encompass all jobs that ended because the respondent found a better or different job or was promoted; involuntary job changes refer to jobs that have ended because the worker was dismissed, made redundant, or because a temporary contract expired; if a job ended for any other reason, including 'to have a baby' or 'to look after children/other person', this is classified among the other job changes. In my sample, 88.29% of voluntary changes are followed by another job spell, while this is the case for 50.03% of involuntary changes and for only 37.12% of other changes. Hence, as measures for job turnover I use the total count of the voluntary, the involuntary and the other job changes. Additionally, I employ the share of voluntary, involuntary and other job changes over the total number of job separations. This second measure is meant to work as a normalised index of the intensity of the amount of instability that each worker has experienced in a given time span.

Then, I define early career as the first ten years that a woman has been on the labour market (i.e. since she left full-time education). While the choice of this particular time span may be considered somewhat arbitrary, the literature offers some justification for it. In particular, Topel and Ward (1992) argue that the first ten years in a worker's career are the crucial ones and they account for two thirds (seven out of ten, on average) of the total number of jobs she will ever

Figure 2: Number of Children at the 20th Year



have. As the worker's experience in the labour market increases, the average duration of each job is prolonged and therefore the number of job changes increases less and less rapidly over time (Topel and Ward, 1992; Light and McGarry, 1998). As a matter of fact, the distribution of job changes at the 10th, 15th and 20th year after leaving full-time education is fairly unchanged, indicating that these patterns are consistent with previous findings (see Figure 1).

Finally, I evaluate fertility at the 20th year after the individual has left full-time education. This corresponds to *quasi*-completed fertility, as the average age of women at the 20th year is 37 years old. At this time, women have on average 1.68 children (Figure 2). Fertility is higher for low-educated women, with a large fraction having two children or more, whereas many among women who achieved higher qualifications are childless. While it is true that women aged 37 are not necessarily past their biological cycle and that the average age at first birth is 25 years old, the average number of children at the 30th year, i.e. when women are aged 47, is only slightly larger (1.92 children). If fertility was evaluated at the 30th year, however, the number of observations would be drastically reduced. The choice of the 20th year as a threshold is, hence, a compromise that accounts for the trade-off between the purpose of investigating full fertility decisions and the need to ensure a decent sample size.

The sample on which my analysis is conducted is made of women who left education in between 1959 and 1986, which corresponds to cohorts born between 1939 and 1970. In line with the widely documented increase in female schooling rates, the share of highly-educated women is higher for the youngest cohorts and the number of low-educated women steadily decreases over time (Figure 3, left panel). On average, one out of seven women has at least a degree, while 23% of people in the sample has gained A levels; the remaining 62% of women has either achieved O levels or no qualification at all (Table 3). Also, as expected, the average age of exit from full-time education is higher the higher the qualification level attained: the median age of entry into the labour market is 21 for graduates, 18 for women with A levels and 16 for those with lower qualifications (Figure 3, right panel).

As indicators of the characteristics of the household of origin, I look at the educational attainment, the working status and the birthplace of the mother and the number of siblings the

Table 3: Descriptive Statistics I

Variable	Obs	Mean	Std. Dev.	Min	Max
Individual characteristics					
Year when left edu	2112	1973.926	7.906	1959	1986
Age when left edu	2112	17.258	2.346	15	35
Qualification:					
- Degree+	2097	0.145	0.352	0	1
- A Level	2097	0.230	0.421	0	1
- O Level	2097	0.387	0.487	0	1
- No qualifications	2097	0.238	0.426	0	1
Job of the mother:					
- Not working	2098	0.445	0.497	0	1
- Low-skilled job	2098	0.198	0.398	0	1
- High-skilled job	2098	0.357	0.479	0	1
Education of the mother:					
- No qualifications	1548	0.579	0.494	0	1
- Some qualifications	1548	0.221	0.415	0	1
- Higher edu	1548	0.200	0.400	0	1
Birthplace of the mother:					
- England	1906	0.680	0.467	0	1
- Scotland	1906	0.123	0.329	0	1
- Wales	1906	0.074	0.262	0	1
- Northern Ireland	1906	0.038	0.191	0	1
- Eire	1906	0.020	0.142	0	1
- Outside UK	1906	0.065	0.246	0	1
No. of siblings	2112	2.001	1.999	0	14
Fertility					
Married (20 yrs)	2112	0.789	0.408	0	1
Ever married	2112	0.815	0.388	0	1
Year of marriage	1699	1979.072	9.528	1959	2008
Age at first birth	1670	25.425	5.020	16	44
No. of children (10 years)	2112	0.923	1.013	0	5
No. of children (20 years)	2112	1.675	1.203	0	9
No. of children (30 years)	1186	1.917	1.187	0	9
Spouse					
Age at woman's 20th year	949	39.437	5.050	22	70
Qualification:					
- Degree+	946	0.154	0.361	0	1
- A Level	946	0.311	0.463	0	1
- O Level	946	0.297	0.457	0	1
- No qualifications	946	0.238	0.426	0	1
Job Experience:					
- No. of vol. job changes (10 yrs)	949	1.777	1.575	0	11
- No. of invol. job changes (10 yrs)	949	0.566	0.946	0	11
- No job	949	0.086	0.281	0	1
- White collar	949	0.196	0.397	0	1
- Skilled blue collar	949	0.595	0.491	0	1
- Unskilled blue collar	949	0.122	0.328	0	1

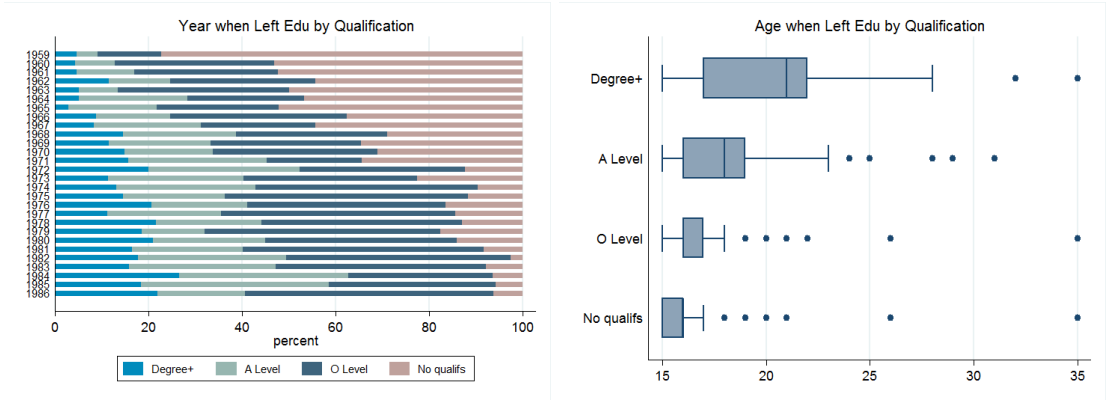
Note: Women sample (cross-section) who left education childless in between 1959 and 1986, and for which info on fertility and job experience is non missing.

Table 4: Descriptive Statistics II

Variable	Obs	Mean	Std. Dev.	Min	Max
Job experience					
At 5th year in the labour market:					
- No. of job spells	2112	1.971	1.388	0	9
- No. of voluntary changes	2112	0.909	1.117	0	7
- No. of involuntary changes	2112	0.252	0.615	0	7
- No. of other changes	2112	0.781	0.761	0	5
At 10th year in the labour market:					
- No. of job spells	2112	3.028	1.987	1	14
- No. of voluntary changes	2112	1.313	1.473	0	11
- No. of involuntary changes	2112	0.399	0.869	0	10
- No. of other changes	2112	1.248	1.035	0	7
- Share of voluntary changes	2112	0.363	0.338	0	1
- Share of involuntary changes	2112	0.112	0.228	0	1
- Share of other changes	2112	0.526	0.361	0	1
At 20th year in the labour market:					
- No. of job spells	2112	4.916	3.117	1	23
- No. of voluntary changes	2112	2.097	2.013	0	13
- No. of involuntary changes	2112	0.705	1.233	0	16
- No. of other changes	2112	1.917	1.536	0	11

Note: Women sample (cross-section) who left education childless in between 1959 and 1986, and for which info on fertility and job experience is non missing.

Figure 3: Time of Leaving Education



respondent ever had.[11] The vast majority of the individuals in my sample have a low-educated, English-born mother; only 6% of women are second generation immigrants (i.e. mother born outside of the UK). The average number of siblings is 2.21, with a large prevalence of women coming from families with less than 4 children.

More than three quarters of women are married at the 20th years into the labour market. I specifically look at marriage status at this time because it coincides with the moment at which their fertility outcome is evaluated. However, this roughly coincides with the indicator for ever been married.

[11]The working status of the mother refers to when the respondent was 14 years old.

Figure 4: Voluntary vs Involuntary Changes by Qualification

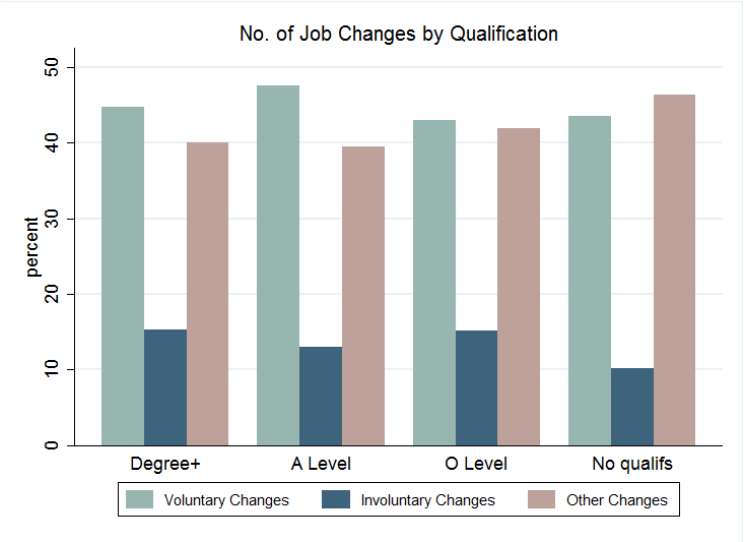
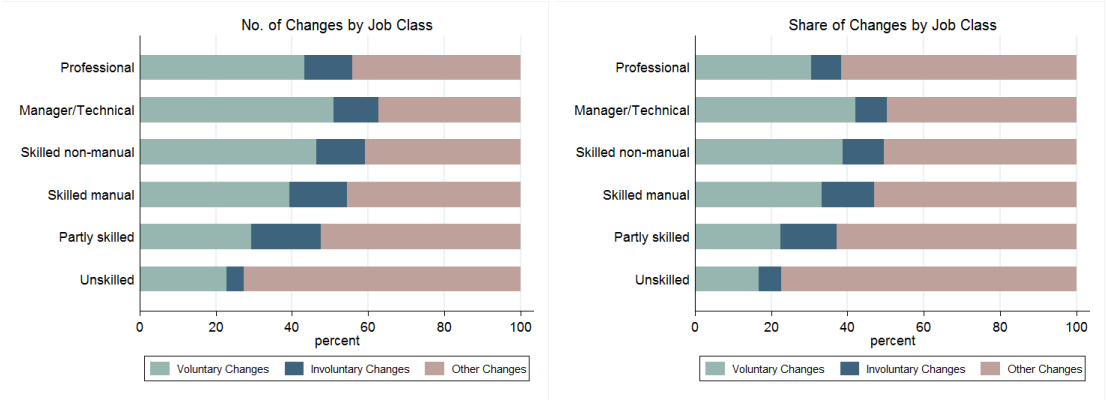


Figure 5: Job Changes by Type and by Social Class



Note: Reasons for Voluntary Changes: Better job, Different job, Promoted; Reasons for Involuntary Changes: Redundancy, Dismissed, Temp job ended; Other Reasons: Retired, Health reasons, To have baby, Family care, Other.

As far as the experience in the labour market during early career (first 10 years after leaving full-time education), each woman has had on average 3.03 jobs.[12] Of these, 36% (1.31) are left voluntarily, 11% (0.40) are left because of dismissal or redundancy and 52% (1.25) end for other reasons.

Voluntary changes are (slightly) more frequent among highly-educated women, whereas involuntary changes are indistinctly experienced by all education sub-groups; conversely, low-qualified women are those who go more often through job separations for other reasons (Figure 4). When breaking down the sample by job class (Figure 5), voluntary job changes seem to be experienced in greater proportion by women who belong to higher job classes, especially professionals and managers; women who incur involuntary job changes are mostly skilled or

[12]Women who have never worked during their early career, i.e. those for which the number of job spells in the first 10 years is equal to zero, are excluded from the sample.

party skilled manual workers; other types of job separation are disproportionately distinctive of unskilled workers.[13]

4 Empirical Model

In order to estimate the effect of early career employment experience on the timing of fertility, the empirical model becomes:

$$C_{it+20} = exp(J'_{ir\bar{t}}\beta_0 + X'_{it}\beta + \delta_t) + \epsilon_{it}, \tag{1}$$

where C_{irt+20} is the number of children born to individual i at time $t + 20$, where t is the year when she has left school. The main variables of interest, i.e. job experience during early career, are included into $J_{ir\bar{t}}$, where $\bar{t}$ indicates the years t to $t + 10$. Individual controls (X_i) are included, as well as year fixed effects.[14] As I am dealing with count data, the model is estimated with a standard Poisson model (Windmeijer and Santos Silva, 1997), hence the exponential specification.

The variables included in $J_{ir\bar{t}}$, i.e. voluntary and involuntary job turnover, are both treated as endogenous. I use two specifications of the same model: the first one exploits the information given by the count of the voluntary and of the involuntary job changes during the woman's early career; in the second specification I substitute the count with the share of voluntary and involuntary job changes over the total number of jobs. This second strategy is meant to evaluate the relative impact of voluntary and involuntary job separations weighted for the amount of job turnover incurred by the worker.

However, employment experience is hardly exogenous to fertility decisions, because both reverse causality and unobserved characteristics issues may arise. In the first case, it may be that planned fertility affects a woman's employment history when the risk of job loss or of failed career advancement increases for women who expect to have a child in the future. This may happen as a consequence of their (potentially) reduced productivity or because employers may sacrifice their job first in case of need (Del Bono et al., 2015). Similarly, there may exist some unobserved characteristics that drive women with stronger family taste to either work less or undertake careers with lower returns and higher uncertainty (De La Rica and Iza, 2005). In both cases, as Del Bono et al. (2015) point out, estimates would be biased towards zero if endogeneity was not accounted for. Conversely, it could be that women who are about to start a family tend to look for a more stable and secure job in view of the financially important commitment that comes with the birth of a child (Easterlin, 1973). In this latter case, coefficients on job instability would be biased away from zero.

[13]The job class is defined as the modal job class evaluated over the first ten years of the woman's career. In case of bimodal distributions, the higher order job class is assigned. Given the absence of information on earnings in the retrospective information data, job class is used as a proxy.

[14]I cannot control for regional fixed effects as I have no retrospective information on the place of residence. The only proxy I can use is the place of birth of the woman's mother, which is included among the individual characteristics.

In the recent literature only a few papers have attempted to rule out the endogeneity bias from the estimated effect of job experience indicators on fertility outcome. While Huttunen and Kellokumpu (2012) and Del Bono et al. (2012) exploit the exogeneity of plant closure when evaluating the effect of job displacement, Auer et al. (2013) are able to profit from the panel structure of their data and estimate fixed effects regressions. Furthermore, Auer and Danzer (2015) aknowledge the potential existence of endogeneity in their model by including a wide range of control variables such as family background, personality traits and attitudes towards career and family formation. Finally, Del Bono et al. (2015) use instrumental variables to account for the bias in the likelihood of going into unemployment.

In this particular context, I instrument job turnover during the individuals' early career with the means of the industry-specific female unemployment rate and the industry-specific growth of the female average earnings in the ten years of the worker's early career. In doing so, I match the unemployment rate and the growth of the average earnings in the Industry Group to which the woman belonged in each of the first ten years of her career. Hence, for example, if a woman worked in the 'Textile' industry in the first 3 years of her career (say, from 1973 to 1975) and then switched to the 'Leather, leather good and fur' industry in the remaining 7 years (1976 to 1982), she is assigned the unemployment rate and the growth in average earnings in the 'Textile' industry for the years 1973 to 1975 and in the 'Leather, leather good and fur' industry for the years 1976 to 1982.[15] Then, I average out these values over the ten years of the woman's early career. Following Windmeijer and Santos Silva (1997), I use a (IV-Poisson) GMM estimator with additive error terms.[16]

The choice of these instruments stems from a number of considerations. First, in principle there should be no evident reason why the instruments should directly affect the outcome variable (i.e. the number of children evaluated 10 to 19 years later). If that was the case, then the assumption would not be valid. Even so, recent evidence (Booth et al., 2002; Burgess et al., 2003) suggests that entering the labour market at times of economic downturns does not have significantly persistent consequences on employment in the medium-run (except for low-skilled workers). Moreover, while the type of occupation that a woman chooses is potentially endogenous to fertility, this should not be the case for the fact of working within a particular Industry Group, where all types of occupations may coexist.

Second, labour market trends such as industry-specific unemployment rate and growth in the average earnings are expected to be strongly correlated to the amount of job turnover a worker experiences. On the one hand, the higher the unemployment rate in a specific industry, the higher the probability that a worker employed in that industry incurs an involuntary job separation. Likewise, this is plausibly associated to a lower probability that the same worker quits her job because she has managed to find a better job (either in terms of wage or of amenities) within that industry. On the other hand, an increase in the growth of the average earnings within an Industry Group, which should pick up the profitability in that particular

[15] In case of multiple changes within the same year where more than one industry is reported, only the first (in chronological order) is taken into consideration.

[16] The model is estimated by GMM using the Stata commands `poisson` and `ivpoisson`.

industry, is presumed to impact negatively the number of involuntary job separations and positively the number of voluntary job changes, i.e. the higher the growth in earnings, the lower the number of layoffs and the higher the chances for a worker to be promoted or to find a better job within that industry. Admittedly, there is also the possibility that the growth of earnings within an Industry Group may be linked to an actual reduction in voluntary job turnover because workers may be content with wage increases in their current job post and hence they may not aspire to switch to a better one. As a matter of fact, however, this would determine an underestimation of the positive correlation between the growth in the average earnings and voluntary job turnover, therefore it is not an element of concern.[17]

Finally, although it may be argued that the trends at the macro level are, *de facto*, determined at the micro level, the exogeneity of the two series to the individual job experience measures is secured by the first being measured on the overall female (full-time) working population, while the latter is based on a specifically selected sub-sample.[18]

Hence, by instrumenting the woman's early career job experience as described above, I try to evaluate its true impact on the number of children born in the long-run and rule out any confounding effect that may be driven by preferences and unobservable characteristics.

For the same simultaneity issues mentioned above and in order to avoid the inclusion of extra endogeneity in the model, I do not consider any other information regarding past or current employment status, including the job class, whether the job was full-time or part-time, etc.

Educational attainment is included in the model as a mere control variable and is not treated as endogenous to fertility. However, it is likely that the coefficients associated to it are plausibly biased.[19]

5 Results

Estimates run on the entire sample of women are reported in Tables 5 and 6, where the main variables of interest are the count and the share of job changes, respectively.

The coefficients of the number of voluntary and involuntary separation in the Poisson estimations (Table 5, column 4) are both negative and significantly different from zero, suggesting that an extra job change yields around a 5% and a 8% decrease in the predicted number of children born, respectively (holding the other constant). I exclude the residual category of other changes because its coefficient would not allow an unambiguous interpretation. This category, in fact, apart from those due to family care that are evidently positively correlated to fertility, includes a large fraction of unspecified reasons and therefore giving estimates a precise meaning would be rather problematic (see Table 2).

As mentioned in the previous sections, however, the coefficients on the indicators for job turnover are likely to be biased because of the potential endogeneity in the model. When this

[17] Conversely, this may actually be at the basis of the weak instrument issues encountered in the analysis.

[18] A similar approach, i.e. the use of time-, region- and industry-specific shares of fixed-term employees as instrumental variables, is also suggested by Auer et al. (2013).

[19] De La Rica and Iza (2005) discuss the endogeneity of education. Sander (1992) and Wooldridge (1997), however, claim that educational attainment is not endogenous to fertility.

Table 5: Number of Job Changes, All Women

	(1) Poisson No. of children	(2) Poisson No. of children	(3) Poisson No. of children	(4) Poisson No. of children	(5) Poisson No. vol. job changes	(6) Poisson No. inv. job changes	(7) IV-Poisson No. of children
No. of voluntary changes	-0.043***	-0.045***	-0.048***	-0.048***			-0.144
	(0.011)	(0.011)	(0.012)	(0.012)			(0.147)
No. of involuntary changes	-0.077***	-0.083***	-0.078***	-0.078***			-0.077
	(0.022)	(0.022)	(0.022)	(0.022)			(0.203)
Age when left edu		-0.037***	-0.030***	-0.030***	-0.022	0.013	-0.032***
		(0.010)	(0.010)	(0.010)	(0.015)	(0.046)	(0.011)
Qualif: degree+		-0.119*	-0.108*	-0.108*	0.194*	0.178	-0.088
		(0.063)	(0.065)	(0.065)	(0.102)	(0.230)	(0.074)
Qualif: a levels		-0.124**	-0.090*	-0.090*	0.182**	0.000	-0.068
		(0.048)	(0.052)	(0.052)	(0.086)	(0.150)	(0.062)
Qualif: o levels		-0.111***	-0.084**	-0.084**	-0.000	0.086	-0.083*
		(0.039)	(0.042)	(0.042)	(0.075)	(0.135)	(0.043)
No. of siblings			0.019**	0.019**	0.002	-0.013	0.019**
			(0.008)	(0.008)	(0.013)	(0.025)	(0.008)
Mother: Scotland			-0.058	-0.058	-0.261***	0.098	-0.084
			(0.055)	(0.055)	(0.084)	(0.170)	(0.064)
Mother: Wales			-0.064	-0.064	-0.449***	-0.070	-0.110
			(0.064)	(0.064)	(0.123)	(0.173)	(0.094)
Mother: N. Ireland			-0.075	-0.075	-0.899***	-0.228	-0.146
			(0.107)	(0.107)	(0.244)	(0.298)	(0.152)
Mother: Eire			-0.075	-0.075	-0.098	0.182	-0.083
			(0.111)	(0.111)	(0.206)	(0.419)	(0.109)
Mother: Non-UK			0.079	0.079	0.072	0.438**	0.088
			(0.063)	(0.063)	(0.105)	(0.191)	(0.076)
Mother: high-skilled job			0.050	0.050	-0.006	0.097	0.053
			(0.041)	(0.041)	(0.073)	(0.133)	(0.043)
Mother: low-skilled job			0.064*	0.064*	0.093	0.020	0.074*
			(0.037)	(0.037)	(0.057)	(0.117)	(0.040)
Avg birth rate				0.082***	0.003	-0.273**	0.083**
				(0.031)	(0.056)	(0.122)	(0.042)
Avg unempl rate					-0.016	0.162***	
					(0.019)	(0.029)	
Growth of avg earnings					1.565***	1.564**	
					(0.329)	(0.742)	
Constant	0.781***	1.387***	1.255***	-0.210	0.601	2.031	-0.075
	(0.085)	(0.169)	(0.188)	(0.540)	(0.949)	(2.091)	(0.809)
Observations	2,112	2,097	1,900	1,900	1,900	1,900	1,900
Year Controls	YES	YES	YES	YES	YES	YES	YES
Only Married	NO	NO	NO	NO	NO	NO	NO
Pseudo R-Squared	0.0154	0.0210	0.0229	0.0229	0.0312	0.0633	
Log-likelihood	-3285	-3243	-2928	-2928	-3023	-1653	

Note: *** p<0.01, ** p<0.05, * p<0.10. Robust standard errors in parentheses. Reference categories: 'No qualifications'; 'Mother: not working'; 'Mother: England'.

endogeneity of job experience is dealt with and the two variables related to job turnover are instrumented with the industry-specific unemployment rate and growth in average earnings, results do not hold anymore (Table 5, column 7) and both coefficients come to be not statistically different from zero. In particular, while the coefficient for involuntary job turnover remains substantially unaffected, voluntary job turnover displays a larger, negative coefficient that implies a reduction of the predicted number of children by 13%, rather than 5%, for each additional voluntary job change, holding the involuntary job separations constant. This would

suggest that the bias in the Poisson coefficients is biased towards zero and therefore women with a higher demand for children are perhaps those who undergo a higher number of voluntary job changes in search for a better job. Nevertheless, the effect may be estimated imprecisely.

In columns 5 and 6 (Table 5), a "pseudo first stage" is displayed: since there is no real first stage in the IV-Poisson, I regress the two endogenous variables separately on all covariates and the excluded instruments. In doing this, I try to give a taste of what the first stage would be and how the two instruments impact the measures of job turnover herein used. As expected, the growth of the average earnings positively affects the number of voluntary changes, possibly by making it easier for the worker to come across better job opportunities within the Industry Group she operates (Table 5, column 5). The average unemployment rate, on the contrary, is positively correlated to the number of involuntary changes (Table 5, column 6), suggesting that the latter increases as becoming unemployed becomes more likely (i.e. the risk of job loss grows at higher levels of unemployment rate). The (heteroskedasticity-robust) F-statistics on the coefficients of the first stage, which are meant to test for the relevance of the instruments, are above the conventional threshold for both the endogenous variables: they are 11.11 in the case of voluntary job changes and 14.23 for the involuntary job turnover measure.[20]

In line with the theoretical predictions, the age at which the woman has left education and the level of schooling attainment are negatively linked to the number of children. De La Rica and Iza (2005) also find that the probability of having the first child is reduced for highly educated women, as suggested by the career prospect motives for postponing maternity. Although potentially endogenous, these variables are included in the model in order to control for differences in education.

On the other hand, family background characteristics do not appear to have a significant impact on fertility choices, similarly to what Auer and Danzer (2015) find using German data. The only positive and significant association arises with the number of siblings, suggesting that coming from larger households is associated to a higher propensity of having more children. The same is found for having a mother working in a low-skilled job rather than not working at all.

Unsurprisingly, the average birth rate is positively and significantly associated to higher fertility, with around 0.08% more children for every one-percentage-point increase in the average birth rate over the twenty years after the woman has left education.

Table 6 displays the estimates relative to the second specification, where the (endogenous) variables of interest are the shares of voluntary and involuntary changes over the total number of job changes. These are computed in order to obtain a measure of the intensity of the voluntariness and involuntariness in changing job during the first years of a worker's career. Since both shares are included in the same model, their coefficients are not directly comparable to the ones in Table 5, as the reference category is slightly different: while in the previous specification only the number of (in)voluntary changes was held constant, here the interpretation

[20]The F-statistics are computed with 2SLS (I use the Stata command `ivreg2`), since the test is not implementable with GMM. Coefficients estimated with 2SLS are omitted, as this method is not appropriate when dealing with count data and the coefficients would not offer a valid interpretation.

Table 6: Share of Job Changes, All Women

	(1) Poisson No. of children	(2) Poisson No. of children	(3) Poisson No. of children	(4) Poisson No. of children	(5) Poisson No. vol. job changes	(6) Poisson No. inv. job changes	(7) IV-Poisson No. of children
Share of voluntary changes	-0.361***	-0.377***	-0.417***	-0.417***			-0.650
	(0.048)	(0.047)	(0.050)	(0.050)			(0.613)
Share of involuntary changes	-0.551***	-0.593***	-0.591***	-0.591***			-0.433
	(0.083)	(0.083)	(0.083)	(0.083)			(0.586)
Age when left edu		-0.041***	-0.034***	-0.034***	-0.020	-0.013	-0.034***
		(0.010)	(0.010)	(0.010)	(0.012)	(0.032)	(0.011)
Qualif: degree+		-0.103*	-0.094	-0.094	0.195**	0.108	-0.079
		(0.062)	(0.065)	(0.065)	(0.083)	(0.179)	(0.076)
Qualif: a levels		-0.112**	-0.076	-0.076	0.220***	-0.097	-0.058
		(0.048)	(0.051)	(0.051)	(0.070)	(0.152)	(0.065)
Qualif: o levels		-0.106***	-0.078*	-0.078*	0.024	0.120	-0.076*
		(0.039)	(0.041)	(0.041)	(0.062)	(0.132)	(0.042)
No. of siblings			0.021***	0.021***	0.019	-0.006	0.023***
			(0.008)	(0.008)	(0.011)	(0.024)	(0.009)
Mother: Scotland			-0.060	-0.060	-0.149**	0.129	-0.073
			(0.053)	(0.053)	(0.071)	(0.141)	(0.060)
Mother: Wales			-0.071	-0.071	-0.318***	0.269*	-0.101
			(0.063)	(0.063)	(0.109)	(0.163)	(0.095)
Mother: N. Ireland			-0.125	-0.125	-0.768***	0.023	-0.170
			(0.108)	(0.108)	(0.211)	(0.287)	(0.166)
Mother: Eire			-0.098	-0.098	-0.174	0.066	-0.109
			(0.104)	(0.104)	(0.183)	(0.402)	(0.109)
Mother: Non-UK			0.088	0.088	-0.079	0.493***	0.075
			(0.062)	(0.062)	(0.086)	(0.155)	(0.074)
Mother: high-skilled job			0.065	0.065	0.015	0.226*	0.065
			(0.041)	(0.041)	(0.061)	(0.123)	(0.044)
Mother: low-skilled job			0.075**	0.075**	0.087*	0.100	0.080**
			(0.036)	(0.036)	(0.048)	(0.101)	(0.040)
Avg birth rate				0.072**	-0.057	-0.082	0.076**
				(0.031)	(0.047)	(0.137)	(0.036)
Avg unempl rate					-0.039**	0.179***	
					(0.018)	(0.031)	
Growth of avg earnings					0.952***	2.007***	
					(0.321)	(0.745)	
Constant	0.848***	1.516***	1.378***	0.093	0.156	-1.783	0.085
	(0.085)	(0.170)	(0.187)	(0.535)	(0.803)	(2.143)	(0.746)
Observations	2,112	2,097	1,900	1,900	1,900	1,900	1,900
Year Controls	YES	YES	YES	YES	YES	YES	YES
Only Married	NO	NO	NO	NO	NO	NO	NO
Pseudo R-Squared	0.0230	0.0295	0.0329	0.0329	0.0121	0.0437	
Log-likelihood	-3259	-3214	-2898	-2898	-1272	-628.2	

Note: *** p<0.01, ** p<0.05, * p<0.10. Robust standard errors in parentheses. Reference categories: 'No qualifications'; 'Mother: not working'; 'Mother: England'.

of coefficients should be made with respect to an equivalent decrease in the share of other kinds of job changes.

Column 4 in Table 6 reports coefficients for the full uninstrumented specification of the model. The number of children is associated to a significant reduction by 0.4% following a one-percentage-point increase in the share of voluntary changes, keeping the fraction of involuntary changes fixed. That is, an increase in the share of voluntary changes is simultaneously coupled to an equivalent decrease in the share of other changes because the denominator is composed of

all three types of changes. Similarly, a one-percentage-point increase in the share of involuntary changes is associated to a significant fall in the number of children by 0.6% in substitution to an equivalent decrease in the share of job changes for other reasons. When using instrumental variables, like in the previous case, both coefficients lose their significance. Yet, the magnitude of the coefficients seems to indicate a bias in the uninstrumented estimates that is coherent with the hypothesis that women with stronger preferences for children seek more stable jobs, i.e. they tend to incur less involuntary and more voluntary job turnover.

The IV approach here is evaluated with a "pseudo first stage" similar to the one presented in Table 5. Columns 5 and 6 report significant associations between the instruments and the endogenous variables that are consistent with the hypotheses of the unemployment rate affecting negatively the number of involuntary job changes and of the growth in average earnings being linked to a greater number of voluntary job separations. The F-statistics on the first stage are, again, computed with 2SLS. Their values are 6.86 and 17.30 for the shares of voluntary and involuntary changes, respectively. All other covariates keep sign and significance consistent with those in Table 5.

Then, I run the analysis on a restricted sample of women who have been married at least once since they left education.[21] This is to account for the potential differences in fertility behaviour of this particular sub-sample of women, compared with their counterparts (i.e. women who have never been married up to their twentieth year in the labour market). In doing so, I am essentially excluding nearly a fourth of the sample, which should hypothetically be composed of less family-inclined (and perhaps more job-oriented) women. Hence, one might expect to obtain a weaker correlation between job-related indicators and the number of children born to a woman compared to the estimates run on the full sample, as people in this particular sub-group might already have revealed their preference for starting a family with their decision to marry their partner.[22] Consequently, fertility choices for these women (and their spouse) might be less affected by changes in their working experience because they may pursue their child-bearing intentions regardless of their condition in the labour market.

Nevertheless, in accordance with De La Rica and Iza (2005), who find that married women working on a fixed-term contract tend to delay motherhood, I still find a negative and significant association between job experience indicators and fertility: the predicted number of children born to married women decreases by 6% and 9%, following an additional voluntary or involuntary job separation (keeping the other constant), respectively (Table 7, column 1). Likewise, fertility falls by 0.5% (0.6%) following a one-percentage-point increase in the share of voluntary (involuntary) changes in lieu of other types of changes (Table 7, column 5). Nonetheless, when the IV approach is used, the coefficients of the job turnover indicators turn out to be non-significant as in the previous cases. Their magnitudes imply a more negative impact of voluntary changes on the number of children and a less negative response to involuntary job

[21] The actual restriction is based on an indicator for being married at the twentieth year into the labour market, which is roughly equivalent to ever been married (see Table 3).

[22] Indeed, women in the full sample have on average 1.67 children each, while in the only-married sample the mean is 1.90 children born to each woman (non-married have an average value of 0.84).

Table 7: Married Women

	(1) Poisson No. of children	(2) IV-Poisson No. of children	(3) Poisson No. of children	(4) IV-Poisson No. of children	(5) Poisson No. of children	(6) IV-Poisson No. of children	(7) Poisson No. of children	(8) IV-Poisson No. of children
No. of voluntary changes	-0.064***	-0.301	-0.063***	-0.302				
	(0.012)	(0.206)	(0.012)	(0.208)				
No. of involuntary changes	-0.092***	-0.030	-0.092***	-0.028				
	(0.022)	(0.373)	(0.022)	(0.373)				
Share of voluntary changes					-0.460***	-1.357	-0.458***	-1.358
					(0.048)	(0.837)	(0.048)	(0.844)
Share of involuntary changes					-0.644***	-0.755	-0.645***	-0.751
					(0.085)	(1.726)	(0.085)	(1.737)
Age when left edu	-0.013	-0.014	-0.012	-0.015	-0.016	-0.018	-0.015	-0.018
	(0.010)	(0.013)	(0.010)	(0.013)	(0.010)	(0.016)	(0.010)	(0.016)
Qualif: degree+	-0.185***	-0.143*	-0.181***	-0.143*	-0.182***	-0.142*	-0.179***	-0.142*
	(0.063)	(0.078)	(0.063)	(0.077)	(0.062)	(0.077)	(0.062)	(0.077)
Qualif: a levels	-0.127***	-0.073	-0.123**	-0.073	-0.118**	-0.065	-0.115**	-0.065
	(0.048)	(0.072)	(0.048)	(0.071)	(0.047)	(0.069)	(0.047)	(0.068)
Qualif: o levels	-0.126***	-0.124***	-0.123***	-0.125***	-0.123***	-0.116***	-0.120***	-0.117***
	(0.038)	(0.044)	(0.038)	(0.044)	(0.037)	(0.043)	(0.037)	(0.042)
No. of siblings	0.011	0.012	0.011	0.012	0.011	0.011	0.011	0.011
	(0.007)	(0.009)	(0.007)	(0.009)	(0.007)	(0.009)	(0.007)	(0.009)
Mother: Scotland	-0.010	-0.030	-0.010	-0.030	-0.010	-0.020	-0.010	-0.020
	(0.056)	(0.057)	(0.055)	(0.057)	(0.054)	(0.058)	(0.054)	(0.058)
Mother: Wales	-0.032	-0.113	-0.032	-0.113	-0.025	-0.099	-0.025	-0.099
	(0.061)	(0.093)	(0.061)	(0.094)	(0.058)	(0.101)	(0.058)	(0.103)
Mother: N. Ireland	0.080	0.071	0.076	0.071	0.045	0.014	0.041	0.014
	(0.145)	(0.166)	(0.144)	(0.166)	(0.140)	(0.158)	(0.140)	(0.157)
Mother: Eire	0.036	0.021	0.033	0.022	0.000	-0.052	-0.002	-0.052
	(0.080)	(0.098)	(0.080)	(0.098)	(0.072)	(0.090)	(0.072)	(0.089)
Mother: Non-UK	0.086	0.097	0.085	0.096	0.083	0.084	0.082	0.084
	(0.057)	(0.107)	(0.057)	(0.107)	(0.056)	(0.119)	(0.056)	(0.119)
Mother: high-skilled job	0.067*	0.096*	0.066*	0.096*	0.079**	0.121*	0.079**	0.121*
	(0.038)	(0.051)	(0.038)	(0.051)	(0.038)	(0.064)	(0.037)	(0.064)
Mother: low-skilled job	0.056	0.096*	0.055	0.096*	0.065*	0.106*	0.064*	0.106*
	(0.035)	(0.056)	(0.035)	(0.056)	(0.034)	(0.064)	(0.034)	(0.065)
Avg birth rate	0.056	0.049	0.055	0.049	0.049	0.034	0.049	0.034
	(0.034)	(0.077)	(0.034)	(0.077)	(0.034)	(0.064)	(0.034)	(0.064)
Spouse: high edu			-0.025	0.003			-0.022	0.002
			(0.034)	(0.046)			(0.034)	(0.045)
Constant	0.026	0.393	0.019	0.389	0.262	0.789	0.255	0.788
	(0.599)	(1.565)	(0.600)	(1.559)	(0.586)	(1.460)	(0.586)	(1.461)
Observations	1,506	1,506	1,506	1,506	1,506	1,506	1,506	1,506
Year Controls	YES	YES	YES	YES	YES	YES	YES	YES
Only Married	YES	YES	YES	YES	YES	YES	YES	YES
Pseudo R-Squared	0.0236		0.0237		0.0332		0.0333	
Log-likelihood	-2302		-2302		-2279		-2279	

*** p<0.01, ** p<0.05, * p<0.10. Robust standard errors in parentheses. Reference categories: 'No qualifications'; 'Mother: England'; 'Mother: not working'.

losses with respect to the full sample.[23] It may be, then, that working married women are subject to a relatively stronger dominance of the substitution effect in their fertility choices compared to their non-married counterparts, perhaps because of the presence of their spouse as an additional source of income. This is not true, however, in the case of increases in the share of involuntary job separations as an alternative to other types of changes.

Interestingly, the educational attainment of the husband seems not to have any notable association to the number of children born (Table 7, columns 4 and 8).

[23]It may be worth pointing out that married women in the sample undergo more job interruptions than those without a spouse: non-married, as expected, experience less of the other types, i.e. those including family care motives, of job separation (0.67 vs. 1.40 other types of job changes per woman, on average). Moreover, while there are no differences in the number of involuntary job changes across the two groups, married women have on average 1.43 voluntary job changes, compared to 0.89 of the non-married.

6 Heterogeneous effects

I also examine potential differences in the impact of job turnover across educational groups and cohorts. Results are presented in Tables A.1 and A.2.

When I divide the sample by educational attainment, with A levels or more on one side and any lower qualification on the other, I observe that the count of job changes is always negatively correlated to the number of children (Table A.1). However, involuntary changes seem to be significantly linked to fertility only in the case of the less educated group of women, where the number of children is associated to a decrease by 9% for every additional job separation.

When ruling out the endogeneity from the model, the magnitude of the coefficients of the voluntary job changes rises, especially in the case of less-educated women. On the contrary, involuntary changes imply a negligible effect on highly-educated women and even a positive effect on the less qualified. This may suggest that career advancement motives may be particularly meaningful in the case of women who did not invest much in human capital, while an involuntary job loss may facilitate child-bearing through the substitution effect channel. Although the result may appear to be in contrast with the previous theoretical evidence (Francesconi, 2002), it should be noted that educational attainment of women has jumped to high levels in relatively little time in the past few decades (Joshi et al., 1985; Ratcliffe and Smith, 2008) and therefore the low-educated group is greatly represented by women in the older cohorts, who also used to face a much tighter labour market than their younger counterparts.[24] Nevertheless, the lack of statistical significance suggests that coefficients may not be precisely estimated.

Yet, when I break down the sample by cohort (Table A.2), estimates suggest a partial confirmation of the mechanism just mentioned.[25] In the uninstrumented specification, job turnover indicators seem to only be significantly associated to fertility outcome of the older cohort, with a decrease in the number of children by 6% following an additional voluntary change and by 16% as a result of an extra involuntary separation. Conversely, the corresponding coefficients for the younger sub-group are much lower in magnitude (around 3%) and are not statistically significant. The use of the IV approach reveals a much stronger negative impact of job turnover for women in the older cohort and a change in sign in the estimated effect for women in the younger cohort.

These results may provide (however not significant) evidence of a relatively stronger incompatibility of job turnover with fertility choices particularly for women who work in a tighter labour market, i.e. women belonging to older cohorts (before the implementation of the Equal Pay Act and the Sex Discrimination Act, both dating back to 1975) or to the less-qualified group of workers, the latter being the most exposed to the scarring effects of labour market shocks (Burgess et al., 2003).

[24] See also Figure 3.

[25] The cohorts are computed on the distribution of the year when education is left. The breakpoint is 1975, which is the 50th percentile of the distribution and also the year at which the series used as instrumental variable are joint together (see Section B.1.2).

7 Conclusions

The aim of this paper is to explore to what extent voluntary and involuntary job mobility during the first years of a woman's career affect her fertility decisions in the long run. With this investigation, I intend to contribute not only to the debate on the long-term effects of job turnover, but also to the literature that deals with the link between individual conditions in the labour market and fertility choices.

The analysis reveals the existence of a negative and significant correlation between job turnover and fertility. However, when I take into consideration the possibility that women with different preferences for children select themselves into diverse career paths, results point in direction of the hypothesis that women with a stronger taste for child-bearing may be more likely to choose more mobile careers. Presumably, this may happen as a consequence of their pursuance of better labour market conditions that can guarantee a more comfortable child rearing. Such findings, however, are likely to be a specific prerogative of working women, as those who have been inactive in their first ten years after leaving education are excluded from the sample. When I use an instrumental variable approach, both types of job turnover still yield a negative effect on the number of children born to a woman by her twentieth year in the labour market, but this appears to be much larger than in the uninstrumented specifications, although not precisely estimated. The implications of these findings are coherent with the hypothesis that high job turnover during early career, regardless of being due to voluntary of involuntary motives, yields a reduction in the number of children as a consequence of the woman's concerns over her future career and employability. Moreover, results imply a relative prevalence of the substitution effect for the sub-sample of married women.

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Appendix

A.1 Appendix A: Tables

Table A.1: Estimates by Education

	(1) Poisson No. of children	(2) IV-Poisson No. of children	(3) Poisson No. of children	(4) IV-Poisson No. of children
Panel A: Counts				
No. of voluntary changes	-0.035*	-0.041	-0.046***	-0.155
	(0.021)	(0.260)	(0.014)	(0.183)
No. of involuntary changes	-0.051	-0.001	-0.089***	0.061
	(0.033)	(0.359)	(0.030)	(0.183)
Panel B: Shares				
Share of voluntary changes	-0.404***	-0.172	-0.393***	-0.832
	(0.085)	(1.032)	(0.062)	(0.840)
Share of involuntary changes	-0.498***	-0.056	-0.602***	-0.150
	(0.157)	(0.902)	(0.097)	(0.650)
Observations	727	727	1,179	1,179
High Edu	YES	YES	NO	NO

*** p<0.01, ** p<0.05, * p<0.10. Robust standard errors in parentheses. Full sample. The following controls are included in all regressions but are omitted for brevity: number of siblings, birthplace and working status of the mother, average birth rate, year controls.

Table A.2: Estimates by Cohort

	(1) Poisson No. of children	(2) IV-Poisson No. of children	(3) Poisson No. of children	(4) IV-Poisson No. of children
Panel A: Counts				
No. of voluntary changes	-0.064***	-0.272	-0.028	0.367
	(0.015)	(0.245)	(0.019)	(0.299)
No. of involuntary changes	-0.176***	-0.735	-0.028	0.222
	(0.045)	(1.002)	(0.024)	(0.167)
Panel B: Shares				
Share of voluntary changes	-0.470***	-1.211	-0.350***	1.541
	(0.066)	(0.944)	(0.079)	(2.325)
Share of involuntary changes	-0.942***	-2.041	-0.347***	1.962
	(0.150)	(2.649)	(0.103)	(1.773)
Observations	927	927	903	903
Cohort	Pre-1975	Pre-1975	Post-1975	Post-1975

*** p<0.01, ** p<0.05, * p<0.10. Robust standard errors in parentheses. Full sample. The following controls are included in all regressions but are omitted for brevity: educational attainment, number of siblings, birthplace of the mother, working status of the mother, average birth rate, year controls.

B.1 Appendix B: Data Construction

B.1.1 Reconstructing individual historical information

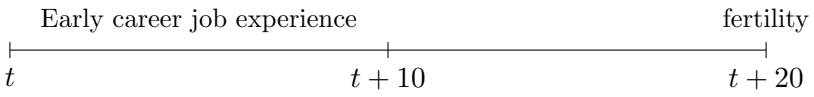
I start from the whole BHPS sample and gather information on all individuals for whom I can derive the year in which they first left full-time education. If this cannot be retrieved, or if the

school leaving date is prior to 1959 or after 1986, I drop the individual from the sample.[26]

Then, I reconstruct the job history for the individuals left in the sample using the retrospective information drawn from the cLIFEJOB dataset, together with that contained in the wJOBHIST and wINDRESP files.[27] Specifically, I keep all individuals for which I can retrieve full information on the job spells experienced during their first ten years in the labour market (i.e. early career), which are computed starting from the date when education was left. For each job spell, I obtain details on both the Industry Group in which the employing firm was operating (according to the SIC 1958 classification), whether the worker was operating on a manual or a non-manual regime and the reason why the job ended.

Finally, when applicable, I retrieve the date of first marriage from the wMARRIAG and the wINDRESP files, and the birth date and the number of children born to every woman from the wCHILDNT and the wINDRESP files. This information is then used to compute the corresponding variables, which are evaluated at the twentieth year after entering the labour market (see Figure B.1).

Figure B.1: Timeline of Individual History



B.1.2 Aggregate Data on Unemployment Rate and Average Weekly Earnings

Data on the female unemployment rate is extracted from the British Labour Statistics tables and the UK Labour Force Survey (see the sources listed in Table B.1). The unemployment rate for the years 1959-1975 is calculated as the ratio of the number of employees in employment over the sum of the employees and of the people registered as wholly unemployed in each Industry Group as defined by the Standard Industrial Classification of 1958.[28] The unemployment rate for the following years, which is drawn from the UK-LFS, is computed consistently with the older data. In the case of unemployed individuals, when the Industry Group is not stated I assign the one where the employee previously worked.

Information on the female average weekly earnings is extracted from the British Labour Statistics tables and the New Earning Survey (see the sources listed in Table B.2). I compute two different series: one for manual female workers and one for non-manual female workers. The growth in the average earnings of manual and of non-manual female workers is calculated over the year before and the year after the reference date.

In order to link two non-comparable series coming from different sources (namely, the series from the British Labour Statistics for the years 1959-1975 with the series from both the UK-

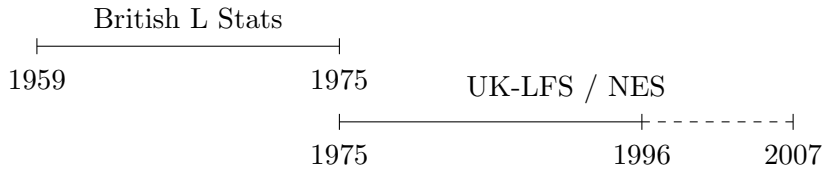
[26] This latter restriction is to be attributed to the availability of data on the average earnings (see next subsection). If only the year is known, I assume the education spell ending date to be on July 1st as an approximation of the end date of the academic year.

[27] See the BHPS Codebook, Volume A, for a description of the datasets.

[28] Counts are based on all women aged 18+ and working full-time, mid-year (June). Self-employed workers are excluded from the count.

LFS for the years 1975-2007 and the NES for the years 1975-1996), I use harmonisation by backcasting: given that the two series overlap at the year 1975 (see Figure B.2), I calculate the yearly growth rate for each series and then report the levels from the newer series to the older one, after adjusting for the growth rate, and go backwards.[29]

Figure B.2: Timeline of Macro Series



The series that are effectively used in the analysis are: (i) the female unemployment rate, (ii) the growth of the average weekly earnings of female manual workers and (iii) the growth of the average weekly earnings of female non-manual workers, all disaggregated by Industry Group (SIC1958). Descriptive statistics are displayed in Figures B.3, B.4 and B.5.[30]

[29] See https://www.ecb.europa.eu/stats/pdf/money/aggregates/hist_series.pdf?438eba18f6a78f0d50f0fe925cdd9e4f.

[30] Some values are missing. In the case of the British Labour Statistics Yearbooks and the New Earnings Survey, this is due to the fact that too few workers in an Industry Group were counted and therefore national estimates were not produced. Accordingly, when I compute the unemployment rate with the Labour Force Survey, the value is set to missing for all those Industry-year cells with too few individuals (less than 70).

Table B.1: Unemployment Rate Data Sources

Employed workers:				
Time	Definition	Group	Source	Table
1959-1968	Numbers of employees in employment	Females	Br. L. Stats Historical Abstract 1886-1698	134
1969-1970	Numbers of employees in employment	Females	Br. L. Stats Year Book 1970	87
1971-1975	Numbers of employees in employment	Females	Br. L. Stats Year Book 1975	62
1975-2008	Employees (weighted)	Females	UK Labour Force Survey	-
Unemployed workers:				
Time	Definition	Group	Source	Table
1959-1968	Numbers of persons registered as wholly unemployed	Total	Br. L. Stats Historical Abstract 1886-1698	171
1959-1968	Numbers of persons registered as wholly unemployed	Males	Br. L. Stats Historical Abstract 1886-1698	172
1969	Numbers of persons registered as wholly unemployed	Females	Br. L. Stats Year Book 1969	121
1970	Numbers of persons registered as wholly unemployed	Females	Br. L. Stats Year Book 1970	137
1971	Numbers of persons registered as wholly unemployed	Total	Br. L. Stats Year Book 1971	107
1971	Numbers of persons registered as wholly unemployed	Males	Br. L. Stats Year Book 1971	107
1972	Numbers of unemployed persons	Females	Br. L. Stats Year Book 1972	109
1973	Numbers of unemployed persons	Total	Br. L. Stats Year Book 1973	101
1973	Numbers of unemployed persons	Males	Br. L. Stats Year Book 1973	101
1974	Numbers of unemployed persons	Females	Br. L. Stats Year Book 1974	123
1975	Numbers of unemployed persons	Total	Br. L. Stats Year Book 1975	96
1975	Numbers of unemployed persons	Males	Br. L. Stats Year Book 1975	96
1975	Numbers of unemployed persons	Total	Br. L. Stats Year Book 1976	105
1976	Numbers of unemployed persons	Males	Br. L. Stats Year Book 1976	105
1975-2008	Unemployed (weighted)	Females	UK Labour Force Survey	-

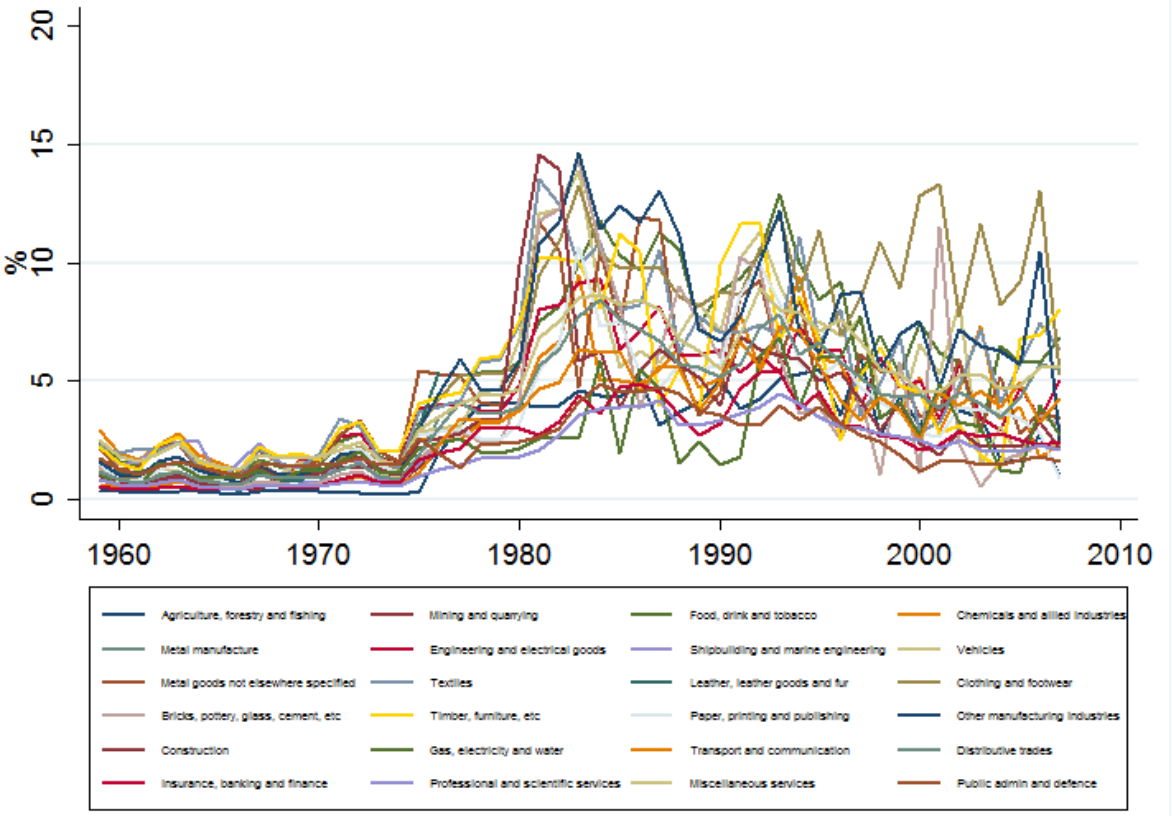
Notes: All women aged 18+ and working full-time, mid-year (June). When two data are available, the most recent classification is chosen (e.g. 1969). In some cases tables do not report figures specifically for female workers: hence, these are calculated by subtracting the number of male workers from the total number of workers.

Table B.2: Average Weekly Earnings Data Sources

Manual workers:				
Time	Definition	Currency	Source	Table
1959-1968	Avg Wk Earnings of manual women	£.s.d	Br. L. Stats Historical Abstract 1886-1698	42
1969-1974	Avg Wk Earnings of manual women	£	Br. L. Stats Year Book 1974	35
1975	Avg Wk Earnings of manual women	£	Br. L. Stats Year Book 1975	22
1975-1996	Avg Wk Earnings of manual women	£	New Earnings Survey	-
Non-manual workers:				
Time	Definition	Currency	Source	Table
1959-1968	Avg Wk Earnings of admin, technical and clerical employees	£.s.d	Br. L. Stats Historical Abstract 1886-1698	53
1969-1970	Avg Wk Earnings of admin, technical and clerical employees	£	Br. L. Stats Year Book 1970	17
1971	Avg Wk Earnings of non-manual women	£	Br. L. Stats Year Book 1971	36
1972	Avg Wk Earnings of non-manual women	£	Br. L. Stats Year Book 1972	18
1973	Avg Wk Earnings of non-manual women	£	Br. L. Stats Year Book 1973	18
1974	Avg Wk Earnings of non-manual women	£	Br. L. Stats Year Book 1974	14
1975	Avg Wk Earnings of non-manual women	£	Br. L. Stats Year Book 1975	14
1976	Avg Wk Earnings of non-manual women	£	Br. L. Stats Year Book 1976	14
1975-1996	Avg Wk Earnings of non-manual women	£	New Earning Survey	-

Notes: All women aged 18+ and working full-time, October. When two data are available, the most recent classification is chosen (e.g. 1969).

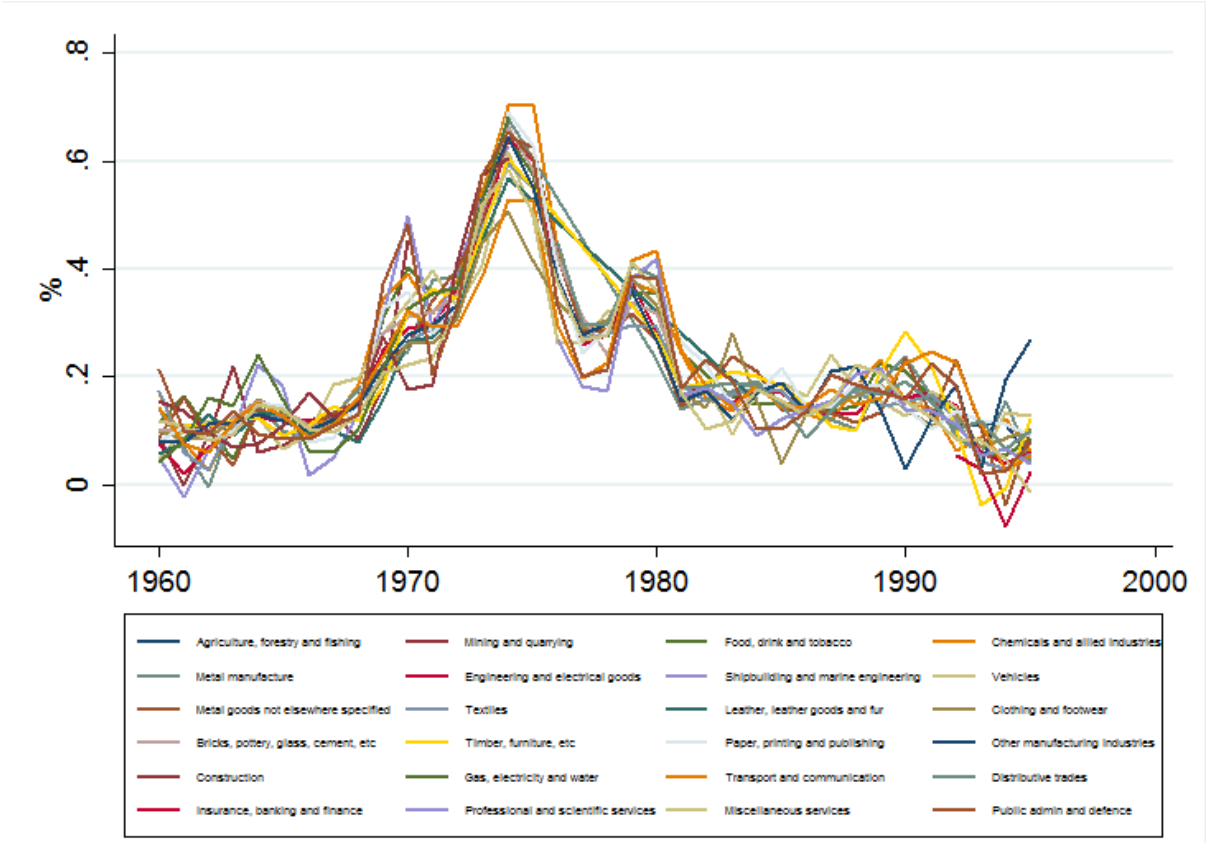
Figure B.3: Unemployment Rates by Industry Group



Industry Group	N	Mean	SD	Min	Max
Agriculture, forestry and fishing	49	2.604	1.930	0.198	6.044
Mining and quarrying	18	0.937	0.438	0.426	2.013
Food, drink and tobacco	49	5.682	3.445	1.051	12.901
Chemicals and allied industries	49	3.891	2.176	1.044	9.511
Metal manufacture	18	1.231	0.717	0.519	3.442
Engineering and electrical goods	49	4.181	2.514	0.543	9.338
Shipbuilding and marine engineering	18	1.622	0.628	0.735	2.479
Vehicles	49	4.713	3.600	0.492	13.900
Metal goods not elsewhere specified	49	4.679	3.037	1.015	11.908
Textiles	49	5.332	3.238	0.894	13.538
Leather, leather goods and fur	18	1.537	1.125	0.380	5.405
Clothing and footwear	49	6.441	4.291	0.624	13.311
Bricks, pottery, glass, cement, etc	49	3.937	3.819	0.563	14.347
Timber, furniture, etc	49	5.065	3.246	1.265	11.674
Paper, printing and publishing	49	3.693	2.577	0.629	10.709
Other manufacturing industries	49	5.811	4.070	0.721	14.663
Construction	49	3.646	3.091	0.567	14.574
Gas, electricity and water	49	2.701	1.826	0.543	7.775
Transport and communication	49	3.276	2.200	0.450	7.357
Distributive trades	49	3.912	2.429	0.618	8.448
Insurance, banking and finance	49	2.394	1.517	0.403	5.362
Professional and scientific services	49	2.084	1.271	0.435	4.484
Miscellaneous services	49	4.751	2.461	1.242	8.930
Public admin and defence	49	2.382	1.144	1.021	4.866
All industries	49	4.053	2.394	0.746	8.405

Notes: Only female workers, aged 18+. The unemployment rate is computed as the number of unemployed people over the sum of the unemployed and the employed workers in a particular Industry Group. Industry Groups are based on the SIC 1958 classification. Missing values: 'Mining and quarrying', 'Metal manufacture', 'Shipbuilding and marine engineering' and 'Leather, leather goods and fur' for the years 1976-2007. Sources: British Labour Statistics (pre-1975), UK LFS (weighted, post-1975).

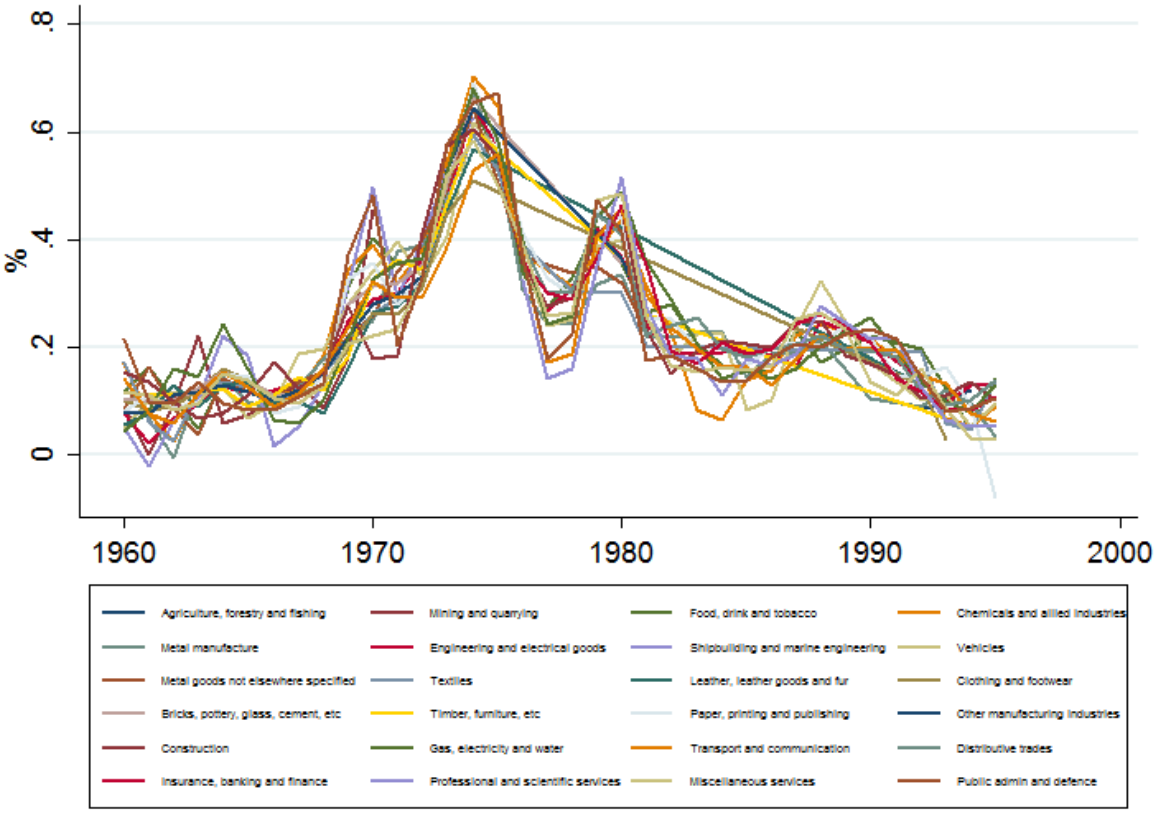
Figure B.4: Growth of Average Weekly Earnings of Manual Workers by Industry Group



Industry Group	N	Mean	SD	Min	Max
Agriculture, forestry and fishing	4	0.095	0.032	0.048	0.113
Mining and quarrying	11	0.135	0.121	0.000	0.453
Food, drink and tobacco	36	0.225	0.145	0.049	0.644
Chemicals and allied industries	36	0.232	0.167	0.027	0.706
Metal manufacture	31	0.183	0.135	-0.004	0.680
Engineering and electrical goods	36	0.208	0.146	0.021	0.643
Shipbuilding and marine engineering	15	0.231	0.205	-0.021	0.627
Vehicles	36	0.214	0.127	0.046	0.617
Metal goods not elsewhere specified	36	0.217	0.150	-0.037	0.645
Textiles	36	0.202	0.134	0.026	0.597
Leather, leather goods and fur	26	0.166	0.122	0.038	0.568
Clothing and footwear	35	0.201	0.118	0.038	0.508
Bricks, pottery, glass, cement, etc	22	0.270	0.163	0.099	0.664
Timber, furniture, etc	31	0.187	0.131	-0.038	0.604
Paper, printing and publishing	36	0.228	0.152	0.078	0.690
Other manufacturing industries	36	0.217	0.141	0.029	0.645
Construction	15	0.222	0.172	0.069	0.606
Gas, electricity and water	15	0.235	0.185	0.043	0.682
Transport and communication	36	0.212	0.124	0.026	0.528
Distributive trades	20	0.202	0.109	0.068	0.449
Insurance, banking and finance	4	0.007	0.058	-0.078	0.054
Professional and scientific services	20	0.170	0.096	0.040	0.417
Miscellaneous services	36	0.201	0.139	-0.013	0.584
Public admin and defence	36	0.222	0.159	0.021	0.653
All industries	36	0.213	0.139	0.063	0.626

Notes: Only manual female workers, aged 18+. The growth of the average weekly earnings is computed as the growth rate from the year before to the year after the reference date. Industry Groups are based on the SIC 1958 classification. The average weekly earnings are deflated using CPI (Base: January 1974; source: ONS). Missing values: 'Agriculture, forestry and fishing' for the years 1959-1990; 'Mining and quarrying' for the years 1973-1996; 'Shipbuilding and marine engineering' for the years 1976-1996; 'Leather, leather goods and fur' for the years 1976-1982; 'Bricks, pottery, glass, cement, etc' for the years 1982-1996; 'Distributive trades' for the years 1959-1970. Sources: British Labour Statistics (pre-1975), New Earnings Survey (post-1975).

Figure B.5: Growth of Average Weekly Earnings of Non-Manual Workers by Industry Group



Industry Group	N	Mean	SD	Min	Max
Agriculture, forestry and fishing	2	0.101	0.027	0.082	0.120
Mining and quarrying	11	0.135	0.121	0.000	0.453
Food, drink and tobacco	34	0.243	0.143	0.047	0.644
Chemicals and allied industries	32	0.236	0.172	0.027	0.701
Metal manufacture	34	0.218	0.145	-0.004	0.680
Engineering and electrical goods	34	0.231	0.143	0.021	0.643
Shipbuilding and marine engineering	15	0.231	0.205	-0.021	0.627
Vehicles	34	0.230	0.144	0.050	0.617
Metal goods not elsewhere specified	20	0.250	0.156	0.037	0.645
Textiles	24	0.222	0.154	0.026	0.597
Leather, leather goods and fur	17	0.181	0.148	0.029	0.568
Clothing and footwear	17	0.186	0.133	0.029	0.508
Bricks, pottery, glass, cement, etc	16	0.243	0.166	0.099	0.664
Timber, furniture, etc	18	0.222	0.155	0.069	0.604
Paper, printing and publishing	36	0.238	0.158	-0.080	0.690
Other manufacturing industries	17	0.231	0.163	0.079	0.645
Construction	36	0.231	0.142	0.069	0.606
Gas, electricity and water	34	0.244	0.160	0.043	0.682
Transport and communication	36	0.218	0.127	0.060	0.560
Distributive trades	20	0.230	0.098	0.093	0.448
Insurance, banking and finance	20	0.228	0.103	0.083	0.464
Professional and scientific services	20	0.201	0.111	0.051	0.515
Miscellaneous services	36	0.218	0.143	0.028	0.584
Public admin and defence	36	0.235	0.163	0.080	0.672
All industries	36	0.228	0.139	0.081	0.626

Notes: Only non-manual female workers, aged 18+. The growth of the average weekly earnings is computed as the growth rate from the year before to the year after the reference date. Industry Groups are based on the SIC 1958 classification. The average weekly earnings are deflated using CPI (Base: January 1974; source: ONS). Missing values: 'Agriculture, forestry and fishing' for the years 1959-1990; 'Mining and quarrying' for the years 1973-1996; 'Shipbuilding and marine engineering' for the years 1976-1996; 'Leather, leather goods and fur' for the years 1976-1982; 'Bricks, pottery, glass, cement, etc' for the years 1982-1996; 'Distributive trades' for the years 1959-1970. Sources: British Labour Statistics (pre-1975), New Earnings Survey (post-1975).