Why has the female unemployment rate fallen so much in Britain?

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Abstract

The fall in aggregate unemployment in Britain between its peaks in 1984 and 1993 is wholly accounted for by a decrease in female unemployment. This remarkable improvement is associated with a fall in their inflow rate, is concentrated among women with young children, and is equally spread across all skill groups. Having discounted temporary demand-side explanations for these trends, we argue that improvements in the provision of workplace assistance to mothers returning to work after childbirth have reduced the labour market frictions associated with the presence of young children. That may be seen as a fall in the natural rate of unemployment.

1. Introduction

Women have been playing an increasingly prominent role in the UK labour market. Female participation increased between 1985 and 1995 (Sly (1996)), especially for women with young children (Joshi *et al* (1995)). Within that increase in participation, continuous full-time employment has risen (McRae (1991)), particularly among better-educated women (Dex *et al* (1993), Macran *et al* (1995)). As the composition of female employment has improved in quality the male-female wage gap has fallen, despite a general increase in wage inequality that would otherwise have reduced female earnings, because females tend to be employed in lower-paid jobs (Harkness and Machin (1995)). While it is generally accepted that female participation is increasing and the wage gap with males is falling, this paper examines ILO-defined female unemployment, about which comparatively little has been written. [(1)]

At the most recent peak, aggregate ILO-defined unemployment in Britain reached 10.4% in spring 1993. But the previous peak, in spring 1984, was higher at 11.7%. We show that this improvement is completely accounted for by a fall in female unemployment; male unemployment actually peaked higher in 1993. This remarkable improvement in female unemployment is associated with a fall in women's rates of inflow into unemployment, is particularly concentrated among women with young children, and is spread equally across all education groups and by previous occupation.

(1) The main reason why little has been written about female unemployment is that many women cannot claim benefits because their husbands work, rendering the claimant count ineffective as a measure of female unemployment. We use the ILO search-based definition of unemployment. Some currently inactive women may enter the labour market quickly, but cannot start within two weeks or have not searched for work in the last four weeks. Arguably, these women could be counted as unemployed, but they do not have high transition rates into employment, and are not ready labour for vacant jobs.

The lower peak in 1993 is often argued to be the result of a more flexible labour market (see Minford and Riley (1994) and Beatson (1995), for example). The labour market pliancy of the unemployed may have increased as replacement ratios have fallen (Wells (1997)) and workers have become more highly educated. Firms' hiring strategies may also be more flexible, because of trade union reform (Waddington (1992), Gosling and Machin (1995)), more decentralised pay-setting, wider use of performance-related pay, and increased competition for jobs in general. But it is hard to reconcile these arguments with the stylised facts about the large fall in female unemployment, which accounts for the fall in aggregate unemployment between the peaks. This paper explains why female unemployment might have fallen between the peaks, in a way that is consistent with the large fall in female inflow rates, is particularly striking for women with young children, and is equally distributed across skill groups.

We proceed as follows. Section 1 discusses recent trends in male and female unemployment rates, relating them to the respective inflow rates and average unemployment durations. Section 2 documents the types of women who now have lower unemployment rates, allowing Section 3 to analyse why women now have low unemployment rates. Section 4 concludes.

2 Male and female unemployment rates

In the last 15 years, women have played an increasingly prominent role in the British labour force. Female participation rates increased by 4 percentage points (pp) to 53.8% in the period 1984 to 1996, while male rates fell by 4.2pp to 72.3%. In the same period, the female share of total employment increased by 3.7pp to 44.3%. It is less well-known how female unemployment rates have changed. This section describes that behaviour.

Figure 1 shows that the ILO-defined aggregate unemployment rate has trended downward between the unemployment peaks in 1984 and 1993.(2) Before 1990, there was little difference between male and female rates. But by 1993, male unemployment rates were 5.9 percentage points higher than females, and never dropped to less than 2.75 points higher through to 1997. Furthermore, male unemployment rates were 0.5pp higher in 1993 than 1984; female unemployment had fallen by 5pp between 1984 and 1993. Figure 2 shows a longer time series for male and female claimant-count unemployment rates. The differences between male and female claimant unemployment rates are generally larger than the differences between ILO rates, reflecting the large number of women searching for jobs, but not eligible for benefits. But both unemployment measures show that the gap between male and female unemployment rates has grown, particularly in the 1990s. Without the trend fall in female unemployment rates over that period, unemployment might not have peaked at a lower rate in the 1990s so far. This gives rise to an interesting possibility: is the fall in female unemployment directly responsible for any perceived drop in the aggregate natural rate of unemployment?

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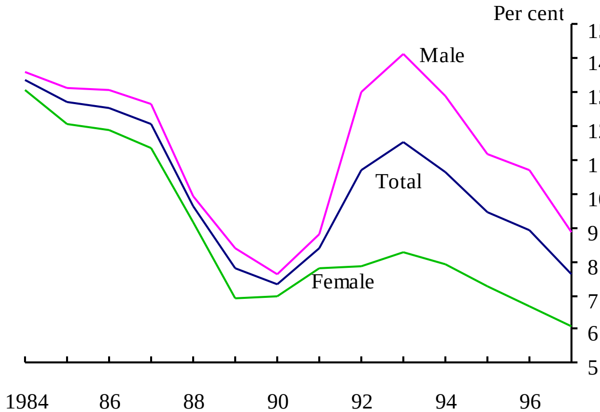
(2) We define the unemployment rate as unemployment/employment, for reasons that will become clear later.

Figure 1

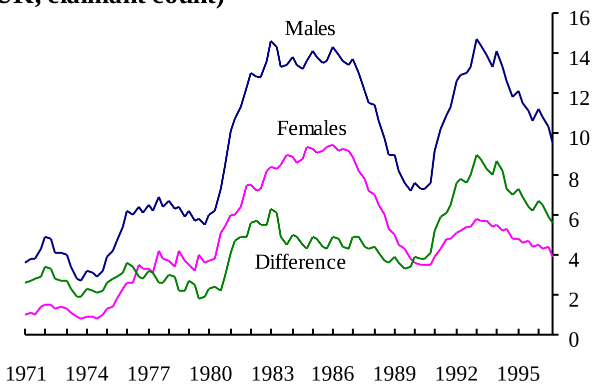
Unemployment rates (U/N) by gender



Note: The unemployment rate is defined as unemployment/employment.

Figure 2

Male and female unemployment rates (UK, claimant count)



A useful starting-point is to assess whether women have lower unemployment rates because they become unemployed less often (the inflow rate), or remain jobless for shorter spells once they become unemployed (the average duration of unemployment spells). Raw inflows and outflows tend to track each other over the business cycle (Burda and Wyplosz (1994)) and on their own tell us little about what is driving unemployment. It is more intuitive and useful to consider the *rate* at which workers flow into unemployment and the *rate* at which workers leave unemployment.

Let N be the stock employed, U the stock unemployed and I the number of workers that flow into unemployment. We can write U/N as

$$\frac{U}{N} = \frac{U}{I} \times \frac{I}{N} \qquad \textbf{(1)}$$

I/N is the inflow rate, the probability that an employed worker will become unemployed.[(3)] Let O be exits from the unemployment pool. Then O/U is the average chance that an unemployed worker will leave the pool, or the exit rate. Layard *et al* (1991) argue that we can assume stationarity year-on-year, which implies that inflows are equal to outflows.[(4)] Since I is then equal to O, I/U is also the exit

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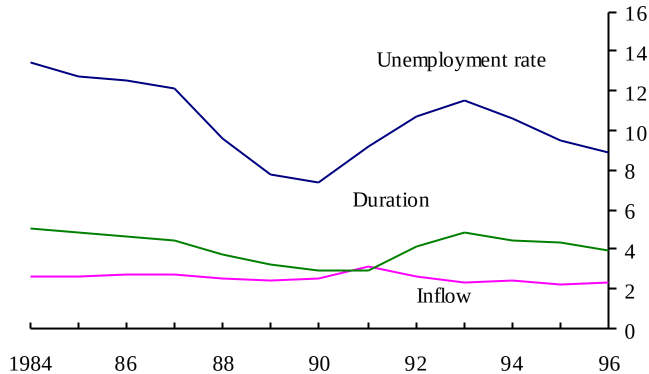
(3) The inflow rate is not quite the chance that an employed worker becomes unemployed, because inactive workers may find jobs if they start searching for work. Our main results are robust to defining the inflow rate as inflows divided by the sum of inactivity and employment. Inflows are the number of workers unemployed for less than three months. The main results are also robust to defining inflows by those unemployed for less than one month, but some of our experiments would involve small cell sizes if we define inflows as unemployment for less than one month. We use unemployment less than three months throughout the paper.
(4) If the labour market is very dynamic, this assumption can be justified because the labour market adjusts to shocks quickly enough that if there were no more shocks, one year later inflows would be equal to outflows. If the labour market is thought to adjust slowly to shocks, unemployment changes slowly, and the approximation that inflows equal outflows is roughly correct.

rate. Unemployment is accordingly decomposed in equation **(1)** into the product of the average length of unemployment spells and the inflow rate.[(5)]

Figure 3 plots inflow rates and average durations. Figure 4 plots actual unemployment and the rate had inflows remained at their 1984 level. From 1993 onwards, a fall in the inflow rate accounts for 1½-2pp of the fall in unemployment relative to 1984. So a fall in the inflow rate accounts for almost all of the fall in unemployment between the peaks in 1984 and 1993. But this aggregate picture masks important differences between males and females.

Figure 3

Aggregate unemployment rate, inflow rate and duration rate



Note: Based on the decomposition in equation (1), where the unemployment rate is the product of the inflow rate and the average duration of unemployment spells.

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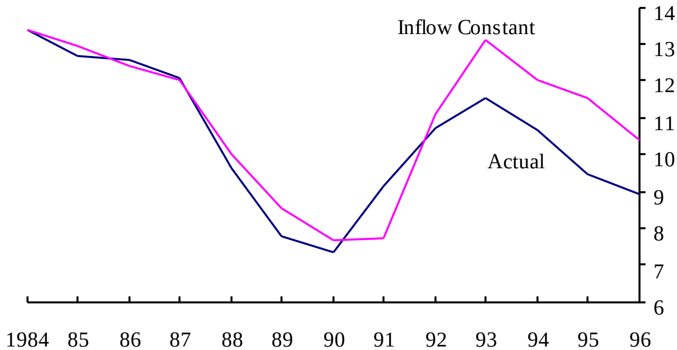
(5) Pissarides (1986) uses a slightly different approach, but the same assumption that year-on-year inflows equal outflows. He measures actual inflow and outflow rates, but uses the identity in **(1)** to calculate an implied unemployment rate.

Figure 4

Actual inflow and outflow constant unemployment rates

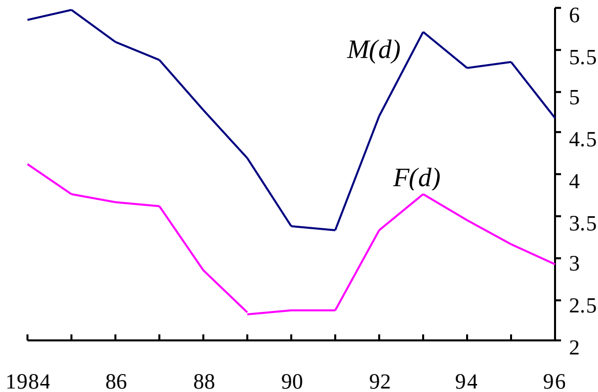


Note: Actual unemployment rate *(U/N)* and unemployment rate had the inflow rate remained at its 1984 level.

Figure 5 shows that women have always left the unemployment pool faster than men, probably because leaving the labour force from unemployment is more common for women than men. In the early part of the period, shorter durations accounted for the slightly lower unemployment rate of women. But time-series changes in the rate at which unemployed men and women find jobs appear very similar, limiting the potential to explain changes in relative unemployment rates. Figure 6 shows that women had higher inflow rates than males until 1990. Thereafter, a sustained fall in female inflow rates leads to parity with males by 1996. The fall in female inflow rates explains women's lower unemployment rates in the 1990s, relative to men.

Figure 5

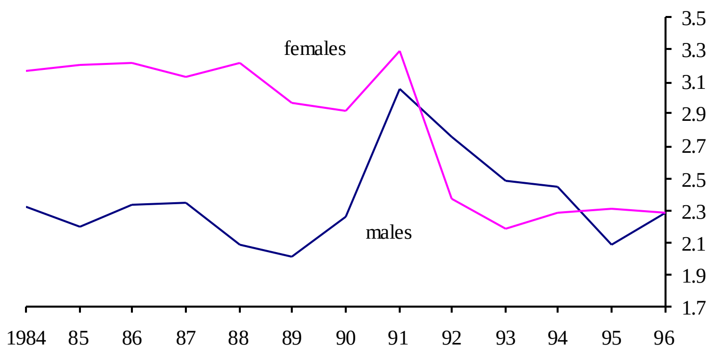
Male and female unemployment



Note: Average duration of unemployment spells, as defined by equation **(1)**.

Figure 6

Male and female inflow rates



Notes: Inflow rates, defined as those unemployed for less than three months divided by employment

At first sight, it appears that some event in 1991, such as a change in benefit rules, led to a step fall in female inflow rates. That conclusion is flawed, because inflow rates may change for structural reasons or with cyclical factors. To control for the cyclical component of female inflows, Figure 7 plots the ratio of female and male inflow rates, which falls steadily between 1988-92. If the efficiency with which unemployed women are competing for jobs has increased, we would expect to see a time-series fall in their relative unemployment durations. Instead, Figure 8 shows that the fall in female unemployment is due to much lower rates of entry into unemployment. We shall discuss in due course why female inflow rates might have fallen.

Figure 7

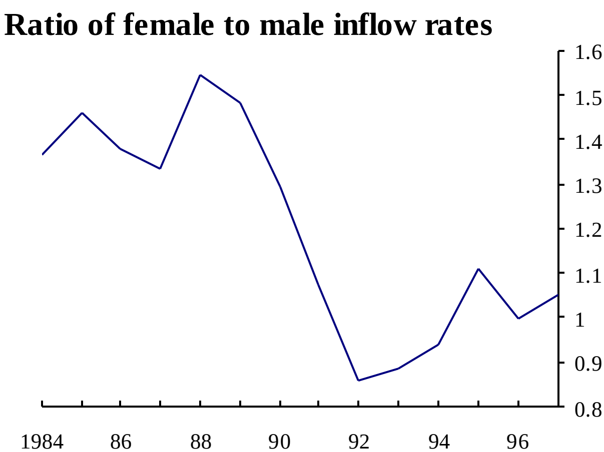
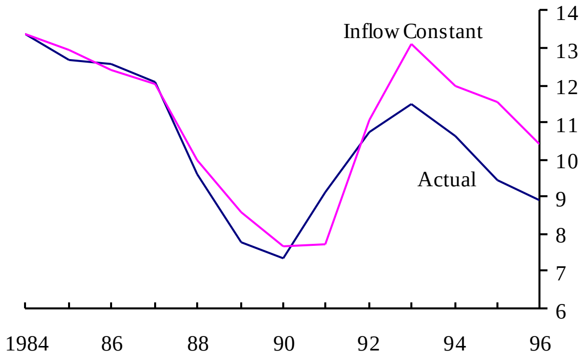


Figure 8

Actual inflow and outflow constant unemployment rates



Note: Actual female unemployment rate *(U/N)* and unemployment rate had the female inflow rate remained at its 1984 level.

The fall in female inflow rates is striking, but what contribution has it made to the falling aggregate unemployment rate? Let *t* denote the year, and subscript *0* the base year—1984 in our case. *D* is the aggregate average duration and *I* the aggregate inflow rate. Using equation **(1)**, the aggregate unemployment rate is decomposed into the product of the aggregate inflow rate and average duration of unemployment spells. Take the difference of year *t* with the base year *0*, add and subtract D_0 ´ I_t to yield

$$\Delta U = U_t - U_0 = I_t (D_t - D_0) + D_0 (I_t - I_0) \qquad \textbf{(2)}$$

Equation **(2)** decomposes changes in the aggregate unemployment rate into a part due to the average duration of spells and a part for the change in the inflow rate. The aggregate inflow rate is a weighted average of the male inflow rate I_t^m, and the female rate I_t^f:

$$I_t = a_t . I_t^m + (1 - a_t). I_t^f \qquad \textbf{(3)}$$

Taking differences of **(3)** with the base year 0 and rearranging gives

$$I_t - I_0 = a_t.(I_t^m - I_0^m) + (1 - a_t).(I_t^f - I_o^f) + (a_t - a_0).(I_0^m - I_0^f) \qquad \textbf{(4)}$$

So changes in the aggregate inflow rate are decomposed into three parts. The first two are the components due to changes in the male and female inflow rates. The third derives from the change in weighting on male and female inflow rates as the two groups change in size between 1984 and year *t*. An equivalent expression can be derived to decompose changes in the aggregate duration.

$$\begin{aligned} D_t - D_0 = b_t.(D_t^m - D_0^m) + (1 - b_t).(D_t^f - D_o^f) + \\ (b_t - b_0).(D_0^m - D_0^f) \end{aligned} \qquad \textbf{(5)}$$

Substituting **(4)** and **(5)** into equation **(2)**, we have

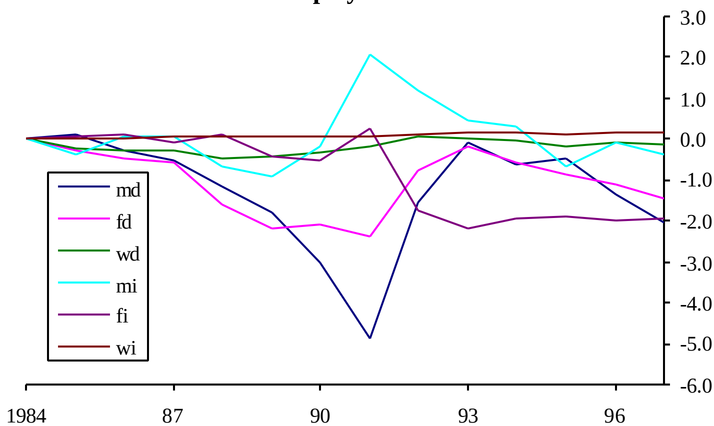
$$\begin{aligned} \Delta U = I_t.\left[b_t.(D_t^m - D_0^m) + (1 - b_t).(D_t^f - D_o^f) + (b_t - b_0).(D_0^m - D_0^f)\right] + \\ D_0.\left[a_t.(I_t^m - I_0^m) + (1 - a_t).(I_t^f - I_o^f) + (a_t - a_0).(I_0^m - I_0^f)\right] \end{aligned} \qquad \textbf{(6)}$$

The percentage points change in aggregate unemployment between year *t* and 1984 is a function of the six components identified in **(6)**. The three in the first square bracket are due to the change in male average durations, female average durations and a change in the weighting of these durations due to increased female participation. The second square bracket contains terms due to the change in male inflow rates, female inflow rates and a change in the weights between the two groups.

Figure 9 plots these six components and Table A lists them. The entries for each year should be interpreted as follows. Take the aggregate unemployment rate[6] for the year in question, 8.9 in the case of 1996. This is compared with 13.4, the figure in the base year (1984), a difference of 4.5 percentage points. This 4.5pp is decomposed using equation **(6)** into parts due to: changes in male and female inflow rates; male and female average durations; and changes in the composition of the labour force. A similar decomposition applies in other years.

Figure 9

Contributions to explaining the change in the unemployment rate



Note: This table uses the decomposition in equation (6) to explain cumulative changes in the unemployment rate between any given year and 1984 from changes in: male durations (md); female durations (fd); the changing composition of durations (wd); male inflow rates (mi); female inflow rates (fi); and the changing mix of the inflows (wi). All of the series in this chart are shown in Table A.

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(6) A reminder that by unemployment rate, we mean *U/N* for purposes of decomposition.

Table A
A decomposition of the cumulative change in the unemployment rate between year *t* and 1984

Year	Duration	Male	Female	Weight	Inflow	Male	Female	Weight
1984	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1985	-0.43	0.10	-0.29	-0.24	-0.27	-0.36	0.09	0.01
1986	-1.01	-0.26	-0.46	-0.29	0.18	0.04	0.11	0.03
1987	-1.36	-0.52	-0.55	-0.29	0.05	0.09	-0.09	0.05
1988	-3.24	-1.17	-1.61	-0.47	-0.54	-0.69	0.10	0.05
1989	-4.37	-1.79	-2.16	-0.42	-1.25	-0.89	-0.41	0.06
1990	-5.42	-3.02	-2.09	-0.32	-0.64	-0.18	-0.52	0.07
1991	-6.68	-4.12	-2.38	-0.18	2.43	2.09	0.26	0.09
1992	-2.23	-1.53	-0.75	0.04	-0.43	1.20	-1.76	0.12
1993	-0.27	-0.10	-0.17	0.00	-1.62	0.43	-2.19	0.14
1994	-1.24	-0.62	-0.57	-0.05	-1.51	0.32	-1.96	0.14
1995	-1.51	-0.49	-0.86	-0.17	-2.43	-0.65	-1.91	0.13
1996	-2.56	-1.34	-1.12	-0.10	-1.93	-0.09	-1.98	0.14

Notes: This table uses equation **(6)** to decompose the change in the unemployment rate *(U/N)* in any given year, relative to 1984, into a component due to changes in the aggregate duration (column 1) and changes in the aggregate inflow rate (column 5). Each of these is then decomposed into a component due to males, females, and a weights component due to change female participation in the labour market. The peak unemployment years are highlighted in grey.

Using data up to 1983, Pissarides (1986) found that changes in the claimant unemployment rate are mainly driven by variations in the average duration of unemployment spells. Layard *et al* (1991) extend the result through to 1991. But do changes in the average duration of unemployment spells also explain the 1.9pp fall in the unemployment rate between the peaks in 1984 and 1993? A drop in the average duration of spells accounts for only 15% of that fall. Even more surprisingly, the fall in female inflow rates accounts for 115% of the total fall. So unemployment fell between its peaks solely because female inflow rates fell. Notice that the fall in female inflow rates is persistent over the last five years, appearing not to dissipate as the labour market has recovered.

3 Which women have lower unemployment rates?

To analyse the fall in female inflow rates, it is useful to know which women have lower unemployment rates. One possibility is that as the demand for skilled labour has increased over time, and driven up skilled wage rates, inactive well-educated women have been drawn into employment. That would lower total female unemployment through a composition effect, because the well-educated have low unemployment rates. We define skill by the level of educational attainment.[7] The contributions of the skilled and unskilled sectors to changes in male and female unemployment rates are:

$$U_t^f = b_t.(U_t^{sf} - U_0^{sf}) + (1-b_t).(U_t^{uf} - U_0^{uf}) + (b_t - b_0).(U_0^{sf} - U_0^{uf})$$

and

$$U_t^m = v_t.(U_t^{sm} - U_0^{sm}) + (1-v_t).(U_t^{um} - U_0^{um}) + (v_t - v_0).(U_0^{sm} - U_0^{um}) \quad \textbf{(7)}$$

where superscript u denotes unskilled, s skilled, f female and m male. The change in the unemployment rate U, for either gender, is the sum of a term for changes in skilled rates, changes in unskilled rates, and a change in the weights because over time the labour force has become more educated. Table B lists the results.

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(7) We define a worker as skilled if they have A levels (or equivalent), an intermediate qualification or a degree. A further issue is whether certain vocational qualifications, normally classed with A levels, are actually equivalent to standard A level grades. Robinson (1997) argues that a trade apprenticeship may not be a better qualification than having O levels. Here we retain a standard classification.

Table B
A decomposition of cumulative changes in male and female unemployment rates between year *t* and 1984

	Women			**Men**		
Year	Skilled	Unskilled	Weight	Skilled	Unskilled	Weight
1984	0.00	0.00	0.00	0.00	0.00	0.00
1985	-0.23	-0.58	-0.06	-0.02	-0.24	-0.11
1986	-0.24	-0.25	-0.08	-0.02	-0.56	-0.09
1987	-0.46	-0.89	-0.10	-0.09	-0.58	-0.13
1988	-0.87	-2.35	-0.12	-0.85	-2.06	-0.08
1989	-1.14	-3.40	-0.21	-1.41	-2.99	-0.28
1990	-1.21	-3.70	-0.29	-1.44	-3.07	-0.47
1991	-1.07	-3.08	-0.34	-0.44	-1.78	-0.55
1992	-1.07	-2.83	-0.45	0.77	-0.38	-0.82
1993	-1.21	-2.46	-0.42	0.68	0.27	-0.60
1994	-1.46	-2.38	-0.48	0.25	-0.11	-0.63
1995	-1.37	-2.95	-0.49	-0.19	-0.98	-0.67
1996	-1.61	-3.39	-0.49	-0.58	-1.23	-0.72

Notes: This table uses equation **(7)** to decompose the change in male and female unemployment rates *(U/N)* between any given year and 1984, into a component due to changes in the appropriate skilled and unskilled unemployment rates and changes in the proportion of skilled workers participating in the labour market. Being skilled is defined as having A levels or better. The peak unemployment years are highlighted in grey.

Highly skilled workers have low unemployment rates. As the proportion of skilled workers in the British labour force has increased during the 1980s and early 1990s, male and female unemployment should have fallen even without changes in skilled and unskilled unemployment rates. The last term in each of the equations in **(7)** captures this effect. Changes in the skill composition of labour have lowered the male unemployment rate by more than for women, even though the growth in the share of skilled workers is largest for women. This implies that the spread between skilled and unskilled unemployment rates is higher for men than women, which is actually the case. Of the remaining effects, a fall in the unemployment rate of skilled females accounts for 68% of the fall in female unemployment between 1984-93, but that sector has a weight of 65% in the female labour force. Overall, the fall in female unemployment relative to males is not skill-biased.

We now analyse trends in unemployment rates between 1984-96 across more narrow skill groups, by gender type. In one case we define skill by five qualifications, and in the other by the six social classes.(8). Denote by U_t^{gs} the unemployment rate of gender *g*, skill *s* in time period *t*. Trends in unemployment rates are estimated using

$$U_t^{gs} = C^{gs} + T_t + D^{gs} * trend + e_t^{gs} \qquad \textbf{(8)}$$

where C^{gs} is a group-specific constant that controls for permanent differences in unemployment rates between cells. T_t is a time-specific dummy that controls for business cycle movements in the unemployment rate. The third term is a group-specific dummy multiplied by a time trend and is the variable of interest. It tells us whether the cell-specific unemployment rate, having accounted for permanent differences in unemployment rates between groups and cyclical factors, is trending between 1984-96. Finally, e_t^{gs} is the error term, with assumed mean zero and uncorrelated with the other terms in **(8)**. As Manning *et al* (1997) emphasise, equation **(8)** does not have a structural interpretation; it merely decomposes the time-series patterns of unemployment rates for each cell into the three components.

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(8) There are five qualification groups: degree (or equivalent), intermediate, A level (or equivalent), O level (or equivalent) and none. The six social class bands are combinations of occupations: professional, intermediate professional, skilled (not manual), skilled (manual), semi-skilled and unskilled. We exclude the unemployed who have never had jobs or cannot describe their previous occupation.

Because equation **(8)** has three groups of dummy variables, to identify the trends we need to drop two specific dummies to avoid the dummy variable trap. Following Manning *et al* (1997), we drop the year dummies for the two trough years when unemployment is highest (1984 and 1993). Now the cell-specific trends are interpreted relative to the trend in aggregate unemployment rates between the two peak years.

In Table C, the differences in trends between skill groups are minor, but the differences between male and female trends within skill groups are very large. All of the female trends are negative and significant, whereas all of the male trends are positive, with three of them significantly so. That pattern of results is even stronger if the left-hand side of **(8)** is replaced with log unemployment.[9] Columns 3 and 4 estimate trends in average durations across the groups. Highly educated men do have a positive trend in durations that is significant at the 5% level,[10] but that is minor compared with the differences between males and females in inflow rate trends in columns 5 and 6. Females in *all* skill groups have lower inflow rates. We cannot reject the restriction that all groups of women have had the same fall in inflow rates. This suggests that the explanation for the fall in female inflow rates should be skill-neutral; it should not rely on skilled women with low inflow rates returning to the labour market. Table D shows that there are no significant unemployment trends for females in any occupations, whereas males in all groups have highly significant positive trends. Even completely unskilled women do not have a significant unemployment trend.

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(9) When the level of the unemployment rate is used on the left-hand side, the trends are changes in percentage points per year. Using log unemployment instead provides the percentage by which unemployment increases each year.
(10) In other words, when highly educated men become unemployed they find it harder to get jobs in 1996, relative to the aggregate trend in durations between 1984-1993.

Table C
Trends in unemployment rates, inflow rates and average duration by gender and qualification

	Unemployment rate		Average duration		Inflow rate	
	Men	Women	Men	Women	Men	Women
Degree	0.13	-0.21**	0.09*	0.01	0.01	-0.08**
Higher	0.26**	-0.22**	0.08*	-0.01	0.04	-0.08**
A Level	0.05	-0.37**	0.01	0.01	0.01	-0.13**
O Level	0.08	-0.35**	0.05	-0.01	-0.00	-0.11**
None	0.19**	-0.36**	-0.02	-0.02	0.05**	-0.09**
F-test*	1.92	1.62	1.98	0.14	1.31	0.93

Notes:

1. The number of observations for the regression is 130, based on 13 years and ten qualification-gender types. Equation **(8)** fits the unemployment rate for each
gender-skill group on cell-specific constants, year dummies and cell-specific trends. The figure in each cell is the coefficient on the cell-specific constants, year dummies and cell-specific time trends. The standard errors in the regressions are 0.07, 0.04 and 0.01, reading from left to right across the table.
2. To enable identification, the time dummies for the trough years of 1984 and 1991 are omitted.
3. Two stars denotes significance at the 1% level, one star at the 5% level.
*. This is an F-test on the restriction that all of the coefficients reported in that column are equal. No tests are rejected at the 1% percent level.

Table D
Trends in unemployment rates by gender and occupations

	Males	Females
Professional	0.27**	0.03
Intermediate	0.24**	0.02
Skilled (not manual)	0.39**	0.05
Skilled (manual)	0.47**	-0.01
Semi skilled	0.45**	0.08
Unskilled	0.52**	0.15
F-test*	1.89	0.48

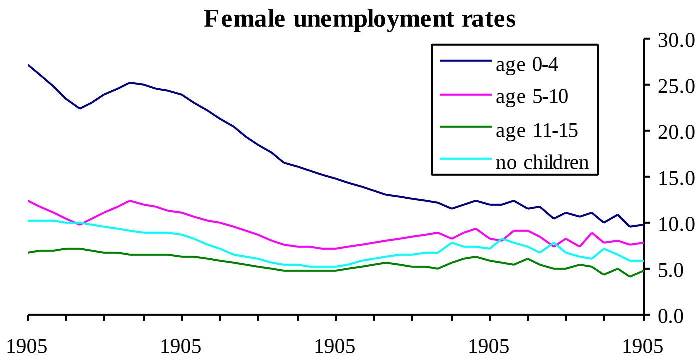
Notes:

1. The number of observations for the regression is 156, based on 13 years and twelve occupation-gender types. Equation **(8)** fits the unemployment rate on
cell-specific constants, year dummies and cell-specific trends. The figure in each cell is the coefficient on the cell-specific constants, year dummies and cell-specific time trends. Each trend has a standard error of 0.092.
2. To enable identification, the time dummies for the trough years of 1984 and 1991 are omitted.
3. Two stars denotes significance at the 1% level, one star at the 5%.
*. This is an F-test on the restriction that all of the coefficients reported in that column are equal. No tests are rejected at the 1% level.

In the absence of a skill-biased change explanation for the fall in female unemployment rates, Figure 10 plots the unemployment rates of four groups of women: those with no children, with the youngest child aged 0-4, 5-10 and 11-15.[(11)] The biggest fall in unemployment rates is among women with children aged 0-4, from 27.2% in 1984 to 9.8% in 1996. Equation **(9)** decomposes changes in the female unemployment rate, U^f, into changes in the unemployment rate of women with children aged 0-4, the unemployment rate of all other women, and the change in the labour force shares of these groups.

(11) These are actual unemployment rates.

Figure 10



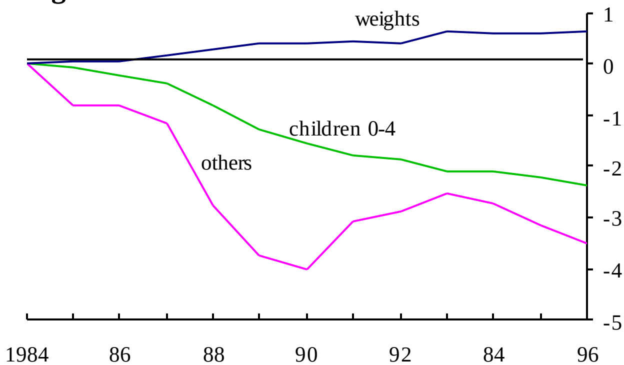
Note: Unemployment rates for women with children aged 0-4, 5-10, 11-15 or no children.

$$\Delta U^f = b_t.(U_t^{04} - U_0^{04}) + (1 - b_t).(U_t^r - U_o^r) + (b_t - b_0).(U_0^{04} - U_0^r) \quad \textbf{(9)}$$

Figure 11 shows that although only comprising 10% of the female labour force, women with young children account for around 45% of the fall in the total female unemployment rate between the peak years of 1984 and 1993. But ‘other’ women also account for a large proportion of the fall in female unemployment; we need some account of why women without young children also have lower unemployment rates. The share of women with young children in the female labour force rose from 10% to 13.5% between 1984-1996, contributing around plus 0.5pp to the unemployment rate by 1996. Table E shows the large fall in the inflow rate of women with young children between 1984 and 1996. In fact, women with young children do not have longer unemployment spells; they have high unemployment rates because they are more likely to become unemployed. This will prove important to be later in the paper.

Figure 11

Contributions of young women with children to falling female levels



Note: This chart uses equation **(9)** to explain cumulative changes in female unemployment rates in a given year relative to 1984 by changes in the unemployment rate of women with children aged 0-4; the unemployment rate of all other women; and the composition of the female labour force.

Table E
Inflow rates for different groups of women

	No Children		Children		Children aged 0-4	
	1984	1996	1984	1996	1984	1996
U/N	10.3	5.3	16.6	8.4	37.3	10.9
Duration	5.7	3.3	3.4	2.7	3.7	2.4
Inflow	1.8	1.6	4.9	3.1	10.0	4.5

Notes: Calculated using equation **(1)** on each of the groups.

To explain the fall in female unemployment, any story must be consistent with the three stylised facts emerging from the paper thus far: falling inflow rates account for the fall in female unemployment between the peaks; the fall in female unemployment is skill-neutral; and this fall is heavily concentrated among women with young children.

4 Explaining lower female unemployment rates

One simple explanation is that in the 1990s, previously unemployed women for some reason stop actively searching for employment and become inactive instead. Joblessness does not change: women are merely reclassified as not actively searching for work. But as highlighted above, women's participation rates have been rising as unemployment has fallen.

A more potent possible explanation is that the current recovery has seen labour demand increase in sectors that heavily employ women, reducing their unemployment rate relative to men. But female unemployment rates have fallen equally across all qualifications and occupations. Employment has grown strongly in the service sector and part-time work during the recent recovery, where a disproportionate number of women are employed. Part-time work has increased as a proportion of total male employment, whereas part-time work has fallen as a proportion of female employment during the recent recovery. And service-sector employment, as a proportion of total employment, has increased faster for men than for women (although from a lower base).

In addition, unemployment can only be driven lower by rising demand as long as wages and prices do not adjust. We know that the female inflow rate fell sharply relative to men between 1988-92, but has remained low and stable through 1997. That is probably enough time for wages to start adjusting and to increase female inflow rates relative to men. It is possible that wages did not explicitly adjust and some other non-pecuniary benefit changed, but that would have narrowed the gender inflow rate gap by now as well. And in any case, it is hard to see how an increase in demand that favoured women would lead to female unemployment falling because of the inflow rate, rather than the speed with which the unemployed find work. In summary, we do not find demand-led explanations of the fall in female unemployment, relative to men, completely convincing.

We now concentrate on explanations of the fall in female unemployment that are consistent with the fall in inflow rates across all skill groups. One set of factors applies to women in general. The other applies to women with young children, whose unemployment and inflow rates have fallen considerably.

First, reasons that apply to women in general. The female labour market is thought to contain more frictions than the male sector (eg Manning *et al* (1997)), because of the generally fixed location of the spouse's work, or the limitations on work imposed by young children. These may have two effects. If women pay for childcare to enable them to work, their replacement ratio will be unemployment benefits relative to wages in work, minus childcare costs. A higher replacement ratio for women with young children causes longer spells of unemployment, on average. Moreover, jobless individuals may receive more than one offer in any discrete period. If having to pay for childcare reduces the effective wage in work for all offers, it becomes more likely that women take jobs with observable characteristics that are only just acceptable to them. McCall (1990) shows that well-matched workers and firms dissolve their match relatively infrequently. If there are unobservable job attributes that are normally distributed with mean zero, new jobs are likely to break up more often when women take jobs that are only just acceptable to them *a priori*. This would increase the break-up rate of jobs and raise the inflow rate into unemployment. So if the proportion of women that are not married or do not have children increases, the rate of female unemployment will fall.

There is evidence that women are delaying the childbirth decision. The age at first birth within marriage increased from 24.4 years in 1974 to 28.3 years in 1994. Between 1981 and 1994, the fertility rate of women aged between 20 and 24 fell from being 1.7 times the general fertility rate to only 1.3 times the general fertility rate. The fertility rate of women aged between 30 and 34 increased from 1.1 to 1.4 times the general fertility rate over the same period. That will increase the number of young women who have no children and are able to work without the restriction of motherhood. If women merely delay childbirth, then labour market frictions could be displaced to later in life. This is not the case as women are choosing to have smaller families, leaving them with fewer years when childcare would be necessary. And the proportion of all households that comprise married couples fell from 65% to 56% between 1981 and 1994/5 (Social Trends (1996)), reducing the number of women who are constrained in their work choices by their husband's job. So this set of frictions appears to have eased in recent years.

To assess whether women are making better job matches, we need to know whether new jobs have a higher probability of continuing beyond the first year. There is no panel data set to measure time-series changes in the continuation rate of new jobs, so we construct age and gender-specific rates from consecutive Labour Force Surveys (following Burgess and Rees (1997)). The survey asks how long each worker has been employed at the current firm. Take an age group in 1986, say 30-35. In 1987, this group will be aged 31-36. Dividing the number of employed workers aged 31-36 with tenure 1-2 years in 1987 by the number of workers aged 30-35 with tenure 0-1 year in 1986 gives the continuation rate into a second year. This assumes that the Labour Force Survey (LFS) is large enough to be a representative sample of the population of employed workers in each age-specific cell. We can repeat the analysis for 1994.[12]

The chance that a woman of working age taking a new job is able to keep that job into a second year increased from 59.6% to 64.2% between 1986/7 and 1994/5. Figure 12 shows that across virtually *all*

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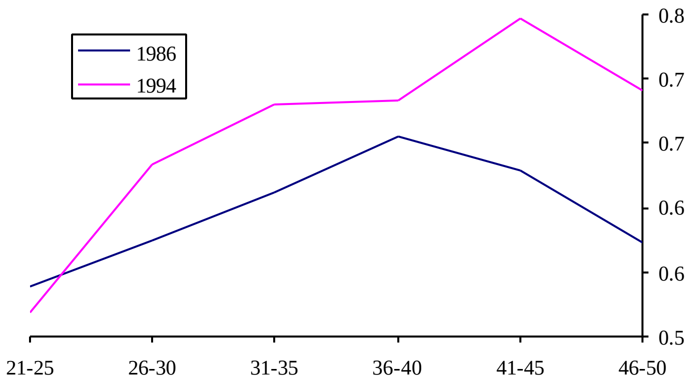
(12) It should be stressed that these are not inflow rates into unemployment, but job break-up rates. But the two should be highly correlated.

of the age range, the continuation rates of new jobs taken by women were higher in 1994 than in 1986. It is not clear why the retention rate of older women should have risen, but this suggests that the chance of making a better match cannot explain all of the dramatic fall in unemployment among women with young children. Relative to new male jobs, female jobs last longer in 1994 than 1986. Figure 13 shows that the continuation rate of male jobs has barely changed in any age groups. This evidence is consistent with women forming better new matches in the 1990s, which last longer than in the 1980s, but we need more to explain female unemployment fully.

Figure 12

Probability that new jobs for women continue into a second year

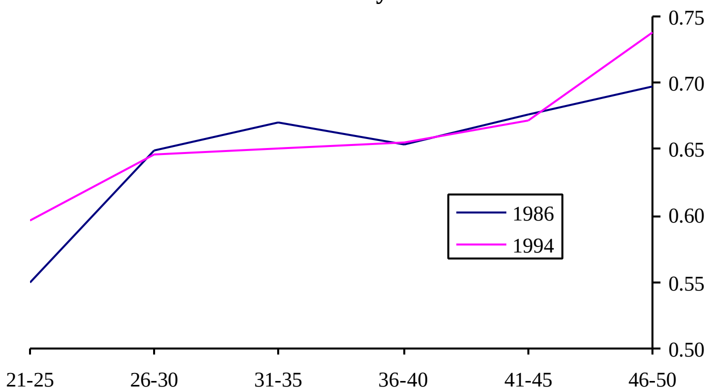


Note: This chart gives the probability, for each age group, that a job held by a woman with tenure less than one year continues into a second year.

Women with young children may have benefited from further, possibly stronger, efficiencies that have lowered their inflow rates into unemployment in the late 1980s and early 1990s. Having a young child impedes working, because for every hour worked, the child must be looked after. Work may be full-time, possibly implying a need for childminding facilities. But most childcare is informal and part-time. So many young mothers can undertake atypical work, usually in the firm of previous employment, such as part-time work, on flexi-time, job-sharing, or term-time working. In the absence of these provisions, women returning after childbirth would become unemployed and search the set of available vacancies. When these provisions are available, returning women may search the set of available vacancies *and* also have an immediately apparent offer at their old firm. If the latter is acceptable, women return to work without becoming unemployed, lowering unemployment via the inflow rate.

Figure 13

Probability that new jobs for men continue into a second year



Note: This chart gives the probability, for each age group, that a job held by a man with tenure less than one year continues into a second year.

If these arguments hold true, should we view them as a fall in the natural rate of female unemployment? When the previous firm offers a flexible contract after maternity leave, to the extent that other vacancies do not do the same, the incentive to search the rest of the market will fall. In search models of the labour market, it takes time to find a suitable new job when there are many vacancies and workers looking for a match. But now women are less likely to engage in lengthy search; they are more likely to accept an immediately apparent vacancy at their old firm. We may view this as an improvement in job-matching technology, which works by reducing the inflow rate into unemployment.

Table F shows that the proportion of children under five years of age in local authority nurseries or with registered child minders almost doubled between 1974-93. The increase in the number of children under five years old receiving day care or childminding totalled roughly 200,000 between 1984-93. If this is to explain lower female inflow rates, we need to explain why unemployed women cannot take advantage of these potential efficiencies. Around 75% of the households where nobody is working only have one adult, and most of these are female; unemployed women may not have the wealth to pay for childminding. Another reason is that their replacement ratios may be high. But it seems unlikely that the slow long-term increases in childminding facilities have played a major role in making female unemployment fall, because they are slow-moving compared with the dramatic fall in unemployment.

Table F
Children under five years of age being looked after in England

	Local authority nurseries	Child minders[(a)]	Play groups	Total per 100 under five years[a]
1974	0.9	2.5	10.3	13.7
1984	1.8	3.9	13.1	18.8
1993	4.1	9.2	12.1	25.4

Source: Regional Trends.
(a) After the *Children Act 1989*, child minders are required to register places available for any child under eigth years of age. The figures prior to 1989 relate to under five year olds only, but in 1993 only 6% of places for child minders were registered as solely for use by under fives.

Are women returning to their old jobs more often after childbirth, instead of becoming unemployed and searching for a new job, if they want to participate in the labour market? In 1988 and 1996, surveys carried out by the Policy Studies Institute (PSI) asked mothers of newly born children whether their firm operated flexible working practices (available to all workers) and family-friendly working practices available to mothers. Table G shows large increases in the availability of both types of practice, making it easier for mothers to return to work after childbirth. What kind of effect have these provisions had on the rate at which women return to the same employer after childbirth?

Table G
The availability of selected workplace arrangements that might help mothers with young children

% of firms helping with:	1979 survey	1988 survey	1996 survey**
Part-time	39	36	79
Job-sharing	-	6	35
Flexi-time	12	12	32
Shift work	11	9	26
Some work at home	3	4	17
Career break at home	-	4	23
help with childcare	3	4	9*

Source: Callender *et al* (1997).
* Workplace nursery or crèche only.
** The 1996 survey asked if employers operated any of the arrangements in the table, while the 1988 survey asked if they operated them ‘ for people doing your kind of work’ . To the extent that respondents in the 1996 survey said that their firm operated an arrangement without it actually being available to that person, it will produce higher estimates than in 1988.

The results in Table H show changes in the post-childbirth employment outcomes of mothers, again using the PSI surveys. The proportion of mothers who had returned to work with the same employer rose from 35% in 1988 to 58% in 1996. Of those not in work after childbirth, 20% were seeking work in 1988 and only 10% were looking in 1996. That is clear survey evidence that mothers can increasingly return to the pre-childbirth employer if they want to participate in the labour market, instead of becoming unemployed and looking for work. The problem with this survey evidence is that it is based on fairly small samples, with only a 55% response rate in

1996. The LFS can be used to provide additional, but slightly more indirect evidence.

Table H
The probability that women return to work after childbirth

	1988 survey	1996 survey
Returned to work *of which:*	46%	67%
same employer	35%	58%
different employer	11%	9%
Not in work *of which:*	55%	33%
seeking work	20%	10%

Notes: The table provides the average probability that a sample of young mothers return to work after childbirth.

Source: Reproduced from Callender *et al* (1997).

In the LFS, women who take a break from work to have children and return to the same firm include tenure accumulated prior to childbirth when asked how long they have been employed in their current job. A woman employed with a firm for three years, who takes a break for childbirth and returns to the same firm for three more years, has accumulated tenure of six years. Table I shows the pattern of elapsed job tenure for employed women with children aged under five years. An elapsed tenure of more than five years, when the child is under five, should mean that the women has returned to the firm that employed her prior to childbirth. The total number of women in employment with children aged 0-4 in employment rose from 700,000 to 1.5 million between 1984-96. Women with tenure lengths below five years had a lower share of employment in 1996 than in 1984, but women with tenure lengths of five years or more increased their share from 23% to 41% over the same period.

Table I
Tenure of employed women with children aged 0-4

Tenure, t	1984		1996	
	Employed	Percentage	Employed	Percentage
t<3 months	97,126	13.9	120,137	7.7
3<t<6 months	72,079	10.3	95,581	6.1
6<t<2 months	110,081	15.7	183,273	11.7
1<t<2 years	113,539	16.2	220,863	14.2
2<t<5 years	144,389	20.6	295,603	18.9
5<t<10 years	114,043	16.2	345,879	22.2
10<t<20 years	47,208	6.7	278,531	17.9
t>20 years	2,544	3.6	20,473	1.3
Total	701,009	100	1,560,340	100

Notes: The table gives the (incomplete) tenure at time of interview.

Overall there is strong evidence that women are increasingly returning to employment in the pre-childbirth firm, and this can account for a large part of their lower inflow rates into unemployment. But why were these facilities not offered previously? Can we point to any exogenous shocks that that are timely and might help to explain the increase in family-friendly practices?

Firms will set up these schemes when the present discounted benefits of doing so are greater than the costs, a large component of which are set-up costs (Opportunity 2000 (1993)). Hilage and Simkin (1992) find that there are set-up costs to family-friendly schemes, but the running costs are fairly low. If a firm only employs one female worker with few firm-specific skills, it will not be worth paying the fixed costs to set up the scheme. But by the end of the 1980s, longer-term trends had raised the educational attainment of women relative to men, childbearing was increasingly being postponed and also involved fewer children. This suggests that women have been gaining more general and firm-specific human capital over time. These trends will have pushed the benefits of schemes beyond the costs for many firms, prompting them to set up new schemes.

In deciding whether to accept a given job offer, jobless individuals with children compare their unemployment benefit with the wage in work plus any in-work benefits. In 1988, family credit (FC) replaced family income support (FIS) as the in-work benefit for families on lower incomes. Unemployment benefit increases with each extra child, but FIS did not. After 1988 FC offered more benefit with each child. Moreover, FC payments were based on net income instead of gross income, so that nobody actually lost money by taking FC. The result was an increase from 210,000 recipients of FIS in 1987 to 470,000 recipients of FC in 1988 (Dilnot and Webb (1990)). This reform will have lowered the reservation wage of some women after childbirth. It is possible that firms could then attract women back to work and avoid loss of firm-specific human capital without paying for full childcare costs, but using much less costly family-friendly practices. These effects will have been re-inforced by an extension to the scheme in 1992. But overall, there is no convincing evidence that any particular legislative change on its own led to large changes in the family-friendly employment provisions that we have linked to lower inflow rates.

5 Conclusions

ILO-defined unemployment in Great Britain fell between the peaks in 1984 and 1993, but was completely driven by lower female unemployment rates. This was almost completely accounted for by the rate at which women become unemployed, is uniform across skill groups, but is heavily concentrated among women with young children.

We argue that certain frictions in the female labour market, particularly associated with having young children, have lessened between 1988-92 and explain the fall in female inflow rates. Identifying them as frictions is a particularly important step because it implies that the natural rate of female unemployment may have fallen, perhaps accounting for some of the improved performance of earnings growth at given unemployment rates during the 1990s. One possibility is that increased demand for skilled workers (see Machin

(1994), Nickell and Bell (1996) and Haskel (1996) for example) may have attracted inactive educated females back into work with higher wages on offer, lowering female unemployment rates relative to men because skilled workers have low unemployment rates. We rule this out. The hypothesis that the demand for labour has increased in sectors that employ many women, lowering their unemployment rate relative to men, also looks doubtful, because the female inflow rate has been low and stable since 1992. As wages adjust to demand shocks over time, the female inflow rate should fall back toward male rates.

Our preferred explanations focus on the restrictions on the set of available jobs that are acceptable to women, mainly due to the presence of young children, that create frictions to their employment. When mothers return to work after childbirth, they have to search the set of available vacancies, which takes time and effort. But many firms have increased workplace assistance that helps mothers of young children return to the previous firm in atypical work, and these offers are immediately apparent without the need for job search. So returning mothers, on average, now face fewer frictions in finding work after childbirth. There is also evidence that new jobs taken by women are increasingly likely to continue into a second year, which would also lower the inflow rate into unemployment. These pieces of evidence may be consistent with a lowering of the natural rate of female unemployment, although of course that is only one interpretation.

While the paper links the patterns of female unemployment with certain factors that should inhibit female labour market performance, it has little in the way of detailed microeconometric work. And although we are arguing that falling female unemployment has lowered aggregate unemployment, we need to know more about how much of the fall has simply displaced male workers. But this paper does provide evidence about the stylised facts that need to be explained regarding female unemployment, and some suggestive evidence on what might explain these trends.

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