Why has the female unemployment rate in Britain fallen?

By Phil Evans of the Bank's Structural Economic Analysis Division.

In this article,[1] Phil Evans examines recent trends in male and female unemployment, and finds that the fall in aggregate unemployment between 1984 and 1993 is wholly accounted for by a decrease in female unemployment. This lower female unemployment rate is almost fully explained by a fall in the rate at which women become unemployed; this fall is uniform across skill groups and is particularly significant among women with young children. He suggests that increased workplace assistance to women with young children has reduced the frictions in the female labour market, and may have lowered the natural rate of female unemployment.

Introduction

The most recent peak in aggregate unemployment (measured by the International Labour Organisation (ILO) search-based definition) in Britain was 10.4%, reached in spring 1993.[2] This is lower than the previous peak, 11.7%, in spring 1984. This article explains how the fall between the peaks is wholly accounted for by lower female unemployment (male unemployment was actually higher in 1993) across all skill groups, and particularly applies to women with young children. The first section discusses recent trends in male and female unemployment rates, and relates them to their inflow rates and average unemployment durations. The second section analyses which groups of women now have lower unemployment rates, and the third section considers possible reasons for these lower rates. The fourth section summarises the conclusions.
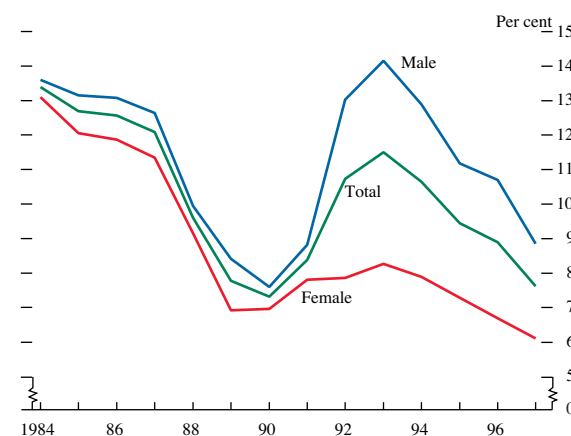
Male and female unemployment rates

The ILO-defined trend aggregate unemployment rate—defined, as in the rest of this article, as unemployment/employment—fell by 1.9 percentage points between the unemployment peaks in 1984 and 1993 (see Chart 1). Within this aggregate, female unemployment fell by 5 percentage points, whereas male unemployment rose by 0.5 percentage points. Before 1990, male and female unemployment rates were broadly similar. But by 1993, unemployment rates for males were 5.9 percentage points higher than for females, and stayed more than 2³/₄ percentage points higher through to 1997.
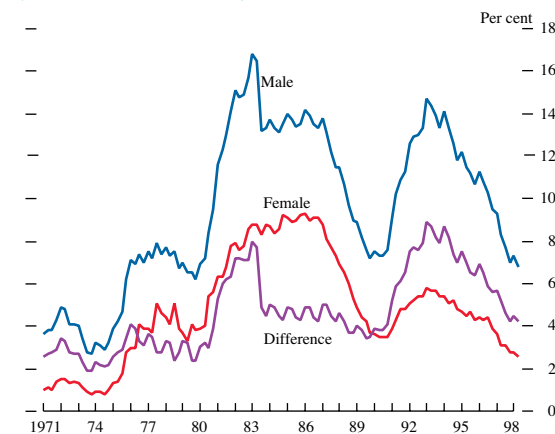
Chart 2 shows a longer time series for male and female claimant-count unemployment rates. These tend to differ more than the ILO rates, reflecting the large number of women searching for jobs, but not eligible for benefits. But both measures show that the gap between male and female unemployment rates has widened, particularly in the 1990s.

In the rest of this section, we analyse the ILO unemployment rates in more detail.

Chart 1
Unemployment rates by gender

Chart 2
**Male and female unemployment rates
(UK claimant count)**

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A useful starting-point is to assess whether unemployment has fallen because workers remain jobless for shorter spells once they become unemployed (the average duration of unemployment spells) or because they become unemployed less often (the inflow rate). 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 *rates* at which workers flow into and out of unemployment.
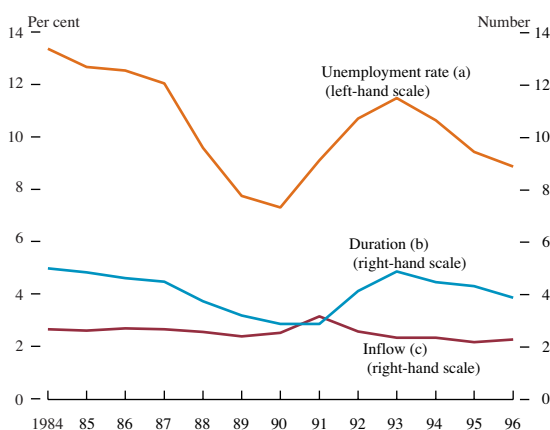
The steps in this assessment are as follows. Let *N* be the stock employed, *U* the stock unemployed and *I* the number of workers that flow into unemployment. We can write *U/N*, the unemployment rate, as

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

I/N is the inflow rate, the average probability that employed workers will become unemployed. We define inflows as the number of workers unemployed for less than three months.[1]

Let *O* be exits from the unemployment pool. Then *O/U* is the average chance that an unemployed worker will leave the pool, the 'exit rate'. Layard *et al* (1991) argue that we can assume year-on-year stationarity, which implies that inflows are equal to outflows.[2] Since *I* is then equal to *O*, *I/U* also equals the exit rate, and the inverse is the average duration of unemployment. So equation (1) decomposes unemployment into the product of the average length of unemployment spells and the inflow rate.[3] Chart 3 shows inflow rates and average durations of unemployment based

on this decomposition, and Chart 4 shows the actual unemployment rate and the unemployment rate if inflows had remained at their 1984 level. If the inflow rate had not fallen, the unemployment rate would barely have fallen between 1984–93.

Chart 4
Actual and inflow constant unemployment rates

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

(a) Average durations of unemployment

Chart 5 shows that women have always left the unemployment pool faster than men. In the early part of the period, shorter durations accounted for the slightly lower unemployment rate of women. If the relative 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. But time-series changes in the rate at which unemployed men and women find jobs appear very similar, and so cannot explain changes in relative unemployment rates.

Chart 3
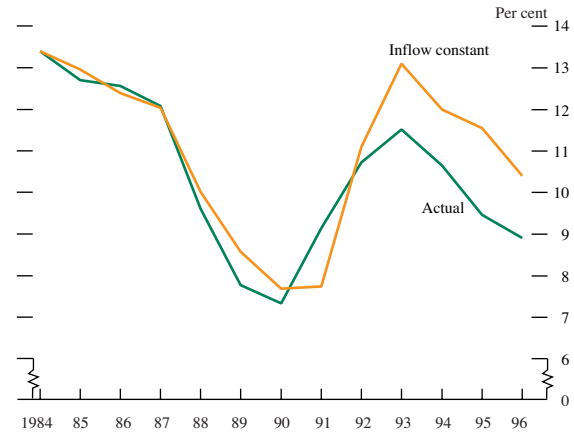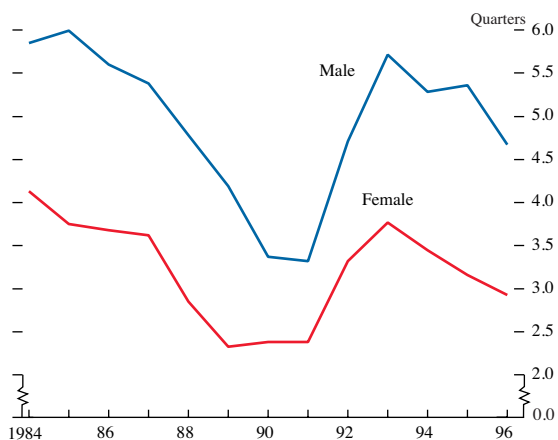### Aggregate unemployment rate, inflow rate and duration rate

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.

(a) Percentage rate.
(b) Number of quarters.
(c) Inflow per quarter.

Chart 5
Male and female unemployment durations

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

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(1) Our main results are robust to defining the inflow rate as inflows divided by the sum of inactivity and employment. The main results are also robust to defining inflows as those unemployed for less than one month, but some of our tests would involve small cell sizes if we defined inflows in this way.
(2) This assumption is justified if the labour market is very dynamic, because the market would adjust to shocks quickly enough that, one year later, if there were no more shocks, 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.
(3) 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.

(b) Inflow rates

Lower inflow rates account for almost all of the fall in unemployment between 1984 and 1993; from 1993 onwards, they account for $1^1/_2$–2 percentage points of the fall in unemployment relative to 1984. Chart 6 shows that women had higher inflow rates than males until 1990; after this, a sustained fall in female inflow rates led to parity with males by 1996.

Chart 6
Male and female inflow rates
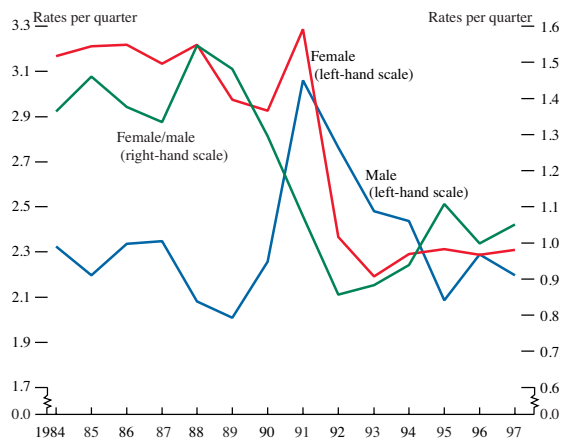
Note: Inflow rates, defined as those unemployed for less than three months divided by employment.

At first sight, it might appear that some event in 1991, such as a change in benefit rules, led to a step fall in female inflow rates. But inflow rates may also change over the cycle. To control approximately for the cyclical component of inflows, Chart 6 also plots the ratio of female and male inflow rates, which falls steadily between 1988–92. So it appears that the fall in female unemployment is due to much lower rates of entry into unemployment.

(c) Contributions to the fall in the aggregate unemployment rate

Table A shows how much of the fall in unemployment since 1984 was caused by changes in the aggregate duration of unemployment spells, and how much by changes in the

Table A
Changes in unemployment rates since 1984

Cumulative percentage change since 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

Note: Peak unemployment years are highlighted.

(1) See Appendix for details.
(2) 'Skill' is defined here by the level of educational attainment. (See note to Table B.)
(3) See Appendix for details.

aggregate inflow rate into unemployment. Each total is then analysed further to show contributions from males and females, and a weighting component to reflect the gradual increase in female participation in the labour market.[1]

The table shows that a lower average duration of unemployment spells accounts for only 0.27 percentage points (15%) of the 1.9 percentage point fall in the unemployment rate between the peaks in 1984 and 1993. But the fall in female inflow rates accounts for no less than 2.19 percentage points—115% of the total fall.

Which groups of women have lower unemployment rates?

(a) Skilled/unskilled?

One possible reason for lower female unemployment rates is that as the demand for skilled labour has increased, driving up skilled wage rates, inactive skilled women have been drawn into employment—and skilled workers tend to have lower unemployment rates.[2] The change in the unemployment rate can be analysed into the contributions of the skilled and unskilled sectors to changes in male and female unemployment rates.[3] Table B shows how changes in skilled and unskilled unemployment rates, and changes in the proportion of skilled workers in the labour force, have contributed to changes to the unemployment rates for men and women since 1984.

Table B
Changes in skilled and unskilled unemployment rates

Cumulative percentage changes since 1984

Year	Female			Male		
	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: 'Skilled' is defined as having 'A' levels or higher. The peak unemployment years are highlighted.

The growth in the share of skilled workers has been larger for women than for men. But Table B shows that changes in the skill composition of labour have lowered the male unemployment rate more than the female rate; this is because the initial spread between skilled and unskilled unemployment rates was higher for men than for women, and so the change in the weight is larger. In addition, a fall in the unemployment rate of unskilled females accounts for 68% of the fall in female unemployment between 1984–93, but that sector has a weight of 65% in 1993 in the female labour force. So unemployment rates for skilled and

unskilled females have fallen roughly in step. It therefore appears that the fall in female unemployment relative to males is not skill-biased.[1]

(b)   Women with young children?

A second possible explanation for lower female unemployment rates might relate to numbers of young children. Chart 7 plots the unemployment rates of four groups of women: those with no children, and those with the youngest child aged 0–4, 5–10 and 11–15. The biggest fall in unemployment rates is among women with children aged 0–4, from 27.2% in 1984, to 9.8% in 1996.[2]

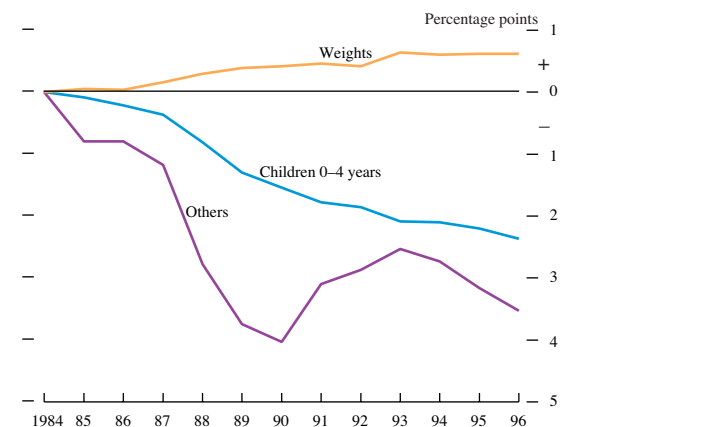**Chart 7**
Female unemployment rates
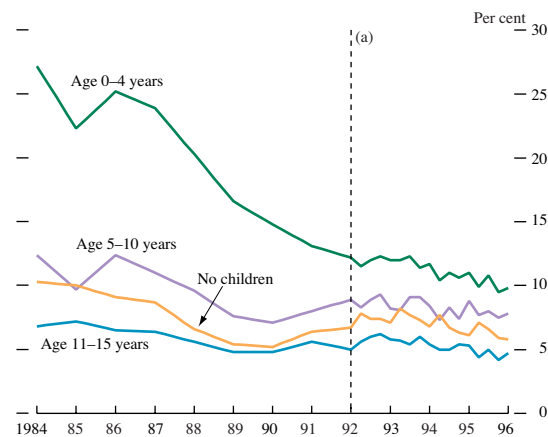
Notes: Actual unemployment rates for women with children aged 0–4, 5–10, 11–15, or with
       no children. 'Unemployment' is defined as unemployment/employment, as before.

(a)   Annual data before 1992, then quarterly data.

Between 1984–96, the share of women with young children in the female labour force rose from 10% to 13.5%, which, other things being equal, would have added around 0.5 percentage points to the unemployment rate by 1996. Chart 8 shows that women with young children account for

Chart 8
**Contributions of women with young children
to falling female unemployment rates**

Note: The chart explains 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.

(1)   This conclusion is supported by more formal analysis in the *Working Paper* version of this article.
(2)   See the Appendix for details.

around 45% of the fall in the total female unemployment rate between 1984 and 1993, though they make up only 10% of the female labour force.

The rest of this article focuses on explaining the unemployment rates of women with young children. But 'other' women also account for about half of the fall in female unemployment; a discussion of why these women also have lower unemployment rates appears in the *Working Paper* version of the article.

Explaining the lower unemployment rates of women with young children

Any explanation of why the female unemployment rate has fallen must take account of the increase in female participation rates in the same period. So we can discount any idea that women previously recorded as unemployed have simply stopped actively searching for work and become inactive instead.

(a)   Increased demand?

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

An increase in the demand for labour can only drive unemployment down if wages and prices do not fully adjust. But wages (and other non-pecuniary benefits) are likely to have had enough time since 1992 to adjust to increasing demand, while the female inflow rate has remained low and stable since falling sharply relative to the male rate between 1988–92. An increase in demand that favoured women might also be more likely to reduce female unemployment via the speed with which the unemployed find work than via a lower inflow rate. As shown earlier, this is not the case. In summary, demand-led explanations of the fall in the unemployment rate for women relative to men do not seem convincing (though there was a slight increase in the average female duration in 1997).

(b)   Factors relating to young children?

It was seen earlier that the fall in unemployment between 1984–93 was almost entirely accounted for by lower inflow rates, with a large proportion of the fall due to lower unemployment rates of women with young children. The

rest of this section considers why the inflow rates of women with young children might have fallen.

(a)   Better childcare provision

Women with young children may be constrained in their working lives by the need to look after young children or use childminding facilities. Table C shows that the proportion of children under five years of age in local authority nurseries or with registered childminders almost doubled between 1974–93; the number of children under five years old receiving day care or childminding increased by roughly 200,000 between 1984–93. But these long-term increases in childminding facilities, which have increased female participation over the longer term, are unlikely to have played the most significant role in making female unemployment fall, because they are slow-moving compared with the large and rapid fall in inflow rates and unemployment.

Table C
Children under five years of age in childcare in England

Per cent

	Local authority	Childminders (a)	Play groups	Total (b)
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: Social Trends.

(a) Since the Children Act 1989, childminders are required to register places available for any child under eight years old.
(b) The figures prior to 1989 relate to under five year olds only, but in 1993, only 6% of places for childminders were registered as solely for use by under fives.

(b)   Flexible working practices

Most childcare is informal and part-time; many mothers with young children look for jobs where they can work part-time, flexi-time, or job share, or work only during term-time. These options may be increasingly available at the firms where they worked before maternity leave—and be reinforced by maternity rights, which have strengthened over time—but may not be readily on offer at other firms. So there may be less incentive for mothers returning to the labour market after having a child to search the rest of the job market—if there is an immediate and acceptable offer at their previous firm, they may return to work without becoming registered as unemployed, and so decrease unemployment via a reduced inflow rate.

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 new-born children whether their firm operated flexible working practices (available to all workers) and family-friendly working practices available to mothers. Table D shows large increases in the availability of both types of practice, making it easier for mothers to return to work after childbirth.

The results in Table E show changes in the post-childbirth employment outcomes of mothers, again using the PSI

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

Percentage of firms offering:	1979 survey	1988 survey	1996 survey (a)
Part-time	39	36	79
Job sharing	n.a.	6	35
Flexi-time	12	12	32
Shift work	11	9	26
Some work at home	3	4	17
Career break at home	n.a.	4	23
Help with childcare	3	4	9 (b)

n.a. = not available.

Source: Callender et al (1997).

(a) The 1996 survey asked if employers operated any of the arrangements in the table, and the 1988 survey asked if they operated them 'for people doing your kind of work'. To the extent that respondents to 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.
(b) Workplace nursery or crèche only.

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, compared with only 10% in 1996.

Table E
The probability that women return to work after childbirth

Per cent

	1988 survey	1996 survey
Returned to work	46	67
of which:		
Same employer	35	58
Different employer	11	9
Not in work	55	33
of which:		
Seeking work	20	10

Source: Callender et al (1997).

This evidence suggests 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.

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. (For example, 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, reports accumulated tenure of six years.) Table F shows the pattern of elapsed job tenure for employed women with children aged under five years. Tenure of more than five years, when the child is under five, should mean that the woman 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 of less than 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% in the same period.

Table F
Tenure of employed women with children aged 0–4

Tenure	1984		1996	
	Employed (thousands)	Percentage	Employed (thousands)	Percentage
<3 months	97	13.9	120	7.7
3–6 months	72	10.3	96	6.1
6–12 months	110	15.7	183	11.7
1–2 years	114	16.2	221	14.2
2–5 years	144	20.6	296	18.9
5–10 years	114	16.2	346	22.2
10–20 years	47	6.7	279	17.9
>20 years	3	3.6	20	1.3
Total	**701**	**100**	**1,560**	**100**

Notes: The table gives tenure at the time of interview. Figures may not sum because of rounding.

This provides strong evidence that women are increasingly returning after childbirth to work for the same employer, which can account for a large part of their lower inflow rates into unemployment. But why were these facilities not offered previously? Have there been any particular developments that might help to explain the increase in family-friendly practices?

Firms are likely to set up these schemes when the present value of the benefits of doing so are greater than the costs, many of which are set-up costs (Opportunity 2000 (1993)). Hillage and Simkin (1992) find that the running costs of such schemes 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, female participation in the workforce had increased, the average educational attainment of women relative to men had risen, childbearing was increasingly being postponed and women were having 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, and may have prompted them to set up new schemes.

A further factor in reducing female inflow rates may have been the introduction of Family Credit (FC) payments in 1988. FC replaced Family Income Support (FIS) as the in-work benefit for families on lower incomes and, unlike FIS, it offered more benefit with each additional child (as unemployment benefit does). Moreover, FC payments were based on net rather than gross income, so that nobody lost income by taking FC. This may have encouraged jobless individuals with children to take work rather than continue on unemployment benefit, by making the

employment option more financially rewarding overall than previously.

There were 210,000 recipients of FIS in 1987; in 1988, there were 470,000 recipients of FC (Dilnot and Webb (1990)). These other payments 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 reinforced by an extension to the FC scheme in 1992.

Conclusions

ILO-defined unemployment in Britain peaked at a lower level in 1993 than in 1984, because of lower female unemployment rates. These were almost completely accounted for by a fall in the rate at which women become unemployed. This fall is uniform across skill groups, but is particularly significant among women with young children.

This article has suggested that certain frictions in the female labour market, especially those associated with having young children, lessened in the late 1980s and early 1990s, and explain much of the fall in female inflow rates. Identifying reduced frictions is particularly important because it implies that the natural rate of female unemployment may have fallen, perhaps accounting for some of the increase in earnings growth at given unemployment rates during the 1990s.

The preferred explanations given here focus on the restrictions on the set of available jobs that are acceptable to women, mainly due to the presence of young children. When mothers are considering a return to work after childbirth, they have to search the set of available vacancies, which takes time and effort. But many firms have increased flexibility and other provisions that help mothers of young children return to their previous employer, 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.

Though the analysis presented here suggests that falling female unemployment has lowered aggregate unemployment, more needs to be known about how much of the fall has simply displaced male workers. But this article does set out some of the stylised facts on female unemployment, and offers some suggestive evidence on what might explain these trends.

Appendix

Decomposing the aggregate unemployment rate into:

(a) The average duration of unemployment spells and the aggregate inflow rate for males and females

We can use equation **(1)**, ie:

$$\frac{U}{N} = \frac{U}{I} \times \frac{I}{N} \tag{1}$$

to decompose the aggregate unemployment rate into the product of the aggregate inflow rate and average duration of unemployment spells. 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. Taking the difference of year t from the base year 0, adding and subtracting D_0 x I_t yields:

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

The aggregate inflow rate is a weighted average of the male inflow rate I^m, and the female rate I^f.

$$I_t = \alpha_t I_t^m + (1 - \alpha_t) I_t^f \tag{3}$$

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

$$I_t - I_0 = \alpha_t (I_t^m - I_0^m) + (1 - \alpha_t)(I_t^f - I_0^f) + (\alpha_t - \alpha_0)(I_0^m - I_0^f) \tag{4}$$

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 is the change in the weighting of 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.

$$\begin{aligned} D_t - D_0 = {} & \beta_t (D_t^m - D_0^m) + (1 - \beta_t)(D_t^f - D_0^f) \\ & + (\beta_t - \beta_0)(D_0^m - D_0^f) \end{aligned} \tag{5}$$

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

$$\begin{aligned} \Delta U = {} & I_t \begin{bmatrix} \beta_t \left(D_t^m - D_0^m\right) + (1 - \beta_t)\left(D_t^f - D_0^f\right) + \\ (\beta_t - \beta_0)\left(D_0^m - D_0^f\right) \end{bmatrix} + \\ & D_0 \begin{bmatrix} \alpha_t\left(I_t^m - I_0^m\right) + (1 - \alpha_t)\left(I_t^f - I_0^f\right) + \\ (\alpha_t - \alpha_0)\left(I_0^m - I_0^f\right) \end{bmatrix} \end{aligned} \tag{6}$$

(b) Skill groups

The contributions of the skilled and unskilled sectors to changes in male and female unemployment rates respectively are:

$$\begin{aligned} U_t^f = {} & \gamma_t \left(U_t^{sf} - U_0^{sf}\right) + (1 - \gamma_t)\left(U_t^{uf} - U_0^{uf}\right) \\ & + (\gamma_t - \gamma_0)\left(U_0^{sf} - U_0^{uf}\right) \end{aligned}$$

and

$$\begin{aligned} U_t^m = {} & \delta_t \left(U_t^{sm} - U_0^{sm}\right) + (1 - \delta_t)\left(U_t^{um} - U_0^{um}\right) \\ & + (\delta_t - \delta_0)\left(U_0^{sm} - U_0^{um}\right) \end{aligned} \tag{7}$$

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 applied (reflecting increasing skill levels in the labour force).

Decomposing changes in the female unemployment rate

Equation **(8)** 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.

$$\begin{aligned} \Delta U^f = {} & \beta_t \left(U_t^{04} - U_0^{04}\right) + (1 - \beta_t)\left(U_t^r - U_0^r\right) \\ & + (\beta_t - \beta_0)\left(U_0^{04} - U_0^r\right) \end{aligned} \tag{8}$$

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