

THE CHANGING RESPONSIVENESS OF LABOUR SUPPLY DURING THE 1990s

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1.
Introduction

The growth of the labour force has often been cited as an explanation of the sustained high rate of output growth in the Irish economy over the last decade. Prior to the current boom, there was a high level of unemployment, a low level of female labour force participation and a large pool of Irish workers resident abroad because of historical emigration patterns. These stylised facts of the pre-boom Irish labour market are frequently used to explain why output growth did not result in upward wage pressures strong enough to choke off the growth because of falling competitiveness, but rather in increased employment and sustained growth rates.

One of the main sources of labour force growth has been the increasing tendency for women who previously worked in the home to join the paid labour force. To a lesser extent, men who were unemployed but not actively seeking work because of disincentives due to the benefit system or discouragement because of poor labour market conditions began actively to participate, as evidenced by the fall in unemployment, and particularly long-term unemployment, in recent years. This paper aims to shed some light on the issue of the potential of the domestic labour force to expand further, and in particular, how the rate of expansion is likely to compare to past rates.

Economists are most often interested in the responsiveness of labour force participation to changes in wage rates and the usual way to express this is in the form of an *elasticity*. This is defined as the percentage change in the participation rate resulting from a one per cent increase in the hourly wage rate. Calculating such an elasticity is the main focus of this paper.

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A knowledge of labour supply elasticities is useful for several purposes. When combined with information about how education levels – and hence wage rates – in the population are changing, future participation patterns may be predicted. Elasticities are also required when predicting the effect of changes in the tax system on government revenue. This is because a cut in the tax rate, for example, will have the “second round” effect of increasing tax revenue to the extent that it brings new participants into the labour market, as well as the more obvious “first round” effect of cutting revenue.¹

Participation patterns are, of course, interesting in their own right; the recent increase in female participation in Ireland is widely accepted as entailing enormous social change. But these patterns are also important for wider predictions of the performance of the economy; for example, since unemployment is the difference between participation and employment, elasticities are important in predicting future unemployment rates; these rates and the government expenditures associated with them are then used in medium-term forecasting exercises, such as the ESRI’s *Medium-Term Review*.

The first step in calculating a participation elasticity that is useful in predicting participation patterns for the medium term is to obtain more recent estimates of the determinants of participation than have been available to date. Thus, data from the 1998 wave of the Living in Ireland Survey are analysed. This survey is carried out annually by the ESRI for Eurostat, and surveys a nationally representative sample of households on questions such as labour supply, income and household characteristics. It is described in greater detail in Barrett *et al.* (2000).

In order to be able to comment on how the determinants of participation have changed over the period of the economic boom, estimates that may validly be compared are required, so data from 1994 are also analysed in order to achieve this.

The paper proceeds as follows. The next section describes changing participation rates in Ireland over the last few decades as well as detailing some of the results that have been found in previous studies as to the effects of increasing wages and other variables on labour force participation. Section 3 introduces the data used and presents some preliminary analyses of the data. Econometric results are discussed in Section 4 and the labour supply elasticities these results imply are outlined. Section 5 concludes.

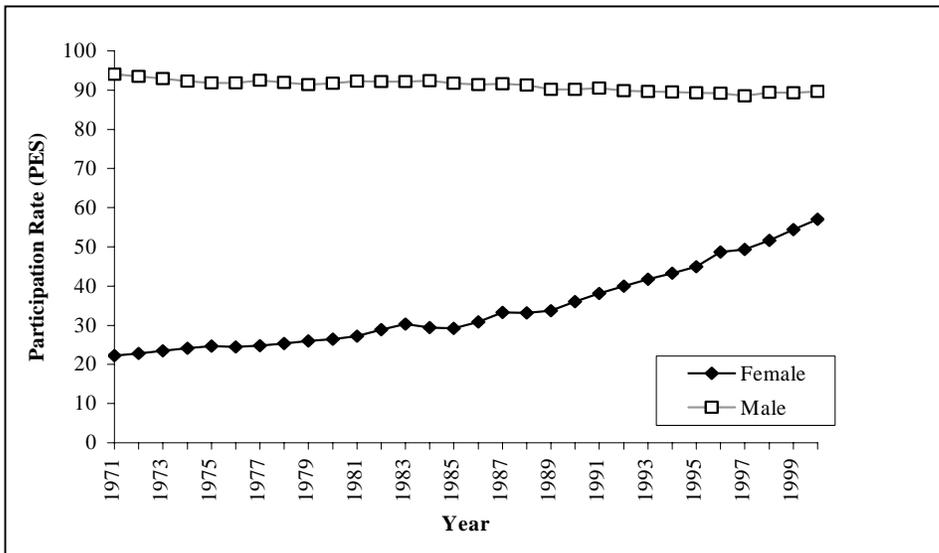
2. Trends in Irish Labour Force Participation Rates

From Figure 1, a plot of participation rates² for men and women aged 25 to 64 in Ireland since 1971, the striking and familiar pattern of strongly rising female participation rates is clear. Explanations of this pattern have emphasised both falling fertility rates and increasing wage rates, the latter in turn being explained by increasing levels of education for Irish women.

¹ It should be noted, however, that the calculation of such a “net” wage elasticity requires a more sophisticated analysis than the one undertaken here.

² Participation rates here are measured on a PES (Principal Economic Status) basis, because of the availability of a continuous series, whereas the analysis in the remainder of the paper is conducted on the basis of ILO definitions of participation.

Figure 1: Participation Rates for Men and Women Aged 25-64, 1971-2000, Ireland

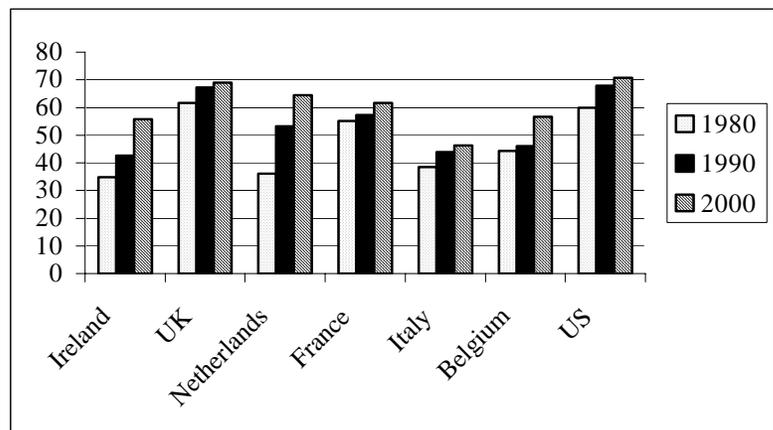


Source: CSO.

Irish women’s participation rates have for many years been low by international standards. However, the recent increases have resulted in their participation rates approaching those of other OECD countries, as illustrated in Figure 2.

It is useful to outline the results of previous analyses obtained for Ireland and other countries. It is widely, although not universally, accepted that women’s labour supply is more responsive to changes in wages than men’s. Because in most countries, the vast majority of men participate in the labour market, most research has been focused on analysing women’s participation behaviour, and particularly that of married women, since single, childless women tend to respond to labour market incentives in a similar way to men. There is also a large literature that focuses on hours of work, but that is not relevant to the present analysis.

Figure 2: Participation Rates for Women Aged 15-64, Selected OECD Countries



Source: OECD. Notes: 1980 figures are for 1981 (Ireland); 1983 (Belgium); and 1984 (UK). 2000 figure is for 1999 for the Netherlands.

International results show that married women increase their hours of work by between 1 per cent and 7 per cent in response to a 1 per cent increase in the wage rate, with most of that response arising because of increasing participation in the labour market rather than because of increasing hours by women already in the labour market. The more reliable estimates are regarded as being those at the lower end of the range, closer to an elasticity of 1 than 7.

Work on female labour supply elasticities for Ireland began with Callan and Farrell (1991), who estimated that in 1987, Irish married women had a participation elasticity of 2.73, a figure that is high by international standards, compared to an employment elasticity of 0.23 for men. Subsequent work by Callan and Van Soest (1996), also using 1987 data, showed lower elasticities for women, of about 0.7. Analysis of more recent data from 1994 indicate participation elasticities of 0.9 for women and 0.3 for men (Barrett *et al.*, 2000). Using data from the same year, but a slightly different methodology, Callan and Doris (1999) found a participation elasticity for men of 0.42, and for women of 0.54, with married women having a higher elasticity than single women – 0.7 compared to 0.4.

These results suggest that labour supply elasticities are reasonably stable over time for men, but fell substantially between 1987 and 1994 for women. There are several reasons why female elasticities might be expected to have been falling over the 1990s. One is a purely mechanical one, that as participation by women in the labour market increases, the denominator in the elasticity calculation increases, so that even if the percentage point increase in the participation rate resulting from a 1 per cent increase in wages remains constant, the participation elasticity will fall. But there are also good economic reasons why the elasticity may fall. As wage rates rise, those women with the least unfavourable non-wage characteristics will be the ones most likely to join the paid labour force. Thus for example, women with no young children are more likely to respond to the increasing wage rates than others. This means that the pool of potential new participants is increasingly characterised by their having very unfavourable characteristics and therefore larger and larger wage increases are required to induce them to join the labour force. It is important to note that not all of these characteristics may be modelled econometrically; personal preferences and attitudes to combining work and childcare are difficult to measure and so are not included in this data set, and cannot therefore be specifically accounted for.

As regards the effect of children on participation rates, it has long been noted that the presence of children has a strong effect on women's participation probabilities, whereas they have little if any effect on men's. Results for Ireland based on 1994 data have shown that children of pre-school age reduce a woman's participation probability by about 23 per cent. Callan and Doris (1999) show that these effects are stronger for single women (34 per cent) than for married women (19 per cent), presumably because the absence of a partner reduces the availability of childcare. Children of primary school age also reduce the participation probability, but to a lesser extent – about 7 per cent – and children of secondary school age actually increase the probability of participation, a result that appears to arise because of the income effect of children – children cost money – outweighing the opportunity costs of working, whereby childcare costs fall as the school day becomes longer and

mothers' preferences for spending time with older children are less strong as children get older.

3. Labour Supply Patterns in Ireland in the 1990s

Men, on the other hand, are little affected by the ages of their children. Results have often shown (Barrett *et al.*, 2000; Callan and Doris, 1999; Murphy and Walsh, 1996) that the absolute number of children affects the probability of participation, but the absence of any age differentiation indicates that this is more likely to be because the replacement rate of benefits is increased by the number of children than because of childcare implications.

Before turning to a more formal analysis, it is useful to examine the participation patterns in the data, which come from the Living in Ireland Survey for the years 1994 and 1998, as mentioned above.³ The labour force states recorded in the data are broken down according to sex and education level in Table 1 below.

Table 1: Percentage Occupying Labour Force States by Education Level, Men and Women, 1994 and 1998

Status	Men				Women			
	Unqualified		Qualified		Unqualified		Qualified	
	1994	1998	1994	1998	1994	1998	1994	1998
Employee	52.2	51.4	78.4	84.9	20.5	28.8	55.8	63.1
Apprentice	0	0	0.4	0.4	0	0	0.1	0.1
Temporary Employment Scheme	4.9	7.4	1.8	2.7	0.4	3.6	1.4	2.6
State Training Scheme	1.1	0.8	0.6	0.1	0.5	0	0.3	0.7
Seeking First Job	2.7	2.2	1.2	0.5	1.1	0.8	0.3	0.3
Unemployed	26.8	22.7	11.5	5.0	2.1	2.5	3.3	2.4
Retired	11.6	14.5	3.3	3.0	0.1	0.6	0.3	0.3
Home Duties	0.7	0.8	0.2	0.2	75.4	63.7	36.4	27.4
Education	0.1	0.3	2.5	3.2	0	0	2.0	3.1
No. Observations	740	366	1,786	1,149	763	358	1,803	1,211

Notes: Qualified individuals have at least a second level qualification (Group Certificate or higher); unqualified individuals have none. Those unemployed may be participating or not participating, depending on whether they are actively seeking work. Percentages may not sum to 100 due to rounding.

The table yields some interesting results. The rise in the employment rate of women, both with and without formal qualifications is very striking – from 55.8 per cent to 63.1 per cent for the former and from 20.5 per cent to 28.8 per cent for the latter category. The increase in the percentage employed is also substantial for qualified men, whereas there was a small, albeit insignificant, drop in the employment rate of unqualified men. For this group, the unemployment rate did drop, suggesting that the employment rate should be observed to rise, but there was a corresponding increase in the retirement rate; for qualified men, and indeed women, there was no such increase. The increase in the employment rate for more educated men occurred as the unemployment rate fell. There was also a small increase in the proportion in education.

For women, the increases in the employment rate came at the expense of being engaged in home duties, rather than unemployment. This is a common feature of women's reporting of their labour market status, so that they often make labour market transitions directly from "out of the

³ These data form a panel of observations, but the panel aspect of the data is not exploited here; rather the data are treated as coming from two cross sections.

labour market” to employment, without ever being recorded as unemployed. For both low-education men and women, there was an increase in the proportion in Temporary Employment Schemes.

Table 2 shows the participation rates of individuals in the sample by various personal characteristics.

Both qualified and unqualified men increased their participation rates, and the table shows that this increase was concentrated in the under-55 age group, as might be expected.

Table 2: Rates (per cent) by Various Characteristics, 1994 and 1998

	1994	1998
Men All	84.7	88.0
Unqualified	72.8	75.1
Qualified	89.6	92.1
Aged less than 55	89.2	93.3
Aged 55 or more	57.4	58.0
Women All	51.2	62.7
Unqualified	26.1	37.4
Qualified	61.9	70.1
Aged less than 40	35.0	49.7
Aged 40 or more	64.6	73.9
Youngest Child Aged 0-4	42.2	56.7
Youngest Child Aged 5-12	37.1	57.6

Note: See *Notes* to Table 1 above.

For women, some of the results are a little more surprising. Both qualified and unqualified, older and younger women increased their participation rates substantially. However, women whose youngest child was of pre-school age had a higher participation rate than those whose youngest child was of primary school age in 1994. By 1998, the participation rates for these two groups had increased substantially, and had more or less equalised. This suggests that the increasing wage rates and tastes for labour market work among the younger cohort of women are increasingly sufficient to outweigh the strong negative effects of young children on participation probabilities. This may have interesting implications for the future pattern of participation in Ireland, resulting in, for example, an increase on the demand for paid childcare, as well as having wider social consequences.

Of course, these are merely frequency tabulations and it is not possible to control for all relevant factors simultaneously using this approach. It is for this reason that we turn to regression analysis in the next section.

**4.
Analysis of
Changing Labour
Supply
Responsiveness
in the 1990s**

The present study has two main aims. One is to obtain some more recent results for labour supply elasticities in Ireland than 1994 and the second is to compare results over time; this requires that econometric model specifications be consistent between years, as otherwise, any differences in estimated parameters would be difficult to interpret.

Women and men are analysed separately in order to allow for the generally perceived differences in women’s and men’s labour supply behaviour. This is standard practice.

The decision to separate those with very low education levels (no second level qualifications) from others was less standard and therefore requires some explanation. In Callan and Doris (1999), it was established that, for men in particular, there was a marked difference in behaviour between individuals according to their educational qualifications. This may

be because the nature of non-participation is different for unqualified men than for those with some formal educational qualifications. Unqualified non-participants are significantly more likely to record themselves as being retired than more qualified men; 42 per cent of low education non-participants reported themselves to be retired in 1994 (58 per cent in 1998) compared to 30 per cent (36 per cent in 1998) of better educated non-participants. This may be because the difficulty that older, unqualified men face in retraining after a period of unemployment makes them more likely to leave the labour market. It may also be because low skill work tends to be more physical, and therefore more difficult to carry out as the individual ages. More qualified men are more likely to be in education than to retire – 23 per cent of non-participants in 1994 and 41 per cent in 1998 – whereas practically none of the lesser educated non-participants were in education.⁴

Clearly, the motive for early retirement is different from the motive for continuing in or returning to education, and so if a participation equation were estimated over both lower and higher educated men, the results would fail to capture adequately the effect of wages on the probability of participation of lower educated men. Since the present study is concerned to establish the extent of male as well as female participation responses, a strategy of separating individuals into two groups on the basis of their educational levels, similar to that followed in Callan and Doris (1999) is followed here.

Educational level is clearly a variable that is very strongly correlated with wages, and so the issue arises as to whether the sample separation, with its attendant sample size reduction, could be avoided by specifying a more flexible functional form for the wage effect. This was experimented with and proved unsuccessful, suggesting that the reason for different behaviour at different education levels is not the different wage rates accompanying the education levels, but rather unobservable characteristics of those who left school so early.

For men and women, and for those with low education and higher levels of education, separate Probit models⁵ were used to analyse the participation decision. Participation is defined as either working or unemployed and actively seeking work, in accordance with the usual ILO definition. It should be noted that, for men, the actively seeking work test is the important one, since a large majority of men are either working or recorded as unemployed in administrative records; this means that unless participation is carefully defined, a discussion of the participation decision for men is uninteresting.

The sample used is also limited to men and women aged over 22 years. This is designed to avoid having to model the decision to study for a third level qualification after leaving school. Farmers and the self-employed were excluded, because of the difficulty of calculating hourly wage rates. Farm labourers were also excluded because of the extremely low wages

⁴ Note that these figures refer to men aged over 22 years.

⁵ The Probit model is designed to take account of some technical problems that arise in the analysis of decisions that are of an “either/or” nature if Linear Regression techniques are used, such as the possibility of predicting participation probabilities that are negative or greater than one. It is the econometric model most commonly used in analysing labour force participation.

recorded for this group.⁶ Those recorded as ill or unemployed due to illness were further excluded.

The wage variable used is the predicted log hourly gross wage rate. The wages were predicted according to the wage regressions included in the Appendix. Linear regression was used for men, whereas a Heckman model⁷ was used for women to control for the well-recognised problem of sample selection, with variables for the number and ages of children being used as the identifying variables in the participation equation.

Although not directly relevant to the analysis of participation, it is interesting to note that the estimated returns to education fell for men but rose for women between the two years; the drops were significant for men whereas the rises for women were largely insignificant. A further interesting point is that the results suggest that the profile of unobservable characteristics for women who joined the labour force between 1994 and 1998 changed substantially.⁸ Note that the 1994 wage estimates differ slightly from those found in some previous studies; this is partly because no variable for the unemployment rate is available for 1998, so it is also omitted for 1994 in order to achieve consistency in the two years, whereas such a variable has been used in previous analyses of 1994 data.

It should be noted that the fact that no satisfactory measure of the state of the labour market, such as industry- or occupation-specific unemployment rates is available is a drawback for the analysis of participation decisions as well as for the prediction of wage rates. There was a dramatic fall in unemployment between 1994 and 1998, which is likely to have increased the participation rate as well as the employment rate. There are several reasons for this. First, it means that fewer individuals are likely not to be participating because of the “discouraged worker” effect, whereby unemployed individuals are discouraged from actively searching for work because of the low probability of success. Second, some individuals – particularly married women – tend to make transitions directly from non-participation to employment when suitable opportunities arise in the labour market, so an increasing number of opportunities pulls them into the labour market.

Normally, this tightening of the labour market would be reflected in higher gross wage rate offers, which would, in turn, increase the probability of participation. However, in this period, Partnership Agreement terms restraining wage increases were still being adhered to to a large extent, so labour demand continued to grow. The resulting differences in labour market opportunities between the two years cannot be controlled for in the econometric analysis.

A further limitation of the analysis is that predicted gross wages, rather than net wages, are used. This means that all calculated elasticities are with respect to changes in gross wage rates. Given that tax rates fell between 1994 and 1998, elasticities may change due to changing net wages for a

⁶ It is possible that the additional provision of room and board explains these low wages.

⁷ The Heckman model is designed to solve the problem that the same unobservable characteristics, such as motivation and labour market orientation, that make it more likely that a woman will work may also make it more likely that she will earn higher wages. In this case, omitting women who are not working from the sample – as would be necessary if Linear Regression were used because of the absence of wage rates in the data for these women – would cause the estimates to be biased. This is known as the sample selection bias problem.

⁸ This is suggested by the fact that lambda, the variable that indicates the degree of sample selection bias, is not statistically significant for the 1998 sample.

given gross wage rate, rather than because of changing behavioural patterns. This should be borne in mind when interpreting the results. Since net wages are endogenous to labour supply, varying according to the relevant tax bracket, which in turn varies with hours worked, and since the tax system is highly non-linear, including net wages would have greatly complicated the analysis.

The coefficients from the Probit model are not immediately interpretable. Accordingly, for both men and women, marginal effects showing the effect on the participation probability of a one unit increase in a variable for the average individual are reported alongside the estimated coefficients. The exception to this is the case of the interpretation of the wage effects; here, elasticities rather than marginal effects are reported.

Results for men are shown in Table 3. Turning first to the demographic variables, living in an urban area reduces the probability of participation for men with no second level qualifications, but not for more highly educated men. The size of this effect rose between 1994 and 1998, as did its statistical significance, although the change in size of effect was not significant.

Each extra year of age up to the age of 55 reduces the probability of participation by about 2 points for unqualified men in both years, whereas for men with qualifications, the effect is not significantly different from zero in 1998, and reduces the probability of participation by less than half a point in 1994. The fact that this effect is greater for lesser educated men probably reflects the greater difficulty in changing careers in the event of unemployment for this group; education confers greater flexibility on the individual. Age has a larger effect for those above 55 years in both education categories, probably reflecting some early retirement decisions; each year reduces the probability of participation by about three points, and by six points for unqualified men in 1998. The greater effect of age for unqualified men may be because low skill jobs tend to be more physically demanding, making early retirement more likely for this group.

Table 3: Results of Probit Models of Participation for Men, 1994 and 1998

	Unqualified Men				Qualified Men			
	1994		1998		1994		1998	
	Coeff. (<i>t-Stat.</i>)	Marginal Effect						
Predicted	4.476	1.21*	2.818	0.68*	1.501	0.21*	0.471	0.06*
Log Wage	(10.21)		(5.30)		(7.15)		(2.03)	
Spline: Age < 55	-0.092	-0.026	-0.062	-0.016	-0.030	-0.004	0.001	0.000
	(7.73)		(4.03)		(3.81)		(0.12)	
Spline: Age > 55	-0.088	-0.025	-0.235	-0.061	-0.241	-0.031	-0.273	-0.032
	(3.58)		(6.61)		(8.44)		(8.14)	
Dummy: Urban	-0.195	-0.054	-0.642	-0.160	-0.011	-0.001	-0.136	-0.016
	(1.56)		(3.29)		(0.12)		(1.09)	
Dummy: Married	-0.542	-0.132	0.022	0.006	0.244	0.032	0.446	0.057
	(3.09)		(0.10)		(1.80)		(2.36)	
Constant	-1.549		-0.565		-0.364		0.445	
	(3.90)		(0.82)		(1.26)		(0.98)	
N	685		345		1,658		1,031	
Participation Rate (%)	72.8		75.1		89.6		92.1	

* denotes elasticity rather than marginal effect.

Being married increases the probability of participation for qualified men, a common result that is usually interpreted as reflecting stable personal characteristics. In 1994, marriage reduced the participation

probability for unqualified men. This is probably a replacement ratio effect, since men with dependent wives are entitled to an allowance in their benefit payments, increasing the proportion of potential earnings replaced by benefits and hence the reservation wage. This affects lower educated men both because they themselves are likely to have lower market wages and because they are more likely to be married to women with low attachment to the labour market and who are, therefore, dependent on their husbands. However, this effect had disappeared by 1998, for reasons that are not clear.

Finally, the elasticity of participation with respect to the gross wage rate is shown. For both higher and lower educated men, the wage elasticity has fallen between 1994 and 1998. The overall male elasticity has fallen from 0.46 to 0.19. The fall is, as discussed in Section 2, expected given the increasing participation rate – the group of those not participating are increasingly likely to be the ones with the poorest labour market characteristics.

Table 4 shows the corresponding results for women. The specification is, of course, different to that used for men. In particular, children strongly affect female participation decisions, whereas no consistent effects could be found for men.

Not surprisingly, children of pre-school age have the greatest effect; each child aged less than four years reduces a woman's probability of participation by about 20 points in 1994 and by about 17 points in 1998. This result is quite stable across qualified and unqualified women. Children of primary school age have a much smaller, but still strong negative effect on labour market participation. Each child aged between 5 and 12 years reduces the participation probability by about 6 points. Interestingly, for low education women, this effect grew to 10 points in 1998, although the difference between the coefficients in the two years is not statistically significant.

Table 4: Results of Probit Models of Participation for Women, 1994 and 1998

	Unqualified Women				Qualified Women			
	1994		1998		1994		1998	
	Coeff. (<i>t-Stat.</i>)	Marginal Effect						
Predicted Log Wage	1.904 (7.76)	1.94*	3.503 (7.18)	2.80*	2.036 (17.42)	0.74*	1.668 (11.95)	0.58*
Spouse's Net Income	0.001 (1.90)	0.000	0.000 (0.76)	0.000	-0.001 (5.31)	0.000	-0.001 (2.60)	0.000
Age	-0.069 (9.50)	-0.021	-0.076 (6.42)	-0.029	-0.059 (13.46)	-0.021	-0.067 (11.15)	-0.021
Number of Children Aged 0-4	-0.653 (4.58)	-0.198	-0.463 (2.64)	-0.174	-0.592 (9.34)	-0.205	-0.526 (5.64)	-0.164
Number of Children Aged 5-12	-0.196 (3.09)	-0.059	-0.280 (3.07)	-0.105	-0.217 (5.08)	-0.075	-0.181 (3.44)	-0.056
Number of Children Aged 13-18	0.008 (0.13)	0.002	0.152 (1.81)	0.057	0.145 (2.76)	0.050	0.056 (0.93)	0.018
Constant	0.497 (1.40)		-1.275 (2.18)		0.033 (0.15)		0.605 (1.90)	
N	737		342		1,703		1,015	
Participation Rate (%)	26.1		37.4		61.9		70.1	

* denotes elasticity rather than marginal effect.

Older children increase the probability of participation for women in both educational categories, although this effect is not always significantly different from zero. The reason for this, as suggested in Section 2 above, is that as children get older, the urgency of spending time with children weakens as their school hours lengthen, and at the same time, those children become more expensive, increasing the income effect of those children that pushes women into the labour market. These effects, where significant, increase participation by about 5 percentage points.

The age of a woman also has a significant negative effect on her participation probability, with each year of age reducing the probability by about two points, an effect that is stable in size across the two years and the two educational categories.

The effect of spousal income is significant for all but low education women in 1998, but tiny, with marginal effects of less than one-tenth of a percentage point.⁹

As regards the effect of wages on female participation, the results are not as predicted. While the wage elasticity did fall for women with formal qualifications, from 0.74 to 0.58, the wage elasticity for lesser educated women rose substantially between 1994 and 1998 from 1.9 to 2.8. There are several potential explanations for this increasing elasticity.

First, falling tax rates may have particularly influenced the potential net wage rate of unqualified individuals; in this case, for a given gross wage rate, the incentive to participate would have increased. However, this explanation is not supported by the results for men – here, unqualified men's wage elasticity dropped substantially over the period in question. Changes in the tax code apply equally to men as to women, so if this explanation were valid, we might expect to see this wage elasticity also increasing. Of course, it is possible that the unqualified male elasticity would have dropped even further over the period in the absence of tax changes, in which case the argument remains valid, but this cannot be tested without modelling changes in the tax system explicitly.

Another possible explanation is that young women who would typically have stayed in the home in the past can no longer afford to do so, perhaps because of the high cost of housing, and particularly of entering the property market. This is an argument that is regularly heard in media discussions of the increasing female participation rate. If this were the case, however, the pattern of increasing wage elasticities might be expected to hold for qualified as well as unqualified women, and this is not the case.

A third possible explanation is that there was a shift in taste for labour market work amongst this group. This is a more plausible explanation, as it may be that the behaviour of a reference group is important in forming preferences, so that staying on 'home duties' yields lower utility if many women in one's reference group are being drawn into the labour market.

Finally, the change in the rate of unemployment between the two years may be important in explaining the result. If it were the case that women did not work before the boom in part because of being constrained by the lack of suitable labour market opportunities for unqualified workers, then the new labour market conditions may be responsible for this apparent increase in responsiveness. It might be argued that this should apply equally to unqualified men, but there is a significant degree of sex

⁹ Note that marriage is not included separately here, as its inclusion was found to yield unstable parameter estimates.

segregation in the labour market and if “women’s jobs”, for example in the service sector, were increasing at a faster rate than “men’s jobs”, then this would not apply. Again, as noted above, the data are not available to test this hypothesis.

Table 5 summarises the elasticity results found. Whilst the overall male elasticity dropped substantially, the female elasticity is stable. This stability masks the composition of changes in responsiveness to wages, however. Whilst the elasticity for women with some educational qualifications fell, as expected, that for women with no qualifications rose. The overall labour supply elasticity did fall between 1994 and 1998, from 0.64 to 0.49, but this was driven by falling male rather than falling female elasticities.

Table 5: Summary of Estimated Elasticities of Participation with Respect to the Gross Hourly Wage

	1994	1998
Unqualified Men	1.21	0.68
Qualified Men	0.21	0.06
All Men	0.46	0.19
Unqualified Women	1.94	2.80
Qualified Women	0.74	0.58
All Women	0.92	0.93
All	0.64	0.49

5. Conclusions

The main finding of this paper is that the elasticity of labour supply in Ireland fell between 1998 and 1994, and that this was driven by a falling male elasticity. The female wage elasticity was stable, and this was because the fall in elasticity for women with some educational qualifications was offset by a substantial rise in the elasticity of women with a low level of education.

Turning to the future, it is likely that the decline in the overall elasticity will continue. As to the female labour supply elasticity, the picture is not so clear. It is important to note that the unqualified group of women is declining as a proportion of the female potential workforce, and so their impact on the overall picture is also declining. It is difficult to say, however, whether the participation elasticity for unqualified women will remain at the high level estimated for 1998, without knowing exactly why it rose between 1994 and 1998. If labour market changes were responsible, then the softening of the labour market currently underway may reverse the increase. If changes in tastes and attitudes were responsible, on the other hand, then this may be a permanent component of labour market responsiveness for this group of women.

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APPENDIX: WAGE PREDICTION ESTIMATES

Table A1: Male Wage Regressions

Variable	1994		1998	
	Coefficient	t-Statistic	Coefficient	t-Statistic
Group Certificate	0.201	5.27	0.130	2.38
Inter./Junior Certificate	0.308	8.82	0.174	3.57
Leaving Certificate	0.460	12.41	0.319	6.46
Diploma	0.609	11.78	0.536	8.18
Degree	0.950	16.81	0.817	11.82
Higher Degree	1.078	16.89	0.894	10.74
Years of Experience	0.022	3.69	0.013	1.87
Years of Unemployment	-0.026	-2.69	-0.040	-3.62
(Years of Unemployment) ²	0.001	4.78	0.001	4.03
Age	0.057	5.83	0.043	3.37
Age Squared	-0.001	-8.79	-0.001	-4.18
Married	0.174	6.20	0.161	3.99
Constant	0.005	0.028	0.626	2.67
Number of Observations	1,592		1,019	
R ²	0.49		0.40	

Table A2: Female Wage Regressions

Variable	1994		1998	
	Coefficient	t-Statistic	Coefficient	t-Statistic
Wage Equation:				
Group/Inter./Junior Certificate	0.134	2.846	0.126	2.28
Leaving Certificate	0.375	8.36	0.451	8.18
Diploma	0.568	9.25	0.664	9.04
Degree/Higher Degree	1.117	21.01	1.127	17.18
Years of Experience	0.062	11.81	0.045	6.35
(Years of Experience) ²	-0.110	-7.25	-0.066	-3.33
Years Out of Lab. Mkt.	-0.027	-4.72	-0.018	-2.51
(Years Out of Lab. Mkt.) ²	0.071	3.62	0.052	2.36
Constant	0.773	12.161	1.060	12.02
Participation Equation:				
Group/Inter./Junior Certificate	0.244	2.74	0.044	0.39
Leaving Certificate	0.428	4.93	0.080	0.70
Diploma	0.424	2.89	0.479	2.46
Degree/Higher Degree	0.790	6.07	0.482	2.78
Years of Experience	0.112	9.29	0.099	6.47
(Years of Experience) ²	-0.281	-7.73	-0.275	-5.91
Years Out of Lab. Mkt.	-0.136	-13.11	-0.126	-9.49
(Years Out of Lab. Mkt.) ²	0.226	6.93	0.182	4.55
Youngest Child Aged 0-4	-0.603	-6.071	-0.633	-5.09
Number Children Aged 5-12	-0.166	-4.45	-0.177	-3.97
Lambda	0.104	2.62	-0.001	-0.01
Constant	0.022	0.18	0.659	3.81
Number of Observations	2,437		1,357	
Log Likelihood	-1642.8		-1032.9	