# The Full-Employment Labour Supply

# in Ireland: 1954-1970

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## I INTRODUCTION

In Ireland as in many other countries the attainment of full employment has become a central feature of government economic policy. In attempting to translate "full employment" into quantitative terms it must be borne in mind that it is not normally the sole policy objective but must be seen in the context of other and possibly conflicting targets. With this in mind the author has recently suggested (Slattery 1976) that an unemployment rate of three per cent represented full employment of the labour force in Ireland during the period from 1954 to 1970 and that this would have been accompanied by annual percentage rates of increase of 12.6 in money wages and 4.6 in prices. Since a commitment to full employment necessitates a manpower policy designed to ensure compatability between the supply of and demand for labour, an essential element of which is an estimate of the numbers of workers likely to be involved, the purpose of the present paper is to translate full employment as defined above into terms of the numbers who would seek employment.

The analysis draws a distinction between long-term equilibrium and short-term disequilibrium and attempts to allow for the open nature of the Irish labour market *vis-à-vis* that in Great Britain.[1] Movements in the rates of domestic labour force participation and of net emigration are regarded as the outcome of two sets of influences—long-term socio-demographic and short-term economic. In the case of migration the former result in what may be

1 Because work permits are required for N. Ireland, GB rather than the UK was regarded as the alternative market for Irish labour. Walsh (1974) estimated some 80 per cent of Irish emigrants go to GB.

termed social emigration and the latter in economic emigration. The argument is that there exists a long-term (or trend) equilibrium such that the syphoning-off of labour in the form of social emigration is just sufficient to offset any excess labour supply resulting from changes in the population and in long-term participation rates. Consequently, in the domestic labour market a pressure of demand has emerged which over time has come to be regarded as normal, in the sense that it is interpreted by both employers and employees as indicative of normal demand for labour conditions. In terms of the model normal domestic demand pressure is identified with the trend (non-agricultural) unemployment rate[2]: if it were to rise relative to Britain this would be characterised by below-trend net emigration and above-trend domestic participation rates; if the rise were absolute it would also be characterised by a below-trend unemployment rate. The reverse would be true of a fall in the domestic pressure of demand for labour. Working-age net emigration is therefore regarded as a form of labour force participation and like domestic participation short-term variations in the rate are determined by variations in the relative attractiveness of the Irish and British labour markets.

## II THE LABOUR FORCE PARTICIPATION MODEL

It seems generally agreed that long-term movements in labour supply reflect changes in population and trends in participation rates, while short-term movements are caused mainly by cyclical variations in participation in response to cyclical changes in the pressure of demand for labour. Following the approach pioneered by Tella (1964) population changes were taken into account by using participation rates i.e., the domestic labour force, employees, self-employed, members of the armed forces and the unemployed, as a percentage of the working-age population. (In what follows references to the population and net emigration refer to persons of working age.)

Short-term variations in the participation rate reflect the fact that employment variations tend to exceed corresponding unemployment variations because marginal workers enter and leave the labour force as the pressure of

2 The interest here lies not in unemployment *per se,* but as a proxy for pressure of demand for labour which in the short-term context of the models is regarded as exogenous. Non-agricultural unemployment was used because the existence of a large agricultural sector where underemployment may mask unemployment reduces the sensitivity of aggregate unemployment to demand changes.

demand is higher or lower[3] and estimation of potential labour supply turns upon estimating the numbers currently outside the labour force who would participate if sufficient jobs were available. The mis-match of employment and unemployment variations is likely to be more pronounced where unemployment statistics derive from numbers registering under social welfare schemes or for purposes of actively seeking employment and is largely attributable to the failure on the part of some to register (see, for example, Godley and Shepherd 1964). Since the labour force estimates used here derive primarily from Census of Population statistics the non-registration effect is likely to be diminished. However, to the extent that those outside the labour force—categorised as, not gainfully occupied—include persons not yet at work, persons of private means and persons engaged in home duties, the possibility of some movement into and out of the labour force remains. In addition since, as is discussed below, short-term fluctuations in net emigration are sensitive to changes in demand pressure at home and in Great Britain there exists an additional pool of marginal labour—those who might emigrate. To allow for this further potential supply, the *de facto* population in each year was augmented by adding the number of net emigrants in that year. (The Report on Full Employment adopted a similar procedure.) Short-term movements into and out of the domestic labour force by members of the augmented population depend on the conflicting pulls of the Irish and British labour markets. A fall in domestic demand pressure will reduce the domestic labour force both by increasing emigration and by depressing the participation rate, and conversely for an increase in demand pressure. These effects will be reinforced or dampened to the extent that Irish labour market slackness increases or diminishes relative to British, where the pressures of labour demand are measured by respective unemployment rates (for Ireland, the non-agricultural rate) and average earnings.[4]

3 Those leaving the labour force as demand pressure falls are sometimes called "discouraged" workers and in addition newcomers may be inhibited from entering. Conversely, a demand fall may induce some categories to enter the labour force, so-called "additional" workers. To this extent labour force variations are net.

4 Reflecting labour market openness the participation function is similar to the migration function. (See Walsh 1974). Mincer (1966) has argued that in regression models where participation is a function of the unemployment rate based on labour force rather than population the unemployment coefficient will be negatively biased. However, Bowen and Finegan (1966) dispute this. Furthermore, numbers unemployed and total insured in non-agriculture are from the same count of insurance cards source and subject to similar errors which tend to cancel in a ratio of one to the other. (Black and Russell 1970). Such cancellation is less likely if unemployed are a ratio of population derived from more reliable birth/death statistics. (For discussion of measurement error bias see Johnston (1972, pp. 281 ff.)

There are some grounds for anticipating that the participation rate—demand pressure relation may be non-linear. While the British experience in this respect (see Shepherd 1968) is a result of non-registration of unemployed the Irish phenomenon of large-scale emigration could produce a similar situation. To the extent that short-term variations in (net) emigration are sensitive to variations in demand pressure emigration will rise (fall) as domestic demand pressure falls (rises) relative to Great Britain. However, just as there are individuals who will emigrate irrespective of the economic climate, there are those who will not emigrate even though unemployed. Consequently, at low levels of domestic demand pressure, a given increase in demand can be met largely by re-employment of non-emigrants with little impact on participation or emigration rates; at high levels of demand a similar increase will draw into the labour force many who would otherwise emigrate thus causing a greater marginal response in participation and emigration rates. (This suggests that the emigration—demand pressure relation should also be non-linear, a point which is taken below.)

The empirical evidence indicates that participation rate sensitivity to changes in demand, varies among age-sex groups—for Irish results see, for example, Walsh (1968 and 1970/1); for the UK, Corry and Roberts (1970) and for the US, Tella (1964/65). It is desirable therefore to introduce some disaggregation of the labour force. The limitations of the available data are such that the only disaggregation possible would seem to be by sex which is not entirely satisfactory, nevertheless, because of the reported differences in male/female participation behaviour, it seemed useful to separate the two.

In examining the participation behaviour of sub-groups within the population, opinions differ on whether the aggregate unemployment rate or the group-specific rate is more appropriate as an indicator of labour demand. However, sub-groups may experience supply or demand fluctuations independently of the overall state of the labour market so that where the object is, as here, to measure response to general cyclical movements use of group-specific rates may over-estimate cyclical sensitivity, and it was considered preferable to use aggregate indicators.[5]

Two long-term factors were considered. The first is the increasing importance, both absolutely and relatively, of the non-agricultural sectors as sources of employment. However, Walsh's (1968, pp 32 ff) results[6] particularly for females indicate the inadequacies of the present aggregative

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5 See Mincer (1966) whose adjustments for bias reduced Tella's (1964/65) regression coefficients by some 50 per cent. See also Dernburg and Strand (1966).

6 The percentage of total employment in non-farm occupations was used as an indicator of industrialisation growth. Walsh (1968) noted that the single females result might be biased because in the census single females on farms are excluded from the labour force.

data for testing detailed hypotheses: on the basis of Walsh's findings the net effect of the process of industrialisation on the aggregate female participation rate could be to cause a slight increase while for males a slight decrease is indicated.[7]

Secondly, participation rates tend to reflect long-term changes in socio-demographic conditions. In industrialised countries a secular downward trend has been observed for male rates, while for females the rates have tended upward, the latter being attributed to an increasing propensity for married women to seek employment. However, even though Ireland has a comparatively low female participation rate,[8] the combination of decreasing age at marriage and improving educational opportunities appear to have offset the effect of married women entering the labour force. (See Leser (1964/65) and Walsh (1975) especially Appendix A.)

It was proposed to use the percentage of total employment in the non-agricultural sectors to represent industrialisation growth and a linear trend to represent socio-demographic changes. However, preliminary investigation showed a higher linear correlation between the two ($r = 0.98$) and it was decided to use only the trend variable to take account of both influences. The estimated trend coefficient in the case of female participation must therefore be regarded as representing the net effect of two (probably conflicting) tendencies.

The relation may be summarised as

$$L = f_1 (U) + f_2 (Ug) + f_3 (W) + f_4 (Wg) + f_5 (t) + v \qquad (1)$$

where L is the participation rate, U the unemployment rate, W wages per head, t a linear time trend with 1954 = 1, v a random term and the subscript g relates to Great Britain. It is anticipated that $f_1$ and $f_4$ will be decreasing functions and $f_2$ and $f_3$ increasing functions. The inclusion of the trend variable serves to isolate the short-term effects of changes in labour market conditions on participation.

### III THE NET EMIGRATION MODEL

Because of the augmented denominator used for the participation rate it might appear that an emigration model is unnecessary. However, thus

[7] However, OECD (1970) notes that in Ireland, Japan, etc., where movement out of agriculture is still large female participation is declining.

[8] In 1961, Irish female participation was second lowest of any developed OECD country. However, the Population Census appears to record only full-time working by married women.

restricting the analysis is appropriate only if full employment would not cause a reversal of net migratory flows. To take account of a possible net inflow with its implications for labour supply elasticity with respect to variations in demand pressure it was necessary to introduce a net emigration function.

The only data available relate to net emigration,[9] but on the assumption that migration is an adjustment process bringing labour supply into line with demand it may be argued that use of net flows is appropriate (Fleisher 1963 and Walsh 1968.) Alternatively, the net flow equation may be regarded as the reduced-form of a structural model in gross flow terms. Fabricant (1970) and Walsh (1974). In either case demand factors in both the domestic and recipient country are relevant—though their relative importance is open to disagreement (Gallaway and Vedder 1971).

The argument is that short-term variations in the net emigration rate—net emigrants as a percentage of the augmented population—are in response to variations in the relative attractiveness of the Irish and British labour markets measured as before: the underlying trend representing social emigration which in the short-term at least, is insensitive to economic stimuli being due to factors such as those suggested in Walsh's (1974) information-flow hypothesis.

Using the notation adopted earlier the model is,

$$X = f_6 (U) + f_7 (Ug) + f_8 (W) + f_9 (Wg) + f_{10} (t) + z \qquad (2)$$

where X and z indicate respectively the net emigration rate and a random term and it is anticipated that $f_6$ and $f_9$ are increasing functions and $f_7$ and $f_8$ decreasing functions.

To explore possible differences in migration behaviour separate male and female functions were estimated. Age-specific data are not available so that further disaggregation was not possible.[10] The reservations expressed earlier about such limited disaggregation apply *a fortiori:* the quinquennial Census of Population estimates indicate net inflows in some age groups. There is a further point. While it may be assumed for (working-age) males as a whole, that short-term variations in the emigration rate reflect movements of workers extension of this assumption to females, seems inappropriate. Many women may emigrate not to seek employment but because their

9 Based on intercensal estimates. O Herlihy (1966) used net passenger movements but Walsh (1968) demonstrated the deficiencies of this data.

10 O Herlihy (1966) and Walsh (1968, 1974) dealt with males and females combined and of all ages. The first two used numbers and the third rates.

husbands are emigrating. Thus while female emigration as a whole may be sensitive to economic conditions, to some extent this reflects an indirect cause-effect linkage; as a result a close correspondence between variations in female net emigration and domestic participation is unlikely, because the latter relates only to working females while the former relates to working-age females. Finally, as before aggregate pressure of demand variables were used in the estimation.

## IV EMPIRICAL RESULTS

Some experimentation was undertaken to determine the most appropriate forms of the relations. Linear and reciprocal forms of the unemployment variables were examined as were a number of variants of the wage variables: the annual growth rate differential (O'Mahony 1965, Slattery 1976); the difference in levels and the Irish/British ratio of levels (Walsh 1974). Each wage variant was examined in money and then in real terms.[11]

Estimation was by ordinary least squares[12] and the results are summarised in Table 1 below. Equations (1) and (2) relate to male and female participation respectively, equations (3) and (4) to male and female emigration.

Table 1: *Participation and net emigration rates: regression results 1953–70*

| Equation Number | Constant | Trend | $U^{-1}$ | $Ug^{-1}$ | $(RW - RWg)$ | $R^2$ | $d$ |
|---|---|---|---|---|---|---|---|
| 1. | 90.2019 | −0.3571 (11.27) | 17.8517 (4.17) | −1.2478 (2.16) | 0.0509 (9.57) | 0.94 | 2.30 |
| 2. | 31.8577 | −0.1566 (19.29) | 4.9818 (4.13) | | 0.0190 (10.88) | 0.98 | 2.41 |
| 3. | −0.7727 | | −9.5030 (2.93) | 1.5226 (3.15) | −0.0180 (4.14) | 0.87 | 1.94 |
| 4. | −0.4886 | | −7.3905 (2.76) | 0.6863 (1.72) | −0.0171 (4.75) | 0.86 | 1.78 |

11 Real wages is money wages per head deflated by the market price deflator of total final expenditure. Wage variables were found to be statistically non-significant when introduced in reciprocal form.

12 The participation and emigration functions were originally part of a larger model including wage and price functions. In the *a priori* form participation was not specified as interdependent but the emigration rate was used with the unemployment rate as a pressure of labour demand indicator in the wage function. Preliminary results failed to establish an interdependent emigration—wages link and it is appropriate therefore to estimate the participation and emigration functions by OLS.

Estimated coefficients with t-statistics in parentheses, $R^2$ the coefficient of multiple determination and the Durbin-Watson d-statistic are shown. (RW-RWg) indicates the real wage per head differential. (Further details regarding results may be obtained from the author.)

The implications of the results for the male (female) participation rate are as follows.[13]

   (i)   The combination of long-term factors summarised in the trend
         tended to reduce the rate by 0.36 (0.16) points per year.[14]

Short-term variations reflected pressure of demand variations in both labour markets.

   (ii)  Sensitivity to domestic unemployment varied inversely with the
         unemployment level. The marginal response to a percentage point
         increase in unemployment ranged from a decrease of 0.19 (0.05)
         points when U = 9.2 per cent, the maximum for the period, to 0.48
         (0.13) points when U = 5.6 per cent, the minimum for the period.

   (iii) Sensitivity to British unemployment also varied inversely with the
         unemployment level. The marginal response to a percentage point
         increase ranged from an increase of 0.14 points when Ug = 2.5 per
         cent, the period maximum, to 0.62 points when Ug = 1.0 per cent,
         the period minimum. The female rate did not appear sensitive to
         pressure of labour demand variations in Great Britain except to the
         extent that such variations affected the real wage differential.

   (iv)  The rate was also sensitive to real-wage differential changes. An
         increase (decrease) of £10 per head relative to Great Britain tended
         to raise (lower) the participation rate by 0.5 (0.2) points.

The results illustrate the effect of an open economy on the domestic labour force in that male participation tended to be the more sensitive to

13 In each case *ceteris paribus* is assumed. While this interpretation is commonly adopted, Geary (1963) would argue it is valid only if regressors are mutually uncorrelated. (See also Geary 1976).

14 The result for males is close to the annual decline of 0.4 points assumed in the Report on Full Employment (RFE) for 1971 to 1976. In view of Walsh's (1968) findings the decline in male participation could be largely attributed to socio-demographic changes. The RFE assumed female participation at its 1966 level throughout the forecast period to 1991.

short-term demand variations i.e., each equation (1) coefficient is larger in absolute terms than the corresponding equation (2) coefficient. The empirical UK and US analyses cited earlier would seem to indicate that the reverse is the norm. However, unlike the UK and the US withdrawal of workers from the Irish labour force cannot be attributed entirely to the discouraged worker effect as usually understood because in Ireland labour withdrawal is in part a transfer to an alternative labour market. Consequently, the Irish worker in general is likely to be more marginally attached to the domestic labour force than a worker in the UK or the US and it would not be inconsistent to suggest that the greater sensitivity displayed by males is indicative of a higher marginal propensity to migrate in response to economic stimuli. This is confirmed by the emigration results: in terms of workers the male/female comparison of emigration sensitivity probably understates the greater male sensitivity since (see above) the proportion of workers among male emigrants is likely to be higher.

Equations (3) and (4) indicate for the male (female) emigration rate that the combination of long-term factors did not exert a significant effect. In the short term the sensitivity of the rate to unemployment variations in Ireland and Great Britain varied inversely with the unemployment level: the marginal response to a percentage point increase in domestic unemployment ranged from an increase of 0.10 (0.08) points when U = 9.2 per cent, to 0.26 (0.20) points when U = 5.6 per cent; the response to a similar increase in British unemployment ranged from a decrease of 0.17 (0.08) points when Ug = 2.5 per cent, to 0.76 (0.34) points when Ug = 1.0 per cent.[15] The rate was also sensitive to short term real-wage differential variations: an increase of £10 per head relative to Great Britain tended to lower the rate by 0.18 (0.17) points.

The results indicate the serious consequences for the Irish economy of a low pressure of labour demand either absolutely or relative to Great Britain: in addition to labour force contraction, a phenomenon common to all industrial economies, depressed demand induces workers to transfer to an alternative labour market. The next section examines these consequences more fully.

## V SHORT-TERM IMPLICATIONS OF FULL EMPLOYMENT

The results in Table 1 were used to obtain estimates of the extent to which it would have been necessary to increase employment in order to attain

15 In equation (4) the $Ug^{-1}$ coefficient just fails to be significant on a two-tailed t-test at the 10 per cent level. It might be argued therefore that like female participation, female net emigration was not sensitive to a significant degree to unemployment variations in GB.

Table 2: *Actual and full-employment net emigration* * *(thousands)*

| | Males | | | Females | | | Males plus females |
| | Actual (1) | Full-Employment (2) | Difference (2) less (1) (3) | Actual (4) | Full-Employment (5) | Difference (5) less (4) (6) | Difference (3) plus (6) (7) |
|---|---|---|---|---|---|---|---|
| 1954 | −21.6 | 4.0 | 25.6 | −17.4 | 1.6 | 19.0 | 44.6 |
| 1955 | −23.7 | −0.5 | 23.2 | −18.4 | −0.7 | 17.7 | 40.9 |
| 1956 | −22.5 | 0.5 | 23.0 | −18.8 | −0.5 | 18.3 | 41.3 |
| 1957 | −28.4 | 3.5 | 31.9 | −25.7 | 1.2 | 26.9 | 58.8 |
| 1958 | −17.6 | 4.9 | 22.5 | −18.4 | 0.7 | 19.1 | 41.6 |
| 1959 | −18.7 | 4.4 | 23.1 | −18.0 | −0.1 | 17.9 | 41.0 |
| 1960 | −22.2 | 0.7 | 22.9 | −17.5 | −2.1 | 15.4 | 38.3 |
| 1961 | −12.4 | 1.7 | 14.1 | −11.4 | −0.8 | 10.6 | 24.7 |
| 1962 | − 4.9 | 8.5 | 13.4 | − 7.5 | 4.3 | 11.8 | 25.2 |
| 1963 | − 7.2 | 12.0 | 19.2 | − 8.1 | 6.7 | 14.8 | 34.0 |
| 1964 | −10.4 | 7.2 | 17.6 | −11.6 | 3.8 | 15.4 | 33.0 |
| 1965 | −11.9 | 10.5 | 22.4 | −11.3 | 7.4 | 18.7 | 41.1 |
| 1966 | − 8.5 | 9.4 | 17.9 | − 8.6 | 6.4 | 15.0 | 32.9 |
| 1967 | −11.1 | 13.6 | 24.7 | −11.2 | 8.3 | 19.5 | 44.2 |
| 1968 | −10.2 | 16.0 | 26.2 | −10.1 | 10.3 | 20.4 | 46.6 |
| 1969 | − 3.8 | 17.8 | 21.6 | − 6.8 | 12.2 | 19.0 | 40.6 |
| 1970 | 0.0 | 18.8 | 18.8 | − 0.6 | 12.9 | 13.5 | 32.3 |

*A minus sign indicates a net outflow.

full employment. In so doing two factors had to be taken into account: the effect of domestic full employment on migration and the effect on participation rates. Estimates of full-employment net emigration rates were obtained from equations (3) and (4) by substituting full-employment values for actual values of domestic variables and retaining actual values of British variables: in keeping with the short-term nature of the analysis the full-employment real wage level in each year was the previous year's actual level increased by 12.6 per cent and deflated by the price index increased by 4.6 per cent over the previous year's actual level; domestic unemployment of 3 per cent was used in each year. Multiplying the rates by corresponding augmented populations gave estimates of net emigration levels which are shown along with actual estimates in Table 2 below.

The results indicate that in almost every year full employment would have resulted in a (net) inflow and this is particularly true of males. The projected reversal of net flows is consistent with the labour market adjustment model used and is not so surprising as might appear. Despite the observed annual overall outflows some age-groups experienced inflows and it seems reasonable to hypothesise that had domestic full employment been attained in any year the net result over all ages might have been an inflow (See Walsh 1975). Moreover, for most years the suggested inflow is less than the previous year's actual outflow and could well be accounted for by the return of short-term emigrants; Kennedy and Bruton (1975) express a similar view.

Two consequences followed: for most years the augmented population required the further addition of the projected inflow; it was possible to distinguish the contributions to full-employment increases in the labour force and employment resulting from increased participation by non-migrants and from variations in the migratory pattern— assuming migrants and non-migrants experienced the same participation and employment rates. Estimates of full-employment participation rates were obtained in a manner similar to that for emigration and multiplication by the further augmented population yielding the full-employment labour force. The results in the form of increases over actual are shown in Table 3 in which columns headed immigrants relate to actual net emigration (i.e., those who under the prevailing less than full-employment conditions actually emigrated) and where appropriate to the estimated additional inflow.

Table 3 Column 7 shows the additional (to recorded unemployment) number of persons who would have sought employment had labour demand been sufficiently high. As may be seen from the table this hidden unemployment never fell below 40,000 and was lowest during 1961, 1962 and 1964

Table 3: *Increase in labour force due to full-employment (thousands)*

|  | Males | | | Females | | | Males plus females Total (1) plus (4) | 'True' Unemployment (see text) |
|  | Total | of which | | Total | of which | | | |
|  |  | residents | immigrants |  | residents | immigrants |  | |
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| 1954 | 53.6 | 31.1 | 22.5 | 11.6 | 5.8 | 5.8 | 65.2 | 130.2 |
| 1955 | 46.4 | 26.2 | 20.2 | 11.7 | 6.3 | 5.4 | 58.1 | 120.1 |
| 1956 | 44.2 | 24.3 | 19.9 | 12.1 | 6.6 | 5.5 | 56.3 | 119.3 |
| 1957 | 64.3 | 36.7 | 27.6 | 17.8 | 9.7 | 8.1 | 82.1 | 160.1 |
| 1958 | 52.0 | 32.7 | 19.3 | 12.6 | 6.9 | 5.7 | 64.6 | 137.6 |
| 1959 | 50.1 | 30.4 | 19.7 | 10.8 | 5.5 | 5.3 | 60.9 | 129.9 |
| 1960 | 42.0 | 22.6 | 19.4 | 8.7 | 4.2 | 4.5 | 50.7 | 113.7 |
| 1961 | 33.7 | 21.8 | 11.9 | 8.0 | 4.9 | 3.1 | 41.7 | 97.3 |
| 1962 | 42.3 | 30.8 | 11.5 | 10.5 | 7.0 | 3.5 | 52.8 | 106.8 |
| 1963 | 49.8 | 33.3 | 16.5 | 11.7 | 7.3 | 4.4 | 61.5 | 117.5 |
| 1964 | 39.7 | 24.8 | 14.9 | 8.9 | 4.4 | 4.5 | 48.6 | 101.6 |
| 1965 | 57.9 | 38.8 | 19.1 | 15.4 | 9.9 | 5.5 | 73.3 | 124.3 |
| 1966 | 50.1 | 34.9 | 15.2 | 12.8 | 8.4 | 4.4 | 62.9 | 115.1 |
| 1967 | 60.7 | 39.8 | 20.9 | 14.9 | 9.2 | 5.7 | 75.6 | 131.6 |
| 1968 | 61.6 | 39.3 | 22.3 | 15.5 | 9.6 | 5.9 | 77.1 | 137.1 |
| 1969 | 62.2 | 43.8 | 18.4 | 17.4 | 11.9 | 5.5 | 79.6 | 135.6 |
| 1970 | 68.2 | 52.2 | 16.0 | 18.4 | 14.5 | 3.9 | 86.6 | 151.6 |

when unemployment (around 5½ per cent) and the unemployment rate disadvantage with Great Britain (at 4 percentage points) were at their lowest.[16] So-called "true" unemployment—recorded plus hidden—is shown in Table 3 Column 8.

Since full employment has been defined in a constrained sense as 3 per cent unemployment, true unemployment does not measure the new employment required for full employment. Rather this is estimated as the difference between 97 per cent of the full-employment labour force and actual employment.[17] In disaggregating actual and full employment totals by sex some allowance was made for differing employment rates experienced by males and females. Table 4 below shows the female/male employment rate ratio and the non-agricultural unemployment rate for censal years from 1951 to 1971.

Table 4: *Ratio of female to male employment rates*

| Year | Ratio | Unemployment % |
|------|-------|----------------|
| 1951 | 1.016 | 7.3 |
| 1961 | 1.029 | 5.7 |
| 1966 | 1.025 | 6.7 |
| 1971 | 1.036 | 7.2 |

As may be seen the ratio showed little variation and appeared insensitive to movements in the overall pressure of labour demand.[18] It was decided therefore to use the mean ratio (1.026) while recognising that full employment policies might well incorporate measures to alter the ratio. The results showing increases required for full employment are shown in Table 5.

As expected the new employment required in any year varied depending on the actual cyclical position. From Column 7 of Table 5, in the years 1961, 1962 and 1964 required new employment was in the 60,000 to 70,000 region (over 6 per cent of actual employment). In other years due to higher domestic unemployment and a worsened relative situation the

16 Ignoring the real wage differential effect which was numerically small.

17 The full-employment target was defined in non-agricultural unemployment rate terms because this provided a more sensitive measure of demand pressure for the labour force as a whole. It is consistent therefore to apply the target to the entire labour force.

18 It was not possible to consider age-sex specific employment rates among which divergence is considerable (Walsh 1975.) Apart from censal years (1961, 1966) actual male/female employment figures are the author's estimates.

Table 5: *Increase in employment required for full-employment (thousands)*

| | Total (1) | Males | | Total (4) | Females | | Males plus Females Total (1) plus (4) (7) |
|---|---|---|---|---|---|---|---|
| | | *of which* | | | *of which* | | |
| | | residents (2) | immigrants (3) | | residents (5) | immigrants (6) | |
| 1954 | 71.2 | 49.5 | 21.7 | 20.3 | 14.6 | 5.7 | 91.5 |
| 1955 | 62.7 | 43.3 | 19.4 | 19.4 | 14.1 | 5.3 | 82.1 |
| 1956 | 62.5 | 43.3 | 19.2 | 20.1 | 14.6 | 5.5 | 82.6 |
| 1957 | 93.4 | 66.8 | 26.6 | 29.4 | 21.4 | 8.0 | 122.8 |
| 1958 | 78.4 | 59.8 | 18.6 | 22.9 | 17.3 | 5.6 | 101.3 |
| 1959 | 74.2 | 55.2 | 19.0 | 20.0 | 14.8 | 5.2 | 94.2 |
| 1960 | 62.5 | 43.8 | 18.7 | 16.1 | 11.7 | 4.4 | 78.6 |
| 1961 | 49.5 | 38.0 | 11.5 | 13.3 | 10.2 | 3.1 | 62.8 |
| 1962 | 56.2 | 45.2 | 11.0 | 15.5 | 12.1 | 3.4 | 71.7 |
| 1963 | 64.6 | 48.7 | 15.9 | 17.4 | 13.1 | 4.3 | 82.0 |
| 1964 | 52.5 | 38.1 | 14.4 | 14.1 | 9.7 | 4.4 | 66.6 |
| 1965 | 68.4 | 49.9 | 18.5 | 20.2 | 14.8 | 5.4 | 88.6 |
| 1966 | 62.0 | 47.4 | 14.6 | 17.7 | 13.4 | 4.3 | 79.7 |
| 1967 | 75.1 | 54.9 | 20.2 | 20.8 | 15.2 | 5.6 | 95.9 |
| 1968 | 79.2 | 57.7 | 21.5 | 21.8 | 15.9 | 5.9 | 101.0 |
| 1969 | 77.6 | 59.9 | 17.7 | 22.1 | 16.6 | 5.5 | 99.7 |
| 1970 | 90.5 | 75.1 | 15.4 | 25.0 | 21.1 | 3.9 | 115.5 |

employment requirement was higher reaching 123,000, (11 per cent of actual employment) in 1957 when unemployment and the differential with Great Britain were at their highest for the period.

By their nature the estimates already allow for the decline in agricultural employment which for the period averaged 9,000 per year. However, declining agricultural employment does mean that the required employment increase would be directed towards non-agricultural sectors with the implication that full-employment would have required considerable acceleration in their development. [19] The enormity of the employment requirement suggests, however, that fixed capital resources might prove a limiting factor at least in the short term.

It should be stressed that the estimates in Table 5 measure the extent to which employment expansion would have been necessary in order at any given time to move to full employment. Once attained the new employment required to maintain full employment would be much less and would depend on such long-term factors as population and participation rate changes. Thus the problem as presented is essentially that of moving the economy to a higher level of activity by expanding in the short term at a rate faster than that required over the long term.

Walsh (1975) adopted a more gradual approach defining the full-employment target as an unemployment rate of 4 per cent in 1986 with zero net emigration between 1971 and 1976 rising to 5,000 per year 1976 to 1986. The estimated new employment requirement was 20,000 jobs per year 1971 to 1986: when a higher population projection was used this rose to 24,000 per year 1976 to 1981. In comparison the present short-term estimates are not unduly large: the mean for the whole period is 89,000 equivalent in Walsh's terms to about four years of job creation. It is apparent, however, that job creation on this scale, hence full employment, could be attained only over a number of years. Nevertheless, the present estimates provide a measure in terms of potential employment lost of the cost of under-utilisation of labour resources.

## VI CONCLUDING REMARKS

The analysis uses aggregate male and female functions with pressure of demand variables defined to include males plus females. It is entirely possible, that differing empirical results would emerge were it possible to use more disaggregative age-sex groupings, or if different demand pressure indicators

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19 Because of the prevalence of agricultural underemployment the required non-agricultural employment increase is probably much greater (See OECD 1973).

had been chosen. Second, the full-employment projections were obtained by extrapolating empirical relations beyond the observed range which is valid only if the relations remain unaltered. While in each case a non-linear relation with unemployment was specified to take account of possible changes in marginal responses particularly at low levels of unemployment, the projections must be regarded as indicating only orders of magnitude.

Finally, the models are essentially short-term and provide little guidance to long-term consequences if the economy were to continue operating at low unemployment relative both to past experience and to Great Britain.

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## APPENDIX

*DATA*
   Most series required adjustment or estimation by the author from whom further details are available.

*Working-Age Population*
   Male and female populations are persons aged 14 years and over. The censal-years' source is the Census of Population (CP). Estimates for other years provided by Central Statistics Office.

*Labour Force*
   Employed (including self-employed and armed forces) plus unemployed: equivalent to the CP, gainfully occupied. Intercensal estimates without sex disaggregation published in Trend of Employment and Unemployment (TEU). Censal data 1946 to 1971 showed sex composition remained virtually constant and disaggregation effected by linear interpolation of male percentage.

*Employment*
   CP category number at work, intercensal estimates of which are published in TEU. Sex disaggregation not available for intercensal years. Examination of censal data showed female/male employment rates ratio altered little between censal years and disaggregation effected by linear interpolation of the ratio.

*Employees in Employment*
   CP category, employees. Intercensal estimates not published and were obtained by linear interpolation between censal years of the ratio employees/CP total at work (employment).

*Non-Agricultural Employment and Unemployment Rate.*
Published in TEU.

*Net Emigration*
   Annual estimates for males and females of all ages obtained using a method described in Leser (1964/5) and Walsh (1968). Working-age estimates obtained using CP tables Hypothetical and Actual Population By Age.

*Average Wages*
   Total wages and salaries (agricultural plus non-agricultural)—see National Income and Expenditure (NIE)—divided by employees in employment.

*Price Index*
   Market price index (1958=100) of total final expenditure obtained as implied deflator of GNP (expenditure measure) plus imports of goods and services. Source, NIE.

*Employees in Employment (GB)*
   Source: Department of Employment Gazette, HMSO (London).

*Average Wages (GB)*
   Total wages and salaries UK (NIE, HMSO (London)) less ditto N. Ireland (N.I. Digest of Statistics) divided by employees in employment (GB).

*Price Index (GB)*
   Obtained as Irish price index. See NIE, HMSO (London). Relates to UK but any error is minor.