SOME ASPECTS OF (NET) EMIGRATION FROM NORTHERN IRELAND

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FOREWORD

This paper reports on one aspect – migration – of on-going work in the Central Economic Service directed towards a fuller understanding of the Northern Ireland economy.

As is indicated in the text, the present results are tentative. They are presented here in the hope of stimulating interest and discussion.

INTRODUCTION

The Economic and Industrial Strategy for Northern Ireland (the Quigley Report) examined the employment prospects for Northern Ireland for the period up to 1981. In doing so a series of projections – under differing assumptions – were made of labour supply in Northern Ireland. Consideration of labour supply necessitates examination of population size, its age/sex composition and activity rates. In the Northern Ireland context it is also necessary to consider migratory flows. Thus it was noted in Appendix 6 of the Quigley Report that migratory flows were likely to be sensitive, to some extent, to variations in the pressure of demand for labour.

Using annual data for the period 1959 to 1975 the present paper focusses on this latter aspect of Northern Ireland's labour supply in attempting to quantify the extent to which migratory flows were sensitive to pressure of labour demand variations in Northern Ireland and Great Britain (1). Subject to the qualifications expressed below in the section describing the model, the approach assumes that migration is a form of labour force participation. Consequently unless otherwise indicated, in what follows the terms population and migration refer to persons of working age: between 1959 and 1971 to persons aged 15 years and over, thereafter to persons aged 16 years and over.

BACKGROUND

The only data available relate to net migration which during the period under consideration invariably meant net emigration. (Though for males aged 65 years and over there would appear to have been small net inflows in 1959 and 1960. See Table 1 below). The magnitude of (net) emigration from Northern Ireland may be illustrated by noting that during this period emigration totalled some 115,000, equivalent to more than 11 per cent of the population in any year (2).

Thus while Northern Ireland exhibited the highest rate of natural increase (i.e. births minus deaths per 1,000 of total population) of all the UK regions, in terms of population

TABLE 1: **Net Emigration by Age and Sex**

	MALES					FEMALES	
Year	15−24[1] years of age	25−44 years of age	45−64 years of age	65 +[2] years of age	Total [1] all ages (15 years +)	15−24[1] years of age	25−44 years of age
1959	963	786	170	−47	1,872	906	1,016
1960	1,138	1,147	188	−28	2,445	916	1,206
1961	1,671	1,551	274	7	3,503	1,292	1,434
1962	1,278	1,135	208	30	2,651	1,011	1,157
1963	831	1,014	76	46	1,967	628	944
1964	1,025	1,246	95	56	2,422	678	1,045
1965	1,099	1,341	100	60	2,600	728	1,121
1966	2,241	1,335	170	26	3,772	1,489	1,186
1967	2,985	1,027	215	0	4,227	1,985	1,179
1968	2,326	802	169	0	3,297	1,548	920
1969	1,990	771	162	0	2,923	1,490	885
1970	1,929	486	171	30	2,616	1,665	912
1971	2,551	384	387	108	3,430	2,293	1,202
1972	2,956	590	565	149	4,260	2,723	1,504
1973	2,714	564	538	143	3,959	2,514	1,436
1974	3,121	648	618	174	4,561	2,882	1,705
1975	3,699	769	734	206	5,408	3,428	1,962

[1] From 1972 onward, the lower age limit is 16 years.

[2] A minus sign indicates a net inflow.

[3] For males plus females the upper two age groups were amalgamated.

TABLE 1: **Net Emigration by Age and Sex** *(continued)*

Year	FEMALES			MALES PLUS FEMALES			
	45−59 years of age	60 + years of age	Total[1] all ages (15 years +)	15−24[1] years of age	25−44 years of age	45 +[3] years of age	Total[1] all ages (15 years +)
1959	197	50	2,169	1,869	1,802	370	4,041
1960	181	52	2,355	2,054	2,353	393	4,800
1961	275	177	3,178	2,963	2,985	733	6,681
1962	277	185	2,630	2,289	2,292	700	5,281
1963	227	108	1,907	1,459	1,958	457	3,874
1964	246	118	2,087	1,703	2,291	515	4,509
1965	264	126	2,239	1,827	2,462	550	4,839
1966	297	100	3,072	3,730	2,521	593	6,844
1967	309	76	3,549	4,970	2,206	600	7,776
1968	241	60	2,769	3,874	1,722	470	6,066
1969	232	58	2,665	3,840	1,656	452	5,588
1970	388	105	3,070	3,594	1,398	694	5,686
1971	586	264	4,345	4,844	1,586	1,345	7,775
1972	698	381	5,306	5,679	2,094	1,791	9,564
1973	762	365	5,077	5,228	2,000	1,808	9,036
1974	877	420	5,884	6,003	2,353	2,089	10,445
1975	1,039	498	6,927	7,127	2,731	2,477	12,335

[1] From 1972 onward, the lower age limit is 16 years.

[2] A minus sign indicates a net inflow.

[3] For males plus females the upper two age groups were amalgamated.

(all ages) growth it came fifth behind (in descending order) East Anglia, South West, East Midlands and West Midlands. (See Table 2 below).

Details of emigration by age and sex are shown in Table 1 below. (see also Figure 1). As may be seen from the table, total annual emigration more than trebled during the period under consideration: from 4,041 persons in 1959 to 12,335 persons in 1975. As Figure 1 shows, for both males and females there was a gradual upward trend in emigration between 1959 and 1970 with some tendency to accelerate thereafter. The acceleration could be due to civil unrest. However it was not so marked as to be apparent in the empirical analysis. After experimentation with a dummy and various trend variables, a linear trend was found to give the most satisfactory results. More than half (57%) of the 1959/1975 increase was due to increased emigration by females which rose from just over 2,000 per year during the early years to almost 7,000 in 1975. Male emigration starting from a similar level rose to some 5,400 by 1975.

TABLE 2: **Natural Increase and Population Growth: UK Regions**

Natural Increase

	Rate per 1,000 population			
Region	1961	1966	1971	1975
Northern Ireland	11.1	11.4	10.1	6.3
Scotland	7.2	6.3	4.8	0.9
Wales	4.3	3.8	3.0	−0.6
North	6.8	5.3	4.0	−0.1
Yorks & Humberside	5.3	5.3	4.7	0.2
East Midlands	6.4	6.9	5.7	1.3
East Anglia	4.9	5.5	4.6	1.3
South East	5.7	6.5	4.2	0.7
South West	3.9	4.4	2.7	−1.3
West Midlands	7.8	8.3	6.8	1.9
North West	5.0	5.2	4.0	−0.2
UK	5.9	6.2	4.6	0.6

Home Populations (all ages) Growth
(mid year estimates)

	Indices 1961 = 100			
Region	1961	1966	1971	1975
Northern Ireland	100.0	103.4	107.7	107.7
Scotland	100.0	100.3	100.6	100.4
Wales	100.0	102.2	103.3	104.9
North	100.0	100.4	100.7	100.4
Yorks & Humberside	100.0	102.8	104.1	104.6
East Midlands	100.0	105.1	109.1	111.9
East Anglia	100.0	105.7	113.2	119.5
South East	100.0	104.0	105.7	105.3
South West	100.0	105.6	110.1	114.0
West Midlands	100.0	103.8	107.5	108.7
North West	100.0	102.0	103.0	102.6
UK	100.0	103.2	105.3	105.9

Source. Regional Statistics (CSO).

Figure 1: **Net Migration**
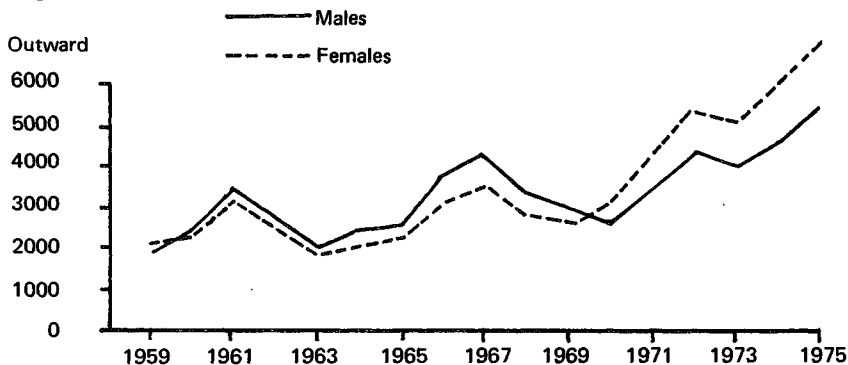
Data by age groups must be treated with particular caution and are better regarded as broad indicators of movement than as accurate annual estimates, nevertheless examination by age group is illuminating. Taking males and females together, emigration by persons in the youngest age group accounted for 63 per cent of the total increase, with emigration by persons aged 25 to 44 years accounting for 11 per cent and by persons aged over 45 years accounting for 26 per cent.

Among males, the youngest age group accounted for 77 per cent of the increase (compared with 53 per cent among females); emigration by the male age group 25 to 44 apparently fell after 1967 and by 1975 was slightly lower than in 1959 while for females this age group accounted for 20 per cent of the increase; the age group 45 years and over accounted for some 23 per cent of the increase (among females, 27 per cent).

In general, emigration increased at a faster rate than the population. This may be seen from Table 3 which shows emigration rates, i.e. numbers of emigrants each year expressed as a percentage of the augmented population (i.e. the *de facto* civilian population in each year plus the number of emigrants in that year). With the exception of males aged 25 to 44 years, where a decline in emigration in the latter years coupled with a 10 per cent increase in population led to a considerable fall in the emigration rate, all other age-sex groupings showed a marked increase. It may also be noted that for both males and females, the emigration rate was consistently highest in the youngest age group.

THE MODEL

The analysis attempts to distinguish between long-term equilibrium and short-term disequilibrium. Variations in the rate of emigration (and of domestic labour force participation) are regarded as the result of two sets of influences—long-term socio-demographic and short-term economic (3). In the case of emigration the former result in what may be referred to as social emigration and the latter as economic emigration. The underlying trend in the emigration rate is taken to represent social emigration; that is, emigration which is not in the short-term at least, sensitive to economic stimuli but is the result of socio-demographic influences such as those suggested in Walsh's (1974) information flow hypothesis.

The argument is that there exists in Northern Ireland a long-term or trend equilibrium in the labour market such that the syphoning-off of labour in the form of social emigration just offsets any excess labour supply due to changes in population size and in long-term activity rates. In terms of the model equilibrium, labour demand pressure is identified with the trend rate of unemployment. If demand pressure were to fall relative to Great

TABLE 3: **Net Emigration Rates*(Percentages) for Northern Ireland**

Year	Males					Females				
	15−24 years[1]	25−44 years	45−64 years	65+ years	All ages	15−24 years[1]	25−44 years	45−64 years	65+ years	All ages
1959	0.88	0.48	0.12	−0.08	0.40	0.84	0.56	0.16	0.04	0.41
1960	1.00	0.71	0.13	−0.05	0.51	0.83	0.67	0.14	0.05	0.44
1961	1.60	0.92	0.19	0.01	0.73	1.19	0.80	0.22	0.15	0.60
1962	1.19	0.68	0.14	0.05	0.55	0.91	0.64	0.22	0.15	0.49
1963	0.75	0.61	0.05	0.07	0.40	0.55	0.53	0.18	0.09	0.35
1964	0.89	0.75	0.06	0.09	0.49	0.58	0.58	0.20	0.10	0.38
1965	0.92	0.81	0.07	0.10	0.53	0.61	0.63	0.21	0.10	0.41
1966	1.81	0.82	0.11	0.04	0.76	1.21	0.67	0.23	0.08	0.56
1967	2.51	0.61	0.14	0.00	0.84	1.68	0.67	0.24	0.06	0.64
1968	1.99	0.48	0.11	0.00	0.66	1.31	0.52	0.19	0.05	0.50
1969	1.68	0.46	0.11	0.00	0.58	1.25	0.50	0.18	0.04	0.48
1970	1.60	0.29	0.11	0.05	0.52	1.38	0.52	0.30	0.08	0.55
1971	2.09	0.22	0.26	0.16	0.67	1.92	0.67	0.46	0.19	0.77
1972	2.33	0.35	0.37	0.22	0.83	2.23	0.84	0.55	0.28	0.94
1973	2.47	0.32	0.36	0.21	0.79	2.36	0.79	0.61	0.26	0.92
1974	·2.81	0.43	0.34	0.26	0.90	2.68	0.94	0.71	0.30	1.06
1975	3.29	0.43	0.49	0.30	1.07	3.13	1.08	0.84	0.35	1.25

*A minus sign indicates a net inflow.

[1] From 1972 onward, 16−24 years.

Britain it would result in an above-trend emigration rate (and below-trend activity rate); if the fall were absolute it would also result in an above-trend unemployment rate. The reverse would be true of an increase in the pressure of demand for labour in Northern Ireland. Emigration is thus regarded as a form of labour force participation where, like participation, short-term variations in the rate are caused by variations in the relative attractiveness of the labour markets in Northern Ireland and in Great Britain as measured by respective unemployment rates and average earnings (4).

As noted earlier the only data available relate to net emigration. However on the assumption that migration is a process of adjustment, bringing the supply of labour into line with demand, it may be argued that it is appropriate to conduct the analysis using net flows (5). Alternatively the net flow equation may be regarded as a reduced-form equation derived from a structural model specified in terms of gross flows (6). In either event, it seems generally agreed that factors pertaining both to the domestic and recipient country or region are relevant—though their relative importance is a matter of disagreement (7). The model may be summarised as

$$X = f_1 (U) + f_2 (U_{GB}) + f_3 (W) + f_4 (W_{GB}) + f_5 (t) + u$$

where X is the emigration rate; U, U_{GB} are the unemployment rates in Northern Ireland and Great Britain respectively; W and W_{GB} are money wages per head in Northern Ireland and Great Britain respectively; t is a linear time trend = 1 in 1959 and u is a random term (8).

The inclusion of the trend variable serves to isolate the short-term effects of changes in labour market conditions on X since the estimated (least-squares) coefficients are identical with those obtained by first regressing each variable on the time trend and then conducting the emigration rate—pressure of demand regression using least-squares residuals about trends (9). Since the hypotheses are that an increase in domestic pressure of demand for labour will, *ceteris paribus,* reduce X while an increase in Great Britain pressure of demand will increase X, it is anticipated that f_1 and f_4 will be increasing functions and f_2 and f_3 decreasing functions.

There are some grounds for anticipating that the relation between emigration rates and the pressure of demand for labour may be non-linear. To the extent that variations in emigration are sensitive to variation in demand pressure in Northern Ireland and in Great Britain, emigration will tend to rise (fall) as the regional pressure of demand falls (rises) relative to Great Britain. However just as there are individuals who will emigrate irrespective of the economic climate, similarly there are those who for one reason or another will not emigrate even though unemployed at home. Consequently at below-trend levels of regional pressure of demand, a given increase in demand may be met largely by re-employment of non-emigrants with little marginal impact on emigration (or activity) rates; at above-trend levels of regional demand a similar increase may draw into the labour force many individuals who would otherwise have emigrated, thus causing a greater marginal response in emigration (and activity) rates.

In order to explore the possibility of differences in migration behaviour between the sexes and among age groups, a separate function was estimated for each of four age groupings for both males and females (10). Aggregate functions for males and females were also estimated. A qualification must be recorded here. While it may be reasonable to assume for males of working age that short-term variations in migration reflect movements of workers, the same may not be true of females. Many women of working age may emigrate not to seek employment, but because their husbands are emigrating. Thus

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while female emigration may be sensitive in the short-term to variations in economic conditions to some extent this may reflect an indirect linkage between cause and effect. Unfortunately the data did not permit separate identification of emigration by married women.

In examining migration (and activity rate) behaviour of groups within the working-age population, opinions differ on whether the aggregate unemployment rate or the group—specific rate is more appropriate as an indicator of labour demand. However a particular group may experience demand or supply fluctuations independently of the overall state of the labour market so that where the object is, as here, to measure the response to general cyclical movements, use of group—specific rates may tend to overestimate cyclical sensitivity so that it was considered preferable to use aggregate pressure of demand indicators (11).

EMPIRICAL RESULTS

Some experimentation was undertaken to determine the most appropriate forms of the relations. The unemployment variables were examined in linear and then in reciprocal form. Money wages were introduced in two alternative forms: the difference between wages in Northern Ireland and in Great Britain, and the ratio of wages in Northern Ireland to wages in Great Britain (12).

Initial results of all the regressions indicated the presence of significant first-order autocorrelation on the Durbin-Watson test. The equations were re-estimated using an iterative procedure in which the autocorrelation coefficient is estimated from least-squares residuals and used to adjust the original data (13). This procedure yielded more satisfactory values of the Durbin-Watson statistic.

Examination of the results indicated that the wage differential—in either form—did not contribute significantly to the explanation of short-term variations in emigration rates and consequently this variable was removed from the analysis. However the non-significance of this variable could be due to its high linear correlation with the trend variable reflecting the gradual narrowing of the gap between wages in Northern Ireland and in Great Britain. (The coefficient of linear correlation between the trend and the wage difference was 0.73, and between the trend and the wage ratio was 0.90.)

Examination of the results also indicated a lack of evidence to support the hypothesis of a non-linear relation between emigration rates and unemployment though in the case of Northern Ireland this could reflect the fact that unemployment consistently remained at higher levels, never falling as low as 5 per cent (14).

The Table below shows the equations selected as affording the "best" explanation of movements in male and female emigration rates during the period from 1959 to 1975. In presenting the results, estimated coefficients with corresponding t-statistic in brackets, R^2 the coefficient of determination and the Durbin-Watson d-statistic are shown. With the exception of those marked with an asterisk the estimated coefficients are significant at the 10 per cent level or better using the t-test.

The implications of the results for male emigration rates during the period 1959 to 1975 may be summarised as follows:

(i)   The combination of long-term factors subsumed in the trend tended on average to increase the all-ages net emigration rate by just over one-tenth of one percentage point per year (equation (5)). The upward trend was most pronounced in the 15—24 age group (equation (1))—over one-third of one percentage point

Equation Number	Age Group	Intercept	U_{NI}	U_{GB}	trend	R^2	d
(males)							
1	15–24	−4.989	0.734	−1.215	0.389	0.849	1.55
		(−2.487)	(2.752)	(−2.396)	(3.504)		
2	25–44	0.011	0.154	−0.372	0.025*	0.794	1.53
		(0.016)	(1.742)	(−2.211)	(0.692)		
3	45–64	−1.044	0.076	−0.090*	0.069	0.872	1.61
		(−2.347)	(1.938)	(−1.205)	(2.720)		
4	65+	−0.008	−0.010*	0.039*	0.013*	0.867	0.84
		(−0.027)	(−0.319)	(0.622)	(0.708)		
5	All ages	−1.433	0.233	−0.397	0.117	0.693	1.56
		(−1.911)	(2.674)	(−2.393)	(2.726)		
(females)							
6	15–24	−4.876	0.485	−0.764	0.396	0.929	1.58
		(−2.985)	(2.686)	(−2.226)	(4.193)		
7	25–44	−1.593	0.158	−0.272	0.131	0.733	1.39
		(−1.745)	(2.296)	(−2.087)	(2.558)		
8	45–59	−1.301	0.041*	−0.052*	0.109	0.949	1.01
		(−2.235)	(1.029)	(−0.690)	(3.384)		
9	60+	−0.659	0.045*	−0.064*	0.048	0.827	1.32
		(−1.440)	(1.322)	(−0.988)	(1.880)		
10	All ages	−1.891	0.166	−0.252	0.153	0.903	1.45
		(−2.451)	(2.415)	(−1.935)	(3.447)		

per year—with a much smaller but still significant increase in the 45–64 age group (equation (3)). For the other two age groups (equations (2) and (4)) the trend was small and not statistically significant.

With the exception of the 65+ age group where in any event net emigration was small the results indicate that in the short-term, emigration was sensitive to variations in the pressure of labour demand in Northern Ireland and/or Great Britain. (The age specific estimates are likely to be of lesser accuracy than the aggregate estimates and this is particularly the case where the absolute numbers involved, as in this age group, are small.)

(ii) On average for the period an increase of one percentage point in the Northern Ireland unemployment rate tended to increase the all-ages emigration rate by about one-quarter of a percentage point, equivalent on average to an increase in annual emigration of some 1,160 persons. This sensitivity was most marked among 15–24 year olds where the response to a one percentage point increase in domestic unemployment was an increase in the emigration rate of almost three-quarters of a percentage point, or 880 persons per year.

(iii) Conversely an increase of one percentage point in the Great Britain unemploy-

ment rate tended to decrease the all-ages emigration rate by almost four-tenths of a percentage point or 1,980 persons per year. Again this sensitivity was most marked among 15–24 year olds where the effect would have been to decrease the emigration rate by about 1.25 percentage points or 1,450 persons per year. The 45–64 age group while sensitive to unemployment variations in Northern Ireland was not apparently sensitive to variations in the Great Britain unemployment rate.

The implications of the results for female emigration rates during 1959 to 1975 may be summarised as follows:

(i)   The combination of long-term factors subsumed in the trend tended on average to increase the all-ages rate by 0.15 percentage points per year (equation 10). As in the case of males the upward trend was most marked in the 15–24 age group (equation 6). The trend rate of increase was smaller in each of the other three age groups but unlike males was statistically significant in each case.

Emigration in the age groups 15–24 and 25–44 was sensitive in the short-term to variations in the pressure of demand for labour in both Northern Ireland and Great Britain. Emigration in the older age groups apparently was not sensitive in this respect: however the numbers involved here were small and as was noted in the case of males, must be regarded as subject to inaccuracy.

(ii)   On average for the period an increase of one percentage point in the Northern Ireland unemployment rate tended to increase the all-ages emigration rate by about one-sixth of a percentage point, equivalent to an increase in annual emigration of 915 persons. As with males, this sensitivity was most marked among 15–24 year olds where the response to a one percentage point increase in unemployment was an increase of almost one-half of a percentage point in the emigration rate or 550 persons per year.

(iii)   Conversely an increase of one percentage point in Great Britain unemployment tended to decrease the all-ages emigration rate by one-quarter of a percentage point or 1,390 persons per year. Again, as with males, this sensitivity was most marked in the 15–24 age group where the effect would have been to reduce the emigration rate by three-quarters of a percentage point or 870 persons per year.

IMPLICATIONS

The empirical results reported in the preceding section indicate a number of issues relevant to a fuller understanding of the Northern Ireland labour market.

First it is noticeable that for both males and females the effect of variations in the pressure of labour demand in Great Britain was greater than the effect of variations in Northern Ireland. (This may be seem from the above table where in each equation the coefficient of the Great Britain unemployment rate is greater in absolute terms than the coefficient of the Northern Ireland unemployment rate.) The implication is that marginal (net) emigrants from Northern Ireland, both male and female, tended to be influenced in their decision to a greater extent by variations in job prospects in Great Britain than in Northern Ireland.

Thus for example if the unemployment rates in Great Britain and in Northern Ireland were both to fall by one percentage point the predominance of the "pull" exerted by the

former labour market over the (in this case, negative) "push" exerted by the latter would result in an increase in emigration. In the case of males (all ages) the rate would rise by 0.164 (or 820 persons per year) and in the case of females (all ages) by 0.086 (or 470 persons per year). Conversely if the unemployment rates were to rise concurrently by one percentage point emigration would fall by similar amounts.

Looked at in another way: in the event of a unit fall in the Great Britain unemployment rate it would be necessary for the Northern Ireland unemployment rate to fall by some 1.6 percentage points in order to prevent a short-term increase in net emigration. (15) That is it would be necessary for the regional/national unemployment differential to narrow. However this is the opposite of what tends to happen: the cyclical relation between unemployment rates at regional and national level is such that as unemployment falls the differential widens, tending to narrow only as unemployment rises again. (16)

The results therefore suggest that in times of increasing labour demand at regional and national level, the Northern Ireland labour force tends to be reduced by an above-trend (net) outflow of workers to Great Britain; that in times of declining labour demand the Northern Ireland labour force tends to increase due to below-trend emigration. To the extent that this occurs an empirically established relation between regional unemployment and employment would tend to overestimate the registration effect, that is the effect on registered unemployment of a given change in employment: because of the cyclical variations in emigration outlined above, during an economic upturn unemployment will tend to fall faster than the corresponding increase in employment would otherwise suggest; during a downturn, unemployment will tend to rise faster than the decrease in employment would otherwise suggest. The results therefore lend support to the anecdotal hypothesis that previous emigrants from Northern Ireland to Great Britain tend to return during periods of unemployment.

Second, in general, male net emigration rates were more sensitive than female rates to short-term variations in the pressure of demand for labour in Northern Ireland and in Great Britain. The implications of this result, which is in line with findings recently reported for the Republic of Ireland, (17) is that males were more likely than females to migrate in response to short-term economic stimuli and in terms of the regional labour force were therefore more marginal. Indeed the male/female comparison of emigration sensitivity probably understates the greater male sensitivity since, as noted earlier, the proportion of workers among male emigrants is likely to be higher.

It would not be inconsistent with this finding to anticipate that an analysis of regional activity rates would also indicate greater sensitivity on the part of males to variations in labour demand. Such a finding would be at variance with empirical results reported for Great Britain and the US where it has been found that females are more likely to withdraw from the labour force when faced with unemployment and that when demand rises again the extra workers are more likely to be drawn from the female population. (18) However the present results indicate that unlike Great Britain and the US the withdrawal of workers from the labour force in Northern Ireland cannot be explained entirely in terms of the discouraged worker effect as usually understood, the phenomenon of large scale emigration having produced a situation where for many emigration is not a last desperate undertaking so that regional labour withdrawal is in part the result of a transfer of labour to an alternative labour market.

Work is currently in hand to examine activity rates in Northern Ireland with a view— among other things—to examining the hypothesis outlined in the previous paragraphs: that male activity rates are more sensitive than female rates to short-term variations in labour demand.

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CONCLUDING REMARKS

In attempting a quantitative analysis of a socio-economic phenomenon there is the inherent danger that a spurious air of exactitude is attributed to the results. It is appropriate therefore to conclude by underlining a number of qualifications regarding the present study.

The first relates to the data on emigration. While estimates for an intercensal period as a whole may be regarded as reliable—they derive from census results combined with records of births and deaths—estimates for individual years must be viewed as subject to error. Consequently while the text has referred to actual and hypothetical numbers of emigrants per year these are to be interpreted as orders of magnitude.

The second relates to the choice of indicators of pressure of labour demand. This has already been discussed in some detail and attention drawn to the lack of general agreement regarding precise specification. While for both males and females, the all-ages and age-specific analyses provided consistent results it is possible that had other pressure of demand indicators been adopted, empirical results different from those reported would have emerged. This of course is a problem endemic in virtually all econometric analyses.

Finally, the analysis has been restricted to one aspect—migration—of the Northern Ireland labour market. While this is common practice in the literature on migration it must nevertheless be recognised that in the Northern Ireland context migration and unemployment are interrelated: thus in the absence of emigration, unemployment in Northern Ireland would be different from that actually observed. In technical terms, the analysis has been conducted in terms of a single equation model in circumstances where a simultaneous equation model is likely to be more appropriate. (19) The present analysis must therefore be regarded as a tentative first step towards furthering understanding of the Northern Ireland labour market. The construction of a larger (simultaneous equation) model remains a task for the future: hopefully—since experimentation with single equation models is a useful stage in the development of larger models—the present analysis will also serve as preliminary groundwork in this respect.

DATA SOURCES
Net Emigration

Estimates of net migration for inter-censal periods are available from the Census of Population Reports. The estimates are derived as the difference between the inter-censal natural increase and the recorded change in the population. While these estimates are available in considerable detail by age and sex, the fact that they relate to an intercensal period as a whole limits their use for analytical purposes.

To supplement the intercensal estimates, annual (on a July-June year basis) estimates are prepared by the Registrar General's Office (RGO) and published in the Registrar General's Annual Report. While the published estimates do not give an age/sex analysis their preparation requires such information and the RGO kindly made their detailed work-sheets available, so that it was possible to obtain annual estimates by age and sex. The RGO estimates were adapted to calendar year estimates on a proportional basis. The published estimates include movements of HM Forces. For the present study civilian net emigration was estimated by assuming the numbers of HM Forces in Northern Ireland remained at the level recorded in the Census of Population 1966.

Wages Per Head

Annual estimates of wages and salaries per head for employees in employment were

obtained by dividing total wages and salaries by total employees in employment. Data on the former are published for the UK in National Income and Expenditure (HMSO, London) and for Northern Ireland in the Northern Ireland Digest of Statistics (HMSO, Belfast. The data here relate to financial years and were adjusted to calender years by proportional redistribution). Estimates for Great Britain were obtained by subtraction.

EMPLOYMENT AND UNEMPLOYMENT (NI)
Source: Department of Manpower Services, Gazette No. 1, Spring 1978.

EMPLOYMENT AND UNEMPLOYMENT (GB)
Source: Department of Employment Gazette.

FOOTNOTES

(1) For the purposes of the analysis Great Britain was regarded as the main destination. It may be noted however that averaged over the latter half of the period and assuming a lag of up to two years in the National Insurance card exchange between Northern Ireland and Great Britain, the net card movement represented only 49 per cent of the census-based net movement. This is surprisingly small particularly in view of Walsh's (1974) finding that some 80 per cent of Republic of Ireland emigrants go to Great Britain and requires further investigation. A lag was used because in principle, cards were exchanged only on renewal and in practice were exchanged after further delays.

(2) By way of contrast it may be noted that Walsh (1974) records that net emigration from the Republic of Ireland during 1951–1971 totalled 543,000 equivalent to almost one-half of the labour force at the end of the period.

(3) Following Tella (1964) population changes are allowed for by expressing emigration and labour force participation in terms of rates.

(4) On the basis of empirical results relating to (net) emigration from the Republic of Ireland to Great Britain, Walsh (1974) concluded that the indicators of economic conditions should consist of earnings and unemployment rates.

(5) See for example Walsh (1968) and Fleisher (1963).

(6) See for example Walsh (1974) and Fabricant (1970).

(7) See for example Gallaway and Vedder (1971). See also Gleave and Cordey-Hayes (1977).

(8) An appropriate price deflator is not available for Northern Ireland so that it was not possible to explore the use of real wages i.e. wages adjusted for differences in price levels between Northern Ireland and Great Britain.
  In some studies (e.g. Raimon (1962)) the effects of wage differentials and of unemployment are treated as alternatives while in others (e.g. Walsh (1974), Gallaway and Vedder (1971)) they are treated as complementary. The latter approach is adopted here.

(9) For a proof of this see for example Koutsoyiannis (1973).

(10) The empirical evidence indicates that this is so in the case of activity rates. See for example Walsh (1968, 1970/71) reporting on the Republic of Ireland; Corry and Roberts (1970) reporting on Great Britain; Tella (1964/5) reporting on the US.

(11) See Mincer (1966) whose adjustments for bias from this source had the effect of reducing Tella's (1964/5) regression coefficients by some 50 per cent. See also Dernburg and Strand (1966).

(12) On the basis of his empirical results Walsh (1974) concluded that use of differences or ratios was preferable to using levels.

(13) See Cochrane and Orcutt (1949).

(14) In a study of the relation between unemployment and employment variations in Northern Ireland, Black and Slattery (1975) found that unlike Great Britain there was no evidence of non-linearity in the relation. This result was also attributed to the absence of—by Great Britain standards —low unemployment rates in Northern Ireland.

(15) The rationale is as follows. A unit fall in the Great Britain unemployment rate would tend to raise the male net emigration rate by 0.397 percentage points. The effect of a unit fall in the Northern Ireland unemployment rate would be to reduce the net emigration rate by only 0.233 points. Thus a fall of 1.7 points (0.397 ÷ 0.233) in Northern Ireland unemployment would be required to cancel out the effect of the change in Great Britain unemployment. A similar calculation for females (all ages) produces a "required" fall of 1.5 points in the Northern Ireland unemployment rate.

(16) See for example Black and Slattery (1975).

(17) See Slattery (1977).

(18) For Great Britain, see for example Corry and Roberts (1970); for the US, Tella (1964/65).

(19) As a result the regression estimates are biased and inconsistent. For a fuller discussion see for example Johnston (1972) Chapter 9.

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