

## *Labour Force Effects of 1967/68 Changes in Education Policy in the Irish Republic*

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*Précis:* In 1968 the so-called "free" secondary education scheme was introduced, and intermediate and leaving certificate courses were added in vocational schools. This article examines the effect on the labour force of these changes, and finds that the labour force is smaller, by approximately 20,000 persons as of 1975 as a result of the changes; that the reduction took effect through reduced entry into the labour force in the years 1968 through 1970 or 1971; that the number of those entering the job market today is about what it would have been in the absence of the changes; but that the composition of those entering the labour force has changed considerably, in the direction of older and more educated persons seeking first jobs.

**I**N 1967 the Minister for Education announced, and in 1968 effected, two major changes in policy which, among other things, have arguably had important consequences for labour force participation, and, hence, for employment and unemployment, as well as for emigration. One was the so-called "free" secondary education scheme, by which most secondary schools were induced to forego student fees in exchange for a new, added state grant, in lieu of fees.<sup>1</sup> The second was the addition of intermediate and leaving certificate courses to vocational schools. The combined effect was to increase school participation rates (i.e., the fraction of an age group attending school), and presumably, to reduce labour force participation rates, within the affected age groups.

1. The added state grant was set at £25 per pupil and was held at that level until the present year. Though it was less than the fee level charged at many schools (and higher than others), virtually all schools went over to the "free" scheme. We have put "free" in inverted commas to emphasise that there are real costs of secondary education, some borne by the taxpayers, some by religious orders, and the main ones (in the form of foregone income, as well as incidental expenses) by the student and his or her family.

This paper reports estimates of the effects of the education policy changes on labour force participation, and on annual numbers entering the labour market in search of first jobs. The paper also discusses the effect on employment/unemployment, and further possible induced effects upon labour force participation.

It is assumed throughout that net emigration is independent of the forces discussed here. The reader is welcome to make other assumptions with the data presented.

Our conclusions, detailed below, are that the labour force is smaller, by approximately 20,000 persons as of 1975, as a result of these changes; that the reduction took effect through reduced entry into the labour force in the years 1968-70 or 1968-71; and that the number (but not the make-up) of those entering the job market today is about what it would have been had the changes not occurred.

In this study, we have tried to isolate the net effects of the policy changes from other influences, including trend. The implications of the study extend, however, to all increases in school participation rates, whatever their origin.

TABLE I: *Second-level school enrolments, by year of age, 14-18 and 19 and over, 1963-74 (thousands of pupils)*

	14	15	16	17	18	19+
1963	31.7	27.7	19.0	11.8	4.4	0.8
1964	31.6	28.2	20.4	12.6	5.1	1.2
1965	33.0	27.9	20.3	12.7	3.8	1.1
1966	34.0	29.4	20.9	13.5	4.1	1.2
1967	37.6	29.8	22.0	13.5	4.5	1.3
1968	40.5	35.2	23.8	15.3	4.8	1.5
1969	43.7	37.2	27.3	16.3	5.3	1.6
1970	44.4	39.0	29.2	18.9	5.5	1.8
1971	46.7	39.8	31.1	20.0	6.3	1.6
1972	48.1	41.9	31.7	21.3	6.7	1.8
1973	50.3	43.0	33.1	21.4	7.4	1.9
1974	53.4	44.5	34.2	21.1	6.4	1.6

Source: Department of Education.

### *The Data*

The central statistic used here is the school participation rate, by year of age. The Department of Education has collected school enrolment data by year of age since 1964. These have been published for 1964 through 1968 (*An Roinn Oideachais, 1964-68*), and data for 1969 through 1974 have been generously made available to us by the Statistics Section of the Department of Education. Data for 1963 and somewhat more limited data for 1962 (published 1962 data do not provide a breakdown as between secondary and vocational schools) were collected and published by the pioneers in this area, the Investment in Education team headed by Professor Patrick Lynch (1965), and published in their two-volume report. Enrolment data for second-level schools are given in Table I.

Statistics on population by year of age are available only for census years (1966 and 1971, for the span of years covered by enrolment data). The Census of Population Office of the CSO makes annual intercensal estimates by age group, not years of age, using five-year intervals (e.g., 0-4, 5-9, 10-14, etc.), and has kindly made these available to us. Using 1961, 1966, and 1971 census data and the intercensal estimates provided by the CSO, we have made year-of-age population estimates by allocating the age-group estimates of the Population Office, according to interpolation and historic patterns as found in census years. These estimates appear in Table 2, and participation rates obtained from data in the first two tables appear in Table 3.

TABLE 2: *Estimated population by year of age, 14-19, 1963-74 (thousands of persons)*

	14	15	16	17	18	19
1963	58.3	55.4	52.4	50.1	45.0	41.4
1964	57.6	56.3	53.2	49.8	47.5	42.8
1965	56.6	55.9	54.6	51.2	47.6	45.3
1966	55.3	55.7	54.6	53.4	49.8	45.9
1967	57.8	54.0	54.1	52.8	51.5	48.3
1968	56.0	56.6	52.6	52.4	50.8	49.4
1969	57.9	55.6	55.6	51.5	51.0	49.2
1970	57.0	57.2	55.0	54.1	49.7	48.9
1971	58.2	56.3	56.5	54.3	52.7	48.0
1972	58.6	57.0	55.2	55.8	53.7	50.7
1973	58.1	57.8	56.9	54.9	55.7	52.9
1974	59.7	58.0	57.6	56.9	54.7	55.2

Source: Central Statistics Office and author's estimates (see text).

TABLE 3: *Estimated second-level school participation rates by year of age, 14-18 and 19 and over, 1963-74*

	14	15	16	17	18	19+
1963	0.5437	0.5000	0.3626	0.2355	0.0978	0.0193
1964	0.5486	0.5009	0.3835	0.2530	0.1074	0.0280
1965	0.5830	0.4991	0.3718	0.2480	0.0798	0.0243
1966	0.6148	0.5278	0.3828	0.2528	0.0823	0.0261
1967	0.6505	0.5519	0.4067	0.2557	0.0874	0.0269
1968	0.7232	0.6219	0.4525	0.2920	0.0945	0.0304
1969	0.7547	0.6691	0.4910	0.3165	0.1039	0.0325
1970	0.7789	0.6818	0.5309	0.3494	0.1107	0.0368
1971	0.8024	0.7069	0.5504	0.3683	0.1195	0.0333
1972	0.8208	0.7351	0.5743	0.3817	0.1248	0.0355
1973	0.8657	0.7439	0.5817	0.3898	0.1329	0.0359
1974	0.8945	0.7672	0.5938	0.3708	0.1170	0.0290

Source: Table 3 is given by dividing Table 1 by Table 2. Note that the 19+ participation rate is obtained by dividing the 19+ enrolment by the estimated population aged 19.

### *Regression Analysis*

A number of multiple regression equations were estimated, with school participation rates by year of age for each relevant year of age (14 through 18, and 19-and-over) for second level as the dependent variables. Participation rates by definition can vary only between zero and unity, and are not likely to follow a linear trend pattern over the very long run. However, for the range of values used here they appear to be effectively linear, as the results will indicate. In various combinations the independent variables included time or year to ascertain trend; the rate of unemployment (to control for the business cycle);<sup>2</sup> and a number of dummy variables inserted to determine the effect of the education policy changes of 1967/68.

The reason for including a business cycle variable is that, *ceteris paribus*, one might expect more students to stay in school longer when the economy is slack and jobs difficult to find. This hypothesis suggests the use of the unemployment rate as an independent variable. There are however, possible econometric objections to using the unemployment rate, since there are definitional relationships between school participation rates and unemployment rates. In brief, the higher are school participation rates, the smaller must be the labour force, other things being equal; and if employment is not affected, unemployed persons will decline by the same amount. Equal absolute decline in the denominator (labour force) and numerator (unemployed persons) of the unemployment rate means a decline in the rate, which is hence negatively related to school participation rates. This objection is overcome in two ways. First, the behavioural relationship hypothesised is positive, so significant positive links discovered would not be spurious. And second, unemployment was lagged one year in the equations. This has econometric advantages, as there is no definitional relationship between participation rates at time  $t$  and unemployment rates at time  $t-1$ . But the principal reason for this specification is that participation rate data are for February, and unemployment data are annual averages of monthly figures; and since the decision to remain in school is presumably made the previous September, or even earlier, the unemployment rate likely to affect enrolment decisions is that for the previous period.

The purpose of the dummy variable is as follows. A dummy variable, set equal to 0 for all years through 1967 and 1 for 1968 and all subsequent years, would reflect the effect of the policy changes if the changes, in effect, displaced a trend line upwards, with the slope of that trend unchanged. This is, in fact, the effect an inspection of the data suggested. It is also intuitively acceptable, that whatever upward trend there is that is associated with other social forces continue, but that there be a once-and-for-all "leap" in school participation.

This oversimplifies the problem, however. Let us briefly consider the probable pattern of influence on school participation rates of the education policy changes. In the first year of the policies, all second level forms are liable to be influenced,

2. Age-specific unemployment rates could not be used because of the lack of data on the insured labour force by age.

but the main effects will be concentrated at decision points, age 14 or 15. But other forms will also be affected: students who at other ages and stages might have left school may instead stay, and even at earlier years students may make different long-range plans than otherwise. For simplicity, let us say that there is a substantial jump in 14-year-old participation rates, and smaller increases in more advanced ages. In the second year of the policy, the 14-year-old rate will remain at its new higher level, augmented by whatever trend increases would have occurred anyway. Perhaps there will even be a more complete adjustment in the second year to the policy, and there will be a further jump in 14-year-old participation rates. Last year's increase in 14-year-old rates will now reach the 15-year-old group, which already had some increase in the previous year. (That initial increase itself now affects the 16-year-old group.) In the third year of the policy, a large increase will affect the 16-year-old group, which has, however, already had two years of increases at presumably more moderate amounts. This process continues for a number of years. The inference is that at lower levels, the participation rate effects will come early and be bunched together in time; whereas at higher levels the effects will be spread over a number of years, and may in fact be difficult to detect, particularly if a strong time trend or other influences are also at work.

Three dummy variables were used, both individually and in combinations: one setting 1967 and all prior years equal to 0 and all subsequent years equal to 1; one in which the divide comes between 1968 and subsequent years; and one in which the divide comes between 1969 and subsequent years. Inspection suggested that no other dummy variables would yield useful results.<sup>3</sup>

Regressions were run for combined third level, for vocational schools, for secondary schools (into which comprehensive and community had been merged), and for all second level combined. Only the last of these are reported here in any detail. While an effect at second level might lead to a subsequent effect at third level (the first large enrolment "bulge" possibly working its way into third level by 1972 or 1973), no such effect could be located statistically. A number of other influences on third level enrolment (such as the introduction of Regional Technical Colleges in 1971) may have made observation of the effect of the 1967/68 changes difficult, and in any event one might have expected the impact of the policy changes to be spread over a number of years. Thus while we failed to detect influences at third level, this does not mean that there were none, and the estimated labour force effects reported here must be regarded as conservative. The results of separate regressions run for vocational and secondary schools (not shown) suggest some shifts between the two types of schools (from vocational to secondary in the junior

3. Effective in 1972, the minimum school-leaving age was raised from 14 to 15 years. Regressions for the 15-year-old group were also run with a dummy to reflect this change, not in order to measure its effect, but rather to control for it. However, the coefficient for this dummy was not statistically significant in explaining 15-year-old school participation rates; and the addition of the independent variable reduced the  $\bar{R}^2$  (the latter being adjusted for degrees of freedom).

TABLE 4: Regression results for second level school participation rates at individual ages, 1963-74—(figures in bold type refer to coefficients selected as representative of the results for the dummy variables)

Time	Unemployment % lagged	Dummy Variables			$\bar{R}^2$
		1968 on = 1	1969 on = 1	1970 on = 1	
		14 year olds			
<b>·028***</b>		<b>·051***</b>			·996
<b>·030***</b>	—·003	<b>·052***</b>	—·006		·996
<b>·031***</b>	—·540	<b>·048***</b>	(a)	—·015	·996
		<b>·051</b>	—	—	
		15 year olds			
<b>·020***</b>		<b>·066**</b>			·983
<b>·018***</b>		<b>·053***</b>	<b>·034**</b>		·990
<b>·019***</b>	·005	<b>·050***</b>	<b>·027**</b>		·995
<b>·019***</b>	·006	<b>·050***</b>	<b>·028**</b>	—·002	·994
		<b>·050</b>	<b>·028</b>	—	
		16 year olds			
<b>·019***</b>		<b>·042*</b>			·961
<b>·016***</b>		<b>·024(+)</b>	<b>·046**</b>		·976
<b>·012**</b>		<b>·034**</b>	<b>·026(+)</b>	<b>·039***</b>	·988
<b>·015***</b>	·014(+)	<b>·018(+)</b>	<b>·043**</b>		·977
<b>·011***</b>	·014(+)	<b>·028*</b>	<b>·028*</b>	<b>·035**</b>	·990
		<b>·028</b>	<b>·028</b>	<b>·035</b>	
		17 year olds			
<b>·005**</b>		<b>·027*</b>	<b>·019(+)</b>	<b>·040**</b>	·974
<b>·006(+)</b>	·020(+)	<b>·008</b>	<b>·041**</b>		·945
<b>·002</b>	·019**	<b>·020*</b>	<b>·023*</b>	<b>·041***</b>	·990
		<b>·020</b>	<b>·023</b>	<b>·041</b>	
		18 year olds			
—·001		<b>·007</b>	<b>·010</b>	<b>·020(+)</b>	·611
<b>·002</b>	<b>·021***</b>	—·008	<b>·021**</b>		·817
<b>·004</b>	<b>·021**</b>	—·003	<b>·013(+)</b>	<b>·017(+)</b>	·882
		—	<b>·013</b>	<b>·017</b>	
		19 year olds			
(a)		<b>·006(+)</b>			·627
—·001(+)	·002	<b>·004(+)</b>	<b>·005(+)</b>		·649
—·001(+)	·002	<b>·005(+)</b>	<b>·003</b>	<b>·004(+)</b>	·690
		<b>·005</b>	—	<b>·004</b>	

Significance : One, two and three asterisks indicate respectively significant at 90%, 95% and 99% levels ; (+) indicates coefficient larger than standard error ; (a) indicates value of coefficient less than ·0005.

cycle, and in the opposite direction among the 15-years-and-younger group, and possibly in other ages, in the senior cycle). The effects on participation rates in these schools would not accurately measure labour market consequences, so results are reported only for all second level combined.

### *Regression Analysis—Results*

The results are reported in Table 4. Most of our comments will pertain to the dummy variables, and their use in subsequent calculations. We comment first more briefly on the other variables.

It will be noted that the unemployment rate lagged does not give us statistically significant coefficients for any age groups except 17- and 18-year-olds, where they have the hypothesised sign, and similar values. Younger boys and girls do not seem to base their school enrolment/leaving decisions on labour market conditions. The 17- and 18- (and possibly 19-) year-olds are at precisely the ages at which one might expect such an influence. (No result was found for 19-year-olds, possibly because enrolment in second level at that age is quite small, and presumably responsive to influences other than those specified in our equations.) The unemployment rate was entered as a per cent rather than a decimal (e.g., 7.5 per cent rather than 0.075), so one interprets the size of the coefficient of 0.021 for 18-year-olds in Table 4 as meaning that a one-percentage-point increase in the unemployment rate increases the school participation rate among 18-year-olds by 0.021 (that is, by 2.1 percentage points).

The regressions show a strong upward time trend in school participation rates among 14-, 15-, and 16-year-olds, and to a lesser extent among 17-year-olds. Trend coefficients are never significant among 18- and 19-year-olds. One must interpret such results with great care, however; it is unlikely that they will persist in future. On the contrary, the future is more likely to be the mirror opposite of the results shown. This is because the rates for the younger age groups, having shown the most clear-cut growth 1963-74, are that much closer to their definitional maxima of 100 per cent, while those for the older age groups, whose participation rates remain fairly low, have considerable room for growth.

We turn to the dummy variables. The coefficient of a dummy variable in these regressions may be taken to be an estimate of the increase in participation rates, not only for the first year (i.e., the year in which the shift or leap takes place), but in all subsequent years as well, for the age affected. Thus a coefficient of 0.04 (with a dummy set equal to 0 for 1962-67, and 1 for all subsequent years) would suggest that participation rates were higher by 0.04 in 1968 and all subsequent years than would have been implied by the fitted trend line, because of the education policy changes of 1967/68.

A similar interpretation is placed on two or even three statistically significant coefficients of different dummy variables. If, for example, 15-year-old enrolment jumps in the first year of the policy because of the availability and lowered price of desired schooling, and if enrolment in this age group jumps again in the second

year because of previous increases in the first year for the 14-year-old group, we may have two statistically significant coefficients of dummy variables. There are obvious problems of multicollinearity in using two or three such dummy variables. The results, however, are fairly good. If, as in the previous paragraph, there were a value of 0.04 for the first dummy variable, and if, on the top of that, there were a value of 0.03 for a second dummy variable (i.e., with 1962-1968 = 0, 1969-74 = 1), then we would conclude that the participation rate for this age group was 0.04 higher in 1968, and 0.07 higher in 1969 and all subsequent years, than would have been due to trend, and we would infer that the increases were due to the policy changes.

Two other points need to be mentioned in relation to the dummy variables. The main purpose of estimating the values of these coefficients, as will be seen, is to use them as estimators of the change in participation rates in some subsequent calculations. If one examines Table 4, one will find for each age group several versions of the estimating equation, and hence several values for the dummy variable coefficient. Though the equations for each age group have somewhat different variables in them, we take their dummy coefficients to be alternative estimates of the *same* real-world value. This interpretation follows from the idea that the dummy coefficient is an estimate of the shift in the intercept, which should be about the same, even for two wholly different (but equally good) equations. For example, if one had two equations each of which explained ninety- to ninety-five per cent in the variation of the dependent variable, but which had (as our equations do not) quite different but significant independent variables together with a dummy of the sort used here, the coefficients of the dummies ought in principle to be the same, since the "shift" should be the same in the two cases. And of course, the real-world effects of the education policy changes are the same, irrespective of how measured.

The other point concerns tests of significance. We are not, strictly speaking, testing hypotheses, or null hypotheses. Rather we are trying to *measure* the effects of a policy change. This means that we have been quite pragmatic about accepting estimates of the coefficients of the dummy variables. Even where the coefficient is not significant at a 95 per cent level, it is a better estimate of the true coefficient than zero would be.

We find from Table 4 that (as expected) participation rates among 14-year-olds jumped only in the first year of the policy. We take 0.051 (the median among the estimates) as our best estimate of the value of this coefficient, and enter it in bold type on Table 4 for use in subsequent calculations. For 15-year-olds, we find significant coefficients for each of the first two years of the policy. We take 0.050 as the best estimate of the effect in the first year (and, of course, all subsequent years), and 0.028 and the incremental effect in the second and subsequent years. These are the values given by the "best" equation. The 0.028 coefficient is, in effect, an attenuated carry-forward of the 0.051 coefficient for 14-year-olds. For 16-year-olds, there are three coefficients of acceptable statistical significance, and their values of 0.028, 0.028, and 0.035, for the three years respectively, have been chosen.



When we move to the 17-year-olds, the results understandably weaken, as the effects of the policy change become spread over a larger and larger number of years. The best results are for the third year of the policy, where the coefficient in the final equation is significant at the 99 per cent level. For our purposes, we have adopted the dummy coefficients of the final equation (0.020, 0.023, and 0.041, respectively). Among 18-year-olds, the dummies for the second and third years of the policy seemed to be acceptably significant for inclusion in subsequent calculations. While they are not significantly different from zero, their values exceed their standard errors, and they are preferable to zero as estimates. Similarly, among the 19-and-olders, there are insignificant but acceptable coefficients, with the small values of 0.005 and 0.004, corresponding to the first and third years respectively.

#### *Cumulative Increases in Enrolment*

The values obtained for coefficients of dummy variables from these regressions have been used in Table 5 to estimate the effect, in thousands of students, on enrolment by year of age, in each year subsequent to the policy changes. For each age, the values obtained in the regressions for increases in participation rates are shown cumulatively in the left column; these are applied to the estimated population at

TABLE 5: *Estimated cumulative increases in school participation rates, and in school enrolment in thousands of students, by year of age, attributable to 1967/68 education policy changes, 1968 through 1974*

Year of Age	14		15		16		17		18		19+ <sup>a</sup>		Total 000
	%	000	%	000	%	000	%	000	%	000	%	000	
1968	5.1	2.9	5.0	2.8	2.8	1.5	2.0	1.0	0	0	0.5	0.2	8.4
1969	5.1	3.0	7.8	4.3	5.6	3.1	4.3	2.2	1.3	0.7	0.5	0.2	13.5
1970	5.1	2.9	7.8	4.5	9.1	5.0	8.4	4.5	3.0	1.5	0.9	0.4	18.8
1971	5.1	3.0	7.8	4.4	9.1	5.1	8.4	4.6	3.0	1.6	0.9	0.4	19.1
1972	5.1	3.0	7.8	4.4	9.1	5.0	8.4	4.7	3.0	1.6	0.9	0.5	19.2
1973	5.1	3.0	7.8	4.5	9.1	5.2	8.4	4.6	3.0	1.7	0.9	0.5	19.5
1974	5.1	3.0	7.8	4.5	9.1	5.2	8.4	4.8	3.0	1.6	0.9	0.5	19.6

<sup>a</sup>Enrolment 19 and over as a per cent of population aged 19

that age, and the result is shown in the right column. The right columns are summed across, for each year, and the total, shown at the right, is the estimated excess of second-level school enrolment in that year over estimated enrolment in the same year, had the policy changes not taken place.

It will be noted that the total enrolment increase rises from 8,400 in 1968 to 19,600 in 1974. There are two influences bringing about the annual rise in total. One is the spreading of the effect through age groups, starting with the lowest

groups and moving up over time, as described earlier. In Table 5, this process is complete by 1970. It is, of course, possible that the spreading of these effects may have continued into 1971 and subsequent years, but no such effects were observable. The other influence is the increase in population, to which the participation rates are applied.

#### *Labour Force Effects*

In our analysis, we will assume that anyone aged 14–19 who is not in school is in the labour force, and vice versa, so that the sum of an age group's labour force participation rate and its school participation rate will be 100 per cent. It is realised that this is not strictly correct. Table 6 shows labour force participation rates (according to the Census of Population) by year of age for 1971, and adds these to the school participation rates to obtain a sum which approximates 90 per cent for all of these ages.<sup>4</sup> In the last column there is a labour force participation rate calculated only for those not in school. It will be observed that this figure rises steadily with age. (School participation rates in Table 6 refer to all levels, and not, as elsewhere in this paper, to second level only).

TABLE 6: *School and labour force participation rates by year of age 1971*

<i>Age</i>	<i>Participation rates</i>				<i>LF as a % of NS</i>
	<i>School S</i>	<i>Labour force LF</i>	<i>Sum S+LF</i>	<i>Non school NS</i>	
14	84.7	9.2	93.9	15.3	60.1
15	70.7	18.5	89.2	29.3	63.1
16	55.0	34.1	89.1	45.0	75.8
17	39.4	49.0	88.4	60.6	80.9
18	20.7	66.3	87.0	79.3	83.9
19	12.1	76.9	89.0	87.9	87.5

One might argue that it is this last column that should be applied to enrolment changes to determine their labour force effects. By this line of argument, rejected here, an increase in school enrolment of 1000 14-year-olds would not reduce the labour force by 1000, but only by 601, while an increase in school enrolment of 1000 17-year-olds would reduce the labour force by 809 persons.

4. Labour force participation rates are obtained by dividing the number of persons "gainfully occupied" by the population of that age, where "gainfully occupied" includes self-employed, assisting relatives, employed by others, and unemployed. Labour force participation is as of April 18, 1971. School participation rates are obtained by dividing reported school enrolment (see text) by population. School enrolments are as of February 1, 1971, while population is as of April 18, 1971.

This line of argument is rejected here because while Table 6 provides the labour force participation rate of non-students, it is an overall or average rate and not an incremental or marginal rate. We assume the incremental rate to be approximately one, because we assume that the home duties, illness, etc., that occupy those neither in school nor in the labour force will be unaffected by the education policy changes. A change of a few thousand in enrolment in an age group is likely, we believe, to have an almost equal and opposite effect on labour force participation.

The figures in Table 6 are provided, however, so that readers may reject this assumption and substitute another. In this connection, it should be noted that, later in the paper, it will be argued that the *ages* of those leaving school for first jobs are affected by the policy changes—that there are fewer 14-year-olds and more 18-year-olds leaving school. If one believed that the figures in the last column of Table 6 were accurate estimators of incremental or marginal rates, then one would conclude that these age effects had quantitative consequences. If, e.g., there are 1000 fewer 14-year-olds leaving school, and 1000 more 18-year-olds, and if the Table 6 figures applied, one would conclude that there were 238 more persons in the labour force (839 less 601) than there would otherwise be. In the present paper, we assume no such result.

Consequently, our estimates of the labour force effects of the education policy changes of 1967/68 can be read directly from the last column of Table 5. By 1974, we estimate that there were 19,600 fewer persons in the labour force—employed and unemployed—than would have been the case had the policies not been effected. By 1975, the number was surely approximately 20,000. As noted earlier, it is assumed that the whole effect is on labour force participation; but other assumptions, involving emigration, are obviously plausible.

### *A Day of Reckoning?*

One is familiar with the common observation that labour force reductions such as those discussed here are likely to be only temporary, and that, after a period of years, either the size of the labour force or flows of new entrants into the labour force will rise again. There are at least three versions of the idea of a “day of reckoning”.

In the one most often heard, it is held that those taken from the job market will, after three to five years' time, return seeking jobs, and that as a result labour force participation rates will rise again. This version is clearly wrong. Unless school participation rates fall again (and that does not seem likely in the foreseeable future), labour force participation rates will not rise again as the result of any such day of reckoning.

Another version concerns flows onto the labour market, rather than labour force stocks. It is best explained through an example. If the initial policy change influenced five years of age (e.g., 15 through 19) and did so in a sequential, cumulative fashion (e.g., 15-year-olds in the first year; 15's and 16's in the second; 15's, 16's, and 17's in the third; etc.), then flows onto the labour market would be lower than

TABLE 7: *New labour force entrants—actual population basis, with and without 1968 changes (thousands of persons)*

Year	14's		15's		16's		17's		18's		19's		20's		Total 15 through 20		Reduction (—) or increase (+) due to policy changes
	with	without	with	without	with	without	with	without	with	without	with	without	with	without	with	without	
1968	15.5	18.4	0.8	4.0	6.6	6.1	5.0	6.0	6.7	6.7	0.9	1.1	1.4	2.4	36.9	44.7	-7.8
1969	14.2	17.2	2.9	4.3	6.9	7.2	6.4	7.1	8.6	8.6	1.6	1.8	-0.3	-0.5	40.3	45.7	-5.4
1970	12.6	15.5	4.0	5.5	7.4	8.1	6.9	8.3	9.0	8.3	1.4	0.8	0.5	0.3	41.8	46.8	-5.0
1971	11.5	14.5	3.9	5.4	7.2	7.8	8.5	8.1	11.2	8.3	2.2	1.1	0	-0.4	44.5	44.8	-0.3
1972	10.5	13.5	3.6	5.0	7.0	7.6	9.1	8.7	12.7	9.7	2.5	1.4	1.1	0.7	46.5	46.6	-0.1
1973	7.8	10.8	4.3	5.3	8.7	9.5	10.0	9.6	13.8	10.8	4.0	2.9	1.3	0.8	49.9	49.7	+0.2
1974	6.3	9.3	5.7	7.2	8.6	9.3	12.0	9.6	14.8	11.8	5.3	4.1	1.5	1.0	54.2	52.3	+1.9

TABLE 8: *New labour force entrants—normalised population basis, with and without 1968 changes (thousands of persons)*

Year	14's		15's		16's		17's		18's		19's		20's		Total 15 through 20		Reduction (—) or increase (+) due to policy changes
	with	without	with	without	with	without	with	without	with	without	with	without	with	without	with	without	
1968	15.5	18.4	1.6	4.5	5.4	6.9	6.6	7.7	9.2	9.2	4.4	3.7	1.6	1.6	44.3	52.0	-7.7
1969	14.2	17.2	4.8	6.3	7.6	8.1	7.6	8.5	10.6	10.2	3.6	1.9	1.7	1.4	50.1	53.6	-3.5
1970	12.6	15.6	4.2	5.7	6.0	6.7	8.2	9.9	11.7	11.0	3.8	3.6	1.9	3.6	48.4	56.1	-7.7
1971	11.5	14.5	4.1	5.6	7.7	8.5	12.1	8.7	13.3	10.1	4.0	2.8	2.1	1.6	54.8	51.8	+3.0
1972	10.5	13.5	3.9	5.4	7.6	8.4	9.7	9.3	13.6	10.6	4.8	3.6	2.0	1.3	52.1	52.1	0
1973	7.8	11.8	4.5	6.1	8.9	9.7	10.5	10.1	14.4	11.2	5.0	3.8	2.1	1.6	53.2	54.3	-1.1
1974	6.3	9.3	5.7	6.2	8.8	9.5	12.3	11.9	16.6	13.5	6.0	4.8	2.0	1.5	57.7	56.7	+1.0

without the policies in the first five years, and in the sixth the number of new entrants would rise again to "normal". In that sixth year, there *is* a day of reckoning, in the sense that the number of new entrants does rise again. In the sense, however, that that sixth-year number never exceeds the flow that would have occurred in the absence of the policy change, there is no day of reckoning. Of course, in the real world, the pattern of influence is not likely to be this neatly mechanical, and the rise in new entrants will be more gradual than this suggests; but the interpretation stands. In the next section, we report on our attempts to measure the flow effects of the 1967/68 education policy changes.

The third version of the day of reckoning thesis concerns both stocks and flows, and is based on behavioural rather than definitional consequences of the education policy changes. The argument is that increased second-level education itself may induce more labour force participation.

The most likely area for such an induced effect is among women. For many years, women have had significantly higher average levels of educational attainment in Ireland than men, and yet significantly less employment opportunity. In other countries, increasing educational attainment combined with limited employment opportunity has entailed inherent contradictions which ultimately have produced strong demands from women for more access to responsible jobs. There can be no doubt whatever that educational progress was a major causal variable explaining the rise of the women's movement in the USA and Great Britain. In Ireland the contradictory situation referred to has been sustained in part because of the type of education involved. It has either been a secondary school education, mainly in convent schools, in which vocationally oriented subjects—including even honours mathematics—were given little emphasis, or it has been a vocational school education in which low-level commercial skills were emphasised. Increases in female school participation rates come today at a time when the nature of education is changing, in the direction of more technical and preprofessional subject matter, and less pure "arts" and "homemaker" education. The percentage of girls' leaving certificate examinations which are in French, German, and Mathematics is rising, and new subjects, such as Economics and in technical areas have been added; and the percentage of girls' examinations in Latin and Home Economics (or Domestic Science) is falling. The combined effect of these changes and the increases in school participation rates discussed in this paper can certainly be to bring about added impetus for higher levels of female labour force participation, throughout all the years of age, among married as well as single women; and what is implied is a demand for jobs with career ladders permitting lifelong advancement, as among men. These changes, in short, may herald a real "day of reckoning" for labour force participation.

The effects of the 1967/68 education policy changes on flows into the Irish Republic labour force have been calculated, and the results are shown in Tables 7 and 8. Table 7 was calculated by first estimating actual numbers of each age group in the labour force each year, and then calculating the numbers which would

have been in the labour force, had the policy changes not occurred, on the basis of Table 5. Then the annual changes in labour force numbers were calculated, by comparing, e.g., the number of 16-year olds estimated to be in the labour force in 1971 with the number of 17-year olds in 1972 (and entering the result as the new 17-year old entrants in 1972). In constructing Table 7, it was assumed that no one enters the labour force before age 14; thus all 14-year olds estimated to be in the labour force in a year are identified as new entrants in that year. As noted earlier, it has been assumed that those 14-19 year olds not in second-level schools are in the labour force. This ignores, among other things, the numbers in third-level education. This error inflates the numbers in both the "with" (i.e., estimated actual) and "without" (i.e., hypothetical numbers who would have entered had the policies not been instituted) columns, but by equal amounts, so that the net differences, as in the last column, are unaffected. It is also, then, assumed that the numbers of 20-year olds in the labour force are not affected by the policies. However, the number of *new entrants* among 20-year olds is affected, since that is influenced in part by the number of 19-year olds in the labour force in the previous year.

Interest in Table 7 attaches primarily to the last column, which shows the estimated net differences in labour force entrants attributable to the policies. The pattern of net differences corresponds nicely to the theoretical pattern described above. In the first year, the number of new entrants is estimated to be 7,800 fewer than without the policy; in the second year, 5,400 fewer; and in the third year, 5,000 fewer. The results in Table 7 are somewhat awkward to interpret however, since there was continued net emigration during the relevant years in these age groups. Differences in age group sizes and patterns of emigration account for the fact that the 1971-1974 net changes do not show nil balances.

Table 8 has been calculated to remove the effects of emigration by holding the population size of each age cohort constant at its size when the group was aged 14 and applying to that population the changing 'with' and 'without' participation rates as the group ages. The age groups are still of different sizes (there being no reason for them to have been of identical size when each was aged 14), but this year's 17-year-old group is the same size as last year's 16's and next year's 18's. As a result of this "normalisation" of population, the results in Table 8 correspond even more closely with the theoretical pattern. Age-group size effects are still noticeable, but it will be seen that the net effect of the policy change is virtually nil in the last three years (and, fortuitously, precisely nil in 1972).

While main interest may attach to the final columns of Tables 7 and 8, a good deal attaches as well to the other figures. An inspection of the last row of Table 7 shows a considerable change in the age structure of the group of new entrants into the labour force, with fewer 14- and 15-year olds, and more of all other age groups, particularly 18-year olds. There are 4,500 fewer 14- and 15-year olds, and 3,000 more 18-year olds entering, as a result of the policy changes. Similar shifts—again, mainly from 14- and 15-year-olds to 18-year olds—are shown in Table 8. The

inference is that while approximately the same *number* of new jobs were needed in 1974 as would have been required had the policies not been implemented, the *types* of jobs required may have been quite different. Not only are 18-year olds obviously older and more mature, as well as better educated, but somewhat less obviously their income needs are greater than are those of 14- and 15-year olds. Evidentially some job upgrading has been required.

*Conclusion : Effects on Unemployment ?*

To summarise, then, the education policy changes of 1967/68 mean

- (1) a smaller labour force, overall, than otherwise, with 19,600 fewer persons employed and unemployed in 1974, and presumably just about 20,000 fewer in 1975;
- (2) this change in the size of the labour force came about almost entirely through fewer new entrants in the years 1968–1970, so that roughly the same numbers are seeking first jobs today as would have had there been no such policy changes; and
- (3) the types of first jobs the economy must provide are quite different to what would have been required in the absence of the changes, since the age distribution of new entrants has shifted sharply in the direction of older and better educated first-job seekers.

It is important to point out again that our analysis has been limited only to the identifiable effects of the 1967/68 changes. There is also, in most of the age groups studied, a powerful upward trend in school participation rates, as is shown in Table 4. Exactly the same analysis applies to the trend as was applied here to the discontinuous jumps. Thus because of the continuing upward trend, we can expect the following:

- (1) The size of the labour force will continue to decline relative to its size in the absence of such growth;
- (2) As long as the growth continues, the numbers of annual new entrants into the labour force will be less than otherwise;
- (3) If and when the growth in participation rates ceases (as indeed it eventually must, even if at 100 per cent), there will be a "day of reckoning" in the sense that the number of new entrants will rise again, as in Tables 7 and 8;<sup>5</sup>
- (4) Even in such an eventuality, the size of the labour force, as opposed to the number of new entrants, will not rise again (unless school participation rates not only stop growing but actually decline); and
- (5) As long as the upward trend in participation rates continues, the age structure of new entrants into the labour force will continue to shift in the direction of an older and better educated group, seeking jobs which pay well and which use their maturity and abilities.

5. This day will not come soon. According to our own projections, to be published elsewhere, school participation rates will still be rising in 1986.

A concluding remark must be made about the relationship of the foregoing to unemployment. It might be assumed (and almost certainly would be hoped) that a decline in the labour force of 19,600 persons also means a decline in unemployment of 19,600 persons, since we have not argued that the number of *jobs* is affected. Unfortunately, such an assumption is hard to defend on economic grounds. In general, some kind of adjustment of labour demand to labour supply is known to occur in most countries and under most circumstances. When labour force participation rates have increased, as (e.g.) more women have sought work, or decreased, as (e.g.) people have retired at younger ages, etc., labour markets seem, after an interval, to have adjusted, and over time as well as among nations, participation rates do not seem to be related to unemployment rates. This process is imperfectly understood. Such adjustments are unlikely to be made in the short run, so that, for brief periods it might be appropriate to assume the number of jobs to be independent of the number seeking work. What the longer term effects are, especially in Ireland, is by no means clear.

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