

## CATHOLIC-PROTESTANT INCOME DIFFERENCES IN NORTHERN IRELAND

BY VANI K. BOROOAH, PATRICIA M. MCKEE, NORMA HEATON AND  
GRÁINNE COLLINS

*University of Ulster*

The purpose of this paper is to analyse income differences between Catholic and Protestant families in Northern Ireland (NI) using Family Expenditure Survey micro-data. The paper's first conclusion is that there is much greater inequality *within* the Catholic and Protestant communities than there is *between* them. Its second conclusion, based upon econometric analysis of data for full-time employees, is that the lower mean income of Catholics, relative to Protestants, could be entirely explained in terms of different rates of reward attached to a given set of labour market characteristics.

### 1. INTRODUCTION

The traditional animosity that exists between the Catholic and the Protestant communities in Northern Ireland (NI) often manifests itself in two polar attitudes. On the Catholic side there is the feeling that economically they are much worse off than Protestants and further that their relative deprivation is due, in large measure, to the economic discrimination that they suffer—and have long suffered—at the hands of Protestants. Such a view is well articulated by, for example, Rowthorn and Wayne, 1988. On the Protestant side, there is the view—to which, for example, Compton, 1981 gives expression—that the relative deprivation of Catholics is caused not by any discrimination that they might suffer, or may have suffered, but rather by factors that are embedded within the Catholic community itself. A well-rounded discussion of these issues is contained in Smith and Chambers, 1991.

Both views have, however, this in common: they have underpinned their respective arguments by reference to the difference in unemployment rates between Catholics and Protestants. One of the most often-quoted statistics about NI is that the unemployment rate for Catholics is twice that for Protestants. This is then used to infer that there is a corresponding differences in economic welfare between the two communities—i.e. that Catholics are twice as worse off than Protestants—and the debate centres on the causes, rather than on the fact, of such deprivation.

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This paper questions the assumption that the difference in unemployment rates between Catholics and Protestants is a good indicator of welfare differences between the communities. Instead, the starting point of this study is the belief that a family's income provides a better guide to its level of welfare. The employment status of the members of a family does not, however, provide a reliable guide to its income level. This is primarily because families with say, unemployed heads have access to non-wage sources of income, most notably from social security benefits. Moreover there are special reasons why the gap between income in-employment and income out-of-employment might not be as great as NI as it might be in other regions of the U.K. Regional wage rates, particularly at the lower end of the skills spectrum, are determined by the forces of local demand and supply rather than by nationally determined rates. NI, as a deprived region of the U.K., therefore has lower wage rates than say, the South-East of England. However, social security benefits are paid at nationally uniform rates. Hence the "replacement ratio," as measured by the proportion of employment income that is replaced by social security payments to the unemployed, is likely to be higher in NI than in more prosperous regions.

Against this background, the purpose of this paper is to provide an investigation of Catholic-Protestant income inequality. The paper is composed of two parts. In the first part the samples of Catholic and Protestant families are subdivided into subgroups.<sup>1</sup> Conceptually, the overall level of inequality in NI would be determined by the fact that (i) there was inequality *within* the subgroups, both among Catholics and among Protestants (ii) there was inequality *between* the subgroups, both for Catholics and for Protestants and (iii) there was inequality *between* Catholics and Protestants, each taken as a whole. The first part of this paper attempts to measure the relative strength of these different effects. A counter-factual question that this part addresses is the following: if mean incomes were to be equalised for each subgroup across its Catholic and Protestant parts (for example, Catholic and Protestant self-employed had, on average, the same income) then how would this affect inequality in NI?

The second part of this paper addresses the question of why income levels differ between Catholics and Protestants. There are essentially two possible reasons for the lower incomes in the Catholic community. The first relates to the fact that Catholics, as noted earlier, have a higher unemployment rate than Protestants. This topic has been analysed extensively and is not discussed here.<sup>2</sup> The second reason stems from the fact that even in employment the average income of Catholics is less than that of Protestants. This topic is addressed in the context of full-time employees from both sides of the religious divide. To the best of our knowledge this is a topic addressed before in the literature on inter-community differences in Northern Ireland. In particular, two questions are asked: (i) how much of the income difference can be attributed to the different labour market characteristics of Catholics; (ii) how much of this income difference is due to different rates of remuneration for the same labour market characteristics?

<sup>1</sup>According to the economic status (employed, unemployed etc.) of the head of family; by family type (single, no children; couple, 3 children etc.); by age; and by occupational class (manager, skilled manual etc.) of the head of family.

<sup>2</sup>See Smith and Chambers, 1991.

The organisation of the paper is as follows. Sections 2 and 3 describe the Family Expenditure Survey (FES) data for NI on which the analysis was based. Section 4 addresses the question of inequality decomposition by subgroups while Section 5 is concerned with the “causes” of inequality. Section 6 concludes the paper.

## 2. THE FES DATA AND THE DEFINITION OF INCOME

The FES, which is an annual survey carried out over a sample of households in the U.K. is designed to gather information on the characteristics, income and expenditure of a household over a two-week period: for cooperating households there is detailed information about their size and structure; their housing costs; the incomes of their members from all sources; their regular committed payments and their expenditure on a variety of goods and services. Although the published data from the FES pertains to households, the micro-data underlying the published figures, permits analysis by families and indeed it is the family which is the unit of analysis adopted in this paper.<sup>3</sup>

Northern Ireland contributes a sample to the FES and it is this sample—hereafter referred to as the NI FES—which is analysed in the study reported here.<sup>4</sup> The NI FES sample design is stratified by area.<sup>5</sup> Three broad geographic divisions are employed: Belfast, the western counties and the remainder. A simple random sample is then drawn from each area with 20 percent of the addresses drawn from Belfast; 45 percent from the East with the remainder from the West. By way of contrast, the sample design for Great Britain is significantly more complex with the local authority areas for Britain stratified by: 16 standard regions; type—based on population density; and economic character—based on rateable value.<sup>6</sup>

The 1989 and 1990 NI FES, on which this study is based, were different from their precursors in that they included, for the first time, a question on the religion of each respondent over the age of 16. The response to this question was very high—only 3.7 percent of respondents declined to answer. Since the focus in this paper is on differences between Catholics and Protestants our analysis excluded respondents who professed either no religion or “other” religions and it also excluded families in which one spouse was Catholic and the other Protestant. After these exclusions, the combined 1989 and 1990 samples contained in total, 1,529 families of which 616 were Catholic and 913 were Protestant. These 1,529 families encompassed 3,252 individuals of whom 1,458 were Catholic and 1,794 were Protestant.<sup>7</sup> On the whole, Catholics had larger families (2.4 members on average) than Protestants (2.0 members).

<sup>3</sup>A family consists of an adult or couple living alone or an adult or couple living with dependent children (i.e. below 16 years of age).

<sup>4</sup>See Great Britain Department of Employment, *Northern Ireland Family Expenditure Survey 1989, 1990* [computer files] Colchester: ESRC Data Archive, 1992.

<sup>5</sup>See McGregor and McKee, 1992 for details.

<sup>6</sup>See Kemsley *et al.* (1980) for details.

<sup>7</sup>It was, of course, possible to consider a third category consisting of all the exclusions. Unfortunately the sample size was too small to permit this. Of the 1,642 families in the sample only 113 families—containing 240 persons—fell into the “excluded” category.

The disposable income of a family was defined as its total income from: wages and salaries; self-employment income; all social security benefits (other than housing benefit); investment income (including income from property); public and private sector pensions; and other income; *less* direct taxes and National Insurance contributions. To take account of the fact that the combined data spanned a period of 24 months, the disposable income of a family was deflated by the value of the Retail Price Index prevailing in the month in which that particular family reported its income.

In order to adjust a family's disposable income for its size and composition, the number of "adult-equivalents" in a family were computed using the equivalence scales used by the U.K. government in computing its Households Below Average Income Statistics (based on McClements, 1977) and this was used to calculate a family's disposable income per adult equivalent.<sup>8</sup> This figure was then replicated for every member of that family. The analysis of inequality reported in the remainder of this paper was based upon *family disposable income per adult equivalent replicated for every family member*. In total therefore, the results were based on an analysis of 3,252 "incomes" of which 1,458 were "Catholic incomes" and 1,794 were "Protestant incomes."

Equivalence scales express the economies of scale that result from increments to family size. As Buhman *et al.*, 1988 note, the "equivalence elasticity" i.e. the proportionate change in economic welfare resulting from a proportionate change in family size can, theoretically, vary from 0 to 1, with larger values indicating smaller economies of scale. This range of possibilities is reflected in the diversity of equivalence scales used internationally. Buhman *et al.*, 1988 report a minimum value for the equivalence elasticity of 0.12 and a maximum value of 0.84 with a mean value of 0.74 and a median value of 0.77. The equivalence scales used in this study represent an equivalence elasticity of 0.59.<sup>9</sup> Of course, the use of alternative equivalence scales with markedly different elasticities could have modified the results reported here. However, this line of enquiry, for two reasons, was not pursued further.

First, the scales used were, as noted earlier, those employed by the U.K. Government in computing its HBAI statistics; these in turn, are the most widely used statistics (and, indeed, the only statistics that are available on a regular and continuing basis) of deprivation and inequality in the U.K. Hence for this reason, these seemed the appropriate equivalence scales to use. As Buhman *et al.*, 1988, p. 116 note "in studies within a given nation the question of choice of equivalence scale is often foreclosed by conventional usage or public policy practice." Second, the obvious alternative scale to use was the one used by the European Commission in evaluating poverty in the countries of the EC. This scale represented larger economies of scale and hence could have been expected to be more disadvantageous to Catholics who, on average, had larger families than Protestants.<sup>10</sup>

<sup>8</sup>These were: for head of household = 1.0, spouse = 0.63, 2nd adult = 0.75, 3rd adult = 0.69, additional adult = 0.59, 13-15 year olds = 0.44, 11-12 year old = 0.41, 8-10 year olds = 0.38, 5-7 year olds = 0.34, 2-4 year olds = 0.3, 0-1 year olds = 0.15.

<sup>9</sup>Strictly speaking it is the equivalence scales based on the U.K. Supplementary Benefit scale rates that have this elasticity value. However, the equivalence scales used in this paper are not very different from these, either in magnitude or in impact. (cf. Johnson and Webb, 1989).

However, this increased economy of scale was purchased at the cost of extreme simplicity: the EC scale assigned each additional adult the value 0.7 and each child, regardless of age, the value of 0.5; this is to be contrasted with the relatively greater complexity of the scales used in this paper, detailed in note 8.<sup>10</sup>

### 3. RELIABILITY OF THE FES

One of the problems with a survey such as the FES—which involves the participating family in a great deal of inconvenience without apparent benefit—is obtaining an adequate response rate. The response rate would appear to depend upon: the age of the head of household (with more cooperation from younger households); the number of children in the household (with greater response from households with children); employment status (with low response from the self-employed) and household size (larger households being more cooperative).<sup>11</sup> The U.K. response rate has fluctuated around 69 percent whereas in NI the response rate has declined from 80 percent in 1967 to 53 percent in 1989. This could be due to the political situation—indeed, over 1970–74, a total of 183 addresses were abandoned due to civil unrest.<sup>12</sup> A variable response rate exacerbates the problems, noted above, associated with differential response rates by population subgroups.

This, in turn, raises the question of how well the FES sample represents the population. This question was addressed, in the context of the U.K., by Atkinson *et al.*, 1988 who found that, applying a uniform grossing up factor to the FES sample for 1982 the implied population figures for children and married couples were considerably higher than those given by the 1982 Census; the need would therefore appear to be for differential grossing-up rates based upon a careful analysis of response rates. Unfortunately as they note “the use of grossing up procedures . . . in Britain is not very far advanced” (p. 223). Thus any work based on FES data must face the possibility that the results derived from them may not be fully applicable to the population.

Needless to say, this injunction applies as well to the work reported in this paper. In order to test that the (combined 1989 and 1990) NI FES sample used was representative of the NI population, a range of statistics derived from the sample were compared with their counterparts from the 1991 Census for NI. These statistics were: age-group;<sup>13</sup> age-group by gender;<sup>14</sup> gender by age-group;<sup>15</sup> marital status by age-group;<sup>16</sup> religion;<sup>17</sup> gender by religion;<sup>18</sup> labour market status;<sup>19</sup> and occupational group.<sup>20</sup> Generally, the fit between the sample and the census was good.<sup>21</sup> In particular, the sample sizes of Catholics and Protestants

<sup>10</sup>This was drawn to our attention by one of the referees.

<sup>11</sup>See Kemsley, 1975; Redpath, 1986.

<sup>12</sup>See McGregor and McKee, 1992.

<sup>13</sup>0–15, 16–24, 25–44, 45–59, 60+.

<sup>14</sup>Percentage of persons in an age-band who are male.

<sup>15</sup>Percentage of all males who are in a particular age-group.

<sup>16</sup>Percentage of total persons of a particular marital status in an age-group.

<sup>17</sup>Percentage of persons who were Catholic or Protestant.

<sup>18</sup>Percentage of persons of a particular gender who were Catholics or Protestants.

<sup>19</sup>Employee; self-employed; unemployed; retired; and unoccupied.

<sup>20</sup>Manager; foreman; professional; and self-employed.

<sup>21</sup>The details are available on request.

were proportionate to their actual populations: the 1991 Census reported proportions of Catholics and Protestants as 47 and 53 percent respectively; the FES sample reported these as 45 and 55 percent.

The most obvious discrepancies between the sample and the census were the following: (i) the FES under-reported the proportion of males in age-groups 0–15 (48.3 vs. 51.2 percent) and 25–44 (45.5 vs. 49.6 percent); (ii) the FES over-reported the proportion of the total number of females in the sample who were in age-group 25–44 (14.7 vs. 13.8 percent); (iii) the FES over-reported the proportion of the total number of persons in the sample who were single and in age-group 0–15 (29.8 vs. 26.0 percent) and under-reported the proportion that were single and in age-group 16–24 (10.4 vs. 12.9 percent).

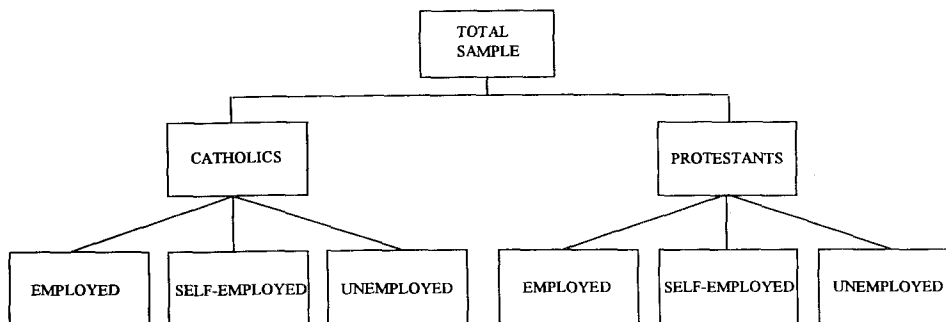
#### 4. CATHOLIC-PROTESTANT INEQUALITY: DECOMPOSITION BY SUBGROUPS

An inequality index  $I(y)$ , defined over a vector of incomes  $y$ , is said to be decomposable if, whenever the population is divided into mutually exclusive and collectively exhaustive subgroups, the overall level of inequality can be expressed in terms of the subgroup means, sizes and inequality values (cf. Shorrocks, 1984). Within this class, an inequality index is said to be additively decomposable (cf. Shorrocks, 1984) if total inequality can be expressed as a weighted sum of the inequality existing *within* the subgroups and of the inequality *between* the subgroups. The latter type of measures have obvious attractions since they permit judgement on the relative influence of population subgroups in determining overall inequality. In applying this framework to an analysis of Catholic-Protestant income inequality, account had to be taken of a two-fold decomposition. First, there was the cleavage of the sample between Catholic and Protestant families; second, within the context of Catholic and Protestant families, there was the further decomposition of families by economic status, by family type or, indeed, by any other criteria. An extension of the theory, discussed above, was required to encompass this “two-fold” decomposition. This is set out below.

Let  $y^C$  and  $y^P$  be, respectively, the vectors of Catholic and Protestant incomes and  $N^C$  and  $N^P$  the numbers of Catholic and Protestants in the sample. Suppose the sub-samples of Catholic and Protestant individuals are partitioned into (the same)  $K$  mutually exclusive and collectively exhaustive subgroups indexed by  $k = 1 \dots K$  with  $N_k^C$  (for Catholics) and  $N_k^P$  (for Protestants) individuals in each subgroup. Let  $y_k^C$  and  $y_k^P$  denotes the vectors of Catholic and Protestant incomes, respectively, in each subgroup ( $k = 1, \dots, K$ ). Then

$$(1) \quad I(y; N) = w^C I(y^C; N^C) + w^P I(y^P; N^P) + B \\ = w^C \sum_{k=1}^K w_k^C I(y_k^C; N_k^C) + w^P \sum_{k=1}^K w_k^P I(y_k^P; N_k^P) + w^C B^C + w^P B^P + B$$

where  $w^C$  and  $w^P$  are the weights attached to Catholic and Protestant incomes over the entire sample and  $w_k^C$  and  $w_k^P$  are the corresponding weights for subgroup  $k$  ( $k = 1, \dots, K$ );  $B^C$  and  $B^P$  are the between subgroup contributions to inequality when respectively, Catholic and Protestant incomes are analysed separately and  $B$  is the between group contribution to Catholic-Protestant inequality.



Reasons for inequality:

1. For every economic category there is inequality within Catholics in that category and within Protestants in that category.
2. For every religion there is inequality between the categories.
3. There is an overall inequality between the communities.

Figure 1. Inequality Decomposition of Religion by Economic Category

The interpretation attached to equation (1) (see Figure 1 for the intuition behind this decomposition) is as follows. If, *within* each subgroup  $k(k = 1, \dots, K)$ , incomes were equalised then  $I(y_k^C; N_k^C) = I(y_k^P; N_k^P) = 0$  and the overall level of inequality would be:  $I(y; N) = w^C B^C + w^P B^P + B$ . In turn, this would result from the fact that: (i) mean incomes differed (for Catholics) between the  $K$  subgroups and the contribution from this source would be  $w^C B^C$ ; (ii) mean incomes differed (for Protestants) between the  $K$  subgroups and the contribution from this source would be  $w^P B^P$ ; (iii) mean incomes—when calculated separately over the entire vectors of Catholic and Protestant income ( $y^C$  and  $y^P$  respectively)—were different between the two communities and the contribution from this source would be  $B$ . In practice, of course, incomes within the Catholic and the Protestant subgroups would not be equal so that there would be a fourth source of inequality arising from the non-zero values of  $I(y_k^C; N_k^C)$  and  $I(y_k^P; N_k^P)$ .

Table 1 shows the results of applying the decomposition of equation (1) when the subgroups were defined by the economic status of the head of family.<sup>22</sup> The inequality index used was Theil's Mean Logarithm Deviation (MLD) Index, the decomposition weights for which are population shares.<sup>23</sup> Table 1 has three panels. The first two panels show the results of decomposing income inequality by subgroups of economic categories for, respectively, the Catholic and Protestant sub-samples, and then for the entire sample. The last panel shows decomposition results when the full sample is divided into its Catholic and Protestant parts.

<sup>22</sup>Other tables, not reported here, but available from the authors, show similar results for disaggregation by family type; by age of family head; and by occupational class of family head.

<sup>23</sup>Within the class of additively decomposable measures, MLD is the most satisfactory since it allows total inequality to be unambiguously split into its between and within group contributions [cf. Shorrocks (1980)].

TABLE I  
INEQUALITY DECOMPOSITION BY ECONOMIC STATUS OF FAMILY HEAD USING THEIL'S  
MLD INDEX

Economic Status	Catholic Index Value/Mean Income	Protestant Index Value/Mean Income	Full Sample Index Value/Mean Income
Employed	0.1214/£114.24 (0.38)	0.1189/£122.33 (0.49)	0.1204/£119.19 (0.44)
Self-employed	0.4008/£82.02 (0.15)	0.3157/£118.97 (0.11)	0.3789/£99.03 (0.13)
Unemployed	0.3658/£41.00 (0.12)	0.4407/£48.88 (0.10)	0.4062/£44.84 (0.11)
Sick	0.0803/£63.80 (0.09)	0.1159/£65.54 (0.05)	0.0941/£64.47 (0.07)
Retired	0.0750/£59.21 (0.11)	0.1004/£71.23 (0.19)	0.0957/£67.24 (0.15)
Other	0.5442/£39.16 (0.13)	0.4213/£40.43 (0.07)	0.4945/£39.68 (0.10)
Within-group: $\sum w_k^R I(y_k^R; N_k^R)$ R = C or P	0.2413	0.1891	0.2159
Between-group: ( $B^C$ or $B^P$ )	0.0836	0.0673	0.0760
Total inequality: ( $I^C; I^P; I$ )	0.3249	0.2564	0.2919
Weights: ( $w^C$ or $w^P$ )	0.45/£79.40	0.55/£96.76	
Within-group: ( $w^C I^C + w^P I^P$ )			0.2871
Between-group: (B)			0.0048
Total inequality:			0.2919

Note: (i) Mean income is weekly disposable income per adult-equivalent.  
(ii) Figures in parentheses are population shares.  
(iii)  $I^C = I(y^C; N^C)$ ;  $I^P = I(y^P; N^P)$ .

The numbers against the specific subgroups in the upper panels (rows 1–6 in Table 1) show first, the value of the inequality index for that category for Catholics, Protestants and the full sample. Thus, in Table 1, when one considered only the incomes of persons living in Catholic families (i.e. the Catholic sub-sample) then the computed value of Theil's MLD index for persons, in this sub-sample, living in families with an employed head was 0.1214; the italicised number immediately following this (114.24) is the average, weekly disposable income per adult-equivalent for persons in this, i.e. "employed Catholics," category. Of the total of Catholic persons in the sample, 38 percent lived in families with an employed (Catholic) head. Similarly, in Table 1, 0.1189 and 122.33 are, respectively, the index value and average disposable income of persons in the "employed Protestant category."

The last three rows of the second panel of Table 1 show the within and between group contributions to total inequality. For example, overall inequality among Catholics, as measured by Theil's MLD index, was 0.3249; of this, the within-group contribution (i.e. arising from income differences within the



economic categories) was 0.2413 and the between group contribution (i.e. arising from differences in mean income between the categories) was 0.0836. The last panel of Table 1 report first, the proportion of Catholic and Protestant persons in the sample and their average income; then they show, respectively, the within and between group contributions to overall inequality—and also the level of this inequality—where now, of course, the groups are Catholics and Protestants considered in their entirety. The results in Table 1 show that if one equalised mean Catholic and Protestant incomes (i.e. set  $B=0$  in equation) the value of the inequality index would fall from 0.2919 to 0.2871 (i.e. by 1.6 percent). If, further, one equalised mean incomes *between* the Catholic economic categories (i.e. set  $B^C=0$ ) while preserving inequality *within* each of these categories and did the same for the Protestant economic categories (i.e. set  $B^P=0$ ) then Table 1 shows that the value of the inequality index would fall to 0.2125 ( $= 0.2871 - (0.45*0.0836) - (0.55*0.0673)$ )—a fall of 26 percent. The remaining inequality (i.e. 0.2125) would be due to inequality *within* the economic subgroups of the Catholic and the Protestant communities.

Thus, of total inequality in Northern Ireland in the two year period 1989–90, only 1.6 percent could be explained by differences in mean Catholic and Protestant incomes when the respective means were calculated over the entire vector of Catholic and Protestant incomes. Twenty-six percent of total inequality in NI was explained by the fact that mean incomes differed between the economic categories for Catholics (for example, a Catholic family with an employed head had, on average, a higher income than a Catholic family with an unemployed head) as they did for Protestants.<sup>24</sup> The remaining inequality (72 percent of total inequality) was due to the presence of inequalities *within* the Catholic and Protestant subgroups (for example, not all Catholic families with an employed head had the same income and nor did their Protestant counterparts).

Another interesting insight into the nature of income inequality in NI is provided by the following counter-factual question: if mean incomes were to be equalised for each subgroup, across its Catholic and Protestant parts, (for example, suppose Catholic and Protestant families with employed heads had, on average, the same income) then what implications would such an equalisation have for the overall level of inequality in NI. This arguably is a more realistic question than the earlier ones which related to the equalisation, of mean incomes *between* the subgroups but *within* the Catholic and Protestant communities. To answer this question requires a modification of the framework employed in equation (1).

If  $y_k$  is the vector of incomes in subgroup  $k$  aggregated across Catholics and Protestants and, as before  $y_k^C$  and  $y_k^P$  are the income vectors in the subgroup for Catholics and Protestants respectively and if  $N_k$  is the total number of persons in subgroup  $k$ ,  $N_k^C$  and  $N_k^P$  being, as before, the respective Catholic and Protestant numbers in subgroup  $k$ , then

$$(2) \quad I(y_k, N_k) = v_k^C(y_k^C; N_k^C) + v_k^P(y_k^P; N_k^P) + B_k, \quad k = 1 \dots K$$

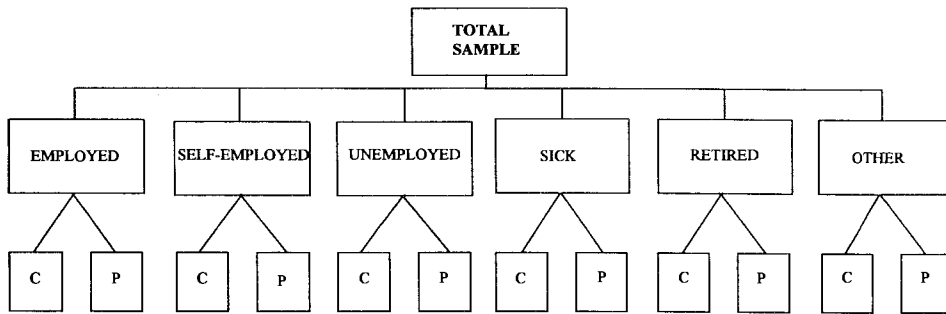
<sup>24</sup> $[(0.45*0.0836 + 0.55*0.0673)/0.2919] = 0.26$

and

$$\begin{aligned}
 (3) \quad I(y; N) &= \sum_{k=1}^K v_k I(y_k; N) + B \\
 &= \sum_{k=1}^K v_k \{v_k^C I(y_k^C; N_k^C) + v_k^P I(y_k^P; N_k^P) + B_k\} + B \\
 &= \sum_{k=1}^K v_k v_k^C I(y_k^C; N_k^C) + \sum_{k=1}^K v_k v_k^P I(y_k^P; N_k^P) + \sum_{k=1}^K v_k B_k + B
 \end{aligned}$$

where  $v_k^C$ ,  $v_k^P$  and  $v_k$  are weights for subgroup  $k$  for the Catholic, Protestant and the aggregate sample respectively ( $k=1, \dots, K$ ). As noted earlier these weights are population shares when Theil's MLD index is employed. Thus  $v_k^C$  and  $v_k^P$  are the proportion of Catholics and Protestants in subgroup  $k$  and  $v_k$  is the proportion of persons in subgroup  $k$  in the entire sample.

Now if mean incomes are the same, for subgroup  $k$ , across its Catholic and Protestant parts, then  $B_k=0$ ; if this equality holds for every subgroup then  $\sum_{k=1}^K v_k B_k=0$  and the overall level of inequality is given by the sum of the first, second and fourth terms of equation (3); if, in addition, mean Catholic and Protestant incomes—considered in their entirety—are equal, then  $B=0$  and the overall level of inequality may be recomputed approximately. Figure 2 provides the intuition behind this decomposition.



Reasons for inequality:

1. For every subgroup (say employed): there is inequality within Catholics in that sub-group and within Protestants in that sub-group.
2. For every subgroup (say employed): there is inequality between Catholics and Protestants in that sub-group.
3. There is inequality between the sub-groups in aggregate e.g. between the employed and the unemployed.

Figure 2. Inequality Decomposition of Economic Category by Religion

The results of inequality decompositions for equation (2) using Theil's MLD Index are shown in Table 2 by the economic status of family head.<sup>25</sup> This table shows that the proportion of persons living in families with an employed head (i.e. employed category) was, on aggregate, 44 percent. If one decomposes total

<sup>25</sup>Similar results are available, but not reported in the paper, for disaggregation by family type, age-group and occupational class.

TABLE 2  
INEQUALITY DECOMPOSITION BY RELIGION FOR EACH ECONOMIC CATEGORY USING  
THEIL'S MLD

Economic Category	Total Inequality	Within-Group Contribution	Between-Group Contribution	Category Weight in Full Sample
Employed	0.1204	0.1198	0.0006	0.44
Self-employed	0.3789	0.3616	0.0173	0.13
Unemployed	0.4062	0.4023	0.0039	0.11
Sick	0.0941	0.0940	0.0001	0.07
Retired	0.0957	0.0920	0.0037	0.15
Other	0.4945	0.4944	0.0001	0.10
All	0.2919	0.2871	0.0048	1.00

inequality for this category by its Catholic and Protestant components then the “between group” contribution to total inequality (0.0006/0.1204) is less than 0.5 percent. To put matters differently, 99 percent of total inequality among persons in the employed category was due to income differences *within* the separate subgroups of employed Catholics and the employed Protestants and only 0.5 percent was due to mean income differences *between* employed Catholics and Protestants. Thus eliminating income differences *between* Catholic and Protestant persons in the employed category, while preserving inequality *within* this category’s Catholic and Protestant constituencies, would have done little to reduce the overall level of inequality in the category. A similar statement can be made for every other economic category. The largest between-group contribution to overall inequality was for the self-employed category for which it was 4.6 percent; the next largest between group contributions was 3.8 percent for the retired category. Thus, if in every category of economic status, mean incomes were equalised between Catholic and Protestant persons (i.e.  $B_k=0$ ,  $k=1, \dots, K$ ) while preserving inequality within its Catholic and Protestant parts, then overall inequality would be reduced by 0.005 (i.e. by  $\sum v_k B_k$ ). In other words, given its original value of 0.2919, equalising Catholic and Protestant mean incomes across each economic category would reduce overall inequality to 0.2871—i.e. by 1.6 percent.<sup>26</sup>

## 5. EXPLAINING CATHOLIC-PROTESTANT INCOME DIFFERENCES

The sources of Catholic-Protestant income differences have been traced to the methodology of Oaxaca, 1973. Two separate regression equations, relating the incomes of persons to a set of explanatory variables, were estimated for Catholics and Protestants respectively, from data of full-time employees in the 1989 and 1990 NI FES samples. This category contained 685 individual earners of whom 252 were Catholics and 433 were Protestants. Since the sample extended over two years, the income of each earner was expressed in constant (1989) prices. The explanatory variables employed were the following:

<sup>26</sup>These conclusions were not substantially altered when disaggregation was by family type, age and occupational groups.

1. *Gender.* The variable GEN took the value unity if the earner was male, and took the value zero otherwise.

2. *Education.* The measure for educational attainment available in the FES is the age of leaving full-time education, which is reported for every adult respondent. These ages were grouped, in this analysis, into three categories:

- (a) 14–15 years or less, represented by the variable ALS14&15, which would be equivalent to entering employment without any formal educational qualifications.
- (b) 16–17 years, represented by the variable ALS16&17, which would be equivalent to entering employment with school-leaving qualifications.
- (c) 18–20 years, represented by the variable ALS18&20, which would be equivalent of possessing experience of further education, possibly with a formal qualification at that level.
- (d) 21–22 years, represented by the variable ALS21&22, which would be equivalent of possessing experience of higher education, possibly with a formal qualification at that level.

These four variables (ALS14&15, ALS16&17, ALS18&20, ALS21&22) took the value unity for persons belonging to that educational category and took the value zero otherwise. The *default* educational category, which took effect when *all* these variables assumed zero values, was leaving full-time education at an age greater than 22 years. This, in most cases, would be associated with obtaining, at least, a university degree or its equivalent and thus this default category represented the highest level of educational attainment.

The two equations, estimated with interaction terms between gender and educational attainment, were:

$$(4) \quad \text{Income}_c = K_c + \alpha_{0c} * \text{GEN} + \alpha_{1c} * \text{ALS14\&15} + \alpha_{2c} * \text{ALS16\&17} \\ + \alpha_{3c} * \text{ALS18\&20} + \alpha_{4c} * \text{ALS21\&22} + \beta_{1c} * (\text{ALS14\&15} * \text{GEN}) \\ + \beta_{2c} * (\text{ALS16\&17} * \text{GEN}) + \beta_{3c} * (\text{ALS18\&20} * \text{GEN}) \\ + \beta_{4c} * (\text{ALS21\&22} * \text{GEN})$$

and

$$(5) \quad \text{Income}_p = K_p + \alpha_{0p} * \text{GEN} + \alpha_{1p} * \text{ALS14\&15} + \alpha_{2p} * \text{ALS16\&17} \\ + \alpha_{3p} * \text{ALS18\&20} + \alpha_{4p} * \text{ALS21\&22} + \beta_{1p} * (\text{ALS14\&15} * \text{GEN}) \\ + \beta_{2p} * (\text{ALS16\&17} * \text{GEN}) + \beta_{3p} * (\text{ALS18\&20} * \text{GEN}) \\ + \beta_{4p} * (\text{ALS21\&22} * \text{GEN})$$

where the subscripts, c and p, refer to Catholics and Protestants respectively and where equations (4) and (5) were estimated on, respectively, data for the 252 Catholic and the 433 Protestant full-time workers in the combined 1989 and 1990 NI FES samples.

The value of  $K$  represents the mean income of a person in full-time employment who is: (i) female (i.e.  $\text{GEN}=0$ ) and (ii) left full-time education at an age greater than 22 years (i.e.  $\text{ALS14\&15}, \dots, \text{ALS21\&22}=0$ ).

Thus, the coefficients  $\alpha_{0c}$  and  $\alpha_{0p}$ , represent the difference in mean incomes arising from differences in gender for, respectively Catholics and Protestants. The coefficients  $\alpha_{1c}, \dots, \alpha_{4c}$  and  $\alpha_{1p}, \dots, \alpha_{4p}$ , measure the deductions to income, for Catholics and Protestants, that are caused by varying educational attainment from the baseline level of (ii) above. These coefficients are the same across gender, that is to say the mean addition to income in moving from one level of education to another is the same for men and women of a particular religion. The interaction terms in equation (4) and (5) were introduced to allow for the fact that educational attainment might have a differential impact upon income, depending on a person's gender. The coefficients  $\beta_{1c}, \dots, \beta_{4c}$  and  $\beta_{1p}, \dots, \beta_{4p}$ , measure the effects on income of different levels of educational attainment, for Catholics and Protestants respectively, where these effects are allowed to vary according gender.

The regression estimates of equations (4) and (5) are shown in Table 3. The central message that these estimates convey is the importance of educational attainment in determining income levels. Controlling for gender and religion, income is highest when the level of educational attainment (as measured by the age of leaving full-time education) is greatest. Thus, for example, the mean income of a Catholic woman who left full-time education at an age greater than 22 years [(presumably with, at least, a university degree or equivalent) is estimated as £411.61 per week and that of a corresponding Protestant woman as £273.52 (i.e. the estimates of  $K_c$  and  $K_p$  in equation (3)]. As the negative values associated with the estimates of  $\alpha_{1c}, \dots, \alpha_{4c}$  and  $\alpha_{1p}, \dots, \alpha_{4p}$  indicate, mean income falls monotonically as full-time education is left at successively earlier ages. The advantage of being Protestant (as opposed to Catholic) is that the income penalty attached to poor educational qualifications is relatively small—the estimated  $\alpha_{1p}, \dots, \alpha_{4p}$  are much smaller than the estimated  $\alpha_{1c}, \dots, \alpha_{4c}$ . On the other hand, men have an income advantage over women. For Catholics, the excess of male, over female, mean income, for educational levels ALS14&15 through to ALS21&22, was respectively £51.03, £2.44, £71.04 and -£15.03; for Protestants the corresponding differences were £94.32, £49.00, £57.33 and £14.25.

The driving forces behind differences in income between Catholics and Protestants, based upon the sub-sample of those in full-time employment, were differences in educational attainment and gender and also, as Table 3 indicates, differences between the two communities in the rates at which educational attainments and gender were rewarded. However the sample differences between the communities in the educational attainments and gender composition of their workforce in full-time employment was not very great (slightly more Catholics than Protestants left school at aged 22–23, 10 percent and 7 percent respectively and slightly less at age 14–15, 23 percent and 25 percent respectively) and, indeed, in terms of income generation, could be argued to favour Catholics.<sup>27</sup> Yet, the mean,

<sup>27</sup> It is possible that the age of leaving full-time education is not a good indicator of qualifications. For example, The Labour Force Survey, 1991, for NI found that, in terms of formal qualifications, Catholics were less well qualified than Protestants. This finding embraced all economically active persons whereas the results reported in paper are confined to the workforce in full-time employment. There is also the question of the subjects studied while in education, anecdotal evidence suggesting that Protestants favoured science and engineering while Catholics were more disposed towards humanities and the social sciences.

TABLE 3  
LABOUR EARNINGS EQUATIONS FOR CATHOLICS AND PROTESTANTS IN NORTHERN IRELAND

Explanatory Variables	Catholics		Protestants	
	Estimate	Standard Error	Estimate	Standard Error
Constant	411.6120	121.6372	273.5200	20.3751
Male	-158.3720	131.4060	61.9956	42.6317
Education Exit: Aged 14-15	-238.2673	122.1583	-149.2104	23.4916
Education Exit: Aged 16-17	-264.6722	122.3263	-130.7423	22.2529
Education Exit: Aged 18-20	-231.0168	122.8795	-111.1088	23.9506
Education Exit: Aged 21-22	-171.9380	124.9302	-32.3213	28.7529
(Male*Aged 14-15)	209.4020	132.7261	31.5543	45.4690
(Male*Aged 16-17)	160.8125	132.2829	-13.0058	44.9294
(Male*Aged 18-20)	229.4068	134.0563	-4.6693	48.4990
(Male*Aged 21-22)	143.3430	137.9132	-47.7450	51.2630
$R^2$	0.19787		0.14904	
$N$	252		433	

weekly, income of Catholics in full-time employment, at £177.66, was 92 percent of the mean, weekly, Protestant income of £192.25.

The next stage of the study was therefore to estimate what the mean income of the Protestant workforce might have been had its attributes, in terms of education and gender, been rewarded at "Catholic," instead of "Protestant" prices. This was done by computing mean income from equation (5) using the estimated values of  $K_c$ ,  $\alpha_{jc}$  and  $\beta_{jc}$  ( $j=0, \dots, 4$ ) and this yielded an "adjusted" mean, weekly, income for Protestants of £174.63, which was £3.03 *less* than the sample mean Catholic income of £177.66. The mirror image of this exercise was to compute the "adjusted" mean Catholic income from estimates of what Catholic incomes would have been had the attributes of persons in the Catholic workforce been rewarded at Protestant "prices." This was done by computing mean income from equation (4) using the estimated values of  $K_p$ ,  $\alpha_{jp}$  and  $\beta_{jp}$  ( $j=0, \dots, 4$ ) and this yielded an "adjusted" mean, weekly, income for Catholics of £193.20, which was £0.95 *more* than the sample mean Protestant income of £192.25. Thus, on this analysis, the entire explanation for the difference between mean Catholic and Protestant income, computed for those in full-time employment, lay in differences, between the communities, in the rates of return associated with labour market attributes, rather than in the levels of such attributes.

Such a finding invites the conclusion that labour market discrimination lies at the heart of Catholic-Protestant income differences in NI.

A recent report concluded that "discrimination [in NI] nevertheless remains well in evidence, with a spate of tribunal findings suggesting that district councils and health and education among the worst and most persistent offenders . . . [In the private sector] the picture is not just one of stubborn Protestant bosses. Among the biggest employers, some Catholic dominated companies are apparently proving slower in redressing the balance than businesses with predominantly Protestant work-forces."<sup>28</sup> However, the change of discrimination needs to be qualified in two respects. First, there is the question of Catholic exclusion from a set

<sup>28</sup> *Financial Times*, 17 May, 1994, p. 11.

of particularly well-paid jobs which provides stable, full-time employment to about 30,000 persons in NI. These are jobs connected with the provision of police and prison services. The sectarian nature of the conflict in NI means that, notwithstanding the government's publicly stated desire to see more Catholics in these services, Catholics who take such jobs effectively run the risk of social ostracism (and worse).<sup>29</sup>

The second feature of the sectarian divide in NI is that the Catholic and Protestant populations are concentrated in different parts of NI and the security engendered by living among one's own leads, in turn, to labour market immobility. Consequently, NI should not be seen as an area over which workers and job-seekers, regardless of religion, move freely but rather as a constellation of geographically segmented labour markets between which mobility is extremely limited. So, for example, single-digit rates of unemployment in the Ballymena travel-to-work area (an overwhelmingly Protestant part of NI) co-exist with unemployment rates in excess of 30 percent in the Strabane travel-to-work area (which is overwhelmingly Catholic) even though the two towns are not more than a hundred miles distant from each other. Bricklayers in Strabane might receive less than bricklayers in Ballymena and while this disparity would have a disproportionately large effect on Catholics, its cause should properly be traced to labour immobility between the two parts of NI rather than to any overt discrimination between Catholics and Protestants.

## 6. CONCLUSIONS

The purpose of this paper has been to analyse income differences between Catholic and Protestant families in NI with a view to firstly, *measuring* the extent of income inequality between the communities relative to the overall level of income inequality in NI and to secondly, providing an *explanation* for the existence of income differences between Catholics and Protestants. On the first part, the substance of the paper lay in answering the question: by how much would *overall* inequality in NI fall if one eliminated income differences between Catholics and Protestants? The answer, arrived at in this paper, was—not much. That is because lying at the heart of the inequality problem in NI is the fact that there is much greater inequality *within* the Catholic and Protestant communities than there is between them and this statement holds true even for Catholics and Protestants belonging to specific categories. Therefore, if one was serious about “doing something” for inequality in NI then one should start by attempting to narrow income differences between the “rich” and the “poor” (irrespective of religion) rather than attempting to narrow the Catholic-Protestant income divide while leaving income distribution, in every other respect, unchanged.

Econometric analysis of data for full-time employees in employment showed that the lower mean income of Catholics, relative to Protestants, could be entirely explained in terms of different rates of reward attached to a given set of labour market characteristics. However, in addition to raising the cry of discrimination

<sup>29</sup>For example, Catholics constitute less than 5 percent of NI's police force, the Royal Ulster Constabulary.

it was important also to recognise that certain features of the NI economy—relating to Catholic exclusion from the large number of well-paid security related jobs and to the immobility of labour between different parts of NI—could also provide an explanation (perhaps only partial) for Catholic-Protestant income differences.

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