COMPARATIVE MEASURES
OF WELFARE EFFORT.

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Introduction

In a recent article in the *Journal of Policy Analysis and Management*, Gilbert and Moon (1988) challenge the conventional definition of welfare effort which is published by the ILO and widely used by researchers to compare and explain differences in welfare expenditures in OECD countries.\(^1\)

The conventional measure of welfare effort expresses direct government outlays for social programs as a percentage of a country's gross domestic product:

\[
\frac{DE}{GDP} \quad [1]
\]

Direct welfare expenditures for each country are compiled by the OECD and comprise expenditures on: health, education, income transfers and social services.\(^2\)

On the basis of this measure, countries such as Sweden and the Netherlands are said to be 'leaders' in social welfare effort while the US, Australia and Japan are considered as 'laggards.'\(^3\)

Gilbert and Moon challenge the conventional welfare effort measure on three grounds:

(i) they argue that the definition of social welfare effort should be extended to include indirect expenditures through the taxation system and private/voluntary transfers;

(ii) that welfare effort comparisons should be adjusted to reflect the degree of need in each country; and
(iii) that these comparisons should be similarly adjusted to reflect the tax burden in each country.

This paper critically examines Gilbert and Moon's arguments, suggests some alternative measures, and discusses the implications of this approach for the welfare effort literature.

1. Gilbert and Moon's critique of the conventional approach

(i) Extending the definition of social welfare effort

As noted above, the conventional index of welfare effort currently includes only those direct expenditures by government on social programs. Gilbert and Moon argue that this measure should (in theory) be extended to include indirect or taxation expenditures (e.g., deductions for dependents) and private/voluntary financing.4

In considering tax expenditures, Gilbert and Moon cite Titmuss' argument that whether income is provided through direct expenditures or as a savings on taxes the net effect is identical. Gilbert and Moon underline this argument by pointing out that in a comparative context:

Excluding tax benefits from an appraisal of social welfare expenditures would result in underestimating the welfare efforts of countries that rely most heavily on "indirect" provisions of social support through the tax system.5

In relation to private and voluntary financing, Gilbert and Moon argue that:

... an ideal measure of the expenditure component would also include the value of cash and in-kind benefits that are transferred outside
market channels through charitable agencies and informal arrangements with family and friends. However, they immediately concede the difficulty of operationalising this measure. They note that the lack of systematic and comparable data on this element makes it 'unfeasible [sic] to incorporate these costs into the expenditure component of welfare effort.'

Thus, they extend the conventional measure [1] by the addition of tax expenditures to give an alternative measure of social welfare expenditure:

\[
\frac{DF + TE}{GDP} \quad [2]
\]

(ii) Adjusting for need

The major challenge to the conventional welfare effort index which Gilbert and Moon present is that of attempting to take need into account when ranking the welfare effort of various countries. They reject the underlying assumption of the conventional index that 'more is better.' They illustrate their point by the following argument:

Should a country with a relatively small elderly population be regarded as making an inferior welfare effort if they spend a lower proportion of their GDP on social security pensions than a country with substantially more elderly persons? What if the first country spent less as an overall percent of their GDP, but more per capita on the elderly?

In considering how need might be expressed on a comparable basis for their index Gilbert and Moon discuss a number of variables: pre-tax and transfer poverty rates; constructing an index which focuses on those groups which traditionally form the core of social
welfare beneficiaries eg: families with children, the elderly, single parent families and the unemployed. Given operational constraints (data availability and comparability) they settle for a need index which incorporates: the dependency ratio, single parent families as a proportion of all families and the unemployment rate (equally weighted). Thus:

\[ \text{NEED} = \text{dependency ratio} + \text{sole parent families} + \text{unemployment rate} \]

\[
\frac{\text{DF} + \text{TF}}{(\text{GDP})(\text{NEED})} ...[3]
\]

(iii) Adjusting for tax revenues

In addition to adjusting the welfare effort index for need, Gilbert and Moon advance several arguments for further adjusting the index to reflect the tax burden.

The first concerns the amount of tax revenue which is expended on social welfare programs:

... if two countries spend the same percent of their GDP's on social welfare, and one collects proportionately twice as much in taxes as the other, are their welfare effort's equal? Surely the country with proportionately smaller tax revenues would be making a greater commitment to social welfare at the expense of other governmental expenditures. It is making less effort to collect taxes, but more effort to spend what it collects on social welfare.\(^{10}\)

Related to this is the effect of the tax burden on the individual:

Because a significant part of a person's economic well-being may be measured by his or her disposable income after taxes and transfers, rather than by pretax income, the overall welfare level of people is affected not only by social welfare expenditures but also by taxes.\(^{11}\)
Gilbert and Moon reflect the tax burden by expressing tax revenues (TR) as a percentage of GDP, thus:

\[ \frac{TR}{GDP} \] 

This modifies their welfare effort equation to:

\[ \frac{DE+TE}{(GDP)(NEED)(TR/GDP)} \] 

2. Comments on Gilbert and Moon's work

(i) The extended definition of welfare expenditure

Table 1 summarises the main results of Gilbert and Moon's analysis. It is clear from comparing Columns 1 and 2 that the inclusion of tax expenditures for this limited sample of countries significantly changes the rankings of welfare effort for countries such as France and the UK. In aggregate, however, the changes in the rankings between columns 1 and 2 are slight: the rank correlation coefficient is 0.93. 12

Given the widely accepted validity of Titmuss' argument, the extension of welfare expenditure to include tax expenditures suggested by Gilbert and Moon should be considered as non-controversial and incorporation of these into future estimates of welfare effort should be limited only by the availability of data.

Although Gilbert and Moon do not use private/voluntary financing estimates for lack of consistent data, it is not clear theoretically that these transfers have as equally a valid standing as tax expenditures in an 'ideal' index such as they propose. While their approach is to encompass all non-market transfers, it could be
argued that the conventional welfare effort index is attempting to capture *only* government action to improve collective welfare. As such, even if these private transfers could be operationalised it is doubtful whether these are an appropriate addition to the extended welfare effort measure.

Table 1: Rank on welfare effort using Gilbert and Moon indices.

<table>
<thead>
<tr>
<th>Country (year)</th>
<th>Conventional index (score)</th>
<th>DE+TE/CfP</th>
<th>NEED Index (S2-H1)</th>
<th>Gilbert/Moon NET index (0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netherlands (1980)</td>
<td>1 (35.5)</td>
<td>2 (41.7)</td>
<td>9 (0.847)</td>
<td>1 (40.0)</td>
</tr>
<tr>
<td>Sweden (1980)</td>
<td>2 (32.5)</td>
<td>1 (45.7)</td>
<td>1 (1.154)</td>
<td>6 (29.8)</td>
</tr>
<tr>
<td>France (1980)</td>
<td>3 (28.3)</td>
<td>5 (29.0)</td>
<td>6 (1.036)</td>
<td>9 (24.5)</td>
</tr>
<tr>
<td>Ireland (1981)</td>
<td>4 (27.8)</td>
<td>3 (36.5)</td>
<td>2 (1.112)</td>
<td>3 (33.8)</td>
</tr>
<tr>
<td>Austria (1981)</td>
<td>5 (27.1)</td>
<td>6 (27.2)</td>
<td>4 (1.068)</td>
<td>10 (23.0)</td>
</tr>
<tr>
<td>UK (1981)</td>
<td>6 (23.5)</td>
<td>4 (35.9)</td>
<td>3 (1.075)</td>
<td>2 (34.1)</td>
</tr>
<tr>
<td>Canada (1980)</td>
<td>7 (21.0)</td>
<td>7 (26.7)</td>
<td>8 (0.922)</td>
<td>4 (33.7)</td>
</tr>
<tr>
<td>US (1981)</td>
<td>8 (20.7)</td>
<td>5 (24.8)</td>
<td>5 (1.056)</td>
<td>7 (28.4)</td>
</tr>
<tr>
<td>Australia (1981)</td>
<td>9 (18.9)</td>
<td>8 (20.6)</td>
<td>7 (0.973)</td>
<td>8 (25.4)</td>
</tr>
<tr>
<td>Japan (1981)</td>
<td>10 (17.3)</td>
<td>10 (17.3*)</td>
<td>10 (0.756)</td>
<td>5 (31.8)</td>
</tr>
</tbody>
</table>

Source: Gilbert and Moon (1988:327-337)

(ii) Adjusting for need

There is strong intuitive appeal for Gilbert and Moon’s arguments in this respect and as the results of their analysis show there are considerable empirical differences in defining which countries are
welfare leaders or laggards when account is taken of differing levels of need in each country.

As Table 1 shows, Gilbert and Moon's adjustments for need have a considerable impact on welfare effort ranking, pushing leaders such as France well down the scale and promoting laggards such as the US and Japan up the ranks. The rank correlation coefficients between Column 4 and Columns 1 and 2 are 0.21 and 0.41 respectively. In other words, the Gilbert and Moon adjustment for need produces a highly significant re-ranking such that the adjusted rankings bear almost no relationship with the original rankings.

The critical issue for adjusting the welfare effort measure in this way is the choice of variables to reflect 'need' and their relative weighting in a composite index. As other studies of cross national comparisons have shown (Buhmann et al 1988) comparative analyses are quite sensitive to choice of measures of need, adjustments for equivalences, etc.

Gilbert and Moon's preferred variable is the rate of pre-tax and transfer poverty for each country, comparable data for which was not then available. In the following section, this paper uses a measure of pre-tax and transfer poverty developed for comparative use in the Luxembourg Income Study (LIS) and the results for LIS countries are compared with the Gilbert and Moon index.

In the absence of a poverty measure, the index which Gilbert and Moon develop has strong appeal and in some respects may be a better measure than pre-tax and transfer poverty rates. Theoretically poverty rates may be an appropriate measure when
looking solely at income transfers. Social welfare effort, on the other hand, is a concept which is intended to have wider application. For example, the demands on health and education programs come not just from the 'poor' but also reflect the demographic composition of the population. Countries with relatively larger numbers of children or the elderly will have a greater need for these types of expenditures. Thus, while the Gilbert and Moon index may not seem as clear cut a measure of need as poverty estimates it is a measure which is appropriate to the broader picture of social welfare expenditure that the welfare effort index is attempting to capture.

There are two ways in which need can be taken into account when looking at welfare effort. Gilbert and Moon opt to divide the expenditure index by the need index \([2/3]\). An alternative way of looking at the problem, and one which I think better expresses the argument which Gilbert and Moon are making, is one which plots welfare expenditure rank against need rank.

In diagram 1 the diagonal represents expenditures which are commensurate with need, those on or above the diagonal could be considered as welfare effort leaders while those below could be considered as laggards.

Another way of expressing welfare effort to reflect parity between welfare expenditures and degree of need would be to subtract welfare expenditure ranks from need ranks and then rank countries by this difference.
Using the ranks shown in Table 2 (Column 3-Column 2), welfare expenditure commensurate with need would be expressed in the following ranking:

1. Netherlands (+7)
2. France (+1)
3. Sweden, US, Japan (0)
4. UK, Ireland (-1)
5. Austria, Canada, Australia (-2)

(iii) Adjusting for taxes

In principle, Gilbert and Moon's arguments concerning the need to control for tax revenue raisings seems persuasive especially in terms of the examples quoted earlier (p4). However, there are several problems with their approach here. The first is a technical error in the construction of their index.
Table 2  Ranks on alternative definitions of welfare expenditure, need and welfare effort

<table>
<thead>
<tr>
<th></th>
<th>(1) DE/GDP</th>
<th>(2) DE+TE/NEED</th>
<th>(3) DE+TE/NEED</th>
<th>(4) DE+TE/NEED(GDP)</th>
<th>(5) DE+TE/NEED(TR)</th>
<th>(6) DE+TE/NEED(TR)(NEED)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netherlands (1980)</td>
<td>1</td>
<td>2</td>
<td>9</td>
<td>1</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Sweden (1980)</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>France (1980)</td>
<td>3</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Ireland (1981)</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Austria (1981)</td>
<td>5</td>
<td>6</td>
<td>4</td>
<td>7</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>UK (1981)</td>
<td>6</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Canada (1980)</td>
<td>7</td>
<td>7</td>
<td>8</td>
<td>5</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>US (1981)</td>
<td>8</td>
<td>8</td>
<td>5</td>
<td>8</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Australia (1981)</td>
<td>9</td>
<td>9</td>
<td>7</td>
<td>10</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Japan (1981)</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>9</td>
<td>10</td>
<td>5</td>
</tr>
</tbody>
</table>

Source: Gilbert and Moon (1988: 237)  
OECD Revenue Statistics of OECD Member Countries 1965-84 (1985)  

Recalling equation [5] it can be seen that the effect of introducing tax revenues (TR) as a proportion of GDP is to cancel out GDP from the relative reckoning:

\[
\frac{\text{DE+TE}}{\text{TR}} = \frac{\text{DE+TE}}{\text{NEED}}
\]

In effect the welfare effort measure which Gilbert and Moon have constructed is welfare expenditure as a percentage of tax revenue, adjusted for need. (This is the measure shown in Column 5 of Table 1.) It appears that Gilbert and Moon believe their measure still controls for GDP but as equation [6] shows this is not the case:

\[
\frac{\text{DE+TE}}{(\text{TR})(\text{NEED})} ...[6]
\]

Apart from this technical error, there are theoretical objections to including tax revenue in the welfare effort measure. Principally, it is not at all clear that differences in funding arrangements for non-welfare activities - eg whether road and transport developments are financed privately or through taxation - should affect the index of social welfare effort. It makes sense to adjust
welfare expenditures for the society's capacity to pay, so the natural deflator is the level of GDP. Implicitly Gilbert and Moon, assuming that total tax revenues are the relevant deflator, are attempting to measure government's 'ability to pay'; but they are ignoring the multitude of environmental, institutional and political factors which influence the decision to finance non-welfare activities through taxation.

A second objection follows from Gilbert and Moon's argument concerning the effect of the tax burden on individuals' disposable incomes. While their observation is correct - that taxation can influence welfare levels and rankings - they are implicitly arguing for the degree of progressivity in the tax system to be taken into account. In which case, it is more appropriate for such an adjustment to occur in the numerator rather than the denominator of the equation since progressive taxation is part of the welfare effort rather than part of society's resources or needs against which such effort is to be measured. We might, for instance, wish to use a measure of tax progressivity, P, to construct an alternative welfare effort index:

\[
\frac{(DF+TE) + (TR\times P)}{(GDP)(NEED)} \quad \ldots [7]
\]

Table 3 uses a measure of tax progressivity based on actual incidence of taxes for families in the LIS data set. Countries with highly progressive tax systems such as the US and Canada are promoted one rank using this measure.
Table 3 Welfare effort rank adjusting for progressivity of the tax system.

<table>
<thead>
<tr>
<th>Country</th>
<th>((\text{DE}+\text{TE}) \times (\text{TR}^*\text{P})/(\text{GDP} \times \text{NEED}))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia (1981)</td>
<td>6</td>
</tr>
<tr>
<td>Canada (1981)</td>
<td>5</td>
</tr>
<tr>
<td>Germany (1979)</td>
<td>3</td>
</tr>
<tr>
<td>Netherlands (1981)</td>
<td>2</td>
</tr>
<tr>
<td>Sweden (1981)</td>
<td>1</td>
</tr>
<tr>
<td>UK (1979)</td>
<td>4</td>
</tr>
<tr>
<td>US (1979)</td>
<td>7</td>
</tr>
</tbody>
</table>

In summary, both technically and theoretically there appears little justification for adjusting for tax revenue in the way suggested by Gilbert and Moon. Although their argument in respect of the impact of the tax burden has some validity, alternative ways of incorporating this adjustment into welfare effort measures needs to be considered. The approach used in Table 3 may be one way of doing so.

(iv) Reconstructing the Gilbert and Moon index

After considering each of the modifications suggested by Gilbert and Moon, I believe the most defensible measure is:

\[
\frac{\text{DE}+\text{TE}}{(\text{GDP} \times \text{NEED})} ...[8]
\]

Table 2 follows through the changes in rankings attributable to each of the steps suggested by Gilbert and Moon. Column 1 shows
the ranking based on the conventional measure. The addition of tax expenditures (Column 2) significantly alters the rankings for the top six countries. The need index rankings are shown in Column 3, with highest = 1 and lowest = 10. Adjusting Column 2 by Column 3 (Column 4) gives the preferred measure described by equation [8]. Columns 5 and 6 are the Gilbert and Moon indices which measure the ratios of welfare expenditure to tax revenue (5) and adjusted for need (6).

Whereas the Gilbert and Moon method of adjustment for need alters the rankings substantially, with Sweden moving from first to sixth position, the preferred adjustment method implies more minor re-rankings of one or two places. The rank correlation coefficient between columns 2 and 4 is high, 0.93.

In summary, the marked changes in welfare effort rank which Gilbert and Moon present are invalid on closer inspection. The technical error described in Section 2(iii) substitutes tax revenue raisings for GDP as the deflator so that countries with low tax revenues relative to GDP appear to make a greater welfare effort than is the case. Conversely, countries such as Sweden which rely heavily on the tax system as a means of redistribution, fall considerably in welfare effort rank on this measure.

3. Alternative measures of welfare effort.

(i) Welfare effort using alternative need indices

It was noted earlier that welfare effort rankings are likely to be highly sensitive to the need index employed. This section of the
paper investigates several alternatives to the need index employed by Gilbert and Moon:

**N1** = pre tax and transfer poverty rates for families

**N2** = degree of income inequality as expressed by the Gini coefficient

**N3** = Gilbert and Moon's need index (SNI-1)

Table 4 shows the need indices described above. The N1 index has been calculated from LIS data using a relative poverty line of 50% of median disposable income, adjusted for family size using the OECD equivalence scale. This index is presented cautiously since it does not include poverty rates for single non-elderly persons and families without children.

The N2 index has also been calculated using the LIS data set and is the Gini coefficient for pre tax and transfer income (adjusted for family size.)

The N3 measure is based on the Gilbert and Moon SNI-1 need index, calculated for the year which corresponds with the LIS data.

<table>
<thead>
<tr>
<th>Country</th>
<th>N1: % families</th>
<th>Need rank</th>
<th>N2: Gini</th>
<th>Need rank</th>
<th>N3: Index</th>
<th>Need rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia (1981)</td>
<td>28.0</td>
<td>5</td>
<td>0.464</td>
<td>2</td>
<td>1.05</td>
<td>2</td>
</tr>
<tr>
<td>Canada (1981)</td>
<td>24.8</td>
<td>7</td>
<td>0.444</td>
<td>6</td>
<td>1.01</td>
<td>4</td>
</tr>
<tr>
<td>Germany (1979)</td>
<td>30.9</td>
<td>3</td>
<td>0.454</td>
<td>5</td>
<td>0.91</td>
<td>6</td>
</tr>
<tr>
<td>Netherlands (1981)</td>
<td>31.5</td>
<td>2</td>
<td>0.500</td>
<td>1</td>
<td>0.97</td>
<td>5</td>
</tr>
<tr>
<td>Sweden (1981)</td>
<td>36.5</td>
<td>1</td>
<td>0.422</td>
<td>7</td>
<td>0.89</td>
<td>7</td>
</tr>
<tr>
<td>UK (1979)</td>
<td>29.9</td>
<td>4</td>
<td>0.456</td>
<td>4</td>
<td>1.04</td>
<td>3</td>
</tr>
<tr>
<td>US (1979)</td>
<td>26.9</td>
<td>6</td>
<td>0.460</td>
<td>3</td>
<td>1.13</td>
<td>1</td>
</tr>
</tbody>
</table>

The rationale behind the choice of each of these measures is that they are various ways of representing 'need' using comparable cross-national data. Thus, N1 describes those defined as poor on
an international standard poverty line; N2 gives a summary measure of societal income inequality which social expenditures (particularly income transfers) might seek to address; N3 is an indicator of demographically generated demands, as discussed in Section 1(ii).

Each of these measures are used to calculate alternative versions of the welfare effort index shown in Table 5. Two trends are discernible: Sweden and the Netherlands are leaders on all versions of the index, while Australia and the US are laggards. The remaining countries have variable rankings.

The correlation between each of these measures is high. Columns 1 and 4 have identical rankings; the lowest rank correlation coefficient is between columns 2 and 3, but it is still fairly high at 0.79.

Table 5: Welfare effort Index using alternative indices of need.

<table>
<thead>
<tr>
<th>Country</th>
<th>DE+TE/GDP</th>
<th>DE+TE/GDP</th>
<th>DE+TE/GDP</th>
<th>DE+TE/GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia (1981)</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>(0.65)</td>
<td>(0.70)</td>
<td>(0.65)</td>
<td>(0.62)</td>
</tr>
<tr>
<td>Canada (1981)</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>(0.85)</td>
<td>(1.02)</td>
<td>(0.88)</td>
<td>(0.84)</td>
</tr>
<tr>
<td>Germany (1979)</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>(0.97)</td>
<td>(0.94)</td>
<td>(0.98)</td>
<td>(1.07)</td>
</tr>
<tr>
<td>Netherlands (1981)</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>(1.35)</td>
<td>(1.29)</td>
<td>(1.24)</td>
<td>(1.39)</td>
</tr>
<tr>
<td>Sweden (1981)</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(1.50)</td>
<td>(1.22)</td>
<td>(1.62)</td>
<td>(1.69)</td>
</tr>
<tr>
<td>U K (1979)</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>(0.98)</td>
<td>(0.96)</td>
<td>(0.97)</td>
<td>(0.93)</td>
</tr>
<tr>
<td>U S (1979)</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>(0.70)</td>
<td>(0.70)</td>
<td>(0.70)</td>
<td>(0.52)</td>
</tr>
</tbody>
</table>

Using the method described above in Section 2(ii) welfare expenditure rank has been plotted against need rank to produce an alternative view of welfare leaders and laggards. Diagram 2 shows
that for the majority of the measures, Sweden, West Germany and the Netherlands are welfare effort leaders; Canada and the UK have mixed rankings; while Australia and the US appear laggards when comparing welfare expenditure and need.

![Diagram comparing welfare expenditure with alternative need ranks.](image)

If the differences between rankings on need and welfare expenditure are examined, the average of measures N1-N3 produces the following ranking:

1. Sweden (+5.5)
2. Netherlands (+4)
3. West Germany (+1)
4. Canada (-0.5)
5. UK (-2)
6. US (-3.5)
7. Australia (-4.5)

**(ii) Income transfer effort**

It was noted earlier that it may be more appropriate to use need indices such as pre tax and transfer poverty rates to examine only the income transfer efforts of various countries.
Table 6 shows total income transfers (defined here as total social security transfers plus tax expenditures) as a percentage of GDP. Thus:

\[
\frac{IT+TE}{GDP} \quad \text{[9]}
\]

This measure has been adjusted for need measures N1-N3:

\[
\frac{IT+TE}{(GDP)(NEED)} \quad \text{[10]}
\]

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Canada</td>
<td>5 (0.51)</td>
<td>5 (0.54)</td>
<td>5 (0.50)</td>
<td>5 (0.48)</td>
</tr>
<tr>
<td>Germany</td>
<td>4 (0.77)</td>
<td>4 (0.93)</td>
<td>4 (0.80)</td>
<td>4 (0.77)</td>
</tr>
<tr>
<td>Netherlands</td>
<td>2 (0.98)</td>
<td>1 (0.95)</td>
<td>2 (0.99)</td>
<td>2 (1.08)</td>
</tr>
<tr>
<td>Sweden</td>
<td>4 (1.46)</td>
<td>1 (1.38)</td>
<td>4 (1.33)</td>
<td>4 (1.50)</td>
</tr>
<tr>
<td>U K</td>
<td>3 (1.61)</td>
<td>3 (1.31)</td>
<td>3 (1.74)</td>
<td>3 (1.81)</td>
</tr>
<tr>
<td>U S</td>
<td>6 (1.03)</td>
<td>6 (1.03)</td>
<td>6 (1.04)</td>
<td>6 (0.98)</td>
</tr>
</tbody>
</table>

As Table 6 shows, the separate analysis of income transfers results in little variance in rankings from those of aggregate welfare expenditures. This suggests that leaders/laggards in overall welfare effort tend to be leaders/laggards in income transfer effort.

We find again that the correlations between these rankings are high - the lowest rank correlation coefficient is 0.86 between Columns 1 and 2, the rankings in 1 and 3 are identical and the correlation coefficient for 1 and 4 is 0.96. In other words,
adjustment for N2 makes no difference to the welfare effort rankings, adjustment for N3 makes only a very slight difference, while adjustment for N1 produces significant but still relatively minor re-rankings.

4. Conclusion: implications for welfare effort studies

The welfare effort literature has largely accepted the index first developed by Wilensky in 1975 which has been adopted (with minor modifications) by the ILO. Studies using this welfare effort index largely attempt to identify the determinants of the size of welfare effort through multiple regression analysis using such explanatory variables as the electoral cycle, parliamentary composition, degree of unionisation, economic growth (see for example, Castles, 1982; Swank and Hicks, 1985). Other writers have used the index to examine hypotheses concerning the convergence or divergence of welfare effort in OECD countries (O'Connor, 1988).

Gilbert and Moon's work re-opens the issue of whether the ILO measure is sufficiently inclusive of all the elements which should be called into account in measuring welfare effort. Their work presents the case that as a minimum the conventional index should be extended to include tax expenditures and additionally, that there is a strong case to be made for adjusting for need. A third modification which I suggest earlier is to incorporate some measure of the progressivity of the tax system into the welfare effort equation, although the case here is not as strong as that suggested for tax expenditures and need. I have argued strongly against Gilbert and Moon's method of adjustment for tax revenues,
since it seems theoretically dubious and their actual method appears to negate their stated intentions.

Although the empirical examples discussed in this paper used only a limited sample of countries, Section 2 (10) and Section 3 (7), the alternative measures suggested resulted in some significant re-ranking. The implications of these findings may affect which countries should be regarded as leaders and laggards; reduce the apparent divergence in effort (as noted by O'Connor, 1988:275) through the use of more comprehensive definitions of welfare expenditure; and may affect the regression results of various explanatory variables.
FOOTNOTES:


3 The terms 'leaders' and 'laggards' were first coined by Harold Wilensky in The Welfare State and Equality (1975) and continues to be used by writers in comparative studies of welfare states.


5 Ibid, 329.

6 Ibid.

7 Ibid.

8 Ibid, 327.

9 Ibid, 331.

10 Ibid, 327.

11 Ibid, 330.

12 Rank correlations for Tables 1-6 are reported in Appendix A.

13 Kakwani's measure of progressivity, calculated from LIS data for taxes on gross income.

14 The OECD equivalence scale weights the first adult as 1; second and subsequent adults as 0.7; and each child as 0.5.

15 Calculated using LIS data, using pre tax and transfer income. Unit of analysis is the family. Income equivalence scales based on OECD equivalences.
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