<table>
<thead>
<tr>
<th><strong>Title</strong></th>
<th>Government services in the OECD 1970-87</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Authors(s)</strong></td>
<td>O'Riordan, William K.</td>
</tr>
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<td><strong>Notes</strong></td>
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</table>
O'RIORDAN WILLIAM K.

GOVERNMENT SERVICES IN THE OECD 1970-87

WORKING PAPER NO. WP90/5

CENTRE FOR ECONOMIC RESEARCH

UNIVERSITY COLLEGE DUBLIN

DEPARTMENT OF POLITICAL ECONOMY
1. INTRODUCTION

This paper is concerned with changes in the level of expenditure on
government services and with identifying the components of that
change. Specifically, it will be shown that, in the vast majority of
OECD countries between 1970 and 1987, the fraction of GDP formed by
government services reached a peak and began to decline. An attempt
is made to identify the role played in this change by relative price,
productivity and numbers employed in the government sector.

The term "government services" is more or less self-explanatory. The
definition given in OECD (1986) P541 is:

"[Services produced by] all departments, establishments and
other bodies of the central, state and local governments which
engage in such activities as administration, defence, health,
educational and social services and the promotion of economic
growth, whether accounted for or financed by ordinary or
extraordinary budgets or extra-budgetary funds. Included are
social security schemes in respect of large sections of the
community, imposed, controlled or financed by government, non-
profit institutions entirely or mainly financed and controlled by
general government or mainly serving general government and
embassies, consulates and military establishments of a country
located abroad".

For all practical purposes, this is equivalent to non-marketed
services. The term 'producers of government services' is applied to
those who work in the sector. The OECD countries and the period 1970
have been chosen because of the large body of reasonably consistent data which has accumulated in the OECD National Accounts. This makes it possible to make meaningful international comparisons. In particular, more information about government services is available in these accounts than in any other source.

Government services are worthy of attention for at least four reasons. Firstly, they occupy a unique place in the economy because they represent that part of output which is produced and supplied without the profit motive. Secondly, they provide the framework within which other forms of production can operate efficiently. Industry and private sector services would be grossly distorted by the failure of the legal, political and even the social welfare systems. Thirdly, they represent the most important civilising element in society. This is admitted by even their harshest critics; to quote Bacon and Ellis (1978), page 31: "It must be emphasised that almost all the civilised activities of a modern society are wholly or largely non-marketed". Finally, in most OECD countries, government services have, for some time, been the sector of the economy in which the most substantial increases in employment have taken place. [O'Riordan (1987) page 52]. This fact is accepted as inevitable and and even desirable by some [such as OECD (1982) page 15 and Conniffe and Kennedy (1984) page 262], and seen as entirely hostile to economic well-being by others [such as Scott (1978) page 113 and Bacon and Ellis (1978) page 114].

In spite of this, government services per se have received relatively little attention. Most recent literature in the area - for example Afxentiou (1982), Conte and Darrat (1988), Lybeck and Henrekson (1988)
with many others - have studied the effect of total government expenditure (which consists mainly of transfer payments as well as government services) on various economic variables. Of those who have used a definition of the public sector which is more or less equivalent to the OECD definition of government services, Landau (1983) and Ram (1986) have studied its relation to economic growth. Ram (1987) has used it to test Wagner's Law and Bacon and Ellis (1978) and Gemmell (1983) have investigated the relationship between government services and the marketed sector of the economy. Adachi (1984) developed a theoretical model, based on fairly strong assumptions, which inter alia, examined the effect of increasing government services on the rest of the economy.

The change in the ratio of expenditure on government services to GDP has received little attention. It has been adverted to in passing by a few authors - such as Henrekson (1988) and Renaud and Van Winden (1988) - but it seems to have been little discussed or analysed. Perhaps that is because it is only obvious in the most recent data.

The following abbreviations will be used throughout the paper:

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GS</td>
<td>Government Services</td>
</tr>
<tr>
<td>EGS</td>
<td>Expenditure on Government Services</td>
</tr>
<tr>
<td>GX</td>
<td>Total Government Current Expenditure</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>$w_j$</td>
<td>$\frac{EGS}{GDP}$ (ie the budget share of GS in GDP)</td>
</tr>
</tbody>
</table>
2. BASIC FACTS

It seems reasonable to put EGS into perspective by comparing it with the size of GDP. Table 1 presents the basic facts for those OECD countries (23 in all) for which data are available, mostly for the period 1970-1987. EGS and GDP are measured at current prices, and the table shows the ratio of EGS to GDP.

In passing, one may remark that the table shows that EGS is not, in general, a dominant part of GDP in the OECD countries. The mean (unweighted) value of the ratio was 10.5% in 1970 and 12.7% in 1987. The highest value (22.2%) is that for Sweden in 1981. Even this, while it is substantial, can scarcely be regarded as dominating the economy. If OECD governments dominate their economies it is not because of the large output of GS but rather because of the volume of transfer payments.
<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>1970</th>
<th>PEAK VALUE (YEAR)</th>
<th>1987</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>0.140</td>
<td>0.153 (1982)</td>
<td>0.140</td>
</tr>
<tr>
<td>U S</td>
<td>0.120</td>
<td>0.135 (1975)</td>
<td>0.120</td>
</tr>
<tr>
<td>Japan</td>
<td>0.063</td>
<td>0.089 (1975)</td>
<td>0.083</td>
</tr>
<tr>
<td>Australia</td>
<td>0.042</td>
<td>0.049 (1974)</td>
<td>0.040</td>
</tr>
<tr>
<td>N Z</td>
<td>0.101</td>
<td>0.135 (1980)</td>
<td>0.125</td>
</tr>
<tr>
<td>Austria</td>
<td>0.111</td>
<td>N P</td>
<td>0.139</td>
</tr>
<tr>
<td>Belgium</td>
<td>0.105</td>
<td>0.153 (1981)</td>
<td>0.133</td>
</tr>
<tr>
<td>Denmark</td>
<td>0.136</td>
<td>0.210 (1982)</td>
<td>0.191</td>
</tr>
<tr>
<td>Finland</td>
<td>0.109</td>
<td>N P</td>
<td>0.152</td>
</tr>
<tr>
<td>France</td>
<td>0.130</td>
<td>0.172 (1984)</td>
<td>0.165</td>
</tr>
<tr>
<td>Germany</td>
<td>0.093</td>
<td>0.119 (1981)</td>
<td>0.112</td>
</tr>
<tr>
<td>Greece</td>
<td>0.076</td>
<td>0.103 (1985)</td>
<td>0.098 (3)</td>
</tr>
<tr>
<td>Iceland</td>
<td>0.099 (1)</td>
<td>0.111 (1982)</td>
<td>0.104 (3)</td>
</tr>
<tr>
<td>Ireland</td>
<td>0.125</td>
<td>0.167 (1981)</td>
<td>0.161 (3)</td>
</tr>
<tr>
<td>Italy</td>
<td>0.095</td>
<td>0.121 (1981)</td>
<td>0.121</td>
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<tr>
<td>Luxembourg</td>
<td>0.085</td>
<td>0.135 (1981)</td>
<td>0.126</td>
</tr>
<tr>
<td>N L</td>
<td>0.126 (2)</td>
<td>0.141 (1979)</td>
<td>0.119</td>
</tr>
<tr>
<td>Norway</td>
<td>0.118</td>
<td>0.150 (1978)</td>
<td>0.146 (3)</td>
</tr>
<tr>
<td>Portugal</td>
<td>0.111 (2)</td>
<td>0.118 (1981)</td>
<td>0.113 (3)</td>
</tr>
<tr>
<td>Spain</td>
<td>0.076</td>
<td>0.113 (1985)</td>
<td>0.110</td>
</tr>
<tr>
<td>Sweden</td>
<td>0.155</td>
<td>0.222 (1981)</td>
<td>0.200</td>
</tr>
<tr>
<td>Turkey</td>
<td>0.097</td>
<td>0.109 (1979)</td>
<td>0.055</td>
</tr>
<tr>
<td>U K</td>
<td>0.104</td>
<td>0.140 (1981)</td>
<td>0.132</td>
</tr>
</tbody>
</table>

NP = No Peak

(1) 1973; (2) 1977; (3) 1986.
However, for the present purposes, the significant fact that emerges from Table 1 is that at some time in the period 1970-87 the ratio of EGS to GDP began to decline in 20 out of the 23 countries listed. In the majority of cases this change happened in the years 1978-85. In one country (Italy), the ratio reached a maximum in 1981 and remained more or less stable at that level. There are only two countries (Austria and Finland) in which the ratio continued to grow over the period. The unweighted means of the ratio for the 21 countries (including Italy) which reached a maximum are:

1970: 10.4%
Peak: 13.5%
1987: 12.2%

The growth from 1970 to the peak was obviously greater than the decline, but it must be borne in mind that in most cases the period of the decline was shorter than that of the increase. This matter is explored in more detail below.

In passing, it is perhaps worth mentioning that EGS also forms a relatively small part of total government current spending (GX). The mean value for EGS/GX in the 22 OECD countries for which data are available are:

1970: 35.3%
1987: 29.7%

Thus EGS comprised, in general, only about one third of total government spending, and the ratio tended to fall during the period. In Australia, Finland, Greece, The Netherlands, Portugal and Spain it fell continuously. In the other countries it reached a peak by 1975 or earlier.
From now on, the symbol \( W_o \) will be used for EGS / GDP (the budget share of GS in GDP).

The obvious and direct explanation of the fall in \( W_o \) which is shown in Table 1 is that it was the result of a widespread effort by the OECD governments to reduce the "size of government". This movement began in the late 1970's when it became widely believed that economic growth was being hindered by over-intrusive governments. As a result of this, all forms of government spending, including GS, were cut. This led to a decline in the size of GS relative to the rest of the economy.

However, it would appear that matters are not quite so simple. There are two reasons for this. Firstly, the restrictions in most countries fell far more heavily and at an earlier date on GS than on other forms of government expenditure; secondly, relatively few countries experienced a contraction in the proportion of the total at work which was employed in the production of GS.
<table>
<thead>
<tr>
<th>Country</th>
<th>EGS/GDP (= Wg)</th>
<th>GX/GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>- 1.8 (1982)</td>
<td>- 0.9 (1985)</td>
</tr>
<tr>
<td>J S</td>
<td>- 0.6 (1975)</td>
<td>- 0.3 (1983)</td>
</tr>
<tr>
<td>Japan</td>
<td>- 0.4 (1975)</td>
<td>- 0.4 (1983)</td>
</tr>
<tr>
<td>N Z</td>
<td>- 1.1 (1980)</td>
<td>*</td>
</tr>
<tr>
<td>Austria</td>
<td>N P</td>
<td>N P</td>
</tr>
<tr>
<td>Belgium</td>
<td>- 2.4 (1981)</td>
<td>- 0.9 (1983)</td>
</tr>
<tr>
<td>Denmark</td>
<td>- 1.9 (1982)</td>
<td>- 1.0 (1983)</td>
</tr>
<tr>
<td>Finland</td>
<td>N P</td>
<td>- 0.5 (1985)</td>
</tr>
<tr>
<td>France</td>
<td>- 1.4 (1984)</td>
<td>- 0.5 (1985)</td>
</tr>
<tr>
<td>Germany</td>
<td>- 1.0 (1981)</td>
<td>- 0.8 (1982)</td>
</tr>
<tr>
<td>Greece</td>
<td>- 2.5 (1985)</td>
<td>- 1.8 (1985)</td>
</tr>
<tr>
<td>Iceland</td>
<td>- 1.6 (1982)</td>
<td>- 0.8 (1983)</td>
</tr>
<tr>
<td>Ireland</td>
<td>- 0.6 (1981)</td>
<td>N P</td>
</tr>
<tr>
<td>Italy</td>
<td>0.0 (1981)</td>
<td>- 0.3 (1986)</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>- 0.9 (1981)</td>
<td>- 1.2 (1981)</td>
</tr>
<tr>
<td>N L</td>
<td>- 2.2 (1979)</td>
<td>- 1.0 (1983)</td>
</tr>
<tr>
<td>Norway</td>
<td>- 0.3 (1978)</td>
<td>N P</td>
</tr>
<tr>
<td>Portugal</td>
<td>0.9 (1981)</td>
<td>N P</td>
</tr>
<tr>
<td>Spain</td>
<td>- 0.9 (1985)</td>
<td>- 0.6 (1985)</td>
</tr>
<tr>
<td>Turkey</td>
<td>- 8.2 (1979)</td>
<td>- 4.9 (1979)</td>
</tr>
<tr>
<td>U K</td>
<td>- 4.0 (1981)</td>
<td>- 1.2 (1984)</td>
</tr>
</tbody>
</table>

NP = No Peak

* = No Data
Table 2 shows the year in which Wg and GX / GDP reached their peaks in the OECD countries, and also the rate at which each of them declined after the peak was reached. It will be seen that of the 21 countries for which data are available, there are some 16 in which the downturn in Wg happened, before that of GX/GDP. There are also 16 countries (but not the same set) in which the rate of decline of Wg is greater than that of GX/GDP. There are at most 5 countries (Germany, Italy, Luxembourg, Spain, and possibly Greece) in which the reduction in Wg could be said to be of the same order of magnitude in regard to duration and size as that in GX / GDP. Bearing in mind that EGS represents, in general, about one third of GX, it will be seen that, in most countries, reductions in EGS represent well over half the total reduction in GS. Thus the reduction in Wg was not a typical result of the effort to reduce the scope of government intervention in the economy.

Secondly, if we measure the 'relative size' of GS by the fraction of the total at work employed in that sector, then the contraction of Wg was not, in general, accompanied by a reduction in relative size. Table 3 shows the average annual percentage change in producers of GS expressed as a fraction of the total at work. In the case of Canada, Belgium, Denmark, France, Ireland, Italy, Luxembourg and Spain, general government employment has been used instead of producers of government services. The difference between the two series seems to be small in most countries, except perhaps Ireland. In any case, this paper is concerned with rates of change and not absolute levels, and there is every reason to think that the rates of change of the two variables are similar.
Table 3 shows that only 3 countries (Canada, the U.S. and Denmark) achieved a substantial rate of decline in the fraction of the total at work producing GS in the period after the decline in $W_d$. In most countries, the fraction continued to rise, though at a reduced rate. Thus, the decline in $W_d$ was not, in general, brought about by a reduction in the relative size of the labour force in that sector. The process thus appears to have been a relatively complex one, which requires more detailed investigation.
<table>
<thead>
<tr>
<th>Country</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>+ 0.2</td>
<td>- 1.8</td>
</tr>
<tr>
<td>U S</td>
<td>- 0.2</td>
<td>- 1.0</td>
</tr>
<tr>
<td>Japan</td>
<td>+ 1.8</td>
<td>- 0.1</td>
</tr>
<tr>
<td>Australia</td>
<td>*</td>
<td>+ 0.7</td>
</tr>
<tr>
<td>N Z</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Austria</td>
<td>+ 1.5</td>
<td>N P</td>
</tr>
<tr>
<td>Belgium</td>
<td>+ 2.9</td>
<td>+ 0.9</td>
</tr>
<tr>
<td>Denmark</td>
<td>+ 5.1</td>
<td>- 1.2</td>
</tr>
<tr>
<td>Finland</td>
<td>+ 3.5</td>
<td>N P</td>
</tr>
<tr>
<td>France</td>
<td>+ 2.1</td>
<td>+ 1.8</td>
</tr>
<tr>
<td>Germany</td>
<td>+ 2.8</td>
<td>+ 1.0</td>
</tr>
<tr>
<td>Greece</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Iceland</td>
<td>+ 2.6</td>
<td>+ 0.2</td>
</tr>
<tr>
<td>Ireland</td>
<td>+ 2.8</td>
<td>+ 1.1</td>
</tr>
<tr>
<td>Italy</td>
<td>+ 2.5</td>
<td>+ 0.8</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>+ 1.2</td>
<td>+ 2.3</td>
</tr>
<tr>
<td>N L</td>
<td>+ 1.7</td>
<td>+ 0.8</td>
</tr>
<tr>
<td>Norway</td>
<td>+ 3.1</td>
<td>+ 1.4</td>
</tr>
<tr>
<td>Portugal</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Spain</td>
<td>+ 4.7</td>
<td>+ 0.9</td>
</tr>
<tr>
<td>Sweden</td>
<td>+ 3.9</td>
<td>- 0.5</td>
</tr>
<tr>
<td>Turkey</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>U K</td>
<td>+ 1.6</td>
<td>- 0.2</td>
</tr>
</tbody>
</table>

* General Government Employees

* No Data

N P No Peak in W
3. COMPONENTS OF THE CHANGE IN GOVERNMENT SERVICES

To understand the processes involved in the decline of $W_g$, it is necessary to decompose it into its component parts. In what follows, the subscript 'g' will be used to denote GS and 'm' will be used for the output of the rest of the economy - that is, the marketed sector for all practical purposes. Define:

- $Y_g, Y_m = \text{output}$
- $P_g, P_m = \text{unit price of output}$
- $Z_g, Z_m = \text{output per head (i.e. productivity)}$
- $N_g, N_m = \text{numbers employed}$

Then, using $Y$ for total output = GDP,

$$Y = Y_g + Y_m = P_g Z_g N_g + P_m Z_m N_m.$$ 

The budget share of GS is:

$$W_g = Y_g / (Y_g + Y_m) = \frac{P_g Z_g N_g}{(P_g Z_g N_g + P_m Z_m N_m)}.$$ 

Dividing by $P_g Z_g N_g$,

$$W_g = \frac{1}{(1 + Z N)}$$

where:

- $P = P_m / P_g = \text{Unit Price of marketed output / Unit Price of GS}$
  - "Relative Price"

- $Z = Z_m / Z_g = \text{Output per head in marketed sector / Output per head in GS}$
  - "Relative Productivity"

- $N = N_m / N_g = \text{Numbers employed in marketed sector / numbers employed in GS}$
  - "Relative Numbers"
Taking Differentials:

\[
\frac{\partial W_{\sigma}}{\partial P} \, dP + \frac{\partial W_{\sigma}}{\partial Z} \, dZ + \frac{\partial W_{\sigma}}{\partial N} \, dN
\]

\[
d(W_{\sigma}) = - \left( \frac{ZN}{(1 + PZN)^2} \right) dP - \left( \frac{PN}{(1 + PZN)^2} \right) dZ - \left( \frac{PZ}{(1 - PZN)^2} \right) dN
\]

Since the data for current-price and constant price output in the two sectors are available, together with figures for employment in the whole economy and in government services, the values for P, Z and N are observable, so the effect on \(d(W_{\sigma})\) due to \(dP\), \(dZ\), and \(dN\) may be calculated. A good approximation to \(d(W_{\sigma})\) is obtained in all cases. The variables \(P\), \(Z\) and \(N\) are evaluated at the mid-point of their ranges.
Annual Average components of change in $W_o$ (x1000)

(= Expenditure on Government Services / GDP)

Using published data on constant price government services:

$P = \text{Relative Price}$

$Z = \text{Relative Productivity}$

$N = \text{Producers of Government Services / All others at work}$

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>P</th>
<th>Z</th>
<th>N</th>
<th>TOTAL</th>
<th>P</th>
<th>Z</th>
<th>N</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>3.5</td>
<td>-2.7</td>
<td>0.4</td>
<td>1.2</td>
<td>1.5</td>
<td>-2.5</td>
<td>-3.0</td>
<td>-4.0</td>
</tr>
<tr>
<td>U S</td>
<td>1.6</td>
<td>-0.4</td>
<td>-0.2</td>
<td>1.0</td>
<td>0.9</td>
<td>-0.8</td>
<td>-1.3</td>
<td>-1.2</td>
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</tr>
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<td>-7.5</td>
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<tr>
<td>Finland</td>
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<td>-3.4</td>
<td>4.7</td>
<td>2.6</td>
<td>N P</td>
<td>N P</td>
<td>N P</td>
<td>N P</td>
</tr>
<tr>
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<td>-3.4</td>
<td>3.1</td>
<td>3.1</td>
<td>-1.3</td>
<td>-4.0</td>
<td>3.0</td>
<td>-2.3</td>
</tr>
<tr>
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<td>-3.7</td>
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</tr>
</tbody>
</table>

$\bar{x} = 2.6 -2.3 3.1 3.2 -0.4 -2.2 0.6 -2.0$

* No Data

N P No Peak

+ Excludes Austria and Finland
Since P, Z and N are positive in all cases, \( \frac{\partial W_a}{\partial P} \), \( \frac{\partial W_a}{\partial Z} \) and \( \frac{\partial W_a}{\partial N} \) are also positive. Thus, the sign of the contribution of each of the variables to \( d(W_a) \) is determined by the signs of \( dP \), \( dZ \) and \( dN \) respectively. Note that \( P, Z \) and \( N \) have been defined with the market sector in the denominator. However, since the discussion centres on GS, the results are presented and the discussion conducted as if the GS variable were in the denominator. Thus from now on, "a rise in \( P \)" indicates that the relative price of GS has risen. This simplifies the discussion considerably. Finally, it may be noted that:

\[ \{ \frac{\partial W_a}{\partial Z} dZ + \frac{\partial W_a}{\partial N} dN \} \]

clearly represents the price change.

The basic results of the calculations are presented in Table 4. For obvious reasons, events before the peak in \( W_a \) are distinguished from events afterwards. To make comparisons easier, the table shows the annual average components of the change in \( W_a \). The values have been multiplied by 1 000 to avoid unnecessary decimals. Thus the basic unit in the table is 0.1% of GDP. These units are by no means trivial in size. Since EGS is, in most cases, of the order of 10% of GDP, an annual average change of 0.1% in \( W_a \) represents roughly an annual average 1% change in EGS.

Recalling that \( P, Z \) and \( N \) are respectively, relative price, relative productivity and relative numbers employed in GS compared with the rest of the economy, certain facts are clear from Table 3. In the period before the peak, \( Z \) fell continuously in all countries, and this exerted a substantial downward pressure on \( W_a \). Given the nature of GS
(service industries without the profit motive) and the assumptions underlying the published data (zero productivity growth is widely assumed), the fall in $Z$ is inevitable. This question is examined in more detail below.

With one small exception in each case, all countries experienced a rise in both $P$ and $N$ before the peak. Both of these exerted an upward pressure on $W_o$. The observed overall increase in $W_o$ was thus due to the excess of the positive influence of $P$ and $N$ over the negative influence of $Z$. It will be noted from the mean values at the foot of the table that in general the positive influence of $N$ was slightly greater than the negative influence of $Z$, indicating a small increase in relative quantity. The greater part of the increase was in general due to an increase in relative price.

Since two countries (Austria and Finland) did not experience a peak in $W_o$, there are 17 observations of countries in which the variable declined. In all countries, except Iceland, $Z$ continued to exert a downward influence. The mean value of the effect of $Z$ and many of the values for the individual countries are very similar to the values estimated before the peak. There is thus no evidence of any substantial change in the effect of relative productivity.

On the other hand, there are considerable changes in the effects of $P$ and $N$. In the case of $P$, in slightly over half the cases (9 out of 17) the effect changed from a positive to a negative one. More significantly, in all cases the effect of $P$ declined and in most cases the decline was considerable. This is shown by the mean values which
went from +2.6 before the peak to -0.4 afterwards. The effect of N shows a similar but rather less consistent pattern. In 4 cases, the effect changed from positive to negative. With two exceptions (Australia and Luxembourg) the effect declined and in most cases the decline was substantial. The mean effect of N went from +3.1 before the peak to +0.6. One may also note that, in the period after the peak, there are only two countries (Iceland and Norway) where the sum of the effects of Z and N is positive. In all other cases, the share of GS in real output was declining.

In summary, relative productivity exerted a substantial downward pressure on $W_\sigma$ both before and after the peak. However, before the peak (that is, roughly in the period 1970 to 1981) this downward influence was exceeded by the positive influence of relative price and relative numbers. The combined effect was to cause $W_\sigma$ to increase. A minor component of this was an increase in the real budget share of EGS. The major component was the increase in relative price.

After the peak, the effect of relative price and relative numbers both fell substantially. The fall in the effect of relative price was slightly greater in general than the effect of relative numbers. Both real budget share and real price exerted a downward pressure after the peak, but the former was stronger.

A possible objection to the procedure outlined above stems from the fact that it depends heavily on the published data for constant-price (ie 'real') EGS. Both relative price ($P$) and relative productivity ($Z$) are affected by the value of this variable. However, as is widely
known, the estimates of real EGS embodied in the OECD National Accounts use the assumption of zero growth in labour productivity in GS. In fact, the assumption is not quite as strong as it appears at first sight, because the OECD data are compiled in a way which does, at least, allow for changes in levels of skill in the producers of GS. (OECD 1987 page 10). In addition to this, four of the 5 countries attempt to make an allowance for productivity changes beyond those which may be due to changes in the skill-level. To quote (OECD 1987, page 11):

Luxembourg and Germany assume an annual increase of 0.5 per cent in labour productivity, an adjustment that can best be described as a nod in the right direction. It recognises that the productivity of government labour is almost certainly tending to rise but recognises too the difficulty of measuring that rise. Government employees in Belgium receive, in addition to cost-of-living increases, periodic pay adjustments designed to keep their salaries in line with those of comparable workers in the business sector. For its estimates of real value added, the Belgian statistical office assumes that one half of these comparability adjustments represent increases in labour productivity. In the business sector, pay increases over and above the general inflation rate, are presumably rewards for enhanced labour productivity, so that the Belgian adjustment for labour productivity in government is essentially based on movements in labour productivity in the rest of the economy. The adjustment for Italy usually varies between 0.3 and 0.5% per annum. It is based partly on measures of work-load, such as the number of hospital-days per employee in public hospitals and the number of 18
retired persons per employee in the social security services, and partly on a qualitative assessment of the progress made by government departments in reducing absenteeism and in office automation.

The remaining OECD countries make no allowance for any increase in labour productivity in GS and one may reasonably ask whether this assumption biases the estimates of the effects of P and Z which are produced above.

One possible approach to the problem is to assume that the rate of growth of labour productivity in GS is proportional to the rate of growth in the service sector in general in any given country, because techniques and standards employed in the marketed services may be expected to be imitated to some extent in GS. However, it is probably unrealistic to expect that productivity in GS would grow as fast as that in the marketed services because of the absence of the profit motive. Accordingly, it has been assumed here that labour productivity (in the sense of real value added per person employed) grows at one half the rate shown by the service sector in general.

Data for "Real value added per person employed in services - year to year percentage changes" are available in the OECD Historical Statistics (OECD 1988) Table 3.11. Since no data were available for Ireland, the series for "Smaller European Countries" was used for this country. A few gaps in the services were filled by using the values for "Larger OECD Countries" or "Smaller European Countries" as appropriate. These changes were used to calculate a set of indices
for productivity in GS in each of the OECD countries. These were used together with numbers employed to calculate real output of GS. Relative price and relative productivity in GS were then recalculated, and Table 3 was reconstructed, using the new data. The data for Belgium, Germany, Italy and Luxembourg were not recalculated because of the efforts, noted above, by the national authorities to arrive at a more satisfactory estimate of real output in GS.

Incidentally, the method employed here gives an annual growth rate for real output per person employed of 0.46% for the entire OECD. This may be compared with the figure of 0.5% used in Luxembourg and Germany and the figure of 0.3% to 0.5% quoted for Italy. All are of the same order of magnitude.
### Table 5

Annual average components of change in $W_{G}$ (x1000)

Using alternative data on constant price Government Services

$P = $ Relative Price

$Z = $ Relative productivity

$N = $ Producers of Government Services / All others at Work

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>P</th>
<th>Z</th>
<th>N</th>
<th>TOTAL</th>
<th>P</th>
<th>Z</th>
<th>N</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
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<td>-0.9</td>
<td>0.4</td>
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<td>1.5</td>
<td>-2.5</td>
<td>-3.0</td>
<td>-4.0</td>
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<td>U S</td>
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<td>-1.6</td>
<td>-0.2</td>
<td>1.0</td>
<td>0.9</td>
<td>-0.8</td>
<td>-1.3</td>
<td>-1.2</td>
</tr>
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<td>-0.6</td>
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<td>0.3</td>
<td>-0.8</td>
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<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
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<tr>
<td>Austria</td>
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<td>-1.7</td>
<td>2.1</td>
<td>1.2</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
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<td>NP</td>
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<td>NP</td>
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<td>-3.0</td>
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</tr>
</tbody>
</table>

\[ \bar{x} = 2.4 - 2.3 = 3.1 - 3.2 - 0.4 - 2.2 = 0.6 - 2.0 \]

* No Data

NP No Peak in $W_{G}$

Excludes Austria, Finland

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The results of using the recalculated values of P and Z are presented in Table 5. Naturally, there are no changes in the "Total" column since the change in W is not affected by the recalculation of P and Z. It will be seen that while there are some changes in the entries from individual countries, there is nothing to indicate that the conclusions drawn from Table 3 need to be changed substantially. Before the peak, Z still exerted a downward pressure on W, with P and N combining to exert a greater pressure in the opposite direction. After the peak the positive influence of P and N was reduced substantially and the negative influence of Z predominated. As shown at the foot of the table, the mean values of the effects of P, Z, and N changed little before the peak and not at all afterwards.
4. THE IRISH EXPERIENCE

The experience of Ireland corresponded very closely to the norm for the rest of the OECD. Wg peaked in 1981 (Table 1). This took place before the peak in GX/GDP, which, in fact, continued to rise throughout the period (Table 2). The ratio of producers of government services to others at work continued to rise throughout the period, perhaps rather more strongly than was normal for OECD countries in the most recent years (Table 3). Finally, the pattern of the contribution of dP, dz and dN to dW was normal - dP and the overall change in "quantity" (dz and dN combined) were both positive before the peak in Wg; after the peak dP was reduced but still positive, while the combined effect of dz and dN was strongly negative.
5. CONCLUSIONS

The basic facts about the ratio of expenditure on government services to GDP in the OECD countries in the period 1970-87 are as follows:

(a) In 21 out of the 23 countries for which data are available, the budget share of EGS in GDP ceased to rise and turned downward. In 18 of the countries this happened between 1978 and 1985. [Table 1].

(b) This change took place at about the same time in countries whose levels of income per head were as diverse as those of Germany and Portugal, Canada and Ireland. [Table 1].

(c) Of the 20 countries in which $W_g$ reached a peak within the period, 16 are countries in which $W_g$ peaked before $GX/GDP$ (where $GX$ is total government current expenditure). There is only one case (Finland) where $GX/GDP$ peaked first. There are also 16 countries (not the same set) in which the average annual rate of decline in $W_g$ was greater than that of $GX/GDP$. There are only two countries (Luxembourg, Finland) in which $W_g$ did not decline either for a longer period or faster than $GX/GDP$. [Table 2].

(d) Analysis of the change in $W_g$ shows that falling relative productivity in GS exerted a continual downward pressure on the ratio throughout the period. However, before the peak, rising relative price and rising relative numbers more than compensated, so that both the relative volume and the relative price contributed to the expansion of $W_g$. 

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(e) After the peak, the rise in both relative price and relative numbers was checked. All but one (Iceland) of the 17 countries for which data are available experienced a downward pressure on \( W_g \) due to a fall in relative volume. In all 16 countries the upward pressure of relative price was reduced. In 9 of the 17, the effect of price changed from positive to negative. If relative price had continued to rise in each country at the same rate as it did before the peak, the budget share of government services would have continued to rise in all but four countries (Canada, US, Denmark, UK).

The facts above seem to indicate that the following inferences are justified. In drawing them, it will be assumed that changes in GS and GX and in the ratio of these to GDP are the result of conscious government policy.

In the OECD countries in the 1980's there was a widespread attempt to reduce the ratio of GX to GDP, probably in an effort to improve the performance of the economies. This restriction fell far more heavily on GS than on transfer payments, which are the other main component of GX. The result was that \( W_g \) began to decline in all but two countries. However, the proportion of the labour force which was producing GS did not, in general, decline. Instead, the decline in \( W_g \) was achieved by a substantial reduction in the relative price of GS. While data are fairly scanty, the indications are that this resulted in a widespread reduction of the relative pay rates in GS. [O'Riordan 1989].
In many ways, this can be seen as a highly desirable development. The nature of GS is such that relative productivity, compared with the rest of the economy, must fall. If this is allowed to drive the relative price of GS up, then the society is faced either with an increasing tax burden to support a given proportion of GS, or with the need to reduce the level of GS. Both of these pose problems.

A solution can be found if the relative price of GS can be made to fall roughly in line with productivity. This seems to have happened in the OECD in the 1980's. However, this poses another problem. The fall in relative price must lead, sooner or later, to a fall in the relative wages of the producers of government services. There is no need for their real wages to fall in an absolute sense, but they must begin to fall behind the rest of the economy. One does not know whether satisfactory GS can be provided under these circumstances. Only the accumulation of additional data can give the answer.
REFERENCES


