



# Pointmaker

## NOT PAVED WITH GOLD

### GOVERNMENT 'INVESTMENT' DOES NOT EQUAL GROWTH

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#### SUMMARY

- Until now there has been little investigation into the impact of the composition of public expenditure by function or by type – consumption or investment – on economic growth.
- In 2011 health, education, and social protection accounted for an average of 65% of total public expenditure across 19 OECD countries. Despite the widespread belief that these functions of government can be growth enhancing, no evidence was found to support this.
- Contrary to expectations, an analysis of spending on road infrastructure – one of the main categories of public capital expenditure, as a proportion of GDP – had an insignificant relationship with real GDP growth for 29 OECD countries over the period 1996 to 2010.
- Tests of the relationship between average real growth rates and average government spending by function were carried out for the same 19 OECD countries from 1996 to 2011. Spending on education as a proportion of GDP had no discernible impact on economic growth, while the correlation between growth and spending on health and on social protection were both negative and significant.
- The state is too big across many OECD nations. Long-term growth in prosperity has led to growth in the size of public budgets, but public expenditure needs to be trimmed back across all functions of government to permit private sectors scope to expand.
- There is no evidence justifying the continual rise in the size of the state and reversing its growth is simply a question of political will. To fail to do so will be at the cost of future living standards.

## 1. INTRODUCTION

The relationship between the role of government and economic prosperity has generated a controversial and heated debate. Unfortunately there is still only an extremely limited discussion about the composition of public expenditure, and this tends to focus only on the merit of individual projects like HS2. There are few cross-country time series studies investigating the question of what structure of government expenditure appears to be most conducive to economic growth.

It is also often held that while it may be desirable to cut the level of public expenditure in total, some forms of spending are growth enhancing. If this were so, it would obviously be efficient to reallocate resources to those areas which promote growth.

But, as will be seen, despite frequent assertions that some forms of spending are associated with economic growth, there appears to be little evidence to support those assertions. This study therefore assesses the impact of the main types of government consumption spending – on education, on health, on social protection and on government investment – in infrastructure on real economic growth.

## 2. METHODOLOGY

This study is based on the results of an empirical analysis of a sizeable sample of OECD countries for which a consistent dataset of annual economic statistics is available.

In order to analyse the relationship between the composition of public expenditure and growth this study used national accounts data on total expenditure by government function from the OECD website.<sup>1</sup> The following data were

available on a consistent basis for 19 OECD countries over the period from 1996 to 2011:<sup>2</sup>

- total government spending,
- expenditure by function in current prices,
- GDP in current prices and
- annual volume GDP growth.

There are ten broad categories of government functions categorised in national accounting data – General public services, Defence, Public order and safety, Economic affairs, Environmental protection, Housing and community amenities, Health, Recreation culture and religion, Education and Social protection (or Welfare).<sup>3</sup> Levels of government expenditure by function for each country in each year as a proportion of GDP were calculated for three of these: education, health and social protection. Both government expenditure by function and GDP were measured in international US\$ at Purchasing Power Parity (PPP) to eliminate any distortions caused by exchange rate movements. The average country public expenditure by function ratios were also compared with average volume GDP for the same nations and correlation coefficients were calculated.

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<sup>1</sup> <http://stats.oecd.org/index.aspx?queryid=350>

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<sup>2</sup> Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Slovak Republic, Spain, Sweden, UK. Note that the economies of these countries are all broadly similar. Also note that the US is not in this dataset as OECD data were not available on a consistent basis. Note that if the US data had been available, the correlations would have been even lower.

<sup>3</sup> These categories are explained in some detail for the European Union by Eurostat. See: [epp.eurostat.ec.europa.eu/statistics\\_explained/index.php/Government\\_expenditure\\_by\\_function\\_-\\_COFOG](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Government_expenditure_by_function_-_COFOG)

The same process was carried out for a sample of 29 OECD countries with road investment as a proportion of GDP averaged over the period 1996-2010 compared with real GDP growth. In this case, both road investment and GDP were measured in € not at PPP values so some exchange rate distortions may be present.

**3. GOVERNMENT EXPENDITURE AND GROWTH**

In the sample of 19 OECD countries analysed for this paper the average proportion of public spending to GDP over 15 years was 47.5%. This ranged from a high of Denmark with 57.3% to a low of Ireland with 22.8%. Theories discussing the long-term and short-term relationships between GDP and public expenditures are discussed in Appendix A.

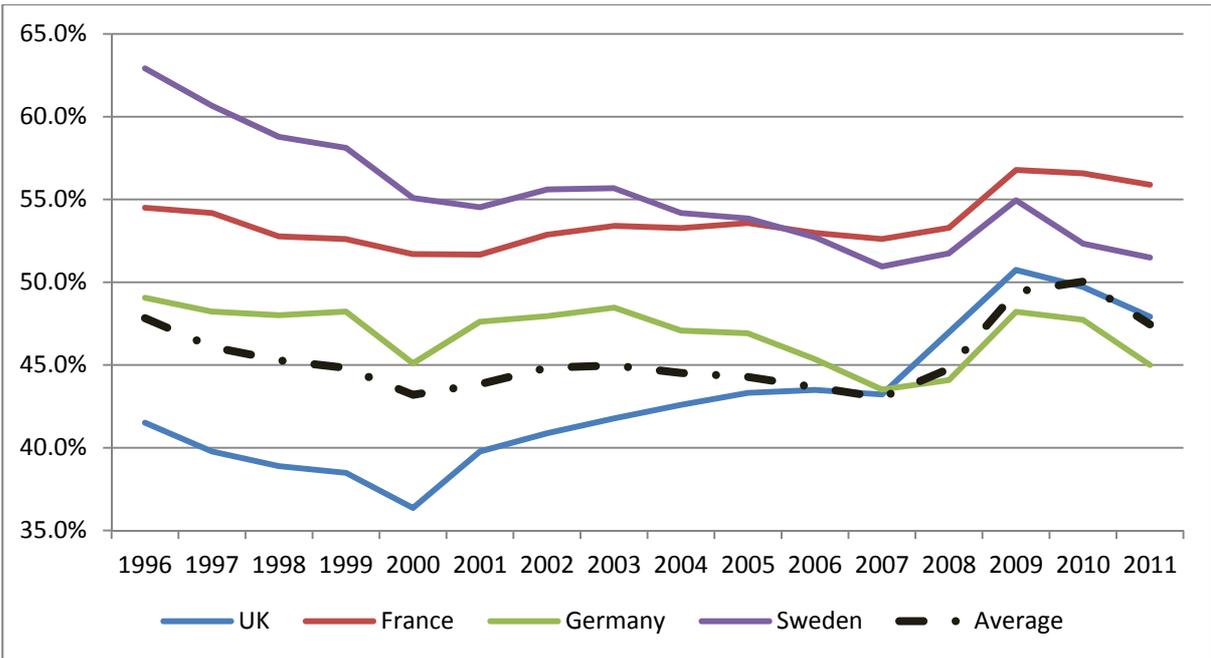
As a result of the financial crisis, many of the major economies reverted back to the use of discretionary fiscal spending on an extensive scale. Across the 19 OECD countries analysed in detail in this report, the average level of total

government expenditure to GDP rose from 45% in 2007 to 50.7% by 2010, sharply reversing a gentle decline in the average ratio since 1996. These trends are displayed in Chart 1 which compares the average level of public expenditure as a proportion of GDP against those in Germany, France, Sweden and the UK.

**4. THE COMPOSITION OF PUBLIC EXPENDITURE**

Broadly speaking, government spending can be broken down into investment and consumption spending. Another division of public budgets can be made by allocating total public expenditure by function. A convention of national income accounting is that all government output is ultimately consumed by itself even if services are provided to citizens, in the form of free education for example. In economic terms any growth enhancing or growth suppressing effects arising from the composition of public expenditure can be seen in terms of positive or negative externalities on the productive efficiency of the private sector.

**Chart 1 Total Government Expenditure as a % of GDP**



Source: OECD

One rarely challenged article of faith in public finance is that public investment, particularly in infrastructure, is superior to public consumption and that some forms of spending are more productive and wealth creating than others. For example, a study published by the European Central Bank<sup>4</sup> before the full impact of the financial crisis noted that the European Commission's stance on public finances in Europe<sup>5</sup> had been that:<sup>6</sup>

*"...budgetary consolidation strategy, based on expenditure restraint, should not be achieved at the expense of the most 'productive' components of public spending (such as public investment, education and research expenditures)."*

No evidence was put forward in the document to support this assertion. Similarly, a communiqué from the European Commission last year stated:<sup>7</sup>

<sup>4</sup> Straub and Tchkarov (2007).

<sup>5</sup> See European Commission (2003).

<sup>6</sup> Straub and Tchkarov (2007).

<sup>7</sup> European Commission (2013).

*"...parts of government spending can be highly efficient, including by increasing physical and human capital, or raising the productivity of the private sector."*

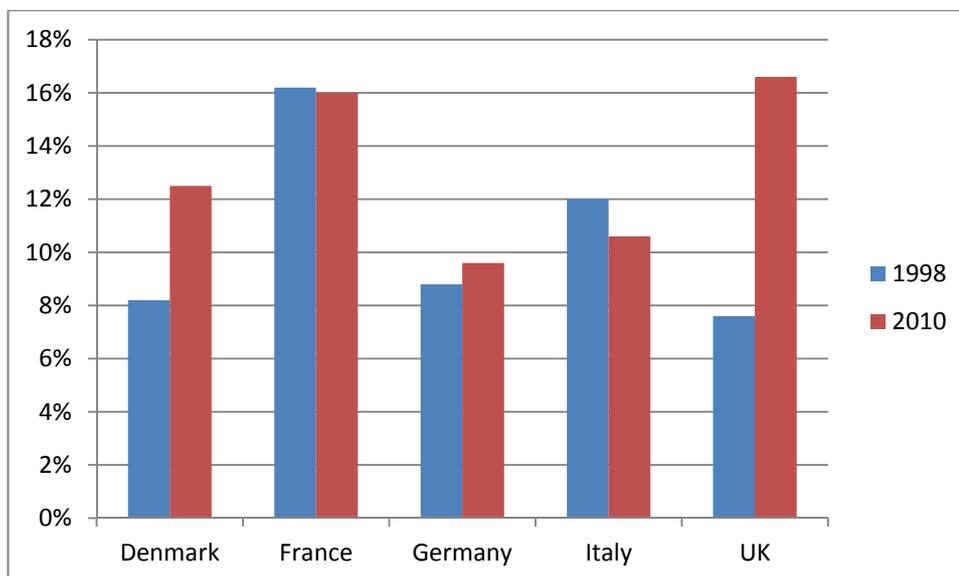
Again, no evidence was put forward to support this statement.

The ratio of public capital investment to GDP in many European countries and the US has been falling since 1970, while the ratio of public consumption has been rising. One recent study suggested this was a cause for concern given the authors' (again unproven) assumption that public investment was more productive than public consumption.<sup>8</sup> The study found that fiscal multipliers for public investment were greater than those for public consumption and warned of the dangers of falling state capital expenditure. However, the balance of evidence of studies on the productive potential of public investment on the private sector is not clear cut.<sup>9</sup>

<sup>8</sup> Straub and Tchkarov (2007).

<sup>9</sup> IMF (2004) and De Haan and Romp (2005).

**Chart 2: Share % of public Investment in Total GFCF**



Source OECD (2013a)

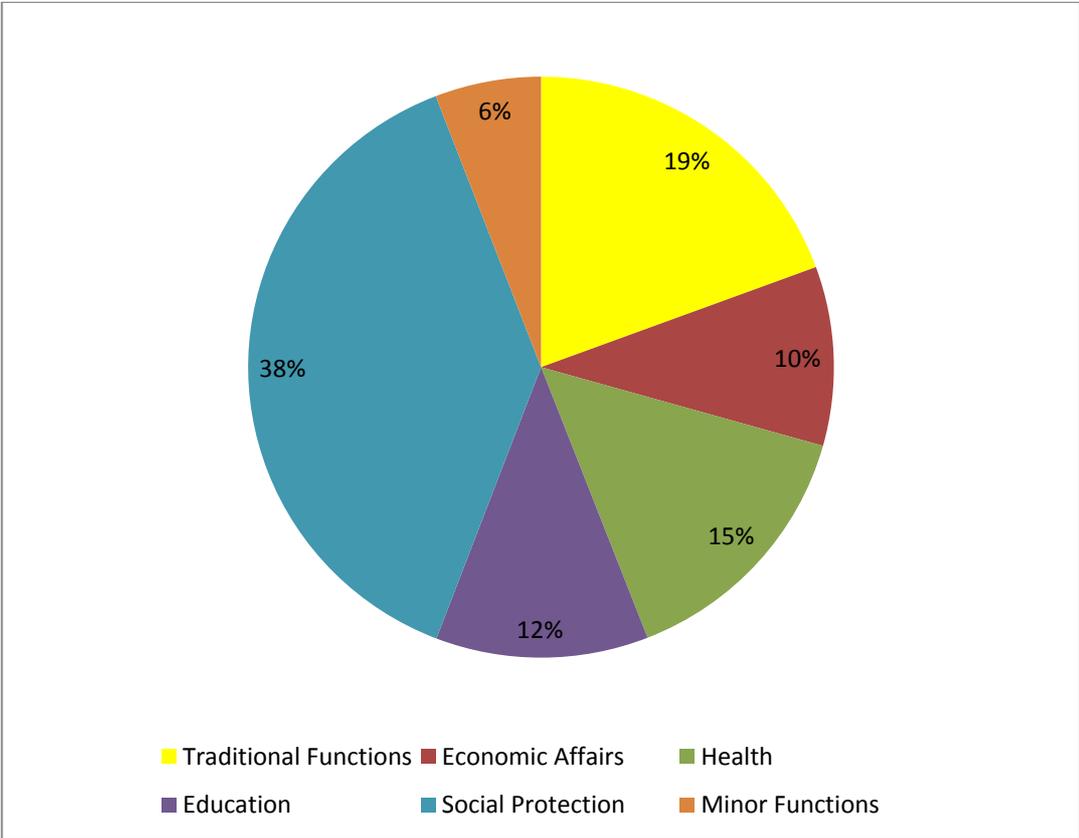
This lack of evidence is worrying as while the share of public investment in total may be falling in aggregate, in some countries the share of government in total investment or Gross Fixed Capital Formation (GFCF) has been expanding, particularly in the UK (see Chart 2). This could be potentially harmful to growth in the context of weak private investment and especially if the productivity of public capital is relatively low.

A breakdown of the composition of public budgets for 2011 is summarised in Chart 3. This shows the average share of public expenditure by government function for all of these countries in that year expressed as a percentage of total government spending.

The three main functions of the state according to Adam Smith were to provide law and order,

defence and certain necessary public projects. These traditional state prerogatives are captured by the three categories: 'general public services', 'defence' and 'public order and safety'. These are aggregated in Chart 3 under the label 'Traditional Functions'. These categories collectively accounted for 19% of all public spending across the 19 countries in 2011. Recreation, culture and religion, Housing and community amenities, and Environmental protection are collected under the label 'Minor Functions', all of which accounted for an average of 6% of total expenditure in 2011.

**Chart 3 Country average Composition of Public Consumption Expenditure by Function 2011**



Source: OECD

It is clear from Chart 3 that the allocation of public expenditure across the group of countries is dominated by three government functions: Health, Education and Social protection (or Welfare). In 2011, these three categories accounted for an average of 65% of total public expenditure across the 19 countries analysed.

The balance of 10% was accounted for by 'Economic Affairs' which covers support programmes, subsidies and public infrastructure spending in mining, manufacturing, agricultural, energy, construction, transport, communication and other service industries.

The relative size of the division is also influenced by the amount of subsidies given to public or private transportation companies and by the amount of expenditure on transport companies classified within the general government sector. Since the structure of public transportation differs widely across countries, this underlies the differing importance of this function. This function

can also vary considerably across countries and over time as a result of extraordinary factors such as reclassification of public companies into the general government sector or capital injections into public corporations. The category in Ireland, for example, was 16.4% of total spending in 2011 due to substantial capital injections into banks in 2011, which were partially treated as capital transfers. In contrast, only 5.3% of public expenditure in the UK was allocated to this category.

In all of the countries spending on Social protection took the largest share of government budgets ranging from 31.3% in the Slovak Republic to 43.7% in Denmark with a cross-country average of 38.3%. In all countries except Hungary and Ireland, Health spending by governments accounted for the second highest share of budgets. The cross-country average was 15.0%, but the relative size of Health budgets ranged from 10.4% of total spending in Hungary to 18.1% in the Czech Republic. Finally, the third

**Table 1 Government Functions as % of GDP average 1996 to 2011**

Country	Education/GDP %	Health/GDP %	Welfare/GDP %	Total Spending % of GDP
Denmark	7.4	7.2	23.7	38.3
Sweden	7.0	6.7	22.9	36.6
France	6.0	7.5	21.9	35.4
Finland	6.3	6.6	22.0	34.9
Austria	5.6	7.9	21.0	34.4
Germany	4.2	6.7	20.9	31.8
Belgium	5.9	6.8	18.1	30.9
Norway	6.0	7.3	16.9	30.2
Italy	4.6	6.5	18.3	29.4
Netherlands	5.4	6.2	16.3	27.9
UK	5.3	6.5	15.8	27.6
Portugal	6.4	6.5	14.3	27.2
Hungary	5.4	5.2	16.4	27.1
Luxembourg	4.7	4.8	17.2	26.7
Czech Rep.	4.6	7.1	12.9	24.5
Spain	4.3	5.6	14.0	23.9
Ireland	4.8	6.6	11.8	23.3
Slovak Rep.	3.8	5.8	13.2	22.8
Estonia	6.8	4.8	11.2	22.5
<b>Average</b>	<b>5.5</b>	<b>6.4</b>	<b>17.3</b>	<b>29.2</b>

Source: OECD

largest government function outside of the broad category General public services, measured by expenditure is Education. This function accounted for an average of 12% of total government budgets across the 19 countries ranging from 8% in Italy to 16.9% in Estonia.

Country level differences in the impact of types of public spending can also be measured in terms of their use of national resources by the average proportion of total expenditure to GDP. This is shown for the three categories in Table 1 which ranks countries in terms of relative spending on Education, Health and Social protection and also in the total of the three categories as a proportion of GDP. With a ratio of total expenditure to GDP of 38.3%, the role of the state in Denmark is greatest in terms of the amount of national resources devoted to its activities across these three functions of government. In contrast, the three functions accounted for the lowest share of GDP in Estonia at 22.5%.

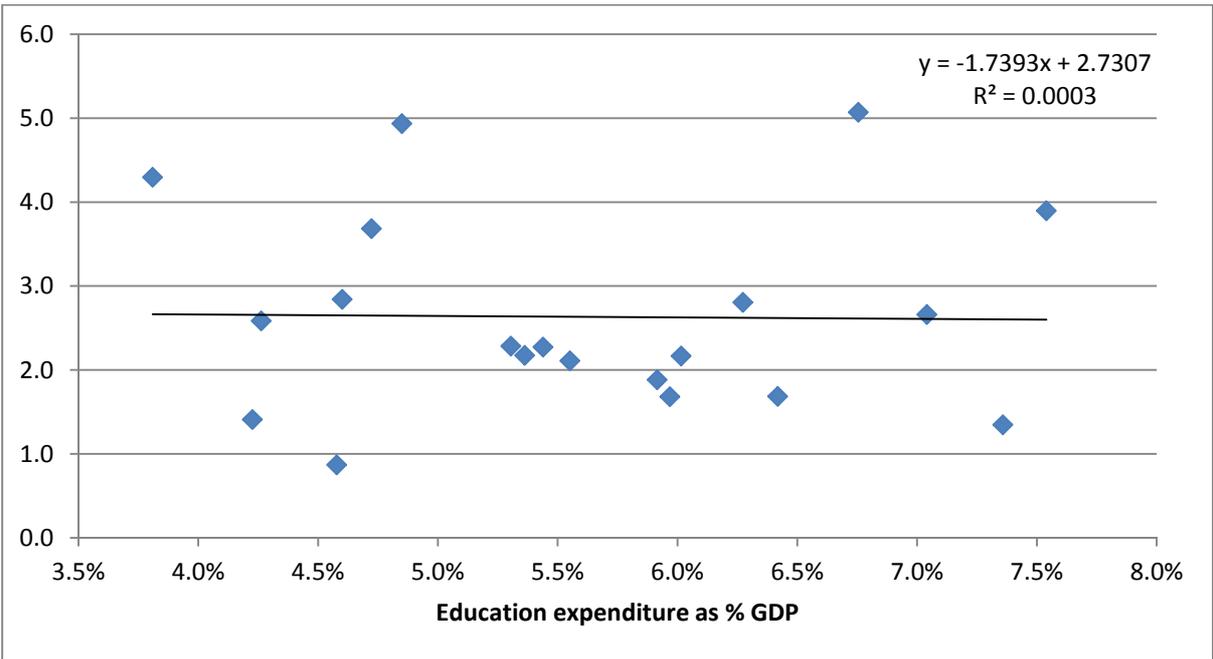
**5. PUBLIC EXPENDITURE BY FUNCTION**

Since the composition of public expenditure differs considerably across countries, this facilitates testing the extent to which average differences in spending by category are related to differences in average economic growth rates across nations.

Welfare expenditure may be politically advantageous for winning voter support. However, in terms of the negative incentives it produces and the necessary creation of an administrative bureaucracy, it is inherently wasteful. In contrast, education and health consumption expenditure by the state arguably might have some investment characteristics by improving a nation’s human capital.

But is there any correlation between spending on these three main areas of government expenditure and growth?

**Chart 4 Public Education Expenditure as % GDP and GDP Growth 1996-2011**



Source: OECD

### 5.1 Education

Total government spending on education covers a wide range of activities from primary schools to relatively costly university support programmes. Denmark at 7.4% spent the highest proportion of public expenditure on education over the period as a proportion of GDP, compared to an average figure of 5.5% across the group of countries analysed. The lowest amount was the 3.8% spent by the Slovak Republic.

It is conventional wisdom that government expenditure on education is beneficial in its direct impact and in its development aspect as an investment in human capital. If so, the resources devoted do not seem to have had a discernible, easily measurable, impact on economic growth. Comparing average education expenditure as a proportion of GDP for the 19 countries over the period from 1996 to 2011 to average real GDP growth produces no evidence of any relationship between the two economic variables.

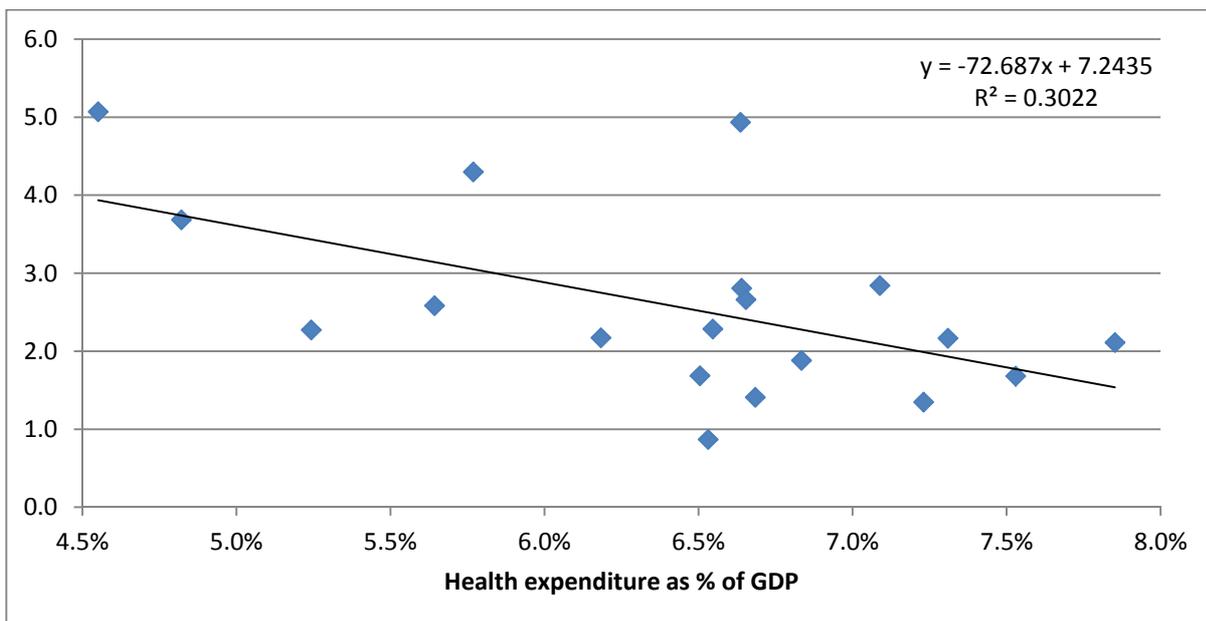
This is shown in Chart 4. The calculated correlation coefficient between the two economic variables was an insignificant minus 0.016.<sup>10</sup> The insignificant mildly negative trend line is also shown on the scatter graph. Spending on public education therefore has no discernible correlation with real GDP growth across the countries investigated over this period.

### 5.2 Health

The relationship between expenditure on health and economic growth is more complex, particularly in developed economies rather than emerging nations. Much depends on demographic factors such as age distribution of the population, the relative allocation of health spending between prevention and cure, and the organisational model through which healthcare is funded and administered.

<sup>10</sup> The calculated t statistic value was -0.066 with 17 degrees of freedom.

**Chart 5 Public Health Expenditure as % GDP and GDP Growth 1996 -2011**



Source: OECD

Total government spending on health in the sample of countries varies from 7.9% of GDP in Austria to 5.8% in Estonia against an average figure of 6.4% over the period.

The evidence shows that the overall impact of health spending on economic growth was negative. In other words; the more money spent on health, the lower the average rate of economic growth. The estimated relationship implies that reducing the average proportion of resources devoted to public health expenditure from 6.5% to 6.0% among the OECD countries studied would be associated with an increase in real economic growth of 0.4% per annum. This is a large amount of resources that could be allocated to other uses. Over a longer period of time the impact is more dramatic because of the effect of compounding.

Comparing average health expenditure as a proportion of GDP for the 19 OECD countries over the period 1996 to 2011 to average real GDP growth produces an inverse relationship between the two economic variables, shown in

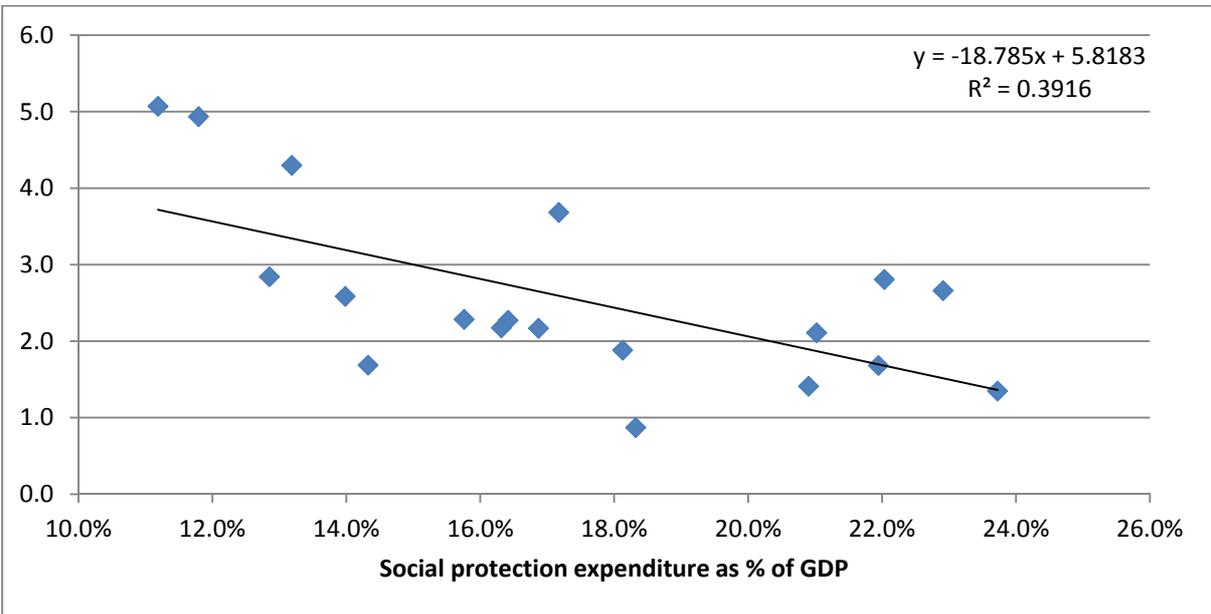
Chart 5. The calculated correlation coefficient between the two economic variables was significant with a value of minus 0.548.<sup>11</sup> The significant downward sloping negative trend line is shown on the scatter graph.

**5.3 Social Protection**

The ‘social protection’ or welfare category of government expenditure includes spending on ‘sickness and disability’, ‘old age’, ‘family and children’, ‘unemployment’, ‘housing’ in the form of benefits in kind, and ‘social exclusion.’ In our sample of countries the highest average expenditure on ‘social protection’ as a proportion of GDP over the period 1996 to 2011 was found in Denmark (23.7%) with the lowest level (11.2%) in Estonia. The average across the group of countries was 17.3%.

<sup>11</sup> The calculated t statistic value was -0.2701 with 17 degrees of freedom.

**Chart 6 Social Protection Expenditure as % of GDP and GDP Growth 1996 – 2011**



Source: OECD

There are a number of arguments in favour of high levels of spending on social protection. High and persistent unemployment, in which inequality increases, may have a negative effect on long-run economic growth. On the other hand when compared to supply-side reforms high levels of welfare spending can also ossify the problems due to inequality through the creation of negative incentives. This study looked only at the level of total expenditure by function and not how money is targeted.

Social protection expenditure across the sample of 19 OECD countries was compared with real GDP growth rates and a scatter graph of the results is shown in Chart 6. A statistically significant negative correlation coefficient of minus 0.626<sup>12</sup> was estimated between the average level of total government expenditure as a proportion of GDP and the average real growth rate in GDP over the period 1996 to 2011. The estimated equation of the negative trend line is also shown on the scatter graph.

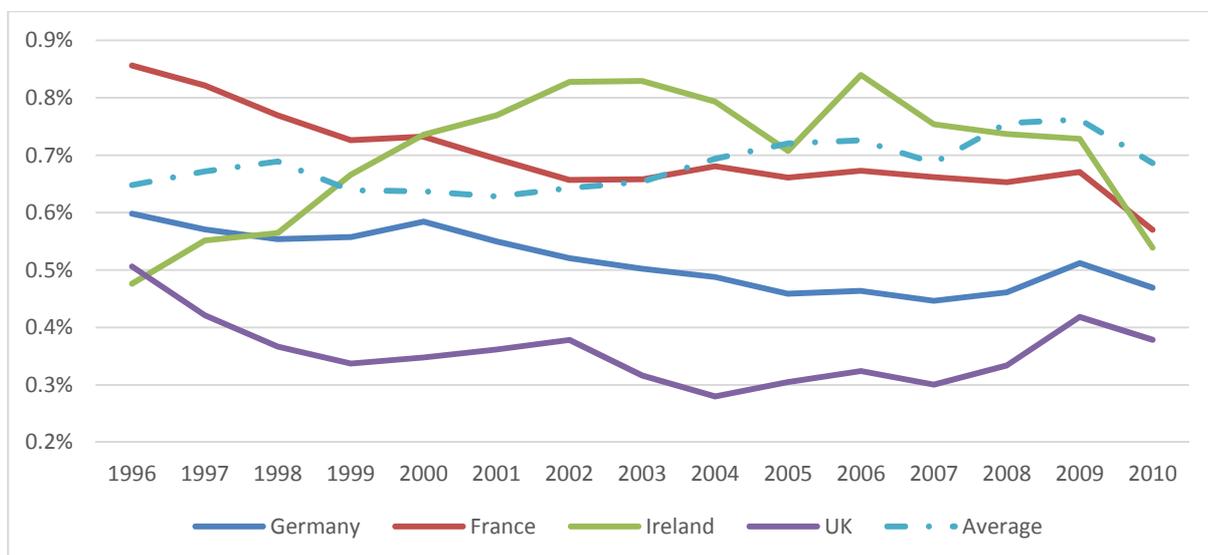
<sup>12</sup> The calculated t statistic value was -3.31 with 17 degrees of freedom.

## 6. PUBLIC INVESTMENT

Consistent data on public investment or the share of the government in Gross Fixed Capital Formation (GFCF) from the OECD is only available over the period 1996 to 2010 for a limited number of countries. Unfortunately, making cross-country and temporal comparisons is also complicated by the increasing use of private-public partnerships to create public buildings and infrastructure. This has created issues in defining the institutional ownership of assets in national accounts.

The article of faith that some forms of government expenditure on infrastructure such as road, rail, ports and energy can have a significant impact on economic growth through the action of both multiplier and network effects is largely based on evidence from emerging markets where there has been an infrastructure deficit and not from developed economies.

**Chart 7 Investment Expenditure on Roads as % of GDP 1996-2010**



Source: OECD

One recent estimate suggests that infrastructure improvements accounted for over half of Africa's improved growth performance between 1990 and 2005.<sup>13</sup> But it would be wrong to assume that additional infrastructure spending would have a similar effect in developed economies, particularly as the law of diminishing marginal returns to investment in public capital must surely apply.

This is reflected in the considerable differences that exist between high income countries and low to middle income countries in terms of the composition of public expenditure. An IMF study of 80 countries<sup>14</sup> found the latter two categories allocated an average of 18.9% and 16.8% of their budgets to capital spending compared to only 4.7% for high income countries. In contrast, subsidies and transfers accounted for 52.0% of spending in richer countries compared to 27.1% in low income countries. This study, which

concentrates on the impact of public investment in the developed countries, shows a very different picture.

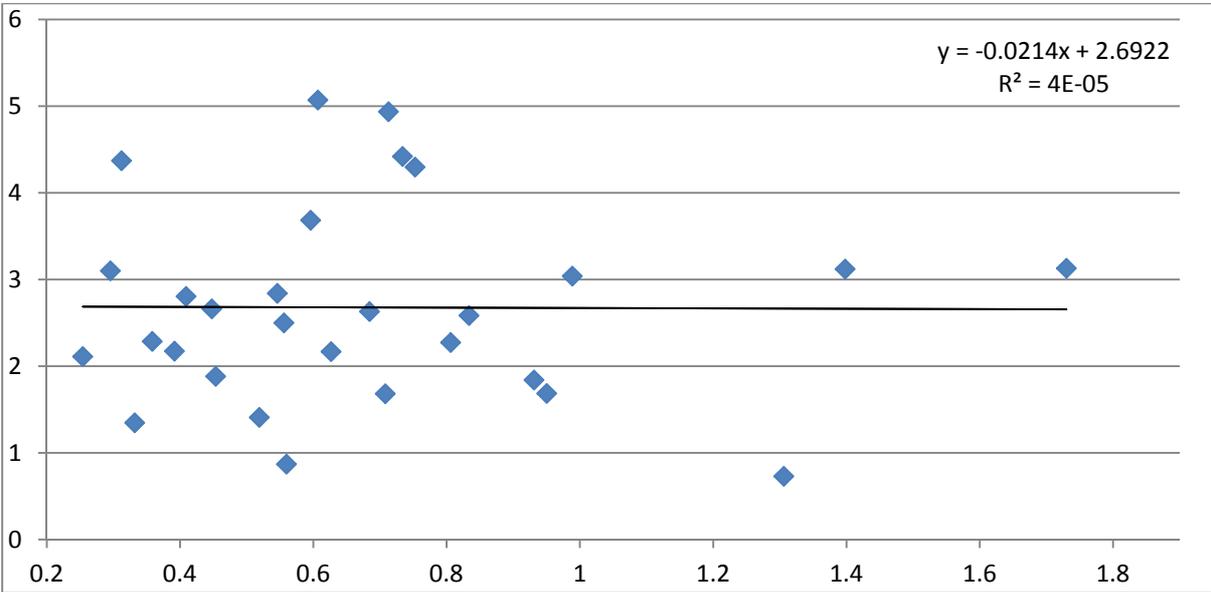
In the absence of consistent data on the impact of total GFCF by governments on economic growth, attention was focused instead on the category of infrastructure spending. There is also a generally held presumption that government investment expenditure in infrastructure such as road building is more efficiency enhancing than government output that is simply consumed. This view has been expressed by the European Commission.<sup>15</sup>

<sup>13</sup> Calderón and Sérvén (2008).

<sup>14</sup> IMF (1995)

<sup>15</sup> European Commission (2003).

**Chart 8 Road Infrastructure Expenditure as % of GDP and GDP Growth**



Source: OECD

*“Existing studies reveal that public investment has a positive impact on output and productivity, although the results are not very strong. This is explained by the fact that only a fraction of public investment expenditures are devoted to projects which aim at directly raising productivity (for example, investment in transport infrastructure), whereas a significant proportion of public investment is devoted to projects that pursue other objectives such as environmental protection or redistribution across regions, which have an indirect contribution to productivity.”*

For this study, data were available on a consistent basis for 29 OECD countries covering the period 1996 to 2010 for the value of investment spending on road infrastructure.<sup>16</sup> The average level of road investment spending for the sample of countries over the period was 0.68% of GDP, but there were large variations between countries and over time. Austria spent the lowest average amount on road spending as a proportion of GDP at 0.25% while the highest average level was invested by Slovenia at 1.73% of GDP. Chart 7 shows that the average amount spent on roads among all of these OECD countries has been relatively stable varying little above or below the mean figure whereas in some cases like Ireland country specific factors such as access to European Union funds stimulated spending until austerity budgets hit the sector. In the UK, France and Germany, there has been a steady decline in the resources allocated to capital spending on roads as a proportion of GDP.

Whereas the conventional wisdom is that public spending on infrastructure investment should

stimulate economic growth the evidence from analysing the data from 29 OECD countries does not support this conclusion. Comparing average road infrastructure expenditure by country over the period 1996 to 2010 to average real GDP growth produces no evidence of the existence of any relationship between the two economic variables (see Chart 8). The calculated correlation coefficient between average infrastructure expenditure on roads as a proportion of GDP and average real GDP growth for each country over the period analysed was an insignificant minus 0.066.<sup>17</sup> The insignificant mildly negative trend line is also shown on the scatter graph.

## **7. CONCLUSION**

These results show no relationship between the main sectors of public expenditure and real GDP growth. This should not be surprising as it has been the view of many economists for a long time that the larger the size of the state, the lower a nation's prosperity. Reallocating public expenditure in such a way as to raise the annual GDP growth rate from 2% to 3% would release resources for other uses. GDP per capita growth of 2% means that the economic standard of living doubles in 36 years. An extra point on that growth rate would double income in just 25 years.

Long-term growth in prosperity has led to growth in the size of public budgets, but public expenditure now needs to be trimmed back across all functions of government to permit the private sector to expand. There is no evidence justifying the continual rise in the size of the state and reversing its growth is simply a question of political will. To fail to do so will be at the cost of future living standards.

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<sup>16</sup> OCED (2013b). The countries included in the analysis additional to the 19 in Table 1 were the US, Canada, Mexico, Japan, Australia, Iceland, Poland, Slovenia, Switzerland and Turkey.

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<sup>17</sup> The calculated t statistic value was -0.273 with 17 degrees of freedom.

## APPENDIX A: PUBLIC EXPENDITURE AND ECONOMIC GROWTH

The relationship between economic growth and public expenditure needs to be considered within two time frames – long term and short term.

**Long Term:** There are two contrasting views of the role of the state and the relationship with long run economic growth in the public finance literature. In his investigation into the factors determining the prosperity of countries Adam Smith suggested that the role of government should be confined to a number of primary functions such as enforcing contracts and providing national defence and some secondary activities, but his fundamental and innovative idea was that unnecessary and wasteful activities by governments that interfered with the operation of markets harmed wealth creating activities. This was the insight behind the spread of '*laissez-faire*' policies restricting the role of the state and the level of public expenditure that took hold in the 19<sup>th</sup> century. This has spawned a host of theories about the need to control public expenditure, but the common theme is that state activity will have a negative impact on economic growth.

In contrast, at the end of the century the German economist Adolph Wagner (1835-1918) proposed that there was a tendency for the activity of governments to grow as countries grew richer. According to Wagner:

*"Comprehensive comparisons of different countries and different times show that among progressive peoples (societies), with which alone we are concerned; an increase regularly takes place in the activity of both the central government and local governments constantly undertake new functions, while they perform both old and new functions more efficiently and more completely. In this way economic needs of the people to an increasing extent and in a more satisfactory fashion, are satisfied by the central and local Governments."*

Wagner's law of increasing state activity suggests that there will be a positive correlation between the level of economic development and the role of the state or in practical terms between real GDP per capita growth and public expenditure. This proposition has gained a great deal of empirical support and has become something of a stylized fact. The assumption that governments have a comparative advantage in carrying out some services desired by citizens has received less attention.

A recent study by Lamartina and Zhaghini (2011) into the joint development of government expenditures and economic growth in 23 OECD countries over the period 1970 to 2006 found a positive correlation between public spending and per-capita GDP and a long-run elasticity greater than one suggesting a more than proportional increase of government expenditures results with respect to a rise in economic activity.

However, although there may be some evidence of a long-term correlation between government expenditure and GDP there is nothing to suggest that the direction of causality runs inevitably from economic growth to public expenditure or public expenditure to growth. It is very important to note that the long-term relationship between public expenditure and GDP growth flows from GDP to a rise in the role of the state and not the other way round. Richer economies can afford more public expenditure.

For example, an important study by Henrekson (1993) using long run Swedish data over the period from 1861 to 1990 found that the correlation between the share of public expenditure in national income was likely to be spurious. Peacock and Wiseman (1961) studied public expenditure in the UK from 1891 to 1955. The authors found some empirical support for Wagner's proposition, but they questioned its generality across countries and across time. Noting the general tendency of public expenditure in the UK to rise over time interspaced by plateaus, they put forward the existence of a 'displacement effect' hypothesis to explain the pattern.

The displacement effect leads to shifts upwards in the level of public expenditure at times of crisis. The authors argued that governments will always find ways of spending money to please some voters, but that their ability to do so is constrained by the electorate's unwillingness to accept higher levels of taxation. This means that in settled times there will be a tolerable level of taxation and that desired public expenditure will be above this level, until a crisis such as war or a social upheaval 'displaces' the previous relationship. After the disturbance is over new ideas of tolerable tax levels emerge, and a new plateau of expenditure may be reached, with public expenditures again taking a broadly constant share of gross national product, though a different share from the former one.

A major survey of the empirical literature by Bergh and Henrekson (2010) came to the conclusion that in rich countries the consensus is that there is a negative correlation between the total size of government and economic growth. The authors listed the main factors that cause the relative size of government in an economy to promote and to inhibit growth, but concluded that the former operate more effectively in poorer countries while the latter are stronger in the developed world. The factors reducing growth resulting from big government are high taxation levels, the crowding out of private production and investment and rent-seeking activities on the part of interest groups which creates institutional sclerosis. The authors conclude:

*"...a careful reading of the existing literature suggests that the relationship between government size and growth is positive for low levels of government size and most likely negative when government is big. The question, then, is whether Western democracies have grown beyond the point where government becomes an impediment to growth."*

There is relatively little in the economics literature about the impact of the composition of public expenditure on economic growth. Neither is there much support for Wagner's suggestion that for certain functions public expenditure has a comparative advantage over private expenditure. There is, however, much written about how rent-seeking interest groups affect the observed pattern of public expenditure making it difficult to cut back even when economic decline results (Olson, 1982). According to Buchanan and Wagner (1977):

*"But aggregates are made up of component parts; an expansion in overall budget size is reflected in increases in particular spending programs, each one of which will quickly come to develop its own beneficiary constituency, within both the bureaucracy itself and the clientele groups being served. To justify its continued existence, the particular bureaucracy of each spending program must increase the apparent "needs" for the services it supplies. Too often these activities by bureaucrats take the form of increasingly costly intrusions into the lives of ordinary citizens, and especially in their capacities as business decision makers."*

**Short Term:** The argument that fiscal deficits can influence real output and can return an economy to its long term growth path by closing an output gap is based upon traditional Keynesianism. For Keynesians like Krugman (2013) aggregate government spending is an important policy variable, which can be used by the government authorities in order to influence real output and the economic growth of the economy.

However, the consensus is that fiscal deficits are ineffective in all but the very short run in affecting output, but that they can result in inflationary pressures when accompanied by accommodative monetary policy and that when government debt is high as a proportion of GDP they will reduce long-term growth (Reinhart and Rogoff, 2009). Furthermore, the empirical magnitude of fiscal multipliers is a subject with much uncertainty and although values estimated by the IMF have recently been revised upwards as reported in Blanchard and Leigh (2013), Coenen et al (2010) have demonstrated that that fiscal stimuli work only when a number of other factors are in operation at the same time.

The most likely result of fiscal expansion is to crowd-out private consumption and investment. In this case additional resources spent by the government would simply displace private spending producing no impact on national output. If, however, the displaced investment would have been more productive than public capital formation, or if the displaced private consumption would have stimulated future market growth, then rising public expenditure, although affordable as a result of rising GDP, would have a negative impact on the rate of GDP growth and on living standards. There should then be negative correlation, which would be causal, between countries with a high level of public expenditure as a proportion of GDP and real GDP growth. This appears to be the case.

Evidence of crowding-out was found by a large scale study of 145 countries analysed over the period 1960 to 2007.<sup>18</sup> Since Keynesian deficit-spending policies are concerned more with the total level of government spending than its allocation among functions, albeit that some Keynesians have a preference for investment expenditure, this issue is of less relevance for this report.

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<sup>18</sup> Furceri and Sousa (2011).

## **APPENDIX B: DATA SOURCES**

Data on the composition of public expenditure is accounted for by national statistics offices under the Classification of the Functions of Government (CFOG) system which is part of the United Nations System of National Accounts (SNA). The CFOG breaks down government expenditure by level (general, central, regional, etc.) and by function. Despite the existence of international standards there are a number of problems in the compilation of a dataset which would provide a consistent breakdown of public expenditure by type across the set of countries studied.

Data on government spending, expenditure by function, GDP in current prices in US\$ at Purchasing Power Parity (PPP), and annual volume GDP growth was available from the OECD countries based on the System of National Accounts 1993 (SNA 1993) from the OECD website.<sup>19</sup>

The CFOG system is meant to be applied as a national income accounting standard across countries. However, consistent internationally comparable data expressed in international dollars to reflect purchasing power parity values were only available from the OECD to compare the composition and relative importance of public expenditure budgets for the 19 countries listed in Table 1.

Information on the share of governments in gross fixed capital formation was sourced from OECD (2013a) and investment expenditure on road infrastructure from OECD (2013b).

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<sup>19</sup> <http://stats.oecd.org/index.aspx?queryid=350>

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