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The Effects of Government Expenditures and Revenues on the Economy and Economic Well-Being: A Cross-National Analysis

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The Effects of Government Expenditures and Revenues on the Economy and Economic Well-Being: A Cross-National Analysis

Summary

The FY2006 budget resolution (H.Con.Res. 95) required that mandatory spending be reduced by $35 billion and revenues be reduced by no more than $70 billion over the next five years. Congress passed and the President signed a reconciliation bill (P.L. 109-171) to reduce mandatory spending by $39 billion between FY2006 and FY2010. A revenue reduction reconciliation bill (H.R. 4297) has not been enacted as of the date of this report. Many argue that tax and spending reductions will stimulate economic growth, whereas many others argue that tax cuts will lead to a larger deficit with adverse economic effects and that spending cuts will reduce critical government services. This report examines the effects of government spending and taxation on economic growth and economic well-being by comparing the United States with 20 other industrial Organization for Economic Cooperation and Development (OECD) countries.

Among the 21 OECD countries, the United States has the fourth smallest public sector, with total government (federal, state, and local) expenditures amounting to 37% of gross domestic product (GDP). Total government spending accounted for 34% of GDP (the smallest) in Ireland and 59% of GDP (the largest) in Sweden. Countries with larger government spending relative to GDP tend to have higher productivity growth rates and lower relative poverty rates. There appears, however, to be no relation between government spending and GDP growth.

Public social welfare expenditures are the benefits paid by all levels of government providing support to maintain welfare. The level of social welfare spending varies from country to country — the market-oriented English-speaking countries such as the United States tend to have social welfare expenditures equal to about 15% of GDP, whereas the welfare-state Scandinavian countries spend much more, typically about 25% of GDP. The evidence suggests that public social welfare expenditures do not have an adverse effect on the economy. But these expenditures can improve economic well-being — countries with higher public social welfare expenditures relative to GDP have lower relative poverty rates.

The major source of funding for government expenditures is tax revenues. Taxes have an effect on government budgets, and most people would agree that they also have an effect on the economy. The evidence suggests, however, that countries with high tax revenues relative to GDP do not generally experience lower economic growth rates than countries with lower tax revenues. Some scholars argue that countries with higher taxes to fund higher social welfare spending tend to choose the types of taxes with the smallest economic distortions.

Many scholars argue that long-term budget deficits can have an adverse impact on the economy. The evidence suggests that countries with larger budget surpluses tend to have higher economic growth rates, and that sustained government budget deficits are likely to reduce long-term economic growth. This report will not be updated.

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The Effects of Government Expenditures and Revenues on the Economy and Economic Well-Being: A Cross-National Analysis

U.S. federal government expenditures in FY2003 were $2,159.9 billion. But the federal government is not alone in spending: state and local governments also spent $2,164.2 billion. The combined federal, state, and local government budget deficit was equivalent to 4.6% of gross domestic product. Although it is recognized that budget deficits (created through either spending increases or tax cuts) provide a short-term stimulus to the economy, it is also generally agreed that persistent budget deficits can have harmful long-term economic effects.[1] For the past few years, there has been a vigorous debate at all levels of government on the best way to reduce and eliminate budget deficits: raise taxes, reduce taxes, or reduce spending.

At the federal level, the FY2006 budget resolution (H.Con.Res. 95) required that mandatory spending (that is, spending for entitlement programs) be reduced by $35 billion and revenues be reduced by no more than $70 billion over the next five years. Congress eventually passed and the President signed a reconciliation bill (P.L. 109-171) to reduce mandatory spending by $39 billion between FY2006 and FY2010. The majority of the reductions are in Medicare, Medicaid, and student loans for higher education. A revenue reduction reconciliation bill (H.R. 4297) has not been enacted as of the date of this report.

The President's FY2007 budget proposal calls for a further $65 billion reduction in mandatory spending and making the 2001 and 2003 tax cuts permanent. The President and the Republican congressional leadership argue that the FY2007 proposals will facilitate economic growth and job creation and otherwise ensure a strong economy in the future. On the other side, the Democratic congressional leadership argues that tax cuts will lead to a ballooning federal deficit with adverse economic effects and that spending cuts will reduce critical government services.

Government spending and taxation can have significant effects on the economy, and on the lives of individuals. This report examines the consequences of government spending, especially public social welfare expenditures, and taxation on the economy and the well-being of the citizens. This analysis summarizes the results

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[1] See, for example, the papers in Alice M. Rivlin and Isabel Sawhill, eds., *Restoring Fiscal Sanity 2005* (Washington: Brookings Institution, 2005); and in Federal Reserve Bank of Boston, *The Economics of Large Government Deficits*, conference series no. 27, proceedings of a conference held in October 1983.

from previous studies and uses data from 21 industrial countries to compare the U.S. experience with that of other countries.[2]

The Size of the Public Sector in the Economy

Government carries out a number of important economic functions. One of those functions is to correct inefficiencies or distortions in the allocation of goods and services. This may take the form of levying taxes or providing subsidies to correct externalities, providing public goods such as national defense and police protection, or regulating monopolies.[3] Another function of government is to redistribute income and wealth through the use of taxes and transfers. Lastly, government can have an economic stabilizing function to reduce unemployment or inflation. In performing these functions, however, government may also introduce inefficiencies or distortions in the market.

One issue that often generates vigorous debate is the proper size of government.[4] Mostly, this debate is qualitative rather than quantitative, in that most argue over whether the public sector is too large or too small. There is no standard for the optimal size of the public sector, and there is no agreed upon way to measure public sector size. In this report, the size of the public sector will be measured by the ratio of government expenditures to gross domestic product (GDP). U.S. public sector size will be judged by comparing this ratio to the same ratio for other industrial countries.

Government plays a significant role in the nation's economy. But the role varies dramatically from country to country. **Figure 1** shows total government spending as a percentage of GDP in 2003.[5] Total government spending accounted for 34% of GDP in Ireland and 59% of GDP in Sweden. Among these 21 countries, the United States has the fourth smallest public sector, with government expenditures amounting to 37% of GDP. In general, the Scandinavian and continental European countries have relatively large public sectors, which amount to 50% or more of GDP. The English-speaking countries as well as Japan and Switzerland tend to have smaller public sectors.

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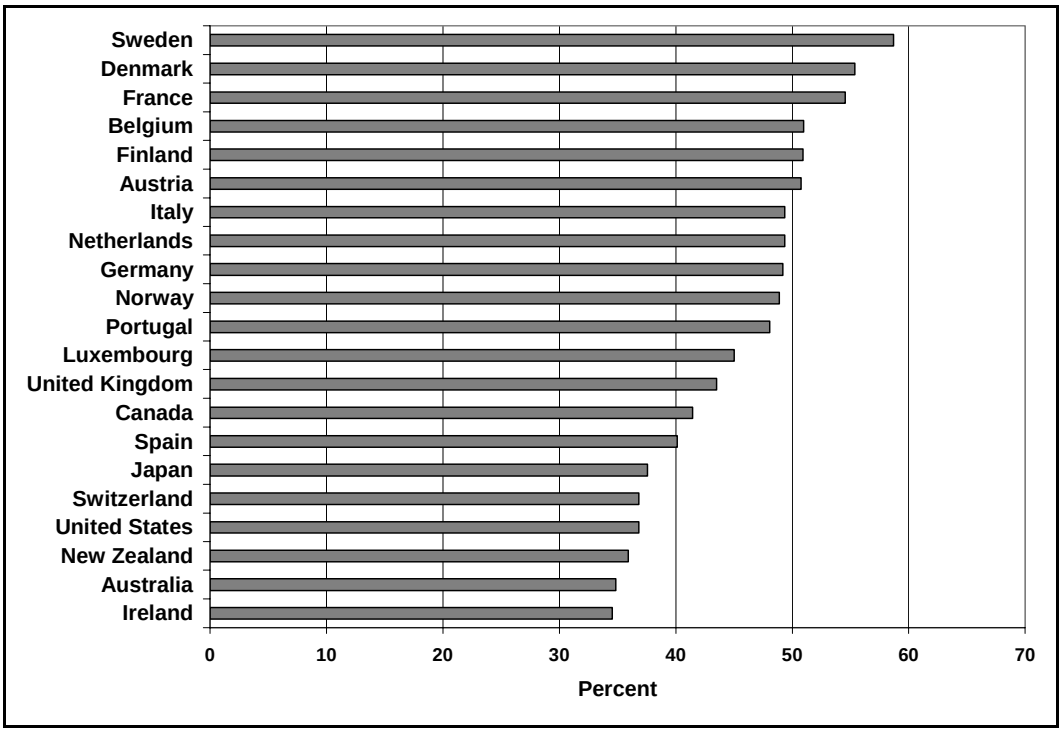
[2] See the appendix for a description of the data used in the report.

[3] A prime example of an externality is the generation of pollution during the production of a good. A firm will typically base its pricing policy on the costs it incurs in the production of the good and not on the total costs, which includes the cost placed on society from the pollution.

[4] See CRS Report RL32162, *The Size and Role of Government: Economic Issues*, by Marc Labonte.

[5] Total government spending includes spending at all levels of government such as state and local as well as the federal or central government. On average, central government spending accounts for 58% of total government expenditures for the 21 countries considered in the report. The range is from a low of 30% to a high of 91%. Given this wide disparity in the importance of the central government spending, total government expenditures and revenues are examined in this report.

Figure 1. Total Government Expenditures as a Percentage of GDP, 2003



Source: Organization for Economic Cooperation and Development (OECD).

Economic theory does not predict an unambiguous effect of government policy on economic growth. Traditional growth models suggest that long-term growth in output and productivity are due to growth in population and exogenous technical progress, which are unaffected by government policy. Newer growth models, however, suggest that government policies that increase investment in physical and human capital can raise long-term growth. Empirical research as well has found that the size of government has ambiguous effects on economic growth — some studies find positive effects and others find negative effects. One study found that government consumption expenditures have a negative effect on economic growth. But consumption expenditures are a fairly small part of total government spending. The same study finds that other government functions such as investment spending for physical and human capital as well as a high quality bureaucracy have a positive effect on economic growth.[6]

Table 1 displays the simple correlation among the 21 industrial countries of the 10-year average of total government spending as a percentage of GDP with various measures of economic growth and well-being.[7] The first row of the table shows the

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[6] See Simon Commander, Hamid R. Davoodi, and Une J. Lee, "The Causes of Government and the Consequences for Growth and Well-Being," World Bank, Policy Research Working Paper no. 1785, Jan. 1997.

[7] The simple correlation between two variables can be between +1 and -1. A positive (continued...)

correlation with the 10-year average annual real GDP growth rate.[8] The estimated correlation is fairly small and is not precisely estimated, thus a correlation of zero cannot be ruled out and the correlation is said to be not statistically significant.[9] Consequently, there is no apparent relation between these two variables. As an example, both the United States and Finland have experienced average annual real GDP growth rates of 3.3% over the past 10 years, yet Finland's government expenditures are equivalent to 54.3% of GDP compared to 35.9% for the United States.

Table 1. Correlations with 10-Year Average Total Government Spending as a Percentage of GDP

	Correlation
10-year Average Annual Real GDP Growth Rate	-0.15
10-year Average Annual Productivity Growth Rate	0.49
Relative Poverty Rate in 2000	-0.63

Source: CRS calculations of OECD data.

The correlation of government spending with productivity growth is shown in the next row of the table. The estimated correlation is positive, of moderate size, and is statistically significant. This suggests that countries with higher government spending relative to GDP also have higher productivity growth rates. Lastly, the final row of the table reports the correlation between government spending relative to GDP and the relative poverty rate.[10] The correlation is -0.63 (and statistically

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[7] (...continued)
(negative) correlation indicates that when one variable increases the other variable tends to increase (decrease). A correlation of zero indicates there is no relation between the two variables.

[8] The 10-year averages are used so as to average out the effects of business cycle fluctuations in these economic variables.

[9] The standard error is also estimated along with the correlation. The standard error is used to test the hypothesis that the estimated correlation coefficient is equal to zero (that is, no correlation). Precisely estimated correlations have small standard errors and the hypothesis of no correlation can usually be rejected. When the hypothesis of no correlation is rejected, the correlation is said to be statistically significant.

[10] The relative poverty rate is the percentage of the population with adjusted family income below 50% of median family income. This poverty threshold is commonly used for international comparisons of poverty because there is no internationally accepted official poverty threshold. Using this poverty threshold produces a poverty rate for the United States that is about 5 percentage points higher than the official poverty rate. The relative poverty rate is available only for 2000 for these countries. For a discussion and comparison of alternative poverty measures across countries see Timothy Smeeding, *Poor People in*
(continued...)

significant), suggesting that countries with higher government spending relative to GDP have lower relative poverty rates.

Not only does the size of the public sector vary among these countries, but spending priorities also vary considerably among countries. **Table 2** shows the percentage of government spending devoted to five government functions in 2003.[11] The countries are organized into four blocks: the continental European countries, the English-speaking countries, the Scandinavian countries, and Japan and Switzerland.[12] The average size of the public sector in each block is about what would be expected (see **Figure 1**). The Scandinavian countries, with their large welfare systems, have the largest public sector, with government spending equivalent to about 53% of GDP. The English-speaking countries, which are more market oriented, have smaller public sectors that are equivalent to about 38% of GDP. The continental European countries fall between these two extremes. The public sectors in Japan and Switzerland are about the same size as the public sectors in the English-speaking countries surveyed.

Although the overall size of the U.S. public sector is not much different from that of other English-speaking countries, U.S. spending priorities are very different. First, the United States devotes a much greater share of government expenditures to defense than any other country.[13] Part of this is due to the role the United States military plays in protecting Europe and Japan. Second, the U.S. allocates a larger proportion of government expenditures for health and education than do most countries. Lastly, the share of government spending in the United States devoted to social protection is less than in other industrial countries.[14]

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[10] (...continued)
Rich Nations: The United States in Comparative Perspective, Luxembourg Income Study, working paper no. 419, Oct. 2005.

[11] Important government functions not listed include public order and safety, environmental protection, and economic affairs, among others.

[12] Data on government expenditures by function are not available for Australia, Canada, and Switzerland.

[13] Defense spending includes military spending, civil defense (including the National Guard and armories), foreign military aid, and defense R&D spending.

[14] Social protection includes social welfare expenditures such as old-age benefits and other transfers. It also includes the administrative costs associated with these programs, grants for research related to social protection, and benefits to victims of natural disasters.

Table 2. Components of Total Government Spending, 2003

	As a percentage of total government spending				
	General public services	**Defense**	**Health**	**Education**	**Social protection**
Continental European Countries					
Austria	14.7%	1.8%	13.0%	11.4%	42.2%
Belgium	18.8	2.4	13.8	12.3	35.5
France	13.2	4.4	15.7	11.2	39.3
Germany	13.0	2.4	13.3	8.5	46.6
Italy	18.6	2.8	13.3	10.7	37.5
Luxembourg	10.8	0.7	11.7	11.8	42.4
Netherlands	16.3	3.1	9.6	10.6	38.0
Portugal	15.7	2.8	14.9	14.7	33.0
Spain	15.7	3.7	12.1	12.8	41.0
Market-oriented English-speaking Countries					
Australia	-	-	-	-	-
Canada	-	-	-	-	-
Ireland	10.6	2.0	19.1	13.0	28.1
New Zealand	12.8	3.3	16.1	19.7	29.2
United Kingdom	11.1	6.2	15.6	12.3	37.8
United States	13.1	11.0	20.0	17.1	19.9
Welfare-state Scandinavian Countries					
Denmark	14.4	2.8	10.2	15.1	44.7
Finland	12.0	3.1	12.8	13.0	42.5
Norway	10.1	4.0	17.1	13.6	39.0
Sweden	14.0	3.5	12.4	12.6	42.5
Other Countries					
Switzerland	-	-	-	-	-
Japan	7.5	2.9	20.0	11.9	34.5

Source: CRS calculations of OECD data.

Notes: Data for Spain and Ireland are for 2002.

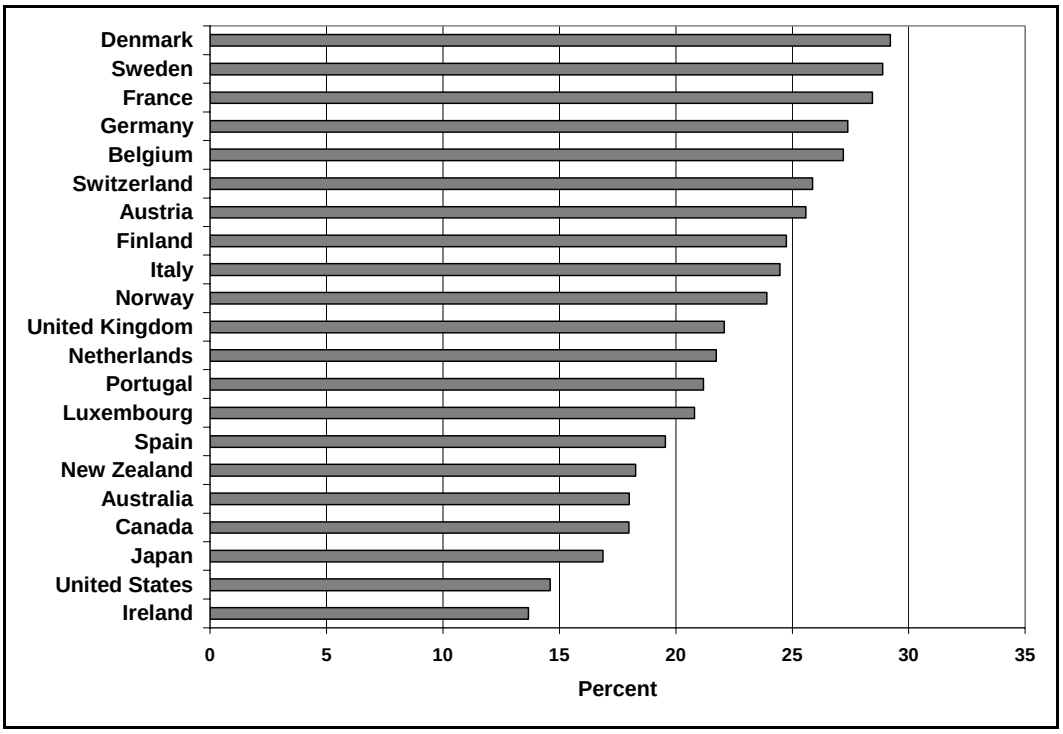
- Data are not available.

Public Social Welfare Expenditures

Public social welfare expenditures are the benefits paid by all levels of government to individuals, families, and households providing support to maintain welfare, and are a major component of social protection expenditures. In the United States, these expenditures are provided by such programs as Social Security, Supplemental Security Income, Temporary Assistance for Needy Families, unemployment insurance, Medicaid, Medicare, food stamps, and the earned income tax credit. At the federal level, most mandatory spending would be included in public social welfare expenditures.

Public social welfare expenditures vary from country to country almost as dramatically as total government expenditures. **Figure 2** shows public social welfare expenditures as a percentage of GDP for the 21 countries in 2001 (the latest year for which these data are available). The market-oriented English-speaking countries tend to have social welfare expenditures equal to about 15% of GDP, whereas the welfare-state Scandinavian countries spend much more — typically about 25% of GDP.

Figure 2. Social Welfare Expenditures as a Percentage of GDP, 2001



Source: CRS calculations of OECD data.

Social welfare expenditures can have a variety of effects on a nation's economy and its citizens. Many social programs, especially means-tested public assistance

programs, have disincentive effects, which can affect the economy.[15] Providing people with income if they don't work could take productive people out of the workforce, thus reducing output. There are two sources of disincentives in many social programs. First, when income increases individuals tend to purchase more goods and services, including leisure (that is, time not working). This is called the income effect, and has a negative effect on work effort.

Second, many social programs reduce benefits as an individual's earnings rise. This acts as an implicit tax on earnings. For example, Social Security has a retirement earnings test, which reduces Social Security benefits to beneficiaries who are under the normal retirement age by $1 for every $2 in earnings above an annual earnings limit.[16] This benefit reduction is comparable to a 50% tax rate on earnings above the limit. Combined with federal, state, and local taxes, the increase in total income may be only a few cents for every $2 earned. The price an individual pays for leisure is forgone wages. As the wage rate falls because of implicit and explicit taxes, the price of leisure falls and the individual will typically work less (that is, purchase more leisure). This effect is called the substitution effect.

In the case of most social programs, both the income and substitution effects act to reduce the work effort of beneficiaries. For example, research has shown that unemployed workers receiving unemployment insurance tend to remain unemployed longer than other unemployed workers.[17] In addition, Social Security beneficiaries subject to the retirement earnings test have been found to limit work hours to keep their annual earnings below the earnings limit.[18]

Removing workers from the workforce, however, could boost productivity in two ways. First, the principle of diminishing marginal returns suggests that as the workforce is reduced (holding the amount of other inputs constant), both marginal and average productivity will increase.[19] Second, some argue that the people receiving these benefits tend to be less productive than current workers. Consequently, economic growth and productivity may not be seriously affected by the provision of social benefits.[20] For example, evidence from OECD countries

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[15] For a discussion of disincentive effects see Robert Moffitt, "Incentive Effects of the U.S. Welfare System: A Review," *Journal of Economic Literature*, vol. 30, no. 1 (Mar. 1992), pp. 1-61; and U.S. General Accounting Office, *Self-Sufficiency: Opportunities and Disincentives on the Road to Economic Independence*, GAO/HRD-93-23, Aug. 1993.

[16] The annual limit is $12,480 in 2006.

[17] See Gary Solon, "Work Incentive Effects of Taxing Unemployment Insurance," *Econometrica*, vol. 53, no. 2 (Mar. 1985), pp. 295-306; and, Bruce Meyer, "Unemployment Insurance and Unemployment Spells," *Econometrica*, vol. 58, no. 4 (Jul. 1990), pp. 757-782.

[18] Leora Friedberg, "The Labor Supply Effects of the Social Security Earnings Test," *Review of Economics and Statistics*, vol. 82, no. 1 (Feb. 2000), pp. 48-63.

[19] The intuition behind this principle is quite simple. As more and more of one input into the production process is used, holding the amount of all other inputs constant, the increases in output become smaller and smaller, and average output per unit of input falls.

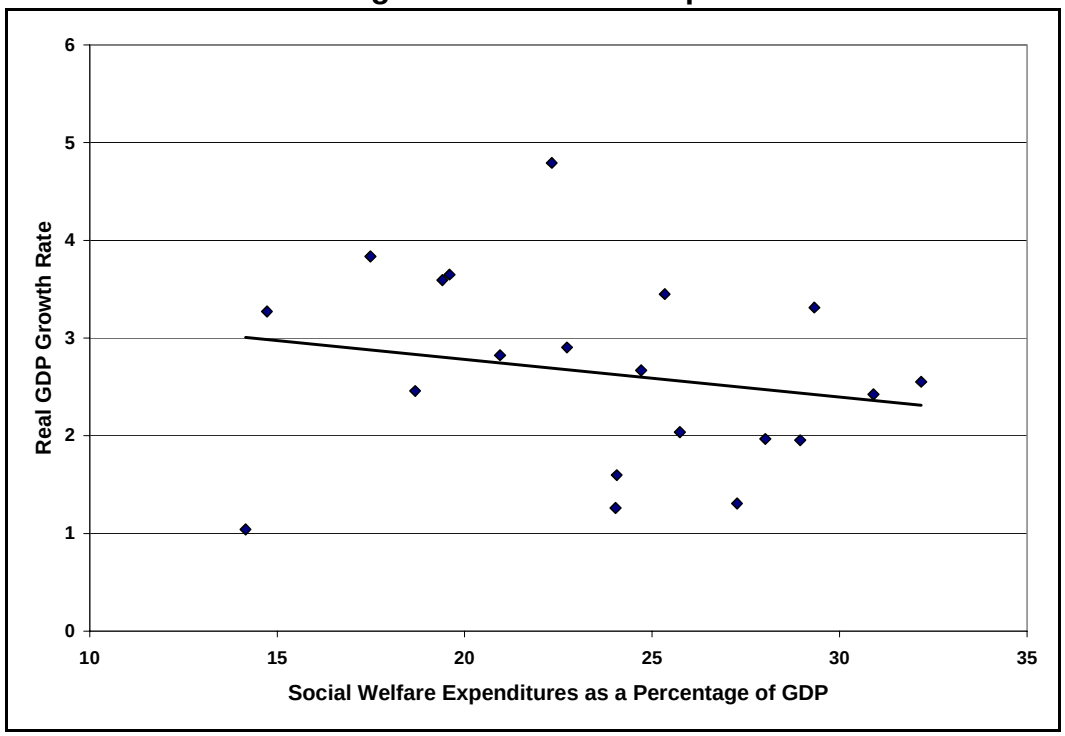
[20] Xavier Sala-i-Martin, "A Positive Theory of Social Security," *Journal of Economic*

(continued...)

shows that higher unemployment compensation is associated with higher productivity.[21] Even though productivity may rise, total output may fall as the workforce is reduced.

Figure 3 shows the relation between public social welfare expenditures expressed as a percentage of GDP and real GDP growth rates for OECD countries. Each point represents the data for one of the 21 countries used in this analysis. The straight line in the figure shows the fitted linear relationship between the two variables. There is a slight negative relationship between these two variables suggesting that countries with higher public social welfare expenditures tend to experience lower annual real GDP growth rates.[22] This relationship, however, is not very precise, in that the scattered data points are not very close to the fitted line.[23]

Figure 3. Relation Between Average Annual Real GDP Growth Rate and Average Social Welfare Expenditures



Source: CRS calculations of OECD data.

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[20] (...continued)
Growth, vol. 1, no. 2 (Jun. 1996), pp. 277-304, for example, suggests that "aggregate output is higher if the elderly do not work."

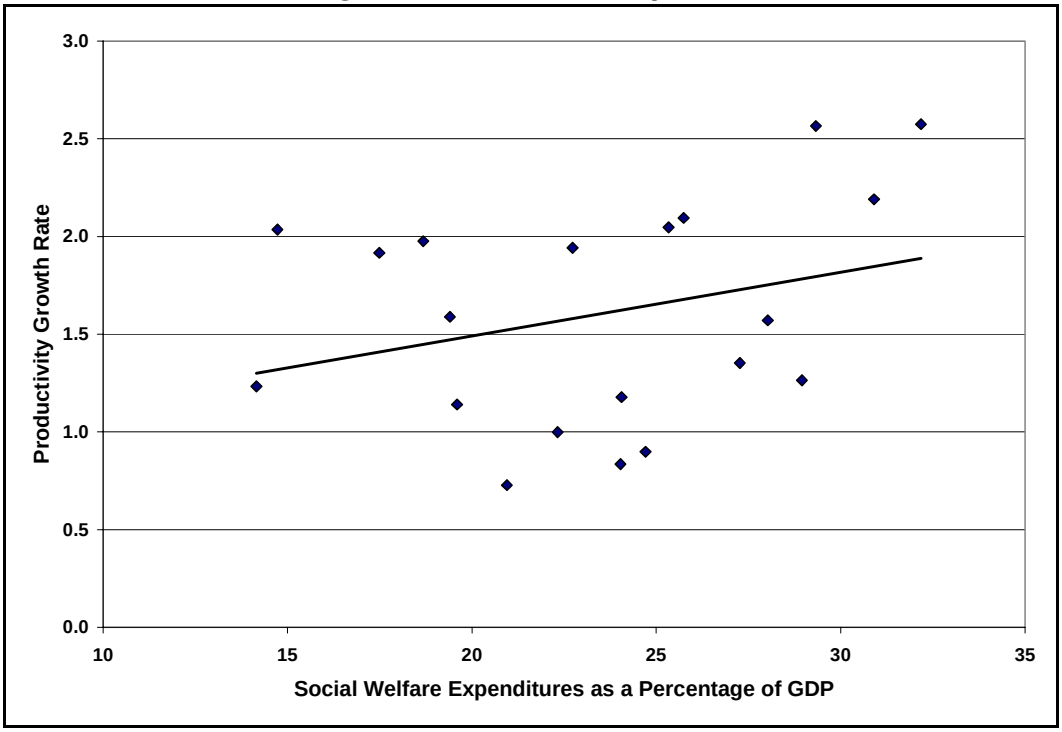
[21] Peter Lindert, *Growing Public*, vol. 2 (Cambridge: Cambridge University Press, 2004), ch. 19.

[22] The simple correlation is -0.19 and is not statistically significant.

[23] In a multivariate analysis, Peter Lindert, *Growing Public*, vol. 2 (Cambridge: Cambridge University Press, 2004), ch. 18 finds that social transfers have no statistically significant effect on the growth rate of real per capita GDP.

The relation between the 10-year averages of public social welfare expenditures and annual productivity growth rate, as well as the fitted linear relationship, is shown in **Figure 4**. In contrast to real GDP growth, there appears to be a slight positive relation between these two variables (the simple correlation is 0.22). This suggests that countries with higher public social welfare expenditures also tend to have higher productivity growth rates. This relationship, however, is far from precise and is not statistically significant.

Figure 4. Relation Between Average Productivity Growth Rate and Average Social Welfare Expenditures

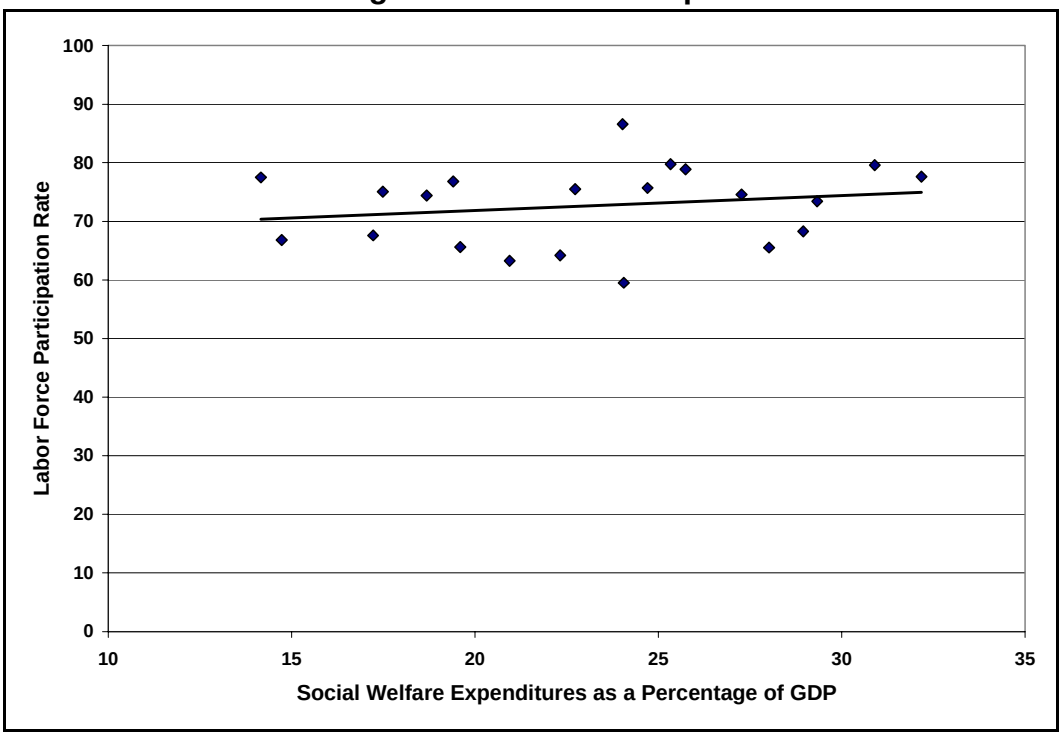


Source: CRS calculations of OECD data.

To investigate the work disincentive effects of public social expenditures, **Figure 5** shows the relation between the 10-year averages of public social welfare expenditures as a percentage of GDP and the 10-year average of the labor force participation rate.[24] There is a positive relationship between these two variables, but it appears to be fairly small and not very precise (the simple correlation is 0.19 and is not statistically significant).

[24] The labor force participation rate is the percentage of the working-age population (15 years and older) who have a job or are looking for one.

Figure 5. Relation Between Average Labor Force Participation Rate and Average Social Welfare Expenditures



Source: CRS calculations of OECD data.

The evidence so far suggests that public social welfare expenditures do not have a large effect on the economy. Many social programs are perceived as ineffective, which prompted President Reagan to famously quip that "the federal government declared war on poverty, and poverty won."[25] But these expenditures can improve economic well-being. Well-targeted social benefits can be effective in reducing poverty among vulnerable populations.[26]

Figure 6 shows the relationship between the 10-year average of public social welfare expenditures as a percentage of GDP and the relative poverty rate in 2000. The figure shows a clear and fairly precise relationship between these two variables — countries with higher public social welfare expenditures relative to GDP have lower relative poverty rates.[27] Social welfare expenditures can reduce poverty by (1) increasing income to above the poverty threshold, and (2) subsidizing employment and augmenting wages.

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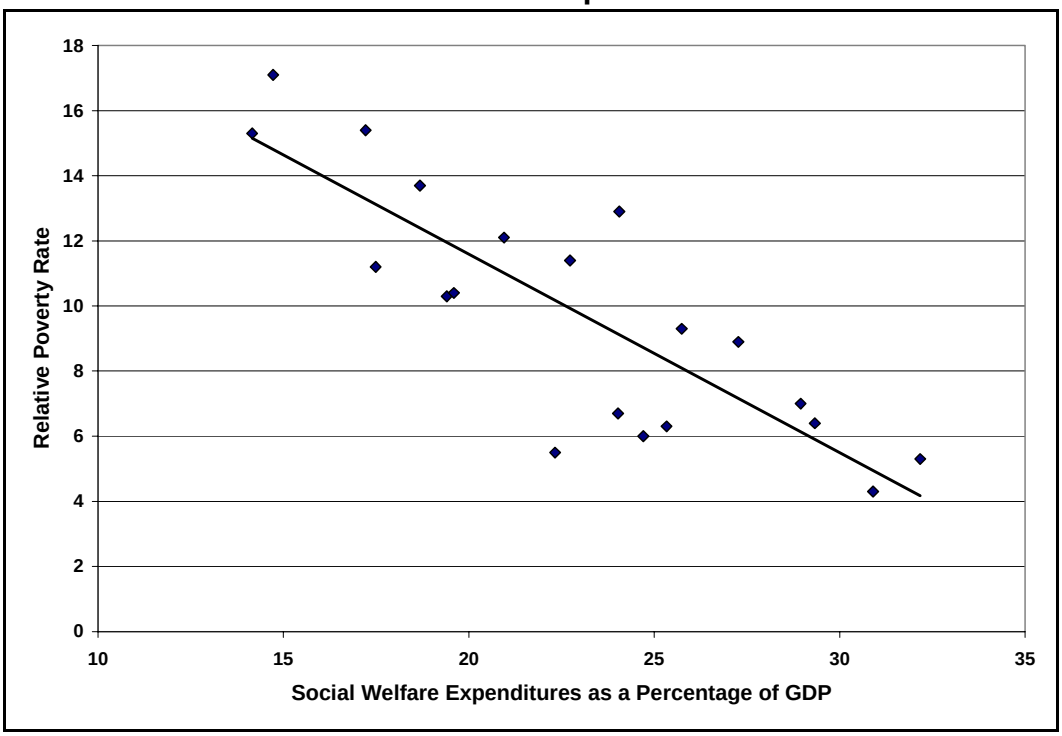
[25] Ronald Reagan, State of the Union Address, Jan. 25, 1988.

[26] See, for example, Thomas L. Hungerford, "The Distribution and Anti-Poverty Effectiveness of U.S. Transfers, 1992," *Journal of Human Resources*, vol. 31, no. 1 (Spr. 1996), pp. 255-273.

[27] The simple correlation is -0.83 and is statistically significant.

Figure 6. Relation Between Relative Poverty Rate and Average Social Welfare Expenditures



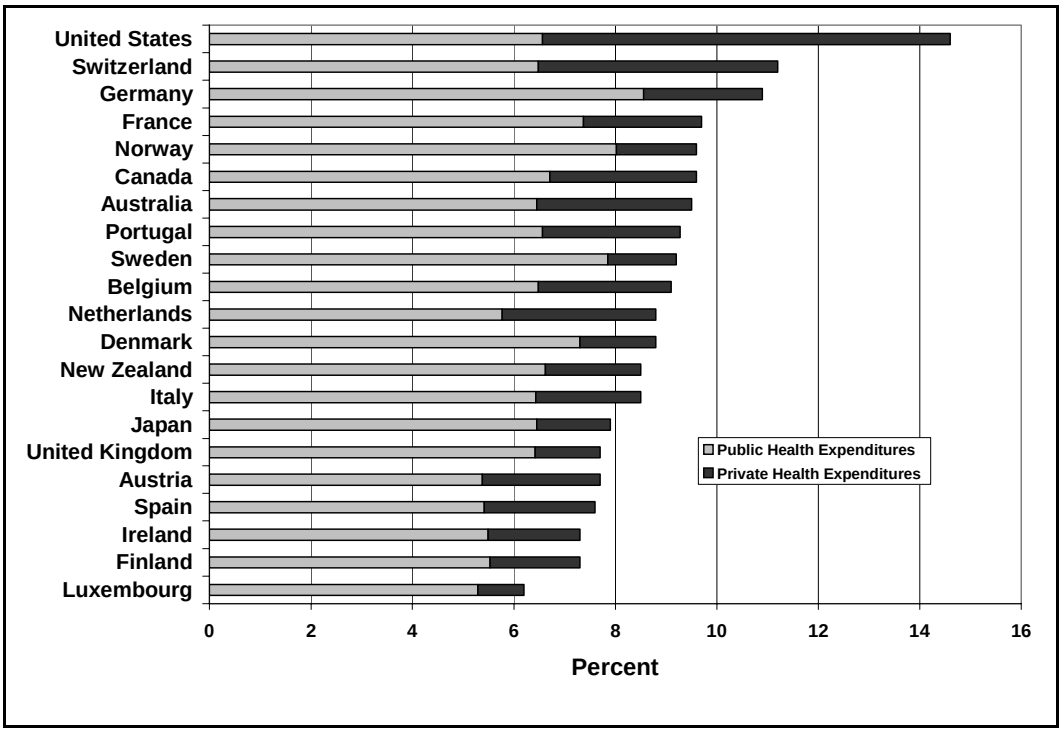
Source: CRS calculations of OECD data.

Public and Private Health Expenditures

Social welfare expenditures have effects beyond those on the economy and economic well-being. But the different components of social welfare expenditures affect different outcomes. One large and important component of social welfare expenditures is health care spending. Since average health outcomes of the population will depend on total health care spending rather than just public health spending, both public and private health expenditures will be the focus of attention. Furthermore, although public health spending affects the budget, both public and private health spending will affect the economy. Also, since different countries have different ratios of public to private health spending, examining both public and private health spending may provide insight into the effectiveness of public versus private spending.

On average, the 21 countries devote the equivalent of about 6.5% of GDP for government health spending (see **Figure 7**). The range is from a low of about 5% of GDP in Luxembourg to over 8% in Germany. The United States is at the average of about 6.5% of GDP. The relative rankings change, however, when private health expenditures are also considered. The United States spends considerably more relative to GDP than any other country (this is also true when per capita health expenditures are considered). Total health spending in the United States was equivalent to 14.6% of GDP in 2002 compared to 11.2% in Switzerland, 7.3% in Finland, and 6.2% in Luxembourg. The 21-country average was 9.0% of GDP.

Figure 7. Public and Private Health Expenditures as a Percentage of GDP, 2002



Source: CRS calculations of OECD data.

In general, richer countries tend to spend more per person on health care. The simple correlation between per capita health expenditures and per capita GDP is 0.61, which is precisely estimated.[28] Although richer countries spend more on health care, health care spending does not appear to be related to either the real GDP growth rate or the productivity growth rate. The simple correlations between total health spending and these two economic growth measures are fairly small.[29]

Health care coverage in the other countries is either universal or nearly universal. In the United States, however, about 82.2% of the population has health insurance coverage (through an employer-provided plan or a government program).[30] Although about 18% of the U.S. population is not covered by health insurance, research suggests that the length of time most go without coverage is fairly short, typically less than six months, and many may be eligible for coverage under the

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[28] Both health expenditures and GDP were converted to U.S. dollars using the purchasing power parities (PPPs). The estimated correlation is statistically significant at conventional confidence levels.

[29] The correlation of total health spending with the real GDP growth rate is -0.19 and with the productivity growth rate is 0.06. Neither of these estimates are statistically significant at conventional confidence levels.

[30] Paul Fronstin, "Sources of Health Insurance and Characteristics of the Uninsured: Analysis of the March 2005 Current Population Survey," Employee Benefit Research Institute Issue Brief no. 287, Nov. 2005.

Consolidated Omnibus Budget Reconciliation Act of 1985 (COBRA, P.L. 99-272) or other continuation-of-coverage laws.[31] CBO, however, estimated that in 1998, 24.5% of non-elderly Americans were uninsured sometime during the year, and 9% were uninsured the entire year.[32]

The important feature of health expenditures is not whether or not they affect economic growth but rather whether or not increased expenditures improve health outcomes. There is no single good measure of health outcomes. Consequently, three measures of health outcomes will be reported. The first column of numbers in **Table 3** presents life expectancy at birth (average for men and women) in each of the 21 countries. By this measure, the United States is tied for last (with Denmark and Portugal) at 77.2 years. The simple correlation between total health expenditures as a percentage of GDP and life expectancy, however, is small and not precisely estimated — there appears to be no relationship between these two variables. But by age 65, life expectancy for men and women in the United States is about at the average for the 21 developed countries (see the next two columns of **Table 3**).

The United States also ranks at the bottom in infant mortality.[33] The market-oriented English-speaking countries tend to have higher infant mortality rates than the welfare-state Scandinavian countries. The continental European countries, Japan, and Switzerland fall between these two extremes. Lastly, the final column of **Table 3** reports the proportion of low birth weight babies.[34] Japan ranks at the bottom just behind the United States.

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[31] Ibid.

[32] Testimony of CBO Director Douglas Holtz-Eakin, House Committee on Ways and Means, Subcommittee on Health, *The Uninsured and Rising Health Premiums*, 108th Cong., 2nd sess., Mar. 9, 2004.

[33] The infant mortality rate is the number of deaths of children under one year of age per 1,000 live births. The OECD notes that there are some differences between countries in the registering practices of premature infants with relatively low odds of survival, which may slightly increase recorded infant mortality. This would affect infant mortality rates for the United States, Canada, and the Scandinavian countries.

[34] This shows the number of live births weighing less than 2,500 grams (5.5 pounds) as a percentage of total live births.

Table 3. Health Indicators, 2003

	Life expectancy			Infant mortality	Low birth-weight
	At birth	At age 65 females	At age 65 males		
Continental European Countries					
Austria	78.8	19.7	16.3	4.1	6.6%
Belgium	78.1	19.7	15.8	4.4	-
France	79.4	21.3	16.9	4.1	6.5
Germany	78.3	19.6	16.0	4.2	6.7
Italy	79.9	20.7	16.7	4.5	6.5
Luxembourg	78.2	19.9	15.9	5.1	-
Netherlands	78.4	19.3	15.6	5.0	5.4
Portugal	77.2	19.0	15.6	5.0	7.4
Spain	79.7	20.4	16.5	4.1	-
Market-oriented English-speaking Countries					
Australia	80.0	20.8	17.4	5.0	6.4
Canada	79.7	20.6	17.2	5.4	5.8
Ireland	77.8	18.6	15.3	5.0	4.9
New Zealand	78.7	20.0	16.7	-	6.5
United Kingdom	78.2	19.1	16.1	5.2	7.6
United States	77.2	19.5	16.6	7.0	7.8
Welfare-state Scandinavian Countries					
Denmark	77.2	18.3	15.4	4.4	5.5
Finland	78.2	19.6	15.8	3.0	4.3
Norway	79.0	19.7	16.2	3.5	5.2
Sweden	79.9	20.0	16.9	3.3	4.3
Other Countries					
Switzerland	80.4	21.0	17.4	4.5	6.5
Japan	81.8	23.0	18.0	3.0	9.0

Source: OECD.

- Not available.

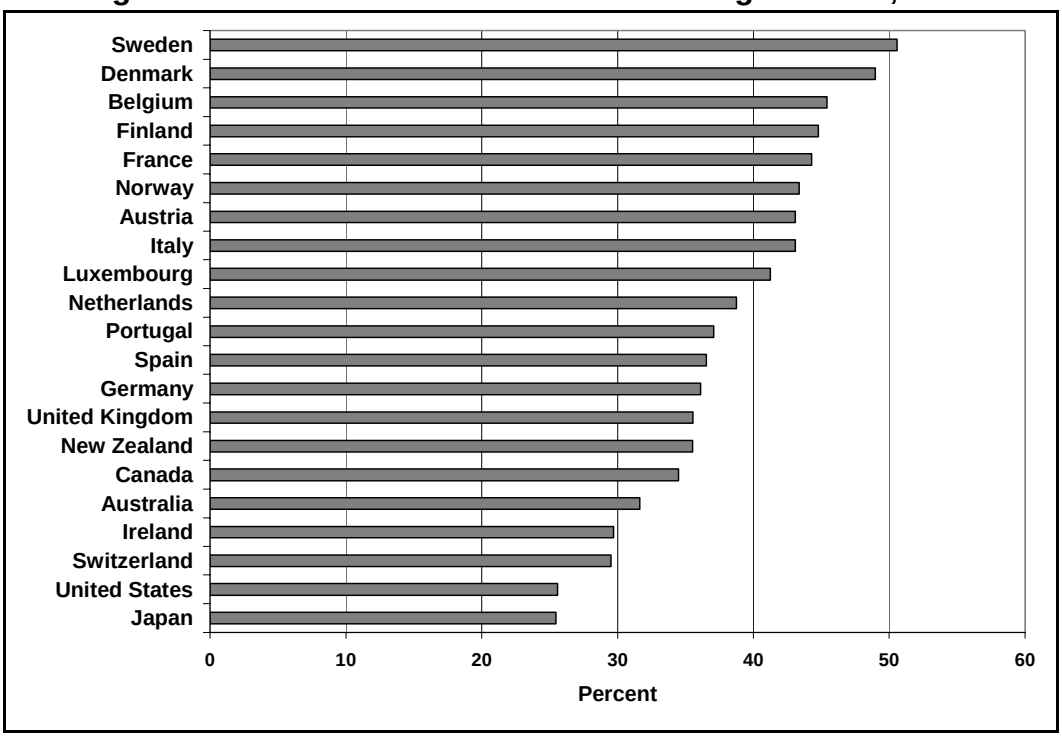
The evidence presented shows that the United States spends considerably more for health care relative to GDP than any other industrial country, but this higher spending does not necessarily translate into better health outcomes. Looking at the United States over time, however, shows that increased spending on health care has

improved health outcomes.[35] But many argue — and research suggests — that private health spending in the United States is no more efficient than public health spending because of poor incentives to control health costs and a medical malpractice system that encourages physicians to practice "defensive medicine."[36]

Tax Revenues

The major source of funding for government expenditures is tax revenues. In general, the continental European countries appear to rely on tax revenues as opposed to other revenue sources to a slightly greater extent than either the market-oriented English-speaking countries or the welfare-state Scandinavian countries. The differences, however, are not particularly large. **Figure 8** shows tax revenues as a percentage of GDP. There is, of course, a relationship between tax revenues and government expenditures (compare **Figure 8** with **Figure 1**) — countries that spend more also raise more tax revenues.[37] Tax revenues as a percentage of GDP in the United States and Japan are about half of what they are in Sweden (25% compared to 50%). The other industrialized countries fall between these two extremes.

Figure 8. Total Tax Revenue as a Percentage of GDP, 2003



Source: OECD

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[35] David M. Cutler, *Your Money or Your Life* (Oxford: Oxford University Press, 2005).

[36] Ibid.; and Henry Aaron and Jack Meyer, "Health" in Alice M. Rivlin and Isabel Sawhill, eds., *Restoring Fiscal Sanity, 2005* (Washington: Brookings Institution, 2005).

[37] The simple correlation is 0.90, which is statistically significant.

Table 4 reports the sources of tax revenues for the 21 industrialized countries. The entries in the table show dramatic variation among the countries in tax policy. Denmark, on one hand, relies on income and wealth tax revenues from individuals for over half of its total tax revenues. Portugal, on the other hand, relies on taxes from individuals for about 16% of total tax revenues. While not as dramatic, there are also disparities between the countries in the proportion of tax revenues from taxes on corporations and from social security taxes.[38] Taxes on goods and services account for 18% to 38% of tax revenues in these countries.

Two relationships stand out. First, the market-oriented English-speaking countries appear to rely more heavily on property taxes than the other industrialized countries (see the last column of **Table 4**). Second, countries with a higher proportion of tax revenues coming from income and wealth taxes tend to rely less on social security taxes.[39]

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[38] Social security taxes can be paid by both the employer and the employee, and are generally based on payroll. Social security tax revenues are earmarked for social programs such as old-age pensions, disability benefits, and unemployment assistance.

[39] The simple correlation is -0.79.

Table 4. Sources of Tax Revenues, 2003

	As a percentage of tax revenue				
	Individual	**Corporate**	**Social Security**	**Goods and services**	**Property**
Continental European Countries					
Austria	23.1%	5.1%	33.7%	28.2%[a]	1.3%
Belgium	31.4	7.4	31.8	24.6	3.3
France	17.0	6.3	37.1	25.6	7.3
Germany	23.9	3.5	40.5	29.4	2.4
Italy	25.1	6.6	29.5	25.7	8.0
Luxembourg	17.1	19.1	27.9	28.1	7.5
Netherlands	17.9	7.6	36.3	31.8	5.2
Portugal	15.8	8.7	31.7	36.7	4.1
Spain	18.6	9.0	35.3	28.2	7.5
Market-oriented English-speaking Countries					
Australia	38.5	16.7	0.0	29.7	9.5
Canada	34.6	10.4	15.4	26.1	10.0
Ireland	26.5	12.9	14.8	38.4	6.5
New Zealand	41.9	13.6	0.0	35.2	5.2
United Kingdom	28.7	7.8	18.5	32.7	11.9
United States	35.3	8.1	26.4	18.2	12.1
Welfare-state Scandinavian Countries					
Denmark	53.2	5.7	3.4	32.5	3.8
Finland	31.0	7.7	26.7	32.0	2.3
Norway	24.8	18.5	22.9	31.2	2.5
Sweden	31.3	5.0	29.1	26.3	3.1
Other countries					
Switzerland	34.3	8.5	25.5	23.3	8.3
Japan	17.5	13.0	38.5	20.3	10.3

Source: OECD.

Taxes have an effect on government budgets and most people would agree that they also have an effect on the economy. How taxes affect the economy depends on how they affect work effort, investment, and saving. The effects that taxes have on individuals can be decomposed into the income and substitution effects. An increase in the tax on most goods, for example, has a negative income and substitution effect, and individuals will typically wish to purchase less of the good. An increase in taxes on wages will have income and substitution effects that work in opposite directions.

The tax lowers the effective wage, which will typically cause people to want to work less.[40] But the tax also reduces income, which will typically cause people to want to work more. The ultimate effect on work effort depends on the relative magnitudes of these two effects. Similar income and substitution effects also apply to saving.

Consequently, people's behavior may change due to tax changes. The distortions introduced by taxes can lead to a misallocation of resources and lost output. The misallocation of resources due to taxes can be measured by the excess burden or deadweight loss of the tax. Most researchers find a deadweight loss from taxes, but there is little agreement on the size of the deadweight loss.[41] Yew-Kwang Ng points out that the estimated deadweight loss may be considerably less if the positive effects on the spending side are taken into account.[42] He also argues that the income taxes themselves may be correcting a distortion in the economy and could lead to a more efficient allocation of resources. For example, most economic measures ignore the social goal of environmental quality. If there is a positive relation between per capita income and environmental degradation, then income taxes may reduce this distortion.

Figure 9 shows the relationship between total tax revenues as a percentage of GDP and the average real GDP growth rates in the industrialized countries (both are 10-year averages). The figure shows that there is no relation since the fitted linear relationship (the straight line in the figure) is almost flat.[43] This suggests that countries with high tax revenues relative to GDP do not generally experience lower economic growth rates than countries with lower tax revenues.

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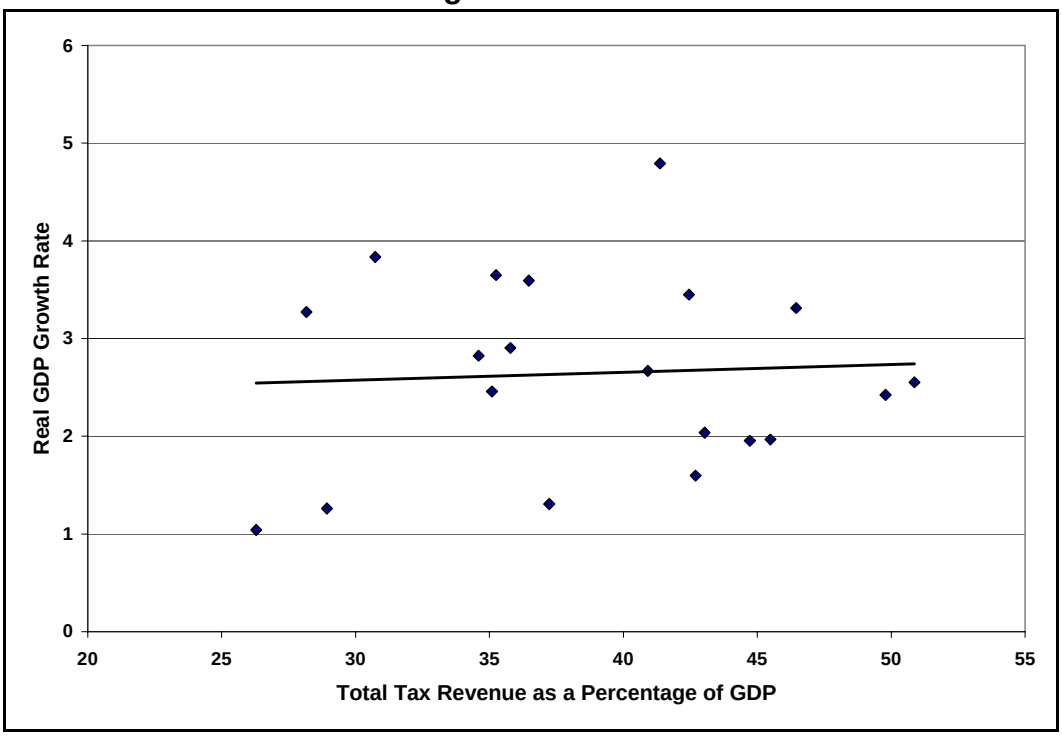
[40] Leisure (not working) can be thought of as a normal good with a price equal to the wage. If the price of leisure falls, workers will typically want to purchase more leisure and work less.

[41] The size of the deadweight loss depends on the extent to which behaviors change as a result of the tax. See, for example, Robert Carroll, *Do Taxpayers Really Respond to Changes in Tax Rates? Evidence from the 1993 Tax Act*, U.S. Treasury Department, Office of Tax Analysis working paper no. 79, Nov. 1998; Jon Gruber and Emmanuel Saez, "The Elasticity of Taxable Income: Evidence and Implications," *Journal of Public Economics*, vol. 84, no. 1 (Apr. 2002, pp. 1-33; and Ian W. H. Parry, *Tax Deductions, Consumption Distortions, and the Marginal Excess Burden of Taxation*, Resources for the Future Discussion paper no. 99-48, Aug. 1999.

[42] Yew-Kwang Ng, "The Optimal Size of Public Spending and the Distortionary Cost of Taxation," *National Tax Journal*, vol. 53, no. 2 (Jun. 2000), pp. 253-272.

[43] The simple correlation is 0.06 and is not statistically significant.

Figure 9. Relation Between Average Annual Real GDP Growth Rate and Average Total Tax Revenue



Source: CRS calculations of OECD data.

Figure 10 shows the relationship between tax revenues relative to GDP and productivity growth rates (both are 10-year averages). The fitted linear relationship is positive and the correlation is 0.43. These results suggest that the countries with higher tax revenues relative to GDP also tend to have higher productivity growth rates.

Tax policy can affect economic growth through several channels, which may, to some extent, offset each other. But even with these various channels, some argue that tax cuts will stimulate long-term economic growth.[44] The bulk of the evidence, however, suggests that tax policy, per se, has had at best a small effect on economic growth. Martin Feldstein finds that the 1981 tax cut had very little impact on economic growth.[45] Using data from OECD countries, Charles Garrison and Feng-Yao Lee can find no evidence that increasing tax rates adversely affects economic growth.[46] Fabio Padovano and Emma Galli, also using OECD data, reach the opposite conclusion and state that "high marginal tax rates and tax progressivity are

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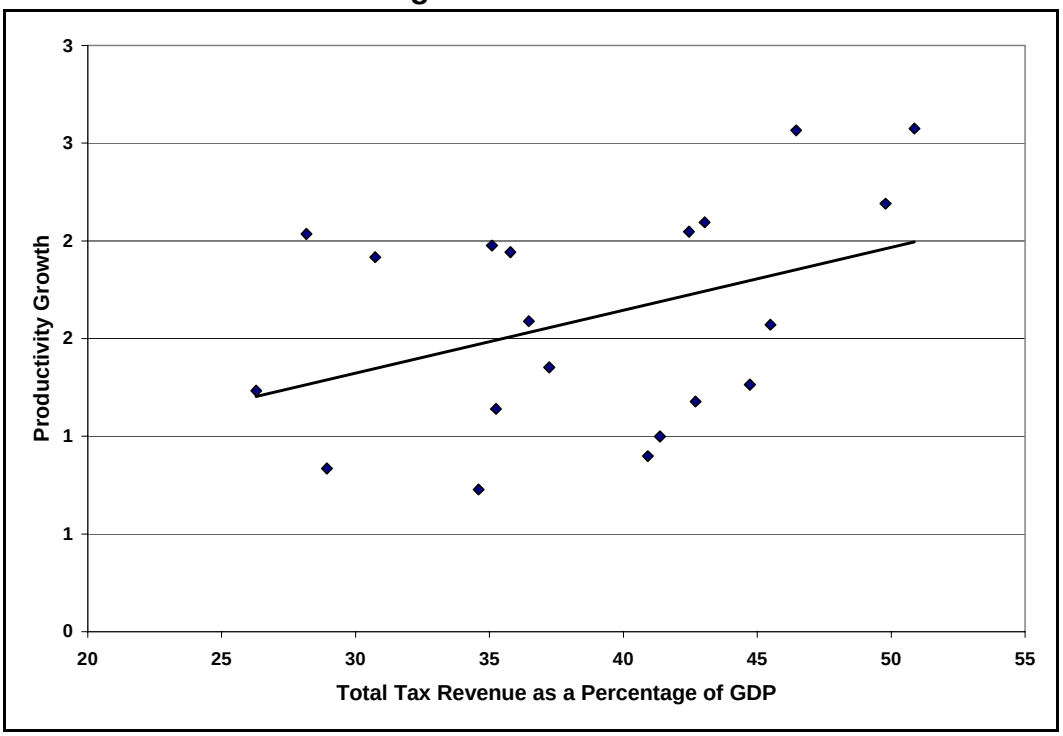
[44] See, for example, Charles W. Calomiris and Kevin A. Hassett, "Marginal Tax Rate Cuts and the Public Tax Debate," *National Tax Journal*, vol. 55, no. 1 (Mar. 2002), pp. 119-131.

[45] Martin Feldstein, "Supply Side Economics: Old Truths and New Claims," *American Economic Review, papers and proceedings*, vol. 76, no. 2 (May 1986), pp. 26-30.

[46] Charles Garrison and Feng-Yao Lee, "Taxation, Aggregate Activity and Economic Growth: Further Cross-Country Evidence on Some Supply Side Hypotheses," *Economic Inquiry*, vol. 30, no. 1 (Jan. 1992), pp. 172-176.

negatively correlated with long-run economic growth."[47] Evidence from U.S. history, however, suggests that rising marginal tax rates had no effect on economic growth rates.[48]

Figure 10. Relation Between Average Productivity Growth Rate and Average Total Tax Revenue



Source: CRS calculations of OECD data.

The observation that taxes may have little effect on economic growth may be partially due to government spending. Tax revenues are either spent or are used to retire government debt, both of which may boost economic growth. Many studies do not separate the effects of government spending on economic growth from the effects of taxes.

In addition, some researchers argue that the welfare states tend to rely on regressive taxes as a primary source of revenue and these taxes tend to have smaller

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[47] Fabio Padovano and Emma Galli, "Tax Rates and Economic Growth in the OECD Countries (1950-1990)," *Economic Inquiry*, vol. 39, no. 1 (Jan. 2001), p. 50.

[48] See William Gale, "Notes on Taxes, Growth, and Dynamic Analysis of New Legislation," *Tax Notes*, 30th Anniversary Issue, 2002; and Nancy L. Stokey and Sergio Rebelo, "Growth Effects of Flat-Rate Taxes," *Journal of Political Economy*, vol. 103, no. 3 (Jul. 1995), pp. 519-550. The authors find that growth rates in per capita real GDP were just as high after a large increase in income taxes in the early 1940s as before the increase. In addition, Gale finds that economic growth rates did not change after the introduction of the income tax in 1913.

adverse economic effects than other types of taxes.[49] Peter Lindert shows that industrialized countries with higher public social welfare expenditures relative to GDP also tend to have higher average effective tax rates on income, higher taxes on consumption, and lower taxes on capital. He further shows that the welfare states tend to have heavier taxes on consumption goods that may be considered bad such as tobacco products, alcoholic beverages, and gasoline.

Government Budget Deficits

The evidence presented so far, although not definitive, suggests that government expenditures, social welfare expenditures, and taxes do not adversely affect economic growth. Raising government spending and taxes does not appear to reduce economic growth, and reducing government spending and taxes does not appear to enhance economic growth. But much of the focus, recently and in the past, has been on budget deficits, especially on how deficits affect long-term economic growth.

The measure of the budget deficit used is the primary government balance, which is government revenues minus government expenditures, but excludes interest payments paid to the public. The primary balance provides a more direct measure of overall government spending and taxes in a given period, whereas interest payments reflect fiscal actions taken in past years. The primary government balance reported here is the 10-year average (1994-2003) expressed as a percentage of GDP. The 10-year average is used because the primary balance fluctuates over the business cycle, and different countries tend to be at different points of the business cycle at any given time.

Many scholars argue that long-term budget deficits can have an adverse impact on the economy.[50] **Figure 11** suggests that the scholars are correct. The figure shows the relation between the primary balance and the average annual real GDP growth rate. The fitted linear relationship (the straight line) is upward sloping and the simple correlation between these two variables is 0.45, which is statistically significant. This suggests that countries with a larger primary balance tend to have higher economic growth rates.[51] Recent research on budget deficits in the United States also suggests that sustained budget deficits will "impose significant economic costs."[52] William Gale and Peter Orszag, for example, project that if the federal budget deficit

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[49] See Peter Lindert, *Growing Public*, vol. 1 (Cambridge: Cambridge University Press, 2005); and Junko Kato, *Regressive Taxation and the Welfare State* (Cambridge: Cambridge University Press, 2003).

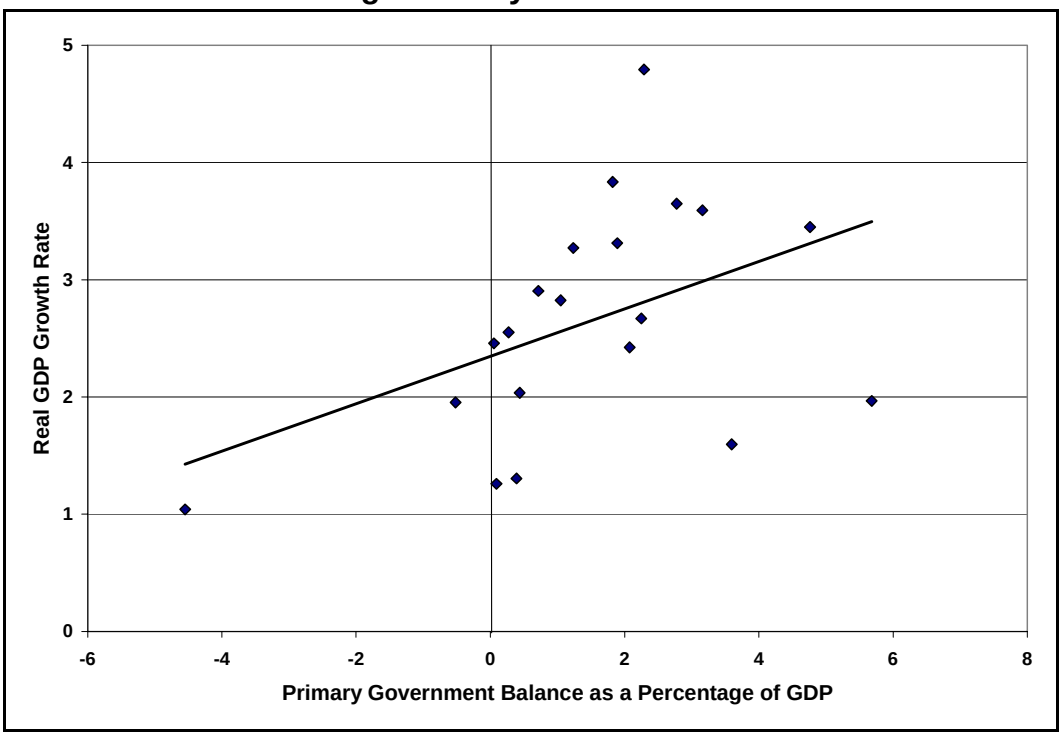
[50] See, for example, the papers in Alice M. Rivlin and Isabel Sawhill, eds., *Restoring Fiscal Sanity 2005* (Washington: Brookings Institution, 2005); and in Federal Reserve Bank of Boston, *The Economics of Large Government Deficits*, conference series no. 27, proceedings of a conference held in Oct. 1983.

[51] The same basic results are obtained when using the total government balance (which includes net interest payments) rather than the primary government balance.

[52] William G. Gale and Peter R. Orszag, "Budget Deficits, National Saving, and Interest Rates," Brookings Institution, *Brookings Papers on Economic Activity*, no. 2, 2004, p. 184.

averages 3.5% of GDP for the next decade, then national income will be reduced by 1% to 2% per year after the end of the decade.

Figure 11. Relation Between Average Annual Real GDP Growth Rate and Average Primary Government Balance



Source: CRS calculations of OECD data.

Conclusion

The evidence presented suggests that raising public social welfare expenditures within reason would not harm economic growth and reducing these expenditures would not increase economic growth; other research supports this conclusion. But changing public social welfare expenditures can have profound effects on economic well-being — reducing social welfare expenditures would likely increase poverty rates. The evidence also suggests that, although tax reductions boost the economy in the short term, they appear to have little effect on long-term economic growth. Sustained government budget deficits, however, are viewed as likely to reduce long-term economic growth.

Data Appendix

The data used in this report come from various OECD databases, which are available online to subscribers. The OECD works to make the data comparable across countries. Most of the data series are available for all the industrial countries considered in the report up to 2003. The data on social welfare expenditures are available only up to 2001, however.

Monetary values for expenditures and revenues are in the currency of the country. Most of the tax and expenditures data are expressed as percentages of GDP. This will provide a measure of the resources used or transferred by the government relative to the amount of resources available in the economy.

Government spending and revenues vary over the course of the business cycle and some of this variation may not reflect decisions made by the government. The 10-year averages are calculated for most of the economic series, and these averages are used in the report to average out the effects of business cycle fluctuations.

In the few instances when monetary values need to be compared across countries, the values are converted to U.S. dollars using purchasing power parities (PPPs). PPPs convert currency by equalizing the purchasing power of various currencies. PPPs capture price differences of a market basket of goods between countries rather than differences in the value of the currencies (that is, exchange rates). Exchange rates fluctuate based on the supply of and demand for a currency and can change even when prices are stable in the two countries.