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ABSTRACT. Wagner’s Law and Keynesian’s theory are two widely accepted yet contrasting propositions. This paper employs Granger causality test on US federal government data, from 1947 to 2002. We used aggregate data as well as disaggregate data with the sub-categories of five federal expenditures, including: national defense, human resources expenditure, physical resources expenditure, net interest payment, and other expenditure. The results of our study suggest that total federal government expenditure is more consistent with Keynesian’s theory while there are diversified causal relationships among five sub-category of federal expenditure. The policy recommendation generated from this paper is that the US federal government should invest more public resources in human resources expenditure assuming that economic growth is the utmost important item on the government agenda.

INTRODUCTION

One of the main features of the contemporary world is the continuing growth within public sector expenditure in developing world as well as industrialized countries. In particular, since the World War II era there has been enduring growth of public expenditure,
regardless of the nature of political and economic system. In the meantime, GDP growth is also increasing rapidly in some developed countries. Taking the US for example, the public expenditure increased after World War II as both population growth and demographic changes took place. US GDP growth, on the other hand, also increased at an amazing speed and thus became the world number one economic entity. Therefore, the causal relation between public expenditure and economic growth warrants close investigation. Questions of interest might include: “which came first: the chicken or the egg?” In other words, one might be interested in understanding: is it public expenditure leading to economic growth or is it economic development bringing about the expanding government expenditure?

Among all the economists who discussed the association between public expenditure and economic growth, Wagner and Keynes are among the most noted with their apparently contrasting viewpoints on the causal relation. Adolf Wagner, who is famous for his Wagner’s Law, was probably the first scholar to recognize a positive correlation between economic growth and the growth of government activities. Among several interpretations of Wagner’s Law, the most popular one would be that the increase in economic activities leads to an increase in government activities, which in turn results in the rise of public expenditure. This implies that public expenditure can be treated as an outcome, or an endogenous factor of the growth of economy. On the other hand, Keynes regards public expenditure as an exogenous factor which can be utilized as a policy instrument to stimulate economic growth. These two completely opposite arguments reflect the viewpoints over the issue of what is the causal relation between economic growth and public expenditure.

In this paper, we concentrate on the relationship between the federal expenditure and GDP growth in US using time series data of 1947-2002. The purpose of this study is to identify the causal relation between economic growth and public expenditure. The relationship is examined by employing the Granger causality test. We further divide the federal expenditure into five categories: national defense expenditure, human resources expenditure, physical resources expenditure, net interest payment, and other function expenditure. Two kinds of analyses are performed in this paper. First, we investigate the long-term relationship between GDP growth and these five federal expenditures by plotting their trends. Second, to
explore the causal relation between growth rates and several subsets of the federal expenditure items, Granger causality test is undertaken.

LITERATURE REVIEW

A number of studies focused on the association between government expenditure and economic growth. Nevertheless, in order to relate to the topic of this paper, we will only focus on the literatures that probe the causal relationship. Among the literatures, some of the studies are the case studies which focus on a specific country while others target the cross-countries research by studying panel dataset. The results did not render conclusive support for our inquiry.

Demirbas (1999) investigates the existence of a long-run relationship between public expenditure and GNP (Wagner’s Law) using time series aggregate data for Turkey over the period 1950-1990. His research finds no empirical support for Wagner’s Law. Sinha (1998) examines the relationship between GDP and government expenditure in Malaysia by using data for 1952-92. Jackson and Fethi (1998) target on the causal relationship between economic growth and government spending in Northern Cyprus by using the time series data from 1977 to 1996. They also find mixed evidence on their empirical results, i.e., some results support Wagner’s Law while others verify Keynesian’s theory. Park (1996) verified 6 versions of the Granger causality test by testing Wagner’s Law and the Keynesian effective demand principle applied in Korea. He found that all the results are consistently in support of Wagner’s Law while only 2 out of 6 versions are compatible with Keynesian principle. Khan (1990) tests Wagner’s Law for Pakistan using time series data covering a period from 1959 to 1984. On the whole, his results confirm the validity of Wagner’s Law in Pakistan. Nagarajan & Spears (1990) conduct a test of Wagner’s Law in Mexico. Their outcomes also confirm Wagner’s Law in Mexico. Lastly, Pluta (1979) tested Wagner’s Law with the applicability in Taiwan. What made his study different from the previous one are the employment of aggregate data as well as the compositions of aggregate data by level of government (including public enterprises), by economic category, and by functional breakdown. Nevertheless, his empirical evidence denies the existence of Wagner’s Law in Taiwan.
Generally speaking, the results for these causal relationships varied from countries to countries. Some research contend that public expenditure does lead to the growth of a country’s economy while others take a different viewpoint by arguing that economic development brings about the expanding government expenditure. However, these studies are undertaken with the time series data of the specific country. The conflicting results are not surprising due to the singular nature of political climate and economic system. In addition, the study using the employment of time series data in a specific country always leads to the shortcoming of small sample size which may produce spurious outcome. Guilkey & Salemi (1982) illustrated the problem by proposing three different versions of the Granger causality test. Their results, however, failed to generalize to more complicated models. As a result, a cross-country research with panel data is necessary to further recognize the causal relationship between economic growth and public expenditure.

Several literatures presenting contrasting views as well as cross-countries approach over the issue of how the causal relationship between government expenditure and economic growth should be like. Anwar, Davies, and Sampath (1996) conduct the research on the causal relation between economic growth and general government expenditure based on 88 countries over the period 1960-92 using unit root and co-integration techniques. They found unidirectional causality for 23 countries and bidirectional causality for 8 countries. The primary difference between their study and previous work is that an overwhelming majority of the countries did not demonstrate a causal relationship between GDP and government expenditures. Saunders (1985) presents data on the size and growth of general government expenditures and receipts relative to GDP growth in OECD countries over the time periods of 1960-81. Saunders' results provide little evidence that government size and growth have been detrimental to economic performance, particularly in the period since 1975.

Based on the abovementioned summary of the literatures, the causal relationship between government expenditure and economic growth is still inconclusive. Further, with the exception of Pluta’s (1979) research, most of these studies are undertaken with the aggregate data on government expenditure rather than disaggregate data on specific item of government spending. In other words, few studies investigate how each sub-category of general government
expenditure relates to economic growth. To tackle the void of the literature by addressing this inadequacy, we take a different approach by disaggregating the general government expenditure into five sub-categories expenditures to relate economic growth.

DATA

The data under examination relate to the US gross domestic product (GDP), total federal outlays and five sub-division expenditures, namely national defense expenditure (ND), human resources expenditure (HR), physical resources expenditure (PR), net interest payment (NIP), and other function expenditure (Other). These data are from official documents published by the US Office of Management and Budget, The Budget For Fiscal Year 2004, Historical Tables. The GDP deflator is employed to obtain the real value. In this paper, for the purpose of analysis, 1947 was taken as the starting point and ending in 2002. Therefore, there are 56 observations in my model. The data before 1947 was not included due to the World War II factor which could potentially magnify outlying problems in this research. As a result, using data after 1947 could effectively reduce the war time impact on the relationship of study interest.

Fifty-six sample observations are included in the study for analysis. Some may propose the expansion of sample size by using quarterly data instead of yearly data. However, the method is inappropriate due to the fact that the federal government budget cycle is progressing based on a year round period rather than a quarter round period. Even though the quarterly data would expand the sample size by four times, it may result in the problematic relationship among the variables under study.

For this purpose, we use the data of GDP and public expenditure (in millions of dollars) to draw 6 trend charts, namely GDP v. Total Federal Outlays, GDP v. ND, GDP v. HR, GDP v. PR, GDP v. NIP, GDP v. Other, to make comparisons of the trend between GDP and public expenditure as described in Figures 1-6 (See Appendices).

In Figure 1, GDP and Total Federal Outlays present an upward trend. However, among the five sub-categories of public expenditure, only the Human Resources expenditure suggested an upward trend (Figure 3) while other expenditures demonstrated a relatively
constant and flat trend. The trend chart casts a broader view on the
association between federal expenditure and economic growth.
Nevertheless, to derive a more precise causal relation, an empirical
model is required to deal with the relation.

MODELS

In this paper, four different regression models were performed,
assuming that there is a linear relation. The first linear regression
model is the relation between GDP and federal total outlays. GDP is
the dependent variable (in millions of dollar) and Federal total outlays
act as the independent variable (in millions of dollar) with year being
the time trend variable. The equation is shown as follow:

$$\text{GDP}_t = \alpha + \beta_1(\text{Total Federal Outlays})_t + \beta_2(\text{Year})_t + \varepsilon_t$$  (1)

Where $t =$ number of observations

The second linear regression model is the relation between GDP
and all other five sub-categories expenditure. GDP is the dependent
variable (in millions of dollar) and ND, HR, PR, NIP, and Other are
used as independent variable (in millions of dollar) with year as the
time trend variable. The third and fourth linear regression models are
also the relation between GDP and all other five sub-categories
expenditure. But they use a different unit of change. In model 3, the
dependent variable and independent variable are the percent change
to the previous year. In Model 4, the dependent variable and
independent variable are the change to the previous year. Their
equations are written as follow:

$$\text{GDP}_t = \alpha + \beta_1(\text{ND})_t + \beta_2(\text{HR})_t + \beta_3(\text{PR})_t + \beta_4(\text{NIP})_t + \beta_5(\text{Other})_t + \varepsilon_t$$  (2)

$$\text{GDP}_t = \alpha + \beta_1(\text{ND})_t + \beta_2(\text{HR})_t + \beta_3(\text{PR})_t + \beta_4(\text{NIP})_t + \varepsilon_t$$  (3)

$$\text{GDP}_t = \alpha + \beta_1(\text{ND})_t + \beta_2(\text{HR})_t + \beta_3(\text{PR})_t + \beta_4(\text{NIP})_t + \beta_5(\text{Other})_t + \varepsilon_t$$  (4)

Where
t = number of observation;
In Model (2), both independent variable and dependent variables
are in millions of dollar;
In Model (3), both independent variable and dependent variables
are in percent change; and
In Model (4) both independent variable and dependent variables are change to the previous year.

All four models have been adjusted and corrected for autocorrelation and heteroscedasticity in the regression.

The results indicate that, counter-intuitively, all the independent variables, including Total Federal Outlays, ND, HR, PR, NIP, and Other, are not statistically significant in these four models Table 1. Only the year variable adds the explanatory power to the model.

<table>
<thead>
<tr>
<th></th>
<th>Model (1)</th>
<th>Model (2)</th>
<th>Model (3)</th>
<th>Model (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Federal Outlays</td>
<td>0.1216</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.4203)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Defense</td>
<td>-0.0720</td>
<td>0.0099</td>
<td>0.4906</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.5140)</td>
<td>(0.0202)</td>
<td>(0.3722)</td>
<td></td>
</tr>
<tr>
<td>Human Resources</td>
<td>0.0048</td>
<td>-0.0708</td>
<td>-0.1946</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.7543)</td>
<td>(0.0629)</td>
<td>(0.7982)</td>
<td></td>
</tr>
<tr>
<td>Physical Resources</td>
<td>-0.0944</td>
<td>0.0088</td>
<td>-0.0386</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.8586)</td>
<td>(0.0144)</td>
<td>(1.0776)</td>
<td></td>
</tr>
<tr>
<td>Net Interest Payment</td>
<td>-0.5009</td>
<td>-0.0038</td>
<td>-0.7186</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.9646)</td>
<td>(0.0453)</td>
<td>(2.2126)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>1.7978</td>
<td>0.0142</td>
<td>0.8511</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.7540)</td>
<td>(0.0268)</td>
<td>(1.6231)</td>
<td></td>
</tr>
<tr>
<td>Year</td>
<td>140834</td>
<td>144057</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(17599.21)</td>
<td>(21947.52)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R-square</td>
<td>0.1757</td>
<td>0.1928</td>
<td>0.0911</td>
<td>0.0139</td>
</tr>
</tbody>
</table>

**METHOD: CAUSALITY TEST**

To further discuss the relation between GDP and public expenditure, we conduct the causality test on the basis of the previous regression results. We use model (1) and (2) to conduct causality test since these two models exhibit the highest R-square value.
In model (1), the causality test between GDP and Total Federal Outlays is undertaken. To test whether the growth of Total Federal Outlays may be attributable to GDP growth or the other way round, we conduct the following analysis. First, test the null hypothesis “Total Federal Outlays does not cause GDP” by running the following regression:

\[ GDP_t = \sum \alpha_i \cdot GDP_{t-i} + \sum \beta_i \cdot Total_{t-i} + \varepsilon_t \]  

(5)

Where

- \( t \) = number of observations,
- \( i = 1 \sim m \), \( m \) is the lagged time value (\( m \) is 5 in this test).

Second, test the null hypothesis “GDP does not cause Total Federal Outlays” by running the following regression:

\[ Total_t = \sum \alpha_i \cdot Total_{t-i} + \sum \beta_i \cdot GDP_{t-i} + \varepsilon_t \]  

(6)

Where \( i = 1 \sim m \), \( m \) is the lagged time value (\( m \) is 5 in this test).

About the lagged value \( m \), when the sample size is small, it is preferable to set a short period of \( m \) value. Guilkey and Salemi (1982) suggested that short period of \( m \) value in small sample test would be able to bring about a more reliable causality analysis. We therefore set the lagged \( m \) value at 5.

The results of regression and the F-test analysis are presented in Table 2. We find that there is a unidirectional causality relation between GDP and Total Federal Outlays. In other word, Total Federal Outlays does result in the change of GDP while GDP does not lead to the change of Total Federal Outlays. This outcome also indicates that

<table>
<thead>
<tr>
<th>Lagged m</th>
<th>GDP → Total F-test (p-value)</th>
<th>Total → GDP F-test (p-value) DF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.80 (0.1851)</td>
<td>1.56 (0.2166) (1, 52)</td>
</tr>
<tr>
<td>2</td>
<td>2.34 (0.1068)</td>
<td>2.43 (0.0988) (2, 49)</td>
</tr>
<tr>
<td>3</td>
<td>1.70 (0.1801)</td>
<td>3.55 (0.0215)* (3, 46)</td>
</tr>
<tr>
<td>4</td>
<td>1.93 (0.1221)</td>
<td>4.06 (0.0070)** (4, 43)</td>
</tr>
<tr>
<td>5</td>
<td>1.24 (0.3099)</td>
<td>3.33 (0.0131)* (5, 40)</td>
</tr>
</tbody>
</table>

Notes: *95% statistical significance; **99% statistical significance.
the increase in Total Federal Outlays would contribute to the growth in GDP.

The same test was conducted in model (2). All the other five variables were also tested for causality relation with GDP variables. The results are presented in Table 3.

In the ND expenditure, we find no causal relation between GDP and National Defense. Taking the model (2) into consideration, with the coefficient of -0.0720, one may reasonably infer that the increase in National Defense expenditure does not produce GDP growth. The argument may make sense since the national defense expenditure is important to the national security and thus they are not affected by the boom or bad times of the economy.

In the HR expenditure, there is unidirectional causality for GDP and Human Resources expenditure. The increase in Human Resources expenditure does result in the increase in GDP, but not vice versa. It implies that the investment of education, training, employment, health, income security, social security, and veterans benefit can always lead to the growth of GDP. However, the growth of GDP does not cause the increase in Human Resource expenditure in the federal government.

In the PR expenditure, there is bidirectional causality for GDP and Physical Resources expenditure. The increase in Physical Resources expenditure causes the growth in GDP, and vice versa. It suggests that the investment of energy, natural resources and environment, commerce and housing credit, transportation, community and regional development can always result in the growth of GDP. Meanwhile, the growth of GDP can also induce the growth of Physical Resources expenditure in federal government.

In the NIP expenditure, there is also bidirectional causality relation for GDP and Net Interest Payment. It suggests that the more Net Interest Payment leads to more GDP growth and more GDP growth can also result in more Net Interest Payment.

In the “Other” expenditure, there is unidirectional causality relation for GDP and Other expenditure. It implies that when GDP grow, the expenditure of international affairs, general science, space and technology, agriculture, administration of justice, and general government will also grow, but not vice versa. The unidirectional
### TABLE 3
The Causality Test of GDP and Five Expenditure Categories

<table>
<thead>
<tr>
<th>GDP → ND</th>
<th>ND → GDP</th>
<th>GDP → HR</th>
<th>HR → GDP</th>
<th>GDP → PR</th>
<th>PR → GDP</th>
<th>GDP → NIP</th>
<th>NIP → GDP</th>
<th>GDP → Other</th>
<th>Other → GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lagged m</td>
<td>F-test (p-value)</td>
<td>Lagged m</td>
<td>F-test (p-value)</td>
<td>DF</td>
<td>Lagged m</td>
<td>F-test (p-value)</td>
<td>Lagged m</td>
<td>F-test (p-value)</td>
<td>DF</td>
</tr>
<tr>
<td>1</td>
<td>1.58 (0.2149)</td>
<td>1</td>
<td>0.23 (0.6301)</td>
<td>(1, 48)</td>
<td>1</td>
<td>1.87 (0.1775)</td>
<td>1</td>
<td>1.50 (0.2263)</td>
<td>(1, 48)</td>
</tr>
<tr>
<td>2</td>
<td>1.28 (0.2877)</td>
<td>2</td>
<td>2.71 (0.0789)</td>
<td>(2, 41)</td>
<td>2</td>
<td>2.18 (0.1254)</td>
<td>2</td>
<td>20.93 (0.000)**</td>
<td>(2, 41)</td>
</tr>
<tr>
<td>3</td>
<td>0.73 (0.5385)</td>
<td>3</td>
<td>0.98 (0.4156)</td>
<td>(3, 34)</td>
<td>3</td>
<td>2.44 (0.0815)</td>
<td>3</td>
<td>3.82 (0.0184)*</td>
<td>(3, 34)</td>
</tr>
<tr>
<td>4</td>
<td>0.32 (0.8627)</td>
<td>4</td>
<td>1.61 (0.2017)</td>
<td>(4, 27)</td>
<td>4</td>
<td>2.40 (0.0750)</td>
<td>4</td>
<td>2.82 (0.0447)*</td>
<td>(4, 27)</td>
</tr>
<tr>
<td>5</td>
<td>0.28 (0.9207)</td>
<td>5</td>
<td>2.17 (0.0985)</td>
<td>(5, 20)</td>
<td>5</td>
<td>1.78 (0.1629)</td>
<td>5</td>
<td>2.30 (0.0837)</td>
<td>(5, 20)</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP → Other</td>
<td>Other → GDP</td>
<td>GDP → Other</td>
<td>Other → GDP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Lagged m</td>
<td>F-test (p-value)</td>
<td>Lagged m</td>
<td>F-test (p-value)</td>
<td>DF</td>
<td>Lagged m</td>
<td>F-test (p-value)</td>
<td>Lagged m</td>
<td>F-test (p-value)</td>
<td>DF</td>
</tr>
<tr>
<td>1</td>
<td>0.07 (0.7871)</td>
<td>1</td>
<td>2.19 (0.1454)</td>
<td>(1, 48)</td>
<td>1</td>
<td>3.05 (0.0415)*</td>
<td>3</td>
<td>0.77 (0.5215)</td>
<td>(3, 34)</td>
</tr>
<tr>
<td>2</td>
<td>0.01 (0.9914)</td>
<td>2</td>
<td>0.79 (0.4587)</td>
<td>(2, 41)</td>
<td>2</td>
<td>3.58 (0.0183)*</td>
<td>4</td>
<td>2.48 (0.0678)</td>
<td>(4, 27)</td>
</tr>
<tr>
<td>3</td>
<td>3.05 (0.0415)*</td>
<td>3</td>
<td>0.77 (0.5215)</td>
<td>(3, 34)</td>
<td>3</td>
<td>2.64 (0.0548)</td>
<td>5</td>
<td>2.05 (0.1150)</td>
<td>(5, 20)</td>
</tr>
<tr>
<td>4</td>
<td>3.58 (0.0183)*</td>
<td>4</td>
<td>2.48 (0.0678)</td>
<td>(4, 27)</td>
<td>4</td>
<td>2.64 (0.0548)</td>
<td>5</td>
<td>2.05 (0.1150)</td>
<td>(5, 20)</td>
</tr>
<tr>
<td>5</td>
<td>2.64 (0.0548)</td>
<td>5</td>
<td>2.05 (0.1150)</td>
<td>(5, 20)</td>
<td>5</td>
<td>notifying</td>
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<td>notifying</td>
<td>notifying</td>
</tr>
</tbody>
</table>

Notes: *95% statistical significance; **99% statistical significance.
causality does make sense to me since the Other expenditure function is usually a less important item in federal government. During the economic downturn, the expenditure on international affairs, science & technology, justice administration, and general government could almost always be the first one to be subtracted.

**DISCUSSION AND POLICY RECOMMENDATION**

This paper presents the results for testing for causal relationship between GDP and public expenditure for US federal government covering the time series data 1947~2002. There are usually two propositions regarding the relation between GDP and government expenditure: Wagner’s Law states that as GDP grows, the public sector tends to grow; and the Keynesian framework postulates that public expenditure causes GDP to grow. The primary strength and originality of this paper is that we used aggregate data as well as disaggregate data for the Granger causality test.

By testing for causality between GDP and Total Federal Outlays, we find that total expenditure does cause the growth of GDP, which is compatible with Keynesian’s theory. However, the growth of GDP does not cause the increase in total public expenditure, which is working against Wagner’s Law.

We further test for causality between GDP and five sub-categories expenditure. We find that there is no causality relation between National Defense expenditure and GDP growth. In addition, there is bidirectional causality relation between GDP and PR, NIP expenditure and unidirectional causality relation between GDP and HR, and Other expenditure.

This discovery of statistical analysis may provide insight into several aspects of policy implications. First, the more federal expenditure does lead to the growth of the US economy. This seems consistent with the traditional theory of fiscal policy.

Second, taking a micro viewpoint of each item of federal expenditure, national defense expenditure is proven to have no influence on GDP growth. A possible explanation could be that a huge amount of money dedicated to the national defense was used in overseas warfare which in return makes no contribution to domestic economy. In particular, the national defense expenditure spending
overseas could contribute to the growth of GDP even though it might help in the sense of GNP indicator.

Third, human resources investment and net interest payment are proven to have a positive impact on US economy. For many years, human resources investment has been promoted by institutional economists as a development strategy in developing countries. The results of this paper support the viewpoint and provide additional insight or argument that human resources investment is also successful in bringing about the economic growth in industrialized countries like the US.

Fourth, as for the physical resources expenditure, we found that stronger evidence on GDP growth is leading to the growth of physical resources investment even though the bidirectional causal relationship is existent in this item of expenditure.

Judging from the abovementioned results and findings, in terms of general federal expenditure, the causality test in US suggested that government expenditure has more influence on the economy than the other way round. In other words, Keynesian theory is generally more prominent than Wagner’s law. Meanwhile, when we dissect the total federal expenditure, our results demonstrate that causal relationships varied from item to item.

Policy recommendations that could be reasonably made from this study include that human resources expenditure should be more prioritized than all the other item of spending assuming economic growth is the utmost goal for the US federal government. On the other hand, national defense expenditure is proven to be of little help to the growth of economic development in our model. Therefore, the federal government should consider reallocating national defense expenditure to human resources expenditure.

NOTES

1. Human resources expenditure includes: (1) education, training, employment, and social services; (2) health; (3) income security; (4) social security; and (5) veterans benefits and services.

2. Physical resources expenditure includes (1) energy, (2) natural resources and environment, (3) commerce and housing credit, (4) transportation, and (5) community and regional development.
3. Other function expenditure includes (1) international affairs; (2) general science, space and technology; (3) agriculture; (4) administration of justice; and (5) general government.

4. The GDP deflator index is available at the Bureau of Economic Analysis (U.S. Department of Commerce at website www.bea.doc.gov/bea/dn/nipaweb/NIPATableIndex.htm#1.

REFERENCES


**APPENDICES**

**FIGURE 1**
Total Federal Outlays vs. GDP (in Millions of Dollars)
FIGURE 4
Physical Resources Expenditure vs. GDP (in Millions of Dollars)

FIGURE 5
Net Interest Payment vs. GDP (in Millions of Dollars)
FIGURE 6
Other Expenditure vs. GDP (in Millions of Dollars)