

Budget Deficits, Economic Freedom, and Economic Growth in OECD Nations: P2SLS Fixed-Effects Estimates, 2003–2008

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Abstract

This study empirically investigates the impacts of central government budget deficits and economic freedom on per capita real economic growth in OECD nations over the period 2003–2008. Economic growth is measured by the percentage growth rate of purchasing-power-parity adjusted real per capita GDP. Within the context of the *Fixed Effects Model*, panel two stage least squares (P2SLS) estimations using a six-year panel data set for 29 of the 30 the OECD member nations as of 2008 as a group reveal that economic growth is a *decreasing* function of higher central government *budget deficits* and an increasing function of economic freedom. It is suggested that governments can best promote real economic growth by limiting the size of their budget deficits (relative to GDP) and pursue policies consistent with increasing various forms of economic freedom.

JEL Codes: P10, P16, F43, H61

Keywords: Percentage per capita real GDP growth; Government budget deficits; Economic freedom

I. Introduction

Since the end of the Great Recession, economic growth in the United States has been anemic, and the unemployment rate in the United States has remained stubbornly high, the extraordinary policies of the Federal Reserve in purchasing massive quantities of toxic assets and U.S. Treasury issues notwithstanding. As this slow growth-high unemployment scenario has played out, two very interesting controversies have arisen. The first involves the massive size of U.S. federal budget deficits, whether measured in dollar terms, inflation-adjusted dollars, or as a percentage of GDP, and the argument that such deficits are both unsustainable and have contributed to the stubbornly poor performance of the U.S. economy (El-Shagi, 2010; Gartner, Griesbach, and Jung, 2011). The second

controversy deals with economic freedom and findings that economic freedom in the United States has fallen and that the United States is now ranked only 19th among nations in the world in the overall level of its economic freedom (Gwartney, Lawson, and Hall, 2012). Arguably, this diminished economic freedom has also contributed to the stubbornly poor performance of the U.S. economy.

Given these two sets of circumstances, this study empirically investigates whether higher budget deficits and reduced economic freedom do in fact reduce economic growth and thereby raise unemployment. In particular, the fundamental purpose of this study is to investigate empirically not only the impact not only of central government budget deficits (as a percentage of GDP) on per capita real economic growth but also of the principal forms of economic freedom on per capita real economic growth. In the latter case, the focus is on the economic freedom measures developed by the Heritage Foundation (2013). The empirical findings in this study affirm that both controversies are well founded, namely, that large budget deficits and reduced economic freedom do in fact reduce economic growth.

Background for the empirical model is presented in the following section of this study. The model and data are described in Section III. The empirical analysis is provided in Section IV, where multiple estimates are undertaken. The first takes the form of a P2SLS (panel two stage least squares) estimation of the basic model using recent data from the OECD nations. Additional P2SLS estimates are then provided to test the robustness of the initial results. An overview is provided in the final section. The investigation is undertaken using a six-year panel data set for OECD nations covering the period 2003–2008.

The empirical evidence provided in this study shows that the pattern of massive budget deficits begun under the Bush Administration (2001–2009) but *greatly expanded* under the Obama Administration (since 2009) has created a persistent negative impact of per capita real GDP growth in the United States. This condition cannot be allowed to continue if economic freedom and growth are the desired outcomes of a healthy economy. Likewise, the pattern of declining economic freedom, which also began under the Bush Administration (2001–2009) but became *greatly exacerbated* under the Obama Administration (since 2009), must be quickly and significantly

reversed. The stakes are high. This dual impact on U.S. prosperity, jobs, and living standards will be economically and indeed socially devastating if permitted to continue and will ultimately relegate the United States to the status of a second-class economic citizen in the global economy.

This study significantly extends the recent study in this journal (Cebula, 2011) in a number of ways, including emphasis on the impact of the central government budget deficit on per capita real GDP growth, a variable that was not considered in Cebula (2011), the addition of an additional year of data to the panel (which permits the inclusion of the full year 2008 of the Great Recession), estimation within the context of the *Fixed Effects* model, and omission of the net exports/GDP variable, which could be critiqued as presenting a specification issue because net exports are part of GDP.¹

II. Relevant Background

Sanz (2011, p. 753) recently observed that in recent years “...OECD member nations have dramatically worsened their public finances...” Indeed, “Developed nations [as a group] will [have] increase[d] their public deficit to 8.8% of GDP in 2010, compared with the 2.1% (on average) of GDP for the period extending between 2000 and 2007...” (Sanz, 2010, p. 753). Since at least the beginning of 2010, increased concern over the debt/deficit/default issue in Greece has spread to Portugal, Spain, Ireland, and (G8 nation) Italy, all of which face significant economic and fiscal challenges. There is concern that if Greece goes down, so too will the economies of other nations, i.e., an “economic domino effect” will occur.² Furthermore, the government deficit/debt circumstances of such major economies as those of the United Kingdom and the United States have also surfaced. In both the United Kingdom and the United States, there has been concern about actual and anticipated government budget deficits being financially unsustainable. Indeed, the deficit/national debt problem in the United States, the world’s largest economy,

¹ The present study also omits the “political stability” and “interest rate” variables that were included in Cebula (2011) because they are highly correlated with the budget deficit variable present in and so focused upon in this analysis. Also, unlike Cebula (2011), which includes PLS estimates, only P2SLS estimates are provided here; this is due to contemporaneousness of economic growth and the budget deficit in the model.

² Regarding such “contagion,” see the relevant study by Melander et al. (2011).

became so disconcerting that the S&P (Standard & Poor's) bond rating service downgraded U.S. Treasury debt as of 2011 to AA+ with a negative outlook; this negative outlook carries with it the prospect of a further downgrade in the future, possibly to AA, absent substantive progress at controlling what appear to be excessive deficits in the United States (El-Shagi, 2010; Gartner, Griesbach, and Jung, 2011). Demonstrating further the failure to resolve government debt crises as well as the seriousness of those crises, S&P in January 2012 issued debt downgrades for G8 nations France and Italy as well as for two other European nations, Austria and Spain.

According to the conventional wisdom, large government budget deficits (relative to a nation's GDP), such as those in Greece, Portugal, Spain, Italy, the United Kingdom, the United States, and elsewhere, *in theory* can result in crowding out of the private sector, i.e., result in reduced capital formation and/or reduced household outlays through a variety of complex mechanisms (David and Scadding, 1974; Carlson and Spencer, 1975; Cebula, 1978, 1995; Guseh, 1997) and thereby induce reduced real economic growth and lower living standards for the populace. Accordingly, a primary purpose of this study is to investigate empirically whether larger central government budget deficits (expressed as a percent of GDP) do in fact act to reduce the growth rate of per capita real GDP.

Furthermore, within the context of the continuing global economic and financial crisis surrounding the deficits and outstanding national debts of many sovereign nations, several policy concerns of the OECD have surfaced. One of these is reflected in the words of the OECD Secretary-General Angel Gurría (OECD, 2009), who has stressed that policymakers must ensure that today's economic and political policies to manage the crisis not be the source of tomorrow's economic problems. The OECD has been working with its own members and, to a degree, with non-member governments and other organizations, to get economies back on the path of economic stability and expansion. Interestingly, as a central part of this effort, the OECD (2009) advocates the position that governments must be cautious not to jeopardize or sacrifice *economic freedoms* as they pursue policies to strengthen and revitalize their economies.

In point of fact, macroeconomic growth and its determinants have been studied for decades. During the last two decades, a variety of studies have been conducted to investigate the linkage between

economic growth and economic freedom *per se*. These studies, which are predominantly empirical in nature, generally find a strong, positive impact of economic freedom on the rate of economic growth (Ali, 1997; Barro, 1997; Clark and Lawson, 2008; Dawson, 1998; De Haan and Siermann, 1998; De Haan and Sturm, 2000; Heckelman and Stroup, 2000; Tortensson, 1994; Gwartney, Holcombe, and Lawson, 2006; Gwartney and Lawson, 2008). Indeed, Cole (2003, p. 196) finds that “...economic freedom is a significant factor in economic growth, regardless of the basic theoretical framework.”

This empirical study focuses principally on the relationship between economic growth on the one hand and (a) central government budget deficits (expressed as a percentage of GDP) and (b) economic freedoms such as fiscal freedom and freedom from excessive government size on the other hand. Clearly, a central concern in this study is that larger central government budget deficits lead to greater crowding out and hence diminished economic growth. In addition, the present study shares the concern of the OECD (2009) that a reduction in economic freedom will result over time in *diminished* economic growth.

In this study, following conventional procedures that deal with growth rates among different nations, economic growth is measured by the percent change in the purchasing-power-parity adjusted per capita real GDP (*PCTCHRPCY*). Given that the OECD is expressly concerned with achieving economic growth without compromising economic freedom, the framework for the study consists *solely* of the nations that comprise the OECD.

III. The Basic Empirical Model

As observed above, economic growth is measured as the percent change in the per capita real GDP over the study period, *PCTCHRPCY*, a measurement that follows most of the more recent related studies on macroeconomic growth (Tortensson, 1994; Cebula, 2011; Goldsmith, 1995; Ali, 1997; Nelson and Singh, 1998; Norton, 1998; Dawson, 1998, 2003; Cole, 2003; Gwartney, Holcombe, and Lawson, 2006). The value of *PCTCHRPCY* is made comparable across nations by *PPP* (purchasing-power-parity) adjustments. In turn, following several studies focused on economic growth (Tortensson, 1994; Goldsmith, 1995; Ali, 1997; Barro, 1997; Nelson and Singh, 1998; Norton, 1998; Dawson, 1998, 2003; Cole, 2003;

Gwartney, Holcombe, and Lawson, 2006), it is hypothesized in this eclectic model that economic growth depends upon (a) central government budget deficits and (b) economic freedom (*FREEDOM*), such that

$$PCTCHRPCY_{jt} = f(DEFY_{jt}, FREEDOM_{jt}) \quad (1)$$

where *PCTCHRPCY_{jt}* is the percent change in the purchasing-power-parity adjusted per capita real GDP (*RPCY*) in OECD nation *j* in year *t*; *DEFY_{jt}* is the ratio of the central government budget deficit in country *j* in year *t* to the nation's GDP in year *t*, expressed as a percentage of GDP;³ and *FREEDOM_{jt}* refers to the values of economic freedom measures (indices) in nation *j* in year *t*.

In accordance with much of the existing theoretical and empirical literature on budget deficits and crowding out, it is expected that the higher the level of *DEFY* in a nation over a given time frame, the greater the degree of *crowding out* of private sector investment and consumer purchases of durables (including housing) and hence the slower the economic growth rate (David and Scadding, 1974; Carlson and Spencer, 1975; Abrams and Schmitz, 1978; Arestis, 1979; Cebula, 1978, 1995; Guseh, 1997; Dawson, 1998), *ceteris paribus*. Indeed, this perspective of a negative impact of budget deficits on economic growth has often taken the form of studies that find that higher budget deficits raise interest rates and thereby reduce the pace of economic growth through reductions in investment and other private sector spending, often referred to as “transactions crowding out” (Al-Saji, 1992, 1993; Barth, Iden, and Russek, 1984, 1985; Cebula, 1997; Cebula and Cuellar, 2010; Findlay, 1990; Gisse, 1999; Hoelscher, 1986; Tanzi, 1985; Zahid, 1988).

Next, it is observed that the Heritage Foundation (2013) has developed ten measures of economic freedom, eight of which are formally considered in this analysis. The two economic freedom measures omitted from the study (labor freedom and freedom from corruption) share the common trait that their presence in the model introduces *significant* multicollinearity problems into the estimates. The eight economic freedom measures investigated here are described below.

³ Expressing a budget deficit as a percent of GDP permits comparison to the size of the economy.

Fiscal freedom (Heritage Foundation, 2013), *FF*, reflects the freedom of individuals and firms to keep and control their income and wealth for their own use and benefit. A government can impose fiscal burdens on economic activities by generating revenues for itself—primarily through taxation.⁴ In any event, the higher the *FF* index, the greater the freedom from government on the tax/revenue side and the greater the rate of economic growth.

The second economic freedom from the Heritage Foundation (2013) stressed in this study is *freedom from excessive government size*, or simply *government size freedom*, *GSF* (Heritage Foundation, 2013). This index of economic freedom reflects the degree of *freedom* in an economy *from the burden of excessive government in terms of expenditures*, i.e., freedom from excessive government on the *expenditure* (as opposed to revenue or tax) side.⁵ The higher the *GSF* index, the greater the freedom from excessive government size on the expenditure side and the greater the rate of economic growth.

In addition to *FF* and *GSF*, this study considers the economic growth implications of six additional economic freedom measures: *PROPRITF* (property rights freedom), *FINF* (financial freedom), *TF* (trade freedom), *MF* (monetary freedom), *BF* (business freedom), and *IF* (investment freedom), data for which were obtained from the Heritage Foundation (2013).

The variable *PROPRITF* is an economic freedom index measuring the degree to which the property rights of a nation's citizenry are protected. The capacity to accumulate private property and wealth is arguably one of the primary motivating forces in a market economy.⁶ Presumably, the greater the degree of property

⁴ Fiscal freedom, then, is a measure of freedom from the burden of government from the *revenue* side. The underlying idea is that higher taxation on the one hand interferes with the ability of individuals and businesses to pursue their goals in the marketplace and on the other hand may reduce, at least to some degree, the incentive to work, save, or invest.

⁵ Government outlays necessarily compete with private agents and interfere with natural market processes and prices by over-stimulating demand, potentially diverting resources through a “crowding out” effect.

⁶ Secure property rights provide both citizens and firms with the confidence and ability to undertake commercial activities, take risks, save the rewards of their efforts, and both formulate and execute long-term planning because of the knowledge that their income, savings, and property accumulation are safe from expropriation by government or other economic agents as well as from outright theft (Heritage Foundation, 2009, pp. 14–15).

rights freedom, the greater the extent of free-market activities and the greater the pace of real economic growth (Heritage Foundation, 2013).⁷

According to the Heritage Foundation (2013), financial freedom (*FINF*) is associated with the fact that essentially all nations impose some form of supervision of banking institutions and providers of other financial services. In theory, such supervision is intended to promote the safety and soundness of the financial system and to ensure that the financial service industry conforms with fiduciary responsibilities. However, excessive banking and financial regulation by government restricts competition, interferes with firm efficiency, and elevates the costs of entrepreneurial activity. Thus, it is hypothesized that the greater the degree of financial freedom, the greater the rate of economic growth should be.

Trade freedom (*TF*) “...reflects the openness of an economy to imports of goods and services from around the world and the ability of citizens to interact freely as buyers and sellers in the international marketplace” (Heritage Foundation, 2013). In principle, free trade agreements between nations are predicated on the expectation that such agreements increase trade freedom and thereby increase economic growth. Accordingly, in this study, economic growth is hypothesized to be an increasing function of *TF*.

Monetary freedom (*MF*), “...reflected by a stable currency and market-determined prices, is to an economy what free speech is to democracy. Free people need a steady and reliable currency as a medium of exchange and store of value. Without monetary freedom, it is difficult to create long-term value...” (Heritage Foundation, 2013). Hence, the greater the value of *MF*, the greater the real economic growth rate that is expected.

Business freedom, *BF*, addresses an individual’s right to create, operate, and close an enterprise without interference from the state (government). It is argued that burdensome, redundant regulations are the most commonplace barriers to the free conduct of entrepreneurial endeavors. In effect, regulations are regarded as a *de facto* “...form of taxation that makes it difficult for entrepreneurs to

⁷ Interestingly, even in a society/economy such as China (which is not among the nations formally studied here), economic growth and development during the “...boom years have been accompanied by greater property rights...” (Osnos, 2010, p. 44).

create value...” (Heritage Foundation, 2013). It is expected that the greater the degree of business freedom, the greater the rate of economic growth.

Restrictions on foreign investment tend to limit capital inflows and outflows and interfere with the ability of capital to flow to its best and most efficient use. Governmental actions that redirect the flow of capital interfere with both the freedom of investors and the freedom of people and firms seeking that capital (Heritage Foundation, 2013). Investment freedom, *IF*, is greater in a nation with fewer restrictions on investment, such that greater investment freedom promotes greater economic growth.

Technically, it is clear that the economic freedoms may interact, although the exact mechanisms for this interaction are not easily identifiable (Heritage Foundation, 2013). This “interaction” takes the form of a high zero-order correlation coefficient, *r*. Indeed, two of the ten measures of economic freedom compiled by the Heritage Foundation (2013), namely, labor freedom and freedom from corruption, have extremely high *r*-values with respect to several of the other variables in the model; hence, they are excluded from the analysis. In any case, the Heritage Foundation (2013) weights each economic freedom measure equally to prevent bias toward any given freedom or policy. Each of the economic freedoms is graded using a scale ranging from 0 to 100, with 100 being the maximum freedom.⁸ As observed in the above text, it is hypothesized (*ceteris paribus*) that per capita real economic growth is an increasing function of each of the economic freedom measures considered here: *FF* and *GSF*, *PROPRITF*, *FINF*, *TF*, *MF*, *BF*, and *IF*.

Substituting *FF*, *GSF*, *PROPRITF*, *FINF*, *TF*, *MF*, *BF*, and *IF* for *FREEDOM* in equation (1) yields:

$$PCTCHRPCY_{jt} = f(DEFY_{jt}, FF_{jt}, GSF_{jt}, PROPRITF_{jt}, FINF_{jt}, TF_{jt}, MF_{jt}, BF_{jt}, IF_{jt}), \quad (2)$$

where it is hypothesized that:

⁸ The higher the numerical value of any one of these economic freedom indices, the greater the degree of that corresponding economic freedom. An index score of 100 indicates an economic environment or set of public policies that is the most conducive to and compatible with economic freedom.

$$\begin{aligned} f_{DEFYjt} < 0, f_{FFjt} > 0, f_{GSFjt} > 0, f_{PROPRITFjt} > 0, f_{FINFjt} > 0, f_{TFjt} > 0, \\ f_{MFjt} > 0, f_{BFjt} > 0, f_{IFjt} > 0. \end{aligned} \quad (3)$$

IV. Empirical Analysis: Panel Two Stage Least Squares Estimates

Given the variables identified in equations (1)–(3) above, the following equation is to be *initially* estimated by panel two stage least squares (P2SLS):

$$PCTCHRPCY_{jt} = a_0 + a_1DEFY_{jt} + a_2FF_{jt} + a_3GSF_{jt} + a_4PROPRITF_{jt} + a_5FINF_{jt} + a_6TF_{jt} + a_7MF_{jt} + a_8BF_{jt} + a_9IF_{jt} + u, \quad (4)$$

where:

$PCTCHRPCY_{jt}$ = the percent change in the purchasing-power-parity adjusted real per capita GDP in nation j in year t ;

a_0 = constant;

$DEFY_{jt}$ = the ratio of the central/federal government budget deficit to the GDP in nation j in year t , expressed as a percent;

FF_{jt} = the value of the fiscal freedom index in nation j in year t ;

GSF_{jt} = the value of the freedom from excessive government size index in nation j in year t ;

$PROPRITF_{jt}$ = the value of the property rights freedom index in nation j in year t ;

$FINF_{jt}$ = the value of the financial freedom index in nation j in year t ;

TF_{jt} = the value of the trade freedom index in nation j in year t ;

MF_{jt} = the value of the monetary freedom index in nation j in year t ;

BF_{jt} = the value of the business freedom index in nation j in year t ;

IF_{jt} = the value of the investment freedom index in nation j in year t ;

and

u = stochastic error term

where $t = 2003, 2004, 2005, 2006, 2007, 2008$ and $j = 1, \dots, 29$.

Descriptive statistics for the variables considered in the basic model are provided in Table 1. The data sources for the variables in the analysis are as follows: $PCTCHRPCY$ (International Monetary Fund, 2013); the freedom indices, FF , GSF , $PROPRITF$, $FINF$, TF , MF , BF , and IF (Heritage Foundation, 2013); and the budget deficit ratio, $DEFY$ (OECD, 2013).

The above system was first estimated using the *Fixed Effects Model* and then estimated using the *Random Effects Model*. Performing the

Table 1. Descriptive Statistics

Variable	Mean	Standard Deviation
<i>RPCY</i>	26,986	11,663
<i>PCTCHRPCY</i>	2.59	1.23
<i>DEFY</i>	4.9	6.7
<i>FF</i>	59.9	12.1
<i>GSF</i>	41.1	19.4
<i>FINF</i>	68.8	17.3
<i>MF</i>	81.2	6.4
<i>BF</i>	78.2	11.2
<i>PROPRITF</i>	76.7	15.8
<i>IF</i>	76.0	8.4
<i>TF</i>	80.1	4.9

Hausman test yielded a p -value = 0.0451. Consequently, the system was estimated within the context of the *Fixed Effects Model*. Moreover, in each of the subsequent estimations provided in this study, the model was first estimated using the *Fixed Effects Model* and then estimated using the *Random Effects Model*. Performing the Hausman (1978) test [phtest (fixed, random)] generated in each of these subsequent cases also yielded a p -value < 0.05, so the study actually adopts the *Fixed Effects Model* in all of the estimations.

The dependent variable reflecting real economic growth per capita, *PCTCHRPCY*, is treated as contemporaneous with the central government budget deficit variable, *DEFY*. Thus a potential simultaneity issue arises. Accordingly, the system is estimated by P2SLS, with the instrument being the lagged value of the unemployment rate of the civilian labor force (OECD, 2013). The instrument was chosen because it was found to be highly correlated with *DEFY*, while not being correlated with the error terms in the system.

The P2SLS estimate of equation (4) is provided in column (a) of Table 2, in which each of the nine estimated coefficients on explanatory variables exhibits the expected sign, with five being statistically significant at the 1% level, two being statistically significant at the 5% level, and two (*TF_{jt}* and *BF_{jt}*) failing to be statistically significant at the 10% level. The F -statistic of 47.15 is statistically significant at the 1% level, attesting to the overall strength of the model.

Table 2. Panel Two Stage Fixed-Effects Least Squares Estimates

Variable/ Estimation	(a)	(b)	(c)	(d)
Constant	-5.32	-5.23	-4.77	-6.88
<i>DEFY</i>	-0.112*** (-3.34)	-0.106*** (-3.23)	-0.101** (-2.39)	-0.123*** (-2.65)
<i>FF</i>	0.007* (2.11)	0.007** (2.40)	0.006* (2.00)	0.006* (1.99)
<i>GSF</i>	0.143*** (3.24)	0.138*** (3.12)	0.129** (2.33)	0.185*** (2.58)
<i>PROPRITF</i>	0.0088*** (3.58)	0.009*** (4.38)	0.0089*** (3.51)	0.008*** (2.72)
<i>FINF</i>	0.005* (2.21)	0.006*** (2.73)	0.004* (2.01)	0.005* (2.09)
<i>TF</i>	0.022*** (3.43)	0.021*** (3.47)	0.023*** (3.57)	0.023*** (3.43)
<i>MF</i>	0.051*** (6.60)	0.045*** (6.03)	0.052*** (6.99)	0.049*** (5.54)
<i>BF</i>	0.001 (0.43)	0.002 (0.74)	0.002 (0.59)	-----
<i>IF</i>	0.002 (0.93)	0.002 (0.96)	-----	-----
<i>G8DUMMY</i>	-----	0.349*** (2.76)	-----	-----
<i>F</i>	47.15***	48.42***	55.37***	48.07***

Terms in parentheses are t-values. ***Indicates statistically significant at the 1% level; ** indicates statistically significant at the 2.5% level; * indicates statistically significant at the 5% percent level. White (1980) heteroskedasticity corrected standard errors and t-values are reported.

Based on these initial P2SLS results, the per capita real economic growth rate in OECD nations over the 2003 through 2008 study period (*PCTCHRPCY*) was, at the 1% statistical significance level, a decreasing function of the central government budget deficit (*DEFY_{it}*). Thus, the higher the budget deficit (expressed as a percent of GDP), the lower the percentage growth rate of the (purchasing-power-parity adjusted) per capita real GDP. This finding is strongly suggestive of a net crowding out effect from government budget deficits and is thus compatible in principle with several previous

empirical studies of earlier time periods and alternative empirical frameworks, although these earlier studies did not adopt P2SLS estimation (Anderson and Jordan, 1968; Klein, 1972; Carlson and Spencer, 1975; Sullivan, 1976; Cebula, 1978, 1995, 2011; Abrams and Schmitz, 1978; Zahn, 1978; Arestis, 1979; Guseh, 1997).⁹

Based on the results shown in column (a) of Table 2, the per capita real economic growth rate in OECD nations over the 2003 through 2008 study period (*PCTCHRPCY*) was an increasing function of both increased fiscal freedom (*FF*) in terms of the burden of taxation and freedom from the burden of excessive government size (*GSF*) in terms of expenditures. The estimated coefficient on *FFjt* is positive and statistically significant at the 4% level, whereas the estimated coefficient on *GSFjt* is positive and statistically significant at the 1% level. Thus, an increase in either fiscal freedom from the burden of government on the tax/revenue side and/or an increase in freedom from the burden of excessive government size on the expenditure side results in an increased percentage growth rate of per capita real GDP. Of course, these findings also imply that *reduced* levels of *FF* and/or *GSF* lead to a *decreased* per capita real economic growth rate. *In principle*, these outcomes might be expected in light of previous studies (Ali, 1997; Barro, 1997; Dawson, 1998; De Haan and Siermann, 1998; De Haan and Sturm, 2000; Heckelman and Stroup, 2000; Gwartney, Holcombe, and Lawson, 2006; Gwartney and Lawson, 2008), although the latter use different, i.e., more aggregated, economic freedom measures. In any case, these two results by themselves indicate that a nation pursuing policies that reduce fiscal freedom and freedom from excessive government size can be expected to experience reduced rates of real economic growth per capita.

Real economic growth per capita (*PCTCHRPCY*) is not only an increasing function of the economic freedoms captured in *FF* and *GSF* but also an increasing function of property rights freedom (at the 1% statistical significance level), financial freedom (at the 3% statistical significance level), monetary freedom (at the 1% statistical significance level), and trade freedom (at the 1% statistical significance level). Thus, overall, it appears that there is new,

⁹ This finding is supportive of David and Scadding (1974) and Friedman (1970; 1971).

additional evidence that increased (higher levels of) economic freedoms promote real economic growth.

To test of the robustness of the model, three alternative specifications of the basic model are estimated. In the first test of the model, this study endeavors to address a possible concern with the analysis of economic growth among OECD nations and whether the presence of the G8 nations in the study data set might somehow bias the results. To account for this possibility, a binary (dummy) variable, *G8DUMMY*, is introduced into the model. The value of *G8DUMMY* = 1 for each G8 nation observation, and the value of *G8DUMMY* = 0 otherwise. *Ceteris paribus*, it is expected that the coefficient on this variable is positive, as a reflection of infrastructure, educational, technological, and other economic and institutional advantages enjoyed by G8 nations vis-à-vis non-G8 nations.

The P2SLS estimation results of the expanded model are provided in column (b) of Table 2. As shown in column (b), all ten of the coefficients exhibit the expected signs, with seven being statistically significant at the 1% level; only the coefficients on the *IF* and *BF* variables fail to be statistically significant at the 10% level. Moreover, the F-ratio is 48.42 and statistically significant at the 1% level. Overall, then, the results in column (b) are consistent with all of the robust results in column (a). Thus, these P2SLS results reveal that real economic growth (as measured in this study) is a decreasing function of the central government budget deficit (expressed as a percent of GDP) and an increasing function of fiscal freedom (*FF*), government size freedom (*GSF*), property rights freedom (*PROPRITF*), financial freedom (*FINF*), monetary freedom (*MF*), and trade freedom (*TF*). Clearly, the presence of the *G8DUMMY* variable does not compromise the basic findings.

As yet a further test of the robustness of the results in the basic model, the model is re-estimated again by P2SLS, this time with both *G8DUMMY* and *IF* omitted from the model. These estimation results, summarized in column (c) of Table 2, yield eight coefficients, all of which exhibit the expected signs; in addition, three are statistically significant at the 1% level, two are statistically significant at the 2.5% level, and two are statistically significant at the 5% level. In sum, then, in column (c), there is further evidence on behalf of the robust results shown in the basic model.

Finally, in column (d), the results of a P2SLS estimation of the model are provided, in this case with the previously (in this study)

statistically insignificant variables, *IF* and *BF*, as well as the *G8DUMMY* variable all omitted. All seven of the estimated coefficients exhibit the expected signs, with five statistically significant at the 1% level and the remaining two statistically significant at the 5% level. Thus, there is yet further support for the findings that that real economic growth over the 2003–2008 study period (among OECD nations) is a decreasing function of the central government budget deficit and an increasing function of fiscal freedom, government size freedom, property rights freedom, financial freedom, monetary freedom, and trade freedom.¹⁰

For the convenience of the reader, the correlation matrix among the key explanatory variables in the basic model in equation (4) is provided in Table 3. Interestingly, of the 36 correlation coefficients provided, those between the following four pairs of variables are perhaps of interest: *FF* and *GSF* ($r = 0.696$), *BF* and *IF* ($r = 0.529$), *BF* and *PROPRIT* ($r = 0.533$), and *IF* and *PROPRIT* ($r = 0.539$). These results imply that in 11% of cases, explanatory variables are rather highly correlated. Indeed, of these four cases, three involve *IF* and/or *BF*. It is little wonder that these two explanatory variables perform somewhat weakly in the estimations. Aside from these instances, the general pattern of zero-order correlation coefficients in Table 3 reveals little of interest or serious concern.

Table 3. Correlation Matrix for Model Explanatory Variables

	<i>DEFY</i>	<i>FF</i>	<i>GSF</i>	<i>PROPRIT</i>	<i>FINF</i>	<i>TF</i>	<i>MF</i>	<i>BF</i>	<i>IF</i>
<i>DEFY</i>	1.00								
<i>FF</i>	0.399	1.00							
<i>GSF</i>	-0.399	0.696	1.00						
<i>PROPRIT</i>	-0.368	-0.387	-0.329	1.00					
<i>FINF</i>	-0.138	-0.039	-0.102	0.422	1.00				
<i>TF</i>	-0.341	-0.181	-0.275	0.329	0.076	1.00			
<i>MF</i>	-0.295	0.179	-0.224	0.462	0.260	0.188	1.00		
<i>BF</i>	-0.155	-0.234	-0.097	0.533	0.309	0.159	0.434	1.00	
<i>IF</i>	-0.339	-0.350	-0.323	0.499	0.466	0.161	0.285	0.529	1.00

¹⁰ Also noteworthy is the high degree of stability of the coefficients along with their respective t-values across the specifications. Such consistency of results also implies a high degree of robustness of the basic model.

V. Conclusions and Overview

The P2SLS estimations provided in this study constitute strong empirical support for the argument that the greater the central government budget deficit as a percent of GDP in OECD nations, the slower the percentage per capita real GDP growth rate (*PCTCHRPCY*) in OECD nations. This persistent P2SLS evidence of crowding out resulting from deficit-financed central government spending is consistent with a number of previous studies (Anderson and Jordan, 1968; Klein, 1972; Carlson and Spencer, 1975; Sullivan, 1976; Cebula, 1978, 1995; Abrams and Schmitz, 1978; Zahn, 1978; Arestis, 1979; Guseh, 1997). Thus, among other things, governments must be wary of policies that generate large, persistent budget deficits. The sustainability of such policies is clearly in question. Clearly, the Standard & Poor's downgrading of U.S. Treasury debt in August of 2011 provides support for this perspective. Moreover, as recently observed by Sanz (2011), the fiscal adjustments that OECD nations are being forced/will be forced to make to get their fiscal houses in order will be very challenging.

In addition, these P2SLS findings strongly imply that pursuing a set of public policies that promotes or is at least consistent with *greater* fiscal freedom (*FF*) from government on the tax/revenue side and *greater* freedom from excessive government size (*GSF*) on the expenditure side are fundamentally compatible with propelling the economies of the OECD onto the road to a full and sustainable economic recovery. Furthermore, the findings imply that economic growth will positively respond to increases in property rights freedom, financial freedom, trade freedom, and monetary freedom. These findings potentially can be interpreted as a signal for policymakers to be very circumspect about, among other things, new regulations to be adopted as well as old regulations that remain in effect but manifest little usefulness or relevance.¹¹

Arguably, the United States must become especially cautious in the current political climate of continuing its agenda of pursuing

¹¹ Regarding fiscal policy actions by OECD nations, the sharp increase in government indebtedness and concomitant growth in the size of government relative to the size of the economy in several OECD nations during the global economic and financial crisis is another serious concern (OECD, 2009; Sanz, 2011).

*higher federal personal income tax rates,*¹² *creating or raising other federal taxes,* and *expanding the role of the federal government while incurring large(r) budget deficits.* Prospective tax and spending policies in the United States appear poised to continue generating large federal budget deficits, to *reduce* fiscal freedom, and to *reduce* freedom from excessive government size. The results of the present study strongly suggest that such policies, which visibly include the huge federal budget deficits currently experienced and still forecasted for the United States in coming years, will reduce the rate of per capita real GDP growth in the United States. Clearly, the latter would tend to compromise U.S. living standards.

To provide a perhaps broader perspective, then, the empirical evidence provided in this empirical study implies strongly that, due to its persistent negative impact on per capita real GDP growth in the United States, the pattern of massive budget deficits begun under the Bush Administration (2001–2009) but *greatly expanded* under the Obama Administration (since 2009) cannot be allowed to continue. Likewise, the pattern of declining economic freedom, which also began under the Bush Administration (2001–2009) but which became *greatly exacerbated* under the Obama Administration (since 2009) must be quickly and significantly reversed. The stakes are high. This dual impact on U.S. prosperity, jobs, and living standards will be economically and indeed socially devastating if permitted to continue and will ultimately relegate the United States to the status of a second-class economic citizen in the global economy.

It is perhaps timely to refer to the classic four-book set by Adam Smith (1776), *An Inquiry into the Nature and Causes of the Wealth of Nations*, in which he observed that government policies were likely to destroy rather than create wealth. It is the “invisible hand” of free markets that leads to the efficient allocation of resources in those

¹² Interestingly, raising income taxes on the “rich” or “super-rich” in the United States has been and continues to be an intensely debated issue. An important part of this debate, all of which lies beyond the scope of the present study, is the elusive problem of defining the term “rich.” Interestingly, it has been found that that higher income tax rates tend to elevate the degree of income tax evasion (Clotfelder, 1983; Feige, 1994; Cebula, Coombs, and Yang, 2009); furthermore, federal government-spending-driven budget deficits also have been shown to increase income tax evasion (Cebula and Coombs, 2009). Such tax evasion behaviors would directly contribute to the federal government’s financial woes by reducing tax collections.

markets. This long-term perspective appears to elude many of those who make policy decisions in the United States and other nations.

References

- Abrams, B.A., and M.D. Schmitz. 1978. "The 'Crowding Out' Effect of Government Transfers on Private Charitable Contributions." *Public Choice*, 33(1): 29–39.
- Ali, A. 1997. "Economic Freedom, Democracy and Growth." *Journal of Private Enterprise*, 13(1): 1–20.
- Al-Sajj, A. 1992. "The Impact of Government Budget Deficits on Ex Post Real Long-term Interest Rates in the U.K." *Economia Internazionale*, 45(2): 158–63.
- Al-Sajj, A. 1993. "Government Budget Deficits, Nominal and Ex Ante Real Long Term Interest Rates in the U.K." *Atlantic Economic Journal*, 21(1): 71–77.
- Anderson, C.L., and J.L. Jordan. 1968. "Monetary and Fiscal Actions: A Test of Their Relative Importance in Economic Stabilization." *Federal Reserve Bank of St. Louis Review*, 65 (11): 11–24.
- Arestis, P. 1979. "The 'Crowding Out' of Private Expenditures by Fiscal Actions: An Empirical Investigation." *Public Finance/Finances Publiques*, 34(1): 19–41.
- Arora, V., and G. Vamvakidis. 2006. "The Impact of U.S. Economic Growth on the Rest of the World: How Much Does It Matter?" *Journal of Economic Integration*, 21(1): 21–39.
- Barro, R.J. 1997. *Determinants of Economic Growth: A Cross-Country Empirical Study*. Cambridge, MA: MIT Press.
- Barth, J.R., G. Iden, and F. Russek. 1984. "Do Federal Budget Deficits Really Matter?" *Contemporary Policy Issues*, 3(1): 79–95.
- Barth, J.R., G. Iden, and F. Russek. 1985. "Federal Borrowing and Short Term Interest Rates: Comment." *Southern Economic Journal*, 52(4): 554–59.
- Carlson, K.M., and R.W. Spencer. 1975. "Crowding Out and Its Critics." *Federal Reserve Bank of St. Louis Review*, 60(12): 1–19.
- Cebula, R.J. 1978. "An Empirical Analysis of the Crowding Out of Fiscal Policy in the United States and Canada." *Kyklos*, 31(3): 424–36.

- Cebula, R.J. 1995. “The Impact of Federal Government Budget Deficits on Economic Growth in the U.S.: An Empirical Investigation, 1955–1992.” *International Review of Economics and Finance*, 4(3): 245–52.
- Cebula, R.J. 1997. “An Empirical Note on the Impact of the Federal Budget Deficit on Ex Ante Real Long-term Interest Rates.” *Southern Economic Journal*, 63(3): 1094–99.
- Cebula, R.J. 2011. “Economic Growth, Ten Forms of Economic Freedom, and Political Stability: An Empirical Study Using Panel Data, 2003–2007.” *Journal of Private Enterprise*, 26(1): 61–81.
- Cebula, R.J., and C. Coombs. 2009. “Do Government-Spending Induced Federal Budget Deficits ‘Crowd Out’ Tax Compliance in the U.S.?” *Tax Notes*, 125(9): 1007–12.
- Cebula, R.J., C. Coombs, and B.Z. Yang. 2009. “The Tax Reform Act of 1986: An Assessment in Terms of Tax Compliance Behavior.” *International Economics*, 62(2): 145–61.
- Cebula, R.J., and P. Cuellar. 2010. “Recent Evidence on the Impact of Government Budget Deficits on the Ex Ante Real Interest Rate Yield on Moody’s Baa-rated Corporate Bonds.” *Journal of Economics and Finance*, 34(3): 301–7.
- Chen, H. 2009. “A Literature Review on the Relationship between Foreign Trade and Economic Growth.” *International Journal of Economics and Finance*, 1(1): 127–39.
- Clark, J.R., and R.A. Lawson. 2008. “The Impact of Economic Growth, Tax Policy, and Economic Freedom on Income Inequality.” *Journal of Private Enterprise*, 24(1): 23–31.
- Clotfelder, C.T. 1983. “Tax Evasion and Tax Rates: An Analysis of Individual Returns.” *Review of Economics and Statistics*, 65(2): 363–73.
- Cole, J.H. 2003. “The Contribution of Economic Freedom to World Economic Growth, 1980–99.” *Cato Journal*, 23(2): 189–98.
- Cole, J.H., and R.A. Lawson. 2007. “Handling Economic Freedom in Growth Regressions: Suggestions for Clarification.” *Economic Journal Watch*, 4(1): 71–78.
- Contessi, S. 2008. “Net Exports’ Recent (and Surprising) Contribution to GDP Growth.” *Federal Reserve Bank of St. Louis Review*, 93(11): 1–7.
- David, P.A., and J.L. Scadding. 1974. “Private Savings: Ultra-Rationality, Aggregation, and Denison’s Law.” *Journal of Political Economy*, 82(2): 225–49.

- Dawson, J.W. 1998. "Institutions, Investment, and Growth: New Cross-Country and Panel Data Evidence." *Economic Inquiry*, 36(4): 603–19.
- Dawson, J.W. 2003. "Causality in the Freedom-Growth Relationship." *European Journal of Political Economy*, 19(3): 479–95.
- De Haan, J., S. Lundstrom, and J. Sturm. 2006. "Market-Oriented Institutions and Policies and Economic Growth: A Critical Survey." *Journal of Economic Surveys*, 20(2): 157–81.
- De Haan, J., and C.L.J. Siermann. 1998. "Further Evidence on the Relationship Between Economic Freedom and Economic Growth." *Public Choice*, 95(3–4): 363–80.
- De Haan, J., and J. Sturm. 2000. "On the Relationship Between Economic Freedom and Economic Growth." *European Journal of Political Economy*, 16(2): 215–41.
- De Haan, J., and J. Sturm. 2007. "Handling Economic Freedom in Growth Regressions: A Reply to Cole and Lawson." *Economic Journal Watch*, 4(1): 79–82.
- Dube, S. 2009. "Foreign Direct Investment and Electricity Consumption on Economic Growth: Evidence from South Africa." *International Economics*, 62(2): 175–201.
- El-Shagi, M. 2010. "The Role of Rating Agencies in Financial Crises: Event Studies from the Asian Flu." *Cambridge Journal of Economics*, 34(4): 671–85.
- Feige, E.L. 1994. "The Underground Economy and the Currency Enigma." *Public Finance/Finances Publiques*, 49(1): 119–36.
- Findlay, D.W. 1990. "Budget Deficits, Expected Inflation, and Short-Term Real Interest Rates." *International Economic Journal*, 4(1): 41–53.
- Friedman, M. 1970. "A Theoretical Framework for Monetary Analysis." *Journal of Political Economy*, 78(2): 193–238.
- Friedman, M. 1971. "A Monetary Theory of Nominal Income." *Journal of Political Economy*, 79 (3): 323–37.
- Gartner, M., B. Griesbach, and F. Jung. 2011. "PIGS or Lambs? The European Sovereign Debt Crisis and the Role of Rating Agencies." *International Advances in Economic Research*, 17(3): 288–99.
- Gissey, W., 1999. "Net Treasury Borrowing and Interest Rate Changes." *Journal of Economics and Finance*, 23(2): 211–19.
- Goldsmith, A.A. 1995. "Democracy, Property Rights and Economic Growth." *The Journal of Development Studies*, 32(2): 157–74.

- Guseh, J.S. 1997. "Government Size and Growth in Developing Countries: A Political-Economy Framework." *Journal of Macroeconomics*, 19(1): 175–92.
- Gwartney, J., R. Holcombe, and R.A. Lawson. 2006. "Institutions and the Impact of Investment on Growth." *Kyklos*, 59(2): 255–76.
- Gwartney, J., R.A. Lawson, and J. Hall. 2012. "Economic Freedom of the World." <http://www.cato.org/pubs/efw> (accessed September 26, 2012).
- Hausman, J.A. 1978. "Specification Tests in Econometrics." *Econometrica*, 46(6): 1273–91.
- Heckelman, J.C. 2000. "Economic Freedom and Economic Growth: A Short-Run Causal Relationship." *Journal of Applied Economics*, 3(1): 71–91.
- Heckelman, C., and M.D. Stroup. 2000. "Which Economic Freedoms Contribute to Economic Growth?" *Kyklos*, 53(4): 527–44.
- Heritage Foundation. 2013. "Economic Freedom Indices: Explore the Data." <http://www.heritage.org/Index/Explore.aspx> (accessed February 20, 2013).
- Hoelscher, G. 1986. "New Evidence on Deficits and Interest Rates." *Journal of Money, Credit and Banking*, 18(1): 1–17.
- International Monetary Fund. 2013. "Data and Statistics." <http://www.imf.org/external> (accessed February 20, 2013).
- Klein, J.J. 1972. "More on the Analysis of Fiscal Policy and Bond Financing." *Economic Notes*, 1(1): 50–60.
- Melander, O., M. Pant, M. Segoviano, and A. Vamvakidis. 2011. "Dancing Spreads: Market ixedAssessment of Contagion from the Crisis in the Euro Periphery Based on Distress Dependence Analysis." *International Advances in Economic Research*, 17(3): 347–63.
- Norton, S.W. 1998. "Poverty, Property Rights, and Human Well-Being: A Cross-National Study." *Cato Journal*, 18(2): 233–46.
- Ogbokor, C.A. 2005. "Time-Series Evidence for the Export-Led Paradigm: A Case Study of Zimbabwe." *Journal of Social Sciences*, 1(2): 77–80.
- Organisation for Economic Co-operation and Development (OECD). 2013. "OECD Economic Surveys: Statistics from A to Z." <http://www.oecd.org/statistics/> (accessed December 8, 2011).
- Organisation for Economic Co-operation and Development (OECD). 2009. "OECD Forum 2009, Summary and Speeches: OECD

Economic Outlook.” http://www.oecd.org/document/57/0,3443,en_21571361_41723666_42942201_1_1_1_1,00.html (accessed December 2, 2010).

Osnos, E. 2010. “Boom Doctor.” *The New Yorker*, October 11, 42–51.

Sanz, I. 2011. “What Do OECD Countries Cut First When Faced with Fiscal Adjustments?” *Southern Economic Journal*, 77(3): 753–75.

Smith, A. 1776. *An Inquiry into the Nature and Causes of the Wealth of Nations*. London: Methuen & Co., Ltd.

Sullivan, B.P. 1976. “Crowding Out Estimated from a Large-Scale Econometric Model.” *Federal Reserve Bank of Dallas Business Review*, 62(1): 1–7.

Tanzi, V. 1985. “Fiscal Deficits and Interest Rates in the United States.” *IMF Staff Papers*, 33(4): 551–76.

Tortensson, J. 1994. “Property Rights and Economic Growth: An Empirical Study.” *Kyklos*, 47(2): 231–47.

White, H. 1980. “A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity.” *Econometrica*, 48(4): 817–38.

Zahid, K. 1988. “Government Budget Deficits and Interest Rates: Evidence Since 1971 Using Alternative Deficits Measures.” *Southern Economic Journal*, 54(4): 725–31.

Zahn, F. 1978. “A Flow of Funds Analysis of Crowding Out.” *Southern Economic Journal*, 45(2): 195–206.