

IMPACTS OF CENTRAL GOVERNMENT BUDGET DEFICITS AND ECONOMIC FREEDOM ON ECONOMIC GROWTH IN OECD NATIONS: P2SLS ESTIMATES, 2006-2012

1. INTRODUCTION

Sanz (2011, p. 753) has 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 (G-8 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”^{1,2}.

Furthermore, the government deficit/debt circumstances of such major economies as those of the U.K. and the U.S., have also surfaced. In both the U.K. and the U.S., there has been concern about actual and anticipated government budget deficits being economically unsustainable. Indeed, the deficit/national debt problem in the U.S., the world’s largest economy, became so disconcerting that the S&P

¹ Regarding such ‘contagion’ see the relevant study by Melander *et al.* (2011).

² Among OECD nations, the public debt in 2010 averaged 100.2% of GDP, as contrasted to 72.6% thereof over the 2000-2007 period (Sanz, 2011, p. 753).

(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 appears to be excessive deficits in the U.S. (El-Shagi , 2010; Gartner *et al.*, 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 G-8 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 U.K., the U.S., 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, the 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. The investigation is undertaken using a seven-year panel data-set for OECD nations covering the period 2006-2012.

Furthermore, within the context of the continuing global economic and financial crisis surrounding the deficits and outstanding national debts of many sovereign nations, several distinct policy concerns of the OECD have surfaced. One of these primary concerns is reflected in the words of the OECD Secretary-General Angel Gurría (OECD, 2009A, p. 1), who has stressed that

“We must ensure that today's policies to manage the crisis not be the source of tomorrow's 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 (2009A, p. 1, 2009B, p. 1) strongly 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.

Consequently, the broader purpose of this study is to investigate empirically not only the impact of central government budget deficits (as a percentage of GDP) on *per capita* real economic growth, but

also to investigate empirically the impact on *per capita* real economic growth of the principal forms of economic freedom. In the latter case, the focus is on the economic freedom measures developed by the Heritage Foundation (2006; 2007; 2008; 2009; 2010; 2011; 2012). By focusing on the panel data for the seven years from 2006-2012, the study takes into account a period of expansion, then the “Great Recession”, and then the somewhat lackluster economic recovery from the latter.

Background for the empirical model is presented in the following section of this study. The model and data are described in Section 3 of the study. The empirical analysis is provided in Section 4, where multiple estimates are provided. 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. The additional P2SLS estimates are then provided to test the robustness of the initial results. An overview is provided in the final section of the study.

2. RELEVANT BACKGROUND LITERATURE

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*. Typically, 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; Gwartney *et al.*, 2006; Gwartney and Lawson, 2008; Heckelman and Stroup, 2000; Tortensson, 1994).

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)³ and (b) fiscal freedom and freedom from excessive government size, along with various other forms of economic freedom, 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

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

of the OECD (2009A, p.1; 2009B, p.1) that a reduction in economic freedoms 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. The analysis involves an unbalanced panel, with data for 29 of 30 nations for the year from 2006 through 2009 and for 33 out of 34 nations for 2010 and the years thereafter.

3. 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, 1978, 1995; Goldsmith, 1995; Ali, 1997; Nelson and Singh, 1998; Norton, 1998; Dawson, 1998, 2003; Cole, 2003; Gwartney *et al.*, 2006). The value of *PCTCHRPCY* is made comparable across nations by PPP (purchasing-power-parity) adjustments. In turn, following a number of studies focused upon economic growth (Tortensson, 1994; Goldsmith, 1995; Ali, 1997; Barro, 1997; Nelson and Singh, 1998; Norton, 1998; Dawson, 1998, 2003; Cole, 2003; Gwartney *et al.*, 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; 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 intermediate and longer term interest rates and thereby reduce the pace of economic growth through reductions in investment and other private sector spending, a phenomenon often so defined as to include ‘transactions crowding out’ but other crowding out forms as well (Al-Saji, 1992, 1993; Barth *et al.*, 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 (2012) 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 very extensive multi-collinearity problems. The eight economic freedom measures investigated here are described below.

Fiscal freedom (Heritage Foundation, 2012, p. 13), *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 (but also from debt that in theory must ultimately be paid off and that in fact must also be serviced). Fiscal freedom, then, is a measure of freedom from the burden of government from the *revenue* side. Technically, *FF* includes freedom from the tax burden both in terms of personal income tax rates and in terms of the overall amount of collected tax revenues as a percentage of a nation’s GDP (since governments obviously impose many forms of taxation in addition to that on income). The underlying idea is that higher tax rates interfere on the one hand 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 incentives to work, save, or invest. 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 measure of economic freedom from the Heritage Foundation (2012) stressed in this study is *freedom from excessive government size*, or simply *government size freedom*, *GSF* (Heritage Foundation, 2012, pp. 13-14). This index of economic freedom

reflects the degree of *freedom* in an economy *from* the *burden of excessive government in terms of expenditures*. Alternatively stated, it reflects the degree of freedom from excessive government on the *expenditure* (as opposed to revenue/tax) side. 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 apart from budget deficits *per se* (Klein, 1972; Carlson and Spencer, 1975; Cebula, 1978, 1995; Guseh, 1997), and driving up interest rates and inflation in the process. The higher the *GSF* index, the greater the freedom from excessive government size on the expenditure side and hence 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 all of which were obtained from the Heritage Foundation (2006; 2007; 2008; 2009; 2010; 2011; 2012).

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. 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, 2012, pp. 14-15). Presumably, the greater the degree of property rights freedom, the greater the extent of free-market activities and the greater the pace of real economic growth (Heritage Foundation, 2012, p. 11). 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).

According to the Heritage Foundation (2012, p. 14), financial freedom (*FINF*) is associated with the fact that essentially all nations impose some form of supervision of banking institutions and the providers of other financial services. In theory, such

supervision is intended in principle to promote safety and soundness of the financial system and to ensure that the financial service industry is in conformity with fiduciary responsibilities. However, excessive banking and financial regulation by government restricts competition, interferes with firm efficiency, and elevates the costs of entrepreneurial activity. Arguably, within

“...a free banking environment, the marketplace should be the primary source of protection through such institutions as independent auditors and information services” (Heritage Foundation, 2012, p. 14).

Such oversight is quite different from burdensome or intrusive government regulation or actual government ownership of banks or other financial firms; the latter interfere with the market mechanism in the providing of financial services to the economy. Thus, it is hypothesized that the greater the degree of financial freedom, i.e., the greater the degree of *freedom from excessive banking and financial regulation by government*, the greater should be the rate of economic growth.

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, 2012, p. 13).

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 [a euphemism for long term economic growth]” (Heritage Foundation, 2012, p. 14).

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 (firm, whatever its form) without interference from the state (government). It is argued (Heritage Foundation, 2012, p. 12) 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 create value [produce goods and services]”.

The most important of these regulations

“...are associated with licensing new companies and businesses”
(Heritage Foundation, 2012, p. 12).

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 for capital to flow to its best and most efficient use. Those 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, 2012, p. 14). Investment freedom, *IF*, is greater in a nation with fewer restrictions on investment, and 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, 2012, pp. 11-12). 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 (2012), 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 (2012, p. 15) weights each economic freedom measure equally so as 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. 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. Paralleling the related literature to date, 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:

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

4. EMPIRICAL ANALYSIS: PANEL TWO STAGE LEAST SQUARES ESTIMATES

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

$$\begin{aligned} PCTCHRPCY_{jt} = & a_0 + a_1 DEFY_{jt} + a_2 FF_{jt} + a_3 GSF_{jt} + \\ & + a_4 PROPRITF_{jt} + a_5 FINF_{jt} + a_6 TF_{jt} + \\ & + a_7 MF_{jt} + a_8 BF_{jt} + a_9 IF_{jt} + u \end{aligned} \quad (4)$$

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; and

where $t = 2006, 2007, 2008, 2009$ and $j = 1, \dots, 29$ and $t = 2010, 2011, 2012$ and $j = 1, \dots, 34$.

The data sources for the variables in the analysis are, as follows: $PCTCHRPCY$, IMF (2008, Table 1; Heritage Foundation, 2006, 2007, 2008, 2009, 2010, 2011, 2012); the freedom indices, FF , GSF , $PROPRITF$, $FINF$, TF , MF , BF , and IF (Heritage Foundation,

TABLE 1 - *Panel Two Stage Least Squares Estimates*

Variable\Estimation	(a)	(b)	(c)	(d)
Constant	-5.25	-5.15	-4.64	-6.59
<i>DEFY</i>	-0.104*** (-3.27)	-0.98*** (-3.10)	-0.098** (-2.32)	-0.11*** (-2.61)
<i>FF</i>	0.008* (2.06)	0.09** (2.33)	0.007* (2.00)	0.007* (1.99)
<i>GSF</i>	0.14*** (3.12)	0.13*** (3.02)	0.127** (2.36)	0.19*** (2.60)
<i>PROPRITF</i>	0.0083*** (3.54)	0.0086*** (4.35)	0.0087*** (3.48)	0.0085*** (2.71)
<i>FINF</i>	0.0048* (2.15)	0.0059*** (2.65)	0.004* (2.03)	0.0049* (2.13)
<i>TF</i>	0.022*** (3.37)	0.02*** (3.39)	0.023*** (3.53)	0.024*** (3.54)
<i>MF</i>	0.051*** (6.52)	0.047*** (5.97)	0.052*** (6.40)	0.053*** (5.44)
<i>BF</i>	0.001 (0.39)	0.002 (0.72)	0.002 (0.56)	-----
<i>IF</i>	0.002 (0.88)	0.002 (0.97)	-----	-----
<i>G8DUMMY</i>	-----	0.32*** (2.61)	-----	-----
<i>F</i>	45.15***	47.26***	54.34***	46.68***

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.

2006, 2007, 2008, 2009, 2010, 2011, 2012); and the budget deficit ratio, *DEFY* (OECD (2010, Table 1; Heritage Foundation, 2006, 2007, 2008; 2009; 2010; 2011; 2012).

The above system was first estimated using the *Fixed-Effects Model* and then estimated using the *Random Effects Model*. Performing the Hausman test yielded a p -value = 0.0449. 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 test [`phtest (fixed, random)`] generated in each of these subsequent cases also yielded a *p*-value less than 0.05, so that the study actually adopts the *Fixed-Effects Model* in all of the estimations provided in this study.

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 (using the STATA 10 command), with the instrument being the lagged value of the unemployment rate of the civilian labor force (OECD, 2010, Table 2; Heritage Foundation, 2006, 2007, 2008, 2009, 2010, 2011, 2012). 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.

TABLE 2 - *Correlation Matrix for Model Explanatory Variables*

	<i>DEFY</i>	<i>FF</i>	<i>GSF</i>	<i>PROPRITF</i>	<i>FINF</i>	<i>TF</i>	<i>MF</i>	<i>BF</i>	
<i>DEFY</i>	1.00								
<i>FF</i>	0.399	1.00							
<i>GSF</i>	-0.392	0.699	1.00						
<i>PROPRITF</i>	-0.375	-0.389	-0.332	1.00					
<i>FINF</i>	-0.144	-0.044	-0.108	0.425	1.00				
<i>TF</i>	-0.360	-0.197	-0.2782	0.329	0.078	1.00			
<i>MF</i>	-0.298	0.185	-0.230	0.456	0.268	0.194	1.00		
<i>BF</i>	-0.157	-0.238	-0.112	0.532	0.313	0.169	0.437	1.00	
<i>IF</i>	-0.341	-0.351	-0.323	0.535	0.467	0.164	0.288	0.527	1.00

The P2SLS estimate of equation (4) is provided in column (a) of Table 1, where 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 one percent level, attesting to the overall strength of the model.

Based on these initial P2SLS results, the *per capita* real economic growth rate in OECD nations over the 2006 through 2012 study period (*PCTCHRPCY*) was, at the 1% statistical significance

level, a decreasing function of the central government budget deficit ($DEFY_{jt}$). 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 a number of previous empirical studies of earlier time periods and alternative empirical frameworks (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)⁴.

Based on the results shown in column (a) of Table 1, the *per capita* real economic growth rate in OECD nations over the 2006 through 2012 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 FF_{jt} is positive and statistically significant at the 4% level, whereas the estimated coefficient on GSF_{jt} 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 *et al.*, 2006; Gwartney and Lawson, 2008), although these studies adopt 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*.

Not only is real economic growth *per capita* ($PCTCHRPCY$) an increasing function of the economic freedoms captured in FF and GSF , but $PCTCHRPCY$ is also an increasing function of property rights freedom (at the 1% statistical significance level), financial freedom (at the 3% statistical significance level), monetary freedom

⁴ This finding could also be viewed as supportive of David and Scadding (1974) and Friedman (1970; 1971).

(at the 1% statistical significance level), and trade freedom (at the 1% statistical significance level). Thus, overall, it appears that there is new, additional evidence that increased (higher levels of) economic freedoms promote real economic growth.

To test 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 infra-structure, educational, technological, and other economic and institutional advantages enjoyed by G-8 nations vis-à-vis non-G-8 nations.

The P2SLS estimation results of the expanded model are provided in column (b) of Table 1. 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 47.25 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 1, 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 2006-2012 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 freedom⁵.

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 2. Interestingly, of the 36 correlation coefficients provided, those between the following four pairs of variables are perhaps of interest: *FF* and *GSF* ($r = 0.699$); *BF* and *IF* ($r = 0.527$); *BF* and *PROPRIT* ($r = 0.532$); and *IF* and *PROPRIT* ($r = 0.535$). These results imply that in 11% of cases, explanatory variables are rather highly correlated. Indeed, of these four cases, three involve either *IF* and/or *BF*. It is little wonder that these two explanatory variables perform 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.

5. 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

⁵ 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.

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 perspective⁶.

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 can potentially 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 relevance⁷.

Arguably, the U.S. must become especially cautious in the current political climate of continuing its agenda of pursuing *higher federal personal income tax rates*⁸, *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 U.S. appear poised to continue generating large federal budget deficits

⁶ Moreover, as recently observed by Sanz (2011), the fiscal adjustments that OECD nations are being forced/will be forced to get their fiscal houses in order will be very challenging.

⁷ 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, 2009B, p.1; Sanz, 2011).

⁸ Interestingly, raising income taxes on the 'rich' or 'super-rich' in the U.S. has been and continues to be an intensely debated issue (Piketty and Saez, 2007; Reynolds, 2006; Edwards, 2009; McLure, 2009; Piketty, 2009). 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 *et al.*, 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 through reducing tax collections.

and 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 being experienced and still forecasted for the U.S. in coming years, will reduce the rate of *per capita* real GDP growth in the U.S. Clearly, the latter would tend to compromise U.S. living standards⁹.

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⁹ 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 markets.

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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 2006-2012. 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 an unbalanced seven-year panel dataset for the OECD member nations 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 pursuing policies consistent with increasing (or, at the very least, not decreasing) various forms of economic freedom.

Keywords: Percentage Per Capita Real GDP Growth, Government Budget Deficits, Economic Freedom

JEL Classification: F43, H61, P10, P16

RIASSUNTO

L'impatto dei deficit di bilancio e della libertà economica sulla crescita nei paesi OCSE: stime 2006-2012

Questo lavoro esamina l'impatto dei deficit di bilancio e della libertà economica sulla crescita reale pro capite nei paesi OCSE nel periodo 2006-2012. La crescita economica è misurata dal tasso percentuale di crescita del PIL reale pro capite con il principio della parità dei poteri d'acquisto. Nel 'Modello a Effetto Fisso' le stime basate sul metodo dei minimi quadrati a due stadi (P2SLS), utilizzando un *data set* di sette anni per un gruppo di paesi dell'OCSE, rivelano che la crescita economica è funzione decrescente del deficit del bilancio centrale e funzione crescente della libertà economica. I risultati suggeriscono che la crescita economica risulta favorita da politiche di contenimento della spesa pubblica coerenti con misure di crescente libertà economica.