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Debt and other determinants of fiscal policy use

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Abstract

Using a measure of variation in real government expenditure for the period 1998 through 2008, this paper employs cross country regression analysis to look at the effect of public debt, both singularly and when adjusting for control variables, on fiscal policy usage. The empirical findings are consistent with the hypothesis that higher public debt tends to lessen the use of fiscal policy.

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1 Introduction

One of the key potential factors determining how much fiscal policy can be employed is the extent of public debt. Presumably, higher levels of public debt make it more difficult both politically and financially to use fiscal policy. Even in the prosperous U.S., debt seems to be making government demand management, with the intended aim of coming to the aid of a distressed economy, a difficult, if

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not a very difficult, undertaking. The purpose of this paper is to use cross section regression analysis to see whether there is empirical support for the contention that greater debt leads to reduced fiscal policy use.

While there is a long history, both theoretical and empirical, of quantifying fiscal policy multipliers, of investigating the results and consequences of fiscal policy, of assessing whether monetary or fiscal policy is more effective, this paper looks at something a little different. With a focus on public debt as a crucial determinant, it explores the determinants of fiscal policy usage.

The paper is divided into five sections. The first section provides a brief review of some of the literature on fiscal policy. The second section presents a simple model of fiscal policy usage and public debt. The third section discusses the variables to be used in the empirical analysis and their sources. The fourth section gives the results of cross country regressions of fiscal policy usage on public debt. Finally, the fifth section ends with a few concluding remarks.

2 Overview of some of the literature

Two of the few variables that have been investigated in the recent literature with regard to their effect on fiscal policy usage are trade openness and trade liberalization. Rodrik suggests that, in order to provide increased social insurance to protect from greater economic instability due to greater globalization, countries more open to international trade have bigger governments (Rodrik 1998). Right in line with this idea, Kneller in his regression analysis finds, using a difference in difference methodology, that, out of a variety of fiscal variables, only welfare and social security spending, social insurance type variables, are affected by trade liberalization (Kneller 2007).

There is quite a bit of work attempting to measure the size of the fiscal multipliers. Ramey finds government spending multipliers ranging from .6 to

1.1(Ramey 2009), while Barro and Redlick obtain military defense spending multipliers over a two year period in the neighborhood of .6 to .7 (Barro and Redlick 2010). Assuming that country characteristics determine the size of the multipliers, Ilzetzki, Mendoza, and Vegh investigate how variables such as debt, openness, and foreign exchange conditions affect the size of the fiscal multipliers (Ilzetzki, Mendoza and Vegh 2010). Employing a structural vector autoregressive regressive model on a unique quarterly dataset for forty four countries from the first quarter of 1960 to the last quarter of 2007, they find, among other things, that in countries with high levels of debt, the long run impact of fiscal policy is negative, and that, while relative closed economies have positive long-run multipliers, relatively open economies have negative long-run multipliers.

Whether in real world operation fiscal policy actually reduces economic instability seems to be increasingly coming under question. Badinger finds, in his empirical analysis of twenty OECD countries, that discretionary fiscal policy actually increases economic instability (Badinger 2009). There is also some evidence that fiscal policy may be counter productive in developing countries. For example, Kaminsky, Reinhart, and Vegh, in their analysis, find that fiscal policy is procyclical in developing countries (Kaminsky, Reinhart, and Vegh 2004).

One possible reason fiscal policy may not work is how it is employed. Elmendorf and Furman propose, explain, and advocate some rules (conditions) for fiscal policy to be effective (Elmendorf and Furman 2008). Fiscal policy must be *timely* so that output increases at an appropriate and not an inappropriate time. It must be *targeted* so as to insure the highest increase in aggregate demand per dollar increase in government spending (per dollar reduction in taxes), and it must be *temporary* so as not to cause any long run increase in the budget deficit.

3 The model

The model consists of a single equation with one key argument and a set of control variables. The equation is as follows.

$$F = g\ (D, \mathbf{C})\quad \delta F/\Delta D < 0$$

In the equation, F stands for the extent of fiscal policy, D for the amount of public debt, and **C** for a vector of control variables. The central hypothesis, that greater public debt reduces fiscal policy use, is expressed by the negative partial derivative between fiscal policy and public debt.

Three control variables will be considered. Two are structural features that are likely to influence the use of fiscal activity and the third is a public disposition or attitude that is apt to make it politically more feasible and thus more likely to employ fiscal policy. The three variables are the level of economic development, the extent of economic investment, and the degree of public trust in the population.

Less developed countries tend to be more unstable, thereby creating a greater need for fiscal policy to stabilize their economies. Thus, one expects to find a negative relationship between the level of economic development and fiscal policy employment, that is, higher levels of development, are, all other things being equal, expected to lead to reduced fiscal policy use.

Similarly, economies characterized by higher levels of investment relative to the economy are likely to have greater need for stabilization, and hence greater need for fiscal policy. Investments by their nature are highly unstable since they are risky and require current outlays on uncertain future benefits.

Public trust in government is critical for the pursuit of any and all government activities including fiscal policy. Thus, it is expected that the greater the degree of public trust, the more politically acceptable it will be to use fiscal policy, and the more fiscal policy will be used.

In sum, fiscal policy usage is influenced by two fundamental factors, the

ability to use fiscal policy, and the need to use fiscal policy in order to stabilize the economy. Characteristics of the economy such as the level of development and the amount of investment impact the need for fiscal stability by increasing or decreasing the prevailing instability of the economy. In particular, reduced levels of economic development and higher levels of investment contribute to greater economic instability, thus leading to a greater requirement for fiscal policy employment. On the other hand, higher levels of economic development and lower levels of investment lead to less inherent economic instability. With reduced economic instability, there is less need for fiscal policy use. With regard to the ability, as opposed to the need, to use of fiscal policy, the ability to use fiscal policy is likely to be dampened with higher levels of debt and lower levels of public trust.

4 Data sources

The measure of the use of fiscal policy is the coefficient of variation on annual real government expenditure in constant 2000 U.S. dollars for the period 1998 to 2008. The real government expenditure data is lifted from the World Bank's World Development Indicators (World Bank 2011). The coefficient of variation on annual real government expenditure for the various countries is computed by the author from the real government expenditure data.

The extent of public debt is captured by percentage of public debt to GDP for the year 2008. The information comes from the dataset on public debt by Jaimovich and Panizza (Jaimovich and Panizza 2010). It is identified by the variable name PUBLICDEBT.

Real GDP per capita in constant 2000 U.S. dollars for the year 2005 is used to quantify the extent of economic development. The data is abstracted from the World Bank. The development variable is given the variable name GDPPC.

The measure of political trust is public trust in politicians from the Global

Competitiveness Report of the World Economic Forum (World Economic Forum 2009). The variable ranges from one to seven with higher values indicating greater political trust, and is a weighted average of answers to their question, "how would you rate the level of public trust in the ethical standards of politicians in your country?" from 2009 through 2010. It is assigned the variable name PUBLICTRUST.

The gauge of the extent of investment in the economy is gross capital formation as a percentage of GDP for the year 2005. The numbers for the variable come from the World Bank. It is identified by the variable name INVESTMENT. Finally, the measure of the extent of urbanization is the percentage of the population living in urban areas in 2005. Once again, the data comes from the World Bank. It is assigned the variable name URBANIZATION.

5 The empirical findings

Table I shows the results of cross country regressions using ordinary least squares on percentage of public debt to GDP for 2008 (PUBLIC DEBT) and other variables.

The table is designed with the first column listing the variables names of the potential explanatory variables. The second, third, fourth, and fifth columns each contain the results of an individual regression run. The regression runs are numbered in the first row. The second to last row gives the r-squared value for each regression equation, while the last row shows the number of observations (the number of countries) entering each regression equation. The estimated coefficients are given in the body of the table with the individual t-statistics underneath in parenthesis. A single asterisk designates significance at the one percent level of significance or better, and a double asterisk indicates significance at the five percent level of significance or better.

Table 1: Cross country regressions of fiscal policy use as measured by the coefficient of variation of real government expenditures from 1998 through 2008 on the percentage of public debt to gdp and other variables

	(1)	(2)	(3)	(4)
CONSTANT	.1954 (11.29) *	.1880 (10.72) *	.1460 (5.355) *	.0840 (2.18) **
PUBLICDEBT	-.0136 (-4.275) *	-.0099 (-2.71) *	-.0090 (-2.30) **	-.0087 (-2.24) **
GDPPC2000		-.0000016 (-2.22) **	-.0000028 (-2.23) *	-.0000026 (-2.97) *
PUBLICTRUST			.0171 (2.15) **	.0155 (1.98) **
INVESTMENT				.0027 (2.26) **
URBANIZATION				
RSQ	.118	.154	.187	.223
N	138	135	116	116

The table contains four equations. The first equation shows the effect of public debt, as measured by the percentage of public debt to GDP for 2008 (PUBLICDEBT), on fiscal policy use in isolation without controlling for any of the other variables. Each of the other three equations portrays the effect on fiscal policy usage of public debt after adjusting for control variable(s). For these

equations, the three control variables, the level of economic development as measured by real GDP per capita in 2000 U.S. dollar (GDPPC2000), the extent of public trust (PUBLICTRUST), and investment as the percentage share of the economy (INVESTMENT), are added in a cumulative fashion.

The results lend support to the hypothesis that public debt reduces fiscal policy usage. The percent of public debt to GDP (PUBLICDEBT) is significant at the one percent level of significance or better in two of the four equations (equations 1 & 2) and is negative and significant at the five percent level or better in the other two equations (equations 3 & 4). Whether public debt is used as the sole regressor to explain fiscal policy usage across countries (equation 1) or in combination with one or more of the control variables (equations 2-4), the coefficient on public debt is negative and statistically relevant. As a single explanatory variable, it explains close to twelve percent of the cross country variation in fiscal policy usage (equation 1), and when used in combination with all three control variables, public debt and the control variables together account for over twenty two percent of the cross country variation in fiscal policy usage (equation 4).

In line with the notion that greater need for fiscal policy brings about greater fiscal policy usage, the two structural control variables, the level of development (GDPPC2000), and the percentage of investment to GDP(INVESTMENT), each have their expected signs whenever they appear as an explanatory variable in any of the equations. Just as theoretically anticipated, the estimated coefficient (GDPPC2000) is negative, as higher levels of development are expected to reduce the overall instability of an economy leading to reduced need for fiscal policy usage. And, just as predicted, the estimated sign on INVESTMENT is positive, since higher levels of investment are expected to increase economy wide instability necessitating increased need for fiscal policy usage. Both the development variable (GDPPC2000) and the investment variable (INVESTMENT) are significant at the five percent level of significance or better

any time they appear in the equations in the table.

In tune with the idea that greater ability to use fiscal policy results in greater fiscal policy usage, the estimated coefficient on public trust (PUBLICTRUST) is positive in the two equations that it enters (equations 3& 4). The trust variable is significant at the five percent level of significance or better in both of these equations.

6 Conclusion

There seems to be some evidence that public debt dampens the use of fiscal policy. What this means is that, in order for fiscal policy to be effectively used for stabilization not just in the short tem but continuously over time, fiscal policy needs to be conducted with fiscal responsibility. Functional finance of budget deficits must not be considered as a viable option. Employing fiscal policy, while maintaining budget discipline so as not to add to debt over the course of the business cycle, is likely to require changes in the political system, and the attitudes of both the public and politicians. Something may have to be done so that policy makers and politicians are not just concerned with the here and now solely to insure re-election, but that they also place high value on the future. Employing current fiscal policy to deal with current recessionary conditions by debt finance, reduces, to the extent debt is accumulated by the process, the ability to use fiscal policy for stabilization in the future.

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