

Fiscal Spending and Economic Growth: Some Stylized Facts

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Summary. — Using an “event analysis”, this paper complements the cross-country approach to the study of fiscal correlates of growth. Data on fiscal expenditures and growth for a database of 140 countries (118 developing countries) over 1972–2005 are reorganized around turning points providing a summary but encompassing description of “what is in the data”. For this sample, the probability of occurrence of a fiscal event is about 10%, and, the probability of a growth event once a fiscal event had occurred is around 26%. For developing countries, fiscal events followed by growth events occur under situations of (i) significantly lesser deficit, (ii) fewer resources devoted to non-interest general public services and (iii) shift in primary expenditures toward transport & communication. After controlling for the growth-inducing effects of positive terms-of-trade shocks and of trade liberalization reform, probit estimates indicate that a growth event is more likely to occur in a developing country when surrounded by a fiscal event. Moreover, the probability of occurrence of a growth event in the years following a fiscal event is greater the lower is the associated fiscal deficit, confirming that success of a growth-oriented fiscal expenditure reform is associated with a stabilized macroeconomic environment (through limited primary fiscal deficit).

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1. INTRODUCTION

A renewed focus on fiscal policy and growth has spawned a lively debate over demands for what has been dubbed greater “fiscal space” to support growth. Besides a few case studies (see World Bank, 2007), so far the exploration of fiscal space and performance in developing countries has proceeded along two paths: (i) studies of the efficiency of specific public sector expenditures—e.g., several studies on infrastructure (Calderón & Servén, 2004) or on other components of social infrastructure (Estache, Gonzalez, & Trujillo, 2007), and (ii) cross-country growth regressions in which government expenditures are included among the regressors (Adam & Bevan, 2005 or Devarajan, Swaroop, & Zou, 1996). Perotti (2007) reviews critically the contributions of the production function and growth regression approaches. Among the more interesting lessons from these exercises (Adam & Bevan, 2005; Bose, Haque, & Osborn, 2007; Kneller, Bleaney, & Gemmell, 1999), using dynamic panels have persuasively shown that capital expenditure, as well as spending on education, health, and transport and communication can be favorable to growth when the government budget constraint is *simultaneously* taken into account in the equation.

As pointed out in several studies (e.g., Easterly, Kremer, Pritchett, & Summers, 1993; Jones & Olken, 2008), growth tends to be highly unstable in low-income countries. This makes it difficult to unveil the relation between growth and its fundamentals leading Hausmann, Pritchett, and Rodrik (2005) to pay attention to turning points by relying on an event analysis. This paper applies this approach over a large data base of 140 countries over the period 1972–2005 providing a description of the correlates between significant public spending “shocks” and growth accelerations, reorganizing the data around turning points, or “events” (calendar time is transformed into “event time”). This descriptive analysis should be viewed as complementary to the approaches described above.

More specifically, we construct growth “events” along the lines of Hausmann *et al.* (2005). Lacking information on mile-

stone events in fiscal reforms similar to those available for trade reforms as in Wacziarg and Welch (2008), we define an “event” on the fiscal side using an approach similar to the definition of an event on the growth side, i.e., based on conditional changes in primary fiscal expenditures but taking into account the government budget constraint. This descriptive approach should be informative as it provides an easy-to-understand exploration of the correlates between fiscal policy (here fiscal expenditures) and performance (here per capita GDP growth). It avoids imposing a single common linear model for all countries as done in cross-country regressions. When applied to a large database, as done here, it gives a more encompassing description of “what is in the data” and is thus complementary to the three other approaches mentioned above.

To highlight the main findings, in this sample, the probability of occurrence of a fiscal event is about 10%, and the probability of a growth event once a fiscal event has occurred is in the 22–28% range. The probability of occurrence of a fiscal event is higher for the bottom half of the income distribution of countries. For the developing country group which is the focus of this study, fiscal events followed by growth events occur under situations of a significantly lesser deficit, and a shift in discretionary expenditures toward transport & communication is only observed for fiscal events followed by growth events. After controlling for the growth-inducing effects of positive terms-of-trade shocks and of trade liberalization reform, the statistical analysis in which the probability of a growth event is conditioned on the occurrence of a fiscal event in surrounding years confirms that growth events are, on average, more likely when a fiscal event has occurred. Moreover, the probability of occurrence of a growth event in the five years

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following a fiscal event is greater the lower is the associated fiscal deficit, confirming that success of a growth-oriented fiscal-expenditure package is associated with a stabilized macroeconomic environment (through limited fiscal deficit).

The paper unfolds as follows. Section 2 presents the identification conditions of both growth and fiscal events (with details and sensitivity analysis left to the Carrère & de Melo, 2007, Annex A.3). Section 3 studies the characteristics of growth and fiscal events, and the relation between the two. The descriptive analysis computes fiscal event (unconditional) probabilities and probabilities that fiscal events are followed (or not) by growth events. Section 4 investigates the characteristics of fiscal events, in particular the ones followed by a growth event, in terms of geography, underlying changes in expenditure composition, and in the level of associated primary deficit. Then the statistical analysis turns on the growth side, the objective being to see if, based on probit estimates, growth events are more likely to occur in a developing country when surrounded by a fiscal event. Section 5 concludes.

2. DEFINING EVENTS

We are interested in the relation between a “significant” change in fiscal spending and a “significant” change in GDP growth—what Hausmann, Pritchett and Rodrick (henceforth HPR, 2005), call “growth acceleration”. Per capita GDP *growth* and primary fiscal expenditures (in GDP %) *growth* are then our two indicator values. Call these growth indicators, z . Average annual *changes*, $z_{t,n}$, are computed for each year over successive windows of length n . Here, because of the limited sample size for the fiscal data (1972–2005) we choose a succession of windows of 5 years ($n = 4$). So we compute $\Delta z_{t,n}$:

$$\Delta z_{t,n} = z_{t,t+n} - z_{t-n-1,t-1}$$

If the change $\Delta z_{t,n}$ in the average indicator value satisfies certain conditions (see below), we will say that an “event” has taken place for z in t . The appendix details how we selected the parameter values defining an event and how sensitive our sample of events is to changes in the conditioning values so here we only describe the conditions for our “benchmark” set of parameters starting with GDP per capita growth, and then turning to primary fiscal expenditures. In this benchmark case, the sample produces 58 growth events and 95 fiscal events. Sensitivity of the number of events to the choice of parameter values is reported in appendix.

(a) Growth events

As in HPR, a growth event will have taken place in t if the following conditions are met:

- (i) an increase in the average per-capita growth of 2 ppa or more (percentage points per annum, ppa),
- (ii) growth acceleration sustained for at least 5 years [t ; $t + 4$],
- (iii) an average annual growth rate of at least 3.5 ppa during the acceleration period [t ; $t + 4$],
- (iv) a post-acceleration output exceeding the pre-episode peak level of GDP.

With this selection process, several events could follow one another over consecutive years capturing in fact the same event. To select the more “relevant” year, we fit a spline regression and choose the year for which the change in indicator value is statistically the most significant. Finally, we impose the restriction that two events must be separated by at

least 5 years. This method is used for both growth and fiscal events. See details in Appendices A and B.

(b) Fiscal events

The core of this study is the definition of a fiscal event. Defining an event was easier for Wacziarg and Welch (2008) where the objective was to identify when significant reductions in trade distortions took place. Here a fiscal event could be a fiscal policy aimed at stabilizing the economy or a fiscal policy aimed at improving the efficiency of the economy (e.g., expenditures to enhance the productivity of private investment or to devote resources to improve property rights enforcement). While both types of fiscal policy, if successful, would raise the growth rate, in the case of stabilization, the economy would be returning to trend growth while in the second case, the growth rate would go up. Like WW, we have in mind a fiscal policy that has more permanent effects on growth.

Barro’s (1990) endogenous growth model provides the framework to identify the growth effects of public expenditures. In this model, productive government capital expenditures increase the marginal productivity of private expenditure. Unless government revenue can be raised in a non-distortionary way—which is highly unlikely in practice—increases in government spending can raise or lower steady-state growth. In this model, government expenditures that only provide consumption services are negatively correlated with growth since the government has to raise taxes in a distortionary way.

This framework which puts the emphasis of fiscal policy on growth—the focus of this paper—underlines the importance of the composition of expenditures and of tax structure. While we can deal with the composition of government expenditures, in our large sample (140 countries over 1972–2005), unfortunately we cannot deal with the growth effects resulting from the choice of tax structure.

While Barro’s model provides a useful framework, implementing the event-analysis in the spirit of WW is much more difficult as there is much more fungibility in fiscal policy than in trade policy. This makes it difficult to identify the fiscal space levers, so it is much more difficult to identify the expected effects of changes in these levers. Here, we restrict fiscal reform to a change in total primary fiscal expenditures and, in a second step, we study the underlying evolution of many components of potential interest (e.g., education, health, or transport and communication).

Faced with limitations and constraints on data availability, we rely on changes in consolidated central government total fiscal expenditures, TFE (taken from the GFS, see details in Carrère & de Melo, 2007, Annex A1) as “event” changes in government expenditures. Since we are looking for autonomous fiscal expenditures, events are defined on expenditures purged of non-discretionary components such as wages and interest payments, IP .¹ Lacking information on the wage component for each functional expenditure category, we consider as discretionary TFE purged of interest payments. So, we define discretionary fiscal expenditure, DFE, as $DFE = TFE - IP$ which is equivalent to focusing on primary spending. We also compute the primary fiscal deficit, def , as the difference between the total revenues and *grants* and the discretionary fiscal expenditure, DFE (so a deficit is negative).

For the developing countries in the sample used here, average DFE is 24% of GDP and average central government primary fiscal deficit, def , is –2% of GDP. An increase in DFE will be declared as fiscal event in t when the following conditions are met over the following five year window:

- (i) An increase in DFE average growth of 1 ppa (percentage point per annum),

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