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Procyclical and countercyclical fiscal multipliers: Evidence from OECD countries[☆]



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ABSTRACT

Using non-linear methods, we argue that existing estimates of government spending multipliers in expansion and recession may yield biased results by ignoring whether government spending is increasing or decreasing. In the case of OECD countries, the problem originates in the fact that, contrary to one's priors, it is not always the case that government spending is going up in recessions (i.e., acting countercyclically). In almost as many cases, government spending is actually going down (i.e., acting procyclically). Since the economy does not respond symmetrically to government spending increases or decreases, the "true" long-run multiplier for bad times (and government spending going up) turns out to be 2.3 compared to 1.3 if we just distinguish between recession and expansion. In extreme recessions, the long-run multiplier reaches 3.1.

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1. Introduction

The recent global financial crisis and ensuing recession triggered major fiscal stimulus packages throughout the industrial world as well as in several emerging markets. The effectiveness of these fiscal packages remains, however, an open question. In fact, the size of the government spending multipliers in the academic literature has varied widely, from negative values to positive values as high as 4.

Why do estimates vary so widely? An obvious explanation is the use of different methodologies. Indeed, there has been an intense debate in the literature regarding the proper identification of fiscal shocks. The widely-used identification method of Blanchard and Perotti in the context of structural vector-autoregression models (SVAR), which relies on the existence of a one-quarter lag between output and a fiscal response, has been called into question by Ramey (2011) on the basis that what is an orthogonal shock for an SVAR may not be so for private forecasters. In other words, there seems to be, at least for the United States, a non-trivial correlation between orthogonal innovations in an SVAR and private forecasts. To remedy this, Barro and Redlick (2011) and Romer and Romer (2010) have suggested, respectively, the use of a “natural experiment approach” (military buildups in the United States) or a narrative approach for the case of taxes.

Another reason for different estimates could be that the size of fiscal multipliers may depend on various characteristics of the economy in question, including degree of openness, exchange rate regime, and the state of the business cycle.¹ The latter factor appears as particularly relevant for policymakers since fiscal stimulus in industrial countries is typically undertaken in bad times and hence, one could argue, the relevant multiplier is not an “average” multiplier over the business cycle but the one that applies in bad times. There is thus reason to believe that the size of fiscal multipliers could well depend on the business cycle.

From a technical standpoint, dividing the classical SVAR regression samples into expansions and recessions could severely compromise the number of observations used in the analysis as well as miss inherent non-linearities in the economy's response to fiscal stimulus. A potential solution is the use of non-linear, regime-switching type regressions, which have been used in some studies for the United States and other industrial countries. Specifically, Fazzari et al. (2012) extend Chan and Tong's (1986) early work on Threshold Autoregressive Models (TAR) to a multivariate setting in order to create a Threshold SVAR (TSVAR) model. In a TSVAR, the parameters are allowed to switch according to whether a threshold variable crosses an estimated threshold (capacity utilization in this case). A possible drawback of this methodology lies in the potential arbitrariness of the threshold selection. In Fazzari et al. (2012), the threshold is estimated from the data but it could still be argued that the selection of the threshold variable itself is arbitrary.

In a related, but different, approach, Auerbach and Gorodnichenko (AG) (2010) solve the issue of threshold selection by extending early work by Granger and Teravistra (1993) on Smooth Transition Autoregressive models (STAR) in order to accommodate simultaneous equation analysis in a Smooth Transition Vector Autoregressive model (STVAR). In this model the transition across states is controlled by an underlying smooth logistic distribution with a weight (or probability) given by a moving average of real GDP growth. For the United States, Auerbach and Gorodnichenko (2010) conclude that the spending multiplier is around zero in expansions and 1.5–2.0 in recessions. Using a linear model, the estimate would be around one, thus underestimating it for recessions and overestimating it for expansions. In Auerbach and Gorodnichenko (2012), they resort to an alternative methodology – advocated by Jorda (2005) and Stock and Watson (2007) – that relies on running a separate regression for each horizon and then constructing the impulse response function. This direct projection method does not impose the dynamic restrictions implicitly embedded in VARs and can easily accommodate non-linearities in the response function. They conclude, for a panel of OECD countries, that the multiplier reaches a maximum of 3.5 during recessions and is essentially zero during expansions.

This paper tackles the same question (do fiscal multipliers depend on the state of the business cycle?) but brings into the picture a new dimension, which we believe is critical for evaluating the size

¹ See Auerbach and Gorodnichenko (2010, 2012) and Ilzetzi et al. (2013).

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