Journal of Macroeconomics 44 (2015) 303–311

Contents lists available at ScienceDirect

Journal of Macroeconomics

journal homepage: www.elsevier.com/locate/jmacro

Fiscal multipliers in good times and bad times ☆

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ARTICLE INFO

Article history:
Received 3 October 2013
Accepted 12 January 2015
Available online 19 March 2015

JEL classification:
E32
E62
H21
H30
H56

Keywords:
Fiscal multipliers
Regime switching

ABSTRACT

This paper estimates the magnitudes of government spending and tax multipliers within a regime-switching framework for the U.S. economy during the period 1949:1–2006:4. Our results show that the magnitudes of spending multipliers are larger during periods of low economic activity, while the magnitudes of tax multipliers are larger during periods of high economic activity. We also show that the magnitudes of fiscal multipliers got smaller for episodes of low growth, while they got larger for episodes of high growth in the post 1980 period. Analyzing the effects of government spending and taxes on consumption and investment spending indicates that the magnitude of the effects of fiscal shocks on consumption and investment is very small.

1. Introduction

The role of fiscal policy in stabilizing business cycles came under scrutiny by researchers and policymakers about three decades ago. As argued by Beetsma and Guilidori (2011), expansionary fiscal policies implemented in response to oil price shocks did not provide the desired results and therefore raised concerns regarding the efficiency of fiscal policy during business cycles. Moreover, fiscal consolidations in Europe during the 1980s, contrary to Keynesian wisdom, led to an increase in output in the short-run and in the long-run and therefore led economists and policymakers to question the established theories regarding fiscal policy. Recent studies, including Alesina et al. (2002) explain this puzzling result with the fact that, certain fiscal shocks, namely shocks to government wages and salaries, can have non-Keynesian effects. They show that negative shocks to government wages and salaries result in an increase in economic activity both in the short-run and in the long-run by decreasing labor demand and wages, and therefore increasing business profits and investment.

With the global financial crisis of 2008 turning into a global recession, there has been a revival of interest in the effects of fiscal policy on major macroeconomic variables. Especially in the U.S., with President Obama's fiscal stimulus package, there

☆ We would like to thank Olivia Cassero, Gernot Doppelhoffer as well as workshop participants of ZEW Macroeconomics workshop 2012 in Mannheim, and seminar participants at NHH Bergen, Norway for useful comments and suggestions. We would also like to thank the Editor and an anonimous referee for very valuable comments and suggestions.

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http://dx.doi.org/10.1016/j.jmacro.2015.01.002
0164-0704/

is a heated discussion regarding the effectiveness of fiscal policy as an economic stimulus tool. In Europe, similarly, fiscal consolidations in many countries pushed economies deeper into recession, quite differently from what we observed in the 1980s.This particular observation certainly suggests that the magnitude- and even the sign- of fiscal multipliers might change during the business cycle.

There are different approaches in estimating tax and spending multipliers, but the two most common approaches employ structural macroeconometric models or vector autoregressive (VAR) models. Among these two approaches, the VAR models occupy a more prominent role in the recent literature.

The studies using VARs identify fiscal shocks either by employing the structural VAR approach or the narrative approach. The structural VAR approach uses either economic theory or institutional information to identify the variance/covariance matrix, and therefore the fiscal innovations (Blanchard and Perotti, 2002; Perotti, 2002). The multipliers estimated with this approach are close to (in most cases less than) unity. Perotti (2002) also argues that the tax multipliers tend to be negative but small, despite some evidence on positive tax multipliers. Finally, he argues that the U.S. is an outlier in many dimensions, so the responses to fiscal shocks estimated on U.S. data are often not representative of the average OECD country. Most VAR studies reach the conclusion that the post-1980 fiscal multipliers are smaller (Perotti, 2002; Favero and Giavazzi, 2009). This particular result is generally interpreted as fiscal policy becoming more ineffective over the years – most probably due to increased labor and capital mobility.

The narrative approach, identifies exogenous fiscal shocks by a narrative based dummy (Ramey and Shapiro, 1998) or the defense news measure (Ramey, 2011) or the exogenous tax measure (Romer and Romer, 2010a). While Ramey and Shapiro, 1998) use large exogenous increases in defense spending, like the Vietnam War, the Korean War and the Carter-Reagan military build-up to identify shocks to fiscal policy and Ramey (2011) constructs a new defense news variable which measures the present discounted value of expected change in military spending, Romer and Romer (2010b) use information from the official U.S. budget documents to classify exogenous tax changes. Ramey (2011) estimates the spending multipliers to be between 0.6 and 1.2, while Romer and Romer (2010a) find that an exogenous tax increase of 1% of GDP lowers real GDP by almost 3%.

Among the more recent studies that do not use VARs, Barro and Redlick (2011) estimate defense spending multipliers with two-stage least squares, using annual data for different samples where the estimated multipliers lie between 0.6 and 0.7.

The approaches mentioned above, with the exception of Auerbach and Gorodnichenko (2012), employ linear models in estimating the tax and spending multipliers. A common characteristic of these studies is that the magnitude of the multipliers does not vary over the business cycle. Auerbach and Gorodnichenko (2012) employ a regime switching VAR where transitions across recessions and expansions are smooth. By imposing the restriction that the U.S. economy is in recession 20 % of the time, they estimate that the total spending multiplier is 0.57 during expansions and 2.45 during recessions, while the defense spending multiplier is 0.8 during expansions and 3.56 during recessions.

In this paper, we investigate empirically whether fiscal multipliers are quantitatively different in magnitude during ‘‘good times’’ and ‘‘bad times’’. To do so, we use a multiple regime framework first suggested by Hamilton (1989). We contribute to the literature by estimating a non-linear model within a Markov-switching framework and obtaining government spending and tax multipliers during periods of low and high levels of economic activity. Our paper differs from Auerbach and Gorodnichenko (2012) in two respects. First, the Markov switching model that we employ has different properties from the STVAR model used by Auerbach and Gorodnichenko (2012). The model employed in this paper provides additional information as it estimates the transition probabilities (the probability of staying in each of the two regimes, low economic activity and high economic activity). Second, government spending multipliers are identified from variations in the defense news variable constructed by Ramey (2011) and the tax multipliers are identified from the exogenous tax variable constructed by Romer and Romer (2010a).

Ramey (2011) shows that defense spending accounts for almost all of the volatility of government spending, but also argues that shocks to government spending or defense spending can be anticipated ahead of actual spending. This has important implications because anticipated future changes in government spending can affect current economic activity. She shows that the standard VAR shocks do not reflect news about defense spending accurately and that the Ramey–Shapiro war dates Granger-cause the VAR shocks. Ramey (2011) also acknowledges that the simple dummy variable approach does not exploit the potential quantitative information available regarding the news about military spending and for this purpose constructs a new measure of defense news variable, which reports the anticipated changes in defense spending. We use this measure to identify shocks to government spending and to calculate the spending multipliers.

One major obstacle in calculating tax multipliers is endogeneity. As GDP increases, we observe an increase in tax revenues and vice versa. This makes the calculation of tax multipliers very difficult. Romer and Romer (2010b) argue that most changes in revenues are endogenous responses to non-policy developments. They analyze federal tax actions from 1945 to 2007 and identify four categories. Of these four categories, spending-driven and countercyclical tax changes are defined as endogenous tax changes, while deficit-driven long-run tax changes are categorized as exogenous tax changes. We use the exogenous tax changes in estimating the tax multipliers.

The non-linear model employed in this paper separates periods of high and low states of the world for the endogenous variable (the change in real GDP per capita scaled by the real GDP per capita of the previous period, which can also be interpreted as per capita growth), and therefore allows us to estimate separate fiscal multipliers for periods of low growth, and periods of high growth. We find that the spending multiplier is 2.91 for periods of low growth and 0.13 for periods of high