Asymmetric tax multipliers

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ABSTRACT

Using recently published tax series by Romer and Romer (2010) and Cloyne (2013) we examine whether or not positive and negative tax shocks have asymmetric effects on the U.S. and U.K. economies. We find that in the U.S. positive tax shocks—tax increases—do not affect output while negative tax shocks—tax cuts—have large, positive effects. In the U.K., tax increases substantially reduce output while tax cuts have no significant effect.

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1. Introduction

The effectiveness of fiscal policy to stimulate output continues to be a widely debated issue in the academic literature. Recent papers by Romer and Romer (2010) and Cloyne (2013) use the narrative records from legislative and executive sources to produce a time series of exogenous shocks to U.S. and U.K. tax policy. Romer and Romer (2010) report a tax multiplier of approximately 3.0 for the U.S., and similarly Cloyne (2013) reports a tax multiplier of 2.5 for the U.K. Both papers continue to receive substantial attention in the literature due to the innovative approach undertaken to produce exogenous tax shocks, as well as, the fact that the tax multipliers are larger than many other tax multipliers estimated using SVAR methods (Blanchard and Perotti, 2002; Barro and Redlick, 2011; Baunsgaard et al., 2012).

Our extension of the Romer and Romer (2010) and Cloyne (2013) studies relaxes the linear framework in which positive and negative tax shocks have symmetric effects on output and its components. Thus, the main goal of this paper is to evaluate whether the Romer and Romer (2010) and Cloyne (2013) tax shock series exhibit asymmetric behavior in a nonlinear framework.[1] Economic intuition suggests tax increases and tax cuts may affect output and its components asymmetrically. For example, tax cuts or tax increases which target business investment may have long run supply-side effects whereas policies that change personal income taxes may only temporarily affect aggregate demand. We find that U.S. tax cuts have large, positive effects on output while tax increases have little effect, whereas in the U.K., tax cuts have no significant effect on output while tax increases have significant, adverse effects. We find these results surprising given the similarity in the tax multipliers

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[1] We began this research in February 2013. However, since then we have independently discovered that Hussain and Milik (2013) investigate a similar question using the Romer and Romer (2010) U.S. data. While our findings support those of Hussain and Milik (2013), we examine the effects for the U.K. as well as the U.S. and emphasize the differences between the two countries. Our methodology is also slightly different from Hussain and Milik (2013).

reported in Romer and Romer (2010) and Cloyne (2013).[2] We offer several hypotheses to explain these results at the end of the paper.

While Romer and Romer (2010) and Cloyne (2013) undertake tests to ensure the exogeneity of their series, the validity of their narrative tax shock series has been the subject of recent criticism. For example, Favero and Giavazzi (2012) challenge the specification of tax shocks used by Romer and Romer (2010) and find when estimated in the correct form the multiplier is approximately 0.5. Mertens and Ravn (2012) eliminate tax changes in the Romer and Romer (2010) series they deem likely to be anticipated because of implementation lags and find a multiplier of 2.0. Charhour et al., 2012 further investigate a claim made by Favero and Giavazzi (2012) regarding the difference between the Romer and Romer (2010) series and the SVAR series used in Blanchard and Perotti (2002) and conclude that the difference between the two series is likely the result of alternative assumptions regarding identification. Perotti (2012) uses Romer and Romer's (2010) tax series with an adjustment and finds that output tax multipliers are larger across various specifications than those in Blanchard and Perotti (2002) but smaller than those reported in Romer and Romer (2010). Mertens and Ravn (2013a) attempt to reconcile differences in the magnitudes of tax multipliers between narrative and SVAR approaches and conclude that the differences between the two approaches are likely a result of measurement errors within the narrative series. Furthermore, Mertens and Ravn (2013a) propose an estimator in which the narrative series are not viewed as mapping one-to-one into true structural shocks but are rather used to impose moment restrictions on a VAR covariance matrix.

We do not seek to contribute to the above debate regarding differences between SVAR and narrative approaches or whether the narrative accounts are truly exogenous. Instead, we follow Romer and Romer (2010) and Cloyne (2013) and take their narrative series as exogenous, but we examine whether each series exhibits asymmetric behavior. To our knowledge, our paper is the first to investigate whether positive and negative tax shocks affect output asymmetrically while also controlling for the state of the business cycle.[3] The rest of the paper proceeds as follows. In Section 2, we describe the data and replicate the results from Romer and Romer (2010) and Cloyne (2013). Section 3 examines the effect of asymmetric tax multipliers on U.S. and U.K. output, as well as, specific GDP components. We explore the role of anticipated versus unanticipated shocks developed by Mertens and Ravn (2012) in Section 4. Section 5 discusses our results, and Section 6 concludes.

2. Narrative tax multipliers

2.1. Data

Romer and Romer (2010) and Cloyne (2013) argue that factors that give rise to tax changes are often correlated with other developments in the economy which complicate efforts to isolate the economic effects of tax changes. Thus, they use the narrative records from the U.S. and the U.K. to produce two series of legislated tax policy shocks and express each tax shock as a percent of nominal GDP in the quarter the shock occurs. For the U.S. the narrative analysis is based mainly on sources such as presidential speeches, the *Economic Reports of the President*, and reports of Congressional committees while in the U.K. the narrative analysis is mainly based on the annual budget.

Romer and Romer (2010) define four motivations for changes in the tax code: to offset a change in government spending, to offset some factor other than spending that is likely to affect output in the near future, to deal with an inherited budget deficit, and to achieve some long-run goal (e.g., higher normal growth, increased fairness, or a smaller role for government). The first two motivations are correlated with other developments affecting output and are classified as endogenous. However, tax changes to deal with an inherited budget deficit or to achieve a long-run goal are unlikely to be correlated with other factors affecting output and are, therefore, considered exogenous.

Thus, the exogenous series of tax changes in Romer and Romer (2010) consists of 45 quarterly, exogenous tax shocks over the 1947–2007 time period. Of these 45 exogenous tax shocks, there are 22 tax increases and 23 tax cuts. Cloyne (2013) develops a similar classification scheme to distinguish between endogenous and exogenous tax shocks in the U.K. The U.K. exogenous tax shock series consists of 113 quarterly, exogenous tax shocks over the 1955–2009 time period with 72 of the tax shocks being tax cuts and 41 being tax increases. The two series are shown in Fig. 1.[4]

2.2. Methodology

The primary model in Romer and Romer (2010) regresses real output growth on a constant and the contemporaneous value and lags of the chosen tax series as shown by Eq. (1). Eq. (2) adds lags of real output growth which controls for the state of the business cycle. Thus, they estimate the following two models:

$$\Delta Y_t = a + \sum_{i=0}^{M} b_i \Delta T_{t-i} + e_t \tag{1}$$

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[2] We replicate the Romer and Romer (2010) and Cloyne (2013) results in Section 2.
[3] Our methodology is similar to Cover (1992).
[4] All data is obtained from the AER's website for each respective paper.