UNIVERSITY OF ANTWERP
Academic year 2018 - 2019

Faculty of Business and Economics

PRIVATE DEBT AND THE EFFECTS OF STABILIZATION POLICY

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Applied Economic Sciences: Economic Policy

Master's thesis submitted for the Pierre Wildiers Prize   Promotor: prof. dr. Roland Winkler

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Private Debt and the Effects of Stabilization Policy

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Introduction

In the master thesis titled *Private Debt and the Effects of Stabilization Policy* I investigate whether the effects of a tax shock differ according to the private debt state of the economy. The usage of fiscal policy is not new, governments often use fiscal policy to stabilize economic activity when the economy is hit by macroeconomic shocks. Measuring the effects of changes in government spending and taxes on GDP and its components is an active research area, nevertheless there is a lack of uniform consensus on the size of fiscal multipliers.

A recent stream of literature looks at whether periods of private debt overhang intensifies the effects of fiscal policy. Bernardini and Peersman (2018) find that government spending multipliers in the U.S. are amplified during periods of high private debt. Studies have stressed the effects that private debt have in the propagation of shocks. Theoretical models, for example Eggertsson and Krugman (2012), show that borrowing households have a higher marginal propensity to consume out of income in comparison to (non-constrained) lenders. The proportion of borrowed constrained households is positively related to the private debt level, eventually allowing Keynesian-type of multipliers.

I endeavor to contribute to the empirical literature by investigating whether the effects of tax shocks in the United States are different across the private debt states of the economy. While the effects for government spending are documented by Bernardini and Peersman (2018), it is unknown whether private debt influences the propagation of tax shocks. This thesis is the first to give an answer to that question.

Methodology

To assess whether the effects of unanticipated exogenous tax shocks differ according to the private debt state of the economy I use Jordà's (2005) methodology of local projections to estimate state-dependent impulse response functions. The local projection method has become popular to estimate (non-linear) effects of policy interventions. The main idea of the local projections approach is to estimate the effect of a shock on the variable of interest, where we consider each horizon independently of each other.

The state-dependent econometric model is estimated by using an indicator variable to determine whether the U.S. economy is in a high or low private debt state. Three main variables are used in the baseline estimate, namely: real GDP per capita, personal consumption expenditure (per capita) and fixed investment (per capita). The vector of control variables differs depending on the variable of interest. For all three variables of interest, 12 lags of exogenous tax shocks are included as control variables and 4 lags of GDP. This controls the dynamics of output and hidden motivation of tax changes. Furthermore, for consumption (investments) as the variable of interest, four lags of consumption (investments) are added as extra control variables.

The dataset (as constructed by Bernardini and Peersman (2018)) contains quarterly U.S. data from 1947 until 2007. For measuring exogenous tax shocks, the unanticipated tax shocks series by Mertens and Ravn (2012) is used. To measure private indebtedness, the ratio of private debt-to-GDP is used as a debt indicator, with private debt being the domestic nonfinancial private debt. The advantage of using a debt-to-GDP ratio is that inflation, population and economic activity are controlled for. High and low private debt states are distinguished by looking at positive and negative deviation of the debt-to-GDP ratio from a Hodrick-Prescott trend ($\lambda = 10^6$).

Results

Following an exogenous tax increase of 1 percent of GDP, (real) GDP decreases significantly when there is private debt overhang. GDP decreases by almost 2 percent and remains depressed for a profound period of time. By contrast, when the economy is in a low private debt state there is no significant effect after the economy is hit by an exogenous tax shock. Furthermore, I found that tax shocks also have an effect on personal consumption and investments whenever the U.S. economy is in a high debt phase. Following a tax increase, consumption decreases by 0.63 percent (in terms of GDP), while investment falls by 0.84 percent (in terms of GDP) in private debt overhang episodes. As with the results for output, there is no evidence that tax shocks affect investment or consumption during periods of low private debt.

The robustness of the model is assessed by varying with the lag length selection of the tax shocks. When the U.S. economy is in a high debt state, there is almost no difference between the responses whether 4, 8 or 12 lags of tax shocks are used. The effect of a tax shock during private debt overhang remains significant irrespectively of the shock lag length. The responses for the low private debt episodes are not only not different from zero but also not robust since it varies strongly on the lag length structure. The baseline model is also tested with six alternative definitions of private debt overhang. Changing the definition of private debt does not lead to significant different results.

Conclusion

The empirical evidence presented in my thesis suggest that the state of private debt is a relevant indicator for policy makers responsible for stabilization policies. This thesis also provides useful policy implications. Stabilization policies, in the form of tax policies, can become more effective when the private debt state is taken into account. Following a tax decrease, output is boosted during private debt overhang while it is unaffected when private debt is low. It is therefore not advisable to implement fiscal consolidation policies, because they could have significant negative effects if the private sector is characterized by debt overhang. In contrast, when private debt levels are below trend, fiscal consolidations can more easily be done since the economy seems to respond less to it.