

The effect of fiscal policy in terms of government spending on private consumption in recessions and booms in Iran

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ABSTRACT

This paper presents an empirical study on measuring the effects of fiscal policy in terms of government spending on private consumption in both recession and booms over the period of 1965-2010. The proposed study uses Hodric-Prescott filter to find the cycle of recessions and booms. Then, we use autoregressive distributed lag model to estimate the changes. The results of this survey indicate that, in long term, an increase on government expenditures normally impacts private sector positively in both recessions and booms. The impact in short terms is positive during the recessions but during the booming session, there is no meaningful relationship between government spending and private spending.

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1. Introduction

One of the primary questions in economy is to find out how much government intervention in economy could improve the whole economy. The main question is to see whether expansion and contraction economical policies could effectively improve macro economical circumstances. Since consumer-spending plays an important role on economy, this survey performs a study to find the relationship between these two terms (van Aarle & Garretsen, 2003; Auerbach & Gorodnichenko, 2010; Bachmann & Sims, 2011). This issue has been investigated previously.

Levaggi (1999) investigated the algebraic substitution between private consumption and government spending in Italy over the period of 1960-1993 and realized that there was an algebraic relationship between consumption and production of public goods and private consumption by the government. Gali et al. (2004) performed an investigation to understand the effects of government spending on consumption.

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Carmignani (2007) performed an empirical investigation on the impact of fiscal policy on private consumption and social outcomes in Europe and the CIS. Dioikitopoulos and Kalyviti (2008) investigated the effects of public capital maintenance and congestion in long-run growth and fiscal policies. Oliver (1989) performed another investigation in two countries of Chile and Mexico over the period of 1984-1960 and realized that consumer spending was influenced by currency devaluation. Therefore, the changes on private does not necessarily mean government saving. Tridmas (1992) studied the effects of government spending on private consumption based on the regular income assumption over the period of 1958-1987 and showed that government spending depending on government policy had various impacts on consumer consumption.

Horvath (2009) investigated whether a rise in private consumption following an exogenous rise in government spending is a feature of the economy under optimal stabilization in a standard New Keynesian setting augmented for the presence of liquidity-constrained agents and non-separable preferences or not. Their investigation provided little evidence in support of a crowding-in effect under 'timelessly optimal' policy.

According to Cogan et al. (2010), there has been an increase interest in fiscal policy to use quantitative techniques to evaluate policy. Because of modeling uncertainty, it is necessary that policy evaluations be robust to alternative assumptions. Cogan et al. (2010) reported that models currently being used in practice to make an assessment on fiscal policy stimulus proposals are not robust. They investigated the sensitivity of their findings in terms of the response of monetary policy, the zero bound on nominal interest rates and the inclusion of an empirically relevant degree of rule-of-thumb behavior in the new Keynesian model. In addition, they related their findings using estimated structural macroeconomic models to the recent literature using reduced-form regression models.

Linnemann and Schabert (2012) studied optimal government spending in a business cycle model with labor income taxes and unemployment due to employing expenditures. They explained that labor market frictions raise the optimal steady state ratio of government spending to private consumption. The labor tax rate is higher since profits are taxed that arise from employed workers which save employing costs.

2. The proposed model

The proposed model of this paper considers the following model,

$$LPC=f(LNGDP-LIQPR-LPP-LGT-DUPOSG), \quad (1)$$

where LPC is the logarithm of consumer spending, which is a dependent variable, LNGDP is the logarithm of growth domestic product when Tax and oil income are excluded, LIQPR is actual money held by people, LPP is logarithm of inflation rate, LGT is logarithm of total government expenditure and finally DUPOSG is a dummy variable associated with government expanding policies, respectively. The implementation of both traditional and time series assume that we deal with stationary data and both mean and covariance of variables are unique over the time horizon. In addition, the covariance only depends on time lag between observations. All macro-economic factors have unit-root where we can remove it by taking difference between observations. The proposed study of this paper uses Augmented Dickey- Fuller Unit Root test to find out whether such problem has been resolved or not. In addition, we use the following to study the impact of fiscal policy.

$$LPC= C + \alpha_1LPC(-1) + \alpha_2LNGDP+ \alpha_3LLIQPR+ \alpha_4LPP+ \alpha_5LGT+ \alpha_6DUPOSG+U_t, \quad (2)$$

where to study the impact of long and short term between expansion fiscal policy and private consumption during both recession and booms we have replaced the dummy variable in Eq. (1) with a new dummy variable fiscal policy representing recession and boom. In order to separate recession

and booms from each other we use Hodric-Prescott (HP) filter (Hodric & Prescott, 1997) and then we use Eq. (3) as follows,

$$LPC = C + \alpha_1 LPC(-1) + \alpha_2 LNGDP + \alpha_3 LLIQPR + \alpha_4 LPP + \alpha_5 DUEXP GT + \alpha_6 DUEXP GT(-1) + \alpha_7 DURECGT + \alpha_8 DURECGT(-1) + U_t \tag{3}$$

where DUEXP GT is zero during the recession years and one during the booms. DURECGT also receives zero for boom sessions and for recession period, it is equal to government expenditures. To verify the effects of expanded fiscal policy in both recession and boom on private consumption in Iran we need to study the long term relationships among the variables of the proposed model using t-student test where the null hypothesis is as follows,

$$\begin{cases} H_0 : \sum_{i=1}^m \beta_i - 1 \geq 0 \\ H_1 : \sum_{i=1}^m \beta_i - 1 < 0 \end{cases} \tag{4}$$

3. Results and discussions

The regression analysis for estimating the parameters yields the following,

$$LPC = 3.87 + 0.399LPC(-1) + 0.141LNGDP + 0.160LLIQPR - 0.0649LPP + 0.044LGT + 0.025DUPOSG \tag{5}$$

(3.54) (2.84) (1.31) (1.95) (-3.23) (2.59) (2.44)

$$R^2 = 0.98 \quad DW = 1.722 \quad F = 315.05$$

As we can observe from the results, most of the parameters are statistically meaningful when the level of significance is five percent. Durbin-Watson (DW) value is within the acceptable limit and R² is equal to 0.98, which means the independent variables could describe 98 percent of the changes in LPC. To verify the effects of expanded fiscal policy in both recession and boom on private consumption in Iran we measure the t-student value as follows,

$$t = \frac{\sum_{i=1}^m \hat{\beta}_i - 1}{\sum_{i=1}^m S \hat{\beta}_i} = \frac{.70089 - 1}{.066015} = -4.5309 \tag{6}$$

As we can observe, t-student is statistically meaningful, which means null hypothesis is rejected and we can accept the long terms effect on independent variables. Now, we need to verify the long term effect in recession and boom and the results are as follows,

$$LPC = 1.85 + 0.560099LNGDP + 0.53496LLIQPR - 0.29591LPP + 1.6172DURECGT + 0.79DUEXP GT \tag{7}$$

(0.71) (1.82) (2.69) (-1.94) (2.17) (1.80)

Again, we can observe that most t-student values are statistically meaningful. The other observation is that the impact of long term fiscal policy is more during the recession than booming session. Finally, to study the short term effect, our study yields the following regression results,

$$dLPC = 0.387 + 0.117dLNGDP + 0.1118dLLIQPR - 0.0618dLPP + 0.1169dDURECGT + 0.070dDUEXP GT - 0.2emc(-1) \tag{8}$$

(0.72) (1.39) (1.97) (-3.69) (3.08) (1.52) (-2.43)

$$D.W = 2.0159 \quad F = 116.0310 \quad R^2 = 0.79371 \quad \bar{R}^2 = 0.72769$$

The impact of fiscal policy during the recession cycle on consumption is positive but this policy does not have meaningful impact on consumption during the booming session. Therefore, government could pose fiscal policy during the recession cycle to increase private consumption. The value of the

parameters associated with error term is -0.2 and it is statistically meaningful when the level of significance is five percent, which means any factor having long term effect will be adjusted by 0.2 in each period.

4. Conclusion

In this paper, we have presented an empirical study to measure the effect of fiscal policy on private consumption in both recession and boom cycles over the period of 1965-2010 in Iran's economy. The survey was based on time series analysis and all data have been used for estimation using ARDL models. We have used Hodric-Prescott filter to find the cycle of recessions and booms. In addition, we use autoregressive distributed lag model to estimate the changes. The results of this survey indicate that, in long term, an increase on government expenditures normally impacts private sector positively in both recessions and booms. The impact in short terms is positive during the recessions but in during the booming session there was no meaningful relationship. Therefore, government could pose fiscal policy during the recession cycle to increase private consumption.

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