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Sectoral labor market effects of fiscal spending



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ABSTRACT

This paper studies sectoral effects of fiscal spending. We estimate a New Keynesian model with search and matching frictions and two sectors. Fiscal spending is either wasteful (consumption) or productivity enhancing (investment). Using U.S. data we find significant differences across sectors. Further, we show that government investment rather than consumption shocks are driver of fluctuations in sectoral and aggregate outputs and labor market variables. Finally, government investment shocks are much more effective in stimulating the economy than spending shocks. However, this comes at the cost of an increase in the unemployment rate.

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1. Introduction

This paper analyzes sectoral labor market effects of fiscal spending. In particular, we highlight the differences between unproductive government consumption expenditures and productive government investment expenditures. The Great Recession resuscitated the interest of policy makers and researchers in the short- and long-run effects of fiscal policy. To counter the large adverse effects on real activity governments around the world used large fiscal policy packages. For example, the American Recovery and Reinvestment Act (ARRA) was worth \$550 billion. Roughly 30% were allocated towards infrastructure projects. This observation relates to the findings by [Bachmann and Sims \(2012\)](#), showing that the government investment-to-government consumption ratio for an increase in government expenditures increases

more during recessions than during booms. Moreover, government investment expenditures average about 20% of total spending in the post-war United States.

Research on government consumption shocks (e.g. [Baxter and King, 1993](#) and [Linnemann and Schabert, 2003](#)) show that an increase in government consumption increases output but crowds-out private consumption. This contradicts the empirical evidence (e.g. [Blanchard and Perotti, 2002](#)) of an increase in private consumption. [Fisher and Turnovsky \(1995, 1998\)](#) study the effects of government investment shocks and highlight the importance of short- and long-run trade-offs. [Linnemann and Schabert \(2006\)](#) use a sticky price model of the business cycle and show that even at low levels of productivity of government investment positive effects on output and private consumption can be achieved. However, research related to the sectoral labor market effects of fiscal policy is rather sparse. This is surprising as, for example, the famous [Bernstein and Romer \(2009\)](#) report on the job market effects of the ARRA breaks down job gains by industry.

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To close this gap, we analyze the sectoral effects of productive vs. unproductive government expenditures. We build a stylized New Keynesian model of the U.S. economy with search and matching frictions and two production sectors. One sector produces goods, while the other sector provides services. Monetary policy in this model follows a Taylor-type interest rate rule. Fiscal policy can use its resources (generated by lump-sum taxation) for government consumption or by building-up the government capital stock. While government consumption is wasteful and works mainly as a demand-side shock, government capital is used in the production process and affects marginal productivity. We want the reader to think about government capital as infrastructure which is an exogenous input into the production process. Then, we estimate this model on U.S. time series using Bayesian methods.

Several findings stand out. The manufacturing labor market is characterized by a larger steady state separation rate and a higher bargaining power compared to the service sector labor market. In contrast, vacancy posting costs are larger in the service sector than in the manufacturing sector. Further, government consumption and investment follow fiscal rules. Government consumption is entirely driven by movements in government debt, while government investment reacts to changes in output and debt. Government investment is more productive in the service sector than in the manufacturing sector.

A variance decomposition analysis shows that sectoral outputs and sectoral employment is mainly driven by aggregate technology shocks. The second most important driving force is monetary policy. A shock in one sector plays only a limited role in explaining fluctuations in the other sector.

Government consumption shocks generate positive effects only on impact. Due to the endogenous reaction of government investment to higher debt, the negative supply side effects dominate the positive demand side effects and output and employment decrease. In contrast, an increase in government investment increases sectoral and aggregate output. We can conclude that government investment is far more effective in increasing aggregate and sectoral output levels than government consumption. However, this also comes at a cost: government investment leads to increased service sector and aggregate unemployment over the medium-run after an initial drop in the unemployment rate.

Our paper contributes to two streams in the literature. First, it contributes to the literature that estimates search and matching models using Bayesian techniques. For the United States, [Gertler et al. \(2008\)](#), [Lubik \(2009\)](#), [Di Pace and Villa \(2013\)](#), and [Furlanetto and Groshenny \(2013\)](#) estimate search and matching models. While [Lubik \(2009\)](#) estimates a stylized version of the search and matching model, [Di Pace and Villa \(2013\)](#) use a richer model with capital and hours worked. [Furlanetto and Groshenny \(2013\)](#) estimate a New Keynesian model with search and matching frictions allowing for mismatch shocks. They show that this mismatch shock was important during the Great Recession.

Besides those papers there are studies estimating search and matching models for other countries. [Lubik \(2012\)](#)

estimates such a model for Hong Kong, [Lin and Miyamoto \(2012\)](#) use data for Japan, and [Wesselbaum \(2014\)](#) focuses on Australia. [Zanetti \(2014\)](#) estimates a New Keynesian model with search and matching friction for the UK and uses this model to address the implications of labor market reforms. The findings point towards a minor role played by the labor market reforms of the Thatcher government.

Second, we add to literature on sectoral effects of fiscal policy. However, the papers in this category interpret sectoral as the difference between traded vs. non-traded goods and perform their analysis in an open economy framework. Our analysis, in contrast, is performed in a closed economy setting. [Bénétrix and Lane \(2010\)](#) perform a VAR analysis for a number of European countries and find that government spending increases the relative size of the non-traded vis-a-vis the traded goods sector. They conclude that fiscal shocks do affect the sectoral allocation while having aggregate effects. Along this line, [Monacelli and Perotti \(2008\)](#) use a structural VAR and find a positive comovement in consumption and production for the manufacturing and the service sector in an open-economy model. They show that a canonical open-economy business cycle model fails to generate such a positive comovement.

Further, [Bouakez et al. \(2013\)](#) estimate SVARs for sub-categories of government spending and investment. They find large differences in the effectiveness of fiscal policy across sectors. The largest effects are obtained for changes in government employment while spending has only limited effects on output. Finally, our paper is related to the work by [Obstbaum \(2011\)](#), who builds a New Keynesian search and matching model with fiscal policy. However, the main difference to our paper is that fiscal spending is purely government consumption. One of the main findings is that the effects on labor market variables and output depends crucially on the financing scheme.

The paper is structured as follows. [Section 2](#) develops our model and [Section 3](#) presents our data set and discusses our estimation results. [Section 4](#) provides a robustness check and [Section 5](#) briefly concludes.

2. Model derivation

We develop a discrete-time model for the U.S. economy with two different production sectors. This model is an extension to the model developed in [Wesselbaum \(2011\)](#), while labor market frictions follow the contributions from [Mortensen and Pissarides \(1994\)](#) and [den Haan et al. \(2000\)](#). Households maximize utility by setting the path of consumption, which is a CES aggregate of differentiated products. Firms set prices and choose employment in two sectors: manufacturing (i.e. goods production) and service and produce a final good using both sectoral outputs. We further assume that separations are endogenous and driven by job-specific productivity shocks. Hence, there is a flow of workers into unemployment while unemployment–employment transition is subject to search and matching frictions.

Monetary policy sets the nominal interest rate via a standard Taylor-type interest rate rule and fiscal policy

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