Research Statement

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I am an applied macroeconomist who specializes in fiscal policy, Bayesian and time series econometrics, monetary economics, and big data. My research goal is to provide new insights about how government spending affects the economy. In particular, I study whether the impact of government spending depends on monetary policy or the business cycle, and how government spending affects aggregate and disaggregated consumption variables. Methodologically, I focus on models from the class of structural vector autoregression (SVAR) models. Studying the impact of government spending and its relationships with the business cycle and monetary policy has been a longstanding research topic in macroeconomics. Research about government spending has received renewed attention since the Great Recession, and is currently more relevant than ever as governments around the world implement unprecedented fiscal stimulus packages to limit the economic consequences of the coronavirus pandemic. I find that the impact of government spending in the United States depends neither on the nature of monetary policy (active/passive) nor on the state of the business cycle. What I find is that the monetary policy regime and the business cycle themselves respond quickly after an expansionary government spending shock, and that they reach similar regimes regardless of their starting points. This leaves the growth path of the economy unaffected by the initial monetary policy regime or the initial state of the business cycle. In other research, I show that a government spending shock increases aggregate consumption, and I uncover a previously undocumented finding: that heterogeneity exists even within durable, nondurable, and service consumption variables.

"Government Spending between active and passive monetary policy," with Collin Philipps (Job Market Paper)

Conventional wisdom suggests that the government spending multiplier is larger when the central bank raises nominal interest rates less than one for one to inflation. We show that this consensus misleads. Models supporting these predictions estimate multipliers while keeping the monetary policy rule constant after a change in government spending. The shortcoming of that approach is it fails to consider how the central bank adjusts its policy regime in response to the economic conditions after the government raises its spending. We demonstrate that the monetary policy rule itself changes quickly after a government spending intervention, and that it reaches a similar regime regardless of its initial condition. This rapid change of monetary policy leaves the multiplier almost completely unaffected by the initial monetary policy regime.

This paper develops a new methodology to analyze this relationship empirically without constraining monetary policy after a government spending intervention. We use a flexible nonlinear SVAR model that approximates the evolution of monetary policy via an evolving mix of two extreme monetary policy regimes. To inform this evolution, we exploit the estimated sequence of inflation parameters from a Taylor rule with time-varying coefficients. First, we find that the central bank changes its policy regime in response to economic conditions several times during our sample period. For example, the U.S. Federal Reserve raised nominal interest rates aggressively in response to high inflation in the early 1980s following the appointment of Paul Volcker as its chairman, while it lowered nominal interest rates in response to the recessions of 1957-58, 1990-91 and 2000-01. Second, we incorporate this feature when we estimate the dynamic effects of a government spending shock. This exercise reveals that the central bank responds quickly after the shock, and that it transitions rapidly to adopt an active policy even if the initial policy had not been active. This rapid response of monetary policy has a fundamental impact on the multiplier. Once we account for the regime's reaction, we find little evidence that the multiplier depends on monetary policy. By contrast, when we keep the monetary policy regime counterfactually constant after the shock, we find results that support the conventional wisdom. These findings lead us to conclude that the consensus in the literature is primarily driven by the constant-regime assumption,

which itself has no empirical support. The widely accepted link between monetary policy and the multiplier vanishes once this assumption is relaxed.

The only exception to this active/passive characterization of monetary policy is the zero lower bound. Between December 2008 and December 2015, the Fed kept nominal interest rates at zero, and did not adjust its policy regime despite unprecedented fiscal stimulus programs such as the American Recovery and Reinvestment Act (ARRA) of 2009. These characteristics of the zero lower bound signal a major departure from the Fed's historical behavior. We estimate the multiplier when nominal interest rates are stuck at zero using impulse response functions that keep the monetary policy regime fixed after the government spending shock. Then, we compare the multiplier estimates from different strategies for identifying government spending shocks. When we use the standard Cholesky approach, we find multiplier estimates smaller than one. In contrast, when we employ sign restrictions on impulse response functions, the corresponding estimates exceed one. The Cholesky approach requires us to assume that governments only react to changes in the business cycle with a delay. Contrary to this premise, however, recent events such as the Coronavirus Aid, Relief and Economic Security (CARES) Act of 2020 reveal that governments can and do react quite quickly during crises, for example, when central banks cut nominal interest rates to zero in response to a severe economic downturn. Our results suggest that the multiplier at the modern zero lower bound in the United States is larger than has previously been found, and that recent fiscal stimulus packages such as the ARRA and the CARES Act might also have larger economic effects than the literature has formerly concluded.

"Government spending and heterogenous consumption dynamics" (Journal of Economics Dynamics and Control, Volume 114, May 2020, 103868)

This study investigates how government spending affects consumption. Theoretical models provide opposing predictions, and empirical studies reach different conclusions. I use a Bayesian factor-augmented VAR that employs information from over 200 variables. This model allows me to tackle the non-fundamentalness problem of fiscal foresight by breaking the misalignment between the information sets of economic agents and the econometrician – an issue that arises in small- and medium-scale VAR models. I also use traditional and narrative sign restrictions to identify government spending shocks with as few restrictions as possible. I define a government spending shock as a shock that drives up output, prices, employment, government spending, government tax revenue, and the government deficit. This set of restrictions is consistent with a large class of neoclassical and new Keynesian models. In addition, I restrict the structural shock parameter to be positive at 1965Q1, 1980Q1, and 2001Q3, which represent dates at which military spending increased surprisingly. This strategy identifies a government spending shock without imposing strong (and questionable) identifying assumptions imposed by the rest of the literature. First, I find that aggregate consumption increases following a government spending shock, and that the resulting spending multiplier exceeds one. Second, I show that heterogeneity exists even within durable, nondurable and service consumption variables. This heterogeneity has not previously been documented, and it remains hidden if one uses alternative identification strategies. Lastly, I provide evidence that my identified government spending shock series is uncorrelated with monetary policy shocks, and that it is unpredictable by economic agents.

"Does the government spending multiplier depend on the business cycle?", with Collin Philipps (under review, Journal of Money, Credit and Banking)

We investigate the question of whether the government spending multiplier depends on the business cycle. Since Auerbach and Gorodnichenko (2012), this question has been the focus of a fast-growing body of literature. However, the empirical literature on this topic has not converged toward a consensus, instead providing evidence for several opposing scenarios. The goal of our paper is to shed light on the origins of these differences. We focus on the methodology of Auerbach and Gorodnichenko (2012) by identifying their underlying assumptions, and replacing each of them, step by step, with weaker

restrictions. This way, we investigate whether the main result of the literature – that the spending multiplier is higher during recessions – is a true feature of the data, or the outcome of identifying assumptions.

Our analysis shows that the constant state assumption is the key driver of this result. Once we relax this assumption and allow the economy to move freely between different states of the business cycle after the shock, there is no difference in the estimated multipliers between expansions and recessions in the medium and long runs. This is because if the economy is hit by the shock during a recession, the economy leaves the recession shortly after the shock, and it reaches a growth path that is similar to one it would have achieved if it had been hit during an expansion. However, we find that the short-run multiplier is higher if the economy is hit during an expansion. This result not only contradicts the main result in the literature, but also opposes Keynesian logic, which predicts that government spending is more effective in recessions as it is less likely to crowd out private spending. This finding is an interesting topic for future research.

Lastly, the literature recently documented heterogeneity in the multiplier with respect to different government spending components (e.g., Ellahie and Ricco (2017)). We illustrate that this heterogeneity mostly occurs during recessions. Our multiplier estimates related to government investment, nondefense, and state and local spending are larger than their government consumption, defense, and federal spending counterparts during recessions. By contrast, we find no evidence for heterogeneity during expansions.

Future Research

My near-term research agenda will continue to investigate topics related to my past research, particularly my job market paper, but it will also go beyond those themes. First, I plan to finalize the work on my job market paper and submit a manuscript to a prestigious journal by the end of the summer 2021.

Second, joint work with Humberto Martinez-Garcia analyzes the pandemic impact on the economy. This topic is the focus of an extremely fast-growing body of literature. We use a SVAR model, and identify a pandemic shock using monthly excess deaths rates related to pneumonia and influenza in the United States, beginning in 1942. Using data from the U.S. Centers for Disease Control and Prevention, we capture the economic impact of the three pandemics of the post-World War II period: the Asian flu (1958/59), the Hong Kong flu (1968) and swine flu (2009) pandemics. Pandemic shocks are different from typical economic shocks. Most importantly, they do not occur as a one-time increase or decrease of a certain variable, but take place over several periods. For example, the coronavirus pandemic was not confined to March 2020, but continues to affect our lives. We plan to incorporate these additional features using generalized impulse response functions, which allow us to study both different shock sizes and different shock lengths.

Third, in a very different project, Vinicios Sant'Anna and I study the macroeconomic consequences of trade policy. Since 2018, the United States has imposed a series of tariffs on a wide variety of imported products from specific countries. Recent papers have found significant short-term impacts of tariffs on prices and traded quantities. However, little is known about the medium- to long-term effects of these tariffs on the U.S. economy. The key contribution will be the use of SVAR models to study the dynamic effects of a trade shock. To identify such a shock, we rely on recent advances in the SVAR literature – proxy SVARs – that apply external instruments for identification. Our preferred instruments are based on announced changes in future tariffs on U.S. imports. We focus on announcements rather than actual changes in tariffs because these changes are often announced months in advance. Therefore, households and firms can adjust their behavior before the actual implementation of the tariff changes. For example, we suspect that prices, especially prices of raw material or assets, react quickly to announcements of changes in trade policy, and then affect the further transition of trade shocks. In this study, we are interested in the effects of a trade shock on output, prices, and trade variables, as well as on labor market and financial market variables.

Over the long term, I see myself using tools from the class of SVAR models to continue investigating fiscal policy. Fiscal policy played a major role during the Great Recession, and is also very relevant during the current pandemic. Many questions related to fiscal policy are important and remain basically unexplored (e.g., the role of fiscal sustainability). It is important to keep studying the effects of fiscal policy, particularly in light of the government resources involved. However, I do not intend to limit myself to fiscal policy. I plan to apply my methodological skills to study other subjects that are policy relevant, as trade restrictions and COVID-19 are today. Finally, I want to emphasize that I am open to modifying or extending existing methodologies if the subject under investigation mandates it.