Do Household Finances Constrain Unconventional Fiscal Policy?

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Extended Abstract

Can a pre-announced sales tax change stimulate the economy by inducing consumers to shift purchases forward before tax rates raise? This form of 'unconventional' fiscal policy has received attention during the financial crises, when conventional monetary policy was constrained by the zero lower bound on nominal interest rates (e.g., Correia, Farhi, Nicolini, and Teles (2013)). Building on the current system of sales taxation, state and local jurisdictions could even set different rates depending on the state of the local economy, and potentially based on automatic rules. Moreover, making the intervention revenue neutral over the business cycle would neutralize potentially offsetting wealth or income effects when announcing the policy.

Necessary conditions for such unconventional fiscal policies to be effective are (i) that consumers are aware of the sales tax changes, (ii) that the tax elasticity of spending is large enough to draw spending from periods far enough in the future, when aggregate demand is back to normal, and (iii) that consumers have sufficient resources to make purchases.

Two previous papers, Agarwal, Marwell, and McGranahan (2017) and Baker, Johnson, and Kueng (2018), provide evidence that the first condition is satisfied in practice. A substantial fraction of consumers responds to temporary state sales tax holidays and to persistent pre-announced sales tax changes at the local and state level. Most of the response is in the form of stockpiling of consumer goods, with larger responses for more storable and durable goods. However, these studies are limited in scope by either the policy's coverage of a small set of products (e.g., in the case of sales tax holidays in Agarwal et al. (2017)) or limitations of the spending data used to study broader sales tax changes (e.g., retail spending covered by AC Nielsen scanner data in Baker et al. (2018)).

In this paper, we study the response of vehicle purchases to state and local sales tax changes, building on the research design of Baker et al. (2018). Vehicles are the largest component of durable spending, which itself is the most volatile portion of consumer spending through the business cycle. Vehicle purchases have been the target of limited fiscal stimulus during the Great Recession; see e.g., Mian and Sufi (2013) and Green, Melzer, Parker, and Rojas (2017), who analyze the 'cash for clunkers' program.

In principle, the elasticity of vehicle spending to sale taxes may be larger or smaller than that of household goods. On the one hand, the intertemporal substitution of longer-lasting durables is likely to be higher than that of less durable items. On the other hand, large expenditures on durables typically require financing, so financial constraints may reduce the response to tax changes. The latter constraint is likely to bind particularly in economic recessions, when household income and credit supply falls.

Data

We will use two administrative data sources to track vehicle purchases. Experian's AutoCount database provides transaction-level data on new and used vehicle purchases compiled from state Departments of Motor Vehicles. The data include, for each vehicle purchase, the location of the buyer, the make, model and model year of the vehicle, and an estimate of the vehicle value. The FRBNY Consumer Credit Panel provides information on financed purchases. In particular, we use information on the creditworthiness and financial position of buyers to examine the role of credit constraints in households' responses to sales tax changes.

For data on local sales tax rates, we turn to Thomson Reuters OneSource sales tax service. This source allows us to construct a database of ZIP code level sales tax rates at a monthly frequency from 2008 to 2014 that covers the entirety of the United States, resulting in more than 2,000 distinct state and local sales tax changes. The data contain comprehensive information on all sales taxes imposed in a given ZIP code stemming from the state, county, city, and from special tax rate districts that the ZIP code is located in, such as school or water districts, police jurisdiction, etc. Moreover, there is information on the combined sales tax in a ZIP code, which may differ from the sum of all of the aforementioned sales tax rates due to statutory maximum sales taxes imposed at a state level (e.g., state sales tax is 4% and the state imposes a maximum total local sales tax rate of 5%) or the fact that a lower-level tax jurisdiction such as a city overrides the sales tax rate of a higher-level jurisdiction, such as state sales tax rate.

Methods

Following Baker et al. (2018), our primary empirical methodology is to utilize a difference-in-differences specification with relatively high-frequency spending and tax data. Specifically, we will estimate the following regression model:

$$\Delta \ln(s_{jt}) = \beta \Delta \ln(1 + \tau_{jt}) + \gamma_j + \theta_t + \lambda' z_{jt} + \varepsilon_{jt}, \qquad (1)$$

where s_{jt} is spending on new or used vehicles in month *t* and sales tax jurisdiction *j*, and τ_{jt} is the corresponding sales tax rate. γ_j are jurisdiction fixed effects, θ_t are time fixed effects, and z_{jt} are additional time-varying covariates at the level of the jurisdiction.

The coefficient β measures the contemporaneous elasticity of the number or value of vehicle purchases to changes in the sales tax rate. In further specifications, we add leads of the tax change variable to test for anticipation effects and lags of the tax change variable to identify the horizon over which the tax stimulus effect reverses. We also conduct subsample analysis to test for heterogeneity in the tax elasticity of spending. We focus in particular on the role of credit supply in moderating or amplifying spending responses, splitting by credit scores, credit availability (measured by availability of open home equity or credit card lines of credit), and geographic differences in automobile credit supply (using curtailment of captive financing in financial crisis documented by Benmelech, Meisenzahl and Ramcharan (2017)).

The economic interpretation of our empirical results depends crucially on whether the tax changes were anticipated. If tax changes are anticipated, then the spending changes around the tax changes reflect substitution effects, while income and wealth effects take place at the

time households learn about an upcoming tax change. As mentioned above, such income and wealth effects could be neutralized either over the business cycle or by offsetting changes to labor income or capital taxation as in Correia et al. (2012).

Using counts of newspaper articles and Google searches containing the term ‘sales tax’, Baker et al. (2018) show that the typical sales tax rate change has a fiscal inside lag of 6 to 9 months (i.e., the difference between when the policy is announced or discussed and when it is implemented) and that Google searches spike well before the new tax rate is implemented.

References

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