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Discussion

In her comments, Valerie Ramey raised some concerns about the accuracy of the local projections method of Jordà (2005). Robert Gordon opened the discussion by pointing out that her sample (1939:Q1 to 2010:Q4) includes World War II, and speculated that her estimates of government spending multipliers are inordinately influenced by the patterns from that period. He worried in particular that her impulse response of private spending to estimated government spending shocks, characterized by a short-run fall but a long-run increase, simply reflected wartime controls on durable goods spending and residential construction, which were lifted at the end of the war. Ramey acknowledged this possibility, but emphasized that her main concern is that the three different econometric procedures she considered all produced different results over the same sample.

In response to Ramey's econometric concerns, James Stock made three methodological comments. First, he agreed that the local projections method can yield "bumpier" impulse response estimates, but speculated that this might not be as much of a concern for the authors because they also have a panel dimension, and can smooth responses across states. He nevertheless argued that the heteroscedasticity- and autocorrelation-consistent (HAC) standard errors corresponding to longer-horizon projections may be substantially understated, since estimation of the spectral density at frequency zero becomes much less precise at these horizons. Second, he argued that it is ultimately an empirical question whether long-horizon forecasts based on local projections are better than those based on iterative vector autoregressive procedures. In theory, iterative forecasts are more efficient if the model is properly specified, while direct regression methods are more robust

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to misspecification. He referred the authors to an empirical assessment of this issue in Marcellino, Stock, and Watson (2006). Third, he raised a broad critique of the literature on fiscal multipliers by arguing that carefully identified shocks, such as the one obtained by the authors, are interesting only to the extent that they are plausibly exogenous, and correlated with an object of interest—in this case, the fiscal multiplier. Rather than estimate impulse responses to these shocks, he argued instead that the dynamic multipliers of interest should be estimated directly using IV techniques with the shocks as instruments, as described in Stock and Watson (2008, 2012) and Mertens and Ravn (2012).

Susanto Basu raised the possibility that the short-lived productivity increase noted by Ramey in her comments might be due to population migration in the medium to long run, which can reduce output per capita. In an unrelated econometric question, he asked whether the authors' impulse response standard errors take into account the fact that their shocks are generated regressors. The authors responded by noting that in a version of their model with migration flows across states, the mechanism described by Basu would indeed generate a short-lived response of productivity. They also pointed out that their shocks are obtained using institutional details on the timing of the granted funds, and are not estimated using forecasting regressions. In this sense, they argued, the shocks are not generated regressors.

Two participants discussed the structural parameters of the model. A first point was raised by Jonathan Parker, who suggested that a lower value for the depreciation rate of public capital relative to private capital might allow the model to better match the data by generating more persistent responses to government spending shocks. He also recommended using the model to simulate responses to "shovel-ready" spending. The authors replied that they considered a model with two types of public capital, one of which has shorter implementation lags, and argued that such a model might better capture the differences Parker emphasized, since road maintenance and resurfacing is faster to implement than building new roads.

Frederic Mishkin asked about the extent to which the elasticity of output with respect to public capital matters for the magnitude of the aggregate multiplier, and why the authors had chosen a value of 10 percent for this elasticity. They explained that while some studies (e.g., Fernald 1999) find estimates as large as 35 percent, their choice of 10 percent is meant to be a conservative value in line with Baxter and King (1993) and Leeper, Walker, and Yang (2010).

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Echoing Francesco Giavazzi's discussion, Michael Woodford elaborated on the link between the model's local and aggregate multipliers. He noted that the authors' local multiplier estimates do not provide direct evidence on aggregate multipliers because they fail to account for the wealth effects on labor supply associated with government spending shocks. However, he explained that the magnitude of the upward bias implied by this omission can be bounded: since typical models imply that wealth effects on labor supply are always less than 100 percent the size of government purchases, it is unlikely that local multiplier estimates of 3 could imply an aggregate multiplier below 2. In response, the authors explained that the different versions of the model calibrated to match the estimates of local multipliers imply an aggregate multiplier of roughly half the local one. They furthermore argued that estimates of local multipliers may be important in their own right (see Banerjee, Duflo, and Qian 2012).

The discussion also touched upon the authors' identification strategy. Simon Gilchrist asked whether the authors were concerned that some states represent a very large fraction of national GDP, so that local transfers to those states may also represent an aggregate stimulus. The authors explained that they performed weighted regressions on the sample, without any changes in results. Mark Bils next raised the possibility that the timing of the outlays, which occur four to six years after the grants, may spuriously coincide with economic downturns, since grants are partly allocated based on factors that may be related to economic activity. The authors responded that there are persistent differences in allocation of funds—for example, to northeastern states relative to southern states—that are not correlated with relative changes in economic activity.

Finally, Ricardo Reis pointed out that the effects of infrastructure spending might depend on the level of existing infrastructure, with larger effects in states with lower levels of public infrastructure. He encouraged the authors to consider controlling for these effects in their estimates. He also asked whether the apportionment rules were set up to transfer funds from states with lower infrastructure needs to those with higher needs, in which case an important component of the authors' shock would be its allocative effects. The authors argued that while the apportionment rules may have reflected these concerns when they were initially developed at the beginning of the last century, they have seldom been reformed to reflect changes in relative infrastructure

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needs since then. In recent decades, therefore, efficient reallocation is likely a negligible part of the shocks they identify.

References

Banerjee, Abhijit, Esther Duflo, and Nancy Qian. 2012. "On the Road: Access to Transportation Infrastructure and Economic Growth in China." NBER Working Paper no. 17897. Cambridge, MA: National Bureau of Economic Research.

Baxter, Marianne, and Robert G. King. 1993. "Fiscal Policy in General Equilibrium." *The American Economic Review* 83 (3): 315–34.

Fernald, John G. 1999. "Roads to Prosperity? Assessing the Link between Public Capital and Productivity." *The American Economic Review* 89 (3): 619–38.

Jordà, Òscar. 2005. "Estimation and Inference of Impulse Responses by Local Projections." *The American Economic Review* 95 (1): 161–82.

Leeper, Eric M., Todd B. Walker, and Shu-Chun Susan Yang. 2010. "Government Investment and Fiscal Stimulus." *Journal of Monetary Economics* 57 (8): 1000–12.

Marcellino, Massimiliano, James H. Stock, and Mark W. Watson. 2006. "A Comparison of Direct and Iterated Multistep AR Methods for Forecasting Macroeconomic Time Series." *Journal of Econometrics* 135 (1-2): 499–526.

Mertens, Karel, and Morten O. Ravn. 2012. "A Reconciliation of SVAR and Narrative Estimates of Tax Multipliers." CEPR Discussion Paper DP8973. Center for Economic Policy Research, May.

Stock, James H., and Mark W. Watson. 2008. "What's New in Econometrics—Time Series." NBER Summer Institute, Lecture 7. Cambridge, MA, July 14–16.

Stock, James H., and Mark W. Watson. 2012. "Disentangling the Channels of the 2007–2009 Recession." Prepared for the Brookings Panel on Economic Activity. Washington, DC, March 22–23.

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