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Volume Title: Fiscal Policy after the Financial Crisis

Volume Author/Editor: Alberto Alesina and Francesco Giavazzi, editors

Volume Publisher: University of Chicago Press

Volume ISBN: 0-226-01844-X, 978-0-226-01844-7 (cloth)

Volume URL: <http://www.nber.org/books/ales11-1>

Conference Date: December 12-13, 2011

Publication Date: June 2013

Chapter Title: Comment on "Government Spending and Private Activity"

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Chapter URL: <http://www.nber.org/chapters/c12633>

Chapter pages in book: (p. 56 - 61)

Comment Roberto Perotti

This is the usual work by Valerie Ramey—insightful, careful, and with a clear message: regardless of the methodology used, shocks to *total* government spending on goods and services increase GDP, but at the cost of depressing private economic activity and private employment.

Still, I disagree with this conclusion. In my view, the correct conclusion is: shocks to *defense* expectations (in EVARs) and to *defense* government spending on goods and services (in SVARs) lead to a decline in private GDP and employment. Shocks to *nondefense* government spending on goods and services, on the other hand, have positive effects on private GDP and private employment.

Ramey (2011a) argues that EVARs and the Blanchard-Perotti SVAR deliver the same results because they essentially use two different instruments for the only government spending variable that appears in these two specifications, *total* government spending:

An SVAR can always be interpreted as an instrumental variables (IV) regression. Viewed in this context, the exercise I performed consists of comparing two instruments for total government spending, the first instrument being the VAR shock to total government spending using a Choleski decomposition and the second being the shock to the military date variable. Defense spending is not included in either VAR. In both VARs, I compare the response of all variables when the peak rise in total government spending has been normalized to the same number. Since there is no significant feedback of other variables to the news variable, in essence I am simply comparing the effects of the same size increase in total government spending on variables of interest, using two different instruments for the same measure of government spending.” (Ramey 2011a, 2)¹

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Prepared for the IGIER-NBER conference, “Fiscal Policy after the Financial Crisis,” held in Milan in December 2011. This chapter was produced as part of the project Growth and Sustainability Policies for Europe (GRASP), a collaborative project funded by the European Commission’s Seventh Research Framework Programme, contract number 244725. For acknowledgments, sources of research support, and disclosure of the author’s material financial relationships, if any, please see <http://www.nber.org/chapters/c12633.ack>.

1. Readers of Ramey (2011b) might be a bit puzzled by the approach and conclusions of the present chapter. The point of Ramey (2011b) was twofold. First, a Blanchard-Perotti SVAR, in which shocks to total government spending are identified via a simple Choleski decomposition, leads to biased estimates of impulse responses to total government spending shocks when there are anticipation effects. Suppose we live in a neoclassical world, so that shocks to government spending on goods and services cause a decline in private consumption and the real wage via a wealth effect; however, because changes to government spending are often known in advance, SVARs tend to exhibit spurious positive responses of private consumption and the real wage to total government spending shocks (some might want to call these typical neo-Keynesian results, although so-called neo-Keynesian models deliver a bewildering array of responses depending on the specific assumptions). Second, EVARs are immune from this problem, and indeed they

This argument is correct if defense and nondefense government spending have the same effects. But if they do not—and surely this is not a crazy hypothesis—then both the EVAR and the Blanchard-Perotti SVAR are misspecified: instead of total government spending, one should have both defense and civilian government spending in the EVARs and the SVARs. Now the “source” of the shock—whether to defense or nondefense spending—matters a great deal. A shock to the defense news variable in the EVAR or to defense spending in the SVAR is likely to be associated with a large response of defense spending, while a shock to nondefense spending in an SVAR is likely to be associated with a large response of nondefense spending. The fact that in all these cases one normalizes the total government response to 1 percent of GDP is useful to interpret the results but does not change the substance, because to each of the two types of shocks there corresponds a different “defense spending intensity” of the response of total government spending. Of course, this all depends on whether we can identify defense and nondefense shocks separately in an SVAR. I will show that we can, and that they give widely different answers.

To this end, I estimate exactly the same EVAR and SVAR estimated by Ramey, except that I have both the log of per capita defense spending and the log of per capita civilian spending whenever she has the log of per capita total government spending. So I estimate the reduced forms

$$(1) \quad X_t = A(L)X_{t-1} + U_t,$$

where in the EVAR case the vector X_t includes the defense news variable, the log of defense spending on goods and services, the log of civilian government spending on goods and services, the log of private GDP (all three last variables are in real, per capita terms), the Barro-Redlick average margined tax rate, the three-month interest rate, the log of government employments, and the log of private employment. In the SVAR case, the vector X_t includes the same variables except that the defense news variable is omitted. The regressions are in levels, with four lags or each variable, a constant, and linear and quadratic trends in each equation. All the data were kindly provided by Valerie Ramey.

In the SVAR, it is meaningful to talk about defense and civilian government spending shocks only if the reduced-form residuals of the defense and

tend to show that private consumption and the real wage fall in response to defense news shocks (the neoclassical response).

In the present chapter, these differences between EVARs and SVARs have disappeared. Ramey reaches the same conclusion as Perotti (2011), namely that, when estimated on the same sample and in response to the same types of shocks (to be defined more precisely later), EVARs and SVARs give essentially the same answers. Hence, in these comments I will not dwell much on the question of whether SVAR shocks do capture something structural, an issue I discuss in Perotti (2011). Given that SVARs have the same status as EVARs in the present chapter (in the last section Ramey tests an hypothesis using only an SVAR), I will consider myself authorized to treat SVARs as meaningful objects.

civilian government spending equations are nearly uncorrelated, so that the ordering of the two variables in a Choleski decomposition does not matter. Empirically, this is indeed the case. As a convention, when I present the response to a shock that variable is ordered first, but the opposite ordering gives virtually identical results.

For brevity, I will focus on the sample starting in 1947:1. Although the analysis of World War II is insightful and interesting as usual, most researchers would be unconvinced by any conclusion based on that period. World War II was obviously by far the largest shock to defense spending and total spending in the sample (and probably in the history of the United States). It could be a great experiment in fiscal policy. Unfortunately, it was also accompanied by things like price controls, production controls, rationing, the draft, and patriotism: to disentangle the role of these factors on variables like labor supply, the real wage, private consumption, and private investment is impossible. For example, Hall (2009) argues that the combined effect of these factors on GDP and labor supply was probably negative; Barro and Redlick (2011) argue that it was probably positive. Unfortunately, as they openly recognize, their conclusions are based exclusively on intuition.

However, given the extensive production controls and rationing, it is hard to see how consumption of goods and some components of private investment could go anywhere but down.² It is interesting to note that, as I show in Perotti (2011), the consumption of services that were not subject to rationing increased instead during World War II. For all these reasons, I will focus on the post-World War II period.

Column (1) of figure 1C.1 displays the median (out of 1,000 bootstrap replications) responses to the defense news shock in an EVAR in the sample starting in 1947:1. The responses of national income aggregates are expressed as percentage points of total GDP by multiplying the log responses by the average share of that variable in GDP. Similarly, the responses of the employment variables are expressed as percentage points of total employment. All responses are normalized so that the peak response of total government spending (the sum of defense and civilian purchases of goods and services) is 1 percent of total GDP, 95 percent standard error bands are displayed.

2. In addition, there are accounting issues that can explain the decline in investment and consumption. As Gordon and Krenn (2010, 11) argue, the war and its preparation mechanically reduced private consumption of nondurables, as recorded in the national income accounts, “since it excludes the food and clothing provided to the 10 percent of the population that served in the military, as these were counted as government rather than consumption expenditures.” Similar accounting issues arise with private investment, another item that displays a decline in the EVAR responses: “Yet much of this new investment in plant and equipment was not counted as investment in the national accounts. . . . [T]he ongoing attempt to double plant capacity was being financed by the government, not by the company’s own funds. . . . Since investment in war-related plant expansion was counted as government spending rather than private investment in the national accounts, the surge of war-related investment during 1941 occurred simultaneously with a decline in measured private investment in the last half of 1941.”

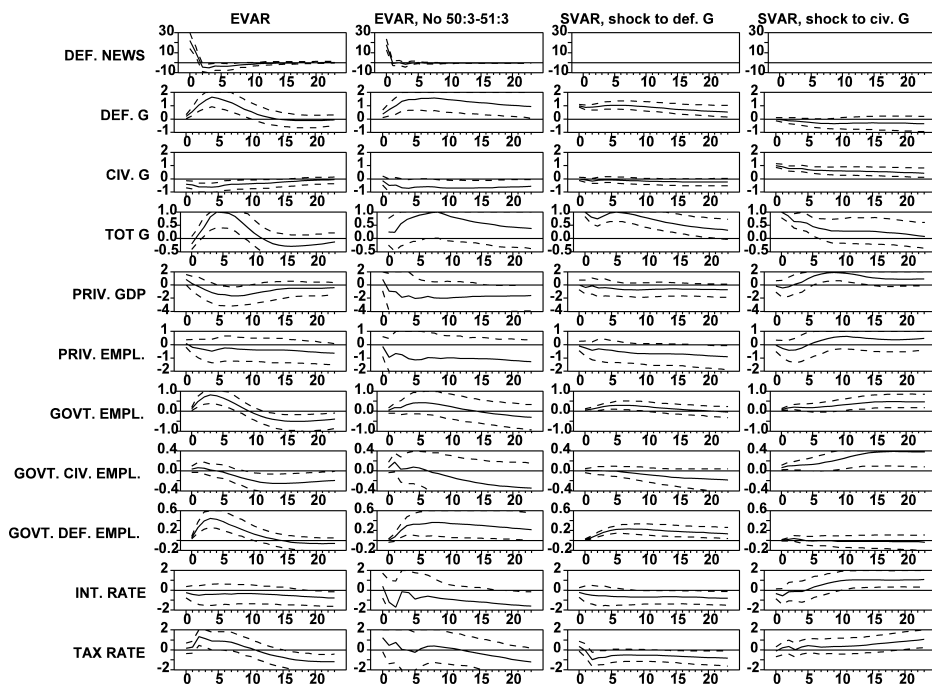


Fig. 1C.1 Responses to various shocks, EVAR and SVAR

Obviously the responses of column (1) are virtually identical to those reported by Ramey in her figures 1.3, 1.6, and 1.14: private GDP and private employment fall. Note, however, an important feature of these responses that could not be detected in the Ramey specification: defense spending increases, but civilian spending falls; hence, if the two types of government spending have different effects, this is not really a clean experiment. The response of private employment is flat; government employment increases, but, not surprisingly, it is only military employment that increases: civilian government employment is flat.³

Column (2) of figure 1C.1 checks the robustness of these results to one key quarter, 1950:3, when the defense news variable takes a value of 63 percent of GDP, the largest value during the Korean War. The next largest revisions during the Korean War were 41 percent in 1950:4, and then -2.02 percent in 1953:1 and -3.06 percent in 1953:3; the next largest revision in the post-Korean War sample is 6.4 percent in 1980:1. Column (2) shows that omitting 1950:3⁴ causes the standard errors to increase drastically. The

3. The responses of civilian and military government employment are obtained from specifications in which each of these two variables replaces the government employment variable in turn.

4. In practice, this is achieved by including a dummy variable for 1950:3 and its four lags.

response of private GDP is now insignificant; only the response of military employment remains significant. Of course, whether one wants to discard any information is largely a philosophical question that will never be solved; still, it is important for the reader to be aware to what extent the results of the defense news EVAR depend on just one quarter of the sample.

Now turn to the SVAR responses. As it turns out, they are very robust, to the exclusion of 1950:3. For brevity, I will focus on the sample with 1950:3 excluded. Column (3) displays responses to a defense spending shock. Note that this is a “pure” defense shock: the response of civilian spending is flat at all horizons. All responses are virtually identical to the responses to a defense news shock in the EVAR: private GDP falls and government employment increases, but only because of an increase in military employment. Now both private employment and the short-term interest rate fall significantly, while their response was insignificant in the EVAR case. The Barro-Redlick tax rate also falls after several quarters.

Column (4) displays the responses to a civilian government spending shock. Note that this too is a pure shock: the response of defense spending is flat at all horizons. The responses are almost symmetrical relative to those in column (3). Private GDP increases by about 2 percentage points of total GDP, and private employment increases, even though the standard errors are larger. Of course, government employment also increases; but now obviously it is civilian government employment that increases.

The short-term interest rate and the Barro-Redlick tax rate increases in response to civilian spending shocks; in contrast, they decline in response to defense spending shocks. To the extent that these are policy variables, one must conclude that civilian spending shocks have positive effects on private activity despite the unfavorable monetary and tax policies that accompany them.

Column (1) of figure 1C.2 displays the median difference, out of 1,000 replications, between the EVAR responses and the SVAR responses to a defense news shock. As it was obvious even from a visual inspection of the impulse responses, these differences are minimal, and never statistically significant. Column (2) displays the median difference or the response between SVAR shocks to nondefense spending and SVAR shocks to defense spending. These differences are large and statistically significant.

In conclusion, the evidence suggests that shocks to defense spending on goods and services have diametrically opposite effects to shocks to civilian spending on goods and services, despite the fact that the latter were on average associated with stricter monetary and tax policies. Ramey’s conclusions are based on the effects of defense spending shocks; they would have been the opposite if she had looked at nondefense spending shocks. Defense spending shocks display the typical neoclassical features of fiscal policy; nondefense shocks display what some might want to call Keynesian features.

In these comments, I have just presented the facts; I do not have a rigorous explanation. But I believe these results are relevant not only from a theoretical

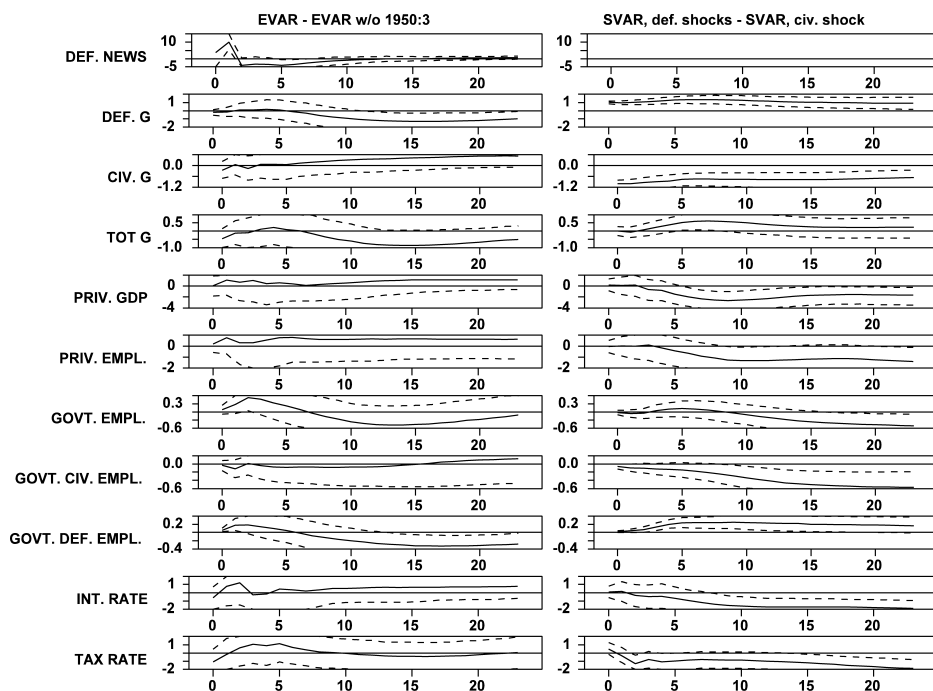


Fig. 1C.2 Significance of differences of responses

perspective. They are relevant also for the policy debate in the United States; and they are of interest for non-US countries, where defense spending is a much smaller part of total government spending, and has exhibited smaller variation over time.

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