The Effect of Fiscal Policy Shocks on the Flow of Funds[1]

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Abstract: This paper uses a selection of fiscal vector autoregression models to identify the effect of fiscal policy shocks on the private sector's balance sheet using the Flow of Funds. As well, I examine the response of treasury interest rates, the Federal Funds rate and the assets of the Federal Reserve to gauge the response of monetary policy to fiscal policy shocks. I find that the Federal Reserve does not respond to fiscal policy shocks in any significant way. I also find that the business sector responds to fiscal policy shocks but not very strongly. The household sector responds more clearly. Fiscal policy shocks have an effect on household's holdings of both short term liquid assets and long term illiquid assets. Spending shocks also have a clear effect on mortgage lending.

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1. Introduction

Since the financial crisis that began in 2008 there has been an explosion in the empirical literature exploring the effects of fiscal policy shocks. The once-every-two-generations severity of the recession led policy makers and economists back to the possibility of fiscal policy as an effective demand management tool, a possibility reinforced by the impotence of monetary policy at the zero lower bound. The nascent literature that has emerged has offered a number of possible routes of research. This paper follows one potential strand of research and examines the effect of fiscal policy shocks on sector balance sheets in the period from 1954 to 2007. Using Flow of Funds data, it mirrors the work of Christiano, Eichenbaum and Evan's seminal "The Effects of Monetary Policy Shocks: evidence from the Flow of Funds" (1994), loosely following their methodology to uncover the effect of revenue and expenditure shocks on the Flow of Funds. As well, this paper uses the Flow of Funds data to examine the response of the Federal Reserve's balance sheet to fiscal policy shocks. This paper explores the response of the Flow of Funds in several alternative specifications of a fiscal vector autoregression (fiscal VAR) using the identification schemes of Fatas and Mihov (2001), Blanchard and Perotti (1999) and Perotti (2005). As well, this paper incorporates the narrative tax shocks of Romer and Romer (2010) and the narrative spending shocks of Valerie Ramey (2011).

The response of household balance sheets to fiscal policy shocks is of some interest. Economists have come, in a simple way, to think of monetary policy as the management of the economy's assets and liabilities and fiscal policy as largely operating through changes in consumption. This paper explores whether these roles are clearly separated.

In the simple fiscal policy multiplier, the effect of fiscal policy on savings is thought of as a "drain" on the effectiveness of policy. For instance, the tax rebates in 2008 pushed by then president George W. Bush were criticized on the grounds that those rebates were largely saved. It is

not obvious, however, that the increased private sector savings (or decreased debt) resulted in no increased economic activity. The role of fiscal policy and savings takes on added pertinence given that much attention has been paid to balance sheet pathologies and their role in stifling real economic activity since the 2008 financial collapse. In this light, it makes sense to try to evaluate the role of fiscal policy as a possible remedy for these pathologies. This paper begins to establish the channels through which fiscal policy shocks can influence the assets and liabilities of the private economy.

This paper also addresses another question brought to the fore by the financial crisis. The modern justification for interventionist fiscal policy is predicated on the fact that it is a second best solution when monetary policy is "out of bullets". What's more, theory suggests that the Fed, when it does have control over the policy rate, is hostile—to an indeterminate degree—towards activist fiscal policy insofar as fiscal policy interferes with the Fed's inflation and output targets. Fiscal VARs are particularly useful for gauging the response of variables "on average" since by construction the shocks under consideration are unanchored from the state of the business cycle.

This paper reaches two main conclusions. First, it establishes some empirical facts about the response of monetary policy to fiscal shocks. In general, to the extent that one can measure a response, the Fed accommodates fiscal policy shocks in the medium and long run. There is mixed evidence for whether the Fed accommodates or counters fiscal policy in the short run. Interest rates, in general, do not responded to either revenue or spending shocks.

Second, the effect on private sector assets and liabilities is somewhat mixed. There is evidence that particular household assets respond to fiscal policy shocks. There is a small impact effect of fiscal policy shocks on highly liquid bank deposits after 1986. Bank deposits decline in response to an increase in spending and increase in response to a tax increase. The response is somewhat more sustained for spending shocks. Less liquid assets, such a pension fund assets have a

larger and more sustained response to fiscal policy shocks, though with similar signs. Mortgage lending has a somewhat mixed response, though on balance it is reasonable to say that there is some evidence that spending shocks have had an effect on mortgage lending during the great moderation. There is also some evidence to suggest that revenue shocks had an effect on mortgage lending in the period before 1986.

These results carry with them some important implications. First, the lack of strong relationship between fiscal policy and monetary policy is important, and this emphasis is unique in the empirical literature. This result also contradicts the theoretical arguments that the Federal Reserve maintains tight control over the economy and tight control over the actions of fiscal authorities. Second, to the extent that fiscal policy does have an effect on the private economy's balance sheet—in particular household's balance sheet—there is a case to be made for policy that targets household balance sheets as well as household consumption.

2. Method

Most of the fiscal VAR work done examining the postwar era either looks only at investment spending as an aggregate measure, occasionally disaggregating into business investment and housing. Often some benchmark interest rate (3 month treasury bills for instance) is also tested. To the extent that financial variables and investment are explored is because most of the earlier forays into fiscal VARs were primarily concerned with evaluating the efficacy of DGSE models (Ramey and Shapiro**,** 1998; Edelberg, Eichenbaum, and Fisher, 1999) However, a closer look at the private sector's balance sheet is useful in its own right especially given the evidence that the Great Recession is driven by balance sheet pathologies. With this in mind, I follow the work done by Chrstiano, Eichenbaum and Evans (CEE, 1996). CEE use flow of funds data to study the effects of monetary policy shocks on the private sector's balance sheet. They explore the effect of policy shocks on net funds borrowed by the business sector, the financial sector, the household sector,

federal state and local governments, the monetary authority (the Fed) and foreigners. Their basic technique, which involves a simple VAR system, is easily applied to fiscal policy shocks.

I identify the fiscal policy shocks in a VAR borrowing from CEE, Fatas and Mihov (FM, 2001) as well as Blanchard and Perotti (BP, 2002) and Perotti (2005). , I also use the Romer and Romer (RR, 2010) narrative tax shocks and for symmetry I employ Ramey's (2011) narratively identified defense spending shocks as exogenous shocks to the VAR. Additionally, I use Mertens and Ravn's (MR, 2011) alternative estimate of the Perotti income elasticity of taxes. The similarity of these approaches makes them comparable while their differences make them useful robustness checks. As well, given that the Perotti specification is often used as a benchmark, the relationship of the narrative shocks to the Perotti benchmark is interesting in its own right.

First, a brief overview and explanation of the problem that must be solved to extract exogenous shocks from a VAR model:

(1) $$\Gamma Y_t = B(L)Y_t + e_t$$

Equation 1 is the "structural equation" that we are interested in estimating, where Γ is a matrix of contemporaneous coefficients and B(L) is a matrix of coefficients on lagged values of the variables in the vector Y. The vector e_t are the uncorrelated, exogenous shocks. However, we only have information to estimate the reduced form equation 2:

(2) $$Y_t = \Gamma^{-1}B(L)Y_t + \Gamma^{-1}e_t$$

Or

(3) $$Y_t = \Gamma^{-1}B(L)Y_t + u_t$$

where the shocks of u_t are likely to be correlated. We must extract the uncorrelated exogenous shocks of the structural model, which allows us to test impulse response functions. We do so by multiplying the matrix Γ^{-1} by its inverse to get an identity matrix, giving us equation 4:

(4) $\Gamma u_t = e_t$

In equation 4 there are more unknown parameters than known parameters. We can calculate the Var/Covar matrix of the reduced form shocks u_t. However, we only know the diagonal elements of Γ, which are equal to 1; as well, we know that the covariances of the structural shock (e_t) are zero. This leaves us with only $\frac{n^2+n}{2}$ knowns and n^2 unknowns. The elements of Γ must be restricted by at least $\frac{n^2+n}{2}$ conditions for the system to be identified.

Both FM and CEE use Cholesky ordering to identify shocks. FM argues that government spending shocks are uncorrelated with all other quarterly economic variables. That is, the claim the fiscal authorities (particularly federal authorities) do not respond to economic shocks immediately. The ordering of government spending first is the key identifying restriction when Cholesky ordering is used to identify exogenous shocks. To start from a CEE/FM baseline, a Cholesky decomposition of my VAR would order variables as such: (G_t Y_t P_t T_t, FF_t D_t) where G is the government spending variable, Y is total GDP, P is the price level as measured by the GDP deflator, T is revenue, FF is the Federal Funds rate, and D is the Flow of Funds variable of interest. In matrix notation:

(5)
$$\begin{pmatrix} 1 & 0 & 0 & 0 & 0 & 0 \\ \gamma_{gy} & 1 & 0 & 0 & 0 & 0 \\ \gamma_{gp} & \gamma_{yp} & 1 & 0 & 0 & 0 \\ \gamma_{g\tau} & \gamma_{y\tau} & \gamma_{p\tau} & 1 & 0 & 0 \\ \gamma_{gff} & \gamma_{yff} & \gamma_{pff} & \gamma_{\tau ff} & 1 & 0 \\ \gamma_{gd} & \gamma_{yd} & \gamma_{pd} & \gamma_{\tau d} & \gamma_{ffd} & 1 \end{pmatrix} \begin{pmatrix} u_g \\ u_y \\ u_p \\ u_\tau \\ u_{ff} \\ u_d \end{pmatrix} = \begin{pmatrix} e_g \\ e_y \\ e_p \\ e_\tau \\ e_{ff} \\ e_d \end{pmatrix}$$

Government spending is ordered first as per the FM specification (CEE orders Y first), with taxation ordered so that government spending, output, and the price level have a contemporaneous effect on tax revenues.

Blanchard and Perotti (2002) offer a more nuanced three variable (G, T and Y) identification procedure that Perotti (2005) expands into a five variable system. Instead of a simple Cholesky

ordering, Perotti makes assumptions about the output, price and interest rate elasticities of government spending and taxation. BP and Perotti use what they call "cyclically adjusted fiscal shocks". Perotti reasons that contemporary structural shocks to quarterly data only capture automatic responses to fiscal policy. Adjusting for the six variable specification of my flow of funds model the fiscal policy shocks are constructed as such:

(6) $$u_t^{t\,CA} = u_t^t - (\alpha_{ty}u_t^y + \alpha_{t\pi}u_t^\pi + \alpha_{ti}u_t^{ff} + \alpha_{td}u_t^d) = \beta_{tg}e_t^g + e_t^t$$

(7) $$u_t^{g\,CA} = u_t^g - (\alpha_{gy}u_t^y + \alpha_{g\pi}u_t^\pi + \alpha_{gi}u_t^{ff} + \alpha_{td}u_t^d) = \beta_{gt}e_t^t + e_t^g$$

The identification scheme involves a combination of making assumptions about the coefficients α_{ij} and ordering the equations accordingly. Perotti reasons there is no effect of output or the policy interest rate on government spending. In addition there is no effect of the Fed Funds rate on taxes. The effect of inflation on government spending works through wage indexation of government payrolls though the actual parameter is arbitrarily assumed to be 0.5. Perotti (following BP) then calculates the output and price elasticity of taxation. Obviously, in this identification scheme most of the work one needs to do is in parameterizing the effect on taxes by contemporaneous changes to output and inflation.

Finally, for BP and Perotti, as with FM, the decision of whether to order taxation or government spending first is essentially arbitrary. All authors rely on the fact that the VAR residuals of government spending and taxation are not highly correlated. All authors take as their benchmark that $\beta_{gt} = 0$.

In matrix notation the identification scheme looks like this):

$$(8)\begin{pmatrix} 1 & \rho_{pg} & 0 & 0 & 0 & 0 \\ \gamma_{gy} & 1 & 0 & \gamma_{\tau y} & 0 & 0 \\ \gamma_{gp} & \gamma_{yp} & 1 & \gamma_{\tau p} & 0 & 0 \\ 0 & \rho_{p\tau} & \rho_{y\tau} & 1 & 0 & 0 \\ \gamma_{gff} & \gamma_{yff} & \gamma_{pff} & \gamma_{\tau ff} & 1 & 0 \\ \gamma_{gd} & \gamma_{yd} & \gamma_{pd} & \gamma_{\tau d} & \gamma_{ffd} & 1 \end{pmatrix} \begin{pmatrix} u_g \\ u_y \\ u_p \\ u_\tau \\ u_{ff} \\ u_d \end{pmatrix} = \begin{pmatrix} e_g \\ e_y \\ e_p \\ e_\tau \\ e_{ff} \\ e_d \end{pmatrix}$$

where ρ_{ij} are the parameters calculated, assumed or estimated by Perotti or MR. I discuss this below. This identification scheme is very similar to the FM scheme in equation 5 with three notable differences. First, it is the primitive shock of government spending on taxation and not the structural shock that matters. Secondly, Perotti's emphasis is on the recursive nature of tax and output variables. Finally, Perroti includes a mechanism for the price level to influence the two variables.

The VARs used to test the response of interest rates and the Federal Reserve's balance sheet are essentially the same as the 6 variable case above. However, the VAR contains only five variables. The D variable (flow of funds) is dropped and the interest rates and balance sheet variables are substituted for the Federal Fund interest rate variable. Everything else remains the same and there is no need to repeat the exposition here for the five variable specification.

Mortens and Ravn (2011a, 2011b) use narrative estimates of tax shocks to identify a SVAR by using narrative identification based on the RR identification. MR, however, construct their own more detailed measures of tax shocks. Their methodology is not employed here; however, they offer a simple suggestion that the calculated tax multipliers of BP are the main source of difference between their results and the results of BP. They propose that an output elasticity of taxation ($\rho_{y\tau}$ in equation 8) of around 3.13 gives similar impulse response results to their proxy measure. It should be cautioned that for the purposes of this paper this is a somewhat crude use of their alternative elasticity. First, the three variable SVAR of BP is different than the SVAR of Perotti that is used here. Secondly, the elasticity proposed by MR is a "full sample" elasticity, in their case from

1959q1 to2006q1. Perotti calculates output elasticities for both the full sample and for the two subsamples proposed by Perotti. The time periods used by Perotti are 1960q1-1980q1 and 1980q1-2001q4. The baseline time period used in this paper is slightly different. The time period in the paper spans 1954q3 to 2007q1 with a 1986q4 breakpoint. However, I use the same elasticities as Perotti. At any rate the addition of the alternative MR elasticity is a useful robustness check. Table 1 has a breakdown of the different elasticities used in this paper.

The Romer and Romer's (R&R) narrative approach to identifying exogenous shocks is also used, though they only identify tax shocks. Valerie Ramey (2011) has also culled the historical record. She has created a series of estimates of defense spending shocks building on her work with Robert Shapiro (Ramey and Shapiro, 1998). The R&R and Ramey approaches are broadly similar; however, the historical sources consulted are different. R&R primarily use government sources such as the *Annual Economic Report of the President*, The Congressional Budget Office's *Budget and Economic Outlook,* and the Social Security Administration's *Social Security Bulletin*. Ramey, on the other hand uses magazines and newspaper accounts, namely *Business Week*, *The New York Times* and the *Washington Post* accounts, to estimate her fiscal shocks. She employs government sources only when the press accounts are not clear, arguing that her methodology best captures the public's expectations because official sources were not available ahead of time and, further, that the actual costs of spending increases were systematically underestimated. It is not entirely clear how the Ramey methodology avoids this problem, since the press in fact seems to rely fairly heavily on official sources for their estimates of future spending increases. The tradeoff seems to be between timing expectations of legislative changes and the accuracy of measuring the actual changes to the fiscal policy series. Ramey also argues that her spending shocks capture anticipation effects[2]. Ramey argues that capturing the anticipation effects is crucial since "[f]rom the standpoint of the

[2] Romer and Romer also offer a measure of the present value of tax shocks. However these are not often used.

neoclassical model, what matters for the wealth effect are changes in the present discounted value of government purchases, not the particular timing of the purchase."(Ramey 2009, p 12)

Favero and Giavazzi (FG, 2009) demonstrate that narrative shocks are comparable to the structurally identified shocks of BP, though without the need to impose other restrictions on the matrix of unstructured residuals in order to uncover the primitive shocks.

They also outline an exogenity test for the narrative shocks. It is worth going through the basis for their exogenity test, though one is encouraged to refer to the original paper for more detail:

(9) $Y_t = \sum_{i=0}^{L} C_{t-i}\, Y_{t-i} + \sum_{i=0}^{L} d_{t-i}\, e_{t-i}^{fpR} + u_t$

Where Yt is defined as it was before and e_t^{fpR} are the "narratively identified" shocks (fp= g or t) from Romer and Romer or Ramey. F&G demonstrate that the narrative shocks can be established as exogenous by transforming the structural VAR in equation 1 into a MA process.

(10) $AY_t = CY_{t-1} + Be_t$

And

(11) $Y_t = \Theta(L)e_t$

Where Y_t here is defined as before and $\Theta(L) = \frac{A^{-1}B}{I - A^{-1} - C(L)}$. As with an SVAR impulse response function this equation cannot be estimated. It has to be derived from an estimate of equation 9:

(12) $Y_t = \sum_{j=0}^{L} \Theta_0\, \Theta_1 e_{t-j} + \Theta_1^{L+1} Y_{t-(L+1)}$

Where $\theta_0 = A^{-1}B$ and $\theta_1 = A^{-1}C$. Y_t is then a function of the "initial condition", the second term on the right hand side and the path of the MA process over L periods. For illustrative purposes FG extract a single equation (for the change in GDP) from the VAR system above:

(13)

$$\Delta gdp =$$

$$\sum_{j=0}^{L} \theta_j^{yt} \sum_{j=0}^{L} \theta_j^{yt} e_{t-j}^{t} + \sum_{j=0}^{L} \theta_j^{yy} e_{t-j}^{y} + \sum_{j=0}^{L} \theta_j^{yp} e_{t-j}^{p} + \sum_{j=0}^{L} \theta_j^{yff} e_{t-j}^{ff} \sum_{j=0}^{L} \theta_j^{yt} e_{t-j}^{t} +$$

$$\sum_{j=0}^{L} \theta_j^{yg} e_{t-j}^{g} + \Theta_1^{L+1} Y_{t-(L+1)}$$

For the narrative shock to be considered an exogenous shock the following assumptions must hold:

(14) $e_t^{fp} = e_t^{fpR} + \varepsilon_t$

Given equation 14 equation 13 can be rewritten (for fp=t) as

(15) $\Delta gdp = \sum_{j=0}^{L} \theta_j^{yt} e_{t-j}^{t} + \sum_{j=0}^{L} \theta_j^{yt} \varepsilon_{t-j}^{t}$

$$+ \sum_{j=0}^{L} \theta_j^{yy} e_{t-j}^{y} + \sum_{j=0}^{L} \theta_j^{yp} e_{t-j}^{p} + \sum_{j=0}^{L} \theta_j^{yff} e_{t-j}^{ff} \sum_{j=0}^{L} \theta_j^{yt} e_{t-j}^{t} + \sum_{j=0}^{L} \theta_j^{yg} e_{t-j}^{g} + \Theta_1^{L+1} Y_{t-(L+1)}$$

The primary testable hypothesis that stems from assumption 14 is that the narrative shocks should be orthogonal to the lags of the variables included in the VAR. FG propose a simple test: regress the n period (from 1 to L) ahead narrative shock on the lags of the component of the VAR. The F-test on these regressions are then used as the basis for determining whether the shocks are exogenous or not. For the purposes here, not being able to reject the null at the 5% level is considered to indicate the endogeneity of the narrative shocks to a particular lag of the VAR variables

The main judgment call for the FG test is deciding how far back the lags of the components of the VAR must go in order to qualify the shocks as exogenous. I indicate in each impulse response whether a R&R or Ramey shock is exogenous. No star indicates that the narrative shocks are not exogenous for between t=0 to t=(-4) lags of the VAR components. One star indicates that up to between t=(-5) and t=(-8) of the VAR variables are exogenous. Two stars indicated that the

narrative shocks are exogenous to all lags of the VAR variables for 9 to 12 lags. Three stars indicate that the VAR variables are exogenous for more than 12 lags. This is roughly consistent with the less formal way FG treat the results of their test.

It is not clear how much the endogeneity bias affects the estimates. Presenting the narrative shocks alongside the other estimates of impulse shocks, one can get a sense of the magnitude of the endogeneity bias in the fiscal VARs. The results, in general, are less statistically significant for the narrative shocks than the FM or Perotti specifications. As well, more often than not, the narrative approaches offer an outlier estimate of the effect of policy shocks.

To estimate the fiscal VARs I follow the FG methodology of constructing impulse response functions. A bootstrap process resamples with replacement out of the residuals of the estimated VARs detailed above. The VAR equations are then solved for the desired length of the impulse response—here 20 quarters—with all impulses set to zero. The equations are then calculated again for the shock of interest. In the case of the R&R and the Ramey specification, the shock is set to 1% of GDP, the FM and both Perotti initial shocks are one standard deviation shocks to the policy variable of interest. The all zero estimate is then subtracted from the single shock estimate. For this paper 500 repetitions were used. As FG point out, this methodology is equivalent to impulse response functions calculated in a standard way. The confidence intervals are also estimated with this bootstrap procedure. For this paper I use two tiers of confidence intervals. I calculate both the 95^{th} and 5^{th} quantiles as well as the 97.5^{th} and 2.5^{th} quantiles. I treat variables that fall between these two confidence intervals as "marginally significant"

All of the impulse response functions reported below are estimated from VARs with six lags. Six lags were chosen for ease of comparison though the decision to impose six lags on all equations sacrifices depth for breadth. In general, six lags lower the prevalence of serial correlation

among the VAR residuals across equations, though any one estimate may have been better served by a different lag specification.

3. Breakpoints

Since Perotti (2005) it has been customary to divide the full sample into two subperiods with the breakpoint at 1980q1. Perotti justifies this by arguing that 1980 is consistent with the breakpoint in monetary policy. He also argues that the 1980 breakpoint is within the confidence intervals of breakpoints in other series in his model. The intuition of this date and its seeming historical consistency does have its appeal.

However, it is not obvious that a breakpoint in fiscal policy time series should be coincident with the a breakpoint in monetary policy. As discussed below and in Mountford and Uhlig (2003) there is not a tremendously strong relationship between fiscal policy shocks and monetary policy. When one employs the VAR breakpoint tests from Bia, Lumsdaine and Stock (1998) a somewhat different result emerges. A breakpoint of 1986q4 makes more sense when the focus is on fiscal policy and not monetary policy. Table 2 shows the results for combinations of the five baseline variables used in this paper (fed spending, GDP, GDP deflator, fed taxes, PPI and the Fed Funds rate) and the full sample period (1954q3 to 2007q1). A fairly robust breakpoint is dated at 1986q4, with a 90% confidence interval of 1981q1 to 1992q3 is shown. This is driven by the government spending variable which alone shows a breakpoint at 1986q4. Most combinations of variables that include government spending show a breakpoint of 1986q4. Meanwhile, the main role of the other variables seems to be in narrowing the confidence intervals. However, one obvious and not surprising exception is the inclusion of the Federal Funds rate. In many specifications that include both the Fed Funds rate and government spending, breakpoints in 1981 are found, though these estimates' confidence interval also include 1986q4. Including five or more of the above variables converges more or less to a breakpoint of 1986q4. The Perroti breakpoint of 1980q1 falls outside

the 90% confidence interval for the five variable breakpoint, though it should be pointed out that the Perotti breakpoint is not that far outside of the confidence interval.

The main issue with the 1986q4 breakpoint date is that there is no clear historical event to mark this breakpoint unlike the Perotti breakpoint, which has a clear historical interpretation. The intuitive appeal of using a breakpoint of 1980q1 is that this can be justified by the clear shift in monetary policy of the Volker Fed. This shift was both aimed at ending the inflation of the Burns era Fed but it also marked a clear shift in priorities of monetary policy to an unambiguous subordination of full employment to price level stability. One wants to point to the fiscal year 1986 federal budget which represented the culmination of Reagan's economic policy, but the major change in 1986 was on the tax side and not on the spending side. Surprisingly, there is little evidence of a structural break in revenue at any point in the time series discussed here. One is left to conclude that, if the 1986q4 break is credible then it is measuring the confluence of things that came together in the 1980s: low inflation, structural deficits and flattening military spending.

So where does this discussion of break points leave us? There are two main possibilities. First, there is no breakpoint in the model as specified. This is backed up by the fact that Bia-Perron, multiple breakpoint tests (not shown) of government spending and government revenue both show zero breakpoints in each series. However, there is also the possibility that the postwar period should be divided into three periods which essentially captures the postwar period, the post Bretton woods period and the post Burns period. What is quite clear is that the instability in fiscal VAR models is being driven by the high inflation period that for our purposes stretches between 1967q2 and 1986q4. This instability would have manifested itself in both government revenues through "bracket creep", which would have spilled over into spending through both the inflation driven increase in in revenue and also through the lower real borrowing costs of the government. These lower real borrowing costs would have come from both a lower real interest rate and in a more rapid

shrinking of the debt to GDP ratio, which is often seen as a metrics of a government's economics health.

This paper takes a somewhat agnostic view on breakpoints, though the preference is for the 1986q4 breakpoint. For those who do not find this breakpoint credible you can think of the two sub periods as robustness checks on the full sample estimate. I avoid breaking the full sample into three time periods because three time periods come at a very high cost in terms of observations in each time period. Effectively, it means splitting the pre-Volker time period into a 13 year period (1954q3-1967q2) and the significantly longer period of inflationary instability from 1967 to 1986. Furthermore, using only two subsamples preserves one of the appeals of the Perotti breakpoint in which it divides the full time period in half. My time series extends later that Perotti, so that a 1986 breakpoint more or less preserves this symmetry.

As well, the focus of this paper is on the post-1986 sample. While the pre-1986 period is of historical interest, from a policy perspective we remain much closer to the post-Volker policy paradigm, ignoring of course, what will someday become known as the 2008q3 breakpoint.

Finally, the choice of shifting the subperiod midpoint from 1980q1 to 1986q4 does not have a significant effect on results in most cases. An important exception is the results of the R&R shocks discussed above. Shifting the breakpoint to 1986q4 causes a dramatic change in the response of the R&R shocks in certain instances. However, the relationship between revenue shocks and a breakpoint justified largely by the spending time series remains unclear, especially given that this breakpoint in part marks a point in time in which revenue and spending were largely decoupled. This may be simply be further evidence that a new regime had clearly emerged by 1986q4. At any rate, I also consider the Perotti 1980q1 breakpoint and discuss it when it points a different result than the 1986q4 breakpoint.

Where of interest, I will also discuss results from a truncated period of 1986q4 to 1999q1. Some estimates do change notably when ends the period at the end of the 20th century. The date 1999q1 is justified in part by the Bia-Lumsdaine-Stock tests that show a breakpoint in the VAR specified above that uses the government spending and taxation series used in Mertins and Ravn (2011).

4. Data

GDP, the GDP deflator, and the fiscal variables are all taken from the Bureau of Economic Analysis's website. The Federal Funds rate is taken from the FF series of the St Louis Fed's F.R.E.D. database as are the 3-month Treasury bill rate and 10 year treasury bond rate. All three of these rates are quarterly averages. The Favero and Giavazzi interest rate is calculated from BEA data. It is interest payments on debt divided by the previous quarters primary debt. All other variables, generically indicated as D in the equations above, are taken from the Federal Reserve's Flow of Funds database. All variables, aside from the interest rates series, are in deflated by the GDP deflator and in log levels. The exact composition of the fiscal variables is somewhat arbitrary, with BP, Perotti, FG, RR and MR all using slightly different expenditure and revenue definitions and FG and MR more or less suggesting that their choices are variants of the Perotti specification and compatible with the RR shocks. The measures of tax shocks are roughly similar between FG and MR. I use the same revenue variable as MR[3] because it is close to the Perotti specification and the alternative output elasticity of revenue measure proposed by MR is based on their definition of federal revenue. As well the MR definition is meant to be compatible with the RR tax shocks. However, the MR expenditure definition is too narrow. It follows Perotti in only including government consumption and investment as government spending, excluding transfer payments. In only including transfer payments as taxes on the revenue side an asymmetry is created in which

[3] The definition of government revenue used in this paper is: BEA Tables 3.2: Line 2 + Line 11 – Line 8

transfers are only treated as a tax. Including transfers in government spending, within the VAR helps establish the "net" effect of transfer payments on the economy. As well, Oh and Reis (2011), demonstrate that transfer payments play a crucial role in thinking about the effect of government spending on the economy. The spending variable I use includes transfer payments in the definition of government expenditures. This is similar to the definition of government spending used by FG net transfers to foreigners[4].

Finally, the RR narrative tax shocks are from the data set provided by Romer and Romer (2009a 2009b) on Chirstina Romer's webtsite. The Ramey (2009b) shocks are from a data set available on the authors website. The narrative fiscal shocks are as a percent of GDP since the preponderance of zero values precludes transforming the series into logs. As mentioned earlier, the Ramey shocks are calculated as the net present value shocks at the time they are expected while the R&R shocks are timed to the quarter that they actually take effect.

5. Results

A few words should be said about the method for sifting through the reams of data. Wading through such large swaths of data is bound to rely on subjective judgment calls, the remedy is transparency and some a priori standard for evaluating the results.

In general, I focus on significant result unless a statistically insignificant result is of interest, as is the case with the response of the interest rate. This, obviously, feeds into the issue of publication bias towards only publishing significant result. As well, it should be noted that there is also an element of confirmation bias on my part.

The 50 years of quarterly data is a relatively small sample and dividing the sample into two subsamples compound the problem further. Furthermore, in the six variable specifications each VAR contains 37 independent variables. The low power of these regressions is bound to result in

[4] The definition of government expenditures used in this paper is Table 3.2: Line 40 - (Line 25 + Line 28 + Line31)

type I errors. With that in mind, the focus on statistically significant results inherently means a focus on the strongest and clearest results. To try to avoid type II errors—which I have some measure of control over—I have chosen to define statistical significance somewhat more stridently than is often found in VAR papers. Confidence intervals of the 97.5th or 2.5th percentile are used. However, I also indicate when zero falls outside of the 95th and 5th. As mentioned above, I treat values that fall in between these confidence intervals as "marginally significant" and in general only consider them in contexts in which there is also some evidence of a strongly significant result.

The relevance of the results also has another criterion. In general, for the non-narrative spending shocks both the FM and Perotti shocks must show a statistically significant effect. For revenue shocks all three non-narrative specifications must be statically significant. This rule is occasionally broken when there is significance across specifications but not for the same time period.

Those who prefer the narrative shocks will—for the most part—come away from this paper with the impression there is little to no effect of fiscal policy shocks on the variables under discussion here. Credibility is lent to this position when the variables are indicated as being exogenous by the FG exogeniety test. However, the issue of low power is compounded by the narrative shocks, where there are relatively few nonzero observations. As well, the Ramey shocks are designed to be "excessively" exogenous, in that they are predications of an outcome and the predictions are often wrong. Furthermore, many of the Romer and Romer shocks are changes to Social Security taxes. Unsurprisingly, then, the R&R shocks test as more exogenous when removing transfer taxes from the definition of government revenue.

The FG test only gets us halfway toward establishing the validity of the narrative shocks since the test only establishes that a variable is exogenous or not. It does not give one a sense the variables relevance to the question at hand. For instance a variable that records the number of

meteors hitting Jupiter will certainly "pass" the FG test, but it will not explain anything about the effect of fiscal policy[5] on the variables. With that in mind, a narrative shock that both tests as exogenous and shows a statistically significant impulse response is a rare bird and worthy of attention. I treat statistically significant narrative shocks that are also judged to be exogenous by the FG test as a standalone result.

I take as the baseline sub period breakpoint as 1986q4. As the discussion above indicates, it has the most clear statistical justification. However, I also look at the Perotti 1980q1 breakpoint and discuss the effect when that breakpoint is used if they are significantly different than the baseline. For the most part the breakpoint does not make much difference but one important exception is the effect on mortgage activity as well as—to a lesser extent—household assets. I also look at a truncated sample at 1999q1. Beyond the indication that this may be a breakpoint (discussed above) from a historical vantage point it is worth considering what the role of the housing bubble was in the response of these variables. Again, when this produces an interesting result it is discussed.

Finally, I break down the impulse response functions into three periods: short run, medium run and long run[6]. I heavily discount the reliability of the impulse response functions the further out they are. If a response shows a response only after 12 quarters (three years) I tend to ignore it as predictions that far away from impact are hard to justify, especially if they are not in line with the shorter run responses.

5a. NIPA Responses

Table 3 shows the impulse response functions of various components of GDP to government spending shocks. The components of investment seem relatively unaffected by

[5] Someone reading this will no doubt try to justify this variable in terms of its effect on fiscal policy. In which case I concede you can argue NASA funding depends in part on activity in the solar system and/or interest in that activity. But, seriously, come on.

[6] For the sake of clarity, "short run" means 4 quarters or less, "medium run" means 4 to 13 quarters and long run means 12 to 20 quarters. The categories obviously overlap, but that is a function of the way the accumulate impulse response functions are reported as to make them intelligible.

government spending shocks over the whole period. The effects seem to be more pronounced in the post-1986 period than in pre-1986 period. However, the effects are statically insignificant across all sub periods. There is some evidence that PCE changes fairly significantly in the pre-1986 period. The FM and Perotti effects suggest about a 6 cent increase in PCE after 8 quarters for a dollar of spending and an increase of about 12.5 cents in PCE spending after 12 quarters. The effect is much smaller, statically insignificant, and of the opposite sign after 1986[7]. These results hold more or less whether one truncates the post-1986 period at 1999q1 or one uses the Perotti breakpoint with the exception that with a 1980q1 breakpoint the non-narrative specifications seem to show a larger and statistically significant impact response of total investment to a government spending shock. There is also a consistent negative response of exports in the medium run to a government spending shock. Twelve quarters out, exports fall by a total of about 2.5 cents for every dollar of government spending under the non-narrative specifications. The main effect of removing transfers from the definition of government spending is to increase the significance and impact of government spending shocks on imports, which also decrease in response to a government spending shock.

Table 4 shows the response of GDP components to a revenue shocks. The responses are similar, but stronger, particularly in the case of personal consumption expenditures. An expansionary tax shock—that is—a decline in revenue will increase PCE during the pre-1986 period, though somewhat more than a similar increase in government spending. The evidence for the effect of a revenue shock on investment is somewhat more mixed. The Perotti specification with the larger elasticity (P-313) shows a significant effect of spending across the three sub periods, though only on impact for the post-1986 period. The other Perotti specification corroborates for the medium and long run of the pre-1986 period. The F&M specification shows a significant effect in

[7] The sign shifts between the two periods is striking and holds across many different variables discussed here. The predominance of the sign shifts between the pre-1986 and post 1986 period is so striking it warrants being highlighted in an aside.

the short run and medium run for the post-1986 period. The effect is roughly the same across sub periods, though the R&R shock is smaller and never statistically significant. It is also clear that the investment effect is driven primarily by nonresidential investment, which shows roughly the same pattern of significance. Changing the sub period by either truncating at 1999q1 or using the Perotti 1980q1 breakpoint does not have much of an effect. Truncating the second sub period at 1999q1 and removing transfers boosts the significance of revenue shocks on nonresidential investment, making the response from impact strongly significant through to about 17 quarters. The R&R response however, remains insignificant.

In summary, there is reasonable evidence that fiscal policy shocks have an effect on household economic activity, at least in the pre-1986 period (though, the narrative shocks—as always—beg to differ). The non-narrative shocks suggest a response of PCE, after 8 quarters, of about 6 cents for every dollar of spending shock and a decline of about 8 cents for every dollar increase in revenue during the pre-1986 period. This increases to about 24 cents per dollar of spending after 20 quarters. Investment responds less strongly, with essentially no response of residential investment and a modest, though mixed response of business investment. The strongest effect, taken from truncating the sample at 1999q1 and removing transfers shows, after 8 quarters, an increase of about 3 cents for every dollar increase in revenue for the post-1986 period. This increases to about 5.8 cents after 17 quarters. When considering the size of the investment and consumption sectors this seems like a large effect on investment. However, this is the largest significant effect found and the evidence less strongly supports a significant effect on investment in the pre-1986 period than is does an effect on PCE in the pre-1986 period.

5b. Interest Rate Responses

Table 5 shows the response of selected interest rates to government spending shocks that are the equivalent of one percent of GDP[8]. The most striking thing is lack of response across interest rates. The one exception is the response of the Favero and Giavazzi interest rate, which is measured as interest payments on federal debt as a ratio of the previous period's total treasury debt. That interest rate declines by about a quarter of a percent on impact and then decreases to about a third of a percent before wavering around zero for the remaining periods. This is clearly driven by the interest rate response in the pre-1986 period. The Ramey shock—which is not exogenous for the post-1986 period—shows no effect even on the FG interest rate. The Ramey shock also offers some evidence of no response of interest rates—at least on impact—for the full sample and the pre-1986 period. The zero effect of spending shocks on 3-month and 10-year treasuries is of marginal statistical significance.

Truncating the sample at 1999q1 has a small effect on the response of treasury bond rates in the short to medium run for the non-narrative specifications. The effect is pretty small decline of around 4 basis points at nine quarters out for 3 month T-bills, but it is statistically significant.

Table 6 shows the effect of truncating the sample at 1999q1 as well as removing transfers from the definition of government spending. This causes a much stronger and sustained response of all the interest rate definitions to government spending shocks in the post-1986q1 period. However, the effect is not very large in the short and medium run and the Fed Funds response remains statistically insignificant in the short run. One final thing of note is that, if you shift the breakpoint of the sample to the Perotti's 1980q1 and remove transfers the non-Ramey impulse

[8] One percent of GDP was chosen to make the estimates more or less comparable across specifications. For the non-narrative shocks 1% of GDP is 1% of the median GDP of each time period. For the 1954-1986 period that is a shock of $43.86 billion dollars. For 1986 to 2007 a shock of 1% of GDP is $96.18bil. For the full period it is $58.33bil.

responses by the FG interest rate to spending shocks are huge and significant. The accumulated response falls by over a percentage point after 10 periods. However, no other interest rate is affected by changing the breakpoint.

Table 7 shows the response of the various interest rates to an increase in federal revenue. The same basic pattern applies, but with different implications. The negative response of the interest rate to an increase in government spending in table 4 is the opposite of the assumed response, suggesting a counter-response of the interest rate to government spending shocks. A negative response of the interest rates to an increase in revenue is consistent with a decline in a deficit or a decline in debt. The revenue response is much stronger—about 125 basis points after 6 quarters. However, given the lack of response by market rates shown in the graph, it seems as though the strong response in the pre-1986q4 period of the FG interest rate is driven by the construction of the variable more than anything else.

There is some indication that there is a slightly stronger response of the Federal Funds rate in the pre-1986 period to revenue shocks. Importantly, contrary to the FG interest rate, the Fed Funds rate looks to be "accommodating" or "coordinated". That is, an increase (decrease) in taxes is accompanied by an increase (decrease) in the Fed funds rate. Both policy actions are expected to have the same effect on output. However, given the size of the shock under consideration the response is quite small. At most, the Fed Funds rate increases by ten basis points in response to a tax shock equal to 1% of GDP.

Truncating the sample at 1999q1 does not have much of an effect on revenue shock responses. Removing transfers increases the significance, and somewhat of the size of some of the responses to an increase in the Federal Funds rate in the pre-1986 period. As well, for the F&M and the baseline Perotti specifications the response of 3-month Treasury bills in slightly larger and becomes more statistically significant in the short and medium run when removing transfers.

In summary, it would appear that neither short nor long term treasury interest rates are very responsive to fiscal policy shocks. The main exception is the medium run response of the FG interest rate. Certainly, their measure has implications for changes in the burden of debt financing for given shock, though it is curious that an increase in spending lowers this measure of the interest rate. Beyond the public finance implications, however, it is not clear what significance this interest rate has as it is not a measure of the capacity of fiscal policy to crowd out (or crowd in) private spending through changes in market interest rates. For changes in the actual market rate of public debt, one can argue that there is either no effect of fiscal policy shocks on the interest rate, or a very small, economically insignificant, effect.

This result is consistent when looking at the Fed's policy rate as well. It is unnecessary to speculate on how tightly controlled the other interest rates relative to the Fed Funds rate, but the co-movement of short term treasury rates and the Fed Funds is clear from the results in the above tables. The next section expands on the reaction of the Fed to fiscal policy shocks, the results largely collaborate the results found here. The Federal Reserve is either nonresponsive or slightly accommodating of fiscal policy shocks.

5c. Federal Reserve Asset Responses

Table 8 shows the effect of government spending shocks of various components of the Feds assets. With respect to total assets, which include foreign reserves, the full sample suggests a somewhat lagged response, ignoring the Ramey shock, which does not qualify as significantly exogenous. It is important to bear in mind that in a "multiplier" sense this response is not very large. Even at 20 quarters the full sample response is only about 2.5 cents per dollar of spending shock. However, if one assumes these asset changes also translate directly into money supply

changes one should multiply the effect by a factor of 8 to get an estimate of the total effect on M2[9]. In which case, one could argue that the government spending shocks are accommodated fairly dramatically in the medium to long run. The fact that these government spending shocks appear to be accommodated is of considerable interest. However, the evidence for the direction of Federal Reserve total assets is not without contradictions. First of all, as usual, the Ramey narrative shock is of a much smaller magnitude than the model identified shocks. It is also of the opposite sign for both the full sample and the pre-1986 period, which seems to be dominating the full sample effect. Where the Ramey shock is both clearly exogenous and statistically significant—the pre-1986 period— it is significant on impact and not in the medium and long run. The similar magnitude of the impact shock for both Ramey and the other shocks lend the Ramey estimate some credibility, though it should be pointed out that the response is quite small.

The results do not change very much when one looks at treasury holdings by the Fed or the broader measure of Federal Funds Assets that include repurchase agreements by the Fed. One major difference is that the Fed Funds asset effect is more similar in the post-1986 period than the treasury security effect. This reflects the fact that repurchase agreements become increasingly important to Federal Reserve monetary management in the 1970s.

As with the interest rate response, truncating the sample at 1999q1 produces a much stronger and more significant response of Fed assets to spending shocks, particularly in the medium and long run. Removing transfers from the definition of government spending does not change estimates very much. The estimates of the impact are in general smaller and less significant but they are comparable to the impulse responses to shocks to total government spending. Of particular

[9] This does not appear to be what actually happens, however. I am not including a discussion of the response of the measured money supply in this paper. I feel the response of the Fed Funds rate and the response of the Fed's Balance sheet is an adequate measure of the response of monetary policy to fiscal policy shocks. It should be noted, though that, for all intents and purposes, there is no response of M1 or M2 to fiscal policy shocks. On the other hand, as detailed below, there is a response of note of household's holding of money assets.

note is that in the truncated sample without transfers there is a small decline in discount lending by the Fed in the medium and long run for the non-narrative shocks.

Table 9 shows the impulse response of Fed balance sheet items to a revenue shock of one percent of GDP. The most striking thing about this table is the strong accommodative response of the Fed to revenue shocks during the pre-1986 period. Increases in revenue are met with declines in domestic assets held by the Fed, which suggests a tightening of monetary policy. It is important to bear in mind again that this effect is somewhat small. The maximum response of Federal Funds Assets to a positive revenue shock is about -$0.05 cents for every dollar of revenue, with the R&R shocks being smaller and mostly not significant. If these changes were to translate directly into an increase in M2, on the other had the impact would be large. However, the response of the Fed Funds rate suggests that these shocks do not translate into large increases in the money supply. This is corroborated by estimates of changes in M2 not shown. The impact is smaller and not statistically significant for the post-1986 period. Of note is that the sign is also reversed for the medium and long run as well as some specifications of the short run. Truncating the sample at 1999q1 or using the Perotti 1980 breakpoint do not change results that much, though they do obfuscate the response of Federal Funds assets to revenue shocks. Truncating the sample at 1999 shows a positive and for both Perotti based specifications a statically significant impact response to a revenue increase in the post-1986 period, However, the medium run shows a net negative response, with the R&R specification showing a relatively large negative response of marginal statistical significance.

Table 10 shows impulse responses of Federal Reserve assets when removing transfers from the definition of revenue and truncating the sample. Here we can make a fairly clear distinction between the two periods. The response to revenue shocks in the pre-1986 period is the same as it is in the full sample with the complete definition of government revenue. In the post-1986 period there is a clear and statistically significant counter response of the Fed to tax increases. The R&R

shocks do add some ambiguity, but for the Federal Funds assets the sign of the response is the same even if the shocks are not statistically significant.

5d. Sector Balance Sheet Responses.

Table 11 shows the response of balance sheets for difference sectors to spending shocks for the baseline period. There is not much to report from the baseline specification. However, it is somewhat striking how large the effect is on household assets, though the response is not statistically significant. Table 12 shows the net response of various sectors when one excludes transfers. Of note, for the non-narrative specifications the medium and long run responses are significant, and much larger in the long run than the more comprehensive definition for the pre-1986 period. For the baseline specification detailed in Table 11 there is about a 37 cent increases in household net assets for every dollar of spending after 8 quarters. The response increases to about 50 cents for the non-narrative shocks after 20 quarters. Removing transfers increases this response to 56 cents after 8 quarters and to over a $1 for every dollar of spending after 20 quarters.

Looking at Table 13 we see that for the baseline specification the pre-1986 period responses to revenue increases are quite similar to those of spending increases. However for the post-1986 the response to revenue increases is much larger and significant. The largest effect is around a 95 cent increase in household net assets for a dollar increase in revenue after 8 quarters, with the effect peaking at almost $1.20 after 13 periods. However, the Perroti specification with the MR elasticities is of marginal significance only in the short run. The R&R shocks are not very helpful, since they are not exogenous, but even their effect is fairly large.

Table 14 shows the effect of revenue shocks on household net assets in the post-1986 period disappears when one truncates the sample at 1999q1. The response becomes insignificant and the magnitude of effect falls substantially. There is also disagreement between the identification strategies about what sign the effect is. Though, now that the R&R shock can be treated as

exogenous, it shows a very large, but statistically insignificant, negative response of business liabilities.

There is also some evidence from the baseline specification of an effect of revenues shocks on business net liabilities, though the evidence is mixed. What is of note is that it appears that the response of business net liabilities does not change signs across sub periods but that business net borrowing falls in response to a revenue increase across periods. The response is also much smaller than the effect on household net assets. Truncating the sample at 1999q1 changes the sign of the response of business net borrowing to revenue shocks**,** but the same mixed evidence for an effect is there, leading one to remain agnostic about the effect there. Removing transfers from the definition of revenue shocks does not change results in any significant way.

It should also be noted that the R&R shock shows a decline in financial assets in response to a revenue increase in the post-1986 period. The R&R shock is exogenous, and the impact effect holds when one truncates the sample at 1999q1.

5e. Household Asset and Liability Responses

The a more detailed look at the balance sheet response of households to fiscal policy shocks is of some interest. First, the narrative shocks often show at least an impact response of household assets to fiscal policy shocks. Secondly, establishing pattern of response to fiscal policy shocks by various household assets is useful in determining the efficacy of fiscal policy's influence on household balance sheets.

Table 15 shows the response of household assets to a federal spending shock. The most consistent and clear response across specifications is the response of currency and deposits. The non-narrative shocks show a fairly strong positive response of currency and deposits held by households to a government spending shock. However, the Ramey shock, which is exogenous,

shows a small but statistically significant negative impact response of household holdings of M1 to a spending shock.

Truncating the sample at 1999 also produces a small impact effect for the Ramey shock on life insurance assets, a slightly larger response of mutual fund shares and an even larger impact response of pension fund assets. The responses are all negative. The non-narrative shocks in these instances show essentially no impact effect and no effect in later time periods. Removing transfers produces a strong medium and long run positive responses of household holdings of credit market instruments and corporate equities in the pre-1986 period. The truncate period also produces a strong negative change in the equity of non-corporate businesses in the post-1986 period.

Table 16 shows results from truncating the sample at 1999 and removing transfers. This specification produces a strong short run decline in household equity holdings in response to a Ramey shock. Most interesting about the truncated sample with transfers removed is the unambiguous short and medium run decline in Pension Fund entitlements in the post-1986 period. This is the only response of all the variables considered here that show a significant response across all three specifications and the narrative Ramey shock is clearly exogenous. This result is somewhat confusing and important in putting other results into perspective.

The response of household assets to revenue shocks is somewhat similar, though as a whole stronger. Table 17 shows the response of assets in the baseline specification. There is a significant impact response of currency and deposits in the pre-1986 period. The R&R narrative shock is exogenous in the post-1986 period and indicates a clear, significant, impact response to changes in various deposits. The R&R shock also produces a significant change in corporate and foreign bond holding in the pre-1986 period.

Truncating the sample at 1999 also produces a significant response in the post-1986 period. The non-narrative shocks show a strong and significant positive response of corporate equities and

mutual fund shares to an increase in revenue in the post-1986 period, this effect is significant for the R&R shock in the medium run.

Truncating the sample at 1999 produces a significant negative impact response of mutual fund shares and pension fund assets to R&R shocks. As well, savings and time deposits show a significant response in the medium run across all three specifications. However, the non-narrative shocks show a strong and universally significant positive change in mutual fund shares up to 16 quarters out if one uses the Perotti 1980q1breakpoint. A similar pattern is observed for pension fund assets using the Perotti break point. This is show on table 18

Finally, if one truncates the sample at 1999 and removes transfers from the revenue shocks the non-narrative shocks show a short run positive effect of revenue shocks on mutual fund shares. However, the R&R shock, which is exogenous, shows a negative response over the same 4 quarter horizon.

5f. Mortgage Responses

Some discussion of the effect of fiscal policy shocks on mortgages is also warranted. Table 19 shows the change in total mortgage assets and total home mortgage assets across all sectors. For the full sample there is an effect of government spending on both net mortgage liabilities of business in the medium and long run. Net mortgage liabilities of household show a modest short run effect of spending shocks during the pre-1986 period under the Ramey narrative shock, though this is of marginal significance.

It is with total mortgage and home mortgage assets that we see an important difference between the Perotti 1980q1 break point and the benchmark breakpoint used in this paper. As table 20 shows, both categories of mortgage assets show a statistically significant response when using the Perotti breakpoint. The effect is fairly strong, relative to the response of other balance sheet responses and is positive. However, for the effect to stand the entire 1980q1 to 2007q1 period must

be included. Truncating the sample at 1999q1 kills both the statistical significance and the magnitude of the response of home mortgage assets and total mortgage assets in the post-1980 period.

As Table 21 shows, the response of mortgages to tax shocks is different. It is during the earlier sub period where the response of mortgages is most pronounced and somewhat weaker, both in terms of its statistical reliability and its magnitude. However, like government spending shocks, the responses to revenue shocks that are significant tend to be in the medium to long run. Shifting the definition of sub period, however, does not have the same effect as spending shocks. The response to revenue shocks remains fairly consistent when truncating the sample or shifting the sub period breakpoint.

6. Discussion

This paper can be seen as having two main purposes. First, it examines the effect of fiscal policy shocks on the balance sheet of the private sector. Second, it examines the response of monetary policy to fiscal policy shocks.

This paper provides reasonably strong evidence that household net assets increase in response to a revenue increase in the 1986q4 to 2007q1 period. Alternatively one can think of this as a decline in household assets when there is decline in government revenue over that period. The net effect on household assets to a government spending shock is less clear. However, both spending and revenue shocks have a clear effect on components of the household balance sheet. There is fairly strong evidence for a modest impact effect of both spending and revenue shocks on household liquid assets such as bank deposits. There is also fairly strong evidence that in the medium and long run there is an effect of both shocks on less liquid assets.

There is also some evidence, though it is period dependent, that spending shocks have a modest effect on mortgage lending after 1980. Mortgages also show a response to fiscal policy

shocks, though the effect of fiscal policy shocks is mixed and heavily dependent on the sub period being discussed. The mortgage response dissipates if one cuts out the post-1999 period even though household assets in general are more responsive if one excludes the post-1999 period. The mortgage question deserves more study, both in light of the inconclusive results here, the special role of housing in the 2008 crisis, and the role of housing as both a driver of the economy (Leamer, 2007) and as a primary store of wealth for households.

The response of pension funds in table 16 is worth spending a moment on as we turn to a discussion about what the results of this paper say about fiscal VARs in general. It is hard to see how the response of pension fund assets can be seen as a behavioral response to spending shocks in the same way that the change in short run liquid assets can be. The implication of this change in highly illiquid pension fund assets—after all households only have access to them when they retire—is that this is capturing the change in the business cycle and the effect of that change in the business cycle on assets as well as a correlated (counter-cyclical) change in government spending. The responses of mutual fund shares and life insurance assets corroborate the idea that these changes are driven by a decline in the assets' value, rather than a behavioral response to fiscal policy shocks. There are hints here of an endogeneity problem. It may be that the non-narrative shocks are not producing cleanly identified structural shocks. The response to revenue changes is similar. Riera-Carton, Vegh and Vuletin (2012) argue that in the case of tax shocks, non-narrative identification strategies that rely on revenue measures are too endogenous to be relied on. This criticism can also—to a less extent—be leveled at spending shocks.

However, in the case of spending shocks and pension funds, the Ramey narrative shock corroborates the findings of the non-narrative shocks, though the effect is smaller, so bias of the non-narrative specifications cannot be ruled out entirely. But it does suggest that the exogeneity of the non-narrative shocks is not simple, nor can one dismiss the non-narrative shocks or the

definition of spending and revenue used in this paper and others out of hand. A broader indicator of the exogeneity of non-narrative shocks, akin to the FG test used in this paper to test the exogeneity of the narrative shocks would be useful.

Secondarily, there is also some evidence for a negative response of business liabilities to both spending and revenue shocks. A decline in business net liabilities to an increase in government spending suggests a "pro-cyclical" effect of spending on business liabilities. However, the revenue response is the opposite. Expansionary tax cuts increase business net liabilities. As a rough approximation, during the pre-1986 period it would seem that a revenue increase is accompanied by both a decline in business financial assets and in business liabilities. After 1986 the decline in net liabilities by businesses is driven by the accumulation of assets with a relatively small change in liabilities.

The response of the Federal Reserve and interest rates seems to indicate either a neutral monetary policy, or perhaps monetary policy with a slight accommodative bias. The stance of the Fed towards fiscal policy has some implications for the New Keynesian predictions about the response of the Fed to fiscal policy shocks. The consensus New Keynesian framework makes very strong predictions about the interaction of fiscal and monetary policy shocks (Woodford 2010). In a nutshell, in a New Keynesian model the central bank controls the risk free interest rate directly with a central bank reaction function. Woodford suggests three different reaction functions a central bank can pursue. First is a strict targeting of the real interest rate at a fixed value. In this instance in a model with sticky prices (which gives the central bank the ability to control the real interest rate) government spending multipliers should be equal to one. This is because savings and consumption decisions do not change since there is no rebalancing of future and current consumption in response to interest rate incentives. A second possibility is that a central bank pursues strict inflation targeting. In this case, the central bank will move to offset any increase in government spending,

leading to a multiplier of less than one because consumption is crowded out to the degree that households can consumption smooth and to the extent that wages change in response to the shock. Finally, and most plausibly, the central bank can follow a Taylor rule type response function that balances the interest rate response according to the central bank's tolerance for changes in inflation and output. In the Taylor rule instance, the output multiplier is indeterminate and depends on the parameters of that Taylor rule chosen by the Fed as well as the extent to which the shocks increase output and change the price level.

Insofar as fiscal policy shocks are not so small that they can be ignored by the Fed, there does not appear to be any evidence that the two stronger behavioral functions are applicable. The evidence for this accommodative stance is stronger in the pre-1986 period. There is a fair amount of noise there, since the pre-1986 period by definition includes the Burns era Fed, which was both intentionally and unintentionally overly accommodative. However, stepping outside of the evidence presented here it may make sense to think of post-1986 monetary policy as more broadly accommodating by opening up the space for fiscal policy to remain noninflationary. Of course, it is not quite clear how much the Fed deserves credit for the low inflation regime of the great moderation and how much natural dynamics kept inflation down. But to the extent that the Fed remained credibly anti-inflationary and that kept inflation expectations low, it makes sense to think of policy coordination in a more broad sense than as simply complementary business cycle responses. There is also an implication in the results of this paper for the notion that fiscal policy can only be effective when the Fed is constrained by the zero lower bound. It does not appear from balance sheet changes that the Fed has been—historically speaking—necessarily hostile to changes in fiscal policy and must be neutered by catastrophe for fiscal policy to be permitted to influence the economy. This is true in practice at least, if not in theory.

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Table 1: Elasticities used in Perotti (2005) based SVAR specifications.

	$\rho_{y\tau}$	$\rho_{p\tau}$	ρ_{pg}
Perotti:			
1954q3 to 2007q1	1.85	1.25	-0.50
1954q3 to 1980q1	1.75	1.09	-0.50
1980q1 to 2007q1	1.97	1.40	-0.50
Perotti 3.13:			
1954q3 to 2007q1	3.13	1.25	-0.50
1954q3 to 1980q1	3.13	1.09	-0.50
1980q1 to 2007q1	3.13	1.40	-0.50

Table 2: Breakpoint Tests for VAR variables.

Variables	Sup-Wald Stat.	Breakpiont	Confidence Interval (90%) Lower	Upper
dgdp	2.768	1966Q2	1954Q4	1990Q3
	(0.108)			
dg	6.300	1986Q4	1971Q4	2001Q4
	(0.018)			
dpl	5.384	1981Q2	1964Q3	1998Q1
	(0.046)			
dt	2.296	1969Q2	1954Q4	2003Q3
	(0.153)			
dff	4.056	1981Q4	1958Q1	2005Q3
	(0.038)			
dgdp dg	7.872	1968Q3	1958Q4	1978Q2
	(0.025)			
dgdp dpl	8.362	1981Q2	1970Q3	1992Q1
	(0.026)			
dgdp dt	3.441	1966Q2	1954Q4	1985Q4
	(0.185)			
dgdp dff	5.266	1981Q4	1963Q4	1999Q4
	(0.077)			
dg dpl	8.204	1968Q3	1960Q3	1976Q3
	(0.029)			
dg dt	7.434	1969Q1	1958Q3	1979Q3
	(0.040)			
dg dff	8.726	1981Q3	1970Q2	1992Q4
	(0.008)			
dpl dt	6.061	1981Q2	1966Q3	1996Q1
	(0.092)			
dpl dff	6.525	1981Q1	1967Q1	1995Q1
	(0.048)			
dt dff	3.043	1981Q4	1954Q4	2007Q1
	(0.234)			
dgdp dg dpl	12.660	1986Q4	1980Q2	1993Q2
	(0.011)			
dgdp dg dt	7.863	1968Q3	1959Q1	1978Q1
	(0.067)			
dgdp dg dff	8.758	1981Q4	1970Q4	1992Q4
	(0.035)			
dgdp dpl dt	9.040	1990Q2	1982Q1	1998Q3
	(0.047)			
dgdp dpl dff	9.301	1990Q2	1982Q2	1998Q2
	(0.032)			
dgdp dt dff	3.547	1966Q2	1954Q4	1985Q1
	(0.343)			
dg dpl dt	10.073	1968Q4	1962Q1	1975Q3
	(0.033)			
dg dpl dff	13.288	1968Q3	1963Q3	1973Q3
	(0.007)			
dg dt dff	8.631	1981Q3	1970Q2	1992Q4
	(0.034)			
dpl dt dff	6.111	1981Q2	1966Q3	1996Q1
	(0.129)			
dgdp dg dpl dt	13.314	1986Q4	1980Q4	1992Q4
	(0.014)			
dgdp dg dpl dff	13.359	1968Q3	1963Q3	1973Q3
	(0.019)			

Table 2 Continued…				
dgdp dg dt dff	8.704	1981Q4	1970Q4	1992Q4
	(0.074)			
dgdp dpl dt dff	10.151	1990Q2	1983Q1	1997Q3
	(0.053)			
dg dpl dt dff	13.247	1968Q3	1963Q3	1973Q3
	(0.020)			
dgdp dg dpl dt dff	13.717	1986Q4	1981Q1	1992Q3
	(0.031)			

Values in parentheses are p-vals for the corresponding Sup-Wal Statstic. Calculated by bootstrap with 1000 repetitions. See Bia Lumsdaine and Stock (1998)
Varible Definition: dgdp= GDP, dg=Gov Spending, dt=Gov Revenue, dpl=GDP Deflator, dff=Federal Funds Rate

Table 3: Response of NIPA components to Government Spending Shocks. 1954q3 to 2007q1
Government spending shocks equal to 1% of GDP. Definiton of spending includes transfers.

Total investment

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	-0.004	-0.002	0.012	0.027	0.054	0.054 (20)	-0.006 (2)
	Perotti	-0.004	-0.003	0.008	0.023	0.047	0.047 (20)	-0.006 (2)
	Ramey ***	0.017	0.063	0.086	0.108	0.173	0.173 (20)	0.017 (1)
54-86	F&M	-0.005	-0.004	0.002	0.010	0.022	0.022 (20)	-0.006 (2)
	Perotti	-0.004	-0.003	0.003	0.008	0.016	0.016 (20)	-0.006 (2)
	Ramey ***	0.003	0.025	0.008	-0.013	0.020	0.031 (5)	-0.016 (14)
86-07	F&M	-0.001	-0.011	-0.019	-0.025	-0.016	-0.001 (1)	-0.025 (12)
	Perotti	-0.002	-0.013	-0.024	-0.031	-0.022	-0.002 (1)	-0.031 (13)
	Ramey	**-0.062**	**-0.224**	**-0.425**	-0.542	-0.473	**-0.062 (1)**	-0.563 (13)

Nonresidential Investment

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	0.000	-0.002	-0.001	0.008	0.033	0.033 (20)	-0.002 (6)
	Perotti	0.000	-0.002	-0.002	0.007	0.029	0.029 (20)	-0.003 (6)
	Ramey ***	0.013	0.050	0.081	0.093	0.128	0.128 (20)	0.013 (1)
54-86	F&M	-0.001	-0.002	-0.001	0.002	0.014	0.014 (20)	-0.002 (3)
	Perotti	-0.001	-0.001	-0.001	0.002	0.013	0.013 (20)	-0.002 (3)
	Ramey ***	0.007	0.034	0.057	0.053	0.058	0.059 (9)	0.007 (1)
86-07	F&M	0.000	-0.003	-0.010	-0.012	-0.006	-0.000 (1)	-0.012 (12)
	Perotti	0.000	-0.004	-0.011	-0.014	-0.009	-0.000 (1)	-0.014 (13)
	Ramey ***	-0.001	-0.060	-0.163	-0.211	-0.137	-0.001 (1)	-0.212 (11)

Residential Investment

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	0.000	0.004	0.006	0.005	0.002	0.006 (7)	-0.000 (1)
	Perotti	0.000	0.003	0.005	0.003	-0.001	0.005 (8)	-0.001 (19)
	Ramey ***	-0.002	-0.021	-0.062	-0.079	-0.070	-0.002 (1)	-0.081 (14)
54-86	F&M	-0.001	0.001	0.003	0.007	0.015	0.015 (20)	-0.001 (2)
	Perotti	0.000	0.001	0.002	0.006	0.013	0.013 (20)	-0.001 (2)
	Ramey ***	0.002	-0.008	-0.043	-0.061	-0.020	0.002 (1)	-0.061 (12)
86-07	F&M	0.000	-0.002	-0.003	-0.001	0.005	0.005 (20)	-0.003 (5)
	Perotti	0.000	-0.003	-0.004	-0.003	0.003	0.003 (20)	-0.004 (8)
	Ramey ***	0.001	-0.015	-0.057	-0.084	-0.095	0.001 (1)	-0.095 (20)

PCE and Residential Investment

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	0.002	**0.019**	0.043	0.069	0.126	0.126 (20)	0.002 (1)
	Perotti	0.002	0.017	0.034	0.054	0.098	0.098 (20)	0.002 (1)
	Ramey ***	-0.001	-0.004	-0.050	-0.058	-0.002	-0.001 (1)	-0.058 (12)
54-86	F&M	0.001	**0.021**	**0.062**	**0.132**	**0.246**	**0.246 (20)**	0.001 (1)
	Perotti	0.001	**0.019**	**0.056**	**0.121**	**0.232**	**0.232 (20)**	0.001 (1)
	Ramey	0.016	0.030	0.010	0.083	0.440	0.440 (20)	0.010 (9)
86-07	F&M	0.000	-0.003	-0.004	-0.004	-0.004	0.000 (2)	-0.005 (11)
	Perotti	0.000	-0.004	-0.009	-0.014	-0.018	-0.000 (1)	-0.018 (20)
	Ramey	-0.009	-0.070	-0.186	-0.298	-0.478	-0.009 (1)	-0.478 (20)

Table 3 continued…
Government spending shocks equal to 1% of GDP. Definition of spending includes transfers.

Personal Consumption Expenditures

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	0.002	**0.017**	**0.041**	**0.071**	**0.131**	**0.131 (20)**	0.002 (1)
	Perotti	0.002	**0.015**	0.034	0.059	0.110	0.110 (20)	0.002 (1)
	Ramey ***	0.002	0.013	-0.001	0.006	0.051	0.051 (20)	-0.001 (9)
54-86	F&M	0.002	**0.023**	**0.063**	**0.114**	**0.196**	**0.196 (20)**	0.002 (1)
	Perotti	0.002	**0.022**	**0.058**	**0.105**	**0.181**	**0.181 (20)**	0.002 (1)
	Ramey	0.018	0.041	0.056	0.127	0.403	0.403 (20)	0.018 (1)
86-07	F&M	0.000	-0.002	-0.009	-0.014	-0.024	-0.000 (2)	-0.024 (20)
	Perotti	0.000	-0.004	-0.012	-0.021	-0.038	-0.000 (1)	-0.038 (20)
	Ramey	-0.004	-0.037	-0.163	-0.308	-0.504	-0.004 (1)	-0.504 (20)

Exports

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	-0.002	**-0.011**	**-0.024**	-0.024	-0.012	-0.002 (1)	**-0.025 (9)**
	Perotti	-0.001	**-0.010**	**-0.022**	-0.021	-0.010	-0.001 (1)	**-0.023 (9)**
	Ramey ***	0.003	0.003	-0.008	-0.017	0.007	0.007 (20)	-0.017 (13)
54-86	F&M	-0.001	-0.010	**-0.021**	-0.023	-0.012	-0.001 (1)	-0.024 (11)
	Perotti	-0.001	-0.009	-0.019	-0.021	-0.011	-0.001 (1)	-0.022 (11)
	Ramey ***	0.002	0.005	-0.009	-0.031	-0.043	0.006 (3)	-0.045 (18)
86-07	F&M	-0.002	-0.010	-0.018	-0.018	-0.021	-0.002 (1)	-0.021 (20)
	Perotti	-0.002	-0.010	-0.017	-0.018	-0.020	-0.002 (1)	-0.020 (20)
	Ramey	-0.022	-0.073	-0.098	-0.116	-0.011	-0.011 (20)	-0.116 (12)

Imports

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	-0.001	-0.009	-0.009	-0.006	0.006	0.006 (20)	-0.010 (6)
	Perotti	-0.001	-0.007	-0.006	-0.003	0.007	0.007 (20)	-0.008 (6)
	Ramey ***	0.003	0.005	0.026	0.045	0.096	0.096 (20)	0.003 (1)
54-86	F&M	-0.001	**-0.008**	-0.010	-0.012	-0.004	-0.001 (1)	-0.012 (13)
	Perotti	0.000	-0.006	-0.009	-0.010	-0.004	-0.000 (1)	-0.010 (13)
	Ramey ***	0.008	0.007	0.006	0.009	0.029	0.029 (20)	0.005 (7)
86-07	F&M	0.000	-0.003	-0.003	-0.005	0.000	0.000 (20)	-0.006 (10)
	Perotti	0.000	-0.003	-0.005	-0.008	-0.003	0.000 (1)	-0.008 (10)
	Ramey *	**-0.041**	-0.118	-0.188	-0.332	-0.430	**-0.041 (1)**	-0.430 (20)

* Indicates the narrative shock is exogenous for at least 4 quarters (see text)

** Indicates the narrative shock is exogenous for at least 8 quarters (see text)

*** Indicates the narrative shock is exogenous for at least 12 Quarters (see text)

Underlined values indicate that zero falls outside of the 95th and 5th quantile

Bolded values indicate that zero lies outside of the 97.5th and 2.5th quantile

Table 4: Response of NIPA components to Government Revenue Shocks 1954q3 to 1999q1.
Response to a government revenue shock equal to 1% of GDP. Definition of revenue includes transfers.

Total investment

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	-0.002	0.268	-0.447	-1.210	-2.391	0.402 (3)	-2.391 (20)
54-07	Perotti	-0.060	-0.018	-1.051	-2.008	-3.487	0.199 (3)	-3.487 (20)
	P-313	**-0.743**	**-2.928**	**-4.960**	-5.779	**-7.292**	**-0.743 (1)**	**-7.292 (20)**
	R&R	-0.166	-0.424	-0.631	-0.819	-1.042	-0.166 (1)	-1.042 (20)
	F&M	0.076	-0.134	-1.715	**-2.454**	-2.729	0.240 (2)	-2.729 (20)
54-86	Perotti	0.021	-0.286	-1.976	**-2.973**	**-3.905**	0.157 (2)	**-3.905 (20)**
	P-313	**-0.541**	**-2.120**	**-3.232**	**-3.500**	**-4.610**	**-0.541 (1)**	**-4.610 (20)**
	R&R ***	-0.080	-0.165	-0.068	-0.039	0.122	0.122 (20)	-0.183 (3)
	F&M	-0.024	**1.231**	**3.038**	3.938	3.177	4.144 (15)	-0.024 (1)
86-07	Perotti	-0.183	0.661	2.582	4.022	3.957	4.492 (15)	-0.183 (1)
	P-313	**-0.433**	-0.608	0.636	2.080	2.530	2.782 (16)	-0.645 (3)
	R&R *	-0.175	-0.141	0.776	1.725	2.528	2.638 (19)	-0.233 (3)

Nonresidential Investment

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	0.047	0.465	0.739	0.752	0.102	0.786 (13)	0.047 (1)
54-07	Perotti	0.019	0.285	0.340	0.153	-0.588	0.363 (7)	-0.588 (20)
	P-313	**-0.158**	**-0.972**	**-2.075**	-2.673	-3.721	**-0.158 (1)**	-3.721 (20)
	R&R	-0.039	-0.082	-0.181	-0.286	-0.532	-0.039 (1)	-0.532 (20)
	F&M	-0.007	-0.059	-0.668	-1.332	**-1.999**	-0.001 (2)	**-1.999 (20)**
54-86	Perotti	-0.023	-0.172	-0.805	-1.533	**-2.238**	-0.023 (1)	**-2.238 (20)**
	P-313	**-0.156**	**-1.031**	**-2.106**	**-2.487**	**-2.963**	**-0.156 (1)**	**-2.963 (20)**
	R&R ***	-0.006	0.009	-0.005	-0.021	-0.010	0.016 (5)	-0.034 (15)
	F&M	0.112	**0.823**	**2.205**	**2.976**	2.269	**3.022 (14)**	0.112 (1)
86-07	Perotti	0.120	0.709	2.058	2.993	2.456	3.142 (15)	0.120 (1)
	P-313	0.003	0.113	0.664	1.154	0.825	1.218 (15)	0.003 (1)
	R&R *	-0.047	-0.208	-0.351	-0.303	-0.109	-0.047 (1)	-0.362 (6)

Residential Investment

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	0.035	0.034	-0.177	-0.664	-0.738	0.067 (3)	-0.894 (17)
54-07	Perotti	0.030	-0.027	-0.338	-0.826	-0.981	0.038 (2)	-1.074 (15)
	P-313	-0.045	-0.189	-0.090	-0.246	-0.774	-0.045 (1)	-0.774 (20)
	R&R	0.020	0.142	0.254	0.249	0.220	0.265 (10)	0.020 (1)
	F&M	0.032	-0.097	-0.517	-0.794	-0.873	0.032 (1)	-0.894 (16)
54-86	Perotti	0.034	-0.114	-0.566	-0.913	-1.138	0.034 (1)	-1.138 (20)
	P-313	-0.018	-0.125	-0.007	-0.108	-0.670	-0.007 (8)	-0.670 (20)
	R&R ***	0.015	0.051	0.025	-0.035	-0.079	0.051 (4)	-0.079 (20)
	F&M	0.045	0.318	0.585	0.375	0.519	0.585 (8)	0.045 (1)
86-07	Perotti	0.016	0.345	0.871	0.983	1.249	1.249 (20)	0.016 (1)
	P-313	-0.019	0.217	0.647	0.748	1.049	1.049 (20)	-0.019 (1)
	R&R *	-0.033	0.116	0.551	0.802	1.212	1.212 (20)	-0.034 (2)

Table 4 continued…
Government revenue revenue equal to 1% of GDP. Definition of spending includes transfers.

PCE and Residential Investment

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	0.068	-0.055	-0.851	-1.838	-1.143	0.068 (1)	-1.915 (13)
54-07	Perotti	0.040	-0.331	-1.594	-2.907	-3.120	0.040 (1)	-3.303 (16)
	P-313	**-0.299**	**-1.741**	-3.426	-5.152	-7.454	**-0.299 (1)**	-7.454 (20)
	R&R	-0.002	0.063	0.248	0.295	0.399	0.418 (19)	-0.002 (1)
	F&M	-0.017	**-0.996**	**-3.693**	**-6.535**	**-9.345**	-0.017 (1)	**-9.345 (20)**
54-86	Perotti	-0.040	**-1.274**	**-4.571**	**-8.011**	**-12.201**	-0.040 (1)	**-12.201 (20)**
	P-313	**-0.341**	**-2.110**	**-4.319**	**-7.109**	**-12.145**	**-0.341 (1)**	**-12.145 (20)**
	R&R ***	0.050	0.171	0.156	-0.014	-0.356	0.187 (5)	-0.356 (20)
	F&M	**0.318**	1.171	1.897	2.013	2.765	2.765 (20)	**0.318 (1)**
86-07	Perotti	0.165	0.824	1.869	2.447	3.537	3.537 (20)	0.165 (1)
	P-313	-0.081	-0.329	-0.214	-0.414	-0.613	-0.081 (1)	-0.677 (18)
	R&R ***	-0.220	-0.504	-0.076	0.576	1.199	1.199 (20)	-0.542 (3)

Personal Consumption Expenditures

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	0.022	-0.137	-0.263	-0.155	1.515	1.515 (20)	-0.306 (10)
54-07	Perotti	-0.008	-0.370	-0.904	-1.133	0.026	0.026 (20)	-1.133 (12)
	P-313	**-0.285**	**-1.673**	**-3.011**	-3.799	-3.767	**-0.285 (1)**	-3.807 (14)
	R&R	-0.028	-0.063	0.080	0.192	0.243	0.243 (20)	-0.069 (3)
	F&M	-0.079	**-0.987**	**-2.965**	**-4.847**	**-7.316**	-0.079 (1)	**-7.316 (20)**
54-86	Perotti	-0.106	**-1.308**	**-3.786**	**-6.181**	**-9.745**	-0.106 (1)	**-9.745 (20)**
	P-313	**-0.324**	**-2.045**	**-4.153**	**-6.181**	**-10.269**	**-0.324 (1)**	**-10.269 (20)**
	R&R	0.083	0.193	0.191	0.158	0.108	0.209 (5)	0.083 (1)
	F&M	**0.235**	0.706	1.969	3.222	5.249	5.249 (20)	**0.235 (1)**
86-07	Perotti	0.084	0.281	1.506	3.069	5.722	5.722 (20)	0.052 (2)
	P-313	-0.118	-0.671	-0.244	0.495	1.755	1.755 (20)	-0.766 (5)
	R&R ***	-0.221	-0.540	0.115	1.303	3.497	3.497 (20)	-0.577 (3)

Exports

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	0.014	0.247	0.729	0.612	-1.069	0.735 (9)	-1.069 (20)
54-07	Perotti	0.015	0.265	0.747	0.666	-0.959	0.770 (9)	-0.959 (20)
	P-313	-0.082	-0.366	-0.431	-0.719	-2.025	-0.082 (1)	-2.025 (20)
	R&R	0.031	0.080	0.172	0.232	0.142	0.249 (13)	0.031 (1)
	F&M	0.004	0.114	0.102	-0.259	-1.286	0.132 (5)	-1.286 (20)
54-86	Perotti	0.012	0.197	0.271	-0.031	-1.275	0.293 (7)	-1.275 (20)
	P-313	-0.063	-0.242	-0.404	-0.680	-1.577	-0.063 (1)	-1.577 (20)
	R&R	0.038	0.111	0.177	0.250	0.403	0.403 (20)	0.038 (1)
	F&M	0.030	0.500	1.548	1.773	0.029	1.793 (10)	0.029 (20)
86-07	Perotti	-0.113	-0.320	0.133	-0.032	-1.705	0.191 (9)	-1.705 (20)
	P-313	**-0.240**	-0.967	-0.968	-1.272	-2.712	**-0.240 (1)**	-2.712 (20)
	R&R ***	-0.136	-0.905	-1.417	-1.855	-2.841	-0.136 (1)	-2.841 (20)

Table 4 continued…
Government revenue shocks equal to 1% of GDP. Definition of revenue includes transfers.

Imports

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	0.103	0.251	-0.372	-1.155	-2.950	0.278 (3)	-2.950 (20)
54-07	Perotti	0.126	0.318	-0.318	-1.117	-3.091	0.324 (3)	-3.091 (20)
	P-313	0.063	-0.251	-1.258	-2.027	**-4.156**	0.063 (1)	**-4.156 (20)**
	R&R	-0.053	-0.194	-0.428	-0.660	-1.091	-0.053 (1)	-1.091 (20)
	F&M	-0.021	-0.157	**-0.637**	**-1.013**	**-1.744**	-0.021 (1)	**-1.744 (20)**
54-86	Perotti	0.052	0.093	-0.324	-0.737	**-1.684**	0.120 (3)	**-1.684 (20)**
	P-313	0.033	-0.056	-0.504	-0.769	-1.679	0.033 (1)	-1.679 (20)
	R&R ***	-0.012	-0.007	-0.032	-0.064	-0.114	-0.006 (3)	-0.114 (20)
	F&M	0.197	**1.373**	**2.811**	2.513	1.673	**2.842 (9)**	0.197 (1)
86-07	Perotti	0.123	0.885	2.257	2.286	1.945	2.387 (9)	0.123 (1)
	P-313	0.091	0.262	0.979	0.848	0.784	0.994 (9)	0.091 (1)
	R&R *	-0.098	-0.866	-0.769	-0.691	0.025	0.025 (20)	-0.931 (6)

* Indicates the narrative shock is exogenous for at least 4 quarters (see text)

** Indicates the narrative shock is exogenous for at least 8 quarters (see text)

*** Indicates the narrative shock is exogenous for at least 12 Quarters (see text)

Underlined values indicate that zero falls outside of the 95th and 5th quantile

Bolded values indicate that zero lies outside of the 97.5th and 2.5th quantile

Table 5: Response of Various Interest Rates to Government Spending Shocks. 1954q3 to 2007q1
Government spending shocks equal to 1% of GDP. Definition of spending includes transfers.

F&G interest rate: Interest Payments/Treasury Debt

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	**-0.248**	-0.186	0.135	-0.113	-0.255	0.189 (7)	**-0.351 (2)**
	Perotti	**-0.249**	-0.210	0.119	-0.127	-0.297	0.161 (7)	**-0.368 (2)**
	Ramey **	0.000	0.000	0.000	0.000	0.000	0.000 (6)	-0.000 (2)
54-86	F&M	-0.304	0.143	0.176	-0.135	0.054	0.574 (6)	-0.304 (1)
	Perotti	-0.309	0.131	0.161	-0.131	0.050	0.548 (6)	-0.309 (1)
	Ramey **	0.000	0.000	0.000	0.000	0.000	-0.000 (15)	-0.000 (2)
86-07	F&M	0.000	0.004	0.014	0.018	0.006	0.018 (13)	0.000 (1)
	Perotti	0.000	0.004	0.012	0.016	0.002	0.016 (13)	-0.000 (2)
	Ramey	0.000	0.000	0.000	0.000	0.000	-0.000 (1)	-0.000 (20)

10-year Treasury Bond Yeild

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	0.000	0.000	-0.003	-0.013	-0.019	0.001 (2)	-0.019 (18)
	Perotti	0.000	0.002	0.002	-0.004	-0.005	0.003 (7)	-0.007 (17)
	Ramey ***	**0.000**	0.000	0.000	0.000	0.000	0.000 (20)	**0.000 (1)**
54-86	F&M	0.000	0.001	-0.006	-0.024	-0.043	0.001 (3)	-0.044 (19)
	Perotti	0.001	0.003	-0.001	-0.015	-0.036	0.004 (6)	-0.036 (20)
	Ramey ***	0.000	0.000	0.000	0.000	0.000	0.000 (7)	0.000 (1)
86-07	F&M	-0.002	-0.010	-0.011	-0.014	-0.007	-0.002 (1)	-0.015 (11)
	Perotti	-0.002	-0.008	-0.009	-0.013	-0.007	-0.002 (1)	-0.014 (11)
	Ramey ***	0.000	0.000	0.000	0.000	0.000	0.000 (4)	0.000 (1)

3-month Treasury Bill Yeild

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	-0.001	-0.005	-0.001	0.001	0.017	0.017 (20)	-0.005 (4)
	Perotti	-0.001	-0.001	0.006	0.012	0.031	0.031 (20)	-0.001 (4)
	Ramey ***	0.000	0.000	0.000	0.000	0.000	0.000 (20)	0.000 (1)
54-86	F&M	-0.002	-0.013	-0.022	-0.033	-0.044	-0.002 (1)	-0.047 (17)
	Perotti	-0.002	-0.010	-0.017	-0.028	-0.036	-0.002 (1)	-0.039 (17)
	Ramey ***	0.000	0.000	0.000	0.000	0.000	0.000 (7)	0.000 (20)
86-07	F&M	-0.001	-0.005	-0.006	-0.007	0.000	0.000 (20)	-0.009 (10)
	Perotti	0.000	-0.004	-0.005	-0.008	-0.002	-0.000 (1)	-0.009 (11)
	Ramey	0.000	0.000	0.000	0.000	0.000	0.000 (4)	-0.000 (14)

Federal Funds Rate

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	-0.006	-0.022	-0.024	-0.013	0.021	0.021 (20)	-0.024 (8)
	Perotti	-0.005	-0.018	-0.014	0.000	0.038	0.038 (20)	-0.018 (4)
	Ramey	0.000	0.000	0.000	0.000	0.000	0.000 (20)	0.000 (1)
54-86	F&M	-0.009	-0.038	-0.051	-0.055	-0.049	-0.009 (1)	-0.055 (9)
	Perotti	-0.008	-0.033	-0.044	-0.046	-0.041	-0.008 (1)	-0.046 (9)
	Ramey ***	0.000	0.000	0.000	0.000	0.000	0.000 (6)	-0.000 (18)
86-07	F&M	-0.001	-0.006	-0.010	-0.011	0.007	0.007 (20)	-0.012 (10)
	Perotti	-0.001	-0.005	-0.010	-0.012	0.004	0.004 (20)	-0.012 (10)
	Ramey	0.000	0.000	0.000	0.000	0.000	0.000 (5)	-0.000 (15)

* Indicates the narrative shock is exogenous for at least 4 quarters (see text)

** Indicates the narrative shock is exogenous for at least 8 quarters (see text)

*** Indicates the narrative shock is exogenous for at least 12 Quarters (see text)

Underlined values indicate that zero falls outside of the 95th and 5th quantile

Bolded values indicate that zero lies outside of the 97.5th and 2.5th quantile

Table 6: Response of Various Interest Rates to Government Spending Shocks 1954q3 to 1999q1. Government spending shocks equal to 1% of GDP. Definition of spending excludes transfers.

F&G interest rate: Interest Payments/Treasury Debt

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-99	F&M	**-0.301**	-0.241	-0.010	-0.141	-0.321	0.039 (9)	**-0.411 (2)**
	Perotti	**-0.310**	-0.259	-0.036	-0.162	-0.356	0.014 (9)	**-0.426 (2)**
	Ramey **	0.000	0.000	0.000	0.000	0.000	-0.000 (8)	-0.000 (2)
54-86	F&M	-0.311	0.112	0.084	-0.106	-0.080	0.370 (5)	-0.311 (1)
	Perotti	-0.317	0.106	0.073	-0.105	-0.077	0.371 (5)	-0.317 (10)
	Ramey **	0.000	0.000	0.000	0.000	0.000	-0.000 (6)	-0.000 (2)
86-99	F&M	-0.001	0.004	**0.029**	**0.061**	**0.140**	**0.140 (20)**	-0.002 (2)
	Perotti	-0.001	0.003	**0.028**	**0.058**	0.133	0.133 (20)	-0.002 (2)
	Ramey	**0.000**	0.000	0.000	0.000	0.000	0.000 (18)	**-0.000 (2)**

10-year Treasury Bond Yeild

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-99	F&M	0.001	0.003	0.003	-0.011	-0.037	0.005 (7)	-0.037 (20)
	Perotti	0.001	0.005	0.007	-0.004	-0.025	0.008 (7)	-0.025 (20)
	Ramey **	**0.000**	**0.000**	0.000	0.000	0.000	0.000 (20)	**0.000 (1)**
54-86	F&M	0.001	0.004	0.000	-0.024	-0.060	0.005 (6)	-0.060 (20)
	Perotti	0.001	0.005	0.003	-0.018	-0.055	0.007 (6)	-0.055 (20)
	Ramey ***	0.000	0.000	0.000	0.000	0.000	0.000 (6)	-0.000 (20)
86-99	F&M	-0.003	**-0.014**	**-0.039**	**-0.082**	**-0.379**	-0.003 (1)	**-0.379 (20)**
	Perotti	-0.003	-0.013	**-0.038**	**-0.081**	**-0.368**	-0.003 (1)	**-0.368 (20)**
	Ramey	0.000	0.000	0.000	0.000	0.000	0.000 (3)	-0.000 (20)

3-month Treasury Bill Yeild

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-99	F&M	0.000	-0.003	-0.001	-0.011	-0.023	0.004 (6)	-0.023 (20)
	Perotti	0.000	-0.001	0.005	-0.004	-0.013	0.008 (7)	-0.014 (16)
	Ramey ***	0.000	0.000	0.000	0.000	0.000	0.000 (20)	0.000 (1)
54-86	F&M	-0.002	-0.013	-0.017	-0.029	-0.044	-0.002 (1)	-0.044 (18)
	Perotti	-0.001	-0.010	-0.012	-0.024	-0.041	-0.001 (1)	-0.041 (20)
	Ramey ***	**0.000**	0.000	0.000	0.000	0.000	0.000 (6)	-0.000 (20)
86-99	F&M	**-0.005**	**-0.023**	**-0.056**	**-0.113**	**-0.376**	**-0.005 (1)**	**-0.376 (20)**
	Perotti	**-0.004**	**-0.023**	**-0.055**	**-0.112**	**-0.375**	**-0.004 (1)**	**-0.375 (20)**
	Ramey	0.000	**0.000**	0.000	0.000	0.000	0.000 (5)	-0.000 (18)

Federal Funds Rate

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-99	F&M	-0.004	-0.017	-0.018	-0.023	-0.038	-0.004 (1)	-0.038 (19)
	Perotti	-0.003	-0.013	-0.009	-0.014	-0.028	-0.003 (1)	-0.028 (20)
	Ramey ***	0.000	0.000	0.000	0.000	0.000	0.000 (7)	0.000 (1)
54-86	F&M	-0.005	-0.033	-0.045	-0.050	-0.043	-0.005 (1)	-0.050 (12)
	Perotti	-0.005	-0.030	-0.038	-0.041	-0.039	-0.005 (1)	-0.042 (11)
	Ramey ***	0.000	0.000	0.000	0.000	0.000	0.000 (2)	-0.000 (20)
86-99	F&M	-0.002	-0.017	**-0.052**	**-0.114**	**-0.313**	-0.002 (1)	**-0.313 (20)**
	Perotti	-0.002	-0.015	-0.050	**-0.112**	**-0.299**	-0.002 (1)	**-0.299 (20)**
	Ramey	0.000	0.000	0.000	0.000	0.000	0.000 (4)	-0.000 (19)

* Indicates the narrative shock is exogenous for at least 4 quarters (see text)

** Indicates the narrative shock is exogenous for at least 8 quarters (see text)

*** Indicates the narrative shock is exogenous for at least 12 Quarters (see text)

Underlined values indicate that zero falls outside of the 95th and 5th quantile

Bolded values indicate that zero lies outside of the 97.5th and 2.5th quantile

Table 7: Response of Various Interest Rates to Government Revenue Shocks 1954q3 to 2007q1. Government revenue shocks equal to 1% of GDP. Definition of revenue includes transfers.

F&G interest rate: Interest Payments/Treasury Debt

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	0.043	0.348	-0.321	0.075	0.290	0.398 (5)	-0.667 (6)
54-07	Perotti	0.043	0.328	-0.331	0.028	0.206	0.379 (5)	-0.696 (6)
	P-313	0.102	0.340	-0.210	0.000	0.057	0.345 (5)	-0.540 (6)
	R&R ***	0.001	0.001	0.000	0.001	0.001	0.001 (5)	-0.000 (6)
	F&M	-0.045	0.079	-0.425	0.168	-0.135	0.251 (5)	**-1.252 (6)**
54-86	Perotti	-0.036	0.059	-0.452	0.186	-0.169	0.253 (5)	**-1.334 (6)**
	P-313	0.062	0.162	-0.403	0.043	-0.158	0.268 (5)	-1.106 (6)
	R&R ***	0.001	0.001	0.001	0.001	0.001	0.001 (1)	0.000 (6)
	F&M	-0.002	-0.010	-0.016	-0.018	0.007	0.007 (20)	-0.018 (10)
86-07	Perotti	-0.002	-0.007	-0.008	-0.007	0.018	0.018 (20)	-0.009 (9)
	P-313	-0.002	-0.005	-0.003	-0.001	0.013	0.013 (20)	-0.005 (4)
	R&R	0.000	0.000	0.000	0.000	0.000	0.000 (19)	-0.000 (4)

10-year Treasury Bond Yeild

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	0.001	0.004	0.028	0.035	0.010	0.035 (11)	0.001 (1)
54-07	Perotti	0.001	0.007	0.034	0.049	0.034	0.050 (13)	0.001 (1)
	P-313	-0.002	-0.007	0.007	0.014	-0.007	0.014 (11)	-0.007 (4)
	R&R	**0.000**	**0.000**	0.000	0.000	0.000	**-0.000 (1)**	-0.000 (20)
	F&M	0.002	0.010	0.035	0.053	0.032	0.053 (12)	0.002 (1)
54-86	Perotti	0.003	0.016	0.054	0.082	0.070	0.085 (13)	0.003 (1)
	P-313	-0.001	-0.005	0.016	0.039	0.036	0.042 (15)	-0.005 (3)
	R&R	**0.000**	0.000	0.000	0.000	0.000	-0.000 (20)	-0.000 (6)
	F&M	0.001	-0.004	0.011	0.008	-0.001	0.012 (9)	-0.004 (4)
86-07	Perotti	0.000	-0.009	0.005	0.001	-0.003	0.005 (8)	-0.009 (4)
	P-313	-0.001	-0.009	0.002	-0.004	-0.004	0.002 (8)	-0.009 (4)
	R&R ***	**0.000**	0.000	0.000	0.000	0.000	**-0.000 (1)**	-0.000 (4)

3-month Treasury Bill Yeild

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	**0.004**	0.019	0.045	0.044	-0.005	0.050 (9)	-0.005 (20)
54-07	Perotti	0.004	0.020	0.047	0.054	0.009	0.057 (11)	0.004 (1)
	P-313	0.000	-0.010	-0.011	-0.009	-0.054	-0.000 (1)	-0.054 (20)
	R&R	**0.000**	**0.000**	0.000	0.000	0.000	**-0.000 (1)**	-0.000 (20)
	F&M	**0.008**	0.026	0.057	0.062	0.026	0.066 (10)	**0.008 (1)**
54-86	Perotti	**0.008**	0.033	0.072	0.087	0.045	0.087 (12)	**0.008 (1)**
	P-313	0.000	-0.009	0.009	0.027	0.008	0.029 (13)	-0.009 (4)
	R&R	**0.000**	0.000	0.000	0.000	0.000	-0.000 (20)	-0.000 (7)
	F&M	0.000	0.003	0.024	0.043	0.014	0.044 (13)	-0.000 (1)
86-07	Perotti	-0.002	-0.012	-0.005	0.017	0.006	0.021 (15)	-0.013 (6)
	P-313	-0.002	-0.018	-0.023	-0.007	-0.006	-0.001 (17)	-0.026 (7)
	R&R	0.000	0.000	0.000	0.000	0.000	0.000 (15)	-0.000 (6)

Table 7 continued…
Government revenue shocks equal to 1% of GDP. Definition of revenue includes transfers.

Federal Funds Rate

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	**0.005**	0.029	0.058	0.060	-0.004	0.063 (11)	-0.004 (20)
54-07	Perotti	0.006	0.034	0.065	0.072	0.014	0.075 (10)	0.006 (1)
	P-313	0.001	-0.007	-0.013	-0.012	-0.053	0.001 (1)	-0.053 (20)
	R&R	0.000	0.000	0.000	0.000	0.000	-0.000 (1)	-0.000 (20)
	F&M	**0.010**	**0.043**	0.078	0.082	0.031	0.088 (10)	**0.010 (1)**
54-86	Perotti	**0.010**	**0.054**	**0.101**	0.111	0.055	0.115 (11)	**0.010 (1)**
	P-313	0.002	0.000	0.021	0.040	0.012	0.042 (13)	-0.000 (4)
	R&R	0.000	0.000	0.000	0.000	0.000	0.000 (20)	-0.000 (6)
	F&M	0.001	0.009	0.033	0.061	0.030	0.061 (13)	0.001 (1)
86-07	Perotti	0.000	-0.004	0.006	0.032	0.022	0.038 (14)	-0.005 (5)
	P-313	0.000	-0.012	-0.015	0.003	0.004	0.010 (16)	-0.019 (6)
	R&R	0.000	0.000	0.000	0.000	0.000	-0.000 (1)	-0.000 (9)

* Indicates the narrative shock is exogenous for at least 4 quarters (see text)

** Indicates the narrative shock is exogenous for at least 8 quarters (see text)

*** Indicates the narrative shock is exogenous for at least 12 Quarters (see text)

Underlined values indicate that zero falls outside of the 95th and 5th quantile

Bolded values indicate that zero lies outside of the 97.5th and 2.5th quantile

Table 8: Response of the Federal Reserve to Government Spending Shocks. 1954q3 to 2007q1
Government spending shocks equal to 1% of GDP. Definition of spending includes transfers.

Federal Reserve: Total Assets

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	0.001	0.143	**0.450**	**0.815**	**1.458**	**1.458 (20)**	0.001 (1)
	Perotti	0.000	0.125	**0.391**	**0.701**	**1.185**	**1.185 (20)**	-0.000 (1)
	Ramey *	-0.005	-0.005	-0.006	-0.006	-0.004	-0.004 (20)	-0.007 (9)
54-86	F&M	-0.012	0.121	0.382	0.704	**1.169**	**1.169 (20)**	-0.012 (1)
	Perotti	-0.015	0.101	0.323	0.599	0.996	0.996 (20)	-0.015 (1)
	Ramey ***	**-0.012**	**-0.020**	-0.039	-0.053	-0.056	**-0.012 (1)**	-0.059 (17)
86-07	F&M	0.034	0.265	0.461	0.560	0.416	0.560 (12)	0.034 (1)
	Perotti	0.029	0.228	0.352	0.428	0.278	0.428 (12)	0.029 (1)
	Ramey	-0.002	0.008	0.004	-0.008	-0.028	0.008 (4)	-0.028 (20)

Federal Reserve: Treasury Securities

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	0.003	0.058	**0.378**	**0.787**	**1.542**	**1.542 (20)**	0.003 (1)
	Perotti	-0.002	0.036	0.309	**0.661**	**1.273**	**1.273 (20)**	-0.002 (1)
	Ramey	-0.001	-0.001	-0.001	0.001	0.009	0.009 (20)	-0.002 (3)
54-86	F&M	0.013	0.091	**0.498**	**1.001**	**1.987**	**1.987 (20)**	0.013 (1)
	Perotti	0.010	0.077	**0.450**	**0.920**	**1.864**	**1.864 (20)**	0.010 (1)
	Ramey *	**-0.011**	-0.013	-0.015	-0.004	0.032	0.032 (20)	-0.018 (7)
86-07	F&M	**-0.106**	-0.152	0.014	0.178	0.258	0.297 (16)	-0.174 (3)
	Perotti	**-0.113**	-0.177	-0.060	0.074	0.154	0.192 (18)	-0.199 (5)
	Ramey	-0.007	-0.019	-0.053	-0.073	-0.050	-0.007 (1)	-0.074 (13)

Federal Reserve: Federal Funds Assets

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	0.020	0.123	**0.450**	**0.818**	**1.510**	**1.510 (20)**	0.020 (1)
	Perotti	0.017	0.101	**0.387**	**0.708**	**1.269**	**1.269 (20)**	0.017 (1)
	Ramey *	-0.003	-0.004	0.000	0.007	0.023	0.023 (20)	-0.005 (3)
54-86	F&M	-0.001	0.077	0.381	**0.795**	**1.632**	**1.632 (20)**	-0.001 (1)
	Perotti	-0.004	0.059	0.338	**0.721**	**1.519**	**1.519 (20)**	-0.004 (1)
	Ramey ***	**-0.013**	-0.019	-0.025	-0.017	0.021	0.021 (20)	-0.027 (7)
86-07	F&M	0.044	0.296	0.587	0.713	0.543	0.713 (12)	0.044 (1)
	Perotti	0.035	0.260	0.470	0.579	0.418	0.579 (12)	0.035 (1)
	Ramey	-0.002	0.004	-0.021	-0.043	-0.056	0.006 (2)	-0.060 (17)

Federal Reserve: Loans to Domestic Banks

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	-0.002	-0.001	0.009	0.020	0.037	0.037 (20)	-0.003 (2)
	Perotti	-0.002	0.001	0.012	0.023	0.041	0.041 (20)	-0.003 (2)
	Ramey ***	-0.001	-0.001	0.000	0.000	0.000	0.000 (20)	-0.001 (2)
54-86	F&M	-0.011	-0.023	-0.036	-0.028	-0.012	-0.011 (1)	-0.036 (8)
	Perotti	-0.010	-0.021	-0.033	-0.025	-0.010	-0.009 (19)	-0.033 (8)
	Ramey ***	-0.003	-0.003	-0.003	-0.003	-0.002	-0.002 (18)	-0.004 (5)
86-07	F&M	0.000	0.001	-0.002	0.001	0.004	0.005 (18)	-0.002 (8)
	Perotti	0.000	0.001	-0.002	0.000	0.003	0.004 (18)	-0.002 (8)
	Ramey ***	0.000	0.000	0.000	0.000	0.000	0.000 (2)	-0.000 (8)

* Indicates the narrative shock is exogenous for at least 4 quarters (see text)

** Indicates the narrative shock is exogenous for at least 8 quarters (see text)

*** Indicates the narrative shock is exogenous for at least 12 Quarters (see text)

Underlined values indicate that zero falls outside of the 95th and 5th quantile

Bolded values indicate that zero lies outside of the 97.5th and 2.5th quantile

Table 9: Response of the Federal Reserve to Government Revenue Shocks 1954q3 to 1999q1. Government revenue shocks equal to 1% of GDP. Definition of revenue includes transfers.

Federal Reserve: Total Assets

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	-0.010	-0.140	**-0.469**	-0.688	-0.697	-0.010 (1)	-0.734 (15)
54-99	Perotti	-0.009	**-0.184**	**-0.612**	**-0.952**	-1.300	-0.009 (1)	-1.300 (20)
	P-313	0.008	-0.154	-0.453	-0.684	-0.967	0.008 (1)	-0.967 (20)
	R&R ***	-0.005	-0.024	-0.079	-0.143	-0.247	-0.005 (1)	-0.247 (20)
	F&M	-0.027	-0.125	**-0.471**	-0.803	-1.208	-0.027 (1)	-1.208 (20)
54-86	Perotti	-0.031	**-0.213**	**-0.708**	**-1.196**	**-1.817**	-0.031 (1)	**-1.817 (20)**
	P-313	-0.013	-0.166	**-0.523**	-0.850	-1.268	-0.013 (1)	-1.268 (20)
	R&R ***	-0.009	-0.038	-0.123	-0.206	-0.294	-0.009 (1)	-0.294 (20)
	F&M	0.026	-0.127	-0.064	-0.019	0.062	0.062 (20)	-0.127 (4)
86-99	Perotti	0.074	-0.098	0.073	0.232	0.366	0.366 (20)	-0.098 (4)
	P-313	0.113	-0.092	0.072	0.205	0.259	0.259 (20)	-0.092 (4)
	R&R ***	0.063	-0.023	-0.312	-0.641	-0.884	0.063 (1)	-0.884 (20)

Federal Reserve: Treasury Securities

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	-0.031	**-0.221**	**-0.522**	-0.688	-0.806	-0.031 (1)	-0.806 (20)
54-99	Perotti	**-0.046**	**-0.283**	**-0.687**	-1.000	-1.432	**-0.046 (1)**	-1.432 (20)
	P-313	-0.050	**-0.249**	-0.528	-0.789	-1.313	-0.050 (1)	-1.313 (20)
	R&R ***	0.001	-0.015	-0.084	-0.164	-0.309	0.001 (1)	-0.309 (20)
	F&M	**-0.054**	**-0.334**	**-0.737**	**-0.992**	**-1.478**	**-0.054 (1)**	**-1.478 (20)**
54-86	Perotti	**-0.066**	**-0.386**	**-0.918**	**-1.311**	**-2.045**	**-0.066 (1)**	**-2.045 (20)**
	P-313	**-0.067**	**-0.336**	**-0.773**	**-1.126**	**-1.888**	**-0.067 (1)**	**-1.888 (20)**
	R&R ***	-0.020	-0.057	-0.163	-0.262	-0.396	-0.020 (1)	-0.396 (20)
	F&M	0.028	0.009	-0.108	-0.272	-0.035	0.040 (3)	-0.309 (14)
86-99	Perotti	0.043	0.061	-0.012	-0.053	0.348	0.348 (20)	-0.060 (14)
	P-313	0.043	0.072	-0.015	-0.098	0.119	0.119 (20)	-0.140 (14)
	R&R ***	-0.068	-0.232	-0.477	-0.564	-0.518	-0.068 (1)	-0.608 (13)

Federal Reserve: Federal Funds Assets

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	-0.034	**-0.243**	**-0.628**	-0.845	-0.945	-0.034 (1)	-0.945 (20)
54-99	Perotti	-0.040	**-0.285**	**-0.765**	**-1.117**	-1.634	-0.040 (1)	-1.634 (20)
	P-313	-0.025	-0.211	-0.567	-0.895	-1.473	-0.025 (1)	-1.473 (20)
	R&R ***	-0.005	-0.031	-0.093	-0.148	-0.219	-0.005 (1)	-0.219 (20)
	F&M	**-0.071**	**-0.332**	**-0.868**	**-1.224**	**-1.823**	**-0.071 (1)**	**-1.823 (20)**
54-86	Perotti	**-0.078**	**-0.392**	**-1.017**	**-1.505**	**-2.352**	**-0.078 (1)**	**-2.352 (20)**
	P-313	**-0.061**	**-0.301**	**-0.816**	**-1.275**	**-2.192**	**-0.061 (1)**	**-2.192 (20)**
	R&R ***	-0.017	-0.057	-0.144	-0.222	-0.330	-0.017 (1)	-0.330 (20)
	F&M	0.058	-0.097	-0.040	-0.109	0.195	0.195 (20)	-0.109 (12)
86-99	Perotti	**0.144**	-0.052	0.186	0.269	0.634	0.634 (20)	-0.052 (4)
	P-313	**0.183**	-0.017	0.225	0.300	0.521	0.521 (20)	-0.017 (4)
	R&R ***	-0.009	-0.160	-0.497	-0.672	-0.660	-0.009 (1)	-0.672 (12)

Table 9 continued…
Government revenue shocks equal to 1% of GDP. Definition of revenue includes transfers.

Federal Reserve: Loans to Domestic Banks

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	0.008	0.019	0.015	0.008	-0.012	0.019 (4)	-0.012 (20)
54-99	Perotti	0.009	0.021	0.018	0.013	0.001	0.021 (4)	0.001 (20)
	P-313	0.000	-0.002	-0.011	-0.009	-0.018	0.002 (2)	-0.018 (20)
	R&R ***	-0.006	-0.006	-0.006	-0.009	-0.014	-0.005 (2)	-0.014 (20)
	F&M	0.018	0.034	0.033	0.024	0.023	0.034 (4)	0.018 (1)
54-86	Perotti	**0.019**	0.039	0.033	0.029	0.025	0.039 (4)	**0.019 (1)**
	P-313	0.007	0.008	-0.001	-0.002	-0.003	0.010 (2)	-0.007 (7)
	R&R ***	-0.009	-0.005	-0.003	-0.004	-0.008	-0.003 (8)	-0.009 (1)
	F&M	0.005	0.014	0.016	0.008	0.005	0.017 (9)	-0.001 (16)
86-99	Perotti	0.004	0.012	0.016	0.009	0.004	0.017 (9)	-0.001 (16)
	P-313	0.002	0.007	0.013	0.008	0.002	0.014 (9)	-0.002 (16)
	R&R ***	0.014	0.004	-0.009	-0.005	0.001	0.014 (1)	-0.009 (8)

* Indicates the narrative shock is exogenous for at least 4 quarters (see text)

** Indicates the narrative shock is exogenous for at least 8 quarters (see text)

*** Indicates the narrative shock is exogenous for at least 12 Quarters (see text)

Underlined values indicate that zero falls outside of the 95th and 5th quantile

Bolded values indicate that zero lies outside of the 97.5th and 2.5th quantile

Table 10: Response of the Federal Reserve to Government Revenue Shocks 1954q3 to 1999q1. Government revenue shocks equal to 1% of GDP. Definition of revenue excludes transfers.

Federal Reserve: Total Assets

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	0.018	-0.126	**-0.422**	-0.617	-0.462	0.018 (1)	-0.628 (14)
54-99	Perotti	0.011	-0.179	**-0.627**	**-0.976**	-1.189	0.011 (1)	-1.213 (19)
	P-313	0.023	-0.174	**-0.545**	-0.846	-1.001	0.023 (1)	-1.006 (19)
	R&R ***	0.001	-0.021	-0.076	-0.137	-0.244	0.001 (1)	-0.244 (20)
	F&M	-0.003	-0.132	**-0.538**	**-0.976**	**-1.506**	-0.003 (1)	**-1.506 (20)**
54-86	Perotti	-0.017	**-0.231**	**-0.779**	**-1.350**	**-2.022**	-0.017 (1)	**-2.022 (20)**
	P-313	0.000	**-0.206**	**-0.646**	**-1.080**	**-1.596**	0.000 (1)	**-1.596 (20)**
	R&R ***	-0.004	-0.040	-0.124	-0.215	-0.321	-0.004 (1)	-0.321 (19)
	F&M	**0.098**	0.116	**0.464**	**1.000**	**2.703**	**2.703 (20)**	0.073 (2)
86-99	Perotti	**0.148**	0.167	**0.634**	**1.262**	**3.080**	**3.080 (20)**	0.124 (2)
	P-313	**0.180**	0.180	**0.656**	**1.302**	**3.287**	**3.287 (20)**	0.157 (2)
	R&R ***	0.143	0.079	0.244	0.699	3.531	3.531 (20)	0.079 (4)

Federal Reserve: Treasury Securities

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	-0.009	-0.168	-0.438	-0.545	-0.452	-0.009 (1)	-0.555 (15)
54-99	Perotti	-0.030	**-0.244**	**-0.659**	-0.973	-1.242	-0.030 (1)	-1.242 (20)
	P-313	-0.034	**-0.241**	**-0.610**	-0.905	-1.244	-0.034 (1)	-1.244 (20)
	R&R ***	0.007	-0.001	-0.055	-0.129	-0.268	0.008 (2)	-0.268 (20)
	F&M	-0.036	**-0.304**	**-0.749**	**-1.063**	**-1.669**	-0.036 (1)	**-1.669 (20)**
54-86	Perotti	**-0.056**	**-0.389**	**-0.980**	**-1.461**	**-2.376**	**-0.056 (1)**	**-2.376 (20)**
	P-313	**-0.065**	**-0.400**	**-0.961**	**-1.471**	**-2.441**	**-0.065 (1)**	**-2.441 (20)**
	R&R ***	-0.017	-0.062	**-0.184**	**-0.307**	-0.519	-0.017 (1)	-0.519 (20)
	F&M	0.040	0.164	0.500	0.872	1.122	**1.279 (17)**	0.040 (1)
86-99	Perotti	0.058	0.239	0.735	1.206	0.929	1.418 (15)	0.058 (1)
	P-313	0.059	0.256	0.773	1.294	1.275	**1.607 (17)**	0.059 (1)
	R&R ***	-0.028	-0.169	-0.212	-0.052	-0.190	0.021 (14)	-0.266 (7)

Federal Reserve: Federal Funds Assets

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	-0.009	-0.218	**-0.605**	-0.819	-0.792	-0.009 (1)	-0.876 (15)
54-99	Perotti	-0.020	**-0.280**	**-0.795**	**-1.166**	-1.511	-0.020 (1)	-1.511 (20)
	P-313	-0.014	**-0.243**	**-0.679**	**-1.078**	-1.564	-0.014 (1)	-1.564 (20)
	R&R ***	-0.002	-0.023	-0.076	-0.114	-0.173	-0.002 (1)	-0.173 (20)
	F&M	-0.033	**-0.262**	**-0.795**	**-1.194**	**-1.831**	-0.033 (1)	**-1.831 (20)**
54-86	Perotti	**-0.055**	**-0.376**	**-1.052**	**-1.604**	**-2.476**	**-0.055 (1)**	**-2.476 (20)**
	P-313	-0.050	**-0.344**	**-0.970**	**-1.538**	**-2.548**	-0.050 (1)	**-2.548 (20)**
	R&R ***	-0.013	-0.057	-0.151	-0.247	-0.438	-0.013 (1)	-0.438 (20)
	F&M	**0.148**	**0.299**	**0.911**	**1.704**	**3.405**	**3.405 (20)**	**0.148 (1)**
86-99	Perotti	**0.180**	0.342	**1.085**	**1.962**	**3.422**	**3.449 (19)**	**0.180 (1)**
	P-313	**0.211**	0.372	**1.136**	**1.999**	**3.764**	**3.764 (20)**	**0.211 (1)**
	R&R ***	0.027	-0.064	0.028	0.440	1.741	1.741 (20)	-0.064 (4)

Table 10 continued…
Government revenue shock equal to 1% of GDP. Definition of revenue excludes transfers.

Federal Reserve: Loans to Domestic Banks

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	0.007	0.013	0.009	-0.001	-0.027	0.013 (4)	-0.027 (20)
54-99	Perotti	0.008	0.018	0.018	0.011	-0.016	0.018 (8)	-0.016 (20)
	P-313	0.002	-0.001	-0.011	-0.016	-0.042	0.002 (1)	-0.042 (20)
	R&R ***	-0.005	-0.005	-0.006	-0.007	-0.014	-0.004 (2)	-0.014 (20)
	F&M	0.011	0.022	0.028	0.026	0.020	0.028 (9)	0.002 (3)
54-86	Perotti	**0.017**	0.036	0.041	0.040	0.030	0.041 (8)	0.015 (3)
	P-313	0.008	0.012	0.017	0.016	0.008	0.017 (8)	-0.004 (3)
	R&R ***	-0.007	-0.003	0.000	-0.001	-0.006	-0.000 (8)	-0.007 (1)
	F&M	0.003	0.017	**0.032**	**0.042**	**0.085**	**0.085 (20)**	0.003 (1)
86-99	Perotti	0.003	0.018	**0.033**	**0.044**	0.100	0.100 (20)	0.003 (1)
	P-313	0.001	0.014	**0.033**	**0.049**	**0.114**	**0.114 (20)**	0.001 (1)
	R&R ***	0.012	0.007	0.017	0.042	0.139	0.139 (20)	0.006 (3)

* Indicates the narrative shock is exogenous for at least 4 quarters (see text)

** Indicates the narrative shock is exogenous for at least 8 quarters (see text)

*** Indicates the narrative shock is exogenous for at least 12 Quarters (see text)

Underlined values indicate that zero falls outside of the 95th and 5th quantile

Bolded values indicate that zero lies outside of the 97.5th and 2.5th quantile

Table 11: Response of Net Liabilites and Assets to Government Spending Shocks. 1954q3 to 2007q1
Government spending shocks equal to 1% of GDP. Definiton of spending includes transfers.

Households: Net Assets

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	-1.213	1.241	2.113	2.774	-2.748	2.774 (12)	-2.748 (20)
	Perotti	-1.481	-0.488	-1.488	-2.062	-9.072	-0.488 (4)	-9.072 (20)
	Ramey ***	-0.123	-0.440	-0.817	-0.813	-1.062	-0.123 (1)	-1.062 (20)
54-86	F&M	-0.880	5.614	17.203	23.285	24.753	24.753 (20)	-0.880 (1)
	Perotti	-1.049	4.366	14.701	19.930	20.498	20.498 (20)	-1.225 (2)
	Ramey ***	-0.060	0.120	0.697	1.009	1.477	1.477 (20)	-0.123 (2)
86-07	F&M	-3.958	-12.135	-40.808	-45.795	-23.377	-3.958 (1)	-45.795 (12)
	Perotti	-4.662	-15.032	-45.839	-53.512	-30.547	-4.662 (1)	-53.593 (13)
	Ramey ***	-0.397	-2.283	-6.755	-9.309	-7.642	-0.397 (1)	-9.704 (15)

Business: Net Liabilities

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	0.253	0.730	1.308	2.180	4.666	4.666 (20)	0.239 (2)
	Perotti	0.246	0.705	1.247	2.168	4.707	4.707 (20)	0.224 (2)
	Ramey ***	0.031	0.112	0.197	0.280	0.510	0.510 (20)	0.031 (1)
54-86	F&M	0.115	0.169	0.087	0.068	0.906	0.906 (20)	-0.038 (11)
	Perotti	0.094	0.098	0.060	0.054	0.777	0.777 (20)	-0.068 (11)
	Ramey ***	**0.067**	0.104	0.146	0.195	0.282	0.282 (20)	**0.067 (1)**
86-07	F&M	-0.045	-1.855	**-4.865**	-4.918	-8.084	-0.045 (1)	-8.084 (20)
	Perotti	-0.021	-1.774	-4.557	-4.256	-6.983	-0.021 (1)	-6.983 (20)
	Ramey ***	-0.012	0.012	0.008	-0.037	-0.227	0.025 (9)	-0.227 (20)

Financial Business: Net Assets

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	-0.033	0.155	0.308	0.515	0.693	0.792 (18)	-0.033 (1)
	Perotti	-0.046	0.140	0.247	0.366	0.309	0.476 (14)	-0.056 (2)
	Ramey ***	0.016	0.034	0.031	0.013	0.001	0.042 (5)	0.001 (20)
54-86	F&M	-0.064	0.107	0.362	0.859	1.497	1.497 (20)	-0.064 (1)
	Perotti	-0.075	0.119	0.329	0.706	1.273	1.273 (20)	-0.075 (1)
	Ramey ***	0.031	0.059	0.063	0.062	0.116	0.116 (20)	0.031 (1)
86-07	F&M	0.292	0.254	-0.721	-0.893	-1.139	0.414 (3)	-1.139 (20)
	Perotti	0.268	0.251	-0.697	-0.911	-1.167	0.393 (3)	-1.167 (20)
	Ramey ***	0.064	0.141	0.136	0.089	0.037	0.172 (6)	0.036 (19)

* Indicates the narrative shock is exogenous for at least 4 quarters (see text)

** Indicates the narrative shock is exogenous for at least 8 quarters (see text)

*** Indicates the narrative shock is exogenous for at least 12 Quarters (see text)

Underlined values indicate that zero falls outside of the 95th and 5th quantile

Bolded values indicate that zero lies outside of the 97.5th and 2.5th quantile

Table 12: Response of Net Liabilites and Assets to Government Spending Shocks. 1954q3 to 20071
Government spending shocks equal to 1% of GDP. Definiton of spending excludes transfers.

Households: Net Assets

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	-1.166	1.383	5.533	10.336	12.422	12.949 (18)	-1.486 (2)
	Perotti	-1.355	0.327	2.900	6.291	7.763	8.542 (17)	-1.959 (2)
	Ramey ***	-0.134	-0.456	-0.775	-0.828	-1.004	-0.134 (1)	-1.004 (20)
54-86	F&M	-0.71	6.439	**25.219**	**39.244**	**46.686**	**46.686 (20)**	-0.710 (1)
	Perotti	-0.876	5.653	**23.948**	**37.471**	**44.030**	**44.030 (20)**	-0.876 (1)
	Ramey ***	0.030	0.354	1.251	1.946	3.089	3.089 (20)	0.008 (2)
86-07	F&M	-1.511	-1.587	-34.824	-48.227	-39.898	2.978 (3)	-51.969 (14)
	Perotti	-1.949	-3.893	-36.931	-50.875	-44.073	1.760 (3)	-55.510 (14)
	Ramey ***	-0.227	-1.988	-5.166	-7.48	-6.536	-0.227 (1)	-7.879 (15)

Business: Net Liabilities

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	0.234	0.552	0.472	0.889	2.236	2.236 (20)	0.185 (2)
	Perotti	0.227	0.532	0.441	0.827	2.414	2.414 (20)	0.173 (2)
	Ramey ***	0.043	0.145	0.241	0.330	0.564	0.564 (20)	0.043 (1)
54-86	F&M	0.183	0.430	0.468	0.266	0.839	0.839 (20)	0.103 (2)
	Perotti	0.163	0.376	0.427	0.143	0.685	0.685 (20)	0.082 (2)
	Ramey ***	**0.064**	0.125	0.188	0.248	0.391	0.391 (20)	**0.064 (1)**
86-07	F&M	0.385	-0.383	-2.945	-2.356	-1.584	0.385 (1)	-3.069 (7)
	Perotti	0.407	-0.278	-2.684	-1.938	-0.824	0.407 (1)	-2.808 (7)
	Ramey ***	-0.085	-0.052	-0.136	-0.306	-0.398	-0.052 (4)	-0.439 (18)

Financial Business: Net Assets

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	-0.039	0.109	0.476	0.862	1.426	1.426 (20)	-0.039 (1)
	Perotti	-0.045	0.103	0.444	0.758	1.156	1.156 (20)	-0.045 (1)
	Ramey ***	0.019	0.035	0.039	0.031	0.042	0.045 (5)	0.019 (1)
54-86	F&M	-0.063	0.034	0.448	0.990	1.649	1.649 (20)	-0.063 (1)
	Perotti	-0.071	0.036	0.427	0.909	1.517	1.517 (20)	-0.071 (1)
	Ramey ***	0.036	0.059	0.083	0.111	0.205	0.205 (20)	0.036 (1)
86-07	F&M	0.394	0.769	0.281	-0.065	-0.621	0.825 (5)	-0.621 (20)
	Perotti	0.377	0.752	0.297	-0.062	-0.627	0.816 (5)	-0.627 (20)
	Ramey	**0.076**	0.185	0.244	0.226	0.147	0.260 (7)	**0.076 (1)**

* Indicates the narrative shock is exogenous for at least 4 quarters (see text)

** Indicates the narrative shock is exogenous for at least 8 quarters (see text)

*** Indicates the narrative shock is exogenous for at least 12 Quarters (see text)

Underlined values indicate that zero falls outside of the 95th and 5th quantile

Bolded values indicate that zero lies outside of the 97.5th and 2.5th quantile

Table 13: Response of Net Liabilites and Assets to Government Revenue Shocks 1954q3 to 2007q1. Government revenue shocks equal to 1% of GDP. Definition of revenue includes transfers.

Households: Net Assets

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	1.688	**12.680**	21.969	13.756	-2.341	22.046 (7)	-2.341 (20)
54-07	Perotti	1.052	9.838	17.756	7.625	-10.297	18.534 (7)	-10.297 (20)
	P-313	0.320	8.459	18.611	12.363	1.795	18.611 (8)	0.320 (1)
	R&R	0.436	2.710	5.188	4.648	3.792	5.188 (8)	0.436 (1)
	F&M	-0.786	0.305	-4.209	-14.465	-18.199	0.305 (4)	-18.785 (18)
54-86	Perotti	-1.747	-3.747	-12.139	-25.348	-32.952	-1.747 (1)	-32.952 (20)
	P-313	**-2.072**	-3.910	-10.327	-22.803	-29.674	**-2.072 (1)**	-29.674 (20)
	R&R	-0.136	-1.208	-2.210	-2.706	-3.171	-0.136 (1)	-3.171 (20)
	F&M	**14.313**	**55.755**	**91.488**	**112.937**	**103.457**	**115.189 (13)**	**14.313 (1)**
86-07	Perotti	**14.411**	**54.601**	**89.947**	**110.489**	103.024	113.809 (14)	**14.411 (1)**
	P-313	10.739	38.302	59.560	72.637	66.592	74.612 (17)	10.739 (1)
	R&R	2.437	13.157	33.511	47.848	50.115	55.816 (17)	2.437 (1)

Business: Net Liabilities

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	-0.066	-1.354	-1.037	0.400	2.873	2.873 (20)	-1.513 (5)
54-07	Perotti	-0.053	-1.441	-1.380	0.024	2.325	2.325 (20)	-1.633 (5)
	P-313	0.082	-1.611	-2.737	-3.036	-3.142	0.082 (1)	-3.185 (18)
	R&R	0.232	0.451	1.052	1.660	2.919	2.919 (20)	0.232 (1)
	F&M	0.064	-0.575	-1.185	-2.226	-4.316	0.064 (1)	-4.316 (20)
54-86	Perotti	-0.006	-0.835	-1.436	-2.654	-5.014	-0.006 (1)	-5.014 (20)
	P-313	-0.016	**-1.426**	**-2.967**	**-4.668**	**-8.092**	-0.016 (1)	**-8.092 (20)**
	R&R	0.069	0.232	0.419	0.547	0.734	0.734 (20)	0.069 (1)
	F&M	0.191	-1.872	**-4.754**	-1.919	4.951	4.951 (20)	**-4.754 (8)**
86-07	Perotti	-0.107	-2.233	-3.981	-1.856	1.951	2.039 (19)	-3.981 (8)
	P-313	-0.287	-2.149	-2.320	0.566	2.555	2.834 (17)	-2.529 (6)
	R&R	0.161	-0.841	-1.104	1.411	3.639	3.908 (18)	-1.104 (8)

Financial Business: Net Assets

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	-0.062	0.028	0.017	-0.576	-1.141	0.163 (6)	-1.276 (18)
54-07	Perotti	-0.085	-0.017	-0.039	-0.804	-1.653	0.126 (6)	-1.746 (19)
	P-313	-0.157	-0.170	0.095	-0.171	-0.557	0.101 (9)	-0.678 (18)
	R&R	-0.043	-0.012	0.143	0.306	0.529	0.529 (20)	-0.043 (1)
	F&M	-0.143	-0.368	-0.639	-1.277	-2.323	-0.108 (2)	-2.323 (20)
54-86	Perotti	-0.181	-0.379	-0.690	-1.496	-2.967	-0.173 (2)	-2.967 (20)
	P-313	-0.240	-0.443	-0.282	-0.622	-1.783	-0.221 (9)	-1.783 (20)
	R&R	-0.055	-0.069	0.085	0.266	0.108	0.283 (15)	-0.103 (5)
	F&M	0.125	0.753	1.098	0.744	-0.468	1.126 (10)	-0.468 (20)
86-07	Perotti	0.068	0.092	-0.236	-0.591	-1.410	0.262 (2)	-1.421 (19)
	P-313	-0.020	-0.289	-0.856	-1.192	-1.816	0.098 (2)	-1.885 (19)
	R&R ***	**-0.547**	**-1.548**	-2.250	-2.411	-2.449	**-0.547 (1)**	-2.563 (17)

* Indicates the narrative shock is exogenous for at least 4 quarters (see text)

** Indicates the narrative shock is exogenous for at least 8 quarters (see text)

*** Indicates the narrative shock is exogenous for at least 12 Quarters (see text)

Underlined values indicate that zero falls outside of the 95th and 5th quantile

Bolded values indicate that zero lies outside of the 97.5th and 2.5th quantile

Table 14: Response of Net Liabilites and Assets to Government Revenue Shocks 1954q3 to 1999q1. Government revenue shocks equal to 1% of GDP. Definition of revenue includes transfers.

Households: Net Assets

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	0.604	7.511	12.820	13.178	26.560	26.560 (20)	0.604 (1)
54-99	Perotti	-0.407	2.873	3.627	-0.187	7.050	7.050 (20)	-0.691 (14)
	P-313	-1.163	0.797	2.540	-1.531	6.207	6.207 (20)	-2.103 (14)
	R&R	-0.207	-1.184	-1.994	-2.415	-3.123	-0.207 (1)	-3.123 (20)
	F&M	-0.788	0.307	-4.204	-14.471	-18.199	0.307 (4)	-18.782 (18)
54-86	Perotti	-1.747	-3.750	-12.143	-25.353	-32.948	-1.747 (1)	-32.948 (20)
	P-313	**-2.071**	-3.909	-10.328	-22.815	-29.681	**-2.071 (1)**	-29.681 (20)
	R&R	-0.136	-1.209	-2.210	-2.705	-3.169	-0.136 (1)	-3.169 (20)
	F&M	1.808	-5.522	-3.704	-0.958	9.399	9.399 (20)	-7.438 (5)
86-99	Perotti	5.364	2.682	9.434	17.252	30.183	31.072 (19)	1.753 (5)
	P-313	2.835	-3.383	1.398	4.475	8.515	8.520 (19)	-4.761 (5)
	R&R ***	-7.535	-19.710	-33.527	-44.150	-70.926	-7.360 (2)	-70.926 (20)

Business: Net Liabilities

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	0.024	-1.039	-1.916	-3.599	-5.766	0.024 (1)	-5.766 (20)
54-99	Perotti	-0.002	-1.261	-2.396	-4.372	-6.947	-0.002 (1)	-6.947 (20)
	P-313	0.081	-1.774	**-4.534**	**-7.425**	-12.345	0.081 (1)	-12.345 (20)
	R&R	0.200	0.560	0.971	1.356	2.142	2.142 (20)	0.200 (1)
	F&M	0.064	-0.576	-1.185	-2.226	-4.316	0.064 (1)	-4.316 (20)
54-86	Perotti	-0.006	-0.835	-1.436	-2.654	-5.012	-0.006 (1)	-5.012 (20)
	P-313	-0.016	**-1.426**	**-2.967**	**-4.667**	**-8.091**	-0.016 (1)	**-8.091 (20)**
	R&R	0.069	0.232	0.419	0.548	0.733	0.733 (20)	0.069 (1)
	F&M	-0.132	1.468	**2.950**	**3.288**	**6.974**	**6.974 (20)**	-0.132 (1)
86-99	Perotti	0.149	**2.695**	2.892	2.952	6.899	**7.060 (18)**	0.149 (1)
	P-313	0.132	**2.722**	2.402	2.062	5.943	**7.163 (17)**	0.132 (1)
	R&R ***	-0.269	0.781	6.381	-3.692	10.527	10.591 (19)	-6.534 (14)

Financial Business: Net Assets

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	-0.110	-0.235	-0.448	-0.840	-1.037	-0.026 (3)	-1.232 (17)
54-99	Perotti	-0.143	-0.274	-0.503	-1.086	-1.932	-0.091 (3)	-1.996 (19)
	P-313	-0.199	-0.365	-0.265	-0.406	-0.776	-0.199 (1)	-0.911 (18)
	R&R	-0.046	-0.056	0.081	0.311	0.477	0.489 (18)	-0.078 (5)
	F&M	-0.143	-0.368	-0.639	-1.277	-2.323	-0.108 (2)	-2.323 (20)
54-86	Perotti	-0.181	-0.379	-0.690	-1.496	-2.967	-0.173 (2)	-2.967 (20)
	P-313	-0.240	-0.443	-0.282	-0.622	-1.783	-0.221 (9)	-1.783 (20)
	R&R	-0.055	-0.069	0.085	0.266	0.108	0.283 (15)	-0.103 (5)
	F&M	-0.079	-0.483	-0.386	-0.459	0.026	0.026 (20)	-0.696 (5)
86-99	Perotti	-0.052	-0.523	-0.367	-0.412	0.099	0.099 (20)	-0.750 (15)
	P-313	-0.122	-0.529	-0.176	-0.423	-0.551	-0.119 (2)	-0.875 (15)
	R&R ***	**-1.089**	-1.636	-1.626	-2.515	-4.090	**-1.089 (1)**	-4.090 (20)

* Indicates the narrative shock is exogenous for at least 4 quarters (see text)

** Indicates the narrative shock is exogenous for at least 8 quarters (see text)

*** Indicates the narrative shock is exogenous for at least 12 Quarters (see text)

Underlined values indicate that zero falls outside of the 95th and 5th quantile

Bolded values indicate that zero lies outside of the 97.5th and 2.5th quantile

Table 15: Response of Household Assets to Government Spending Shocks. 1954q3 to 2007q1
Government spending shocks equal to 1% of GDP. Definiton of spending includes transfers.

Households: Total Currency and Deposits

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	0.136	**1.479**	**4.548**	**8.201**	**15.239**	**15.239 (20)**	0.136 (1)
	Perotti	0.108	1.271	**3.986**	**7.531**	**14.392**	**14.392 (20)**	0.108 (1)
	Ramey ***	-0.014	-0.019	0.034	0.142	0.456	0.456 (20)	-0.024 (3)
54-86	F&M	0.179	**1.503**	**3.850**	**6.360**	**10.903**	**10.903 (20)**	0.179 (1)
	Perotti	0.160	**1.351**	3.469	5.637	9.973	9.973 (20)	0.160 (1)
	Ramey ***	0.010	0.089	0.231	0.373	0.831	0.831 (20)	0.010 (1)
86-07	F&M	0.088	1.266	**4.002**	**6.422**	11.676	11.676 (20)	0.088 (1)
	Perotti	0.060	1.151	**3.878**	**6.025**	10.488	10.488 (20)	0.060 (1)
	Ramey	-0.044	0.028	0.000	-0.214	-0.451	0.028 (4)	-0.453 (18)

Households: Total Checkable Deposits and Currency

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	0.067	0.512	1.284	2.177	3.973	3.973 (20)	0.067 (1)
	Perotti	0.057	0.454	1.147	1.964	3.733	3.733 (20)	0.057 (1)
	Ramey ***	**-0.026**	-0.078	-0.154	-0.210	-0.286	**-0.026 (1)**	-0.286 (20)
54-86	F&M	0.005	0.053	0.142	0.473	1.123	1.123 (20)	-0.021 (3)
	Perotti	-0.003	-0.005	0.003	0.237	0.850	0.850 (20)	-0.063 (3)
	Ramey ***	**-0.034**	**-0.085**	-0.131	-0.130	-0.035	**-0.034 (1)**	-0.139 (9)
86-07	F&M	-0.224	-0.708	-1.365	-1.892	-2.563	-0.224 (1)	-2.694 (19)
	Perotti	-0.232	-0.719	-1.354	-1.692	-2.141	-0.232 (1)	-2.280 (15)
	Ramey ***	**-0.047**	-0.035	-0.032	-0.055	-0.143	-0.032 (8)	-0.147 (19)

Households: Total Savings and Time Deposits

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	0.048	0.840	2.993	5.974	12.472	12.472 (20)	0.048 (1)
	Perotti	0.028	0.710	2.599	5.298	11.770	11.770 (20)	0.028 (1)
	Ramey ***	0.023	0.132	0.383	0.693	1.385	1.385 (20)	0.023 (1)
54-86	F&M	0.001	0.900	2.499	4.165	6.627	6.627 (20)	0.001 (1)
	Perotti	-0.011	0.817	2.252	3.711	6.101	6.101 (20)	-0.011 (1)
	Ramey ***	**0.040**	**0.214**	**0.472**	**0.752**	**1.557**	**1.557 (20)**	**0.040 (1)**
86-07	F&M	0.234	0.726	**2.893**	**5.226**	**10.358**	**10.358 (20)**	0.196 (2)
	Perotti	0.232	0.677	**2.815**	**5.073**	**9.495**	**9.495 (20)**	0.182 (2)
	Ramey	-0.039	-0.097	-0.163	-0.227	-0.185	-0.039 (1)	-0.253 (15)

Households: Credit Market Insturments, Assets

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	-0.131	-0.436	-0.499	-0.029	-0.096	0.148 (15)	-0.499 (8)
	Perotti	-0.128	-0.417	-0.545	-0.195	-0.403	-0.047 (14)	-0.545 (8)
	Ramey ***	0.011	0.053	0.125	0.218	0.347	0.347 (20)	0.011 (1)
54-86	F&M	-0.039	0.162	0.899	1.895	2.452	2.506 (17)	-0.039 (1)
	Perotti	-0.035	0.159	0.867	1.780	2.297	2.379 (18)	-0.035 (1)
	Ramey ***	-0.005	-0.011	0.029	0.086	0.148	0.148 (20)	-0.012 (3)
86-07	F&M	-0.394	-1.282	-2.579	-1.154	0.848	0.848 (20)	-2.822 (7)
	Perotti	-0.360	-1.169	-2.548	-0.886	1.833	1.833 (20)	-2.770 (7)
	Ramey ***	0.033	0.190	0.311	0.580	0.867	0.867 (20)	0.033 (1)

Table 15 continued
Government spending shocks equal to 1% of GDP. Definiton of spending includes transfers.

Households: Corporate Equities

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	-1.005	0.175	1.162	2.465	-2.667	2.465 (12)	-2.667 (20)
	Perotti	-1.193	-0.842	-0.601	-0.572	-7.201	-0.525 (11)	-7.201 (20)
	Ramey	-0.175	-0.633	-1.062	-1.236	-1.783	-0.175 (1)	-1.783 (20)
54-86	F&M	-0.939	2.620	10.176	14.007	14.665	14.665 (20)	-1.114 (2)
	Perotti	-1.056	1.881	8.692	11.950	12.116	12.116 (20)	-1.378 (2)
	Ramey ***	-0.084	-0.054	0.279	0.532	0.701	0.701 (20)	-0.169 (2)
86-07	F&M	-1.031	-4.056	-20.547	-22.235	-13.860	-0.963 (2)	-22.338 (10)
	Perotti	-1.483	-5.344	-23.066	-25.238	-16.016	-1.483 (1)	-25.780 (10)
	Ramey ***	-0.317	-1.477	-3.564	-4.650	-3.915	-0.317 (1)	-4.721 (13)

Households: Mutual Fund Shares

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	-0.045	0.132	0.308	0.541	-0.047	0.541 (12)	-0.047 (20)
	Perotti	-0.059	0.061	0.130	0.261	-0.497	0.261 (12)	-0.497 (20)
	Ramey ***	-0.012	-0.037	-0.051	-0.045	-0.052	-0.012 (1)	-0.052 (7)
54-86	F&M	-0.059	0.042	0.028	-0.302	-1.649	0.042 (4)	-1.649 (20)
	Perotti	-0.067	-0.003	-0.066	-0.457	-1.905	-0.003 (4)	-1.905 (20)
	Ramey ***	-0.007	-0.015	-0.025	-0.045	-0.119	-0.007 (1)	-0.119 (20)
86-07	F&M	-0.489	-2.587	-6.423	-7.172	-4.832	-0.489 (1)	-7.172 (12)
	Perotti	-0.549	-2.926	-7.118	-7.969	-5.161	-0.549 (1)	-7.969 (12)
	Ramey ***	0.012	-0.235	-0.761	-0.974	-0.811	0.012 (1)	-0.983 (13)

Households: Life Insurance Assets

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	-0.009	0.056	0.222	0.456	0.829	0.829 (20)	-0.009 (1)
	Perotti	-0.015	0.020	0.122	0.280	0.500	0.500 (20)	-0.015 (2)
	Ramey	-0.003	-0.011	-0.024	-0.038	-0.063	-0.003 (1)	-0.063 (20)
54-86	F&M	0.004	0.076	0.325	0.649	1.085	1.085 (20)	0.004 (1)
	Perotti	-0.001	0.048	0.250	0.533	0.907	0.907 (20)	-0.001 (1)
	Ramey ***	0.001	0.005	0.013	0.024	0.054	0.054 (20)	0.001 (1)
86-07	F&M	-0.064	-0.164	-0.344	-0.425	-0.677	-0.064 (1)	-0.677 (20)
	Perotti	-0.072	-0.201	-0.404	-0.498	-0.805	-0.072 (1)	-0.805 (20)
	Ramey	-0.005	-0.011	-0.017	-0.027	-0.069	-0.005 (1)	-0.069 (20)

Households: Pension Fund Assets

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	-0.222	0.432	0.751	0.928	0.696	0.969 (14)	-0.222 (1)
	Perotti	-0.272	0.143	0.098	0.087	-0.359	0.177 (5)	-0.359 (20)
	Ramey	-0.018	-0.059	-0.099	-0.095	-0.070	-0.018 (1)	-0.099 (8)
54-86	F&M	-0.138	0.351	0.678	0.759	0.413	0.759 (12)	-0.138 (1)
	Perotti	-0.166	0.201	0.417	0.315	-0.147	0.455 (9)	-0.192 (2)
	Ramey ***	0.002	-0.003	-0.017	-0.007	0.010	0.010 (20)	-0.018 (7)
86-07	F&M	-1.431	-0.987	-5.077	-4.989	-2.310	-0.714 (3)	-5.121 (9)
	Perotti	-1.732	-2.064	-7.023	-7.062	-4.144	-1.458 (3)	-7.273 (13)
	Ramey ***	0.036	-0.219	-0.574	-0.621	-0.220	0.036 (1)	-0.631 (13)

Table 15 continued….

Government spending shocks equal to 1% of GDP. Definiton of spending includes transfers.

Households: Proprietors Equity in Noncorporate Business

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	-0.177	-0.734	-1.763	-3.260	-6.191	-0.177 (1)	-6.191 (20)
	Perotti	-0.189	-0.784	-1.917	-3.502	-6.865	-0.189 (1)	-6.865 (20)
	Ramey ***	-0.004	-0.028	-0.097	-0.154	-0.232	-0.004 (1)	-0.232 (20)
54-86	F&M	-0.084	-0.431	-0.984	-2.195	-3.840	-0.084 (1)	-3.917 (19)
	Perotti	-0.082	-0.452	-1.021	-2.324	-3.941	-0.082 (1)	-3.941 (20)
	Ramey ***	-0.009	-0.060	-0.176	-0.326	-0.604	-0.009 (1)	-0.604 (20)
86-07	F&M	-0.395	-1.326	-1.889	-0.977	5.341	5.341 (20)	-1.937 (7)
	Perotti	**-0.452**	-1.542	-2.527	-2.135	3.608	3.608 (20)	-2.539 (11)
	Ramey ***	-0.024	-0.137	-0.304	-0.463	-0.355	-0.024 (1)	-0.478 (13)

* Indicates the narrative shock is exogenous for at least 4 quarters (see text)

** Indicates the narrative shock is exogenous for at least 8 quarters (see text)

*** Indicates the narrative shock is exogenous for at least 12 Quarters (see text)

Underlined values indicate that zero falls outside of the 95th and 5th quantile

Bolded values indicate that zero lies outside of the 97.5th and 2.5th quantile

Table 16: Response of Household Assets to Government Spending Shocks. 1954q3 to 1999q1
Government spending shocks equal to 1% of GDP. Definiton of spending excludes transfers.

Households: Total Currency and Deposits

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-99	F&M	0.117	1.178	3.756	6.496	11.360	11.360 (20)	0.117 (1)
	Perotti	0.098	1.029	3.354	5.887	10.388	10.388 (20)	0.098 (1)
	Ramey ***	-0.020	-0.058	-0.069	-0.045	0.083	0.083 (20)	-0.072 (7)
54-86	F&M	0.054	0.646	2.481	4.392	7.985	7.985 (20)	0.054 (1)
	Perotti	0.034	0.506	2.099	3.932	7.319	7.319 (20)	0.034 (1)
	Ramey ***	-0.003	0.040	0.155	0.339	0.721	0.721 (20)	-0.003 (1)
86-99	F&M	0.025	0.903	1.330	0.628	0.156	1.330 (8)	0.025 (1)
	Perotti	-0.011	0.752	1.092	0.156	-1.072	1.114 (7)	-1.072 (20)
	Ramey	**-0.139**	**-0.241**	-0.376	**-0.961**	**-2.634**	-0.138 (6)	**-2.660 (19)**

Households: Total Checkable Deposits and Currency

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-99	F&M	-0.011	0.085	0.473	1.378	**2.840**	**2.840 (20)**	-0.011 (1)
	Perotti	-0.014	0.054	0.413	1.268	**2.758**	**2.758 (20)**	-0.014 (1)
	Ramey **	**-0.024**	**-0.062**	-0.103	-0.096	-0.005	-0.005 (20)	-0.108 (9)
54-86	F&M	-0.028	-0.039	0.280	1.257	2.822	2.822 (20)	-0.104 (3)
	Perotti	-0.031	-0.069	0.208	1.161	2.686	2.686 (20)	-0.123 (3)
	Ramey ***	**-0.024**	-0.053	-0.064	-0.029	0.089	0.089 (20)	-0.071 (7)
86-99	F&M	0.043	**0.711**	1.310	1.307	0.942	1.342 (10)	0.043 (1)
	Perotti	0.052	**0.739**	1.366	1.377	1.060	1.421 (10)	0.052 (1)
	Ramey	**0.052**	0.055	0.129	0.121	0.143	0.391 (19)	0.011 (2)

Households: Total Savings and Time Deposits

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-99	F&M	-0.015	0.510	1.910	3.406	6.333	6.333 (20)	-0.015 (1)
	Perotti	-0.030	0.398	1.583	2.842	5.736	5.736 (20)	-0.030 (1)
	Ramey ***	0.014	0.084	0.218	0.380	0.791	0.791 (20)	0.014 (1)
54-86	F&M	-0.049	0.353	1.255	2.111	2.843	2.843 (20)	-0.049 (1)
	Perotti	-0.060	0.260	1.061	1.772	2.321	2.321 (20)	-0.060 (1)
	Ramey ***	**0.033**	**0.174**	0.401	0.685	1.409	1.409 (20)	**0.033 (1)**
86-99	F&M	0.135	0.486	0.740	0.341	0.237	0.771 (7)	0.135 (1)
	Perotti	0.112	0.396	0.557	0.080	-0.447	0.668 (7)	-0.450 (19)
	Ramey ***	**-0.073**	**-0.211**	-0.267	-0.702	**-2.136**	**-0.073 (1)**	**-2.136 (20)**

Households: Credit Market Insturments, Assets

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-99	F&M	0.031	0.302	0.908	2.179	3.878	3.878 (20)	0.031 (1)
	Perotti	0.033	0.317	0.891	2.135	3.870	3.870 (20)	0.033 (1)
	Ramey ***	0.015	0.054	0.098	0.146	0.265	0.265 (20)	0.015 (1)
54-86	F&M	0.062	0.602	**1.822**	**3.539**	**4.718**	**4.729 (18)**	0.062 (1)
	Perotti	0.068	0.627	**1.825**	**3.518**	**4.727**	**4.800 (18)**	0.068 (1)
	Ramey ***	0.012	0.050	0.138	0.218	0.378	0.378 (20)	0.012 (1)
86-99	F&M	0.226	0.716	1.048	2.725	0.926	3.004 (14)	0.226 (1)
	Perotti	0.250	0.885	1.302	3.021	1.072	3.300 (14)	0.250 (1)
	Ramey	**0.162**	**0.475**	0.418	0.814	0.559	1.054 (15)	**0.162 (1)**

Table 17 continued
Government spending shocks equal to 1% of GDP. Definiton of spending excludes transfers.

Households: Corporate Equities

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-99	F&M	-0.853	1.199	8.159	12.406	15.671	15.671 (20)	-1.162 (2)
	Perotti	-0.980	0.558	6.799	10.433	12.957	12.970 (19)	-1.428 (2)
	Ramey ***	-0.080	-0.256	-0.348	-0.505	-0.903	-0.080 (1)	-0.903 (20)
54-86	F&M	-0.997	2.486	**14.195**	**23.692**	**31.001**	**31.001 (20)**	-1.248 (2)
	Perotti	-1.103	2.037	**13.357**	**22.731**	**29.664**	**29.664 (20)**	-1.448 (2)
	Ramey ***	-0.056	0.024	0.657	1.087	1.677	1.677 (20)	-0.136 (2)
86-99	F&M	-1.806	-0.759	14.431	37.701	243.375	243.375 (20)	-3.368 (2)
	Perotti	-2.167	-1.924	13.322	34.488	228.321	228.321 (20)	-4.299 (2)
	Ramey ***	**-1.522**	**-3.215**	-2.060	-0.599	22.078	22.078 (20)	**-3.530 (3)**

Households: Mutual Fund Shares

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-99	F&M	-0.024	0.251	0.825	1.430	1.713	1.713 (20)	-0.024 (1)
	Perotti	-0.032	0.201	0.709	1.254	1.503	1.503 (20)	-0.032 (1)
	Ramey ***	-0.005	-0.008	-0.001	0.010	0.027	0.029 (19)	-0.009 (2)
54-86	F&M	-0.018	0.290	0.898	1.622	2.312	2.312 (20)	-0.018 (1)
	Perotti	-0.025	0.263	0.842	1.545	2.227	2.227 (20)	-0.025 (1)
	Ramey ***	0.002	0.016	0.050	0.088	0.156	0.156 (20)	0.002 (1)
86-99	F&M	-0.094	-0.306	1.621	3.107	4.912	4.912 (20)	-0.339 (3)
	Perotti	-0.124	-0.415	1.400	2.688	4.236	4.236 (20)	-0.415 (4)
	Ramey	**-0.338**	**-1.110**	**-1.852**	**-2.984**	-4.321	**-0.338 (1)**	-4.321 (20)

Households: Life Insurance Assets

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-99	F&M	0.007	0.107	0.367	0.739	1.662	1.662 (20)	0.007 (1)
	Perotti	0.004	0.086	0.319	0.657	1.536	1.536 (20)	0.004 (1)
	Ramey ***	-0.003	-0.014	-0.030	-0.044	-0.070	-0.003 (1)	-0.070 (20)
54-86	F&M	0.004	0.089	0.382	**0.813**	**1.498**	**1.498 (20)**	0.004 (1)
	Perotti	0.001	0.070	0.336	0.735	1.378	1.378 (20)	0.001 (1)
	Ramey ***	0.001	0.008	0.025	0.050	0.107	0.107 (20)	0.001 (1)
86-99	F&M	0.006	0.040	0.062	0.226	0.669	0.669 (20)	0.006 (1)
	Perotti	0.004	0.036	0.049	0.190	0.577	0.577 (20)	0.004 (1)
	Ramey	**-0.016**	**-0.051**	-0.065	-0.124	-0.202	**-0.016 (1)**	-0.202 (20)

Households: Pension Fund Assets

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-99	F&M	-0.160	0.582	1.406	1.489	0.712	1.489 (12)	-0.160 (1)
	Perotti	-0.195	0.414	1.036	0.918	0.021	1.036 (8)	-0.195 (1)
	Ramey ***	-0.008	-0.026	-0.056	-0.088	-0.175	-0.008 (1)	-0.175 (20)
54-86	F&M	-0.153	0.649	1.806	2.701	3.686	3.686 (20)	-0.153 (1)
	Perotti	-0.173	0.538	1.633	2.462	3.393	3.393 (20)	-0.173 (1)
	Ramey ***	0.007	0.035	0.091	0.164	0.265	0.265 (20)	0.007 (1)
86-99	F&M	-2.234	**-8.913**	**-21.114**	-38.088	-42.594	-2.234 (1)	-50.331 (18)
	Perotti	**-2.361**	**-9.272**	**-21.734**	-38.309	-41.165	**-2.361 (1)**	-49.255 (16)
	Ramey ***	**-0.816**	**-2.894**	**-5.622**	**-8.442**	-4.731	**-0.816 (1)**	**-9.192 (16)**

Table 16 continued….

Government spending shocks equal to 1% of GDP. Definiton of spending excludes transfers.

Households: Proprietors Equity in Noncorporate Business

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-99	F&M	-0.110	-0.468	-1.523	-3.928	-11.994	-0.110 (1)	-11.994 (20)
	Perotti	-0.117	-0.509	-1.627	-4.213	-12.762	-0.117 (1)	-12.762 (20)
	Ramey ***	-0.014	-0.081	-0.236	-0.439	-0.888	-0.014 (1)	-0.888 (20)
54-86	F&M	-0.079	-0.570	-1.470	-3.861	**-9.217**	-0.079 (1)	**-9.217 (20)**
	Perotti	-0.080	-0.584	-1.554	-3.983	**-9.467**	-0.080 (1)	**-9.467 (20)**
	Ramey ***	-0.012	-0.074	-0.212	-0.411	-0.737	-0.012 (1)	-0.737 (20)
86-99	F&M	-0.206	-1.782	-6.717	-14.976	-33.620	-0.206 (1)	-33.620 (20)
	Perotti	-0.229	-1.905	**-7.057**	**-15.632**	-34.157	-0.229 (1)	-34.157 (20)
	Ramey	-0.048	-0.301	-1.167	-1.912	-1.480	-0.048 (1)	-2.159 (14)

* Indicates the narrative shock is exogenous for at least 4 quarters (see text)

** Indicates the narrative shock is exogenous for at least 8 quarters (see text)

*** Indicates the narrative shock is exogenous for at least 12 Quarters (see text)

Underlined values indicate that zero falls outside of the 95th and 5th quantile

Bolded values indicate that zero lies outside of the 97.5th and 2.5th quantile

Table 17: Response of Household Assets to Government Revenue Shocks 1954q3 to 2007q1.
Response to a government revenue shock equal to 1% of GDP. Definition of revenue includes transfers.

Households: Total Currency and Deposits

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	-0.124	-1.070	-4.134	-7.496	-11.804	-0.124 (1)	-11.804 (20)
54-07	Perotti	-0.176	-1.491	**-5.149**	-9.272	-14.298	-0.176 (1)	-14.298 (20)
	P-313	-0.209	-1.599	**-5.264**	**-9.668**	**-16.594**	-0.209 (1)	**-16.594 (20)**
	R&R	**0.220**	0.767	1.434	1.922	2.122	2.159 (19)	**0.220 (1)**
	F&M	**-0.270**	**-1.843**	**-4.916**	**-6.874**	**-9.812**	**-0.270 (1)**	**-9.812 (20)**
54-86	Perotti	**-0.340**	**-2.373**	**-6.263**	**-9.060**	**-13.289**	**-0.340 (1)**	**-13.289 (20)**
	P-313	**-0.341**	**-2.136**	**-5.183**	**-7.327**	**-11.800**	**-0.341 (1)**	**-11.800 (20)**
	R&R	-0.032	-0.135	-0.290	-0.407	-0.646	-0.032 (1)	-0.657 (19)
	F&M	-0.108	-0.877	-0.875	1.216	4.431	4.431 (20)	-1.329 (6)
86-07	Perotti	-0.016	-0.408	-0.478	1.505	6.548	6.548 (20)	-0.911 (6)
	P-313	-0.028	-0.234	-0.791	0.094	2.438	2.438 (20)	-0.791 (8)
	R&R ***	**0.575**	0.745	0.576	1.346	3.424	3.424 (20)	**0.575 (1)**

Households: Total Checkable Deposits and Currency

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	0.033	-0.216	-0.556	-0.264	1.406	1.406 (20)	-0.556 (8)
54-07	Perotti	0.017	-0.305	-0.754	-0.598	0.910	0.910 (20)	-0.757 (10)
	P-313	0.012	-0.173	-0.372	-0.156	0.765	0.765 (20)	-0.421 (7)
	R&R	**0.188**	**0.586**	**1.198**	**1.737**	**2.667**	**2.667 (20)**	**0.188 (1)**
	F&M	-0.042	-0.143	-0.465	-0.776	-1.281	-0.042 (1)	-1.301 (18)
54-86	Perotti	-0.068	-0.305	-0.862	-1.440	-2.273	-0.068 (1)	-2.273 (20)
	P-313	-0.060	-0.092	-0.291	-0.707	-1.813	-0.060 (1)	-1.813 (20)
	R&R	**0.104**	0.286	0.499	0.571	0.310	0.579 (11)	**0.104 (1)**
	F&M	0.093	-0.967	-2.322	-2.446	-0.832	0.093 (1)	-2.545 (11)
86-07	Perotti	0.156	-0.573	-1.543	-1.378	-0.450	0.156 (1)	-1.543 (8)
	P-313	0.188	-0.079	-0.293	0.430	1.319	1.436 (19)	-0.323 (7)
	R&R ***	**0.338**	0.719	1.408	2.729	3.549	3.736 (17)	**0.338 (1)**

Households: Total Savings and Time Deposits

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	-0.047	-0.647	-2.805	-6.003	-10.545	-0.047 (1)	-10.545 (20)
54-07	Perotti	-0.080	-0.865	-3.586	-7.215	-12.166	-0.080 (1)	-12.166 (20)
	P-313	-0.108	-0.750	-2.877	-5.816	-12.626	-0.108 (1)	-12.626 (20)
	R&R	-0.033	-0.189	-0.654	-1.405	-3.012	-0.033 (1)	-3.012 (20)
	F&M	-0.043	-0.875	-2.682	-3.724	-3.081	-0.043 (1)	-3.921 (15)
54-86	Perotti	-0.092	**-1.273**	**-3.796**	-5.696	-5.145	-0.092 (1)	-5.899 (14)
	P-313	-0.096	-0.917	-2.497	-3.427	-3.129	-0.096 (1)	-3.697 (15)
	R&R	-0.071	-0.426	-0.923	-1.332	-2.445	-0.071 (1)	-2.445 (20)
	F&M	-0.256	**-1.364**	-2.394	-2.019	-0.742	-0.256 (1)	-2.394 (8)
86-07	Perotti	-0.284	**-1.369**	-2.680	-2.275	0.870	0.870 (20)	-2.680 (8)
	P-313	**-0.327**	**-1.464**	-3.210	-3.278	-0.656	**-0.327 (1)**	-3.344 (10)
	R&R ***	-0.071	-0.564	-1.608	-2.168	-0.846	-0.071 (1)	-2.168 (12)

Table 17 continued…
Government revenue shocks equal to 1% of GDP. Definition of revenue includes transfers.

Households: Credit Market Insturments, Assets

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	0.075	-0.112	-0.735	-2.831	-7.220	0.175 (2)	-7.220 (20)
54-07	Perotti	0.083	-0.084	-0.876	-3.223	-7.890	0.198 (2)	-7.890 (20)
	P-313	0.058	-0.238	-0.990	-2.734	-5.925	0.125 (2)	-5.925 (20)
	R&R	-0.040	-0.228	-0.608	-1.116	-2.141	-0.040 (1)	-2.141 (20)
	F&M	0.176	0.763	1.474	1.628	1.935	1.935 (20)	0.176 (1)
54-86	Perotti	0.171	0.731	1.141	0.973	1.190	1.190 (20)	0.171 (1)
	P-313	0.095	0.274	0.069	-0.194	-0.199	0.296 (3)	-0.313 (17)
	R&R	0.035	0.138	0.118	0.016	0.026	0.157 (5)	-0.035 (15)
	F&M	-0.032	0.010	-0.845	-4.813	-10.795	0.464 (5)	-10.795 (20)
86-07	Perotti	-0.268	-1.962	-4.423	**-9.504**	**-15.524**	-0.268 (1)	**-15.524 (20)**
	P-313	-0.313	-2.774	-6.098	**-11.107**	**-15.214**	-0.313 (1)	**-15.214 (20)**
	R&R ***	0.018	-1.815	-4.772	-7.864	-9.591	0.018 (1)	-9.591 (20)

Households: Corporate Equities

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	0.976	**10.292**	18.184	14.861	11.606	18.184 (8)	0.976 (1)
54-07	Perotti	0.532	8.424	15.623	11.053	5.750	15.623 (8)	0.532 (1)
	P-313	0.126	7.985	18.213	17.676	18.867	18.867 (20)	0.126 (1)
	R&R	0.807	3.764	6.557	7.255	9.817	9.817 (20)	0.807 (1)
	F&M	-0.732	0.857	-0.844	-4.913	-5.151	0.857 (4)	-6.495 (16)
54-86	Perotti	-1.405	-2.009	-6.040	-12.388	-15.107	-1.405 (1)	-15.415 (18)
	P-313	**-1.537**	-1.943	-4.201	-10.444	-11.871	**-1.537 (1)**	-12.132 (19)
	R&R	0.420	0.615	0.185	0.228	0.787	0.979 (18)	0.065 (10)
	F&M	**8.236**	**31.969**	**48.750**	**58.950**	**59.075**	**62.554 (16)**	**8.236 (1)**
86-07	Perotti	**8.903**	**33.377**	**51.662**	**61.926**	62.629	**67.314 (15)**	**8.903 (1)**
	P-313	**7.177**	**27.483**	41.113	49.039	49.174	52.688 (14)	**7.177 (1)**
	R&R ***	1.991	13.023	27.746	36.893	35.706	39.655 (15)	1.991 (1)

Households: Mutual Fund Shares

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	0.016	0.311	0.183	-0.669	-2.121	0.409 (6)	-2.121 (20)
54-07	Perotti	-0.014	0.164	-0.153	-1.179	-2.723	0.194 (5)	-2.723 (20)
	P-313	-0.027	0.284	0.454	-0.235	-1.214	0.534 (7)	-1.214 (20)
	R&R	0.065	0.253	0.346	0.283	0.265	0.352 (7)	0.065 (1)
	F&M	-0.058	-0.097	-0.288	-0.499	-0.232	-0.058 (1)	-0.545 (13)
54-86	Perotti	**-0.098**	-0.257	-0.549	-0.878	-0.749	**-0.098 (1)**	-0.961 (15)
	P-313	**-0.094**	-0.064	0.047	-0.074	0.663	0.663 (20)	-0.114 (2)
	R&R ***	0.026	0.040	0.064	0.125	0.285	0.285 (20)	0.026 (1)
	F&M	**1.846**	**8.753**	**15.014**	**18.399**	**17.565**	**18.820 (16)**	**1.846 (1)**
86-07	Perotti	**1.901**	**8.914**	**15.452**	**18.928**	**17.024**	**19.314 (13)**	**1.901 (1)**
	P-313	**1.473**	**7.574**	**12.782**	**15.745**	13.681	**16.057 (13)**	**1.473 (1)**
	R&R ***	0.267	4.023	**9.516**	**12.192**	10.670	**12.417 (13)**	0.267 (1)

Table 17 continued…
Government revenue shocks equal to 1% of GDP. Definition of revenue includes transfers.

Households: Life Insurance Assets

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	0.015	0.078	0.291	0.611	1.500	1.500 (20)	0.015 (1)
54-07	Perotti	0.007	0.024	0.152	0.361	1.084	1.084 (20)	0.001 (2)
	P-313	0.002	0.024	0.257	0.602	1.603	1.603 (20)	-0.009 (2)
	R&R	0.006	0.035	0.117	0.220	0.436	0.436 (20)	0.006 (1)
	F&M	-0.003	-0.020	-0.104	-0.283	-0.432	-0.003 (1)	-0.442 (19)
54-86	Perotti	-0.015	-0.095	-0.302	-0.614	-1.006	-0.015 (1)	-1.006 (20)
	P-313	-0.013	-0.046	-0.111	-0.306	-0.734	-0.013 (1)	-0.734 (20)
	R&R	-0.001	-0.003	-0.018	-0.055	-0.164	-0.001 (1)	-0.164 (20)
	F&M	0.037	-0.013	-0.066	0.098	0.548	0.548 (20)	-0.080 (6)
86-07	Perotti	0.041	0.028	0.071	0.386	1.030	1.030 (20)	0.010 (6)
	P-313	0.020	-0.012	0.042	0.355	1.000	1.000 (20)	-0.041 (6)
	R&R **	-0.007	-0.055	-0.002	0.187	0.563	0.563 (20)	-0.062 (3)

Households: Pension Fund Assets

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	0.064	1.250	1.143	-0.842	-2.871	1.567 (6)	-2.871 (20)
54-07	Perotti	-0.033	0.772	0.263	-1.799	-4.290	0.967 (6)	-4.290 (20)
	P-313	-0.112	0.567	0.699	-0.896	-3.692	0.930 (7)	-3.692 (20)
	R&R	0.029	0.271	0.422	0.310	-0.107	0.434 (7)	-0.107 (20)
	F&M	-0.188	-0.230	-0.873	-1.757	-1.479	-0.188 (1)	-1.814 (15)
54-86	Perotti	**-0.272**	-0.651	-1.701	-2.857	-2.827	**-0.272 (1)**	-3.078 (16)
	P-313	**-0.273**	-0.472	-0.914	-2.038	-2.081	**-0.273 (1)**	-2.217 (14)
	R&R ***	0.029	-0.026	-0.065	-0.066	-0.014	0.038 (2)	-0.069 (9)
	F&M	**4.049**	**13.390**	15.118	16.704	14.806	16.788 (13)	**4.049 (1)**
86-07	Perotti	**3.900**	12.722	14.259	15.295	14.567	15.910 (18)	**3.900 (1)**
	P-313	2.785	8.290	6.763	5.876	5.530	8.703 (5)	2.785 (1)
	R&R	-1.140	-1.897	-4.716	-6.352	-10.107	-1.140 (1)	-10.107 (20)

Households: Proprietors Equity in Noncorporate Business

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	0.062	0.196	-0.739	-4.065	-14.100	0.196 (4)	-14.100 (20)
54-07	Perotti	0.050	0.156	-0.844	-4.185	-14.372	0.156 (4)	-14.372 (20)
	P-313	0.015	0.030	-0.624	-2.774	-10.764	0.030 (4)	-10.764 (20)
	R&R	-0.144	-0.631	-1.277	-1.995	-3.183	-0.144 (1)	-3.183 (20)
	F&M	0.013	-0.172	-0.749	-2.077	-5.356	0.013 (1)	-5.356 (20)
54-86	Perotti	0.010	-0.202	-0.813	-2.224	-5.358	0.010 (1)	-5.358 (20)
	P-313	0.059	0.147	0.168	-0.566	-2.845	0.189 (7)	-2.845 (20)
	R&R ***	-0.107	-0.457	-0.798	-0.858	-0.352	-0.107 (1)	-0.881 (11)
	F&M	-0.113	1.094	3.217	3.269	-1.865	3.635 (10)	-1.865 (20)
86-07	Perotti	-0.031	1.226	3.394	4.393	1.148	4.397 (11)	-0.031 (1)
	P-313	-0.049	0.740	1.951	2.527	-0.031	2.527 (12)	-0.049 (1)
	R&R ***	-0.087	-0.063	0.019	0.285	-1.049	0.352 (13)	-1.049 (20)

* Indicates the narrative shock is exogenous for at least 4 quarters (see text)

** Indicates the narrative shock is exogenous for at least 8 quarters (see text)

*** Indicates the narrative shock is exogenous for at least 12 Quarters (see text)

Underlined values indicate that zero falls outside of the 95th and 5th quantile

Bolded values indicate that zero lies outside of the 97.5th and 2.5th quantile

Table 18: Response of Household Assets to Government Revenue Shocks 1954q3 to 1999q1. 1980q1 Breakpoint
Response to a government revenue shock equal to 1% of GDP. Definition of revenue includestransfers.

Households: Total Currency and Deposits

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	**-0.235**	**-1.786**	**-5.572**	**-8.258**	-11.653	**-0.235 (1)**	-11.653 (20)
54-99	Perotti	**-0.307**	**-2.314**	**-6.815**	**-10.487**	-14.677	**-0.307 (1)**	-14.677 (20)
	P-313	**-0.322**	**-2.267**	**-6.713**	**-10.524**	**-16.734**	**-0.322 (1)**	**-16.734 (20)**
	R&R	0.072	0.225	0.362	0.368	0.028	0.371 (9)	0.028 (20)
	F&M	**-0.260**	**-1.397**	-3.062	-3.552	-4.240	**-0.260 (1)**	-4.240 (20)
54-80	Perotti	**-0.339**	**-2.050**	**-4.717**	-6.294	-8.820	**-0.339 (1)**	-8.820 (20)
	P-313	**-0.318**	**-1.585**	-3.168	-3.940	-6.352	**-0.318 (1)**	-6.352 (20)
	R&R ***	-0.058	-0.200	-0.236	-0.223	-0.334	-0.058 (1)	-0.359 (18)
	F&M	-0.128	0.897	3.888	8.265	12.844	13.014 (18)	-0.140 (2)
80-99	Perotti	-0.076	1.157	4.567	8.998	14.088	14.088 (20)	-0.076 (1)
	P-313	-0.220	0.307	2.298	5.815	9.697	9.767 (19)	-0.306 (2)
	R&R	**0.559**	1.247	2.419	2.703	1.902	2.742 (10)	**0.559 (1)**

Households: Total Checkable Deposits and Currency

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	-0.049	-0.432	-1.356	-2.203	-2.616	-0.049 (1)	-2.682 (17)
54-99	Perotti	-0.053	-0.468	-1.403	-2.303	-2.903	-0.053 (1)	-2.908 (19)
	P-313	-0.035	-0.178	-0.523	-0.972	-1.604	-0.035 (1)	-1.604 (20)
	R&R	**0.152**	**0.437**	**0.883**	**1.110**	0.952	**1.146 (13)**	**0.152 (1)**
	F&M	-0.111	-0.325	-0.688	**-0.923**	-0.953	-0.111 (1)	**-0.993 (14)**
54-80	Perotti	-0.113	**-0.384**	**-0.787**	**-1.075**	**-1.192**	-0.113 (1)	**-1.210 (18)**
	P-313	-0.111	-0.294	-0.577	-0.813	-1.142	-0.111 (1)	-1.142 (20)
	R&R ***	0.076	0.173	0.284	0.298	0.223	0.320 (10)	0.076 (1)
	F&M	0.030	-0.435	-2.067	-3.593	-3.489	0.030 (1)	-4.196 (16)
80-99	Perotti	0.043	-0.459	-2.217	-3.808	-3.628	0.043 (1)	-4.465 (16)
	P-313	0.002	-0.396	-1.823	-3.174	-3.193	0.002 (1)	-3.786 (15)
	R&R	**0.345**	0.709	1.038	0.927	0.206	1.075 (9)	0.206 (20)

Households: Total Savings and Time Deposits

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	-0.067	-0.887	-3.090	-4.872	-5.782	-0.067 (1)	-5.782 (20)
54-99	Perotti	-0.127	-1.280	-4.067	-6.440	-8.297	-0.127 (1)	-8.297 (20)
	P-313	-0.143	-1.144	-3.463	-5.624	-8.862	-0.143 (1)	-8.862 (20)
	R&R	-0.085	-0.543	-1.401	-2.218	-3.819	-0.085 (1)	-3.819 (20)
	F&M	-0.026	-0.446	-1.199	-1.367	-0.501	-0.026 (1)	-1.367 (12)
54-80	Perotti	-0.123	-1.150	-2.816	-3.544	-3.920	-0.123 (1)	-3.920 (20)
	P-313	-0.127	-0.806	-1.432	-1.167	-0.775	-0.127 (1)	-1.432 (8)
	R&R ***	-0.017	-0.176	-0.364	-0.579	-0.738	-0.017 (1)	-0.750 (17)
	F&M	-0.257	-0.178	1.664	4.947	6.353	6.960 (18)	-0.375 (3)
80-99	Perotti	-0.241	-0.175	1.524	4.897	6.510	7.011 (17)	-0.400 (3)
	P-313	-0.271	-0.029	2.212	5.698	7.460	7.841 (17)	-0.318 (2)
	R&R	0.065	0.034	-0.524	-1.350	-2.894	0.065 (1)	-2.894 (20)

Table 18 continued…
Government revenue shocks equal to 1% of GDP. Definition of revenue includes transfers.

Households: Credit Market Insturments, Assets

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	0.147	0.650	1.412	1.987	2.665	2.665 (20)	0.147 (1)
54-99	Perotti	0.145	0.659	1.267	1.600	2.086	2.086 (20)	0.145 (1)
	P-313	0.086	0.313	0.426	0.556	0.945	0.945 (20)	0.086 (1)
	R&R	-0.060	-0.205	-0.373	-0.596	-1.037	-0.060 (1)	-1.037 (20)
	F&M	**0.225**	**0.942**	**2.137**	2.591	2.385	2.591 (12)	**0.225 (1)**
54-80	Perotti	**0.189**	0.826	1.755	2.191	1.788	2.207 (13)	**0.189 (1)**
	P-313	0.107	0.265	0.580	0.795	0.414	0.831 (11)	0.107 (1)
	R&R ***	-0.056	-0.156	-0.159	-0.223	-0.365	-0.056 (1)	-0.365 (20)
	F&M	-0.454	-1.468	-1.305	-1.767	-3.056	-0.454 (1)	-3.056 (20)
80-99	Perotti	-0.498	-1.721	-1.711	-2.206	-3.520	-0.498 (1)	-3.520 (20)
	P-313	-0.582	-1.999	-2.434	-2.787	-3.989	-0.582 (1)	-3.989 (20)
	R&R	-0.034	0.307	0.486	0.398	0.210	0.610 (10)	-0.034 (1)

Households: Corporate Equities

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	-0.146	3.887	6.854	7.433	14.785	14.785 (20)	-0.146 (1)
54-99	Perotti	-0.772	1.459	2.428	-0.479	4.280	4.280 (20)	-1.224 (14)
	P-313	-0.995	1.506	5.920	3.924	11.885	11.885 (20)	-0.995 (1)
	R&R	0.419	1.114	1.606	2.451	4.787	4.787 (20)	0.419 (1)
	F&M	-0.913	0.159	-0.338	-3.381	-0.444	0.919 (5)	-3.384 (13)
54-80	Perotti	**-1.855**	-4.053	-8.091	-12.570	-14.915	**-1.855 (1)**	-14.915 (20)
	P-313	**-2.153**	-4.684	-8.036	-12.070	-14.067	**-2.153 (1)**	-14.280 (19)
	R&R ***	-0.814	-1.609	-1.271	-1.855	-3.271	-0.814 (1)	-3.271 (20)
	F&M	**3.352**	6.521	5.165	11.701	20.897	20.897 (20)	**3.352 (1)**
80-99	Perotti	**3.469**	7.048	5.699	13.150	23.723	23.723 (20)	**3.469 (1)**
	P-313	2.498	5.778	6.540	8.042	15.066	15.066 (20)	2.498 (1)
	R&R	0.739	0.583	-2.306	3.039	3.920	4.273 (15)	-2.513 (7)

Households: Mutual Fund Shares

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	-0.045	-0.029	-0.306	-0.673	-0.704	-0.028 (2)	-0.875 (17)
54-99	Perotti	-0.084	-0.192	-0.614	-1.218	-1.467	-0.084 (1)	-1.586 (18)
	P-313	-0.081	0.019	0.046	-0.396	-0.370	0.123 (6)	-0.577 (16)
	R&R	0.058	0.147	0.169	0.197	0.300	0.300 (20)	0.058 (1)
	F&M	-0.040	-0.026	-0.068	-0.227	-0.119	-0.023 (5)	-0.227 (12)
54-80	Perotti	**-0.103**	-0.293	-0.560	-0.834	-1.036	**-0.103 (1)**	-1.036 (20)
	P-313	**-0.125**	-0.318	-0.490	-0.744	-1.042	**-0.125 (1)**	-1.042 (20)
	R&R ***	-0.032	-0.100	-0.167	-0.232	-0.271	-0.032 (1)	-0.271 (20)
	F&M	0.387	1.403	1.244	1.760	3.981	3.981 (20)	0.387 (1)
80-99	Perotti	0.368	1.378	1.188	1.836	4.027	4.027 (20)	0.368 (1)
	P-313	0.258	1.214	0.808	-0.013	1.800	1.800 (20)	-0.113 (14)
	R&R	**0.443**	0.970	0.808	2.518	3.017	3.356 (16)	**0.443 (1)**
	R&R ***	0.267	4.023	**9.516**	**12.192**	10.670	**12.417 (13)**	0.267 (1)

Table 18 continued…
Government revenue shocks equal to 1% of GDP. Definition of revenue includes transfers.

Households: Life Insurance Assets

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	-0.001	0.019	0.057	0.096	0.505	0.505 (20)	-0.001 (1)
54-99	Perotti	-0.014	-0.049	-0.132	-0.240	-0.178	-0.014 (1)	-0.311 (16)
	P-313	-0.013	-0.020	0.059	0.183	0.726	0.726 (20)	-0.028 (3)
	R&R	0.007	0.033	0.075	0.126	0.254	0.254 (20)	0.007 (1)
	F&M	-0.005	-0.037	-0.064	-0.065	0.237	0.237 (20)	-0.078 (10)
54-80	Perotti	**-0.018**	-0.103	-0.191	-0.233	-0.005	-0.005 (20)	-0.233 (12)
	P-313	**-0.021**	-0.100	-0.052	0.094	0.485	0.485 (20)	-0.100 (4)
	R&R ***	-0.002	-0.002	0.012	0.020	0.045	0.045 (20)	-0.003 (3)
	F&M	0.012	**0.156**	**0.403**	**0.678**	**1.049**	**1.049 (20)**	0.012 (1)
80-99	Perotti	0.012	**0.157**	**0.417**	**0.713**	**1.164**	**1.164 (20)**	0.012 (1)
	P-313	0.013	**0.158**	**0.380**	**0.610**	0.954	0.954 (20)	0.013 (1)
	R&R	0.002	-0.002	-0.001	0.007	0.009	0.017 (14)	-0.005 (3)

Households: Pension Fund Assets

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	-0.141	0.161	-0.073	-0.237	1.995	1.995 (20)	-0.237 (12)
54-99	Perotti	-0.249	-0.379	-1.108	-1.737	-0.484	-0.204 (2)	-1.808 (13)
	P-313	-0.285	-0.489	-0.834	-1.580	-1.143	-0.285 (1)	-1.854 (14)
	R&R	-0.046	-0.157	-0.198	-0.182	-0.183	-0.046 (1)	-0.210 (7)
	F&M	**-0.234**	-0.448	-0.717	-1.223	-1.138	**-0.234 (1)**	-1.364 (15)
54-80	Perotti	**-0.384**	**-1.164**	-1.963	-2.815	-3.344	**-0.384 (1)**	-3.344 (20)
	P-313	**-0.410**	**-1.306**	-1.983	-2.793	-3.551	**-0.410 (1)**	-3.551 (20)
	R&R ***	-0.120	-0.400	-0.581	-0.722	-1.157	-0.120 (1)	-1.157 (20)
	F&M	**1.847**	**6.222**	9.820	14.364	23.317	23.317 (20)	**1.847 (1)**
80-99	Perotti	**1.935**	**6.774**	10.470	15.759	24.633	24.633 (20)	**1.935 (1)**
	P-313	1.581	5.619	7.843	11.105	19.202	19.202 (20)	1.581 (1)
	R&R	-0.562	-1.417	0.184	2.498	1.303	2.498 (12)	-1.417 (4)

Households: Proprietors Equity in Noncorporate Business

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	0.005	-0.360	-1.555	-3.552	-5.997	0.005 (1)	-5.997 (20)
54-99	Perotti	0.005	-0.382	-1.580	-3.425	-6.381	0.005 (1)	-6.381 (20)
	P-313	0.031	-0.084	-0.531	-1.371	-4.519	0.031 (1)	-4.519 (20)
	R&R	-0.089	-0.447	-0.803	-1.040	-1.286	-0.089 (1)	-1.286 (20)
	F&M	-0.030	-0.411	-1.142	-2.471	**-4.398**	-0.030 (1)	**-4.398 (20)**
54-80	Perotti	-0.005	-0.251	-0.819	-2.294	-4.520	-0.005 (1)	-4.520 (20)
	P-313	0.008	-0.075	-0.688	-2.061	-4.587	0.017 (2)	-4.587 (20)
	R&R ***	0.033	0.080	0.080	-0.010	-0.124	0.080 (4)	-0.142 (18)
	F&M	0.245	**2.399**	**7.120**	**11.411**	**17.215**	**17.215 (20)**	0.245 (1)
80-99	Perotti	0.386	**3.083**	**8.999**	**14.403**	**20.940**	**20.940 (20)**	0.386 (1)
	P-313	0.372	2.471	**7.111**	**11.499**	**15.900**	**15.900 (20)**	0.372 (1)
	R&R	-0.017	0.221	0.619	1.205	2.652	2.652 (20)	-0.017 (1)

* Indicates the narrative shock is exogenous for at least 4 quarters (see text)

** Indicates the narrative shock is exogenous for at least 8 quarters (see text)

*** Indicates the narrative shock is exogenous for at least 12 Quarters (see text)

Underlined values indicate that zero falls outside of the 95th and 5th quantile

Bolded values indicate that zero lies outside of the 97.5th and 2.5th quantile

Table 19: Response of Mortgages Assets to Government Spending Shocks. 1954q3 to 2007q1
Government spending shocks equal to 1% of GDP. Definiton of spending includes transfers.

Total Mortgages

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	0.078	**0.859**	**3.155**	5.686	9.051	9.051 (20)	0.078 (1)
	Perotti	0.056	0.690	2.633	4.678	6.921	6.921 (20)	0.056 (1)
	Ramey	0.005	0.030	0.079	0.150	0.219	0.219 (20)	0.005 (1)
54-86	F&M	0.028	0.386	1.402	2.785	5.078	5.078 (20)	0.028 (1)
	Perotti	0.015	0.313	1.115	2.339	4.211	4.211 (20)	0.015 (1)
	Ramey ***	0.010	0.045	0.112	0.181	0.317	0.317 (20)	0.010 (1)
86-07	F&M	0.172	1.037	3.175	6.202	12.578	12.578 (20)	0.172 (1)
	Perotti	0.128	0.866	2.692	5.400	10.679	10.679 (20)	0.128 (1)
	Ramey *	-0.031	-0.101	-0.190	-0.256	-0.409	-0.031 (1)	-0.409 (20)

Home Mortgage

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	0.054	**0.553**	1.889	3.040	3.646	3.728 (17)	0.054 (1)
	Perotti	0.040	0.448	1.566	2.437	2.574	2.770 (17)	0.040 (1)
	Ramey ***	0.001	0.007	0.010	0.004	-0.057	0.014 (7)	-0.057 (20)
54-86	F&M	0.008	0.193	0.800	1.745	3.114	3.114 (20)	0.008 (1)
	Perotti	0.002	0.137	0.655	1.475	2.629	2.629 (20)	0.002 (1)
	Ramey ***	0.004	0.008	0.015	0.019	0.045	0.045 (20)	0.004 (1)
86-07	F&M	0.114	0.469	1.441	3.048	6.188	6.188 (20)	0.114 (1)
	Perotti	0.077	0.320	1.083	2.467	4.889	4.889 (20)	0.077 (1)
	Ramey *	-0.034	-0.086	-0.167	-0.228	-0.419	-0.034 (1)	-0.419 (20)

* Indicates the narrative shock is exogenous for at least 4 quarters (see text)

** Indicates the narrative shock is exogenous for at least 8 quarters (see text)

*** Indicates the narrative shock is exogenous for at least 12 Quarters (see text)

Underlined values indicate that zero falls outside of the 95th and 5th quantile

Bolded values indicate that zero lies outside of the 97.5th and 2.5th quantile

Table 20: Response of Mortgages Assets to Government Spending Shocks. 1954q3 to 2007q1. 1980q1 BP. Government spending shocks equal to 1% of GDP. Definiton of spending includes transfers.

Total Mortgages

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	0.078	**0.859**	**3.155**	5.686	9.051	9.051 (20)	0.078 (1)
	Perotti	0.056	0.690	2.633	4.678	6.921	6.921 (20)	0.056 (1)
	Ramey	0.005	0.030	0.079	0.150	0.219	0.219 (20)	0.005 (1)
54-80	F&M	0.004	0.111	0.182	0.342	0.499	0.518 (18)	0.004 (1)
	Perotti	-0.008	0.031	-0.013	0.083	0.174	0.244 (18)	-0.020 (9)
	Ramey	0.007	0.039	0.094	0.139	0.232	0.232 (20)	0.007 (1)
80-07	F&M	0.245	**1.951**	**6.660**	**13.246**	25.115	25.115 (20)	0.245 (1)
	Perotti	0.201	1.701	**6.032**	12.129	23.020	23.020 (20)	0.201 (1)
	Ramey *	-0.009	-0.034	-0.016	0.093	0.433	0.433 (20)	-0.038 (5)

Home Mortgages

		1 qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
54-07	F&M	0.054	**0.553**	1.889	3.040	3.646	3.728 (17)	0.054 (1)
	Perotti	0.040	0.448	1.566	2.437	2.574	2.770 (17)	0.040 (1)
	Ramey ***	0.001	0.007	0.010	0.004	-0.057	0.014 (7)	-0.057 (20)
54-80	F&M	-0.008	-0.037	-0.110	0.006	-0.181	0.021 (14)	-0.181 (20)
	Perotti	-0.015	-0.077	-0.214	-0.176	-0.317	-0.015 (1)	-0.317 (20)
	Ramey	0.005	0.017	0.012	0.001	0.018	0.022 (6)	0.001 (12)
80-07	F&M	0.208	**1.580**	**4.798**	**8.970**	15.416	15.416 (20)	0.208 (1)
	Perotti	0.184	**1.419**	**4.356**	**8.174**	14.149	14.149 (20)	0.184 (1)
	Ramey *	0.000	0.016	0.086	0.223	0.497	0.497 (20)	0.000 (1)

* Indicates the narrative shock is exogenous for at least 4 quarters (see text)

** Indicates the narrative shock is exogenous for at least 8 quarters (see text)

*** Indicates the narrative shock is exogenous for at least 12 Quarters (see text)

Underlined values indicate that zero falls outside of the 95th and 5th quantile

Bolded values indicate that zero lies outside of the 97.5th and 2.5th quantile

Table 21: Response of Mortgage Assets to Government Revenue Shocks 1954q3 to 2007q1.
Government revenue shocks equal to 1% of GDP. Definition of revenue includes transfers.

Total Mortgage Assets

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	-0.027	-0.253	-1.395	-2.878	-3.859	-0.027 (1)	-3.932 (17)
54-07	Perotti	-0.062	-0.545	-2.290	-4.496	-6.819	-0.062 (1)	-6.859 (19)
	P-313	**-0.138**	**-0.923**	-2.683	-4.545	-7.531	**-0.138 (1)**	-7.531 (20)
	R&R	0.014	0.078	0.095	0.109	0.354	0.354 (20)	0.014 (1)
	F&M	0.002	-0.345	**-1.619**	-3.113	-4.304	0.002 (1)	-4.329 (19)
54-86	Perotti	-0.048	**-0.676**	**-2.509**	**-4.688**	-7.489	-0.048 (1)	-7.489 (20)
	P-313	**-0.087**	**-0.708**	-1.656	-2.521	-3.526	**-0.087 (1)**	-3.537 (19)
	R&R ***	-0.017	-0.071	-0.198	-0.340	-0.582	-0.017 (1)	-0.582 (20)
	F&M	0.066	0.041	-0.503	-1.603	-3.799	0.164 (3)	-3.799 (20)
86-07	Perotti	0.101	0.375	0.290	-0.315	-1.114	0.515 (7)	-1.114 (20)
	P-313	-0.005	0.200	-0.226	-1.110	-3.491	0.244 (3)	-3.491 (20)
	R&R *	**0.309**	**1.651**	3.286	4.745	6.511	6.511 (20)	**0.309 (1)**

Home Mortgage Assets

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	0.008	-0.137	-0.944	-2.146	-3.362	0.008 (1)	-3.362 (20)
54-07	Perotti	-0.022	-0.340	-1.586	-3.319	-5.472	-0.022 (1)	-5.472 (20)
	P-313	**-0.086**	**-0.694**	-1.941	-3.340	-5.347	**-0.086 (1)**	-5.347 (20)
	R&R	0.023	0.096	0.206	0.273	0.699	0.699 (20)	0.023 (1)
	F&M	0.003	-0.216	**-1.134**	-2.267	-3.547	0.003 (1)	-3.547 (20)
54-86	Perotti	-0.025	**-0.405**	**-1.619**	**-3.246**	-5.333	-0.025 (1)	-5.333 (20)
	P-313	-0.049	**-0.398**	-0.886	-1.395	-2.242	-0.049 (1)	-2.242 (20)
	R&R ***	0.010	0.026	-0.016	-0.117	-0.159	0.026 (4)	-0.195 (18)
	F&M	0.043	-0.064	-0.742	-1.485	-2.647	0.110 (2)	-2.647 (20)
86-07	Perotti	0.084	0.239	0.058	-0.196	-0.087	0.289 (5)	-0.196 (12)
	P-313	-0.035	-0.048	-0.554	-1.106	-2.315	0.030 (3)	-2.315 (20)
	R&R *	0.082	0.319	0.480	0.586	1.003	1.003 (20)	0.082 (1)

* Indicates the narrative shock is exogenous for at least 4 quarters (see text)

** Indicates the narrative shock is exogenous for at least 8 quarters (see text)

*** Indicates the narrative shock is exogenous for at least 12 Quarters (see text)

Underlined values indicate that zero falls outside of the 95th and 5th quantile

Bolded values indicate that zero lies outside of the 97.5th and 2.5th quantile

Table 23: Response of Mortgage Assets to Government Revenue Shocks 1954q3 to 2007q1. 1980q1 BP. Government revenue shocks equal to 1% of GDP. Definition of revenue includes transfers.

Total Mortgage Assets

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	-0.027	-0.253	-1.395	-2.878	-3.859	-0.027 (1)	-3.932 (17)
54-07	Perotti	-0.062	-0.545	-2.290	-4.496	-6.819	-0.062 (1)	-6.859 (19)
	P-313	**-0.138**	**-0.923**	-2.683	-4.545	-7.531	**-0.138 (1)**	-7.531 (20)
	R&R	0.014	0.078	0.095	0.109	0.354	0.354 (20)	0.014 (1)
	F&M	0.002	-0.345	**-1.619**	-3.113	-4.304	0.002 (1)	-4.329 (19)
54-86	Perotti	-0.048	**-0.676**	**-2.509**	**-4.688**	-7.489	-0.048 (1)	-7.489 (20)
	P-313	**-0.087**	**-0.708**	-1.656	-2.521	-3.526	**-0.087 (1)**	-3.537 (19)
	R&R ***	-0.017	-0.071	-0.198	-0.340	-0.582	-0.017 (1)	-0.582 (20)
	F&M	0.066	0.041	-0.503	-1.603	-3.799	0.164 (3)	-3.799 (20)
86-07	Perotti	0.101	0.375	0.290	-0.315	-1.114	0.515 (7)	-1.114 (20)
	P-313	-0.005	0.200	-0.226	-1.110	-3.491	0.244 (3)	-3.491 (20)
	R&R *	**0.309**	**1.651**	3.286	4.745	6.511	6.511 (20)	**0.309 (1)**

Home Mortgage Assets

		1qrt	4 qrt	8 qrt	12 qrt	20 qrt	max	min
	F&M	0.008	-0.137	-0.944	-2.146	-3.362	0.008 (1)	-3.362 (20)
54-07	Perotti	-0.022	-0.340	-1.586	-3.319	-5.472	-0.022 (1)	-5.472 (20)
	P-313	**-0.086**	**-0.694**	-1.941	-3.340	-5.347	**-0.086 (1)**	-5.347 (20)
	R&R	0.023	0.096	0.206	0.273	0.699	0.699 (20)	0.023 (1)
	F&M	0.003	-0.216	**-1.134**	-2.267	-3.547	0.003 (1)	-3.547 (20)
54-86	Perotti	-0.025	**-0.405**	**-1.619**	**-3.246**	-5.333	-0.025 (1)	-5.333 (20)
	P-313	-0.049	**-0.398**	-0.886	-1.395	-2.242	-0.049 (1)	-2.242 (20)
	R&R ***	0.010	0.026	-0.016	-0.117	-0.159	0.026 (4)	-0.195 (18)
	F&M	0.043	-0.064	-0.742	-1.485	-2.647	0.110 (2)	-2.647 (20)
86-07	Perotti	0.084	0.239	0.058	-0.196	-0.087	0.289 (5)	-0.196 (12)
	P-313	-0.035	-0.048	-0.554	-1.106	-2.315	0.030 (3)	-2.315 (20)
	R&R *	0.082	0.319	0.480	0.586	1.003	1.003 (20)	0.082 (1)

* Indicates the Narrative Shock is Exogenous for at least 4 quarters (see text)

** Indicates the Narrative Shock is Exogenous for at least 8 quarters (see text)

*** Indicates the Narrative Shock is Exogenous for at least 12 Quarters (see text)

Underlined values indicate that zero falls outside of the 95th and 5th quantile

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