ON THE EASE OF OVERSTATING THE FISCAL STIMULUS IN THE US, 2008-9

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ABSTRACT

This note shows that the aggregate fiscal expenditure stimulus in the United States, properly adjusted for the declining fiscal expenditure of the fifty states, was close to zero in 2009. While the Federal government stimulus prevented a net decline in aggregate fiscal expenditure, it did not stimulate the aggregate expenditure above its predicted mean. We discuss the implications of limitations on states' ability to run deficits for the design of fiscal stimulus at the federal level. We devote particular attention to intertemporal moral hazard concerns in a federal fiscal system, and ways to address these concerns.

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The financial crisis of 2008-9 led to a massive bailout of the financial system, and significant fiscal stimulus by the United States federal government. Despite this massive stimulus, unemployment reached two digit figures, leading some observers to question the efficacy of fiscal policy. Moreover, recent research raised questions with respect to the fiscal multiplier in the US, as well as about possible adverse effects of higher future debt overhang.[3] Given that the counterfactual of the performance of the US economy in the absence of the fiscal stimulus is hard to ascertain, one may thus question its effectiveness, and hence the logic of continuing it.

The purpose of this paper is to examine whether there was net fiscal expenditure stimulus in the U.S. during the crisis. First, we analyze the patterns of fiscal expenditure of the federal government, the state and the local governments, and the consolidated fiscal expenditure. We distinguish between the "pure fiscal expenditure" and the published total expenditure. The "pure fiscal expenditure" or simply, fiscal expenditure of the textbook variety is defined as the sum of government consumption and government gross investment whereas the published total expenditure equals this pure fiscal expenditure plus transfers. Excluding transfer payments (i.e. net of the transfers to financial sector and automatic stabilizers like higher unemployment benefits that were a consequence of the higher unemployment levels) allows us to consider the impact of the policy driven or discretionary fiscal stimulus.[4] That is, the total consumption and

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[3] See de Resende *et. al.* (2010), Spilimbergo *et al.* (2009), Monacelli *et al.* (2009), and the references therein.

[4] This observation does not negate the possible benefit of stabilizing the financial system by means of federal bailouts. Yet, focusing on the liquidity transfer to collapsing financial institutes does not amount to net fiscal stimulus that increases the fiscal expenditures in ways that compensate for the impact of borrowing constraints on state and local governments. This

gross investment levels are the government expenditure levels relevant for computing the Keynesian fiscal multiplier. While a large literature defines countercyclical fiscal policy as one with positive correlation between fiscal surplus and output, we focus on actual government spending. We agree with Kaminsky, Reinhart and Vegh (2004) that one needs to focus on government instruments to smooth business cycles, not on outcomes like fiscal deficit, that are endogenous. For example, the government may be raising tax rate in the recession and cutting expenditure, yet running a fiscal deficit because the tax base is smaller. As we will see below, identifying fiscal stimulus with fiscal deficits during recession may mask actual policy stances.

We show that, statistically, the federal expenditure stimulus compensated for the fifty states' negative stimulus due to collapsing state expenditures. The sum of the federal (positive) and states (negative) fiscal expenditure stimulus, however, is close to zero. We close with a discussion of possible obstacles for net expenditure stimulus in a federal system, and propose ways to ameliorate some of these concerns, relieving some of the handicaps of net fiscal expenditure stimulus in a federal system.

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observation is pertinent in explaining the anaemic reaction of the overall US economy to the alleged 'big federal fiscal stimulus' at times when the adverse wealth effect and shrinking access of the private sector to credit reduced sharply the private aggregate demand.

1. Patterns of Federal and States expenditure in the US

Figure 1.a reports the seasonally adjusted patterns of the pure fiscal expenditure in the US, 1995-2009, at three levels – (a) consolidated, (b) federal and (c) state and local - in constant (2005) billions of US dollars[5]. Figure 1.b plots the real expenditures relative to their respective values in 2008Q3. The figures reveal that during the crisis, state and local fiscal expenditures dropped from USD 1547 billion in real terms in 2008Q3 to USD 1545.5 billion in 2009Q3 while the federal fiscal expenditures rose from USD 991.6 billion to USD 1043.3 billion over the same period. The consolidated fiscal expenditures therefore rose from USD 2536.6 billion in real terms in 2008Q3 to USD 2585.5 billion in 2009Q3. Moreover, all the three series fell before rising – as the economy was in a tailspin in the first quarter of 2009, both federal and state fiscal expenditures were falling with it.

Figure 2 plots the fiscal expenditures plus transfers for each level of government. During the crisis, from 2008Q3 to 2009Q4, state and local fiscal expenditures plus transfers rose by USD

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[5] All data are from Bureau of Economic Analysis (BEA) website. The series for pure fiscal expenditures are available in real, seasonally adjusted terms from BEA. The series for total expenditures (fiscal expenditures plus transfers) is available in current dollars (seasonally adjusted) for each level of government and were converted into constant dollars using the deflator for government expenditure at that level.

20.43 billion. The federal fiscal expenditures plus transfers increased by USD 415.39 billion, resulting with a net increase of the consolidated expenditures plus transfers[6].

In order to better understand the actual magnitude of the fiscal stimulus, we proceed by focusing on the patterns of the three (consolidated, federal and state and local) fiscal expenditure time series relative to GDP. Considering fiscal policy lags, fiscal expenditure at time *t* may reflect decisions undertaken at time *t-1*, which reflects GDP at that time. Figure 2 reports the three fiscal expenditure time series, normalized by four-quarter lagged GDP. Each chart reports the actual time series, the predicted series of one-step-ahead forecasts using the proper ARIMA structure, and the 95% confidence interval around the predicted value.[7] Figure 3 reveals that the consolidated fiscal expenditure was well within the confidence interval of prediction for the entire time period between 2006Q1 and 2009Q3. This was largely because that while federal expenditures were rising, state and local government expenditures went into a free fall,

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[6] The three series were deflated using their own deflators, therefore the sum of changes in real federal and state fiscal expenditures plus transfers does not add up to the real change in consolidated expenditures plus transfers, which was USD 351.22 billion.

[7] An ARIMA model (with no MA component) was considered for simplicity and tractability. The series were tested for unit roots using Phillips Perron (1988) and Augmented Dickey Fuller (ADF) unit root tests as well as Clemente-Montanes-Reyes (1998) (CMR) tests allowing for two structural breaks. All the tests indicated unit roots in levels and rejected unit root in the first differenced series for state level fiscal expenditures. For federal fiscal expenditures, all tests agreed on an I(2) process. For the consolidated fiscal expenditure series, the ADF and Phillips Perron tests rejected a unit root but the CMR test did not. The estimated ARIMA models assume this series to be I(1). The optimal lag in the ARIMA models was selected using BIC statistic. Results are available on request.

stabilizing only after 2009Q1. In fact, for all of 2008, state and local fiscal expenditures were significantly below what could be predicted using historical data. The figures clearly reveal that the fiscal expenditure stimulus did not expand the consolidated fiscal expenditure above the predicted level[8].

In figure 4, we examine the actual and predicted values of fiscal expenditures plus transfers, along with the confidence intervals around one-step-ahead predictions made using the appropriate ARIMA structure, as defined in footnote 7. The selected ARIMA models are indicated on the figure. It is clear that while the consolidated fiscal expenditure plus transfers was outside the confidence interval in two of the last five quarters, it exceeded the upper bound by at most 0.6 percentage points, and fell back within the confidence interval in 2009Q3. Thus, even taking into account the transfers to the financial sector and the automatic stabilizers built into the system, the federal stimulus did not expand the consolidated fiscal expenditure significantly above the predicted level. Moreover, even this limited impact may now be over.

To summarize, our results indicate that, so far, the federal fiscal expenditure stimulus has mostly compensated for the negative state and local stimulus associated with the collapsing tax revenue and the limited borrowing capacity of the states. While this is a significant accomplishment, the net effect is that the consolidated fiscal expenditure stimulus is small, at a time when the private sector's deleveraging has reduced private consumption. Thus, the fiscal expenditure stimulus did not manage to provide a viable cushion for the negative stimulus associated with private sector's

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[8] The consolidated fiscal expenditure lay outside the confidence interval in 67 out of the 246 quarters in sample, but all of these instances were in the years before 1995.

declining demand. The next section discusses the possible challenges associated with delivering a net fiscal stimulus in the US.

2.   Obstacles for net stimulus

The case for net stimulus in the US is debatable. On the one hand, if the US is already in a robust recovery, as is presumed by more optimistic observers, then net fiscal stimulus may be redundant, and could lead inflationary pressure down the road.[9] On the other hand, double digit unemployment, and uncertainty regarding the strength of the recovery, may suggest the need for a second US federal fiscal stimulus package. Independently of this debate, understanding the reasons for the lack of greater net fiscal expenditure stimulus in the aftermath of the deepest recession of the last fifty years is essential. One explanation is provided by the moral hazard concerns associated with common pool challenges of a fiscal union. Another explanation for the lack of a larger stimulus is that the present trajectory of the US public debt/GDP, in the absences

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[9] At the end of August 2009, Reuters reported "While economists in the NABE survey acknowledged that the stimulus package had helped to break the pace of the economy's decline in the second quarter, only 35 percent viewed fiscal policy as being "about right". Half of the respondents saw fiscal policy as too simulative. About 266 members took part in the poll which was conducted between August 3-18. The U.S. economy contracted at a 1.0 percent annual rate in the second quarter after collapsing 6.4 percent in the first three months of the year. "Fully 76 percent do not believe a second stimulus package is needed. Three-quarters responded that they would like to see fiscal policy become more restrictive over the next two years, but only 28 percent expect that it will be," the NABE said. See
http://www.reuters.com/article/idUSTRE57U0LT20090831

of concrete plans for fiscal consolidation, is a cause for concern. We close the paper with a discussion of these issues.

The limits on state borrowings in a federal union may be rationalized by the concern that the absence of such limits may induce competitive borrowing by states, expecting the federal government to bail them out in due course.[10] This is an important concern in a highly centralized federal union, where most of the tax revenue is 'owned' by the federal government (von Hagen and Eichengreen, 1996). There is also the apprehension that transferring federal resources to states with deeper tax revenue shortfalls would 'reward' states that were less prudent, and penalize states that designed a more stable tax base and a precautionary pool of 'saving for the rainy day' in good times in order to provide the cushion for bad times.

While this moral hazard concern is important, in principle one could design a federal stimulus program that would involve transfers to states but would not reward states that had made past fiscal mistakes. For example, this can be done by channelling funds to states on a per-capita basis, such that each state gets an allocation proportionate to its population, and as long as the state government is committed to spend these funds and not use them to repay past debt. One may also expect that the equitable per capita treatment of this scheme would facilitate greater support for the net fiscal expenditure stimulus by the Congress. Under this scheme, the federal

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[10] Examples for gaming a Federal Union by means of "competitive borrowing" include Argentina, where there have been frequent federal bailouts of provincial governments, leading ultimately to higher inflation, and arguably to the ultimate financial meltdown of the early 2000s (see Aizenman (1991) and Tornell and Lane (1999)). See also the recent concerns regarding the euro zone's rescue plan for Greece (*The Economist*, Feb 18th 2010, Greece and the euro).

government borrows for the states, in a way that equalizes the borrowing per-capita, independently of the quality of the domestic public finance mechanism of each state.[11]

Another concern restraining public support for greater federal stimulus may be the long run implications of a net stimulus, i.e. increasing the future debt overhang. Observers noted that even before the crisis, the public debt trajectory was unsustainable, and fiscal reform was needed (see Auerbach and Gale, 2009). Recognizing the gravity of the recession induced by the financial crisis may call for coupling any federal fiscal stimulus with outlining a credible medium term plan for fiscal consolidation. In fact, independent of the fiscal stimulus triggered by the great recession, concerns about the future path of the public debt/GDP remain a serious policy challenge for the US.

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[11] Similar schemes may apply if the allocation to each state were proportional to the state population times the average federal tax revenue per capita during the years prior to the crisis.

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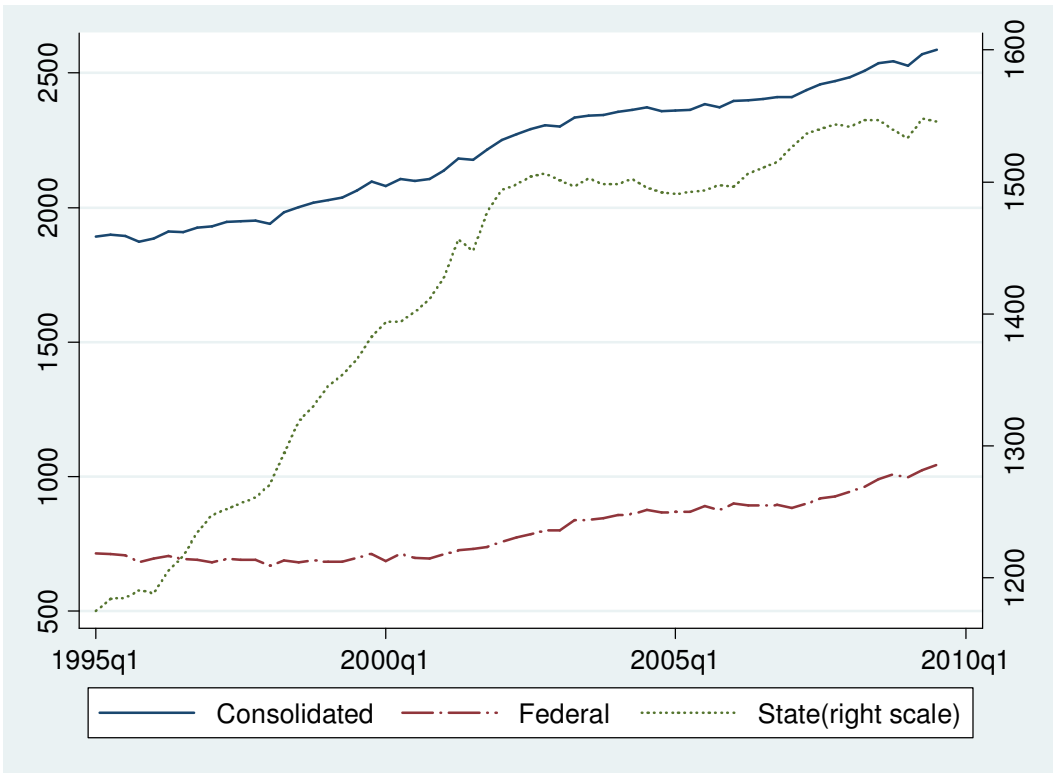Tornell, Aaron and Philip R. Lane (1999) "The voracity effect" *The American Economic Review*, 22-46.

Figure 1.a. "Pure" fiscal expenditures (Consumption + Gross Investment)
(Billions of 2005 US dollars, seasonally adjusted)
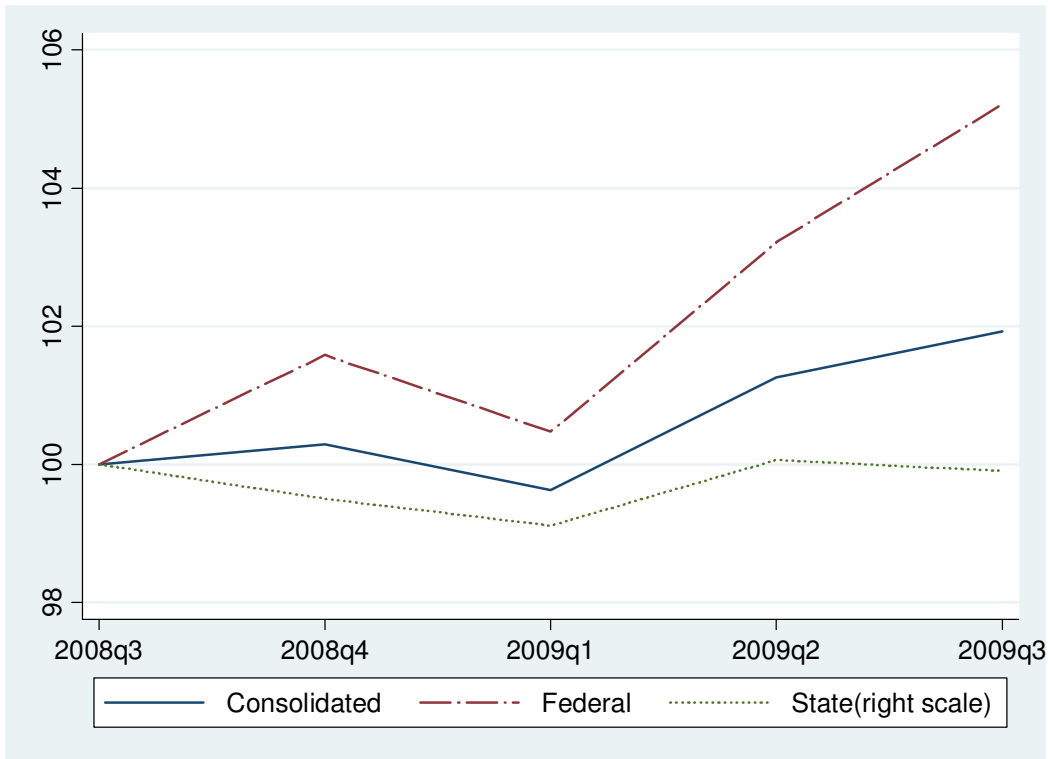
Figure 1.b: Pure fiscal expenditures
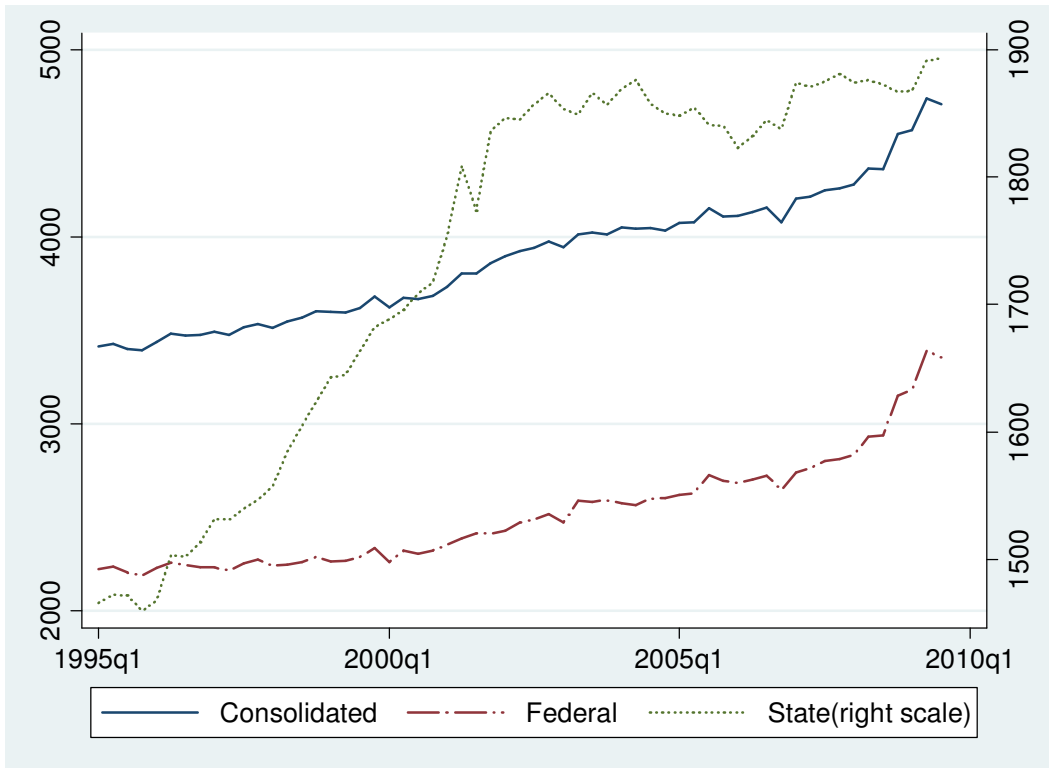(2008Q3 = 100)

Figure 2.a: Total Expenditures (Pure fiscal expenditures + transfers)
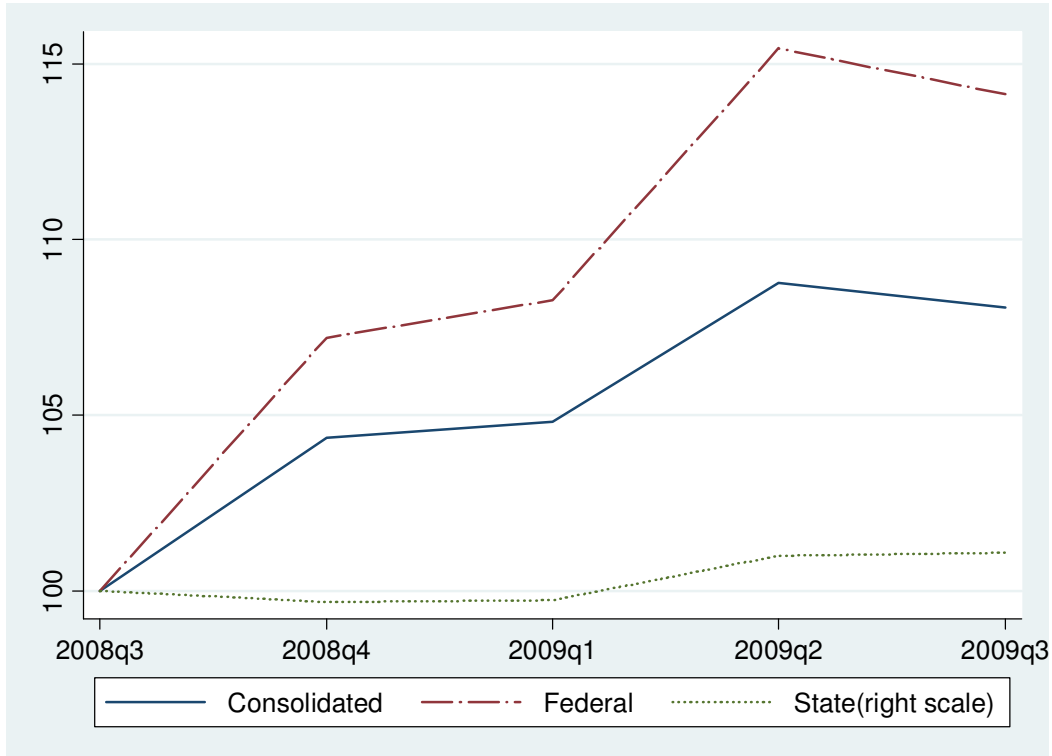(Billions of 2005 US dollars, seasonally adjusted)

Figure 2.b: Total Expenditures (Pure fiscal expenditures + transfers)
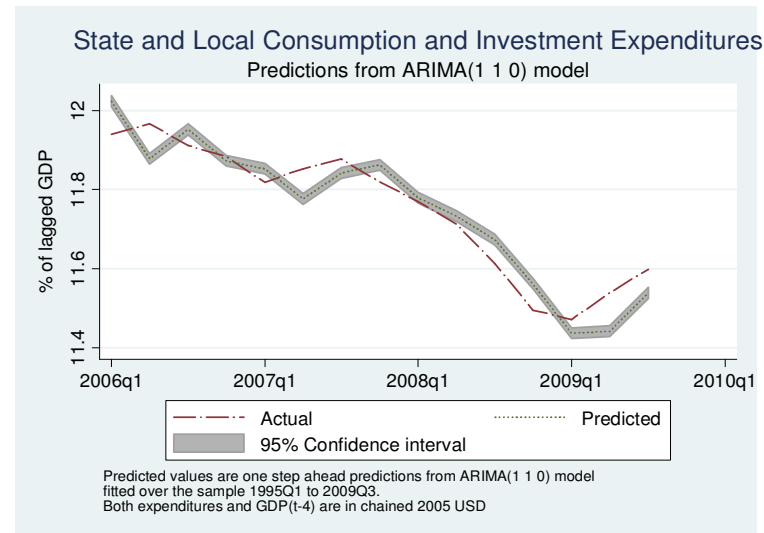(2008Q3 = 100)

Consolidated Constumption and Investment Expenditures
Predictions from ARIMA(1 1 0) model

Predicted values are one step ahead predictions from ARIMA(1 1 0) model
fitted over the sample 1948Q1 to 2009Q3.
Both expenditures and GDP(t-4) are in chained 2005 USD

Federal Consumption and Investment Expenditures
Predictions from ARIMA(2 1 0) model

Predicted values are one step ahead predictions from ARIMA(2 2 0) model
fitted over the sample 1995Q1 to 2009Q3.
Both expenditures and GDP(t-4) are in chained 2005 USD

State and Local Consumption and Investment Expenditures
Predictions from ARIMA(1 1 0) model

Predicted values are one step ahead predictions from ARIMA(1 1 0) model
fitted over the sample 1995Q1 to 2009Q3.
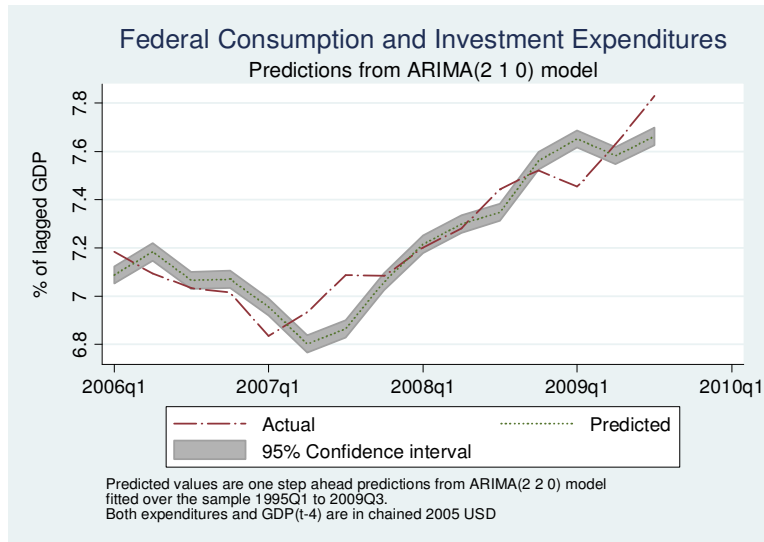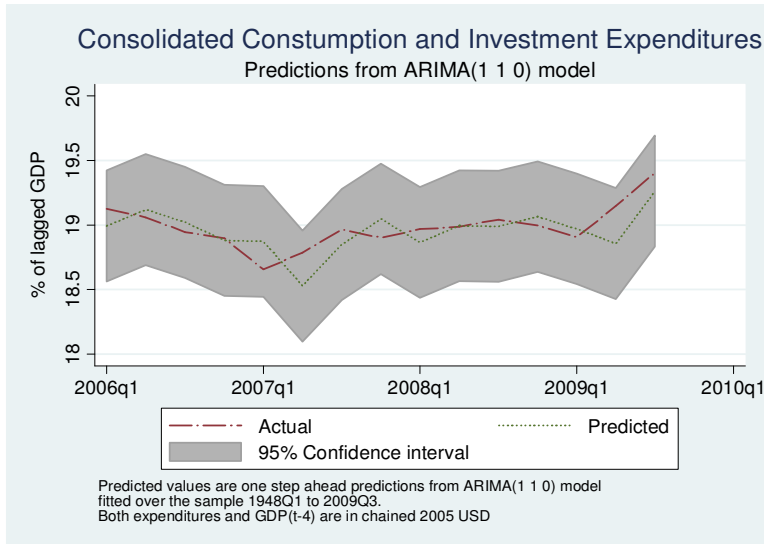Both expenditures and GDP(t-4) are in chained 2005 USD

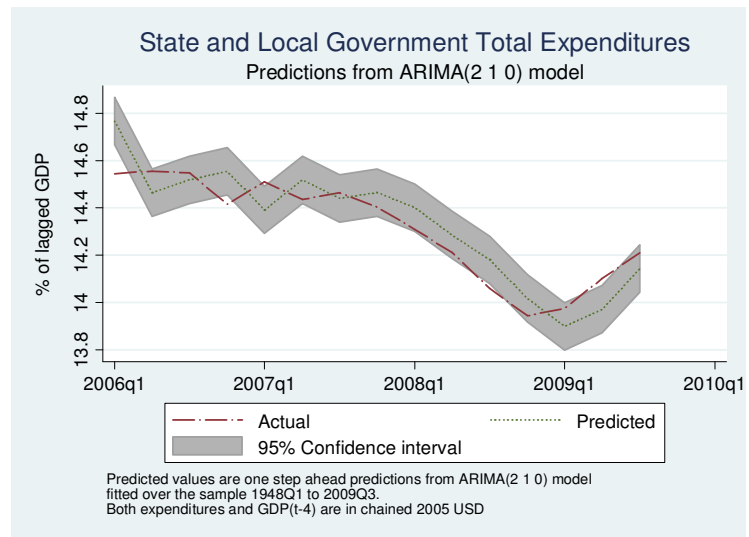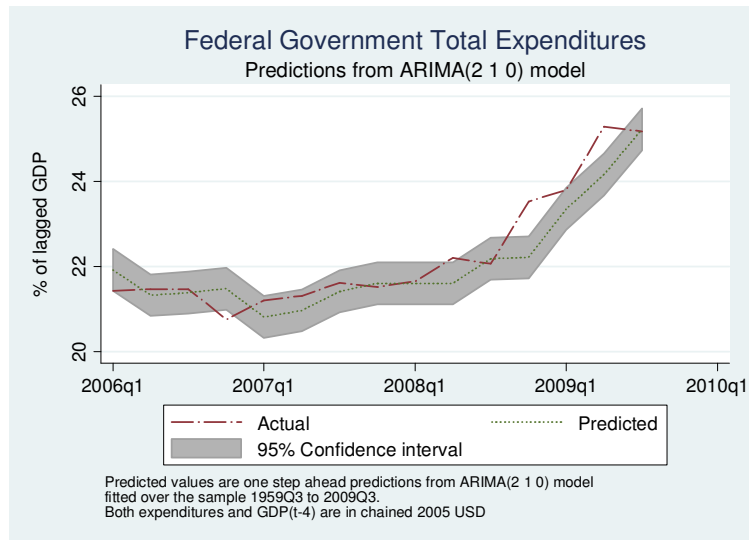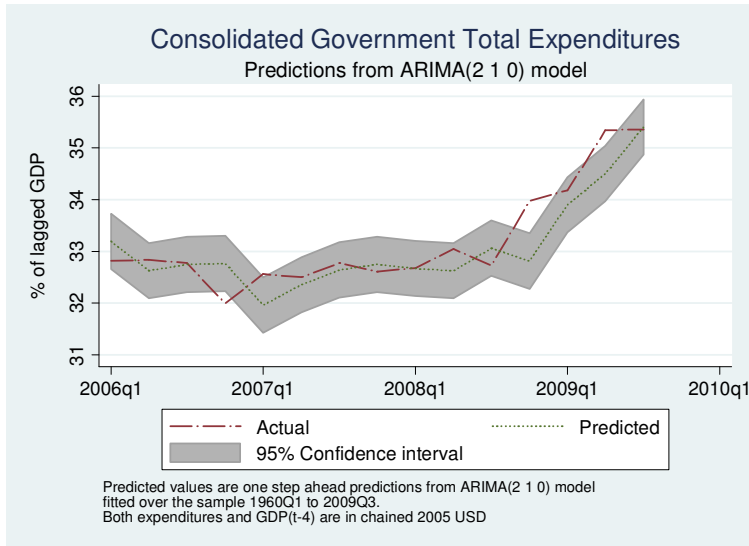Figure 3: Pure Fiscal Expenditures/Lagged GDP; 1995-2009

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Figure 4: (Pure Fiscal Expenditures+ Transfers)/Lagged GDP; 2006-2009.