AN ESTIMATE OF SHORT-TERM GDP LOSSES FROM A GOVERNMENT SHUTDOWN

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ABSTRACT. Economists suggest that GDP losses from the December 22nd, 2018 partial shutdown of the federal government will be between 9 billion USD. Here, a range of reduction in GDP from the shutdown are estimated using aggregate expenditures from the National Table of Accounts. A reasonable range of 4th Quarter GDP reduction is 9 to 77 billion USD or 0.05% to 0.4% of 2018 GDP (Table 2). The short-term impact of the shutdown is proportionately small because the 800,000 furloughed federal employees constitute about 0.5% of the total U.S. labor force. Longer term impacts on GDP depend on changes in investor and consumer confidence and will be discussed in a future note. This example illustrates the practical use of introductory macroeconomic course skills in analyzing current economic issues. Some familiarity with undergraduate macroeconomics is assumed. Applies to: ECON 2220 (Introduction to Macroeconomics).

1. INTRODUCTION

On December 31st, 2018, J.P. Morgan Chase economist Jesse Edgerton estimated GDP reductions of 0.2 percent of 1st Quarter 2019 GDP growth, or an insignificant 8.7 billion USD, based on the reduction of GDP from the last major federal shutdown (Davidson). Economist Mark Zandi of Moody's Analytics predicts the federal shutdown in the last week of 2018 will not have a measurable impact on 4th Quarter 2018 GDP, but he concluded that impacts could be seen in the 1st quarter of 2019, if the shutdown persists (*id*). In a sixteen day shut-down in October 2013 was estimated to cause a 24 billion USD GDP reduction, or between 0.2 and 0.6 percent of GDP (Hicken 2013, OMB 2013). Are these estimates within a reasonable range of likely GDP reductions?

One method of determining the impacts on GDP would be to estimate the wages and salaries of furloughed federal employees and federal contractors. That method is fraught with ambiguity. There about 2.7 million salaried civilian federal workers and another 4 million executive military branch employees (Jennings and Nagel 2018), of which about 800,000 persons were furloughed during the current partial federal shutdown or about 0.5% of the U.S. labor force of 162 million persons (BLS 2018). The number of federal workers impacted by the shutdown is ambiguous because the growth of the federal government employment was reduced beginning in the 1980s by outsourcing federal positions to a blended workforce of federal contractors and state, local and private grant recipients (Volcker Alliance 2017). One estimate is that the federal blended workforce is 9 million persons, including 2.5 million salaried

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workers, 3.7 million direct contract employees, 1.3 military employees, and another 1.5 million employees tied to federal grants to state and local government and private industry (Volcker Alliance). The blending of the federal with state and local government employees is implemented primarily through federal revenue sharing, and about 21% percent of state and local government revenues (Center for Budget Priorities April 2018). About 83% of those shared revenues are federal mandatory Medicaid and Medicare payments, but about 17% are for discretionary programs (*id*). Discretionary funding is subject to a federal shut down. The number of persons employed under federal contracts is unclear (CBO 2012). Thus, the number of effected federal, state and local government and contractor private employees from the 2018-2019 shutdown are not fully known and are difficult to estimate. This confounds estimating the impact of a partial federal government shutdown using direct methods. Finally, the timing of loss-of-funding and loss-of-payments to employees is ambiguous. Each agency has its own level of unused reserves from prior quarters, and those the first day on which an individual employee would stop receiving a paycheck varies by agency (Scholtes, Emma and Becker 2019).

Data on aggregate expenditures from the National Accounts provides another method to estimate a range of short-term impacts on GDP from the shutdown that avoids ambiguities in computing impacts by direct accounting methods. Here, the National Accounts related to aggregate expenditures is to estimate a range of potential GDP losses from the current partial federal government shutdown. This is a practical demonstration of skills gained by undergraduate students in introductory macroeconomics courses. A reasonable range of the short-term 4th Quarter GDP reduction from the federal government partial shutdown is 9 to 77 billion USD (Table 2) - an extremely small GDP reduction compared to a 20 T USD 2018 GDP (0.05 to 0.4%).

Long term impacts of the shut-down depend on changes in investor and consumer confidence from the 3 T USD drop in the value of U.S. stock market capitalization. Those will be discussed in a future note.

2. A Model of Short-term GDP Reductions based on Aggregate Expenditures

The BEA through its National Accounts provide GDP estimates for the Third Quarter of 2018 (BEA Nov. 28, 2018). That data includes information on the key components for Aggregate Expenditure (AE)-Aggregate Production(AP) model that underlies the Keynesian cross diagram and multiplier model of the goods market studied in many undergraduate macroeconomics courses (Case 9d, Colander 8d, Blanchard 6d). The core of the AE-AP model are the National Accounts and estimates of domestic expenditures for:

$$\begin{aligned}
GDP &\equiv AE = \text{Gross domestic product}\\
AE &= \text{Aggregate expenditures}\\
C &= \text{Consumption spending}\\
I &= \text{Planned investment spending}\\
G &= \text{Government Purchases}\\
X &= \text{Exports - Receipts from}\\
M &= \text{Imports - Expenditures for.}
\end{aligned}$$

The triple bar symbol ($\equiv$) means "identical to" or "defined to be equal to".

In macroeconomics, these variables are related by,

$$GDP \equiv AE = C + I + G + (X - M). \tag{2.1}$$

The degree to which changes in government purchases (G) disperse through the economy is related to the government spending multiplier,

$$\begin{aligned}
&\text{Government spending multiplier} = \frac{1}{MPS} = \frac{1}{1 - MPC};\\
&\text{where,}\\
&MPS = \text{marginal propensity to save, and,}\\
&MPC = \text{marginal propensity to consume.}
\end{aligned}$$

A long-term marginal propensity to consume (MPC) is typically taken to be 0.2. This implies a government spending multiplier of 1.25.

If a naive assumption is made that federal expenditures are proportional to time, then the percent reduction in federal expenditures is proportional to the number of weeks that the government is shut down. Since the shut-down involves 800,000 out of 2,500,000 salaried federal employees, including postal workers, the reduction of expenditures is assumed to be about one-third of total deferred expenses. E.g. - a one week shutdown reduces expenditures by $(1 - (51/52) \times 0.33 = 0.006 = 0.6\%$. This naive assumption simplifies the confounding factor that each federal agency has differing levels of unused reserves, and, thus, the date on which an individual federal employee, contractor or grantee would stop consumption varies.

Table 1. Percentage Expenditure Reduction by Number of Weeks

Weeks	Reduction %	× 33%
1	1.9	0.6
2	3.8	1.3
3	5.8	1.9
4	7.7	2.5

Based on the above, following is the estimate range of short-term GDP reductions using the BEA's third quarter of estimate of 2018 GDP (BEA Nov. 28, 2018). In Table 2 in the fourth column, an 0.25% expenditure reduction is applied to baseline nominal G of 3550.7 B USD, yielding a new G of 3541.9 B USD, a revised reduced AE at 20,651.6 B USD, and a net short-term reduction in GDP of 8.7 B USD. Table 3 shows the same result in terms of real chained 2012 dollars:

Table 2. Range of GDP Losses - 4th Qtr. 2018 - Nominal B-USD

1	Variable	Baseline	0.25%	0.75%	1.25%	1.75%
2	AE	20660.3	20651.6	20633.9	20616.1	20598.4
3	C	14052.1	14052.1	14052.1	14052.1	14052.1
4	I	3709	3709	3709	3709	3709
5	X	2540.6	2540.6	2540.6	2540.6	2540.6
6	M	3191.9	3191.9	3191.9	3191.9	3191.9
7	G	3550.7	3541.8	3524.1	3506.4	3488.6
8	Δ AE		8.7	26.4	44.2	61.9
9	Δ AE $\times$ 1.25		10.9	33.0	55.25	77.4

Source: Author from BEA Nov. 2018. Notes: Estimates of Changes in Nominal 2018 Billions USD from Baseline. Line 8 in the table shows the change in GDP without the multiplier effect on reductions in total GDP (Δ AE) to a percentage reduction shown on line 1 to total federal, state, and local expenditures (G) in line 7. Line 9 increases the estimate of Δ AE by a governmental spending multiplier of 1.25.

Table 3. Range of GDP Losses - 4th Qtr. 2018 - Chained B-USD

1	Variable	Baseline	0.3%	0.55%	0.8%	1.0%
2	AE	18638.8	18629.2	18621.2	18613.3	18605.3
3	C	12957.2	12957.2	12957.2	12957.2	12957.2
4	I	3435.2	3435.2	3435.2	3435.2	3435.2
5	X	2545.7	2545.7	2545.7	2545.7	2545.7
6	M	3491.5	3491.5	3491.5	3491.5	3491.5
7	G	3192.2	3182.6	3174.6	3166.6	3158.7
8	Δ AE		9.6	17.6	25.5	33.5

Source: Author from BEA Nov. 2018. Notes: Estimates of Changes in Chained 2012 Billions USD from Baseline. The table shows the change in GDP (Δ AE) without the multiplier effect on reductions in total GDP corresponding to a percentage reduction shown on line 1 to total federal, state, and local expenditures (G) in shown line 7.

Since the estimate involves a short-term short, computation of the effect of the government spending multiplier is done by simple multiplication. The Keynesian cross multiplier computation was not done.

3. Discussion

The next round of politically significant impacts on the short-term GDP response to the 2018-2019 federal shutdown will be from potential evictions of some 2.2 million families receiving HUD Section 8 rental assistance. In 2015, there were 4,578,583 families in the United States receiving HUD Rental Assistance. This includes 2,176,055 that receive housing vouchers (Center on Budget and Policy Priorities). In Utah in 2015, that was 16,843 families (38 percent of which have children) for all forms of rental assistance and 10,809 that are on rental vouchers. About 98 percent of federal HUD workers have been furloughed. In light of the shutdown, Section 8 housing voucher payments may be stopped for the month of January. HUD's federal shutdown contingency plan notes that local public housing authorities have only been reimbursed through December 2018. Local PHAs have not been paid funds to pay January Section 8 rental vouchers. If local PHAs have no reserves and the federal shutdown continues in January, they will have no funds to pay Section 8 vouchers (Carson, *e.g.* O'Reilly).

Federal employees deemed critical have filed suits against the administration on the grounds that forcing them to work without compensation violates the Fair Labor Standards Act (AFGE 2018).

In a December 23, 2018 pre-shutdown opinion poll, 1,992 likely voters remained split how well President Trump handled the border security conflict and partial governmental shutdown (Morning Consult). 56% of Republicans thought Trump did enough to compromise with Democrats; 7% of Democrats thought the president did enough to reach out to the opposition (Question 19).

Paradoxically, both Republicans and Democrats had the same negative outlook on the likely negative economic impact of the shutdown (Questions 9 to 17), on the whether the shutdown would lead to any practical impact on border security (Question 18) and whether the shutdown would lead to the President receiving his funding demands for a border wall (Question 20). Votes in both parties did not feel that the shutdown would either solve the border security problem or lead to the funding of the President's request. In the short-term through January 5, 2018, President Trump's approval-disapproval ratings have been essentially unchanged at around 42% disapproval. Both Republican (45%) and Democratic (32%) likely voters felt that the shutdown would either have a positive or no impact on them (Question 16). Republicans (43%) and Democratic (57%) likely voters felt that the shutdown would either have either a somewhat negative or very negative impact on "people like them" (Question 16). If the shutdown persists, these opinion poll results will tend more towards the negative opinion range.

It is unlikely the President will change his political shutdown strategy until his approval ratings decline further and there is significant public move towards a negative opinion of the shutdown.

These likely voter views are consistent with the small reductions in GDP and the small percentage of the labor force that are directly impacted by the shutdown (0.5% of total GDP and total labor force), discussed above.

4. Conclusion

In conclusion, J.P. Morgan Chase economist Jesse Edgerton estimated GDP reductions of 0.2 percent of 1st Quarter 2019 GDP growth, or an insignificant 8.7 billion USD, are within a reasonable range of economic short-term impacts from the shutdown, but the Morgan-Chase estimate is at the low-end of the loss range. The U.S. Bureau of Economic Analysis and the U.S. Bureau of Labor Statistics - agencies that collect key economic indicators needed to estimate GDP - have been furloughed.

About: I am a former mathematics student with an emphasis in statistics and had an lengthy career in antitrust.

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