

The Takeaway

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When Is Government Spending More Effective in Stimulating the Economy?

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The recent periods of low interest rates have shown that fiscal policies are crucial for economic recovery. Understanding the effects of increased government spending on the economy is of great importance, particularly for policymakers. The \$800 billion American Recovery and Reinvestment Act was introduced in February, 2009, to resuscitate the economy. The \$2.2 trillion Coronavirus Aid, Relief, and Economic Security Act was launched in March, 2020, in response to the economic crisis during the COVID-19 pandemic. Although similar, these two stimulus packages were not equally effective because their recessions were very different.

The effectiveness of government spending is summarized in terms of multipliers that quantify the rise in GDP as a result of a \$1 increase in government spending. While earlier research focused on whether government spending is more effective in



WHAT'S THE TAKEAWAY?

Recession can result from a lack of demand or a lack of supply.

Demand-driven recessions lead to lower prices, while supply-driven recessions result in higher prices.

Government spending is more effective in a low inflation recession than in a high inflation recession.

Understanding the underlying forces driving the state of the economy is important for effective policy design.

bad times vs. good times, our research¹ shows that the nature of recession matters in determining the government spending multipliers. In particular, the government spending multipliers differ across recessions, based on whether they coincide with high or low inflation.

NATURE OF RECESSION

Recessions are usually driven by either a lack of demand or a lack of supply. In a recession driven by a lack of demand, consumers are not willing to buy goods. This lack of demand for final goods brings down price levels. The 2007-2009 global financial crises are a great example of recession driven by a lack of demand. The housing price collapse made the average household in the United States poorer which led to a decrease in consumption and price level.

A recession can also be driven by a lack of supply. The lack of supply (or supply chain disruptions) raises the cost of production which raises prices. The dominant force behind the COVID-19 pandemic recession was supply disruptions due to lockdowns and trade restrictions.

MECHANISM

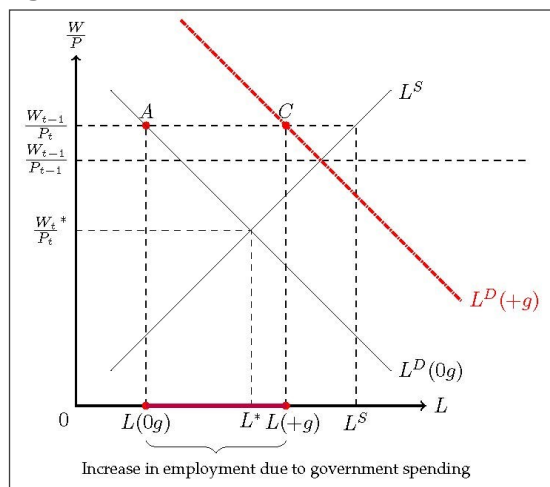
In order to understand how government spending stimulates output in the economy, consider a simple labor market equilibrium with labor demand (L^D , downward sloping line) and labor supply (L^S , upward sloping line), shown in Figure 1. Figure 1a shows a demand-driven recession and 1b shows a supply-driven recession. The main friction in this economy is downward nominal wage rigidity (DNWR)—workers are not willing to have

their nominal wage cut and the current wage cannot be lower than the previous wage. When DNWR is a binding constraint, it results in involuntary unemployment in the economy and recession.

Assume we are in a recession where the market clearing wage (W_t^*), which assures full employment, is lower than the previous wage (W_{t-1}). As wages are not adjusting downward, firms find it too costly to employ workers and hire fewer workers for production than the labor supply, resulting in involuntary unemployment. In a demand-driven recession, price level goes down, resulting in rising real wages (W_t/P_t). As real wages increase, firms hire even fewer workers. Point A in Figure 1a represents the intersection of real wages and labor used in production in a demand-driven recession. In a supply-driven recession, however, producers raise prices, leading to lower real wages (W_t/P_t). Accordingly, point B in Figure 1b represents the equilibrium labor outcome in a supply-driven recession.

Now, let's think about an increase in government spending, which is shown as a red dotted and dashed downward sloping line in both graphs ($L^D(+g)$). As producers have to produce more products to satisfy increased demand by government, the labor demand curve shifts right. In a demand-driven recession, an increase in government spending is not enough to achieve full employment. Government spending can effectively raise labor market outcomes to point C in Figure 1a without raising real wages. The horizontal distance between A and C shows the size of the increase in employment due to government spending in a demand-driven recession.

Figure 1a: Demand-driven recession



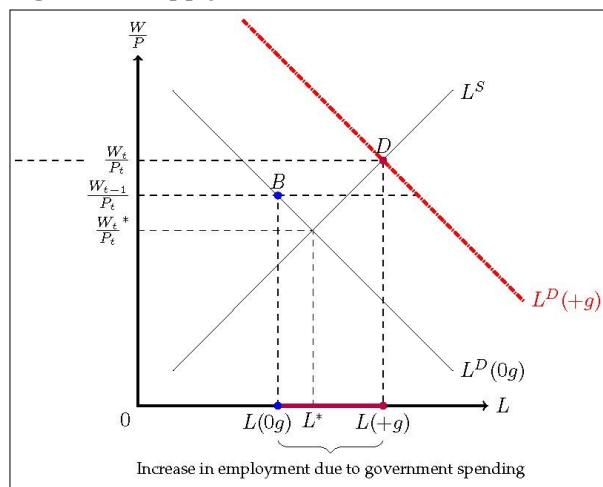
In contrast, the increase in labor demand due to expansionary government spending raises equilibrium real wages in a supply-driven recession. The labor market equilibrium is point D in Figure 1b, where labor supply and demand cross. The increase in labor due to an expansionary government spending is the horizontal distance between B and D. Therefore, an increase in output caused by an increase in government spending is smaller in a supply-driven recession than a demand-driven recession.

This simple exercise shows that government spending is more effective when the DNWR constraint binds, highlighting the main mechanisms in place. Notably, the opposing response of inflation in different recessions suggests that the degree to which the DNWR constraint binds differs across recessions. Thus, the government spending multiplier is likely to be larger in a demand-driven recession than a supply-driven recession.

EMPIRICAL EVIDENCE

As we established in the previous section, the effectiveness of government spending in a

Figure 1b: Supply-driven recession



recession with the binding DNWR constraint can differ based on the nature of the recession. In order to investigate empirically if the nature of recession matters in government spending multipliers, we exploit the rich long-time series data for the United States (1889-2017), where there is a large variation in government spending, the unemployment rate, and also periods of high and low inflation.²

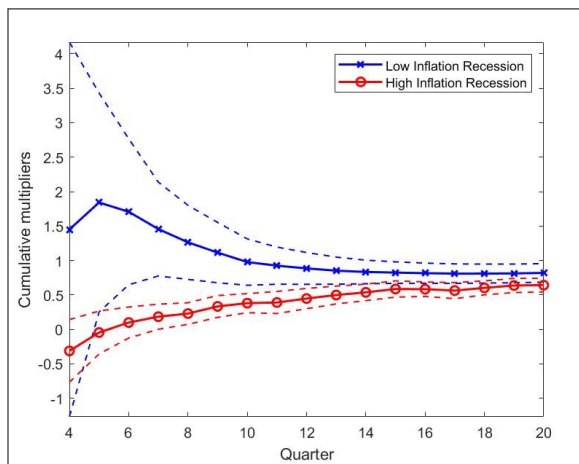
We distinguish not only between low and high unemployment periods, but also consider the interaction between unemployment and inflation. We separately consider high unemployment periods accompanied with low inflation, which can be thought of as an analog of the demand-driven recession in our model. Similarly, we consider periods with high unemployment and high inflation, which corresponds to a supply-driven recession in our theoretical framework.

Figure 2 plots the estimated cumulative multipliers across two recessions with corresponding standard error bands over the 5-year horizon.³ The blue line with crosses shows the multipliers over time in a low inflation recession. The red line with circles represents the

multipliers in a high inflation recession. We find that the government spending multiplier is statistically significantly larger in a high unemployment period accompanied with low inflation (demand-driven recession), than a high unemployment period accompanied with high inflation (supply-driven recession). This finding is consistent with our theory.

We also conduct a regional analysis, exploiting variation in military procurement contracts across US states, for the sample period 1966-2018 to further evaluate our predictions. We find that the effects of government spending on the economy are larger in periods when the employment rate is low, and particularly when it coincides with low inflation. Notably, this regional approach also allows us to exploit a new data set quantifying a

Figure 2: Cumulative multipliers across recessions



Source: Jo and Zubairy (2021).

DNWR measure across US states to test our proposed mechanism directly.⁴ We find larger effects of government spending when low employment coincides with states facing higher level of DNWR and low inflation, conditions that would satisfy a recession driven by lack of demand in our theoretical setting.

CONCLUSION

Identifying the sources of recession, whether from a lack of demand or supply, is important for the design of economic policy. Government spending is more effective in stimulating GDP in a low-inflation recession. During a high-inflation recession, government spending might not work as well and other fiscal interventions may be needed.

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Notes:

- ¹ Jo, Y.J. & Zubairy, S. (2021). State dependent government spending multipliers: Downward nominal wage rigidity and sources of business cycle fluctuations. Working Papers 20210127-001, Texas A&M University, Department of Economics. <https://ideas.repec.org/p/txm/wpaper/20210127-001.html>
- ² Ramey, V. & Zubairy, S. (2018). Government spending multipliers in good times and in bad: Evidence from US historical data. *Journal of Political Economy*, 126(2), 850-901. <https://doi.org/10.1086/696277>
- ³ We employ the one-step IV estimation procedure for the fiscal multipliers as introduced in Ramey and Zubairy (2018), and estimate state-dependent local projections a la Jordà (2005).
- ⁴ Jo, Y.J. (2021). Establishing downward nominal wage rigidity through cyclical changes in the wage distribution. Working Papers 20211216-001, Texas A&M University, Department of Economics. <https://ideas.repec.org/p/txm/wpaper/20211216-001.html>

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