

No. 18-47  
Summer 2018

# MERCATUS GRADUATE POLICY ESSAY

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NOMINAL GDP TARGETING: A PATH TO END FISCAL STIMULUS

by Conor Norris



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**Abstract**

After decades out of favor, fiscal stimulus has experienced a resurgence since the 1990s, culminating with the American Recovery and Reinvestment Act (ARRA) in 2009. This policy essay extends public choice theory to fiscal stimulus by examining the incentives facing policymakers, voters, and bureaucrats when nominal GDP is unstable. This paper shows how fiscal stimulus suffers from inefficiencies caused by these incentives, using both public choice theory and a case study of ARRA. With a central bank operating under a nominal GDP targeting regime, it argues, the fluctuations in nominal GDP are substantially reduced, removing a major incentive for fiscal stimulus.

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## **Acknowledgments**

I would like to thank my committee chair, Dr. Scott Sumner, as well as my committee members, Dr. Matthew Mitchell and Dr. David Beckworth, for their time and invaluable assistance with suggestions and revisions. I would also like to thank Stefanie Haeffele and Arielle John, whose deadlines and feedback throughout the writing process helped me develop my ideas. I would like to acknowledge the Mercatus Center and George Mason University for a fellowship experience that helped develop my understanding of economics. Finally, I would like to thank my parents, Christopher and Sueanne Norris and my family for their years of support.

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## 1. Introduction

According to Keynesian theory, governments should react to a drop in nominal gross domestic product (NGDP) by engaging in countercyclical fiscal stimulus. In order to maintain stable aggregate demand, the government should either increase its spending or reduce taxes after a fall in private spending. John Maynard Keynes doubted the self-correcting ability of the market in the short run. When aggregate demand falls, the Keynesian prescription calls upon the government to use a combination of targeted stimulus on labor-intensive projects and tax cuts to groups with a high marginal propensity to consume to decrease unemployment. The newly employed workers are then able to make purchases again, restoring aggregate demand to its previous level. In this way, the fiscal authority can smooth fluctuations in the business cycle.

Keynes went even further, suggesting that stimulus did not have to be spent on something people value, as long as the government spent money. Unfortunately, the value generated by the resources used in stimulus projects may be far lower than their best alternative uses, since the projects that the government engages in may be far larger than is efficient. For instance, according to the USDA Inspector General much of the Rural Utilities Service's broadband program's budget will be wasted.<sup>1</sup> In North Ridgeville, Ohio, stimulus program funds were spent on a project the mayor called "far from a top priority."<sup>2</sup> The funds may not even go those that need them. The Advanced Technology program gives 40 percent of its subsidies to Fortune 500

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<sup>1</sup> Michael Grabell, "Rural Broadband Stimulus Program Slammed in Gov't Report," *ProPublica*, April 14, 2009. <https://www.propublica.org/article/rural-broadband-stimulus-program-slammed-in-govt-report-414>.

<sup>2</sup> Steve Fogarty, "Stimulus Grant Funds a Quieter North Ridgeville," *The Chronicle-Telegram*, May 22, 2009. <http://www.chroniclet.com/news/2009/05/22/Stimulus-grant-funds-a-quieter-North-Ridgeville.html>.

companies.<sup>3</sup> Infrastructure projects such as “the big dig” and “the bridge to nowhere,” that greatly exceed their budget or are not even useful frequently occur.

Wasteful stimulus projects occur because of the incentives that politicians face. Although these poor outcomes can be surprising to those who believe public officials are motivated solely by the public good, they are unsurprising to those that examine politicians using public choice theory. Government employees respond to incentives and seek to maximize their benefits just as private individuals do. Instead of acting like benevolent dictators, politicians can be analyzed as rational actors, acting in their own self-interest.

In a public choice model, politicians are motivated to obtain votes, develop a legacy, and/or to gain prestige. Their policy choices seek to further those aims. By proposing and completing projects that their constituents want, politicians can improve their re-election likelihood regardless of the cost to the nation as a whole. Additionally, they can target specific industries or firms, in order to obtain donations or the votes of their workers. Because of these incentives, stimulus projects are designed to benefit the short-term interests of certain voters, firms, and interest groups rather than designed to be the most efficient use of funds. The Keynesian prescription for countercyclical stimulus may increase aggregate demand in the short-run, but in practice its implementation leaves the economy worse off in the long run when, on the margin, when the public does not highly value the product of the spending.

Because of the incentives facing politicians, fiscal stimulus is often wasteful in practice. Rather than engaging in stimulus, a more effective remedy is to prevent nominal GDP, or total

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<sup>3</sup> Brian Riedl, “Congress Should Follow the President and Eliminate the Advanced Technology Program,” *Heritage Foundation Backgrounder* 1828, (March 2005). <https://www.heritage.org/budget-and-spending/report/congress-should-follow-the-president-and-eliminate-the-advanced>.

spending in the economy, from falling in the first place. Designing a policy to prevent fluctuations in nominal GDP ends the need for fiscal stimulus while mitigating the problems associated with the business cycle.

In order to provide more stable growth and prevent economic downturns, Scott Sumner has proposed that the Federal Reserve abandon inflation targeting and instead target nominal GDP. Under an NGDP targeting regime, the Fed targets a growth path for total spending. They boost the money supply whenever NGDP growth is below target, and reduce the money supply when NGDP is growing too fast. Nominal GDP growth is the sum of inflation and growth in real output. In economic downturns, the Fed allows inflation to increase, in order to keep nominal GDP growing at a steady rate. Conversely, when the real economy is growing especially fast, the Fed allows slower inflation.

Although an inflation targeting regime seeks the same macroeconomic stability goal through different means, it suffers from shortcomings. In particular, it responds to supply shocks and demand shocks with the same policy, although they require different reactions. Policymakers are unable to discern the cause of a change in the price level in real time, so they react as if an increase in the price level is a demand shock, occasionally resulting in a contractionary policy stance when expansionary policy is required.

With the Federal Reserve targeting the path of nominal spending, countercyclical fiscal stimulus is redundant. Because the Fed is committed to a path of spending, a stimulus package only changes the allocation of spending, not the total amount. For instance, the Fed will respond to stimulus with a more contractionary monetary policy, offsetting the expansionary fiscal policy. This means that the Fed prevents the stimulus from actually increasing aggregate demand, which is its purpose in the Keynesian framework.

In this paper, I explore the public choice theory behind fiscal stimulus spending in order to discover how the inefficiencies associated with stimulus result in poor outcomes. While most studies examine the results of fiscal stimulus, I am focusing on the motivations behind it. If the institutional interactions incentivize stimulus designed to win reelections rather than to stimulate aggregate demand through the maintenance of total spending, then stimulus is ineffective regardless of which politicians design the program.

In addition to extending public choice to stimulus spending, I also examine the 2009 American Recovery and Reinvestment Act (ARRA) stimulus. This allows me to show public choice theory in action and offer insights into why the program took its final form. While shedding light on the decision-making process, this example helps to strengthen my theory of stimulus spending.

Finally, I discuss NGDP targeting and how it can reduce the need for fiscal stimulus. In addition to the macroeconomic stability provided by NGDP targeting, it also prevents the need for countercyclical fiscal policy. I use a vector autoregression to estimate the effect of fluctuations in nominal GDP on government spending in the US from 1920 to 2013, in order to estimate the fiscal savings that NGDP targeting provides. While the direct benefits of better monetary policy are becoming well-known, the additional benefit of ending fiscal stimulus hampered by perverse incentives make NGDP targeting a more attractive policy.

## **2. Literature Review**

Public choice theory gives us a lens to understand the incentives facing policy makers making decisions regarding fiscal stimulus. Economists developed public choice theory in the



1950s and 1960s in *The Calculus of Consent*,<sup>4</sup> *Social Choice and Individual Values*,<sup>5</sup> an *Economic Theory of Democracy*,<sup>6</sup> *The Theories of Committees and Elections*,<sup>7</sup> and *The Logic of Collective Action*.<sup>8</sup> Public choice theory applies the economic way of thinking to understand individuals' actions to political institutions. Contradicting the prevailing view that policy makers in government are purely benevolent, they applied rational choice, exchange, and the role of incentives to the field. Their work analyzed the incentives facing policy makers and the institutional settings in which they operate. Buchanan and Richard Wagner flesh out a theory of public finance using the methodology of public choice in *Democracy in Deficit*.<sup>9</sup> Without a norm to balance the government's budget, politicians face incentives to expand government services and finance them through deficit spending. In this book, they also trace the change in norms after the rise of Keynesian policy.

In addition to the theoretical foundation upon which public choice theory rests, there exists a growing literature of empirical evidence supporting the conclusions drawn by Buchanan and Tullock's seminal work. Thomas Stratmann and Gabriel Okolski use data from the US states over a 30-year period to analyze the effect of voter turnout and political contributions on federal

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<sup>4</sup> James M. Buchanan, *The Calculus of Consent: Logical Foundations of Constitutional Democracy*, vol. 3 of *The Collected Works of James M. Buchanan* (Indianapolis: Liberty Fund, 1999).

<sup>5</sup> Kenneth Arrow, *Social Choice and Individual Values*, 2<sup>nd</sup> ed. (New Haven: Yale University Press, 1963).

<sup>6</sup> Anthony Downs, *An Economic Theory of Democracy*, (New York: Harper, 1957).

<sup>7</sup> Duncan Black, *The Theory of Committees and Elections*, (New York: Cambridge University Press, 1958).

<sup>8</sup> Mancur Olson, *The Logic of Collective Action: Public Goods and the Theory of Groups*, (Cambridge: Harvard University Press, 1965).

<sup>9</sup> James M. Buchanan, *Democracy in Deficit: The Political Legacy of Lord Keynes*, vol. 8 of *The Collected Works of James M. Buchanan*, (Indianapolis: Liberty Fund, 2000).

spending in “Civic Participation and Government Spending.”<sup>10</sup> They find evidence that voter turnout and contributions affect the amount of spending. Their results provide evidence supporting the theory that federal spending is motivated by more than the provision of public goods that correct for a perceived market failure. Consistent with public choice theory, Rice (1986) found evidence that labor union and interest-groups pressure their governments to introduce policies that reduce economic hardship in recessions.<sup>11</sup> Between 1950 and 1980, these policies contributed to the growth of the size of government in Europe.

In “Interest Groups and Size of Government,” Dennis Mueller and Peter Murrell study a rent-seeking arrangement between political parties and interest groups.<sup>12</sup> They provide empirical evidence that political parties supply interest groups with favors in exchange for support. They also find that in a sample of OECD countries, the number of interest groups is positively correlated with the size of government. In order to explain the growth in the size and scope of government since the progressive era, Robert Higgs develops the ratchet theory in *Crisis and Leviathan*.<sup>13</sup> After a temporary government program is created or spending increases in response to a crisis, government doesn’t shrink back to its previous size after the crisis is over. Ratchet theory provides insight into how temporary spending contained in fiscal stimulus can lead to permanently higher spending.

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<sup>10</sup> Thomas Stratmann and Gabriel Okolski, “Civic Participation and Government Spending,” Working paper, Mercatus Center at George Mason University, no. 10-24, May 2010. <https://www.mercatus.org/system/files/Civic%20Participation%20and%20Government%20Spending.pdf>.

<sup>11</sup> Tom W. Rice, “The Determinants of Western European Economic Growth, 1950-1980,” *Comparative Economic Studies* 19 (1986): 233–257.

<sup>12</sup> Dennis C. Mueller, and Peter Murrell, “Interest Groups and Size of Government,” *Public Choice* 48, no. 2 (1986): 125-45. <https://www.jstor.org/stable/30024587>.

<sup>13</sup> Robert Higgs, *Crisis and Leviathan* (New York: Oxford University Press, 1987).

In the wake of the 2008 financial crisis and the subsequent recovery, researchers have focused their attention on the effects of government spending to offset recessions. Andrew Young and Russell Sobel estimated the state level patterns of the distribution of ARRA funds to gain insight into the incentives facing policymakers designing it.<sup>14</sup> When controlling for political variables, they find that ARRA was poorly designed Keynesian countercyclical policy. They found no evidence that the funds went to areas that needed it, as unemployment and per capita income were not associated with the amount of funds received.

Examining the report data from recipients of the ARRA, in “Stimulus Facts- Period 2” Veronique de Rugy examines the public choice incentives determining who received the stimulus funds.<sup>15</sup> Using a simple regression to bolster the statistics, she found that the political party affiliation of the district’s representative and their leadership status in Congress affected the likelihood of receiving funds and the size of the package received. This provides evidence that public choice theory can explain the design of countercyclical policy.

Manuel Dinc and Serdar Adelino studied the firms that lobbied for the ARRA funds.<sup>16</sup> They found that firms that were suffering due to the recession spent more on lobbying than firms that did not and shifted resources from capital formation to lobbying. Additionally, they found

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<sup>14</sup> Andrew Young and Russel Sobel, “Recovery and Reinvestment Act Spending at the State Level: Keynesian Stimulus or Distributive Politics?” *Public Choice* 155, no. 3-4 (2013): 449–68. <https://doi.org/10.2139/ssrn.1673913>.

<sup>15</sup> Veronique de Rugy, “Stimulus Facts—Period 2,” Working paper, Mercatus Center at George Mason University, No. 10-15, March 2010. <https://www.mercatus.org/system/files/Stimulus%20Facts%20Working%20Paper.pdf>.

<sup>16</sup> Manuel Adelino and Serdar Dinc, “Corporate Distress and Lobbying: Evidence from the Stimulus Act,” *Journal of Financial Economics* 114, no. 2 (November 2014): 256–272. <https://doi.org/10.1016/j.jfineco.2014.07.004>.

that firms that lobbied policymakers had a significantly greater likelihood of receiving stimulus funds than those that did not.

Later in my paper, I argue that switching to a Nominal GDP targeting regime is the best way to avoid the need for fiscal stimulus, which is beset by public choice problems. In “The Promise of Nominal GDP Targeting,” Scott Sumner compares targeting NGDP versus the previous gold standard and the current inflation targeting regime.<sup>17</sup> By targeting nominal income, the Fed can avoid downturns like we experienced in 2008 and in the Great Depression. When nominal incomes fall, debtors struggle to make payments and defaults increase, causing bank failures and worsening the recession. By allowing faster inflation during a slump, the Fed can keep nominal GDP growth steady and prevent downturns from becoming severe.

### **3. Keynesian Fiscal Stimulus Theory**

According to Keynesian theory, fiscal policy is a useful tool to combat a recession. Recessions are caused by a decrease in aggregate demand, either from reduced investment by firms in capital goods or lower consumption by individuals.<sup>18</sup> As aggregate demand falls, firms are able to sell fewer goods and must lower labor costs by firing workers. As unemployment increases, aggregate demand decreases further, and firms respond by decreasing investment and future output.

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<sup>17</sup> Scott Sumner and Ethan Roberts, “The Promise of Nominal GDP Targeting,” Policy primer, Mercatus Center at George Mason University, 2018. <https://www.mercatus.org/publications/monetary-policy/promise-nominal-gdp-targeting>.

<sup>18</sup> Alan Blinder, “Keynesian Economics,” in *The Concise Encyclopedia of Economics*, edited by David R. Henderson (Indianapolis: Liberty Fund, 2008).

Keynes believed that the free market was naturally unstable, because prices and wages are sticky and slow to adjust to changing conditions.<sup>19</sup> Because the free market was slow to correct itself, unemployment could increase, and output fall below potential for some time before the recovery begins. When private spending collapses, government can employ the idle resources to help jump start demand.<sup>20</sup>

When enacting countercyclical stimulus, government can use purchases to increase aggregate demand directly. It can also use transfers and tax cuts to indirectly raise aggregate demand through consumption. While government spending itself helps offset the decrease in aggregate demand, the power of fiscal stimulus lies in the multiplier effect.<sup>21</sup> As the government spending enters the economy, it becomes income for an individual. Each person then uses a portion of that income to spend on goods and services, where it becomes someone else's income. The multiplier effect increases the effectiveness of government spending and mobilizes idle resources to jumpstart the economy. Keynesians believe that the spending multiplier is greater than the multiplier for tax cuts, so they tend to support fiscal stimulus concentrating on government expenditures.

In his testimony in support of fiscal stimulus, Lawrence Summers advocated for timely, targeted, and temporary stimulus.<sup>22</sup> Any attempted fiscal stimulus that fails to meet all three of

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<sup>19</sup> Ezra Klein, "Larry Summers: 'I think Keynes mistitled his book,'" *The Washington Post*, July 26, 2011. [https://www.washingtonpost.com/blogs/wonkblog/post/larry-summers-i-think-keynes-mistitled-his-book/2011/07/11/gIQAzZd4aI\\_blog.html](https://www.washingtonpost.com/blogs/wonkblog/post/larry-summers-i-think-keynes-mistitled-his-book/2011/07/11/gIQAzZd4aI_blog.html).

<sup>20</sup> Alan Blinder, "Keynesian Economics," in *The Concise Encyclopedia of Economics*, edited by David R. Henderson (Indianapolis: Liberty Fund, 2008).

<sup>21</sup> Ibid.

<sup>22</sup> Summers, Lawrence, Fiscal Stimulus Issues, Testimony before Joint Economic Committee, 110<sup>th</sup> Cong, January 16, 2008, [http://larrysummers.com/wp-content/uploads/2012/10/1-16-08\\_Fiscal\\_Stimulus\\_Issues.pdf](http://larrysummers.com/wp-content/uploads/2012/10/1-16-08_Fiscal_Stimulus_Issues.pdf).

these criteria fails to be effective. When a recession begins or appears imminent, policymakers should enact stimulus quickly to employ resources as they initially become idle, rather than waiting for aggregate demand to continue to fall and the recession to worsen. These programs should be targeted towards those with the highest marginal propensity to consume, so that the multiplier effect is as large as possible. While paying off debt may be good for a household, Keynesians argue that in a recession it is spending that increases aggregate demand and is necessary for recovery. Therefore, stimulus funds should be targeted to those who spend their income, usually those with low incomes or those who have seen a recent and sudden decline in their incomes. Finally, fiscal stimulus must be temporary. Its purpose is to mobilize idle resources while the free market—due to sticky prices and wages—is unable to shift them to their highest valued uses. Long term, stimulus programs lead to higher inflation, interest rates, and substantially crowd out private investment.<sup>23</sup>

Not only should the program be temporary, but it should be funded through surpluses accumulated during economic expansions. Countercyclical fiscal policy should also be used to prevent growth from overheating, by increasing taxes or decreasing government purchases. Both of these measures offset the increased deficit in recessions. A more moderate form of Keynesianism advocates for using “automatic stabilizers,” or non-discretionary increases in spending that occur when people’s incomes fall and decreases in spending when their incomes rise.<sup>24</sup>

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<sup>23</sup> Ibid.

<sup>24</sup> John Taylor, “Reassessing Discretionary Fiscal Policy,” *Journal of Economic Perspectives* 14, no. 3 (Summer 2000): 21–36. <https://doi.org/10.1257/jep.14.3.21>.

While in theory countercyclical fiscal policy sounds promising, its implementation in practice is beset by serious problems. Writing later, Keynes expressed some of his concerns, saying:

Organised public works, at home and abroad, may be the right cure for a chronic tendency to a deficiency of effective demand. But they are not capable of sufficiently rapid organisation (and above all they cannot be reversed or undone at a later date), to be the most serviceable instrument for the prevention of the trade cycle.<sup>25</sup>

#### 4. Public Choice Theory

Economists studying the marketplace assume individuals are motivated by self-interest, yet for years economists assumed those same people in the political arena acted purely in the best interest of society. Public choice developed to extend economic principles to the political process. Previous analysis considered the government as a fiscal brain, allocating, spending, and designing regulation as a single entity trying to reach the common good.<sup>26</sup> Yet, the government is comprised of many individuals, each of whom responds to their own incentives. When individuals enter the political arena, they remain rational utility maximizers.

When it comes to politics, individuals may seem to act differently and have different decision-making processes, but individuals in the political arena face different incentives than in the marketplace. We should start with symmetrical assumptions about private choice and public choice. Voters vote in their own self-interest, whether it is to maximize their income or to maximize what they perceive to be their group welfare. When voters organize into interest

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<sup>25</sup> John Maynard Keynes, "The International Control of Raw Materials," vol. 27 of *The Collected Writings of John Maynard Keynes*, ed. Elizabeth Johnson and Donald Moggridge (Cambridge: Cambridge University Press, 2012).

<sup>26</sup> James M. Buchanan, "The Pure Theory of Government Finance: A Suggested Approach," *Journal of Political Economy* 57, no. 6 (December 1949): 496-505. <https://doi.org/10.1086/256880>.

groups, they can pressure politicians to enact legislation that favors their group and spreads the cost out among the rest of the voters. Bureaucrats working in government agencies seek to further their career. Politicians design legislation and vote for bills in order to win reelection, often designing legislation to help their home district or interest groups that can promise votes in return.

### **A. Incentives for Fiscal Stimulus Programs**

During a recession, support for stimulus programs increases in an attempt to help ease the suffering. Voters support what they feel is right and tend to support fiscal stimulus. A large segment of the potential voters believes in the value of make work projects, which are a hallmark of fiscal stimulus.<sup>27</sup> Because each vote is unlikely to alter the outcome of any given election, voters often vote expressively—that is, they vote to express an opinion, rather than to change the outcome.<sup>28</sup> Unfortunately, this means that they have little incentive to gather information, making them “rationally ignorant.”<sup>29</sup> Nor, do they have an incentive to process what information that they do gather.<sup>30</sup> This makes them more inclined to support policies that sound good rather than policies that work.<sup>31</sup> To signal their desire to help those suffering, voters often vote for candidates who support countercyclical stimulus.

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<sup>27</sup> Bryan Caplan, *The Myth of the Rational Voter: Why Democracies Choose Bad Policies* (Princeton: Princeton University Press, 2007).

<sup>28</sup> George Stigler, “Economic Competition and Political Competition,” *Public Choice* 13, (September 1972): 91-106. <https://www.jstor.org/stable/30022685>.

<sup>29</sup> Anthony Downs, *An Economic Theory of Democracy* (New York: Harper, 1957).

<sup>30</sup> Bryan Caplan, *The Myth of the Rational Voter: Why Democracies Choose Bad Policies* (Princeton: Princeton University Press, 2007).

<sup>31</sup> Geoffrey Brennan and Loren Lomasky, *Democracy and Decision: The Pure Theory of Electoral Preference* (New York: Cambridge University Press, 1995).



The firms and industries that suffer in a recession can lobby politicians for support or protection. This support could help them reduce the number of employees laid off or help keep profits stable. When firms are able to rally their employees to vote over a single issue, they can be a powerful interest group in an election. They can unite voters for their single issue, donate to candidates, and endorse candidates, giving them power to influence politicians. While those in the industry benefit from stimulus they receive, the costs are spread out among the rest of the voters.

Mancur Olson demonstrated how the concentrated benefits and dispersed costs of interest groups can be a powerful motivator for politicians.<sup>32</sup> When a small group of individuals stand to benefit substantially from a law or regulation, they work together to capture that potential gain. Conversely, the rest of society who stands to lose from the new measure faces a larger cost trying to defeat the measure than living with it. We can see how this works in a recession. A small interest group of industries or workers suffering could lobby more intensely than those who oppose aid to specific firms or industries. Because the small interest group lobbies more intensely, they can convince the politician more easily than the diffused group of voters that are opposed to aid.

There is empirical evidence to support the theory that voters and interest groups affect politicians' spending patterns. Because interest groups lobby for policies like bailouts, tariffs, and federal contracts, a larger number of interest groups should lead to an increase in government spending. Mueller and Murrell find evidence suggesting that this holds true in

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<sup>32</sup> Mancur Olson, *The Logic of Collective Action: Public Goods and the Theory of Groups* (Cambridge: Harvard University Press, 1965).

OECD countries.<sup>33</sup> Their theory is that as interest groups support a politician or party, it leads to a competition between candidates to get more interest group support in the election. They also found evidence that a greater number of voters in an election is associated with an increase in government spending.

In their study of the United States, Stratmann and Okolski also found evidence that an increase in voter turnout is associated with an increase in federal spending.<sup>34</sup> Lower-income earners support more redistribution from the higher-income earners, which is consistent with public choice theory. They find that even in economic expansions, voters still tend to support politicians with redistributionist policies. They also find evidence that campaign contributions are associated with an increase in government expenditures, indicating the power of campaign contributions to influence politicians.

Politicians face incentives to propose and support the popular fiscal stimulus demanded by the segments of the public and special interests. Politicians seek to win votes to remain in office and also to build and maintain a legacy. Austerity programs involve a reduction in spending and an increase in taxes to pay down debt, and are not popular with voters, especially during a recession. The benefits of not engaging in stimulus are long term and difficult to accurately imagine for the typical voter.<sup>35</sup> Conversely, stimulus programs have demonstrable benefits that are immediately felt by interest groups. Tom Rice, in his study of post-war western

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<sup>33</sup> Dennis C. Mueller and Peter Murrell, "Interest Groups and the Size of Government," *Public Choice* 48, no. 2 (1986): 125–45. <https://www.jstor.org/stable/30024587>.

<sup>34</sup> Thomas Stratmann and Gabriel Okolski, "Civic Participation and Government Spending," Working paper, Mercatus Center at George Mason University, no. 10-24, May 2010. <https://www.mercatus.org/system/files/Civic%20Participation%20and%20Government%20Spending.pdf>.

<sup>35</sup> James M. Buchanan, *Democracy in Deficit: The Political Legacy of Lord Keynes*, vol. 8 of *The Collected Works of James M. Buchanan*, (Indianapolis: Liberty Fund, 2000).

Europe, found evidence to support the theory that interest groups and labor unions pressure to introduce policies to reduce hardship during recessions.<sup>36</sup>

Politicians compete with other politicians for election, so they must choose popular policies to win more support than their opponents and remain in office. Even the most idealistic politicians must accept some political considerations to remain in office. This can take the form of supporting popular policies or interest groups. Otherwise, a challenger can rise in the next election, and gain the support of interest groups and voters by making promises to support their favored policies. A candidate promising federal spending on local infrastructure or an expansion of transfers to a politically powerful group can gain considerable support and pose a significant challenge, forcing their opponent to seek the support of other interest groups.

Voters tend to judge politicians' performance on economic conditions prior to the election, not over the long term.<sup>37</sup> This tendency encourages short-term policies with substantial long-term costs. In *Democracy in Deficit*, Buchanan and Wagner note that because of public choice incentives, fiscal policy is biased towards focusing on low unemployment, while encouraging higher inflation.<sup>38</sup> Lower unemployment is a short-term benefit of fiscal stimulus, while inflation and high debt crowding out future investments are long-term costs. This inflation may not materialize while the politician is in office, or even if they still are, so much time has passed that voters do not tie the inflation to previous fiscal stimulus. Likewise, the crowding out of future investments is a long-term problem and difficult to perceive.

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<sup>36</sup> Tom Rice, "The Determinants of Western European Economic Growth, 1950-1980," *Comparative Economic Studies* 19 (1986): 233-257.

<sup>37</sup> Gerald Kramer, "Short-Term Fluctuations in US Voting Behavior, 1896-1964," *The American Political Science Review* 65, No. 1 (March 1971) 131-143. <https://doi.org/10.2307/1955049>.

<sup>38</sup> James M. Buchanan, *Democracy in Deficit: The Political Legacy of Lord Keynes*, vol. 8 of *The Collected Works of James M. Buchanan*, (Indianapolis: Liberty Fund, 2000).

In this case, good politics and good economics are not one in the same. Allowing the economy to naturally recover is not a politically popular move. The time it takes for capital and workers to move to its highest valued uses can be too long for a politician when voters are suffering through a recession. Voters may punish a politician appearing to do nothing to help improve the economy while they are suffering. Instead, a politician faces incentives to support the struggling industries and voters in that recession. Reducing the unemployment rate in this way gains support of the industry interest groups and the voters whose jobs are saved as a result. Despite the short-term benefit of the decrease in unemployment, supporting inefficient firms depresses long-run growth.

Bureaucrats enact much of the government's regulations and wealth transfers. The members of the bureaucracy face an incentive to try to maximize their budget, which is provided by the legislature.<sup>39</sup> A larger budget enhances employment security and opportunities for promotion within the bureau.<sup>40</sup> Meanwhile, the managers of the bureaucracy gain prestige and power, and improve their standing for a future position.

Greater efficiency, or coming in under budget, only results in a lower budget the next year, rather than higher profits. Bureaus are punished for being cost effective. Voters do not receive a bill for each bureaucracy's service consumed, or even monthly bills, so they cannot accurately estimate the costs of bureaucracies.<sup>41</sup> Therefore, there is little pressure from voters to

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<sup>39</sup> J.D. Gwartney and Richard Wagner, "Public Choice and the Conduct of Representative Government," in *Public Choice and Constitutional Economics*, ed. J.D. Gwartney and Richard Wagner, (Stamford: Jai Press, 1988).

<sup>40</sup> William Niskanen, "The Peculiar Economics of Bureaucracy," *The American Economic Review* 58, no. 2 (May 1968): 293–305. <http://www.jstor.org/stable/1831817>.

<sup>41</sup> James M. Buchanan, *Democracy in Deficit: The Political Legacy of Lord Keynes*, vol. 8 of *The Collected Works of James M. Buchanan*, (Indianapolis: Liberty Fund, 2000).

restrain the bureaucracy. Bureaus competing with private providers have some restraint on their costs. However, when they are monopoly providers, bureaus tend to overspend more and are even less efficient.<sup>42</sup> As bureaus become larger, they become more difficult to effectively monitor, by managers and by outsiders like voters or legislators. As monitoring becomes costlier, it is easier for bureaus to expand their size and scope. All of the members of a bureaucracy stand to gain from expansion of its role.

## **B. Incentives that Shape Stimulus Financing**

In order to help smooth the business cycle, the Keynesian policy prescription is to run a surplus when the economy is expanding and to run a deficit when it is contracting. While in theory governments should grow a surplus during expansions and use that to pay off debt from a recession, that is usually not the case. In practice, governments are willing to run deficits in recessions, but continue to do so while the economy is performing well.

Like all government spending, fiscal stimulus can be funded through increasing taxes, by decreasing spending, by borrowing, or by inflation. However, increasing taxes and decreasing other spending defeats the point of countercyclical stimulus, which is to boost total spending. Buchanan and Wagner detail how, absent institutional restraints requiring a balanced budget, governments do not use taxation or decrease other spending to fund fiscal stimulus.<sup>43</sup>

Politicians no longer face strong opposition to consistently running a budget deficit. Prior to the Great Depression, there was an informal norm to pay off debt incurred during a crisis,

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<sup>42</sup> William Niskanen, “Bureaucrats and Politicians,” *The Journal of Law & Economics* 18, no. 3 (December 1975): 617–643. <https://www.jstor.org/stable/725050>.

<sup>43</sup> James M. Buchanan, *Democracy in Deficit: The Political Legacy of Lord Keynes*, vol. 8 of *The Collected Works of James M. Buchanan*, (Indianapolis: Liberty Fund, 2000).

which was usually a war. Since the abandonment of the gold standard and the popularity of Keynesian theory, that norm has evaporated.<sup>44</sup> This new norm allows fiscal stimulus to be funded with ever-increasing debt that is never paid off. While the current voters gain from the stimulus, they do not bear all the costs. When the government runs a budget deficit, the borrowing is paid for by voters in the future. Because the debt must eventually be repaid, future generations face increased taxes or decreased spending.

Current citizens bear little to no cost of future taxes, making borrowing politically popular. The future generations are not able to vote; thus, they have no say. While the voters gain real income immediately, the costs are pushed far into the future. This helps make the stimulus feel cheaper than it really is, because the costs are not felt by the current generation.

After the economy has recovered from a recession, Keynesian theory prescribes increasing taxes to reduce the deficit incurred by the stimulus. Voting for a tax increase is unpopular, and a difficult move for politicians. Increasing taxes lowers voters' income, making them worse off. The budget balancing effect of the increase in taxes must be imagined rather than directly felt.<sup>45</sup> Because voters feel the negative impact of reduced income now, and not the positive impact of improved fiscal standing later, they often do not support a tax increase.

The manner with which the government pays for public sector spending can affect taxpayers' perceptions of its cost. The theory of fiscal illusion states that more complex structures of taxation lead to greater government spending.<sup>46</sup> Because there is no direct charge for services rendered, it is difficult for voters to accurately perceive the true costs. The illusion is

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<sup>44</sup> Ibid.

<sup>45</sup> Ibid.

<sup>46</sup> Amilcare Puviani, *Teoria della illusione Finanziaria*, (Milan: Sandron, 1903).

only strengthened when the tax code becomes more complex. William Niskanen demonstrated the fiscal illusion in the 1980s and 1990s, showing how tax cuts led to an increase in government spending, when many expected that it would lead to a decrease in spending.<sup>47</sup>

### **C. Incentives That Shape Fiscal Stimulus Programs**

Finally, politicians must decide how to distribute the fiscal stimulus funds. Government activity in stimulus spending provides substantial incentives for interest groups to pressure members of Congress. Vote-maximizing politicians tend to spend on projects that yield tangible benefits for their constituents and interest groups, knowing these projects help them win the next election. Therefore, fiscal stimulus is applied so that interest groups experience benefits while the actual long-term economic impact is overlooked. These incentives influence the projects chosen, the regions they are located in, and the firms or agencies used to carry out them out.<sup>48</sup> The same incentives that govern the stimulus help explain fiscal stimulus.

Robert Barro and Laurence Summers agree that the most productive activity government can undertake is fixing potholes, as the US suffers from a maintenance deficit of infrastructure.<sup>49</sup> Repairs to infrastructure provide employment and a substantial benefit for users; however, it does not gain the support of voters. Politicians running for reelection often highlight their accomplishments and new projects undertaken. Grand projects like high-speed rail or new

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<sup>47</sup> William Niskanen, “‘Starve the Beast’ Does Not Work,” *Cato Policy Report* 26, no. 2 (March–April 2004): 2. <https://object.cato.org/sites/cato.org/files/serials/files/policy-report/2004/3/cpr-26n2-2.pdf>.

<sup>48</sup> Veronique de Rugy and Matthew Mitchell, “Would More Infrastructure Spending Stimulate the Economy in 2017?” Policy primer, Mercatus Center at George Mason University, 2017. <https://www.mercatus.org/publications/federal-fiscal-policy/would-more-infrastructure-spending-stimulate-economy-2017>.

<sup>49</sup> Ibid.

bridges and roadways allow for opening ceremonies that get exposure and significant changes to the area that voters recognize.

When policymakers make transfers to firms to support aggregate demand, interest groups have a strong incentive to shape the stimulus. Industries that are strongly impacted by the recession typically lobby the hardest.<sup>50</sup> Eager to prevent a reduction in their workforce and possibly bankruptcy, industries lobby politicians for some form of aid. Politicians are likely to intervene to prevent an increase in the number of unemployed. When the struggling industry is a major employer in a politician's district, this effect is amplified. Large job losses could be catastrophic for reelection chances, incentivizing politicians to prevent job losses with bailouts or federal contracts, to apply stimulus programs, or to increase unemployment benefits if the job losses already occurred.

Additionally, stimulus is also designed to help voters through both transfers and tax cuts. These programs help keep voters' income stable near prerecession levels or increase it. Because of voters' myopic view of the economy, support for fiscal stimulus can win support when the economy is faltering, or at least prevent losing votes to competitors in the next election. For instance, stimulus typically includes tax cuts, which visibly increases consumers' income.<sup>51</sup> Increases in unemployment insurance and other transfers are other ways for government to increase spending on programs that are easily perceived as increasing voters' income, and are likely to be included in any stimulus.

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<sup>50</sup> Manuel Adelino and Serdar Dinc, "Corporate Distress and Lobbying: Evidence from the Stimulus Act," *Journal of Financial Economics* 114, no. 2 (November 2014): 256–272. <https://doi.org/10.1016/j.jfineco.2014.07.004>.

<sup>51</sup> Antony Davies et al., "The US Experience with Fiscal Stimulus," Working paper, Mercatus Center at George Mason University, No 12-12, April 2012. <https://www.mercatus.org/publication/us-experience-fiscal-stimulus>.



Because of their ability to borrow, governments do not face the same budget constraints as households. Like all government spending, fiscal stimulus programs are funded through tax revenue and government borrowing. Because politicians are not the residual claimant of the government, they do not benefit from saving or spending more efficiently. Therefore, wasteful spending is a minor concern. Policymakers are willing to overspend when money is sought by interest groups or voters, because those groups benefit and the costs are dispersed across all taxpayers.

The process of obtaining profit through political means is called rent-seeking. Rent-seeking firms spend money lobbying politicians in an attempt to redistribute money from others. The money spent to obtain the redistribution is a cost for society.<sup>52</sup> During a fiscal stimulus, firms or interest groups lobby the politicians to enact programs designed to help them. Because it is seeking to redistribute wealth, redistribution does not add to growth. While the firm benefits from the wealth they gain, for the economy as a whole the money spent lobbying is a deadweight loss. Russel Sobel provides evidence that the benefits of lobbying are captured by the executives rather than the company as a whole, further reducing the gains from rent-seeking.<sup>53</sup> While lobbying for stimulus may not improve the company's financial standing, it still affects the shape that stimulus programs take.

#### **D. The Ratchet Effect**

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<sup>52</sup> Gordon Tullock, "The Welfare Costs of Tariffs, Monopolies, and Theft," *Western Economic Journal* 5, no. 3 (June 1967): 224–232. <https://doi.org/10.1111/j.1465-7295.1967.tb01923.x>.

<sup>53</sup> Russel Sobel, "Crony Capitalism Pays Well for Rent-Seeking CEOs," *Investor's Business Daily*, July 9, 2014. <https://www.investors.com/politics/commentary/political-activity-and-connections-dont-make-business-profitable/>.

The ratchet effect, a theory developed by Robert Higgs in *Crisis and Leviathan*, details the incentives facing politicians and bureaucrats to explain the long-term growth in the size and scope of government in the United States.<sup>54</sup> In response to a crisis, politicians often propose new programs or an expansion of current programs. While intending for the expansion to be temporary, after the crisis ends the increase in spending remains. New agencies continue to operate, even if their original mission has been completed.

After a crisis ends and stimulus is no longer needed, politicians face a difficult choice. Those who benefitted from the temporary programs are now an entrenched interest. Ending the programs can be costly for them. Bureaucratic services create constituencies that support the continuation of programs. While an agency's budget may decrease some after stimulus, it is likely to remain above its original level. Utilizing their lobbying power, agencies try to keep as much of the program intact as possible. The ratchet effect predicts that even after a recession ended, much of the stimulus program becomes permanent.

### **E. Public Choice Theory of Monetary Policy**

Monetary policy, which is enacted by the Federal Open Markets Committee, is not immune to some of the public choice critiques of fiscal policy. Because of the FOMC's structure, its members do not face many of the same incentives that members of Congress face. The FOMC is a small body, comprised of 12 experts who are either presidential appointees or presidents of regional Fed branches who serve on a rotating basis. The 12 districts of the Federal Reserve System are quite large, unlike Congressional districts. Designing monetary policy to support one

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<sup>54</sup> Robert Higgs, *Crisis and Leviathan*, (New York: Oxford University Press, 1987).

district is difficult as presidents only serve on the FOMC for one year and the districts are home to many diverse interests. Additionally, the FOMC is not elected by voters, so the FOMC members do not have to try to appease them.

While the Fed is largely independent from Congress, it is bureaucratic in nature. Like a bureaucracy, the Fed cannot retain its profits; the Fed rebates its profits in excess of operating costs to the Treasury. While this limits the pressure Congress can exert on the Fed, it does incentivize the Fed to maximize its own budget. William Shughart and Robert Tollison note that the Fed faces a choice between higher remittances to the Treasury and greater amenities and more employees. If the Fed reduced their remittances in order to increase their budget, Congress could begin to exert more control. With higher inflation, the Fed is able to keep their remittances steady, while at the same time increasing their budget. These incentives cause the Fed to be biased towards higher inflation, which Shughart and Tollison found evidence of over the Fed's first 66 years of operation.<sup>55</sup>

Although the Fed is independent and does not face appropriations from Congress, Fed officials still face political pressure. Members of Congress can and have proposed legislation as a way of threatening the Fed's independence in order to influence monetary policy. For instance, despite the high inflation in 1974, Congress held hearings to pressure the Federal Reserve into lowering the interest rate to lower unemployment. They threatened the Fed with audits, budget appropriations, confirmation of Reserve Bank presidents, and packing the board with those from pro-inflation groups, which caused them to lower the Federal Funds Rate from 13 percent to 7.5

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<sup>55</sup> William Shughart and Robert Tollison, "Preliminary Evidence on the Use of Inputs by the Federal Reserve System," *The American Economic Review* 73, no. 3 (June 1983): 291-304. <https://www.jstor.org/stable/1808113>.

percent.<sup>56</sup> In 1993 Congress again threatened the Fed's independence to pressure them to keep interest rates low. Despite the entire FOMC wanting to increase rates in 1993, Greenspan decided to wait until the following year.<sup>57</sup> At the next meeting most of the members wanted to increase rates 50 basis points. Greenspan reluctantly allowed an increase of only 25 basis points.

There is also a possibility that the Fed has been captured by the financial industry. In regulatory capture, the agency tasked with regulating an industry instead advances the interests of the industry.<sup>58</sup> Employees often move between the Fed and financial institutions because of the expertise required for both. Additionally, member banks are involved in the election of the regional Fed presidents, five of whom sit on the FOMC. Because the Fed implements its policy through the financial system and employs many former bankers, the financial industry may have a larger influence over monetary policy.

The Fed's recent usage of unconventional monetary policy when interest rates reached zero poses additional problems. Typically, the Fed enacts monetary policy by purchasing short term Treasury securities. In the first and third round of quantitative easing, the Federal Reserve purchased mortgage-backed securities in order to provide support to the housing market. Unconventional monetary policy designed to support specific industries suffering from a recession has a similar impact as fiscal stimulus designed to help industries impacted by a recession. Rather than focusing on the economy as a whole, the Fed considers specific industries,

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<sup>56</sup> Daniel Smith and Peter Boettke, "An Episodic History of Modern Fed Independence," *The Independent Review* 20, no. 1 (Summer 2015): 99-120. <https://dx.doi.org/10.2139/ssrn.2135233>.

<sup>57</sup> Ellen E. Meade et al., "The Effects of FOMC Communications before Policy Tightening in 1994 and 2004," FEDS Notes, Board of Governors of the Federal Reserve System, September 24, 2015. <https://www.federalreserve.gov/econresdata/notes/feds-notes/2015/effects-of-fomc-communications-before-policy-tightening-in-1994-and-2004-20150924.html>.

<sup>58</sup> George Stigler, "The Theory of Economic Regulation," *The Bell Journal of Economics and Management Science* 2, no. 1 (Spring 1971): 3-21. <https://doi.org/10.2307/3003160>.

which can open them up to pressure from members of Congress to whom those industries are important constituents.

## **5. Case Study: The American Recovery and Reinvestment Act**

In response to the 2008 recession, Congress passed the American Recovery and Reinvestment Act. ARRA was signed into law in February 2009 and provided \$787 billion in federally funded transfers, purchases, and tax reductions.<sup>59</sup> Tax cuts, which went to individuals and firms, comprised \$288 billion of the program. States and local governments received \$144 billion in grants from the federal government, 90 percent of which went to education and Medicaid. The remaining \$357 billion went towards federal spending programs for transportation, communication, infrastructure improvements, scientific research, and an extension of federal unemployment benefits.

Examining who received the stimulus funds can shed light on public choice theory's ability to explain the incentives behind fiscal stimulus. Young and Sobel examined the states level spending of stimulus funds. They found statistically significant evidence that states with higher per capita GDP immediately before crisis received more money than states with lower per capita GDP.<sup>60</sup> States that were wealthier received more stimulus funds than poorer states. They also found that receiving federal aid the year before ARRA was associated with receiving more ARRA funds. Combined, these findings provide some evidence that the wealthier states are able to more effectively lobby to extract funds.

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<sup>59</sup> American Recovery and Reinvestment Act (ARRA) of 2009, Pub. L. No. 111-5, 123 Stat. 115 (2009).

<sup>60</sup> Andrew Young and Russel Sobel, "Recovery and Reinvestment Act Spending at the State Level: Keynesian Stimulus or Distributive Politics?" *Public Choice* 155, no. 3-4 (2013): 449-68. <https://doi.org/10.2139/ssrn.1673913>.

Additionally, they find the unemployment rate after the recession was not consistently associated with an increase in funds.<sup>61</sup> The variables to support Keynesian theory, change in per capita GDP and change in unemployment rate, are never the right sign and are rarely significant across their models. In order for fiscal stimulus to be effective, it must be employing idle resources. By not targeting areas with a sudden drop in per capita GDP and higher unemployment, ARRA was not designed to use the idle resources.

Young and Sobel did find evidence that the average tenure of a state's representative was positively associated with funds that state received. A state having a representative from the Democratic Party on the appropriations committee was associated with a greater amount of funds received from the federal government during the Obama administration. Similar to the wealthier states receiving more funds, these provide some evidence that better political connections can help increase the amount of funds received. States that voted for Barack Obama in the 2008 election were also found to receive more funds. However, this may represent the support of Democratic Party voters for fiscal stimulus and its opposition by Republican voters. Their findings do not support the argument that the ARRA stimulus was designed as an effective countercyclical stimulus.<sup>62</sup> Rather, they found evidence that political incentives shaped how the stimulus funds were distributed.

In 2008, Politico noted the lobbying frenzy over the stimulus package as it was being designed.<sup>63</sup> Among the many divergent interests was a coalition of homebuilders and contractors, who were hit hard by the recession. In Adeliro and Dinc's study of firms' lobbying activity, they

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<sup>61</sup> Ibid.

<sup>62</sup> Ibid.

<sup>63</sup> Lisa Lerer, "Lobby Free-for-All over Stimulus Funds," *Politico*, December 16, 2008. <https://www.politico.com/story/2008/12/lobbying-free-for-all-over-stimulus-funds-016602>.

found that firms who struggled financially during the recession sought ARRA funds. These firms also decreased their capital investments in order to shift funds to rent-seeking. They found that firms that lobbied were more likely to receive stimulus funds and be a ‘prime’ or major recipient. While lobbying intensity of firms was associated with receiving more stimulus funds, financial weakness was not. This suggests that lobbying greatly impacted the distribution of stimulus funds. In 2007-2008, firms spent over \$6 billion on lobbying, a dramatic increase from previous years.<sup>64</sup> Lobby intensity fell rapidly after the period where stimulus funds were available. This suggests that the increase in stimulus was geared towards obtaining stimulus funds.

When states received stimulus funds, they used a large portion of the money to close budget gaps.<sup>65</sup> This includes substantial payments to teachers and public sector employees, rather than actual countercyclical spending. This highlights the strength of interest groups, most notably unions and the bureaucracy. When money from the federal government is given to states through temporary grants, it permanently increases their spending. Future taxes increase by 33-42 percent after receiving temporary federal funding in order to continue the programs.<sup>66</sup> Once states increase their spending, interests are entrenched to fight for the continuation of their program or position. According to the GAO, states reduce the amount of money spent on infrastructure when

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<sup>64</sup> Manuel Adelino and Serdar Dinc, “Corporate Distress and Lobbying: Evidence from the Stimulus Act,” *Journal of Financial Economics* 114, no. 2 (November 2014): 256–272.  
<https://doi.org/10.1016/j.jfineco.2014.07.004>.

<sup>65</sup> Veronique de Rugy, “The Essential Stimulus: Lessons from The American Recovery and Reinvestment Act Of 2009,” (policy brief, Mercatus Center at George Mason University, Arlington, 2010).  
<https://www.mercatus.org/publication/essential-stimulus>.

<sup>66</sup> Veronique de Rugy and Matthew Mitchell, “Would More Infrastructure Spending Stimulate the Economy in 2017?” (Policy primer, Mercatus Center at George Mason University, Arlington, 2017).  
<https://www.mercatus.org/publications/federal-fiscal-policy/would-more-infrastructure-spending-stimulate-economy-2017>.

federal government gives them grants. The federal government shifts the funding for local infrastructure to the entire country, yet a locality or state benefits at their expense.

Another drawback to ARRA is the opportunity cost of the program. When money is spent on politically popular projects or favored firms and industries, it cannot be spent on something that consumers value. Politicians lack the requisite knowledge to be able to determine the highest valued use of funds. In fact, they often gave grants that the recipients found to be low valued uses.<sup>67</sup> For example, one engineering firm manager told Garret Jones and Daniel Rothschild that without the stimulus funding, “we would have probably had our guys working on something else.” Another complained that, “We received ARRA funds for —the last thing on our list; and truthfully, the least useful thing, a crane and a forklift.”<sup>68</sup> While some grants provided money for needs well, many others suffered from a lack of local knowledge about how to best use the resources or what the firm needed to do to help the community.

Moreover, the statistic of jobs created is not entirely accurate, as many of the new employees are hired from other firms rather than from the unemployed. While there may be idle resources in the economy, because of the specialization required in the modern workforce the skills of the unemployed may not match the skills necessary to complete the stimulus projects. Jones and Rothschild also found that many of the new hires for firms that received stimulus grants were employees from other firms, not unemployed. I expect to find a difference in human capital between a worker in residential housing construction and in infrastructure construction. While there may be a large overlap in skills, a firm working on an infrastructure project tries to

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<sup>67</sup> Garret Jones and Daniel Rothschild, “No Such Thing as Shovel Ready: The Supply Side of the Recovery Act,” Working paper, Mercatus Center at George Mason University, no. 18-11, August 2010. <https://www.mercatus.org/publication/no-such-thing-shovel-ready>.

<sup>68</sup> Ibid.



hire employees with infrastructure knowledge and experience. Firms are inclined to hire people who fit the skills needed as closely as possible.<sup>69</sup> Unless the stimulus projects undertaken match the skills of the workers who lost jobs, new hires come from workers at other firms in the industry without the stimulus contracts rather than the unemployed. This job shifting reduces the number of unemployed hired and the cost of switching jobs and retraining further reduces the gains of stimulus spending.

Experience has shown that stimulus is not temporary in practice. Blanchard and Perotti's study of stimulus programs show that 95 percent of spending remained in place despite being planned to be temporary.<sup>70</sup> In 2011, two years after ARRA was signed into law, only 62 percent of the funds set aside for infrastructure projects had been spent.<sup>71</sup> Stimulus spending continued until 2013. According to public choice theory, ending these programs are difficult because of the interests created by the program. Whether its bureaucrats overseeing a project or firm receiving support, these vested interests seek to maintain their support even after the recession is over.

## **6. Nominal GDP Targeting**

Currently, the Federal Reserve is under an inflation targeting regime, which it uses to reach its dual mandate of low inflation and low unemployment. An alternative to the current monetary policy regime is to target nominal GDP, or the sum of total spending. In other words,

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<sup>69</sup> Arnold Kling, "PSST: Patterns of Sustainable Specialization and Trade." *Capitalism and Society* 6, no. 2, (2011): article 2. <https://doi.org/10.2202/1932-0213.1086>.

<sup>70</sup> Olivier Blanchard and Roberto Perotti, "An Empirical Characterization of the Dynamic Effects of Changes in Government Spending and Taxes on Output," *The Quarterly Journal of Economics* 117, no. 4 (November 2002): 1329–68. <https://www.jstor.org/stable/4132480>.

<sup>71</sup> Veronique de Rugy, "The Essential Stimulus: Lessons from The American Recovery and Reinvestment Act Of 2009," (policy brief, Mercatus Center at George Mason University, Arlington, 2010). <https://www.mercatus.org/publication/essential-stimulus>.

NGDP growth includes both inflation and real GDP growth. Under NGDP targeting, the Fed targets the ultimate goal of monetary policy, rather than the means of achieving it.<sup>72</sup>

Furthermore, wages, debt, and other contracts are set in nominal terms, so they are slow to adjust and sensitive to inflation.

Under NGDP level targeting, the Fed targets a steady growth path in the total money value of all the goods produced. Because targeting the growth path is a level target, it forces the Fed to make up for past mistakes. For instance, if the NGDP growth target is 5 percent and the actual NGDP growth was only 4 percent, the Fed targets a NGDP growth of 6 percent to return to the previous growth path.<sup>73</sup> In the recovery from the 2008 recession, the Fed has consistently undershot its stated target for inflation. NGDP level targeting prevents this.

NGDP targeting has other desired attributes. According to Evan Koenig from the Dallas Fed, there are three “desiderata” for a monetary policy regime.<sup>74</sup> Firstly, any rule should minimize the underutilization of resources due to frictions that slow the adjustment of prices and distort relative prices. Since wages are sticky, NGDP targeting allows prices to fluctuate so that they can reach their market clearing levels. A rule should also imply low and stable inflation expectations. Although NGDP targeting allows inflation to vary over the short term if there is a significant change in output, over the medium to long term inflation should remain low and

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<sup>72</sup> Charles Bean, “Targeting Nominal Income: An Appraisal,” *The Economic Journal* 93, no. 372 (December 1983): 806-19. <https://doi.org/10.2307/2232747>.

<sup>73</sup> David Beckworth, “The Knowledge Problem in Monetary Policy: The Case for Nominal GDP Targeting,” Policy brief, Mercatus Center at George Mason University, Arlington, 2017. <https://www.mercatus.org/publications/monetary-policy/knowledge-problem-monetary-policy>.

<sup>74</sup> Evan Koenig to FOMC, memorandum, “The Case for Targeting the Level of Nominal Spending,” October 13, 2010. <https://www.federalreserve.gov/monetarypolicy/files/FOMC20101013memo02.pdf>.

stable.<sup>75</sup> Any large changes in inflation occurs only so that the Fed can maintain its NGDP growth rate target. Finally, any monetary policy regime or rule should promote financial stability. NGDP targeting distributes risk between creditors and borrowers more efficiently than a price level target.<sup>76</sup>

Using an aggregate supply-aggregate demand model shown in figure 1 (see appendix), one can understand how NGDP targeting works in practice. In this model, the aggregate price level and the total quantity of output is determined by the intersection of the aggregate supply and aggregate demand curves. Aggregate demand slopes down; this inverse relationship is caused because as the price level increases, individuals are able to purchase fewer goods. Conversely, aggregate supply slopes upwards because when wages are sticky, profits increase as the price of goods increase. Monetary policy works by moving the aggregate demand curve.

Using the aggregate demand and aggregate supply graph discussed above, a negative aggregate demand shock shifting the AD curve inwards decreases both the price level and output as shown in figure 2 (see appendix). In response, when the Fed is targeting NGDP it increases the money supply in order to increase NGDP back to its target path. Under an inflation targeting regime, the Fed also increases the money supply to maintain its inflation target. Figure 3 (see appendix) shows a negative supply shock, which shifts the AS curve inward increasing the price level but decreasing the quantity demanded. In this case an NGDP targeting the Fed does not

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<sup>75</sup> Scott Sumner and Ethan Roberts, “The Promise of Nominal GDP Targeting,” Policy primer, Mercatus Center at George Mason University, Arlington, 2018. <https://www.mercatus.org/publications/monetary-policy/promise-nominal-gdp-targeting>.

<sup>76</sup> Evan Koenig to FOMC, memorandum, “The Case for Targeting the Level of Nominal Spending,” October 13, 2010. <https://www.federalreserve.gov/monetarypolicy/files/FOMC20101013memo02.pdf>.

react, as supply shocks don't impact NGDP. Conversely, an inflation targeting Fed reduces the money supply in order to maintain its inflation target, despite the fact that output has fallen.

NGDP targeting allows the Fed to react appropriately to both supply and demand shocks. Because the supply and demand shocks can be indistinguishable in real time, the Fed suffers from the knowledge problem.<sup>77</sup> The Fed's current monetary policy regime, inflation rate targeting, forces them to respond the same to any increase in inflation, regardless whether the change is due to supply or demand causes. Under NGDP targeting, the Fed responds appropriately to both, which requires different policies.<sup>78</sup> In his assessment of NGDP targeting in 1983, Charles Bean concludes:

“that a policy of targeting nominal income is an optimal response to demand shocks and to productivity shocks if labour supply is inelastic. Even if labour supply is elastic nominal income targets will still produce a better response to productivity shocks than monetary targets if the price elasticity of aggregate demand is less than unity. Growth rules are less attractive than targets for the level of nominal income.”<sup>79</sup>

In order to appropriately smooth the business cycle, the Fed allows inflation to vary in the short run. For instance, if real GDP growth is 6 percent, using the same NGDP target of 5 percent, the Fed acts to reduce the money supply so that the inflation growth falls to -1 percent. Under Inflation targeting, the Fed keeps inflation at its target of 2 percent, allowing GDP to grow above trend. Likewise, when GDP growth falls in a recession, the Fed increases the money

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<sup>77</sup> Scott Sumner and Ethan Roberts, “The Promise of Nominal GDP Targeting,” policy primer, Mercatus Center at George Mason University, 2018. <https://www.mercatus.org/publications/monetary-policy/promise-nominal-gdp-targeting>.

<sup>78</sup> Ibid.

<sup>79</sup> Charles Bean, “Targeting Nominal Income: An Appraisal,” *The Economic Journal* 93, no. 372 (December 1983): 806–19. <https://doi.org/10.2307/2232747>.

supply so that inflation rises to keep spending growth stable. This accommodative policy allows GDP to return to trend quickly and inflation soon returns to its previous trend.

Because it keeps the growth path of total spending stable, adopting a NGDP targeting regime substantially reduces the most powerful incentive to engage in fiscal stimulus. While recessions are still possible under an NGDP targeting regime, David Beckworth and Joshua Hendrickson found that NGDP targeting performed superior to Taylor Rule inflation targeting.<sup>80</sup> By making recessions fewer in number and less severe, there is a reduced need for temporary programs to keep voters' incomes stable. The Keynesian support for fiscal stimulus rests on the belief that the economy needs government spending to encourage private spending and investment.

Nominal GDP targeting also encourages good supply side policies. Any policy attempting to increase aggregate demand is offset by monetary policy in order to keep total spending stable. Fiscal stimulus is an attempt to increase aggregate demand. Thus, policy makers could no longer argue that increasing government spending increases total spending under nominal GDP targeting. When voters do not believe that stimulus can increase aggregate demand, there is much lower support. However, tax reforms and other policies attempting to increase aggregate supply are still effective at increasing the real GDP component of nominal GDP growth.

Conversely, inflation targeting allows policies designed to stimulate aggregate demand. A collapse in real GDP without a corresponding increase in inflation, which can occur under inflation targeting, leads to higher unemployment. Those that become unemployed take time to

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<sup>80</sup> David Beckworth and Joshua Hendricks, "Nominal GDP Targeting and the Taylor Rule on an Even Playing Field." Mercatus Working Paper, Mercatus Center at George Mason University, 2016.

find a new job. Voters express their desire to help by voting for politicians who promise that their policies can help those impacted by the recession. Policies designed to do something to help those negatively impacted become more popular with voters.<sup>81</sup>

Bailouts and other stimulus policies designed to support failing businesses are more difficult to justify under NGDP targeting. When total spending is growing steadily, it is clearer that money given to one firm or industry must be taken from another. Although rent-seeking still exists, it is more difficult to engage in when the costs of bailouts becomes clearer. Because the Fed is committed to maintaining spending growth on a stable path, the failure of a business does not lead to a collapse in total spending.

However, NGDP targeting still faces some of the perverse incentives of any monetary policy. Congress has been able to put pressure on the Fed in order to nudge them towards their preferred policy in the past. They could continue to try to pressure the Fed to increase their NGDP growth path target in the future, although much of the recent pressure from Congress has been for tighter policy. Because an NGDP targeting regime targets a growth path, it is difficult for Congress to put enough pressure on the Fed to increase the target. The Fed may design monetary policy to serve the interests of the financial industry. Finally, the Fed shares the characteristics with a bureaucracy, so there are incentives for them to seek to maximize their budget. Monetary policy is not devoid of incentives that can hamper its effectiveness.

## **7. Data and Model**

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<sup>81</sup> Patrick Egan, “‘Do Something’ Politics and Double-Peaked Policy Preferences,” *The Journal of Politics* 76, no. 2 (February 2014): 333–349. <https://doi.org/0.1017/s0022381613001527>.

In addition to describing the change in incentives that accompany a change to NGDP targeting, I provide an estimation of the amount of federal spending when there is a decrease in nominal GDP. My goal is to be able to provide evidence that unstable nominal GDP leads to an increase in government spending, as public choice theory suggests. This empirical evidence shows that under a NGDP targeting regime that prevents large deviations of NGDP growth from the trend, there is less fiscal stimulus. Not only does the analysis provide some evidence for the public choice theory of fiscal stimulus, it also provides a rough estimate of the federal spending that can be avoided under a NGDP targeting regime.

I examine time series data of the United States, using quarterly data beginning in 1949 to show how the instability in NGDP growth affects the amount of government spending. I use a measure of total government spending rather than just stimulus in order to account for the automatic stabilizers, or spending increases that happen automatically during a recession. I access the data from the Federal Reserve's FRED database. In order to capture the NGDP diverging from its trend, I use the percent deviation of NGDP from the estimated full employment NGDP. By using simply the change in NGDP, I can only measure some of the deviation from trend, because it is a rate rather than a level. The full employment NGDP, also called potential NGDP, is estimated by the CBO and is accessed from FRED. I am also using the Federal government's current expenditures as a percentage of NGDP for my measure of government spending.

I create a measure of the political orientation of government, using the percentage of legislative seats held by the Democratic Party. I create a percentage of seats in control of Democrats and a dummy variable for a Democratic Majority for each house of Congress and a dummy variable for the Democratic Party controlling both houses of Congress. This data comes

from the US House of Representatives and US Senate historical webpage.<sup>82</sup> The Democratic Party is the left of center party in the United States and has historically advocated for greater increases in spending than the Republican Party. It is likely that having a majority of Democrats in Congress yields higher spending than having a majority of Republicans in Congress.

My measure of unemployment is quarterly and came from the FRED database. Federal spending, especially fiscal stimulus, is done to combat unemployment, when the demand from voters is the strongest. I use the American Bar Association's historical data for the number of lawyers.<sup>83</sup> Before 1955, they gathered the data every 5 years, so I use linear interpolation to fill the missing data. A majority of lobbyists and many bureaucrats are lawyers, so the variable can serve as a proxy for them.

For a measure of income inequality, I used the percentage of income held by the top 1 percent of income earners from Thomas Piketty and Emmanuel Saez, linearly interpolated by quarter.<sup>84</sup> Income inequality is often cited as an inspiration for income redistribution programs and a number of government spending initiatives. The debt to GDP ratio was gathered on a quarterly basis from FRED.

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<sup>82</sup> "Party Divisions of the House of Representatives, 1789 to Present," History, Art, & Archives, US House of Representatives, US House of Representatives, 2018. <https://history.house.gov/Institution/Party-Divisions/Party-Divisions/>.

"Party Division," Senate Historical Office, US Senate, 2018. <https://www.senate.gov/history/partydiv.htm>.

<sup>83</sup> "ABA National Lawyer Population Survey," American Bar Association, 2017. [https://www.americanbar.org/content/dam/aba/administrative/market\\_research/Total%20National%20Lawyer%20Population%201878-2017.authcheckdam.pdf](https://www.americanbar.org/content/dam/aba/administrative/market_research/Total%20National%20Lawyer%20Population%201878-2017.authcheckdam.pdf).

<sup>84</sup> Thomas Piketty, and Emmanuel Saez, "Income Inequality in the United States: 1913-1998," *The Quarterly Journal of Economics* 68, no. 1 (February 2003): 1–41. <https://doi.org/10.1162/00335530360535135>.



In Figures 4-6 in the appendix, one can see the trends in NGDP over time. Federal government's current expenditures as a proportion of NGDP have been growing at a positive rate after World War II, although its rate of change has changed. NGDP has grown exponentially, with a higher rate of growth occurring in the early 1970s. Finally, the NGDP's divergence from full employment NGDP has been primarily negative, reaching troughs during or soon after recessions.

My variable of interest is the divergence of NGDP from full employment NGDP. My dependent variable is the Federal Government Current Expenditures in nominal dollars divided by NGDP. I expect the relationship between the divergence of NGDP and federal expenditures to be negative, so that a decrease in NGDP below the trend is associated with an increase in government expenditures. My sample begins in 1949 and ends in 2016. This timeframe allows me to focus my analysis after the creation of the Federal Reserve, the end of World War II, and when transfers were considered a more acceptable task for government to carry out.<sup>85</sup> I analyze a second sample of 1990 through 2016, in order to estimate the relationship while the Federal Reserve has operated under a Taylor Rule-like regime.

I estimate a Vector Auto Regression (VAR) and perform a Granger test to determine which variable – government expenditures or the deviation in NGDP – is the leading variable that impacts the value of the other. I also include exogenous control variables in my VAR to account for differences over time in both the economy and in the political structure.

To estimate the effect that a decline in nominal GDP has on government expenditures, I use the equation:

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<sup>85</sup> Robert Higgs, *Crisis and Leviathan* (New York: Oxford University Press, 1987).

$$AE_t = B_1E_{t-1} + B_2E_{t-2} + \dots + B_pE_{t-p} + C_0N_t + C_1N_{t-1} + \dots + C_pN_{t-p} + \Psi W_t + \varepsilon_t$$

where E is federal government expenditures as a proportion of nominal GDP. N is the divergence of NGDP from the full employment NGDP. W is a vector of exogenous variables to control for other conditions in the United States that could impact federal spending. They include Democratic control of Congress, the number of lawyers, the debt to GDP ratio, the unemployment rate, and the percentage of income held by the top 1 percent of income earners. I use 5 lags of government spending and deviation of NGDP in the VAR. I use the first differences of government spending and the deviation of NGDP, according to the results of my Dickey-Fuller test (see tables 1 and 2 in the appendix).

The results of my estimations for the full sample period can be found in table 3 in the appendix. In each specification, the coefficient for NGDP is statically significant and negative. According to my Granger causality Wald test, for the government spending equation the p value of the coefficient of the deviation of NGDP is 0.000 (see table 4 in the appendix). Therefore, I reject the null hypothesis that all coefficients of the lags of the deviation of NGDP is zero. I have evidence that the deviation of NGDP from its full employment trend granger causes government spending.

A graph of the impulse response function can be found in figure 7 in the appendix. A shock to the deviation in NGDP of a 1 standard deviation below trend is associated with an increase in Federal Expenditures as a proportion of GDP by 10 percent for 2 years. The coefficient for the NGDP is statistically significant at the 1 percent level. The  $R^2$  for my model was low, at 19 percent. These results suggest that a decrease in NGDP is associated with an increase in Federal Expenditures, as public choice theory suggests.

Since the Fed began targeting a low and steady inflation rate in the late 1980s, the relationship between nominal GDP and the business cycle is much clearer. An increase in NGDP can cause a boom and a decrease in NGDP can cause a bust, because most of the changes result from a change in output, not inflation. In the sample from 1990 to 2016, the correlation between the deviation of NGDP and Federal Expenditures is -0.7138. As the scatterplot in Figure 8 (see appendix) shows, there is a clear negative relationship between the deviation of NGDP and Federal Expenditures.

The results of my Granger Causality Wald Test also show that the Deviation of NGDP granger causes Federal Expenditures. In the final specification of my model, I control for Democratic Party control of Congress, the unemployment rate, and income held by the top 1 percent. My impulse response function in figure 9 (see appendix) shows a negative association between the first difference of deviation of NGDP from trend and the first difference of federal expenditures. In this sample, the relationship between NGDP and federal expenditures is larger. In this estimation, I find that a 1 percent decrease in NGDP below trend is associated with a 56 percent increase in federal expenditures as a proportion of GDP.

## **8. Discussion and Policy Recommendation**

Stimulus programs designed to keep incomes steady during a recession are poorly designed because of the incentives facing the policymakers designing them and the groups they may impact. Policymakers are rational actors seeking to maximize their utility, just like individuals in the marketplace. While some utility may come from good policy, much of it comes from winning votes and remaining in office. Stimulus programs advanced by these politicians tend to be designed to help either their district or interest groups who improve their

reelection chances while shifting the cost to others. Voters tend to vote expressively with limited knowledge, either to signal the results they want or to show their desire to help those impacted by the recession. Meanwhile, special interests lobby for stimulus to be designed in a way that benefits them, whether that is keeping a near-bankrupt firm from shutting down or helping support a failing industry.

Bureaucrats, like all workers, seek job stability and a path to promotions. After a stimulus program begins, they pressure to maintain the temporary programs they are involved with running, rather than face potential job loss. This pressure helps increase the size of government and keep stimulus spending after the recovery, when even Keynesians believe it to be ineffective.

Keynesian theory prescribes countercyclical spending to help support aggregate demand in a recession and help spur the recovery. However, by targeting total spending in an economy, NGDP, the Fed can prevent substantial decreases in aggregate demand. This is in contrast to inflation targeting, which allows NGDP to fluctuate. By targeting the growth path of NGDP, fiscal stimulus becomes both ineffective and less attractive. Because the Fed offsets increases to spending above their preannounced trend, any stimulus spending is clearly be offset by less spending elsewhere in the economy. Although direct transfers like this do exist, they are much more difficult to justify and are politically contentious. Direct aid to firms and industries cannot be argued to keep spending stable, because the Fed's monetary policy is already accomplishing that.

The results of my model provide evidence that a decrease in NGDP is associated with an increase in government expenditures. For the United States, I found that a decrease of NGDP is associated with an increase in government spending, which is consistent with public choice theory. In my full sample, NGDP falling below the full employment potential NGDP by 1

percent is associated with an increase in federal expenditures by 10 percent. However, in the post 1990 sample the effect on federal expenditures was over 50 percent, which seems implausibly larger. The relationship is significant and the correct sign across the full and recent samples and each specification, providing evidence to support a public choice theory analysis of stimulus spending.

In order to avoid the fiscal stimulus encouraged by the current monetary policy regime that allows NGDP to fluctuate, I recommend that the Federal Reserve begin targeting a path of NGDP growth. Past research by Beckworth and Hendrickson has examined NGDP targeting's performance relative to other monetary policy regimes.<sup>86</sup> They found its performance in avoiding recessions and economic volatility superior to a Taylor rule inflation targeting regime. In addition to performing better than inflation targeting, it also reduces the need for fiscal policy hampered by the incentives facing policymakers, voters, interest groups, and bureaucrats.

## **9. Conclusion**

In this paper I apply public choice theory to examine fiscal stimulus. Because of the incentives facing politicians, voters, bureaucrats, and interest groups, fiscal stimulus is often wasteful in practice. I estimated the effect of a change in nominal GDP on government spending to help quantify how much the government wastes trying to recover from recessions. Rather than engaging in fiscal stimulus, a more effective remedy is a monetary policy regime that prevents nominal GDP from falling in the first place. The Federal Reserve switching monetary policy

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<sup>86</sup> Beckworth, David and Joshua Hendrickson. "Nominal GDP Targeting and the Taylor Rule on an Even Playing Field," (working paper, Mercatus Center at George Mason University, October 2016). <https://www.mercatus.org/publications/nominal-gdp-targeting-taylor-rule>.

regime to nominal GDP targeting provides stable growth and reduces the need for fiscal stimulus.

## 10. Appendix

Figure 1. Aggregate Supply and Demand

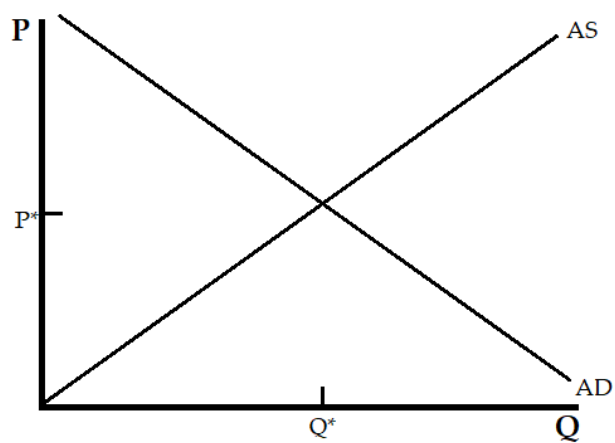
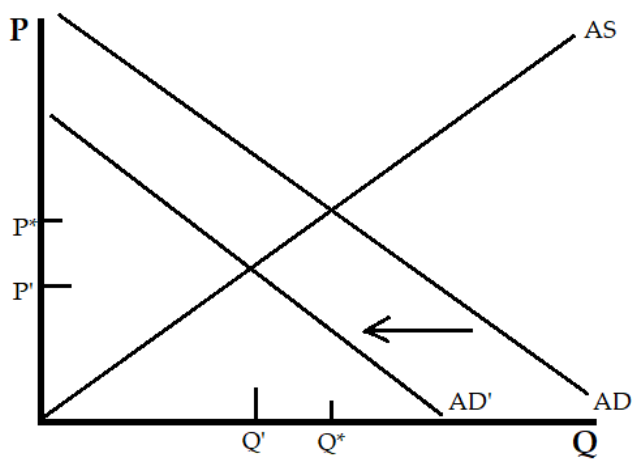
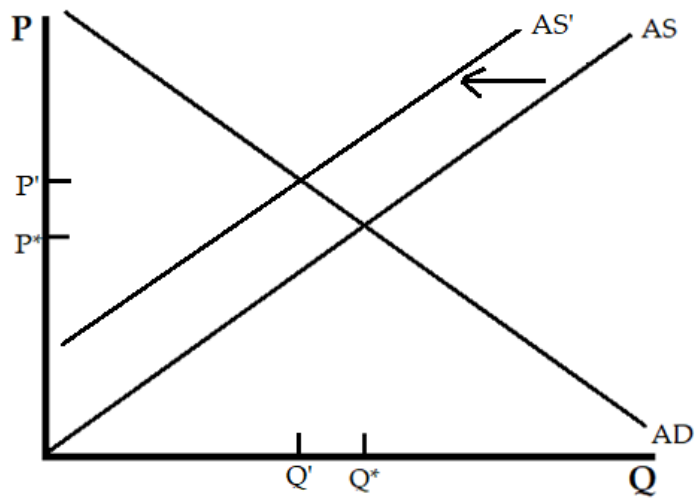


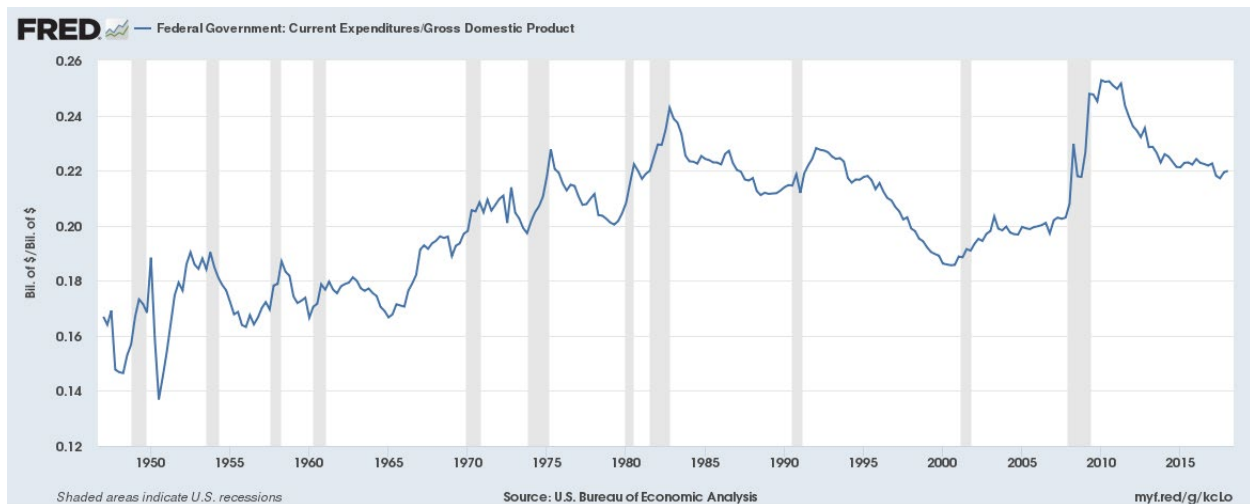
Figure 2. Negative Shock in Aggregate Demand



**Figure 3. Negative Shock in Aggregate Supply**

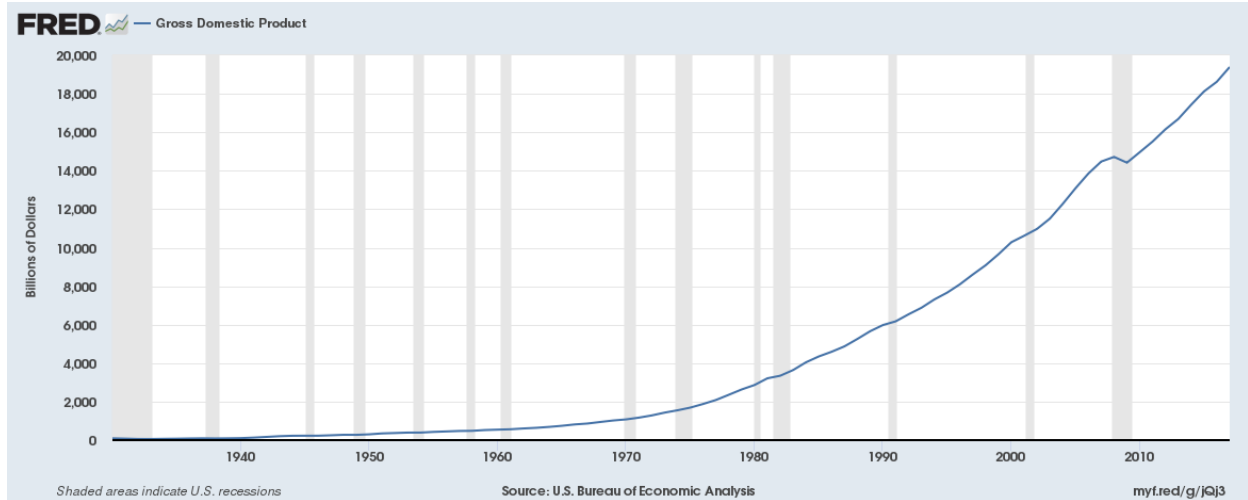


**Figure 4. Current Expenditures as a Proportion of NGDP**

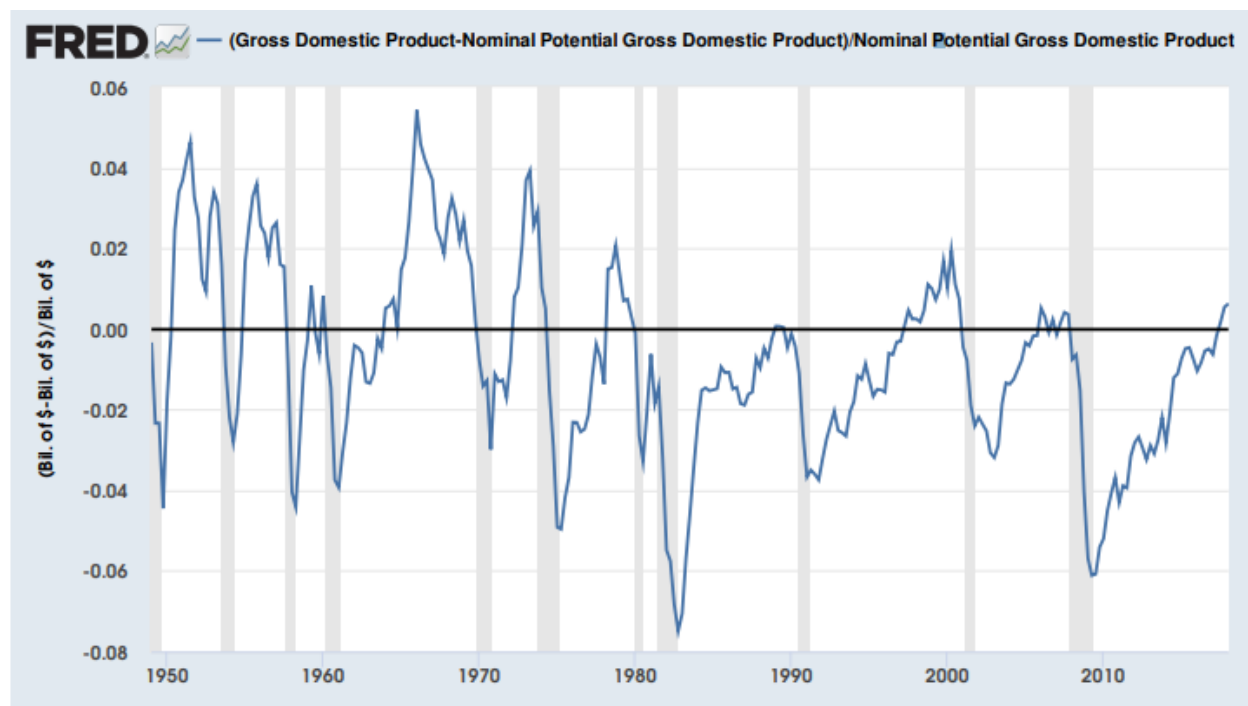




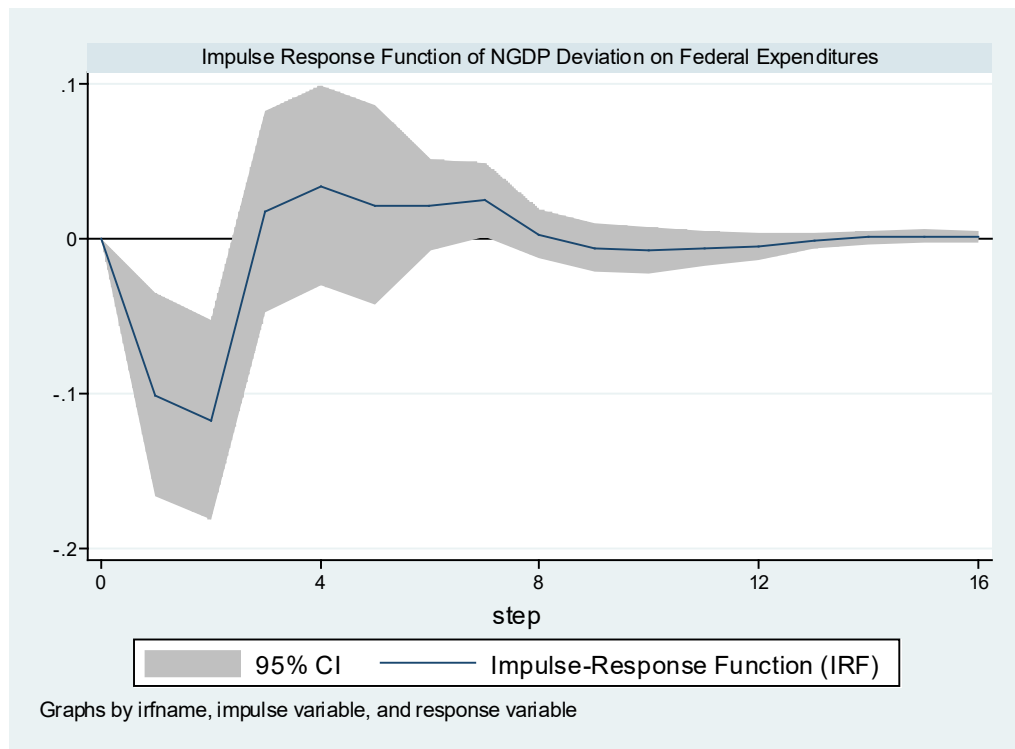
**Figure 5. NGDP Growth**



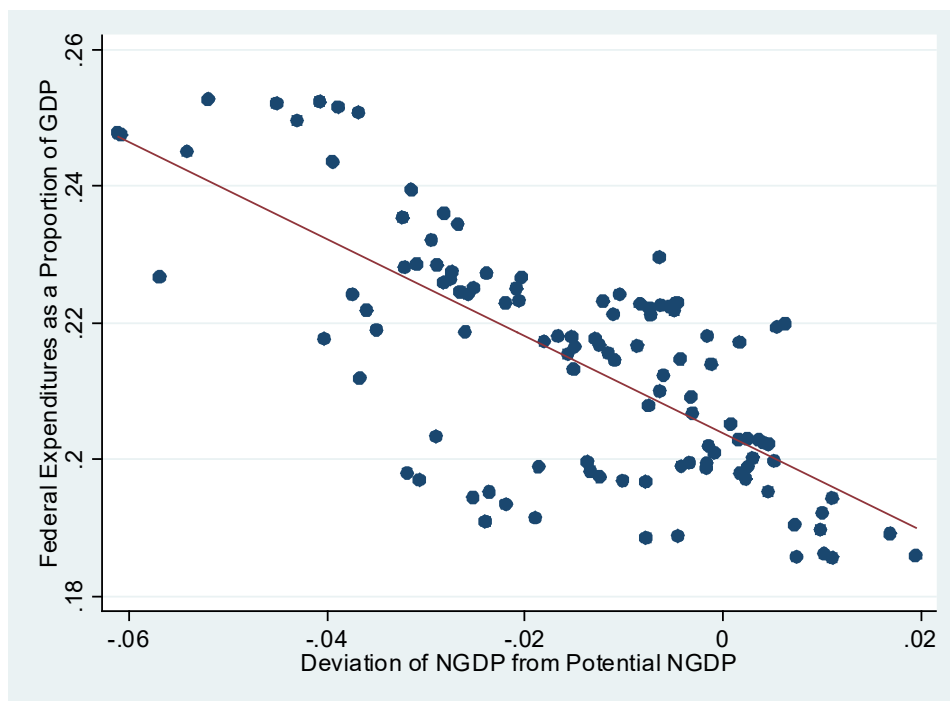
**Figure 6. NGDP Divergence from Full Employment NGDP**



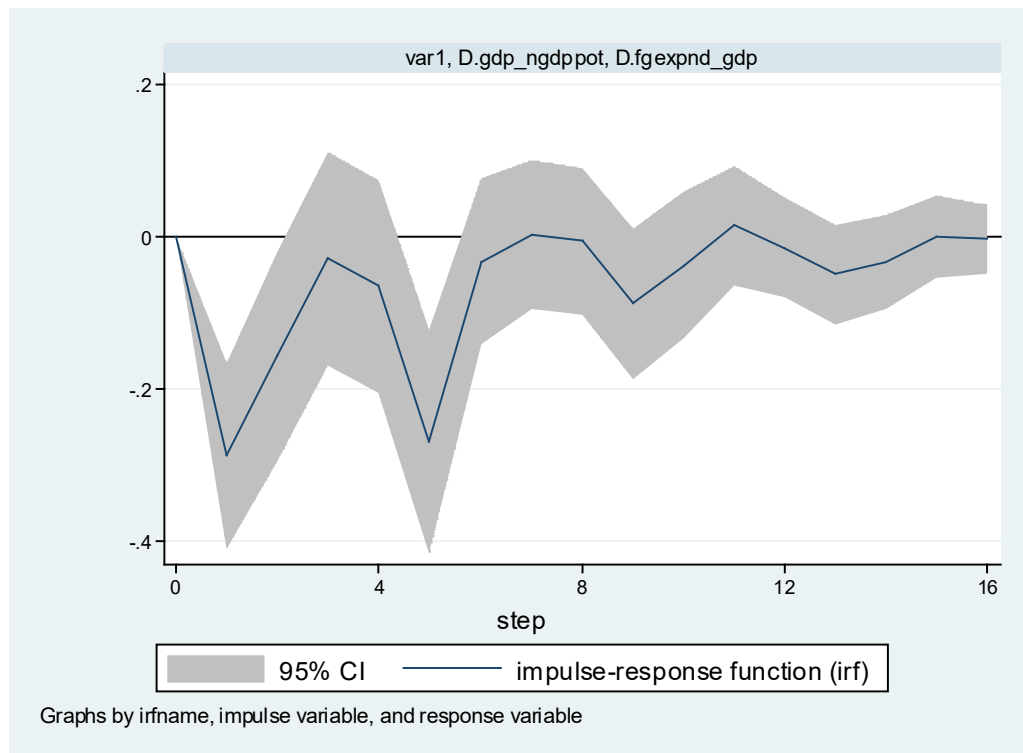
**Figure 7. Impulse Response Functions**



**Figure 8. Scatter Plot of Federal Expenditures and Deviation of NGDP**



**Figure 9. Impulse Response Function 1990-2018**



### Table 1. Dickey-Fuller Test for Government Spending

Dickey-Fuller test for unit root                      Number of obs    =         276

		Interpolated Dickey-Fuller		
	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-2.569	-3.989	-3.429	-3.130

MacKinnon approximate p-value for  $Z(t) = 0.2943$ 

D.fgexpnd~p	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
fgexpnd_gdp						
L1.	-.0473058	.0184138	-2.57	0.011	-.0835569	-.0110546
_trend	7.69e-06	5.11e-06	1.51	0.133	-2.36e-06	.0000177
_cons	.0087336	.0032931	2.65	0.008	.0022505	.0152166

```
. dfuller d.fgexpnd gdp, trend regress lags(0)
```

Dickey-Fuller test for unit root                      Number of obs    =         275

		Interpolated Dickey-Fuller		
	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-16.449	-3.989	-3.429	-3.130

MacKinnon approximate p-value for  $Z(t) = 0.0000$ 

D2.fgexpnd~p	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
D.fgexpnd_~p						
L1.	-.9946031	.0604653	-16.45	0.000	-1.113643	-.8755636
_trend	-1.06e-06	3.69e-06	-0.29	0.774	-8.32e-06	6.20e-06
_cons	.0003149	.0005876	0.54	0.592	-.000842	.0014718

**Table 2. Dickey-Fuller test for Nominal GDP**

Dickey-Fuller test for unit root

Number of obs = 276

		Interpolated Dickey-Fuller		
	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-3.392	-3.989	-3.429	-3.130

MacKinnon approximate p-value for  $Z(t) = 0.0525$

D.gdp_ngdp~t	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
gdp_ngdppot						
L1.	-.0835522	.0246356	-3.39	0.001	-.1320521	-.0350523
_trend	-7.73e-06	7.25e-06	-1.07	0.287	-.000022	6.54e-06
_cons	.0004604	.0010904	0.42	0.673	-.0016863	.002607

```
. dfuller d.gdp_ngdppot, trend regress lags(0)
```

Dickey-Fuller test for unit root

Number of obs = 275

		Interpolated Dickey-Fuller		
	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-11.983	-3.989	-3.429	-3.130

MacKinnon approximate p-value for  $Z(t) = 0.0000$ 

D2.gdp_ngd~t	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
D.gdp_ngdp~t						
L1.	-.6820404	.0569176	-11.98	0.000	-.7940955	-.5699853
_trend	-5.83e-07	6.49e-06	-0.09	0.928	-.0000134	.0000122
_cons	.0001781	.0010337	0.17	0.863	-.0018569	.0022131

**Table 3. Results from VAR Full Sample**

Results from VAR 1949-2018			
	(1)	(2)	(3)
Federal Expenditures	0.0061 (.060)	-.01404 (.061)	-0.0175986 (.061)
Deviation of NGDP	-0.0964*** (.059)	-.1004*** (.033)	-0.1006*** (.033)
Democrats in Congress		0.0015** -0.001	0.0016647** (.001)
Unemployment Rate		-0.00003 (.0001)	-.0001 (.0002)
Top 1 percent		0.0001 (.0001)	-0.0001026 (.0003)
Number of Lawyers			1.70E-09 (2.79e-09)
N	271	259	259
R2	0.1094	0.1907	0.1957

**Table 4. Granger Causality Test**

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
D_fgexpnd_gdp	D.gdp_ngdppot	37.255	5	0.000
D_fgexpnd_gdp	ALL	37.255	5	0.000
D_gdp_ngdppot	D_fgexpnd_gdp	5.8644	5	0.320
D_gdp_ngdppot	ALL	5.8644	5	0.320

**Table 5. Results from VAR 1990-2018**

Results from VAR 1990-2018					
	(1)	(2)	(3)	(4)	(5)
Federal Expenditures	-.2644*** (.091)	-0.352*** (.092)	-0.3534*** (.092)	-0.3648*** (.094)	-0.3658*** (.094)
Deviation of NGDP	-0.2815*** (.063)	-.2875*** (.062)	-0.2927*** (.065)	-.2862*** (.062)	-.2830*** (.066)
Democrats in Congress		0.0027*** (.001)	.0026*** (.001)	0.0027*** (.001)	0.0028*** (.001)
Unemployment Rate		-0.0006** (.0002)	-0.0005 (.0003)	-.0003 (.0004)	-.0003 (.0004)
Top 1 percent		.0006** (.0002)	0.0009 (.001)	0.0008 (.0004)	.0007 (.001)
Number of Lawyers			-2.40E-09 (8.28e-09)		1.43E-09 (1.02e-08)
Debt to GDP ratio				-0.00003 (.0004)	-0.00003 (.0001)
N	107	95	95	95	95
R2	0.3888	0.487	0.4874	0.4895	0.4896

**Table 6. Granger Causality Wald Test 1990-2018**

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
D_fgexpnd_gdp	D.gdp_ngdppot	35.691	5	0.000
D_fgexpnd_gdp	ALL	35.691	5	0.000
D_gdp_ngdppot	D_fgexpnd_gdp	9.697	5	0.084
D_gdp_ngdppot	ALL	9.697	5	0.084

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