

***“Crisis Actors: Understanding the Dynamics Between Central Banks and Legislative Bodies”***

Written by: Vishesh Sharma

Email: [vs2685@columbia.edu](mailto:vs2685@columbia.edu)

Phone Number: 201-682-5489

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Thesis Advisor: Professor Allison Carnegie

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### **Abstract**

Over the last two decades, the Federal Reserve has been given more powers to address and manage crises; at the same time, there has been increasing legislative gridlock in the American Congress. This paper aims to investigate how potential legislative gridlock affects the action of central banks in an attempt to understand whether or not central banks are truly independent in their actions or if they are influenced by a less efficient legislative body; specifically, the main hypothesis this paper seeks to test is: if indicators of greater legislative gridlock are present, then there is a greater likelihood the central bank acts and acts with greater speed. The paper concludes that there is not much evidence to support this hypothesis; in fact, the quantitative results suggest the presence of or greater amount of some indicators actually *decrease* the likelihood of the central bank acting along with its speed. Following these results with a case study, however, did support some original expectations. Overall, there were no consistent results across the quantitative and qualitative analyses, suggesting there may be other factors that explain such differences.

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## **Chapter One: Introduction**

*“It is common sense to take a method and try it. If it fails, admit it frankly and try another. But above all, try something.”*

- President Franklin Delano Roosevelt

*“The case against a fully independent central bank is strong indeed.”*

- Milton Friedman

## 1.1: Introduction

When a crisis unfolds that has deep economic and financial ramifications, a country's leadership must act decisively to prevent the economic turmoil from getting out of control. Two main options are available to a country, depending on the nature of the crisis: fiscal policy or monetary policy. Governmental leadership has the ability to pass legislation that deploys funds to stymie the crisis – whether it's providing stimulus to the economy or bailing out specific affected institutions or industries – while creating new regulations and enforcement mechanisms to decrease the likelihood of such a crisis ever happening again. However, passage of such legislation is not without a variety of hurdles or considered guaranteed at all; differing political factions, competing ideologies, size of the majority, and other forms of friction-causing factors play large roles in the process. Consequently, while powerful, effective fiscal policy can be difficult to get passed in a speedy and efficient manner; this inaction can further cause the crisis to get worse.

When the gears behind fiscal policy come to a halt, the other tool available to help the economy is that of monetary policy. Central banks, the institutions in charge of monetary policy, are primarily responsible for the control of their respective money supplies and affect interest rates. While commonplace now, central banks did not always have these roles. Likewise, over time, the role of the central bank is constantly evolving and the opinions of what a central bank should or should not do is changing as well. For example, a central bank's role of lender of last resort became widely accepted (and expected) when, during the Panic of 1866, the Bank of England 'supported the refinancing of viable banks and brokers by depleting its own reserves' which allowed financial stability to return in a few months.<sup>12</sup> Since then, depending on the country, modern central banks have differing mandates while having many common functions. The Federal Reserve, for example, has a dual mandate in which it is tasked to stabilize inflation and promote maximum employment.<sup>3</sup>

What sets central banks apart from legislative bodies is their independence. For the purposes of credibility, political transparency, and efficiency, most central bank actors are

<sup>1</sup> Sowerbutts, Rhiannon. "The demise of Overnerved Gurney." *Quarterly Bulletin*, The Bank of England, 2016, pp. 94-106.

<sup>2</sup> Ibid

<sup>3</sup> "The Federal Reserve's Dual Mandate." The Federal Reserve Bank of Chicago, 20 October 2020.

allowed to use their discretion in accordance with the laws governing the bank itself. Thanks to this convenient attribute, central banks can often pursue the same policy goals like the legislative body, such as maximizing employment, via different means; whereas lawmakers might call for a public works program to increase employment, central banks can create an investment friendly environment by lowering the cost of borrowing funds, which would eventually employ people. Similarly, if the need for an economic stimulus is required, the federal government can pass legislation that delivers direct payments to citizens. The Federal Reserve, however, could cut interest rates, which would allow homeowners to refinance their mortgages. By doing so, homeowners would be able to have lower monthly mortgage payments; as a result, these homeowners would have more money in their pockets to spend on the consumption of goods.<sup>4</sup>

In times of crisis, these two macroeconomic policy sets – fiscal and monetary – are available for use. While these tools are distinct, they can be used to accomplish the same goal in varying ways. Ideally, the institutions in charge of these policy tools would work in a complementary manner, working efficiently to solve the crisis at hand effectively and efficiently. There have been critical instances, however, where central banks have moved quickly to stabilize economic downturns by taking advantage of their unilateral authority. On 9/11, the Federal Reserve ensured that the banking system functioned smoothly amid the uncertain nature of the day.<sup>5</sup> During the Great Recession of 2008, the Federal Reserve once again moved to stabilize the financial system, ensuring the liquidity of the system by acting as a dealer of last resort.<sup>6</sup>

While the speed and efficiency of a central banking authority is critical in crises, these qualities might induce its legislative counterparts to become complacent. Such a dynamic has occurred in the COVID-19 Pandemic in the United States. As the impact of the crisis started to be forecasted, the Federal Reserve once again moved to stabilize the financial system. While Congress and the President were working on a large stimulus package, the Federal Reserve continued to provide support, taking up most of the business and political headlines.<sup>7</sup> Once the CARES act was passed, the Federal Reserve, now armed with even more authority due to the

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<sup>4</sup> Lewis, Holden. “How The Federal Reserve Affects Mortgage Rates.” *Nerd Wallet*, 17 March 2021.

<sup>5</sup> Neely, Christopher. “The Federal Reserve’s Response to the Sept. 11 Attacks.” The Federal Reserve Bank of St. Louis, 1 January 2002.

<sup>6</sup> Kohn, Donald. “The Federal Reserve’s Policy Actions during the Financial Crisis and Lessons for the Future.” Bank of Governors of the Federal Reserve System, 13 May 2010.

<sup>7</sup> Saphir, Ann and Howard Schneider. “Powell says economy still needs Fed support, pushes back on inflation worries.” Reuters, 23 February 2021.

legislation, still continued providing support. Since the start of the crisis on American soil so far, Congress has only passed one stimulus bill while the Federal Reserve continuously supports the economy. Throughout this period of time, Jerome Powell, Chairman of the Federal Reserve, has publicly asked and advocated for more “direct fiscal support” as it would be easier to repay than a Fed-backed loan.<sup>8</sup> He also stated that “further support is likely to be needed from monetary and fiscal policy” and there would be “tragic” outcomes if such support was not provided.<sup>9</sup> In this instance, the central bank’s leader is practically begging its fiscal counterpart to do more but to no avail.

## 1.2: Research Question

The objective of this paper is to understand what are the key factors that affect the dynamic between the institutions responsible for fiscal policy and the central banks when a crisis arises – which of these factors cause the time delay between monetary and fiscal action and contribute to whether or not these institutions will act at all. The paper is mainly concerned with the latter: how the factors in question, which aim to capture the concept of legislative gridlock, influence the legislature and central bank in their decisions to address the crisis through policy changes. The examinations of time passed between institutional actions and the start of a crisis will serve to further support or undermine the findings of main subjects of inquiry. The following paper will be divided into two sections. First, this analysis will utilize a quantitative approach that examines a group of variables to determine which ones are correlated with the action gap between fiscal and monetary institutions. Following these correlations, multiple regression analyses will be performed between the variables to investigate possible causality. Then, the paper will undertake a qualitative approach, examining case studies to confirm the findings of the quantitative section or to discover stark differences that contradict it.

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<sup>8</sup> Ibid.

<sup>9</sup> Ibid.



### 1.3: Motivation

Given the lack of continuous legislation coming out of the American Congress during the COVID-19 Pandemic, the Federal Reserve has been applauded for its efforts, taking a swift and impactful role early on.<sup>10</sup> Due to this success, it seems that the Federal Reserve has provided cover to lawmakers, making it easier for them to be less active and unproductive.<sup>11</sup> An independent body like the Federal Reserve acting as the leader during crisis management is, on the surface, not wholly compatible with a democratic system, where elected representatives derive their power from and are accountable to the public.<sup>12</sup> The decisions central banks make have a tremendous influence on the individuals in their countries “yet the officials who make these decisions will not have to answer to the publics whose jobs and quality of life hang in the balance.”<sup>13</sup> Moreover, with increased independence, central banks are often not required to disclose basic information to citizens on why and how certain decisions were made.<sup>14</sup> Though it is true that the appointees on the Federal Reserve are accountable to Congress to an extent, ultimately, it is much more difficult for the public to have any influence on a set of political appointees than the legislators they directly vote in.

While the Federal Reserve is given its independence to Congress for the sake of credibility and efficiency, it is this very independence that is allowing the federal lawmakers to hide behind such actions and signal that progress is occurring when many issues are being left unsolved. Moreover, as Federal Reserve Chairman Jerome Powell has suggested, there are simply some areas of pain that the Federal Reserve cannot address.<sup>15</sup>

Given these developments, turning to the literature for insights can be perplexing; while there are extensive bodies of research that separately examine the comparative characteristics of legislatures, central bank actions, the relationship between legislatures and central banks, and financial crises, there are limited pieces that attempt to connect these different subject areas via quantitative analysis to understand how these institutions act in relation to each other when a

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<sup>10</sup> Irwin, Neil. “How the Fed’s Quick Action May Have Given Congress Cover for Inaction.” *The New York Times*, 15 September 2020.

<sup>11</sup> Ibid.

<sup>12</sup> Berman, Sheri, and Kathleen R. McNamara. “Bank on Democracy: Why Central Banks Need Public Oversight.” *Foreign Affairs*, vol. 78, no. 2, 1999, pp. 2–8.

<sup>13</sup> Ibid.

<sup>14</sup> Ibid.

<sup>15</sup> Saphir, Ann and Howard Schneider. “Powell says economy still needs Fed support, pushes back on inflation worries.” Reuters, 23 February 2021.

crisis occurs. This paper will aim to create such an analysis. Specifically, this paper will analyze and try to explain how the institutional and political characteristics of legislative bodies not only affect its own decisions but also how it affects the decision of a central bank during times of crisis. To do so, the paper will rely on surveying multiple countries with potential correlations of action gaps and the selected factors can help inform policy decision making; perhaps certain conditions allow for the legislative body and central bank to work in tandem rather than allow the latter to take the lead.

#### **1.4: Literature Review**

##### Gauging Legislative Success in The American Context

Within the first 100 days of President Franklin Delano Roosevelt's first term, the federal government swiftly moved to pass a series of items on an ambitious legislative agenda aimed at fixing the catastrophic damages that stemmed from the Great Depression.<sup>16</sup> These pieces of legislation brought direct relief to those suffering the most, providing funds for food, blankets, and other forms of support.<sup>17</sup> Along with such relief, an array of agencies – like the Public Works Administration and Agricultural Adjustment Administration – propelled into action by putting people to work, starting a series of infrastructure projects, and cutting away at the deflation that was hurting farmers.<sup>18</sup> This undertaking is often considered one of the most ambitious uses of fiscal policy by the government in American history, relying on taxation and deficit spending.<sup>19</sup> Broadly speaking, if there was a large material problem plaguing the country, the government spent money trying to solve it. The remarkable momentum of the Roosevelt administration in those first 100 days set a precedent in which all future presidents' first 100 days in office would serve as a benchmark attesting to their overall effectiveness and success as a leader.<sup>20</sup>

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<sup>16</sup> Walsh, Kenneth. "The First 100 Days: Franklin Roosevelt Pioneered the 100-Day Concept." U.S. News, 12 February 2009.

<sup>17</sup> Ibid.

<sup>18</sup> Ibid.

<sup>19</sup> Ibid.

<sup>20</sup> Walsh, Kenneth. "The First 100 Days: Franklin Roosevelt Pioneered the 100-Day Concept." U.S. News, 12 February 2009.

Decades later, the Congress, politicians, and public institutions consistently have the lowest approval ratings.<sup>21</sup> On top of that, the Congress is increasingly becoming less active in the amount of legislation being passed and ultimately signed by the executive.<sup>22</sup> It would seem the era of a powerful and active government is in the past. However, while the results of the first 100 days of FDR's presidency have helped craft powerful narratives about what successful crisis leadership looks like, such narratives rarely delve into the underlying political realities of the moment, disregarding the ideological composition of government, compromises and concessions, and failed items on the legislative agenda.

### Structural Characteristics' Effects on Legislative Efficiency

Understanding these underlying realities, and how they affect outcomes, can inform those in charge with creating future institutions on how they should proceed. There has been a considerable amount of research that examines how certain political structures and political systems lead to the less efficient functioning of legislative bodies.

Gerring et al (2011), in "Are Parliamentary Systems Better?," examines the differences in "constitutional engineering" of countries, specifically comparing and contrasting the differences in outcomes of parliamentary and presidential systems.<sup>23</sup> Overall, they found that "parliamentary systems are associated with superior governance."<sup>24</sup> Out of the different measures they tested, two are of interest for this paper: the capacity for flexible policy making and decisive leadership.<sup>25</sup> First, whereas the "advocates of separate powers often emphasize the virtues of political stability [...] advocates of parliamentary rule emphasize the problem of the status quo."<sup>26</sup> For the latter, the most important ability to have is the ability "to adapt to changing demands and changing circumstances."<sup>27</sup> Parliamentary systems are understood to have more dynamic and adaptive policy making capabilities. To examine the second measure, decisive leadership, more formal categorizations can be applied to the systems to gain a more nuanced understanding of it:

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<sup>21</sup> Enten, Harry. "Congress' approval rating hasn't hit 30% in 10 years. That's a record." CNN, 1 June 2019.

<sup>22</sup> French, Lauren. "Congress setting new bar for doing nothing." Politico, 21 March 2016.

<sup>23</sup> Gerring et al. "Are Parliamentary Systems Better?" Boston University, 12 July 2011, 28.

<sup>24</sup> Ibid.

<sup>25</sup> Ibid, 29.

<sup>26</sup> Ibid, 7.

<sup>27</sup> Ibid, 10.

decisiveness and resoluteness.<sup>28</sup> Cox and McCubbins (2001) define decisiveness as the “ability of a state to enact and implement policy change” and define resoluteness as the “ability of a state to commit to maintaining a given policy.”<sup>29</sup> Based on these definitions, parliamentary systems are considered to be decisive while presidential ones are resolute.<sup>30</sup> In sum, while presidential systems might be able to conform to policies for a longer period of time credibly, parliamentary ones are more adaptive to changing circumstances.

Consequently, the presence of a parliamentary system or lack thereof could quite likely have an impact on the functioning of legislatures, and possibly, by extension, central banks; a more efficient and responsive system of government would mean a legislature would be more responsive in a crisis. Conversely, a presidential system, which is committed to existing policy commitments, might indicate a more active central bank.

Along with legislative systems, the manner in which the populace is represented and votes also has a bearing on legislative outcomes. Proportional representation sees less polarization and more legislative success whereas plurality based electoral systems heighten polarized politics and achieve less consensus.<sup>31</sup> This is because the proportional representation system distributes seats in the legislative body in proportion to the votes cast for each political party, creating an environment for coalition building and consensus building.<sup>32</sup> The plurality electoral system, or a “winner-take-all system” rewards the person who wins the most votes not the person who wins the majority; this means less popular views might be represented in the legislature. This could have some consequences for gridlock; with representatives from districts that are not fully captured, the legislature might be composed of individuals with more pointed views who are less open to compromise. As a result, gridlock might worsen, causing more legislative inefficiency and allowing the central bank to lead the way.

Another structure that can affect legislative outcomes is the number of veto points (or veto players) present in the system. Tsebelis (1995) defines veto players as those “individual or collective actors whose agreement is required for change of the status quo.”<sup>33</sup> These veto players

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<sup>28</sup> Ibid, 5.

<sup>29</sup> Cox, Gary and Matthew McCubbins. “The Institutional Determinants of Economic Policy Outcomes”. Cambridge University Press, 2001, 27.

<sup>30</sup> Gerring et al. “Are Parliamentary Systems Better?” Boston University, 12 July 2011, 5.

<sup>31</sup> Adams, James and Nathan J. Rexford, “Electoral Systems and Issue Polarization.” *The Oxford Handbook of Electoral Systems*, April 2018.

<sup>32</sup> Ibid.

<sup>33</sup> Tsebelis, George. “Decision Making in Political Systems: Veto Players in Presidentialism, Parliamentarism, Multicameralism and Multipartyism.” *British Journal of Political Science*, vol. 25, no. 3, 1995, 289.

can be institutional (i.e. president) or partisan (i.e. political parties).<sup>34</sup> Since veto players hold a considerable amount of power over the policy making process, their leverage and negotiation abilities can prolong or completely shut down the passage of pieces of legislation. As Tsebelis notes, “the potential for policy change decreases with the number of veto players.”<sup>35</sup>

Since the amount of veto points in a system has an effect on the responsiveness of it (i.e. the potential for policy change), an increase might suggest that the legislative would be less likely and slower to act; due to this possibility, a central bank, as a result of its independent authority subject to its charter, might not only be more likely to act but also be quicker in its response time relative to the start of a crisis.

Along with the amount of veto players present in a system, the partisan composition of legislative bodies is an obvious influence on the legislative process. While it is commonly understood the majority party (or coalition) will have more control over the legislative process, this is not always the case. Edwards et al (1997) state, when discussing the dynamics of unified and divided government on a president’s agenda, that the “president’s party is not necessarily a reliable source of support, unified government may not substantially increase the president’s likelihood of success.”<sup>36</sup> Although a part of the same party, different elected officials may drastically vary ideologically, preventing them from signing onto key pieces of the legislative agenda. A comparison of different presidential administrations and their relative congressional majorities might illustrate this result as shown in the figure below.<sup>37</sup>

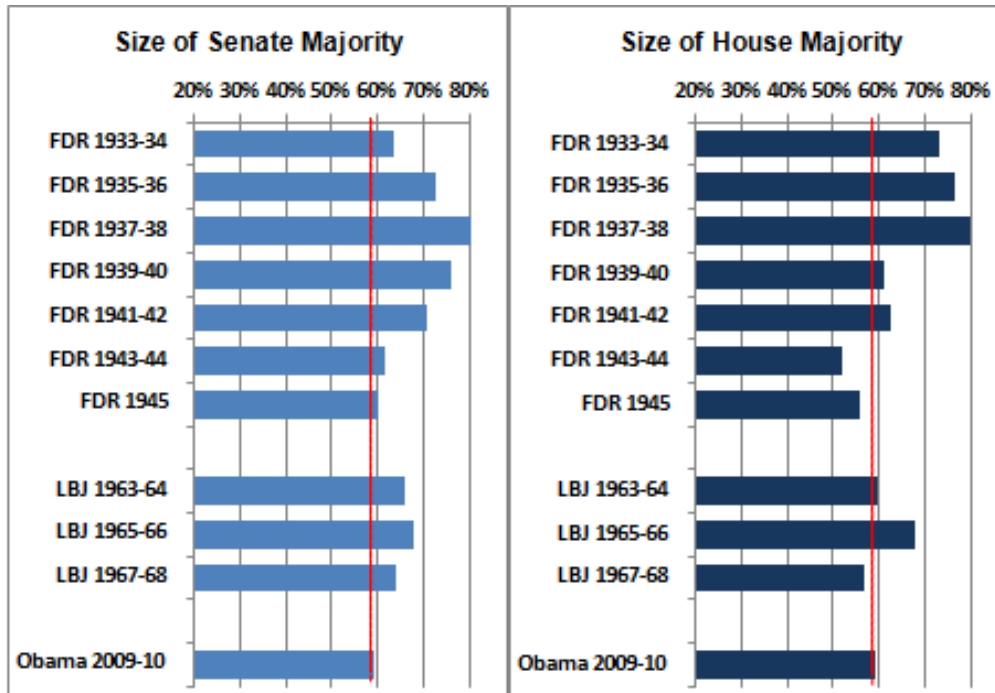
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<sup>34</sup> Ibid.

<sup>35</sup> Ibid

<sup>36</sup> Edwards, George C., et al. “The Legislative Impact of Divided Government.” *American Journal of Political Science*, vol. 41, no. 2, 1997, pp. 545–563.

<sup>37</sup> Silver, Nate. “Obama’s NO F.D.R - Nor Does He Have F.D.R’s Majority.” *FiveThirtyEight*, 1 March 2010.



*Figure 1: Congressional Majorities of FDR, LBJ, and Barack Obama*

Whereas President Franklin D. Roosevelt and President Lyndon B. Johnson had overwhelmingly large majorities in both chambers of Congress during their first terms, President Barack Obama had a smaller one. The majorities held by the previous two presidents played a significant part in passing large pieces of legislation packages such as the New Deal and Great Society programs.<sup>38</sup> In contrast, who also had major legislative achievements, famously struggled to get a public option passed as a part of the Affordable Care Act due to one Democratic senator's disapproval.<sup>39</sup>

These observations would suggest that the larger the majority a party possesses, the less marginal power each member of the party has in influencing and passing legislation. Consequently, the amount by which the ruling party possesses a majority might have an effect on the legislature when it is faced with a crisis; a majority political party with a lower majority of seats in the legislature may have a more difficult time passing critical legislation during a crisis

<sup>38</sup> Ibid.

<sup>39</sup> McGreal, Chris. "Why Joe Lieberman is holding Barack Obama to ransom over healthcare." *The Guardian*, 16 December 2009.

compared to a political party that has a larger majority. As a result, a central bank may act with more urgency if the legislature cannot address the needs of the crisis on its own.

### Economy

The state of a nation's economy will inform the nation's response to a financial or economic crisis and how far it can go. For example, a nation with a less developed economy might not have the same fiscal space as a more developed counterpart; fiscal space refers to the extent a government's budget can provide resources for certain purposes or its citizens without compromising the nation's financial stability and long-term sustainability.<sup>40</sup> Moreover,

Given such constraints on governments, it is possible that government's with larger economies would not only have greater resources at its disposal but also might make lawmakers more amenable to deploying such resources as they would not perceive such a deployment as detrimental to financial stability. Using a nation's gross domestic product could be a useful all-encompassing proxy for measuring a country's economic health and capacity.

### Political Polarization

Political polarization can also have profound consequences in the legislative process, leading to obstructionism and gridlock. Epstein and Graham (2007) find that political polarization not only increases congressional gridlock but can affect the independence of the judiciary and areas of foreign policy as well.<sup>41</sup> Mann and Ornstein (2012) show how increased political extremism utilizes institutional tactics like the filibuster to cause more gridlock.<sup>42</sup> Clearly, there is ample evidence to suggest that increased political polarization leads to legislative inefficiency, setting the stage for a more active central bank.

These observations suggest that greater political polarization would increase the likelihood of legislatures passing new pieces of legislation; consequently, this would suggest a

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<sup>40</sup> Haksar et al. "Economic Preparedness: The Need for Fiscal Space." *International Monetary Fund Blog*, 2018.

<sup>41</sup> Epstein, Diana and John D. Graham. "Polarized Politics and Policy Consequences." Rand Corporation, 2007.

<sup>42</sup> Ornstein, Norman and Thomas E. Mann. *It's Even Worse Than It Looks*. Basic Books, 1 May 2012.

legislature will have difficulty responding to a crisis and might take longer to respond in comparison to a legislature that exhibits less political polarization.

### The Blame Game and the Deflection of Responsibility

In *The Myth of Independence: How Congress Governs the Federal Reserve*, Sarah Binder and Mark Spindel track the evolution of the Federal Reserve, its evolving powers, and its relationship with Congress. Binder and Spindel argue that, contrary to the widely accepted concept, the Federal Reserve is not independent.<sup>43</sup>

Since elected officials have an interest in providing short-term economic stimulus, which can have fatal long term consequences such as inflation, central banks have been constructed to be insulated from political interference; as a result, monetary decisions are kept away from politicians interested in promoting themselves, especially right before an election.<sup>44</sup> However, in the case of the United States, “Congress periodically demands greater accountability.”<sup>45</sup>

As a result, while the Federal Reserve is able to operate on its own, it is constantly engaged in a “blame game” with Congress, where Congress gives the Federal Reserve more power, which allows it “to routinely blame the Fed for its policy failures.”<sup>46</sup> As a result, “in the current, polarized era in which politicians routinely stalemate over more aggressive fiscal stimulus, the burden of generating economic growth in the wake of the crisis and recession rests even more firmly on the Fed’s shoulders.”<sup>47</sup>

There is a cycle of Congress revisiting the Federal Reserve’s powers, giving it more power, and then relying on it in times of gridlock. This suggests the dynamic makes it easier for Congress to deflect responsibility, especially in times of polarization.

These findings suggest that any variable which would contribute to legislative gridlock, such as political polarization, might cause the central bank to act swiftly when responding to an urgent crisis with economic ramifications as the legislature lags behind; doing so would allow

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<sup>43</sup> Binder, Sarah and Mark Spindel. *The Myth of Independence: How Congress Governs the Federal Reserve.* Princeton University Press, 5 September 2017.

<sup>44</sup> Ibid.

<sup>45</sup> Ibid.

<sup>46</sup> Ibid.

<sup>47</sup> Ibid.



the legislature to divert attention away from itself to the central bank, softening any negative electoral ramifications once members of it publicly excoriate the central bank.

### Defining a Crisis

In the context of political narratives or the chronicling of presidential administrations, the term “crisis” is used for numerous contexts. Moreover, the naming of crises like “The Great Financial Crisis of 2008” or “The European Debt Crisis” does not convey what precipitated the crisis, when exactly the crisis started, how long the crisis lasted, and how exactly it was resolved; sometimes, such events cover multiple crises. Consequently, defining what a crisis constitutes is a difficult task. To resolve this issue, this paper utilizes the definitions and parameters set by Carmen Reinhart and Kenneth Rogoff in *This Time Is Different: Eight Centuries of Financial Folly*. Reinhart and Rogoff categorize different financial crises by the nature of each crisis (i.e. an inflation crisis versus a banking crisis) and provide quantitative methods to measure them.

According to Reinhart and Rogoff’s classifications, there are seven types of crises: inflation crises, currency crashes, currency debasements, the bursting of asset price bubbles, banking crises, external debt crises, and domestic debt crises.<sup>48</sup> Of the aforementioned classifications, inflation crises, currency crashes, currency debasements, and the bursting of asset price bubbles can be defined by quantitative thresholds while banking crises, external debt crises, and internal debt crises can be defined by events.<sup>49</sup> This paper’s analysis will focus specifically on event-defined crises as this paper is concerned with if and how quickly institutions react when a crisis occurs; by using the event-defined metric, the paper can clearly utilize dates of when the crisis started and then see on what dates did the legislature or central bank respond (if at all). Moreover, this paper will expand the definition of an event-defined crisis; instead of focusing solely on large bank closures with government interventions, it will also include the addition of crises that did or would have had economic impacts such as the COVID-19 Pandemic or the World Trade Center Attacks on September 11, 2001, which also involved Congress and the Federal Reserve.

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<sup>48</sup> Reinhart, Carmen and Kenneth Rogoff. *This Time is Different: Eight Centuries of Financial Folly*. Princeton University Press, 1 September 2009.

<sup>49</sup> Ibid.

The following section details the threshold criteria set by Reinhart and Rogoff. Inflation crises are noted by an annual inflation rate of 20 percent or higher; there is also a more extreme threshold in which inflation exceeds 40 percent.<sup>50</sup> Next, currency crashes are marked by an annual depreciation of the currency against the United States dollar of 15 percent or more.<sup>51</sup> There are two types of events that denote banking crises; first, in the case of a systemic crisis, there will be bank runs that “lead to the closure, merging, or takeover by the public sector of one or more financial institutions.”<sup>52</sup> Second, in the case of a milder, financial distress, “if there are no runs, the closure, merging, takeover, or large-scale government assistance of an important financial institution (or group of institutions) that marks the start of a string of similar outcomes for other financial institutions.”<sup>53</sup> External debt crises are defined as “the failure of a government to meet a principal or interest payment on the due date (or within the specified grace period). These episodes include instances in which rescheduled debt is ultimately extinguished in terms less favorable than the original obligation.”<sup>54</sup> The event threshold for domestic debt crises is similar to the external ones but additionally involves “the freezing of bank deposits, and forcible conversions of such deposits from dollars to local currency.”<sup>55</sup>

These definitions, criteria, and threshold illuminate what this paper means when referring to a “crisis.” The data of this paper will closely follow these criteria and, as previously mentioned, will use a similar framework to include other types of crisis that closely follow the same guidelines. With these guidelines, this paper can properly define what a crisis is and when exactly it started; this will help inform if and how quickly legislatures and central banks responded to the crisis with greater precision.

### **1.5: This Paper’s Contribution**

This paper aims to further clarify the concept of central bank independence, especially in the context of crisis management. Central banks, though playing a “blame game” with their legislatures, are considered independent in their ability to take actions subject to the powers

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<sup>50</sup> Ibid.

<sup>51</sup> Ibid.

<sup>52</sup> Ibid.

<sup>53</sup> Ibid.

<sup>54</sup> Ibid.

<sup>55</sup> Ibid.

given to them. While this may be true, in terms of exercising power, it is possible that the central bank assesses the capacity of the legislature to react appropriately during a crisis. If the central bank deems the legislature is not, it might have to step in to compensate for the lack of policy response; such a relationship would suggest that the central bank, independent in exercising its power, is beholden to the legislature after all, albeit in a different way. After all, if members of the legislature knows the central bank will step into manage the crisis, then they may feel more comfortable not compromising for their own benefit; by not acting, the legislature would then, in effect, compel the central bank to act.

This paper will try to uncover this potential relationship by connecting the aforementioned subjects in the literature review with an objective of developing a cohesive model on how legislative bodies and central banks act in response to crises. By quantitatively examining these relationships, this paper will explain whether or not there is any evidence to support the notion that the presence of legislative gridlock causes the central bank to act with greater urgency.

## **1.6: Hypotheses**

Given the theoretical work, this paper poses several questions to see what factors affect the dynamics between central banks and legislative bodies; it will examine the effects of these factors on five dependent variables: 1) does the central bank act? 2) does the government act? 3) time passed between the crisis start date and central bank action 4) time passed between the crisis start date and government action and 5) time passed between central bank and government.

The main hypothesis of this paper is that if there is greater legislative gridlock during a crisis, the central bank will not only act to address it but act quicker. This hypothesis will be tested by looking at the effect independent variables, most of which are considered to increase or decrease legislative gridlock, have on the actions of legislatures and central banks. For example, more veto points in a system, as George Tsebelis argues, contributes to greater legislative inefficiencies. With more veto players, multiple policy preferences, ideologies, and electoral needs must be juggled and consolidated into a cohesive compromise; this can be very difficult, denying a consensus and prolonging the negotiations process. With an inefficient legislative body, one that takes longer to enact policy changes, a crisis can become deadly. If the hypothesis

holds true, then such a development would cause the central bank to take actions to address the crisis.

In a similar manner, Increased political polarization can result in contradictory policy positions or governance philosophies held by the existing parties in the political system. It may be advantageous for certain political actors or political parties to obstruct any potential legislation or promote inaction; for example, members from an opposition party might find it in their own best interests to obstruct legislation during an election year. Such an action may make voters feel as though the incumbents in power are not suited to decisively lead the country through the crisis. With such politics being played, central banks might have to act with greater force and speed to stymie a crisis from worsening.

In essence, this paper expects that the presence or greater amount of any variable that is considered to increase legislative gridlock would also be associated with a greater likelihood of the central bank acting and a lower likelihood of the legislature acting in response to a crisis.

## **Chapter Two: Quantitative Analysis**

*“I assure this committee that, if I am confirmed, I will be strictly independent of all political influences ... essential to that institutions’ ability to function effectively and achieve its mandated objectives”*

- Federal Reserve Chair, Ben Bernanke

## Chapter Two: Data and Analysis

This chapter aims to determine a quantitative understanding of the discrepancies between monetary and legislative actions. First, to perform this analysis, the independent and dependent variables in question must be clearly and narrowly defined. Next, the chapter will look at the possible correlations between the variables. Once the aforementioned steps are performed, this section of the paper will examine a multivariate regression to ascertain any significant results. Finally, the section will conclude with an analysis of the regression's findings.

As previously mentioned, this paper will look at the responses of developed countries to crises starting from the 1970s. While examining the policy responses of a broader range of countries (i.e. emerging markets) might yield additional insights, these countries do not often have the same resources and fiscal space that the highly developed ones do; consequently, limiting this paper to developed nations will assist in standardizing underlying conditions in the analysis.

### **2.1: Measurement of the Dependent Variables**

Since the primary objective of this paper is to understand the delay in action between central banks and legislative bodies, defining what metric will be used to describe that delay is crucial. Before that, however, it would be beneficial to see whether or not either of these institutions acted at all; such an analysis can inform what factors cause these institutions to act in the first place.

On first glance, it might seem acceptable to simply measure the dependent variable as a binary one: either the central bank acted first or it did not. However, this measure will most likely not yield any meaningful insight; the autonomy of central banks allow them to act as quickly as they would like to whereas legislative bodies go through a much more rigorous deliberative process. A second measure to consider is the number of days passed between the actions of the central bank and the legislative body. More days passed between the actions of the two institutions might be indicative of the underlying impacts of political polarization. However, even this measure might not fully capture the dynamics between the two institutions. For example, a central bank might be cooperating with the legislature due to public signalling or

discussions and act relatively soon to one another. This does not capture how far away from the start of the crisis did both of these institutions act, which would obscure the efficiency of the legislative body.

To account for these deficiencies, three main dates will be recorded: the start date of the crisis, the date on which the central bank first took action in response, and the date on which the legislature took action in response. From these dates, the days between the start date of the crisis and central bank action, days between the start of date of the crisis and legislative action, and days between the actions of the central bank and legislative body. These three dependent variables broadly capture the dynamics this paper aims to examine.

#### **“Did The Government Act?”**

Before understanding the time delay of government action, understanding what factors might cause a government to act at all is important. To accomplish this, this paper will utilize a binary dependent variable that measures whether or not the government acted in the crisis (0 - the government did not act, 1 - the government did act). This variable is coded as “LegAct.”

#### **“Did The Central Bank Act?”**

Understanding what factors might cause the central bank to act all is important as well. To understand this, this paper will utilize a binary dependent variable that measures whether or not the central bank acted in the crisis (0 - the central bank did not act, 1 - the central bank did act). This variable is coded as “CBAct.”

#### **“Days Between Crisis Start and Government Action”**

This variable measures the amount of days between the start of the crisis and when the government passes legislation to address it. In this paper, this variable is continuous with the least amount of days being recorded as 0 and it is coded as “LegDiff.”

#### **“Days Between Crisis Start and Central Bank Action”**

This variable measures the amount of days between the start of the crisis and when the central bank acts to address it. In this paper, this variable is continuous with the least amount of days being recorded as 0 and it is coded as “CBDiff.”

**“Days Between Central Bank and Government Actions”**

This variable measures the amount of days between when the central bank takes action and the government takes action. In this paper, this variable is continuous with the least amount of days being recorded as 0 and it is coded as “CBDiff.”

**2.2: Measurement of the Independent Variables**

**“Type of System”**

When evaluating the overall effectiveness and efficiency of a legislative body, the type of system in which that body is organized can play an important role. A considerable amount of research and evidence points to parliamentary systems being more efficient than presidential ones. Due to this dynamic, it could be expected that legislatures in parliamentary systems act relatively quicker than their presidential counterparts when a crisis unfolds. If this is the case, the days elapsed between the crisis start date and legislative action would be less in parliamentary systems. This variable is coded as “system” and is sourced from the World Bank’s Database of Political Institutions; in the original dataset, “system” can have three outcomes (0 - direct presidential, 1 - strong president elected by assembly, 2 - parliamentary) but all of the countries relevant to this analysis fall under direct presidential or parliamentary. As a result, “system” will be treated as a binary variable.

**“Plurality”**

This variable identifies whether or not a country’s system utilizes plurality voting for its elections. A plurality voting system is an electoral system where the voter gets to vote for only one candidate and the candidate who receives more votes than any other candidate is the winner regardless of whether or not that person received the majority of the vote. Plurality systems are considered to possibly result in fewer parties, unequal representation, and possibly more political polarization; a plurality based system might result in more gridlock, causing the central bank to take faster action as the legislative body lags behind. This variable is coded as “plurality” and is taken from the World Bank’s Database of Political Institutions.



### **“Proportional Representation”**

This variable identifies whether not a country’s political system has a proportional representation system. In a proportional representation system, all votes are represented proportionally in the political body; a certain percentage of votes for a certain political party will result in that political party receiving that percentage of seats. Proportional representation systems are considered to lead to less polarization and promote political stability as more viewpoints are presented in the legislative body. This variable is coded as “pr” and is sourced from the World Bank’s Database of Political Institutions.

### **“Majority”**

Not only does having a majority greatly affect a political party or coalition’s prospects of passing legislation but also the amount by which that entity has a majority greatly matters as well. The Democratic Party of the United States is often referred to as a “big tent party” because it encompasses several different factions across different lines; these factions extend to having a more conservative wing and a more liberal wing as well.<sup>56</sup> If the Democratic Party holds a majority in the senate by 2 seats but both of those senators are more conservative, then the party might not be able to get larger pieces of legislation passed that are more liberal. Having a larger majority might allow for the faster passing of legislation. This variable is coded as “maj” and is obtained from the World Bank’s Database of Political Institutions.

### **“Ideology”**

A government’s ideology has profound effects on the decisions it makes. In this context, “the government is understood as the chief executive along with the cabinet, ministries, and top civil servants.”<sup>57</sup> A government with a conservative ideology may believe in the power of monetary policy and be less quick to act with its own tools, whereas a more liberal government might be inclined to jump into action with fiscal stimulus or regulatory measures. Understanding how the ideology of the government (governmental leadership) affects the dynamics this paper is

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<sup>56</sup> Tarlov, Jessica. “The Democratic Party platform represents our big tent.” *The Hill*, 20 August 2020.

<sup>57</sup> V-Dem Dataset v11.1, V-Dem Institute, 2021

concerned with can help predict the actions of future governments in times of crisis. This variable is coded as “v2exl\_legitideo1” and is sourced from the V-Dem database version 11 provided by the V-Dem Institute, which is housed at the University of Gothenburg, Sweden. Specifically, this variable measures the ideology of the government, with larger values representing more socialistic governments.

### **“Veto Players”**

Another structural variable that affects the efficiency of a legislative body is the number of veto players (or veto points) in the system. Veto players are those actors who have the power to overturn or refuse a political action being taken.<sup>58</sup> For example, the president of the United States would be considered a veto player because he or she can veto a law passed by the United States congress. Due to the power veto players carry, it is commonly understood that the more veto players a system has the slower the legislative process can become.<sup>59</sup> A system with a greater number of veto players may put more responsibility on its central bank for crisis responses. The variable is coded as “checks” and has been obtained from the World Bank’s Database of Political Institutions.

### **“Political Polarization”**

The political polarization of a legislative body has profound effects on its ability to pass legislation in an efficient manner. Greater polarization within the legislative body would most likely result in the passage of any legislation to be greatly reduced as multiple political actors could not come to an agreement. Consequently, greater political polarization would increase the sluggishness of the legislative body and might require the central bank to act more swiftly in times of crisis. The variable is coded as “MARPORPOL” and is derived from the The Manifesto Project, which provides analysis on the policy positions of political parties of many countries from different time periods. This variable is derived using the following formula from Taylor and Herman (1971):

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<sup>58</sup> Tsebelis, George. “Decision Making in Political Systems, 1995.

<sup>59</sup> Ibid.

$$V = \frac{1}{n} \sum_{i=1}^N f_i (x_i - \bar{x})^2,$$

where  $V$  is defined as Variance,  $n$  is the total number of seats in the legislative body,  $N$  is the total number of political parties,  $f_1, f_2, \dots, f_N$ , are the number of seats held by the  $N$  parties,  $x_1, x_2, \dots, x_N$ , are their respective ideological positions on the “left-right” scale, and  $\bar{x}$  is the weighted mean ideological position.<sup>60</sup> The values for polarization were produced using this formula, substituting in the “RILE” (right-left) scores for political parties found in the Manifesto Project’s data sets as well as the values for seats per political party and total number of parties.<sup>61</sup>

### **“Societal Polarization”**

The polarization of society can also have a profound effect on the legislature’s actions as well, contributing to gridlock and inaction as representatives try to appease their polarized voting bases. This variable is coded as “Vdempol” and is derived from surveys that track societal polarization. It is sourced from the V-Dem database version 11 provided by the V-Dem Institute, which is housed at the University of Gothenburg, Sweden.

### **“Real Gross Domestic Product”**

Although the countries of observations in this paper’s analyses revolve around countries with highly developed economies and high standards of living, the following analyses will attempt to control for any advantages having a larger economy might confer to a country during a crisis. Moreover, having a larger economy might cause lawmakers to be more amenable to the deployment of large resources to address a crisis. To understand this possible influence, a variable will be included that measures historical gross domestic products. The variable is coded as “realGDP” and is sourced from the World Bank.

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<sup>60</sup> Taylor, Michael, and V. M. Herman. “Party Systems and Government Stability.” *The American Political Science Review*, vol. 65, no. 1, 1971, pp. 28–37.

<sup>61</sup> Manifesto Project Database, 2021

### 2.3: Inclusion of Interaction Variables

Since political polarization might be affected by institutional factors, this paper will utilize interaction terms to properly account for this possibility.<sup>62</sup> Moreover, political polarization, as this paper seeks to ascertain, might also affect how the central bank acts in relation to the governmental body in charge of fiscal policy; this possibility will also be accounted for in an interaction term. The following are interaction terms that will be included in this paper's regression analyses:

#### **“Polarization x System”**

This will be the interaction between the continuous variable that measures political polarization, “MARPORPOL”, and the binary variable that measures whether or not the country's legislative system is a parliamentary or presidential one, “system.” Since the literature on the matter points to parliamentary systems (which take the value of 0) being less polarized, the presence of a presidential one (which takes the value 1) would increase political polarization.

#### **“Polarization x Veto Points”**

This will be the interaction between the continuous variable that measures political polarization, “MARPORPOL”, and the continuous variable that measures the amount of veto points in a governmental system. With more veto points, there are more points for certain political actor(s) to derail the legislative process for his or her own agenda; with varied agendas across different veto points, political polarization could increase.

#### **“Polarization x Did Central Bank Act?”**

This will be the interaction between the continuous variable that measures political polarization, “MARPORPOL”, and the binary variable that measures whether or not the country's central bank acted to address the crisis, “CBAct.” This interaction can help illustrate the potential relationship between political polarization and central bank action. If the government is extremely polarized, the central bank might act quicker; as a result, the central bank acting might be a sign of higher political polarization.

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<sup>62</sup> Ornstein, Norman and Thomas E. Mann, *It's Even Worse Than It Looks*, 2012

## 2.4: Correlations

	LegAct	CBAct	system	plurality	pr	maj	checks	MARPOR~L	RealGDP	v2exl_legitideol	Vdempol
LegAct	1										
CBAct	0.5098	1									
system	0.0533	-0.0628	1								
plurality	-0.0636	-0.1348	0.2285	1							
pr	0.0566	0.1619	-0.2636	-0.4045	1						
maj	-0.0816	-0.0737	-0.31	0.1123	-0.0935	1					
checks	0.0899	-0.0783	-0.0923	-0.3306	-0.1442	-0.161	1				
MARPORPOL	-0.0052	0.0414	-0.048	-0.215	0.0506	-0.0597	-0.0449	1			
RealGDP	0.149	0.1454	0.5499	0.2164	-0.2948	-0.1008	0.0312	0.0563	1		
v2exl_legitideol	-0.1611	-0.0771	0.5261	0.1419	-0.208	-0.1315	-0.1617	0.2557	0.4375	1	
Vdempol	0.0025	-0.13	0.3049	0.3068	-0.0074	-0.0104	-0.1481	-0.1288	0.0928	0.176	1

**Figure 2: Correlation between Binary Dependent and Independent Variables**

This correlation table looks at both of the binary dependent variables: does the government act and does the central bank act. Out of all the independent variables, the real GDP has the highest correlation with both dependent binary variables (0.1490 for “LegAct” and 0.1454 for “CBAct”). Although not notably high, these correlations make sense as countries with higher gross domestic products would have greater fiscal space and developed monetary institutions.<sup>63</sup>

Moreover, there is a negative correlation between how socialistic a government’s ideology is and whether or not the government acts. Although it is a small correlation, -0.1520, it is still surprising. A more socialistic government would typically be associated with government action not inaction.

Another interesting correlation to note is that between the two dependent binary variables; there is a 0.5098 correlation between the government acting and the central bank acting. This would make sense as crises require both fiscal and monetary policy to adequately address them.

<sup>63</sup> Haksar et al. “Economic Preparedness: The Need for Fiscal Space.” *International Monetary Fund Blog*, 2018.

	LegDiff	system	plurality	pr	maj	checks	MARPOR~	RealGDF	v2exl_legitideol	Vdempol
LegDiff	1									
system	0.0815	1								
plurality	-0.062	0.2568	1							
pr	0.0714	-0.304	-0.41	1						
maj	-0.259	-0.194	0.0782	-0.129	1					
checks	-0.029	-0.086	-0.21	-0.252	0.0196	1				
MARPORPOL	0.1416	-0.031	-0.392	0.1953	-0.092	-0.035	1			
RealGDP	-0.152	0.5467	0.3195	-0.363	0.0662	-0.077	0.0772	1		
v2exl_legitideol	0.3723	0.5148	0.1262	-0.297	-0.112	0.0921	0.4102	0.5103	1	
Vdempol	0.1401	0.3246	0.4345	-0.124	-0.017	-0.062	-0.1114	0.1586	0.3324	1

**Figure 3: Correlation between Government Action and Independent Variables**

The independent variable with the highest correlation to the days passed between the start of the crisis and when the government takes action is the measure of the government’s ideology, “v2exl\_legitideol”, with a value of 0.3723. This is somewhat unexpected. Higher values on this independent variable representative of more socialistic oriented ideology whereas lower values are representative of more conservative leaning governments. A more socialist-leaning government would more likely be in favor of using fiscal policy and using government action, which could be associated with faster action. Here, however, the correlation suggests the opposite.

The next highest correlation between the days passed between the start of the crisis and government action is the political polarization. Although the correlation is smaller, at 0.1416, it supports the notion that polarization increases legislative inaction. Moreover, “Vdempol” has a correlation of 0.1401, which further suggests that societal polarization would lead to more legislative gridlock.

	CBDiff	system	plurality	pr	maj	checks	MARPOR~L	v2exl_legitideol	Vdempol
CBDiff	1								
system	-0.1788	1							
plurality	-0.0408	0.2402	1						
pr	0.0722	-0.2513	-0.3983	1					
maj	-0.0904	-0.2994	0.094	-0.2067	1				
checks	-0.079	-0.0309	-0.4758	-0.112	0.026	1			
MARPORPOL	0.027	-0.0978	-0.365	0.126	-0.0407	0.0734	1		
v2exl_legitideol	0.0356	0.33	0.022	-0.0873	-0.1678	0.1042	0.346	1	
Vdempol	-0.1528	0.3535	0.3499	-0.0907	-0.0853	-0.2261	-0.1178	0.2225	1

**Figure 4: Correlation between Central Bank Action and Independent Variables**

In this correlation, the negative correlation of the majority percentage to the days passed between central bank action and the start of the crisis stands out. Even though the correlation is small, at -0.0904, it suggests that the central bank might act faster if the majority party has a larger share of the seats in the government. This would confirm an assertion in Binder and Spindel (2011) that the central bank does take signals from the government at the time of action and is beholden to the legislative body.<sup>64</sup> With a more solidified majority in the legislative body, the central bank actors might feel more comfortable taking quicker action.

Another negative correlation, the one between the binary independent variable that measures whether a country's governmental system is parliamentary or presidential, "system", and days passed between central bank action and the start of the crisis, is interesting as well. Once again, the correlation is relatively low in absolute terms, -0.1788, but it shows that a presidential system would more likely be associated with a lower amount of days passed with the crisis start date and central bank action; a presidential system is considered to be less efficient than a parliamentary one and might require the central bank to act more swiftly to compensate for the inefficiency.<sup>65</sup>

Finally, "Vdempol" has a correlation of -0.1528, which suggests that as societal polarization increases, the central bank will act faster to resolve a crisis.

<sup>64</sup> Binder and Spindel, *The Myth of Independence*, 2017.

<sup>65</sup> Gerring et al. "Are Parliamentary Systems Better?", 2011.

	BothDiff	system	plurality	pr	maj	checks	MARPOR~L	RealGDP	v2exl_legitideol	Vdempol
BothDiff	1									
system	-0.0768	1								
plurality	-0.1606	0.2582	1							
pr	0.2726	-0.1936	-0.4	1						
maj	-0.0905	-0.2277	0.0791	-0.2436	1					
checks	-0.0808	-0.1499	-0.4788	-0.0725	0.2105	1				
MARPORPOL	0.1199	-0.111	-0.3853	0.2076	-0.0877	0.0879	1			
RealGDP	-0.1882	0.5811	0.3537	-0.4097	0.0876	-0.0985	0.043	1		
v2exl_legitideol	0.1061	0.314	0.0773	-0.1593	-0.1195	0.0224	0.4539	0.5435	1	
Vdempol	0.4545	0.398	0.4228	-0.1129	-0.0187	-0.3152	-0.0958	0.1733	0.3774	1

**Figure 5: Correlation between Difference between Both Actions and Independent Variables**

There are a few interesting correlations in this instance. First, the correlation between the type of governmental system and difference in time between both actions once again supports the idea that a presidential system would reduce the difference, as the central bank would move to compensate for an inefficient government.

Next, the negative correlation between the amount of veto points in a system and the difference between both actions supports the idea that more institutional friction, which could also contribute to more political polarization, might lead the central bank to act swiftly to compensate for inefficiency.

The correlation between the gross domestic product and the days passed between both actions could suggest that as a country's GDP increases, its institutions can better coordinate policy responses to crises, thus reducing the days passed between the actions of the central bank and legislative body.

There is a positive correlation of 0.1795 between the days passed between both actions and how more socialistic a government's ideology gets. Similar to previous correlations, this result is surprising. A more socialistic government is associated with more governmental action, which would reduce the time delay between central bank and governmental action, not increase it.

Finally, the two polarization measures give encouraging results. First, there is a correlation of 0.1199 between political polarization, "MARPORPOL" and the days passed. This suggests that, although it is a small effect, political polarization increases the delay between the institutions acting. The largest correlation, however, is between societal polarization and the



difference between the two institutions acting at 0.4545. This suggests that societal polarization has a huge effect on the delay between the central bank acting and the legislative body acting.

## **2.5: Multivariate Regression Analyses**

To investigate the potential relationships between the aforementioned dependent and independent variables, five analyses will be performed using multivariate regressions. The two main dependent variables of interest are “Did The Central Bank Act?” and “Did The Legislature Act?” First, two logistic regressions will be used to examine the two main dependent variables of interest. Second, three linear multivariate regression analyses will be performed to establish potential causal relationships between the independent variables and the amount of days passed between the start of a crisis and respective institutional actions, which will be used to further confirm or reject the relationships found in the first two.

The results of each of these regressions will be compared against the literature and will be used to confirm or deny the hypotheses laid out earlier in the paper. .

### Regression #1: Does The Central Bank Act?

VARIABLES	CBAct
system	18.79656 (34.09413)
plurality	0.5796394 (0.742713)
pr	1.022594 (0.9219237)
maj	0.028186 (0.1229397)
checks	0.4384631* (0.2150086)
MARPORPOL	0.9740691* (0.015458)
realGDP	1** (3.35e-13)
v2exl_legitideol	0.6931889 (0.3101651)
Vdempol	0.7692986 (0.3019632)
polarxsystem	0.9326638** (0.0272792)
polarxchecks	1.006729* (0.0039745)
constant	115.8247 (431.3757)
observations	56
Pseudo R2	0.2074
Standard errors in parantheses	
*** p<0.01, ** p<0.05, * p<0.1	

**Figure 6: Coefficients and Standard Errors for “Does the Central Bank Act?”**

In this logistic regression, four variables were statistically significant: “checks,” “MARPORPOL,” “polarxchecks,” and “polarxsystem.” “Checks” is statistically significant with 90% confidence, showing that an increase of unit in the amount of veto points is suggestive of a decrease in the odds of the central bank acting by a factor of 0.4384631. Furthermore,

“MARPORPOL” is statistically significant at 90%, meaning that an increase of one unit of political polarization is associated with a decrease in the likelihood of the central bank acting by a factor of 0.9740691. The interaction variables “polarxsystem” and “polarxchecks” are also significant; this means that having different systems and different amount of veto points influences the value of political polarization. While the significance of these interaction variables support the idea that political polarization is affected by the structural engineering of the legislature, political polarization ultimately does not affect the likelihood of the central bank acting.

The independent variables that were not statistically significant are also worth looking at. While “system” was close to being statistically significant with 90% confidence, it ultimately was not. This might mean that, barring some glaring cases, the central bank is not concerned with how efficient the legislature is when responding to a crisis, giving credence to its own autonomy. “Plurality” and “pr” are also not significant; this means the null hypothesis cannot be rejected, suggesting the type of representational system has no bearing on whether the central bank will act or not during a crisis. “Vdempol” is also not statistically significant, suggesting that broader societal polarization will not have an effect on the central bank’s actions in a crisis. Finally, “v2exl\_legitideol is not statistically significant; this result is surprising as it would be expected that the presence of a more socialistic government would decrease the likelihood of the central bank acting as the government would be more active by itself.

The statistical significance of the number of veto points is not consistent with the hypothesis that more veto points leads to legislative inefficiency, causing the central bank to act in order to compensate for inaction. So, according to the literature, whereas the chances of policy making decreases with an increase in the number of veto points, the central bank act is more likely to make a decision. The main hypothesis of this paper is also rejected; increased political polarization, as the results of the regression convey, does not put more of the burden of resolving crises on the central bank. Before definitively rejecting the effect of the number of veto points and political polarization on the dynamic between central banks and legislative bodies, however, the variable’s relationship with government action must be examined as well.

### Regression #2: Does The Government Act?

VARIABLES	LegAct
system	0.0677187 (0.1333747)
plurality	1.539368 (1.497583)
pr	1.6003 (1.697237)
maj	3.133471 (17.68082)
checks	1.225218 (0.4615762)
MARPORPOL	0.9859707 (0.0224236)
realGDP	1** (1.71e-13)
v2exl_legitideol	0.2556274** (0.1410208)
Vdempol	0.1421941 (0.4865048)
polarxsystem	0.1.065761** (0.0270927)
polarxchecks	0.99876 (0.003442)
CBAct	3.265348 (4.22425)
polarxCBAct	1.026036 (0.0166002)
constant	0.0285009 (0.1240143)
observations	56
Pseudo R2	0.3463

Standard errors in parantheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Figure 7: Coefficients and Standard Errors for “Does the Legislature Act?”**

This logistic regression maintains all the independent variables from the previous one but adds two more: “CBAct” and the interaction term “polarxcbact.” This is done to test the notion of whether or not the central bank provides cover for crisis responses. Furthermore, it assists in

testing the question whether or not central banks are more likely to act in more politically polarized environments. There are two statistically significant variables: “v2exl\_legitideol”, “polarxsystem.” “v2exl\_legitideol” is statistically significant with 95% confidence, meaning the presence of a more socialistic government is associated with a decrease in the odds ratio of the government acting by a factor of 0.2556274. “Polarxsystem” is statistically significant with 95% confidence, meaning that the presence of a presidential governmental system does affect polarization; specifically, in this analysis, the presence of a presidential governmental system will increase the slope of political polarization.

### Regression #3: Days Between Crisis Start Date and Central Bank Action

VARIABLES	CBDiff
system	-87.1276 (119.4913)
plurality	-72.91353 (285.6196)
pr	-60.39696 (148.5348)
maj	-604.6574 (697.4801)
checks	-25.4922 (142.8386)
MARPORPOL	1.2579 (3.534589)
realGDP	7.35e-13 (2.44e-11)
v2exl_legitideol	74.15647 (73.48302)
Vdempol	-32.16843 (71.46572)
polarxsystem	-2.08937 (2.362208)
polarxchecks	-0.3668506 (0.8046767)
constant	780.3291 (638.8397)
observations	35
R-squared	0.1086

Standard errors in parantheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*Figure 8: Coefficients and Standard Errors for “Days Between Crisis Start Date and Central Bank Action”*

In this multivariate regression, no independent variable is statistically significant. It is interesting to see that the number of veto points, “checks”, is not statistically significant since “checks” was found to decrease the likelihood that the central bank acts in the first place. This might indicate that the number of veto points, and thereby legislative inefficiency, does not affect how quickly a central bank acts but just influences whether it acts or not in either direction. Similarly, the null hypothesis that political polarization does not affect the days between the crisis start date and central bank action cannot be rejected.

**Regression #4: Days Between Crisis Start Date and Government Action**

VARIABLES	LegDiff
system	-771.5611* (372.2561)
plurality	-36.75986 (296.049)
pr	179.1899 (135.4908)
maj	-960.5021 (955.451)
checks	-37.94057 (38.99274)
MARPORPOL	-0.1881272 (2.078862)
realGDP	-6.64e-11 (4.50e-11)
v2exl_legitideol	223.1531* (129.4151)
Vdempol	52.68355 (79.64796)
polarxsystem	9.591733 (6.622004)
polarxchecks	-0.0786746 (0.5476855)
constant	1339.231 (748.4234)
observations	34
R-squared	0.4622

Standard errors in parantheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Figure 9: Coefficients and Standard Errors for “Days Between Crisis Start Date and Government Action”**



In this multivariate regression, two independent variables are statistically significant: “v2exl\_legitideol” and “system.” “System” is statistically significant with 95% confidence, meaning that an increase of one unit is associated with a decrease of -771.5611 units of the days passed. This result is surprising because it suggests that a presidential system is likely to decrease the days passed. The literature suggests that presidential systems are less able to adapt to situations and are inefficient at passing legislation. “v2exl\_legitideol” is statistically significant with 90% confidence, meaning that an increase of one unit in socialistic ideology increases the days passed between the crisis start date and government action by 223.1531 units. This is also surprising because a socialistic government is associated with more fiscal spending and swifter government responses.

### Regression #5: Days Between Central Bank Action and Government Action

VARIABLES	BothDiff
system	-492.4758* (239.8725)
plurality	-189.5529 (152.4731)
pr	148.585 (182.0592)
maj	-296.4625 (1001.01)
checks	-15.73025 (174.2022)
MARPORPOL	-0.3950383 (2.764293)
realGDP	-1.61e-12 (1.74e-11)
v2exl_legitideol	223.1531 (129.4151)
Vdempol	202.3841* (114.2626)
polarxsystem	4.274525* (2.312669)
polarxchecks	-0.1309344 (0.6510815)
constant	480.2077 (550.387)
observations	34
R-squared	0.4854

Standard errors in parantheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Figure 10: Coefficients and Standard Errors for “Days Between Central Bank and Government Action”**

In this multivariate regression, two independent variables are statistically significant: “system” and “Vdempol.” “System” is statistically significant with 90% confidence and “Vdempol” is statistically significant with 90% confidence. The result for “system” is surprising because it suggests that the presence of a presidential system is associated with a decrease in the

days passed by -492.4758 units. The literature suggests that presidential systems are less able to adapt to situations and are inefficient at passing legislation, the opposite of what the regression's results convey. "Vdempol" also suggests that an increase in a unit of societal polarization is associated with an increase in the amount of days passed by 202.3841 units; this supports the hypothesis that increased polarization increases the action-delay between central banks and legislative bodies. However, this is the only ti

One interaction term, "polarxsystem," is statistically significant with 90% confidence, meaning that, as previous regressions have shown, the type of system has an effect on the amount of political polarization in the political system, meaning the slope of political polarization will be greater in a presidential system.

## 2.6: Discussion and Limitations

The results of the regression analyses were surprising and unexpected. In many instances, the regression s conveyed results opposite to what the paper expected; in others, the null hypothesis for independent variables simply could not be rejected.

For the first question, "does the central bank act?", the results do not support the hypothesis that the amount of veto points and political polarization have an influence on whether or not the central bank acts. In fact, the results suggest the opposite of what was expected. While this paper expected to find that greater political polarization and more veto points would be associated with an increase in the likelihood that the central bank acts, the results of the logistic regression suggest they actually *decrease* that likelihood. The literature on veto points and the successful passage of legislation suggests that more veto points would increase gridlock as there are more actors involved with the ability to veto the policy proposal or decision in question. This paper hypothesized, as a result, the central bank might act swiftly to stabilize any deleterious effects; this was not proven.

In a similar manner, this paper considered the notion that political polarization can render a legislative body useless by promoting gridlock. More political polarization suggests the presence of contradicting governance philosophies or policy positions held by existing members and political parties in the legislature; this would likely result in clashes on large topics of debate such as how to solve a crisis, causing friction and gridlock. Consequently, this legislative friction

would implore the central bank to act in order to stabilize the crisis, taking actions that could substitute for fiscal stimulus in the short-run; this was not supported by the quantitative analysis.

Political polarization is also affected by other systemic independent variables. The regression of the first question suggests that the value of political polarization, the one specifically in legislative bodies, changes as the type of legislative system changes and the amount of veto points increases.

While these results help shed light on one of the main questions of inquiry - that greater gridlock-inducing characteristics cause the central bank to act - it leaves much to be desired in other areas. First, the Pseudo R-squared value of this regression is only 0.2074; this means that the independent variables are not completely explaining the variations in the dependent variable. There might be other variables that have not been considered, which could improve this value. Models with more or different variables that test the same dependent variable might provide a better fit. Another issue is that while political polarization was statistically significant, societal polarization was not. These two are considered to be related, with one relating to the polarization of the political body while the other tracks polarization across societally more broadly.

The second question, “does the legislature act?” had some mixed results as well. First, this analysis rejects the hypothesis that governments with more socialistic ideologies are associated with the government acting during a crisis; these types of governments should favor fiscal stimulus packages and government intervention, whereas more conservative governments would shy away from such intervention. Evidence to support this idea was not found. This regression’s results, again, is consistent with the interaction between the political polarization and the type of system the legislature has.

This analysis did not confirm the hypothesis that more political polarization would lead to a decrease in the likelihood of the government acting nor does it confirm the hypothesis that the larger a majority is, the more likely the government is to act and get legislation passed. It is possible that while these variables do have an affect on the functioning of a legislature, they simply are overcome during a crisis when the government must quickly decide to act or not.

The third dependent variable of inquiry, the amount of days passed between the crisis start date and central bank action, had the lowest R-squared value of the remaining three performed analyses with a value of 0.1086. Moreover, no independent variables or interaction

terms were statistically significant. This could suggest that none of these variables have any bearing on *how quickly* the central bank acts.

The regression for the fourth dependent variable, days between crisis start date and government action, yielded the second highest R-squared value of 0.4622. However, the results were surprising. First, while “v2exl\_legitideol,” which measures how socialistic a government is, was statistically significant, it has the opposite effect on the time passed than expected. The original hypothesis for this relationship was that the more socialistic a government is, the quicker it will move to take action. The result, however, suggests that a more socialistic government will lead to an increase in the time passed between the crisis start date and government action. This might suggest that a government that is willing to take action in the first place might lead to more time being passed; constructing legislation and navigating multiple elected officials simply might take longer. Second, “system” is statistically significant as well but with the opposite effect than what was expected. The literature suggests that a presidential system is less efficient, possibly meaning that they will take longer in passing legislation; the result suggests that the presence of presidential systems *decreases* the amount of days passed between the crisis start date and government action. This result is puzzling. One possible explanation that would need further probing is the importance of the executive in the presidential system. Since the president is voted in by the broadest cross-section of citizens, he or she might be able to gain broader support and compel members of the legislature to act swiftly. In the United States, the “rally around the flag effect” and usage of the “bully pulpit” by the president might serve as topics of inquiry to test this possibility and incorporate it into this piece of work.<sup>667</sup>

Finally, the regression for the fifth dependent variable, days between government and central bank action, yielded the highest R-squared value of 0.4854. Once again, “system” produced the opposite result of what was expected with presidential systems being associated with a *decrease* in the time passed.

This regression results in a statistical significance of societal polarization on the time passed between both actions. This confirms the idea that polarization increases governmental inefficiency; however, political polarization, which is meant to be closely related to societal polarization, was not statistically significant.

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<sup>66</sup> Mueller, John. "Presidential Popularity from Truman to Johnson". *American Political Science Review*, 1970.

<sup>67</sup> Mervin, David. "The Bully Pulpit, II." *Presidential Studies Quarterly*, vol. 25, no. 1, 1995.

Since the results of the analyses were mixed, it is worthwhile exploring some of the limitations in the design and methodology. First, there may be some omitted variable bias present in the regressions, presenting a threat to internal validity. There are many factors that contribute to the functioning of legislative bodies and central banks but not all of them could be measured and included. Two of these potential variables, whose values are difficult to measure or gather, are not included in the set of variables examined which could be correlated with the dependent variable: the ideology of the central bank leader and staff and the effect of past crises on the current one. For the prior, there is no database on the historical ideologies of central bankers across the world. This presents a problem as it is possible that just as the ideology of a government would have an effect on the actions it takes, the economic and political philosophies of central bankers would have an effect on theirs. For example, Paul Volcker famously refused to lower interest rates despite the urging of President Ronald Reagan because he was concerned with lowering inflation.<sup>68</sup> However, this may not always be the case, which is related to the second potential omitted variable of concern: the effect of past crises on current ones. Jerome Powell, for instance, has a conservative background but has consistently supported fiscal stimulus for the COVID-19 induced recession and has rigorously used the powers of the Federal Reserve. It is possible that the lessons learned by the central bank from the 2008 financial crisis have greatly shifted viewpoints on monetary and fiscal policy. Regardless of the effects of these variables, researchers might find it useful to derive a method to measure them; including such data in future analyses will most likely strengthen any regression and yield important insights.

Another potential limitation of the analysis lies within the measurement of the independent variables. Some errors in the consistent measuring of independent variables might exist as they rely heavily on subjective categorizing; for example, societal polarization relies on surveys of people who may have very different perceptions on how the values for polarization correspond with how polarized society specifically is. Similarly, the RILE index that the MARPOR data relies on may not measure the ideological values of political parties across countries in a consistent manner. For example, the contemporary Democratic Party in the United States shares elements of center-right, center-left, and far-left individual political parties found across Europe.

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<sup>68</sup> Long, Heather. "Who is Jerome Powell, Trump's pick for the nation's most powerful economic position?" *The Washington Post*, 2 November 2017.

A potential threat to external validity may lie within the differences between countries. While this analysis purposefully chose countries with highly developed economies and high standards of living, there are still large differences that may not apply to other countries which might grow into highly developed economies with high living standards. Country-specific cultural, political, and societal issues might be contributing certain results that were observed; it is important to note that most nations in the cross-section of data used are western ones. Non-western democracies that increasingly become more developed may or may not face similar phenomena as the regressions suggest subject to their distinct internal characteristics.

A possible explanation for the overall results is that while the legislature imbues the central bank with new powers after a crisis, and certain members of the legislature might hope that the central bank takes action during gridlock, the central bank ultimately might tread carefully as it wants to maintain credibility as an institution and not be further regulated by the legislature.

## **2.7: Conclusion**

The objective of this quantitative analysis was to understand the effects of institutional and political characteristics of the legislature, mainly political polarization, on how the central bank acts. To understand this in a more granular lens, the analysis ran five regressions to test the following dependent variables: 1) does the central bank act? 2) does the government act? 3) time passed between the crisis start date and central bank action 4) time passed between the crisis start date and government action and 5) time passed between central bank and government.

In sum, this paper found that, with a few exceptions, the null hypothesis for most variables (that they have no impact on the dependent variables) could not be rejected. In the few instances where the null hypothesis could be rejected, the results contradicted what was originally expected, suggesting that not only does gridlock not cause central banks to act or move with more speed but also it may cause the central bank to hold back, matching the overall political attitudes in the legislature.

### **Chapter 3: Qualitative Analysis**

*“In a world of global trade and integrated capital markets, it is natural for economic and financial shocks and policy actions to be transmitted across borders.”*

- Federal Reserve Chair, Jerome Powell



### Chapter 3: COVID-19: A Tale of Two Countries

To further understand the results found in the quantitative analyses, this section will examine a comparative analysis of two countries' respective responses to the COVID-19 pandemic. This section will compare the dynamics between legislative bodies and central banks in the United States, which has been considered to have a poor response time to the crisis, and the Republic of Korea, which has been praised for its exceptional containment of the pandemic and its effects. First, the section will provide a timeline of what and when each country did. Then, the statistically significant factors from the quantitative analysis will be examined in the context of these two countries to see if they had consistent results with what those analyses found.

#### 3.1: The United States of America

The United States' response to the coronavirus pandemic has been widely criticized and ranked among one of the worst global responses to the coronavirus pandemic.<sup>69</sup> Despite its vast amount of resources, the United States did not continuously pass legislation to address the ongoing effects of the pandemic as it raged on while other nations did. To understand why this occurred, this section will examine the timeline of the coronavirus pandemic in the United States, the responses of different political actors, and the resulting legislation to address the crisis; it will further examine how polarization affected each step of the way.

The first case of COVID-19 was reported on December 31st, 2019 in Wuhan, China.<sup>70</sup> While the problem seemed to be contained within China at the time, COVID-19 soon infected multiple individuals across the world in less than a month.<sup>71</sup> The first case in the United States was reported on January 21st, 2020. Close to a week later, the World Health Organization had declared COVID-19 a global health emergency.<sup>72</sup> By this time, the politicization of the coronavirus had already begun with actors from different political parties taking vastly different stances.<sup>73</sup>

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<sup>69</sup> Study ranks New Zealand Covid-19 response best, Brazil worst, US in bottom five." *France24*, 28 January 2021.

<sup>70</sup> "A Timeline of Covid-19 Developments in 2020." *The American Journal of Managed Care*, 1 January 2021.

<sup>71</sup> *Ibid.*

<sup>72</sup> *Ibid.*

<sup>73</sup> "Republicans, Democrats Move Even Further Apart in Coronavirus Concerns." *Pew Research*, 25 June 2020.

Ahead of the 2020 presidential election, the United States was facing unprecedented levels of political polarization that began rising from 2010, with someone even comparing it to levels not seen since the Civil War.<sup>74</sup> Such polarization was seen to manifest itself in Congressional obstructionism of the previous presidential administration as well as the large swing in economic and social policy preferences from the last administration to the Trump administration. Moreover, the policy preferences of both major parties also began moving towards the extremes of their ideologies, diminishing the voices of those with more centrist viewpoints.<sup>75</sup>

After the declarations of public emergencies, the Trump administration moved to restrict travel to and from China in hopes of preventing further spread of the coronavirus; this decision immediately came under contention with Democratic elected officials like Speaker of the House Nancy Pelosi publicly excoriating it.<sup>76</sup> From February 20th and onwards, a slew of crises and large decisions began to unfold. First, the markets experienced a crash like it had not seen since the Great Recession of 2008 on February 20th. Moreover, the World Health Organization and the United States declared COVID-19 a pandemic and a national emergency respectively.<sup>77</sup> To restore confidence in the markets, which had crashed once again on March 9th, and address the economic fallout that millions of Americans would face due to the pandemic, President Trump called on Congress to pass a stimulus package on March 17th 2020.<sup>78</sup>

While these crises occurred and President Trump began negotiations with Congress on a relief bill, the Federal Reserve under the leadership Chairman Jerome Powell quickly responded by cutting interest rates starting on March 15th, stabilizing financial markets by providing liquidity, and supporting the flow of credit throughout the economy by utilizing its special powers under the Paycheck Protection Program Liquidity Facility, which allows the Federal Reserve to help small businesses so they can keep their workers on payroll, and the Main Street Lending Program, which provides loans to small and mid-sized businesses.<sup>79</sup> Together, these

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<sup>74</sup> Drtuman, Lee. "American politics has reached peak polarization." *Vox*, 24 March 2016.

<sup>75</sup> "Political Polarization in the American Public." *Pew Research*, 12 June 2014.

<sup>76</sup> Klar, Rebecca. "Pelosi says Trump's China travel ban wasn't 'this great moment.'" *The Hill*, 26 April 2020.

<sup>77</sup> "A Timeline of Covid-19 Developments in 2020." *The American Journal of Managed Care*, 1 January 2021.

<sup>78</sup> *Ibid.*

<sup>79</sup> "Federal Reserve takes additional actions to provide up to \$2.3 trillion in loans to support the economy." *The Federal Reserve*, 9 April 2020.

efforts helped stabilize the economy in the short run as Congress figured out how to address the problems facing it.<sup>80</sup>

Nine days after the President's request to Congress, the Senate passed the CARES act and the following day President Trump signed it, signing into law “the largest recovery package in history,” sending direct payments to Americans and expanding unemployment insurance.<sup>81</sup><sup>82</sup> So far, the legislature and central bank have worked in tandem to effectively stabilize and address the economic and health crises stemming from the coronavirus pandemic. However, behind the scenes, the aforementioned polarizing statements and policy preferences only continued to cause issues. Whereas multiple Democratic officials stated that the recovery package does not adequately address the needs of everyday people, the Republican officials blamed good chunks of it as wasteful spending and the disincentivizing of work.<sup>83</sup>

Subsequent relief bills were promised by both the Democrats and Republicans but to no avail. The Republican-controlled Senate introduced a package that would provide another stimulus check, more funds for small businesses, and liability protections for “companies seeking to bring employees back to the workplace during the pandemic.”<sup>84</sup> This package was introduced on July 27th, 2020, four months after the original recovery package was signed into law. However, as “jobless claims [reached] a record high of 1.186 million”, talks for a second recovery package stalled under the divided government.<sup>85</sup> Much of the disagreements were purely between ideological lines in the Democratic-controlled House of Representatives and the Republican-controlled Senate. For example, multiple Democratic representatives wanted to increase the stimulus check amount but wanted to get rid of liability protections for large corporations seeking to employ workers during the pandemic.<sup>86</sup> As a result the Democratic House of Representatives also introduced rival bills that conformed more to their ideological wants. There was little to no room for compromise.

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<sup>80</sup> Irwin, Neil. “How the Fed’s Quick Action May Have Given Congress Cover for Inaction.” *The New York Times*, 15 September 2020.

<sup>81</sup> “A Timeline of Covid-19 Developments in 2020.” *The American Journal of Managed Care*, 1 January 2021.

<sup>82</sup> Snell, Kelsey. “What’s Inside the Senate’s \$2 Trillion Coronavirus Aid Package.” *NPR*, 26 March 2020.

<sup>83</sup> Levine, Marianne and John Bresnahan. “Republican infighting leads to embarrassing setback on aid.” *Politico*, 23 July 2020.

<sup>84</sup> “A Timeline of Covid-19 Developments in 2020.” *The American Journal of Managed Care*, 1 January 2021.

<sup>85</sup> *Ibid.*

<sup>86</sup> Horsely, Scott. “Lawmakers Split Over Liability Protections In Pandemic Relief Bill Negotiations.” *NPR*, 14 December 2020.

Throughout this period of inaction, the Federal Reserve continued to, with its augmented powers under the CARES Act, support the economy. These new powers are consistent with what Binder and Spindel found in their research; Congress gave new powers to the Federal Reserve right after a crisis. Using these powers, the Federal Reserve kept providing loans to entities that needed them, injecting more money into the economy. As this happened though, Jerome Powell repeatedly signalled to Congress that they must utilize fiscal tools as his mandate was being stretched thin.<sup>87</sup>

Due to the gridlock, the second recovery package did not get passed until almost a year later, under a new presidential administration and unified government; it is important to keep in mind that some provisions in this package were also disagreed upon by members of the same party at first and no one from the opposition party voted for it.<sup>88</sup>

### **3.2: South Korea**

The case of South Korea serves as a stark contrast to that of the United States; interestingly enough, South Korea had its first reported case on the same exact day as the United States; this fact serves to highlight the differences in response times.

Within 10 days of the first case, the government announced a \$17 million epidemic prevention budget that would be used to stymie the virus' spread.<sup>89</sup> Four days later, the government further announced it will spend 4.8 billion KRW as an emergency fund.<sup>90</sup> On February 26th, the government once again announced an aid package of 51.3 billion KRW that will be distributed to 10 cities; this was followed by an announced rent reduction of approximately 20-35% for small businesses.<sup>91</sup> On March 18th, another aid package of 51.9 billion KRW was announced. It is important to note that while having a similar political system as the United States, South Korea had passed multiple aid packages whereas the United States still had not passed one.

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<sup>87</sup> Saphir, Ann and Howard Schneider. "Powell says economy still needs Fed support, pushes back on inflation worries." Reuters, 23 February 2021.

<sup>88</sup> Pramuk, Jacob. "Biden signs \$1.9 trillion Covid relief bill, clearing way for stimulus checks, vaccine aid." *CNBC*, 11 March 2021.

<sup>89</sup> Cha, Victor and Dana Kim. "A Timeline of South Korea's response to COVID-19." *Center for Strategic & International Studies*, 27 March 2020.

<sup>90</sup> Ibid.

<sup>91</sup> Ibid.

On top of these spontaneous aid increases, the South Korean government launched four, large stimulus packages with the last one being worth over \$6.5 billion.<sup>92</sup> Multiple institutions have pointed to South Korea's quick and aggressive fiscal response as one of the main reasons why it is not suffering like so many of its fellow OECD nations.<sup>93</sup> At the same time, the Bank of Korea kept rates low and provided temporary "unlimited" funds to businesses who needed them in terms of loans.<sup>94</sup> Unlike in the American case, the legislature's roles were front and center as a part of the crisis response not the monetary institutions.

### 3.3: Comparison via Quantitative Factors

When turning back to the quantitative section, the paper found that the amount of veto points and political polarization had an opposite effect of what was expected in respect to the likelihood the central bank acts; an increase in veto points and political polarization *decreases* the likelihood the central bank acts. The United States possesses a greater number of veto points and greater political polarization than South Korea, yet each country's respective central banks acted to address the crisis. This suggests that these factors may not have any bearing on the central bank's actions. It is quite possible, just as the idea of central bank independence supports, that the central bank acts when it concludes the crisis at hand requires it, not because of legislative inefficiency.

Another unexpected result from the quantitative section was that the presence of a more socialistic-government would *decrease* the likelihood that the government acts to address it; the paper expected that the presence of a more socialistic-governemnt would increase such likelihood. Moreover, the paper expected that a more socialistic-government would be quicker in responding to a crisis. Once again, the opposite result was found. The comparison of the case studies, however, confirms this paper's original expectations. The conservative government of the Trump administration took longer to act, even in regards to unilateral actions the executive holds, whereas the center-left government of the Moon Jae-in acted much quicker in South Korea.

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<sup>92</sup> "South Korea draws extra \$6.6 billion budget to help small businesses, households." *Reuters*, 10 September 2020.

<sup>93</sup> Pesek, William. "South Korea Shows OECD How It's Done in COVID-19 Era." *Forbes*, 29 January 2021.

<sup>94</sup> "Bank of Korea to extend unlimited repo operations for one month by July." *Reuters*, 29 June 2020.

Finally, the quantitative analysis found that greater levels of societal polarization leads to an increase between the time the legislature acts and the central bank acts. In the case of the United States, which has higher societal polarization in contrast to South Korea, this is consistent with the quantitative results.

Considering the comparison of the United States and South Korea is not completely consistent with the quantitative results, it is possible that there are many other factors that affect the questions of interest. The cultural, historical, and societal characteristics of both the United States and South Korea are vastly different, which might affect the variables of interest in differing ways.

Chapter 4: Summary and Conclusion

*“We’re a democratic society. Shutting down the government should not be on the agenda”*

- Federal Reserve Chair, Alan Greenspan

## 4.1 Conclusions

While monetary and fiscal tools are delegated to two separate institutions – central banks and legislatures – only one of them is directly accountable to voters. Despite this fact, central banks are increasingly being seen as close substitutes for legislative action with some economists calling for the Federal Reserve to be given more powers such as allowing for direct cash transfers to Americans, an idea once proposed by Milton Friedman.<sup>95</sup> Such a development may seem efficient, as money could be delivered to those who need it without the tedious logistics of Congress; however, it would absolve those who are elected from performing their duties. Increasingly, central banks are playing larger roles in addressing economic crises, seemingly providing cover for the legislature. Consequently, it is important to understand what underlying factors contribute to a legislature's inefficiency and a central bank's subsequent actions.

The first set of factors that influence the dynamics between central banks and legislatures can be categorized as institutional: those factors that are engineered into the political system and not dependent on shifting attitudes of constituents or political actors. Political systems with more veto points are associated with a *decrease in the* likelihood of a central bank acting in response to a crisis. However, the number of veto points is not statistically significant for any other point of inquiry. Another surprising result was that a presidential system was statistically significant in two of the analyses but had an opposite effect to what was affected, which opens the door for further analysis of the power a president holds in addressing a crisis.

The second set of factors that influence the dynamics between central banks and legislatures can be categorized as political: those factors that are dependent on shifting attitudes of political actors and constituents. One of the most important quantitative findings is that increased political polarization makes it *less* likely for the central bank to act in response to a crisis. On the other hand, an increase in societal polarization is associated with an increase in the delay between central bank and governmental action. These statistically significant results do not support the hypothesis that, in times of increased political polarization, central banks cover the legislature's responsibility by responding. Moreover, the presence of a more socialistic government *decreases* the likelihood of a government acting in times of crisis; this does not confirm the assertion that more socialistic governments are more willing to use fiscal stimulus

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<sup>95</sup> Wolf, Martin. "The case for helicopter money." *The Financial Times*, 12 February 2013.



and government intervention as solutions. The expected effect of a more socialistic government was contradicted in another regard as well. When examining the effects it has on the time passed between a government's action and the start of a crisis, the presence of a more socialistic government *increases* the time passed according to the analysis. This might suggest that a government that is willing to take action at all will need more time to actually get legislation passed.

The comparison of the United States and the Republic of Korea assisted in supporting some of this paper's original expectations or providing evidence against the results from the quantitative analysis. However, the fact there were not any strong consistent results with the quantitative analysis means there may be more factors, like cultural, ethnic, historical, and societal, at play which affects how urgently a legislature responds to crises and how a central bank reacts in response.

In sum, the main hypothesis, that the presence of factors associated with legislative gridlock would also be associated with an increase in the likelihood of the central bank acting and with more speed, was not proven.

#### **4.2 Future Considerations**

This paper utilized a cross section of data that attempts to gauge different characteristics of the legislature; the paper tries to understand the influence this data has on the dynamic between central banks and legislatures. However, there may be many different internal reasons to the central bank that causes it to act a certain way. For example, different heads of the central bank may strongly subscribe to different economic theories and philosophies of government. Furthermore, their own previous experiences with crises might greatly influence how they view crises should be dealt with. For example, Paul Volcker was very committed to fighting inflation with high interest rates and President Reagan and Congress signalling him to stop multiple times.<sup>96</sup>

To do a more complete, two sided analysis a data set that surveys these internal characteristics about central banks should be constructed. It can then be added to the regressions performed in this paper and might yield differing results. For example, such an analysis may

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<sup>96</sup> Fuerbringer, Jonathan. "Reagan Criticizes Fed's Move." *The New York Times*, 20 January 1982.

prove that how a central bank acts really act is not influenced much by the legislature's inefficiencies but rather its own internal ideologies and characteristics.

#### **4.3: Final Words**

Central banks are not directly responsible to voters; as democracies seemingly become more inefficient, central banks are caught picking up the slack. As a result, more policy makers may be willing to give the central bank even more unilateral powers due its inefficiencies. This reasoning absolves the policy makers that constituents vote in from passing legislation, letting the central banks provide cover for them and then blaming them when responses aren't the best. Consequently, it is important to gauge factors that contribute to this dynamic. Although Congress may not give the Federal Reserve directly money transfer power any time soon, it is important to keep a close look on what powers are being given because it may be difficult to reverse those decisions.

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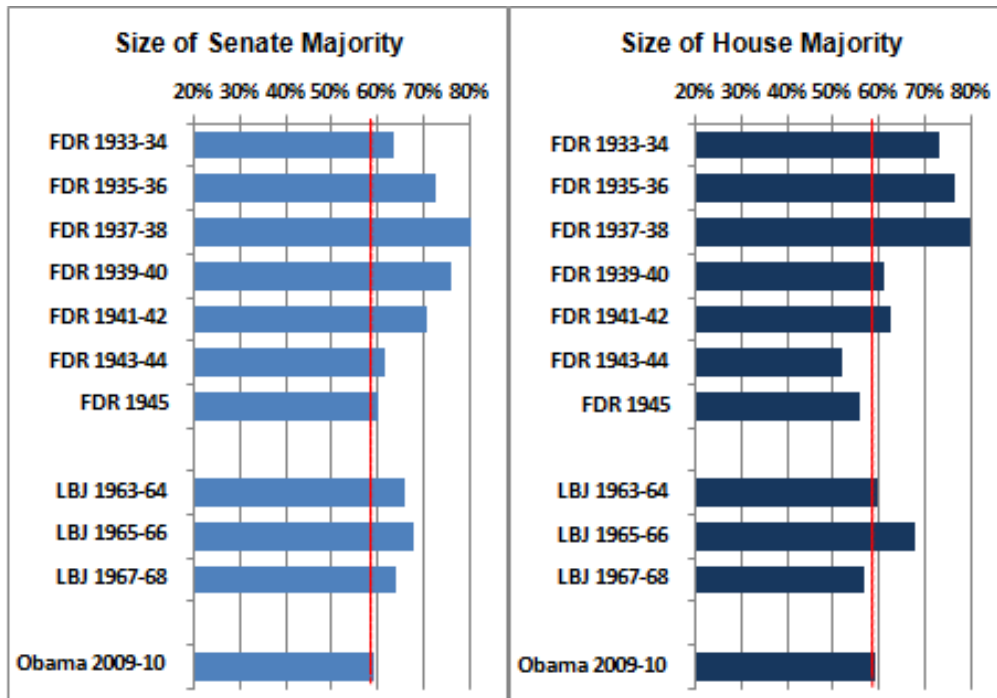
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Appendix



*Figure 1: Congressional Majorities of FDR, LBJ, and Barack Obama*

	LegAct	CBAct	system	plurality	pr	maj	checks	MARPOR~L	RealGDP	v2exl	legitideol	Vdempol
LegAct	1											
CBAct	0.5098	1										
system	0.0533	-0.0628	1									
plurality	-0.0636	-0.1348	0.2285	1								
pr	0.0566	0.1619	-0.2636	-0.4045	1							
maj	-0.0816	-0.0737	-0.31	0.1123	-0.0935	1						
checks	0.0899	-0.0783	-0.0923	-0.3306	-0.1442	-0.161	1					
MARPORPOL	-0.0052	0.0414	-0.048	-0.215	0.0506	-0.0597	-0.0449	1				
RealGDP	0.149	0.1454	0.5499	0.2164	-0.2948	-0.1008	0.0312	0.0563	1			
v2exl	-0.1611	-0.0771	0.5261	0.1419	-0.208	-0.1315	-0.1617	0.2557	0.4375	1		
Vdempol	0.0025	-0.13	0.3049	0.3068	-0.0074	-0.0104	-0.1481	-0.1288	0.0928	0.176	1	

*Figure 2: Correlation between Binary Dependent and Independent Variables*

	LegDiff	system	plurality	pr	maj	checks	MARPOR~	RealGDF	v2exl_legitideol	Vdempol
LegDiff	1									
system	0.0815	1								
plurality	-0.062	0.2568	1							
pr	0.0714	-0.304	-0.41	1						
maj	-0.259	-0.194	0.0782	-0.129	1					
checks	-0.029	-0.086	-0.21	-0.252	0.0196	1				
MARPORPOL	0.1416	-0.031	-0.392	0.1953	-0.092	-0.035	1			
RealGDP	-0.152	0.5467	0.3195	-0.363	0.0662	-0.077	0.0772	1		
v2exl_legitideol	0.3723	0.5148	0.1262	-0.297	-0.112	0.0921	0.4102	0.5103	1	
Vdempol	0.1401	0.3246	0.4345	-0.124	-0.017	-0.062	-0.1114	0.1586	0.3324	1

**Figure 3: Correlation between Government Action and Independent Variables**

	CBDiff	system	plurality	pr	maj	checks	MARPOR~L	v2exl_legitideol	Vdempol
CBDiff	1								
system	-0.1788	1							
plurality	-0.0408	0.2402	1						
pr	0.0722	-0.2513	-0.3983	1					
maj	-0.0904	-0.2994	0.094	-0.2067	1				
checks	-0.079	-0.0309	-0.4758	-0.112	0.026	1			
MARPORPOL	0.027	-0.0978	-0.365	0.126	-0.0407	0.0734	1		
v2exl_legitideol	0.0356	0.33	0.022	-0.0873	-0.1678	0.1042	0.346	1	
Vdempol	-0.1528	0.3535	0.3499	-0.0907	-0.0853	-0.2261	-0.1178	0.2225	1

**Figure 4: Correlation between Central Bank Action and Independent Variables**

	BothDiff	system	plurality	pr	maj	checks	MARPOR~L	RealGDP	v2exl_legitideol	Vdempol
BothDiff	1									
system	-0.0768	1								
plurality	-0.1606	0.2582	1							
pr	0.2726	-0.1936	-0.4	1						
maj	-0.0905	-0.2277	0.0791	-0.2436	1					
checks	-0.0808	-0.1499	-0.4788	-0.0725	0.2105	1				
MARPORPOL	0.1199	-0.111	-0.3853	0.2076	-0.0877	0.0879	1			
RealGDP	-0.1882	0.5811	0.3537	-0.4097	0.0876	-0.0985	0.043	1		
v2exl_legitideol	0.1061	0.314	0.0773	-0.1593	-0.1195	0.0224	0.4539	0.5435	1	
Vdempol	0.4545	0.398	0.4228	-0.1129	-0.0187	-0.3152	-0.0958	0.1733	0.3774	1

**Figure 5: Correlation between Difference between Both Actions and Independent Variables**

VARIABLES	CBAct
system	18.79656 (34.09413)
plurality	0.5796394 (0.742713)
pr	1.022594 (0.9219237)
maj	0.028186 (0.1229397)
checks	0.4384631* (0.2150086)
MARPORPOL	0.9740691* (0.015458)
realGDP	1** (3.35e-13)
v2exl_legitideol	0.6931889 (0.3101651)
Vdempol	0.7692986 (0.3019632)
polarxsystem	0.9326638** (0.0272792)
polarxchecks	1.006729* (0.0039745)
constant	115.8247 (431.3757)
observations	56
Pseudo R2	0.2074

Standard errors in parantheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*Figure 6: Coefficients and Standard Errors for “Does the Central Bank Act?”*

VARIABLES	LegAct
system	0.0677187 (0.1333747)
plurality	1.539368 (1.497583)
pr	1.6003 (1.697237)
maj	3.133471 (17.68082)
checks	1.225218 (0.4615762)
MARPORPOL	0.9859707 (0.0224236)
realGDP	1** (1.71e-13)
v2exl_legitideol	0.2556274** (0.1410208)
Vdempol	0.1421941 (0.4865048)
polarxsystem	0.1.065761** (0.0270927)
polarxchecks	0.99876 (0.003442)
CBAct	3.265348 (4.22425)
polarxCBAct	1.026036 (0.0166002)
constant	0.0285009 (0.1240143)
observations	56
Pseudo R2	0.3463

Standard errors in parantheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*Figure 7: Coefficients and Standard Errors for “Does the Legislature Act?”*

VARIABLES	CBDiff
system	-87.1276 (119.4913)
plurality	-72.91353 (285.6196)
pr	-60.39696 (148.5348)
maj	-604.6574 (697.4801)
checks	-25.4922 (142.8386)
MARPORPOL	1.2579 (3.534589)
realGDP	7.35e-13 (2.44e-11)
v2exl_legitideol	74.15647 (73.48302)
Vdempol	-32.16843 (71.46572)
polarxsystem	-2.08937 (2.362208)
polarxchecks	-0.3668506 (0.8046767)
constant	780.3291 (638.8397)
observations	35
R-squared	0.1086

Standard errors in parantheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Figure 8: Coefficients and Standard Errors for “Days Between Crisis Start Date and Central Bank Action”**



VARIABLES	LegDiff
system	-771.5611* (372.2561)
plurality	-36.75986 (296.049)
pr	179.1899 (135.4908)
maj	-960.5021 (955.451)
checks	-37.94057 (38.99274)
MARPORPOL	-0.1881272 (2.078862)
realGDP	-6.64e-11 (4.50e-11)
v2exl_legitideol	223.1531* (129.4151)
Vdempol	52.68355 (79.64796)
polarxsystem	9.591733 (6.622004)
polarxchecks	-0.0786746 (0.5476855)
constant	1339.231 (748.4234)
observations	34
R-squared	0.4622

Standard errors in parantheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Figure 9: Coefficients and Standard Errors for “Days Between Crisis Start Date and Government Action”**

VARIABLES	BothDiff
system	-492.4758* (239.8725)
plurality	-189.5529 (152.4731)
pr	148.585 (182.0592)
maj	-296.4625 (1001.01)
checks	-15.73025 (174.2022)
MARPORPOL	-0.3950383 (2.764293)
realGDP	-1.61e-12 (1.74e-11)
v2exl_legitideol	223.1531 (129.4151)
Vdempol	202.3841* (114.2626)
polarxsystem	4.274525* (2.312669)
polarxchecks	-0.1309344 (0.6510815)
constant	480.2077 (550.387)
observations	34
R-squared	0.4854

Standard errors in parantheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

***Figure 10: Coefficients and Standard Errors for “Days Between Central Bank and Government Action”***

Does The Central Bank Act?							
Logistic Regression				Number of obs		56	
				Wald chi2(12)		.	
				Prob > chi2		.	
Log pseudolikelihood = -29.363942				Pseudo R2		0.2074	
CBAct	Odds Ratio	Robust Std. Err.	z	P>z	[95% Conf. Interval]		
system	18.79656	34.09413	1.62	0.106	0.5371887	657.7031	
plurality	0.5796394	0.742713	-0.43	0.67	0.0470416	7.142221	
pr	1.022594	0.9219237	0.02	0.98	0.1747026	5.985595	
maj	0.028186	0.1229397	-0.82	0.413	5.46E-06	145.4587	
checks	0.4384631	0.2150086	-1.68	0.093	0.167699	1.146398	
MARPORPOL	0.9740691	0.015458	-1.66	0.098	0.9442382	1.004842	
RealGDP	1	3.35E-13	2.59	0.01	1	1	
v2exl_legitideol	0.6931889	0.3101651	-0.82	0.413	0.2883927	1.666168	
Vdempol	0.7692986	0.3019632	-0.67	0.504	0.3564375	1.660376	
polarxsystem	0.9326638	0.0272792	-2.38	0.017	0.8807011	0.9876923	
polarxchecks	1.006729	0.0039745	1.7	0.089	0.9989696	1.01455	
_cons	115.8247	431.3757	1.28	0.202	0.0782705	171397.3	

*Figure 11: Full Results for Regression #1*

Does The Legislature Act?							
Logistic Regression					Number of obs	56	
					Wald chi2(12)	.	
					Prob > chi2	.	
Log pseudolikelihood = -24.527055			Robust		Pseudo R2	0.3463	
LegAct	Odds Ratio	Std. Err.	z	P>z	[95% Conf.	Interval]	
system	0.0677187	0.1333747	-1.37	0.172	0.0014264	3.215015	
plurality	1.539368	1.497583	0.44	0.657	0.2286895	10.36188	
pr	1.6003	1.697327	0.44	0.658	0.2001663	12.79416	
maj	3.133471	17.68082	0.2	0.84	0.0000493	199061	
checks	1.225218	0.4615762	0.54	0.59	0.5855177	2.563813	
MARPORPOL	0.9859707	0.0224236	-0.62	0.534	0.9429864	1.030914	
RealGDP	1	1.71E-13	0.14	0.887	1	1	
v2exl_legitideol	0.2556274	0.1410208	-2.47	0.013	0.086702	0.753678	
Vdempol	1.421941	0.4865048	1.03	0.304	0.7271943	2.780436	
polarxsystem	1.065761	0.0270927	2.51	0.012	1.013962	1.120207	
polarxchecks	0.99876	0.0038442	-0.32	0.747	0.9912539	1.006323	
polarxCBAct	1.026036	0.0166002	1.59	0.112	0.9940103	1.059093	
CBAct	3.265348	4.22425	0.91	0.36	0.2586806	41.21876	
_cons	0.0285009	0.1240143	-0.82	0.414	5.64E-06	144.0918	

*Figure 12: Full Results for Regression #2*

Days Between Crisis Start Date and Central Bank Action						
Linear Regression				Number of obs	35	
				F(10, 23)	.	
				Prob > F	.	
				R-squared	0.1086	
				Root MSE	371.82	
CBDiff	Coef.	Robust Std. Err.	t	P>t	[95% Conf. Interval]	
system	-87.1276	119.4913	-0.73	0.473	-334.3141	160.0589
plurality	-72.91353	285.6196	-0.26	0.801	-663.7627	517.9357
pr	-60.39696	148.5348	-0.41	0.688	-367.6646	246.8707
maj	-604.6574	697.4801	-0.87	0.395	-2047.505	838.1901
checks	-25.4922	142.8386	-0.18	0.86	-320.9764	269.992
MARPORPOL	1.2579	3.534589	0.36	0.725	-6.053954	8.569755
RealGDP	7.35E-13	2.44E-11	0.03	0.976	-4.98E-11	5.13E-11
v2exl_legitideol	74.15647	73.48302	1.01	0.323	-77.85473	226.1677
Vdempol	-32.16843	71.46572	-0.45	0.657	-180.0065	115.6697
polarxsystem	-2.08937	2.362208	-0.88	0.386	-6.97597	2.79723
polarxchecks	-0.3668506	0.8046767	-0.46	0.653	-2.031451	1.29775
_cons	780.3291	638.8397	1.22	0.234	-541.2116	2101.87

*Figure 13: Full Results for Regression #3*

Days Between Crisis Start Date and Legislative Action						
Linear Regression			Number of obs	34		
			F(10, 22)	.		
			Prob > F	.		
			R-squared	0.4622		
			Root MSE	385.77		
LegDiff	Coef.	Robust Std. Err.	t	P>t	[95% Conf. Interval]	
system	-771.5611	372.2561	-2.07	0.05	-1543.573	0.4509078
plurality	-36.75986	296.049	-0.12	0.902	-650.7279	577.2082
pr	179.1899	135.4908	1.32	0.2	-101.8007	460.1806
maj	-960.5021	955.451	-1.01	0.326	-2941.986	1020.982
checks	-37.94057	38.99274	-0.97	0.341	-118.8066	42.92543
MARPORPOL	-0.1881272	2.078862	-0.09	0.929	-4.499424	4.12317
RealGDP	-6.64E-11	4.50E-11	-1.48	0.154	-1.60E-10	2.68E-11
v2exl_legitideol	223.1531	129.4151	1.72	0.099	-45.23749	491.5437
Vdempol	52.68355	79.64796	0.66	0.515	-112.4962	217.8633
polarxsystem	9.591733	6.622004	1.45	0.162	-4.141463	23.32493
polarxchecks	-0.0786746	0.5476855	-0.14	0.887	-1.214505	1.057156
_cons	1339.231	748.4234	1.79E+00	0.087	-212.9039	2891.366

*Figure 14: Full Results for Regression #4*

Difference Between Central Bank and Legislative Actions						
Linear Regression			Number of	28		
			F(10, 16)	.		
			Prob > F	.		
			R-squared	0.4854		
			Root MSE	289.56		
BothDiff	Coef.	Robust Std. Err.	t	P>t	[95% Conf.	Interval]
system	-492.4758	239.8725	-2.05	0.057	-1000.983	16.03121
plurality	-189.5529	152.4731	-1.24	0.232	-512.7814	133.6756
pr	148.585	182.0592	0.82	0.426	-237.3632	534.5332
maj	-296.4625	1001.01	-0.3	0.771	-2418.51	1825.585
checks	-15.73025	174.2022	-0.09	0.929	-385.0225	353.562
MARPORPOL	-0.3950383	2.764293	-0.14	0.888	-6.255077	5.465001
RealGDP	-1.61E-12	1.74E-11	-0.09	0.927	-3.85E-11	3.53E-11
v2exl_legitideol	-70.28725	132.2445	-0.53	0.602	-350.6332	210.0587
Vdempol	202.3841	114.2626	1.77	0.096	-39.8418	444.61
polarxsystem	4.274524	2.313669	1.85	0.083	-0.6302361	9.179284
polarxchecks	0.1309344	0.6510815	0.2	0.843	-1.249297	1.511166
_cons	480.2077	550.387	0.87	0.396	-686.5607	1646.976

*Figure 15: Full Results for Regression #5*