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Korea-U.S. Policy Dialogue: Political Polarization

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Session I

Elite Polarization

Polarization and Governance in the US and South Korea

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Introduction

The last twenty years have witnessed a considerable fall in the confidence that American voters have in democratic institutions to provide efficient and equitable governance and to solve social problems. Evidence of such a decline can be found both in opinion polling and in the rising strength of populist and nationalist ideas.[1] This loss of democratic confidence has coincided with the increasingly high levels of ideological polarization and partisan animosity. Logically, there are many reasons why anxieties about American democracy and political polarization go hand in hand. First, there may be a direct effect in that the cacophony of partisan debate may turn off voters and reinforce the idea that social problems may not be solvable by pluralistic compromise. Second, polarization may provide elite actors the incentives and the opportunities to attack democratic institutions and norms for partisan gain.[2] And finally, polarization may, in fact, present considerable challenges for good government.

Concerns about the systemic consequences of polarization arise in large part because the U.S. Congress is not designed to perform well in highly polarized environments. First, bicameralism and other supermajoritarian institutions make the formation of winning coalitions very difficult even in the best of circumstances.[3] Now that polarization has increased the difficulty of building them across party lines, legislating only becomes harder.

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1 See Foa and Mounk (2016, 2017) on declining support for democracy in most developed countries. Voeten (2016) argues that their findings for most countries are overstated, but there has been a decline in the US.

2 See Graham and Svolik (2020).

3 See Krehbiel (1998) and Brady and Volden (2005).

Second, compounding the problems of legislative partisanship is that each party is heavily factionalized ideologically. Unlike legislative leaders elsewhere who have powers of confidence and dissolution on top of the control of renomination, American party leaders are often unable to manage conflicts within their own ranks.[4] These conflicts further complicate the legislative process. Finally, as legislative partisanship has increased, legislators of the president's party are often forced to act as advocates of the administration rather than as defenders of the prerogatives of a co-equal branch.[5] Thus, executive incursions on legislative prerogatives are likely to remain unchecked. Some of the negative consequences of polarization have been well-documented. Scholars have documented that as polarization has increased 1) legislative output has declined,[6] 2) the appropriations process fails to conclude prior to the beginning of the fiscal year with increasing regularity,[7] and 3) delays in the confirmation process have increased leading to growing numbers of vacancies in the executive branch and the judiciary.[8]

Recent concerns about polarization in South Korea may raise similar concerns about that country's governance. For example, Hahn et al. (2018), find that legislative polarization in Korea increased from 0.7 during the 17th National Assembly (2004-2008) to 0.9 during the first half of the 20th (2016-May 2018), as measured by the distance between the ideal points of the two largest political parties. This level is comparable in magnitude to elite polarization in the U.S. around 2010. Hahn (this volume) finds that while polarization fell from the 1990s, it has started rising again following the impeachment of Park Guen-hye. Based on surveys of members of the National Assembly, Han and Shim (2018) find that partisan differences were greater in 2013 than 2007 on a wide variety of policy issues.

Because South Korea shares many important institutional features with the US, there are reasons to expect similar effects on governance. First, it also operates under a presidential constitutional system. Elected presidents must govern in collaboration with a separately

4 See McCarty (2015) and Pildes (2015).

5 For a general argument, see Levinson and Pildes (2006). In support of this claim, Kriner and Schickler (2016) find evidence that the effect of divided government on House investigatory activity of the executive has been magnified by polarization, but they find no similar effect for the Senate.

6 See Binder (2003); Binder (2015); and McCarty, Poole and Rosenthal (2016).

7 See Woon and Anderson (2012), Hanson (2014),McCarty (2016).

8 See McCarty and Razaghian (1999); Binder and Maltzman (2002); O'Connell (2009); O'Connell (2015).

elected national legislature. In Korea, executive-legislative coordination is further complicated by the fact that presidential elections and National Assembly elections are never held concurrently, increasing the likelihood that presidents must govern some or all of their term with a legislative majority. In both countries, executive-legislative conflicts have been associated with presidential impeachments. Second, although the Korean National Assembly in unicameral, it relies on supermajorty rules for the passage of most legislation.[9] Third, South Korea has recently evolved into a more decentralized political system reminiscent of American federalism. Thus, governing authority has become more fragmented allowing polarization to undermine strong cooperation between national and regional governments.

Yet, as I will argue in this report, there are many other important differences which might allow polarization to play out quite differently in the two countries. First, the legislative and budgetary powers of the Korean president help to offset the effects of polarization on legislative gridlock. While gridlock and polarization have incentivized US presidents to go around Congress, forgoing the accountability and legitimacy of legislation, Korean presidents have not (yet) been forced into that route. A second factor is that polarization in Korea seems to be based more on social identity than policy differences. While such affective polarization can be an impediment to effective governance, the overlapping policy preferences of the parties afford grounds for compromise. On the other hand, the US is best with both affective and policy-based polarization making compromise difficult.

In the sections that follow, I will review the evidence on the impacts of polarization on governance in the US and draw some tentative comparisons with South Korea. Both because the rise in party polarization in South Korea is more recent and because certain data are unavailable, some of the comparisons will be necessarily speculative.

9 The 60% supermajority requirement for the legislative fast-track was adopted in 2012. But Mo (2001) argues that the Assembly operated on informal supermajoritarian before those rules were adopted. The adoption of formal rules however has not eliminated the consensus norms as was revealed by the controversial use of the fast-track procedure to change the electoral system in 2019.

Polarization and Legislative Gridlock

The impact of political polarization depends significantly on its interaction with the institutional setting. In a perfectly majoritarian political setting where the government can set policy according to its preferences, polarization should lead to greater levels of policymaking as each new government is able to adjust policy to its liking. Moreover, we should expect to see greater swings in policy as governments of the left are replaced by governments of the right and vice versa.

But neither the US nor South Korea has fully majoritarian policymaking institutions. Both operate on constitutions based on the separation of powers so that authority is shared by separately elected presidents and legislators. Moreover, both countries have significant "midterm elections" where the legislatures are elected without a concurrent presidential election. Such non-concurrent elections increase the likelihood that a president will be forced to govern without a legislative majority.[10] As Figure 1 shows, the lack of a legislative majority for the president's party has been the norm for both countries over the last 30 years. Strict majoritarianism is also precluded by bicameralism in the US and the use of supermajority rules in the legislatures of both countries. The US president's party has only controlled the House and a filibuster-proof majority in the Senate for one of the past forty years. In 2020, South Korea's Democratic Party became the first party with enough seats to meet the supermajority requirement adopted by the National Assembly in 2012.[11]

The existence of such non-majoritarian and supermajoritarian institutions has been found to associate with policy inaction or *gridlock*.[12] For example, consider the effects of the separation of powers where a president may veto legislative enactments. A new policy may be adopted only when the president and the legislature can agree on an alternative to the status quo.13 Absent such an agreement policy gridlock endures. Similarly, bicameral institutions will require the agreement of both chambers. Gridlock may also emerge in cases

10 This issue is magnified in South Korea where all legislative elections are non-concurrent. In the US, the House of Representatives alternates between concurrent and non-concurrent elections and each Senate seat is elected alternately between concurrent and non-concurrent elections.

11 See https://thediplomat.com/2014/09/the-tyranny-of-the-minority-in-south-korea/

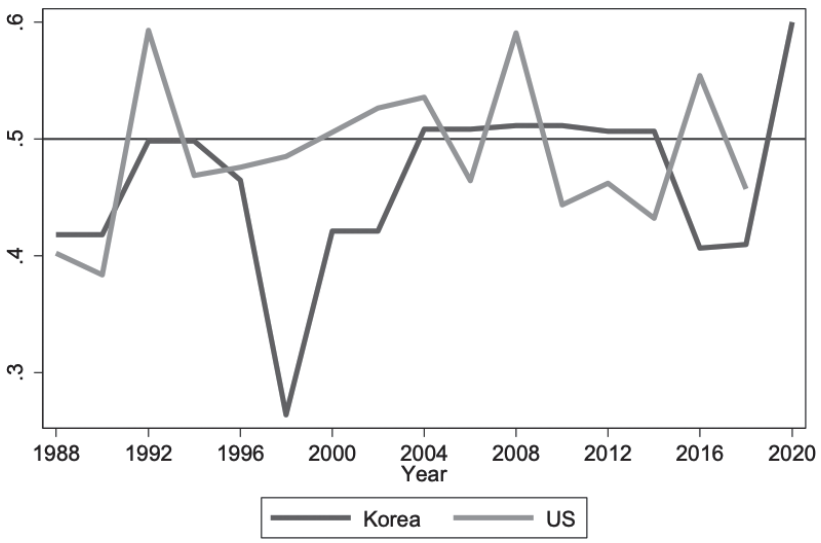
12 See Tsbellis (2002), Krehbiel (1998) and Brady and Volden (2005).

13 Or if the legislature is sufficiently cohesive that it can pass a bill and override a presidential veto.

of where no party can obtain a legislative majority so that legislation requires multiparty agreements.

In settings where gridlock is possible, party polarization will tend to exacerbate it. When the president's party had preferences that diverge from those of the legislative majority party, agreement is less likely. When the House majority and the Senate majority strongly disagree, new legislation will falter. Similarly, ideological and partisan conflicts can prevent legislative coalitions from forming. This is especially true given the high levels of affective and identity-based partisanship found in both the US and South Korea. Even on issues where there is no obvious ideological disagreement, partisanship may undermine the ability to reach agreements.[14] Such partisan conflicts are also exacerbated by the fact that party control of the legislature and executive are tightly contested.[15]

Figure 1: Seat Share President's Party



14 See Lee (2009).

15 See Lee (2016).

Evidence that polarization (especially in combination with divided party control) has reduced legislative activity in the US is fairly well established. Much of this work uses a list of significant legislative enactments compiled and undated by David Mayhew.16 To compile his list, Mayhew uses a combination of policy histories and contemporaneous journalistic accounts to determine the set of statutes and enactments which have had the greatest impact on society.

Figure 2 plots the number of Mayhew's significant legislative enactments by congressional term against the DW-NOMINATE polarization. It reveals a striking pattern. The US Congress enacted the vast majority of its significant measures during the least polarized period. The ten least polarized congressional terms produced almost sixteen significant enactments per term, whereas the ten most polarized terms produced slightly more than ten.[17]

To control for other factors that might explain these differences, I have elsewhere developed a statistical model of legislative output.[18] In this model, I attempt to isolate the effect of polarization by controlling for unified party control of government, split party control of Congress, the election cycle, changes in party control of the presidency and Congress, and secular trends. In the preferred specification, there are substantively large and statistically significant negative effects of polarization. [19]

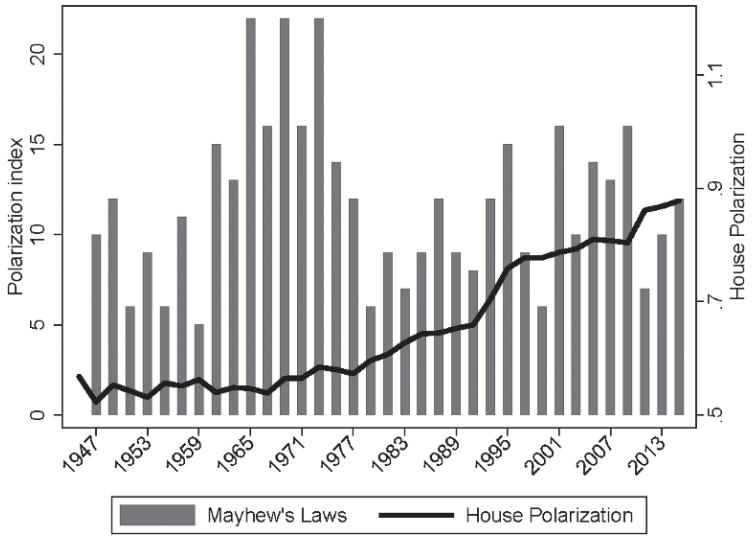
16 See Mayhew (1991).

17

18 It is an updated version of the model from McCarty (2007).

19 See Binder (2015) for a review of evidence using measures other than Mayhew's landmark laws.

Figure 2:



Admittedly, the production of statutes may be an imprecise measure of legislative gridlock in that it may also reflect a lack of society demand for new laws. So a better approach may be to examine legislative performance on routine functions that must be done every year such as adopting budgetary blueprints and appropriating funds on time. As it turns out, polarization has negatively impacted these legislative functions as well. With increasing frequency, the House and Senate fail to pass the budget resolutions required by the Congressional Budget and Impoundment Control Act of 1974. Even when both chambers pass budget resolutions, conference committees are rarely convened so that the differences between the two resolutions are never reconciled. Over the past twenty years, very few appropriation bills have passed before the beginning of the fiscal year.[20] More commonly, governmental activities are funded for many months through continuing resolutions (CRs).[21] Occasionally, all federal spending for an entire year is provided under CRs. On numerous occasions (most recently in 2018-2019), the Congress and the president will not even reach agreement on a CR, leading to the fiscal shutdown of the federal government.

20 See McCarty (2016).

21 A continuing resolution is a joint resolution enacted by Congress, when the new fiscal year is about to begin or has begun, to provide budget authority for Federal agencies and programs to continue in operation until the regular appropriations acts are enacted. Usually a CR caps appropriations at the appropriated amount of the previous year.

When appropriation bills do pass, they are often packaged together as "omnibus" bills that are negotiated by party leaders and the president, thus circumventing the role of the appropriation committees. These omnibus bills have increasingly become vehicles for legislative initiatives unrelated to appropriations.[22]

Scholars have also noted that legislative gridlock has become a problem for the South Korean National Assembly.[23] But the literature tends to focus on specific legislation and reforms that failed to pass, such as reforms related chaebol and labor market reform. To my knowledge, there have been few efforts to systematically quantify the success of significant enactments of the National Assembly along the lines of Mayhew's efforts. So assessing trends and their relationship to party polarization is not yet possible.

It is worth noting that there are also strong theoretical reasons to believe that the impacts of polarization on gridlock may be smaller in South Korea than the US. This is because the South Korean President has formal legislative proposal power and the executive branch plays a much more significant role in developing legislation than in the US.[24] The US president is much more likely to leave it to Congress to formulate policies and when presidents do make proposals Congress often amends them very significantly. A second advantage of South Korean presidents is the higher levels of party discipline in that country.[25] In the US, even presidents whose party controls the legislature must deal with various party factions. Moreover, presidential bargaining with opposition party leaders may also be undermined by factionalism.[26] This has led some US scholars to argue for more explicit presidential proposal powers to overcome congressional gridlock and other collective action problems.[27]

To the extent to which legislative productivity and gridlock in South Korea has been studied systematically, the focus has been on the passage rates for proposed legislation with a particular focus on the success of legislative member bills in comparison to that

22 See Hanson (2014).

23 See Mo (2001), Park (1993), Seo (2013), and Heo (2013).

24 See Kim (2008).

25 ibid

26 See McCarty (2015) and Pildes (2015).

27 See Howell and Moe (2016).

of government bills. But the research on legislative productivity in the US suggests that looking at these overall rates may provide a misleading picture as it has found that polarization and divided government tend to produce *higher* levels of minor legislation. Thus, developing measures of significant legislative output is a ripe area for research on South Korean politics.

In the area of fiscal policy, South Korea has not witnessed the same difficulties in legislating as the US Congress. Unlike the US where there is an expectation that the president will submit a budget, Article 54 of the South Korean constitution requires the executive to formulate a budget.[28] The National Assembly routinely approves the budget proposals by the annual early December deadline for the fiscal year which begins on January 1. A primary difference between the US and South Korea is that the National Assembly plays a more circumscribed role relative to the executive. Under Article 57 of the Constitution, the National Assembly may not increase expenditures beyond the executive request nor create new items of expenditure. Even these modest powers are used sparingly as the National Assembly reduced the government's FY 2020 proposal by only .2%.[29] The US Congressional alterations of presidential budget requests are orders of magnitude larger even when the president's party controls Congress. Moreover, if the National Assembly does not pass the budget, the president is constitutionally authorized to continue spending at the previous year's level. So the South Korean government is protected from shutdowns.[30]

The Consequences of Legislative Gridlock

A primary consequence of gridlock, somewhat paradoxically, is that it may increase policy uncertainty. Although gridlock does of course stabilize formal policies, it also precludes policymakers from responding to new circumstances with policy changes. This may generate substantial uncertainty over policy outcomes and effectiveness. For example, consider a program that spends a billion dollars to alleviate poverty. The outcome of this

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28 See Kim (2008). There is a statutory requirement that US presidents submit a budget by February 1 for a fiscal year that begins on September 1. But US presidents have increasingly missed this deadline. See McCarty (2016).

29 https://www.reuters.com/article/us-southkorea-economy-budget/south-korean-parliament-approves-2020-government-budget-idUSKBN1YE1G8

30 Article 54(3).

program in terms of the numbers of people in poverty may depend on a whole host of factors such as demographic shifts, employment opportunities, etc. Thus, if the billion dollar allocation were gridlocked, there would be more uncertainty as to its effects on poverty. If, on the other hand, the funding level could be flexibly adjusted to account for demographic and economic circumstances, we might expect less variation in its impact.[31] A related argument is one developed by Jacob Hacker.[32] In his account, policy outcomes are not necessarily uncertain under gridlock, but may "drift" predictably over long periods of time. One of his primary examples is that of employer provided health insurance. Such insurance became popular during World War II as a way of avoiding wartime wage controls. But despite the rising problems with that system such as escalating costs, reduced coverage rates, and job market rigidities associated with workers locked into jobs to maintain insurance, "serious efforts [at reform] have been effectively blocked by a formidable constellation of ideologically committed opponents and vested interests."

Similar problems have manifested in South Korea. For example, Jongryn Mo identifies legislative gridlock as influential in the crises of the late 1990s. He identifies several areas in which pre-Crisis economic reforms would have made the Korean economy less vulnerable. These include labor market reform, corporate law reform focused on chaebol transparency, and financial market reform. He notes that such reforms had been on the agenda since democratization but had not been tackled. Many of these areas, especially chaebols and corporate governance, remain quite resistant to efforts at reform. As a result, despite longstanding concerns, the role the largest chaebol and their affiliates have continued to grow.[33]

31 See McCarty (2018) for an elaboration of this argument.

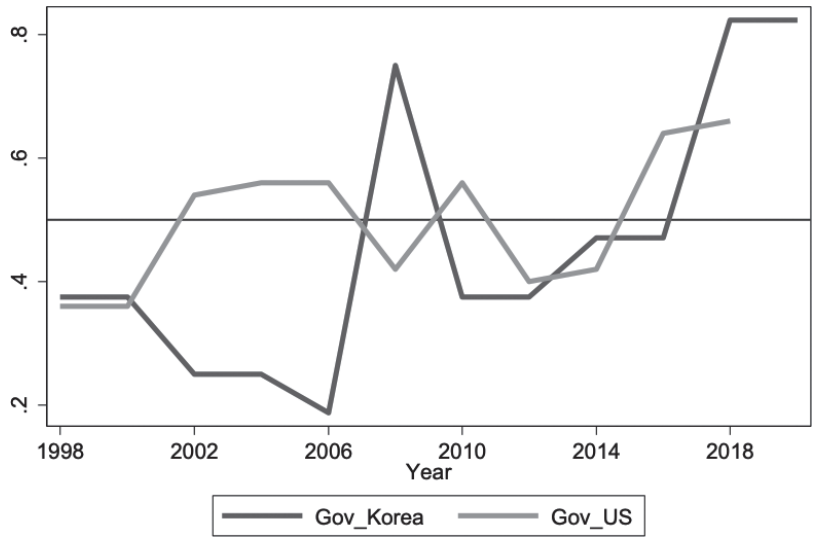
32 See Hacker (2004).

33 See https://www.eastasiaforum.org/2020/12/04/chaebol-reform-still-an-uphill-battle-after-lee-kun-hee/ https://www.bloomberg.com/news/articles/2020-11-19/korea-set-to-crack-down-on-chaebols-with-corporate-reform-steps

National-local Conflicts

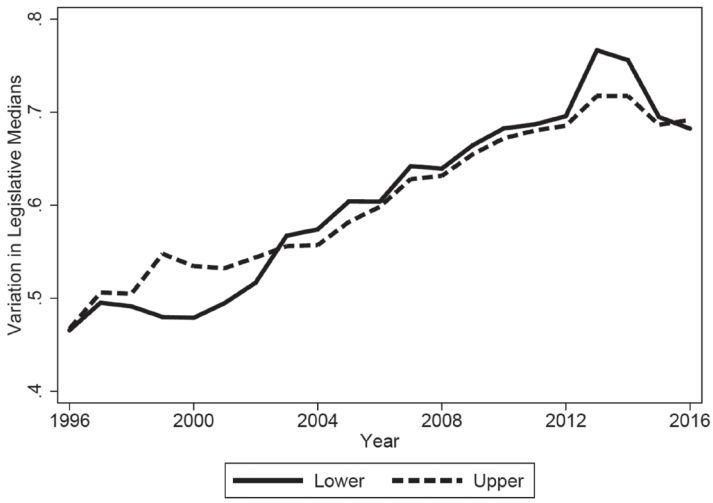
Polarization can also manifest itself in more conflict between national and regional governments especially when partisan control of provincial governments differs from that of the national government. Such a pattern of divided party control has long been true of the US and has been quite pronounced in South Korea since devolution in 1995. Figure 5 shares the share of the elected regional executives who are members of the president's party. In the US, regional party alignments tends to keep the president's share of governors between 50 to 60%. There has been far more variability in South Korea. The traditional regional strength of conservative parties meant that Kim Dae-jung and Rho Moo-Hyun governed with the vast majority of regional governments under opposition control Alternatively, the Democratic landslide in 2018 has given Moon Jae-in's party control of 80 percent of the provincial and municipal executives.

Figure 4: President's Share of Regional Executives



In the United States, there has been an additional trend towards unified party control of state governments.[34] When combined with partisan polarization, this has resulted in a large increase in polarization across states. This rise has had two major implications for US policymaking. First, policy choices and outcomes increasingly vary across states. Republican-controlled states have become more likely to implement conservative legislation while Democratic-controlled states are more likely to adopt progressive measures. Second, these trends have exacerbated conflict between states and the federal government as more liberal states will oppose conservative national administrations and more conservative state governments will oppose liberal administrations. Several factors have contributed to this federal polarization, but the most important appears to be the nationalization of local elections and the increased level of interest group activity targeting state-level elected officials and policymakers.[35]

Figure 5: Cross-State Polarization Computed from NPAT common space scores. See Shor and McCarty (2011). The measure is the cross-state variation in the chamber median ideal point.



34 See McCarty (2020).

35 See Hopkins (2017), Rogers (2016, 2017), Hertel-Fernandez (2019), and McCarty (2020).

But again important institutional differences between the US and South Korea suggest much less scope for polarization to undermine cooperation between central and regional governments. Under the US Constitution, power is explicitly shared between the national and state governments, and the states are sovereign in a number of areas such as the regulation of intra-state commerce. Additionally, state governments have substantial standing to sue the federal government over the encroachment of their rights. But unlike the US, South Korean local governments have no areas of sovereignty. They have been delegated a set of functions which are inherently local as well as some other functions delegated from the central government. Moreover, despite these delegations Article 9 of the Local Autonomy Act reads "Despite the functions specified in this law, the central government may exercise its own power and control over any function, if other laws define them as the functions of the central government."[36] Thus, given the dominance of the central government, ideological and partisan differences across levels of the South Korean government are unlikely to pose significant governance problems.

Case Studies

Despite many similarities, there have been key differences in the two countries' experiences with polarization. In this section, I sketch two of them. The first concerns the experiences with presidential impeachment and the second with the responses to the COVID-19 pandemic.

The Politics of Impeachments

In 2019, Donald Trump was impeached by the House of Representatives following revelations that he encouraged the Ukrainian president to open an investigation into President Trump's presumed election rival, Joseph Biden. These revelations followed a long independent investigation into the Trump campaign's role in encouraging (if not cooperating) with Russian efforts to interfere in the 2016 presidential elections. Although it found no evidence of collusion with the Russians, the report written by for FBI director

36 See Choi et al (2012).

Robert Mueller contained substantial evidence of obstruction of justice. At the same time, there have been major allegations of improprieties in the president's pre-presidential business dealings and his efforts to exploit his office for the financial gain of himself and his family.

Despite the large number of plausible grounds for impeachment, the Democratic leaders of the House of Representatives decided to only consider those charges related to Ukraine. That decision reflected the concern that the members of the president's party were unlikely to support impeachment charges related to obstruction in the Russian case or broader concerns about financial corruption. But little Republican support was forthcoming even on the Ukraine charges. No Republican members supported the Articles of Impeachment in the House. When the case reached the Senate, Republicans blocked the testimony of new witnesses leading to a vote of acquittal that followed partisan lines.[37]

The previous usage of the impeachment procedures against Bill Clinton was not quite as partisan. In 1998, the US House impeached Clinton on a set of articles stemming from his lying on a deposition in a sexual harassment case. Only five members of the president's party supported the two articles of impeachment that passed. Twelve opposition members opposed one article and 12 opposed the other. In the Senate, Clinton was acquitted as 10 Republicans voted not guilty on Article One and 5 voted not guilty on Article Two.

The impeachments of Roh Moo-hyun and Park Guen-hye in South Korea played out very differently. An important difference is that under the Korean constitution, impeachments are tried by the Constitutional Court, rather than by a political branch.[38] Removal from office requires the support of six of the nine justices. Roh was charged with illegally campaigning on behalf of his party during the mid-term legislative elections. While the court found that

37 Among Republicans, only Mitt Romney, the party's 2012 presidential nominee, broke ranks and voted to convict.

38 With respect to the prospects for politicization of the court, there are many salient differences between the Constitutional Court and the US Supreme Court. First, the president can only directly appoint three of the nine members. Three other members must be selected from a list generated by the Chief Justice of the Supreme Court and three others by a majority of the National Assembly (by custom, one each nominated by the ruling party, the opposition, and by mutual agreement, or by a third major party). The chief justice is subject to Assembly confirmation. Moreover, members must not join a party or engage in political activities. There is six year term (renewable) and a mandatory retirement age of 70. But given higher turnover rates, currently 8 of nine members have been appointed by Moon Jae-in. See Ginsburg (2009).

Roh had violated the law, it ruled that impeachment and removal ought to be reserved for actions that threaten the "free and democratic" order.[39] The case against Park Geun-hye centered around allegations that her aide Choi Soon-sil had used her proximity to Park to solicit donations from several chaebol of two foundations that she controlled. Moreover, it was revealed that Choi had influenced policies of the Park government and edited Park's speeches. In many ways, these offenses are akin to allegations which have been made against Donald Trump's son-in-law, Jared Kushner, who is believed by some to have used his position as a senior advisor to the president to shore up the finances of his family real estate firm. When prosecutors brought charges against Choi, Park apologized. But widespread protests sunk her approval rating which eased the path for the National Assembly to pass articles of impeachment by an overwhelming 234 to 56 margin. While the vote was taken by secret ballot, this margin implies that a very large number of Park's co- partisans supported her ouster. The Constitutional Court ultimately removed Park on an 8-0 vote.

There are several possible reasons for the differences across these outcomes. The most significant here is that the role of political polarization was far less consequential in the Korean cases. Public opinion was fluid enough to fall in line behind a president perceived to be wrongly impeached (Roh) and galvanized against the more serious offenses (Park). Given Park's lack of popularity, it simply was not tenable for her co-partisans to try to save her. But in the case of Trump impeachment (and to a lesser extent the earlier Clinton impeachment), public support for impeachment and related investigations fell squarely on partisan lines. Thus, few members of either party had incentive to approach these matters in an impartial way. The procedural and institutional differences presumably loomed large as well. While there is a relatively low threshold for bringing impeachment charges (a simple majority of the House of Representatives), the hurdle for conviction and removal is an implausibly large supermajority in a partisan Senate. The Korean Constitution has a higher threshold for issuing impeachment articles (two thirds of the assembly), but relies on a far less politicized branch to adjudicate those charges. The Korean system may represent better tradeoffs between underuse and abuse of the impeachment powers.

39 That Roh's party won major victories in the legislative elections following his impeachment might have persuaded some justices of the political problems the court might face following a removal. Thus, the dynamic may be similar to that of Bill Clinton where Clinton's high popularity led several opposition party members to support acquittal in the Senate.

The Response to COVID 19

The earliest cases of COVID-19 arrived in South Korea and the US at about the same time. South Korea is now held out as the paradigmatic success story while the US suffered through some of the highest infection and death rates in the world. But such stark differences were not quite as apparent at the start of the outbreak. In fact, President Moon Jae-in was widely criticized for his policies at the beginning of the outbreak. In mid-February his approach was not that different from the one Donald Trump would ultimately adopt in the US. He predicted aloud that the outbreak would "disappear before long" and assured South Koreans that is was not necessary to wear masks outdoors. He was strongly criticized by the conservative opposition for not taking quicker measures to stop travel to and from China and for the insufficient supplies of surgical masks for citizens.[40] When a major outbreak occurred in a megachurch in Daegu, a party spokesman floated the idea of a policy of maximum containment, only to back down from conservative criticism that his government was subjecting its own citizens to harsher measures than it was the Chinese. Following these criticisms, 1.2 million Koreans signed a petition that called from Moon's impeachment.[41] Ultimately, Moon's government implemented a travel ban that focused only on Hubei province.

Unlike Donald Trump, the Moon government did however forcefully and responsibly react as the nature of the pandemic became clearer. In stark contrast to the US, the policies were formulated in close consultation with public health authorities. The Korean approach focused on testing, surveillance, and quarantine to bring the pandemic under control. The legislative basis for these policies was legislation passed by the National Assembly in the wake of the MERS outbreak which caused 38 deaths in 2015. Following that outbreak, the National Assembly quickly amended the Infectious Disease Control and Prevention Act (IDCPA), to permit health officials to collect personal information for contact tracing purposes, and then disseminate anonymized versions of it publicly without consent. Despite the privacy issues raised, a whopping 78 percent of Koreans agreed that it was okay to sacrifice privacy in order to contain the virus. While such a consensus was important for

40 The early shortages were due to hoarding of KF95 masks, but the problems were quickly ameliorated by ramping up production and instituting a rationing system. Unlike the early pandemic in the US, mask usage was never officially discouraged.

41 https://www.wsj.com/articles/south-korea-spends-billions-to-blunt-coronaviruss-economic-impact-11582872869

ensuring compliance with these public health measures, it should be noted that there are stiff legal penalties for refusing COVID testing or for breaking quarantine. Another factor that aided the South Korean response is that there appears to have been little conflict between the national and local governments. Part of this is undoubtedly due to the Democratic Party's regional election landslide in 2018. But in the two governments still controlled by Liberty Korea (Daegu and North Gyeongsang), the national and local governments worked well together (despite the fact that opposition to Moon's public approval was lowest in these places).[42] The widespread support for these policies and their ultimate success helped carry Moon's Democratic Party to a huge electoral victory in the 2020 legislative elections.

In the United States, party polarization created a much different response to COVID. Donald Trump intended to build his 2020 reelection campaign around fast economic growth, low levels of unemployment, and booming financial markets. He and his advisors quickly determined that aggressive responses to the pandemic would have very negative short-run economic consequences. So the administration sought to downplay the pandemic so as to not "panic" the American people.[43] As the panic worsened, the president was very hesitant to use the powers of the federal government to purchase and distribute medical supplies and personal protective gear for medical and other "front-line" workers. Similarly, his continued concerns about avoiding panic in order to reopen the economy led him to downplay the need for certain public health measures such as masking and social distancing.

The president was also able to exploit polarization to shift the blame. That the pandemic hit democratically-led states and cities allowed him to suggest that it was the so-called "blue state" governors who had botched the crisis. Moreover, his administration failed to come to the aid of those hard hit states. Then against the string of scientific consensus, the President turned early economic reopening and mask wearing into partisan issues. As a result, these policies differed greatly across conservative and liberal states and undermined any coordinated response to the virus. While estimates vary as to how many lives a better response would have saved, the inescapable fact is that the US has led the world in per capita cases and deaths. Ultimately, Donald Trump's reelection bid was also one of the casualties.

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42 https://www.koreatimes.co.kr/www/nation/2020/03/113_286209.html

43 See Woodward (2020).

While it is often common to attribute the different outcomes between the US and South Korea to cultural factors, the role of political and institutional differences is unmistakable. Whereas Trump's precarious political situation gave him incentives to exploit polarization to politicize the disease, the lower levels of polarization in Korea and the stronger hand of the Korean presidency afforded Moon the latitude to react strongly to the crisis despite the criticism of his opponents.

Conclusions

While recent increases in polarization in South Korea may be worrisome, the primary argument of this report is that polarization may have far less impact on governance there than it has had in the United States. While the two countries have broadly similar constitutional structures, the greater centralization in the South Korean national government and presidency is less likely to produce the gridlock and stasis now typical of the US government.

It may be concerning, however, that these features of the South Korean constitution are remnants of a not-too-distant authoritarian past. Yet, given rising popular support for democracy in Korea, it does not seem that the strong presidency has been a major impediment to its consolidation.[44] One might speculate that government paralysis associated with gridlock might do more to undermine further democratic gains than excessive executive power.

On a final note, it is worth pointing out that some degree of polarization may be beneficial to the Korean political system. The consensus among political scientists is that democracy works best when parties provide the voters with distinct menus of policy positions. Some degree of polarization is necessary for political representation and accountability. When the parties do not take distinctive positions, voters will lack a clear choice with regard to policy. Moreover, heterodox parties reduce the usefulness of partisan cues as to which candidates to support. But when parties are distinct and coherent, voters can better register their views

44 Using data from the Varieties of Democracy project (Coppedge et al. 2020), Han and Shin (2018) show dramatic increases in their indexes for electoral and liberal democracy. While these indicators dipped during the aftermath of the Great recession, they have rebounded and now exceed those of the US (author calculations).

through their vote. Additionally, when parties push different policies, voters know who to hold accountable when a policy approach fails. These arguments, known as Responsible Party Theory, were summed up nicely in the American Political Science Association's report from its Committee on Political Parties in 1950:

> In a two-party system, when both parties are weakened or confused by internal divisions or ineffective organization it is the nation that suffers. When the parties are unable to reach and pursue responsible decisions, difficulties accumulate and cynicism about all democratic institutions grows. An effective party system requires, first, that the parties are able to bring forth programs to which they commit themselves and, second, that the parties possess sufficient internal cohesion to carry out these programs...
>
> On the other hand, ... a coalition that cuts across party lines, as a regular thing, tends to deprive the public of a meaningful alternative. When such coalitions are formed after the elections are over, the public usually finds it difficult to understand the new situation and to reconcile it with the purpose of the ballot. Moreover, on that basis it is next to impossible to hold either party responsible for its political record. This is a serious source of public discontent.[45]

In sum, without some differentiation of the political parties, it would be almost impossible for the typical voter to have any influence over the direction of public policy. In the US, the costs of polarization have outstripped these benefits, but whether that is true for South Korea has yet to be seen.[46]

45 See American Political Science Association (1950).

46 See McCarty (2019).

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A First Historical Look at the Elite Polarization in South Korea

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In the immediate aftermath of the 1987 liberalization, the political development of South Korea was nearly as impressive as the country's economic development in the preceding decades. During the authoritarian era, due to the persisting anti-communist ideology and the prioritization of economic development, dissidents were kept out of mainstream politics. With the Korea's democratization, however, dissidents and activists were granted full participation in mainstream politics emerging as new political elites. As a result, many observers of Korean society had anticipated that this embracement of former activists into mainstream polictics diminish extreme polarization in Korean society.

Paradoxically, however, the maturation of liberalization seems to have further fragmented the Korean society and intensified political polarization. Often the reform drive was motivated by populist goals, leading to the disintegration of the existing social order that had generated consensus for decades. As a result, various social divisions in Korean society such as region, generation, gender, and socioeconomic classes seem to be consolidating along party lines. For example, according to the most recent opinion poll admistered by Gallup Korea in the first week of November, 2021, 61% and 66% of self-identified liberals and conservatives supported the Demoractic Party (DP) and People's Power (PP) respectively. Among those in their 30s and 40s, approximately 39% and 44% identified themselves as supporters of the DP. On the other hand, only 21% and 26% identified themselves as PP supporters. In sharp contrast, among those who are in their 60s and 70s, 20% and 56% supported the two parties respectively. In short, aside from the regional rivalry between two Southern regions, many other groups have consolidated along two major parties.

In the U.S., many scholars argue that political polarization among the public has become considerably more severe since the 1970s (Abramowitz and Saunders, 1998; Hetherington 2001; Jacobson, 2004, 2005; Stonecash, Brewer, and Mariani 2003; Abramowitz and Saunders, 2008). Although some scholars disagree about the significance of political polarization among the American public (Fiorina, Abrams, and Pope, 2008; Fiorina and Abrams, 2008, Fiorina, 2017), a majority of scholars have found evidence there has been

an increase in ideological awareness and polarization among the public (Abramowitz and `Saunders 1998; Hetherington, 2001; Layman and Carsey 2002). For example, using data from the 1976-1994 American National Election Studies and the 1992-94 ANES panel survey, Abramowitz and Saunders (1998) demonstrated that ideological polarization of the Democratic and Republican Parties had significantly increased during the Reagan and post-Reagan eras. Likewise, Hetherington (2001) showed that the percentage of "neutral" voters declined by 6 points between 1980 and 1996, whereas the percentage of voters expressing positive feelings toward one party and negative feelings toward the other increased by the same amount. The author also showed that the total number of "likes" and "dislikes" that NES respondents provided about two parties had also increased significantly by the 1990s when compared with the 1970s and 1980s. In short, most scholars agree that polairztion among the public seems to have substantially incrased in the U.S.

Recent findings show that polarization has even advanced to a degree at which it has become part of the public's political identity and rooted in affect (Iyengar, Sood, and Lelkes, 2012). For example, using the implicit association test (IAT), Iyengar and Westwood (2015) demonstrated that hostile feelings for the opposing party were ingrained or automatic in voters' minds. According to the authors, party-based affective polarization was even stronger than that based on race. Furthermore, the authors' findings show that party cues exerted powerful effects on nonpolitical judgments and behaviors. Likewise, Iyengar et al. (2012) show that, when gauged by thermometer ratings of the out-party, partisans like their opponents less and less over time. The authors also found that the so-called "social distance" between supporters of two parties also increased. For example, in the past fourty years, the proportion of Democratic and Republican identifiers feeling "upset" at the possibility of their child marrying an out-party member increased substantially. Likewise, based on large voter files, Iyengar et al. (2018) found that 80.5% of married couples share a party identification. The author showed that selection rather than convergence after their marriage explains the agreement of their party identity. It is also worth noting that Levendusky and Malhotra (2016) show that affective polarization can increase while ideological divisions shrink.

What has intensified public polarization? Many scholars have suggested that elite polarization may be a catalyst of public polarization. In the case of the U.S., many researchers have argued that political elites aref highly polarized. Most notably, Democratic and Republican members are known to be ideologically quite distinct (Poole and Rosenthal

1997). Many scholars have argued that Democratic officeholders and electoral candidates have been moving to the left while Republican officeholders and electoral candidates have been moving to the right. Most notably, several scholars have shown that, when measured by roll call voting records, ideological differences between the two major parties have steadily become greater during the past half century (Poole and Rosenthal 1997, 2001; Stonecash, Brewer, and Marianai 2003). McCarthy and Poole (2008) suggest that this historical trend is driven by the increased economic inequality; as economic inequality becomes greater, the two major parties to diverge as a result of their effort to appeal to their constituencies.

Mass opinion in the aggregate tends to respond to changes in the information environment provided by elites (Hertherington, 2001). For example, Campbell et al. (1960) recognize the importance of elite-level cues while pointing out the cognitive limitations of ordinary citizens. Likewise, V.O. Key (1966) suggests that elite behavior will set the terms by which the masses think about politics. In light of this view, Carmines and Stimson (1989) argue that changes in the behavior of Republican and Democratic elites was the engine for an issue evolution on race in the 1960s. Likewise, Brody (1991) also shows that elite consensus generally predicts higher approval ratings of presidents whereas elite division leads to lower approval. According to Zaller (1992), if elites behave in a partisan manner, ordinaty citizens are likely to be exposed to a heavily partisan stream of information. As a result, they are likely to express opinions reflecting the heavily partisan stream. All these findings strongly suggest that increased elite polarization produces a partisan information stream, yielding a more polarized public.

There is widespread agreement among scholars and journalists alike concerning the influence of growing ideological divisions at the elite level in the U.S. For example, during the 1966 House and Senate elections, Sullivan and O'Connor (1972) found that candidates took quite divergent positions in accordance with their parties (also see Sullivan and Minns, 1978). Likewise, Erikson and Wright documented that the national pools of congressional candidates were extremely divergent in the 1982, 1990, and 1994 elections (Erikson and Wright 1989, 1993, 1997). Page (1978) showed that presidential nominees of the two major parties also took divergent positions (also see Enelow and Hinich 1984).

The anticipated effects of polarization among the public are unambiguous; polarized elites intensify partisan sorting among the public by offering polarized choices to voters. Pardos-

Prado and Dinas (2010) reported that countries with more polarized party systems enhanced the explanatory power of directional voting theory (Rabinowitz and Macdonald, 1989). Using the European Election Study (EES) 2004 data on approximately twenty countries, the authors showed that, voters would vote for the more extreme position on their own side when parties offer more polaizred chocies. The electorate's polarization is likely to weaken the strength of the linkage between voters' and candidates' preference. Furthermore, citizens in polarized party systems are likely to rely less strongly on substantive criteria and more on heuristics. In light of this view, Fazekas and Meder (2013) found that the prevalence of issue voting decreased in more polarized party systems.

In this analysis, we take a first look at the historical trend in elite polarization in Korea. More specifically, our working hypothesis is that political elites have offered increasingly polarized choices to the public, reinforcing partisan sorting of the Korean public along party lines. In order to do so, we collected National Assembly members' electronic voting records between 2004 and 2019. Also, we examined National Assembly members' inter-party bill co- sponsoring since the 1987 democratization. Finally, we examined the ideal points of Supreme Court Justices between 2004 and 2020.

Data and Method

In this analysis, we rely on three separate data sets to assess whether the degree of elite polarization has become increasingly severe in South Korea. First, we examine electronic voting records from the 17th National Assembly to the 21st National Assembly spanning over 17 years. More precisely, our data consist of all electronic voting records between 2004 and 2021. Electronic voting was first introduced to the Korean National Assembly in 2004. Accordingly, our data encompass all available roll call voting records from the Korean National Assembly. Our data consist of voting records on 12,260 bills and encompasses 1,057 National Assembly members.

Roll Call Voting

In the current study, we ought to estimate ideological preferences of legislators that are comparable across time and institutions (See, for example, Bailey, 2007, 2013; Bailey and

Chang 2001). For example, Martin and Quinn (2002) estimate the ideal points of U.S. Supreme Court justices over 47 years. For such dynamic estimation of ideal points over a long period of time, analytically one major obstacle is an insurmountable computational burden. Accordingly, although dynamic ideal point models are inherently attractive, they are often impractical when attempting to analyze a large-scale data set (Imai, Lo, and Olmsted 2016).

In order to cope with this difficulty, we fitted an Expectation-Maximization (EM) model developed by Imai, Lo, and Olmsted (2016). The authors' model allows us to fit a variant of Martin and Quinn's (2002) Bayesian model more efficiently. More specifically, their EM algorithm *approximately* maximize the posterior distribution under the dynamic ideal point model.[1] This approach significantly reduces the computational burden inherent in the dynamic estimation of ideal point models, allowing the application of Martin and Quinn's (2002) Bayesian model to the analysis of historical data spanning over a long period of time. Imai, Lo, and Olmsted (2016) demonstrate that the EM algorithm yields ideal point estimates which are nearly identical to those from the existing methods such as the standard Bayesian ideal point model developed by Clinton, Jackman, and Rivers (2004). Also, the authors demonstrate the computational efficiency and scalability of the proposed methodology by applying it to a wide range of real and simulated data sets.

Finally, unlike MCMC algorithms enabling the computation of uncertainty measures by characterizing the entire posterior distribution, EM algorithms do not produce uncertainty estimates such as standard errors.[2] In coping with this shortcoming, although some applied research ignore estimation uncertainty associated with ideal points, Imai et al. (2016) compute uncertainty measures applying the parametric bootstrap approach employed in Lewis and Poole (2004) and Carroll et al. (2009).[3] Applying this procedure, therefore, we also estimate the uncertainty measures for the ideal point estimates.

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1 Since a closed form of an EM algorithm directly maximizing the posterior distribution is unavailable, the authors rely on variational Bayesian inference, which is frequently used for fast and approximate Bayesian estimation (see Wainwright and Jordan, 2008; Grimmer, 2011).

2 The author note that the standard errors based on variational posterior often underestimate the degree of uncertainty.

3 As noted by the authors, it is somewhat unconventional to adopt a frequentist method such as Bootstrapping in a Bayesian model. Nevertheless, the authors' view is that there is no conflict with interpreting the resulting confidence intervals as a measure of uncertainty for our Bayesian estimates over repeated sampling. We agree with the authors.

Subsequently, we took the difference between two major parties each year. During this period, there existed a total of over 40 parties with the negotiation body status. For each year, we chose two major parties in accordance with the number of seats. This way, naturally one conservative and one liberal parties were selected for each year. The conservative parties were The Democratic Justice Party (1987-1989), the Democratic Liberal Party (1990-1995), the New Korea Party (1996), the Grand National Party (1997-2011), the New Frontier Party (2012-2016), the Liberal Korea Party (2017-2019), and the People Power Party (2020-Present). On the other hand, the liberal parties were the Reunification Democratic Party/Peace Democratic Party (1987- 1990), the Democratic Party (1991-1995), the National Congress for New Politics (1996-1999), the Millennium Democratic Party (2000-2003), the Uri Party (2004-2006), the Grand Unified Democratic New Party (2007), the Democratic Party (2008-2010), the Democratic United Party (2011-2012), the Democratic Party (2013), the New Politics Alliance for Democracy (2014), and the Democratic Party of Korea (2015-Present). Most observers of Korean politics would consider all of the conservative and lieberal parties as successors of the same two parties. Therefore, our results can be seen as fairly comparable to the results concerning the historical trend in U.S. Congress with a two-party system.

Bill Co-sponsorship

Next, we examine bill co-sponsorship data and see if interparty co-sponsoring has increased or decreased over the years. Here our data go back to 1987, the year of democratization.[4] Much of the empirical research on elite polarization has focuses on the roll call voting on specific bills. On the other hand, only a fraction of bills become subject to final voting in legislatures as they die in committees, are withdrawn, or never even get processed, etc. Furthermore, which bills become subject to final voting is far from random as parties often delay the deliberation of contentious bills, possibly introducing a significant selection bias when relying on roll call voting records as a measure of interparty polarization.

4 Although officially bill sponsorship data are available from the 1st National Assembly, the recordings from the early years seem less complete. Also, the 1987 democratization marks the beginning of a completely new political system. Accordingly, the comparability of the pre-1987 era seems questionable. Therefore, we decided to choose the year 1987 as the beginning of our data.

When attempting to guage the degree of polarization, bill co-sponsorship can be a complimentary alterantive to roll call voting records. Various interest groups attempt to influence the production of legislation whereas legislators compete to provide these groups with relevant legislation. Furthermore, legislators expend reputational capital to co-sponsor legislation and convince others to cosponsor (Campbell, 1982). Accordingly, bill sponsorship can be a useful indicator showing the policy objectives of a legislator. Although there may be a debate concerning what motivates legislators to co-sponsor a bill,[5] most scholars of legislative politics would view bill co-sponsorship primarily as rational position-taking and a means of appealing to their constituents (e.g., Campbell, 1982). For example, examining the number of bills co-sponsored by members of the U.S. House of Representatives and Senate, Campbell (1982) shows that the frequency of bill co-sponsorship is influenced by party affiliation and ideology as well as electoral margin of victory and general legislative activity. Therefore, bill co-sponsorship can be a useful measure of group polarization in the legislature.

Supreme Court En-banc Decisions

As another measure of elite polarization, we examine the ideal points of supreme court justices. Although the justice is expected to act independently, many scholars (e.g., Tribe 1985) suspect such notion of 'defiant' justice is a myth. On the other hand, although Supreme Court Justices might feel 'loyal' to the President who appointed oneself, there is likely to be 'institutional pressures' within the Court that diffuse them the outside loyalties. Likewise, it is reasonable to assume that presidents would expect the justices they appoint not to interfere with their major political goals. Indeed, in the U.S., many presidents have even appointed those who were personal friends and confidantes as Supreme Court Justices.[6] In short, an important aspect of such appointments is about achieving ideological goals.

The Korean Supreme Court consists of 14 Justices, and their term lasts for six years which can be renewable. 13 Justices are appointed to the court by the President on the

5 For example, Wilson and Young (1997) argue that bill co-sponsorship is primarily informative of members' expertise and interest in a bill while serving no other purposes.

6 Franklin Delano Roosevelt (FDR) appointed Felix Frankfurter, whereas Truman appointed his friend Fred Vinson. John F. Kennedy appointed his friend Byron White, and Lyndon Johnson appointed his confidante and lawyer Abe Fortas.

recommendation of the Chief Justice and the consent of the National Assembly, and serve renewable terms of six years. Annually, nearly 50,000 cases reach the Supreme Court, and each Justice sits in approximately 4,000 cases. Accordingly, unlike the U.S. Supreme Court, not all of their decisions are en banc. In order to keep our task at a manageable level, we limit our analysis to en banc decisions between 2004 and 2021. Although they have obvious limitations, unquestionably en banc decisions are the cases with the most significant social impact. Hopefully, our findings will offer a meaningful starting point for discovering the roots of political polarization in South Korea.

Results

Our task was to assess the extent of elite polarization in Korea. In order to do so, we first examine roll call voting records between 2004 and 2019. As described earlier, we fitted an EM item response model. Subsequently, we took a difference between the average ideal point of two major parties in each year.

As shown in Figure 1, the two major parties seem to have been most polarized in the early years of the Roh government. Between 2008 and 2013, however, the severity of polarization seems to have somewhat lessened. On the other hand, beginning around 2013, the interparty difference seems to be on the rise again. After 2017, perhaps as a result of President Park's impeachment, the two parties have become increasingly polarized. Although we do not want to speculate on the mechanism underlying these trends, unlike the U.S., it is clear that interparty polarization has not steadily increased or decreased. Instead, the severity of polarization seems to respond to the changes in the political environment.

Next, we analyze the pattern of cross-party bill co-sponsorsoring. More specifically, we examine, of all bill co-sponsoring, the proportion of co-sponsoring with out-party members. In other words, if two legislators co-sponsor a bill, we regard it as a connection of two 'nodes' in a network. We assess what proportion such links are made between members of different parties.

Our results clearly show that the proportion of bill co-sponsoring with out-party members decreased substantially over time. A more careful examination revelas that the decreasing trend became most pronounced around 2008. Between 1987 and 2008, on average 46.3%

and 54.6% of all bill co-sponsoring were done with out-party members annually for the conservative and the liberal party respectively. In sharp contrast, inter-party co-sponsoring constituted only 20.1% (the conservative party) and 15.6% (the liberal party) of all bill co-sponsoring in 2019, marking a truly remarkable drop.

This picture becomes even clearer when examining the proportion of cross-party bill co-sponsoring between the two major parties. The previous analysis included co-sponsoring with members of all other parties, including the ones that share similar ideological leanings. When limiting the analysis to the members of two major parties at each time point, the decrease in the proportion of cross-party bill co-sponsoring became highly pronounced beginning around 2008. From 1987 to 2008, the proportions of interparty co-sponsoring were 36.3% and 46.3% for the conservative and the liberal party respectively. Since 2008, however, interparty co-sponsorship between the two parties reached the historical low of 9.5% (the conservative party) and 5.5% (the liberal party) for the two parties respectively.

Between 1987 and 2019, the proportion of within-party bill co-sponsorship has steadily increased. The proportions of within-party bill co-sponsorship were 57.5% and 52.5% between 1987 and 2008 for the conservative and the liberal parties respectively. On the other hand, in 2019, they reached 83.9% and 94.5% for the two major parties respectively. This corresponds to the historical high for the liberal party. Likewise, for the conservative party, it is also the highest ever, aside from 2012, 2014, and 2019. It is clear that nearly all bill co-sponsoring is done with in-party members.

Finally, we examine the Korean Supreme Court's en blac decisions. More specifically, we examine the ideal point estimates of all Supreme Court Justices between 2006 and 2020. When examining the dynamic ideal point estimates, it seems as if the Supreme Court has turned somewhat liberal over the years from 2006 (0.05) to 2020 (-0.59). This is not surprising since, in many social issues such as gay rights and gender issues, the Korean society has become liberal.

It turned out that, on average, the Moon government had appointed the most liberal Supreme Court Justices (-.347). Surprisingly, although the Roh government had appointed three most liberal Supreme Court Justices such as Y. L. Kim (-1.532), S. A. Chun (-1.374), and S. H. Park (-1.227), it also appointed some of the most conservative Supreme Court Justices such as D. H. Ahn (1.628) and H. S. Kim (1.338). This shows that, although he

was often criticized for his ideological extremism during his term, Roh's appointment of Supreme Court Justices seems relatively 'balanced' when compared with Moon. On the other hand, the Park government appointed the most conservative Supreme Court Justices (0.175). In other words, the two most recent presidents appointed the most extrme Supreme Court Justices. This seems to be consistent with our hypothesis.

We assessed the severity of polarization among the Supreme Court Justices. First, we took the difference between the most liberal and conservative Justices every year. There are no clear signs of increasing or decreasing polarization here. Nevertheless, in the most recent years, the severity of polarization seems to be increasing. This is sensible as the last two governments have appointed the most conservative and liberal Supreme Court Justices.

Alternatively we examine the difference between the Supreme Court Justices appointed by the liberal and the conservative government at each time point. Here we consider the MB and the Park governments as the conservative governments. On the other hand, we consider the DJ Kim, the Roh, and the Moon governments as the liberal governments. Again, there are no clear signs of increasing or decreasing polarization here when considering the entire time period. Nevertheless, in the most recent years, since 2018, the severity of polarization seems to have signficnatly increased.

Discussion and Conclusion

In this anlaysis, we examined whether the political elites have become increasingly polarized. In the U.S., there is a clear evidence showing that the two parties have become increasingly polarized when gauged by roll call voting records. We attempt to replicate such findings in South Korea using electronic voting records from the 17th to the 20th National Assembly. Our results show that the serverity of polarization has worsened significantly in recent years. The overall trend of polarization was evern clearer from bill co-sponsorship: inter- party co-sponsorship most dramatically decreased in the past decade whereas within-party co- sponsorship has significantly increased. When examining the appointment of Supreme Court Justices, it was also clear that the most recent two presidents appointed the Supreme Court Justices with the most extreme ideological positions. In short, our results clearly show that political elites offer increasingly polarized choices, reinforcing partisan sorting of the Korean public.

Figure 1: The Ideal Point Estimates of Two Major Parties in the National Assembly of Korea, 2004-2021

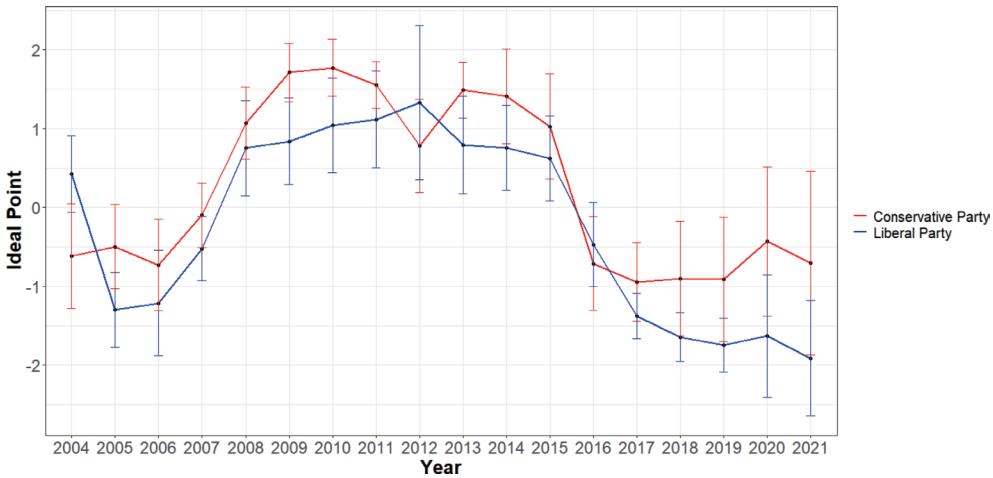


Figure 2: Difference in Two Major Two Parties' Ideal Point Estimates in the National Assembly of Korea, 2004-2021

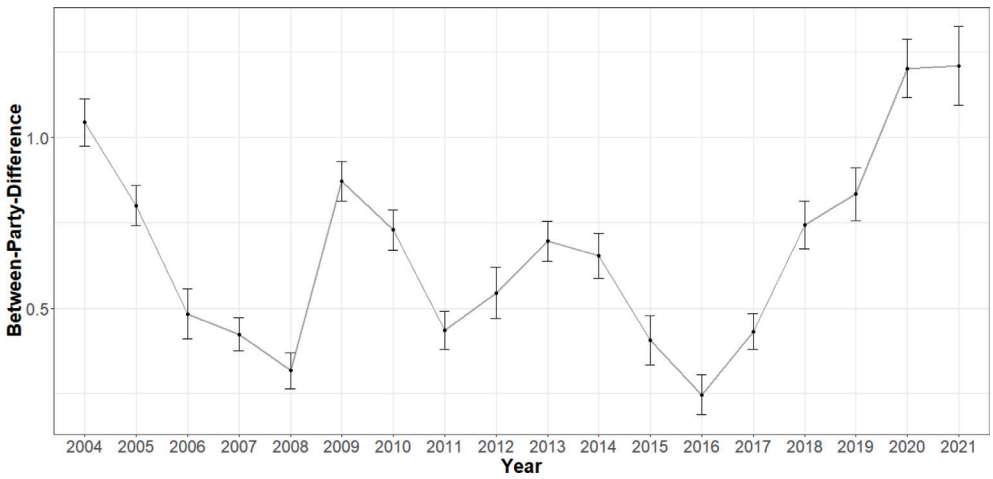


Figure 3: Cross-party Bill Co-sponsoring with All Parties in the National Assembly of Korea, 1987-2021

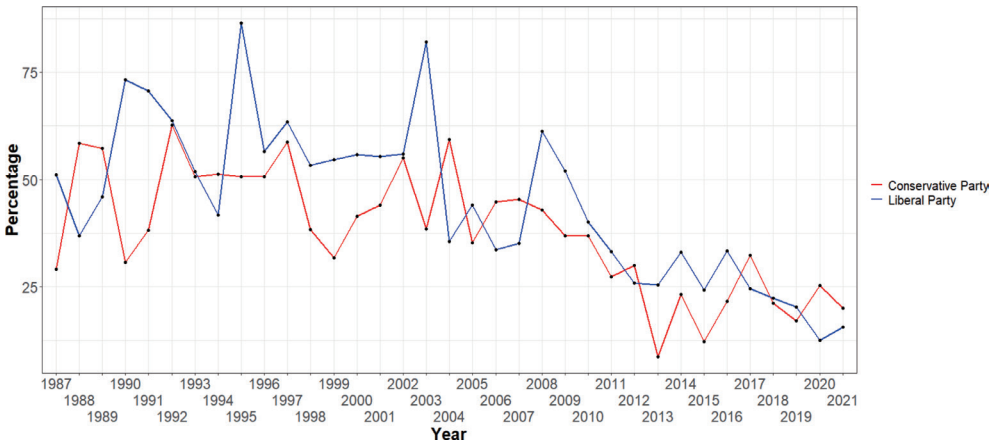


Figure 4: Cross-party Bill Co-sponsorship between Two Major Parties in the National Assembly of Korea, 1987-2021

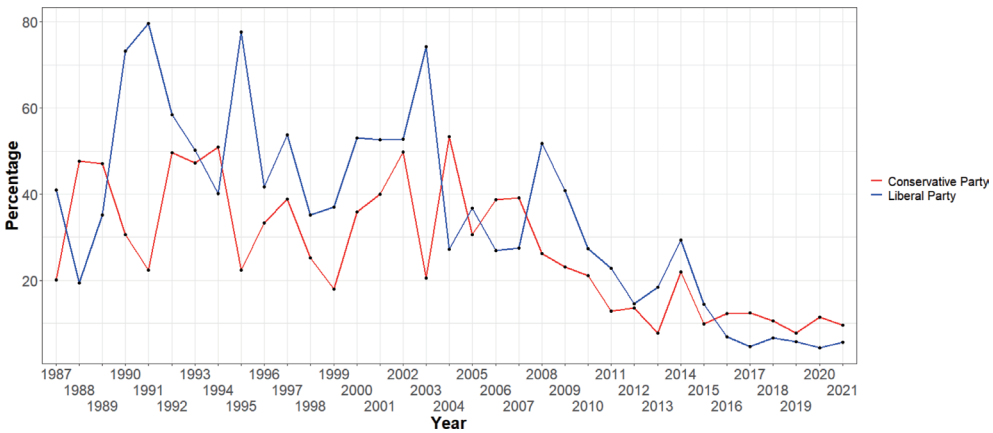


Figure 5: Within-party Bill Co-sponsorsoring in the National Assembly of Korea, 1987-2021

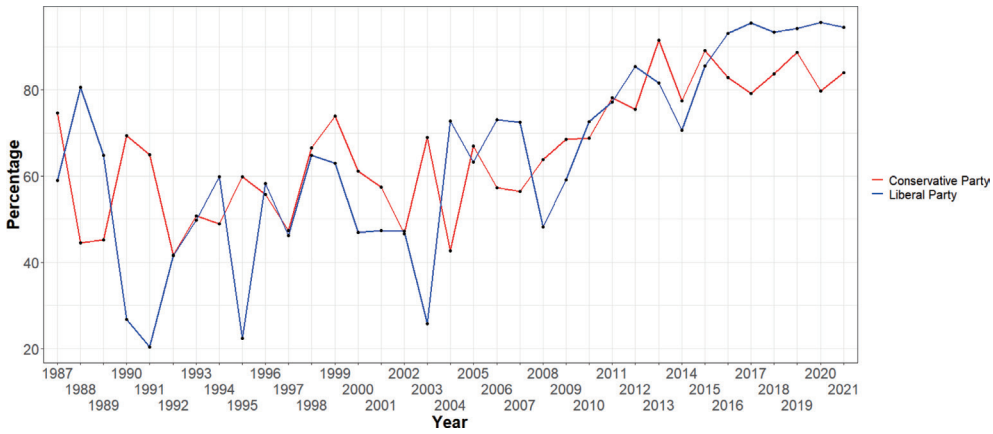


Figure 6: The Ideal Points of Supreme Court Justices by Presidential Appointment

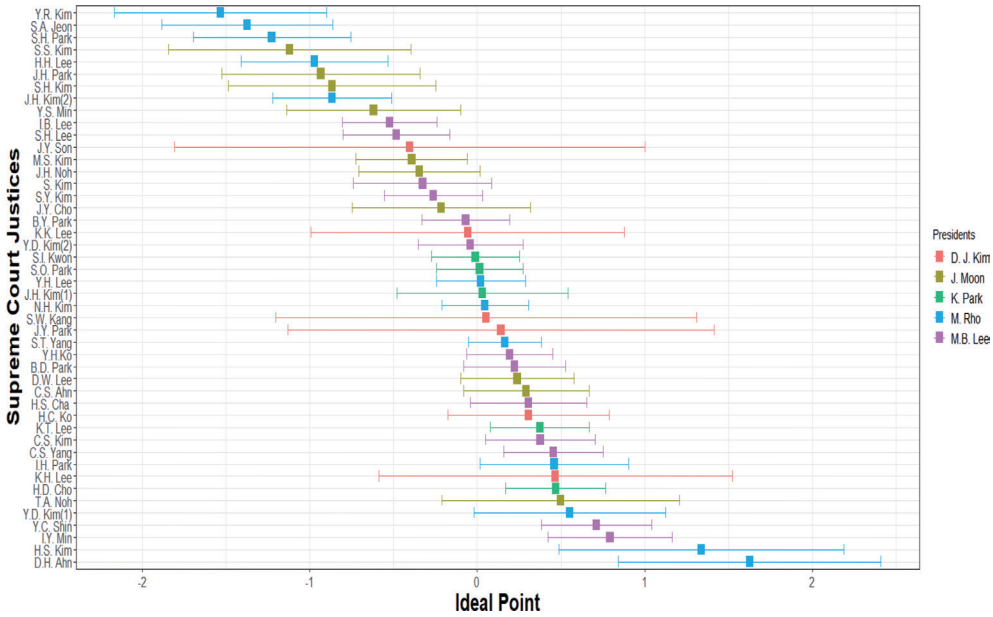


Figure 7: The Ideal Points of Supreme Court Justices over Time, 2004-2021

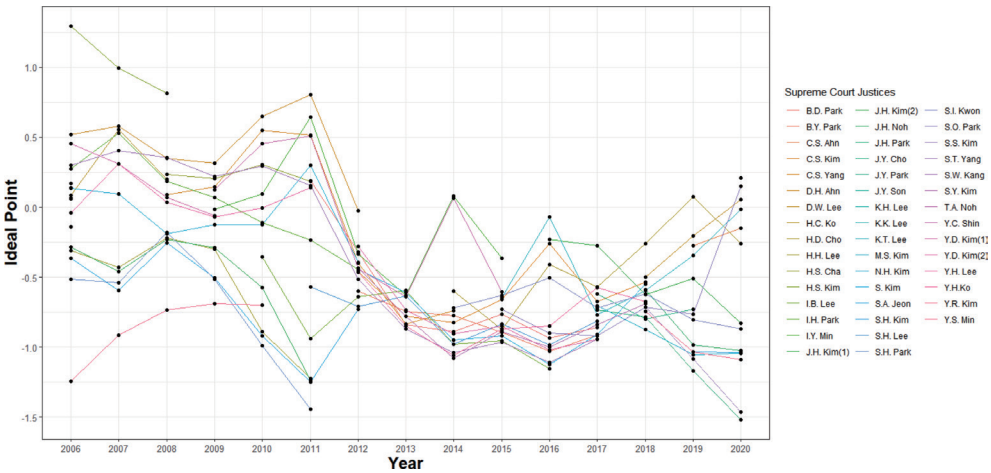


Figure 8: The Mean Ideal Points of the Supreme Court Justices, 2004-2021

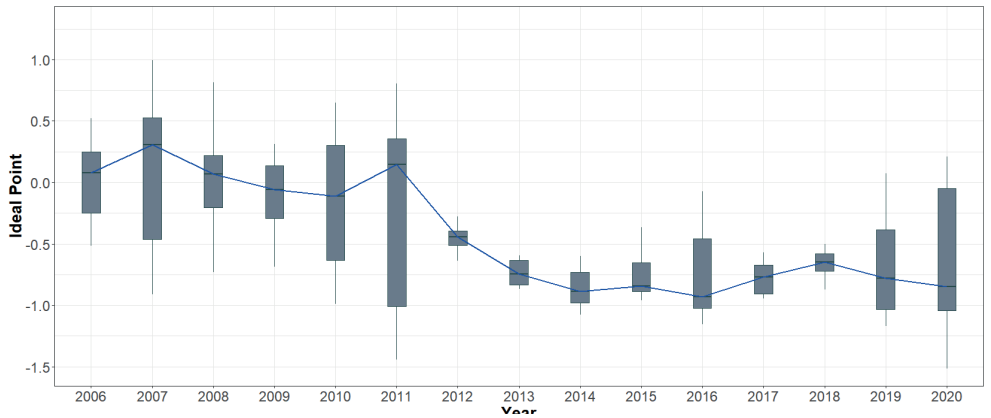


Figure 9: The Difference between Two Extreme Supreme Court Justices, 2004-2020

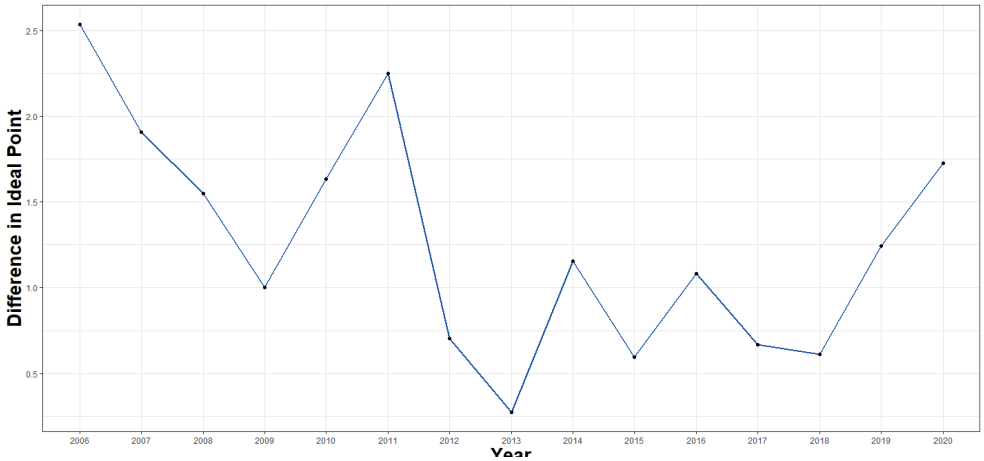
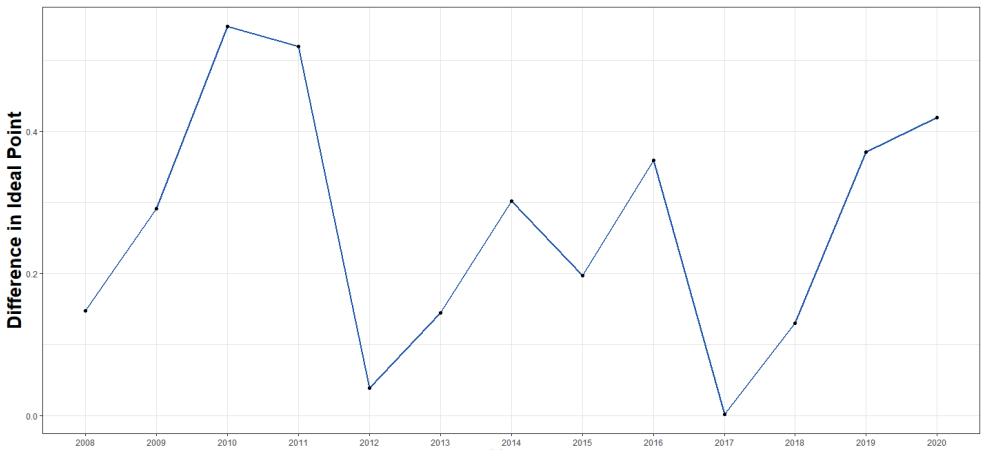


Figure 10: The Difference between Supreme Court Justices Appointed by Liberal and Conservative Presidents, 2004-2020



Session II

Voter Polarization

Opinion Polarization in Korea

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KDI School of Public Policy and Management

Abstract

Although there is a growing concern that Korean politics become more extreme and polarized, previous studies find that there is no evidence for *opinion* polarization. This study extends the previous findings in three ways. First, I add the latest WVS wave to examine whether political development since 2014 caused any divergence in opinions. I find no supporting evidence. Second, therefore, I focus on investigating the characteristics of those who are "ideologically consistent" by conducting and using custom-designed survey results. I find the signs of antipathy between different ideologies and ideological sorting. What is unique in Korea is that there are more consistent voters among conservatives, and their opinions are more tightly aligned with partisan views. Third, I explore how ideological consistency affects people's perceptions and attitudes toward COVID-19. As in the other advanced countries, this global pandemic reveals how political division negatively affects the disease control effort.

1. Introduction

There is a growing concern that Korean politics become more extreme and polarized. Previous studies show that political polarization in advanced countries has developed on both margins of politicians and the mass public. They observe a widening gap in their values and attitudes (McCarty, Poole, and Rosenthal 2016; Caughey, O'Grady, and Warshaw 2019). Polarizing politics is a warning sign to democracy because it can paralyze the public decision-making process in other countries by driving political parties more extreme and make it difficult to find common grounds (McCarty 2016).

However, Lee (2019) suggests little support that Korean opinions have polarized over time. Using the World Value Survey and the Korean General Social Survey, he shows that the opinion gap between progressives and conservatives has narrowed rather than widened on

various social issues. Therefore, he argues that political polarization would result from the overrepresentation of those who have strong political beliefs, strengthened by social media, and participate very actively in political actions.

This study extends the previous findings in three ways. First, I add the latest WVS wave to examine whether political development since 2014 caused any divergence in opinions. I find no supporting evidence. Second, therefore I focus on investigating the characteristics of those who are "ideologically consistent." To do this, I conduct and use the results of a custom-designed survey. I find the signs of antipathy between different ideologies and ideological sorting. What is unique in Korea is that there are more consistent voters among conservatives, and their opinions are more tightly aligned with partisan views. Third, I explore how ideological consistency affects people's perceptions and attitudes toward COVID-19. As in the other advanced countries, this global pandemic reveals how political division negatively affects the disease control effort.

2. Long-term Trend in Opinion Polarization: Evidence from World Value Survey

In this section, I explore how opinion polarization has evolved over the long run. It is commonly measured by the differences in value orientation of different ideological or partisan groups over contemporary issues. While several surveys collect information about Korea's public opinions, few of them ask about the respondent's opinion about political and socioeconomic issues. World Value Survey is one of the best choices because it includes several questions that ask the respondents' values and repeats the same questions over a long period. However, there are also limitations that some critical political cleavages in Korea, such as attitude toward North Korea, are not reflected.

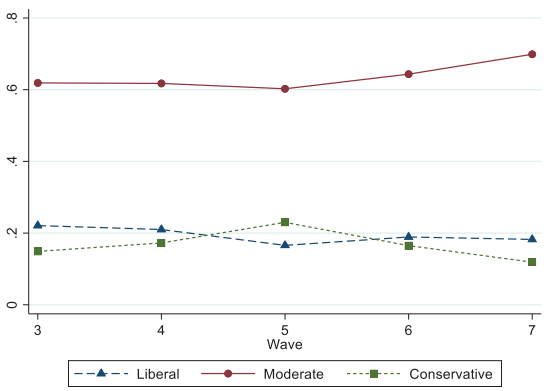
2.1. Changes in Ideological Distribution

I first overview the evolution of ideological distribution. Respondents are asked to identify their political stance on a 1-10 Likert scale. I define those who answered 1-3 as the progressives, 4-7 as the moderates, and 8-10 as the conservatives. I use the information to describe the changes in ideological distribution.

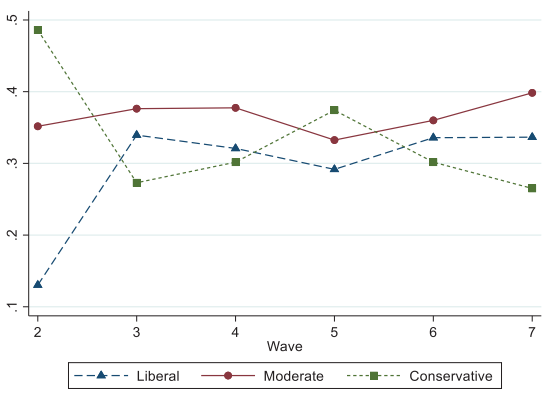
In measuring political polarization, most studies focus on the division of views between political parties, such as the democratic and republican parties. However, self-defined political orientation is considered to be a better dimension in Korea because the party system and people's attachment to political parties are relatively weak and unstable.

Figure 1 presents the distribution of the self-defined political scale. While more than half of Koreans appear to be moderate, its share has increased since the fifth wave (2015). In contrast, the shares of progressives and conservatives have steadily decreased. Applying a narrower definition of the moderate, those who scale their political orientation with 5 and 6 yields a similar result shown in Panel B of Figure 1. The share of moderates has steadily increased since wave 5, and the shares of progressives and conservatives changed on a minor scale.

Figure 1: Changed in the Distribution of Self-defined Political Position



Panel A. moderate = 4-7



Panel B. moderate = 5-6

2.2. Opinion Polarization between Progressives and Conservatives?

Figure 1 suggests that a shift in the ideological distribution would not explain political polarization if it existed indeed. Therefore, I test the following hypothesis that the gap between progressives and conservatives on socioeconomic issues widened despite stable ideological distribution. I calculate the three ideological groups' average scores on specific socioeconomic issues and illustrate them in Figure 2. The scores are rescaled so that a higher score means that the answer is closer to the conservative view. Panel (a) to (e) indicate the scores for the following statement. The scale is in the parentheses.

(a) We need more income differences as incentives for individual effort (1-10)

(b) People should take more responsibility to provide for themselves (1-10)

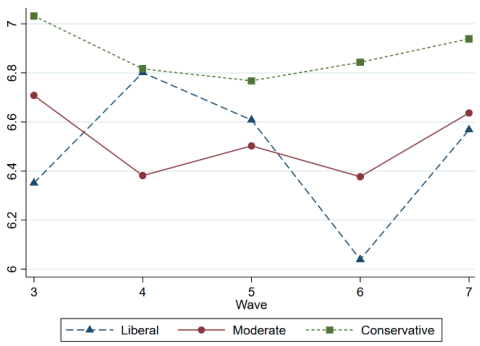
(c) Competition is good. It stimulates people to work hard and develop new ideas (1-10)

(d) Homosexuality is never justified (1-10)

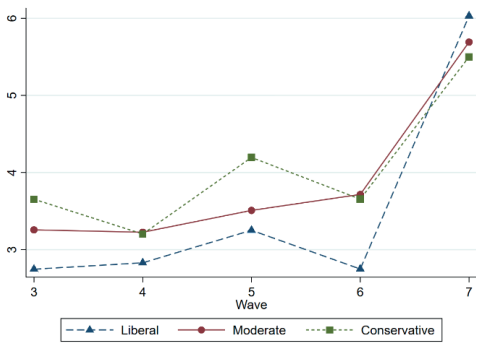
(e) Strongly agree that men should have more right to a job than women when jobs are scarce (1-5)

(f) Economy growth and creating jobs is more important than protecting the environment (1-2)

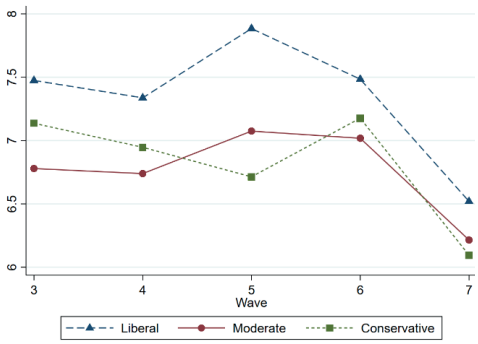
Figure 2: Views on Socioeconomic Issues



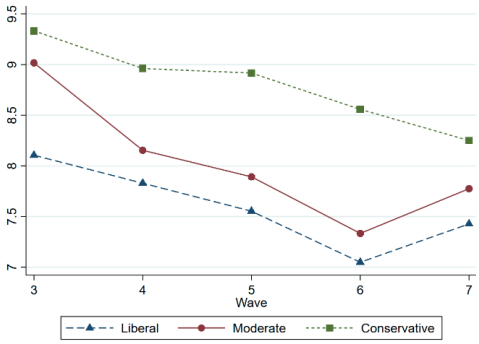
(a) We need more inequality



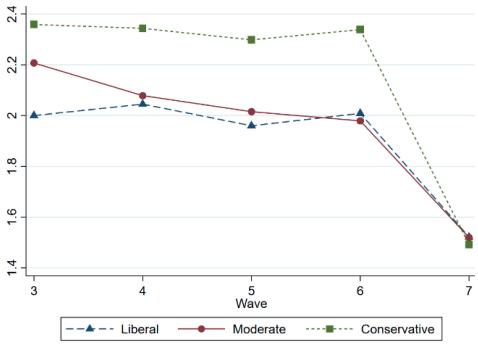
(b) Individual responsibility



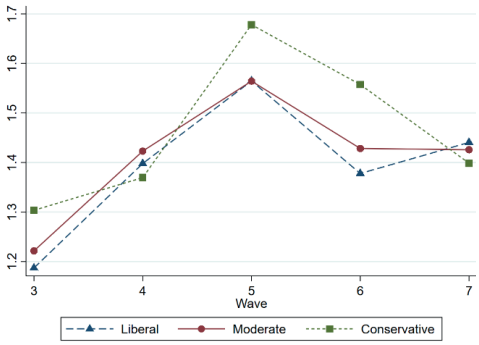
(c) Competition is good



(d) Homosexuality is never allowed



(e) Men should have more right to a job

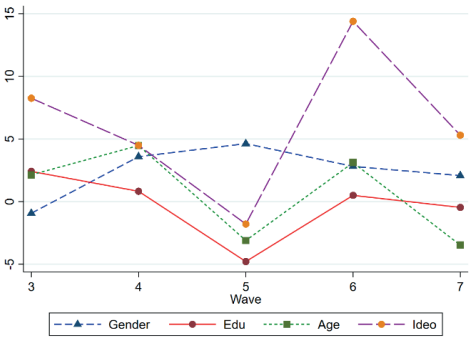


(f) Economic growth than the environment

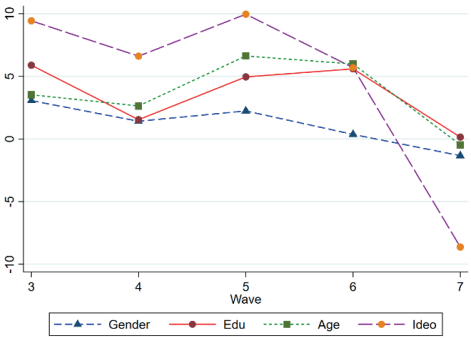
Overall, I find consistent gaps between progressives and conservatives from Figure 2. However, I do not find evidence that the gap widens over time. The gaps have narrowed in most socioeconomic issues. As for government responsibility (b), gender equality (e), and environmental protection (f), I find no difference between progressives and conservatives. I find a slight divergence in the view of economic inequality (a), but the gap becomes much smaller in the seventh wave (2017).

As the data suggest that the ideological gap does not appear to diverge, I examine whether polarization took place in other dimensions, such as gender, educational level, and age. Pew Research Center's report (2014) finds an intensifying ideological polarization between partisan identities in the United States. In other dimensions, no or only weak divergence is found. Figure 3 illustrates the evolution of opinion gaps in various dimensions. The figure shows no sign that the ideological gap has widened more than other types of gap.

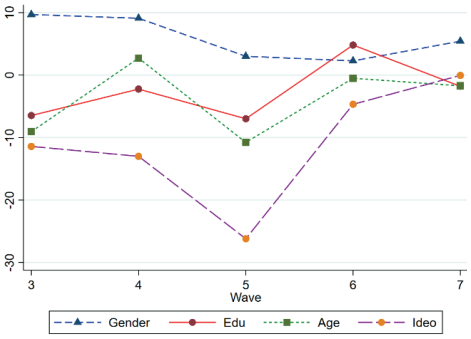
Figure 3: Polarization in Other Dimensions?



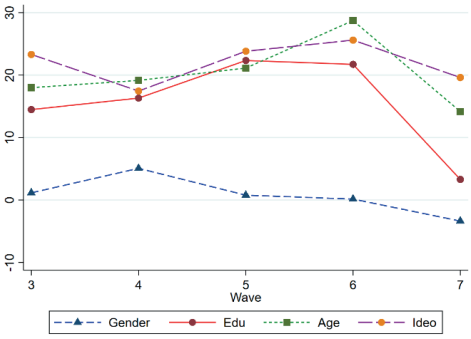
(a) We need more inequality



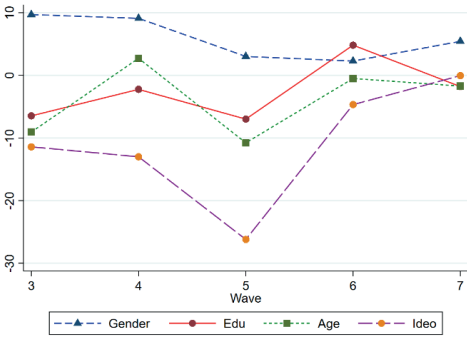
(b) Individual responsibility



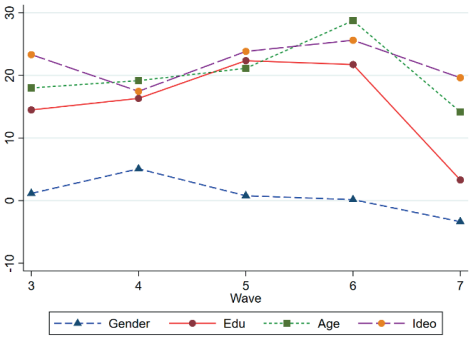
(c) Competition is good



(d) Homosexuality is never allowed



(e) Men should have more right to a job



(f) Economic growth than the environment

2.3. Trends in Ideological Consistency

The previous subsection found that the average opinion of progressives and conservatives did not diverge in Korea. I examine the next hypothesis that might explain political polarization in Korea -growing ideological consistency. Ideological consistency measures how an individual's views on socioeconomic issues are aligned with the typical partisan values of progressives or conservatives. In other words, it measures the coherence of political attitudes toward various social issues.

To measure ideological consistency, I rescale the answers to the six questions presented in subsection 2.2. For example, the response to the question "We need larger income differences as incentives for individual effort," is initially on a 1-10 scale but labeled as conservative if it is greater than 6, moderate if it is either 5 or 6, and progressive if it is smaller than 5. Then I assign 1, 0, -1 to conservative, moderate, and progressive responses, respectively. The ideological consistency measure is the sum of all re-coded values.

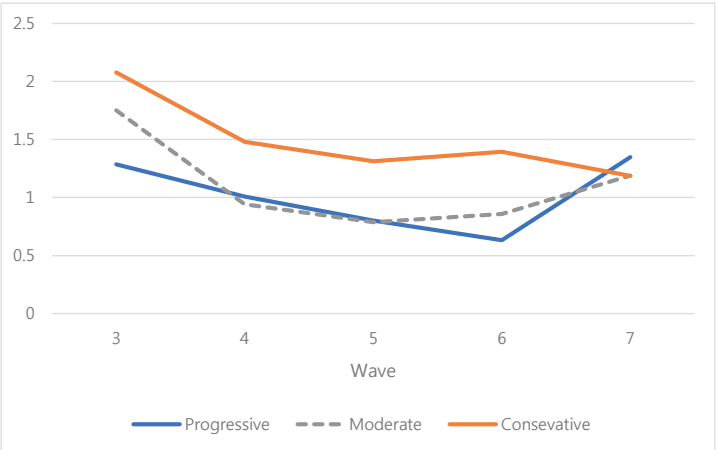
Table 1 reports the changes in the distribution of ideological consistency. It shows that Koreans have more conservative views on individual issues, regardless of the self-identified ideological orientation. In other words, many of those who think themselves are progressive have conservative opinions on social issues. It also means that Korea's political cleavages exist in other areas, such as history and attitude toward North Korea. I also find that the shares of consistent progressives increased slightly since Wave 3.

Table 1: Distribution of Ideological Consistency

Wave	Consistently progressive	Mostly progressive	Mixed	Mostly conservative	Consistently conservative
3	0.5	4.1	38.3	39.2	17.9
4	1.7	9.8	44.0	34.7	9.9
5	0.4	8.6	51.2	31.9	8.0
6	1.5	10.0	48.9	29.6	10.0
7	1.1	8.1	45.5	33.2	12.1

If the distribution of ideological consistency did not change much, what about the consistency of progressives and conservatives? Figure 4 illustrates the evolution of the ideological consistency of three self-defined political positions. It shows that both progressive and conservative voters did not become more ideologically consistent. Analysis results in this section indicate that there is no sign of polarizing opinions. However, this could be because the WVS has too few questions to build a credible consistency indicator. For this reason, the next section examines the characteristics of consistent voters using a custom-designed survey that has more questions to measure ideological consistency.

Figure 4: Evolution of Ideological Consistency Scores



3. Who are the Ideologically Consistent Voters? Evidence from a Custom-designed Survey

To construct a more credible and representative consistency indicator, I hired a survey firm to do an online survey in February 2021 for 2,000 respondents that are drawn from the firm's online panel. This survey includes several questions that ask the respondent's views on social issues. I select the following ten questions to calculate the consistency index. Because the answers are on a 0-10 Likert scale, I label 0-3 as progressive, 4-6 as moderate, and 7-10 as conservatives. For questions that give conservative answers high scores, such as 1, 8, and 10, I reversed the scale. As in the previous section, I assign 1, 0, -1 to conservative,

moderate, and progressive responses, respectively, and add up the values to obtain the consistency index.

1. Military forces are the best way to ensure peace.
2. It is necessary to give aids to North Korea for peace in the Korean peninsula.
3. Diplomacy needs to be more balanced between China and the United States.
4. Social welfare should be given priority before economic growth
5. It is necessary to regulate large corporations.
6. Inherited wealth is not fair.
7. Rich people need to pay more taxes.
8. It is essential to maintain traditional family values.
9. Rights for sexual minorities should be protected.
10. Women now face much fewer barriers to social activities than before.

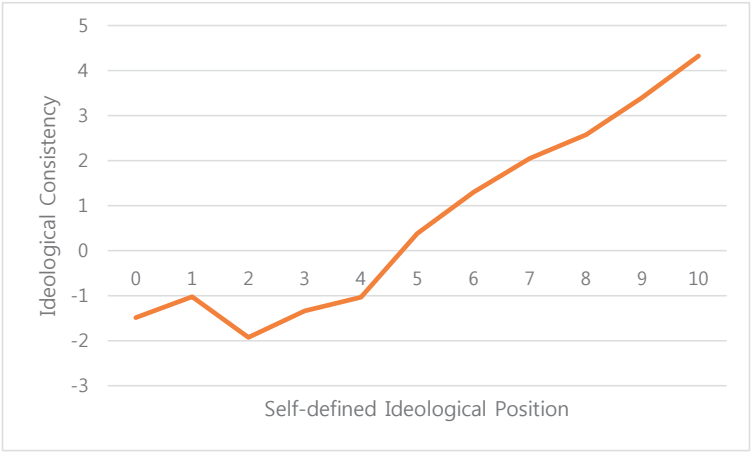
Figure 5 compares self-identified political position (X-axis, 0 = very conservative, 10 = very progressive) and the consistency index (Y-axis). It shows that going to political extremes increases consistency, and conservatives have more consistent views than progressives.

How many progressives and conservatives are consistent voters? Following the convention, I grouped respondents into five categories according to the consistent index:

- Consistently conservative (+7 to +10)
- Mostly conservative (+3 to +6)
- Mixed (-2 to +2)
- Mostly progressive (-6 to -3)
- Consistently progressive (-10 to -7)

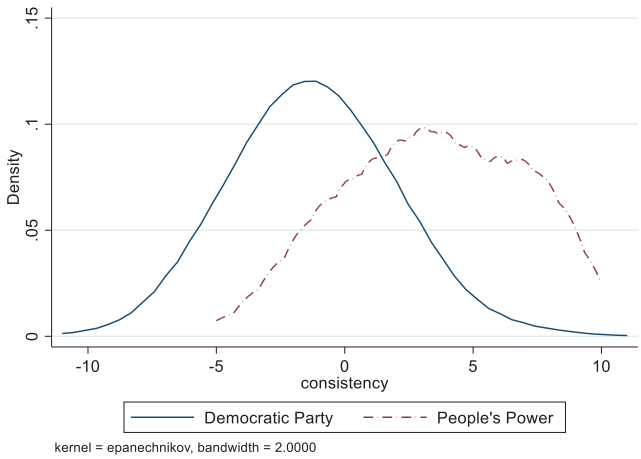
Overall, a new measure of political consistency appears to identify better those who have a strong political orientation. According to the definition, 5.7% of all respondents are “consistently conservative,” 17.2% are “mostly conservative,” 20.0% are “mostly conservative,” and only 1.5% are “consistently conservative.” In contrast, the vast majority, 55.6% of all respondents, is “mixed.”

Figure 5: Self-defined Political Position and Consistency



Although consistently ideological people make up a small portion of the population, their shares in progressives and conservatives are somewhat larger. The data show that 4.5% of progressives and 19.2% of conservatives are consistent voters. Of the ruling party supporters, the Democratic Party of Korea, 2.04% are consistently progressive. In contrast, of the conservative opposition party supporters, People's Power, 23.7% are consistently conservative. Figure 6 illustrates the distribution of ideological consistency of the two parties' supporters. It is apparent that the right tail of People's Power is fatter than Democrats.

Figure 6: Distribution of Ideological Consistency



Interestingly, 5.1% of neutrals are also consistently conservative. This may reflect that many conservatives are reluctant to say that they have no supporting party since the impeachment of the former president Park Geun-hye.

What are the implications of these ideologically consistent voters? To find an answer to this question, I perform regression analyses that control for education, region, age, and income levels. The focus is to show how consistent voters are different in value orientation, and more importantly, attitudes toward the political process and system. The literature has highlighted growing antipathy between different parties and ideologies, which could threaten rational decision-making in the public domain.

I first explore how ideologically consistent voters see each other. Table 2 shows the regression analysis results where the dependent variable is a 0-10 indicator that measures how the respondent likes the subject. The coefficients indicate how each group differs from the benchmark group – those who have mixed views. The results show a sign of solid mutual antipathy. Consistently progressive voters have more negative feelings about the conservative opposition party (People's Power, -2.713) and the former president (Park Geun-hye – 1.885) even compared to mostly progressive voters (-0.869 and -0.624, respectively). Conservative voters express even greater hatred toward progressives. Consistently conservative voters have very negative views toward Democratic Party (-3.979) and the current president Moon Jae-in (-4.343). It is noteworthy that even "mostly conservative" voters also show strong antipathy toward progressive – the magnitude is almost the same as the antipathy of progressives do toward conservatives.

Table 2: Ideological Consistency and Antipathy

	(1) Democratic Party	(2) People's Power	(3) Moon Jae- in	(4) Park Geun-hye	(5) Japan	(6) China	(7) Christianity
Consistently progressive	0.645 (0.459)	-2.713** (0.468)	2.134** (0.493)	-1.885** (0.425)	-0.367 (0.429)	0.328 (0.401)	-1.550** (0.543)
Mostly progressive	1.388** (0.146)	-0.869** (0.148)	1.798** (0.156)	-0.624** (0.135)	-0.286* (0.136)	0.170 (0.127)	-0.233 (0.172)
Mostly conservative	-2.387** (0.156)	0.719** (0.158)	-2.594** (0.167)	0.907** (0.144)	0.575** (0.145)	-0.958** (0.136)	0.146 (0.184)
Consistently conservative	-3.979** (0.247)	1.647** (0.252)	-4.343** (0.266)	1.800** (0.229)	2.047** (0.231)	-1.150** (0.216)	0.932** (0.293)
Observations	2000	2000	2000	2000	2000	2000	2000
R-squared	0.309	0.135	0.342	0.197	0.081	0.091	0.058

* significant at 5%, ** significant at 1%. Standard errors are in parentheses.

Coefficients are not reported for control variables that include categorical variables for age, region, education, and income.

The ideological gap also appears in the diplomatic domain. Interestingly, conservative voters have strong views toward the two neighboring countries, Japan and China. They have a much positive view of Japan and a negative view of China. Consistent voters also have strong views of Christianity, which is likely to originate from the friendly relationship between protestant churches and conservative parties. While consistent progressives see churches more negatively, the consistent conservatives have more favorable views of churches.

What are the implications of the antipathy observed in Table 2? First, antipathy toward different ideologies and parties can breed itself. Table 3 present the regression results for questions asking the respondents' attitude in terms of interacting with other people. The dependent variables are on a 0-10 scale for all columns except 4, where the dependent variable is binary. The first column shows that consistent voters find it hard to make friends with different political views. Getting married with a politically different view is even more difficult. Interestingly, such a tendency is found to be stronger for progressives. Column 3 suggests the possibility of ideological sorting as ideologically consistent voters have friends that share similar political views.

While Columns 1 to 3 suggest that progressives are more likely to mingle with people in the same political position, Columns 4 to 6 indicate that conservatives interact more with social network services and Youtube (Column 4). It is likely to be associated with their distrust in the general election of 2020 (Column 5), an argument widely circulated via Youtube and their intransigent attitude. Column 6 shows the result for the respondents' choice between "compromise to pass the law" and "uphold the values rather than passing a defected law" when the supporting party's key bills are at stake. Conservative voters tend to be uncompromising, and the consistent conservatives have an even more assertive attitude.

Table 3: Ideological Consistency and Ideological Sorting

	(1) Hard to make friends with politically different	(2) Hard to get married with politically different	(3) My friends have similar political views	(4) SNS/ Youtube is my main information source	(5) I have no trust in 2020 General Election process	(6) I would prefer the supporting party not to compromise
Consistently progressive	1.517** (0.459)	2.375** (0.534)	1.513** (0.383)	-0.000 (0.081)	-2.567** (0.514)	-0.099 (0.091)
Mostly progressive	0.436** (0.146)	0.682** (0.169)	0.238 (0.121)	0.082** (0.026)	-1.182** (0.163)	-0.039 (0.029)
Mostly conservative	-0.227 (0.155)	-0.235 (0.181)	-0.178 (0.130)	0.002 (0.028)	1.075** (0.174)	0.145** (0.031)
Consistently conservative	0.702** (0.247)	0.782** (0.288)	0.484* (0.206)	0.170** (0.044)	2.564** (0.277)	0.343** (0.049)
Observations	2000	2000	2000	2000	2000	2000
R-squared	0.049	0.053	0.040	0.057	0.143	0.062

* significant at 5%, ** significant at 1%. Standard errors are in parentheses.

Coefficients are not reported for control variables that include categorical variables for age, region, education, and income.

Consistent voters speak and participate actively. Table 4 shows that consistent voters are more likely to participate in petitions to Blue House, an effective method of raising a social issue, and vote in every election. Conservatives do not talk much about politics in their everyday life, but it does not mean that they do not have political voices. The analysis results show that the overrepresentation of ideologically consistent voters would lead to political polarization.

Table 4: Ideological Consistency and Activism

	(1) Talk about politics every day	(2) Participated in political rallies in last 3 years	(3) Participated in petitions to Blue House in last 3 years	(4) Voted in all elections last 3 years
Consistently progressive	0.514** (0.085)	0.235** (0.049)	0.193* (0.092)	0.240** (0.080)
Mostly progressive	0.260** (0.027)	0.048** (0.015)	0.134** (0.029)	0.108** (0.025)
Mostly conservative	-0.062* (0.029)	-0.028 (0.017)	0.024 (0.031)	0.095** (0.027)
Consistently conservative	-0.206** (0.046)	0.049 (0.026)	0.157** (0.049)	0.171** (0.043)
Observations	2000	2000	2000	2000
R-squared	0.122	0.043	0.046	0.096

* significant at 5%, ** significant at 1%. Standard errors are in parentheses.

Coefficients are not reported for control variables that include categorical variables for age, and income.

4. Polarization and COVID-19

The COVID-19 pandemic has revealed how public policy can be distorted by political polarization in addressing a global health crisis. Many studies have shown that political position affects the channel and type of information, attitudes, and behaviors about COVID-19 (Makridis and Rothwell 2020).

This section explores how ideological consistency affects the respondent's perceptions and attitudes toward COVID-19 in Korea. I utilize eight related questions as follow:

1. The COVID-19 crisis worsened because the government did not ban entry from China.
2. Religious organizations are responsible for group infections and the prolonged COVID-19 situation.
3. Even if the number of confirmed cases is high, I think the U.S. and Europe responded better because they started vaccination first.

4. In the early days of COVID-19, the public mask system, in which the government controlled the price and quantity of masks to address a shortage of masks, was an appropriate policy.
5. It is inappropriate for the government to commit to the guaranteed price, 1,500 won per unit, to public mask suppliers even when the market prices fell in June.
6. I think personal freedom was undermined under the pretext of COVID -19 quarantine.
7. It is better to constantly adjust social distancing to reality than to apply strict rules for consistency reasons.
8. The government must aid self-employed people's fixed costs, such as store rental.

Respondents were asked to answer yes or no to the questions. I regress the binary variable (1=yes, 0=no) on ideological consistency and the same control variables used in Section 3. I report the results in Table 5. Because the dependent variable is binary and I employ the linear probability model, the coefficient can be interpreted as the additional probability that the respondent agrees with the statement compared to those with mixed views.

Table 5: Ideological Consistency and Perceptions about COVID-19

	Consistently progressive	Mostly progressive	Mostly conservative	Consistently conservative
1. ban entry from China	-0.354** (0.080)	-0.210** (0.025)	0.181** (0.027)	0.288** (0.043)
2. Religion responsible	0.058 (0.052)	0.022 (0.016)	-0.071** (0.018)	-0.259** (0.028)
3. US, Europe better with vaccines	-0.156 (0.086)	-0.107** (0.027)	0.165** (0.029)	0.411** (0.046)
4. mask control appropriate	0.074 (0.053)	0.047** (0.017)	-0.058** (0.018)	-0.268** (0.029)
5. guaranteeing mask price bad	-0.207* (0.091)	-0.080** (0.029)	0.154** (0.031)	0.274** (0.049)
6. too little freedom due to COVID	-0.092 (0.083)	-0.060* (0.026)	0.180** (0.028)	0.422** (0.045)
7. flexibile social distancing	0.100 (0.071)	0.060** (0.023)	-0.067** (0.024)	-0.199** (0.038)
8. support self-employed	0.072 (0.086)	0.048 (0.027)	-0.135** (0.029)	-0.147** (0.046)

* significant at 5%, ** significant at 1%. Standard errors are in parentheses.

Coefficients are not reported for control variables that include categorical variables for age, region, education, and income.

The table shows that consistent voters, particularly conservatives, have very different ideas from the middle (mixed). For example, conservatives think that the situation would have been better if the government had prohibited entry from China in the early phase, but religious organizations, churches specifically, are not responsible for the spread of COVID-19. This tendency is even stronger for consistently conservative voters. They also tend to think that the U.S. and Europe are in a better situation because they started vaccination first despite a lot more confirmed cases. Their views are in line with the conservative party's stance.

It is interesting that consistent conservatives are firmly against government intervention in the mask market. Note that the mask price skyrocketed immediately after the first major outbreak in Daegu in February 2020. The conservative party (then-United Future Party)

criticized the government, calling for mask export ban and government procurement. Later they changed the stance that the government intervention is a version of socialist rationing. Consistently conservatives share this view.

Consistently conservatives also think that social distancing needs to be based on rules rather than flexibility. This is somewhat surprising because conservatives prefer reopening stores and relaxing social distancing in other countries. They are also against government support for the self-employed.

5. Conclusion

In this study, I conducted three sets of analyses to shed empirical light on political polarization in Korea. First, I examined the WVS and found no supporting evidence for opinion polarization has intensified. Ideological distribution did not change much, and the opinion gap on a few social issues did not diverge between progressives and conservatives. This result motivated me to take a deeper look at the voters who have more consistent ideological orientations. Conducting and using custom-designed survey results, I showed that they have more antipathy toward political parties and figures in the other ideological base, interact with people sharing the same beliefs, and participate more in politics. However, there were more consistent voters among conservatives, and they had a lot stronger partisan views. I suggest that their characteristics and activism could be one of the driving forces that polarize Korea's politics, as suggested by the media. The COVID-19 pandemic is a great example that shows how political division negatively affects the disease control effort. I find that ideological consistency affects people's perceptions and attitudes toward COVID-19. Disbelief and misinformation about disease control efforts can cause severe problems in response to infectious diseases. Although Korea has been relatively successful in controlling the disease, the analysis results show that a concerted response to the global crisis will not be easy in the future.

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Partisan Polarization in the Mass Public in South Korea and the United States

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Abstract

In this chapter, I compare trends in partisan polarization in the United States and South Korea. I show that the mass public's partisan polarization in the United States has increased across every issue domain. It has also increased in terms of the public's symbolic ideology. There are now substantial gaps between the views of Democrats and Republicans in the United States. In South Korea, there are much smaller differences in the mass public's issue opinion and ideology across parties. Moreover, unlike in the United States, there is also little evidence that polarization in the public's policy preferences is increasing in South Korea. The lack of partisan polarization in South Korea's mass public has important implications for elections, political accountability, and democratic stability.

The magnitude of political polarization in a country has important implications for the democratic process (McCarty 2019). Previous work has shown that polarization can inhibit compromises and slow policymaking. It can raise the stakes of elections and increase animus between people in different partisan camps (Iyengar et al. 2019). It can decrease electoral accountability for scandals and poor performance (Hamel and Miller 2019; Hopkins 2018). Polarization can even diminish support for democracy and undermine democratic stability (Svolik 2019; Graham and Svolik 2020).

The United States has seen a dramatic increase in polarization over the past several decades. Polarization has increased dramatically among elected officials in Congress (McCarty, Poole, and Rosenthal 2016) and among state legislators (Shor and McCarty 2011). Partisan polarization has also increased among the mass public (Caughey, Dunham, and Warshaw 2018). There has been less work on polarization in South Korea. But recent work has shown that there appear to have been much smaller increases in partisan polarization among the mass public in South Korea than in the United States (Lim 2019).

In this chapter, I compare trends in partisan polarization in the United States and South Korea. I use a survey that fields identical questions in both countries. This enables me to compare public opinion in both countries on the same scale. Consistent with prior work, I find that the mass public's ideological polarization in the United States has increased across every issue domain. It has also increased in terms of the public's symbolic ideology. There are now substantial gaps between the views of Democrats and Republicans in the United States.

In South Korea, there are much smaller differences in the mass public's issue opinion and ideology across parties. The largest differences are on issues related to women's rights. But even on this domain, the differences across parties in South Korea pale in comparison to partisan differences in the United States. Unlike in the United States, there is also little evidence that polarization in the public's policy preferences is increasing in South Korea. The only area where I find some evidence of increasing partisan polarization in South Korea is in terms of the public's symbolic ideology on a left-right scale.

The low level of partisan polarization in South Korea's mass public has important implications for elections, governmental performance, and the stability of the political system. It makes the party structure fluid and largely personality driven. But it also likely strengthens both electoral accountability and democratic stability.

This chapter proceeds as follows. First, I discuss the background literature on mass polarization in the United States and South Korea. Next, I discuss my data and methods. I then discuss my results, including changes in polarization on individual issues, policy ideology, and symbolic ideology. Finally, I briefly conclude and discuss the implications of my findings.

1. Background

There is a large literature that has examined trends in polarization in the United States. It has been widely documented that partisan polarization in Congress has grown significantly in recent decades. This research has shown that congressional voting is increasingly polarized by party. Indeed, the gap between the roll call behavior of the two parties has grown substantially over the past fifty years (Poole and Rosenthal 1997; McCarty, Poole, and Rosenthal 2016; Bartels, Clinton, and Geer 2016). This is even true of legislators who represent the same constituency. Poole and Rosenthal (1984), for instance, show that Democratic and Republican senators from the same state vote very differently. McCarty, Poole, and Rosenthal (2009, p. 671) demonstrate that over three-quarters of contemporary congressional polarization is explained by "intradistrict divergence," and less than a quarter to "sorting" of Democratic and Republican members into ideologically congenial districts. Congressional politics, in short, has become much more nationalized, with members' roll call records overwhelmingly determined by their party affiliation (see Caughey, Dunham, and Warshaw 2018).

There is also a growing body of work on changes in partisan polarization in the mass public in the United States. This work has shown that while the public is less polarized than elites (Hill and Tausanovitch 2015), Democrats and Republicans have become much more polarized overtime (DiMaggio, Evans, and Bryson 1996; Bafumi and Shapiro 2009; Pew Research Center 2017; Caughey, Dunham, and Warshaw 2018). This is largely because liberals have tended to sort into the Democratic party, while conservatives have sorted into the Republican party (Fiorina, Abrams, and Pope 2005; Levendusky 2009). As a result, the two parties are much more internally homogenous on most policy issues than in earlier eras. There are now few conservative Democrats or liberal Republicans.

There has been less work on polarization between the parties in South Korea. This could be because the parties have been a "carousel of party creations, mergers and dissolutions." Moreover, the parties have generally lacked "distinguishing ideological or programmatic markers and remain cadre parties, [instead] focusing on their charismatic leader and their home regions" (Hermanns 2009). However, there is evidence that partisan polarization among elites has increased in recent years (Lim 2019), as the parties have increasingly offered "distinguishable policy platforms" (Wang and Kitschelt 2012). Previous work finds less evidence though of increases in polarization among the mass public (Lee 2018; Lim 2019).

2. Data and Methods

In order to examine trends in polarization in the mass public, I use data from the World Values Survey. (WVS) (Inglehart et al. 2014). This is a large-scale probability survey conducted every 3-5 years in about 77 countries around the world. The fact that respondents in both South Korea and the United States receive the same questions enables us to directly compare public opinion in both countries. Moreover, we can compare the levels of partisan polarization in the two countries.

To measure partisan polarization, I focus on differences between the average opinions of supporters of the major partisan groups in each country.[1] In the United States, I focus on Democrats and Republicans. The 'Democratic Party' is the major liberal party in the United States, while the 'Republican Party' is the major conservative party.

In South Korea, it is more challenging to define the major parties since the partisan coalitions have changed substantially over the past few decades (see Hermanns 2009; Wang and Kitschelt 2012; Lee 2014). The main conservative party in South Korea has been primarily known as the 'Grand National Party' or, more recently, the 'People Power Party'.[2] The main liberal party is the 'Democratic Party'. 'Our Open Party' was another left-of- center party in the early 2000s that later merged with the 'Democratic Party'.[3] For simplicity, I code these as a single party throughout the time period. The 'Justice Party' is another left-wing party that emerged in recent years, and the 'People's Party' is a centrist party that emerged recently.

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1 Unlike most surveys in the United States, the WVS does not ask respondents to identity whether they usually think of themselves as a member of a particular party. Instead, it asks them to identify the party they supported in the most recent national election.

2 The Grand National Party's name has changed over the past two decades as several offshoot parties have split-off and/or merged with it. For instance, it was known for several years as the Saenuri Party and more recently as the Liberty Korea Party. In recent years, the Bareun Party broke off from the Grand National Party. For simplicity, however, I code the Bareun Party as part of the Grand National Party. Finally, it is important to note that the 2017 WVS was conducted when the approval ratings of the country's president from the Grand National Party dipped to historic lows due to several scandals. Perhaps as a result, the proportion of respondents that indicated support for the Grand National Party dropped substantially compared to the 2010 WVS.

3 The Democratic Party's name, and composition, has changed over this period as several offshoot parties have split-off and/or merged with it. For instance, the modern Democratic Party was formed as a merger between the previous iteration of the Democratic Party and the New Political Vision Party (NPVP).

I evaluate the public's average opinions in a number of different ways. The results using each approach are oriented on a left-right scale so that positive values are more conservative. Moreover, the usage of a common survey and common questions renders the results comparable across countries. Finally, I weight all the results to ensure they are representative of the national population in each country.

First, I measure the average opinion in each party on a number of individual policy issues. I focus separately on public opinion on issues on the economic domain, the cultural domain, and on women's rights. While the public's views on these domains are highly correlated in recent years in the United States (Jessee 2009; Tausanovitch and Warshaw 2013; Caughey, Dunham, and Warshaw 2018), past work has shown the public's views across domains are often negatively correlated in other countries (Malka, Lelkes, and Soto 2019; Caughey, O'Grady, and Warshaw 2019). In other words, people with liberal cultural attitudes tend to have more conservative economic attitudes (and vice versa).

There are at least half a dozen questions in the World Values Survey on each domain. The economic domain includes questions related to economic redistribution and the size of government. The cultural domain includes questions related to abortion, divorce, views about gays, and suicide. The women's rights domain includes questions related to women's role in society, women's civil rights, and sexism.

Second, I summarize the public's ideological preferences on each issue domain using Bayesian latent variable models (Clinton, Jackman, and Rivers 2004; Treier and Jackman 2008; Tausanovitch and Warshaw 2013).[4] This approach enables me to aggregate opinion across the individual issue questions and produce summary measures of the public's policy ideology on each issue domain.

Finally, I examine the public's left-right symbolic ideology on a ten-point scale. These scales provide an important indication of the public's self-evaluation of their ideological views. But these proxies are not ideal measures of citizens' policy preferences per se. Left–right self-placement can depend greatly on political context, which makes it difficult to compare self-placements across countries and time. It can also be driven as much by

4 I used the MCMCordfactanal function in the R package MCMCpack (Martin, Quinn, and Park 2011) to estimate the ideal points. The results are post-processed to be on a standard, normal scale.

partisan and symbolic attachments as by "operational" policy preferences (Inglehart and Klingemann 1976; Thorisdottir et al. 2007; see also Ellis and Stimson 2012). In addition, it presumes that ideological variation takes place along a single left–right dimension. This assumption is unlikely to be true in all countries given the increasing salience of political conflict over non- economic issues (Inglehart 1990; Kitschelt 1994; Knutsen 1995; Kriesi et al. 2006). Indeed, recent studies have found that there is often little relationship between the public's symbolic ideology and their ideological views on policy issues (Caughey, O'Grady, and Warshaw 2019).

3. Results

This section discussed my main findings. First, I discuss the public's polarization on economic issues in each country. Next, I discuss polarization on cultural issues. Third, I discuss polarization on women's rights issues. Finally, I discuss trends in partisan polarization on symbolic left-right ideology. All of the plots are oriented on a left-right scale so that positive values represent more conservative views.

A. Polarization on Economic Issues

I start by examining trends in the mass public's views on economic issues, including questions related to redistribution and the size of government. Figure 1 shows the public's views on several individual economic issues. The top plot shows public opinion about whether 'People receiving state aid for unemployment' is a key component of democracy. The middle plot shows opinion about whether 'taxing the rich and subsidizing the poor' is a key component of democracy. The bottom plot shows public opinion about whether income should be made more equal.

On the first two issues, the public in South Korea is clearly to the left of the public in the United States. On the third issues (income inequality), the average opinion in both countries are similar. Crucially, however, on all three issues there is much more partisan polarization in the United States than in South Korea. The Democratic and Republicans parties in the United States are roughly three times further apart on these economic issues than the major parties in South Korea

Figure 2 summarizes the public's ideological preferences across all of the economic questions in the World Values Survey. The results are very similar to those on the individual issues. Figure 2 indicates that the public is South Korea is more liberal (left-wing) than the public in the United States on the economic domain. However, partisan polarization is much more muted in South Korea. The average economic ideology of supporters of the two largest parties in South Korea is only about a quarter of a standard deviation apart, while the views of Democrats and Republicans in the United States are about a standard deviation apart. There was also only a modest increase in polarization in the South Korean public's polarization between 2005 and 2018 (and most of this occurred between 2005 and 2010).

Figure 1: Economic Issues. These plots show changes in partisan polarization on three economic issues. The size of the dots is proportional to each group's size.

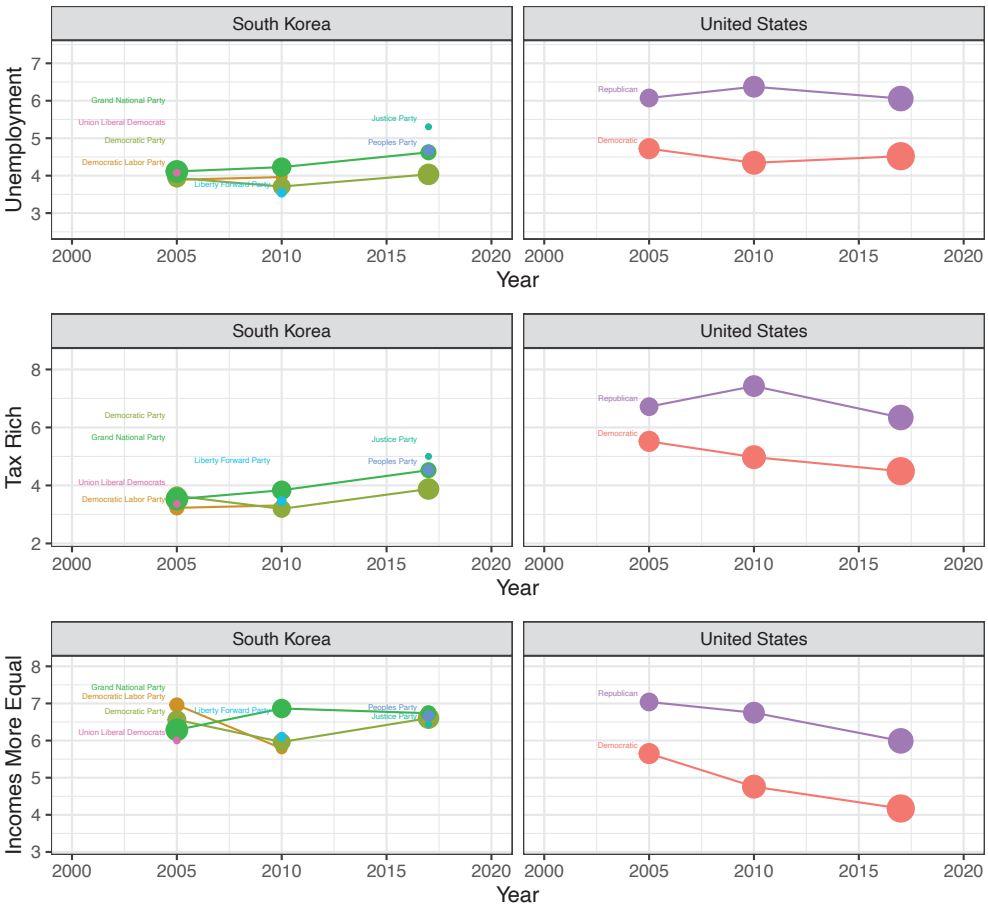
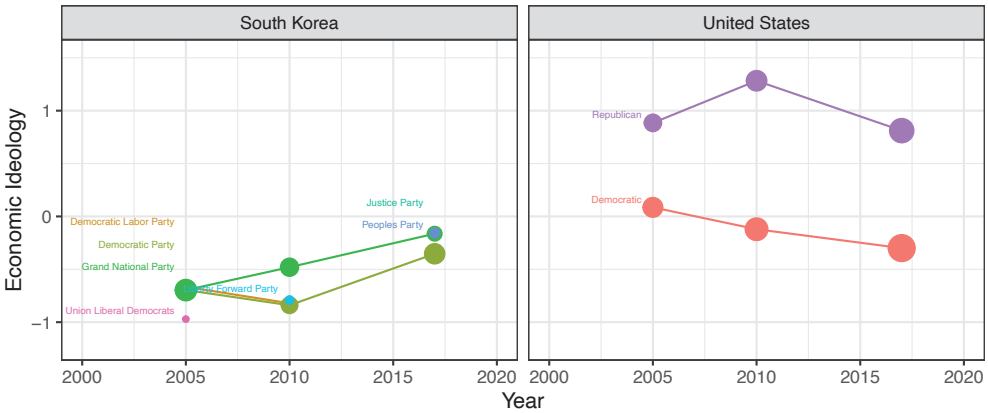


Figure 2: Economic Ideology. These plots show changes in partisan polarization on economic ideology. The size of the dots is proportional to each group's size.



B. Polarization on Cultural Issues

Next, I examine trends in the mass public's views on cultural issues. Figure 3 shows the public's views on several individual cultural issues. The top plot shows public opinion about whether abortion is justifiable. The middle plot shows public opinion about whether homo- sexuality is justifiable. The bottom plot shows public opinion about whether 'civil rights protect people's liberty' are an important part of democracy.

On all three issues, the public in South Korea is clearly to the right of the public in the United States. In fact, all of the major parties in South Korea are generally to the right of both the Democratic and Republican parties. There are also relatively small amounts of partisan polarization in South Korea, and no evidence of an increase in partisan polarization there. In contrast, supporters of the two parties are far apart on cultural issues in the United States and these differences are increasing overtime. The differences on these issues between members of the two parties there have doubled over the past two decades.

Figure 3: Cultural Issues. These plots show changes in partisan polarization on three cultural issues. The size of the dots is proportional to each group's size.

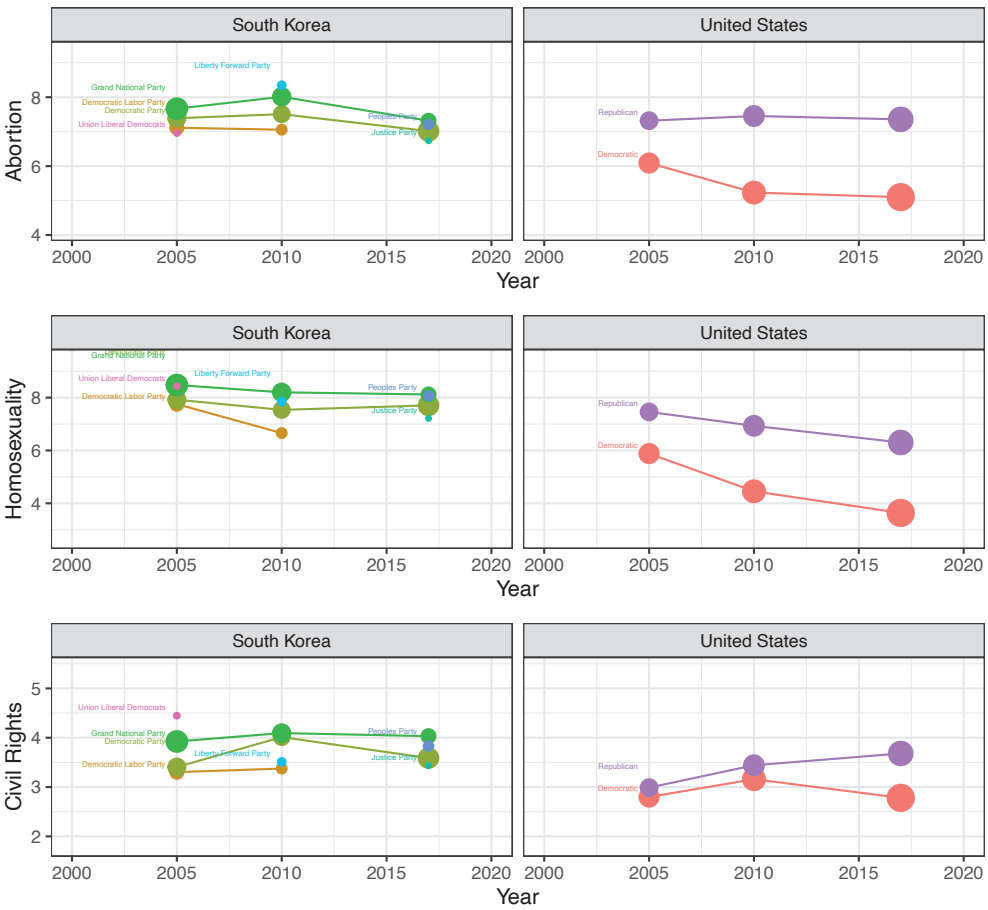
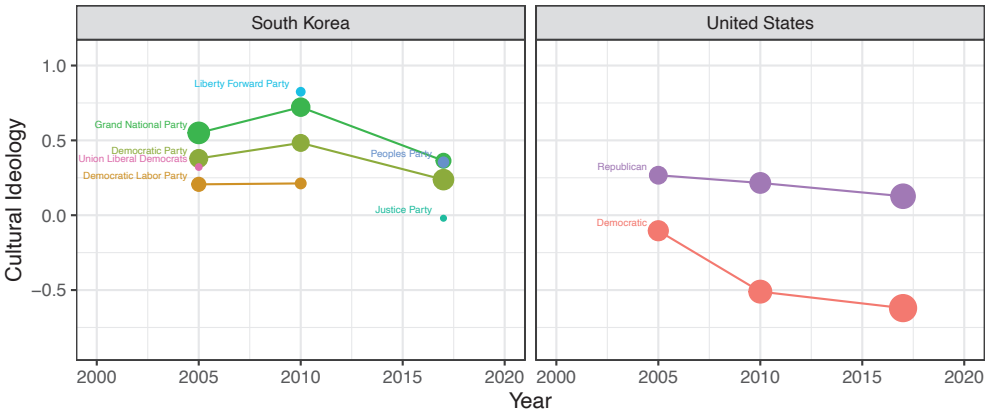


Figure 4 summarizes the public's ideological preferences across all of the cultural questions in the World Values Survey. The results are very similar to those on the individual issues. Figure 4 indicates that the public is South Korea is more conservative (right-wing) than the public in the United States on the economic domain. However, partisan polarization is much more muted in South Korea. The average cultural ideology of supporters of the two largest parties in South Korea is only about a fifth of a standard deviation apart, while the views of Democrats and Republicans in the United States are about three quarters of a standard deviation apart. There was also no increase in polarization in the South Korean public's views across parties over the past 15 years, while polarization in the United States has steadily increased.

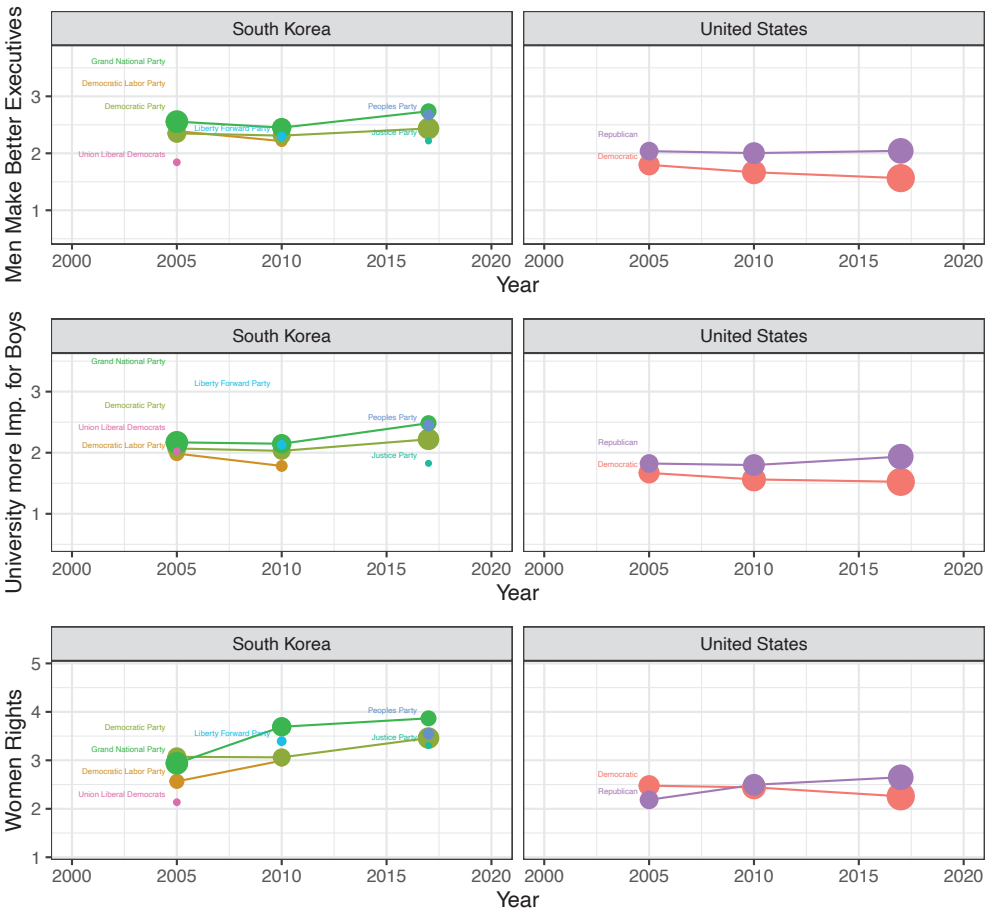
Figure 4: Cultural Ideology. These plots show changes in partisan polarization on cultural ideology. The size of the dots is proportional to each group's size.



C. Polarization on Women's Rights Issues and Sexism

Next, I examine trends in the mass public's views on women's rights issues. Figure 5 shows the public's views on several individual women's rights issues. The top plot shows public opinion about whether 'Men make better business executives than women do.' The middle plot shows opinion about whether the public believes that 'University is more important for a boy than for a girl'. The bottom plot shows public opinion about whether 'Women should have the same rights as men.'

Figure 5: Women's Rights Issues. These plots show changes in partisan polarization on three women's rights issues. The size of the dots is proportional to each group's size.

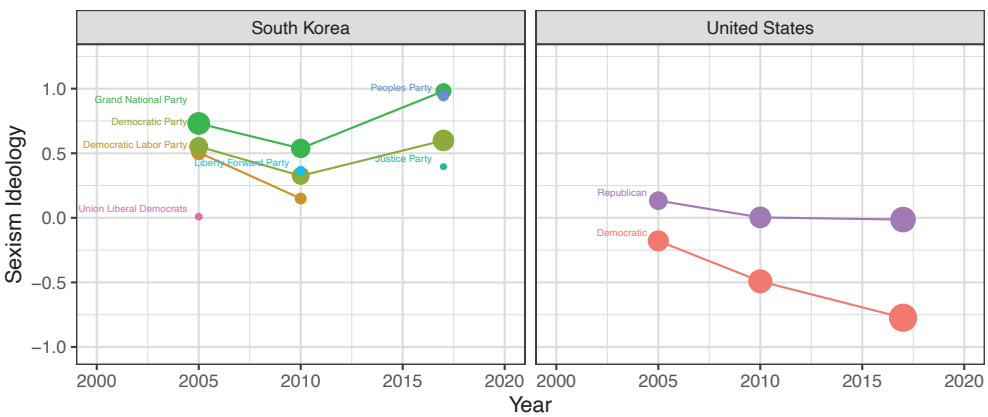


There is less polarization in South Korea than in the United States. But the partisan polarization there appears to be growing on these issues overtime. Polarization is also increasing in the United States on women's rights issues. Once again, on all three issues, the public in South Korea is clearly to the right of the public in the United States. All of the major parties in South Korea are generally to the right of both the Democratic and Republican parties.

Figure 6 summarizes the public's ideological preferences across all of the questions in the World Values Survey related to women's rights and sexism. The results are very similar

to those on the individual issues. Figure 6 confirms that the public is South Korea is much more conservative (right-wing) than the public in the United States on women's rights. Like on the economic and cultural domains, however, partisan polarization is much smaller in South Korea. The average ideology of supporters of the two largest parties in South Korea is only about a third of a standard deviation apart, while the views of Democrats and Republicans in the United States are about three quarters of a standard deviation apart. Polarization is also growing in the United States. Unlike the other two issue domains, there has also been a modest increase in partisan polarization in the South Korean public's views over the past 15 years, especially since 2010. Supporters of the conservative and centrist parties now take markedly more conservative positions than supporters of the more liberal parties.

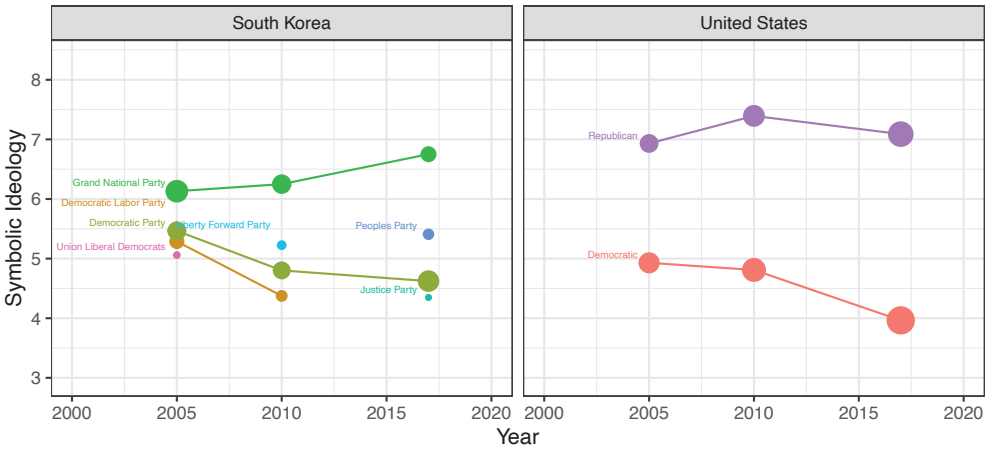
Figure 6: Ideology on Women's Rights. These plots show changes in partisan polarization on ideology about women's rights and sexism. The size of the dots is proportional to each group's size in the survey.



D. Polarization on Symbolic Left-Right Ideology

Finally, Figure 7 examines trends in the symbolic left-right ideology of the mass public in South Korea and the United States. This represents respondents' evaluations of their position on a 10-point left-right continuum. The figure shows that partisan polarization on this scale has increased in both South Korea and the United States over the past 15 years. However, partisan polarization remains much larger in the United States.

Figure 7: Symbolic Ideology. These plots show changes in partisan polarization on symbolic left-right ideology on the World Values Survey. Higher values indicate more conservative ideological self-placements. The size of the dots is proportional to each group's size in the survey.



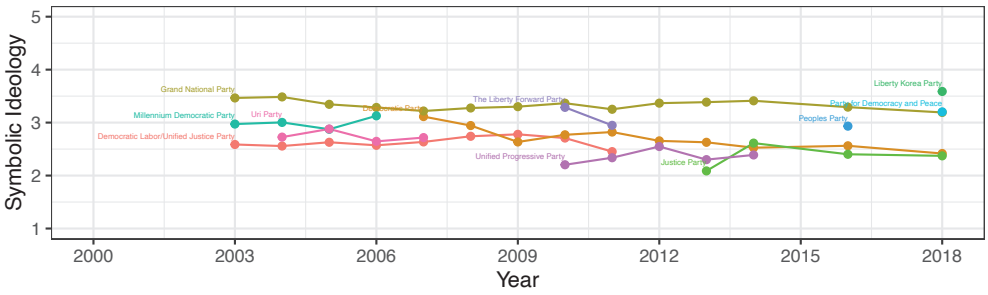
More generally, I think that caution is warranted in interpreting the apparent increase in left-right polarization in South Korea's mass public. First, the sample sizes in each party in the World Values Survey (WVS) are very small. Thus, the changes could be largely statistical noise. Second, Figure 8 shows that the increase in polarization on symbolic ideology in the WVS is only partially corroborated in the South Korean General Social Survey (Kim et. al. 2019).[5] Third, the modest changes in polarization observed in the GSS could be partially driven by changes in the composition of the parties. For instance, the People's Party appears to have peeled off some of the moderate supporters of the other parties in 2016.

In the United States, polarization has clearly grown over the past two decades. Supporters of the Republican party placed themselves about 2 points to the right of supporters of the Democratic party in 2005. In 2017-2018, this gap had grown to about 3 points, driven largely by supporters of the Democratic party moving to the left in terms of their symbolic ideology.

5 Note that I simplified the party structure in the General Social Survey data to be as similar as possible to the parties in the World Values Survey.

In South Korea, there was about half a point separating supporters of the major parties in 2005. Today, supporters of the left-wing parties are about 2 points more liberal than supporters of the main right-wing party. This suggests some growth in partisan polarization. One potential explanation for the apparent increase in polarization on left-right symbolic ideology could be an increase in constraint across policy issues (i.e., a high correlation in the public's views across domains). This growth in issue constraint appears to be driving some of the partisan polarization in the United States (Caughey, Dunham, and Warshaw 2018). However, I find no evidence that issue constraint is increasing in South Korea.

Figure 8: Symbolic Ideology. These plots show changes in partisan polarization on symbolic left-right ideology in the South Korean General Social Survey. Higher values indicate more conservative ideological self-placements.



4. Discussion

In this chapter, I have examined partisan polarization in the United States and South Korea. I show that ideological polarization between supporters of the two major parties is large and growing across all policy domains in the United States (Caughey, Dunham, and Warshaw 2018). In contrast, there is generally much less partisan polarization in South Korea and there has been little or no increase in polarization on the public's policy preferences there. The only area where polarization may be increasing in South Korea is in the public's symbolic left-right ideology. As I have discussed, however, caution is warranted in interpreting these results.

The lack of partisan polarization in South Korea's mass public has important implications for elections and political accountability. The lack of polarization makes it easier for voters to take into account valence considerations, such as the economy or success at foreign policy. This makes it more likely that voters will reward politicians for strong performance and punish them for scandals or policy failures. It also helps facilitate the fluidity of the partisan coalitions in South Korea, where the strong impact of valence considerations has led to much larger swings in recent election results from election-to-election than in the more polarized environment in the United States. For instance, the Democratic Party won a resounding victory in South Korea's 2017 presidential election after the impeachment for corruption of the previous president from the conservative, Grand National Party.[6] The Democratic Party also won a landslide victory in recent legislative elections.[7] The strong electoral check provided by the public in South Korea incentives re-election seeking politicians to avoid scandals, grow the economy, and achieve other policy successes.

In contrast, polarization may be weakening political accountability in the United States. Scandals appear to have modest, and diminishing effects, on elections in the United States (Hamel and Miller 2019). Polarization may also be decreasing the effect of other valence factors, such as the economy, on elections (Hopkins 2018; Sides, Tesler, and Vavreck 2019). The low level of partisan polarization in South Korea also has implications for democratic stability. Recent work has shown that polarization undermines the public's ability to serve as a democratic check (Svolik 2019; Graham and Svolik 2020). As one scholar recently wrote, "in polarized electorates, voters are willing to trade off democratic principles for partisan interests" (Svolik 2019). Thus, the low level of partisan polarization in South Korea's mass public helps reduce the odds of democratic breakdowns there.

6 See https://www.cnn.com/2017/05/09/asia/south-korea-election/index.html.

7 See https://www.cnn.com/2020/04/15/asia/south-korea-election-intl-hnk/index.html.

Future research should continue to examine how changes in the party structure in South Korea at the elite level filter down to the mass public. Previous work has shown that the public tends to follow the views of party elites (Lenz 2013; Barber and Pope 2019). Thus, growth in elite polarization in South Korea could eventually lead to increases in polarization among the mass public as well. This could lead to more issue-based campaigns where voters have a clear choice between the policy agendas of the two parties (APSA Committee on Political Parties 1950). But it could also have negative implications for both political accountability and democratic stability.

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Session III

Political Economy of Polarization

Campaign Finance, Inequality, and Polarization in the United States and South Korea

Adam Bonica*

Abstract

This chapter will compare campaign finance systems in the US and South Korea, emphasizing the differences between how money operates in each system and its influence on economic inequality and political polarization. It first compares the laws and regulations on campaign finance in each county. It then compares measures of economic inequality and levels of inequality in campaign contributions for both countries. This is followed by a summary of the literature on campaign finance and polarization in the US and a discussion of what it suggests for South Korea.

Introduction

Economic inequality is an important area of study for understanding the causes and consequences of political polarization in the United States. McCarty, Poole, and Rosenthal (2006) discuss at length the relationship between rising inequality and political polarization. A key component of the story is the role of money in politics. The structure of US campaign finance and its interaction with its electoral system has been identified as a likely mechanism by which economic inequality and partisan polarization reinforce each other.

The observed relationship between political polarization and income inequality is seen in comparing the time trends for polarization measured from roll-call voting in Congress (Poole and Rosenthal 1997, McCarty, Poole, and Rosenthal 1997) and the top 1 percent income shares of pre-tax income (Piketty and Saez 2020). The relationship between these trends is shown in Figure 1, which updates a figure from Bonica et. al. (2013) with an additional decade of data to cover through 2018. The two measures have closely tracked one another

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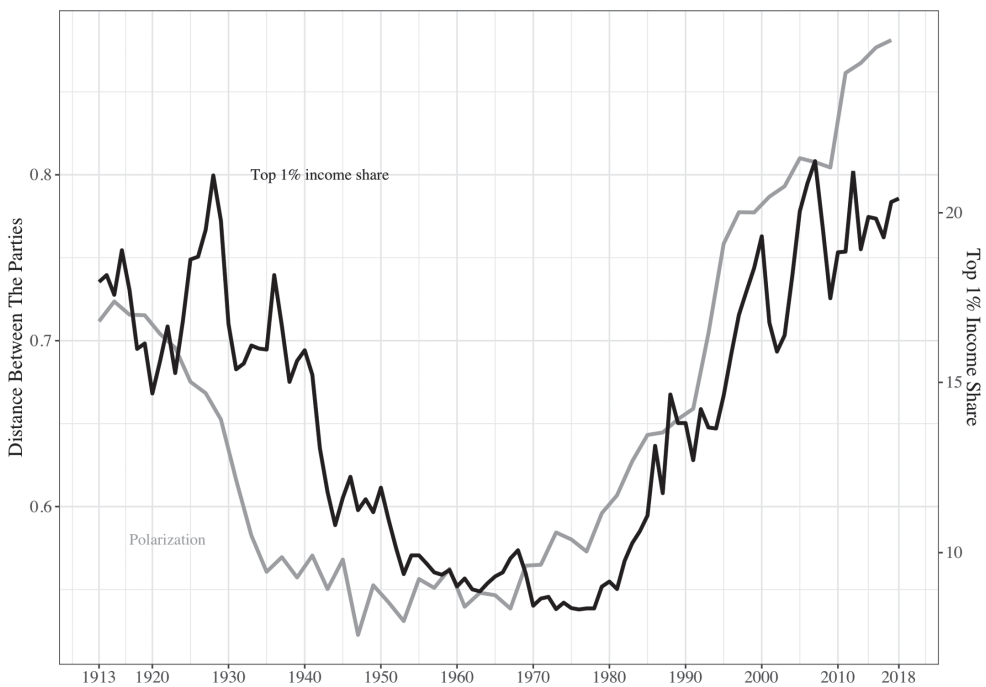
for over a century. The correlation between congressional polarization and income inequality has further strengthened since 2008, increasing from R=0.69 to R=0.78 for the entire period and from R=0.91 to R=0.94 during the post-war period (1945-2019). McCarty, Poole, and Rosenthal (2006) have argued that heightened political polarization has made it difficult for the government to enact policies that would push back against rising economic inequality, partly due to legislative gridlock. At the same time, economic inequality has created demand for lower taxes and free-market policies that favor the rich, who in turn support these policies through their campaign contributions.

Figure 1: Top 1 Percent Income Share and Polarization in the US House of Representatives, 1913-2018



Sources: Authors calculations using the polarization data from voteview.org and data on income from Piketty and Saez (2020).

The relative importance of campaign finance to American elections distinguishes it from other advanced democracies. The large sums of money needed to run for office make fundraising a core requirement for a successful campaign. Candidates expend vast amounts

of time and effort fundraising to remain competitive. Lax regulations on political spending and a highly unequal wealth distribution have resulted in a campaign finance system dominated by the wealthy (Bonica et al. 2013). Campaign finance is also a feature of American democracy for which most citizens express dissatisfaction. According to a recent New York Times poll on campaign finance reform, Americans are largely unified in the belief that money has too much influence on politics and, in particular, gives wealthy donors undue influence (Confessore and Thee-Brenan 2015).

In this chapter, I compare campaign finance systems in the US and South Korea, focussing on what the differences in how money operates in each system might tell us about its effect on inequality and polarization. I begin by comparing the laws and regulations on campaign finance in each county. I then compare the US and South Korea on measures of economic inequality relative to other advanced democracies and the two countries in terms of the concentration of campaign contributions. This is followed by a summary of the literature on campaign finance and polarization in the US and a discussion of what it suggests for South Korea.

Campaign Finance Regulation in the United States and South Korea

Campaign Finance Regulation in the United States

The US has a long and evolving history of regulating campaign finance. The first successful effort to regulate campaign finance gave rise to the Tillman Act (1907), which banned corporations from making direct monetary contributions. The Labor-Management Relations Act of 1947 (Taft-Hartley) later banned contributions from labor unions. For a period, campaigns were financed primarily by direct contributions from individuals. This changed with the passage of the Federal Election Campaign Act (FECA) in 1971, which forms the basis for the current regulatory framework in the US. FECA established Political Action Committees (PACs) as legal entities and was later amended to enact contribution limits on the amounts individuals and PACs could donate to candidates per election cycle. FECA also included measures to increase transparency through strict disclosure requirements, tasking the newly created Federal Election Commission (FEC) with reporting records on federal candidates and committees' fundraising and spending activities.

As is common for election-related legislation in the US, FECA was challenged in the courts. This legal challenge culminated in the landmark case *Buckley v. Valeo*, 424 U.S. 1 (1976), in which the Supreme Court upheld limits on direct contributions and disclosure requirements but struck down as unconstitutional limits on independent expenditures. This ruling, which was made on First Amendment grounds, created loopholes allowing wealthy individuals to spend unlimited amounts on politics so long as they did so independently from candidates. Notably, Buckley v. Valeo opened the so-called "soft-money" loophole that allowed corporations to give unlimited amounts to state party organizations, which in turn could be transferred to the national party committees.

Congress responded to concerns about the corrupting influence of unlimited corporate contributions by closing the "soft-money" loophole with the Bipartisan Campaign Reform Act (BCRA) in 2002. While BCRA ended the loophole that allowed corporations and labor unions to make unlimited contributions to party committees, it did not ban wealthy individuals from spending unlimited amounts on independent expenditures. The legal environment would again change in 2010 following the Supreme Court ruling in *Citizens United v*. FEC, 558 U.S. 310 (2010). This ruling ended the ban on corporate and labor unions from spending to influence elections and paved the way for Super PACs. While the US retains robust transparency laws surrounding campaign finance, restrictions intended to limit the influence of wealthy individuals and corporations have largely been dismantled.

The current US campaign finance system is one that strongly favors the rights of wealthy individuals and corporations to spend freely to influence elections. Underpinning this regime is the Supreme Court's interpretation of campaign contributions as a form of speech and thus constitutionally protected by the first amendment. It is also one in which a large and growing number of citizens participate in the political process by donating—often in small amounts—to support candidates and causes. This results in a campaign finance system primed to exacerbate both economic inequality and political polarization. While wealthy donors' outsized role promotes tax cuts for the wealthy and other policies that increase economic inequality (Hacker and Pierson 2011), the millions of individuals donating to campaigns tend to favor more ideologically extreme candidates on both the left and the right. This is especially true of small donors (defined as donors giving $500 or less during a two-year election cycle) who are often motivated by a populist backlash against policies seen as advantaging the wealthy (Bonica et al. 2013).

Campaign Finance Regulation in South Korea

The Korean electoral system exhibits some similarities to the United States. Legislators are elected via single-member districts, the president is elected separately, and support for parties has a strong regional component. One key difference pertains to the party system. US elections tend to be more candidate-centered, with parties having relatively little direct control over candidate emergence and selection. While the major parties in the US do engage in fundraising and strategically provide financial support to candidates, most candidates receive little to no financial support from the party and must raise funds on their own. By contrast, Korean politics are more party-centered, with the parties having *de facto* nomination power in selecting candidates and candidates relying heavily on parties for campaign funds (Shin, Jin, Gross, Eom 2004).

The South Korean regulatory framework for campaign finance was set in place by the Political Fund Act. The act defines which entities are permitted to fundraise, places limits on contributions, mandates public disclosure of certain contributions, and provides for public funding to political parties. First enacted in 1965, this act has since undergone 24 revisions (OECD 2016). In 2005, the act was amended to ban corporate donations following a series of campaign finance scandals. Revisions to act have been a mostly legislative driven process. Unlike the US, the South Korean courts have been less active in intervening to weaken campaign finance regulations passed by the national legislature.

Individual donors have two main pathways to give to political parties and candidates. First, they can give directly to political parties in the form of party membership fees. There is no limit on the amount an individual can give in party membership fees. In 2015, party membership fees accounted for about a quarter of the total funds raised by parties. Second, they can donate to supporters' associations, which can then direct funds to candidates. Individuals can donate up to approximately $5,000 per to support legislative candidates and $10,000 for presidential candidates. The largest source of the parties' funds comes from public subsidies, accounting for over a third of the parties' total income.

Enforcement of campaign finance law is the responsibility of the National Election Commission, an independent constitutional agency tasked with managing elections and political funds. While there have been several high profile scandals related to campaign finance violations—most recently, former Prime Minister Lee Wan-koo—enforcement of

campaign finance laws is arguably much more robust than in the US. Despite its status as an independent agency, the Federal Election Commission has been relatively ineffective in matters of enforcement, due in large part to partisan deadlock among commissioners (Franz 2020).

The primary difference from the US campaign finance system is the centrality of the political parties in political fundraising. In contrast to the largely candidate-centered US campaign finance system, candidates in South Korean elections rely on political parties as their main source of campaign funds. The prohibition on corporate contributions and public financing also distinguishes South Korea from the US.

Another important distinction for how campaign finance operates in the US and SK is the time frame for elections. In the US, campaigning begins almost immediately following the previous election, during which candidates are continuously fundraising. In South Korea, the campaign period is restricted to 2 weeks. This limited campaign season limits the amount of time and effort South Korean candidates devote to fundraising relative to their American counterparts. This difference is an important one. The constant pressure to fundraise is a source of dissatisfaction for American politicians and can distract time and effort away from other duties of office. Although some state legislatures ban fundraising by members while in session, most do not. Neither does the US Congress.

Economic and Political Inequality in the United States and South Korea

Economic Inequality in the US and South Korea

Economic equality is a key component of the concept of egalitarian democracy, which holds that socio-economic inequality, and in particular the unequal distribution of wealth and resources, can inhibit equal participation in the democratic process and the equal exercise of political rights and freedoms. The Varieties of Democracy (V-DEM) project has constructed cross-national measures of democratic performance, including a measure for the concept of egalitarian democracy (Coppedge et al. 2020).

Figure 2: Cross-national Comparisons on Measures of Inequality for 27 Advanced Democracies

Note: The grey points represent the values for other advanced democracies. The advanced democracies included in the figure are Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Estonia, Finland, France, Germany, Iceland, Ireland, Israel, Italy, Japan, Lithuania, Luxembourg, Netherlands, New Zealand, Norway, Slovenia, South Korea, Spain, Sweden, Switzerland, United Kingdom, and the United States of America.

Figure 2 compares the US and South Korea with 25 other advanced democracies on the V-DEM egalitarian democracy measure as well as other selected measures relating to economic inequality drawn from various sources, including the OECD and the World Income Database. Comparing advanced democracies on measures of inequality reveals a telling pattern about the relative performance of the US and South Korea. South Korea generally falls within the middle range among advanced democracies. The US, by comparison, exhibits much higher levels of economic inequality and is often positioned as an outlier among its peer nations. The US likewise lags far behind most of its peer nations on the V-DEM measure of egalitarian democracy, whereas South Korea falls nearer the middle of the distribution.

The share of pre-tax income going to the top 1 percent, a commonly used measure of income concentration and inequality, shows South Korea to be less concentrated than the US but above the OECD average (Facundo et al. 2016). The share of income going to the top 1 percent in the US (20.2%) is significantly higher than the corresponding share in South Korea (12.2%). This is compared to an OECD average of 9.6%. Other measures related to economic inequality show similar patterns. The average CEO to worker pay ratio, which measures the relative disparity in compensation between CEOs and the average worker in a company, shows the US and South Korea to be on opposite sides of the range (Kiatpongsan and Norton 2014). South Korea has one of the lowest ratios, with CEOs earning 60 times what their average employee earns. In the US, by comparison, CEOs earn 352 times the amount of the average employee, a disparity far larger than that observed in any other advanced democracy. The US (24.5%) and South Korea (22.3%) both rank higher than average on the percentage of workers employed in low paying jobs (OECD 2020a). The child poverty rate is slightly above the average in South Korea (14.5%) and significantly higher in the US (21.2%) (OECD 2020b). Employment protections for workers, as measured by the OECD, are among the most stringent in South Korea and are the weakest in the US (OECD 2020c). Lastly, measures of intergenerational economic mobility show South Korea to be behind the OECD average and the US ranking last (GDIM 2018).

Neither the US nor South Korea is leading their peer countries in terms of performance on measures of egalitarian democracy. However, of the two countries, the US consistently ranks well behind South Korea's more middling performance relative to other advanced democracies. One element of American democracy that may help explain its more extreme

level of economic inequality is its system of campaign finance, which also sets the US apart from its peers. South Korea, by comparison, structures and regulates its campaign finance system more in line with other advanced democracies and has better maintained its guardrails that protect against economic power being translated into political power.

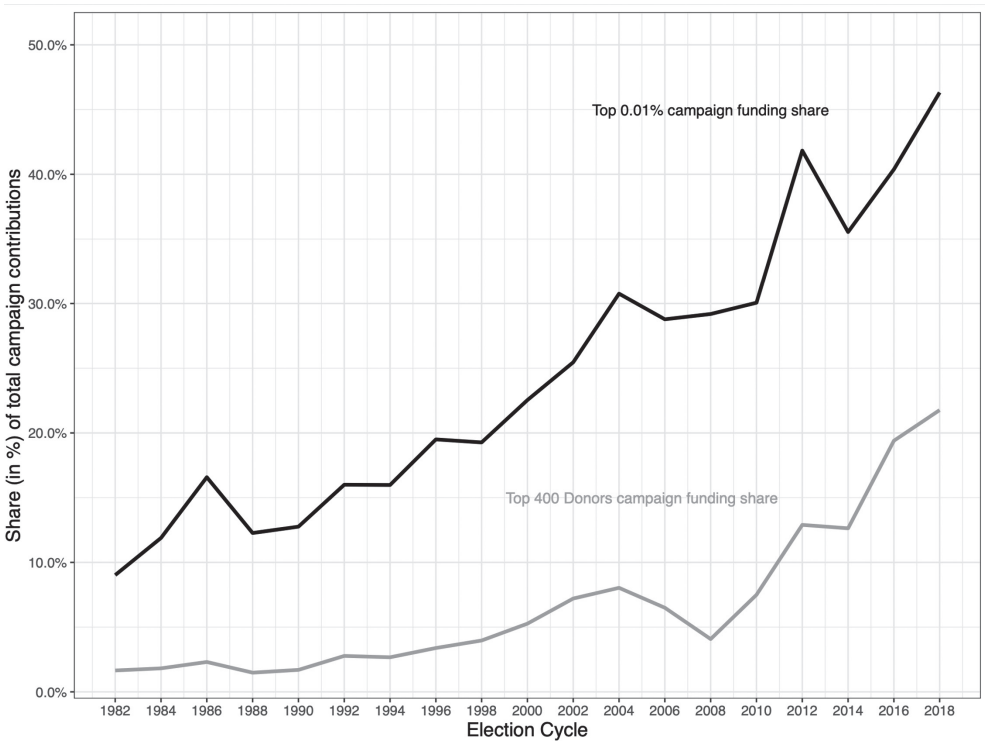
Inequality in Campaign Finance in the US and South Korea

Campaign finance represents one of the more straightforward mechanisms by which economic power can be translated into political influence. Absent regulation, the wealthy are greatly advantaged in this arena. Few citizens are in a position to donate hundreds, let alone millions, of dollars to support a campaign or political cause. This disparity is exacerbated by rising income and wealth inequality. As wealth becomes more concentrated, the super-rich can afford to spend vast sums on politics, outpacing the amounts spent by ordinary citizens. When a single individual can spend $100 million but the average donor gives around $50, as is the case in the US, the resources provided by that one wealthy donor is equivalent to that provided by 2 million donors. As campaigning becomes more costly and politicians perceive their electoral prospects to be tied to their fundraising performance, the attention and weight given to wealthy donors increases, as does their influence. This, in turn, can distort democratic representation if the wealthy have different material interests or political preferences than the population at large (Broockman, Ferenstein, and Malhortra 2019).

For the reasons explained above, inequality in campaign contributions is likely both a consequence and cause of economic inequality. Figure 3 provides a sense of how concentrated campaign contributions in the US have become. It tracks the share of contributions provided by the top 0.01% of contributors in the voting age population per election cycle (approximately 25,000 individuals in recent election cycles) as well as the share from the top 400 donors. The share of contributions coming from the top 0.01% of the voting-age population has grown from less than 10 percent in 1982 to nearly 50% in 2018. In the decade after the Supreme Court ruled on Citizens United, the share of contributions coming from the super-rich, measured here by the 400 top donors per election cycle, increased from 12.8% in 2012 to 19.3% in 2016. In 2018, this tiny slice of the population accounted for over 20 percent of total campaign contributions. Notably, this trend occurred simultaneously with a rapid rise in the number of Americans making political contributions,

growing from a few hundred thousand individuals in the 1980s to upwards of five million individuals donating in recent presidential election cycles. Yet this rise in mass participation has done little to counteract the trend towards increasing concentration of campaign contributions.

Figure 3: Shares of Federal Contributions From The Top 0.01% of the voting age population and the top 400 donors, 1982-2018



Note: The top 0.01% share represents the top 25,206 donors in 2018, or 0.01% of the 252 million adults of voting age according to the U.S. Census.

Source: Database on Ideology, Money in Politics, and Elections (DIME).

Table 1: Total independent expenditures by cycle.

	Soft-Money	527s	501(c)	Super PACs	Total Federal Spending	%IEs
1992	$165.5	$0.0	$0.0	$0.0	2325.9	7.1%
1994	$149.9	$0.0	$0.0	$0.0	2000.1	7.5%
1996	$379.6	$0.0	$0.0	$0.0	2781.5	13.6%
1998	$283.7	$0.0	$0.0	$0.0	2113.8	13.4%
2000	$644.8	$3.6	$33.0	$0.0	3352.3	20.3%
2002	$637.0	$37.5	$16.1	$0.0	2534.3	27.2%
2004	$0.0	$734.4	$35.7	$0.0	5260.2	14.6%
2006	$0.0	$441.9	$14.7	$0.0	3547.3	12.9%
2008	$0.0	$533.6	$175.0	$0.0	5875.0	12.1%
2010	$0.0	$580.6	$184.4	$143.7	3953.3	23.0%
2012	$0.0	$550.3	$338.4	$860.3	5985.8	29.2%
2014	$0.0	$687.4	$174.0	$680.3	3940.8	39.1%
2016	$0.0	$741.5	$178.0	$1,790.6	6701.6	40.4%

Sources: FEC, IRS, and the Center for Responsive Politics.

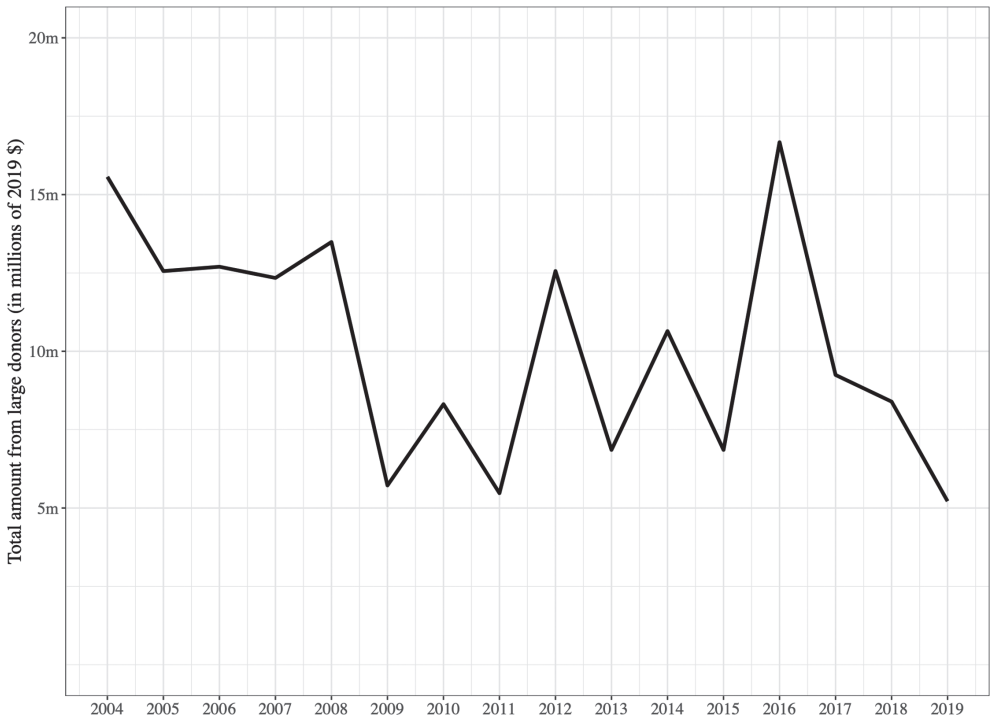
The rise in the concentration of political contributions is largely a consequence of the deregulation of independent expenditures, which have grown sharply as a total share of political expenditures in federal elections. Independent expenditures, which provide an avenue for wealthy donors to spend in unlimited amounts to influence elections, have long been a part of the campaign finance landscape in the US. In the early 1990s, independent expenditures accounted for less than 10% of total dollars spent on federal elections. During this period, much of what was spent on independent expenditures was through the "soft-money" loophole, which allowed businesses and individuals to fund the national party organizations through donations made to state party organizations. Soft-money as a percentage of federal contributions grew rapidly through 2002, peaking at 27.2% of funds. When the soft-money loophole was closed after the passage of the BCRA in 2004, independent expenditures shifted to 527 organizations. While a significant source of election spending, 527 organizations as a share of total spending never accounted for more than 15% of total spending. However, the loosening of restrictions on independent expenditures

after the 2010 Supreme Court ruling in *Citizens United* coincided with a marked increase in spending. Independent expenditures soared in the subsequent election cycles, reaching 40.4% of total spending in 2016.

The trend towards increasing political inequality in political contributions in the US is well-documented. However, the claim that large donors directly influence politicians and policy has been notoriously difficult to establish empirically. This reflects data limitations as well as practical considerations given that donors and politicians have strong incentives to conceal such influence from observers. While claims about corrupting influence of political donations remain difficult to establish causally, most experts believe that such influence does exist. In fact, many theoretical models of campaign contributions (e.g. Baron 1994) are premised on the assumption that special interest groups give to politics with the express goal of securing tax breaks, contracts, or favorable regulatory or policy outcomes.

Although the highly-detailed itemized contribution records required to measure the top 0.01% shares of campaign contributions are not available for South Korea, the available data suggests that sources of campaign funds are distributed more equally than in the US. There are several reasons to suggest this is the case. First, contribution limits in South Korea are not subject to the same legal loopholes that permit wealthy Americans to spend unlimited amounts on politics. This prevents super-wealthy individuals from dominating fundraising and disincentivizes parties from targeting their fundraising operations on a small number of elite donors. Second, parties in South Korea rely on membership fees collected from party members for about a quarter of their total income (OECD 2016). Third, public subsidies to political parties are more generous in South Korea than in the US, accounting for over a third of the parties' total income (OECD 2016). The more restrictive fundraising environment combined with public funding and party membership fees cushions against the type of inequality in campaign contributions observed in the US.

Figure 4: Total Amounts Donated to South Korean Campaigns by Large Donors Giving Over 3 million won (~$2,600), 2004-2019



What can be compared is the total amount of money spent on elections in both countries. The amount of money spent on elections by large individual donors in South Korea is a small fraction of what is spent in the US. Figure 4 plots the total amounts donated by large donors—defined as individuals giving over 3 million won (~$2,600)—in each year from 2004 to 2019.[1] Two features of this figure stand out. First, the total amounts spent by large donors per year remained relatively flat over this period. That is, the total amount coming from large donors has not exploded like it has in the US. Second, the total amount donated by large donors in South Korea is a small fraction of what is spent in the US, even when adjusting for population size. The most spent in a single year was $16.7 million in 2016, corresponding with the 2016 legislative election. This amount came from 4,489 individuals, giving an average of $3,713. In that same year, there were twelve wealthy donors in the

1 I thank Hye Young You for generously providing this data.

US that each spent more than $16.7 million. In fact, Sheldon and Miriam Adelson donated over $100 million in the 2012 election cycle alone, more than the combined $90 million spent by all large donors in South Korea over the past decade (2010-2019). This highlights a stark difference in the legality and willingness of wealthy individuals to spend on political campaigns in the two countries.

Campaign Finance and Polarization

The centrality of campaign finance to American elections and politics more generally has naturally led scholars to consider it as a likely cause of polarization. Early work by theorists identified likely mechanisms by which donors might advantage more extreme candidates (Baron 1994). More recent empirical research finds that donors, on average, hold more ideological extreme views than the population in general (Bafumi and Herron 2010).

The different roles of parties in nominating candidates in the US and Korea are especially relevant to understanding how campaign finance might influence political polarization. Party primary elections are central to the candidate selection process in the US. Partisan primaries represent a potential pathway by which campaign finance influences partisan polarization. Fundraising during the primaries is a crucial factor in determining who will represent the parties in the general elections (Bonica 2018). The candidates that thrive in these candidate-centric contests tend to be those who can successfully fundraise early on in their campaigns. Insofar as these candidates tend to be more ideological extreme, campaign finance likely contributes to rising polarization. On this point, there is evidence that fundraising during primary elections is a source of polarization (Kujala 2019).

Another important distinguishing feature of South Korean campaign finance is the centrality of parties. The candidate-centered nature of fundraising in the US has been an area of interest among scholars interested in the relationship between campaign finance and polarization. La Raja and Schaffner (2015) have argued that strengthening party-centered campaign finance could counter polarization in the US. On this front, South Korea's party-centered campaign finance system is potentially less prone to being a driving force of polarization.

Conclusion

Given its centrality to electoral politics, campaign finance has the potential to affect both economic inequality and political polarization. Although not without its flaws, South Korea's system retains many of the regulatory safeguards that campaign finance reformers in the US have long advocated—e.g., enforced contribution limits, restrictions on corporate contributions, public financing, and a centralized enforcement agency. The party-centered system of campaign finance in South Korea is also consistent with the direction some political scientists have advocated the US should move in order to counteract polarization (La Raja and Schaffner 2015).

The rising concentration of political contributions is a significant development in American elections. This trend reflects the deregulation of campaign finance, growing economic inequality, and the rising stakes of winning elections in an era of extreme partisan polarization. Despite several high-profile campaign finance and bribery scandals in South Korean politics, its system of campaign finance has been relatively successful in avoiding the worst excesses of its American counterpart. South Korea's stricter regulations on large donations have prevented the type of concentration in campaign contributions seen in the US. South Korea has also kept its elections less costly and its elections timeframes limited, lowering the pressure for candidates to fundraise and the electoral stakes for doing so.

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Interest Groups and Polarization

Hye Young You*

Abstract

How do interest groups contribute to polarization? Interest groups are active participants in American politics and they use campaign contributions and lobbying to influence elections and policy outcomes. This essay reviews the literature on the relationship between interest group activities and the polarization in the US while assessing the potential mechanisms between them. I evaluate the consequences of interest group activities on the information environment to which politicians are exposed. I also review the campaign finance and lobbying environment in South Korea and draw comparisons with the US. I conclude the essay by discussing the future research agendas on interest groups and polarization.

1. Introduction

Polarization is a defining feature of the contemporary American political landscape (McCarty, Poole, and Rosenthal 2006; Theriault 2008; McCarty 2019). Substantive scholarly work has focused on the causes of polarization (e.g., Hetherington 2009; McCarty, Poole, and Rosenthal 2009). In this report, I review the role of interest groups as a potential driving force of polarization in the United States. What distinguishes American democracy from other advanced democracies is that organized interests play a crucial role in shaping political processes as well as government policies through campaign contributions and lobbying. In this essay, I first provide an overview of interest group activities in American democracy. Next, I focus on campaign finance and lobbying as specific channels that interest groups employ that could affect the degree of polarization.

After reviewing the literature examining the role of interest groups as a cause of the polarization, I turn to examine how increasing polarization affects the interactions between interest groups and policymakers. While substantive scholarly work has focused on the

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causes of polarization (McCarty, Poole, and Rosenthal 2009), there has been a relative lack of endeavors to identify the *consequences* of polarization (Barber and McCarty 2013). Existing studies that explore the effects of polarization mostly focus on voter behavior and public opinion (e.g., Levendusky 2010; Druckman, Peterson, and Slothuus 2013). However, polarization can also affect legislative behaviors. In particular, I explore the question about how unequal participation by individuals and groups in campaign contributions and lobbying could influence the types of interest groups with which members of Congress most actively interact and how those potentially biased interactions could influence the information environment that politicians face.

Next, I discuss the role of interest groups in South Korean politics and provide a comparison with the US. There are two distinct features that affect the role of interest groups in South Korea. First, public financing in South Korea plays a larger role than in the US and regulations on campaign finance are more restrictive. Second, lobbying activities in South Korea are very limited and there is no established lobbying industry that provides a market for access. Therefore, interest groups' access to politicians is largely determined by existing personal connections based on hometowns, schools, and employment. I review how restrictive campaign finance and lobbying practices affect polarization in South Korea.

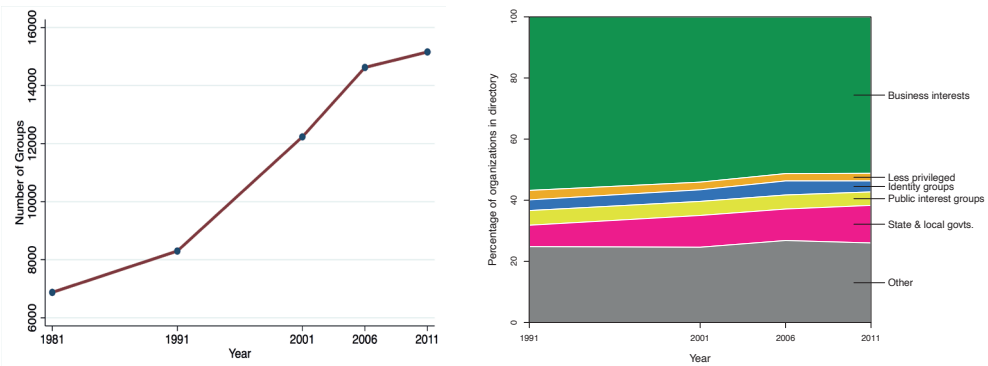
I conclude the report by discussing future research agendas on interest groups and polarization.

2. Interest Groups in American Democracy

Organized interests have played an important role in American democracy since the very beginning of the republic (Allard 2008). James Madison's *Federalist Paper* #10 famously discussed how to control factions given that forming factions is an inevitable part of human nature. Madison believed that in a country as large as the United States, diverse interests would arise and would compete against one another, thereby preventing domination by any one faction. Overtime, as Madison predicted, the number of organized interests that are active in politics has increased. The *Washington Representatives* directory includes any organization that has a presence in national politics either by maintaining an office in Washington, DC, or by hiring Washington-based lobbying firms to manage their relationships with the federal government (Schlozman et al. 2015). Panel (a) in Figure 1 presents the number of groups listed in the *Washington Representatives* 1981, 1991, 2001,

2006, and 2011 editions. Whereas the number of listed groups active in national politics was just over 6,000 in 1981, the number had increased to 15,000 in 2011. Panel (b) n Figure 1 shows the composition of different groups listed in the *Washington Representatives* for the period 1991-2011. It is clear that business interests are the dominate presence in national politics at any given time but other groups, such as state and local governments, have increased their presence over time.

Figure 1: Groups Listed in the Washington Representatives



(a) Number of Groups

(b) Types of Groups

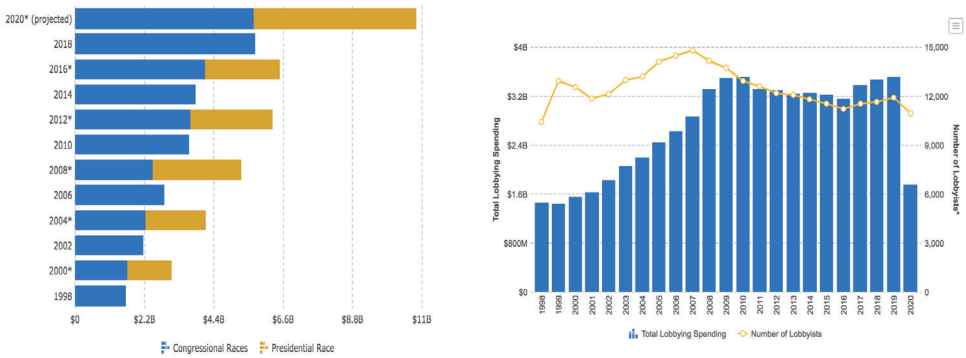
Interest groups' presence in national politics has expanded both in number and participation through campaign financing and lobbying. Panel (a) in Figure 1 shows the (inflation-adjusted) cost of elections for congressional and presential races from 1998 to 2020 (projected) from the Center for Responsive Politics' data. The total amount of money spent on federal races has consistently increased and the 2020 election cycle is expected to have been the most expensive election in the history of the US. Given that private funding from individuals and organized interests account for most of candidates' funding, increasingly expensive elections imply that donors and interest groups' influence could also increase. Panel (b) presents the total lobbying spending and the number of lobbyists registered at the federal level for the period 1998-2020 from the Center for Responsive Politics.[1] Total lobbying expenditures had increased steadily until 2010 and, since then, over 3 billion

1 The lobbying data for 2020 is incomplete given that the Center for Responsive Politics has compiled data for the first and second quarters of 2020 as of October 25, 2020.

dollars on average are spent on lobbying the federal government. The number of lobbyists registered under the Lobbying Disclosure Act, the statute that regulates domestic lobbying, is around 12,000.

A key issue in the role of interest groups in American democracy is unequal political participation by different groups. Do different groups have equal voices in political process? How does the explosion of interest groups affect equality in the political representation? Existing work shows that there is significant inequality among groups and that wealthy and business interests dominate the market for political influence (Schlozman, Verba, and Brady 2012; Schlozman et al. 2015)

Figure 2: Money in the US Politics



(a) Cost of Elections

(b) Total Lobbying Spending and Number of Lobbyists

Scholars studied whether inequality in political participation by different groups is associated with increasing polarization. Indeed, while the cost of elections and total lobbying spending increased over the past decades, political polarization has also increased. Scholars point out that the relationship between interest groups and political parties has shifted from the past and now there is a close alignment between groups and parties (Pierson and Schickler 2020). It is clear that interest groups exercise their influence in a more polarized environment but do interest groups themselves contribute to creating the polarized environment? The two channels that interest groups employ that may cause the polarization are campaign contributions and lobbying. In the following sections, I review scholarly work on the role of campaign finance and lobbying on increasing polarization in the US and evaluate the empirical evidence provided by existing literature.

3. Campaign Finance and Polarization

Campaign finance is considered to be a mechanism of how money and interest groups influence the degree of polarization in American politics. The cost of election campaigning has been increasing. The role of interest groups and individuals in financing campaigns is more important when primary elections are increasingly expensive and competitive, and some argue that the campaign finance system in the US is a direct cause of polarization.

Copious amounts of work have been devoted to uncovering the relationship between campaign contributions from interest groups through Political Action Committees (PACs) and politicians roll-call voting. Current literature documents that there is a weak relationship between campaign contributions and politicians' voting behaviors. However, recent studies point out that the sources of fundraising, not the total amount of fundraising, may correlate with polarization. Scholars have developed an ideology score for donors based on their donation patterns and one distinctive finding is that individual donors are more ideologically extreme than group donors (PACs). In this section, I review studies that explore the relationship between types of campaign finance and polarization, which is deeply related to the issue of political selection.

Congress authorizes public financing for nominating presidential candidates in 1974. The Presidential Election Campaign Fund provides matching public funds to qualified candidates based on their records of donations from individual donors (Briffault 2020). Candidates who accept matching public funds should also accept the authorized spending limits. The main idea behind creating a public financing system for the presidential nomination process is simple: to curb "deleterious influence of large contributions on the political process" (*Buckley v. Valeo*).[2] Although the public financing system played an important role in the nomination process of major political candidates, no major party nominee has accepted the public financing since 2004. As the number and volume of donations from individuals and organizations has increased, the role of public financing has steadily declined and the private funding has become the main source of financing candidates. This pattern is also true for congressional candidates.

2 424 U.S. 1 (1976)

Scholars have explored the relationship between campaign finance regulations/modes of campaign contributions and candidate extremism. Ex ante, it is not clear how an increase in the role of public financing would affect candidate selection. On one hand, public financing reduces the influence of donors who often have more extreme ideologies than non-donors. Therefore, increasing reliance on public financing may support selection of candidates who are less extreme. On the other hand, given that donors tend to donate to winning candidates, especially access-seeking business PACs (Bonica 2013), extreme candidates are less likely to win (Hall 2015), and therefore, campaign finance system can play a gatekeeping role, which raise the bar for extreme candidates to bring in money and subsequently win the race (McCarty, Poole, and Rosenthal 2006). If this is the case, a shift to public financing could lower the bar for extremists to run and win and this could increase polarization among elected officials (Baron 1994; Ashworth 2006).

To answer how increasing the role of public financing affects candidate selection, Masket and Miller (2015) exploit the changes in the modes of campaign financing in Arizona and Maine. Both states adopted a robust public financing system for state legislative campaigns. Dubbed as "Clean Elections," candidates who opt into public financing receive lump-sum grants from the state treasury and agree to forgo private donations and cap their campaign spending. Masket and Miller (2015) compare candidates who select into public financing with candidates who stay on traditional sources of private funding in their subsequent legislative behaviors and find no systematic difference in their ideological extremism. Although their results help our understanding of the effect of sources of campaign finance on legislative behaviors, there is one issue with the causal inference in this setting: candidates *optionally choose* the mode of campaign financing.

Hall (2014) also exploits changes at the state level in campaign financing laws in Arizona, Connecticut, and Maine and employs a difference-in-differences design to measure the effect of campaign financing on electoral outcomes and roll-call behaviors of state legislators. He finds that public financing reduces incumbency advantages which makes the election more competitive. At the same time, reduced incumbency advantages alter the behaviors of access-seeking interest groups, which prefer moderate incumbents, and this leads to more polarization in the state legislatures. Hall (2014) documents the trade-offs that public financing introduces in terms of electoral competition and polarization. More recently, Kilborn and Vishwanath (Forthcoming) show that candidates for state offices in Arizona, Connecticut, and Maine who exclusively rely on public campaign financing are

more extreme and less representative of their districts. Overall, existing scholarly work points out that replacing the current campaign finance system with a more public-funded system would not necessarily reduce polarization.

The limited role of public financing in the US implies that campaign finance through private actors plays an important role in the electoral success. If so, how could the campaign finance system contribute to polarization? To answer this question, two key issues should be examined. First, we need to examine whether donors hold more extreme preferences than non-donors. Second, campaign contributions should facilitate access to politicians so that politicians are exposed to donors with more extreme views, which may not represent the average citizen's view.

There is vast literature on the motivations for donations and the preferences of donors. It is important to understand why individuals and groups donate to political campaigns in the first place. Scholars have differentiated the motivations between group donors and individual donors. The primary motivation cited in the literature for groups that form political action committees (PACs) to donate to political campaigns is access to politicians. Corporations, trade associations, and other groups ultimately want to influence policy outcomes and campaign contributions are considered as a tool to gain access to tell their story to politicians. Although scholarly attempts to examine the effect of campaign contributions on politicians' roll-call voting show mixed evidence that money buys votes (Ansolabehere, de Figueiredo, and Snyder 2003), there is robust evidence that PACs' campaign contribution patterns follow the logic of access-seeking: PACs tend to contribute to incumbents, committee members who serve on the committees relevant to their interests, and majority party members (Fouirnaies and Hall 2014, 2018; Grimmer and Powell 2016).

Motivations for individual donors show some patterns that differ from the motivations by groups donors. Ansolabehere, de Figueiredo, and Snyder (2003) emphasize that campaign con- tributions by individuals are motivated by consumption value, which implies that individuals enjoy benefits from participating in the political process, without expecting a return from politicians they support. Another factor cited as a motivation for individual donation is ideology. Barber (2016a) show that a candidate's ideology is an important factor for many individual donors and individuals holding more extreme ideologies assign more weight to ideology than other factors when they decide to donate. In contrast to PAC donors, individual donors care less about the incumbency status or committee assignment

of legislators. Hill and Huber (2017) also show that individuals donate when they perceive that election stakes are high.

Do these different motivations of donors lead to different donation patterns and does that imply that individuals and PACs show different degrees of extremism in their ideologies? Understanding the distribution of ideology among different types of donors is important in connecting campaign finance to polarization. There is extensive literature documenting the preferences and ideologies of wealthy individuals and donors. Page, Bartels, and Seawright (2013) survey wealthy individuals who are extremely active in political participation and note that they tend to hold more conservative views, especially on economic issues, than the general public. Are these distinctive preferences reflected in their donation patterns? Bonica has made a significant contribution in estimating the ideology of donors (Bonica 2013, 2014) and his work shows that there is substantial variation in donor ideologies and that individual donors are more extreme than PACs. PACs associated with business interests show more moderate ideology than ideology PACs and recent work suggests that their moderate behaviors could be a result of internal constraints that access-seeking PACs face from their employees and shareholders (Li 2018; Min and You 2019).

Individual donors who do not face the internal constraints that PAC donors face show more ideological extremism and the role of individual making small donations is increasing (Bouton, Castanheira, and Drazen 2018). If individual donors play a larger role in financing political campaigns, does that increase political polarization? Barber (2016b) directly tackles this question using variations in contribution limits imposed on individual and group donors at the state level. He shows that allowing higher individual contributions increases the success of more extreme candidates and this selection effect in turn increases polarization in state legislatures. Keena and Knight-Finley (2019) show that senators who are more extreme in their voting behaviors raise more money from small donors. Although calls for eliminating the role of large money and business interests in politics often accompany a proposal to expand the role of small donors, empirical evidence suggests that a larger role of small donors in financing candidates' campaigns could lead to selecting more extreme candidates (Pildes 2020).

Recent work also highlights the nationalization of politics and the role of national donors in sponsoring local elections as a cause of polarization. It is reported that more than half of the contributions that candidates raise in congressional elections come from donors who live

outside the district where the candidates are running for office (Gimpel, Lee, and Pearson-Merkowitz 2008). Donors who live in big cities such as New York City, Los Angeles, and Houston heavily donate to political candidates across the nation. Hopkins (2018) documents that state and local elections, which are supposed to focus on state and local issues, are increasingly nationalized. That is, issues on which candidates compete in state and local elections closely resemble national partisan issues, such as abortion and gun rights. While it is unclear whether the nationalization of local elections caused the increasing role of out-of-district donors or the increasing role of out-of-district-donors caused the nationalization of local politics, it is clear that donors who live out of a candidate's district have played an increasingly larger role. Canes-Wrone and Miller (2020) show that members of the House Representatives are more responsive to the policy preferences of out-of-district donors. Although more research is needed on whether out-of-district donors are more ideologically extreme than within-district donors, if out-of-district donors are especially vocal about more partisan issues such as abortion, a more reliance on national donors could also lead to more polarized campaign platforms and legislative behaviors.

The majority of research on donors in campaign contributions focuses on the distinction between individual donors and group donors, but recent studies attempt to produce a finer-grained differentiation among group donors. For example, Barber and Eatough (Forthcoming) propose a new measure of the politicization of industries based on news coverage and find that a higher politization of an industry leads to more partisan donation patterns by the industry. This adds a more nuanced understanding to well-documented PACs' donation patterns: access-seeking behaviors. Although factors such as incumbency status and committee assignment are considered important factors in PACs' donation decisions in the existing literature, ideology has become an increasingly important factor in PACs' contribution patterns as the issue has become more polarized. Grumbach (2020) also shows that contributions from those who are affiliated with activist organizations such as environmental and abortion groups, are positively correlated with legislative extremism at the state level since the activist donors wield significant influence in the nomination process in party primaries. These studies require more nuanced understanding about the motivation and consequences of group-based donations in a polarized political setting.

Ultimately, whether campaign finance contributes to polarization depends on whether donors with extreme ideologies than non-donors have better access to politicians who are consequently, more exposed to donors' policy views and are pressured to incorporate

those extreme preferences in their legislative behaviors. Do donors have better access to politicians? The answer from the extant literature unequivocally indicates that politicians grant more access to donors. Using an experimental design, Kalla and Broockman (2016) show that individuals who mentioned their donation histories are more likely to garner meetings with legislators and their staffers. If donors have consistent advantages in delivering their policy preferences to politicians, this may influence the perceptions that politicians and their staffers formulate about the constituency's preferences on specific policies. Especially when the policy preferences of donors significantly diverge from the general public's or politicians' constituencies want, the disproportionate access that donors have to politicians can cause both more polarization and issues of representation.

4. Lobbying and Polarization

Lobbying is another important channel through which interest groups interact with policymakers in American politics. The practice of lobbying and the presence of lobbyists on behalf of various interests within the United States is as old as the nation's history (Allard 2008). While the public holds skeptical and negative views about lobbying and lobbyists, lobbying as an exercise of the right-to-petition is inherently nested into representative democracy. Although there are different perceptions about what constitutes lobbying activities, the Lobbying Disclosure Act of 1995, which regulates lobbying activities by domestic interest groups define lobbying contacts as "any oral or written communication to an executive or a legislative branch official that is made on behalf of a client with regard to the formation, modification, or adoption of federal legislation, rule, regulation, policy, the nomination or confirmation of a person for a position of the United States government."[3]

Lobbying activities in the US are extensive. As panel (b) in Figure 2 shows, annul lobbying spending at the federal level has been over 3 billion dollars since 2008 and there is also active lobbying at the state level (Payson 2020a,b). Firms and business interests dominate the field of lobbying (Schlozman, Verba, and Brady 2012; Drutman 2015; You 2017) and their expenditure on lobbying easily exceed their spending on campaign contributions (Ansolabehere, de Figueiredo, and Snyder 2003; Kerr, Lincoln, and Mishra 2014). Other

3 https://lobbyingdisclosure.house.gov/amended_lda_guide.html

types of interest groups also have steadily increased their participation in the lobbying process; examples include universities (de Figueiredo and Silverman 2006), local governments (Goldstein and You 2017), and foreign governments and businesses (You 2020) are those examples.

Although lobbying is another key channel that interest groups employ to influence policymakers, in contrast to the literature on campaign finance and political polarization, there is a relative dearth of literature examining the relationship between lobbying activities and polarization. Those studies that concern the relationship between lobbying and polarization. A key question concerning that relationship is whether interest groups that participate in lobbying are different from groups that do not participate in the lobbying process. This parallels the studies of donor ideology in campaign finance literature. If groups that lobby are significantly different from non-lobbying groups in terms of their policy preferences, and if lobbying increases the probability of access to politicians, politicians may have biased perceptions about the preference distribution of citizens and groups. Therefore, it is important to know whether the preferences of lobbying groups diverge from non-lobbying groups.

Existing work in campaign finance literature informs that firms and business interests are more moderate than individuals and ideological groups in terms of their donation behaviors. Given that firms and business interests dominate lobbying and engage in the majority of lobbying spending, some speculate that lobbying, in contrast to campaign contributions, could reduce polarization precisely because business interests are ideologically less extreme and focused on maintaining the status quo (Baumgartner et al. 2009).

To examine the validity of this claim, it is important to accurately measure the ideology of lobbying groups. However, this is particularly challenging. Unlike campaign contributions, lobbying record does not target specific politicians, therefore, it is difficult to measure the ideology of lobbying groups unless these groups also donate to political campaigns (Bonica 2013). Recent work on lobbying directly tackles this challenge and devised a novel solution to measure the ideology of lobbying groups. For example, Thieme (2020) exploits lobbying disclosure requirements at the state level to measure interest group ideology. In Iowa, Nebraska, and Wisconsin, lobbying groups are required to declare their positions on bills they lobbied. Combining these data with roll-call votes by state legislators on the lobbied bills, Thieme (2020) demonstrates that the ideological positions of lobbying groups are

more extreme than we assumed, especially among conservative groups. He also finds that there is a weak or no relationship in ideology based on lobbying disclosures and campaign donations for corporations and trade associations. This implies that groups may have more extreme policy preferences than their preference in contributions and dominant lobbying activities by business interests cannot be ruled out as a potential cause of polarization.

Crosson, Furnas, and Lorenz (2020) adopt a similar strategy as Bonica (2013) and Thieme (2020) and estimate the ideology for over 2,600 organizations that took positions on congressional legislation between the 109th and 114th Congresses. They show that the overall distribution of interest groups follows the patterns of polarized pluralism and there is significant heterogeneity within the same category of groups. But groups that are often take positions on bills are more polarized than other groups and position-taking groups that give more campaign contributions and lobbying spending are more conservative. If groups that are more active in position-taking, donations to campaigns, and lobbying are more extreme in their ideology and more likely to interact with members of Congress, members of Congress may perceive the preference of groups and their constituents as more extreme than the actual preferences of their constituents.

Groups not only lobby members of Congress to influence bills, they also craft bills and act as "legislators." In California, groups are listed as sponsors along with a name of the author, a state legislator who introduces a bill. Over 40% of bills introduced in the California state legislature list the name of a group sponsor (Kroeger 2020). When institutional features do not directly allow for groups to become a sponsors, interest groups take an alternative path. The American Legislative Exchange Council (ALEC), a policy group that promotes business interests at the state level, crafts model bills that reflect the preferences of corporations and trade associations and disseminates the model bills to state legislators (Hertel-Fernandez 2019). The influence of the ALEC is larger in states lacking resources and support for legislative capacity (Hertel-Fernandez 2014). Given that recent studies show that corporate and business interests have a conservative bias in their policy preferences, this implies that active lobbying in the legislative process can shape politicians' view on issues as well as their voting and other legislative behaviors.

Although business interests have received most of the attention in the lobbying literature, there is a burgeoning literature focusing on advocacy groups in the lobbying process. Advocacy groups, such as environmental protection groups or gun rights groups, are often

more ideologically extreme than corporations and business interests in their campaign contribution patterns. These ideological/single-issue organizations are also more extreme in their ideologies and the issues they focus on are also those that are most polarizing, such as abortion and gun rights (Crosson, Furnas, and Lorenz 2020). Whereas business interests often allocate resources to both legislative and bureaucratic lobbying since they pay significant attention to rulemaking processes by regulators and particularistic benefits accrued to their own firms (You 2017), advocacy groups' attention is more focused on the legislative process because they are more interested in agenda-setting. Using state-level lobbying disclosure data from Colorado and Ohio, Garlick (2016) show that bills that are lobbied heavily by advocacy groups tend to have more partisan roll-call voting patterns. Although this relationship is correlational, increasingly active roles played by advocacy groups in the lobbying process should receive more attention as a potential cause of polarization.

Interest groups' lobbying efforts target not only legislators but also the mass public. This grassroot lobbying has received relatively little attention in the literature but scholars have started to focuse on the role of organized interests and corporations as a potential driving force of mass polarization on specific issues. For example, Farrell (2016) documents that anti-climate change organizations with corporate funding tend to produce more polarized contents on climate-change issues. Although this study does not provide a direct evidence that interest groups' grassroot lobbying activities increase the polarization of mass public opinions, groups influence the production of (potentially polarizing and inaccurate) information that could be available to the public and contribute to their opinion formation.

5. Consequences of Group Influence on the Policymaking Process

If donors and lobbying groups have preferential access to politicians, what are the consequences of group influence on the policymaking process? In this section, I focus on the group influence on politicians' knowledge about voters and policy developments. Through campaign contributions and lobbying, interest groups that are active in politics exploit the opportunity to deliver their policy preferences and opinions to politicians and their staff members. If donors and lobbying groups hold policy preferences that are sufficiently different from those of ordinary citizens, frequent interactions with these

interest groups and donors could distort politicians' understanding of the policy preferences of their constituents and the necessary information to reflect the constituents' opinions in the policy development process.

Recent research studies the degree of accuracy in politicians' perceptions on their constituencies' opinions. Although politicians have strong incentives to know what voters want and to be aligned with their constituency's preference, it is not clear whether politicians have an biased understanding of that preference. This is partly because there is significant variation in political participation in the US across citizens and groups (Schlozman, Verba, and Brady 2012); therefore, politicians are more likely to know the preferences of citizens who make frequent contacts with them (Fenno 1977) or those who support them (Butler and Dynes 2016).

Broockman and Skovron (2018) surveyed legislators in state legislatures and found that politicians from both parties have consistent conservative bias in their perceptions of constituents' policy preferences. Across all issue areas they examine-including same-sex marriage and banning as-sault rifles-Broockman and Skovron (2018) show that politicians overestimate how conservative their voters' opinions are. For example, regarding a question on background checks for gun pur- chases, 84.3% of the surveyed public support background checks. However, when state legislators are asked how many people support background checks for gun purchases, the average number politicians assume is 48.48%. This suggests there is a significant misperception about how much the public supports tightening regulations on purchasing guns. Broockman and Skovron (2018) show that the misperception of public opinion appears more salient among Republican politicians and they cite a recent mobilization of conservative voters who have made frequent contacts to Republican members as a potential explanation. If conservative citizens who contact their representatives have more extreme and intense preferences for issues discussed in the paper, it is likely that their activism and political participation could influence the information environment to which politicians are exposed and this could lead to a politician's biased perception about the distribution of voter preferences on issues.

Another potential mechanism that can contribute to the conservative bias in state politicians' perception of public opinion is legislative lobbying by conservative business interests. Although business interests are less likely to lobby on controversial social issues such as abortions, they actively lobby state legislators to influence policies on minimum wage and

state-level regulations. In recent years, one particular group has received much attention: the American Legislative Executive Council (ALEC). ALEC is a coalition of corporations and business associations that promote pro-business legislation at the state level (Hertel-Fernandez 2014). ALEC drafts model bills that reflect their policy references and distributes them to state legislatures. Instead of providing policy-relevant information to legislators who ultimately introduce a bill to the legislature, ALEC writes a bill and their strategy to "subsidize" the legislative process has been highly effective, especially in states where state legislators are time- and resource-constrained (Hertel-Fernandez 2014, 2019). Scholars have documented that conservative groups and business leaders have designed strategies to influence state-level policies since the 1970s but there is similar movement from the liberal side (Scocpol and Hertel-Fernandez 2016). If this is the case, both conservative citizens and groups are more mobilized at the state level and these joint forces can amplify the conservative bias that politicians have formed regarding the preference of citizens and groups.

Misperceptions that are observed among politicians are also found in legislative staffers. Hertel-Fernandez, Mildenberger, and Stokes (2019) surveyed 101 senior staffers in the Congress about their knowledge of their member's constituents' public opinions on various issues. When compared with true district preferences, there is a consistent pattern of misperception: Democratic staffers tend to believe the public opinion is more liberal than the true district preference. Republican staffers consistently overestimate how conservative district preferences are compared to the true district preferences. Hertel-Fernandez, Mildenberger, and Stokes (2019) show that staffers who have more contacts with corporate donors and groups have more misperceptions about constituent preferences. In contrast, the mismatch between actual and perceived constituency preferences is smaller if a member's district has higher union density, which implies that more contact with groups that represent the mass public may reduce staffers' misperceptions.

Existing work demonstrates that with politicians have contacts affects the information that politicians and their staffers receive and their perception of voter preferences. Although the extant work does not directly test whether lobbying or contacts by specific individuals and groups influence policy outcomes, Bils, Duggan, and Judd (2020) develop a model that examine how the effectiveness of lobbying could contribute to policy extremism. In their model, Bils, Duggan, and Judd (2020) show that when lobbying is ineffective, both candidates converge to the median voter's ideal point. However, when the effectiveness of

money becomes large, this could lead to arbitrary extreme policy outcomes. This suggests that the role of group influence on policy outcomes hinges on the effectiveness of interest groups in their use of money to affect electoral outcomes and lobbying legislators to change policies.

Although the impact of polarization on governance is not definitive (Lee 2015), there are possible areas where polarization could influence the policymaking process, vis-à-vis politicians' interaction with interest groups. One of those areas is the impact of polarization on legislators' incentives to acquire information. Recently, scholars have illustrated how persuasion happens in a collective decision-making setting (Caillaud and Tirole 2007; Kamenica and Gentzkow 2011). Congress is a quintessential example of collective policymaking, and theoretical frameworks have been developed to study how persuasion among legislators works in Congress (Schnakenberg 2017; Awad Forthcoming). Information is a key tool in persuasion and, from the perspective of a policy sponsor (e.g., committee chair), selecting witnesses to present at congressional hearings plays a crucial role in informing other members and consequently persuading them.

Park (2017) used evidence from a lab experiment to show that political polarization can affect witness selection and can prevent legislative hearings from being informative. Building on experimental evidence presented by Park (2017), Ban, Park, and You (2020) examine how polarization is associated with the selection of witnesses and information provision from witnesses in actual legislative hearings. They show that hearings on more polarized issues include witnesses who are more extreme since persuasion of staunch opponents is less likely to occur (Kamenica and Gentzkow 2011). Thus, the invited witnesses provide little analytical information and more political information that would reinforce the members' existing beliefs, and subsequently, lead to little updating in members' positions on the issues. This burgeoning literature suggests that exploring the role of polarization on legislative behaviors outside of roll-call voting would be a fruitful direction to fully understand the consequences of polarization on governance.

6. Interest Groups and Polarization in South Korea

The role of interest groups outside of the US has received relatively little attention from scholars, although there is an increasing number of published studies have regarding interest group activities in the European Union (e.g., (Klüver 2013). A similar pattern pertains to the role of interest groups in Korean politics. Research on the causes of the polarization in Korean politics has increased and extant literature mostly focuses on the voter polarization, party organizations, and the media. Interest groups and their role are rarely mentioned as a potential cause of polarization. In this section, I briefly examine the campaign finance and lobbying system in Korea and highlights its similarities to and differences from the US system.

In Korea, campaign finance is highly regulated and this is related to the historical role of money in its elections. Throughout Korean history, there have been multiple political scandals related to illegal money laundering and bribery involving prominent politicians. The 2002 presidential campaign marked a turning point in the demands for reforms to campaign financing. During the 2002 presidential campaigns, the media reported that prominent business groups in South Korea illegally delivered money to political candidates. In particular, Hoi-Chang Lee from the Hannarah Party (the opposition party at that time) received millions of dollars from a truck filled with cash. This scandal stunned the nation and calls for tightening regulations on campaign finance and banning the interference of business interests increased after the scandal was revealed.

A big reform took place in 2004 in South Korea regarding campaign finance. It aimed to increase transparency in reporting and increase the role of small donors. Crucially, it banned any contributions from corporations and organized interests to reduce the influence of non-individual donors, especially corporations. The current campaign finance system in Korea puts strong restrictions on both donors and candidates. First, individuals can donate up to total of 20,000,000 won (~ $18,000) per year. Individual donors can donate a maximum of 5,000,000 won (~ $4,500) to a party organization or a congressional candidate. Donors can give up to 10,000,000 won (~ $9,000) to a presidential candidate and her campaign. Individual donors who donate more than 3,000,000 won(~ $2,800) are required to disclose their identity and contribution records.[4]

4 Source: National Election Commission of South Korea (https://m.nec.go.kr/portal/bbs/list/ B0000269.do?menuNo=200170).

Groups are not allowed to donate on behalf of their organization but there have been scandals and speculations that members of particular groups coordinated their donations to politicians.[5]

Corporations, labor unions, and other groups allocate money to their employees and members and these individuals donate to politicians. In doing so, they ensure individual donors donate less than 3,000,000 won so that their identities are not revealed. The ban on group donations is a product of the 2004 reform but critics have raised the issue that the strict ban on any group donations facilitates illegal behaviors and imposes significant constraints on groups' freedom to express their opinions. Although the ban on group contributions was intended to prevent any appearance of corruption, it also stripped away some positive functions of campaign contributions. Some argue that campaign contributions can facilitate the communication between citizens and politicians and contributions could signal the quality of candidates (Jacobson 1990) or the credibility of policy-relevant information that groups possess (Gordon and Hafer 2005).

There is also a strict restriction on how much money candidates may raise in Korea. Legislators in the National Assembly may raise up to 150,000,000 won (~ $120,000) in non-election year and 300,000,000 won (~ $240,000) in an election year.[6] There is also a public financing system that allows legislative and presidential candidates to be reimbursed for their expenditures during campaigns if their vote shares are equal to or above 15% of the total votes. All these measures combined imply that there are strong regulations in Korea's campaign finance system, regarding both from donors' freedom to donate and candidates' ability to raise and spend money. This is a stark contrast to the US campaign finance system where the argument, "money as speech," has been widely accepted and restrictions on campaign finance have been lifted over time.

Figure 3 shows the number of donations made by 'large' donors whose identities and contribution records are revealed because they donated more than 3,000,000 won per year.[7] In a country with 41 million voting-eligible population, the number of large donors is quite small. Although it is still possible that donors have disproportionate access to politicians in

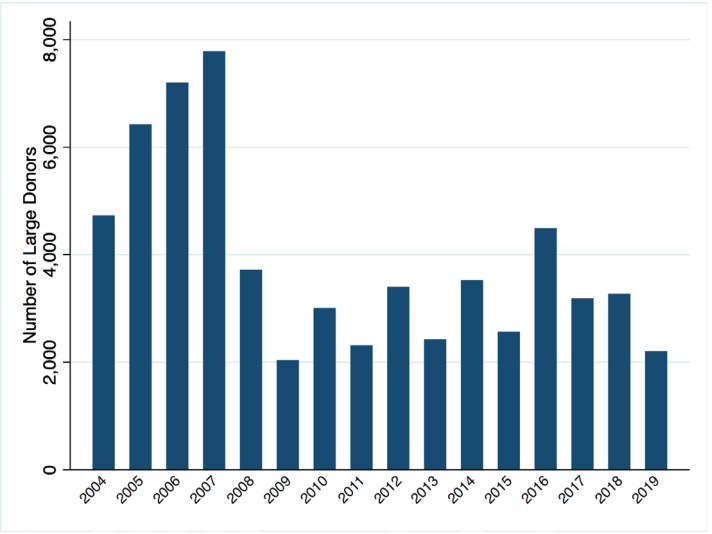
5 http://news.bizwatch.co.kr/article/tax/2018/02/10/0001

6 https://www.easylaw.go.kr/CSP/OnhunqueansInfoRetrieve.laf?onhunqnaAstSeq=97& onhunqueSeq=3636

7 Data is obtained from the National Election Commission based on a request.

South Korea, the campaign finance system does not seem to play a crucial role in explaining interaction patterns between voters and politicians.

Figure 3: Number of Large Donors in Korea, 2004-2019



Similar to the campaign finance system, lobbying is also heavily regulated in South Korea. Although there is no law that directly regulates lobbying activities, there are various legal constraints that prohibit more comprehensive lobbying activities. For example, individuals and groups cannot hire a person or a firm in order to lobby bureaucrats and politicians on their behalf. Corporations and groups hire former bureaucrats and congressional staffers as their employees and these revolving-door personnel (revolvers) play the role of in-house lobbyists on behalf of their employees. However, given that there is no explicit law that regulates lobbying activities, there are no reporting requirements for lobbying activities to generate information about lobbying in South Korea. There were attempts in the 2000s to legalize lobbying in Korea and three bills were introduced to the National Assembly. However, due to the public's negative perception of lobbying and other politicians' lack of interests, none of the three bills advanced beyond the committee stage.[8]

8 https://www.nars.go.kr/report/view.do?cmsCode=CM0156&brdSeq=2148

Those in-house lobbyists contact their former colleagues, often using personal connections through hometowns and schools they both attended. This implies that politicians and staffers have limited contacts with a narrow number of organizations through lobbying. Given that there is no systematic research on estimating ideologies between groups that do and do not hire revolving-door lobbyists, it is difficult to know whether lobbying by a very limited set of groups would increase or decrease polarization.

However, the overly restrictive lobbying system in South Korea can affect the quality of policies that legislators produce. Providing information as a form a lobbying has long been characterized in the formal theory literature (Austen-Smith 1993; Lohmann 1995; Schnakenberg 2017) and legislators constantly seek information to develop their policies. Inputs from various interest groups could transmit valuable information to policymakers and lead to higher-quality policies. If various groups have unequal distributions of resources, allowing more lobbying could generate a bias toward more affluent and active groups. This implies that lobbying activities could embody trade-offs between the degree of bias and the quality of policymaking. However, current regulations on lobbying in South Korea do not seem to take the quality of policymaking dimension into account, as most debates on legalizing lobbying center around the potential bias that legalized lobbying could be generated in favor of business interests and affluent groups. However, the current lobbying environment in Korea constrains smaller and non-business groups from hiring a third-party to advocate for them. Some fear that legalizing lobbying to a full-scale industry could give disproportionate advantages to well-sourced groups like conglomerates; but those groups already employ revolvers and utilize their personal connections to get access to politicians. Given that, it is unclear whether legalization of lobbying would further exacerbate the already unequal representation of various interest groups.

7. Conclusion

How do interest groups contribute to polarization? Polarization has received much attention from the media, the public, and scholars as a defining feature of contemporary American politics. At the same time, money spent on politics in the US has dramatically increased over the last decades. Campaign contributions and lobbying are cited as two main mechanisms that interest groups use to influence the current political landscape in the US. In this article, I examine existing work to draw a connection between money's role in politics and polarization in the US. Although there is no definitive answer to the question of whether the campaign finance system and lobbying contribute to increasing polarization, it is clear that donors and lobbying groups in the US have preferences that are distinct from the general public's and that politicians' interactions with citizens are heavily biased toward donors and lobbying groups. Also, increases in income inequality imply that the unequal political participation and representation will be amplified in coming years.

I also examine the campaign finance and lobbying system in South Korea. Although both campaign finance and lobbying are highly regulated, which may reduce concerns about the influence of money on polarization, this could also generate issues of unequal access to politicians. Bans on contributions from groups and third-party representation in the lobbying process prohibits information transmission among citizens and politicians since a narrow set of groups, mostly large corporations and law firms that have conglomerates for clients, can hire revolving-door bureaucrats and ex-staffers. This implies that existing personal connections play an important role in acquiring access to politicians, which creates unequal opportunities in rights-to-petition and poor quality in the policymaking.

There are two understudied areas of research where more examination could help us understand the influence of money and groups on polarization. First, interest groups have expanded the tools they employ for political influence. After the Citizens United decision in 2010, independent expenditures through Super PACs have dramatically increased (Briffault 2012). Fundraising ability has been an important criteria to evaluate candidate quality and extreme candidates tend to have disadvantages in broadening their appeal to many donors. Political sponsorship from a small number of wealthy donors implies that extreme candidates could survive longer in primaries and electoral competitions. Therefore, it would be fruitful to study how the rise of Super PACs and independent expenditures change the selection of candidates (Cox 2020).

The role of social media is another area where more research could lead to a better understanding of the causes of polarization. Levy (Forthcoming) shows that social media limits individuals' exposure to news that is counter to their own political opinions and, therefore, increases polarization. News and information consumption on social media play an important role in individuals' opinions about various issues and interest groups actively use social media platforms to communicate their agendas and policy goals (van der Graaf, Otjes, and Rasmussen 2016). Does the rise of social media reduce or amplify existing inequality in political participation among interest groups? Do interest groups disseminate more polarized messages on social media than their messages in off-line activities? What issues do interest groups mention more often in social media and how do they interact with politicians? There is a burgeoning literature on social media and interest groups (Whitesell 2019) and more research on this topic will shed light on how interest groups use new communication platforms and how that contributes to polarization.

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Redistribution Policy, Economic Incentives, and Social Preference

SeEun Jung*

Abstract

We attempt to analyze factors that explain individual political orientation and supportiveness of redistribution policy via an online experiment with 1000 representative samples in Korea. We incentivize the experiment to capture individual productivity, political orientations, risk and competition preference, and social preference. The results suggest that people who are more inequality averse, who believe that success requires luck, and women, who are less overconfident than men, tend to set higher tax rates, and those who are more productive and successfully competitive tend to prefer lower tax rates. In addition, we find that there is 'partisan bias' on the supportiveness of redistribution policy. Depending on which party executes the tax policy through the experiment, preferred tax rates may vary significantly, which is larger for left voters.

JEL Classifications: C91, D64, D72, D91, I38
Keywords: Redistribution Policy, Social Preference, Economic Incentives, Online Experiment

1. Introduction

Why are people supportive of income redistribution? Classical economic theory assumes that people have self-interested preferences and only respond to economic incentives, so only poor people should support income redistribution. However, many empirical studies and experiments suggest that individuals also contain other-regarding preferences, and social preference sometimes makes individuals behave against their self-interests. According to existing economic studies, economic incentives affect decisions to support various economic policies. While voters will support policies to maximize individual

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economic gains, the various individual economic preferences and social preferences can also impact the decisions of supporting policies. For example, risk-averse individuals are likely to support progressivism. Because progressive social parties traditionally support redistribution policies, risk-averse individuals are likely to accept redistribution policies as social safety nets (Bishop et al. 1991). In addition, a study by Carlson et al. (2005) suggested that risk-averse voters are likely to support progressive parties because they are usually inequality averse. Similarly, competitive individuals are more likely to have a winner's view because they are confident of winning the competition and support liberal conservatism that guarantees success rather than redistribution. As such, simply speaking, there could be a link between political orientation and these preferences driven by economic incentives.

Let's think about the redistribution policy. Who would agree to the income redistribution policy or the redistributive tax? The preference for redistribution policy is one of the long-standing topics in the field of political economics. Without considering political orientation and social preferences, existing standard economics predicts that only those who will receive the tax benefit would support this policy. In the standard economic model, individuals prefer situations that are economically beneficial to them, so there will be no economic incentive for high-income groups to support redistribution. However, as much research has already been done, individuals have social preferences or a desire for fairness (Camerer 2003, Ledyard 1995, Fehr and Falk 2002, Fehr and Gachter 2002 and so on). In other words, individuals have a preference not only for economic rewards but also for others, which is reflected in their behaviors. This results in some high-income earners supporting income redistribution. That is, redistribution policies can be supported by selfish decisions caused by low-income earners' incentives for economic compensation and the preference of high-income earners with other-regarding preferences. Among several studies, Esarey et al. (2012) conducted experiments to analyze how social preferences affect tax decisions. Their study showed that economic incentives have a significant impact on tax decisions. That is, higher-income earners preferred lower tax rates, and lower-income earners preferred higher tax rates. However, the impact of political orientation and social preference for fairness and fairness on tax rates was vague. The authors suggested that this may be because political tendencies and social preferences were not large enough to overwhelm economic incentives.

In this study, we conduct an Internet experiment and collect political opinions and social preferences from 1,000 Korean representative samples. Distinctive differences from existing experimental studies are (1) online experiments were conducted with samples representing South Korea rather than just using limited laboratories, and (2) actual preferences were measured using economic incentives, unlike other online surveys. Variables for preference measured by simple questions in general surveys without economic incentives are likely to have a bias in the direction they want to be seen by others (self-serving bias), and this bias is often different from actual behaviors (Miller and Ross, 1975; Singer and Ye, 2013). Therefore, the experiment contributes to this literature by reporting how political orientations and various preferences explain real behaviors.

2. Theoretical Background

This chapter describes the theoretical background linking economic incentives to political orientation. In this experiment, after performing real effort tasks, taxes are paid or received with compensation (wage) acquired through the experiment, according to their preferred rate. The preference tax rate determined by individuals may be interpreted as a proxy for the real preference for how supportive he would be for the income redistribution policy. As detailed in the next chapter, participants will perform tasks that require actual effort online, determining their pretax wages. Before wages are notified, participants must determine the desired tax rate without other participants' information. Once the tax rate is determined, if the pretax wage is higher than the overall average pretax wage, the amount of the tax (tax rate multiplied by one's own wage) must be taken from his pretax wages. If the pretax wage is lower than the average pretax wage, the tax amount will be received. To prevent a motivation crowding-out effect due to taxes, the average pretax wage is guaranteed if the final wage becomes smaller than the average pretax wage after the tax is taken. The highest value also cannot exceed the average value if the tax is received.

2.1. Utility Maximization Problem

It can be assumed that an individual simply solves the utility maximization problem as follows:

$$\max_{t} \mathrm{E}[u] = \hat{p}e(1-t) + (1-\hat{p})e(1+t) - c - \beta\hat{h}$$

e represents effort, and if the wage is assumed to be 1, the piece rate can be considered wages. t represents the tax rate preferably chosen by the individual.[1] Participants eventually pay the tax amount if pre-tax wages are higher than the pre-tax average wages of all participants and receive the tax amount, vice versa. Participants were informed about this tax system at the beginning of the survey, so they expected their wages to be higher or lower than average without other participants' information. Let us mark

$$\hat{p}(e, \gamma | e_{-i})$$

as the expected probability performing above the average. γ can capture one's overconfidence. Therefore, it is possible to assume $\hat{p}_e > 0, \hat{p}_\gamma > 0$, suggesting that the greater the effort or the greater the self-confidence, the greater the likelihood you will expect your wages to be higher than average. Meanwhile, it is costly to expend effort. These costs $c(e, k)$ are defined as a function of effort and individual skills k. We can additionally assume that $c_e > 0, c_{ee} > 0, c_{ek} < 0$ based on the assumption of a standard cost function. It is also assumed that the marginal cost varies depending on the abilities and skills of the individual. In other words, a person with a good ability has a small marginal cost.

We also consider that individuals have different preferences for inequality in consideration of social preferences. To this end, the individual's expected post-distribution inequality is defined as $\hat{h}\,(g\,(t, E), \delta | K)$, $g(t, E)$ represents the variance of income after redistribution, and E represents all participants' effort $E = (e_1, e_2, ..., e_N)$. δ represents the portion of income

1 In experimental studies in general, the tax rate was determined using the median voting rule, but as this experiment was conducted online, it was impossible to determine the tax rate at the same time using the median voting rule, we had to simplify the definition of tax rates as individual tax rates. If a participant chose his preferable tax rate, this rate applied only to him: it is not a universal tax rate to everyone. Therefore, the tax rate decisions that we will see in this work are considered a partial equilibrium analysis, and we only focus on individual preferences thoroughly.

distribution that is arbitrarily influenced by luck, not by individual effort, following Alesina and Angeletos (2005). β can be assumed to be the degree of individual inequality aversion. This allows the following assumptions to be made without losing generality: $\hat{h}_t = \hat{h}_{ggt} < 0$, $\hat{h}_{tt} = \hat{h}_{gg}(g_t) + \hat{h}_g g_{tt} > 0$

To simplify the analysis, as in Esarey et al. (2012), we assume the following: First, there is no tax-induced disincentive effect. In other words, they make the same effort regardless of ($\frac{\partial e^*}{\partial t} = 0$). The predicted probability given by indi-t he tax rate they set viduals is not related to the preference for inequality and the tax rate (i.e., $\hat{p} \perp \beta, t$), and a marginal change of individual effort on his expected utility loss due to inequality is negligible (i.e., $\frac{\partial \hat{h}}{\partial e} \approx 0$). Then, the First Order Condition yields the following:

$$\left.\frac{\partial \mathrm{E}[u]}{\partial t}\right|_{\frac{\partial e^*}{\partial t}=0} = (1 - 2\hat{p})e - \beta\hat{h}_t = 0 \qquad (*)$$

2.2. Predictions

2.2.1. Inequality Aversion

From (∗), using the implicit function theorem, w.r.t β,

$$\hat{h}_t + \hat{h}_{tt}\frac{\partial t}{\partial \beta} = 0 \Rightarrow \frac{\partial t}{\partial \beta} = -\frac{\overset{-}{\hat{h}_t}}{\underset{+}{\hat{h}_{tt}}} \geq 0 \qquad (1)$$

A person's preferred tax rate grows as his/her aversion to inequality grows.

2.2.2. Overconfidence

From (*), using the implicit function theorem, w.r.t γ,

$$-2\hat{p}_\gamma e - \beta\hat{h}_{tt}\frac{\partial t}{\partial \gamma} = 0 \Rightarrow \frac{\partial t}{\partial \gamma} = -\frac{\overset{+}{2\hat{p}_\gamma e}}{\underset{+}{\beta\hat{h}_{tt}}} \leq 0 \qquad (2)$$

A person's preferred tax rate falls as his/her overconfidence grows.

2.2.3. Luck

From (*), using the implicit function theorem, w.r.t δ,

$$\hat{h}_{t\delta} + \hat{h}tt \frac{\partial t}{\partial \delta} = 0 \Rightarrow \frac{\partial t}{\partial \delta} = -\frac{\hat{h}_{t\delta}}{\hat{h}_{tt}} = -\frac{\overset{+}{\hat{h}_{g\delta}}\bar{g}t}{\underset{+}{\hat{h}_{tt}}} \geq 0 \qquad (3)$$

A person's preferred tax rate rises as s/he belief in the degree of inequality determined by external forces such as luck rises.

2.2.4. Skill

From (*), using the implicit function theorem[2], w.r.t k,

$$(1-2\hat{p})\, e_k - 2\hat{p}_e e_k e - \beta \hat{h}_{tt} \frac{\partial t}{\partial k} = 0 \Rightarrow \frac{\partial t}{\partial k} = -\frac{(2\hat{p}-1)\overset{+}{ek} + 2\hat{p}_e \overset{+}{e_k e}}{\underset{+}{\beta \hat{h}_{tt}}}$$

therefore,

$$\hat{\mathrm{p}} \geq \frac{1}{2} \Rightarrow \frac{\partial t}{\partial k} \leq 0 \qquad (4)$$

If a person evaluates his/her probability to be above the mean, his/her preferred tax rate falls with skill.

2.2.5 Risk Preference

Consider the mean-variance utility model separately to link with risk aversion, following all general assumptions. A person would perceive the distribution of his earnings based on his expected probability of winning ($\hat{p}$) as follows:

earning (M)	$e(1-t) - c - \beta\hat{h}$	$e(1+t) - c - \beta\hat{h}$
expected probability P ($M = m$)	$\hat{p}$	$1-\hat{p}$

2 $\left.\frac{\partial \mathrm{E[u]}}{\partial \mathrm{e}}\right|_{\frac{\partial \hat{\mathrm{h}}}{\partial \mathrm{e}} \approx 0} = -2\hat{p}_k t - c_{ek} = -2\hat{p}_e e_k t - c_{ek} = 0 \Rightarrow e_k = -\frac{\overset{-}{c_{ek}}}{\underset{+}{2\hat{p}_e t}} \geq 0$

Then, he would maximize the mean-variance utility (u') with risk aversion parameter $\lambda > 0$.

$$\max_{t} E[u'] = \mu(\hat{p}, e, t) - \frac{\lambda V(\hat{p}, e, t)}{2}$$

$\mu(\hat{p}, e, t)$ is the expected earning ($\hat{p}e(1-t) + (1-\hat{p})e(1+t) - c - \beta\hat{h}$) and $V(\hat{p}, e, t)$ the variance of earning ($4e^2\hat{p}(1-\hat{p})t^2$). To simplify the analysis, we assume that the risk aversion parameter is uncorrelated with cost and effort (i.e. $\lambda \perp \hat{p}, e$). Then, FOC yields

$$\frac{\partial E[u']}{\partial t} = \mu_t - \frac{\lambda V_t}{2} = 0 \qquad (**)$$

From (**), using the implicit function theorem[3], w.r.t λ

$$\mu_{tt}\frac{\partial t}{\partial \lambda} - \frac{V_t}{2} - \frac{\lambda V_{tt}}{2}\frac{\partial t}{\partial \lambda} = 0 \Rightarrow \frac{\partial t}{\partial \lambda} = -\frac{\overset{+}{V_t}}{\underset{+}{\lambda}\underset{+}{V_{tt}}} < 0 \qquad (5)$$

The preferred tax rate decreases as the person becomes more risk averse. However, there is another channel to consider regardless of this experiment itself: risk-averse individuals might prefer having a safety net, where risk aversion might also be positively correlated with the preferred tax rate.

3. Experiment Design

The survey was conducted in November 2018 and in December 2018 by an online survey company [embrain macromill]. Before this survey, a preliminary survey was conducted with 100 people with representative characteristics of the Korean population to construct the performance distribution of the real effort tasks that we use in our experiment. The main survey was conducted with a representative sample of 1,000 Korean people. The average duration of a survey session was approximately 30 minutes. The compensation was paid differently according to the final credit earned by each participant[4]

3 $\mu_t = 2_{pe} - e \Rightarrow \mu_{tt} = 0$

4 Participation fee KRW 2800 + compensation by performance on average KRW 3341.

The design of the experiment is as follows. Each participant proceeds from step 1 to step 7.

Stage 1: Real effort task 1 (individual task): individual piece-rate calculated based on the performance, incentivized

Stage 2: Tax rate decision: participants choose the tax rate preferred, incentivized

Stage 3: Competition Choice: Choose whether to compete with other participants, incentivized

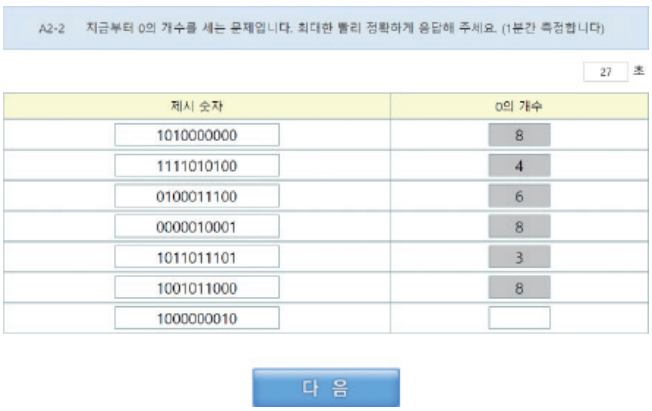
Stage 4: Real effort task 2 (competition task or an individual task depending on his competition decision): competition: winner-take-all compensation, no competition: individual piece rate, incentivized

Stage 5: Lottery choices (eliciting risk aversion measure): Ten lottery choices, incentivized

Stage 6: Collecting political orientation questions and demographic information, non-incentivized

Stage 7: Notice of competition results and lottery winning status, final credit announcement

3.1. Real Effort Task: Counting Zeros



In the field of experimental economics, productivity is often measured through tasks that need participants' efforts. Labor productivity is often measured by simply solving

problems such as summing five two digit numbers (Niederle and Vesterlund, 2007), finding a maze, finding a typo, or remembering words. Another famous experimental task is to play the counting sevens game, which is counting how many sevens are in the block as much as possible in a limited time (Mohnen et al. 2008). In this experiment, we introduce the counting 0s game, a more simplified task of transforming the counting sevens game. Counting zeroes, as shown in the figure below, is a task of finding as many times as possible how many times a zero appears in a given ten digit number consisting of only 0 and 1 in a minute. The piece rate is ten for this task.[5]

3.2. Tax Rate Decision

After Stage 1, participants receive information on their scores in Stage 1 and the corresponding earnings so far. Then, they decide what could be their preferable tax rate. To eliminate the bias related to participants' political orientation and the South Korean government's current ruling party at the time of the survey, we make a randomly chosen party seen as the hypothetical ruling party.[6] Participants are clearly informed that once participants decide their preferable tax rate, they will either pay or receive the amount of tax (their final earning multiplied by their chosen tax rate) if their final earning is above or below the pretax average earning of all participants. It is also clearly stated that this tax aims to foster the redistribution of the earnings.

3.3. Choice of Competition

Participants decide whether to participate in a competition with other participants of the same age group for the games played in Stage I. When participating in the competition, we compared individual performance with the average performance of participants of the same age group of samples collected in the presurvey to determine the winner or the loser.[7] We compare performance among the same age group to consider that the higher the age group,

5 In this experiment, we simplified tasks as much as possible in using computers since we have age groups with older people who are not very familiar with using computers for surveys.

6 According to Mullinix (2016), individuals may change their opinions on a specific policy depending on which party (democratic vs. republican) is suggesting the policy.

7 The age groups are the 20s, 30s, 40s, 50s, and 60s.

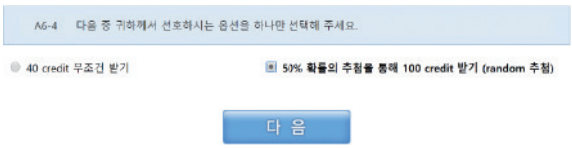
the lower the willingness to participate in Internet games. When the person chooses to compete, they receive 20 as the piece rate when they win, and they receive nothing if they lose. If no competition is selected, the credit calculation is the same as in Stage 1: the piece rate is ten.

3.4. Real Effort Task: Competitive/Noncompetitive Situations

Participants perform the real effort task the same as Stage 1. To avoid the effects of this stage's win/loss results on the following stages, the results were provided at the end of all stages, not at this stage.

3.5. Lottery choice: Risk Aversion Elicitation

Ten questions of a lottery (risky option) vs. a certain credit (safe option) choice: Risk aversion can be measured depending on at how much certain credit an individual switches his or her choice between a risky lottery and the certain credit by transforming the certain credit from 10 to 100. Finally, one question out of ten is randomly picked. Individuals would receive either a certain credit or play the lottery of that question depending on their choice between the lottery and the credit.



Ten choices (from ten certain credits to 100 credits vs. 50% of 100 credits)

3.6. Collecting political orientation questions and demographic information

We collected preferences for political and economic policies in 25 questions, political parties supported, and political orientation. Answers were collected on a Likert scale from 0 (aggressive opposition) to 10 (aggressive consent). The questions on political and economic policy are as follows.

B1. We need to provide aid to North Korea.

B2. We should break away from U.S.-centered diplomacy as China becomes more important.

B3. Refugees should be allowed.

B4. FTA hurts Korea's economic sovereignty.

B5. Welfare expansion is more important than economic growth.

B6. Regulations on large corporations are necessary.

B7. The rich should be taxed, and money should be given to the poor. (Introduction of wealth tax)

B8. I'm against the Internet real-name system.

B9. We should guarantee the rights of sexual minorities.

B10. Conscientious objection to military service should be allowed.

B11. We must guarantee freedom of assembly and demonstration.

B12. To protect consumers, the government must intervene in the economy.

B13. Inheritance wealth is not just.

B14. The government should publicize public goods such as roads and electricity. B15. Excessive government intervention is necessary for the economy.

B16. Health care should be equally provided to everyone regardless of the ability to pay.

B17. Quality education is everyone's right.

B18. Modern society needs governmental surveillance.

B19. If I have different political views, I don't have to support the nation. B20. Maintaining a traditional family is important.

B21. Rich people in Korea are not paying enough taxes.

B22. Many of the barriers to women's social life have disappeared.

B23. Selection through test scores is the fairest way.

B24. Military power is the best way to achieve peace.

B25. Even at cost, we should reduce nuclear dependence.

We collected information about individual political orientation (progressive 0-conservative 10), supporting party, and the party supported during the 2012 presidential election. Additionally, we collected self-reported preferences for risk and competition. In addition, we collected demographic information (gender, age, region, educational background, occupation, marital status, child, average monthly income, spouse income, assets, SNS usage) at the end.

3.7. Notice of competition results, lottery winning status, and final credit announcement

At the end of all the questions, the previous game results, whether the competition was won or lost, information on winning the lottery, and finally, the credits participants re- ceived were announced, and the survey ended.

4. Results

4.1. Basic Statistics

Table 1 presents the basic statistics for the 1,000 participants in the experiment. Forty-nine percent of the participants were women, with an average age of 43.76, and 74% of the participants were college graduates. Eighty-nine percent of the participants were employed, 66%were married, and 58% had children. Monthly income and assets were collected in categories and replaced by the approximate value of income and assets with the category's lower bound value to facilitate analysis. The variable of the social networking service (SNS) use is defined as the number of choices by choosing two channels that they usually use when accessing the news: Internet portal, television news, SNS, Internet community, and paper.[8]

8 The maximum age of participants is 69, leaving out the population in their 70s and older. Due to the nature of online experiments, the pool of participants is relatively young and, therefore, relatively progressive.

4.1.1. Political Conservative Tendencies

Table 2 provides the basic statistics for questions about political orientation. The self-reported political bias variable is a variable collected on a Likert scale (conservative (10) - progressive (0)). On average, it is slightly progressive in the middle (4.59), with a standard deviation of 1.93. The median value is 5 (center), indicating that the overall distribution is divided by 50.

Table 1: Summary Statistics: Sociodemographic Information

	obs	mean	sd	min	man
Female (=1)	1000	0.49	0.50	0	1
Age	1000	43.76	12.90	20	69
University (=1)	1000	0.74	0.44	0	1
Married (=1)	1000	0.66	0.48	0	1
Child (=1)	1000	0.58	0.49	0	1
Working (=1)	1000	0.89	0.32	0	1
Monthly Income	1000	283.50	208.71	0	1000
Spouse Monthly Income	1000	135.50	187.26	0	1000
Asset	1000	26665	40189.77	0	300000
SNS usage	1000	1.1262	0.49	0	2

The comprehensively derived conservative political orientation variable defined as 'revealed conservatism' is the average of 25 questions. Except for B18, B20, B22, B23, and B24, the mean value was obtained by adding ten minus the reported value. This is because most of the questions are close to the progressive values. In other words, it can be interpreted that the closer the value is to ten , the more conservative , and vice versa. The average and median values are close to 4.5. The standard deviation is 0.95, which is biased to the left compared to the self-reported political variable with a smaller standard deviation. From this, we can infer that participants are more progressive and less extreme than they think.

The 25 questions related to political orientation can be divided into two categories: 12 questions of political value (B1, B2, B3, B8, B9, B10, B11, B18, B19, B20, B24, B25) and 13 questions of economic value (B4, B5, B6, B7, B12, B13, B14, B15, B16, B17,

B21, B22, B23). This is because the direction of preference on economic and political issues may be different. For example, regarding conservative parties' policies, competitive and risk-taking participants can be supportive in a liberal view of market competition. In contrast, risk-averse participants can be politically conservative, defending tradition and not pursuing change. Therefore, this study analyzes conservatism by dividing it into political and economic parts. Basic statistics show that the revealed conservatism (5.16) derived from the question of political values is closer to the center (5 points) than that (3.92 points) derived from economic values. This may be interpreted as participants' political conservative preference being rather moderate on average, but it would be more progressive for economic issues. Figure 1 is a distribution chart of conservativeness averaged based on the issues related to the 25 political and economic policies. Many participants answered that they were in the center on the self-reported conservatism measure, while 25 questions on the conservatism measure were slightly biased towards the left (progressive). This suggests that participants are more progressive than they think and report.

Table 2: Summary Statistics: Political Questions

	median	mean	sd	min	max
B1	5	5.16	2.46	0	10
B2	5	4.54	2.12	0	10
B3	4	3.67	2.50	0	10
B4	5	4.44	1.90	0	10
B5	5	4.86	2.30	0	10
B6	7	6.60	2.41	0	10
B7	7	6.78	2.60	0	10
B8	3	3.73	2.90	0	10
B9	5	5.41	2.79	0	10
B10	3	3.05	2.72	0	10
B11	7	6.80	2.14	0	10
B12	6	6.37	2.13	0	10
B13	5	4.73	2.55	0	10
B14	8	7.37	2.30	0	10
B15	5	4.92	2.29	0	10

	median	mean	sd	min	max
B16	8	7.44	2.09	0	10
B17	8	8.19	1.76	0	10
B18	5	4.96	2.49	0	10
B19	5	5.77	2.40	0	10
B20	5	5.48	2.40	0	10
B21	8	7.84	2.33	0	10
B22	6	5.64	2.60	0	10
B23	5	4.84	2.48	0	10
B24	6	5.98	2.41	0	10
B25	5	5.71	2.80	0	10
Self-reported conservatism	5	4.59	1.93	0	10
Conservatism revealed (total)	4.52	4.54	0.99	1	10
Conservatism revealed (political)	5.16	5.21	1.10	1	9
Conservatism revealed (economic)	3.92	3.91	1.02	0.54	9.23
Support conservative party in 2012 election	0	0.205	0.41	0	1

Figure 1: Political Orientation Distributions

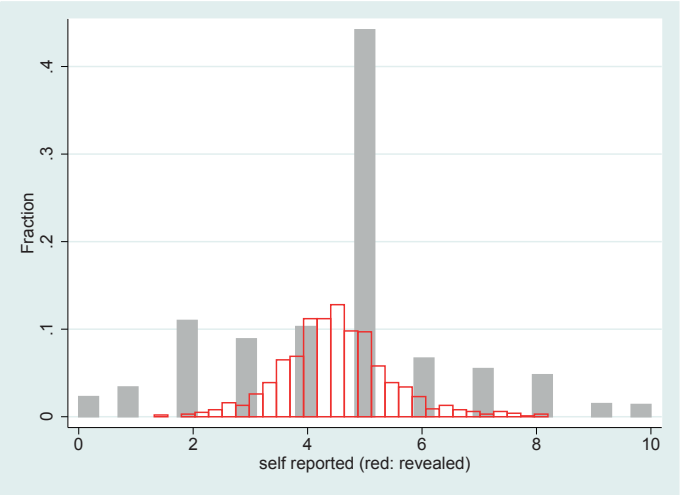


Table 3 shows summary statistics for conservativeness variables by gender and age. Women's conservative tendencies are generally lower than men's. Men tend to overestimate self-reported conservative political tendencies, while women do not differ significantly from self-reported conservative political tendencies and derived conservative political tendencies. It also appears that there is a greater difference in views on political beliefs than on economic values. By age group, conservative political tendencies show a U-shape. Conservative tendencies in their 40s (derived conservative political tendencies: 4.35) are the lowest, and conservative tendencies in their 20s (derived conservative political tendencies: 4.66) are higher than those in their 3/4/50s. Conservative tendencies decrease to their 40s and then start to increase (4.66→4.44→4.35→4.52→4.84). Interest- ingly, people's self-reported conservative tendencies in their 20s are more progressive than revealed (derived) conservative political tendencies, while in general, self-reported conservative tendencies are more conservative than revealed conservative political tendencies. This suggests that people in their 20s tend to underestimate their conservative tendency compared to other generations.

Table 4 shows the pairwise correlation matrix between the self-reported conservative tendency and derived conservative political tendencies. Variables are strongly correlated with one another. Additionally, the derived conservativeness variables between economic and political values are significantly correlated. Therefore, the variables that we use in this study can be considered as significant measures reflecting one's political orientation through various dimensions.

Table 3: Summary Statistics: Political Questions by age and gender

	Gender		Age				
	Male	Female	20s	30s	40s	50s	60s
Observations	507	493	185	198	231	230	156
B1	5.37	4.95	4.37	5.07	5.65	5.41	5.12
B2	4.34	4.74	3.91	4.47	4.94	4.93	4.18
B3	3.81	3.52	2.24	2.91	4.11	4.60	4.28
B4	4.12	4.78	4.10	4.55	4.88	4.50	3.99
B5	4.83	4.88	5.28	5.39	4.89	4.63	3.97
B6	6.67	6.54	6.54	7.10	6.88	6.57	5.68

	Gender		Age				
	Male	Female	20s	30s	40s	50s	60s
B7	6.96	6.58	6.56	7.12	6.97	6.90	6.13
B8	3.72	3.74	3.44	3.26	3.88	4.02	4.04
B9	5.12	5.70	5.99	5.86	5.43	5.08	4.57
B10	2.67	3.44	2.07	2.66	3.48	3.65	3.21
B11	7.03	6.57	7.26	6.92	6.96	6.60	6.19
B12	6.54	6.19	6.19	6.42	6.42	6.44	6.33
B13	4.81	4.65	4.14	4.35	4.91	5.10	5.09
B14	7.59	7.15	7.18	7.40	7.55	7.20	7.54
B15	5.07	4.77	4.16	4.71	5.40	5.11	5.12
B16	7.59	7.29	7.78	7.59	7.51	7.16	7.18
B17	8.34	8.03	8.34	8.35	8.17	7.92	8.21
B18	5.21	4.71	4.96	5.01	5.06	4.76	5.06
B19	5.60	5.94	6.21	5.83	5.77	5.68	5.30
B20	5.96	4.98	4.33	4.75	5.56	6.14	6.65
B21	7.79	7.90	7.39	8.27	8.04	7.88	7.49
B22	6.83	4.41	5.98	5.39	5.30	5.77	5.84
B23	4.83	4.86	4.76	4.80	4.92	4.73	5.06
B24	6.54	5.40	5.32	5.63	5.86	6.40	6.73
B25	5.39	6.04	5.78	6.26	6.20	5.33	4.79
Self-reported conservatism	4.75	4.42	4.51	4.42	4.35	4.83	4.88
Revealed conservatism (total)	4.64	4.44	4.66	4.44	4.35	4.52	4.84
Revealed conservatism (political)	5.39	5.04	5.28	5.18	5.01	5.17	5.56
Revealed conservatism (economic)	3.95	3.89	4.08	3.76	3.73	3.93	4.17
Support conservative party in 2012 election	0.23	0.18	0.11	0.12	0.18	0.26	0.39

Table 4: Pairwise Correlation Matrix for Conservatism Variables

	Self-reported	revealed (economic)
Conservatism revealed (total)	0.483***	0.459***
Conservatism revealed (political)	0.429***	
Conservatism revealed (economic)	0.400***	
Support conservative party in 2012 election	0.354***	

Table 5 is the result of a regression analysis of conservative political tendencies with demographic variables. It provides information on how gender, age, and educational background can be related to each conservative political orientation. First, women tend to be more progressive than men. Age, as shown in Table 3, takes the U-shape to explain conservativeness. On average, the impact on political orientation of one's monthly income and one's spouse's monthly income is not statistically significant here. However, it is interesting that monthly income during the 2012 presidential election seems to have reduced the possibility of supporting the conservative party. In other words, individuals with lower income supported the conservative party in 2012.[9] Interestingly, conservative tendencies derived from political belief values tend to be more progressive with more assets. Nevertheless, those who have more assets in conservative political tendencies derived from economic values tend to be more conservative. This suggests that rich people tend to take political ideologies and economic values differently in terms of conservativeness. In general, college-educated people are likely to be more progressive. The distribution of conservative political orientation by gender and age is as follows:

4.1.2. Competition Preference

This section analyzes the competition preference. Preferences for competition are collected in two ways. First, within the experiment, whether competing with other participants of the same age and gender (if the competition is selected, 1 or 0) shows the preference for competition. The second are self-reported variables (11-ladder Likert scale, 0 absolutely not

9 "Why do poor people vote for the rich¿' Thomas Frank, 2004, Henry Holt and Co.

competitive to 10 absolutely competitive) on how much individuals prefer competition in a survey question. Table 6 presents basic statistics on competitive preference variables. A total of 67% of all participants chose competition in the experiment, and the self-reported competition preference value was 4.85 on average.

Table 7 is an analysis of the determinants for competitive preferences. Similar to several existing studies (Niederle and Vesterlund, 2007 and so on), women do not prefer competition over men. Additionally, the older an individual is, the less competitive s/he becomes. Interestingly, the higher the monthly income and the higher the asset he has, the more competitive s/he is. It is difficult to verify the causality between variables and competition preference because those who prefer competition are more likely to be high-income earners in the first place. Risk preferences and competitive preferences have been shown to have a positive relationship.

Table 5: Conservatism Determinants on Socio-demographic variables

	(1) Self-reported	(2) revealed (total)	(3) revealed (political)	(4) revealed (economic)	(5) 2012 election
Female	-0.374***	-0.199***	-0.356***	-0.054	-0.067**
	(0.13)	(0.07)	(0.07)	(0.08)	(0.03)
Age	-0.054	-0.103***	-0.104***	-0.103***	-0.012
	(0.04)	(0.02)	(0.02)	(0.02)	(0.01)
Age sq.	0.001*	0.001***	0.001***	0.001***	0.000**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Married	0.009	-0.056	0.022	-0.128	-0.001
	(0.29)	(0.15)	(0.16)	(0.18)	(0.06)
Child	-0.018	0.183	0.157	0.206	-0.023
	(0.25)	(0.13)	(0.14)	(0.16)	(0.05)
log income	-0.031	0.020	0.007	0.031	-0.014*
	(0.04)	(0.02)	(0.02)	(0.02)	(0.01)
log spouse income	0.020	0.005	0.005	0.005	0.009
	(0.03)	(0.02)	(0.02)	(0.02)	(0.01)
log asset	-0.017	0.005	-0.015*	0.024**	0.004
	(0.02)	(0.01)	(0.01)	(0.01)	(0.00)

	(1) Self-reported	(2) revealed (total)	(3) revealed (political)	(4) revealed (economic)	(5) 2012 election
University	-0.212 (0.15)	-0.086 (0.07)	-0.063 (0.08)	-0.107 (0.09)	0.032 (0.03)
Constant	5.948*** (0.78)	6.557*** (0.39)	7.452*** (0.44)	5.730*** (0.48)	0.309* (0.16)
N	1000.000	1000.000	1000.000	1000.000	1000.000
r2	0.024	0.049	0.061	0.032	0.072

Table 6: Summary Statistics: Competition Preference

	obs	mean	sd	min	max
Choose to compete	1000	0.67	0.47	0	1
self-reported competition preference	1000	4.85	1.89	0	10

Table 7: Determinants of competition preference: Self-reported vs. Choose to compete

	(1) Self-reported	(2) Self-reported	(3) Self-reported	(4) Choice	(5) Choice	(6) Choice
Female	-0.286*** (0.07)	-0.277** (0.07)*	-0.287*** (0.07)	-0.201** (0.09)	-0.190** (0.09)	-0.189** (0.09)
Age	-0.037* (0.02)	-0.027 (0.02)	-0.029 (0.02)	-0.072*** (0.03)	-0.074** (0.03)*	-0.074*** (0.03)
Age sq.	0.000* (0.00)	0.000 (0.00)	0.000* 0.00)	0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)
Married	0.153 0.15)	0.161 (0.15)	0.167 (0.15)	0.310 (0.20)	0.306 (0.20)	0.306 (0.20)
Child	0.065 (0.14)	0.047 (0.14)	0.048 (0.14)	-0.066 (0.17)	-0.059 (0.17)	-0.059 (0.17)
Log income	0.039* (0.02)	0.037* (0.02)	0.036* (0.02)	0.065** (0.03)	0.067** (0.03)	0.067** (0.03)
Log spouse income	0.013 (0.02)	0.013 (0.02)	0.013 (0.02)	-0.009 (0.02)	-0.010 (0.02)	-0.010 (0.02)

	(1) Self-reported	(2) Self-reported	(3) Self-reported	(4) Choice	(5) Choice	(6) Choice
Log asset	0.019** (0.01)	0.019** (0.01)	0.016* (0.01)	0.001 (0.01)	0.002 (0.01)	0.002 (0.01)
university	-0.039 (0.08)	-0.035 (0.08)	-0.029 (0.08)	-0.112 (0.10)	-0.106 (0.10)	-0.107 (0.10)
Risk aversion (Lotteries)	0.043*** (0.01)	0.043*** (0.01)	0.044*** (0.01)	0.070*** (0.02)	0.069*** (0.02)	0.069*** (0.02)
Conservatism (Self-reported)	0.005 (0.02)			-0.042* (0.02)		
Conservatism (revealed total)		0.096*** (0.03)			-0.042 (0.05)	
Conservatism (revealed political)			-0.025 (0.04)			-0.018 (0.05)
Conservatism (revealed economic)			0.105*** (0.03)			-0.024 (0.04)
N	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000
r2	74.548	82.179	87.066	57.647	55.099	55.103

Table 8: Summary Statistics: Risk Preference

	obs	mean	sd	min	max
Risk Preference (lotteries)	1000	2.74	2.67	0	10
Self reported risk preference	1000	3.96	2.10	0	10

The relationship between competition preference and politically conservative variables depends on how competitive preference variables are collected. In the case of self-reported competition preference. The larger the conservative tendency, especially the more conservative in terms of economic value, the more competitive individuals tend to be. However, the conservative tendency lowered the decision to participate in the competition in this experiment. This suggests that real competition preferences may differ from competition preferences that individuals think they have.

4.1.3. Risk Preference

This section analyzes individuals' risk preferences. Table 8 shows the basic statistics for the risk preference variable. Like competition preferences, risk preferences are also collected in two ways. The first is to measure risk preferences with lottery choices, which are incentivized during experiments. This variable is defined as the number of lottery choices he chose considered risky options among ten questions. That is, the more lottery tickets he chooses, the more risk-taking s/he is. Participants selected 2.74 lottery tickets on average. The second is self-reported risk preference, which is, on average, 3.96.

Table 9 analyzes the determinants of risk preferences. Similar to many existing studies, women are more risk averse than men. Interestingly, it appears that marital status and spouses' income have a significant impact. Cash is preferred over lottery tickets when married, but the higher the spouse's income, the higher the preference for lottery tickets over cash.

The relationship between risk preference and political orientation is weaker than that with the preference for competition. The only significant case happens when we analyze the relationship between conservative tendencies separately with political and economic policy value and self-reported risk preferences. Political conservatism lowers self-reported risk preferences, and economic conservatism increases self-reported risk preferences. This is in line with the fact that conservative tendencies are positively correlated with risk aversion when emphasizing nationalism in political beliefs, suggesting that conservative individuals prefer the status quo. On the other hand, risk preference is positively correlated with conservatism in economic policy, i.e., liberalism and marketism. This is consistent with competitive preferences.

Table 9: Determinants of Risk Preference: Self-reported vs. Lottery Choices

	(1) Self-reported	(2) Self-reported	(3) Self-reported	(4) Lotteries	(5) Lotteries	(6) Lotteries
Female	-0.212***	-0.202***	-0.217***	-0.286***	-0.289***	-0.283***
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Age	-0.021	-0.017	-0.020	-0.043**	-0.043**	-0.042*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Age sq.	0.000	0.000	0.000	0.000**	0.000**	0.000**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Married	0.072	0.073	0.080	-0.293*	-0.292*	-0.296*
	(0.15)	(0.15)	(0.15)	(0.16)	(0.16)	(0.16)
Child	-0.005	-0.011	-0.010	0.087	0.086	0.086
	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)
Log income	-0.001	-0.001	-0.003	0.016	0.015	0.016
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Log spouse income	0.015	0.015	0.015	0.063***	0.064***	0.064***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Log asset	0.010	0.010	0.007	-0.001	-0.002	-0.000
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
university	0.055	0.061	0.067	-0.095	-0.096	-0.100
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Competition (Choice)	0.301***	0.306***	0.308***	0.351***	0.349***	0.350***
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Conservatism (Self-reported)	-0.016			0.011		
	(0.02)			(0.02)		
Conservatism (revealed total)		0.029			0.007	
		(0.03)			(0.04)	
Conservatism (revealed political)			-0.085**			0.051
			(0.04)			(0.04)
Conservatism (revealed economic)			0.091***			-0.033
			(0.03)			(0.03)
N	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000
r2	37.800	37.558	46.962	55.706	55.355	57.400

Table 10: Summary Statistics: Social Preference

	obs	mean	sd	min	max
Inequality Aversion	1000	4.31	2.71	0	10
Belief in Luck	1000	5.24	2.71	0	10

4.1.4. Social Preferences

In this section, we analyze inequality aversion and belief in luck. Inequality aversion was collected on an 11-step Likert scale from questions about the income gap (C11) and the definition of success (10-C10). Table 10 shows the basic statistics of each variable. Inequality-averse individuals perceive the income gap more negatively, and those who believe in luck think that luck is more necessary than one's own efforts in success. Table 11 shows the determinants of social preferences such as inequality aversion and belief in luck. First, as age increases, inequality aversion increases, and the role of luck in success tends to be more believed. Married individuals are more likely to believe in luck. Social preferences are more strongly affected by a spouse's income than one's own, and a higher income of spouses decreases inequality aversion and belief in luck. From this, we could infer that the spouse's income is considered a stable asset he or she can rely on, thus mitigating the impact of failure (i.e., becoming unequal or unsuccessful). College graduates tend to believe relatively less in luck in success.

The connection to political orientation is also evident. The more conservative s/he is, the less inequality averse, and the greater the tendency to think of success as an individual's responsibility. This is in line with liberal marketist values of conservatism. However, in the case of luck, the conservative tendency derived from political beliefs has been shown to increase the belief in luck in success, as opposed to other cases.

4.1.5 Productivity and tax rates

In this experiment, participants played the counting zeros game in two stages. Stage 1 measured individual productivity with a piece rate payment method, which typically pays performance-based wages. Participants were paid ten credits for each question. In Stage 2, if individuals decided to compete with others, winners paid double the credits of Stage

1 (20 credits per question), and losers received nothing. If a participant did not select the competition, he received ten credits per question, as in Stage 1.

Table 12 presents the basic statistics for productivity. Due to the learning effect, the second stage's productivity increased compared to the first stage. When competition is selected, productivity is higher than when competition is not selected (p-value: 0.0025). There seems to be a compensation incentive effect of competitive environments. This result is similar to other existing literature showing increased productivity when the reward system changes to a competitive tournament (Niederle and Vesterlund, 2007 and so on).

Table 11: Determinants of Social Preference: Inequality Aversion (IA) and Belief in Luck

	(1) IA	(2) IA	(3) IA	(4) Luck	(5) Luck	(6) Luck
Female	-0.027 (0.07)	-0.031 (0.07)	-0.023 (0.07)	0.054 (0.07)	0.058 (0.07)	0.087 (0.07)
Age	0.074*** (0.02)	0.038* (0.02)	0.039* (0.02)	0.044** (0.02)	0.030 (0.02)	0.036* (0.02)
Age sq.	-0.001*** (0.00)	-0.000 (0.00)	-0.000 (0.00)	-0.001*** (0.00)	-0.001*** (0.00)	-0.001*** (0.00)
Married	0.016 (0.15)	-0.012 (0.15)	-0.016 (0.15)	0.405*** (0.15)	0.393** (0.15)	0.387** (0.15)
Child	0.042 (0.14)	0.129 (0.14)	0.129 (0.14)	-0.154 (0.14)	-0.120 (0.14)	-0.126 (0.14)
Log income	-0.028 (0.02)	-0.019 (0.02)	-0.018 (0.02)	-0.001 (0.02)	0.003 (0.02)	0.008 (0.02)
Log spouse income	-0.024 (0.02)	-0.026 (0.02)	-0.026 (0.02)	-0.055*** (0.02)	-0.056*** (0.02)	-0.057*** (0.02)
Log asset	0.002 (0.01)	0.006 (0.01)	0.008 (0.01)	-0.008 (0.01)	-0.006 (0.01)	0.000 (0.01)
university	-0.024 (0.08)	-0.024 (0.08)	-0.028 (0.08)	-0.155** (0.08)	-0.152* (0.08)	-0.173** (0.08)
Risk Preference (Lotteries)	-0.007 (0.01)	-0.008 (0.01)	-0.009 (0.01)	-0.018 (0.01)	-0.018 (0.01)	-0.022* (0.01)
Choose to compete	-0.097 (0.07)	-0.095 (0.07)	-0.095 (0.07)	-0.060 (0.07)	-0.056 (0.07)	-0.056 (0.07)

	(1) IA	(2) IA	(3) IA	(4) Luck	(5) Luck	(6) Luck
Conservatism (Self-reported)	-0.122*** (0.02)			-0.061*** (0.02)		
Conservatism (revealed total)		-0.431*** (0.04)			-0.170*** (0.03)	
Conservatism (revealed political)			-0.151*** (0.04)			0.126*** (0.04)
Conservatism (revealed economic)			-0.269*** (0.03)			-0.252*** (0.03)
N	1000.000	1000.000	1000.000	1000.000	1000.000	1000.000
r2	78.574	170.245	173.353	119.567	130.617	171.858

Table 12: Summary Statistics: Productivity

	obs	mean	sd	min	max
Productivity 1	1000	15.84	4.31	0	32
Productivity 2	1000	17.96	4.82	0	37
Productivity 2(compete)	673	18.28	4.91	0	37
Productivity 2(not compete)	327	17.30	4.56	3	32.67
Tax rate choice	1000	13.64	15.97	0	100

4.2. Data Analyses

4.2.1. Conservatism and Tax rate decisions

This section analyzes political orientation and redistribution policy preference (tax rate selection), considering conservative tendencies and competitive/risk/social preferences measured in the experiment.

Table 13 presents the analyses of conservative tendencies considering the competition, risk, and social preference that we collected through the experiment. The more inequality averse, the more important s/he thinks that the luck is in success; more educated, more progressive, older, and more competitive male individuals are the more conservative.

Table 14 analyzes the determinants of individual preferred tax rates. We believe these tax rates reflect the actual preference, as there is an economic incentive for compensation. The results somewhat correspond to the theoretical predictions in the previous section. The more inequality averse, the higher the tax rate is preferred. Women tend to set higher tax rates, which can be considered to be consistent with predictions because women usually have a smaller degree of self-confidence than men.[10]

Those who believe that success is determined by luck rather than effort tend to set higher tax rates. Finally, preferable tax rates were different depending on their ability. When using the entire sample, individuals with high ability preferred a lower tax rate. It is interesting to analyze the sample by dividing it into tax contributors and beneficiaries. As a result of the Esarey et al. (2012) study, the greater the ability (i.e., income above average), the lower tax is preferred, while individuals with the lower ability (i.e., income below average did not have a significant relation between preferable tax rates and ability. This suggests that determining the tax rate based on ability works differently depending on the ability cut off.

In summary, we find that (1) female participants tend to be less conservative than male participants, (2) inequality aversion and competition aversion negatively correlate with being conservative, and (3) those who believe the luck factor in terms of success tend to be less conservative. Especially concerning the tax rate choice, gender, inequality/competition aversion, and luck beliefs are all positively related to the preference for higher taxes. However, risk aversion is significantly negatively related to preferred tax (positive coefficients for risk preference), which suggests that risk aversion works more towards economic incentives than political orientations. In addition, high performers (eventually becoming taxpayers) prefer a lower tax rate, confirming our theoretical predictions.

10 Studies of men having greater self-confidence than women include Niederle and Vesterlund (2007).

Table 13: Determinants of Conservatism

	(1) Self-reported (total)	(2) revealed (political)	(3) revealed (economic)	(4) revealed (economic)	(5) 2012 election
IA	-0.691*** (0.13)	-0.587*** (0.06)	-0.421*** (0.07)	-0.740*** (0.08)	-0.084*** (0.03)
Luck	-0.290** (0.12)	-0.222*** (0.06)	-0.003 (0.07)	-0.423*** (0.07)	-0.064** (0.03)
Female	-0.376*** (0.13)	-0.198*** (0.06)	-0.354*** (0.07)	-0.054 (0.08)	-0.059** (0.03)
Age	-0.040 (0.04)	-0.090*** (0.02)	-0.095*** (0.02)	-0.085*** (0.02)	-0.009 (0.01)
Age sq.	0.001 (0.00)	0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)	0.000** (0.00)
Married	0.059 (0.28)	-0.036 (0.14)	0.028 (0.16)	-0.095 (0.17)	0.005 (0.06)
Child	-0.027 (0.25)	0.181 (0.12)	0.158 (0.14)	0.202 (0.15)	-0.024 (0.05)
Log income	-0.030 (0.04)	0.017 (0.02)	0.006 (0.02)	0.028 (0.02)	-0.016** (0.01)
Log spouse income	0.004 (0.03)	-0.007 (0.02)	-0.002 (0.02)	-0.011 (0.02)	0.006 (0.01)
Log asset	-0.015 (0.02)	0.006 (0.01)	-0.014 (0.01)	0.025*** (0.01)	0.004 (0.00)
University	-0.228 (0.14)	-0.095 (0.07)	-0.061 (0.08)	-0.127 (0.09)	0.032 (0.03)
Risk preference (lotteries)	0.012 (0.02)	-0.000 (0.01)	0.014 (0.01)	-0.013 (0.01)	0.004 (0.00)
Choose to Compete	0.228* (0.13)	0.055 (0.06)	0.047 (0.07)	0.063 (0.08)	0.025 (0.03)
Constant	6.135*** (0.78)	6.615*** (0.38)	7.366*** (0.44)	5.922*** (0.46)	0.278* (0.16)
N	1000.000	1000.000	1000.000	1000.000	1000.000
r2	0.062	0.141	0.094	0.149	0.090

Table 14: Tax Rate Decision

	(1) Total	(2) Tax Receiver	(3) Tax Payer	(4) Not Compete	(5) Compete
Female	2.433**	2.464	1.918	1.591	2.872**
	(1.11)	(1.67)	(1.24)	(1.88)	(1.37)
Age	-0.423	0.401	-1.310***	-0.823	-0.213
	(0.33)	(0.53)	(0.38)	(0.58)	(0.41)
Age sq.	0.004	-0.003	0.012***	0.008	0.002
	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)
Married	0.878	3.659	0.345	8.086*	-3.167
	(2.41)	(4.12)	(2.44)	(4.18)	(2.95)
Child	-0.660	-2.994	0.893	-6.554*	2.195
	(2.12)	(3.77)	(2.07)	(3.62)	(2.61)
Productivity 1	-0.427***	0.417	-0.497***	-0.391	-0.436**
	(0.15)	(0.29)	(0.18)	(0.26)	(0.19)
IA	1.875*	2.347	1.836	1.458	2.414*
	(1.14)	(1.73)	(1.25)	(1.98)	(1.40)
Luck	1.203	0.952	2.283**	-2.143	2.873**
	(1.07)	(1.68)	(1.15)	(1.87)	(1.31)
Choose to compete	-0.278	-3.483**	-1.409		
	(1.11)	(1.63)	(1.51)		
Risk Preference (Lotteries)	0.396**	0.352	0.399*	-0.102	0.638***
	(0.19)	(0.29)	(0.22)	(0.35)	(0.24)
Conservatism (revealed political)	-0.504	-0.890	0.095	-1.332	-0.223
	(0.53)	(0.81)	(0.58)	(1.02)	(0.63)
Conservatism (economic)	0.040	0.126	0.295	-0.903	0.504
	(0.50)	(0.76)	(0.56)	(0.87)	(0.62)
Log income	0.494	0.179	0.695**	0.457	0.632
	(0.33)	(0.52)	(0.34)	(0.51)	(0.43)
Log spouse income	-0.315	-0.541	0.119	0.027	-0.402
	(0.27)	(0.41)	(0.31)	(0.51)	(0.33)
Log asset	0.021	-0.159	0.160	0.055	-0.011
	(0.13)	(0.21)	(0.14)	(0.24)	(0.16)
University	1.957*	4.141**	0.288	1.266	2.400*
	(1.22)	(1.81)	(1.43)	(2.18)	(1.48)

	(1) Total	(2) Tax Receiver	(3) Tax Payer	(4) Not Compete	(5) Compete
Constant	25.237*** (8.39)	-4.878 (13.67)	38.659*** (9.14)	44.745*** (14.51)	15.657 (10.38)
N	1000.000	564.000	436.000	327.000	673.000
r2	0.029	0.041	0.087	0.055	0.048

Table 15: Partisan Bias based on Gender

	Full	Male	Female	Full	Male	Female
Supporting Party Rules	3.686** (1.588)	4.442** (2.101)	2.954 (2.400)			
Opposite Party Rules				-3.400*** (1.276)	-2.772* (1.600)	-4.308** (2.075)
Observations	1000	507	493	1000	507	493
Adjusted R^2	0.039	0.038	0.025	0.040	0.035	0.031

4.2.2. Partisan Bias

In this section, we further provide empirical evidence that another factor affects the preference for policies, known as 'partisan bias'. As in Mullinix (2005), people's partisan attachments can distort political preference.[11] Here, we attempt to analyze whether policy preferences (tax choice in our experiment) are biased based on which party proposed it. Our experiment makes a randomly chosen party the hypothetical ruling party when participants must choose their preferred tax rate. With the information on their political orientations and supporting political party, which we collected at the end of the survey, we defined variables whether the ruling party was their supported party or the opposite party. Table 15 presents the partisan bias based on gender, controlling for all variables that we previously mentioned.

The results show that when deciding the preferred tax rate, which party rules does matter. If the supported party is ruling, participants tend to increase their preferred tax rate

11 a Democrat may support a policy proposed by Democrats but oppose the same policy if proposed by Republicans

significantly, while if the party located in the opposite direction to their supported party is ruling, they would significantly decrease their preferred tax rate. Male participants are especially more supportive if their supported party is ruling, while female participants are more unsupportive when the opposite party is ruling.

Table 16 shows the partisan bias based on individual political orientations divided into left (progressive), center, and right (conservative).

The results show that participants who are on the left have a larger variance in preferred taxes depending on which party rules. They are more supportive of the supported party and more unsupportive of the opposite party.

This existence of partisan bias suggests that people's partisan attachments can distort preference formation.

Table 16: Partisan Bias based on individual political orientation

	left	center	right	left	right
Supporting Party Rules	5.914** (2.583)	2.022 (2.468)	1.190 (4.205)		
Opposite Party Rules				-7.911*** (2.091)	-3.566 (2.908)
Observations	256	545	199	256	199
Adjusted R^2	0.034	0.039	-0.011	0.068	-0.003

5. Conclusion

This study aimed to analyze the relationship between political orientation, economic incentives, and social preference among 1,000 Koreans using online experiments. Experiments with economic incentives can be used to determine the relationship between actual behavior and preferences. Participants in this experiment went through seven stages, each of which collected productivity, preferred redistribution tax rates, preferences for competition and risk, social preferences, and various political orientation variables.

In our study, as the theory predicts, people who are more inequality averse, who believe that success requires luck, and women, who are less overconfident than men, tend to set higher tax rates, and those who are more productive and winning competitions tend to prefer lower tax rates. While the Esarey et al. (2012) study had limitations in responding only to economic incentives, this study empirically finds a significant impact of political orientation, beliefs, and social preferences in determining tax rates. Furthermore, our study finds that in terms of policy support, innate preference matters. Depending on which party is executing the tax policy, preferred tax rates may vary significantly, which is larger for the left voters. This existence of partisan bias suggests that people's partisan attachments can distort preference formation.

Of course, these results should be interpreted with extreme caution. A few variables that we use in our analyses might be interrelated with one another, and it is too early to make any conclusive causal claims. However, our results can still shed light on under- standing individual supportiveness of redistributive policy through various dimensions, such as political orientation, economic incentives, and social preference, which, in turn, could help to set a more effective communicable policy that often encounters conflicts among voters.

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Session IV

Internet Media and Polarization

Internet Media and Opinion Polarization

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1. Introduction

In this chapter, we discuss the role of the media regarding to the issue of political polarization of public opinion. In particular, this chapter focuses on Internet-based media, such as Internet news and social networks, that are characterized by more enhanced user engagement and interaction than traditional media (Baum and Groeling, 2008; Lawrence et al., 2010). It may be viewed that this characteristic of Internet media could secure diversity of public opinion through competition of ideas using various channels and achieve a decision-making process that is closer to direct democracy (Gentzkow and Shapiro, 2011). However, the development of the Internet media has led to a substantial polarization of public opinion, inducing users sharing only one-sided views and not being exposed to diverse views (Sunstein, 2009; Brady et al., 2017). For example, researches on Facebook's role in Britain's Brexit decision and in U.S. presidential election in 2016 point to the issue of public opinion polarization (Allcott and Gentzkow, 2017). We question whether the development of information and communication technology can guarantee diversity in idea and public opinion. Through this study, we provide implications on the problem that would change the media environment due to the development of technology represented by using big data and artificial intelligence in the future.

In order to look at the impact of Internet media on public opinion, we need to look at both the supply and demand sides of markets for news. That is, both the choice of media to provide messages and the response of consumers who have chosen the media should be considered. To understand this, the political slant of messages provided by Internet media at a certain time must be identified, and the change in political preference of consumers exposed to the message must be measured. Therefore, for accurate identification, there is a challenge to associate the information provided by the media with consumers exposed to that information (Prior, 2013). This requires rigorous experimental setting that would be difficult to implement in reality. In this study, due to the limitations of the data, we attempt to analyze the supply and demand aspects, respectively, using separate data. In addition, we discuss the role of news aggregators that deliver selected news to consumers. Theoretically,

news aggregators can improve the quality of news consumption (Delarocas et al., 2013; Jeon and Nasr, 2016). However, what happens in South Korea seems quite different where 76% of news consumers use aggregators (Reuters Institute Digital News Report, 2020). We review related theories and further examine South Korean case.

First, we discuss the diversity of news supply, exploring the possibility of Internet media affecting public opinion by selectively providing messages. We generate simple but effective indicators that measure the diversity of information delivery and compare by issue. Two types of Internet media are considered: social networks and Internet news. The main difference between the two media is that social network is a medium where information is exchanged through comments by users, and Internet news sites are media that provide selected news by trained journalists. We identify partisan keywords and associated expressions in these Internet media, and see how diverse the media can present their views. If a consumer is not exposed to various views and only gets one-sided information, this may occur in the pursuit of an increase in intensive margin, or loyalty (e.g. clicks per user) in terms of maximizing revenue for Internet media (Mullainathan and Shleifer, 2005). In the case of social network, it appears that homogeneous users gather together, which is likely to lead to the blocking of information with opposite views.

We then tackle the issue of the news effect on media users. We employ the media panel data including individual level media usage information and the one's political view. Using the data set, we examine the causal relationship of exposure to specific media to the change in users' political view. With data from 2012 and 2016, we compare groups exposed to social network and news media between the two periods and groups not exposed. The results show that both social network and news media had a significant impact on users' political views, although the direction of change is different. Furthermore, when comparing respondents having news literacy with respondents having not, we can confirm that people without news literacy are more influenced by the media. The reason may be that those who are less interested in the news may accept political messages in a less critical aspect.

We deal with the role of news aggregators in the market, especially in South Korea. As the influence of newspaper decreases, the influence of Internet news aggregators (so called Internet portals) in the news market increases significantly. In Korea, the news aggregator is the second-largest channel of news consumption after TV, and it is the starting point for consuming news on the Internet (Reuters Journalism Research Institute, 2020). The average

slant of selected news may be one of the important strategies for news aggregators. We show that news consumers want to consume more news similar to their own viewpoints, and the aggregators select and place news content based on the incentive for maximizing consumer clicks. The quality of news content plays an important role in consumer choice, which is related to the political position of news (Mullainathan and Shleifer, 2005; Gentzkow and Shapiro, 2010). This complicates the role of news aggregators in the issue of political polarization. We suggest the research question for further studies of how the dominance of news aggregators influences the ecosystem of news market.

To sum up, in this chapter we pose following research questions with regard to the Internet media and public opinion polarization focusing on South Korean case:

i) Do Internet media provide news with diverse political views?

ii) Do news consumers change their views when exposed Internet media?

iii) How the entry of news aggregators is related to the problem of opinion polarization?

The contribution of this study is to examine the possibility of the mechanism of polarization of public opinion in consideration of both supply and consumption aspects of Internet media. Another contribution would be that we utilize text mining method and present useful metrics to measure diversity in Internet media. This chapter is organized as follows. Section 2 goes over the supply side of Internet news market and introduces diversity index, and Section 3 presents the results of media effect on news consumers using media panel data. Section 4 reviews theories on news aggregators and discusses the Korean case. Section 5 presents conclusions and policy suggestions.

2. Literature review

Among various discussions regarding the polarization of public opinion, we focus on discussions related to the role of the media.[1] In the field of political science, Prior (2013) offers survey of media impact on political polarization of public opinion. Prior (2013) explains that the media newly entered in the market are sending politically biased messages more than the media in the past do. The study, however, also points out that many empirical evidences show that most Americans are still in the middle, and that a small number of people with high political involvement show some possibilities to be extreme. Importantly, it is pointed out that there is a difficulty in verifying these effects empirically, and that is, there is no way to identify which people are exposed to which messages. Overall, it emphasized that so far there is no evidence that biased messages change the behavior of typical American consumers dramatically.

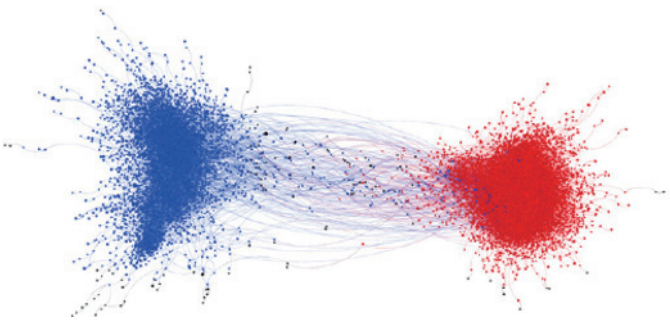
On the effect of the emergence of Internet media on public opinion, Baum and Groeling (2008) investigate news selection behavior and compare Internet news and traditional media. The study analyzes the news content of five websites (one progressive, two conservatives, and two news agencies) before and after the election. It is assumed that the news agency could be an effective baseline in determining the political slant because it objectively provides all potential news that can be taken as neutral. As a result, Internet news sites largely target at small but loyal consumer group, with a "niche-oriented" approach. By comparing the news section of Internet news sites with the news agency, the study finds that those news are placed in favor of supporting parties. Lawrence et al. (2010) analyze blog readers' deliberation, polarization, and political participation. The analysis found that readers usually visit blogs that are close to their personalities, and that it is rare to visit blogs that are diverse. In particular, blog readers are found to be more polarized than other consumers, almost the same level as the senator. These readers reported a high tendency to participate in politics. Gentzkow and Shapiro (2011) verify if the online

1 There are studies on traditional media such as Mullainathan and Shleifer (2005) and Gentzkow and Shapiro (2006) that the relationship between media competition and polarization is discussed. Empirical evidences on the effectiveness of traditional media and Internet media are presented in DellaVigna and Kaplan (2007), Gentzkow and Shapiro (2010), and Martin and Yurukoglu (2017). Discussions on online and social media and relationships with consumers include Baum and Groeling (2008), Lawrence et al. (2010), Gentzkow and Shapiro (2011), Brady et al. (2017), Beam et al. (2018), and Möller et al. (2018).

news environment is becoming more polarized than offline, showing that online news consumption strengthens more centrist, not polarized, opinions than offline. The political position of the news site is estimated based on the ZIP code of the server's location and the user's political preference is measured through survey responses. The combined data is used to compare how different news sites are used by conservative and progressive users. It is reported that online news consumption is concentrated on intermediate sites due to the low percentage of extreme sites, and that the high proportion of consumers using multiple channels in the online environment has made online consumers less extreme.

The issue of polarization in social network is also important. As shown in the Figure 1, it is a typical argument that social network enhances the interaction between users who sharing political opinion, resulting in the opinion polarization (Brady et al., 2017). Lee (2018) conducts a survey before and after the impeachment of president Park to see if people who use social media as the main medium of news consumption trust fake news and participate in politics. The study shows that social media users have become more ideologically extreme. However, Beam et al. (2018), Möller et al. (2018), Dubois and Blank (2018), and Gentzkow and Shapiro (2011) suggest that the effectiveness of social media is not identifiable for users.

Figure 1: Connection of messages according to the political preference in U.S.



Note: Figure shows retweet connections on controversial issues (gun control, same-sex marriage, climate change). The left group refers to the Democratic and the right group to the Republican.

Source: Brady *et al*. (2017).

3. Diversity of Internet news

In this section, we provide some cases of contents on Korean Internet media as a partial evidence for polarizing mechanism. Specifically, we examine if Internet media expose users to content with diverse political views. Specifically, we want to see if Internet content (Twitter, blog, news, etc.), which may contain partisan keywords, associate with keywords of the opposite views. Gentzkow and Shapiro (2011) argued that unlike Sunstein (2009), online media users are exposed to a wider variety of opinions and take a centrist view. An important element of a democratic society is the belief based on accurate information of citizens, and in order to form it, it is necessary to have access to conflicting information with various views. The authors created an index to measure how isolated news consumers are from conflicting information that is opposed to them, as follows.

Isolation index
= conservative audience's exposure to conservative messages
- progressive audience's exposure to conservative messages

The index is an index measured based on news consumers and refers to the relative size of the exposure ratio to conservative views of progressives based on the proportion of conservatives exposed to conservative views. According to the analysis, online media consumers did not have an extreme tendency, which the authors pointed out was because online news consumption was concentrated on centrist sites and consumers access various sites. Gentzkow and Shapiro (2011) cited cnn.com, wsj.com and usatoday.com as examples of centrist news sites, while news aggregator such as Yahoo! news and AOL news were also categorized as centrist sites.

Data and Methodology. We collect associated words for a particular keyword and measure the frequency of the opposite expressions. This can be understood as the minimum condition to achieve diversity. Keywords that can determine political trends are selected using text analysis data of the 2015 National Assembly minutes established by Choi (2017). These expressions are strategically chosen by a political party to reveal political differences from its counterpart. It, therefore, is a fundamental attribute of having a significant difference in frequency depending on the political group. Therefore, we can interpret that the less biased group would have higher frequency of opposing party expressions on average. The frequency of keywords and associations in social media and Internet news is collected using

Daumsoft's social metrics service. From the first quarter of 2015 to the second quarter of 2017 presidential election, the keywords and associated words in social network mentions and Internet news articles are collected.[2] In this way, we measure the slant of associated words for major issues. Five representative keywords most mentioned by congressmen are selected according to major issues/political parties. We collect up to 500 associated words to selected keywords. The frequency of the counterpart keywords is calculated in the associated words according to issue/partisan/keyword.

We generate indicators by measuring the frequency of keywords that reveal political slant related to selected major political and economic issues. For example, among the major issues in 2015, selected issues are standardization of history textbooks, jobs (wage and unemployment), tax finance, and North Korea. The standardization of textbooks and North Korean issues are chosen as topics with clear political stance, while jobs and financial issues were chosen as topics related to the economy. Using the frequency of extracted keywords, we generate the following indicator:

$$P_i^R = \frac{\sum_k f_{i,k}^D}{\sum_j f_{i,j}^R}$$

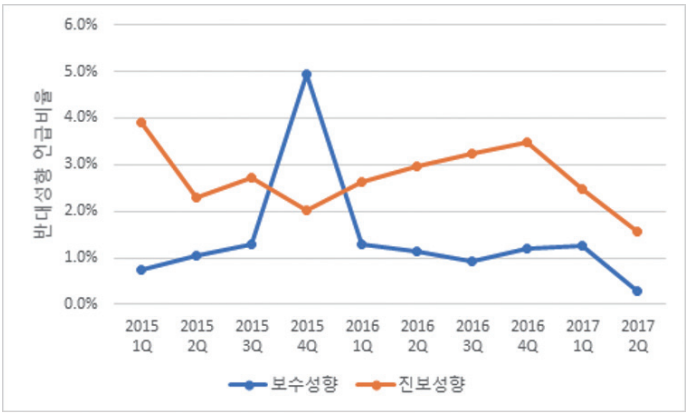
i refers to each issue, and the superscript R to a conservative keyword, the superscript D to liberal keywords. $f_{i,j}^R$ indicates the frequency of jth conservative associated keywords with issue i and $f_{i,k}^D$ the frequency of th progressive associated keywords with issue i. Therefore, P_i^R means the ratio of associated progressive keywords relative to the associated conservative keywords with issue i. P_i^D can be made on the other way around. We can think that the larger this index, the greater the diversity, meaning that there are more references of the keywords with opposite view. If this metric value is closer to zero it can be said that the extremity becomes stronger since there is little mentioning of opposite view. Low value of this index can be interpreted as a condition of filter bubble or echo chamber. This metric is simple but it can be said the minimum condition to measure diversity. For example, if you look at issues related to North Korea, keywords such as the 'North Korean Human Rights Act' and 'long-range missiles' can be used as conservative keywords. The above index measures how many progressive keywords can be included in a tweet or blog post

2 For example, the associated keywords of 'the North Korean Human Rights Act' are 'the North Korean defectors,' 'the North Korean Residents,' 'National Security Law,' and 'the Anti-Terrorism Act.'

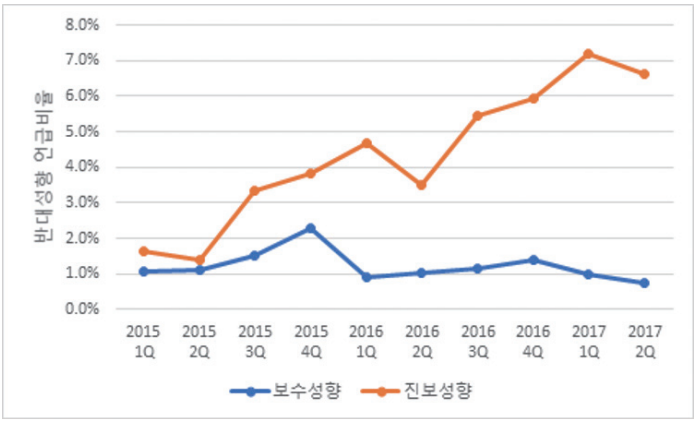
containing these keywords. Expressions such as 'Gaesong Industrial Complex,' 'peace' and 'dialogue (between North and South)' can be progressive keywords. The rate of referring opposite partisan keywords allows us to quantitatively identify and compare the extent of the content's diversity.

Diversity of Internet media. We present the diversity index by each political position in social networks and Internet news sites in Figure 2. The average value over the study period is shown in Table 1. In social network, the associations of progressive keywords were three times more than those of conservative keywords. One possible interpretation may be that social network has more progressive users who are active. In Internet news, on the contrary, the number of associated words with conservative keywords is higher. The diversity index of social network is about 1.4% for conservative keywords, and 2.7% for progressive keywords. The diversity index of Internet news is 1.2% for conservative keywords and 4.4% for progressive keywords. Overall, the value of index itself is very low. Congressmen can be considered as subjects to compare the figures. Using the Congress Record, we can check the diversity index of conservative congressmen and progressive congressmen, respectively. According to the 2015 record, about 10.3% of conservative congressmen referred to the expression of the other side. Progressive congressmen mentioned 13.9 percent. Thus, the rate shown in the Internet media is much lower than that of conservative congressmen. In other words, Internet media can be seen as more extreme than the congressmen. These results are also in line with Mullainathan and Shleifer (2005) that the partisanship of information provided by the media to be 1.5 times more extreme than that of the general public when the contribution of intensive margin is high.

Figure 2: Trend of diversity index depending on media types.



A. Social Networks



B. Internet News

Source: Social Metrics(Daumsoft, 2019).

Table 1: Average value of diversity index according to media type and party.

Media Type	Party	N. of Associated Keywords	Diversity Index(%)
Social Network	Conservative	436,810	1.4%
	Progressive	1,313,598	2.7%
Internet News	Conservative	326,308	1.2%
	Progressive	164,394	4.4%

Source: Social Metrics(Daumsoft, 2019).

In the case of social network users, the low diversity index seems to be natural because people with homogeneous preferences would gather on the media. Nevertheless, we can see that the diversity index of the progressive group is about twice as high as that of the conservative group. The trend over time in Figure 2 shows that as the 2017 presidential election approaches, the index in both groups is lowered. This can be interpreted that both groups are becoming more extreme. It seems that for both groups the confrontation becomes stronger as the election approaches. In the case of Internet news, the trend of progressive and conservative keyword groups is shown completely different. The diversity index remains very low for conservative group, while it increases from about 2% to about 7% for progressive group. In the case of Internet news, the writers of articles are not the general public but the journalists. However, while conservative articles rarely mention progressive keywords, progressive articles mention conservative keywords more. These results can be interpreted as the attitude of writing articles varies depending on the partisanship of the media, and the progressive articles are closer to a neutral attitude.

Diversity choice of media. We investigate which factors affect the diversity index in Internet media by conducting regression analysis on voters' preference, conservative dummy, and political events dummy (Table 2). We apply voter's conservativeness (the first moment), the distribution of voter's political preference (the second moment), and the average conservativeness of keywords. The unit of observation is issue per month. As results for social networks, there is no significant effect of these variables on the diversity index. That is, average of individual voters' aggregated characteristics might not able to explain the diversity index of social networks. On the other hand, the effect of voter's conservativeness and its variance have significantly estimated for Internet news. This result can attribute to the fact that Internet news sites who maximize their profits consider the consumer's political preference in writing news articles. It seems to be natural that the more diverse voters' preferences, the more opposing expressions are made in the news. In addition, as voters increase their conservativeness, the diversity index increases due to the increase in conservative expressions in progressive articles. It is also interesting that progressive keywords are significantly higher than conservative keywords in the diversity index. This can be interpreted that conservative news is less diverse than progressive news. The dummy variables of political events are not significantly estimated.

Table 2: Regression results on diversity index.

	(1) Social Network (2015)	(2) Social Network (2015)	(3) Social Network (2015-2017)	(4) Internet News (2015)	(5) Internet News (2015)	(6) Internet News (2015-2017)
Variance of Voter's Preference	-0.047 (0.318)			0.515* (0.287)		
Voter's Conservativeness		-0.006 (0.055)			0.099* (0.052)	
Conservativeness Keywords	-0.004 (0.004)	-0.004 (0.004)	0.002 (0.006)	-0.008* (0.004)	-0.008* (0.004)	-0.008** (0.003)
Event I			0.000 (0.005)			-0.004 (0.005)
Event II			0.002 (0.005)			0.010 (0.006)
Event III			0.004 (0.005)			-0.003 (0.004)
Event IV			0.018 (0.014)			-0.003 (0.005)
Event V			0.005 (0.005)			-0.000 (0.004)
Event VI			0.017 (0.027)			-0.007 (0.005)
Constant	0.041 (0.036)	0.038** (0.018)	0.038*** (0.008)	-0.009 (0.031)	0.021 (0.014)	0.045*** (0.004)
Observations	135	135	348	129	129	330
r2	0.114	0.114	0.056	0.268	0.269	0.201

Note: 1) The dependent variable is the diversity index. Issue-specific dummy applied to all models. Standard errors are in the parentheses.

2) Voter characteristics are applied only to 2015 sub samples due to lack of data.

3) Event dummies are applied only to the model (3) and (6). Event I: MERS outbreak. Event II: Wooden-box mine incident. Event III: Historry textbooks controversy. Event IV: General election. Event V: Impeachment of president Park. Event VI: Presidential election 2017.

4) * $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$.

Source: Social Metrics(Daumsoft, 2019).

4. Effect on Media Users

Many of the debates that arise in our society regarding media are basically assumed to have a direct impact on users' values or perspectives. For example, the problem of biased news placement on Internet news is meaningful only if biased news influences users' political beliefs or values. However, there is a lack of empirical discussion on whether Internet news actually influenced consumers' political views (Choi, 2017). Regulations on television are based on the premise that the media affects viewers. Thus, empirical evidence of the media impact on consumers is an important issue to be prioritized in pursuing media-related policies. However, estimation of these effects is not simple. This is because there is an endogeneity issue between consumer preference and media usage. The media wants to provide content according to consumers' preferences, and at the same time, consumer preference is also affected by the contents of the media. Empirical studies mainly use instrumental estimation methods to control for this endogeneity. For example, Gentzkow and Shapiro (2010) and Choi (2017) estimated the impact of consumers on media by utilizing exogenous changes on the consumer side, while DellaVigna and Kaplan (2007) estimated the impact of media on consumers by utilizing exogenous changes on the media supply side.

In this section, we attempt to identify the causal relationship between social network and news media to consumers' political preference by considering the endogeneity between media usage and consumer preference. Using raw data from the Korea Media Panel Survey, we linked individual-level media usage information and political preference variable. Using this data, we can investigate the effect of exposure to certain types of media on users' political preference. We use difference-in-differences (DID) framework to verify causality. Utilizing information on the political preference included in the individual questions of the media panel 2012 and 2016 surveys, newly exposed and unexposed groups are compared between two periods. We, then, can identify whether the actual change in political preference is significant after exposure to a certain media. In addition, we analyze whether the influence of the media is different by separating users according to their preference for news. The result show that both social network and news media had a significant impact on users' political views. However, the direction of change was different depending on the type of media. In addition, comparing those who responded to prefer news in 2016 with those who did not, we can confirm that those who do not prefer news are more influenced by the media. The reason might be that people who are less interested in news take political messages in a less critical way. [implication]

Data and methodology. The raw data of the Korea Media Panel Survey is used for the analysis data. The survey provides individual response data and media diary data. Media diaries require respondents to record media usage during the day, separated by 15-minute intervals. Using this record, individual exposure to the media is made. Questions about individual's political preference are included in 2012 and 2016. These two data, media diary and political preference, are combined and analyzed between 2012 and 2016. We select users (N=7,334) who responded in both 2012 and 2016 for constructing panel data.

Table 3: Political preference of survey respondents in 2012 and 2016.

Political Preference	2012	2016	Difference
Highly Progressive	186	200	14
Progressive	1,355	1,244	-111
Median	2,621	2,630	9
Conservative	2,700	2,577	-123
Highly Conservative	472	683	211
Total	7,334	7,334	

Source: Korea Media Panel Survey, 2012, 2016.

Table 3 shows the distribution of political preference variable. Survey questions about political preference are the same in 2012 and 2016, with the values consisting of five levels from 1 (highly progressive) to 5 (highly conservative). Table 3 shows a slight difference in the distribution between 2012 and 2016. It is noteworthy that the response of progressive and conservative have decreased significantly but the proportion of median remains almost the same. We can see that the number of respondents who are highly conservative has increased significantly.[3] Table 4 shows the demographic characteristics of panels in 2012 and 2016.

3 Regarding the change in ideological orientation, the media panel shows a moving toward conservativeness that is different from the results of the Korea Comprehensive Social Survey.

Table 4: Summary of Demographic Variables in Panel Data.

Variable	Mean	Std. Dev.	Minimum	Maximum
Male	0.43	0.50	0	1
Age	51.30	18.12	17	99
Married	0.81	0.39	0	1
Occupation	0.44	0.50	0	1
Higher Education	0.35	0.48	0	1
High Income (> $3,000, Monthly Average)	0.14	0.35	0	1
Low Income (< $500, Monthly Average)	0.44	0.50	0	1
Religion	0.30	0.46	0	1

Source: Korea Media Panel Survey, 2012, 2016.

For the analysis, we utilize DID method to examine the causal relationship. An important point in the design is the setting of the treatment group and the control group, which is distinguished by exposure to a certain media. The following regression models is used to estimate the average treatment effect (ATT) on the treatment group.

$$y_i = \beta_0 + \beta_1 D_{gt} + \beta_2 G_i + \beta_3 t_i + \varepsilon_i,$$

where y_i refers to political view of respondent i, G_i to a dummy variable that is 1 for treatment group and 0 for control group, and to a dummy variable that is 0 for pretreatment and 1 for post-treatment. D_{gt} indicates $G_i \times t_i$ and β_1 is an estimate of the ATT. We define respondents who are exposed to a certain media between the two periods as the treatment group. In other words, the treatment group did not use the media in 2012 but used in 2016. The control group is a group that does not use the media for both periods. In addition, we check if the preference for news is related to political preference. The reason is that news is a main medium that can convey political messages.

Social networks. One of the most important changes in the media market is the increase in social network users, and this change is also identified in the media panel data of this study. In 2016, the number of new social network users is 2,788 who have not used the media in 2012. The respondents categorized as control group are 3,187 who have never used social network.

The results are presented in Table 5. We can see that ATT of social network (social network X T) on all 6 models are significant as negative. This means that social network users have become more progressive than before, and that they are more progressive than non-users. For the news preference group, the estimates are –0.093 and –0.099 that are slightly smaller than –0.1 and –0.13 in the non-preferred group. This result implies that news preference group are less affected by the media, but a more rigorous analysis is needed to confirm that the difference is significant between two groups.

Table 5: The effect of social networks on user's political preference.

	Total Sample		Non News Preference		News Preference	
	(1)	(2)	(3)	(4)	(5)	(6)
social network	-0.293*** (0.023)	0.047* (0.025)	-0.378*** (0.040)	-0.030 (0.045)	-0.235*** (0.029)	0.072** (0.031)
T	0.089*** (0.022)	0.035* (0.021)	0.118** (0.043)	0.072* (0.040)	0.078** (0.026)	0.019 (0.025)
social network×T	-0.107** (0.033)	-0.095** (0.032)	-0.130** (0.058)	-0.100* (0.056)	-0.099** (0.041)	-0.093** (0.039)
Constant	0.467*** (0.016)	-0.466*** (0.087)	0.442*** (0.029)	-0.274 (0.182)	0.477*** (0.019)	-0.478*** (0.093)
Individual Characteristics	N	Y	N	Y	N	Y
R^2	0.036	0.126	0.057	0.164	0.025	0.111
Observations	11,950		3,924		8,026	

Note: White's heteroscedasticity robust standard errors are reported in the parentheses.

Source: Korea Media Panel Survey, 2012, 2016.

Print News. Now we analyze the media effect on respondents who read print news online and offline.[4] Similar to earlier analysis, we identify treatment group (N = 813) who read print news in 2016 but not in 2012, and 3,484 control group who did not read them in both periods. It is noteworthy that reading print news in the media diary includes subscribing to Internet news sites and subscribing to newspapers through electronic media. As a result, there is a problem that it is not easy to distinguish between paper and Internet media.

4 Media diary in the Korea Media Panel Survey doesn't distinguish online and offline media for print news.

However, we think that there is something in common in terms of the influence of text media. The results are presented in Table 6.

Table 6: The effect of print news on user's political preference.

	Total Sample		Non News Preference		News Preference	
	(1)	(2)	(3)	(4)	(5)	(6)
Print News (on, off)	-0.147*** (0.036)	-0.052 (0.035)	-0.145*** (0.058)	-0.147** (0.056)	-0.131** (0.045)	-0.008 (0.044)
T	0.025 (0.021)	-0.028 (0.020)	0.020 (0.039)	-0.009 (0.036)	0.027 (0.026)	-0.038 (0.025)
Print News×T	0.125** (0.053)	0.115** (0.049)	0.205** (0.088)	0.174** (0.079)	0.073 (0.067)	0.072 (0.063)
Constant	0.408*** (0.015)	-0.453*** (0.117)	0.324*** (0.027)	-0.332 (0.206)	0.446*** (0.018)	-0.518*** (0.137)
Individual Characteristics	N	Y	N	Y	N	Y
R^2	0.003	0.127	0.004	0.170	0.002	0.113
Observations	8,594		2,818		5,776	

Note: White's heteroscedasticity robust standard errors are reported in the parentheses.

Source: Korea Media Panel Survey, 2012, 2016.

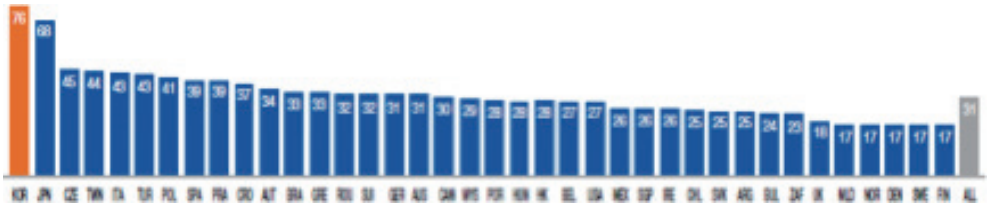
According to the result, respondents who read print news say that they become more conservative than before and more conservative than respondents who did not read newspapers. In addition, news preference group shows no significant effect, but non news preference group shows significant change to be conservative. We can interpret this result that respondents who prefer news treat news articles with more critical attitude, but that respondents who do not prefer news may be easily influenced by the tone or intention of news articles. Due to the nature of the media, paper media and Internet media may be quite different, but we could not analyze the difference due to the lack of data.

5. News Aggregators

Can news aggregators be related to the polarization of public opinion? In particular, the case of Korea is interesting because unlike the United States, Korea has a high proportion of news aggregators. As shown in Figure 3, when reading news on the Internet, Koreans mostly visit news aggregators (76%) rather than newspaper websites (4%). Korean news aggregators such as Naver.com and Daum.net provide selected news that are related to popular issues at the time, possibly drawing attention most. Theoretically, there is a possibility that extreme news attracts more clicks in the online environment. Previous studies on news aggregators, however, extreme content is unlikely to emerge because news articles are selected based on a certain quality level of the platform (Delarocas et al., 2013; Jeon and Nasr, 2016). Nevertheless, many questions have been raised about this selection mechanism and the resulting political bias, but empirical research on this has been lacking. There is also no clear evidence that biased news can change consumers' political preferences.

Figure 3: Proportion that used as a source of news in the last week by country in 2019

(A) Newspaper website



(B) News aggregator

Source: Reuters Institute Digital News Report (2019, 2020)

Model of News Aggregators. In 2016, the Internet news market has 6,526,989 daily visitors, or 82.2 percent of all website visitors. In addition, Naver.com and Daum.net accounted for 55.4% and 22.4% respectively, accounting for about 78% of the Internet news market (Public Opinion Survey Committee, 2016). Since news aggregators are the starting point for most Korean consumers' news consumption, the selection of news has a significant impact on the Internet news market. The principal objective of these selection behaviors is maximizing advertising revenue through increased number of visitors. The number of visitors affects not only the advertising revenue of the news aggregators but also the revenue structure of the individual Internet media involved.

Main actors in the Internet news market include Internet press company, news aggregators, advertisers, and users. We assume that there are two news aggregators in the market, and that users, advertisers and press companies can either multi-home or single-home on news aggregators. The main revenue source for news aggregators is Internet advertising. We consider advertising on news aggregators only. The news aggregator determines the advertising price or amount of advertising (the placement of advertising), and the content on which the advertisement will be uploaded. The news aggregator needs to increase the number of visitors (or clicks) to increase its advertising revenue. This is because the number of visitors determines advertising prices (usually price per milles). An advertiser shall determine how much advertisements will be placed on which news aggregator in consideration of advertising prices, advertising effects, etc. The news aggregator provides a variety of content to increase the number of visitors, and what we want to see is the political bias of news content as a key strategic variable of the news aggregator. We assume that other forms of content are exogenously determined when provided to consumers (such as community and gaming services).[5] The supply of news content through the news aggregator is constant and is free to consumers. When consumers choose news of the same issue, the political bias of news articles plays an important role. These biases are represented by expressions used in news titles and content. In short, if all other conditions equal, the bias in the news will be a major factor in consumers' choice of news aggregator. Therefore, the news aggregator has the incentive to maximize the number of visitors by adjusting the overall bias of the news it supplies.

5 It is expected that these assumptions will be unlikely to distort the interpretation of the results, as estimates of actual consumer behavior only target visitors to the news section.

Number of clicks leads to advertising revenue. Advertisers assume higher potential gains from single-homing consumers (Anderson et al., 2012). Advertisers have an incentive to deliver advertising messages to more consumers, which returns to sales revenue in the advertiser's product market. Thus, in equilibrium, sales revenue is equal to advertising prices. Advertisers prefer newly exposed consumers to those with overlapping exposures to advertising messages. For this reason, each news aggregator has an incentive to increase its market power in the advertising market by increasing the number of single-homing consumers.[6]

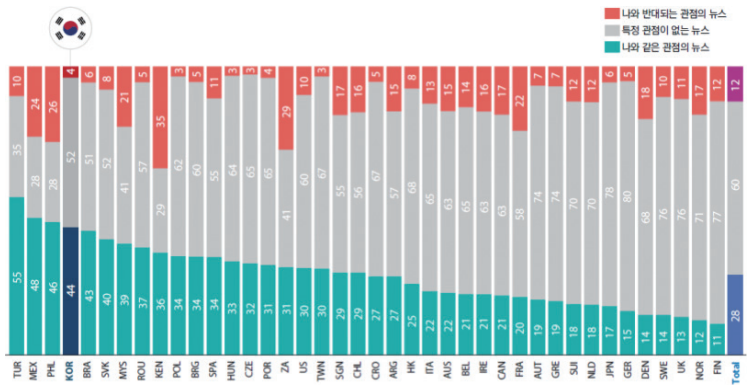
There are two main ways in which press companies supply news to news aggregators. One is a news search partnership and the other is a news content partnership. In the former case, articles from affiliated press companies appear on the news aggregator's searching service. These articles can only be viewed when consumers type keywords on the site. In the latter case, the press sends the article to the aggregators and the editors of the news aggregator put it on the main news page. Editors decide whether the article is shown, where it is placed, and how it is titled. What we mainly consider is the second way of news content partnership, meaning that only articles served in the news section of the news aggregator will be considered. Not all articles are serviced, and the editors of the news aggregator will select and place articles according to certain criteria (such as the number of clicks).

In sum, news aggregators have an incentive to increase the number of clicks for single-homing consumers. Based on this, Choi (2017) empirically analyze Korean news aggregator case and report that consumers prefer news outlets with a political position to be close to them and that news aggregators select political bias of news according to the average preference of consumers.

Consumer preference and news selection. We examine the behavior of news consumers on news aggregators. As Gentzkow and Shapiro (2010) discussed, consumers prefer news close to their political position, and typically, they might want to avoid the news supporting rival political view. Figure 2 shows this tendency of consumer preference where the preferences for news sharing consumer's point of view dominate the preferences of news challenging it.

6 Under this framework, news articles serve as bait products that attract consumers to access news aggregators, and because of this, the news aggregator pays a certain amount of fees per article to the media. The amount is set differently depending on the size of the media, but the actual contract is not disclosed.

Figure 2: Preference for news that share your point of view, that have no point of view, or that challenge your point of view (2020)



Source: Reuters Institute Digital News Report (2019, 2020)

To empirically test this, Nielsen's Internet user data and average slant of news aggregators are matched and used. To measure the consumer behavior, we use two variables, "number of clicks" and "duration per click" in each news section of news aggregators, representing how many news they clicked on and how long they spent reading each news. These are indicators of the quantitative and qualitative characteristics of the user's interest in news aggregators. If a user is interested in content of a certain news, the length of stay would be longer. However, the average length of stay per click could increase as the number of clicks decreases. Main statistics shows that each user's daily number of clicks and duration per click, with the average user clicking about 13 times a day and staying at an average of 56 seconds per page. On average, 546 people (30.5% of single-homers) accessed Daum.net per day, while about 500 (16.2% of single-homers) accessed Naver.com from the Nielsen sample we have.

Result show that the greater the difference between news slant and the user's political preference, the fewer clicks in the news section. For one standard deviation of the difference increase, user clicks decrease by 0.47. The reduction in the number of clicks, a quantitative indicator, is a direct impact on the sales of advertising in news aggregators. For the duration per click on a page, it is difficult to conclude whether to increase or decrease. The difference in political views can reduce the duration of stay and the number of clicks on the page. The direction of the duration per click, therefore, would be decided depending on which factor

dominates. One thing we can conclude is that the clicks on news aggregators decrease (increase) if consumers find them politically distant (close) to themselves.

Since news consumers' attention correlates the aggregators' profits, the news platform has an incentive to supply news that cater to consumers' views. To verify this hypothesis, we examine the relationship between the aggregator's slant and the average political preference of users. The results from Choi (2017) show that it can be confirmed through regression analysis that these two have a positive correlation. The average slant in news increased by 0.0093 when the daily average conservativeness of users increased by 0.1 points. To sum up, the selection of the aggregator's slant is influenced by the user's average political preference. This result is somewhat obvious because the aggregator has an incentive to increase the number of visitors for advertising revenue, and users tend to prefer news close to their own political views.

News Quality. The results so far show that news aggregator's news selection has a certain degree of biasedness due to economic incentive. This might support the possibility that news aggregators can induce public opinion polarization. However, one question could be that the slanted news are inferior products in terms of quality. Recent studies show that the entries of news aggregators improve the average quality of news (Delarocas et al., 2013; Peitz and Reisinger, 2015; Jeon and Nasr, 2016). Main reason for this is that the aggregators select quality articles to attract more readers. That is, "reader expansion effect" of news platforms dominates "business stealing effect" on Internet press media. Empirical examples are the studies on Google News case (Chiou and Tucker, 2017; George and Hogendorn, 2020). Further studies on news quality are, therefore, required to verify the relationship between news aggregators and public opinion polarization. Korean case might be worth mentioning in this regard. The quality of news selected by aggregators must be higher than average quality of Internet news, but it still appears low compared to the "offline" newspapers. For example, users of aggregators still read news with grammatical errors, click baits, and misinformation. Further studies should work on the research question of how the dominance of news aggregators influences the ecosystem of news market and how we can fill the gap between theory and data.

6. Concluding Remarks

In this chapter, we looked at the possibility that Internet media may have a filter bubble or echo chamber effect in providing information, i.e. providing only one sided information rather than politically diverse information.[7] We also checked for significant changes in the political views of consumers exposed to Internet media. In the case of Internet media, it is easy to think that there is a high possibility of access to more diverse information in that it is not in the form of delivery message through scarce channels like traditional media, but the analysis suggests that Internet media is likely to become more extreme. In the case of social network and Internet news, the diversity level is low, with an average of less than 3%, which is much lower than the average of 10.3% for conservative lawmakers. In other words, social network users are very unlikely to encounter comments that are opposite to their own views. This means that, as Sunstein (2009) noted, Internet media are likely to form an environment that increase extremity. This result is in line with Mullainathan and Shleifer (2005) where intensive margin by bringing together loyal users dominates in maximizing revenue. In case of Internet news, there is a difference in that news articles need to be reviewed and refined by reporters, in which progressive articles appear to be trying to be more intentionally neutral. Or it could be the process of verifying and refuting the opponent's claim in an article.

In terms of media effect, users exposed to social network can confirm that their views have changed significantly in a more progressive direction than users who have not, and users exposed to news media have changed their views in a conservative direction. These results are in line with Lee et al. (2017). This change might depend on the channel characteristics, but we couldn't study further due to the limitation of data. In addition, the degree of change was different depending on the level of news literacy. These results demonstrate the possibility that Internet media users may be influenced by media that they are exposed to. That is, the combined results of both supply and demand aspects show that the media can selectively provide information and significantly affect public opinion if users are exposed

7 The filter-bubble effect or eco-chamber effect is a phenomenon that causes consumers to consume only news that is sympathetic to them, which means they are not exposed to other types of news. It is pointed out that consumers are strengthening their confirmation bias through the process of sharing and spreading content with homogeneous group members (Allcott and Gentzkow, 2017; Hwang Yong-seok, 2017). In the U.S., there has been a lot of criticism that news consumption through Facebook has brought this problem.

to such media differentially. However, we need more detailed information to verify the impact of Internet media on actual users.

In terms of media effect, South Korean case would be interesting because the usage of news aggregators dominates Internet news market. We try to find the possibility of public opinion polarization with using news aggregators. It is confirmed that the greater the difference between consumers' preference and the news slant, the significant decrease in the number of clicks of consumers in the news section. It is also confirmed that the selection of the aggregator's slant correlates significantly with consumers' political preferences. This allowed us to infer the mechanism by which the aggregator's news selection is made under the platform's incentive structure, which needs to maximize advertising revenue by increasing the number of clicks of consumers.

As a final remark, discussing polarization over only one type of media is likely to be misleading (Dubios and Blank, 2018). it would be desirable to discuss news consumption through various channels rather than a certain type of the media to identify polarization. The results of this study could show that if there is a consumer using Internet media only, it is difficult for him to be exposed to information from various perspectives. It is difficult to be exposed to various views when using content selectively in Internet media, such as the recent increase in YouTube users. Although it is true that Internet media affects users, its impact is not absolute considering the overall media market. Considering the impact of other media channels such as TV, it is difficult to conclude on the possibility of extreme public opinion through the current analysis. Due to the limitations of the data, the media on the supply side and the users on the demand side could not be directly connected. It is also worth considering that no matter how extreme the Internet media provides, it is difficult to conclude on the impact of current results alone on users, as it is possible to obtain information of various views through other media. Considering users' share of each media, it is necessary to comprehensively examine the effects of various media such as TV and newspapers, and it is impossible to conclude simply by the effects of Internet media. By extending this study, we leave the work of text analysis and demand analysis of various media as future works.

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Supply-Side Polarization: How YouTube's Recommendation Algorithm Pushes Real People Content

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YouTube and Mass Polarization

Polarization between politicians has been growing for decades in the United States (McCarty, Poole and Rosenthal, 2016). Less clear is the degree to which similar polarization is occurring among the general public. On the one hand, individuals generally agree on many policies, and for those on which they disagree, they are more likely than politicians to find common ground on other dimensions. But the public is also more likely to hold ideologically inconsistent policy preferences than politicians. For example, a liberal politician is unlikely to be both pro-choice and pro-gun, whereas a liberal voter may be both. As such, the tools used to measure elite polarization find only limited evidence of a similar trend among the general public because these tools interpret such preference inconsistencies as ideological moderation (Broockman, 2016). It is an open question whether the public is actually less polarized than politicians, or whether the tools we use for political elites are inappropriate for measuring mass polarization.

There is a growing body of evidence that argues the public is in fact increasingly polarized by using alternative measures. First, there is evidence that partisan motivated reasoning – the regularity in which individuals from different parties see objective facts differently – is increasing (Kunda, 1990; Taber and Lodge, 2006; Miller, Saunders and Farhart, 2016). Second, non-policy dimensions of polarization also exhibit increasing trends, such as

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survey respondents' aversion to the idea of a friend or family member marrying someone from the opposing political party (Hetherington, 2001; Bafumi and Shapiro, 2009; Layman et al., 2010; Iyengar and Westwood, 2015). Perhaps most troublingly, there is recent evidence suggesting that citizens are increasingly likely to support violence against out-group partisans (Kalmoe, 2014, 2019). These findings suggest that the American public is becoming more divided along party lines, reflected in an increase in general disdain for out-group partisans that does not map neatly onto public policy preferences, and commonly referred to as "affect polarization" (Iyengar, Sood and Lelkes, 2012; Iyengar and Westwood, 2015).

But why is affect polarization increasing? Existing research proposes a few different explanations, and it is to this literature that we make our contribution. On the one hand, work by Mason (2018) argues that the United States has undergone several decades of partisan sorting, wherein the public's party affiliations are increasingly correlated with other dimensions of their identity, such as race, religion, and class. This type of sorting makes partisanship less of a choice and more of an identity, which in turn connects it with the rich sociological and psychological literature on group attachment and – concerningly – out-group antipathy (Tajfel and Turner, 1979). Unlike established social identities such as race and gender, there are fewer norms governing out-group antipathy along the dimension of partisanship, making its expression more prevalent (Iyengar and Westwood, 2015).

Research on the changing structure of the media and information environment offers an alternative explanation, focusing specifically on the affordances of online social networks. The broad argument is that personalized news feeds and information diets make it easier for individuals to fall into ideological echo chambers online. Once in these echo chambers, users are less likely to see information that contradicts their existing views, leading to social extremism and political polarization (Adamic and Glance, 2005; Prior, 2007; Iyengar and Hahn, 2009). Echo chambers may also be home to more negative characterizations of out-group members, increasing affect polarization (Long and Collingwood, 2019).

The prevalence of online echo chambers is well-studied on platforms such as Twitter and Facebook, which make up a large portion of the research on online information ecosystems. On Twitter, while there is some evidence of online echo chambers, they are inhabited by only a small number of users, leading researchers to conclude that concerns about echo chambers were largely overblown (Barber ´a et al., 2015). On Facebook,

information diets are fairly diverse in the sense that users see a variety of content across the ideological spectrum. However, users tend to engage with content that is closer to their ideology, indicating that user choice, in addition to user options, is a crucial component to understanding online echo chambers (Bakshy, Messing and Adamic, 2015).[1]

There is less research on other online social media platforms, despite their growing popularity. YouTube is one of the most popular among these alternatives, having eclipsed cable news in 2016 in terms of total hours of political content watched, and is indeed the largest social network platform in the United States (Smith and Anderson, 2018). Part of the explanation for the relative paucity of scholarly research on YouTube is the limited access provided by the official YouTube API which has seen the default quotas decline from a million "points" in mid-2019 to a paltry 10,000 in 2020.[2]

Despite the lack of scholarly attention, there is growing concern over the role played by YouTube's recommendation in leading users toward more extreme content (Tufekci, 2018). In particular, several journalistic accounts argued that the algorithm pushed users toward more ideologically extreme right-wing content (Nicas, 2018; Schroeder, 2019; Anonymous, 2019; Fisher and Taub, 2019). Much of the initial academic research focused explicitly on this "radicalization pathway," tracing the drift of users from less extreme communities (the so-called "intellectual dark web," or "IDW") through more extreme communities (the alt-lite) to arrive at the fringes of explicitly racist, conspiracy-laden communities (the alt-right). Two contributions attracted considerable media attention for describing the process by which users, particularly younger men, would "fall in" to these communities, via a combination of the networked-community of right-wing YouTube influencers, channel features, and possibly the recommendation algorithm (Lewis, 2018; Ribeiro et al., 2019).

Quantitative research followed that relied on anonymous web-scraping with bots to scrape lists of recommended videos at scale, concluding that recommendations actually trended

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1 However, it is worth noting that engagement data such as clicks on links or "favorites" and "likes" are often not available in public APIs (Application Programming Interfaces), meaning that it is difficult for researchers outside the company to analyze these effects systematically.

2 These quota units are effectively the currency with which researchers can purchase data on different components of YouTube, ranging from relatively inexpensive (channel and video statistics) to moderately expensive (video comments) to very expensive (video transcripts). By dropping the daily quota from 1 million points to 10,000, YouTube has severely curtailed the usefulness of the API for researchers interested in quantitatively evaluating the platform at scale.

toward moderate content, not extreme (Ledwich, 2020). This study was criticized for claiming that the recommendation algorithm had a "de-radicalizing" effect, even though personalization is a key element of the recommendation algorithm (Narayanan, 2019). By relying on an "anonymous" API to collect recommendations, the researchers amputated one side of the recommendation algorithm – namely the rich user-specific information such as watch histories and engagement, or even more basic demographics such as age and gender.

More recent efforts have combined the anonymous data available via the API and web-scraping, with observational data based on user watch histories (Brown et al., 2020). In contrast to the "de-radicalization" conclusion drawn by Ledwich (2020), this study, in fact, finds evidence of ideological polarization in the viewing behaviors of real users, as opposed to the automated viewing "behaviors" of the API and bots with no history collecting YouTube data. However, since these conclusions are based on what users choose to watch, it is difficult to disentangle how much of this polarization is driven by the supply-side (the recommendation algorithm) versus the demand-side (the preferences of real users). Related work by Hosseinmardi et al. (2020) used a rich observational dataset of user watch histories from 2016 to 2019 to describe ideological echo chambers on the platform, finding evidence of a growing far-right echo chamber across this period, although they argue it is unlikely to be driven by the recommendation algorithm.

Efforts to understand whether and how YouTube's recommendation algorithm influences polarization are thus at an impasse. Data collected using YouTube's API is hamstrung by the limited ecological validity of the data that are gathered. Yet, relying on observations of an individual's browsing history conflates the supply of recommended videos with the user's demand for certain types of content.

In this chapter, we overcome this limitation by hiring real YouTube users to gather data for us. Specifically, we pay users to install a browser extension that scrapes the list of recommended videos they see, and ask them to complete 20 "traversals" from a randomly assigned starting video. At each video along this sequence of traversals, users are asked to click on one of the recommended videos according to a randomly assigned traversal rule. This approach to data collection overcomes the limitations with existing quantitative research and provides our clearest snapshot of precisely how the recommendation algorithm on America's largest social media site contributes to polarization in the ideological content people consume.

1. YouTube's Algorithm

How might a recommendation algorithm contribute to political polarization by serving users more ideologically consistent or extreme content? To describe our theoretical intuition, we combine what little is publicly available about the YouTube algorithm (Covington, Adams and Sargin, 2016) with a set of simple assumptions.

From a technical standpoint, YouTube's recommendation algorithm combines two deep neural networks – one for generating a short list of candidate videos out of the millions available on the platform, and the second for ranking this list to be presented to the user. This pipeline is visualized in Figure 1. At least as of 2016 when Covington, Adams and Sargin (2016) was shared with the public, the end goal of the algorithm is to maximize watch time per impression. Or put more simply, the goal is to recommend those videos the user is most likely to 1) click on and 2) watch the longest.

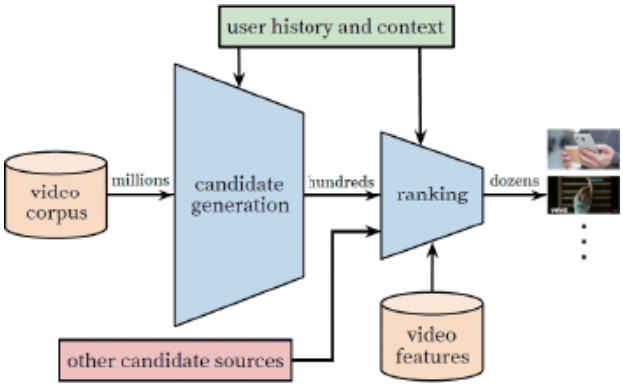
Given this goal, the final metric that the algorithm produces is a predicted number of minutes watched for a sample of candidate videos. Formally, the algorithm is set up as a classification task where it attempts to predict whether the next video to be watched at time t (w_t) is a specific video i drawn from corpus V, conditional user U and context C features, or:

$$P(w_t = i \mid U, C) = \frac{e^{v_i u}}{\sum_{j \in V} e^{v_j u}} \qquad (1)$$

u and v are embeddings in R^N for users and videos respectively, which are learned by the neural net. The user features $u \in R^N$ combine the user's watch history, search history, and context-features such as demographics, location, and log-in status. According to Covington, Adams and Sargin (2016), these context features provide priors for new users who have not yet built the richer information on watch and search histories.

Given our interest in whether and how the algorithm pushes users into ideological echo chambers, there are two attributes worth emphasizing. The first is that, as with any recommendation algorithm, YouTube's has "an implicit bias toward the past" (Covington, Adams and Sargin, 2016, pg. 3). From YouTube's perspective, this is a problem because it privileges older videos over newer, whereas users are typically interested in current content. The algorithm overcomes this specific concern with the "past" by including the age of the training data as a feature.

Figure 1: The YouTube recommendation algorithm architecture. Blue trapezoids indicate two deep neural networks designed to 1) winnow down universe of possible videos to a few hundred candidates and 2) further refine these candidates via a ranking system. Diagram taken from paper shared by Google (Covington, Adams and Sargin, 2016).



However, there is a broader interpretation of a bias toward the past that speaks directly to our substantive focus on echo chambers. Specifically, although new videos are in some senses novel, they are nevertheless mapped into an embedding space built on existing videos. This embedding space is crucial to predict whether and how long a given user will watch the new video based on their previous watch history. In this sense, the recommendation algorithm is biased not just toward the past, but toward the most-watched past. Put simply, because the algorithm is designed to recommend content that users are most likely to watch, and because the data by which it makes this determination relies heavily on the user's past watch history, it is inherently biased toward providing content similar to what the user has already watched. In the context of ideological political content, this means that users are exposed content that they like, or specifically, more ideologically congruent content. And insofar as there is a rich body of evidence suggesting that humans suffer from confirmation bias in which they dislike information that challenges their worldview, we expect that a recommendation algorithm is innately pro-echo chamber (Taber and Lodge, 2006).

The second attribute of the recommendation algorithm relevant for our investigation is the relative weight assigned to user histories versus context features. According to Covington, Adams and Sargin (2016), context features like location, demographics, and meta-data

are useful only insofar as the user's watch and search histories are underdeveloped. This lends credence to the criticisms of Ledwich (2020) for concluding that the recommendation algorithm has a de-radicalizing effect based on data gathered without any user information. Insofar as the algorithm predominantly relies on these user-specific attributes, capturing recommendations using anonymous data collection methods misses an essential part of how the algorithm works.

2. Our Contribution

To overcome the limitations associated with measuring the YouTube recommendation algorithm using anonymous data collection methods, we asked survey respondents fielded from two different sources[3] to gather the data for us. We built a simple browser extension that automatically downloads the list of recommended videos from a YouTube page to facilitate the task.

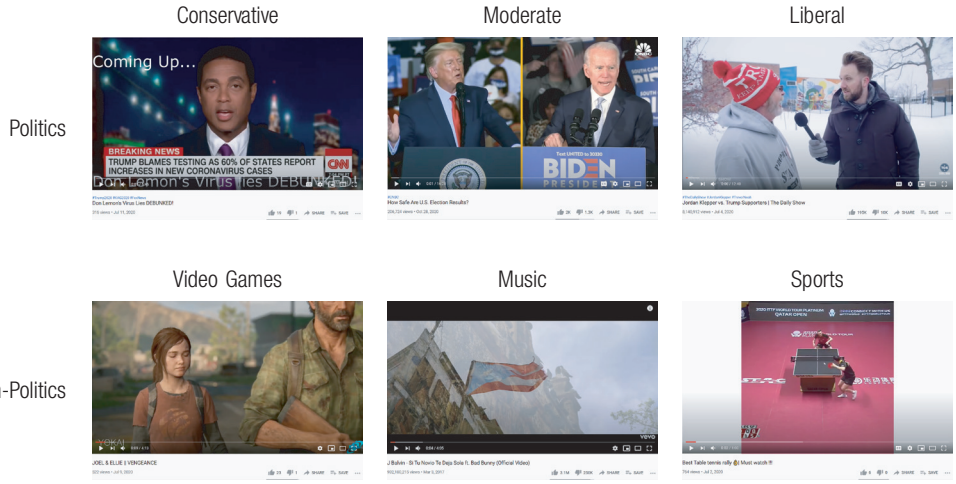
Our respondents were instructed to complete the traversal task using a non-private browser, logged into their YouTube (or Google) account. We randomly assigned these users to start from a given seed video, which were chosen according to their ideological content. Specifically, we stratified our sample across five conservative videos, five moderate videos, five liberal videos, three sports videos, three video-game videos, and three music videos. Examples of each type are given in Figure 2.

Users completed the task by navigating to the seed video and then waiting a certain amount of time before clicking on one of the recommended videos according to a "traversal rule." The traversal rules included always clicking on the first second, third, fourth, or fifth recommended video. The browser extension collected the list of 20 YouTube recommendations that were presented to these real users based on their watch history, account information, and demographic details. Users repeated this traversal rule 20 times, before completing a short survey that collected demographic information, political orientation (partisanship and ideology), and a battery of questions about how they use YouTube.

3 The first sample was a convenience sample obtained from Amazon Mechanical Turk. The second was a sample recruited via ads on Facebook.

Our primary contribution is the collection of recommended videos for real users, using real browsers and logged into real YouTube accounts. These data overcome concerns associated with previously published research on the recommendation algorithm that failed to account for personalized recommendations. By asking real users to traverse from a randomly assigned seed video and according to a randomly assigned traversal rule, we are able to characterize the supply-side of whether and how the YouTube recommendation algorithm contributes to partisan echo chambers online.

Figure 2: Examples of seed videos. Top row gives examples of conservative ("Don Lemon's Virus Lies DEBUNKED!"), moderate ("How Safe Are U.S. Election Results?"), and liberal political videos ("Jordan Klapper vs. Trump Supporters — The Daily Show"). Bottom row gives examples of non-political videos about video games, music, and sports.



3. Measuring ideological echo chambers

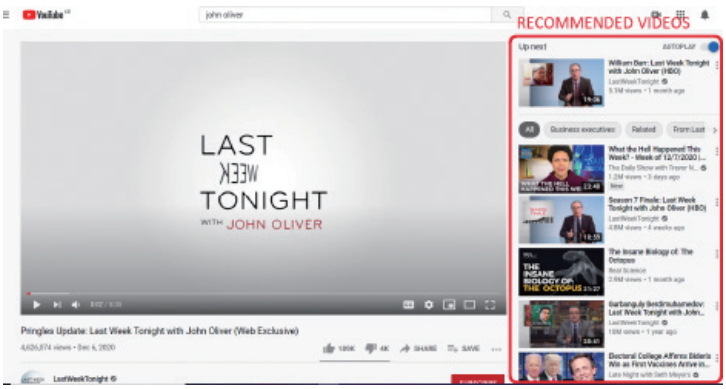
To estimate the ideological content of a video, we adopt the method described in Brown et al. (2020), which uses a text-based method to estimate the ideology of a YouTube video. We use a RoBERTa model trained on the text metadata of 67,450 YouTube videos including the video description, video tags, video title, and channel title.[4] For each of the YouTube videos that the survey respondent watched or saw in the recommendations, we collected the video metadata and estimated the ideology score of the video.

Our resulting dataset thus captures the ideological orientation and extremism of real videos recommended to real users, for whom we also know their core demographics, political affiliations, and self-reported use of the platform. Importantly, we can also estimate the average ideology of media outlets, allowing us to express the results in a substantively grounded context. Our investigation focuses on the degree to which the recommendation algorithm pushes users of different demographics and political affiliations toward ideological echo chambers.

To give a concrete description of our dataset, we start with a single user (u) on a starting seed video (j). On this page, user u is shown a list of recommended videos (v) indexed by i, arrayed as a column to the right of the video they're currently watching, as displayed in the example in Figure 3. We obtain the ideology for each of these recommended videos, yielding a 20-element vector of recommendations that are associated with the seed video (j). User u then clicks on one of these recommended videos according to some traversal rule (k) (i.e., click on the first, second, etc.), completing their first "traversal", indexed with t. When they arrive at this new video, they are again shown a list of recommended videos, and repeat the traversal according to rule k, and so on for a total of 20 traversals.

4 The ideology scores for these training data were generated by estimating the principle component of separation between the videos using the correspondence matrix of videos and the subreddits that they appear in. Scores for domains using subreddit-url matrix decomposition method correlate well with similar methods for estimating the ideology of domains and politicians on Twitter in Eady et al. (2019)

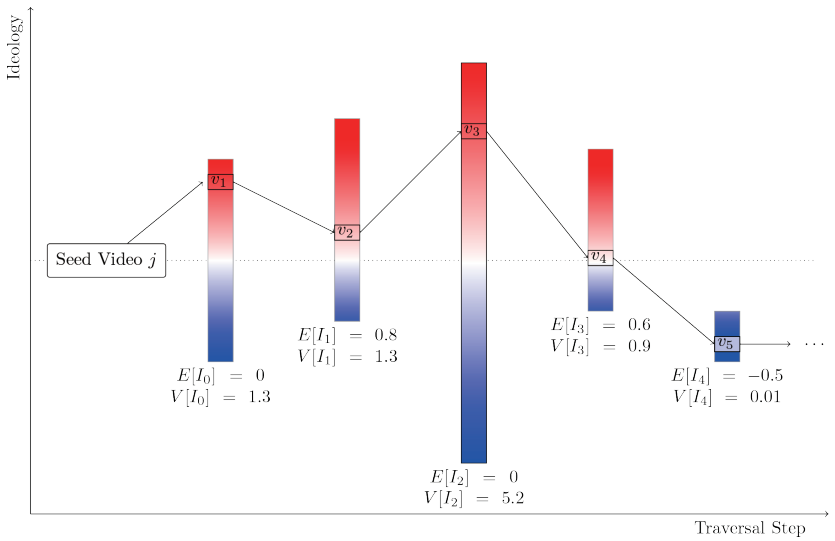
Figure 3: Example of a YouTube video page, with the current video displayed on the left and the list of recommended videos displayed on the right.



Thus the core element of observation is the ideology of video $v_{u,j,i,k,t}$, representing a video in the i-th position of the list of recommendations shown to user u at traversal step t according to traversal rule k from starting video j. We are less interested in each of these recommended videos in isolation, and more interested in the 20-video distribution that user u was shown at each step t using seed video j and following traversal rule k , which we denote $I_{u,j,k,t}$. Concretely, we have 20 lists of 20 videos for user u where each list is comprised of 20 recommended videos provided by YouTube at each step of their traversal.

Figure 4 visualizes the first five traversal steps, simplifying notation to represent $I_{u,j,k,t}$ as I_t. The shaded rectangles represent the list of up to 20 recommended videos associated with the *preceding* video in the sequence, starting with the initial seed video that we randomly assign to the user. The small black boxes represent which of these 20 videos were selected according to the traversal rule. In this stylized example, the list of recommended videos associated with the seed video (i.e., the first red-blue column) are evenly distributed across the ideological spectrum, whereas those associated with the first clicked video v_1 in the traversal skew more conservative, although have the same variance. Their expected ideologies I are $E[I_{u,j,k},0] = 0$ and $E[I_{u,j,k},1] = 0.8$. The recommended videos associated with the second traversal are more dispersed but re-centered on a moderate ideology, while those associated with the third and fourth traversal steps are more concentrated and skewed.

Figure 4: Schema of the data collection for a given survey respondent u starting from a seed video j and traversing according to some rule k. Shaded rectangles represent the ideological distribution of the up to 20 recommended videos that appear with the previously clicked video. Black boxes represent the video chosen from among these up to 20 recommendations according to traversal rule k.



We are primarily interested in three dimensions of these data. First, we are interested in the average ideology of each video's 20 recommendations $E[I_{u,j,k,t}] = \frac{1}{20}\sum_i v_{u,j,i,k,t}$, which captures the expected deology of the next video the user would see were they to choose one of these recommended videos at random. Because we expect that the user might be more inclined to click on one of the top videos in this list, we can weight this expectation by position, $\sum_i v_{u,j,i,k,t} * w_i$ where these weights are linear in rank, $w_i = \frac{1}{i}$. Furthermore, as YouTube will automatically play the first recommended video after the current video completes (if the user has not opted out of auto-play), we are also interested in the ideology of first video recommended, $v_{u,j,1,k,t}$.

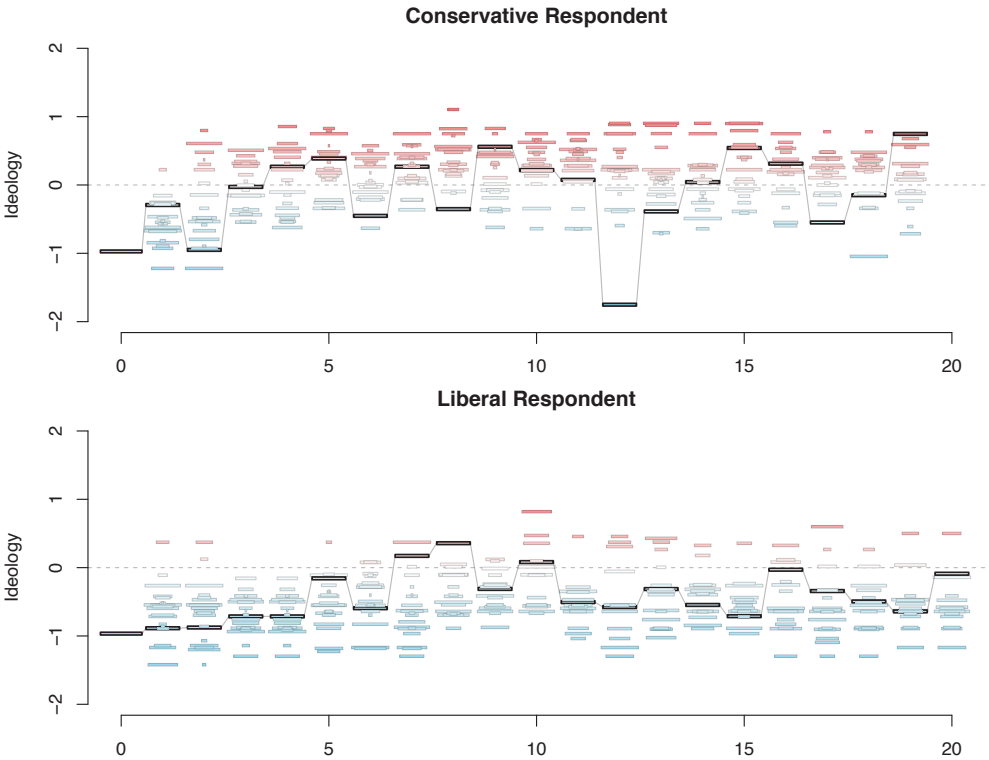
Second, we are interested in the ideological dispersion of these recommendations, or $Var(I_{u,j,k,t})$. As above, we can either treat each recommended video equally, or weight the variance according to the video's position in the list. We interpret smaller variances in this distribution as evidence of an ideological echo chamber, while larger variances reflect exposure to competing viewpoints.

Third, we are interested in the dynamics of the respondents' movements across traversal steps. If respondents consistently end on more ideologically extreme videos compared to where they started, this would be consistent with the theory that the recommendation algorithm drives users into ideological echo chambers, and particularly extreme echo chambers. Additionally, if the variance of the recommended videos tightens as users proceed further down the traversal sequence, this would suggest that the recommendation algorithm pushes users toward more ideologically homogeneous content, another sign that the recommendation engine drives users into echo chambers, regardless of where on the ideological spectrum they are driven. Alternatively, if the variance of the recommended videos gets larger, it would indicate that YouTube is recommending users an ideologically diverse set of videos. To capture these trajectories by which users move through 20 traversals, we predict outcomes as a function of the traversal step, where larger values indicate that the users are further into the traversal.

4. What real users are recommended

Before turning to statistical analyses where we aggregate over all users, we start by replicating Figure 4 with actual traversals by a sample of users to illustrate what these paths look like with real data, depicted in Figure 5. In this example, a liberal Democrat and a conservative Republican both started from the same relatively liberal seed video (traversal step zero), and were both assigned to click on the third video in the list of recommendations for each of the 20 steps in the traversal (indicated with black outlines). Each horizontal bar represents one of the 20 recommended videos, where the width of the bar indicates its rank in the list. Recommended videos that appear toward the top are wider, while those further down the list of recommendations are narrower. Videos are colored based on the ideology of the video, with liberal videos appearing more blue and conservative videos appearing more red.

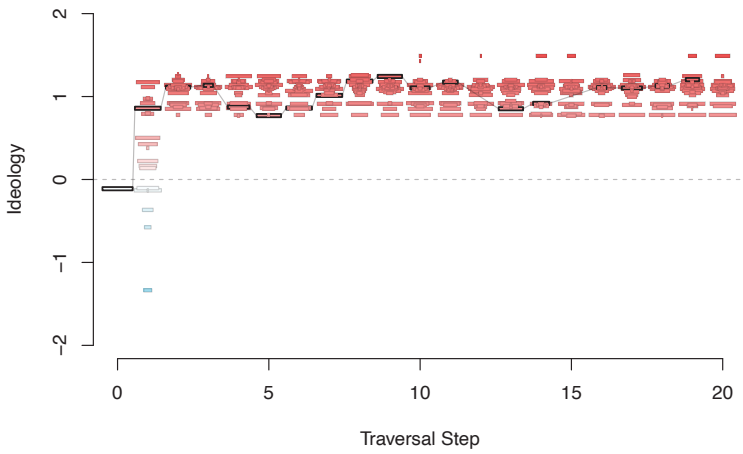
Figure 5: All recommended videos seen by a single conservative (top) and a single liberal (bottom) user, starting from a liberal seed video (traversal step 0) and always clicking the third recommended video from the list. Each recommended video is represented by a rectangle where placement on the y-axis indicates the ideology of the video. The widths indicate where in the list of 20 recommendations they lie, with wider bars indicating videos more toward the top of the list, and narrower indicating videos down toward the bottom. The video the user is asked to click on is outlined in black.



As illustrated, the conservative user is recommended videos that skew conservative, while the liberal user is recommended videos that skew liberal. For both users, always clicking on the third recommended video in the list pushes them toward relatively moderate content, such that both arrive at a less liberal distribution by the end of the full traversal. In addition, there doesn't appear to be much change in the variance from step to step. Together, these two examples are consistent with the de-radicalizing effects proposed in Ledwich (2020). However, we can find striking evidence of an echo chamber as illustrated in Figure 6. Here

the user – a conservative Republican – starts on a moderate video and is almost immediately shunted into an extremely conservative echo chamber.

Figure 6: Empirical traversals for a conservative Republican who is shunted into a conservative echo chamber.



These examples help clarify the interplay between user history and the recommendations on the platform. However, the preceding discussion is purely descriptive. To formally interrogate how the recommendation algorithm influences the content users are shown and therefore are more likely to consume, we turn to regression analysis.

We organize our data by respondent and traversal step and estimate the average ideology of the recommended videos seen at each step through the progression of 20 traversals. We control for seed video fixed effects and traversal rule fixed effects, and – in the most rigorous specifications – include a "lagged" measure of the outcome of interest. Thus our coefficients on user characteristics reflect the difference in the ideological content they are recommended conditional on their starting place, their traversal rule, and the ideological content they were recommended on the immediately preceding video. Put substantively, we ask whether – at any given traversal step, for any given starting video, and according to any given traversal rule – real consumers of YouTube videos are shuttled into echo chambers reaffirming their ideological position, which we measure as the combination of the average ideology and the variance of the recommended videos.

Who is recommended conservative videos?

To answer this question, we predict the ideology of the recommended videos seen by our real users as a function of user-level characteristics and where they are in the traversal. Formally, for respondent u given seed video j and instructed to proceed according to traversal rule k at traversal step t:

$$y_{u,j,k,t} = \alpha_j + \gamma_k + \beta_1 y_{u,j,k,t-1} + \beta_2 T + \beta_3 T^2 + \beta_4 T^3 + \beta_5 Indep_u + \beta_6 GOP_u + \gamma X_u + \varepsilon_{u,j,k,t} \quad (2)$$

where α_j represent fixed effects for the seed video, γ_k are fixed effects for the traversal rule, and $y_{u,j,k,t-1}$ is a lagged measure of the outcome (i.e., the value of the outcome measured at the previous stage in the traversal). Our main coefficients of interest are β_{2-4}, capturing the possibly curvilinear relationship between the outcome and the traversal step T, and β_{5-6}, capturing relationship between the self-reported partisanship of the respondent (Independents and Republicans are compared to Democrats) and the videos they are recommended. We control for other self-reported covariates in X_u which include gender, age, race, educational attainment, and income.

We calculate $y_{u,j,k,t}$ in four ways, dropping subscripts for clarity. First, we calculate the raw average of the first 20 recommended videos, capturing the expected content the user would watch if they clicked on one of the recommended videos at random ($y_{u,j,k,t} = \frac{1}{20} \sum_i v_i$). Second, we calculate the average ideology weighted by the videos position in the list of recommendations $y_{u,j,k,t} = \sum_i v_i * \frac{1}{i}$. This measure approximates what users are most likely to click on assuming (as YouTube also assumes) that videos higher in the list are more likely to be clicked. Third, we calculate the variance of the 20 recommendations $y_{u,j,k,t} = \frac{\sum_i (v_i - v)^2}{19}$. This measure approximates the ideological diversity of the recommendations. As with the average ideology, we calculate both unweighted and weighted measures using the position of each video in the list. Fourth, we calculate the squared difference between the recommendations and the ideology of the current video ($y_{u,j,k,t} = \frac{\sum_i (v_i - CurrentVideo)^2}{19}$). This measure is similar to the variance except that, instead of comparing each video to the mean of the recommendations, we are comparing the recommendations to the video the user is currently watching, yielding a measure of how ideologically diverse the recommendations are with respect to the current content.

We start by predicting the weighted average ideology of recommendations the user is exposed to according to traversal rule k, summarized in Table 1. As illustrated, there is consistent evidence of Independents and Republicans being recommended significantly more conservative videos than Democrats. This result is robust to specification decisions and persists even when controlling for the traversal rule and seed video via fixed effects. In addition, there is evidence that all users in our data are shown more conservative content the deeper into the traversal they travel. Substantively, these results indicate that a standard devi- ation increase in the traversal step (roughly 5.7 steps) corresponds to a 0.14 increase in the video ideology, while the difference in the recommended videos between Democrats and Republicans is roughly 0.26 on the scale bounded between -2 and 2. Putting this in perspective, starting from an initial seed video of The Young Turks (ideology of -0.89), a user would be predicted to be recommended content similar in ideology to the New York Times (ideology of -0.37) by the 20th traversal. Similarly, the difference between videos shown to a Democrat and a Republican is equivalent to the ideological distance between Fox News (0.90) and One American News Network (1.19).

That these results obtain even after controlling for the weighted average ideology recommended in the previous traversal step (column 4) and adding user fixed effects (column 5, precluding our ability to include traversal-invariant user covariates) gives us confidence in interpreting these results as accurate reflections of the ideological biases in YouTube's recommendation algorithm. Put bluntly, the longer a user stays on YouTube, the more conservative content they are shown.

Ideological Diversity

Table 1 finds that Independents and Republicans are recommended more conservative content than Democrats, as are users who stay on the platform longer. But is this consistent with a *narrower* range of content? To test this, we calculate two measures of how the list of recommended videos may narrow.

The first is what we refer to as ideological "diversity", operationalized as the variance of the content of the recommended videos. We plot the coefficients from Equation 2 in the left

panel in Figure 7.[5] Smaller values represent a set of 20 recommended videos that are more tightly clustered, consistent with an echo chamber. As illustrated, users are recommended less ideologically diverse content the deeper into the traversal they are, and Republicans are recommended less ideologically diverse content than Democrats. Substantively, these results indicate that YouTube's recommendation algorithm pushes users into ideological echo chambers the longer they stay on the platform. The magnitude of this effect is small, amounting to a 5% decline in the diversity of the videos users are recommended for 6 steps through the traversal and is only one-fifth the size of the difference between Democrats and Republicans. However, this effect size suggests that a user who follows the recommendations supplied by the algorithm for the full 20 steps will wind up seeing videos that are approximately 11% less ideologically diverse than those they are recommended on the first step.

Table 1: Average recommended ideology predicted by respondent characteristics

	Fixed Effects					Mixed Effects
	Basic (1)	+Controls (2)	+FE (3)	+Lag DV (4)	+ User FE (5)	Nested (6)
Traversal Step	0.140*** (0.020)	0.141*** (0.020)	0.141*** (0.020)	0.019*** (0.004)	0.037*** (0.006)	0.139*** (0.006)
Trav Step Quadratic	0.011 (0.016)	0.011 (0.016)	0.014 (0.016)	–0.001 (0.004)	0.002 (0.005)	0.014** (0.006)
Trav Step Cubic	–0.030** (0.012)	–0.029** (0.012)	–0.025** (0.012)	–0.013*** (0.004)	–0.014*** (0.005)	–0.022*** (0.006)
Independent	0.008 (0.101)	–0.003 (0.097)	0.088 (0.107)	0.009 (0.017)		0.098 (0.104)
Republican	0.263** (0.107)	0.282** (0.111)	0.240** (0.108)	0.041** (0.017)		0.262** (0.115)
Lagged Ideo				0.854*** (0.011)	0.727*** (0.015)	
Controls	N	Y	Y	Y	Y	Y
Seed Video FE	N	N	Y	Y	Y	N

5 We omit the quadratic and cubic terms on traversal step for clarity.

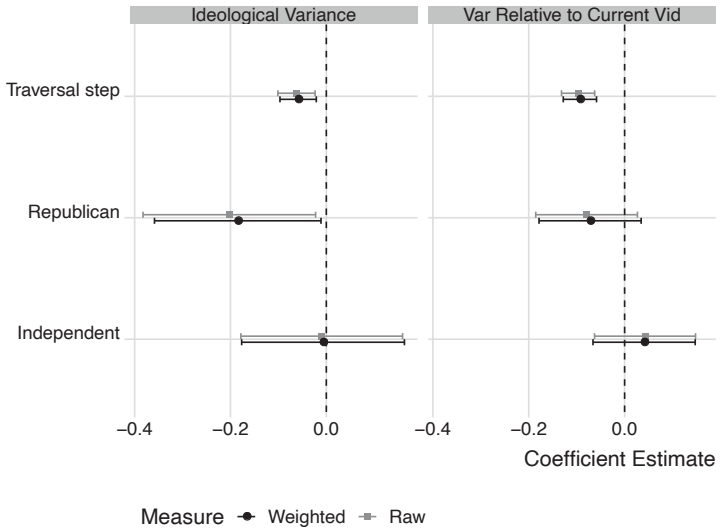
	Fixed Effects					Mixed Effects
	Basic (1)	+Controls (2)	+FE (3)	+Lag DV (4)	+ User FE (5)	Nested (6)
Traversal Rule FE	N	N	Y	Y	Y	Y
User FE	N	N	N	N	Y	N
Observations	11,193	11,193	11,193	10,882	10,882	11,193
R^2	0.030	0.047	0.200	0.786	0.802	

Notes: Higher values indicate more conservative videos. Robust standard errors clustered on the user presented in parentheses for models 1 through 5. Model 6 nests users within seed videos in a multilevel model. Coefficients represent the standard deviation chance in the average ideology recommended to users at each step in the traversal, predicted by the user's self-reported characteristics and where in the traversal sequence they are. Demographic controls including age, education, income, gender, and ethnicity not shown. * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

Second, we estimate the squared difference between the list of recommended videos and the ideology of the current video on which they are displayed. Statistically, this measure is conceptually similar to the sample variance of a random variable, except instead of squaring the differences between recommended videos and their average ideology, we are squaring the differences between recommendations and the ideology of the video on which they are displayed. Substantively, smaller values of this measure reflect recommendations that are more ideologically similar to the video the user is currently watching, consistent with an echo chamber. This measure gives some idea of how the traversal across recommendations pushes users toward more or less diverse content, relative to the current video at any given traversal step.

The coefficients for the traversal step and a comparison between partisans is depicted in the right panel of Figure 7. As illustrated, the coefficient on the traversal step suggest that following the recommendation algorithm deeper into the traversal yields recommendations that are significantly more clustered around the video the user is currently on. Substantively, this estimate suggests that following the algorithm all the way through 20 traversals results in the variance of the list of recommendations at the final step shrinking by 22% relative to the diversity of the videos recommended at the initial step (approximately 0.66). Again, we note the difference between Democrats and Republicans, with the data suggesting that Republicans are more likely to be recommended videos similar to the current video they are on, although the coefficient is only marginally significant.

Figure 7: Coefficients estimated according to column 5 of Table 1, related to different outcomes. Left plot predicts variance in ideology of 20 recommendations as a function of cubic polynomial traversal step and respondent partisanship. Right plot plots relationship between the variance of the 20 recommended videos at each traversal step relative to the ideology of the current video. Light gray squares reflect an unweighted outcome measure. Black circles reflect outcomes weighted by the position of each video in the list of 20 recommendations, where videos that appear toward the top of the list are weighted more heavily.



Taken together, our findings highlight several important conclusions. First, the YouTube recommendation algorithm suggests increasingly conservative content the deeper into the traversal a user travels, independent of their ideology, partisanship, or any other set of demographic characteristics. Second, this shift in the ideology of the content recommended is paired with a narrowing of the variation of the recom- mendations, although this effect is substantively small. Third, there is striking evidence that the experiences differ by the partisanship of the user. While all users are suggested videos that are, on average, more conservative as they proceed deeper into the traversal, Republicans are suggested content that is significantly more conservative, and less diverse, than Democrat users.

How deep into the traversal do these differences by party appear? To evaluate this question, we use a kernel-based method for flexibly estimating the relationship between partisanship

and our outcomes of interest across the traversal (Hainmueller, Mummolo and Xu, 2019). Our results are summarized in Figures 8 which plots the coefficient on the difference between partisans, controlling for user demographics, as well as seed and traversal rule fixed effects. As illustrated, the differences between Democrats and Republicans both in terms of the average ideology of the recommended videos, as well as the diversity of these recommendations, increases the deeper into the traversal users travel. However, these differences are not statistically significant at conventional levels.

Progression from Randomly Assigned Seed Videos

The preceding results indicate that Republicans are more likely than Democrats to be recommended conservative videos, although there is much less of a difference between Democrats and Independents. However, the two explanations for this pattern are observationally equivalent. Is it that Democrats are recommended significantly more *liberal* videos? Or is it that Republicans are recommended significantly more *conservative* content?

To test this, we compare how the recommendations suggested to Democrats and Republicans change across traversal steps from three types of seed videos – conservative (red), moderate (gray), and liberal (blue). We estimate the average recommendation ideology for each type of seed video across the first two traversal steps ("Initial Recs") and the last two traversal steps ("Final Recs") for Democrats (left panel of Figure 9) and Republicans (right panel). This plot underscores the exactly where and how we observe the conservative bias in the data. Importantly, both Democrats and Republicans are recommended more conservative videos as they progress through the 20 traversals. However, the conservative push is driven almost entirely by users who start with liberal seed videos. For users who are randomly assigned to a conservative seed video, there is no change between the recommendations they receive in the first two traversal steps compared to the last two. Furthermore, the partisan difference between Democrats and Republicans only obtains for users who start with liberal and moderate seed videos, with such Republican users being recommended more conservative content than Democratic users both initially and by the end of the traversal task.

Figure 8: Kernel-based flexible estimation of interaction between partisanship and traversal step. Top row plots dynamics of partisan differences for average recommendation ideology. Bottom row replaces average ideology with ideological variance. Reference group are Democrat users.

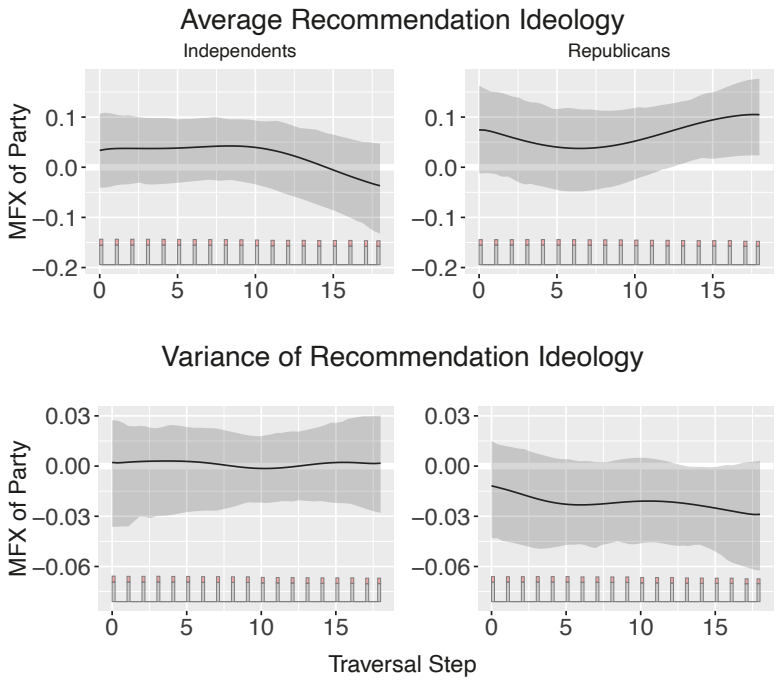
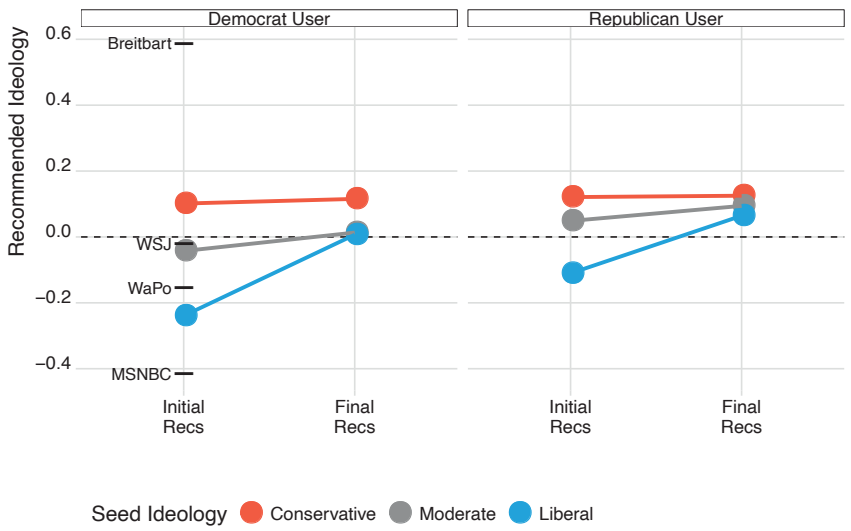


Figure 9: Average recommendation ideology (y-axis) between first two steps and last two steps (x-axis), separated by seed video ideology (colors) and respondent partisanship (panels). Ideology of selection of news media outlets given in left panel.



Taken together, these results suggest a possible explanation for the conservative bias in YouTube's recommendation algorithm. Specifically, it appears YouTube's recommendation algorithm targets moderately conservative content for all users. When users start on videos close to this content, the algorithm keeps them in roughly the same part of the ideological spectrum. But when users start on more liberal videos, the algorithm's conservative bias becomes apparent. User characteristics like partisanship do not appear to matter if the user starts on a seed video that is already near the conservative bias target, but do act as a drag on how far the algorithm can move users away from liberal content toward the moderately conservative anchor.

The experiences of Republicans and Democrats on YouTube differ in the strength of these trends, but not in their nature. For all users in our sample, starting on an ideologically conservative seed video deposits them in roughly the same part of the ideological spectrum relative to where they started on average. And both Democrats and Republicans, when starting with a liberal seed video, are recommended increasingly conservative content as they progress deeper into the traversal. What differs is the speed at which partisans are pushed in this conservative direction, and – correspondingly – where they arrive at

the 20th step. Democrats starting from moderate or liberal seed videos arrive at very moderate recommendations, whereas Republicans arrive at the same ideological destination regardless of where they start.

5. Implications for affect polarization

These findings present the first evidence of how online social media recommendation algorithms operate on real users. Previous research has relied on automated recommendation collection strategies, which do not account for user personalization, undermining the construct and ecological validity of their data. By asking real users to navigate YouTube using real accounts, we find that the recommendation algorithm separates Democrats from Republicans, with the latter group being significantly more likely to arrive in ideologically congruent echo chambers. Furthermore, by randomly assigning these real users to seed videos and traversal rules, we isolate the supply-side role played by the recommendation algorithm.

In aggregate, these differences are small but non-trivial. Following YouTube recommendations through roughly 6 videos will result in the user being suggested content that is 0.14 units more conservative on an ideology scale ranging between -2 and 2 – an increase in conservative content of roughly 10%. Substantively, this is commensurate to the distance between CNN and the Washington Post. The difference in recom- mendations served to Republicans and Democrats is more striking, amounting to roughly 0.26 units or the difference between MSNBC and the Washington Post.

However, these results should be interpreted with caution, particularly with respect to the differential results for Democrats and Republicans Although our data allow us to isolate the role played by the recommendation algorithm, we are unable to peer inside the black box. Without this clarity, we can't determine whether the algorithm operates more forcefully for Republicans because the are more demanding of ideologically congruent content than Democrats, or for some other reason. For example, if Republicans more consistently click on conservative videos than Democrats click on liberal videos, an algorithm trained to provide users with videos they would most likely want to watch will naturally better serve the Republicans. Conversely, if conservative content is more profitable for other reasons

(i.e., clickbait titles, more advertising partners, etc.), then the explanation for the observed divergence is more a function of supply-side profit-maximization.

Nevertheless, our findings suggest that there are systematic differences in the lived experiences of Democrats and Republicans on one of the largest online social network platforms, and the dominant source of video content on the internet. Unlike previous work which has relied on anonymous browsers to traverse the recommendation algorithm, we show that real users of YouTube are exposed to significantly different ideological content. More specifically, we find that this content is significantly more conservative – and that the ideological diversity of these recommendations narrows – the deeper into the recommendation algorithm users get.

These echo chambers are consistent with an explanation of the growing affect polarization in the United States that focuses on the role played by online political information (Adamic and Glance, 2005; Prior, 2007; Iyengar and Hahn, 2009). As citizens are exposed to an increasingly narrow set of political facts and worldviews, their ability to participate as well informed citizens in deliberative democracy erodes. More troublingly, their willingness to "other" fellow citizens who exist in different echo chambers grows (Kalmoe, 2014, 2019). Unlike a growing body of research which, relying on anonymous methods of data collection, concludes that online sources of information do not exhibit echo chambers (Barber ´a et al., 2015; Bakshy, Messing and Adamic, 2015) and that, if anything, recommendation algorithms have a de-radicalizing effect (Ledwich, 2020), we find quite the opposite using a sample of real users watching real videos on their real YouTube accounts.

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