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Essays on Political Economy

By

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Jury

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Dedications

To my father Muhammad Iqbal (late) who I miss dearly

&

Mother (Tallat Iqbal) who strived for education of their children

Résumé

Cette thèse se compose de trois essais. Le premier essai explore les canaux d'achat de voix (l'effet des élections sur les habitudes de consommation alimentaire des ménages) au Pakistan, pays caractérisé par l'alternance de régimes autoritaires et démocratiques. En utilisant des données microéconomiques ainsi que la méthode des différences de différences, nous montrons que l'augmentation des dépenses de consommation est fortement influencée par la période électorale dans les deux régimes.

Dans le deuxième essai, nous analysons la relation entre les incitations des politiciens à utiliser les dépenses publiques (c'est-à-dire à concevoir un cycle budgétaire politique), leur popularité et le degré de polarisation des électeurs. En partant de l'hypothèse que cette relation est non linéaire, et en utilisant des données sur les gouverneurs américains, sur la période 1987-2017, nous montrons que l'association entre la popularité, la polarisation et les dépenses publiques est en forme de U. Plus la base électorale est polarisée, plus la popularité compte. La relation est particulièrement significative et positive pour des niveaux de popularité élevés. La relation est encore plus présente dans les années électorales, signalant un comportement stratégique opportuniste, orienté vers la réélection, plutôt que partisan.

Dans le troisième et dernier essai, nous examinons les déterminants des réactions des Etats américains lors de la pandémie de la Covid-19. Parmi ces déterminants, nous montrons que les règles d'équilibre budgétaire ont joué un role significatif notammement grâce à la possibilité de bénéficier des fonds de stabilisation budgétaire. Les administrations des différents Etats américains ont tenté de résoudre la quadrature du cercle en cherchant simultanément à respecter les règles budgétaires, limiter l'impact économique des mesures de distanciation sociale, lutter contre la pandémie et satisfaire leur base politique. Certaines règles budgétaires ont induit un arbitrage entre santé publique et santé financière, ce qui peut relancer le débat sur la pro-cyclicité des règles budgétaires.

Abstract

This thesis consists in three essays. The first essay explores the vote buying channel through the effect of elections on food consumption patterns of households in Pakistan a country characterized by multiple episodes of authoritarian and democratic regimes. Using Difference in Difference methodology and micro level data, we document that increase in consumption expenditures is strongly associated with election period in both regimes.

The second essay analyzes that incentives of politicians to use fiscal expenditures (i.e., engineer a political budget cycle) depend on their popularity and on the degree of polarization of the electors. We assume that this relationship is non-linear, using data for the US governors, over the period 1987-2017. We show that the association between popularity, polarization, and fiscal expenditures, is U-shaped: the more polarized the electoral base, the more popularity matters. The connection is especially significant and positive for higher levels of popularity. The relation is even more verified in election years, signaling an opportunistic, reelection-oriented, strategic behavior, rather than a partisan one.

The third and final essay examines the determinants of US states' reactions to the Covid-19 pandemic. We show that Balanced-Budget Rules have had an impact, mediated by the possibility of benefiting from the funds previously stored in Budget Stabilization Funds. State policymakers tried to square the circle by simultaneously respecting budget rules, limiting the economic impact of the social distancing measures, combating the pandemic, and pandering to their political basis. Some fiscal rules have induced a trade-off between health and public finance, a result which may reignite the debate on the pro-cyclicality of fiscal rules.

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General Introduction

According to Schumpeter (1942), “Democracy is the institutional arrangement for arriving at political decisions in which individuals acquire the power to decide by means of a competitive struggle for the people’s vote”. The creation and consolidation of democracy requires well-functioning institutions which ensures free and fair elections, accountability of incumbent politicians to electorate and free entry into politics. Rich countries like USA, Canada, Australia, New Zealand and those in the European Union are all consolidated democracies while poor countries in sub-Saharan Africa, South Asia and Central America are less democratic or unconsolidated democracies which revert back to non-democratic regimes (authoritarian regimes or military coups).

What are the reasons lying behind the fact that some countries becoming democratic once never step-back to non-democratic regime and some democracies fell to non-democratic regimes many times? The commercialization of agriculture without feudal or semi-feudal relation between landlord and labour affect the democratization process (Acemoglu & Robinson, 2012; T. S. Aidt & Franck, 2015). Initial political regime or social conditions affect the process of a country becoming democratic (Alesina et al., 2013; Luebbert et al., 1991). The will of political leaders to form democracy is unavoidable even in the presence of favourable social, economic and external conditions in country (Huntington, 1991). The institutional legacy of colonizer plays a vital role in democratization process of developing countries (Acemoglu et al., 2001). The most consistent anti-democratic force is the landed upper-class as democratization poses the threat of losing cheap labour. Democracy is formed when a society faces a potential threat of internal conflict or revolution (Aidt et al., 2011; Therborn, 1977).

The first chapter of this thesis focuses on vote-buying as a usual way to engineer Political Business/Budget Cycle (PBC) in Pakistan. Pakistan is the best scenario for studying vote-buying as it has episodes of democracy as well as authoritarian regime (same as dictatorship or military regime). Pakistan came into being in 1947 (after partition of British-India into India and Pakistan) as a democratic country. But democracy in Pakistan fell four times to military coups as compared to India which is the largest democracy in the world. Creation of democracy is different from persistence of democracy or as called consolidated democracy. Pakistan is an example of unconsolidated democracy (i.e., democracy going back to non-democratic regimes-authoritarian or military regime) with this process repeating many times.

What are the factors preventing developing countries like Pakistan, Argentina and other Latin American countries from becoming a consolidated democracy? Dictatorial regimes collapse due to social protests and democratic regimes collapse due to unsustainable policies and radical populist movements (Robinson & Acemoglu, 2006). Politics is integrally conflictual and every policy choice creates winners and losers. In developing countries, elites are afraid of losing their power to challengers in a society, e.g., in Pakistan Industrialists, pro-army groups, opposition political parties (can be called as elite) support military coups to change balance of power. Pakistan is frequently on the verge of political conflict. Organized civil society, shocks and crises, sources of income and composition of wealth, political institutions, inter-class inequality, middle-class, globalization and political identities are the factors affecting the process of democratization in a country (Robinson & Acemoglu, 2006).

Agricultural economies where elites have more income from land might support military coups (Eltis & Engerman, 2000). A non-democratic regime is generally a regime for the elite or privileged in a society and electoral corruption is pervasive in many developing countries. Developing countries, even after becoming democracies suffer from weak electoral institutions, poverty and unemployment. Aidt et al. (2020) report evidence of vote-buying in 104 non-OECD countries from 1975 through 2015, they observe monetary expansion (monthly growth rate of M1) during the election month and in post-election month. They also present evidence of increase in consumption expenditures of individuals in Armenia around elections, which shows that vote-selling phenomenon is prevalent.

Free and fair elections are considered a backbone of democracy, but we often see anecdotal evidence of distribution of cash, gift-cards, sewing machines, food items and clothing to the electorate before elections, especially in developing countries. The phenomenon of vote-buying is antagonistic to democratization process in the society, because it means laws and policies do not reflect the choice made by majority. Mitra et al. (2017) have looked at vote-buying in Indian states during national elections, they have looked at the consumption patterns of households. They observe an increase in consumption expenditures of households during elections, which supports the anecdotal evidence of illegal vote-buying. Similarly, Cantú (2019) has shown evidence of distribution of gift cards by one of the parties in Mexico during the 2012 presidential election.

Vote-buying is an illegal and non-democratic activity, but there is a dearth of empirical evidence in the political economy literature on vote-selling. Our contribution is broadly to the literature of political business cycles, election financing, clientelism, and vote-buying in developing democracies. We explore vote-buying in Pakistan. Why? Pakistan is the 5th most populous country

of the world, it has experienced various shades of non-democratic regimes from a restricted democracy to a full military authoritarian regime and it is an agrarian economy.

In this project, we empirically test the hypothesis whether vote-buying occurs in unconsolidated democracies particularly with phases of authoritarian regimes. Pakistan is an ideal setting for that, as micro level data gives unique opportunity to compare two political regimes at local government level elections. We first calculate expenditure elasticities for food commodities by using Almost ideal demand system (AIDS). We then estimate the consumption patterns of households in authoritarian (local election of 2005) and democratic regimes (local election of 2015). Our results indicate an increase in consumption expenditures during election period in both authoritarian and democratic regimes. We also explain vote-buying on the basis of different income groups and we further verify our results using Karachi (a swing division). This is a novel contribution to the literature as there is no study (to the best of our knowledge) which empirically investigates and compares vote-buying in different political regimes.

The second chapter is titled, "More to the picture than meets the eye? Governors' popularity, voters' polarization and political budget cycles". It relates to the literature on political economy, political budget cycles, public choice, popularity of incumbent politicians and polarization of voters. Political economy is defined as the study of how the political nature of decision-making affects policy choices and ultimately economic outcomes (Drazen, 2000). Economic policy is the result of a collective choice mechanism which is used to combine different preferences into a single preference or policy by a politician and it becomes accepted policy. The relationship between the policy chosen and the policy desired by general public would depend on the policy preferences of the incumbent politician.

An economist who derives the optimal policy for an economy usually makes that policy for the infinite time period, i.e., for the lifetime of an economy. In reality the democratic representative, a politician when she makes the policies, knows that she is selected for a fixed term and after that she might be replaced. Such facts have a significant impact on the policies chosen by her. A politician is concerned that she should be re-elected and she wishes to stay in office for a longer period, but the fixed term elections make her do even some stout tasks for getting re-elected. The fear that the politician might be replaced in the next election affects macroeconomic variables greatly as the politician would try to influence her probability of re-election by making policy choices which would show her competence and value to the voters (Drazen, 2000).

The uncertainty about the retention of a politician in office might affect her policy choices in three different ways. First, she would choose those policies which would increase the probability of retention in office, such policy choices would significantly affect economic outcomes (Alesina & Tabellini, 1990). Second, if there is a high probability that she would lose the election to a politician whose policy preferences are vividly different than her, even then she would try to choose policies in such a way that she can influence policies of her successor (Persson & Svensson, 1989). Third, if neither the politician is able to increase her probability of retention in office nor she is able to affect successor's policies, even then her policies would affect the economic outcomes significantly in the years to come (Drazen, 2000).

Analysts have classified politicians into two types: First are the politicians who want to win the elections for power and adulation which leaders get, they want to get re-elected again and again for power and ego-rents (rents from holding office). These politicians are called as opportunistic or office-motivated (Rogoff & Sibert, 1988). Second politicians can have a well-defined ideology, and objectives which are different than other politicians (opponent) and they want to implement

it. They want to get re-elected to continue their policies and they are called as partisan. Both kinds of politicians would behave as opportunistically before elections as both are interested in retention of office either for power or to implement their preferred policy. So, it can be said that politicians or policymakers would be exhibiting opportunistic as well as partisan behaviors.

An opportunistic politician when faced with the probability that she might be replaced, she would try to maximize her probability of retention in office by signaling her competence and value to the voters. When two opportunistic politicians face similar circumstances, they would make identical policy choices. When a partisan politician faces a situation that she might be replaced with someone having different policy preferences, she would choose policies to affect the policies of her successor and this could be done in two ways: i.e, she would choose policies to increase the probability of election of the candidate with similar policy preferences like from her own party or she would choose policies to affect the constraints of her successor. Nonetheless, when a politician cannot affect the probability of retention in office or policy choices of successor, even then, uncertainty about electoral outcomes would increase constraints of the successor when she takes office.

When an economic cycle is induced by the electoral cycle, whether due to opportunistic or partisan behaviors of politicians, we call it a Political Business Cycle (PBC). For a politician desire to win the next election has always been so important that it undermines all other important economic issues and this consideration leads to inefficiencies in economic policies. The phenomenon of electoral manipulation before elections is probably as old as first election but it has got a formal consideration by Nordhaus (1975) in an analytical framework model based on the Phillips curve for the United States. Economic conditions prevailing in the economy just before an election have

a significant impact on voters' behavior in the election. That's why politicians take advantage of it which is indicated by cyclical movements in policy instruments (Tufte, 1978).

Fair (1988) found that if we want to observe that the voters hold politicians accountable for the economic performance of a country, such influence of economic outcomes on electoral outcomes can best be observed during presidential elections. The results of his study indicate that a 1% growth in the GNP of the country increases the vote share of an incumbent by 1%. Many studies found the results similar to (Fair, 1988). In such periods, the economic conditions of the country before elections play a major role in determining the fate of the politician regarding her retention in office. Researchers found similar results for the United states, Britain, France, Italy and Germany. Pre-electoral economic situation significantly affects the vote share of politicians in the election (Alesina & Perotti, 1995).

Studies at the time of Nordhaus (1975) and Tufte (1978) were based on how economic policies as well as economic outcomes would react to periods of election. Tufte (1978) explained it in a very good manner: using the example of Richard Nixon who before the elections of 1972 in the United States, substantially increased the social security benefits, gave tax exemptions and reinstated tax credits on investments in 1971. The government made it sure that the distribution of transfer payments via cheques reach the recipients just two months before the elections (Rogoff & Sibert, 1988). Tufte (1978) argued strongly that economic activity in the industrialized countries showed a clear political cycle behavior. In the case of United States, he showed from 1948 through 1976, that real disposable income, as well as unemployment, showed a political business cycle induced behavior right before and after the elections.

The major debate in the literature is about whether there is sufficient evidence of PBCs in the economic outcomes or policy instruments. This distinction is important to get a clear picture of the

plethora of literature existing on PBCs. The empirical evidence about the existence of PBCs in the policy instruments (fiscal transfers) is stronger as compared to PBCs in the economic outcomes (growth, unemployment and inflation). Bizer & Durlauf (1990) and Tufte, (1978) find evidence of PBCs in the fiscal policy instruments (fiscal transfers, taxes, disposable income and public expenditures) for the United States. However, the empirical literature (McCallum (1978), (Golden & Poterba, 1980), (Hibbs, 1987), Alesina (1988), and Jonsson & Klein (1996) reject the existence of PBCs in economic outcomes (growth and unemployment) for the United States. The empirical evidence suggests the existence of pre-electoral manipulation of policy instruments (Alesina et al., 1992; Keech & Pak, 1989) and shows that it affects the well-being of voters after the election.

Drazen & Eslava (2010) present an approach to political budget cycles highlighting changes in the composition rather than the level of government expenditures, a view consistent with arguments that voters dislike deficits and high government spending (Peltzman, 1992). Citizens value government spending on some goods but not others, and rational, forward-looking voters use the levels of government-provided goods to make inferences about the incumbent's fiscal preferences. Election year shifts in the composition of the budget improve the incumbent's chances of being re-elected, since voters assign some probability to higher spending on goods they prefer reflecting the incumbent's true preference over types of spending rather than purely electoral motives. Voters penalize the incumbent party for running large deficits before elections and reward it for increasing the amount of targeted spending observed before the election.

In Aidt et al. (2011), strong evidence is found that an incumbent politician increases his chance of re-election by increasing the spending expenditures in the election year and the incentives to do so are greater when his chances to win are low. If fiscal manipulation can bring electoral advantages to politicians, they will do it. They will increase expenditures in the areas which common people

are aware of and which can increase their popularity. Information asymmetries also play a role in creating PBCs: if some (even few) voters are uninformed and cannot identify election motivated expansionary policies, politicians would use this opportunity to win election. Therefore, it becomes rational that voters (both naïve and rational) reward or punish politicians for economic performance (De Haan & Klomp, 2013; Maloney & Pickering, 2015).

Yet, Schultz (1995) has argued that most tests of political business cycles (PBCs) suffer from a serious shortcoming; they are based on the implicit assumption that the government's incentives to manipulate the economy do not vary greatly from one election to the next. Schultz claims that both the expected benefits and the expected costs of political manipulations depend on the government's electoral chances. When the government is safe, the potential benefits are small while costs are large. When the government is unpopular, the potential benefits are great while the costs are discounted heavily. Therefore, there will be an inverse relationship between the government's reelection chances and the degree to which the government engages in pre-election manipulations of the economy.

Electoral cycles may appear in the form of changes in the composition of government spending (Rogoff, 1990). For example, in Bove et al. (2017), a theoretical model is presented, backed by empirical evidence showing how politicians use trade-off between social and military expenditures to signal their competence before elections. Politicians during peace time increase social expenditures and cut military expenditures to show voters that they share their spending priorities. Similarly, in Boly et al. (2019), evidence is provided of environmental repercussions induced by electoral cycles. They find that incumbents change the composition of expenditures in the budget, instead of its level, by decreasing public goods which leads to an increase in environmental damage.

Castro & Martins (2018) have examined the data for 18 European countries over the period 1990-2012. Their empirical analysis strongly supports the presence of opportunistic political business cycles in macroeconomic variables of public expenditures. They have identified certain components of public expenditures which are mostly manipulated before elections, such as public services, health expenditures, social protection and education. Increasing the expenditures on these categories is considered a good policy among all segments of societies, thus these policies lead to quick results and reveal political opportunism. They also observe that political opportunism was visible in various components of public expenditures for central European countries, although for Nordic and southern European countries it was concentrated mostly in public services.

The politicians always try to make the year before an election a happy one. If the political party in power expects to get re-elected, then it tries to show its competence by increasing spending in the areas where improvement would be readily observed, and the voters would reward them. But if the political party do not expect to get re-elected, even then it spends on its preferred policy choices and create deficits which are later financed by the winning party (Mandon & Cazals, 2019). Politicians of countries having Presidential system of government use Political business cycles to get re-elected by increasing the GDP growth in the year of election (Rohlfs et al., 2015).

Moreover, in the second chapter of this thesis, we provide an empirical evidence that how popularity related incentive affects the budget manipulation given the polarization of population in US states. We have a comprehensive dataset to ascertain whether popularity of the governor has a role to play in the degree of engineering a PBC before elections, given the polarization of the population. Do popular governors have the same incentive to engineer political budget cycles as unpopular ones? To answer this question, we are using popularity of the governors of US states from 1987 through 2017. Our first contribution in this project is to consider explicitly the

popularity of incumbents as it has not been considered in literature due to non-availability of data. We have built this hand-picked popularity dataset using opinion poll surveys in US states.

Our second contribution is to see what role polarization plays and how, overtime, the increasing polarization of population in the US has affected political budget cycles. This is a novel contribution to the literature on polarization as empirically analyzing the polarization is a difficult task. Our measure of polarization is unique as well as self-explaining. We have used American National Election studies surveys from 1987 through 2017. We have also collected data on win-margin and turnout rates in US states for gubernatorial elections. Data for other control variables is coming from National Association of State Budget officers (NASBO) fiscal survey reports. Our third contribution is that our hand-picked dataset, which is comprehensive and enables to empirically test our hypothesis of how the popularity of US governors affects their degree of engineering fiscal expenditures, given the polarization of population. Our results indicate that popularity has a significant role to play in budget manipulation by Governors before elections. The higher the popularity, the higher the incentives to engineer a PBC, but only when the polarization of voters is also large.

The third chapter is titled “Health politics? Determinants of US states’ reactions to covid-19”. It was conceptualized during pandemic and it has been published (Farvaque et al., 2020). The motivation was to know whether partisan politics or budgetary rules constrain governors in US, in budget making during covid-19 pandemic (a natural experiment). Measuring the economic costs of the pandemic is still a difficult task, which probably indicate the worst recession the US may have known. Concerning the US states, Clemens & Veuger (2020) estimate that state government sales and income tax revenues will drop by approximately $106 billion in the fiscal year 2021, representing 0.5% of their GDP, with a loss of 11.5% in expected revenues. As expenditures may

increase too, the states' budgets may be widely affected. However, most US states face the binding constraint of balanced-budget requirements. Balanced-Budget Rules (BBRs) force states to balance their books every year, generally forbidding their governors and legislatures from passing, executing or reporting any deficit.

In fact, adopting quarantine, shelter-in-place lockdowns or other forms of social-distancing measures is *de facto* imposing a cost in the economy. Closing businesses is, by definition, economically costly, but shutting schools also has a strong impact, as parents have to choose between working or staying at home to take care of their children, the latter decision implying that firms have to face a labor shortage, and thus disruptions in the production process. Closing businesses obviously affects sales-and-profit-based tax revenues, while closing schools and other places of congregation has second-round impacts, as households' revenues dwindle and income-based tax revenues shrink correspondingly.

Hence, as the pandemic spread in early 2020, governors were faced with the threat of falling expected revenues, the possibility of having to increase expenditures to support their population, and the illegality of running a deficit. If most of the states also benefit from the presence of rainy-day funds (RDFs, also called Budget Stabilization funds – see, e.g., Zhao, 2016), in which previous surpluses may have been "stored". In case of harsh circumstances, these funds cannot be raided so easily, and exit rules are often stringent. In other words, given that the budgetary process is constrained by the presence of fiscal rules, governors have had to face the pandemic, with its induced costs (economic and fiscal) while they were preparing the next fiscal year budget. Moreover, the stabilization funds may have been expected to moderate the unexpected Coronavirus exogenous shock to government expenditure and revenue, if only they could be raided

easily. A question thus emerges: given that it is the announced health-related measures that are likely to create the fiscal shock, have the funds played their counter-cyclical vocation?

Previous research has shown that the restrictions on the possibility of carrying deficits from one year to the other induce states to implement adjustments (that is, spending cuts or tax increases) in the face of economic shocks (see Azzimonti et al., 2016; Clemens & Miran, 2012 or Poterba, 1994 for a theoretical appraisal). As a consequence, BBRs have been accused of creating volatility, by inducing pro-cyclical responses (which was particularly noticeable during the Great Recession, as Jonas, 2012 and Campbell & Sances, 2013, have shown). According to this argument, strict fiscal rules may impede policymakers' reactions to shocks, for fear of breaching the balanced-budget requirements. In short, the BBRs reduce the possibility of smoothing out the impact of economic shocks. In some ways, the Covid-19 pandemic is no different from other shocks, and governors have been caught between a rock and a hard place: how can they support the population and deal with the economic consequences of the shock, while ensuring a balanced budget?

In other words, one cannot rule out the possibility that policymakers in the US states may have been fearful of the fiscal impacts of the adoption of sanitary policy measures that were, essentially, driving the economy to a halt, bringing with them large reductions in revenues. In this research, we thus analyze if and how partisan politics and fiscal institutions correlated in US states' reactions to the health crisis. We analyze how fiscal rules and the rules governing the use of budget stabilization funds correlate with the policy measures taken to combat the epidemic in the US. In terms of sanitary measures, we first consider the determinants of the number of social distancing measures announced by US states (up to 7 April). Then, we analyze the length of time between the rise of the epidemic and the announcement of the social distancing measures taken by US

states. Finally, we look at the probability of having a shorter length of reaction before the adoption of each social distancing measure by US states.

Our results reveal that both partisanship and fiscal institutions have played a role in the adoption of social distancing measures. However, it appears that fiscal rules may have induced a trade-off between health and the economy, as well as some procyclical behaviors. In other words, we show that budgetary constraints have been critical in responding to the pandemic. We find that rules of a political nature – in particular that the governor balance the budget – increase the delay in decision-making, while those forbidding the carryover of a deficit prompt them to act faster. One explanation would be that rules of a political nature place a significant weight on the political responsibility of the governor, especially on the responsibility for the consequences of his actions in balancing the budget. This increases the time for reflection, and the probability of acting slowly, in relation to neighbouring states. Politics is an important determinant in the adoption of policy measures. In face of the pandemic, institutional economic rules or, more precisely, budgetary constraints have trumped politics.

To summarize, political stability and strong institutions are considered as pre-requisite for development. Economic growth and democracy go hand in hand. The dictatorship may lead to economic miracles in short term in developing economies, while long lasting economic success is outcome of a stable democracy. This dissertation attempts to compare the behavior of voters in a developed country (United States) and a young democracy (Pakistan) both remained under the occupation of United Kingdom.

1 Vote buying: Evidence from Pakistan

1.1 Introduction

There is growing concern over high prevalence of vote buying in developing countries among economists, political and social scientists. Vote buying is a phenomenon which involves vote selling by voters to candidates (potential bidders-politicians) against electoral hands out (cash, goods or services). In other words, it is a transaction between a voter and a politician. Voters' lower socio-economic status, the presence of political dynasties, social networks and brokers (politicians' intermediaries handing over gifts to voters) are potential factors that facilitate vote buying.

The hypotheses that incumbents try to win the election by manipulating the voters through budgetary (political budget/business cycles- PBCs) and monetary (political monetary cycles-PMCs) polices have been under investigation since at least the seminal work by Nordhaus (1975) and Hibbs (1977). However, the presence (or not) of PBCs and PMCs is an ongoing discussion and convincing empirical support for these theories is still debated (for detail see., Drazen, 2000; Hugo, 2020; Paldam, 1997). Free and fair elections are inevitable for well and smooth functioning of democratic process. And it becomes increasingly important for the developing countries where democracy is young and not well developed.

Albeit vote buying is illegal and non-democratic, it is often present in the developing world. It undermines democracy (Anderson et al., 2015; Baland & Robinson, 2008; Cruz et al., 2017). Electoral handouts may foster corruption, and lead to lower accountability (Banerjee et al., 2011; Djankov et al., 2010), hinder economic development (Khemani, 2015; Robinson & Verdier, 2013; Stokes et al., 2005) and lead to the concentration of power by helping elite groups to remain in power (Acemoglu et al., 2013). Irrespective of moral arguments related to vote buying, it is of

grave importance from an economist' point of view, as it involves economic activity and leads to short term as well as long term consequences. There is substantial anecdotal evidence of vote buying by candidates through electoral handouts (provisions and cash) before the elections. Many accounts and country specific work show how candidates tend to buy vote by using various strategies across the world (Aidt et al., 2020; Akhmedov & Zhuravskaya, 2004; Eggers & Hainmueller, 2009; Gingerich, 2010; Mitra et al., 2017). Political parties use different vote buying methods depending upon voters' specific characteristics. In some countries, politicians even influence private banks along with state owned bank. For example, in Russia (an electoral autocracy) increased lending through government and private banks before presidential elections has been used to get favorable election outcomes (Fungáčová et al., 2020).

Although vote buying has been investigated in many countries, scant attention has been given to vote buying mechanisms under different political regimes in a country. It is a relevant question, given that authoritarian and democratic regimes are characterized by different ideologies and less tools are available for political engineering with politicians under democratic regime in comparison to authoritarian. Moreover, traditional studies either focus on PBCs or PMCs but less attention is paid to the fact that both channels are linked with each other. It accentuates the role of governing institutions. For example, Central Bank Independence (CBI) is a fundamental feature of good governance, as the bank may resist PMCs (Barro & Gordon, 1983; Kydland & Prescott, 1977; Rogoff, 1985; Rogoff & Sibert, 1988; Walsh, 1995). To fill this void and to explore mechanism of vote buying, we focus on Pakistan.

Why focus on Pakistan? The case of Pakistan is particularly relevant for several reasons. First, Pakistan is an ideal setting, as since its inception in 1947, it has been exposed to multiple episodes of authoritarian regime and almost half of its life is characterized by military regimes; General

Ayub Khan (1958-69), General Yahya khan (1969-71), General Muhammad Zia-ul-Haq (1977-88) and General Pervez Musharraf (1999-2008).

Even dictators need support and military act as an agent of elite (Acemoglu et al., 2010). So, it is interesting to explore the local government elections in authoritarian regime due to the reason, that candidates act as agents for dictators and offer support in upcoming general elections. The results indicate that there is strong positive relationship between election period and consumption patterns for poorer people in authoritarian regime as compared with democratic regime.

Second, Pakistan is the 5th most populous country in the world, and a large proportion of its population is poor and lives in rural areas. Agriculture sector is major contributor to country's GDP and consumers spend a significant share of their budget on food commodities: around 58.7% as indicated by Haq et al. (2008). Unfortunately, in the absence of a proper mechanism for fund raising by political parties to campaign and contest elections, candidates try to buy vote in different ways. Poverty, lower education and large family size tend to open the window of opportunities and make vote buying easy for politician (A. Dixit & Londregan, 1996).

Third, micro level data offers a unique opportunity to compare two political regimes at local government level elections[1].

In this paper, first, we ask if vote buying occurs under authoritarian and democratic regimes? Motivated to explore macroeconomic linkages and know whether the PMCs is reality or myth? I first investigate the evolution of monetary aggregate (M1) growth rate around the election month (an indicator of money demand) at first stage. The increase in M1 around the election gives us

[1] Albeit political scientists frequently differentiate between different kinds of dictatorship (for detail see, Linz et al., 1996), in this paper we closely focus on most common form of dictatorship i.e., authoritarian regime (military dictatorship).

preliminary evidence (stylized fact) of vote buying as in Aidt et al. (2020), and then I delve into depth to explore the consumption pattern differences.

Then what is the possible way to reveal the existence of vote buying? To answer this question, I develop a conjecture that, in the absence of vote buying, there should be no difference of consumptions patterns of households between normal (far from election day) and around the election period (very close to election day, i.e., just before and after). In other words, the significant positive association between consumption expenditures and election period would indicate vote buying phenomena.

As, there is no direct way to trace electoral transfers and no incentive for voters and candidates to share the information about the transactions, I assume that poor household will convert electoral cash into food commodities rapidly, so in general there should be an increase in consumption expenditures on food commodities during the election period. In particular, this should be true for the poorer households.

To test this hypothesis, I first calculate the expenditures elasticities for eight food groups by using Almost Ideal Demand System (AIDS). This exercise allows me to separate the different food items in categories (luxury vs. non-luxury goods).

I present evidence of vote buying occurrence, using different window size in terms of number of days before and after elections. I estimate the consumption patterns in authoritarian (local elections of 2005) and democratic regimes (local elections of 2015). The results indicate an increase in total consumption expenditure in both regimes, with a similar pattern arising for heterogeneous food groups. I also uncover the black box of vote buying on the basis of different income groups. Finally, I introduce robustness check using the Karachi-swing division where incumbents need to buy most votes) and it corroborates our findings.

This paper contributes to various strands of literatures: vote buying (Aidt et al., 2020; Mitra et al., 2017), electoral handouts (Brusco et al., 2004; Cantú, 2019; Díaz-Cayeros et al., 2016) and clientelistic politics (Bardhan & Mookherjee, 2016; Hicken & Nathan, 2020). To the best of my knowledge there is no prior study which empirically investigates and compares vote buying between authoritarian and democratic regime using local government elections in a country.

The rest of the paper proceeds as follow. Section II presents preliminary evidence. Section III introduces data sources. Section IV includes empirical strategy for vote buying. Section V presents results and section VI concludes.

1.2 Stylized facts

Initially, following the relevant strand of literature on PMCs, I ask if there is any significant shift in monetary aggregate M1, around the local election periods in both regimes? If yes, then it would indicate the manipulation of monetary tools by incumbent politicians to obtain favorable election outcomes. The estimation strategy is in line with Aidt et al. (2020). However, to avoid potential bias arising from combining data from different countries, I examine the relationship between money growth (M1) and election period for Pakistan only for the period 2004-17.

Table 1. 1 Preliminary evidence

	[1]	[2]	[3]
Dictatorship election month	0.563*** (0.091)	0.570*** (0.092)	0.690** (0.325)
Democracy election month		0.887*** (0.092)	0.971*** (0.265)
Controls	No	No	Yes
Constant	-4.439*** (0.091)	-4.447*** (0.092)	-3.596 (4.030)
Observations	124	124	119

Notes: Notes: This table presents the results of OLS regressions examining relationship between election period and money growth (M1) in authoritarian and democratic regime. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

In table 1.1, the dependent variable is the monthly log difference (growth rate) of money (M1). All columns indicate a significant increase in M1 during election months, under dictatorship or democracy. The size of coefficients attached to election periods under democracy are high as compared with dictatorship election period (in columns 2 and 3). The results are robust to the inclusion of set of control variables (GDP per capita growth, inflation-consumer prices annual growth rate, polity index of democracy, and exchange rate against US dollar[2]).

[2]We used economic data from Aidt et al.(2020), and data on election dates comes from the Election Commission of Pakistan (ECP).

1.2.1 Macro to micro level evidence

Given the preliminary macro level evidence in table 1.1, this study goes deeper than the existing literature about vote buying by using micro level data on consumption patterns in different socio-political regimes around the local government elections across Pakistan. First, I estimate the expenditure elasticities for different food groups[3]. Second, we analyze consumption patterns around election periods to exhibit causal relation.

1.3 Data sources

The data for this study comes from two different sources: First, the various waves of Pakistan Social and Living Standards Measurement (PSLM) survey conducted by the Pakistan Bureau of Statistics (PBS) for the period 2004-19. It offers information on multiple socio economic characteristics of respondents. Household integrated Economic Survey (HIES), a part of PSLM, is the only data set which records consumption expenditures on a wide range of different commodities by households across Pakistan. Second, for local bodies elections' dates in different provinces and districts, I rely on the Election Commission of Pakistan (ECP) data.

HIES reports consumption items that are purchased, self-produced, given and received as alternative to monetary rewards. We segregated the consumption expenditures into food and non-food groups, while food group expenditures are further divided into following eight groups based on the relevant strand of literature on vote buying and consumption patterns (Aidt et al., 2020; Haq et al., 2008; Haq et al., 2011; Mitra et al., 2017; Nazli et al., 2012). The groups are: i) wheat (ii) rice (iii) fruit (iv) vegetable (v) dairy (vi) cooking oil (vii) meat and fish, and (viii) other food group.

[3] The detailed methodology used for computation of expenditure elasticities are given in the appendix.1.A.

The descriptive statistics (mean, standard deviation, minimum and maximum value) are reported in appendix 1.B and 1.C for each window size of the variables used in the vote buying analysis (used to estimate the effect of an election on the consumption pattern) under authoritarian and democratic regimes respectively. Post and treated are dummy variables coded as 1 if the respondents are in the treatment group, and 0 otherwise. Total food expenditures show the total food spending by households. Wheat, rice, fruit, vegetables, dairy, cooking oil, meat and other food represent different food groups created by disaggregating total food expenditures. Household size indicates the number of family members. Other variables are dummy variables. The number of observations varies according to the window size chosen in the analysis.

1.4 Empirical strategy

The PSLM/HIES survey covers four provinces of Pakistan (i.e., Punjab, Sindh, Khyber Pakhtunkhwa-previously, NWFP-and Baluchistan). PSLM/HIES is conducted during September to June in each wave. The local bodies elections were held across Pakistan in 2005. So, it is not possible for me to estimate directly a difference in difference (DID) using a single wave data given the absence of a control group during the year 2005. To overcome this empirical challenge, my estimation strategy for vote buying in authoritarian regime relies on the comparison of the consumption patterns of the households surveyed during the election period of 2005 with the consumption patterns of the households surveyed during the same dates but for the year prior (2004) and posterior (2007) to the election year (2005). I follow the same strategy for the democratic regime by comparing consumption patterns of households surveyed during the election period with prior and posterior HIES year wave. This estimation strategy for analysis is in line with the one used by Aidt et al.(2020) and akin to a Difference in Difference methodology (DID).

As described by Mitra et al. (2017) and Aidt et al. (2020), I develop the conjecture that the increase in consumption expenditures by households around the election period may be due to vote selling. Given the anecdotal evidence at least, the vote selling by poor households would lead to higher consumption. Albeit vote buying occurs before the election day, it is difficult to ascertain a precise time of vote buying and of the change in consumption (the latter may happen before or after the election day). Following the difference in difference (DID) approach, I have created before and after sets for treatment and control groups. In line with Aidt et al. (2020), I defined a cutoff of 14 days after election day and calculated (2*δ days) from this cut off (back in time). All the household surveyed during (2*δ days) window are covered in the treatment group.

In other words, it is the period during which households are potentially exposed to the vote selling/vote buying activity. Moreover, the treated households interviewed during (0, δ days) and ($\delta, 2 * \delta$ days) before the cutoff date are placed in the "post" and "before" groups, respectively. The control group includes the households interviewed during the same period as the ones in the treatment group (2*δ days), but in the year prior and posterior to the election year. The δ ranges from 5 to 20 days[4]. It creates many windows around the election day, as well as before and after groups[5].

I estimate the following baseline equation:

$$\boldsymbol{Y_{it} = \alpha + \beta(Treated - \delta)_{it} + \gamma(post - \delta)_{it} + \lambda(Treated - \delta * post - \delta)_{it} + \omega(X)_{it} + \varepsilon_{it}} \quad \textbf{(1)}$$

In equation (1), the dependent variable $\boldsymbol{Y_{it}}$ indicates the consumption expenditures of household "i" at time t (t being the days around election). $\boldsymbol{(Treated - \delta)_{it}}$ is a dummy variable, coded as 1 if the households belong to the treatment group, in the (2*δ days) window, and 0 otherwise.

$\boldsymbol{(Post - \delta)_{it}}$ is a binary viable, coded as 1 if the household is surveyed in (δ) days around the election. $\boldsymbol{\lambda}$ represents coefficient of interest i.e., the interaction term ($\boldsymbol{Treated - \delta * post - \delta)_{it}}$ and captures the change in consumption expenditures related to the election period.

$\boldsymbol{(X)_{it}}$ represents the vector of control variables, in which we include: household size, household head education, household head occupation (employer, employee and farmer).

[4] The is made to provide reasonable time to households for spending the extra-income acquired by vote selling before the election. For simplicity, we have put line at 10 days window for each graph.

[5] For details, see Aidt et al. (2020).

1.5 Results

This section details results for each regime. I examined the impact of election on consumption expenditures for eight food groups; i) wheat, (ii) rice, (iii) fruit, (iv) vegetable, (v) dairy, (vi) cooking oil, (vii) meat and fish and (viii) other food group. These food items account for a large proportion of households' budget across Pakistan. I have estimated the effects of elections on total food expenditures and all above mentioned groups under both authoritarian and democratic regimes.

1.5.1 Vote buying in authoritarian regime

The context of local government elections during the authoritarian regime is the following. On October13, 1999, Army Chief General Pervez Musharraf toppled the elected government of prime minister Nawaz Sharif following the attempt to appoint a replacement for Musharraf. Local government elections of 2005 were held under the control of Musharraf 's military-led government. The elections were manipulated by various tactics prior to the election. For example, direct support to favorite candidates, transferring of officers to have favorable outcomes in military controlled areas, districts' gerrymandering and rejection of nomination papers of the opposition's candidates. To go a step further, in the run for 2005 elections, provincial government of Sindh create several new districts (Kamer, Shahdodkot, Kashmore, Jamshoro and Umer kot) by splitting up Larkana, Jacobabad, Dadu and Mirpurkhas districts in December 2004[6]. Similarly, in Punjab, in June 2005, three new towns were combined with Lahore district (a contribution of 9 towns in

[6] Section 7 of the LGO 2001 authorises the provincial government to "…declare Tehsils (Taluqas) and Districts notified under the SBNP Land Revenue Act, 1967 (W.P. Act XVII of 1967), to be Tehsils or, as the case may be, Districts under this Ordinance".

total) whereas some other districts (Rawalpindi, Faisalabad, Gujranwala and Multan) were upgraded in June 2005[7]. All these manipulations and pre-poll rigging paid off well for the government. Musharraf's Pakistan Muslim League Quaid-i-Azam (PML-Q) political party won the 2005 local elections with a high margin as compared to 2002 general elections in which PML-Q won with a narrow one. This victory placed Musharraf in a good position to win upcoming general elections of 2008.

I present the results for total food expenditure for each window size (5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 and 20 days) in the table 1.2. Whereas, regression results for all window size on each food group listed above are given in the appendix. 1.B. Moreover, results for total consumption and each food group are displayed in diagrams.

Table 1.2 contains the baseline regression results for total food expenditure during the election period under dictatorship regime. The dependent variable is log (total food expenditures). The window size ranges from 5 to 20 days.

The coefficients attached to the variable of interest (i.e., interaction term treatment*post) are positive and statistically significant, except in the few columns in table 1.2. As the window size increases the interaction term's coefficient value (ATE) increases. It reaches a maximum value (when δ=11) and then decreases with the increase in window size.

[7] Under Section 8, Punjab LGO 2001, the government may declare a tehsil or tehsils within one or more adjoining districts as a city district if the population exceeds one million; the economy is largely oriented to commercial, industrial, and services sectors; and the existing administrative and municipal infrastructure has become inadequate for efficient service delivery. Similarly, Section 9 (1) authorises the government "to declare a whole number of contiguous Unions to be a Town in the City District".

Table 1. 2 Baseline results: vote buying in authoritarian regime

Window:	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]
Post	-0.019	-0.023*	-0.043***	-0.061***	-0.055***	-0.065***	-0.066***	-0.072***	-0.060***	-0.062***	-0.045***	-0.043***	-0.046***	-0.038***	-0.033***	-0.032***
	(0.015)	(0.014)	(0.012)	(0.011)	(0.011)	(0.010)	(0.010)	(0.009)	(0.009)	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Treated	-0.121***	-0.159***	-0.195***	-0.213***	-0.214***	-0.226***	-0.230***	-0.237***	-0.228***	-0.227***	-0.209***	-0.212***	-0.220***	-0.208***	-0.196***	-0.205***
	(0.027)	(0.018)	(0.015)	(0.013)	(0.012)	(0.011)	(0.010)	(0.010)	(0.010)	(0.011)	(0.011)	(0.011)	(0.012)	(0.013)	(0.014)	(0.015)
Treated * post	0.043	0.068***	0.107***	0.116***	0.110***	0.122***	0.123***	0.100***	0.077***	0.066***	0.033**	0.034**	0.041***	0.023	-0.000	0.010
	(0.034)	(0.025)	(0.022)	(0.021)	(0.019)	(0.019)	(0.017)	(0.015)	(0.015)	(0.014)	(0.014)	(0.014)	(0.014)	(0.015)	(0.016)	(0.017)
Household size	0.089***	0.088***	0.089***	0.089***	0.088***	0.088***	0.088***	0.088***	0.088***	0.088***	0.088***	0.088***	0.088***	0.089***	0.089***	0.089***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Household head literate	0.276***	0.260***	0.241***	0.240***	0.229***	0.223***	0.226***	0.225***	0.226***	0.224***	0.219***	0.216***	0.214***	0.213***	0.215***	0.213***
	(0.014)	(0.011)	(0.010)	(0.009)	(0.008)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)
Employer	-0.051**	-0.032	-0.027	-0.019	-0.020	-0.013	-0.005	-0.006	-0.003	-0.003	-0.001	-0.001	0.000	-0.001	-0.000	-0.000
	(0.024)	(0.020)	(0.018)	(0.017)	(0.016)	(0.015)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Employee	-0.069***	-0.064***	-0.057***	-0.061***	-0.059***	-0.055***	-0.056***	-0.057***	-0.056***	-0.054***	-0.051***	-0.045***	-0.044***	-0.042***	-0.040***	-0.040***
	(0.016)	(0.014)	(0.012)	(0.011)	(0.010)	(0.010)	(0.009)	(0.009)	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Farmer	-0.000	0.003	0.017	0.021	0.036**	0.041***	0.043***	0.039***	0.041***	0.039***	0.041***	0.049***	0.049***	0.050***	0.056***	0.055***
	(0.027)	(0.021)	(0.018)	(0.015)	(0.014)	(0.013)	(0.012)	(0.012)	(0.012)	(0.012)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Constant	7.241***	7.265***	7.280***	7.300***	7.311***	7.324***	7.326***	7.339***	7.329***	7.334***	7.325***	7.324***	7.328***	7.318***	7.317***	7.322***
	(0.023)	(0.019)	(0.017)	(0.015)	(0.014)	(0.013)	(0.012)	(0.012)	(0.012)	(0.012)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Observations	3321	4546	5881	7322	8752	10045	11151	11843	12210	12658	13166	13752	14257	14675	15143	15248

Notes: This table presents the results of DID regressions examining relationship election period and consumption patterns in authoritarian/dictatorship regime. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

The results show a 12.3 percent increase in total consumption expenditures around the election period in 2005 as compared with the same dates of interview but in non-election years (2004 and 2007).

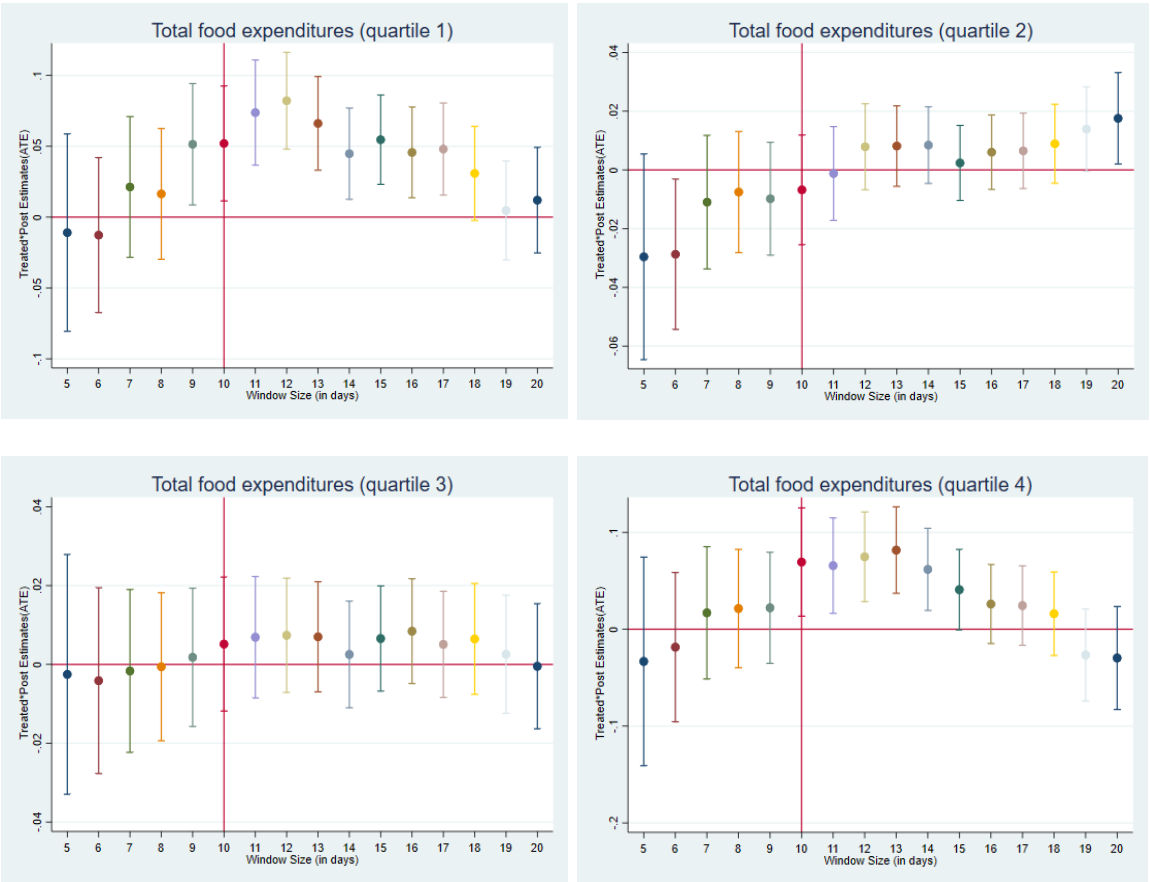
A lower education level (defined by literacy of household head-whether household head can read and write or not) of voters contributes to the vote selling phenomena. Surprisingly, literate household heads are significantly and positively related to spending as compared with counter parts-illiterate household heads. There is a significant positive association between household size and food consumption expenditure. Household with large family size may be more inclined towards vote selling and thus increase consumption during election period or they may receive more of cash-outs are proportional to the family size. The spending during election time is significant and positively related to an occupation as farmer. This may be due to the difference in the income associated with each type of occupation, while employees are negatively associated with consumption expenditures. Average Treatment Effects (ATE) of total food consumption expenditures for each window size are presented in figure 1.1.

Figure 1. 1 Average treatment effects (ATE) for total food expenditures in authoritarian regime.

In figure 1.1 the horizontal axis contains different window size in days (5 to 20). The vertical axis reports the average treatment effects indicating the effect of the election on total food consumption expenditures, and the bars show the 95% confidence intervals.

Figure 1.2 consists of average treatment effects by quartile. The households at the top of the distribution show a significantly positive effect of election of consumption but less than the average treatment effect in the figure 1.1 around the election.

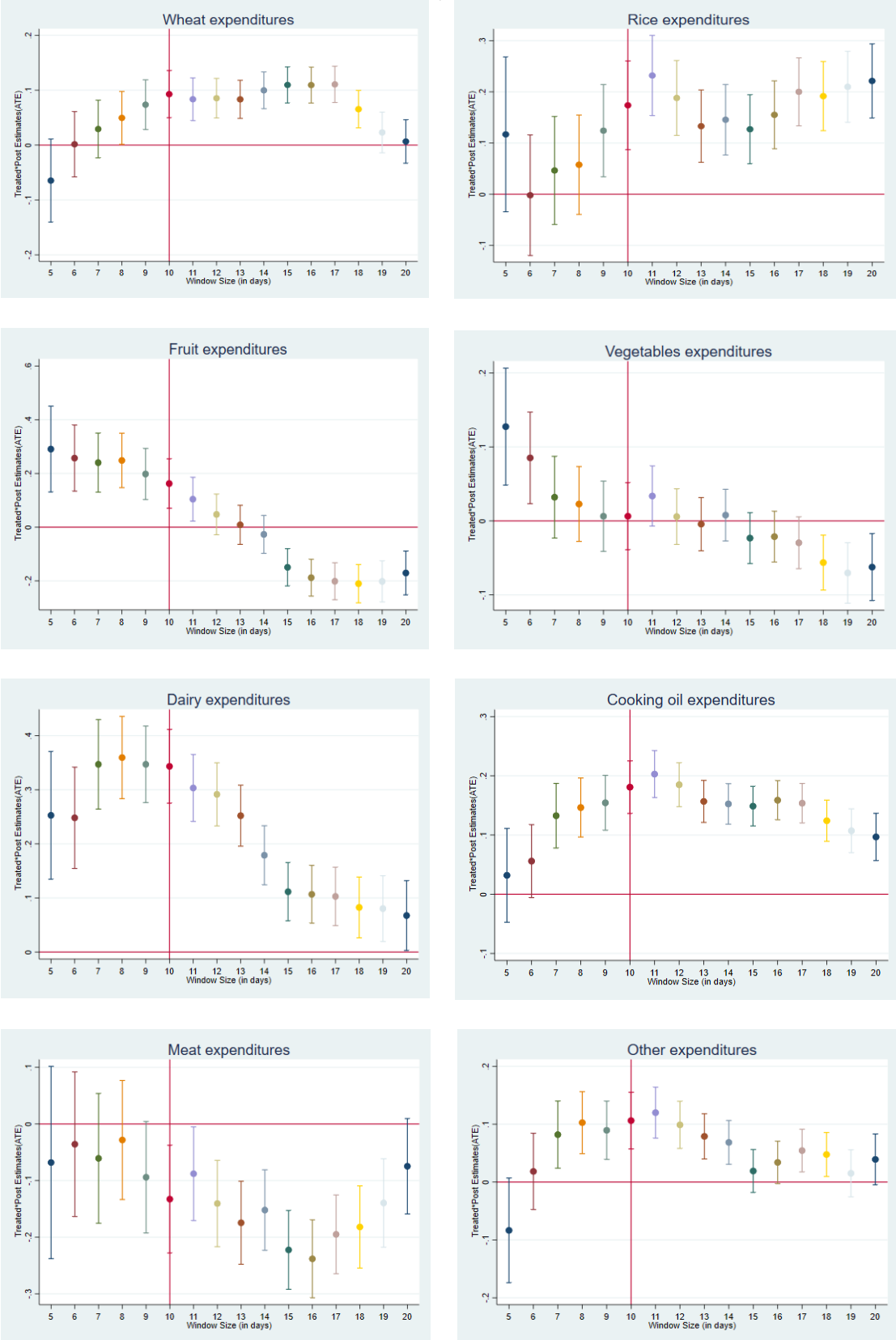
Figure 1. 2 Average treatment effect (ATE) by quartile in authoritarian regime



I re-estimated the equation (1) for each food category and present the results in the form of diagrams. It divides total food consumption into eight groups. Figure 1.3 displays response of disaggregated consumption expenditures of above eight food sub groups to election period.

Figure 1.3 indicates that the effect of election on consumption expenditures on food groups has a similar pattern to spending on total food. Consumption expenditures increases around the election for all food groups, except meat group. The result for meat group is not in line with Aidt et al. (2020). The elasticities (see appendix 1.A) show that meat is a luxury item having an expenditure elasticity 1.09. It may be attributed to different vote buying strategy is in the authoritarian regime. The coefficient of interest (Treated*post) for all other groups is positive and significant near the election along the different window sizes. Figure 1.3 shows the strongest effect of election on dairy consumption under the authoritarian regime.

Figure 1. 3 Average treatment effects (ATE) for food sub groups in authoritarian regime



1.5.2 Vote buying in democratic regime

The authoritarian regime ended in 2008. Then reforms were introduced to empower the Election Commission of Pakistan (ECP) to ensure fair and free elections in Pakistan. However, up to the present days, election seasons are full of deliberate rumors, misinformation, changes in voters' list, vote buying, clientelism in general, while in particular, on election day, bogus votes, coercion by feudal lords, violence, extortion, tempering of results are methods usually adopted by the candidates to get favorable election outcomes. In 2015, local government elections were held after a 10 years gap. Table 1.3 contains the results for equation (1) estimated for election under the democratic regime.

Table 1. 3 Baseline regression results: vote buying in democratic regime

Window:	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Post	-0.023* (0.012)	-0.012 (0.011)	-0.008 (0.010)	-0.019** (0.009)	-0.012 (0.009)	-0.010 (0.008)	-0.016** (0.008)	-0.022*** (0.008)	-0.028*** (0.007)	-0.027*** (0.007)	-0.025*** (0.007)	-0.020*** (0.007)	-0.004 (0.006)	-0.002 (0.006)	-0.005 (0.006)	-0.011* (0.006)
Treated	0.035** (0.016)	0.009 (0.014)	-0.008 (0.012)	-0.020* (0.011)	-0.024** (0.010)	-0.024*** (0.009)	-0.021** (0.009)	-0.021** (0.009)	-0.017** (0.008)	-0.008 (0.008)	-0.005 (0.008)	0.002 (0.008)	0.021*** (0.008)	0.032*** (0.007)	0.036*** (0.007)	0.042*** (0.007)
Post * Treated	0.016 (0.020)	0.037** (0.018)	0.047*** (0.016)	0.062*** (0.015)	0.069*** (0.014)	0.067*** (0.014)	0.062*** (0.013)	0.050*** (0.013)	0.038*** (0.012)	0.024** (0.012)	0.016 (0.011)	0.008 (0.011)	-0.014 (0.011)	-0.025** (0.010)	-0.028*** (0.010)	-0.036*** (0.010)
Household size	0.097*** (0.002)	0.096*** (0.002)	0.094*** (0.002)	0.094*** (0.002)	0.094*** (0.001)	0.094*** (0.001)	0.094*** (0.001)	0.093*** (0.002)	0.093*** (0.001)	0.093*** (0.001)	0.092*** (0.001)	0.092*** (0.001)	0.092*** (0.001)	0.092*** (0.001)	0.092*** (0.001)	0.092*** (0.001)
Household head literate	0.192*** (0.010)	0.193*** (0.009)	0.187*** (0.008)	0.183*** (0.007)	0.177*** (0.007)	0.183*** (0.007)	0.180*** (0.006)	0.184*** (0.006)	0.183*** (0.006)	0.187*** (0.006)	0.187*** (0.005)	0.186*** (0.005)	0.187*** (0.005)	0.187*** (0.005)	0.191*** (0.005)	0.194*** (0.005)
Employer	-0.006 (0.017)	-0.006 (0.015)	-0.010 (0.014)	-0.013 (0.013)	-0.004 (0.012)	0.001 (0.012)	-0.000 (0.011)	-0.000 (0.011)	0.001 (0.010)	0.003 (0.010)	-0.002 (0.010)	-0.003 (0.009)	-0.006 (0.009)	-0.006 (0.009)	-0.006 (0.009)	-0.004 (0.008)
Employee	-0.101*** (0.014)	-0.111*** (0.012)	-0.111*** (0.011)	-0.111*** (0.011)	-0.104*** (0.010)	-0.100*** (0.009)	-0.099*** (0.009)	-0.094*** (0.009)	-0.091*** (0.008)	-0.091*** (0.008)	-0.094*** (0.008)	-0.094*** (0.008)	-0.097*** (0.008)	-0.100*** (0.007)	-0.099*** (0.007)	-0.100*** (0.007)
Farmer	0.044*** (0.016)	0.027* (0.014)	0.014 (0.013)	0.016 (0.012)	0.020* (0.011)	0.022** (0.011)	0.025** (0.011)	0.030*** (0.010)	0.033*** (0.010)	0.039*** (0.009)	0.041*** (0.009)	0.041*** (0.009)	0.040*** (0.009)	0.039*** (0.008)	0.038*** (0.008)	0.036*** (0.008)
Constant	8.217*** (0.020)	8.224*** (0.018)	8.244*** (0.017)	8.256*** (0.016)	8.251*** (0.015)	8.243*** (0.014)	8.247*** (0.013)	8.256*** (0.014)	8.260*** (0.013)	8.262*** (0.013)	8.267*** (0.012)	8.266*** (0.012)	8.250*** (0.012)	8.249*** (0.011)	8.250*** (0.011)	8.253*** (0.010)
Observations	5565	6891	8260	9425	10736	11958	13023	13937	15130	16480	17529	18529	19844	21222	22397	23392

Notes: This table presents the results of DID regressions examining relationship election period and consumption patterns in democratic regime. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively

Table 1.3 reports the average treatment effects (ATE) for the effect of election on total consumption expenditures. Results have a similar pattern as under the authoritarian regime, and indicate an increase in consumption expenditures during the election period, but only for the medium window size. For a large window size, the results do not show any significant and positive impact of election on spending, and even it turns negative with the increase in window size. Other control variables (household family size, household head education, and occupation) show significant and positive association with spending while employee variable is negatively related to consumption expenditures. These results are qualitatively the same as in the case of the authoritarian regime. Figure 1.4 displays the detailed results (Treated*post) for all window sizes in the democratic regime.

Figure 1. 4 Average treatment effect (ATE) for total food expenditures in democratic regime.

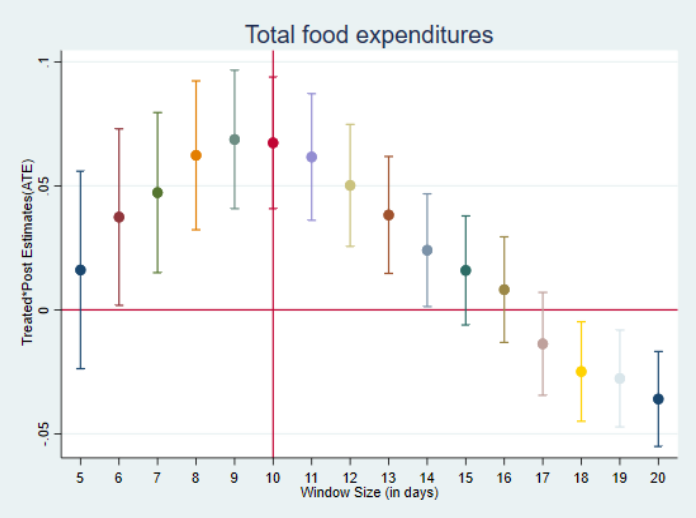


Figure 1.5 shows the ATE by quartile. There is no a significantly positive increase in consumption expenditures around the elections in the bottom of distribution, i.e., for the poorest households as compared with authoritarian regime.

Figure 1. 5 Average treatment effects (ATE) by quartile in democratic regime

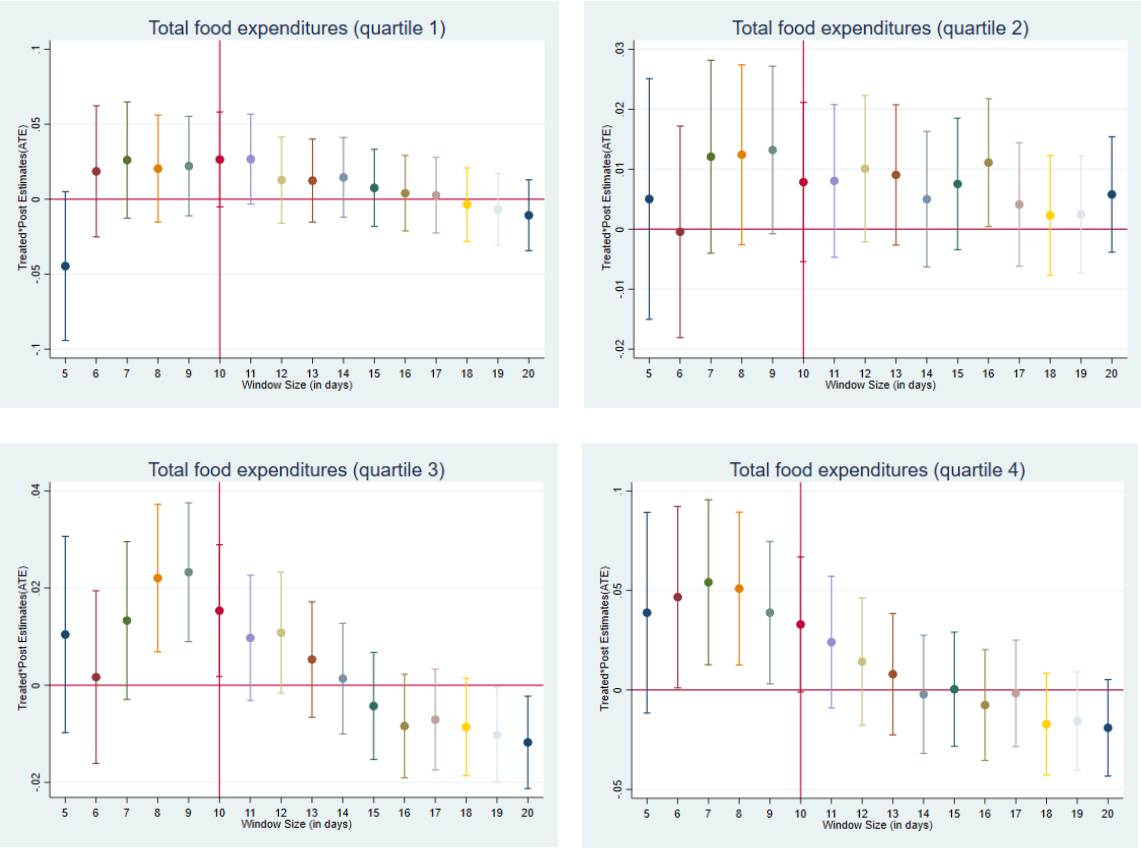
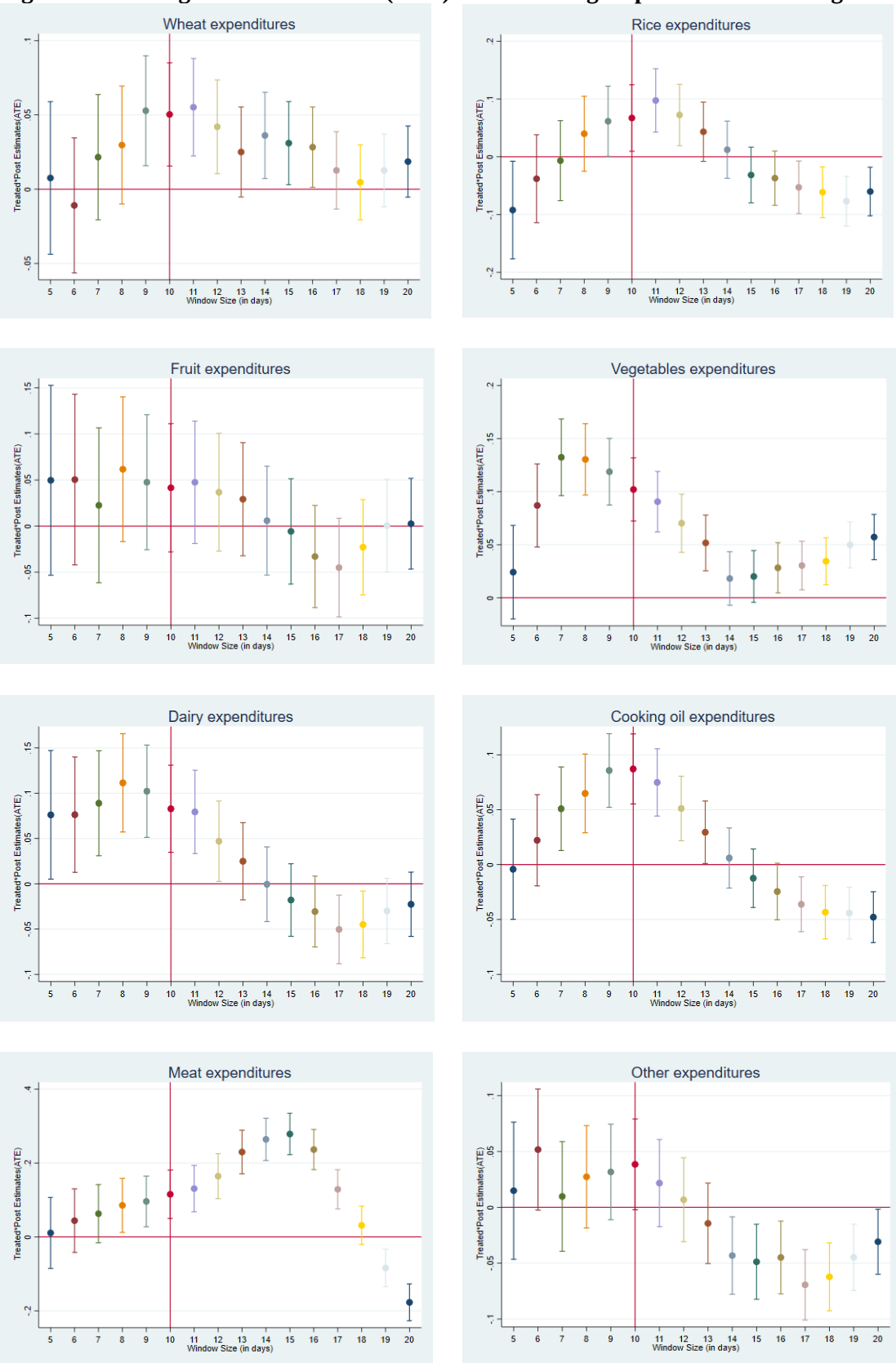


Figure 1.6 indicates the ATE for the above-mentioned eight food subgroups. All the food groups show an almost similar pattern i.e., an increase in the consumption expenditures around the election. Interestingly, the strongly significant and positive effect of election on spending appears now for meat group in democratic regime.

This result is line with local norms of Pakistan. As a vote buying strategy, politicians and their brokers offer most often biryani (a dish made of rice and chicken/meat) in lunch or dinner to participants/voters in their constituencies during corner meeting and political processions and congregations.

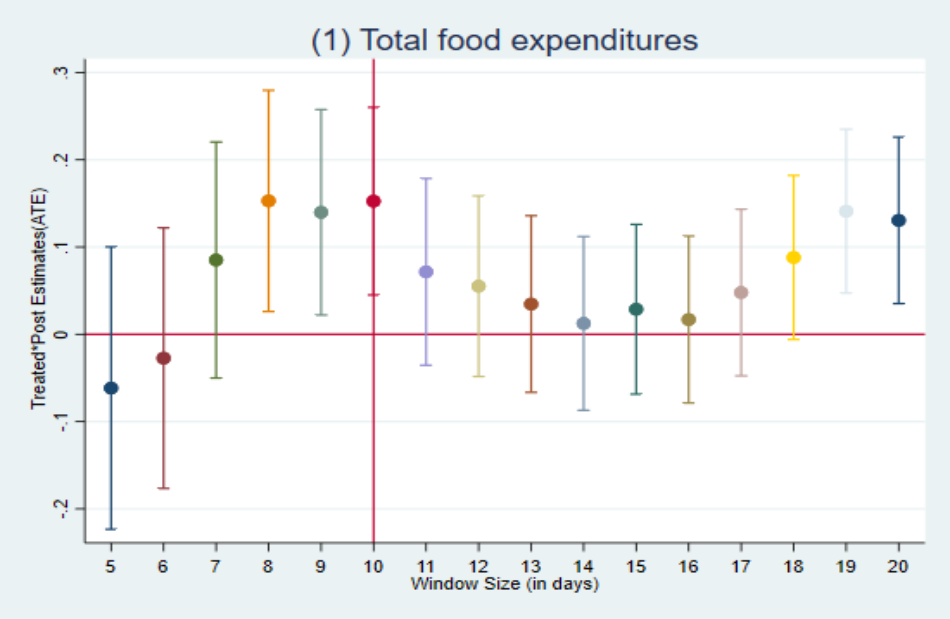
Figure 1. 6 Average treatment effects (ATE) for food sub groups in democratic regime



1.6 Robustness checks

Karachi is the provincial capital of Sindh (previously the capital of Pakistan). It attaches a great importance to economic activity and has been historically a "swing" division/district. The political parties (Pakistan Tehreek-e-Insaf (PTI), Pakistan people party (PPP), Pakistan Muslim Langue Nawaz (PLMN), Muttahida Qaumi Movement (MQM), Jamaat-i-Islami's-JI) have been majors political parties in this division. Our conjecture is that if Karachi is a swing division/district, then there should be more vote buying. The figure 1.7 pertains to total food expenditures of household survey around election period there from Karachi. Figure 1.7 records a higher value of ATE, in comparison to figure 1.4. It reveals the presence of a larger degree of vote buying in Karachi.

Figure 1. 7 Average treatment effects (ATE) for Karachi



The local government elections of 2015 were held in different phases in different districts. It offers an opportunity to compute DID estimates based on short period with in the same province- Sindh. We define several windows around election day and re-estimated equation (1). Now the "treated" is a dummy variable, coded as 1 if the household is from Karachi and 0 for the households from the other division of Sindh. We drop the division of Hyderabad as it shares a border with Karachi to have a clear estimation strategy. "Post" is a dummy and coded as 1 if the household is survey in 5 days before and after of election and 0 for the household not surveyed during that window. The high value of ATE confirms our hypothesis of more vote buying in the swing division/district of Karachi.

1.7 Conclusion

In this paper, I examine the vote buying phenomena during local government elections under authoritarian and democratic regime in world's largest new democracy however, exposed to many episodes of authoritarian regime (military rule) since its inception. To explain the potential channels of vote buying, I first provide the stylized facts using a macroeconomic indicator. The preliminary evidence shows that there is monetary (M1) expansion during elections months.

Then, this paper provides micro-level evidence, by combining households' consumption data from Pakistan Social Living Measurement (PSLM) survey with election dates data and using a difference-in-difference methodology. More precisely, this paper aims at estimating the impact of elections on consumption patterns of household for both types of regimes.

The results show an increase in the consumption expenditures around the election, which confirms vote selling activity by the households in both regimes. The results are valid for short and medium window size (close to election day) and reveal a decay process in consumption for the largest window size (far from election day). There is difference between spending patterns of poorer and rich households. Poorer household tend to spend more around election period under democratic regime.

As dictators may need more support in comparison with democratic regime so, it is of grave importance to explore the vote buying phenomenon by the income/expenditure distribution of the households under dictatorship as well as democracy. The results reveal substantial vote selling/vote buying by the poorer households as there is a significantly positive increase in consumption expenditures around the election for the poorer households only under authoritarian regime.

Moreover, I examine the effect of election on consumption expenditures of households for various food groups. All the food groups show similar general pattern of rise in spending around election.

Interestingly, meat group under democratic regime show strongest effect of election on consumption expenditures which is line the vote buying norms in Pakistan given the anecdotal evidence. The results are robust for “swing division” where vote buying is central to steer election outcomes.

1.8 Appendix 1.A

Almost Ideal Demand System (AIDS)

Deaton and Meullbauer (1980) introduced Almost Ideal Demand System (AIDS) and this has been commonly used for consumption analysis. By following the relevant strand of literature (for detail see, Haq et al., 2008; Haq et al., 2011; Nazli et al., 2012) to estimate the income/expenditure elasticities, I use Linear Approximate of Almost Ideal Demand system (LA-AIDS). Equation (1) describes Linear Approximate of Almost Ideal Demand system entailing various household characteristics.[8]

$$\boldsymbol{w_i = \alpha_i + \sum_j \gamma_{ij} \ln p_j + \beta_i \ln\left(\frac{x}{P}\right) + \theta z + \varepsilon_i} \quad (1)$$

In equation (1), w_i representing budget share of good i, p_j is the price of good j, x describes expenditure and P is a price Index (approximated by Stone Price Index ($\ln(P) = \sum_j w_j \ln(P_j)$)). Z shows a vector of control variables (provinces, household size, occupation and education of household head). $\boldsymbol{\alpha_i, \gamma_{ij}, \beta_i, \theta}$ are parameters, while $\boldsymbol{\varepsilon_i}$ is the error term. Given the correlation of among error terms, the parameters are estimated by joint analysis of these regression equations through the Seemingly Unrelated Regression (SUR). The generalized form of SUR is as follow:

$$\boldsymbol{Y = X\beta + \mu} \quad (2)$$

And the expenditure elasticity (ηi) is computed as follow:

$$\boldsymbol{\eta_i = \frac{\beta_i}{w_i} + 1} \quad (3)$$

[8] The restrictions imposed for estimation of LA-AIDS model are adding up property is satisfied if $\sum_i \propto_i = 1$, $\sum_i \beta_i = 0$, $\sum_i \gamma_i = 0$. Homogeneity is satisfied if $\sum_j \gamma_{ij} = 0$ Symmetry is satisfied if $\gamma_{ij} = \gamma_{ji}$.

Food expenditures elasticities

Descriptive statistics of the key variables used for the computation of expenditures elasticities by LA-AIDS are provided in table A.1.

Table A.1. Descriptive statistics for LA-AIDS model

Variable	Obs	Mean	Std. Dev.	Min	Max
Wheat share	15,040	0.19	0.09	0.00	0.71
Rice share	15,040	0.04	0.04	0.00	0.49
Fruit share	15,040	0.03	0.04	0.00	1.00
Vegetables share	15,040	0.10	0.04	0.00	0.83
Milk share	15,040	0.20	0.10	0.00	1.00
Cooking oil share	15,040	0.02	0.03	0.00	0.28
Meat share	15,040	0.10	0.08	0.00	0.76
Other share	15,040	0.32	0.09	0.00	0.99
log (wheat price)	15,040	2.57	0.10	2.35	2.71
log (rice price)	15,040	3.18	0.18	2.72	3.54
log (fruit price)	15,040	3.19	0.17	2.78	3.68
log (vegetables price)	15,040	2.83	0.18	2.49	3.69
log (milk price)	15,040	3.05	0.19	2.67	3.49
log (oil price)	15,040	4.20	0.08	4.01	4.41
log (meat price)	15,040	4.76	0.14	4.41	5.23
log (other price)	15,040	4.41	0.27	4.11	6.47
log (food index)	15,040	4.64	0.51	0.01	6.98

Table A.2. Expenditure Elasticities

Food groups	Expenditures elasticities
Wheat	0.83 (0.000)
Rice	1.14 (0.000)
Fruit	0.99 (0.000)
Vegetables	0.89 (0.000)
Dairy	1.32 (0.000)
Cooking oil	1.47 (0.000)
Meat	1.09 (0.000)
Other Foods	0.87 (0.000)

Source: Author's own calculation using PSLM/HIES 2005-06.
Notes: The figures in parentheses are P-values and all expenditure elasticities are statistically significant.

In table A.2, we report expenditures elasticities for different food groups. Table A.2 shows all food group have positive expenditure elasticities. It indicates that commodities are normal. Moreover, rice, dairy, cooking oil and meat found to be luxury food items.

1.9 Appendix 1.B

Table B.1. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Window size in days: [5]					
Post	3,321	0.52	0.50	0	1
Treated	3,321	0.21	0.41	0	1
Post * Treated	3,321	0.14	0.34	0	1
Total food expenditures	3,321	3202.15	1804.76	426	28571
Wheat	3,321	720.76	498.19	0	9000
Rice	3,321	189.23	250.79	0	5050
Fruit	3,321	115.87	142.88	0	2020
Vegetables	3,321	213.50	120.74	0	1140
Dairy	3,321	507.42	443.96	0	5800
Cooking oil	3,321	447.22	324.33	0	8400
Meat and fish	3,321	309.89	327.93	0	3216
Other food	3,321	698.26	515.88	61	5841
Household size	3,321	6.85	3.25	1	36
Household head literate	3,321	0.54	0.50	0	1
Self employed	3,321	0.09	0.29	0	1
Employee	3,321	0.29	0.45	0	1
Farmer	3,321	0.07	0.26	0	1
Window size in days: [6]					
Post	4,546	0.48	0.50	0	1
Treated	4,546	0.27	0.45	0	1
Post * Treated	4,546	0.11	0.31	0	1
Total food expenditures	4,546	3168.25	1746.57	405	28571
Wheat	4,546	724.34	485.51	0	9000
Rice	4,546	179.88	234.78	0	5050
Fruit	4,546	113.63	140.37	0	2020
Vegetables	4,546	212.13	121.42	0	1140
Dairy	4,546	500.16	434.48	0	5800
Cooking oil	4,546	446.40	310.77	0	8400
Meat and fish	4,546	297.67	317.72	0	3216
Other food	4,546	694.04	503.18	0	5841
Household size	4,546	6.83	3.25	1	36
Household head literate	4,546	0.53	0.50	0	1
Self employed	4,546	0.09	0.29	0	1
Employee	4,546	0.29	0.46	0	1
Farmer	4,546	0.10	0.30	0	1

Variable	Obs	Mean	Std. Dev.	Min	Max
Window size in days: [7]					
Post	5,881	0.45	0.50	0	1
Treated	5,881	0.31	0.46	0	1
Post * Treated	5,881	0.09	0.29	0	1
Total food expenditures	5,881	3165.39	1741.25	405	28571
Wheat	5,881	739.54	489.62	0	9000
Rice	5,881	179.77	232.92	0	5050
Fruit	5,881	113.43	140.00	0	2020
Vegetables	5,881	211.36	121.57	0	1140
Dairy	5,881	496.83	430.88	0	5800
Cooking oil	5,881	448.73	309.33	0	8400
Meat and fish	5,881	289.40	310.29	0	3700
Other food	5,881	686.34	500.10	0	5841
Household size	5,881	6.90	3.31	1	36
Household head literate	5,881	0.53	0.50	0	1
Self employed	5,881	0.09	0.29	0	1
Employee	5,881	0.30	0.46	0	1
Farmer	5,881	0.10	0.30	0	1
Window size in days: [8]					
Post	7,322	0.41	0.49	0	1
Treated	7,322	0.34	0.47	0	1
Post * Treated	7,322	0.08	0.28	0	1
Total food expenditures	7,322	3165.30	1753.79	352	28571
Wheat	7,322	736.15	485.58	0	9000
Rice	7,322	182.15	243.56	0	5280
Fruit	7,322	112.54	143.23	0	2020
Vegetables	7,322	212.37	124.12	0	1370
Dairy	7,322	494.78	433.36	0	5800
Cooking oil	7,322	448.27	301.55	0	8400
Meat and fish	7,322	289.45	318.24	0	3700
Other food	7,322	689.58	532.46	0	7888
Household size	7,322	6.89	3.29	1	36
Household head literate	7,322	0.52	0.50	0	1
Self employed	7,322	0.09	0.29	0	1
Employee	7,322	0.31	0.46	0	1
Farmer	7,322	0.11	0.32	0	1

Variable	Obs	Mean	Std. Dev.	Min	Max
Window size in days: [9]					
Post	8,752	0.37	0.48	0	1
Treated	8,752	0.36	0.48	0	1
Post * Treated	8,752	0.08	0.26	0	1
Total food expenditures	8,752	3167.08	1735.55	352	28571
Wheat	8,752	740.59	481.26	0	9000
Rice	8,752	185.00	240.58	0	5280
Fruit	8,752	109.08	138.97	0	2020
Vegetables	8,752	211.70	122.78	0	1370
Dairy	8,752	493.38	430.67	0	5800
Cooking oil	8,752	451.00	296.27	0	8400
Meat and fish	8,752	287.25	320.21	0	3700
Other food	8,752	689.08	524.52	0	7888
Household size	8,752	6.91	3.29	1	36
Household head literate	8,752	0.53	0.50	0	1
Self employed	8,752	0.09	0.29	0	1
Employee	8,752	0.31	0.46	0	1
Farmer	8,752	0.12	0.33	0	1
Window size in days: [10]					
Post	10,045	0.33	0.47	0	1
Treated	10,045	0.37	0.48	0	1
Post * Treated	10,045	0.07	0.25	0	1
Total food expenditures	10,045	3191.48	1789.05	352	28571
Wheat	10,045	753.65	520.90	0	12000
Rice	10,045	183.74	238.19	0	5280
Fruit	10,045	107.98	142.16	0	2020
Vegetables	10,045	210.46	121.78	0	1370
Dairy	10,045	500.12	463.14	0	7800
Cooking oil	10,045	456.29	297.29	0	8400
Meat and fish	10,045	286.55	324.68	0	3700
Other food	10,045	692.70	536.50	0	7888
Household size	10,045	6.94	3.31	1	36
Household head literate	10,045	0.52	0.50	0	1
Self employed	10,045	0.09	0.29	0	1
Employee	10,045	0.32	0.47	0	1
Farmer	10,045	0.13	0.33	0	1

Variable	Obs	Mean	Std. Dev.	Min	Max
Window size in days: [11]					
Post	11,151	0.34	0.47	0	1
Treated	11,151	0.39	0.49	0	1
Post * Treated	11,151	0.09	0.28	0	1
Total food expenditures	11,151	3201.89	1794.66	336	28571
Wheat	11,151	754.91	517.20	0	12000
Rice	11,151	180.28	236.18	0	5280
Fruit	11,151	107.98	141.99	0	2020
Vegetables	11,151	209.69	121.31	0	1370
Dairy	11,151	502.76	462.03	0	7800
Cooking oil	11,151	460.25	299.50	0	8400
Meat and fish	11,151	287.36	323.54	0	3700
Other food	11,151	698.67	539.29	0	7888
Household size	11,151	6.92	3.31	1	36
Household head literate	11,151	0.53	0.50	0	1
Self employed	11,151	0.10	0.30	0	1
Employee	11,151	0.32	0.47	0	1
Farmer	11,151	0.13	0.33	0	1
Window size in days: [12]					
Post	11,843	0.38	0.49	0	1
Treated	11,843	0.38	0.49	0	1
Post * Treated	11,843	0.11	0.31	0	1
Total food expenditures	11,843	3225.24	1821.06	336	28571
Wheat	11,843	760.16	517.78	0	12000
Rice	11,843	180.41	236.41	0	5280
Fruit	11,843	108.78	148.51	0	2998
Vegetables	11,843	209.69	121.61	0	1370
Dairy	11,843	507.72	466.55	0	7800
Cooking oil	11,843	465.31	301.99	0	8400
Meat and fish	11,843	290.08	335.67	0	6084
Other food	11,843	703.08	538.28	0	7888
Household size	11,843	6.94	3.31	1	36
Household head literate	11,843	0.53	0.50	0	1
Self employed	11,843	0.10	0.30	0	1
Employee	11,843	0.32	0.47	0	1
Farmer	11,843	0.12	0.33	0	1

Variable	Obs	Mean	Std. Dev.	Min	Max
Window size in days: [13]					
Post	12,210	0.42	0.49	0	1
Treated	12,210	0.37	0.48	0	1
Post * Treated	12,210	0.12	0.33	0	1
Total food expenditures	12,210	3222.87	1820.45	336	28571
Wheat	12,210	760.72	518.64	0	12000
Rice	12,210	179.98	237.20	0	5280
Fruit	12,210	108.10	149.15	0	2998
Vegetables	12,210	209.10	122.06	0	1670
Dairy	12,210	508.27	468.94	0	7800
Cooking oil	12,210	466.38	302.30	0	8400
Meat and fish	12,210	289.49	335.19	0	6084
Other food	12,210	700.83	534.70	0	7888
Household size	12,210	6.94	3.32	1	36
Household head literate	12,210	0.53	0.50	0	1
Self employed	12,210	0.10	0.29	0	1
Employee	12,210	0.32	0.47	0	1
Farmer	12,210	0.12	0.33	0	1
Window size in days: [14]					
Post	12,658	0.46	0.50	0	1
Treated	12,658	0.36	0.48	0	1
Post * Treated	12,658	0.15	0.35	0	1
Total food expenditures	12,658	3238.50	1839.08	336	28571
Wheat	12,658	765.68	520.09	0	12000
Rice	12,658	181.31	240.45	0	5280
Fruit	12,658	107.56	149.79	0	2998
Vegetables	12,658	208.78	121.88	0	1670
Dairy	12,658	512.79	483.06	0	7800
Cooking oil	12,658	470.16	308.84	0	8400
Meat and fish	12,658	288.26	333.85	0	6084
Other food	12,658	703.95	551.69	0	12500
Household size	12,658	6.96	3.34	1	36
Household head literate	12,658	0.53	0.50	0	1
Self employed	12,658	0.09	0.29	0	1
Employee	12,658	0.32	0.47	0	1
Farmer	12,658	0.12	0.33	0	1

Variable	Obs	Mean	Std. Dev.	Min	Max
Window size in days: [15]					
Post	13,166	0.51	0.50	0	1
Treated	13,166	0.35	0.48	0	1
Post * Treated	13,166	0.17	0.37	0	1
Total food expenditures	13,166	3238.78	1833.07	336	28571
Wheat	13,166	767.39	521.66	0	12000
Rice	13,166	181.43	239.61	0	5280
Fruit	13,166	106.08	147.85	0	2998
Vegetables	13,166	208.35	121.90	0	1670
Dairy	13,166	513.94	486.81	0	7800
Cooking oil	13,166	472.91	310.41	0	8400
Meat and fish	13,166	286.77	331.98	0	6084
Other food	13,166	701.91	546.37	0	12500
Household size	13,166	6.97	3.35	1	36
Household head literate	13,166	0.53	0.50	0	1
Self employed	13,166	0.09	0.29	0	1
Employee	13,166	0.31	0.46	0	1
Farmer	13,166	0.12	0.32	0	1
Window size in days: [16]					
Post	13,752	0.53	0.50	0	1
Treated	13,752	0.33	0.47	0	1
Post * Treated	13,752	0.18	0.38	0	1
Total food expenditures	13,752	3255.68	1837.67	322	28571
Wheat	13,752	770.60	528.07	0	12000
Rice	13,752	183.60	241.44	0	5280
Fruit	13,752	106.00	146.32	0	2998
Vegetables	13,752	208.51	122.27	0	1670
Dairy	13,752	519.80	492.76	0	7800
Cooking oil	13,752	478.34	313.58	0	8400
Meat and fish	13,752	286.43	330.64	0	6084
Other food	13,752	702.40	539.74	0	12500
Household size	13,752	6.99	3.38	1	36
Household head literate	13,752	0.53	0.50	0	1
Self employed	13,752	0.09	0.28	0	1
Employee	13,752	0.31	0.46	0	1
Farmer	13,752	0.11	0.32	0	1

Variable	Obs	Mean	Std. Dev.	Min	Max
Window size in days: [17]					
Post	14,257	0.56	0.50	0	1
Treated	14,257	0.32	0.47	0	1
Post * Treated	13,752	0.18	0.38	0	1
Total food expenditures	14,257	3265.08	1836.64	322	28571
Wheat	14,257	770.75	528.75	0	12000
Rice	14,257	184.40	241.07	0	5280
Fruit	14,257	106.44	145.84	0	2998
Vegetables	14,257	208.32	122.77	0	1670
Dairy	14,257	525.01	498.35	0	7800
Cooking oil	14,257	481.41	315.05	0	8400
Meat and fish	14,257	285.48	329.65	0	6084
Other food	14,257	703.26	534.71	0	12500
Household size	14,257	6.97	3.37	1	36
Household head literate	14,257	0.53	0.50	0	1
Self employed	14,257	0.09	0.28	0	1
Employee	14,257	0.31	0.46	0	1
Farmer	14,257	0.11	0.32	0	1
Window size in days: [18]					
Post	14,675	0.60	0.49	0	1
Treated	14,675	0.31	0.46	0	1
Post * Treated	14,675	0.22	0.41	0	1
Total food expenditures	14,675	3261.45	1832.85	322	28571
Wheat	14,675	768.97	526.69	0	12000
Rice	14,675	182.70	239.26	0	5280
Fruit	14,675	106.25	145.34	0	2998
Vegetables	14,675	208.01	123.13	0	1670
Dairy	14,675	526.82	499.85	0	7800
Cooking oil	14,675	481.80	315.35	0	8400
Meat and fish	14,675	284.36	327.90	0	6084
Other food	14,675	702.54	531.52	0	12500
Household size	14,675	6.96	3.36	1	36
Household head literate	14,675	0.53	0.50	0	1
Self employed	14,675	0.08	0.28	0	1
Employee	14,675	0.30	0.46	0	1
Farmer	14,675	0.11	0.31	0	1

Variable	Obs	Mean	Std. Dev.	Min	Max
Window size in days: [19]					
Post	15,143	0.63	0.48	0	1
Treated	15,143	0.30	0.46	0	1
Post * Treated	15,143	0.23	0.42	0	1
Total food expenditures	15,143	3288.95	1952.04	322	56358
Wheat	15,143	770.54	569.05	0	20000
Rice	15,143	183.73	242.94	0	5280
Fruit	15,143	108.94	163.54	0	5980
Vegetables	15,143	208.51	123.22	0	1670
Dairy	15,143	534.70	524.96	0	12800
Cooking oil	15,143	486.50	320.46	0	8400
Meat and fish	15,143	287.39	333.54	0	6084
Other food	15,143	708.64	550.36	0	12500
Household size	15,143	6.96	3.35	1	36
Household head literate	15,143	0.53	0.50	0	1
Self employed	15,143	0.08	0.28	0	1
Employee	15,143	0.30	0.46	0	1
Farmer	15,143	0.11	0.31	0	1
Window size in days: [20]					
Post	15,248	0.66	0.47	0	1
Treated	15,248	0.30	0.46	0	1
Post * Treated	15,248	0.25	0.43	0	1
Total food expenditures	15,248	3295.41	1958.78	322	56358
Wheat	15,248	771.05	569.59	0	20000
Rice	15,248	183.64	242.74	0	5280
Fruit	15,248	109.36	165.19	0	5980
Vegetables	15,248	209.00	123.40	0	1670
Dairy	15,248	534.87	524.99	0	12800
Cooking oil	15,248	487.73	321.02	0	8400
Meat and fish	15,248	288.84	335.04	0	6084
Other food	15,248	710.92	553.03	0	12500
Household size	15,248	6.96	3.38	1	36
Household head literate	15,248	0.53	0.50	0	1
Self employed	15,248	0.08	0.28	0	1
Employee	15,248	0.30	0.46	0	1
Farmer	15,248	0.11	0.31	0	1

Regression results by quartiles

Table B.2. Regression results: First quartile

Window:	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Post	-0.017 (0.017)	-0.014 (0.016)	-0.019 (0.015)	-0.016 (0.014)	-0.039*** (0.013)	-0.045*** (0.012)	-0.053*** (0.011)	-0.062*** (0.011)	-0.059*** (0.011)	-0.048*** (0.011)	-0.062*** (0.010)	-0.051*** (0.011)	-0.051*** (0.010)	-0.042*** (0.010)	-0.036*** (0.010)	-0.032*** (0.010)
Treated	-0.028 (0.027)	-0.023 (0.019)	-0.058*** (0.017)	-0.055*** (0.015)	-0.075*** (0.014)	-0.084*** (0.012)	-0.094*** (0.012)	-0.105*** (0.012)	-0.101*** (0.012)	-0.091*** (0.012)	-0.100*** (0.013)	-0.091*** (0.014)	-0.094*** (0.014)	-0.085*** (0.015)	-0.067*** (0.016)	-0.074*** (0.017)
Post * Treated	-0.011 (0.035)	-0.013 (0.028)	0.021 (0.025)	0.016 (0.024)	0.051** (0.022)	0.052** (0.021)	0.074*** (0.019)	0.082*** (0.017)	0.066*** (0.017)	0.045*** (0.016)	0.055*** (0.016)	0.046*** (0.016)	0.048*** (0.017)	0.031* (0.017)	0.005 (0.018)	0.012 (0.019)
Household size	0.061*** (0.004)	0.060*** (0.003)	0.061*** (0.003)	0.059*** (0.003)	0.059*** (0.003)	0.060*** (0.002)	0.060*** (0.002)	0.059*** (0.002)	0.060*** (0.002)	0.060*** (0.002)	0.059*** (0.002)	0.060*** (0.002)	0.060*** (0.002)	0.061*** (0.002)	0.061*** (0.002)	0.061*** (0.002)
Household head literate	0.110*** (0.015)	0.096*** (0.013)	0.093*** (0.012)	0.089*** (0.010)	0.079*** (0.010)	0.077*** (0.009)	0.079*** (0.009)	0.079*** (0.008)	0.082*** (0.008)	0.082*** (0.008)	0.083*** (0.008)	0.082*** (0.008)	0.083*** (0.008)	0.083*** (0.008)	0.086*** (0.008)	0.085*** (0.008)
Employer	-0.009 (0.026)	0.020 (0.022)	0.018 (0.020)	0.012 (0.018)	0.004 (0.017)	0.005 (0.016)	0.008 (0.015)	0.008 (0.015)	0.007 (0.015)	0.008 (0.015)	0.007 (0.015)	-0.005 (0.016)	-0.006 (0.016)	-0.006 (0.015)	-0.007 (0.015)	-0.007 (0.015)
Employee	0.016 (0.016)	0.022 (0.015)	0.018 (0.013)	0.008 (0.012)	0.004 (0.011)	0.010 (0.011)	0.012 (0.010)	0.010 (0.010)	0.009 (0.010)	0.010 (0.010)	0.007 (0.010)	0.002 (0.010)	0.003 (0.009)	0.004 (0.009)	0.005 (0.009)	0.006 (0.009)
Farmer	0.001 (0.027)	0.014 (0.023)	0.004 (0.022)	0.016 (0.018)	0.020 (0.017)	0.032** (0.016)	0.040*** (0.015)	0.039*** (0.015)	0.039*** (0.015)	0.038*** (0.015)	0.035** (0.014)	0.032** (0.014)	0.032** (0.014)	0.035** (0.014)	0.038*** (0.014)	0.039*** (0.014)
Constant	7.025*** (0.028)	7.033*** (0.025)	7.040*** (0.023)	7.056*** (0.020)	7.075*** (0.018)	7.076*** (0.016)	7.083*** (0.016)	7.099*** (0.015)	7.095*** (0.015)	7.087*** (0.016)	7.105*** (0.015)	7.097*** (0.015)	7.098*** (0.015)	7.089*** (0.015)	7.086*** (0.015)	7.085*** (0.015)
Observations	971	1354	1766	2226	2623	2995	3328	3504	3610	3683	3826	3941	4050	4186	4282	4300

Notes: This table presents the results of DID regressions examining relationship election period and consumption patterns in authoritarian/dictatorship regime. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table B.3. Regression results: Second quartile

Window:	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Post	0.013* (0.007)	0.020*** (0.006)	0.008 (0.006)	0.005 (0.005)	0.001 (0.005)	0.000 (0.005)	-0.003 (0.004)	-0.010** (0.004)	-0.008* (0.004)	-0.008* (0.004)	-0.008** (0.004)	-0.010*** (0.004)	-0.008** (0.004)	-0.007** (0.004)	-0.009*** (0.004)	-0.010*** (0.004)
Treated	0.009 (0.015)	0.011 (0.009)	-0.000 (0.007)	-0.004 (0.006)	-0.004 (0.005)	-0.007 (0.005)	-0.011** (0.005)	-0.016*** (0.005)	-0.014*** (0.005)	-0.016*** (0.005)	-0.012** (0.005)	-0.016*** (0.005)	-0.016*** (0.005)	-0.018*** (0.006)	-0.022*** (0.007)	-0.026*** (0.007)
Post * Treated	-0.030* (0.018)	-0.029** (0.013)	-0.011 (0.012)	-0.008 (0.011)	-0.010 (0.010)	-0.007 (0.010)	-0.001 (0.008)	0.008 (0.007)	0.008 (0.007)	0.008 (0.007)	0.002 (0.007)	0.006 (0.006)	0.006 (0.007)	0.009 (0.007)	0.014* (0.007)	0.018** (0.008)
Household size	0.005*** (0.002)	0.005*** (0.001)	0.006*** (0.001)	0.005*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.007*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.007*** (0.001)	0.007*** (0.001)	0.007*** (0.001)	0.007*** (0.001)
Household head literate	0.002 (0.007)	0.005 (0.006)	0.009* (0.005)	0.011** (0.004)	0.009** (0.004)	0.008** (0.004)	0.009*** (0.003)	0.009** (0.003)	0.009*** (0.003)	0.009*** (0.003)	0.009*** (0.003)	0.008*** (0.003)	0.008*** (0.003)	0.008*** (0.003)	0.009*** (0.003)	0.009*** (0.003)
Employer	0.003 (0.011)	0.000 (0.010)	-0.003 (0.009)	0.002 (0.008)	0.004 (0.007)	0.004 (0.007)	0.001 (0.006)	-0.001 (0.006)	-0.000 (0.006)	-0.001 (0.006)	-0.000 (0.006)	0.000 (0.006)	0.001 (0.006)	0.001 (0.006)	0.000 (0.006)	0.000 (0.006)
Employee	-0.020** (0.008)	-0.017** (0.007)	-0.012** (0.006)	-0.011** (0.005)	-0.011** (0.005)	-0.007* (0.004)	-0.009** (0.004)	-0.007* (0.004)	-0.008* (0.004)	-0.007* (0.004)	-0.006 (0.004)	-0.005 (0.004)	-0.004 (0.004)	-0.004 (0.004)	-0.005 (0.004)	-0.005 (0.004)
Farmer	-0.002 (0.014)	0.000 (0.010)	0.008 (0.009)	0.010 (0.008)	0.008 (0.007)	0.012* (0.006)	0.011* (0.006)	0.012** (0.006)	0.011* (0.006)	0.011** (0.006)	0.012** (0.006)	0.013** (0.005)	0.014*** (0.005)	0.013** (0.005)	0.013** (0.005)	0.013** (0.005)
Constant	7.813*** (0.013)	7.804*** (0.010)	7.807*** (0.009)	7.810*** (0.008)	7.810*** (0.007)	7.807*** (0.006)	7.808*** (0.006)	7.815*** (0.006)	7.813*** (0.006)	7.813*** (0.006)	7.813*** (0.006)	7.814*** (0.006)	7.813*** (0.006)	7.812*** (0.006)	7.814*** (0.005)	7.815*** (0.006)
Observations	804	1113	1439	1792	2194	2514	2769	2915	3029	3154	3289	3421	3536	3648	3731	3750

Notes: This table presents the results of DID regressions examining relationship election period and consumption patterns in authoritarian/dictatorship regime. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table B.4. Regression results: Third quartile

Window:	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Post	0.010 (0.007)	0.012** (0.006)	0.005 (0.006)	0.001 (0.005)	0.006 (0.005)	0.002 (0.005)	-0.003 (0.004)	-0.001 (0.004)	0.002 (0.004)	0.004 (0.004)	0.001 (0.004)	-0.001 (0.004)	-0.005 (0.004)	-0.010*** (0.004)	-0.007** (0.003)	-0.007* (0.003)
Treated	-0.007 (0.013)	-0.002 (0.009)	-0.005 (0.007)	-0.007 (0.006)	-0.009* (0.006)	-0.014*** (0.005)	-0.016*** (0.005)	-0.015*** (0.005)	-0.015*** (0.005)	-0.013** (0.005)	-0.016*** (0.005)	-0.019*** (0.005)	-0.016*** (0.006)	-0.018*** (0.006)	-0.014** (0.007)	-0.012 (0.007)
Post * Treated	-0.003 (0.015)	-0.004 (0.012)	-0.002 (0.011)	-0.001 (0.010)	0.002 (0.009)	0.005 (0.009)	0.007 (0.008)	0.007 (0.007)	0.007 (0.007)	0.003 (0.007)	0.007 (0.007)	0.008 (0.007)	0.005 (0.007)	0.006 (0.007)	0.003 (0.008)	-0.000 (0.008)
Household size	0.005*** (0.001)	0.005*** (0.001)	0.005*** (0.001)	0.006*** (0.001)	0.005*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.006*** (0.001)
Household head literate	0.027*** (0.007)	0.027*** (0.005)	0.026*** (0.005)	0.024*** (0.004)	0.024*** (0.004)	0.020*** (0.004)	0.018*** (0.004)	0.017*** (0.003)	0.017*** (0.003)	0.016*** (0.003)	0.017*** (0.003)	0.017*** (0.003)	0.017*** (0.003)	0.016*** (0.003)	0.015*** (0.003)	0.015*** (0.003)
Employer	-0.009 (0.012)	-0.014 (0.010)	-0.016* (0.009)	-0.010 (0.008)	-0.007 (0.007)	-0.004 (0.007)	-0.005 (0.007)	-0.003 (0.006)	-0.004 (0.006)	-0.004 (0.006)	-0.005 (0.006)	-0.006 (0.006)	-0.006 (0.006)	-0.006 (0.006)	-0.006 (0.006)	-0.006 (0.006)
Employee	-0.002 (0.008)	-0.002 (0.006)	-0.005 (0.006)	-0.005 (0.005)	-0.003 (0.005)	0.001 (0.005)	0.001 (0.004)	-0.000 (0.004)	0.001 (0.004)	0.000 (0.004)	0.000 (0.004)	0.002 (0.004)	0.001 (0.004)	0.002 (0.004)	0.000 (0.004)	-0.000 (0.004)
Farmer	0.002 (0.013)	0.005 (0.010)	0.001 (0.009)	0.003 (0.007)	0.008 (0.007)	0.011* (0.006)	0.010* (0.006)	0.009 (0.006)	0.008 (0.006)	0.008 (0.005)	0.007 (0.005)	0.009* (0.005)	0.007 (0.005)	0.007 (0.005)	0.006 (0.005)	0.006 (0.005)
Constant	8.100*** (0.012)	8.097*** (0.010)	8.102*** (0.009)	8.101*** (0.008)	8.098*** (0.007)	8.101*** (0.007)	8.104*** (0.007)	8.104*** (0.006)	8.101*** (0.006)	8.100*** (0.006)	8.102*** (0.006)	8.103*** (0.006)	8.105*** (0.006)	8.109*** (0.006)	8.107*** (0.006)	8.107*** (0.006)
Observations	837	1123	1441	1752	2070	2381	2648	2810	2888	3026	3139	3317	3465	3545	3649	3666

Notes: This table presents the results of DID regressions examining relationship election period and consumption patterns in authoritarian/dictatorship regime. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table B.5. Regression results: Fourth quartile

Window:	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Post	-0.002	0.016	0.005	-0.011	-0.006	-0.028**	-0.041***	-0.051***	-0.062***	-0.057***	-0.044***	-0.035***	-0.038***	-0.036***	-0.012	-0.012
	(0.019)	(0.016)	(0.015)	(0.014)	(0.013)	(0.013)	(0.012)	(0.012)	(0.011)	(0.011)	(0.011)	(0.011)	(0.010)	(0.010)	(0.010)	(0.010)
Treated	-0.001	-0.005	-0.040*	-0.058***	-0.057***	-0.081***	-0.077***	-0.092***	-0.099***	-0.097***	-0.086***	-0.081***	-0.081***	-0.076***	-0.050**	-0.045*
	(0.045)	(0.030)	(0.023)	(0.019)	(0.016)	(0.014)	(0.014)	(0.014)	(0.014)	(0.015)	(0.015)	(0.016)	(0.017)	(0.019)	(0.022)	(0.025)
Post * Treated	-0.033	-0.019	0.017	0.021	0.022	0.069**	0.066***	0.075***	0.082***	0.062***	0.041*	0.026	0.024	0.016	-0.027	-0.030
	(0.055)	(0.039)	(0.035)	(0.031)	(0.029)	(0.028)	(0.025)	(0.024)	(0.023)	(0.022)	(0.021)	(0.021)	(0.021)	(0.022)	(0.024)	(0.027)
Household size	0.026***	0.025***	0.026***	0.024***	0.023***	0.021***	0.021***	0.021***	0.021***	0.022***	0.022***	0.022***	0.022***	0.022***	0.022***	0.022***
	(0.004)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Household head literate	0.105***	0.102***	0.098***	0.093***	0.092***	0.079***	0.079***	0.076***	0.072***	0.075***	0.072***	0.068***	0.069***	0.068***	0.064***	0.063***
	(0.019)	(0.016)	(0.014)	(0.013)	(0.011)	(0.011)	(0.011)	(0.010)	(0.010)	(0.010)	(0.010)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Employer	-0.021	-0.020	-0.002	0.018	0.024	0.005	0.010	0.034*	0.037*	0.034*	0.031*	0.034*	0.030*	0.030*	0.028	0.028*
	(0.033)	(0.026)	(0.024)	(0.023)	(0.021)	(0.019)	(0.018)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.018)	(0.018)	(0.017)	(0.017)
Employee	-0.013	-0.018	-0.014	-0.033**	-0.022*	-0.022*	-0.020	-0.012	-0.009	-0.006	-0.006	-0.009	-0.009	-0.006	-0.002	-0.004
	(0.023)	(0.019)	(0.016)	(0.014)	(0.013)	(0.013)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Farmer	0.019	-0.029	-0.029	-0.036*	-0.042**	-0.034*	-0.035**	-0.034**	-0.033**	-0.033**	-0.031**	-0.019	-0.016	-0.010	-0.003	-0.003
	(0.038)	(0.028)	(0.024)	(0.021)	(0.018)	(0.017)	(0.017)	(0.016)	(0.016)	(0.016)	(0.015)	(0.016)	(0.016)	(0.015)	(0.016)	(0.016)
Constant	8.308***	8.307***	8.303***	8.345***	8.357***	8.403***	8.413***	8.418***	8.424***	8.412***	8.408***	8.407***	8.408***	8.406***	8.400***	8.402***
	(0.040)	(0.032)	(0.026)	(0.024)	(0.021)	(0.021)	(0.019)	(0.018)	(0.019)	(0.018)	(0.018)	(0.018)	(0.017)	(0.017)	(0.016)	(0.016)
Observations	709	956	1235	1552	1865	2155	2406	2614	2683	2795	2912	3073	3206	3296	3481	3532

Notes: This table presents the results of DID regressions examining relationship election period and consumption patterns in authoritarian/dictatorship regime. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Regression results: Sub food groups

Table B.6. Regression results: Wheat

Window:	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Post	0.021	-0.021	-0.066***	-0.070***	-0.086***	-0.110***	-0.114***	-0.110***	-0.086***	-0.096***	-0.107***	-0.102***	-0.100***	-0.077***	-0.056***	-0.032***
	(0.020)	(0.017)	(0.016)	(0.014)	(0.013)	(0.013)	(0.012)	(0.011)	(0.011)	(0.011)	(0.010)	(0.010)	(0.010)	(0.009)	(0.009)	(0.009)
Treated	0.020	-0.038*	-0.050***	-0.060***	-0.090***	-0.120***	-0.123***	-0.132***	-0.127***	-0.139***	-0.150***	-0.152***	-0.155***	-0.128***	-0.101***	-0.093***
	(0.031)	(0.022)	(0.018)	(0.016)	(0.014)	(0.013)	(0.012)	(0.012)	(0.012)	(0.013)	(0.013)	(0.013)	(0.014)	(0.015)	(0.017)	(0.019)
Post * Treated	-0.065*	0.002	0.029	0.050**	0.074***	0.093***	0.084***	0.085***	0.083***	0.100***	0.110***	0.109***	0.111***	0.065***	0.023	0.007
	(0.039)	(0.030)	(0.027)	(0.025)	(0.023)	(0.022)	(0.020)	(0.018)	(0.018)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.019)	(0.020)
Household size	0.122***	0.121***	0.120***	0.123***	0.123***	0.122***	0.123***	0.122***	0.122***	0.122***	0.121***	0.121***	0.122***	0.123***	0.123***	0.122***
	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Household head literate	-0.009	-0.012	-0.021*	-0.027**	-0.038***	-0.049***	-0.060***	-0.060***	-0.057***	-0.055***	-0.054***	-0.054***	-0.053***	-0.055***	-0.058***	-0.060***
	(0.017)	(0.014)	(0.012)	(0.011)	(0.010)	(0.009)	(0.009)	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Employer	-0.107***	-0.105***	-0.095***	-0.085***	-0.077***	-0.077***	-0.081***	-0.079***	-0.080***	-0.077***	-0.071***	-0.067***	-0.067***	-0.064***	-0.065***	-0.065***
	(0.032)	(0.027)	(0.023)	(0.021)	(0.019)	(0.018)	(0.017)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.015)	(0.015)	(0.015)	(0.015)
Employee	-0.025	-0.035**	-0.029*	-0.021	-0.029**	-0.022*	-0.021*	-0.022**	-0.025**	-0.024**	-0.017*	-0.009	-0.009	-0.003	0.002	0.002
	(0.020)	(0.017)	(0.015)	(0.013)	(0.013)	(0.012)	(0.011)	(0.011)	(0.011)	(0.010)	(0.010)	(0.010)	(0.010)	(0.009)	(0.009)	(0.009)
Farmer	0.012	0.031	0.027	0.053***	0.071***	0.081***	0.089***	0.086***	0.084***	0.084***	0.087***	0.095***	0.092***	0.098***	0.104***	0.103***
	(0.031)	(0.025)	(0.022)	(0.019)	(0.017)	(0.015)	(0.014)	(0.014)	(0.014)	(0.014)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Constant	5.576***	5.623***	5.667***	5.652***	5.673***	5.706***	5.719***	5.731***	5.722***	5.735***	5.742***	5.735***	5.730***	5.708***	5.698***	5.691***
	(0.029)	(0.026)	(0.022)	(0.020)	(0.018)	(0.017)	(0.016)	(0.016)	(0.015)	(0.015)	(0.015)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
Observations	3307	4514	5829	7235	8644	9917	11006	11688	12052	12496	13000	13582	14079	14493	14950	15047

Notes: This table presents the results of DID regressions examining relationship election period and consumption patterns in authoritarian/dictatorship regime. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table B.7. Regression results: Rice

Window:	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Post	-0.038 (0.037)	0.072** (0.032)	0.047 (0.029)	0.007 (0.027)	-0.072*** (0.025)	-0.082*** (0.024)	-0.087*** (0.023)	-0.117*** (0.022)	-0.099*** (0.022)	-0.114*** (0.021)	-0.082*** (0.021)	-0.104*** (0.020)	-0.104*** (0.019)	-0.040** (0.019)	-0.021 (0.019)	-0.028 (0.019)
Treated	-0.179*** (0.062)	-0.150*** (0.043)	-0.194*** (0.037)	-0.220*** (0.032)	-0.268*** (0.029)	-0.290*** (0.026)	-0.342*** (0.025)	-0.345*** (0.025)	-0.329*** (0.025)	-0.344*** (0.026)	-0.340*** (0.026)	-0.370*** (0.027)	-0.407*** (0.027)	-0.414*** (0.029)	-0.447*** (0.031)	-0.461*** (0.033)
Post * Treated	0.117 (0.077)	-0.002 (0.060)	0.046 (0.054)	0.058 (0.050)	0.124*** (0.046)	0.174*** (0.044)	0.232*** (0.040)	0.188*** (0.037)	0.133*** (0.036)	0.145*** (0.035)	0.127*** (0.034)	0.155*** (0.034)	0.200*** (0.034)	0.192*** (0.034)	0.210*** (0.035)	0.221*** (0.037)
Household size	0.095*** (0.006)	0.089*** (0.005)	0.090*** (0.004)	0.092*** (0.004)	0.090*** (0.003)	0.090*** (0.003)	0.089*** (0.003)	0.089*** (0.003)	0.088*** (0.003)	0.088*** (0.003)	0.087*** (0.003)	0.086*** (0.003)	0.086*** (0.003)	0.086*** (0.003)	0.086*** (0.002)	0.085*** (0.002)
Household head literate	0.245*** (0.033)	0.240*** (0.028)	0.257*** (0.025)	0.248*** (0.022)	0.249*** (0.020)	0.274*** (0.019)	0.280*** (0.018)	0.283*** (0.017)	0.292*** (0.017)	0.292*** (0.017)	0.286*** (0.017)	0.288*** (0.016)	0.288*** (0.016)	0.284*** (0.016)	0.286*** (0.015)	0.283*** (0.015)
Employer	-0.070 (0.055)	-0.053 (0.047)	-0.098** (0.043)	-0.063 (0.040)	-0.030 (0.037)	-0.060* (0.035)	-0.051 (0.033)	-0.055* (0.032)	-0.043 (0.032)	-0.044 (0.032)	-0.041 (0.031)	-0.042 (0.031)	-0.033 (0.031)	-0.033 (0.031)	-0.032 (0.030)	-0.032 (0.030)
Employee	-0.089** (0.037)	-0.043 (0.032)	-0.038 (0.029)	-0.033 (0.026)	-0.030 (0.024)	-0.038* (0.023)	-0.041* (0.021)	-0.053** (0.021)	-0.042** (0.021)	-0.032 (0.020)	-0.024 (0.020)	-0.020 (0.019)	-0.022 (0.019)	-0.016 (0.019)	-0.020 (0.018)	-0.022 (0.018)
Farmer	0.187** (0.074)	0.127** (0.056)	0.115** (0.048)	0.121*** (0.042)	0.145*** (0.038)	0.147*** (0.035)	0.138*** (0.033)	0.115*** (0.032)	0.123*** (0.032)	0.128*** (0.031)	0.142*** (0.031)	0.144*** (0.030)	0.134*** (0.030)	0.136*** (0.030)	0.132*** (0.029)	0.132*** (0.029)
Constant	4.117*** (0.058)	4.083*** (0.047)	4.090*** (0.040)	4.108*** (0.036)	4.191*** (0.033)	4.185*** (0.031)	4.201*** (0.029)	4.224*** (0.028)	4.203*** (0.028)	4.215*** (0.027)	4.207*** (0.026)	4.230*** (0.026)	4.244*** (0.025)	4.199*** (0.025)	4.194*** (0.025)	4.202*** (0.025)
Observations	3111	4220	5427	6743	8030	9136	10098	10703	11020	11399	11859	12393	12851	13186	13597	13690

Notes: This table presents the results of DID regressions examining relationship election period and consumption patterns in authoritarian/dictatorship regime. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table B.8. Regression results: Fruits

Window:	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Post	-0.044 (0.037)	-0.038 (0.033)	-0.083*** (0.030)	-0.109*** (0.028)	-0.068*** (0.026)	-0.056** (0.025)	-0.028 (0.024)	-0.022 (0.023)	0.010 (0.023)	0.039* (0.022)	0.111*** (0.021)	0.129*** (0.020)	0.118*** (0.020)	0.099*** (0.020)	0.072*** (0.019)	0.055*** (0.019)
Treated	-0.307*** (0.063)	-0.300*** (0.043)	-0.297*** (0.036)	-0.338*** (0.032)	-0.313*** (0.029)	-0.281*** (0.026)	-0.248*** (0.025)	-0.237*** (0.025)	-0.216*** (0.026)	-0.190*** (0.027)	-0.108*** (0.028)	-0.087*** (0.028)	-0.083*** (0.029)	-0.066** (0.031)	-0.076** (0.035)	-0.091** (0.038)
Post * Treated	0.291*** (0.082)	0.257*** (0.063)	0.240*** (0.056)	0.249*** (0.052)	0.198*** (0.049)	0.162*** (0.047)	0.104** (0.042)	0.047 (0.039)	0.009 (0.037)	-0.027 (0.036)	-0.149*** (0.035)	-0.188*** (0.035)	-0.201*** (0.035)	-0.210*** (0.036)	-0.202*** (0.039)	-0.171*** (0.042)
Household size	0.049*** (0.005)	0.054*** (0.004)	0.056*** (0.004)	0.051*** (0.003)	0.050*** (0.003)	0.049*** (0.003)	0.050*** (0.003)	0.051*** (0.003)	0.050*** (0.003)	0.050*** (0.003)	0.050*** (0.002)	0.049*** (0.002)	0.049*** (0.002)	0.049*** (0.002)	0.049*** (0.002)	0.049*** (0.002)
Household head literate	0.529*** (0.033)	0.540*** (0.028)	0.508*** (0.025)	0.512*** (0.022)	0.488*** (0.021)	0.481*** (0.019)	0.478*** (0.018)	0.477*** (0.018)	0.474*** (0.018)	0.477*** (0.017)	0.466*** (0.017)	0.457*** (0.017)	0.454*** (0.016)	0.447*** (0.016)	0.448*** (0.016)	0.448*** (0.016)
Employer	0.041 (0.057)	0.054 (0.050)	0.027 (0.045)	0.016 (0.042)	-0.009 (0.039)	0.012 (0.037)	0.038 (0.035)	0.044 (0.034)	0.054 (0.034)	0.052 (0.033)	0.055* (0.033)	0.059* (0.032)	0.068** (0.032)	0.058* (0.032)	0.062** (0.031)	0.063** (0.031)
Employee	-0.222*** (0.040)	-0.222*** (0.034)	-0.209*** (0.030)	-0.222*** (0.027)	-0.213*** (0.025)	-0.200*** (0.024)	-0.186*** (0.023)	-0.188*** (0.022)	-0.181*** (0.022)	-0.167*** (0.021)	-0.167*** (0.021)	-0.155*** (0.020)	-0.156*** (0.020)	-0.157*** (0.020)	-0.150*** (0.019)	-0.151*** (0.019)
Farmer	-0.161** (0.071)	-0.164*** (0.053)	-0.151*** (0.046)	-0.167*** (0.040)	-0.129*** (0.036)	-0.141*** (0.033)	-0.124*** (0.032)	-0.134*** (0.031)	-0.117*** (0.030)	-0.116*** (0.030)	-0.107*** (0.030)	-0.088*** (0.029)	-0.067** (0.029)	-0.075*** (0.029)	-0.069** (0.029)	-0.069** (0.029)
Constant	3.948*** (0.050)	3.923*** (0.043)	3.956*** (0.038)	4.020*** (0.034)	4.008*** (0.031)	4.003*** (0.029)	3.978*** (0.028)	3.975*** (0.027)	3.950*** (0.027)	3.917*** (0.027)	3.866*** (0.026)	3.859*** (0.025)	3.871*** (0.025)	3.887*** (0.025)	3.911*** (0.024)	3.923*** (0.024)
Observations	2865	3894	5038	6197	7317	8307	9206	9771	10054	10393	10794	11294	11731	12029	12454	12548

Notes: This table presents the results of DID regressions examining relationship election period and consumption patterns in authoritarian/dictatorship regime. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table B.9. Regression results: Vegetables

Window:	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Post	-0.046**	-0.065***	-0.041***	-0.054***	-0.039***	-0.029**	-0.027**	-0.008	0.008	0.013	0.052***	0.065***	0.081***	0.101***	0.102***	0.100***
	(0.019)	(0.017)	(0.016)	(0.014)	(0.013)	(0.012)	(0.012)	(0.012)	(0.011)	(0.011)	(0.010)	(0.010)	(0.010)	(0.010)	(0.009)	(0.010)
Treated	-0.307***	-0.267***	-0.223***	-0.222***	-0.229***	-0.230***	-0.241***	-0.228***	-0.216***	-0.213***	-0.190***	-0.190***	-0.182***	-0.163***	-0.156***	-0.162***
	(0.031)	(0.021)	(0.018)	(0.016)	(0.014)	(0.013)	(0.012)	(0.013)	(0.013)	(0.013)	(0.013)	(0.014)	(0.015)	(0.016)	(0.019)	(0.021)
Post * Treated	0.127***	0.085***	0.032	0.023	0.006	0.006	0.034	0.006	-0.004	0.008	-0.023	-0.021	-0.030*	-0.056***	-0.070***	-0.062***
	(0.040)	(0.032)	(0.028)	(0.026)	(0.024)	(0.023)	(0.021)	(0.019)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.019)	(0.021)	(0.023)
Household size	0.072***	0.071***	0.072***	0.071***	0.072***	0.072***	0.071***	0.071***	0.071***	0.071***	0.071***	0.071***	0.072***	0.073***	0.073***	0.073***
	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Household head literate	0.203***	0.171***	0.147***	0.148***	0.146***	0.147***	0.158***	0.161***	0.163***	0.162***	0.155***	0.157***	0.159***	0.160***	0.160***	0.161***
	(0.017)	(0.014)	(0.013)	(0.011)	(0.010)	(0.010)	(0.009)	(0.009)	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Employer	-0.003	0.006	-0.008	-0.012	-0.007	-0.005	0.008	0.009	0.011	0.012	0.015	0.014	0.013	0.007	0.005	0.004
	(0.028)	(0.024)	(0.021)	(0.020)	(0.018)	(0.017)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
Employee	-0.045**	-0.048***	-0.052***	-0.072***	-0.070***	-0.075***	-0.075***	-0.075***	-0.071***	-0.071***	-0.070***	-0.063***	-0.065***	-0.066***	-0.066***	-0.067***
	(0.020)	(0.017)	(0.015)	(0.014)	(0.013)	(0.012)	(0.011)	(0.011)	(0.011)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Farmer	-0.004	-0.005	-0.002	-0.005	0.010	0.009	-0.004	-0.003	0.008	0.005	0.005	0.016	0.013	0.005	0.006	0.005
	(0.035)	(0.027)	(0.023)	(0.020)	(0.018)	(0.016)	(0.016)	(0.016)	(0.016)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.014)	(0.014)
Constant	4.709***	4.747***	4.743***	4.765***	4.760***	4.752***	4.750***	4.737***	4.719***	4.710***	4.683***	4.665***	4.645***	4.624***	4.622***	4.623***
	(0.027)	(0.023)	(0.021)	(0.019)	(0.017)	(0.016)	(0.015)	(0.014)	(0.014)	(0.014)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Observations	3307	4526	5853	7280	8702	9990	11094	11781	12146	12590	13094	13678	14177	14593	15054	15159

Notes: This table presents the results of DID regressions examining relationship election period and consumption patterns in authoritarian/dictatorship regime. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table B.10. Regression results: Dairy

Window:	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Post	-0.020	-0.029	-0.077***	-0.100***	-0.095***	-0.112***	-0.112***	-0.142***	-0.141***	-0.123***	-0.114***	-0.119***	-0.134***	-0.135***	-0.139***	-0.132***
	(0.029)	(0.027)	(0.024)	(0.022)	(0.021)	(0.020)	(0.019)	(0.018)	(0.018)	(0.017)	(0.017)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)
Treated	-0.119**	-0.149***	-0.267***	-0.313***	-0.316***	-0.321***	-0.321***	-0.348***	-0.348***	-0.328***	-0.298***	-0.307***	-0.317***	-0.307***	-0.314***	-0.306***
	(0.048)	(0.035)	(0.029)	(0.025)	(0.022)	(0.020)	(0.019)	(0.019)	(0.020)	(0.020)	(0.021)	(0.022)	(0.023)	(0.025)	(0.028)	(0.030)
Post * Treated	0.253***	0.248***	0.347***	0.360***	0.347***	0.343***	0.303***	0.292***	0.252***	0.179***	0.112***	0.107***	0.103***	0.082***	0.080***	0.067**
	(0.060)	(0.048)	(0.042)	(0.039)	(0.036)	(0.035)	(0.032)	(0.030)	(0.029)	(0.028)	(0.027)	(0.027)	(0.028)	(0.029)	(0.031)	(0.033)
Household size	0.079***	0.078***	0.077***	0.075***	0.074***	0.074***	0.075***	0.075***	0.074***	0.075***	0.074***	0.073***	0.073***	0.073***	0.073***	0.073***
	(0.004)	(0.004)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Household head literate	0.376***	0.384***	0.355***	0.363***	0.342***	0.331***	0.341***	0.338***	0.341***	0.334***	0.325***	0.320***	0.313***	0.312***	0.312***	0.307***
	(0.026)	(0.023)	(0.020)	(0.018)	(0.016)	(0.015)	(0.015)	(0.014)	(0.014)	(0.014)	(0.014)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Employer	-0.030	0.012	0.028	0.037	0.036	0.041	0.066**	0.075***	0.076***	0.060**	0.058**	0.060**	0.063**	0.068***	0.074***	0.078***
	(0.048)	(0.040)	(0.035)	(0.033)	(0.030)	(0.028)	(0.026)	(0.026)	(0.026)	(0.025)	(0.025)	(0.025)	(0.025)	(0.024)	(0.024)	(0.024)
Employee	-0.080**	-0.081***	-0.072***	-0.072***	-0.059***	-0.050***	-0.064***	-0.057***	-0.055***	-0.060***	-0.060***	-0.053***	-0.052***	-0.042***	-0.039**	-0.033**
	(0.031)	(0.028)	(0.024)	(0.022)	(0.020)	(0.019)	(0.018)	(0.017)	(0.017)	(0.017)	(0.016)	(0.016)	(0.016)	(0.016)	(0.015)	(0.015)
Farmer	0.151***	0.200***	0.215***	0.221***	0.227***	0.232***	0.231***	0.225***	0.224***	0.210***	0.208***	0.211***	0.222***	0.230***	0.239***	0.242***
	(0.052)	(0.041)	(0.035)	(0.031)	(0.028)	(0.026)	(0.025)	(0.024)	(0.024)	(0.024)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
Constant	5.218***	5.234***	5.298***	5.326***	5.344***	5.361***	5.362***	5.394***	5.398***	5.403***	5.410***	5.428***	5.453***	5.451***	5.461***	5.463***
	(0.041)	(0.037)	(0.032)	(0.029)	(0.026)	(0.024)	(0.023)	(0.022)	(0.022)	(0.022)	(0.021)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
Observations	3271	4443	5734	7129	8512	9738	10777	11439	11792	12208	12704	13280	13771	14177	14631	14728

Notes: This table presents the results of DID regressions examining relationship election period and consumption patterns in authoritarian/dictatorship regime. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table B.11. Regression results: Cooking oil

Window:	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Post	-0.024 (0.019)	-0.049*** (0.017)	-0.087*** (0.015)	-0.116*** (0.014)	-0.129*** (0.013)	-0.153*** (0.012)	-0.166*** (0.012)	-0.170*** (0.011)	-0.154*** (0.011)	-0.163*** (0.011)	-0.165*** (0.010)	-0.173*** (0.010)	-0.168*** (0.010)	-0.149*** (0.009)	-0.143*** (0.009)	-0.134*** (0.009)
Treated	-0.163*** (0.033)	-0.201*** (0.022)	-0.264*** (0.018)	-0.282*** (0.016)	-0.309*** (0.014)	-0.335*** (0.013)	-0.347*** (0.012)	-0.365*** (0.012)	-0.361*** (0.013)	-0.367*** (0.013)	-0.371*** (0.013)	-0.387*** (0.013)	-0.392*** (0.014)	-0.373*** (0.015)	-0.371*** (0.017)	-0.367*** (0.019)
Post * Treated	0.032 (0.040)	0.056* (0.031)	0.133*** (0.028)	0.146*** (0.025)	0.154*** (0.024)	0.181*** (0.023)	0.203*** (0.020)	0.185*** (0.019)	0.157*** (0.018)	0.153*** (0.017)	0.149*** (0.017)	0.159*** (0.017)	0.154*** (0.017)	0.124*** (0.018)	0.107*** (0.019)	0.097*** (0.020)
Household size	0.083*** (0.003)	0.085*** (0.003)	0.087*** (0.002)	0.086*** (0.002)	0.084*** (0.002)	0.083*** (0.002)	0.083*** (0.002)	0.083*** (0.001)	0.084*** (0.001)	0.084*** (0.001)	0.083*** (0.001)	0.082*** (0.001)	0.083*** (0.001)	0.084*** (0.001)	0.084*** (0.001)	0.083*** (0.001)
Household head literate	0.266*** (0.017)	0.237*** (0.015)	0.225*** (0.013)	0.210*** (0.011)	0.200*** (0.010)	0.193*** (0.010)	0.191*** (0.009)	0.189*** (0.009)	0.189*** (0.009)	0.187*** (0.008)	0.184*** (0.008)	0.183*** (0.008)	0.181*** (0.008)	0.181*** (0.008)	0.181*** (0.008)	0.179*** (0.008)
Employer	-0.061** (0.030)	-0.040 (0.026)	-0.035 (0.023)	-0.036* (0.021)	-0.030 (0.019)	-0.026 (0.018)	-0.024 (0.017)	-0.021 (0.017)	-0.016 (0.017)	-0.017 (0.016)	-0.017 (0.016)	-0.017 (0.016)	-0.017 (0.016)	-0.021 (0.016)	-0.021 (0.016)	-0.023 (0.016)
Employee	-0.073*** (0.020)	-0.066*** (0.017)	-0.063*** (0.015)	-0.075*** (0.014)	-0.063*** (0.012)	-0.056*** (0.012)	-0.063*** (0.011)	-0.056*** (0.011)	-0.052*** (0.011)	-0.050*** (0.010)	-0.048*** (0.010)	-0.044*** (0.010)	-0.045*** (0.010)	-0.043*** (0.010)	-0.039*** (0.009)	-0.040*** (0.009)
Farmer	-0.040 (0.034)	-0.016 (0.027)	-0.005 (0.024)	0.003 (0.020)	0.023 (0.018)	0.027 (0.017)	0.024 (0.016)	0.023 (0.015)	0.023 (0.015)	0.022 (0.015)	0.024* (0.015)	0.028* (0.014)	0.029** (0.014)	0.029** (0.014)	0.035** (0.014)	0.034** (0.014)
Constant	5.305*** (0.029)	5.340*** (0.024)	5.361*** (0.021)	5.405*** (0.019)	5.444*** (0.017)	5.477*** (0.015)	5.495*** (0.014)	5.512*** (0.014)	5.507*** (0.014)	5.516*** (0.013)	5.529*** (0.013)	5.548*** (0.013)	5.554*** (0.013)	5.536*** (0.013)	5.541*** (0.012)	5.547*** (0.013)
Observations	3299	4507	5829	7250	8664	9937	11033	11717	12080	12524	13024	13596	14089	14499	14960	15063

Notes: This table presents the results of DID regressions examining relationship election period and consumption patterns in authoritarian/dictatorship regime. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table B.12. Regression results: Meat

Window:	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Post	0.023 (0.034)	0.008 (0.032)	0.064** (0.029)	0.030 (0.027)	0.075*** (0.025)	0.087*** (0.024)	0.072*** (0.023)	0.083*** (0.022)	0.088*** (0.022)	0.078*** (0.021)	0.122*** (0.021)	0.131*** (0.020)	0.129*** (0.019)	0.112*** (0.019)	0.087*** (0.019)	0.062*** (0.019)
Treated	-0.172** (0.068)	-0.190*** (0.043)	-0.168*** (0.037)	-0.198*** (0.033)	-0.134*** (0.029)	-0.091*** (0.026)	-0.105*** (0.025)	-0.083*** (0.025)	-0.064** (0.026)	-0.055** (0.026)	0.000 (0.027)	0.017 (0.028)	0.001 (0.029)	0.006 (0.032)	-0.029 (0.036)	-0.075* (0.039)
Post * Treated	-0.068 (0.087)	-0.036 (0.065)	-0.061 (0.058)	-0.028 (0.054)	-0.094* (0.050)	-0.133*** (0.049)	-0.088** (0.042)	-0.141*** (0.039)	-0.175*** (0.037)	-0.152*** (0.036)	-0.223*** (0.036)	-0.238*** (0.035)	-0.195*** (0.035)	-0.182*** (0.037)	-0.140*** (0.040)	-0.075* (0.043)
Household size	0.071*** (0.005)	0.067*** (0.004)	0.066*** (0.004)	0.066*** (0.003)	0.068*** (0.003)	0.068*** (0.003)	0.067*** (0.003)	0.068*** (0.003)	0.068*** (0.003)	0.068*** (0.002)	0.069*** (0.002)	0.070*** (0.002)	0.070*** (0.002)	0.070*** (0.002)	0.071*** (0.002)	0.070*** (0.002)
Household head literate	0.493*** (0.032)	0.465*** (0.027)	0.442*** (0.025)	0.440*** (0.022)	0.436*** (0.020)	0.431*** (0.019)	0.448*** (0.018)	0.460*** (0.018)	0.455*** (0.018)	0.454*** (0.017)	0.442*** (0.017)	0.432*** (0.016)	0.435*** (0.016)	0.434*** (0.016)	0.439*** (0.016)	0.441*** (0.016)
Employer	-0.069 (0.060)	-0.049 (0.053)	-0.005 (0.047)	-0.008 (0.043)	-0.014 (0.040)	-0.005 (0.038)	0.013 (0.036)	0.007 (0.034)	0.013 (0.034)	0.018 (0.034)	0.014 (0.033)	0.020 (0.033)	0.028 (0.032)	0.023 (0.032)	0.029 (0.032)	0.030 (0.032)
Employee	-0.169*** (0.039)	-0.160*** (0.034)	-0.135*** (0.030)	-0.134*** (0.027)	-0.129*** (0.025)	-0.140*** (0.024)	-0.133*** (0.023)	-0.138*** (0.022)	-0.134*** (0.022)	-0.132*** (0.021)	-0.136*** (0.021)	-0.129*** (0.020)	-0.122*** (0.020)	-0.127*** (0.020)	-0.120*** (0.019)	-0.119*** (0.019)
Farmer	-0.251*** (0.060)	-0.250*** (0.048)	-0.206*** (0.043)	-0.202*** (0.038)	-0.167*** (0.035)	-0.202*** (0.032)	-0.181*** (0.031)	-0.196*** (0.030)	-0.183*** (0.030)	-0.188*** (0.029)	-0.192*** (0.029)	-0.181*** (0.029)	-0.174*** (0.028)	-0.179*** (0.028)	-0.170*** (0.028)	-0.172*** (0.028)
Constant	4.762*** (0.049)	4.803*** (0.042)	4.756*** (0.038)	4.786*** (0.036)	4.732*** (0.032)	4.727*** (0.030)	4.725*** (0.028)	4.706*** (0.028)	4.702*** (0.028)	4.692*** (0.027)	4.655*** (0.026)	4.645*** (0.026)	4.630*** (0.025)	4.637*** (0.025)	4.652*** (0.024)	4.670*** (0.025)
Observations	3063	4144	5320	6609	7881	9015	10002	10639	10966	11359	11810	12338	12779	13125	13550	13653

Notes: This table presents the results of DID regressions examining relationship election period and consumption patterns in authoritarian/dictatorship regime. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table B.13. Regression results: Other

Window:	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Post	-0.015	-0.046**	-0.040**	-0.055***	-0.041***	-0.050***	-0.054***	-0.060***	-0.058***	-0.070***	-0.048***	-0.052***	-0.063***	-0.057***	-0.054***	-0.059***
	(0.022)	(0.020)	(0.018)	(0.016)	(0.015)	(0.014)	(0.014)	(0.013)	(0.013)	(0.012)	(0.012)	(0.011)	(0.011)	(0.010)	(0.010)	(0.010)
Treated	0.014	-0.083***	-0.128***	-0.147***	-0.135***	-0.150***	-0.168***	-0.177***	-0.169***	-0.169***	-0.144***	-0.152***	-0.168***	-0.163***	-0.145***	-0.165***
	(0.039)	(0.024)	(0.021)	(0.018)	(0.016)	(0.015)	(0.014)	(0.014)	(0.014)	(0.014)	(0.015)	(0.015)	(0.015)	(0.017)	(0.018)	(0.020)
Post * Treated	-0.084*	0.018	0.082***	0.103***	0.089***	0.106***	0.120***	0.099***	0.079***	0.069***	0.019	0.034*	0.054***	0.048**	0.015	0.039*
	(0.046)	(0.034)	(0.030)	(0.027)	(0.026)	(0.025)	(0.022)	(0.021)	(0.020)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.021)	(0.022)
Household size	0.073***	0.074***	0.077***	0.074***	0.073***	0.073***	0.074***	0.074***	0.074***	0.074***	0.074***	0.074***	0.075***	0.075***	0.075***	0.075***
	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Household head literate	0.336***	0.308***	0.277***	0.281***	0.273***	0.264***	0.266***	0.263***	0.263***	0.259***	0.256***	0.251***	0.247***	0.249***	0.251***	0.252***
	(0.019)	(0.016)	(0.014)	(0.013)	(0.012)	(0.011)	(0.010)	(0.010)	(0.010)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.008)
Employer	-0.044	-0.022	-0.034	-0.029	-0.034	-0.024	-0.012	-0.014	-0.009	-0.009	-0.003	-0.004	-0.001	-0.004	-0.007	-0.008
	(0.034)	(0.029)	(0.026)	(0.024)	(0.022)	(0.021)	(0.020)	(0.019)	(0.019)	(0.019)	(0.019)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
Employee	-0.063***	-0.059***	-0.058***	-0.058***	-0.059***	-0.058***	-0.051***	-0.053***	-0.053***	-0.051***	-0.045***	-0.041***	-0.039***	-0.039***	-0.039***	-0.039***
	(0.023)	(0.020)	(0.017)	(0.016)	(0.015)	(0.014)	(0.013)	(0.012)	(0.012)	(0.012)	(0.012)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Farmer	-0.077**	-0.092***	-0.063**	-0.059***	-0.053***	-0.046***	-0.035**	-0.042***	-0.041***	-0.048***	-0.042***	-0.036**	-0.039***	-0.039***	-0.034**	-0.036**
	(0.037)	(0.028)	(0.025)	(0.021)	(0.019)	(0.017)	(0.016)	(0.016)	(0.016)	(0.015)	(0.015)	(0.015)	(0.014)	(0.014)	(0.014)	(0.014)
Constant	5.713***	5.756***	5.741***	5.768***	5.772***	5.787***	5.794***	5.808***	5.802***	5.814***	5.800***	5.802***	5.812***	5.804***	5.804***	5.814***
	(0.030)	(0.025)	(0.022)	(0.020)	(0.018)	(0.017)	(0.016)	(0.015)	(0.015)	(0.015)	(0.014)	(0.014)	(0.014)	(0.013)	(0.013)	(0.013)
Observations	3321	4545	5880	7321	8751	10044	11150	11842	12209	12657	13165	13749	14254	14672	15140	15245

Notes: This table presents the results of DID regressions examining relationship election period and consumption patterns in authoritarian/dictatorship regime. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

1.10 Appendix 1.C

Table C.1. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Window size in days: [5]					
Post	5,565	0.57	0.50	0	1
Treated	5,565	0.38	0.48	0	1
Post * Treated	5,565	0.21	0.41	0	1
Total food expenditures	5,565	8349.70	4316.45	598	46630
Wheat	5,565	1765.22	1134.11	0	14080
Rice	5,565	551.31	617.84	0	7200
Fruit	5,565	275.43	363.59	0	5320
Vegetables	5,565	585.91	309.32	0	3265
Dairy	5,565	1475.46	1090.50	0	11760
Cooking oil	5,565	1026.62	595.01	0	8280
Meat and fish	5,565	657.70	647.99	0	6600
Other food	5,565	2012.05	1596.78	53	32130
Household size	5,565	6.46	3.17	1	30
Household head literate	5,565	0.55	0.50	0	1
Self employed	5,565	0.16	0.37	0	1
Employee	5,565	0.47	0.50	0	1
Farmer	5,565	0.17	0.38	0	1
Window size in days: [6]					
Variable	Obs	Mean	Std. Dev.	Min	Max
Post	6,891	0.54	0.50	0	1
Treated	6,891	0.38	0.49	0	1
Post * Treated	6,891	0.20	0.40	0	1
Total food expenditures	6,891	8321.43	4309.13	598	46630
Wheat	6,891	1763.77	1118.01	0	14080
Rice	6,891	543.08	611.53	0	7200
Fruit	6,891	274.26	361.66	0	5320
Vegetables	6,891	592.09	311.34	0	3265
Dairy	6,891	1478.59	1096.03	0	11760
Cooking oil	6,891	1022.47	594.46	0	8280
Meat and fish	6,891	655.29	664.38	0	9550
Other food	6,891	1991.88	1578.22	53	32130
Household size	6,891	6.49	3.18	1	30
Household head literate	6,891	0.55	0.50	0	1
Self employed	6,891	0.16	0.37	0	1
Employee	6,891	0.47	0.50	0	1
Farmer	6,891	0.17	0.38	0	1

Variable	Obs	Mean	Std. Dev.	Min	Max
Window size in days: [7]					
Post	8,260	0.50	0.50	0	1
Treated	8,260	0.38	0.49	0	1
Post * Treated	8,260	0.19	0.39	0	1
Total food expenditures	8,260	8319.17	4302.73	598	46630
Wheat	8,260	1754.53	1126.31	0	14080
Rice	8,260	539.26	603.24	0	7200
Fruit	8,260	274.87	364.36	0	5320
Vegetables	8,260	601.17	323.22	0	5470
Dairy	8,260	1482.25	1104.24	0	11760
Cooking oil	8,260	1022.34	592.30	0	8280
Meat and fish	8,260	658.08	666.85	0	9550
Other food	8,260	1986.69	1548.38	53	32130
Household size	8,260	6.50	3.23	1	45
Household head literate	8,260	0.55	0.50	0	1
Self employed	8,260	0.17	0.37	0	1
Employee	8,260	0.47	0.50	0	1
Farmer	8,260	0.17	0.38	0	1
Window size in days: [8]					
Post	9,425	0.47	0.50	0	1
Treated	9,425	0.39	0.49	0	1
Post * Treated	9,425	0.18	0.39	0	1
Total food expenditures	9,425	8349.79	4312.42	598	46630
Wheat	9,425	1749.68	1126.49	0	14080
Rice	9,425	542.32	608.40	0	7200
Fruit	9,425	276.77	369.20	0	5320
Vegetables	9,425	605.66	322.51	0	5470
Dairy	9,425	1490.20	1122.26	0	12760
Cooking oil	9,425	1023.19	599.48	0	8280
Meat and fish	9,425	656.00	659.24	0	9550
Other food	9,425	2005.97	1550.95	53	32130
Household size	9,425	6.52	3.22	1	45
Household head literate	9,425	0.55	0.50	0	1
Self employed	9,425	0.17	0.38	0	1
Employee	9,425	0.46	0.50	0	1
Farmer	9,425	0.18	0.38	0	1

Variable	Obs	Mean	Std. Dev.	Min	Max
Window size in days: [9]					
Post	10,736	0.47	0.50	0	1
Treated	10,736	0.40	0.49	0	1
Post * Treated	10,736	0.18	0.39	0	1
Total food expenditures	10,736	8351.41	4332.58	598	46630
Wheat	10,736	1760.08	1143.16	0	14080
Rice	10,736	542.86	614.60	0	7200
Fruit	10,736	274.44	363.41	0	5320
Vegetables	10,736	607.98	323.91	0	5470
Dairy	10,736	1486.55	1140.36	0	19600
Cooking oil	10,736	1023.38	604.63	0	8280
Meat and fish	10,736	651.72	655.63	0	9550
Other food	10,736	2004.40	1546.89	53	32130
Household size	10,736	6.54	3.24	1	45
Household head literate	10,736	0.55	0.50	0	1
Self employed	10,736	0.17	0.38	0	1
Employee	10,736	0.46	0.50	0	1
Farmer	10,736	0.18	0.38	0	1
Window size in days: [10]					
Post	11,958	0.47	0.50	0	1
Treated	11,958	0.41	0.49	0	1
Post * Treated	11,958	0.18	0.38	0	1
Total food expenditures	11,958	8351.52	4352.33	598	46630
Wheat	11,958	1752.91	1135.02	0	14080
Rice	11,958	544.73	614.75	0	7200
Fruit	11,958	274.13	362.58	0	5320
Vegetables	11,958	608.05	324.95	0	5470
Dairy	11,958	1493.17	1145.35	0	19600
Cooking oil	11,958	1020.05	605.54	0	8280
Meat and fish	11,958	652.23	661.76	0	9550
Other food	11,958	2006.24	1541.85	53	32130
Household size	11,958	6.55	3.25	1	45
Household head literate	11,958	0.55	0.50	0	1
Self employed	11,958	0.17	0.38	0	1
Employee	11,958	0.46	0.50	0	1
Farmer	11,958	0.17	0.38	0	1

Variable	Obs	Mean	Std. Dev.	Min	Max
Window size in days: [11]					
Post	13,023	0.48	0.50	0	1
Treated	13,023	0.41	0.49	0	1
Post * Treated	13,023	0.18	0.39	0	1
Total food expenditures	13,023	8364.09	4402.63	598	53838
Wheat	13,023	1752.56	1145.09	0	17000
Rice	13,023	542.52	607.15	0	7200
Fruit	13,023	274.35	366.73	0	5320
Vegetables	13,023	607.96	326.14	0	5470
Dairy	13,023	1493.74	1147.09	0	19600
Cooking oil	13,023	1016.17	603.65	0	8280
Meat and fish	13,023	656.95	677.70	0	9550
Other food	13,023	2019.86	1608.26	53	38462
Household size	13,023	6.55	3.25	1	45
Household head literate	13,023	0.55	0.50	0	1
Self employed	13,023	0.17	0.38	0	1
Employee	13,023	0.47	0.50	0	1
Farmer	13,023	0.17	0.37	0	1
Window size in days: [12]					
Post	13,937	0.49	0.50	0	1
Treated	13,937	0.42	0.49	0	1
Post * Treated	13,937	0.19	0.39	0	1
Total food expenditures	13,937	8398.73	4528.10	598	124230
Wheat	13,937	1755.90	1188.81	0	37000
Rice	13,937	544.66	611.16	0	7200
Fruit	13,937	275.27	370.20	0	5320
Vegetables	13,937	608.34	328.25	0	5470
Dairy	13,937	1493.69	1149.95	0	19600
Cooking oil	13,937	1015.68	611.45	0	13920
Meat and fish	13,937	675.93	743.44	0	31000
Other food	13,937	2029.27	1610.68	53	38462
Household size	13,937	6.56	3.29	1	63
Household head literate	13,937	0.55	0.50	0	1
Self employed	13,937	0.17	0.38	0	1
Employee	13,937	0.47	0.50	0	1
Farmer	13,937	0.17	0.37	0	1

Variable	Obs	Mean	Std. Dev.	Min	Max
Window size in days: [13]					
Post	15,130	0.50	0.50	0	1
Treated	15,130	0.41	0.49	0	1
Post * Treated	15,130	0.19	0.39	0	1
Total food expenditures	15,130	8410.11	4496.41	598	124230
Wheat	15,130	1762.68	1180.47	0	37000
Rice	15,130	541.61	608.10	0	7200
Fruit	15,130	274.11	365.90	0	5320
Vegetables	15,130	608.12	326.88	0	5470
Dairy	15,130	1492.68	1152.79	0	19600
Cooking oil	15,130	1014.75	614.35	0	13920
Meat and fish	15,130	696.18	772.30	0	31000
Other food	15,130	2019.98	1591.77	53	38462
Household size	15,130	6.56	3.28	1	63
Household head literate	15,130	0.55	0.50	0	1
Self employed	15,130	0.17	0.38	0	1
Employee	15,130	0.47	0.50	0	1
Farmer	15,130	0.17	0.38	0	1
Window size in days: [14]					
Post	16,480	0.50	0.50	0	1
Treated	16,480	0.40	0.49	0	1
Post * Treated	16,480	0.19	0.39	0	1
Total food expenditures	16,480	8449.84	4530.01	598	124230
Wheat	16,480	1768.94	1171.11	0	37000
Rice	16,480	539.97	608.54	0	8000
Fruit	16,480	275.00	371.09	0	5320
Vegetables	16,480	608.16	327.25	0	5470
Dairy	16,480	1497.86	1157.70	0	19600
Cooking oil	16,480	1015.08	610.69	0	13920
Meat and fish	16,480	721.47	811.53	0	31000
Other food	16,480	2023.38	1628.40	53	38462
Household size	16,480	6.57	3.27	1	63
Household head literate	16,480	0.55	0.50	0	1
Self employed	16,480	0.17	0.38	0	1
Employee	16,480	0.47	0.50	0	1
Farmer	16,480	0.17	0.38	0	1

Variable	Obs	Mean	Std. Dev.	Min	Max
Window size in days: [15]					
Post	17,529	0.51	0.50	0	1
Treated	17,529	0.40	0.49	0	1
Post * Treated	17,529	0.20	0.40	0	1
Total food expenditures	17,529	8466.55	4522.46	598	124230
Wheat	17,529	1774.04	1165.75	0	37000
Rice	17,529	538.57	606.52	0	8000
Fruit	17,529	274.69	370.41	0	5320
Vegetables	17,529	608.81	326.94	0	5470
Dairy	17,529	1497.28	1158.64	0	19600
Cooking oil	17,529	1014.51	608.69	0	13920
Meat and fish	17,529	733.51	826.56	0	31000
Other food	17,529	2025.14	1627.14	53	38462
Household size	17,529	6.58	3.27	1	63
Household head literate	17,529	0.54	0.50	0	1
Self employed	17,529	0.17	0.38	0	1
Employee	17,529	0.47	0.50	0	1
Farmer	17,529	0.18	0.38	0	1
Window size in days: [16]					
Post	18,529	0.51	0.50	0	1
Treated	18,529	0.41	0.49	0	1
Post * Treated	18,529	0.20	0.40	0	1
Total food expenditures	18,529	8480.33	4544.19	598	124230
Wheat	18,529	1775.65	1158.86	0	37000
Rice	18,529	536.47	604.46	0	8000
Fruit	18,529	276.35	377.51	0	8350
Vegetables	18,529	609.25	327.62	0	5470
Dairy	18,529	1499.69	1167.80	0	19600
Cooking oil	18,529	1014.25	608.77	0	13920
Meat and fish	18,529	733.29	825.26	0	31000
Other food	18,529	2035.38	1636.93	53	38462
Household size	18,529	6.59	3.27	1	63
Household head literate	18,529	0.55	0.50	0	1
Self employed	18,529	0.17	0.38	0	1
Employee	18,529	0.47	0.50	0	1
Farmer	18,529	0.17	0.38	0	1

Variable	Obs	Mean	Std. Dev.	Min	Max
Window size in days: [17]					
Post	19,844	0.51	0.50	0	1
Treated	19,844	0.41	0.49	0	1
Post * Treated	18,529	0.20	0.40	0	1
Total food expenditures	19,844	8453.46	4530.30	412	124230
Wheat	19,844	1775.93	1157.70	0	37000
Rice	19,844	532.44	600.08	0	8000
Fruit	19,844	274.49	374.30	0	8350
Vegetables	19,844	607.24	327.22	0	5470
Dairy	19,844	1493.61	1165.14	0	19600
Cooking oil	19,844	1011.84	609.39	0	13920
Meat and fish	19,844	732.16	827.34	0	31000
Other food	19,844	2025.75	1621.87	53	38462
Household size	19,844	6.58	3.27	1	63
Household head literate	19,844	0.54	0.50	0	1
Self employed	19,844	0.17	0.38	0	1
Employee	19,844	0.47	0.50	0	1
Farmer	19,844	0.17	0.38	0	1
Window size in days: [18]					
Post	21,222	0.51	0.50	0	1
Treated	21,222	0.40	0.49	0	1
Post * Treated	21,222	0.20	0.40	0	1
Total food expenditures	21,222	8465.78	4529.32	412	124230
Wheat	21,222	1783.83	1167.32	0	37000
Rice	21,222	529.59	598.33	0	8000
Fruit	21,222	273.43	371.36	0	8350
Vegetables	21,222	607.28	326.41	0	5470
Dairy	21,222	1490.91	1163.55	0	19600
Cooking oil	21,222	1013.32	613.04	0	13920
Meat and fish	21,222	744.45	842.19	0	31000
Other food	21,222	2022.99	1610.61	53	38462
Household size	21,222	6.60	3.29	1	63
Household head literate	21,222	0.54	0.50	0	1
Self employed	21,222	0.17	0.38	0	1
Employee	21,222	0.46	0.50	0	1
Farmer	21,222	0.17	0.38	0	1

Variable	Obs	Mean	Std. Dev.	Min	Max
Window size in days: [19]					
Post	22,397	0.51	0.50	0	1
Treated	22,397	0.41	0.49	0	1
Post * Treated	22,397	0.21	0.40	0	1
Total food expenditures	22,397	8481.28	4530.88	412	124230
Wheat	22,397	1786.39	1168.67	0	37000
Rice	22,397	528.20	598.04	0	8000
Fruit	22,397	272.33	367.64	0	8350
Vegetables	22,397	607.02	326.88	0	5470
Dairy	22,397	1488.26	1162.94	0	19600
Cooking oil	22,397	1011.06	612.48	0	13920
Meat and fish	22,397	758.72	857.07	0	31000
Other food	22,397	2029.31	1610.60	53	38462
Household size	22,397	6.60	3.30	1	63
Household head literate	22,397	0.54	0.50	0	1
Self employed	22,397	0.17	0.38	0	1
Employee	22,397	0.47	0.50	0	1
Farmer	22,397	0.17	0.38	0	1
Window size in days: [20]					
Post	23,392	0.51	0.50	0	1
Treated	23,392	0.40	0.49	0	1
Post * Treated	23,392	0.21	0.41	0	1
Total food expenditures	23,392	8503.46	4554.77	412	124230
Wheat	23,392	1780.05	1163.59	0	37000
Rice	23,392	528.78	598.02	0	8000
Fruit	23,392	273.36	366.69	0	8350
Vegetables	23,392	606.12	327.23	0	5470
Dairy	23,392	1491.98	1166.53	0	19600
Cooking oil	23,392	1010.86	614.08	0	13920
Meat and fish	23,392	776.82	896.85	0	31000
Other food	23,392	2035.49	1610.23	53	38462
Household size	23,392	6.59	3.30	1	63
Household head literate	23,392	0.55	0.50	0	1
Self employed	23,392	0.17	0.38	0	1
Employee	23,392	0.47	0.50	0	1
Farmer	23,392	0.17	0.37	0	1

Regression results by quartiles

Table C.2. Regression results: First quartile

Window:	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Post	0.034** (0.015)	0.020 (0.013)	0.006 (0.012)	-0.002 (0.011)	-0.013 (0.010)	-0.008 (0.010)	-0.019** (0.009)	-0.018** (0.009)	-0.018** (0.009)	-0.021** (0.008)	-0.020** (0.008)	-0.015* (0.008)	0.001 (0.008)	0.008 (0.007)	0.006 (0.007)	0.006 (0.007)
Treated	0.043** (0.020)	-0.003 (0.017)	-0.009 (0.014)	-0.006 (0.012)	-0.007 (0.011)	-0.011 (0.011)	-0.011 (0.010)	-0.007 (0.010)	-0.009 (0.010)	-0.011 (0.009)	-0.007 (0.009)	-0.001 (0.009)	-0.000 (0.010)	0.006 (0.009)	0.009 (0.009)	0.011 (0.009)
Post * Treated	-0.045* (0.025)	0.019 (0.022)	0.026 (0.020)	0.020 (0.018)	0.022 (0.017)	0.026 (0.016)	0.027* (0.015)	0.013 (0.015)	0.012 (0.014)	0.015 (0.014)	0.008 (0.013)	0.004 (0.013)	0.003 (0.013)	-0.004 (0.012)	-0.007 (0.012)	-0.011 (0.012)
Household size	0.062*** (0.004)	0.062*** (0.003)	0.062*** (0.003)	0.062*** (0.003)	0.062*** (0.003)	0.062*** (0.002)	0.061*** (0.002)	0.061*** (0.002)	0.061*** (0.002)	0.061*** (0.002)	0.060*** (0.002)	0.060*** (0.002)	0.061*** (0.002)	0.061*** (0.002)	0.061*** (0.002)	0.062*** (0.002)
Household head literate	0.047*** (0.012)	0.052*** (0.011)	0.050*** (0.010)	0.048*** (0.009)	0.050*** (0.008)	0.055*** (0.008)	0.052*** (0.008)	0.054*** (0.007)	0.056*** (0.007)	0.056*** (0.007)	0.056*** (0.007)	0.055*** (0.006)	0.055*** (0.006)	0.056*** (0.006)	0.057*** (0.006)	0.058*** (0.006)
Employer	0.051** (0.022)	0.045** (0.020)	0.044** (0.018)	0.039** (0.016)	0.042*** (0.015)	0.053*** (0.015)	0.054*** (0.014)	0.057*** (0.014)	0.060*** (0.013)	0.057*** (0.013)	0.054*** (0.012)	0.054*** (0.012)	0.057*** (0.012)	0.058*** (0.012)	0.059*** (0.011)	0.059*** (0.011)
Employee	0.028 (0.018)	0.021 (0.016)	0.018 (0.015)	0.016 (0.014)	0.016 (0.013)	0.030** (0.012)	0.031*** (0.012)	0.034*** (0.011)	0.038*** (0.011)	0.035*** (0.010)	0.035*** (0.010)	0.036*** (0.010)	0.040*** (0.010)	0.039*** (0.010)	0.034*** (0.009)	0.033*** (0.009)
Farmer	0.080*** (0.024)	0.069*** (0.021)	0.055*** (0.019)	0.048*** (0.018)	0.057*** (0.016)	0.070*** (0.015)	0.072*** (0.015)	0.076*** (0.015)	0.081*** (0.014)	0.076*** (0.013)	0.077*** (0.013)	0.078*** (0.013)	0.081*** (0.013)	0.081*** (0.012)	0.079*** (0.012)	0.078*** (0.012)
Constant	7.988*** (0.028)	7.999*** (0.024)	8.015*** (0.022)	8.025*** (0.020)	8.030*** (0.018)	8.013*** (0.018)	8.024*** (0.017)	8.023*** (0.017)	8.020*** (0.016)	8.029*** (0.015)	8.034*** (0.015)	8.029*** (0.015)	8.009*** (0.015)	8.000*** (0.014)	8.002*** (0.014)	8.000*** (0.013)
Observations	1506	1876	2260	2546	2904	3259	3561	3773	4051	4378	4631	4867	5262	5625	5908	6136

Notes: This table presents the results of DID regressions examining relationship election period and consumption patterns in democratic regime. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table C.3. Regression results: Second quartile

Window:	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Post	-0.004	0.001	-0.004	-0.004	-0.000	-0.001	-0.003	-0.005	-0.005	-0.004	-0.005	-0.006*	-0.005	-0.005	-0.004	-0.007**
	(0.006)	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Treated	0.003	0.005	-0.005	-0.002	-0.005	-0.002	-0.003	-0.005	-0.006	-0.004	-0.005	-0.007*	-0.003	-0.001	-0.002	-0.004
	(0.008)	(0.007)	(0.006)	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Post * Treated	0.005	-0.000	0.012	0.012	0.013*	0.008	0.008	0.010	0.009	0.005	0.008	0.011**	0.004	0.002	0.003	0.006
	(0.010)	(0.009)	(0.008)	(0.008)	(0.007)	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Household size	0.010***	0.010***	0.010***	0.010***	0.009***	0.009***	0.010***	0.010***	0.010***	0.010***	0.009***	0.009***	0.009***	0.009***	0.009***	0.009***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Household head literate	0.011**	0.011**	0.014***	0.012***	0.011***	0.011***	0.011***	0.011***	0.012***	0.012***	0.012***	0.012***	0.011***	0.012***	0.013***	0.013***
	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)
Employer	0.010	0.009	0.005	-0.002	-0.000	-0.003	-0.001	-0.001	-0.001	-0.001	-0.002	-0.005	-0.005	-0.006	-0.006	-0.007*
	(0.008)	(0.007)	(0.007)	(0.006)	(0.006)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)
Employee	-0.009	-0.008	-0.007	-0.009	-0.006	-0.008*	-0.006	-0.008*	-0.007*	-0.006	-0.007*	-0.008**	-0.008**	-0.008**	-0.009**	-0.010***
	(0.007)	(0.006)	(0.006)	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)
Farmer	-0.007	-0.004	-0.003	-0.005	-0.005	-0.006	-0.003	-0.005	-0.003	-0.001	-0.001	-0.001	-0.002	-0.002	-0.003	-0.004
	(0.008)	(0.007)	(0.007)	(0.006)	(0.006)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)
Constant	8.726***	8.727***	8.727***	8.732***	8.730***	8.732***	8.731***	8.734***	8.733***	8.733***	8.734***	8.737***	8.738***	8.737***	8.737***	8.742***
	(0.011)	(0.010)	(0.009)	(0.008)	(0.008)	(0.007)	(0.007)	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)
Observations	1439	1790	2141	2454	2806	3118	3371	3621	3934	4270	4523	4780	5132	5460	5733	5964

Notes: This table presents the results of DID regressions examining relationship election period and consumption patterns in democratic regime. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table C.4. Regression results: Third quartile

Window:	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Post	-0.003 (0.006)	0.005 (0.006)	-0.004 (0.005)	-0.006 (0.005)	-0.004 (0.005)	-0.003 (0.004)	-0.001 (0.004)	-0.005 (0.004)	-0.001 (0.004)	0.000 (0.004)	0.003 (0.004)	0.005 (0.003)	0.005 (0.003)	0.004 (0.003)	0.005 (0.003)	0.005 (0.003)
Treated	0.003 (0.008)	0.005 (0.007)	-0.004 (0.006)	-0.010** (0.005)	-0.011** (0.005)	-0.007 (0.005)	-0.004 (0.005)	-0.005 (0.004)	-0.002 (0.004)	0.001 (0.004)	0.005 (0.004)	0.008** (0.004)	0.007* (0.004)	0.008** (0.004)	0.010*** (0.004)	0.011*** (0.003)
Post * Treated	0.010 (0.010)	0.002 (0.009)	0.013 (0.008)	0.022*** (0.008)	0.023*** (0.007)	0.015** (0.007)	0.010 (0.007)	0.011* (0.006)	0.005 (0.006)	0.001 (0.006)	-0.004 (0.006)	-0.008 (0.005)	-0.007 (0.005)	-0.009* (0.005)	-0.010** (0.005)	-0.012** (0.005)
Household size	0.006*** (0.001)	0.006*** (0.001)	0.007*** (0.001)	0.007*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.005*** (0.001)
Household head literate	0.009* (0.005)	0.012** (0.005)	0.012*** (0.004)	0.011*** (0.004)	0.013*** (0.004)	0.012*** (0.004)	0.012*** (0.003)	0.014*** (0.003)	0.013*** (0.003)	0.014*** (0.003)	0.014*** (0.003)	0.014*** (0.003)	0.013*** (0.003)	0.014*** (0.003)	0.014*** (0.003)	0.014*** (0.003)
Employer	-0.002 (0.009)	-0.001 (0.007)	-0.005 (0.007)	-0.005 (0.006)	-0.001 (0.006)	-0.001 (0.006)	-0.003 (0.005)	-0.004 (0.005)	-0.004 (0.005)	-0.003 (0.005)	-0.003 (0.005)	-0.004 (0.005)	-0.007 (0.004)	-0.008* (0.004)	-0.007* (0.004)	-0.006 (0.004)
Employee	-0.014** (0.007)	-0.014** (0.006)	-0.014** (0.006)	- 0.015*** (0.005)	-0.009* (0.005)	-0.008* (0.005)	-0.007 (0.004)	-0.007* (0.004)	-0.008** (0.004)	-0.007* (0.004)	-0.006 (0.004)	-0.006 (0.004)	-0.008** (0.004)	-0.008** (0.004)	-0.007** (0.003)	-0.007** (0.003)
Farmer	0.004 (0.008)	-0.001 (0.007)	-0.001 (0.007)	0.001 (0.006)	0.004 (0.006)	0.003 (0.006)	0.003 (0.005)	0.003 (0.005)	0.002 (0.005)	0.004 (0.005)	0.003 (0.005)	0.002 (0.004)	0.000 (0.004)	-0.001 (0.004)	-0.000 (0.004)	0.000 (0.004)
Constant	9.059*** (0.011)	9.055*** (0.010)	9.056*** (0.009)	9.058*** (0.008)	9.055*** (0.008)	9.055*** (0.008)	9.053*** (0.007)	9.056*** (0.007)	9.053*** (0.007)	9.050*** (0.006)	9.048*** (0.006)	9.049*** (0.006)	9.052*** (0.006)	9.054*** (0.006)	9.053*** (0.005)	9.054*** (0.005)
Observations	1373	1706	2043	2313	2620	2894	3159	3392	3716	4061	4335	4605	4889	5214	5521	5797

Notes: This table presents the results of DID regressions examining relationship election period and consumption patterns in democratic regime. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table C.5. Regression results: Fourth quartile

Window:	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Post	-0.036** (0.015)	-0.031** (0.014)	-0.020 (0.013)	-0.022* (0.012)	-0.013 (0.011)	-0.011 (0.011)	-0.004 (0.010)	-0.008 (0.010)	-0.007 (0.009)	-0.010 (0.009)	-0.012 (0.009)	-0.011 (0.008)	-0.011 (0.008)	-0.004 (0.008)	-0.001 (0.008)	-0.003 (0.008)
Treated	-0.004 (0.020)	-0.011 (0.017)	-0.017 (0.015)	-0.018 (0.013)	-0.017 (0.012)	-0.014 (0.012)	-0.006 (0.012)	0.001 (0.011)	0.005 (0.011)	0.012 (0.011)	0.008 (0.011)	0.012 (0.010)	0.009 (0.010)	0.019** (0.010)	0.017* (0.009)	0.020** (0.009)
Post * Treated	0.039 (0.026)	0.047** (0.023)	0.054** (0.021)	0.051*** (0.020)	0.039** (0.018)	0.033* (0.017)	0.024 (0.017)	0.014 (0.016)	0.008 (0.016)	-0.002 (0.015)	0.000 (0.015)	-0.008 (0.014)	-0.002 (0.014)	-0.017 (0.013)	-0.016 (0.013)	-0.019 (0.012)
Household size	0.029*** (0.002)	0.029*** (0.002)	0.028*** (0.001)	0.028*** (0.001)	0.029*** (0.001)	0.029*** (0.001)	0.028*** (0.001)	0.029*** (0.001)	0.029*** (0.001)	0.028*** (0.001)	0.028*** (0.001)	0.028*** (0.001)	0.028*** (0.001)	0.028*** (0.001)	0.028*** (0.001)	0.028*** (0.001)
Household head literate	0.080*** (0.013)	0.080*** (0.012)	0.070*** (0.011)	0.066*** (0.010)	0.071*** (0.009)	0.068*** (0.009)	0.070*** (0.009)	0.075*** (0.008)	0.075*** (0.008)	0.073*** (0.008)	0.075*** (0.007)	0.077*** (0.007)	0.078*** (0.007)	0.076*** (0.007)	0.077*** (0.006)	0.077*** (0.006)
Employer	-0.010 (0.020)	-0.006 (0.018)	-0.004 (0.016)	-0.002 (0.015)	-0.006 (0.014)	-0.008 (0.014)	-0.013 (0.013)	-0.014 (0.013)	-0.014 (0.012)	-0.008 (0.012)	-0.013 (0.012)	-0.015 (0.011)	-0.021* (0.011)	-0.020* (0.010)	-0.019* (0.010)	-0.016* (0.010)
Employee	-0.045** (0.018)	-0.050*** (0.016)	-0.045*** (0.014)	-0.044*** (0.013)	-0.053*** (0.012)	-0.056*** (0.012)	-0.055*** (0.011)	-0.049*** (0.011)	-0.047*** (0.011)	-0.046*** (0.010)	-0.047*** (0.010)	-0.049*** (0.010)	-0.053*** (0.009)	-0.054*** (0.009)	-0.053*** (0.008)	-0.053*** (0.008)
Farmer	-0.031* (0.018)	-0.033** (0.016)	-0.033** (0.015)	-0.028** (0.014)	-0.036*** (0.013)	-0.039*** (0.012)	-0.038*** (0.012)	-0.029** (0.012)	-0.029** (0.011)	-0.030*** (0.011)	-0.027*** (0.010)	-0.027*** (0.010)	-0.027*** (0.010)	-0.032*** (0.009)	-0.031*** (0.009)	-0.030*** (0.009)
Constant	9.270*** (0.024)	9.275*** (0.021)	9.280*** (0.019)	9.280*** (0.017)	9.271*** (0.016)	9.277*** (0.016)	9.277*** (0.016)	9.263*** (0.016)	9.267*** (0.016)	9.279*** (0.016)	9.283*** (0.015)	9.279*** (0.015)	9.281*** (0.014)	9.279*** (0.013)	9.274*** (0.013)	9.270*** (0.013)
Observations	1247	1519	1816	2112	2406	2687	2932	3151	3429	3771	4040	4277	4561	4923	5235	5495

Notes: This table presents the results of DID regressions examining relationship election period and consumption patterns in democratic regime. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Regression results: Sub food groups

Table C.6. Regression results: Wheat

Window:	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Post	0.058***	0.049***	0.035***	0.030**	0.008	0.010	0.006	0.011	0.003	-0.010	-0.013	-0.022**	-0.019**	-0.016**	-0.026***	-0.029***
	(0.017)	(0.015)	(0.013)	(0.012)	(0.012)	(0.011)	(0.011)	(0.010)	(0.010)	(0.009)	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)
Treated	-0.003	-0.002	-0.027*	-0.038***	-0.057***	-0.050***	-0.051***	-0.051***	-0.044***	-0.051***	-0.049***	-0.049***	-0.039***	-0.034***	-0.041***	-0.043***
	(0.020)	(0.017)	(0.015)	(0.014)	(0.013)	(0.012)	(0.011)	(0.011)	(0.011)	(0.010)	(0.010)	(0.009)	(0.009)	(0.009)	(0.009)	(0.008)
Post * Treated	0.008	-0.011	0.022	0.030	0.053***	0.050***	0.055***	0.042***	0.025	0.036**	0.031**	0.028**	0.013	0.005	0.013	0.019
	(0.026)	(0.023)	(0.022)	(0.020)	(0.019)	(0.018)	(0.017)	(0.016)	(0.015)	(0.015)	(0.014)	(0.014)	(0.013)	(0.013)	(0.013)	(0.012)
Household size	0.129***	0.128***	0.125***	0.125***	0.125***	0.124***	0.125***	0.124***	0.124***	0.125***	0.124***	0.124***	0.124***	0.124***	0.124***	0.124***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Household head literate	0.009	0.003	0.003	-0.006	-0.016*	-0.012	-0.020**	-0.020**	-0.023***	-0.021***	-0.022***	-0.025***	-0.028***	-0.029***	-0.029***	-0.030***
	(0.013)	(0.012)	(0.011)	(0.010)	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)	(0.006)	(0.006)
Employer	-0.045**	-0.026	-0.033*	-0.021	-0.018	-0.013	-0.009	-0.011	-0.011	-0.011	-0.013	-0.008	-0.006	-0.003	-0.003	-0.003
	(0.021)	(0.018)	(0.017)	(0.016)	(0.015)	(0.014)	(0.013)	(0.013)	(0.012)	(0.012)	(0.011)	(0.011)	(0.011)	(0.010)	(0.010)	(0.010)
Employee	-0.060***	-0.051***	-0.049***	-0.045***	-0.046***	-0.042***	-0.035***	-0.032***	-0.028***	-0.028***	-0.027***	-0.023**	-0.023**	-0.021**	-0.018**	-0.018**
	(0.017)	(0.015)	(0.014)	(0.013)	(0.012)	(0.012)	(0.011)	(0.011)	(0.010)	(0.010)	(0.010)	(0.009)	(0.009)	(0.009)	(0.008)	(0.008)
Farmer	-0.023	-0.011	-0.024	-0.037**	-0.034**	-0.035**	-0.032**	-0.028**	-0.018	-0.009	-0.003	0.004	0.009	0.013	0.017	0.019*
	(0.022)	(0.020)	(0.018)	(0.017)	(0.016)	(0.015)	(0.014)	(0.014)	(0.013)	(0.013)	(0.012)	(0.012)	(0.011)	(0.011)	(0.011)	(0.010)
Constant	6.483***	6.488***	6.516***	6.524***	6.541***	6.536***	6.530***	6.534***	6.537***	6.544***	6.549***	6.558***	6.556***	6.555***	6.559***	6.558***
	(0.025)	(0.022)	(0.022)	(0.021)	(0.019)	(0.018)	(0.017)	(0.019)	(0.018)	(0.017)	(0.016)	(0.016)	(0.015)	(0.015)	(0.014)	(0.014)
Observations	5450	6755	8080	9208	10503	11705	12757	13661	14843	16180	17216	18200	19482	20835	21984	22949

Notes: This table presents the results of DID regressions examining relationship election period and consumption patterns in democratic regime. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table C.7. Regression results: Rice

Window:	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Post	-0.041	-0.006	0.032	0.026	0.033	0.013	-0.014	-0.024	-0.006	0.016	0.049***	0.056***	0.078***	0.086***	0.101***	0.091***
	(0.028)	(0.026)	(0.023)	(0.022)	(0.021)	(0.020)	(0.019)	(0.019)	(0.018)	(0.017)	(0.016)	(0.016)	(0.015)	(0.015)	(0.015)	(0.014)
Treated	-0.052	-0.080***	-0.114***	-0.151***	-0.163***	-0.171***	-0.188***	-0.172***	-0.153***	-0.130***	-0.105***	-0.098***	-0.083***	-0.077***	-0.068***	-0.086***
	(0.033)	(0.029)	(0.025)	(0.023)	(0.022)	(0.020)	(0.019)	(0.019)	(0.019)	(0.018)	(0.018)	(0.017)	(0.017)	(0.016)	(0.016)	(0.016)
Post * Treated	-0.092**	-0.038	-0.007	0.040	0.062**	0.067**	0.098***	0.072***	0.043*	0.012	-0.032	-0.037	-0.053**	-0.061***	-0.077***	-0.060***
	(0.043)	(0.039)	(0.035)	(0.033)	(0.031)	(0.029)	(0.028)	(0.027)	(0.026)	(0.025)	(0.025)	(0.024)	(0.023)	(0.022)	(0.022)	(0.021)
Household size	0.105***	0.103***	0.099***	0.098***	0.097***	0.097***	0.096***	0.094***	0.095***	0.096***	0.096***	0.096***	0.096***	0.095***	0.095***	0.096***
	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Household head literate	0.144***	0.148***	0.156***	0.154***	0.154***	0.167***	0.163***	0.173***	0.174***	0.176***	0.173***	0.177***	0.180***	0.179***	0.186***	0.190***
	(0.022)	(0.020)	(0.018)	(0.017)	(0.016)	(0.015)	(0.014)	(0.014)	(0.013)	(0.013)	(0.013)	(0.012)	(0.012)	(0.011)	(0.011)	(0.011)
Employer	0.065*	0.028	0.017	0.001	-0.008	-0.009	-0.018	-0.011	-0.009	-0.013	-0.012	-0.012	-0.016	-0.024	-0.021	-0.014
	(0.035)	(0.031)	(0.029)	(0.027)	(0.025)	(0.024)	(0.023)	(0.022)	(0.021)	(0.021)	(0.020)	(0.020)	(0.019)	(0.018)	(0.018)	(0.017)
Employee	0.028	-0.009	-0.024	-0.030	-0.026	-0.026	-0.025	-0.028	-0.033*	-0.042**	-0.048***	-0.056***	-0.060***	-0.069***	-0.066***	-0.064***
	(0.028)	(0.025)	(0.023)	(0.022)	(0.020)	(0.019)	(0.019)	(0.018)	(0.017)	(0.017)	(0.016)	(0.016)	(0.015)	(0.015)	(0.015)	(0.014)
Farmer	0.275***	0.231***	0.211***	0.223***	0.230***	0.247***	0.246***	0.250***	0.229***	0.221***	0.208***	0.196***	0.197***	0.192***	0.191***	0.190***
	(0.039)	(0.035)	(0.032)	(0.030)	(0.028)	(0.026)	(0.025)	(0.025)	(0.024)	(0.023)	(0.022)	(0.021)	(0.021)	(0.020)	(0.020)	(0.019)
Constant	5.227***	5.233***	5.244***	5.266***	5.269***	5.270***	5.295***	5.306***	5.285***	5.263***	5.247***	5.242***	5.222***	5.226***	5.209***	5.211***
	(0.041)	(0.037)	(0.033)	(0.031)	(0.029)	(0.028)	(0.026)	(0.027)	(0.026)	(0.025)	(0.024)	(0.024)	(0.023)	(0.022)	(0.021)	(0.021)
Observations	5254	6487	7795	8890	10131	11292	12313	13185	14311	15583	16553	17483	18704	19986	21070	22012

Notes: This table presents the results of DID regressions examining relationship election period and consumption patterns in democratic regime. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table C.8. Regression results: Fruits

Window:	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Post	-0.027 (0.032)	0.007 (0.029)	0.025 (0.026)	-0.006 (0.025)	-0.002 (0.023)	0.004 (0.022)	0.003 (0.021)	-0.007 (0.021)	-0.019 (0.020)	-0.008 (0.019)	0.003 (0.018)	0.010 (0.018)	0.020 (0.017)	0.012 (0.017)	0.006 (0.016)	-0.005 (0.016)
Treated	0.109*** (0.040)	0.105*** (0.035)	0.109*** (0.030)	0.075*** (0.027)	0.096*** (0.026)	0.102*** (0.024)	0.092*** (0.023)	0.099*** (0.023)	0.103*** (0.022)	0.118*** (0.021)	0.124*** (0.021)	0.141*** (0.020)	0.158*** (0.019)	0.142*** (0.019)	0.126*** (0.018)	0.117*** (0.018)
Post * Treated	0.050 (0.053)	0.050 (0.047)	0.023 (0.043)	0.062 (0.040)	0.048 (0.037)	0.042 (0.035)	0.047 (0.034)	0.037 (0.033)	0.029 (0.031)	0.006 (0.030)	-0.006 (0.029)	-0.033 (0.028)	-0.045* (0.027)	-0.023 (0.026)	0.001 (0.026)	0.003 (0.025)
Household size	0.068*** (0.004)	0.069*** (0.004)	0.068*** (0.003)	0.066*** (0.003)	0.066*** (0.003)	0.066*** (0.003)	0.065*** (0.003)	0.066*** (0.002)	0.066*** (0.002)	0.066*** (0.002)	0.066*** (0.002)	0.067*** (0.002)	0.067*** (0.002)	0.066*** (0.002)	0.065*** (0.002)	0.066*** (0.002)
Household head literate	0.471*** (0.026)	0.475*** (0.023)	0.458*** (0.021)	0.451*** (0.020)	0.437*** (0.019)	0.435*** (0.018)	0.439*** (0.017)	0.442*** (0.016)	0.435*** (0.016)	0.444*** (0.015)	0.442*** (0.015)	0.441*** (0.014)	0.449*** (0.014)	0.451*** (0.013)	0.459*** (0.013)	0.466*** (0.013)
Employer	-0.121*** (0.043)	-0.094** (0.039)	-0.104*** (0.035)	-0.108*** (0.033)	-0.088*** (0.031)	-0.076*** (0.029)	-0.080*** (0.028)	-0.081*** (0.027)	-0.079*** (0.026)	-0.076*** (0.025)	-0.075*** (0.024)	-0.084*** (0.023)	-0.097*** (0.023)	-0.101*** (0.022)	-0.098*** (0.021)	-0.086*** (0.021)
Employee	-0.373*** (0.034)	-0.387*** (0.031)	-0.392*** (0.028)	-0.397*** (0.027)	-0.382*** (0.025)	-0.375*** (0.024)	-0.376*** (0.023)	-0.371*** (0.022)	-0.376*** (0.021)	-0.369*** (0.020)	-0.368*** (0.020)	-0.374*** (0.019)	-0.382*** (0.018)	-0.391*** (0.018)	-0.387*** (0.017)	-0.383*** (0.017)
Farmer	-0.310*** (0.042)	-0.309*** (0.038)	-0.328*** (0.035)	-0.317*** (0.032)	-0.296*** (0.030)	-0.289*** (0.029)	-0.283*** (0.028)	-0.277*** (0.027)	-0.277*** (0.026)	-0.261*** (0.025)	-0.248*** (0.024)	-0.247*** (0.023)	-0.258*** (0.023)	-0.268*** (0.022)	-0.267*** (0.021)	-0.263*** (0.021)
Constant	4.811*** (0.047)	4.780*** (0.042)	4.796*** (0.038)	4.841*** (0.035)	4.825*** (0.033)	4.814*** (0.032)	4.821*** (0.031)	4.817*** (0.029)	4.826*** (0.028)	4.810*** (0.027)	4.804*** (0.026)	4.804*** (0.025)	4.792*** (0.024)	4.808*** (0.024)	4.806*** (0.023)	4.808*** (0.022)
Observations	4820	5952	7148	8158	9245	10285	11213	12008	13031	14178	15050	15919	17024	18183	19185	20040

Notes: This table presents the results of DID regressions examining relationship election period and consumption patterns in democratic regime. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table C.9. Regression results: Vegetables

Window:	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Post	-0.065***	-0.088***	-0.124***	-0.123***	-0.107***	-0.086***	-0.074***	-0.059***	-0.041***	-0.017**	-0.011	-0.009	-0.006	-0.001	-0.005	-0.008
	(0.014)	(0.013)	(0.012)	(0.011)	(0.010)	(0.010)	(0.010)	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)	(0.007)	(0.007)	(0.007)
Treated	0.151***	0.088***	0.044***	0.054***	0.057***	0.062***	0.061***	0.068***	0.074***	0.093***	0.091***	0.086***	0.083***	0.078***	0.062***	0.052***
	(0.017)	(0.015)	(0.013)	(0.012)	(0.011)	(0.010)	(0.010)	(0.010)	(0.009)	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Post * Treated	0.024	0.087***	0.132***	0.130***	0.119***	0.102***	0.090***	0.070***	0.052***	0.018	0.020	0.028**	0.030***	0.034***	0.050***	0.057***
	(0.022)	(0.020)	(0.018)	(0.017)	(0.016)	(0.015)	(0.015)	(0.014)	(0.013)	(0.013)	(0.012)	(0.012)	(0.012)	(0.011)	(0.011)	(0.011)
Household size	0.088***	0.087***	0.085***	0.085***	0.084***	0.084***	0.084***	0.083***	0.083***	0.084***	0.084***	0.084***	0.084***	0.084***	0.084***	0.084***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Household head literate	0.117***	0.122***	0.118***	0.107***	0.104***	0.109***	0.108***	0.111***	0.112***	0.119***	0.118***	0.115***	0.116***	0.118***	0.120***	0.122***
	(0.011)	(0.010)	(0.009)	(0.009)	(0.008)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Employer	-0.021	-0.012	-0.010	-0.007	0.004	0.010	0.009	0.006	0.009	0.006	0.002	-0.002	-0.005	-0.004	-0.008	-0.008
	(0.018)	(0.016)	(0.015)	(0.014)	(0.013)	(0.012)	(0.012)	(0.012)	(0.011)	(0.011)	(0.010)	(0.010)	(0.010)	(0.009)	(0.009)	(0.009)
Employee	-0.097***	-0.099***	-0.097***	-0.088***	-0.083***	-0.082***	-0.083***	-0.084***	-0.083***	-0.086***	-0.085***	-0.087***	-0.089***	-0.090***	-0.093***	-0.097***
	(0.015)	(0.013)	(0.012)	(0.011)	(0.011)	(0.010)	(0.010)	(0.010)	(0.009)	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Farmer	0.018	-0.005	-0.001	0.010	0.010	0.008	0.008	0.013	0.013	0.010	0.011	0.012	0.010	0.009	0.003	-0.001
	(0.018)	(0.016)	(0.015)	(0.014)	(0.013)	(0.013)	(0.012)	(0.012)	(0.011)	(0.011)	(0.010)	(0.010)	(0.010)	(0.009)	(0.009)	(0.009)
Constant	5.645***	5.677***	5.729***	5.729***	5.725***	5.712***	5.712***	5.711***	5.699***	5.679***	5.678***	5.680***	5.677***	5.675***	5.680***	5.681***
	(0.022)	(0.019)	(0.019)	(0.017)	(0.016)	(0.015)	(0.015)	(0.015)	(0.015)	(0.014)	(0.013)	(0.013)	(0.012)	(0.012)	(0.012)	(0.011)
Observations	5533	6854	8221	9381	10686	11902	12961	13870	15059	16406	17447	18439	19739	21109	22274	23260

Notes: This table presents the results of DID regressions examining relationship election period and consumption patterns in democratic regime. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table C.10. Regression results: Dairy

Window:	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Post	-0.050**	-0.053***	-0.042**	-0.055***	-0.031*	-0.032**	-0.043***	-0.027*	-0.014	0.001	0.014	0.028**	0.040***	0.043***	0.046***	0.043***
	(0.023)	(0.021)	(0.019)	(0.018)	(0.017)	(0.016)	(0.015)	(0.015)	(0.014)	(0.014)	(0.013)	(0.013)	(0.012)	(0.012)	(0.012)	(0.012)
Treated	-0.058**	-0.071***	-0.092***	-0.114***	-0.107***	-0.098***	-0.098***	-0.077***	-0.063***	-0.048***	-0.036**	-0.031**	-0.016	-0.016	-0.029**	-0.039***
	(0.028)	(0.024)	(0.021)	(0.019)	(0.018)	(0.017)	(0.016)	(0.016)	(0.015)	(0.015)	(0.015)	(0.014)	(0.014)	(0.014)	(0.014)	(0.013)
Post * Treated	0.076**	0.076**	0.089***	0.111***	0.102***	0.083***	0.079***	0.047**	0.025	-0.001	-0.018	-0.031	-0.050***	-0.045**	-0.030	-0.023
	(0.036)	(0.032)	(0.030)	(0.028)	(0.026)	(0.025)	(0.023)	(0.023)	(0.022)	(0.021)	(0.020)	(0.020)	(0.019)	(0.019)	(0.018)	(0.018)
Household size	0.074***	0.073***	0.071***	0.072***	0.071***	0.071***	0.071***	0.071***	0.071***	0.070***	0.069***	0.070***	0.070***	0.069***	0.069***	0.069***
	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)
Household head literate	0.287***	0.286***	0.283***	0.289***	0.283***	0.285***	0.285***	0.288***	0.290***	0.293***	0.293***	0.297***	0.302***	0.304***	0.312***	0.315***
	(0.018)	(0.016)	(0.015)	(0.014)	(0.013)	(0.012)	(0.012)	(0.011)	(0.011)	(0.011)	(0.010)	(0.010)	(0.010)	(0.010)	(0.009)	(0.009)
Employer	0.003	-0.001	-0.012	-0.019	-0.018	-0.015	-0.019	-0.014	-0.012	-0.006	-0.014	-0.013	-0.010	-0.017	-0.019	-0.015
	(0.030)	(0.027)	(0.025)	(0.023)	(0.022)	(0.021)	(0.020)	(0.019)	(0.018)	(0.018)	(0.017)	(0.017)	(0.016)	(0.016)	(0.016)	(0.015)
Employee	-0.162***	-0.183***	-0.186***	-0.187***	-0.187***	-0.184***	-0.184***	-0.177***	-0.170***	-0.171***	-0.174***	-0.178***	-0.181***	-0.187***	-0.189***	-0.188***
	(0.024)	(0.022)	(0.020)	(0.019)	(0.018)	(0.017)	(0.016)	(0.015)	(0.015)	(0.015)	(0.014)	(0.014)	(0.013)	(0.013)	(0.013)	(0.012)
Farmer	0.232***	0.205***	0.198***	0.194***	0.204***	0.202***	0.206***	0.209***	0.209***	0.218***	0.224***	0.223***	0.218***	0.218***	0.218***	0.216***
	(0.029)	(0.027)	(0.024)	(0.023)	(0.021)	(0.020)	(0.019)	(0.019)	(0.018)	(0.017)	(0.017)	(0.016)	(0.016)	(0.015)	(0.015)	(0.015)
Constant	6.529***	6.559***	6.571***	6.583***	6.573***	6.570***	6.580***	6.567***	6.549***	6.539***	6.537***	6.525***	6.512***	6.514***	6.506***	6.508***
	(0.034)	(0.030)	(0.027)	(0.025)	(0.024)	(0.023)	(0.022)	(0.021)	(0.020)	(0.020)	(0.019)	(0.019)	(0.018)	(0.018)	(0.017)	(0.017)
Observations	5415	6704	8037	9161	10415	11609	12627	13517	14690	16014	17037	18019	19302	20648	21795	22783

Notes: This table presents the results of DID regressions examining relationship election period and consumption patterns in democratic regime. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table C.11. Regression results: Cooking oil

Window:	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Post	0.012	0.021*	0.015	0.009	0.000	-0.000	0.006	0.007	0.015*	0.025***	0.035***	0.040***	0.050***	0.052***	0.049***	0.045***
	(0.014)	(0.013)	(0.011)	(0.011)	(0.010)	(0.010)	(0.010)	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)	(0.007)	(0.007)	(0.007)
Treated	-0.116***	-0.149***	-0.176***	-0.189***	-0.206***	-0.208***	-0.201***	-0.190***	-0.177***	-0.158***	-0.148***	-0.136***	-0.125***	-0.124***	-0.123***	-0.123***
	(0.017)	(0.015)	(0.014)	(0.013)	(0.012)	(0.011)	(0.011)	(0.011)	(0.010)	(0.010)	(0.010)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Post * Treated	-0.004	0.022	0.051***	0.065***	0.086***	0.087***	0.075***	0.051***	0.029**	0.006	-0.012	-0.025*	-0.036***	-0.043***	-0.044***	-0.048***
	(0.023)	(0.021)	(0.019)	(0.018)	(0.017)	(0.016)	(0.016)	(0.015)	(0.015)	(0.014)	(0.014)	(0.013)	(0.013)	(0.012)	(0.012)	(0.012)
Household size	0.095***	0.096***	0.095***	0.094***	0.094***	0.094***	0.095***	0.094***	0.094***	0.094***	0.094***	0.094***	0.094***	0.094***	0.094***	0.094***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Household head literate	0.139***	0.147***	0.140***	0.138***	0.129***	0.134***	0.133***	0.138***	0.140***	0.142***	0.143***	0.140***	0.140***	0.141***	0.139***	0.138***
	(0.011)	(0.010)	(0.010)	(0.009)	(0.008)	(0.008)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Employer	0.013	0.019	0.015	0.014	0.019	0.017	0.013	0.016	0.016	0.018*	0.014	0.010	0.011	0.008	0.007	0.007
	(0.018)	(0.017)	(0.015)	(0.014)	(0.014)	(0.013)	(0.012)	(0.012)	(0.011)	(0.011)	(0.011)	(0.010)	(0.010)	(0.010)	(0.009)	(0.009)
Employee	-0.081***	-0.080***	-0.083***	-0.084***	-0.077***	-0.081***	-0.080***	-0.075***	-0.071***	-0.073***	-0.076***	-0.076***	-0.078***	-0.081***	-0.080***	-0.079***
	(0.015)	(0.014)	(0.013)	(0.012)	(0.011)	(0.011)	(0.010)	(0.010)	(0.010)	(0.009)	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)
Farmer	0.071***	0.056***	0.040**	0.038**	0.039***	0.037***	0.039***	0.043***	0.041***	0.039***	0.041***	0.040***	0.043***	0.046***	0.046***	0.045***
	(0.019)	(0.018)	(0.016)	(0.016)	(0.015)	(0.014)	(0.013)	(0.013)	(0.013)	(0.012)	(0.012)	(0.011)	(0.011)	(0.010)	(0.010)	(0.010)
Constant	6.177***	6.161***	6.185***	6.196***	6.203***	6.198***	6.188***	6.185***	6.171***	6.166***	6.161***	6.156***	6.145***	6.146***	6.149***	6.152***
	(0.023)	(0.020)	(0.020)	(0.018)	(0.017)	(0.016)	(0.015)	(0.016)	(0.015)	(0.014)	(0.014)	(0.013)	(0.013)	(0.012)	(0.012)	(0.012)
Observations	5512	6827	8193	9344	10636	11847	12905	13809	14993	16335	17371	18355	19648	21004	22155	23138

Notes: This table presents the results of DID regressions examining relationship election period and consumption patterns in democratic regime. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table C.12. Regression results: Meat

Window:	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Post	-0.073**	-0.029	-0.008	-0.009	0.016	0.016	-0.010	-0.065***	-0.148***	-0.201***	-0.229***	-0.219***	-0.169***	-0.159***	-0.137***	-0.137***
	(0.030)	(0.027)	(0.025)	(0.023)	(0.022)	(0.021)	(0.021)	(0.020)	(0.020)	(0.019)	(0.019)	(0.018)	(0.018)	(0.017)	(0.017)	(0.016)
Treated	0.046	0.008	-0.028	-0.039	-0.051**	-0.065***	-0.084***	-0.133***	-0.201***	-0.255***	-0.271***	-0.230***	-0.128***	-0.032	0.080***	0.169***
	(0.037)	(0.032)	(0.028)	(0.026)	(0.024)	(0.023)	(0.022)	(0.022)	(0.022)	(0.021)	(0.021)	(0.021)	(0.020)	(0.020)	(0.020)	(0.019)
Post * Treated	0.011	0.044	0.063	0.085**	0.096***	0.115***	0.131***	0.164***	0.230***	0.264***	0.279***	0.236***	0.129***	0.032	-0.084***	-0.177***
	(0.049)	(0.044)	(0.040)	(0.037)	(0.035)	(0.033)	(0.032)	(0.031)	(0.030)	(0.029)	(0.029)	(0.028)	(0.027)	(0.026)	(0.026)	(0.025)
Household size	0.085***	0.085***	0.085***	0.086***	0.086***	0.088***	0.088***	0.088***	0.087***	0.085***	0.084***	0.083***	0.084***	0.085***	0.083***	0.084***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Household head literate	0.391***	0.380***	0.368***	0.360***	0.356***	0.367***	0.371***	0.367***	0.356***	0.348***	0.341***	0.337***	0.333***	0.329***	0.338***	0.344***
	(0.024)	(0.022)	(0.020)	(0.019)	(0.018)	(0.017)	(0.016)	(0.016)	(0.015)	(0.015)	(0.015)	(0.014)	(0.014)	(0.013)	(0.013)	(0.013)
Employer	-0.089**	-0.091**	-0.102***	-0.100***	-0.071**	-0.068**	-0.076***	-0.088***	-0.099***	-0.098***	-0.102***	-0.099***	-0.111***	-0.108***	-0.104***	-0.096***
	(0.040)	(0.036)	(0.033)	(0.031)	(0.029)	(0.028)	(0.027)	(0.026)	(0.025)	(0.025)	(0.024)	(0.023)	(0.023)	(0.022)	(0.022)	(0.021)
Employee	-0.219***	-0.233***	-0.241***	-0.242***	-0.218***	-0.217***	-0.222***	-0.216***	-0.217***	-0.220***	-0.221***	-0.218***	-0.227***	-0.218***	-0.213***	-0.213***
	(0.032)	(0.029)	(0.027)	(0.025)	(0.023)	(0.023)	(0.022)	(0.021)	(0.021)	(0.020)	(0.020)	(0.019)	(0.019)	(0.018)	(0.018)	(0.017)
Farmer	-0.243***	-0.266***	-0.295***	-0.285***	-0.288***	-0.284***	-0.287***	-0.272***	-0.242***	-0.213***	-0.208***	-0.209***	-0.212***	-0.212***	-0.202***	-0.205***
	(0.039)	(0.035)	(0.032)	(0.030)	(0.028)	(0.027)	(0.027)	(0.026)	(0.025)	(0.024)	(0.024)	(0.023)	(0.023)	(0.022)	(0.022)	(0.021)
Constant	5.595***	5.578***	5.597***	5.589***	5.555***	5.534***	5.553***	5.614***	5.699***	5.775***	5.814***	5.808***	5.761***	5.737***	5.714***	5.705***
	(0.044)	(0.040)	(0.036)	(0.033)	(0.031)	(0.030)	(0.030)	(0.029)	(0.028)	(0.028)	(0.027)	(0.026)	(0.026)	(0.025)	(0.024)	(0.024)
Observations	5211	6440	7729	8844	10079	11214	12217	13093	14231	15527	16509	17452	18679	20002	21146	22111

Notes: This table presents the results of DID regressions examining relationship election period and consumption patterns in democratic regime. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table C.13. Regression results: Other

Window:	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Post	-0.035*	-0.009	0.013	-0.009	0.008	0.005	-0.008	-0.014	-0.008	0.002	0.007	0.010	0.030***	0.024**	0.013	-0.003
	(0.019)	(0.017)	(0.015)	(0.015)	(0.014)	(0.013)	(0.013)	(0.012)	(0.012)	(0.011)	(0.011)	(0.010)	(0.010)	(0.010)	(0.010)	(0.009)
Treated	0.215***	0.181***	0.202***	0.191***	0.189***	0.187***	0.196***	0.204***	0.224***	0.250***	0.252***	0.247***	0.269***	0.263***	0.247***	0.232***
	(0.024)	(0.020)	(0.018)	(0.016)	(0.015)	(0.014)	(0.014)	(0.013)	(0.013)	(0.013)	(0.012)	(0.012)	(0.012)	(0.011)	(0.011)	(0.011)
Post * Treated	0.015	0.052*	0.010	0.027	0.032	0.038*	0.022	0.007	-0.014	-0.043**	-0.049***	-0.045***	-0.069***	-0.062***	-0.045***	-0.031**
	(0.031)	(0.028)	(0.025)	(0.023)	(0.022)	(0.021)	(0.020)	(0.019)	(0.018)	(0.018)	(0.017)	(0.017)	(0.016)	(0.016)	(0.015)	(0.015)
Household size	0.091***	0.090***	0.089***	0.089***	0.089***	0.088***	0.088***	0.086***	0.086***	0.086***	0.085***	0.084***	0.085***	0.084***	0.084***	0.084***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Household head literate	0.231***	0.228***	0.217***	0.212***	0.199***	0.204***	0.199***	0.206***	0.206***	0.214***	0.218***	0.220***	0.224***	0.230***	0.235***	0.239***
	(0.015)	(0.013)	(0.012)	(0.011)	(0.011)	(0.010)	(0.010)	(0.009)	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)	(0.007)	(0.007)
Employer	0.002	0.010	0.017	0.008	0.024	0.029	0.029*	0.029*	0.032**	0.035**	0.025*	0.019	0.014	0.012	0.014	0.017
	(0.027)	(0.024)	(0.022)	(0.020)	(0.019)	(0.018)	(0.017)	(0.016)	(0.016)	(0.015)	(0.015)	(0.014)	(0.014)	(0.013)	(0.013)	(0.013)
Employee	-0.067***	-0.073***	-0.065***	-0.061***	-0.046***	-0.038***	-0.035**	-0.031**	-0.028**	-0.024**	-0.028**	-0.030**	-0.036***	-0.046***	-0.043***	-0.047***
	(0.021)	(0.019)	(0.017)	(0.016)	(0.015)	(0.014)	(0.014)	(0.013)	(0.013)	(0.012)	(0.012)	(0.012)	(0.011)	(0.011)	(0.011)	(0.010)
Farmer	-0.071***	-0.079***	-0.082***	-0.064***	-0.062***	-0.057***	-0.051***	-0.046***	-0.048***	-0.047***	-0.044***	-0.046***	-0.049***	-0.059***	-0.063***	-0.069***
	(0.024)	(0.021)	(0.020)	(0.019)	(0.017)	(0.017)	(0.016)	(0.016)	(0.015)	(0.014)	(0.014)	(0.013)	(0.013)	(0.012)	(0.012)	(0.012)
Constant	6.651***	6.646***	6.639***	6.658***	6.646***	6.640***	6.653***	6.663***	6.655***	6.639***	6.644***	6.649***	6.633***	6.640***	6.649***	6.665***
	(0.030)	(0.026)	(0.024)	(0.022)	(0.021)	(0.020)	(0.019)	(0.019)	(0.018)	(0.017)	(0.017)	(0.016)	(0.016)	(0.015)	(0.015)	(0.014)
Observations	5565	6891	8260	9425	10736	11958	13023	13937	15130	16480	17529	18529	19844	21222	22397	23392

Notes: This table presents the results of DID regressions examining relationship election period and consumption patterns in democratic regime. Standard errors (in brackets) are robust to arbitrary heteroskedasticity. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

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2 More to the picture than meets the eye?

Governors' popularity, voters' polarization and political budget cycles[9]

2.1 Introduction

There is now a large amount of literature on Political Budget Cycles (PBCs). Some results are now clearly established, among which the presence of PBCs, at both the national and local levels, in developed and developing economies (see, e.g., the surveys by Dubois, 2016 and Philips, 2016). However, there are still some missing links between some elements of the reasoning undermining the existence of PBCs in democracies. In this paper, we revisit the literature on PBCs by highlighting how the incentives of politicians and the characteristics of the polity they have to convince can condition the size of their manipulation of budgets. We focus on the United States, as it is probably the country that has been most studied in the literature (as confirmed by Potrafke, 2018), and we look at the state level and gubernatorial elections, to gain insights from a large number of observations. Governors may tweak budgets (i.e., engineer PBCs) in order to enhance their popularity and, by way of consequence, their probability of re-election. The literature has shown ideologically induced policies to be prevalent at the state level, with Democratic governors implementing more expansionary policies than Republican governors (Potrafke, 2018). Yet, do popular governors have the same incentives to boost their popularity through pre-electoral expansions as unpopular ones? Popular governors may not need to manipulate spending and, on the opposite, a very unpopular governor would not need to use

[9] This chapter is co-authored with Etienne Farvaque and Nicolas Ooghe from University of Lille.

discretionary policy. In both situations, for symmetric reasons, manipulating fiscal policy would be known in advance to be useless.

In other words, the mechanism for PBCs to be worth is the following: even though a governor has an incentive to create impulses in fiscal policy(ies) to be reelected, this can only have an impact if her popularity is high enough that re-election looks possible in the first place. Otherwise, no need to try to engineer an expansion as the election is lost from the start. This popularity-related incentive has not been fully considered in the extant literature, although it lies at the core of Hanusch & Magleby (2014) reasoning. It is thus the first contribution of this study to highlight the empirical importance of popularity on the manipulation of fiscal policy.

Our second contribution is to consider explicitly that polarization of the electorate, which is an important characteristic of the polity on which governors have to rely to get (re-)elected, strongly matters. That the American population is more polarized is now fully acknowledged in the debates (see, e.g., Alesina et al., 2020). The impact of the polarization on electoral manipulation has been theorized, in particular by Horz (2021) and (Callander & Carbajal (2020). If voters are strongly polarized, a governor engineering a PBC will get less credit for it from the part of the electorate that is far from her own position. In such a case, the incentives to use fiscal manipulation are strongly reduced. While Grechyna (2021) shows that polarization of the American electorate can influence the degree of mandatory spending, its empirical relevance for the use of discretionary expenditures to skew elections still needs to be confirmed. The second contribution of this research is thus to analyze empirically if polarization conditions the success of a PBC, by considering explicitly the influence popularity has in relation to polarization.

Theoretically, we mostly rely on Hanusch & Magleby (2014), who argue that there is a non-linear relationship between popularity and the size of political budget cycle, and on Horz (2021), who show that the non-linearity comes from the relation between polarization and fiscal policy. Our aim is thus to simultaneously account for both effects, to get a deeper understanding of how incumbents use fiscal policy to improve their reelection chances.

However, there are at least two difficulties in studying how popularity and polarization influence PBCs in American states. First, although data on the popularity of presidents of the United States is easily available, this is not the case for governors. We thus use a built-to-purpose specific dataset, using opinion poll surveys from different, yet consistent, sources, to obtain a continuous series of incumbent governors' popularity. For 32 of the American states (see appendix 2.A for the list), the series is continuous and complete, and our investigation is thus based on this sample, to base our results on a balanced panel. We are then able to confirm our results for the 50 states, i.e., including the states for which the popularity survey series are interrupted or discontinuous. Second, concerning polarization, we have used individual level surveys from the American National Election Study (ANES), aggregated by state. The key dependent variable is the real total state general expenditure, which includes general fund expenditures during the year as well as expenditures adjustments, a broad measure that comprises nearly all state-level spending. The data for other economic and political variables is also handpicked, coming from yearly 'Fiscal Survey of the States' by National Association of State Budget Officers (NASBO). Our dataset covers the period 1987 to 2017.

The structure of the paper is the following: we first review the literature, indicating how we complete the extant evidence. Second, we describe the dataset, in particular how we

have compiled the data on popularity and polarization. Third, we present the results and discuss their relevance and robustness. The last section concludes.

2.2 Relation with the literature

Do popular governments have the same incentives to boost their popularity through pre-electoral expansions than unpopular governments? On the opposite, would a very unpopular government really be tempted to use discretionary policy, as it would be known in advance to be useless? In other words, even though a government has an incentive to create impulses in fiscal policy(ies) to be reelected, this can only have an impact if the popularity of the government is high enough that re-election looks possible in the first place. Otherwise, no need to try to engineer an expansion as the election is lost from the start. Schultz (1995) has argued along that line, claiming that most tests of political budget cycles (PBCs) suffer from a serious shortcoming: they are based on the (often implicit) assumption that the government's incentives to manipulate the economy do not vary greatly from one election to the next. He claims on the opposite that both the expected benefits and the expected costs of political manipulations depend on the government's electoral chances. When the government is safe, the potential benefits are small while costs are large. When the government is unpopular, the potential benefits are great while the costs are discounted heavily. Therefore, there will be an inverse relationship between the government's reelection chances and the degree to which the government engages in pre-election manipulations of the economy.

The assumption underlying the theory of PBCs is that governments in democratic countries seek re-election for which they pursue fiscal expansions before elections to enhance their electoral prospects. Typically, Aidt et al. (2011) show that an incumbent politician increases her probability of re-election by increasing expenditures in the election year, and that the incentives to do so are greater when her ex-ante chances to win are low. This tends

to confirm the seminal argument of Frey & Schneider (1978), who advanced the hypothesis that the government will pursue ideological goals when it is popular and engage in opportunistic behavior when its popularity is low.

Hence, even though the empirical literature often delivers evidence of pre-electoral budget manipulation, the theoretical debate insists for the need to control for the size of the incentives the (un)popularity of the incumbent creates. One reason is probably that the knot is not so easy to sever as could be thought because (i) the relation between the incentives to engineer a politically-motivated budget cycle depends on the popularity of the incumbent, but also on the polarization of the electorate, a variable rarely considered in the empirical literature, and (ii) the relation between these two variables is probably non-linear (Horz, 2021).[10][11]

In some ways, the debate is reminiscent of the initial insight of Mosley's, (1976) "satisficing" theory of electioneering, in which an incumbent will trigger manipulations only when the voters' "attention filters" are crossed (Franzese, 2002). Such filters themselves depend upon the degree of polarization of the electorate. Polarization is the fact that there is a large, and increasing, gulf on attitudes about various political issues and stimuli between groups, and that has been shown to be particularly prevalent in the American electorate (see, e.g., Abramowitz & Saunders, 2008; Ahler, 2014; Westfall et al., 2015). It has been shown that polarization can matter, as electoral cycles appear to be larger in politically polarized countries, and that the phenomenon is not confined to newer or

[10] Another benefit of the model of Hanusch & Magleby (2014) is that it does not rely on the competence of the incumbent, which is a notoriously tricky concept to measure.

[11] It is out of the scope of the paper to look at the determinants of polarization. Acemoglu et al. (2016) or Dixit & Weibull (2007) provide theoretical arguments explaining the divergence of preferences and opinions in the electorate.

weaker democracies (Alt & Lassen, 2006). Even though people may have a stronger perception of polarization than it actually exists (Enders & Armaly, 2019), this may nevertheless distort their attention filters, and thus modify the incentives of the incumbent politicians.

All in all, a large literature now exists on Political Budget Cycles, and an exhaustive review would probably be impossible to realize, even though the surveys by Franzese, (2002), Dubois (2016), (Philips, 2016) and Potrafke (2018) cover a large amount of the academic works that have looked at the issue. These tend to confirm the presence of PBCs, at both the national and local levels, in developed and developing economies.

However, even if a meta-analysis confirms that the results are less and less subject to researchers' biases, the evidence brought forward by the literature is sometimes not fully conclusive, and / or reveals very small impacts, as emphasized by Mandon & Cazals (2019).

In our view, this may be due to the fact that the literature, more often than not, has not simultaneously considered popularity and polarization, nor the non-linearity that characterizes the relation between the variables of interest.

The goal of this article is thus to verify if the non-linearity is present, and how it impacts on the size of PBCs in the US states.

2.3 Data and method

To what extent do the popularity of the incumbent governor and the polarization of the population condition the realization of a political budget cycle? To answer this question, we use data covering the American states, for the period 1987 - 2017. The dependent variable we consider is the real total state general expenditure, which includes the general fund expenditures during the year, as well as expenditure adjustments. It is thus a broad measure that comprises nearly all state-level spending meaning that, if anything, our results may suffer from an underestimation bias. According to the National Association of State Budget Officers (NASBO) the major component of total state expenditures is, in 2018, general fund expenditures, representing 40.5 percent of total state spending, followed by the federal funds (31.2 percent), other state funds (26.5 percent) and bonds (1.8 percent). The variable is taken from the 'Fiscal Survey of the States', a report NASBO publishes every year. Table 2.1 presents the statistics for this and all the other variables we consider in the analysis.

As stated above, both an incumbent with no chance of re-election (being very unpopular), and an incumbent who is certain to get re-elected (being very popular), have little incentives to manipulate the state spending for electoral purposes. Thus, we want to explore if the effects of popularity impact the degree of manipulation of the budget by governors in the US states. However, at the state level, popularity data for politicians are notoriously difficult to obtain on a regular and consistent basis, which makes it difficult to study this topic comprehensively (Hanusch & Magleby, 2014).

Table 2. 1 Descriptive statistics

Variable	Obs.	Mean	Median	Std. Dev.	Min	Max
Log (real total state expenditure)	960	9.20	9.26	0.95	6.16	11.47
Polarization (Ratio of Liberal to Conservative)	890	0.73	0.61	0.53	0	6
Polarization (Herfindahl Hirschman index, HHI)	890	2357	2240	491.21	1593	6250
Polarization ("> median value" dummy)	992	0.54	-	0.49	0	1
Variance of Polarization	890	5.22^8	3.3^8	1	1809.58	1.62^9
Popularity	807	0.55	0.56	0.16	0.097	0.948
Log (win margin)	992	2.22	2.46	1.17	-5.3	4.17
Election year (dummy)	992	0.24	-	0.43	0	1
Republican Governor (dummy)	992	0.49	-	0.50	0	1
Governor Lame-duck	992	0.26	-	0.44	0	1
Total resources / GDP	992	1.52	1.52	0.27	0.48	2.16
Log (real Gross State Product)	992	12.31	12.33	0.88	9.79	14.58
Log (real State debt per capita)	992	7.63	7.62s	0.64	5.21	9.26
Turnout rate	992	47.43	47.25	11.36	21.4	74.2
Balanced Budget Rules	992	2.34	-	0.86	0	3
Population (% of < 15 years)	992	20.5	20.46	1.63	15.6	26.6
Population (% of > 65 years)	992	13.2	13.12	1.9	9.1	20.15

We have thus collected data on popularity, relying on several sources. First, we have used the Governors job approval ratings dataset created by Beyle et al. (2002), and updated for several years after. This provides governors approval ratings up to 2009[12]. This has been completed using Public policy polling, Ballotopedia, "talking points" memos, polling reports, Arizona politics, Rasmussen reports, the Washington Post, as well as data reported in the five-thirty-eight blog. This has allowed us to create a continuous series for 32 states, from 1987 to 2017. The consistency of the series has been ensured in two ways. First, we have selected sources in a very similar question was asked, along the following model:

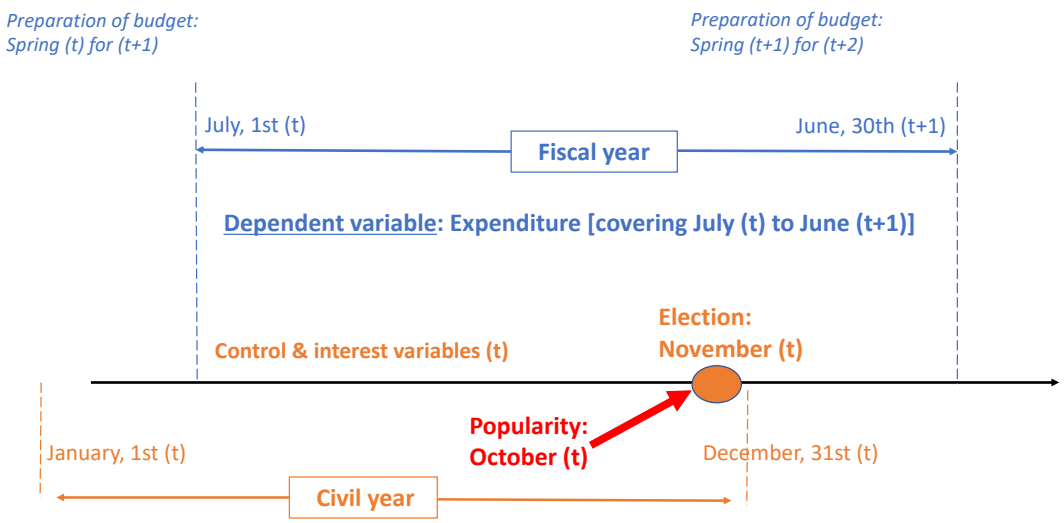
[12] See https://jmj313.web.lehigh.edu/node/6.

Q: Do you approve or disapprove of Governor [abc's] job performance?

In general, there are three options available to respondents: 1) approve, 2) disapprove and 3) not sure. Similarly, e.g., King & Cohen (2005), we have calculated the popularity of the incumbent governor according to the following formula: *State i's governor popularity = percent positive / (percent positive + percent negative).* This includes positive and negative approvals of the respondents but disregards the option 'not sure'.

Second, the consistency of the data has been ensured by considering polls taken right before the election, that is, in October of the election year. This is important, because calendar considerations are key in the American context, if only because the fiscal year does not correspond to the civil year in the US states (and this will thus matter when defining the variable, the incumbent will consider manipulating). Figure 2.1 exposes the timeline of the different parts of the dataset, and how they have to be considered to avoid running misleading or spurious regressions (in particular when we will consider election years separately – see below). However, it has to be signaled that popularity figures are the limiting ones, and induce us to base our analysis on a balanced panel of 32 American states. These are the ones for which the popularity series are complete. We will provide estimates for the 50 states, under a caveat due to the discontinuity of the popularity measures for some states.

Figure 2. 1 Timeline: fiscal, electoral and control variables



Source: Authors.

Concerning polarization, we define it by relying on the ideological self-identification of the people, i.e., how they place themselves on a liberal-conservative continuum. It has been regularly confirmed that polarization in the American public has increased over the last decades (see, for example, Alesina et al., 2020, or Enders & Armaly, 2019). Standardly, to explore the effects of polarization on the incentives to use political budget cycle by the governors, we rely on the surveys conducted by American National Election Studies (ANES), and aggregate individual level surveys by state.[13] The particular question of interest in the survey is:

[13] An issue with these surveys is that they are conducted once every other year, mostly during even years. As our sample period ranges from 1987 till 2017, we have interpolated our aggregated state level data from ANES cumulative file to ensure continuity of the dataset.

> *Q: We hear a lot of talk these days about liberals and conservatives. When it comes to politics, do you usually think of yourself as extremely liberal, liberal, slightly liberal, moderate, slightly conservative, conservative, extremely conservative or haven't you thought much about this?*

The following options are available to the respondents: 1) Extremely liberal, 2) Liberal, 3) Slightly liberal, 4) Moderate, 5) Slightly conservative, 6) Conservative, 7) Extremely conservative, 8) Don't know or haven't thought much about it. Disregarding the option "don't know" and "haven't thought much about it", we keep seven categories. Figure 2.2 displays the categories for the balanced panel of 32 states. As can be seen, the proportion of surveyed people defining themselves as "Conservative" or "Liberal" tend to increase over time, while the proportion of "Moderate" tends to decrease, with an acceleration in the last years of the period. As a consequence, the ratio of Liberals to Conservative tends to increase over time, as can be seen in figure 2.3.

The variance of the self-positioning into the seven categories by the respondents to the ANES surveys also gets higher and higher, as figure 2.4 shows. This reveal both an increased polarization over time of the average American, but also a growing volatility in - and between - the categories themselves. Another way to capture these trends is shown in figure 2.5, which displays how the value of the Herfindahl-Hirschman index of self-positioning categories (HHI, defined as the sum of the squared share of each type of answer to the survey) evolves over time. This shows a negative trend, corresponding to the fact that the people who are surveyed tend to classify themselves differently over time (hence the higher volatility in figure 2.4), but also relatively large variations over time, or

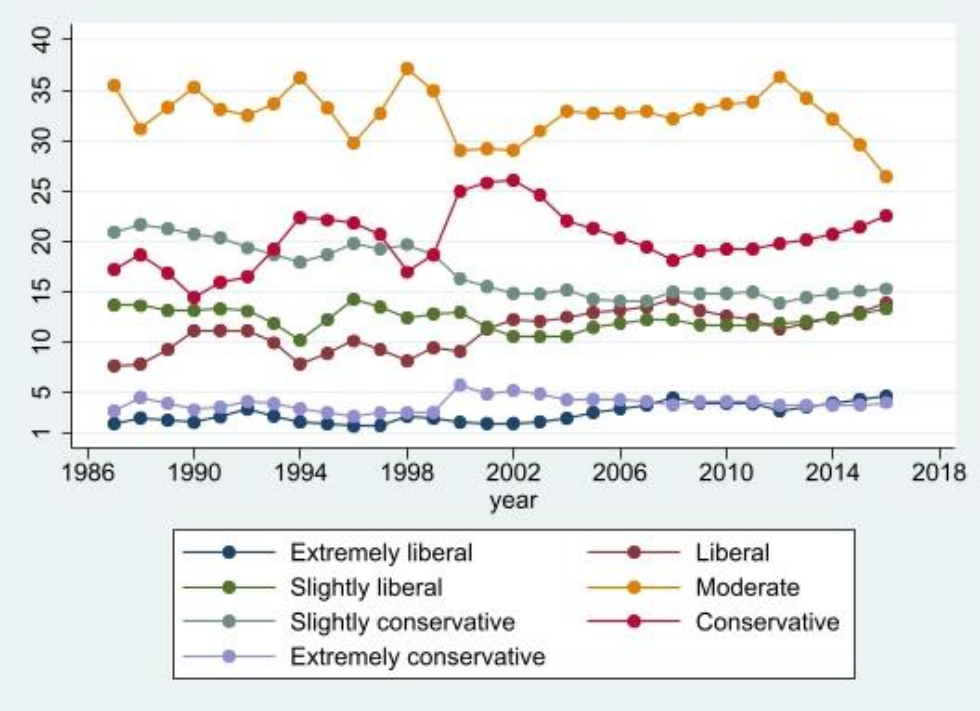
fluctuations in the degree of polarization, which may indicate that some periods can be even more polarizing than others.

As can be seen from Table 2.1, the mean value of Herfindahl-Hirschman index of self-positioning categories is 2357, and its median value is equal to 2240. The difference between the median and the mean of the HHI is thus equal to 117, meaning an average difference of 18% in the self-placement of the respondents, which can be considered as relatively important.[14] As a consequence, we will define a state to have a high degree of polarization if it is superior to the median value, and accordingly create a dummy indicating if a state is a "high polarization" one.

As a consequence, in the estimates below, not only will we include polarization, as it appears to be an important feature of the American electorate, but we will consider different measures of polarization, as they may correspond to different incentives for incumbent governors.

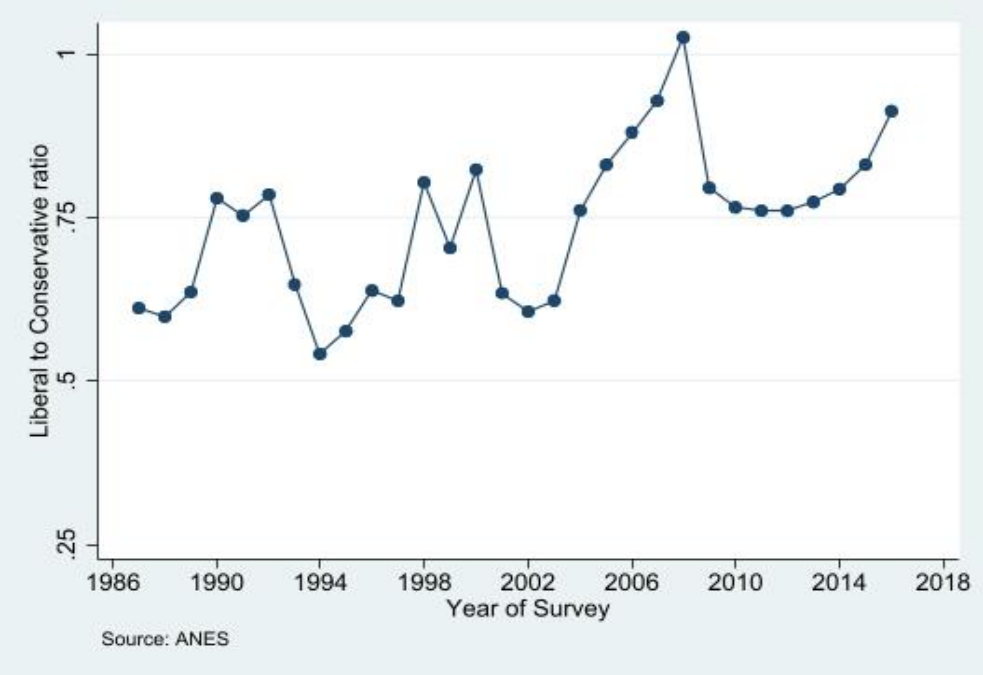
[14] In itself, this distribution, with a mean superior to the median, can be considered as a revelator of the polarization of the American society, as it means that the average share of self-placement is superior to the ones that cover 50% of the total population.

Figure 2. 2 Self-positioning of the American electorate, 32 states



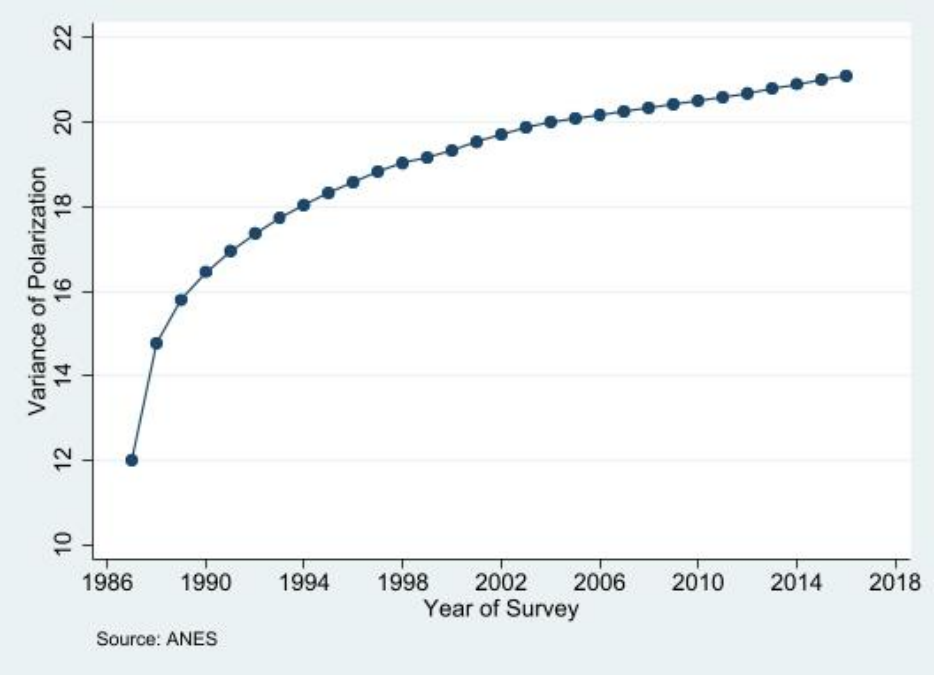
Source: Authors, from ANES data.

Figure 2. 3 Ratio of Liberals to Conservatives, 32 states



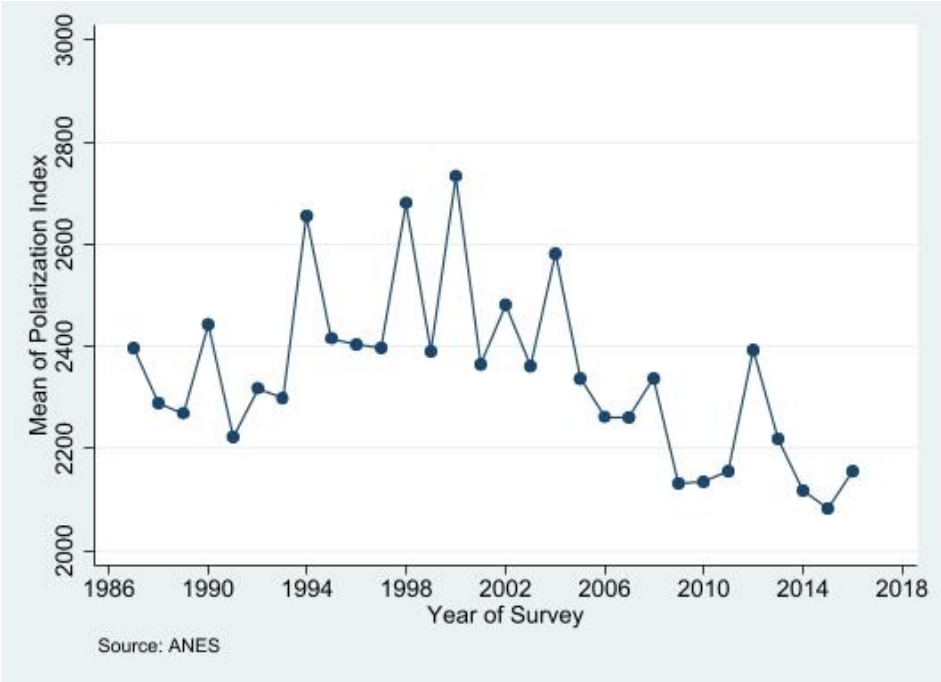
Source: Authors, from ANES data.

Figure 2. 4 Variance of self-positioning of the American electorate, 32 states



Source: Authors, from ANES data.

Figure 2. 5 HHI index of self-positioning of the American electorate, 32 states



Source: Authors, from ANES data.

Also, as reported in Table 2.1, we consider several economic and political variables as control variables. *Republican governor* is a dummy variable, coded 1 if the incumbent governor is republican and coded as zero otherwise, and the same definition applies to the variable named *Lame duck governor*, indicating if the governor is at the end of her second mandate. The log of the *win margin* of the governor is standardly calculated by subtracting the percentage votes of the winner from the previous election minus the percentage of the votes obtained by the best challenger. *Election* is also a dummy variable which is coded as 1 if there is election during the year for respective states, and coded 0 otherwise. The log of *real total resources* of the state in percentage of the state's real GDP is another explanatory variable, allowing us to control for the difference in real wealth in each state. Log of real *Gross state product* is the actual total production of goods and services during one year in a state. It also allows us to control for the potential tax base of the state. The log of the real *State debt per capita* is also included, as a high level of debt can impede an incumbent to manipulate the budget (de facto forbidding to run or increase the size of any deficit). Finally, we also control for the presence of Balanced-Budget Rules, as these could reduce the governor's margin of maneuver.

Methodologically, we will proceed as follows: first, the baseline regression takes the following linear form, for a governor, *g*, in a given state, *i*, considered at time *t*:

$$
\begin{aligned}
Y_{i,t+1} = \alpha_o + \alpha_i + \beta_1\left(Republican\ Governor_{g,i,t}\right) + \\
\beta_2\left(Lame\ duck\ governor_{g,i,t}\right) + \beta_3\left(Win\ margin_{g,i,t-n}\right) + \beta_4\left(Turnout\ rates_{i,t}\right) + \\
\beta_5\left(Variance\ (Polarization)_{i,t}\right) + \beta_6\left(Ratio\ Liberal\ to\ Conservatives_{i,t}\right) + \\
\beta_7\left(Popularity_{g,i,t}\right) + \beta_8\left(High\ polarization\ dummy_{i,t}\right) + \\
\beta_9\left(High\ polarization\ dummy_{i,t} * Popularity_{g,i,t}\right) + \beta_{10}\left(X_{i,t}\right) + \varepsilon_{i,t},
\end{aligned}
$$

where all the variables are self-explaining, while X_{it} is the vector of control variables we are using. In addition, we include state fixed effects.

Second, to explore the non-linearity of the relation between popularity, polarization and the political budget cycle, we also consider separate estimates in which we add to the previous set of variables: first, the squared value of the variable measuring popularity, as well as the interaction between this squared value and the "high polarization" dummy, and then, quartiles of the popularity variable, each quartile considered with its own interaction with the "high polarization" dummy.

Finally, in order to check how fiscal manipulation depends upon the degree of polarization and popularity, we estimate the different versions of the equation by constraining the sample, running the regression on sub-samples defined by the degree of polarization. More precisely, we explore if and how the relation exists for the observations located above or below the median value of the HHI index of polarization.

2.4 Results

Table 2.1 contains the results of our estimates for the full sample (1987 – 2017), while Table 2.3 restricts the sample to election years. Interestingly, as can be seen from table 2.1, the turnout rate is significant and the coefficient attached to the variable is negative, which may reveal a constraint on politicians coming from the degree of mobilization of the electorate. Also, it appears that a Republican governor tends to reduce the total expenditures.

Our variable of interest, popularity is not significant in the first set of estimates (that is, in the full sample, and when we focus on the states that have a degree of polarization inferior to the median). This is not the case, however, in the last set, i.e., for states with a relatively high degree of polarization. In these states, as can be seen in the eighth column of Table 2.2, the relation between popularity and fiscal policy seems to be non-linear, in conformity with the theoretical result of Hanusch & Magleby (2014). More precisely, when polarization is high, popularity reduces the temptation to manipulate fiscal policy, up to a point where incentives increase again. In other words, the relation is U-shaped in high polarization situations. Considering polarization thus tends to reconcile the conflicting views existing in the literature, as it induces that popularity indeed has an influence on the incumbents' policy, but only in highly polarized environments.

Otherwise, for what concerns the control variables, they have the expected sign. For example, the "resources to GDP" variable is significant and gets a positive sign, reflecting the fact that a richer state can induce more fiscal spending, while a larger amount of debt per capita reduces the margins for the incumbent.

Table 2.3 focuses on election years. Taking particular care of the timeline of events (see figure 2.1), our results for those years tend to be in line with the previous ones. This is the case for the control variables, although it has to be noted that the level of the debt per capita is no longer significant, which may reveal that the constraint debt imposes is not fully considered by the incumbent politicians in election years. As the second column of the table shows, polarization matters more in elections years, and in particular when it is high (the coefficient attached to the dummy "high polarization" is positive and significant, as well as its interaction with the variable "popularity squared"). This is confirmed in the second part of the table, and column eight again reveals a U-shaped relation between popularity and fiscal policy, when polarization is high.

Our results thus tend to confirm the existence of PBCs, although these are only present in highly polarized environments. When the electorate is divided, fiscal policy is less manipulated when the governor is (relatively) unpopular, and more when she is highly popular This thus contradicts the argument made by Schultz (1995) and others, that popular governments will have lower incentives to engineer political business cycle. Our results tend to show that American governors behave the other way round, but only when their electorate is divided. This would qualify the argument of Mandon & Cazals (2019), in that our estimates reveal sizeable impacts, but only in the restricted sample (considering only election years and high polarization environments).

2.5 Robustness analysis

We have tested the robustness of our results in several ways.[15] First, there may be a suspicion of endogeneity between popularity and the decision of a Governor to manipulate fiscal expenditures. We have thus estimated the equation by GMM and 2SLS. Our sample suffers from a "small N, small T" bias, which forbids to put too much faith on the associated tests. This explains why we consider standard panel-data estimates as our baseline methodology, and not the GMM, for example. Nevertheless, when running our estimates by GMM and 2SLS, the results are qualitatively the same. Moreover, our variables of interest are even more significant than in the baseline results reported above, which can thus be considered as suffering from an underestimation bias. Nevertheless, the tests indicate an over-identification issue, and the small N, small T bias prohibits to rely too much on these alternative methods.

Second, as stated before, the distribution of the polarization variable reveals a mean that is superior to the median value. In other words, some states are highly polarized and skew the distribution. To take this into account, we run estimates in which we split the sample not through the median, as in tables 2.2 and 2.3, but through the mean. This induces that we have few observations in the right-hand side part of polarized observations, and more on the left-hand side. The results reveal a pattern very similar to the main results shown in tables 2 and 3: the popularity variable is not significant when polarization is weak, and a U-shaped relation is apparent in highly polarized environments. And the coefficients attached to popularity are even larger than for the main results.

[15] All the results are available from the authors.

Third, we have also signaled that obtaining popularity measures is sometimes problematic, and that we have presented results based on continuous series obtained for a balanced panel of 32 states. When including in the analysis the observations for the whole set of American states, this creates an unbalanced panel, and the series for popularity are discontinuous. This makes us cautious in interpreting the results based on the full sample. Nevertheless, the general pattern is still present: popularity matters in more polarized environments, and the non-linear, U-shaped form, relation is apparent.

2.6 Conclusion

In this paper, we cover the American states over the period 1987-2017, and we can confirm that the incentives to engineer a political budget cycle (PBC) for an incumbent politician increase with popularity, but only when the degree of polarization of the electorate is large. The relationship is thus highly non-linear, confirming theoretical analyses by, in particular, Hanusch & Magleby (2014) and Horz (2021), that have predicted an association of this type.

Our results thus point at the fact that unearthing PBCs may be harder than usually expected, as the non-linearity may contribute to reduce the significance of the results, if it is not explicitly considered. This may explain why the debate on PBCs is still important.

All in all, our results reveal the importance of taking into account the political and social context when looking at the occurrence and importance of PBCs. The background changes in demographic and social preferences (in particular, polarization of voters) matter, and imply that there is more to the picture than first meets the eye.

Table 2. 2 Popularity, polarization and political budget cycles, 1987 - 2017

	Full sample			Low degree of polarization (< median)			High degree of polarization (> median)		
	Linear	**Non-Linear: squared**	**Non-Linear: quartiles**	**Linear**	**Non-Linear: squared**	**Non-Linear: quartiles**	**Linear**	**Non-Linear: squared**	**Non-Linear: quartiles**
Governor Republican	-0.018*** (0.006)	-0.018*** (0.006)	-0.018*** (0.006)	-0.026*** (0.008)	-0.026*** (0.008)	-0.026*** (0.008)	-0.007 (0.010)	-0.007 (0.010)	-0.007 (0.010)
Ln Total resources actual GDP	0.622*** (0.028)	0.619*** (0.028)	0.621*** (0.028)	0.511*** (0.034)	0.511*** (0.035)	0.506*** (0.035)	0.750*** (0.051)	0.735*** (0.051)	0.754*** (0.051)
Ln real Gross State Product	0.970*** (0.025)	0.972*** (0.025)	0.967*** (0.026)	0.982*** (0.034)	0.982*** (0.034)	0.970*** (0.034)	0.998*** (0.041)	1.001*** (0.041)	1.001*** (0.041)
Ln real State debt per capita	-0.064*** (0.014)	-0.065*** (0.014)	-0.064*** (0.014)	-0.081*** (0.022)	-0.081*** (0.022)	-0.076*** (0.022)	-0.044** (0.020)	-0.046** (0.020)	-0.046** (0.020)
Variance of Polarization	-0.006 (0.009)	-0.007 (0.009)	-0.007 (0.009)	-0.002 (0.014)	-0.002 (0.014)	-0.001 (0.014)	-0.013 (0.011)	-0.014 (0.011)	-0.014 (0.011)
Ratio %Liberal to %Conservative	-0.009 (0.006)	-0.010 (0.006)	-0.010 (0.006)	-0.010 (0.012)	-0.010 (0.012)	-0.010 (0.012)	-0.011 (0.008)	-0.011 (0.008)	-0.011 (0.008)
Turnout rates	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001** (0.000)	-0.001** (0.000)	-0.001** (0.000)	-0.001** (0.000)	-0.001** (0.000)	-0.001** (0.000)
Term Limits (Lame-duck)	-0.008 (0.007)	-0.008 (0.007)	-0.008 (0.007)	-0.007 (0.010)	-0.007 (0.010)	-0.007 (0.010)	-0.005 (0.011)	-0.004 (0.011)	-0.005 (0.012)
Balance Budget Rules	0.004 (0.005)	0.003 (0.005)	0.004 (0.005)	0.012* (0.008)	0.012 (0.008)	0.012 (0.008)	0.004 (0.006)	0.003 (0.006)	0.004 (0.006)
Population < 15 years	0.010** (0.005)	0.010** (0.005)	0.010** (0.005)	0.024*** (0.007)	0.024*** (0.007)	0.023*** (0.007)	0.000 (0.008)	0.001 (0.008)	0.001 (0.008)
Population > 65 years	0.008* (0.005)	0.008* (0.005)	0.008* (0.005)	0.012** (0.006)	0.012** (0.006)	0.013** (0.006)	0.003 (0.008)	0.003 (0.008)	0.003 (0.008)
Win Margin	-0.002 (0.002)	-0.002 (0.002)	-0.002 (0.002)	-0.003 (0.003)	-0.003 (0.003)	-0.003 (0.003)	0.001 (0.004)	0.000 (0.004)	0.001 (0.004)
Popularity	-0.010 (0.024)	-0.073 (0.117)		-0.002 (0.025)	-0.010 (0.118)		0.008 (0.031)	-0.321** (0.152)	
Polarization dummy	-0.029 (0.020)	0.031 (0.050)	-0.004 (0.012)						
Polarization dummy # popularity	0.059* (0.035)	-0.161 (0.186)							
Popularity square		0.061 (0.111)			0.008 (0.112)			0.291** (0.132)	
Polarization dummy # Popularity square		0.191 (0.168)							
4 quantiles of popularity=2			0.006 (0.010)			0.010 (0.010)			0.002 (0.014)
4 quantiles of popularity=3			0.002 (0.011)			0.007 (0.011)			-0.007 (0.014)
4 quantiles of popularity=4			0.004 (0.011)			0.010 (0.012)			-0.001 (0.014)
4 quantiles of popularity=2 # Polarization dummy			0.009 (0.016)						
4 quantiles of popularity=3 # Polarization dummy			0.008 (0.016)						
4 quantiles of popularity=4 # Polarization dummy			0.014 (0.016)						
Constant	-3.320*** (0.383)	-3.316*** (0.382)	-3.274*** (0.388)	-3.624*** (0.518)	-3.625*** (0.519)	-3.497*** (0.525)	-3.632*** (0.635)	-3.541*** (0.632)	-3.646*** (0.641)
Observations	686	686	686	359	359	359	327	327	327
R^2	0.860	0.861	0.860	0.879	0.879	0.880	0.850	0.852	0.850

Notes: Standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01

Table 2. 3 Popularity, polarization and political budget cycles - Election years

	Full sample			Low degree of polarization (< median)			High degree of polarization (> median)		
	Linear	**Non-Linear: squared**	**Non-Linear: quartiles**	**Linear**	**Non-Linear: squared**	**Non-Linear: quartiles**	**Linear**	**Non-Linear: squared**	**Non-Linear: quartiles**
Governor Republican	-0.017 (0.012)	-0.021* (0.012)	-0.017 (0.013)	-0.013 (0.012)	-0.016 (0.012)	-0.016 (0.012)	-0.034 (0.033)	-0.041 (0.029)	-0.030 (0.034)
Ln Total resources actual GDP	0.865*** (0.065)	0.843*** (0.061)	0.890*** (0.068)	0.830*** (0.058)	0.787*** (0.063)	0.786*** (0.064)	0.676*** (0.208)	0.633*** (0.187)	0.740*** (0.220)
Ln real Gross State Product	0.899*** (0.060)	0.878*** (0.057)	0.923*** (0.063)	0.905*** (0.041)	0.848*** (0.065)	0.847*** (0.066)	0.941*** (0.167)	0.877*** (0.151)	1.015*** (0.170)
Ln real State debt per capita	0.029 (0.028)	0.035 (0.026)	0.027 (0.029)	0.045 (0.031)	0.058 (0.035)	0.059 (0.035)	0.004 (0.076)	0.029 (0.068)	-0.009 (0.079)
Variance of Polarization	0.000 (0.022)	0.004 (0.020)	-0.002 (0.023)		0.019 (0.016)	0.019 (0.016)	-0.008 (0.082)	0.010 (0.074)	-0.010 (0.089)
Ratio %Liberal to %Conservative	-0.034** (0.016)	-0.044*** (0.015)	-0.028* (0.017)		-0.010 (0.020)	-0.009 (0.021)	-0.043 (0.036)	-0.063* (0.033)	-0.026 (0.037)
Turnout rates	0.000 (0.001)	0.001 (0.001)	-0.001 (0.001)		0.000 (0.001)	0.000 (0.001)	-0.002 (0.003)	0.001 (0.003)	-0.003 (0.003)
Term Limits (Lame-duck)	-0.009 (0.017)	-0.012 (0.016)	-0.006 (0.018)		-0.024 (0.016)	-0.024 (0.016)	-0.018 (0.040)	-0.021 (0.036)	-0.013 (0.045)
Balance Budget Rules	0.014 (0.011)	0.013 (0.010)	0.013 (0.011)		0.027* (0.015)	0.027* (0.015)	0.016 (0.020)	0.020 (0.018)	0.012 (0.021)
Population < 15 years	-0.003 (0.012)	-0.005 (0.011)	0.003 (0.013)		0.011 (0.012)	0.011 (0.013)	-0.016 (0.034)	-0.018 (0.030)	0.000 (0.035)
Population > 65 years	0.005 (0.010)	-0.000 (0.010)	0.011 (0.011)		0.006 (0.009)	0.006 (0.010)	0.001 (0.031)	-0.026 (0.029)	0.016 (0.034)
Win Margin	-0.003 (0.005)	-0.006 (0.005)	-0.000 (0.005)		-0.001 (0.005)	-0.001 (0.005)	0.006 (0.011)	0.000 (0.010)	0.010 (0.012)
Popularity	0.019 (0.051)	0.032 (0.223)			0.014 (0.036)	-0.008 (0.155)	0.252* (0.135)	-1.458*** (0.537)	
Polarization dummy	-0.133*** (0.045)	0.225** (0.106)	-0.044 (0.028)						
Polarization dummy # popularity	0.241*** (0.077)	-1.123*** (0.395)							
Popularity square		-0.004 (0.213)				0.022 (0.147)		1.597*** (0.489)	
Polarization dummy # Popularity square		1.207*** (0.357)							
4 quantiles of popularity=2			-0.008 (0.022)			-0.000 (0.014)			0.055 (0.060)
4 quantiles of popularity=3			-0.002 (0.024)			-0.003 (0.017)			0.041 (0.064)
4 quantiles of popularity=4			0.002 (0.026)			0.017 (0.017)			0.075 (0.069)
4 quantiles of popularity=2 # Polarization dummy			0.064* (0.037)						
4 quantiles of popularity=3 # Polarization dummy			0.044 (0.038)						
4 quantiles of popularity=4 # Polarization dummy			0.085** (0.038)						
Constant	-3.389*** (0.972)	-3.134*** (0.919)	-3.851*** (1.043)	-3.524*** (0.856)	-3.527*** (0.865)	-3.468*** (0.903)	-3.006 (3.202)	-1.995 (2.883)	-4.270 (3.422)
Observations	173	173	173	91	91	91	82	82	82
R^2	0.885	0.899	0.879	0.958	0.958	0.959	0.854	0.886	0.847

Notes: Standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01

2.7 Appendix 2.A

Table 2. 4 List of the states covered in baseline estimation

Sr. no	State name	State code	Sr. no	State name	State code
1	Alabama	1	17	Minnesota	23
2	Arizona	3	18	Missouri	25
3	Arkansas	4	19	New Hampshire	29
4	California	5	20	New Jersey	30
5	Colorado	6	21	New York	32
6	Connecticut	7	22	North Carolina	33
7	Florida	9	23	Ohio	35
8	Georgia	10	24	Oregon	37
9	Illinois	13	25	Pennsylvania	38
10	Indiana	14	26	Tennessee	42
11	Iowa	15	27	Texas	43
12	Kansas	16	28	Virginia	46
13	Louisiana	18	29	Washington	47
14	Maryland	20	30	West Virginia	48
15	Massachusetts	21	31	Wisconsin	49
16	Michigan	22	32	Wyoming	50

2.8 Appendix 2.B

Table 2. 5 Full sample, low and high degree of polarization

	Full sample			Low degree of polarization (< median)			High degree of polarization (> median)		
	Linear	**Non-Linear: squared**	**Non-Linear: quartiles**	**Linear**	**Non-Linear: squared**	**Non-Linear: quartiles**	**Linear**	**Non-Linear: squared**	**Non-Linear: quartiles**
Governor Republican	-0.018*** (0.006)	-0.017*** (0.006)	-0.018*** (0.006)	-0.025*** (0.008)	-0.025*** (0.008)	-0.025*** (0.008)	-0.012 (0.009)	-0.011 (0.009)	-0.012 (0.010)
Ln Total resources actual GDP	0.580*** (0.025)	0.578*** (0.025)	0.580*** (0.025)	0.537*** (0.032)	0.538*** (0.032)	0.532*** (0.032)	0.545*** (0.042)	0.532*** (0.042)	0.545*** (0.042)
Ln real Gross State Product	0.936*** (0.024)	0.938*** (0.024)	0.934*** (0.024)	0.969*** (0.032)	0.969*** (0.032)	0.957*** (0.032)	0.953*** (0.038)	0.957*** (0.038)	0.959*** (0.038)
Ln real State debt per capita	-0.057*** (0.014)	-0.057*** (0.014)	-0.057*** (0.014)	-0.084*** (0.020)	-0.084*** (0.020)	-0.079*** (0.020)	-0.017 (0.021)	-0.021 (0.020)	-0.021 (0.021)
Variance of Polarization	-0.003 (0.009)	-0.003 (0.009)	-0.003 (0.009)	-0.005 (0.014)	-0.005 (0.014)	-0.005 (0.014)	-0.002 (0.011)	-0.003 (0.011)	-0.003 (0.012)
Ratio %Liberal to %Conservative	-0.006 (0.005)	-0.006 (0.005)	-0.006 (0.005)	-0.009 (0.011)	-0.009 (0.011)	-0.010 (0.011)	-0.002 (0.006)	-0.002 (0.006)	-0.002 (0.006)
Turnout rates	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001** (0.000)	-0.001** (0.000)	-0.001** (0.000)	-0.001* (0.000)	-0.001* (0.000)	-0.001* (0.000)
Term Limits (Lame-duck)	-0.010 (0.007)	-0.010 (0.007)	-0.010 (0.007)	-0.005 (0.009)	-0.005 (0.009)	-0.004 (0.009)	-0.006 (0.011)	-0.005 (0.011)	-0.005 (0.011)
Balance Budget Rules	0.005 (0.005)	0.004 (0.005)	0.005 (0.005)	0.008 (0.007)	0.008 (0.007)	0.007 (0.007)	0.011* (0.007)	0.009 (0.007)	0.011 (0.007)
Population < 15 years	0.009** (0.005)	0.009** (0.005)	0.009* (0.005)	0.018*** (0.006)	0.018*** (0.006)	0.017*** (0.006)	0.013 (0.008)	0.013* (0.008)	0.013 (0.008)
Population > 65 years	0.008* (0.004)	0.007* (0.004)	0.007* (0.004)	0.013** (0.005)	0.013** (0.005)	0.012** (0.005)	0.007 (0.007)	0.006 (0.007)	0.006 (0.007)
Win Margin	-0.003 (0.002)	-0.003 (0.002)	-0.003 (0.002)	-0.003 (0.003)	-0.003 (0.003)	-0.004 (0.003)	-0.003 (0.004)	-0.003 (0.004)	-0.003 (0.004)
Popularity	-0.004 (0.023)	-0.072 (0.111)		-0.002 (0.023)	-0.036 (0.109)		0.050* (0.030)	-0.311** (0.147)	

Polarization dummy	-0.035* (0.019)	0.021 (0.047)	-0.002 (0.012)						
Polarization dummy # popularity	0.076** (0.033)	-0.133 (0.175)							
Popularity square		0.065 (0.105)			0.033 (0.103)			0.322** (0.128)	
Polarization dummy # Popularity square		0.182 (0.158)							
4 quantiles of popularity=2			0.007 (0.010)			0.008 (0.009)			-0.003 (0.013)
4 quantiles of popularity=3			0.002 (0.010)			0.003 (0.010)			-0.001 (0.013)
4 quantiles of popularity=4			0.006 (0.011)			0.010 (0.011)			0.014 (0.014)
4 quantiles of popularity=2 # Polarization dummy			0.004 (0.015)						
4 quantiles of popularity=3 # Polarization dummy			0.012 (0.015)						
4 quantiles of popularity=4 # Polarization dummy			0.019 (0.015)						
Constant	-2.936*** (0.365)	-2.929*** (0.364)	-2.892*** (0.370)	-3.273*** (0.483)	-3.270*** (0.484)	-3.150*** (0.489)	-3.526*** (0.618)	-3.405*** (0.615)	-3.506*** (0.625)
Observations	788	788	788	422	422	422	366	366	366
R^2	0.850	0.851	0.850	0.875	0.875	0.876	0.839	0.842	0.839

Notes: Standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01

Table 2. 6 Election Years

	Full sample			Low degree of polarization (< median)			High degree of polarization (> median)		
	Linear	**Non-Linear: squared**	**Non-Linear: quartiles**	**Linear**	**Non-Linear: squared**	**Non-Linear: quartiles**	**Linear**	**Non-Linear: squared**	**Non-Linear: quartiles**
Governor Republican	-0.019 (0.012)	-0.021* (0.011)	-0.017 (0.013)	-0.016 (0.011)	-0.016 (0.011)	-0.016 (0.011)	-0.029 (0.034)	-0.035 (0.030)	-0.025 (0.036)
Ln Total resources actual GDP	0.862*** (0.062)	0.843*** (0.059)	0.889*** (0.066)	0.777*** (0.054)	0.777*** (0.055)	0.781*** (0.055)	0.709*** (0.215)	0.674*** (0.191)	0.766*** (0.228)
Ln real Gross State Product	0.908*** (0.057)	0.885*** (0.054)	0.928*** (0.060)	0.855*** (0.058)	0.854*** (0.059)	0.842*** (0.060)	0.979*** (0.174)	0.894*** (0.157)	1.045*** (0.181)
Ln real State debt per capita	0.026 (0.027)	0.030 (0.025)	0.026 (0.028)	0.056* (0.032)	0.056* (0.032)	0.066** (0.032)	0.003 (0.078)	0.021 (0.070)	-0.014 (0.082)
Variance of Polarization	0.001 (0.021)	0.004 (0.020)	-0.001 (0.022)	0.018 (0.014)	0.018 (0.015)	0.019 (0.015)	-0.017 (0.084)	-0.002 (0.075)	-0.023 (0.093)
Ratio %Liberal to %Conservative	-0.032** (0.015)	-0.042*** (0.015)	-0.027* (0.016)	-0.014 (0.017)	-0.014 (0.017)	-0.012 (0.018)	-0.049 (0.037)	-0.073** (0.034)	-0.033 (0.039)
Turnout rates	0.000 (0.001)	0.001 (0.001)	-0.001 (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	-0.002 (0.003)	0.001 (0.003)	-0.003 (0.003)
Term Limits (Lame-duck)	-0.008 (0.016)	-0.014 (0.015)	-0.006 (0.017)	-0.023* (0.014)	-0.023 (0.014)	-0.022 (0.014)	-0.007 (0.042)	-0.009 (0.037)	-0.007 (0.047)
Balance Budget Rules	0.014 (0.010)	0.013 (0.010)	0.013 (0.011)	0.025* (0.014)	0.025* (0.014)	0.026* (0.014)	0.017 (0.021)	0.022 (0.018)	0.014 (0.022)
Population < 15 years	-0.002 (0.011)	-0.004 (0.011)	0.003 (0.012)	0.010 (0.011)	0.010 (0.012)	0.010 (0.012)	-0.018 (0.036)	-0.028 (0.032)	-0.004 (0.039)
Population > 65 years	0.004 (0.009)	0.001 (0.009)	0.009 (0.010)	0.005 (0.008)	0.005 (0.009)	0.004 (0.009)	-0.010 (0.035)	-0.045 (0.033)	0.003 (0.040)
Win Margin	-0.003 (0.005)	-0.006 (0.004)	-0.001 (0.005)	-0.002 (0.005)	-0.002 (0.005)	-0.002 (0.005)	0.007 (0.012)	-0.000 (0.011)	0.010 (0.013)
Popularity	0.006 (0.048)	0.019 (0.204)		0.013 (0.033)	0.007 (0.138)		0.280* (0.142)	-1.516** (0.565)	
Polarization dummy	-0.137*** (0.042)	0.182* (0.097)	-0.048* (0.025)						
Polarization dummy # popularity	0.248*** (0.073)	-0.994*** (0.364)							
Popularity square		-0.002 (0.195)			0.006 (0.130)			1.658*** (0.508)	

Polarization dummy # Popularity square		1.110*** (0.331)							
4 quantiles of popularity=2			-0.010 (0.021)			0.000 (0.013)			0.054 (0.065)
4 quantiles of popularity=3			-0.006 (0.022)			-0.005 (0.015)			0.051 (0.069)
4 quantiles of popularity=4			-0.000 (0.025)			0.018 (0.016)			0.085 (0.073)
4 quantiles of popularity=2 # Polarization dummy			0.067* (0.035)						
4 quantiles of popularity=3 # Polarization dummy			0.048 (0.036)						
4 quantiles of popularity=4 # Polarization dummy			0.087** (0.036)						
Constant	-3.513*** (0.920)	-3.239*** (0.873)	-3.905*** (0.985)	-3.543*** (0.782)	-3.544*** (0.789)	-3.479*** (0.821)	-3.189 (3.351)	-1.556 (3.018)	-4.148 (3.660)
Observations	199	199	199	109	109	109	90	90	90
R^2	0.884	0.898	0.879	0.962	0.962	0.964	0.848	0.883	0.838

Notes: Standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01

Table 2. 7 Popularity, polarization and political budget cycles, 1987 - 2017 2SLS Regression

	Full sample			Low degree of polarization (< median)			High degree of polarization (> median)		
	1	2	3	4	5	6	7	8	9
Governor Republican	-0.007 (0.017)	-0.020 (0.013)	-0.021 (0.013)	-0.020 (0.027)	-0.035* (0.019)	-0.029* (0.015)	0.017 (0.030)	0.008 (0.025)	-0.001 (0.018)
Ln Total resources actual GDP	0.931*** (0.032)	0.616*** (0.083)	0.582*** (0.091)	0.924*** (0.050)	0.555*** (0.106)	0.543*** (0.092)	0.924*** (0.044)	0.564** (0.227)	0.556*** (0.180)
Ln real Gross State Product	1.013*** (0.012)	1.152*** (0.096)	1.235*** (0.152)	1.012*** (0.019)	1.182*** (0.127)	1.182*** (0.140)	1.017*** (0.019)	1.102*** (0.137)	1.506*** (0.349)
Ln real State debt per capita	-0.017 (0.018)	-0.114*** (0.039)	-0.089** (0.044)	0.002 (0.032)	-0.113** (0.053)	-0.157*** (0.057)	-0.032 (0.029)	-0.110 (0.087)	0.018 (0.043)
Election	0.006 (0.019)	-0.004 (0.015)	0.019 (0.019)	-0.009 (0.033)	-0.022 (0.024)	-0.009 (0.023)	0.026 (0.029)	0.012 (0.020)	0.039 (0.031)
Variance of Polarization	-0.003 (0.004)	-0.019 (0.013)	-0.018 (0.013)	-0.012 (0.009)	-0.009 (0.016)	-0.025 (0.018)	0.004 (0.006)	-0.031 (0.029)	-0.009 (0.017)
Ratio %Liberal to %Conservative	-0.013 (0.016)	-0.022 (0.014)	-0.026* (0.015)	0.010 (0.033)	-0.034 (0.028)	-0.042 (0.026)	-0.024 (0.025)	-0.009 (0.020)	-0.013 (0.015)
Turnout rates	-0.000 (0.001)	-0.001* (0.001)	-0.004** (0.002)	0.001 (0.001)	-0.001 (0.001)	-0.004** (0.002)	-0.001 (0.001)	-0.002 (0.001)	-0.004 (0.003)
Term Limits (Lame-duck)	-0.025 (0.023)	-0.014 (0.018)	-0.016 (0.019)	-0.044 (0.041)	-0.020 (0.027)	-0.004 (0.022)	-0.006 (0.031)	0.013 (0.033)	0.005 (0.025)
Balance Budget Rules	-0.001 (0.017)	0.041 (0.038)	0.041 (0.038)	-0.028 (0.041)	0.034 (0.041)	0.042 (0.039)	0.013 (0.019)	0.059 (0.116)	0.075 (0.081)

	Full sample			Low degree of polarization (< median)			High degree of polarization (> median)		
	1	2	3	4	5	6	7	8	9
Population < 15 years	-0.002 (0.009)	0.030** (0.013)	0.026* (0.016)	0.001 (0.015)	0.045** (0.018)	0.070*** (0.023)	-0.005 (0.013)	0.019 (0.022)	-0.010 (0.017)
Population > 65 years	-0.003 (0.007)	0.008 (0.009)	0.040* (0.021)	-0.004 (0.012)	0.010 (0.011)	0.032 (0.020)	-0.002 (0.010)	0.011 (0.016)	0.062 (0.045)
Win Margin	-0.007 (0.007)	-0.000 (0.005)	0.000 (0.005)	-0.004 (0.010)	0.002 (0.007)	0.002 (0.006)	-0.009 (0.012)	-0.011 (0.015)	-0.007 (0.008)
Popularity	-6.983*** (2.258)	-4.960** (2.002)	-5.209*** (1.725)	-7.347** (3.455)	-4.525** (2.268)	-3.891*** (1.493)	-7.818* (4.254)	-6.146 (6.185)	-4.899* (2.951)
Polarization dummy	0.192** (0.083)	0.131* (0.068)	0.132** (0.059)						
Popularity square	6.535*** (2.125)	4.595** (1.850)	4.794*** (1.577)	6.864** (3.234)	4.185** (2.083)	3.627*** (1.373)	6.800* (3.703)	5.289 (5.308)	4.192* (2.510)
Polarization dummy # Popularity square	-0.451** (0.222)	-0.304* (0.171)	-0.309** (0.151)						
Constant	-2.694*** (0.750)	-4.303*** (0.846)	-5.689*** (1.850)	-2.600** (1.163)	-5.039*** (1.226)	-5.339*** (1.812)	-2.275 (1.511)	-2.926* (1.727)	-9.507** (4.256)
Observations	718	718	718	382	382	382	336	336	336
State F.E.	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Year F.E.	No	No	Yes	No	No	Yes	No	No	Yes

Robust standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01

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3 Health Politics? Determinants of US states' reactions to Covid-19[16]

> *"Today people started losing their jobs because of (…) Do Nothing Democrats, who should immediately come back to Washington and approve legislation to help families in America. End your ENDLESS VACATION!"*
> *Donald J. Trump, Tweeter, 3:50 PM · 17 Apr. 2020*

3.1 Introduction

Faced with the Covid-19 pandemic, according to Adolph et al. (2020), Republican governors and governors in states with more Trump supporters reacted more slowly, adopting social distancing measures more reluctantly. Such a partisan, politically induced reaction would clearly be in line with President Trump's rants (as exemplified by the above quote, in which lockdowns and shelter-in-place orders are essentially assimilated to imposed vacations). However, the decisions also entailed huge potentially negative health consequences.

It can only be acknowledged that governors had to take decisions in a highly uncertain and politically fraught environment. The above quote from President Trump confirms the political stance, itself confirming a previous view in which he insisted that the "cure [i.e. lockdowns and social distancing] cannot be worse than the problem itself".[17] Hence, it may

[16] This chapter is co-authored with Etienne Farvaque and Nicolas Ooghe from University of Lille and published in *Journal of Public Finance and Public Choice*.
[17] As reported, for example, by the *New York Times*: https://www.nytimes.com/2020/03/23/us/politics/trump-coronavirus-restrictions.html.

be true that the political context had an impact on the adoption of policy measures to fight the new epidemic. Yet, is this the whole story?

In fact, adopting quarantine, shelter-in-place lockdowns or other forms of social-distancing measures is *de facto* imposing a cost in the economy. Closing businesses is economically costly, but shutting schools also has a strong impact, as parents have to choose between working or staying at home to take care of their children, the latter decision implying that firms have to face a labor shortage, and thus disruptions in the production process. Closing businesses obviously affects sales-and-profit-based tax revenues, while closing schools and other places of congregation has second-round impacts, as households' revenues dwindle and income-based tax revenues shrink correspondingly.

Moreover, not only is it hard to decide what restrictive measures to take; deciding when to announce them is also problematic. From an epidemiological perspective, the earlier the containment measures are taken, the shorter they need to last. Later adoption of containment measures can lead to harsher consequences for government finances, because later adoption will induce a longer period of economic freezing. Hence, policymakers are confronted with a twinned trade-off: adopting measures on social distancing and restrictions on economic activity not only saves lives, at the cost of lost economic activity (and induced public finance consequences), but the timing of the decisions can be important, as adopting too late or too fast also makes a difference, in both the sanitary and economic dimensions.

Measuring the economic costs of the pandemic is still a daunting challenge, but the first estimates draw a landscape of pain and sorrow, with probably the worst recession the US may have known.[18]

Concerning the US states, Clemens & Veuger, (2020) estimate that state government sales and income tax revenues will drop by approximately $106 billion in the fiscal year 2021, representing 0.5% of their GDP, with a loss of 11.5% in expected revenues. As expenditures may increase too, the states' budgets may be widely affected. However, most US states face the binding constraint of balanced-budget requirements. Balanced-Budget Rules (BBRs) force states to balance their books every year, generally forbidding their governors and legislatures from passing, executing or reporting any deficit.[19]

Hence, as the pandemic spread in early 2020, governors were faced with the threat of falling expected revenues, the possibility of having to increase expenditures to support their population, and the illegality of running a deficit. If most of the states also benefit from the presence of rainy-day funds (RDFs, also called Budget Stabilization funds – see, e.g., Zhao, 2016), in which previous surpluses may have been "stored" in case of harsh circumstances, these funds cannot be raided so easily, and exit rules are often stringent. In other words, given that the budgetary process is constrained by the presence of fiscal rules, governors have had to face the pandemic, with its induced costs (economic and fiscal) while they were preparing the next fiscal year budget. Moreover, the stabilization funds may have been expected to moderate the unexpected shock to government expenditure and revenue,

[18] First estimates can be found in, e.g., Barrot et al. (2020), or Eichenbaum et al. (2020), for the US, as well as in the literature review provided below.

[19] Hou & Smith (2010)) detail the institutional context surrounding fiscal decisions in the US states, under the constraint of Balanced-Budget Rules (BBRs), while Hansen, (2020) shows that fiscal rules are efficiently constraining the behaviour of policymakers because they are internalized by domestic political actors.

if only they could be raided easily. A question thus emerges: given that it is the announced health-related measures that are likely to create the fiscal shock, have the funds played their counter-cyclical vocation?

Previous research has shown that restrictions on the possibility of carrying deficits from one year to the other induce states to implement adjustments (that is, spending cuts or tax increases) in the face of economic shocks (see Azzimonti et al., 2016; Clemens & Miran, 2012; Poterba, 1994, for a theoretical appraisal). As a consequence, BBRs have been accused of creating volatility, by inducing pro-cyclical responses (which was particularly noticeable during the Great Recession, as Jonas, (2012), and Campbell & Sances, 2013, have shown). Stringent fiscal rules may impede policymakers' reactions to shocks, for fear of breaching the balanced-budget requirements. In short, the BBRs reduce the possibility of smoothing out the impact of economic shocks. In some ways, the Covid-19 pandemic is no different from other shocks, and governors have been caught between a rock and a hard place: how can they support the population and deal with the economic consequences of the shock, while ensuring a balanced budget?

One cannot rule out the possibility that policymakers in the US states may have been fearful of the fiscal impacts of the adoption of sanitary policy measures that were, essentially, driving the economy to a halt, bringing with them large reductions in revenues. In this research, we thus analyze if and how partisan politics and fiscal institutions correlated in US states' reactions to the health crisis. We analyze how fiscal rules and the rules governing the use of budget stabilization funds correlate with the policy measures taken to combat the epidemic in the US. In terms of sanitary measures, we first consider the determinants of the number of social distancing measures announced by US states (up to 7 April). Then,

we analyze the length of time between the rise of the epidemic and the announcement of the social distancing measures. Finally, we look at the probability of having a shorter length of reaction before the adoption of each social distancing measure.

There are two papers that, to our knowledge, are closely related to what we explore in this paper. First, Adolph et al. (2020) explore how the interplay between the spread of the pandemic, political partisanship, and policy diffusion explain the timing of governors' decisions to close businesses and schools, and impose quarantines. They perform an event history analysis of several social distancing policies implemented in the US states. Their main conclusion is: "Republican governors and governors from states with more Trump supporters were slower to adopt social distancing policies". As delays in the adoption of such measures are likely to trigger serious adverse public health outcomes, this result is important. However, as their analysis does not include the legal constraints of the BBRs, it is important to examine if budget considerations may have affected the governors' decisions. The second paper is by Baccini & Brodeur (2020), who show that Republican governors were also less likely to implement a stay-at-home order. They also focus on the term limits that some governors may face, and reveal that governors without a term limit were significantly quicker to adopt state-wide orders than those with a term limit. However, in their estimates, they, too, do not control for the presence of BBRs. In view of their importance in the previous crisis (the Great Recession) and of the size of the fiscal adjustment induced by the social distancing measures, it is important to complement their analysis.

Our results reveal that both partisanship and fiscal institutions have played a role in the adoption of social distancing measures. However, it appears that fiscal rules may have

induced a trade-off between health and the economy, as well as some pro-cyclical behaviors. In other words, we show that budgetary constraints have been critical in responding to the pandemic.

We present the literature on the cost of the pandemic, and on the measures taken to address it, as well as the relation between the latter and the fiscal situation of the states. We then turn to the data. Next, we discuss the results, on the number of measures adopted, and on the timing of their adoption. The final section concludes.

3.2 Literature review: optimal policies to fight a pandemic, and their real impacts

The Covid-19 epidemic has spurred an intense effort by researchers around the world, and not only in virology. Concerning our question, we classify it in two strands: one related to the theoretical optimal policy design to deal with the disease, and one measuring the transmission mechanisms, as well as the consequences of the implemented policies. We add the literature on fiscal institutions (i.e., balanced-budget rules and rainy-day funds).

In the literature concerned with optimal policy design, Barrot et al. (2020) and Kempf, (2020) provide frameworks where the uncertainties related to the health impact are embedded, showing how the optimal mitigation response depends on the fatality rate and reproduction rate of the disease, as well as the response by policymakers confronted with polarized populations, as is the case in the US. Kempf's (2020) analysis helps understanding the delays in response across US states, as policymakers must weigh the health benefits of, say, quarantine measures against the economic damages they inflict. Nevertheless, an optimal response to uncertainty should lead to harsher policy measures, to reduce the cost of underestimating the dangers of the disease, at greater economic cost (Barnett et al., 2020). Such an analysis can be backed by the computation of the shadow cost of infection risks (Collard et al., 2020), which lies at the basis of the trade-off between health- and economic-related costs.

Lockdowns, quarantines and social distancing measures have been part of the arsenal deployed by policymakers to fight the pandemic. Although they are probably the closest policy to the optimal one (Piguillem & Shi, 2020), lockdowns have led to large economic costs, causing a furor among skeptical politicians (see the above discussion and the Trump

quotation). Alvarez et al. (2020) analyze the optimal lockdown policy, in terms of intensity and duration, and show how much it depends on the proportion of infected and susceptible people in the population, and the extent of testing. A byproduct of their analysis is that, under their calibration, lockdowns represent only 25% to 30% of the welfare cost of the disease – thus appearing as a necessary ill, rather than a remedy worse than the cure. Farboodi et al. (2020) reveal that the optimal policy should be deployed fast and, although it should not be a complete lockdown, should involve social distancing for a long period. The length of the lockdown is also a focus of the study by Aum et al. (2020), who show the risks of an early lifting of the lockdown. In an analysis related to Alvarez et al. (2020), Gonzales-Eiras and Niepelt (2020) put figures on the optimal lockdown for the US, in the form of economic activity reduced "by two thirds for about 50 days", which would amount to a deep recession, with a 9.5% GDP loss, and the implied increase in unemployment.[20] Guerrieri et al. (2020) wonder if the epidemic is a supply or demand shock, and, in a model with incomplete markets and liquidity-constrained consumers, show that "a 50% shock that hits all sectors is not the same as a 100% shock that hits half the economy", and that, in such a framework, the shock will have the properties of a supply shock. This thus reduces the relevance of fiscal stimuli, except that full insurance payments to workers will retain their desired impact.[21] Mitman & Rabinovich (2020) also find that a large unemployment-related transfer is optimal, at least as a first policy reaction, to compensate for the shock.

[20] It can be shown that testing widely can reduce the economic costs, as it would favor the possibility of some workers returning to work earlier (Favero et al., 2020). Delivering "passports" to tested workers lies at the core of the proposal by Eichenberger et al. (2020). Aum et al. (2020) show that low-skilled workers would benefit most from such a policy, while Brotherhood et al. (2020) insist on the gains for the younger workers.
[21] In particular, the desired impact is to reduce the loss of consumption, traded off with the probability of Covid-related death. See Hall et al. (2020) for an analysis across such a line.

All this literature points to Covid-19 leading to large economic costs and to the policy measures that should be implemented. Offsetting the induced costs would require large fiscal measures, financed by debt, and obviating the respect of any balanced-budget rule. Compared with these theoretical recommendations, how have the real measures fared?

This second strand of the literature can itself be separated into two: Why would such policies be efficient? And how efficient are the policy measures?

On the why side, a strong mechanism seems to be information, as evidenced by Gupta et al. (2020). Moreover, the fact that the removal of a policy does not induce a relapse, as shown in the case of the repeal of the governor's order by the Supreme Court in Wisconsin (analyzed by Dave et al., 2020a), tends to support this information channel. However, the same information can be processed differently, and there may be a feedback loop between the underlying health condition of an agent and the response to the disease (Chang & Velasco, 2020). Barrios & Hochberg (2020)and Driscoll et al. (2020) show that partisanship, as much as income, is a predictor of compliance with the quarantine policies. This reveals that, to be effective, a politician's decision will need obedient people. While Driscoll et al. (2020) or Fan et al. (2020) show that such behavior may vary along party lines, Gitmez et al. (2020), taking this feature into account, show that a person's behavior in a pandemic context is an externality on any other's. Agents thus need public information to be biased (in some ways, overestimating the danger) to correct for the externality, and for information to influence behavioral responses. This theoretical result, however, does not include the possibility that some partisan voters may actually disdain virus-related information. Barrios & Hochberg (2020) indicate that such disdain characterizes Trump

voters, while Allcott et al. (2020) show that agents living in Republican areas adopt less social distancing.

On the how side, Friedson et al. (2020) look at California's "shelter-in-place order" (aka confinement or quarantine, *de facto* impliying a lockdown, as workers should refrain from going to their jobs). They reveal that, as California was the first state to adopt such a policy, the prevalence of the disease has been reduced, with many deaths avoided, at an induced cost equal to 400 job losses per life saved. Dave et al. (2020b) look at the impact of the same policy for all the states that have implemented it.[22] They confirm the beneficial impact of the lockdown in terms of avoided deaths and reduced prevalence of the disease, although "early adopters and high population density states appear to reap larger benefits", a conclusion shared by Desmet & Wacziarg (2020).

Workers will be affected differently by the types of policy measures implemented. Mongey et al. (2020) describe those most susceptible to being affected as being "in low-work-from-home or high-physical-proximity jobs". These are less-educated workers (as also established by Aum et al., 2020), who have a lower income on average, have less liquid assets and are more likely to be renting their housing.[23] These categories of workers experienced greater declines in their employment level during the lockdown period, if only due to lower spending by high-income individuals (Chetty et al., 2020). The increase in

[22] For a more global analysis, involving 50 countries, that confirms the results obtained on and in the US, see Jinjarak et al. (2020). For Germany, see Glogowsky et al. (2021).Askitas et al. (2020) look at policies across 135 countries, confirming the importance of the restrictions on mobility in the arsenal deployed against the disease, while Lin & Meissner (2020) analyze the spillovers of the lockdown measures across 70 countries as well as the US states. Cronert (2020) focuses on the specific case of school closures, in 167 countries, revealing that competitive elections may have prompted policymakers to react faster. This adds a nuance to Cepaluni et al. 's (2020) result – that democracies are disadvantaged when it comes to imposing measures that typically constrain civil liberties.

[23] Even wealthier agents have suffered, in any case, in so far as real estate is an important part of their wealth, given that the housing market has been hit severely (Yoruk, 2020).

unemployment that could be expected from the lockdown and social distancing measures quickly became evident, jumping to a high of 15% in the US (starting from a very low level before the crisis), and even to 26.5% according to some estimates (Couch et al., 2020). The increase is unprecedented, as well as the record high level. Yet, the upsurge was not uniformly distributed, as black people and Latinos suffered even more (Fairlie, 2020; Couch et al., 2020).

Even if the lockdown and other measures can be considered as responsible for the job losses, Aum et al. (2020) show that around half of them would have been incurred anyway, if only due to reduced hiring by the sectors most affected, or by the increased uncertainty that precludes new investments. One mechanism is that business owners have seen their numbers reduced by almost a quarter (and 41% for African-American ones) across almost all sectors and industries (Fairlie, 2020), even though small businesses in more affluent ZIP codes appear to have supported a more than proportional share of the brunt of the adjustment (Chetty et al., 2020).

All in all, the literature surveyed points to heavy costs of the pandemic, to partisan degrees of recognition of the severity of the crisis, and to the importance of the measures implemented to address it. Barrot et al. (2020) estimate that, by May 2020, state-mandated business closures might have cost more than 3% of 2019 US GDP and saved 1% of the US population. Some of the huge costs generated by the pandemic are to be found on the fiscal side. As of July 2020, the federal government has accumulated a $2.7trn deficit (representing more than 10% of GDP), and is considering the adoption of a new coronavirus-relief bill. Our own analysis aims at understanding how policymakers in the US states have faced the crisis.

The third literature we rely on describes how fiscal institutions (i.e., balanced-budget rules and rules surrounding the use of budget stabilization funds, aka rainy-day funds) can constrain policymakers.

The literature on these fiscal institutions has shown that they are in fact complementary mechanisms, whose objective is the control of debt. Battaglini & Coate (2008) recall that Barro's (1979) fiscal smoothing argument relies on the assumption that governments are benevolent. In this model, public spending has to fluctuate over time, with budget surpluses and deficits being used as a buffer to prevent tax rates from changing too rapidly and abruptly (Battaglini & Coate, 2008).

However, when the government is not benevolent, which can happen if politicians have either a partisan bias (Hibbs, 1977) or an opportunistic tendency (Nordhaus, 1975; Rogoff, 1990; Rogoff & Sibert, 1988), theses fluctuations may not be random nor optimal. In such cases, decision-makers are subject to debt and deficit biases, and indebtedness can increase without being checked. While in Barro's (1979) model, the benevolent planner makes decisions and creates equitable transfers between citizens, in the model of Battaglini and Coate (2008), the governing body is biased towards patronage and spending inflation (in an archetypal tragedy of the commons issue). Based on this, it can then be shown that the political bias leads to distortions in taxes (proportional to the candidates' winning margin), to levels of public goods that are inferior to the optimal level, and to extremely high levels of debt compared to optimal levels (see, for example, Angeletos et al., 2016).

The public finance problems arising from high debt are essentially twofold: (1) an increased risk of default, with the resulting financing difficulties; and (2) the reduction in

the government's leeway associated with the size of the debt service (Ball et al., 1998). For the American states, two instruments have then been identified to control the level of debt. Fiscal rules are the principal one. Although their origin can be traced back to the period during which American states wrote their constitution, they have been enforced from the 1980-90s to the present day in many more countries, and both at the national and sub-national levels. Their spread has been so large that, according to Asatryan et al. (2018), it can be said that "one of the main policy measures to prevent governments from running persistent deficits and to ensure the long-term sustainability of public finances, and thus the level of debt, has been the use of fiscal rules". To achieve such debt targets, fiscal rules will not only control the debt but also impose constraints on the components of the budget (Fernández & Parro, 2019).

Hou & Smith (2006) provide a synthesis of the rules present in the budget process in the American states, and discuss the various indicators available in the US sub-national case, where the rules are deemed binding. While the rules appear to meet their objectives in the American states, they have also been accused of inducing pro-cyclical variations of the budget (a view questioned by Clemens & Miran, 2012).

The second instrument is much more specific to the American states, and has been more recently designed: Budget Stabilization Funds. Also known as Rainy Day Funds, they are designed to cover revenue shortfalls and respond to unforeseen events, setting aside money for general purposes (Pew Charitable Trusts, 2014). Their vocation is thus clearly counter-cyclical, as they are meant to smooth budgets over multiple years and across different phases of the business cycle, but their operations are also governed by more or less

restrictive rules (Pew Charitable Trusts, 2014, 2017). This instrument would reduce the potential pro-cyclical effects generated by balanced budget requirements.

In the context of the unprecedented health crisis that began in January 2020, in what is in fact the middle of the fiscal year for most American states, these two instruments (balanced-budget requirements and stabilization budget funds rules) must be considered, as they have probably influenced, both the speed with which health measures have been announced, and the number of measures announced.

A first reason (as explained, for example, by Bohn & Inman, 1996)is that the budgetary process is modified by the presence of such rules. In the face of the pandemic, when preparing the budget for the next fiscal year, governors in American states can only have been confronted with the squaring exercise of preparing a budget that could only be expansionary (due to the fall in fiscal revenues and potential expenditures associated with the sanitary crisis), while having to respect their state's balanced budget requirement.

A second reason is that the rules governing the operation of stabilization funds can have played a significant role in allowing or forbidding to use these funds to cushion the unexpected Coronavirus exogenous shock to government expenditure and revenue. Given that, contrary to a standard recession, it is the announced health-related measures that are likely to create the fiscal shock, have the funds played their counter-cyclical vocation or have they reinforced the shock?

3.3 Data

We build our analysis on three sets of variables of interest, plus a set of control variables.[24] First, we study states' social distancing measures and prevalence of Covid-19 cases. The policy measures are examined along eight dimensions, announced over the period from the first reported case of transmission in the United States in January 2020 up to April 7, 2020. Sources of data are Adolph et al. (2020) and the Center for Systems Science and Engineering – Johns Hopkins University25. The policy measures considered are gatherings restrictions, school closures, restaurant restrictions, non-essential and other business closures, stay-at-home orders, travel restrictions and curfews. As can be seen from Tables 3.1 and 3.2, we compute the number of policy measures taken by each state, by each of the census regions, as well as the number of days between the appearance of the first Covid-19 case and the announcement of each measure. We also include the number of cases in each state, and in each region.

Second, we include balanced-budget rules (BBRs) and information on the states' Budget Stabilization Funds. BBRs constitute a system of legal provisions and requirements covering the state's budget process. Some of the provisions are embedded in the state's constitution; others are part of lower-level types of regulations. Budget Stabilization Funds, or rainy-day funds (RDFs), allow states to set aside a surplus for times of unexpected revenue shortfall or budget deficit (Randall & Rueben, 2017). As can be seen from Table 3.3, most states have some type of RDF, but their relatively recent spread across American

[24] The perspective on the crisis is still short, which forbids the use of sophisticated econometric techniques, given the small number of observations. Adolph et al. (2020) use event-studies techniques, while we will rely on standard OLS and Probit analyses, as Baccini & Brodeur (2020) do. Nevertheless, in such a context, correlations are more than telling, even if the techniques forbid going too far in terms of causal conclusions.
[25] The 2019 novel coronavirus covid-19 (2019-ncov) data repository can be found here: https://github.com/CSSEGISandData/COVID-19.

states has led to different rules (either on how much and when to contribute to the RDF, whether it should be capped, and, importantly in our context, under what conditions the funds can be spent).

The standard measure for BBRs is the one built by the United States Advisory Commission on Intergovernmental Relations (ACIR, 1987). We use it for comparison with the literature that relies on it. As can be seen in Table 3.3, the index reveals a relatively high degree of constraint, with an average score of 8.08/10 for the 50 states. Yet, since its publication in 1987, it has not been updated. Hence, we will also include the classification proposed by Hou & Smith (2010), which we have updated, hand-picking modifications of the fiscal regulations in each state. This classification differentiates between nine types of balanced-budget characteristics, and is based on an analysis that distinguishes between the technical rules (T) and the political ones (P) along the budget process (executive preparation, legislative review and implementation).

Among political rules, two directly target the governor. Table 1c shows that policy rule BBR #1 ("Governor must submit a balanced budget") is adopted in 80% of the states, while BBR #6 ("Governor must sign a balanced budget") is adopted in only two states (California and Massachusetts). Concerning technical rules, BBR #2 ("Own-source revenue must match (meet or exceed) expenditures") is operational in 11 states. The last technical rule is BBR #9 ("No deficit may be carried over to the next fiscal year {or biennium}"), which concerns seven states.

[Tables 3.1, 3.2, and 3.3 here]

We also include data from the PEW (2017) report on each state's Budget Stabilization Fund (aka rainy-day fund –RDF), which can be used as a way to smooth out the negative effects of recessions. Their presence has often been overlooked, but we believe that their presence may have an impact on policymakers' reactions. Thus, we first include the fund's 2019 amount (more precisely, we scale it by each state's GDP).[26] However, the states that have a rainy-day fund (the exceptions being Colorado, Illinois and Montana – see PEW, 2017), are confronted with two types of rules in the use of funds. On the one hand, the rules we will call RDF Restrictive Rules, where the withdrawal of funds is allowed if the reason is explicitly "related to volatility" (of revenues and/or economic); on the other hand, the rules we will classify as RDF Soft Rules, where the reason is not linked to this definition of volatility (but to a forecast error or a budget variance, or even to no conditions). Table 3.1 shows, in particular, that only 16 states have rules explicitly linked to the restrictive criterion, including eight strictly. As several states hold different types of RDFs, we also include information on the differences between rules, if they diverge: the variable "RDF both kind of rules" reveals that this is the case for 16% of the states, for which one fund can have strict rules, while another fund has laxer ones.

Third, we include political variables, a dummy signaling a Republican governor in state *i*, the percentage of Trump voters in the 2016 presidential election, and a measure of opinion polarization in each state.[27] The latter is built from the American National Election Study (ANES), by considering a Herfindahl-Hirschman index of the shares of respondents

[26] Sources: NASBO Fiscal Survey of the States, Fall 2019 (https://www.nasbo.org/reports-data/fiscal-survey-of-states) ;and https://gsfic.georgia.gov/revenue-shortfall-reserve-holdings-reports.

[27] Sources: for Republican Governorship: The National Conference of State Legislators. State partisan composition, January 2020, https://www.ncsl.org/research/about-state-legislatures/partisancomposition, and for the percentage of Trump voters in the 2016 election: https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/42MVDX.

declaring themselves Conservative, Liberal or Moderate.[28] This accounts for the possibility that Americans are more and more divided along moral or economic issues, as confirmed by, e.g., Baldassarri & Park (2020) and Barrios & Hochberg (2020).

Finally, we include GDP per capita (from the BEA) as a catch-all control variable. Given the disparities among US states, we take the log of this variable.[29] We also include three variables that could influence a governor's behavior: the budget balance forecast, the revenue forecast, and the expenditure forecast (obviously, we do not include simultaneously expenditure and revenue forecasts, as they are correlated). These will control for the impact that the expected budget for the current year (that is, before the crisis started) could have, as states that have approved more balanced or prudent budgets should have more fiscal space to withstand the consequences of a lockdown or a temporary freezing of economic activities.

[28] More precisely, from the question "We hear a lot of talk these days about liberals and conservatives. When it comes to politics, do you usually think of yourself as extremely liberal, liberal, slightly liberal, moderate, slightly conservative, conservative, extremely conservative or haven't you thought much about this?". After aggregating the individual ANES data state wise, we calculate an HH polarization index for each state in 2016. (We disregard the option "don't know" or "haven't thought much about it").

[29] The small number of observations forbids the addition of too many control variables, and GDP per capita in many ways summarizes an important number of differences among US states.

3.4 Results on the adoption of social distancing measures

Table 2 displays the results of our analysis on the determinants of the number of social distancing measures announced by US states. The estimated equation is:

$$Log\_Number\_of\_measures\_announced_i = \alpha + \beta_1 BBR_i + \beta_2 RDF_i + \beta_3 POLITICAL_i + \beta_4 X_i + \varepsilon_i$$

where $i = 1,\ldots,50$ states, α is a constant, ε an error term, *BBR* is a set of fiscal rule variables, *RDF* is a set of rainy-day fund variables, *POLITICAL* is a set of political variables and *X* is a set of control variables (namely: Log GDP, Region average number of measures, State *i* Covid cases, and State *i*'s Region Covid cases). The estimation technique we use is the Log-OLS. Given the count nature of the dependent variable, an expected option would have been to use Poisson or Negative Binomial models. However, the conditions for using a Poisson model are that the considered events should occur randomly over a fixed period of time, which is not met in our context. More importantly, the probability of occurrence should be very small while the number of incidences should be very large. This limiting condition of Poisson is not fulfilled in our context, and implementing a Poisson procedure would deliver unreliable estimates. Moreover, the Poisson regression is estimated by maximum likelihood estimation, and thus usually requires a large sample size (see Hutchinson & Holtman, 2005), another condition not met in our case. A Negative Binomial would run into the same issues, plus the fact that the distribution of our dependent variable is not over-dispersed. Finally, we have performed the sk (skewness-kurtosis) test on the original variable, and the distribution is close to a normal one. These reasons have led us

to use the Log-OLS procedure. As we have no zeros in the dependent variable, we do not lose data due to undefined values, and we keep the benefits of simple OLS, while considering the specificities of the dependent variable. (Moreover, the normality test is even improved.)

Tables 3.4 and 3.5 display our results for this first regression. We find that the percentage of Trump voters in the 2016 presidential election tends to reduce the number of policy measures taken in US states to face the epidemic. However, neither this variable, nor the one indicating the presence of a Republican governor, nor their interaction, appear as robustly significant determinants. Also, the degree of political polarization in the state is not significant. Hence, contrary to what the literature suggests, partisan considerations do not appear as a strong determinant of the adoption of social distancing measures in the US states.

Much more significant are the results related to BBRs and RDFs. Although the ACIR index of stringency of budget rules is never significant (see Table 3.4), some rules definitely are, according to the Hou & Smith (2010) classification scheme. As shown in Table 3.5, the rules number 6 and, especially, 7 are decisive. Rule number 7, in particular, has led to a higher number of policy measures being adopted. This rule is a technical one, and indicates that "Controls are in place on supplementary appropriations". And supplementary appropriations are exactly what could have been needed to face the consequences of stay-at-home orders, as well as of business closures. Hence, it appears that, since the negative economic consequences of the lockdown measures were expected, as long as some legal controls were in place, governors have relied on policy measures, anticipating that the level

of deficit would be reined in by the controls.[30] This interpretation is reinforced by the fact that, when we include the expected expenditure or the expected revenue, the rules lose their degree of significance, to the benefit of the fiscal variables. Higher expected revenues (or expenditures, as both are strongly correlated) have tended to increase the number of social-distancing measures the US states have announced.

The amount of funds in the RDF is also positive and significant, with a large coefficient, indicating that governors anticipated that rainy-day funds could be used to smooth out the consequences of social distancing and lockdown. Here again, the inclusion of variables related to the budget forecast tends to reduce the significance of the RDF, which indicates that these amounts may be considered when preparing the budget, and that this has been the case in the face of the epidemic.

Finally, wealthier states (in terms of GDP per capita) may have been more reluctant to adopt a higher number of policy measures against the epidemic. Although the coefficient is barely significant, this may be related to the fact that Democratic states are more usually urban and wealthier, as compared to Republican states. Besides, the number of measures adopted in the region to which the state belongs has a positive, though not significant, impact. Moreover, the number of declared Covid-19 cases in a state has a positive and significant impact on the adoption of a larger number of measures.

[Tables 3.4 and 3.5 here]

[30] To save on space, we only reproduce results for the significant rules. Other results are available upon request.

3.5 Results on the timing of adoption of social distancing measures

In Tables 3.6 to 3.10, we look at the length of time (measured by the number of days between the first Covid-19 case declared in the state and the adoption of the policy by the same state) it took to adopt each type of social distancing policy measure.[31] We look separately at each policy measure, because each kind of policy under analysis may have a different effect on government finance. For instance, closing schools does not directly reduce revenues (though it might reduce expenditure), while closing restaurants or other business activities can have a more direct effect on government finance, if only in terms of lost tax revenues.

The equation, estimated by standard OLS, is:

$$TimeAfter1stCase\_policy\_p_i = \alpha + \beta_1 BBR_i + \beta_2 BSF_i + \beta_3 POLITICAL_i + \beta_4 X_i + \varepsilon_i$$

where $p = 1,\ldots,5$ policy, $i = 1,\ldots,50$ state, α is a constant, ε an error term, *BBR* a set of fiscal rule variables, *RDF* is a set of rainy-day fund variables, *POLITICAL* is a set of political variables and *X* is a set of control variables (namely: *LogGDP(per cap.), End Balance Forecast 2020, Revenue Forecast 2020, Expenditure Forecast 2020, State i Covid cases Policy p, State i's Region Covid cases Policy p,* and *Share of states in Region of state i with Policy p announced*).

We discard the ACIR stringency index, which was never significant in the previous analysis, and focus on BBRs. Here again, if the percentage of Trump voters negatively

[31] Given the small number of observations for curfews and restrictions on travel, we neglect these two measures in the rest of the study.

influences the adoption of any policy measure, the coefficient is large but rarely significant, whatever the type of policy concerned.[32] The number of declared cases in the state has a significant and strong influence on the length of adoption, with a positive coefficient. In other words, the more important the number of cases, the slower the adoption of social distancing measures.[33] This is not the case for the number of cases in the surrounding states, in particular for the closure of schools (Table 3.7). The more important the number of cases in the region, the faster the adoption of school closures. This may be due to the fact that schools host children from surrounding states, in particular those close to the border of each state, and that governors wanted to reduce the number of infections coming from outside of their state.

The institutional and legal context has also played a major role. Whatever the policy measure, the softer the rules on getting funds out of the RDF, the fewer the number of days for adopting any type of policy. Hence, it clearly appears that the negative economic impacts of the fight against the epidemic have been considered, and that rainy-day funds have been considered as essential to smooth out their financial consequences: the more funds are easily available, the easier it is to offset the losses in revenues (resp. increases in expenditures) induced by the restrictions on economic activity.

A set of fiscal rules has played a major role in the adoption of policy measures. In particular, BBR number 2, which stipulates that "Own-source revenue must match

[32] The small number of observations means one should be cautious about statistical significance.

[33] The question of reverse causality (i.e., states that took longer time to adopt policies have seen a higher increase in the number of cases) may be raised. To tackle this, we have estimated the same regressions with a 7, 10 and 14-days lag of the Covid-19 cases regressor. in this set of estimates, the instantaneous number of Covid-19 cases is no longer significant, while the lags are strongly significant. Yet, the sign associated with the respective coefficients is still always positive. Hence, we think it can be safely interpreted that the number of cases has indeed slowed the decision process, as the delay between the increase in cases and the announcement is increasing in the (lagged) number of cases.

expenditures", tends to reduce the number of days necessary to implement school closures (see Table 3.7), and, less significantly, non-essential business closures and stay-at-home orders (see Tables 3.9 and 310). As this rule means that any policy with an impact on revenues must have an offsetting change in expenditures, it is not surprising that its impact has been strong on school closures (essentially, school closures tend to reduce expenditures, as furloughed teachers can benefit from federal support, while school buses no longer need to be fueled or maintained). In other words, this policy measure has allowed governors to save money, which they needed in order to deal with the consequences of other policy measures.

On the contrary, BBR number 6 has lengthened the period of adoption of many policy measures, school closures being the exception (see Tables 3.6, 3.8, 3.9 and 3.10). This rule stipulates that "The governor must sign a balanced budget". As the epidemic has hit the US during the period of preparation of the next fiscal year's budgets, it is not surprising that this recommendation has led to some delays in the adoption of sanitary measures, as their impact on the budget could only be expected to increase it. This also points to the possibility that governors have considered a trade-off between health and the economic dimensions, induced by the presence of fiscal rules. In other words, the fear of an unbalanced budget, and of breaking the commitment stipulated by fiscal rules, may have prompted governors to be more reluctant in adopting sanitary measures. Remarkably, the fiscal requirements have more influence than the other variables related to budget preparation (forecasts of revenues, expenditures, or the end balance).

[Tables 3.6, 3.7, 3.8, 3.9 and 3.10 here]

What prompts a state to act faster? We consider if each state has acted faster than the average state in its region, and we do this for each type of policy measure (see the five Policy p_Yr variables in Table 3.1 for descriptive statistics). Tables 3.11 and 3.12 synthetize our results. We still find that the percentage of Trump voters is never significant. However, in this set of regressions only does the variable attached to a Republican governor become significant. More precisely, it is always negative, meaning that in states dominated by the Republicans, speed of adoption of social distancing measures has been inferior (in comparison with Democrat-governed states). This is especially true for restaurant restrictions, non-essential business closures, and stay-at-home orders, which are probably the measures with the largest consequences on the budget balance.

More important than partisan considerations are the (deterioration in) health conditions and the legally binding fiscal requirements. First, for all the policy measures, it appears that the number of Covid-19 cases has played an important role: the higher the number, the slower a governor announces a policy. The effect is even more significant for restrictions on gathering, restaurant restrictions and school closures (compared to stay-at-home orders and non-essential business closures). The health authorities' recommendations on limiting the spread of the pandemic by reducing the opportunities for reunions of people are followed tardily, and only in proportion to the number of cases – which may nevertheless have been too lately to stop the spread of the disease.

Second, BBR number 1 ("Governor must submit a balanced budget") has reduced the speed of adoption of school closures and stay-at-home orders (though the effect is barely significant for the latter). Given that these measures may have only second-order impact in

a budget, this could be expected. The same interpretation applies to BBR number 4 ("Legislature must pass a balanced budget"), significant only for restrictions on restaurants. BBR number 7 ("Controls are in place on supplementary appropriations") tends to increase the probability of acting quickly: where adjustments to the budget are subject to audits or controls, governors have tended to act faster, knowing that any fiscal drift would be monitored.

Finally, BBR number 9 ("No deficits are allowed to be carried over into the next fiscal year or budget cycle") increases the probability to act quickly. And this is true with regard to all the policy measures, whether on limiting gatherings of people or on closing economic activities in the face of the spread of the disease, although with different degrees of significance. Theoretically, later adoption of containment measures could lead to harsher consequences for government finances, as later adoption might imply a longer period of economic freezing. In fact, from an epidemiological perspective, the earlier the containment measures are taken, the shorter those containment measures may need to last. Thus, even if governors and their administrations are only concerned about avoiding or reducing the length of the economic freeze, it makes less sense for them to adopt containment measures later, when the epidemic has already exploded.[34] This is exactly what our results reveal: governors seem to have acted under the combined pressure of the need for information in face of uncertainty, as confirmed by the importance of Covid-19 cases, and of the institutional constraints they have to deal with (as confirmed by the importance of BBRs - in particular, here, the no-deficit-carryover rule).

[34] We thank one of the referees for this interpretation.

Rules on budget stabilization funds do not seem to have influenced the speed of decision-taking. However, the coefficient attached to the level of the RDF is significant and positive for restaurant restrictions and non-essential business closures. While these measures are typically those with a potentially large effect on the budget, acting fast in this case means a greater impact, and the rainy-day fund is then even more useful to cushion the shock. These funds would compensate for an unexpected deficit, and thus to face the fiscal consequences of the pandemic. This interpretation is reinforced by the fact that the amount in the RDF has a negative coefficient for school closures, which have reduced consequences for the budget balance (compared to, say, non-essential business closures). Here again, our results support the view that the institutional context (the fiscal rules and other financial regulations) have had a remarkable influence in face of the pandemic.

[Tables 3.11 and 3.12 here]

3.6 Conclusion

Balanced-budget rules have played a decisive role: rules of a political nature – in particular that the governor balance the budget – increase the delay in decision-making, while those forbidding the carryover of a deficit prompt them to act faster. One explanation would be that rules of a political nature place a significant weight on the political responsibility of the governor, especially on the responsibility for the consequences of his actions in balancing the budget. This increases the time for reflection, and the probability of acting slowly, comparatively to neighboring states. Conversely, technical rules tend to increase the number of measures as well as the speed of announcement. Would technical rules would only indirectly engage the governor's responsibility to balance the budget, removing

responsibility for policies in favor of painful future budgetary adjustments, at the price of generating more procyclicality?

Rainy-day funds allow for faster decision-making and their amount favors the implementation of more social distancing measures. The absence of a rainy-day fund creates more uncertainty. While the National Association of State Budget Officers has in recent years signaled that the states' problem was the management of surpluses (rather than budget cuts as in the 2008 crisis), we show that higher reserves made it easier to adapt in face of the pandemic shock. Moreover, while rules explicitly linked to economic and/or revenues volatility (i.e., more restrictive ones) favor the counter-cyclical role in front of an unanticipated economic shock, in the case of this health crisis, withdrawal rules not explicitly linked to this volatility (i.e., softer ones) have allowed for better reactivity (unlike in a classic recession, the measures announced to confront the sanitary crisis are likely to create the fiscal shock).

Our results indicate that, although politics can be an important determinant in the adoption of policy measures, in face of the pandemic, institutional economic rules or, more precisely, budgetary constraints have trumped politics.

Table 3. 1 Descriptive statistics – US states' social distancing measures

I/ April 7, 2020, based on 8 policy measures	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
Number of measures announced	50	5.02	0.91	2.00	7.00
Log_Number of measures announced	50	1.59	0.21	0.69	1.95
Pol.1 : Gatherings, Recom/Rest	50	1.00	0.00	1.00	1.00
Pol.2 : School Closures	50	0.96	0.20	0.00	1.00
Pol.3 : Restaurant Restrictions	50	0.94	0.24	0.00	1.00
Pol.4 : NEO Business Closures	50	0.92	0.27	0.00	1.00
Pol.5 : Stay at Home	50	0.88	0.33	0.00	1.00
Pol.6 : Quarantine	50	0.24	0.43	0.00	1.00
Pol.7 : State Curfew	50	0.04	0.20	0.00	1.00
Pol.8 : Travel Restrictions	50	0.04	0.20	0.00	1.00
II/ Average number of measures adopted by other states in the region on the day of the announcement of the last measure by state *i*					
Region average number of measures	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
	50	5.03	0.56	3.50	5.67
III/ Delay in announcing a policy in days from the date of first Covid-19 case in the state					
Variables : _TimeAfter1stCase_ *policy p*	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
- Pol.1 : Gatherings. Recom/Rest	50	11.18	13.07	-6.00	53.00
- Pol.2 : School Closures	48	11.54	12.70	-5.00	51.00
- Pol.3 : Restaurant Restrictions	47	13.91	13.30	-1.00	54.00
- Pol.4 : NEO Business Closures	46	15.65	14.18	-1.00	56.00
- Pol.5 : Stay at Home	44	21.93	14.17	5.00	64.00
IV/ Yr = 1 if the state has a length of time for announcing the adoption of a measure inferior to the average observed by the other states in the region. 0 otherwise.					
Variables "*Policy p*_Yr"	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
- Pol.1 : Gatherings. Recom/Rest	50	0.66	0.48	0.00	1.00
- Pol.2 : School Closures	50	0.62	0.49	0.00	1.00
- Pol.3 : Restaurant Restrictions	50	0.58	0.50	0.00	1.00
- Pol.4 : NEO Business Closures	50	0.54	0.50	0.00	1.00
- Pol.5 : Stay at Home	50	0.50	0.51	0.00	1.00
V/ Share of other states in the region having adopted *Policy p* on the day of the announcement by state *i*					
Variables "Share of states in Region of state i with *Policy p* adopted"	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
- Pol.1 : Gatherings. Recom/Rest	50	0.44	0.35	0.00	1.00
- Pol.2 : School Closures	50	0.44	0.37	0.00	1.00
- Pol.3 : Restaurant Restrictions	50	0.32	0.33	0.00	1.00
- Pol.4 : NEO Business Closures	50	0.41	0.36	0.00	1.00
- Pol.5 : Stay at Home	50	0.45	0.33	0.00	1.00

Table 3. 2 Descriptive statistics – US states' Covid-19 cases & policy measures

I/ Number of Covid-19 cases in the state at the announcement of the last decided measure					
State *i* Covid cases	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
	50	941.94	1547.13	19.00	7954.00
II/ Number of Covid-19 cases in other states in the region when the last measure is announced					
State *i* 's Region Covid cases	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
	50	8513.66	13073.23	126.00	83871.00
III/ Number of Covid-19 cases in the state at the announcement of *Policy p* by state *i*					
Variables "State *i* Covid cases *Policy p"*	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
- Pol.1 : Gatherings, Recom/Rest	50	72.54	132.58	0.00	727.00
- Pol.2 : School Closures	48	98.38	190.26	0.00	967.00
- Pol.3 : Restaurant Restrictions	47	113.91	187.83	0.00	967.00
- Pol.4 : NEO Business Closures	46	210.13	299.53	0.00	1083.00
- Pol.5 : Stay at Home	44	974.14	1605.62	11.00	7954.00
IV/ Number of Covid-19 cases in the state at the announcement of *Policy p* by state *i* or at April 7th if the state has not announced the measure					
Variable "State *i* Covid cases *Policy p*" BIS	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
- Pol.1 : Gatherings, Recom/Rest	50	72.54	132.58	0.00	727.00
- Pol.2 : School Closures	50	460.56	2441.79	0.00	17309.00
- Pol.3 : Restaurant Restrictions	50	298.38	1179.37	0.00	8333.00
- Pol.4 : NEO Business Closures	50	261.80	373.15	0.00	1746.00
- Pol.5 : Stay at Home	50	920.58	1515.54	11.00	7954.00
V/ Number of Covid-19 cases in other states of the region at announcement of *Policy p* by state *i*					
Variables "State *i*'s Region Covid cases *Policy p"*	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
- Pol.1 : Gatherings, Recom/Rest	50	777.98	1763.34	8.00	9700.00
- Pol.2 : School Closures	48	827.00	1843.80	51.00	10281.00
- Pol.3 : Restaurant Restrictions	47	844.60	1043.21	40.00	6088.00
- Pol.4 : NEO Business Closures	46	2292.80	4858.13	40.00	23731.00
- Pol.5 : Stay at Home	44	7820.64	13440.50	310.00	83871.00
VI/ Number of Covid-19 cases in other states of the region at announcement of *Policy p* by state *i*. or at April 7th if the state has not announced the measure					
Variable "State *i*'s Region Covid cases *Policy p*" BIS	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
- Pol.1 : Gatherings, Recom/Rest	50	777.98	1763.34	8.00	9700.00
- Pol.2 : School Closures	50	2172.56	8305.12	51.00	57350.00
- Pol.3 : Restaurant Restrictions	50	2055.68	7084.53	40.00	50014.00
- Pol.4 : NEO Business Closures	50	2642.64	4807.92	40.00	23731.00
- Pol.5 : Stay at Home	50	8730.56	14424.55	310.00	83871.00

Table 3. 3 Descriptive statistics – Fiscal rules and control variables

I/ Balanced-budget rules (BBRs)	Obs	Mean	Std. Dev.	Min	Max
ACIR (1987) : Degree of Stringency	50	8.08	2.63	0.00	10.00
Hou & Smith's (2010) classification (T: technical; P: political)					
BBR #1: *"Governor must submit a balanced budget" (P)*	50	0.80	0.40	0.00	1.00
BBR #2: *"Own-source revenue must match (meet or exceed) expenditures" (T)*	50	0.22	0.42	0.00	1.00
BBR #3: *"Own-source revenue and general obligation (or unspecified) debt (or debt in anticipation of revenue) must match (meet or exceed) expenditures" (T)*	50	0.72	0.45	0.00	1.00
BBR #4: *"Legislature must pass a balanced budget" (P)*	50	0.72	0.45	0.00	1.00
BBR #5: *"A limit is in place on the amount of debt that may be assumed for the purpose of deficit reduction" (T)*	50	0.42	0.50	0.00	1.00
BBR #6: *"Governor must sign a balanced budget" (P)*	50	0.04	0.20	0.00	1.00
BBR #7: *"Controls are in place on supplementary appropriations" (T)*	50	0.38	0.49	0.00	1.00
BBR #9: *"No deficit may be carried over to the next fiscal year (or biennium)" (T)*	50	0.14	0.35	0.00	1.00
II/ Budget Stabilization Funds	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
Budget stabilization withdrawal conditions (Pew. 2017): No fund	50	0.06	0.24	0.00	1.00
RDF Restrictive Rules	50	0.32	0.47	0.00	1.00
RDF Soft Rules	50	0.78	0.42	0.00	1.00
RDF Both types of rules	50	0.16	0.37	0.00	1.00
Rainy Day Fund /GDP	50	0.0051	0.0082	0.00	0.0420
III/ Political and Economic Variables	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
Republican Governor	50	0.52	0.50	0.00	1.00
Trump Voters (%. 2016)	50	0.49	0.10	0.29	0.69
Polarization Index (2016)	50	2459.68	1209.07	1659.81	10000.00
Log (GDP per capita)	50	11.0028	0.1872	10.5944	11.3967
Expenditure Forecast / GDP	50	.0469586	.015388	.0199704	.1020465
Revenue Forecast / GDP	50	.0466631	.0155593	.0195457	.102949
Budget Balance Forecast / GDP	50	.0019332	.0025334	0	.0123652

Table 3. 4 Determinants of the *number* of social distancing measures announced by US states (April 7, based on 8 possible measures)

	1	2	3	4	5	6	7	8	9	10
BBRs stringency (ACIR)	-0.0166 (-1.44)	-0.00431 (-0.35)	-0.00221 (-0.16)	-0.0104 (-0.82)	-0.0122 (-1.08)	-0.0145 (-1.23)	-0.0134 (-1.19)	-0.0157 (-1.33)	-0.0158 (-1.21)	-0.0168 (-1.26)
Trump voters (%, 2016)		-0.608 (-1.54)	-0.451 (-0.78)	-0.392 (-0.94)	-0.131 (-0.34)	-0.0625 (-0.16)	-0.0923 (-0.24)	-0.0251 (-0.06)	-0.0339 (-0.06)	-0.00748 (-0.01)
Republican governor		-0.0463 (-0.76)	0.0811 (0.24)	-0.0287 (-0.47)	-0.0262 (-0.48)	-0.0193 (-0.34)	-0.0260 (-0.47)	-0.0190 (-0.34)	-0.0265 (-0.08)	-0.0388 (-0.12)
Rep. Gov * Trump voters			-0.265 (-0.38)						0.0156 (0.02)	0.0438 (0.07)
Polarization index										-0.000093 (-0.89)
Polarization index squared										6.99e-09 (0.72)
Rainy Day Fund/GDP		9.795** (2.45)	9.952** (2.45)	8.740** (2.19)	4.387 (1.11)	4.275 (1.07)	4.176 (1.05)	4.065 (1.02)	4.050 (0.99)	4.148 (0.84)
RDF Restrictive rules		0.0175 (0.25)	0.0209 (0.29)	-0.00402 (-0.06)	-0.0244 (-0.38)	-0.0316 (-0.48)	-0.0289 (-0.45)	-0.0359 (-0.55)	-0.0362 (-0.54)	-0.0285 (-0.41)
RDF Soft rules		-0.0347 (-0.47)	-0.0339 (-0.46)	-0.0657 (-0.88)	-0.0554 (-0.84)	-0.0686 (-0.99)	-0.0578 (-0.87)	-0.0709 (-1.03)	-0.0710 (-1.02)	-0.0696 (-0.94)
Log (GDP per cap.)		-0.329 (-1.57)	-0.317 (-1.48)	-0.279 (-1.34)	-0.366* (-1.94)	-0.340* (-1.76)	-0.373* (-1.98)	-0.347* (-1.80)	-0.347* (-1.76)	-0.307 (-1.49)
Region average number of measures		0.0582 (0.95)	0.0634 (0.99)	0.0769 (1.24)	0.0786 (1.41)	0.0860 (1.51)	0.0795 (1.43)	0.0869 (1.53)	0.0866 (1.48)	0.0791 (1.28)
Log (1+State *i* Covid cases)		0.0412* (1.71)	0.0402 (1.65)	0.0464* (1.94)	0.0686*** (2.95)	0.0691*** (2.95)	0.0691*** (2.98)	0.0697*** (2.98)	0.0698*** (2.92)	0.0568** (2.03)
Log(1+State *i's* Region Covid cases)		0.0271 (1.05)	0.0252 (0.94)	0.0249 (0.98)	-0.000325 (-0.01)	0.000584 (0.02)	-0.00285 (-0.11)	-0.00182 (-0.07)	-0.00174 (-0.07)	0.00639 (0.23)
End Balance Forecast 2020/GDP				18.17 (1.51)		8.583 (0.74)		8.654 (0.75)	8.649 (0.74)	8.302 (0.68)
Revenue Forecast 2020/GDP					6.789*** (3.21)	6.305*** (2.83)				
Expenditure Forecast 2020/GDP							7.091*** (3.25)	6.597*** (2.88)	6.605*** (2.82)	6.384** (2.45)
Constant	1.728*** (17.67)	4.777* (1.88)	4.559* (1.73)	4.062 (1.60)	4.707** (2.06)	4.375* (1.87)	4.779** (2.10)	4.438* (1.90)	4.451* (1.84)	4.228* (1.69)
Observations	50	50	50	50	50	50	50	50	50	50
R-squared	0.041	0.411	0.414	0.445	0.537	0.544	0.540	0.547	0.547	0.559
Adjusted R-squared	0.021	0.260	0.244	0.284	0.403	0.396	0.406	0.400	0.383	0.364

Note: t-statistics in parentheses, * p<.1, ** p<.05, ***p<.01

Table 3. 5 Determinants of the *number* of social distancing measures announced by US states (April 7, based on 8 possible measures)

	1	2	3	4	5	6	7	8	9	10
BBR #6 (Hou & Smith)	-0.0227 (-0.15)	-0.180 (-1.19)	-0.180 (-1.17)	-0.189 (-1.25)	-0.282* (-1.99)	-0.281* (-1.96)	-0.277* (-1.97)	-0.277* (-1.94)	-0.279* (-1.93)	-0.286* (-1.92)
BBR #7 (Hou & Smith)	0.144** (2.39)	0.136** (2.32)	0.135** (2.22)	0.123** (2.03)	0.0896 (1.62)	0.0878 (1.55)	0.0930* (1.69)	0.0914 (1.62)	0.0875 (1.48)	0.0898 (1.49)
Trump voters (%, 2016)		-0.808** (-2.17)	-0.785 (-1.41)	-0.703* (-1.80)	-0.436 (-1.21)	-0.422 (-1.13)	-0.417 (-1.15)	-0.405 (-1.09)	-0.303 (-0.55)	-0.262 (-0.46)
Republican governor		-0.0376 (-0.65)	-0.0208 (-0.07)	-0.0249 (-0.42)	-0.00844 (-0.16)	-0.00646 (-0.12)	-0.00867 (-0.16)	-0.00691 (-0.13)	0.0644 (0.23)	0.0777 (0.26)
Rep. Gov * Trump voters			-0.0351 (-0.06)						-0.148 (-0.25)	-0.168 (-0.28)
Polarization index										-0.0000709 (-0.71)
Polarization index squared										4.28e-09 (0.46)
Rainy Day Fund/GDP		11.38*** (3.00)	11.39*** (2.96)	10.73*** (2.79)	6.146 (1.59)	6.120 (1.57)	6.123 (1.59)	6.102 (1.56)	6.096 (1.54)	7.139 (1.48)
RDF Restrictive rules		0.0431 (0.63)	0.0434 (0.63)	0.0333 (0.48)	0.0194 (0.31)	0.0179 (0.28)	0.0162 (0.26)	0.0149 (0.23)	0.0159 (0.25)	0.0271 (0.40)
RDF Soft rules		0.0200 (0.28)	0.0198 (0.27)	0.00204 (0.03)	0.00726 (0.11)	0.00390 (0.06)	0.00637 (0.10)	0.00338 (0.05)	0.00179 (0.03)	-0.00137 (-0.02)
Log(GDP per cap.)		-0.403* (-2.02)	-0.402* (-1.97)	-0.351* (-1.69)	-0.364* (-2.00)	-0.354* (-1.86)	-0.370** (-2.04)	-0.361* (-1.89)	-0.353* (-1.81)	-0.309 (-1.51)
Region average number of measures		0.0294 (0.50)	0.0301 (0.49)	0.0477 (0.77)	0.0716 (1.29)	0.0744 (1.28)	0.0717 (1.29)	0.0742 (1.28)	0.0779 (1.29)	0.0662 (1.04)
Log (1+State *i* Covid cases)		0.0621** (2.60)	0.0618** (2.51)	0.0645** (2.69)	0.0859*** (3.73)	0.0859*** (3.68)	0.0863*** (3.74)	0.0863*** (3.69)	0.0853*** (3.55)	0.0749** (2.68)
Log(1+State *i's* Region Covid cases)		0.00717 (0.28)	0.00703 (0.27)	0.00650 (0.26)	-0.0171 (-0.70)	-0.0168 (-0.68)	-0.0193 (-0.78)	-0.0189 (-0.76)	-0.0196 (-0.77)	-0.0104 (-0.38)
End Balance Forecast 2020/GDP				10.71 (0.95)		2.152 (0.20)		1.927 (0.18)	2.409 (0.22)	0.763 (0.06)
Revenue Forecast 2020/GDP					6.351*** (3.01)	6.224*** (2.79)				
Expenditure Forecast 2020/GDP							6.485*** (3.02)	6.368*** (2.80)	6.369*** (2.77)	6.473** (2.52)
Constant	1.540*** (41.22)	5.741** (2.38)	5.716** (2.30)	5.007* (1.98)	4.725** (2.13)	4.598* (1.97)	4.790** (2.17)	4.675* (2.01)	4.536* (1.87)	4.202 (1.69)
Observations	50	50	50	50	50	50	50	50	50	50
R-squared	0.109	0.494	0.494	0.506	0.593	0.594	0.594	0.595	0.595	0.607
Adjusted R-squared	0.071	0.347	0.330	0.346	0.461	0.447	0.463	0.448	0.433	0.416

Note: t-statistics in parentheses, * p<.1, ** p<.05, ***p<.01

Table 3. 6 Determinants of *length of announcement* of gatherings restrictions (April 7)

	1	2	3	4	5	6	7	8
Republican governor	3.994 (1.17)	3.474 (1.01)	3.483 (1.03)	3.545 (1.04)	3.327 (0.96)	-10.09 (-0.59)	-7.796 (-0.43)	-9.476 (-0.51)
Trump voters (%, 2016)	-24.16 (-1.30)	-27.04 (-1.44)	-30.86 (-1.63)	-31.14 (-1.63)	-31.65 (-1.64)	-49.65 (-1.67)	-44.76 (-1.41)	-45.32 (-1.41)
Log GDP (per cap.)	3.678 (0.36)	1.823 (0.17)	3.386 (0.33)	3.399 (0.33)	2.418 (0.23)	0.916 (0.09)	2.860 (0.25)	3.842 (0.32)
Rainy-day Fund/GDP	-117.7 (-0.60)	-79.07 (-0.40)	15.30 (0.07)	9.357 (0.04)	10.98 (0.05)	-15.64 (-0.07)	29.43 (0.12)	-4.286 (-0.02)
Log (1+State *i* Covid cases)	3.596*** (3.15)	3.590*** (3.14)	3.175*** (2.72)	3.186*** (2.72)	3.247*** (2.73)	3.231** (2.70)	3.065** (2.43)	2.773* (1.95)
Log(1+State *i's* Region Covid cases)	-0.535 (-0.41)	-0.612 (-0.47)	-0.123 (-0.09)	-0.116 (-0.09)	-0.223 (-0.16)	-0.546 (-0.38)	-0.241 (-0.15)	-0.0983 (-0.06)
Share of states in Region of state i with Policy *p* announced	-1.360 (-0.18)	-1.835 (-0.24)	-2.423 (-0.32)	-2.569 (-0.34)	-2.643 (-0.34)	-0.529 (-0.06)	-0.898 (-0.11)	-0.740 (-0.09)
BBR #6 (Hou & Smith)	23.63*** (2.82)	23.87*** (2.84)	26.23*** (3.09)	25.99*** (3.06)	25.75*** (3.00)	25.85*** (2.99)	25.48*** (2.91)	26.08*** (2.91)
RDF Restrictive rules	-1.648 (-0.44)	-1.463 (-0.39)	-1.646 (-0.45)	-1.585 (-0.43)	-1.492 (-0.40)	-1.533 (-0.41)	-1.396 (-0.37)	-1.427 (-0.37)
RDF Soft rules	-10.34** (-2.55)	-9.762** (-2.38)	-10.70** (-2.66)	-10.66** (-2.65)	-10.30** (-2.49)	-9.828** (-2.34)	-10.33** (-2.36)	-10.12** (-2.28)
End Balance Forecast 2020/GDP		-551.7 (-0.96)			-304.6 (-0.49)	-384.0 (-0.61)	-425.4 (-0.66)	-363.6 (-0.55)
Revenue Forecast 2020/GDP			-156.4 (-1.40)					
Expenditure Forecast 2020/GDP				-152.4 (-1.33)	-128.7 (-1.03)	-115.6 (-0.91)	-96.31 (-0.72)	-118.5 (-0.82)
Rep. Gov * Trump voters						27.48 (0.80)	23.26 (0.65)	26.60 (0.72)
Polarization index							-0.000895 (-0.47)	-0.00353 (-0.59)
Polarization index squared								0.000000254 (0.46)
Constant	-19.19 (-0.16)	3.849 (0.03)	-6.172 (-0.05)	-6.374 (-0.05)	4.357 (0.04)	29.44 (0.23)	6.138 (0.05)	1.135 (0.01)
Observations	50	50	50	50	50	50	50	50
R-squared	0.582	0.592	0.602	0.600	0.603	0.610	0.612	0.615
Adjusted R-squared	0.474	0.473	0.487	0.485	0.474	0.469	0.457	0.445

Notes: Policy *p* where *p* refers to the same category of policy; t-statistics in parentheses, * p<.1, ** p<.05, ***p<.01

Table 3. 7 Determinants of *length of announcement* of school closures (April 7)

	1	2	3	4	5	6	7	8
Republican governor	7.702** (2.55)	8.386** (2.65)	7.888** (2.57)	7.928** (2.59)	8.374** (2.61)	-12.15 (-0.70)	-11.82 (-0.65)	-8.648 (-0.45)
Trump voters (%, 2016)	-40.23** (-2.18)	-37.77* (-2.01)	-36.03* (-1.78)	-34.96* (-1.72)	-35.11* (-1.71)	-66.55* (-2.00)	-65.78* (-1.88)	-62.31* (-1.74)
Log (GDP per cap.)	0.403 (0.04)	1.253 (0.13)	-0.170 (-0.02)	-0.293 (-0.03)	0.647 (0.06)	-1.180 (-0.12)	-0.847 (-0.08)	-2.410 (-0.21)
Rainy-day Fund/GDP	-3.846 (-0.02)	-21.56 (-0.11)	-48.75 (-0.23)	-58.15 (-0.28)	-50.63 (-0.24)	-72.79 (-0.35)	-65.33 (-0.28)	-26.79 (-0.11)
Log (1+State *i* Covid cases)	5.479*** (4.23)	5.699*** (4.27)	5.757*** (4.09)	5.814*** (4.14)	5.854*** (4.12)	5.973*** (4.22)	5.918*** (3.75)	6.285*** (3.68)
Log(1+State *i's* Region Covid cases)	-2.858** (-2.12)	-2.769** (-2.04)	-3.064** (-2.17)	-3.136** (-2.20)	-2.957* (-2.00)	-3.297** (-2.20)	-3.246* (-1.99)	-3.422** (-2.05)
Share of states in Region of state i with Policy p announced	2.599 (0.31)	1.585 (0.19)	1.994 (0.24)	1.964 (0.23)	1.420 (0.17)	-0.00565 (-0.00)	0.00716 (0.00)	-0.153 (-0.02)
BBR #2 (Hou & Smith)	-10.49*** (-3.08)	-11.47*** (-3.14)	-10.79*** (-3.10)	-10.86*** (-3.12)	-11.48*** (-3.10)	-12.12*** (-3.26)	-12.04*** (-3.10)	-12.43*** (-3.13)
RDF Restrictive rules	-1.084 (-0.33)	-1.452 (-0.44)	-1.328 (-0.40)	-1.410 (-0.42)	-1.570 (-0.47)	-1.695 (-0.51)	-1.658 (-0.48)	-1.676 (-0.48)
RDF Soft rules	-12.04*** (-3.24)	-13.03*** (-3.30)	-12.33*** (-3.26)	-12.41*** (-3.28)	-13.04*** (-3.26)	-12.83*** (-3.22)	-12.86*** (-3.17)	-13.52*** (-3.18)
End Balance Forecast 2020/GDP		461.4 (0.77)			361.4 (0.54)	305.3 (0.46)	292.8 (0.42)	251.0 (0.36)
Revenue Forecast 2020/GDP			61.42 (0.54)					
Expenditure Forecast 2020/GDP				75.76 (0.65)	45.92 (0.35)	45.77 (0.35)	48.34 (0.36)	77.11 (0.53)
Rep. Gov * Trump voters						43.62 (1.19)	42.94 (1.13)	36.68 (0.92)
Polarization index							-0.000155 (-0.09)	0.00312 (0.54)
Polarization index squared								-0.000000307 (-0.60)
Constant	31.71 (0.29)	20.11 (0.18)	34.01 (0.30)	34.50 (0.31)	24.32 (0.21)	60.56 (0.51)	56.68 (0.44)	65.47 (0.50)
Observations	48	48	48	48	48	48	48	48
R-squared	0.619	0.625	0.622	0.623	0.626	0.641	0.641	0.645
Adjusted R-squared	0.516	0.510	0.506	0.508	0.498	0.504	0.489	0.479

Notes: Policy *p* where *p* refers to the same category of policy; t-statistics in parentheses, * p<.1, ** p<.05, ***p<.01

Table 3. 8 Determinants of *length of announcement* of restaurant restrictions (April 7)

	1	2	3	4	5	6	7	8
Republican governor	4.383 (1.25)	3.924 (1.08)	3.766 (1.05)	3.831 (1.07)	3.652 (0.99)	-21.44 (-1.10)	-16.11 (-0.77)	-17.35 (-0.81)
Trump voters (%, 2016)	-20.03 (-0.98)	-21.58 (-1.03)	-25.11 (-1.17)	-25.05 (-1.16)	-25.20 (-1.15)	-59.29* (-1.75)	-51.31 (-1.44)	-51.64 (-1.43)
Log (GDP per cap.)	1.608 (0.14)	0.398 (0.03)	2.227 (0.19)	2.181 (0.19)	1.413 (0.12)	-3.761 (-0.30)	-0.486 (-0.04)	0.719 (0.05)
Rainy-day Fund /GDP	-83.59 (-0.39)	-66.09 (-0.30)	-10.80 (-0.05)	-16.67 (-0.07)	-16.54 (-0.07)	-52.83 (-0.22)	46.78 (0.17)	15.85 (0.06)
Log (1+State *i* Covid cases)	4.155*** (3.07)	4.002*** (2.87)	3.592** (2.38)	3.638** (2.41)	3.626** (2.37)	3.538** (2.33)	3.278** (2.09)	2.897 (1.62)
Log(1+State *i's* Region Covid cases)	0.333 (0.20)	0.260 (0.16)	0.573 (0.34)	0.583 (0.35)	0.505 (0.29)	0.0112 (0.01)	0.510 (0.27)	0.541 (0.28)
Share of states in Region of state i with Policy p announced	-3.362 (-0.37)	-3.814 (-0.42)	-2.723 (-0.30)	-2.869 (-0.32)	-3.197 (-0.34)	-7.412 (-0.76)	-6.676 (-0.68)	-6.022 (-0.60)
BBR #6 (Hou & Smith)	27.08*** (3.12)	27.35*** (3.12)	28.76*** (3.22)	28.53*** (3.20)	28.48*** (3.15)	28.82*** (3.22)	27.61*** (3.02)	27.86*** (3.00)
RDF Restrictive rules	-2.156 (-0.54)	-1.916 (-0.47)	-1.925 (-0.48)	-1.909 (-0.47)	-1.809 (-0.44)	-2.132 (-0.53)	-1.670 (-0.40)	-1.581 (-0.38)
RDF Soft rules	-12.44*** (-2.89)	-11.92** (-2.69)	-12.13*** (-2.80)	-12.13*** (-2.80)	-11.89** (-2.66)	-11.55** (-2.60)	-12.20** (-2.68)	-11.65** (-2.45)
End Balance Forecast 2020/GDP		-360.8 (-0.56)			-204.1 (-0.29)	-499.0 (-0.68)	-551.8 (-0.75)	-485.2 (-0.64)
Revenue Forecast 2020/GDP			-110.6 (-0.86)					
Expenditure Forecast 2020/GDP				-103.4 (-0.79)	-88.27 (-0.62)	-61.13 (-0.43)	-28.92 (-0.19)	-54.61 (-0.34)
Rep. Gov * Trump voters						52.85 (1.31)	42.45 (0.99)	44.37 (1.01)
Polarization index							-0.00164 (-0.75)	-0.00476 (-0.66)
Polarization index squared								0.000000289 (0.46)
Constant	-4.328 (-0.03)	11.24 (0.08)	-3.333 (-0.03)	-3.370 (-0.03)	5.296 (0.04)	80.89 (0.55)	41.27 (0.26)	35.70 (0.22)
Observations	47	47	47	47	47	47	47	47
R-squared	0.556	0.559	0.565	0.563	0.564	0.586	0.593	0.596
Adjusted R-squared	0.432	0.421	0.428	0.426	0.411	0.423	0.415	0.400

Notes: Policy *p* where *p* refers to the same category of policy; t-statistics in parentheses, * p<.1, ** p<.05, ***p<.01

Table 3. 9 Determinants of *length of announcement* of non-essential business closures (April 7)

	1	2	3	4	5	6	7	8
Republican governor	3.524 (1.03)	3.499 (1.00)	3.442 (0.98)	3.493 (1.00)	3.482 (0.98)	-8.965 (-0.51)	-5.558 (-0.31)	-7.569 (-0.40)
Trump voters (%, 2016)	-30.10 (-1.51)	-30.31 (-1.47)	-30.95 (-1.48)	-30.45 (-1.44)	-30.53 (-1.42)	-48.45 (-1.48)	-42.23 (-1.24)	-42.79 (-1.24)
Log (GDP per cap.)	-2.821 (-0.25)	-2.923 (-0.25)	-2.648 (-0.23)	-2.755 (-0.24)	-2.839 (-0.24)	-4.142 (-0.34)	-1.717 (-0.14)	-0.576 (-0.04)
Rainy-day Fund /GDP	21.90 (0.10)	23.13 (0.11)	33.28 (0.15)	26.24 (0.12)	26.26 (0.11)	-0.938 (-0.00)	97.39 (0.36)	61.91 (0.22)
Log (1+State *i* Covid cases)	4.501*** (3.67)	4.489*** (3.55)	4.388*** (3.05)	4.457*** (3.09)	4.458*** (3.04)	4.397*** (2.98)	4.110** (2.68)	3.700** (2.10)
Log(1+State *i'* Region Covid cases)	-1.196 (-0.80)	-1.204 (-0.79)	-1.102 (-0.68)	-1.159 (-0.71)	-1.172 (-0.69)	-1.212 (-0.71)	-0.778 (-0.43)	-0.729 (-0.39)
Share of states in Region of state i with Policy p announced	9.267 (1.13)	9.265 (1.11)	9.038 (1.07)	9.175 (1.08)	9.191 (1.06)	8.483 (0.97)	7.800 (0.88)	8.281 (0.92)
BBR #2 (Hou & Smith)	-6.505* (-1.70)	-6.427 (-1.54)	-6.310 (-1.55)	-6.431 (-1.58)	-6.390 (-1.48)	-6.100 (-1.40)	-6.411 (-1.45)	-6.526 (-1.46)
BBR #6 (Hou & Smith)	22.61** (2.63)	22.65** (2.59)	23.05** (2.52)	22.77** (2.50)	22.77** (2.46)	23.47** (2.50)	22.38** (2.34)	22.78** (2.34)
RDF Restrictive rules	-1.252 (-0.34)	-1.234 (-0.33)	-1.239 (-0.33)	-1.243 (-0.33)	-1.233 (-0.32)	-1.445 (-0.37)	-0.962 (-0.24)	-0.977 (-0.25)
RDF Soft rules	-12.16*** (-3.01)	-12.11*** (-2.84)	-12.09*** (-2.92)	-12.13*** (-2.93)	-12.10*** (-2.80)	-11.89** (-2.72)	-12.53*** (-2.80)	-11.98** (-2.56)
End Balance Forecast 2020/GDP		-34.11 (-0.05)			-23.77 (-0.03)	-139.6 (-0.19)	-179.0 (-0.24)	-111.5 (-0.15)
Revenue Forecast 2020/GDP			-20.94 (-0.16)					
Expenditure Forecast 2020/GDP				-8.135 (-0.06)	-6.556 (-0.04)	-4.225 (-0.03)	28.42 (0.18)	1.531 (0.01)
Rep. Gov * Trump voters						26.32 (0.73)	19.59 (0.52)	22.85 (0.59)
Polarization index							-0.00161 (-0.75)	-0.00512 (-0.69)
Polarization index squared								0.000000322 (0.50)
Constant	55.24 (0.42)	56.58 (0.42)	54.53 (0.41)	54.98 (0.42)	55.96 (0.41)	79.01 (0.56)	50.29 (0.34)	46.51 (0.31)
Observations	46	46	46	46	46	46	46	46
R-squared	0.656	0.656	0.657	0.656	0.656	0.662	0.668	0.671
Adjusted R-squared	0.545	0.531	0.532	0.531	0.517	0.510	0.503	0.490

Notes: Policy *p* where *p* refers to the same category of policy; t-statistics in parentheses, * p<.1, ** p<.05, ***p<.01

Table 3. 10 Determinants of *length of announcement* of stay-at-home orders (April 7)

	1	2	3	4	5	6	7	8
Republican governor	4.091 (1.09)	4.045 (1.04)	4.016 (1.03)	4.098 (1.06)	4.058 (1.02)	-6.247 (-0.33)	-4.261 (-0.22)	-7.828 (-0.39)
Trump voters (%, 2016)	-36.14 (-1.50)	-36.30 (-1.47)	-36.41 (-1.48)	-36.10 (-1.46)	-36.24 (-1.44)	-48.55 (-1.43)	-41.93 (-1.15)	-57.42 (-1.43)
Log (GDP per cap.)	-5.101 (-0.38)	-5.180 (-0.38)	-4.742 (-0.34)	-5.134 (-0.36)	-5.257 (-0.36)	-5.218 (-0.36)	-1.772 (-0.11)	-6.902 (-0.40)
Rainy-day Fund /GDP	-336.0 (-1.03)	-334.3 (-1.01)	-315.8 (-0.82)	-337.9 (-0.88)	-338.4 (-0.87)	-340.4 (-0.86)	-70.38 (-0.11)	-681.0 (-0.75)
Log (1+State *i* Covid cases)	3.427** (2.36)	3.402** (2.23)	3.321* (1.84)	3.437* (1.91)	3.423* (1.86)	3.402* (1.82)	3.099 (1.57)	2.581 (1.26)
Log(1+State *i's* Region Covid cases)	-1.914 (-0.95)	-1.892 (-0.91)	-1.834 (-0.84)	-1.922 (-0.86)	-1.909 (-0.84)	-1.821 (-0.79)	-1.364 (-0.55)	-1.377 (-0.55)
Share of states in Region of state i with Policy p announced	3.870 (0.38)	3.726 (0.36)	3.698 (0.36)	3.888 (0.37)	3.759 (0.35)	4.202 (0.38)	3.911 (0.35)	2.378 (0.21)
BBR #2 (Hou & Smith)	-7.208* (-1.70)	-7.106 (-1.56)	-7.085 (-1.59)	-7.219 (-1.62)	-7.126 (-1.50)	-6.845 (-1.42)	-6.752 (-1.38)	-6.722 (-1.37)
BBR #6 (Hou & Smith)	26.04*** (2.80)	26.07*** (2.76)	26.29** (2.69)	26.02** (2.68)	26.03** (2.63)	26.63** (2.65)	25.91** (2.52)	25.79** (2.51)
RDF Restrictive rules	-0.979 (-0.23)	-0.952 (-0.22)	-0.996 (-0.23)	-0.979 (-0.22)	-0.950 (-0.21)	-1.219 (-0.27)	-1.183 (-0.26)	-0.428 (-0.09)
RDF Soft rules	-11.31** (-2.47)	-11.25** (-2.37)	-11.28** (-2.42)	-11.31** (-2.42)	-11.25** (-2.33)	-11.18** (-2.29)	-11.72** (-2.32)	-9.881* (-1.82)
End Balance Forecast 2020/GDP		-49.50 (-0.07)			-52.08 (-0.07)	-104.9 (-0.13)	-221.9 (-0.27)	95.46 (0.11)
Revenue Forecast 2020/GDP			-19.15 (-0.10)					
Expenditure Forecast 2020/GDP				1.841 (0.01)	4.026 (0.02)	1.824 (0.01)	-9.548 (-0.05)	-30.19 (-0.15)
Rep. Gov * Trump voters						21.49 (0.55)	17.11 (0.42)	24.42 (0.59)
Polarization index							-0.00173 (-0.53)	-0.00978 (-1.08)
Polarization index squared								0.000000949 (0.95)
Constant	98.48 (0.64)	99.49 (0.63)	95.49 (0.60)	98.75 (0.62)	100.1 (0.62)	104.6 (0.64)	66.01 (0.36)	147.1 (0.73)
Observations	44	44	44	44	44	44	44	44
R-squared	0.585	0.585	0.585	0.585	0.585	0.589	0.593	0.606
Adjusted R-squared	0.442	0.424	0.424	0.424	0.405	0.391	0.375	0.373

Notes: Policy *p* where *p* refers to the same category of policy; t-statistics in parentheses, * p<.1, ** p<.05, ***p<.01

Table 3. 11 Probability of a *shorter* time period before adoption of a policy (April 7)

	Gathering restrictions			School closures			Restaurant restrictions		
BBR #1 (Hou & Smith)				-3.412*	-3.698**	-4.441**			
				(-1.78)	(-2.16)	(-2.14)			
BBR #4 (Hou & Smith)							-4.679	-2.803**	-2.949
							(-0.98)	(-2.03)	(-1.64)
BBR #9 (Hou & Smith)	2.189	2.638*	2.339*				6.756	3.409**	2.161**
	(1.63)	(1.96)	(1.84)				(1.60)	(2.05)	(2.03)
RDF Restrictive rules	1.626			1.912			4.286		
	(1.38)			(1.42)			(0.96)		
RDF Soft rules	1.542			2.662*			1.040		
	(1.26)			(1.81)			(0.45)		
Republican governor	-1.116	-0.668	-0.518	-1.289	-0.843	-0.945	-5.716*	-2.169**	-2.155*
	(-1.44)	(-0.93)	(-0.85)	(-1.34)	(-1.13)	(-1.24)	(-1.68)	(-1.97)	(-1.94)
Log (GDP per cap.)	1.289	1.070	0.212	0.711	2.037	0.0871	29.86	2.899	1.584
	(0.54)	(0.47)	(0.10)	(0.27)	(0.78)	(0.04)	(1.45)	(0.93)	(0.45)
Rainy-day Fund /GDP	-11.64	-6.500	-10.66	-122.9**	-130.1**	-146.0**	1214.5	618.0**	718.4*
	(-0.42)	(-0.21)	(-0.33)	(-2.18)	(-2.05)	(-2.04)	(1.23)	(2.13)	(1.86)
Trump voters (%2016)	5.679			-3.558			38.91		
	(1.54)			(-0.51)			(1.42)		
End Balance Forecast 2020/GDP		426.3			155.4			-407.7	
		(1.56)			(1.04)			(-1.50)	
Revenue Forecast 2020/GDP			21.17			39.00			-83.42*
			(1.04)			(1.30)			(-1.78)
Log(1+State *i* Covid cases policy *p*)	-1.262***	-1.227***	-1.040***	-1.996***	-1.616**	-1.588**	-5.834	-1.992***	-2.013***
	(-3.08)	(-3.08)	(-2.93)	(-2.67)	(-2.49)	(-2.26)	(-1.51)	(-2.96)	(-2.81)
Log(1+State *i*' Region Covid cases policy *p*)	0.122	0.245	0.0144	0.270	0.336	0.160	-0.145	-0.328	-0.166
	(0.39)	(0.93)	(0.06)	(0.68)	(1.03)	(0.51)	(-0.10)	(-0.87)	(-0.41)
Share of states in Region of state *i* with policy *p* announced	0.188	0.0309	0.0757	1.073	0.119	-0.0828	10.68*	2.357	1.044
	(0.16)	(0.03)	(0.07)	(0.47)	(0.08)	(-0.05)	(1.74)	(1.22)	(0.52)
Constant	-14.41	-8.947	0.589	1.118	-14.07	7.631	-323.5	-20.10	-3.375
	(-0.54)	(-0.36)	(0.03)	(0.04)	(-0.49)	(0.27)	(-1.41)	(-0.60)	(-0.09)
Observations	50	50	50	50	50	50	50	50	50
Pseudo R-squared	0.534	0.489	0.448	0.692	0.612	0.625	0.836	0.686	0.722

Notes: Policy *p* where *p* refers to the same category of policy; t-statistics in parentheses, * p<.1, ** p<.05, ***p<.01

Table 3. 12 Probability of a *shorter* time period before adoption of a policy (April 7)

	Non-essential business closures			**Stay-at-home orders**		
BBR #1 (Hou & Smith)				-1.444*	-1.438*	-1.276*
				(-1.65)	(-1.71)	(-1.66)
BBR #7 (Hou & Smith)	1.708*	2.287**	1.315*			
	(1.68)	(2.13)	(1.74)			
BBR #9 (Hou & Smith)	3.046*	3.841*	2.839*	1.421	1.585	1.813*
	(1.81)	(1.77)	(1.92)	(1.63)	(1.63)	(1.80)
RDF Restrictive rules	0.193			1.316**		
	(0.19)			(2.08)		
RDF Soft rules	1.275			0.594		
	(0.89)			(0.91)		
Republican governor	-1.802*	-2.384*	-1.512*	-1.376**	-1.637**	-1.469**
	(-1.69)	(-1.75)	(-1.82)	(-2.16)	(-2.38)	(-2.39)
Log (GDP per cap.)	1.292	1.477	1.309	-2.161	-1.743	-1.104
	(0.31)	(0.48)	(0.51)	(-0.95)	(-0.89)	(-0.56)
Rainy-day Fund /GDP	275.6	841.9**	362.1	-13.49	-0.650	-4.996
	(0.93)	(1.99)	(1.42)	(-0.32)	(-0.02)	(-0.14)
Trump voters (%2016)	2.988			-1.316		
	(0.47)			(-0.33)		
End Balance Forecast 2020/GDP		-619.7**			299.6	
		(-2.11)			(1.40)	
Revenue Forecast 2020/GDP			-12.94			-7.206
			(-0.43)			(-0.30)
Log(1+State *i* Covid cases policy *p*)	-1.443**	-1.726**	-1.346**	-0.696**	-0.580**	-0.647*
	(-2.23)	(-2.25)	(-2.54)	(-2.51)	(-2.07)	(-1.95)
Log(1+State *i's* Region Covid cases policy *p*)	0.376	0.483	0.459	-0.0815	-0.109	-0.111
	(0.67)	(0.73)	(1.04)	(-0.27)	(-0.39)	(-0.38)
Share of states in Region of state *i* with policy *p* announced	-0.186	-0.944	-0.520	-1.018	-0.794	-1.144
	(-0.11)	(-0.42)	(-0.33)	(-0.96)	(-0.76)	(-1.07)
Constant	-13.26	-12.45	-11.40	30.60	25.38	19.37
	(-0.28)	(-0.36)	(-0.41)	(1.18)	(1.18)	(0.90)
Observations	50	50	50	50	50	50
Pseudo R-squared	0.659	0.723	0.633	0.479	0.441	0.406

Notes: Policy *p* where *p* refers to the same category of policy; t-statistics in parentheses, * p<.1, ** p<.05, ***p<.01

General Conclusion

This thesis contributes to the literature on political business cycles (PBCs), by looking at vote-buying, the relation between popularity and polarization, and how rules constrain politicians. The first project examines vote-buying phenomenon under different political regimes. This project focuses on Pakistan, as it is the largest new democracy exposed to various shades of authoritarian and democratic regimes. It provides micro-level evidence from consumption patterns of households and local election dates data, using a difference-in-difference methodology, during different political regimes in the country. This is an original contribution to the extant literature on vote-buying, being the first study to analyze vote-buying phenomenon under different political regimes. The results show a rise in consumption expenditures around elections, which indicates a vote-selling phenomenon during authoritarian, as well as democratic regimes in Pakistan. The results are robust for different food groups as well as for a "swing district".

The second paper contributes to the literature on political budget cycles (PBCs), popularity of incumbents and polarization of electorate. This paper examines empirically how the popularity related incentives of incumbent politicians condition the success of a PBC, given the polarization of the electorate. This is a novel contribution as the extant literature lacks empirical evidence related to popularity and polarization. Results indicate that popularity and polarization have a role to play, in the American states (from 1987 through 2017). The incentives of an incumbent governor to engineer a PBC depend on her level of popularity. The higher the popularity, the higher the incentives to engineer a PBC, but only when the polarization of the electorate is also large. We confirm the non-linear relation of popularity

and PBC given the polarization, thus confirming the theoretical contributions of Hanusch & Magleby (2014) and Horz (2021).

The third chapter contributes that how fiscal rules constrain the politicians for the adoption of policy measures to fight covid-19. As the saying goes "a cure cannot be worse than the problem". Governors in the US states faced the twin problem of choosing political considerations over social distancing measures in face of the pandemic shock. Our results show that politics is an important consideration in the adoption of social distancing measures but overall, that budgetary constraints have trumped over politics during pandemic. Balance budget rules and budget stabilization funds have played a decisive role, as the states with surpluses in rainy-day funds (budget stabilization fund) acted more quickly to implement policy measures to combat pandemic, in contrast to other states.

The essays in the thesis enhance our understanding of various connections of politics and economy. The first essay helps to understand vote-buying phenomenon empirically in a developing democracy with various phases of authoritarian and democratic regimes. Future research can focus to find what role elites play in developing democracies to undermine continuation of democratic regimes in such countries. The second essay helps to understand the non-linear relationship between popularity and political budget cycle (PBC) in the US states given the polarization of the electorate. Future research can be about building a comparative popularity and polarization dataset of developed democracies to disentangle their relationship in a set of countries. The third essay helps to understand how political considerations and budgetary rules constrained the politicians in adoption of policy measures during pandemic. All the three essays are stand-alone contributions but they all contribute to understand various phenomenon of political economy.

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