Democracy and Macroprudential Banking Regulation*

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Abstract

Do democracies implement more banking regulations than authoritarian states? Existing studies examine the relationship between democracy and financial development and banking crises, but we lack an understanding of how political regimes influence banking regulations. Examining the increased global focus on macroprudential policy, which preemptively restricts credit expansion to decrease the risk and magnitude of banking crises, I argue that democratic countries limit regulatory implementation. Because the difficulty of retrospective evaluation of macroprudential policies exacerbates the short-termism of democratic decision-making, and the heterogeneous distributional effects of regulation increase the transaction costs of veto bargaining, democratic countries tend to resist reform and maintain status quo regulatory systems. Empirically, a panel dataset of macroprudential policies in 126 countries from 1990-2020 and case studies of the United States, China, and Hungary indicate robust empirical support for the democratic disadvantage of macroprudential regulations.

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Introduction

The economic and political consequences of the Great Financial Crisis (GFC) of 2007-2009 have led to increased interest in financial regulation, especially in macroprudential policies. Contrary to traditional banking regulations that aim to improve individual bank health, macroprudential policies regulate banking systems by restricting borrowers' credit access and mitigating the collective impact of banks' behavior on financial systems. Policymakers and economists expect this new regulatory framework to reduce the potential negative externalities of banking crises, thereby preventing macroeconomic and political instability caused by banking crises, including regime change, terrorism, and the rise of political extremism (Walter, Ray, and Redeker 2020; Armingeon and Guthmann 2014; Bechtel, Hainmueller, and Margalit 2014; Fernández-Albertos and Kuo 2016). Despite this persuasive argument in the wake of the GFC, the adoption of macroprudential regulatory reform varies across countries. What explains this variation?

In this article, I examine how political regimes influence the implementation of macroprudential policies. A large literature demonstrates that democratic governance produces effective public policy, highlighting the role of the democratic elements, including vertical accountability through competitive elections (Dixit and Londregan 1996; Grossman and Helpman 1996); horizontal accountability through executive constraints (North and Weingast 1989; Tsebelis 2011); and open access to markets (Eichengreen and Leblang 2008; Steinberg, Nelson, and Nguyen 2018; Milner and Kubota 2005). When it comes to finance, scholars largely agree that democratic countries have larger and more sophisticated financial systems than autocracies (Keefer 2007, 2008; Barth, Caprio, and Levine 2005; Calomiris and Haber 2014; Menaldo and Yoo 2015). However, not all public policies are equally responsive to democratic governance. Here, I explore mechanisms through which macroprudential policy may put democracies at a disadvantage.

I argue that democratic countries are less likely to adopt macroprudential policies because democratic governments tend to maintain status quo regulatory frameworks. Two

theoretical mechanisms anchor this argument. First, vertical accountability through elections encourages leaders to adopt a myopic time horizon due to shorter tenure and frequent elections. Because macroprudential policies impose preventative restrictions on the financial system as a whole, these measures are costly in the short term, so voters and political leaders seek to prevent short-term credit contractions. Moreover, the short-termism of democratic decision-making is further exacerbated in areas, such as macroprudential policy, where retrospective policy evaluation is difficult. Even if macroprudential policy successfully prevents a crisis, future retrospective voters may not realize the policy benefits as the crisis did not occur, cannot be easily measured by causal observers, and is easy to ignore. In this way, uncertainty in the future timing and magnitude of crises compounds the short-termism of democratic decision-making.

Second, democratic institutions impose more significant constraints on governments than autocratic regimes. The existence of multiple veto players limits regulatory action, leading to status quo bias in democracies. Moreover, banking regulation increases the cost of veto bargaining in democracies because special interest groups in financial industries are strong, employing ample resources for lobbying. In particular, macroprudential regulation not only divides banks from veto players in other sectors but also leads to fragmentation among financial sectors as regulation creates a heterogeneous distribution of benefits among banking sectors. On the other hand, in autocracies, power consolidation in autocracies is more likely in the financial sector because political leaders tend to capture the banking sector to generate rents that help maintain their ruling coalitions (Calomiris and Haber 2014; Shih 2020). Discretion in the decision-making process means political transaction costs are internalized; therefore, as the power of authoritarian leaders is more consolidated, veto bargaining costs are greatly diminished.

To test the democratic disadvantage in macroprudential policy, I utilize three empirical approaches. First, using a panel dataset provided by the IMF that tracks the adoption of various types of macroprudential regulations from 1990 to 2020 in 126 countries, I employ

event history models to estimate the timing of macroprudential policy implementation. The results confirm that, all else equal, advanced democratic regimes are 26 percent (95% CI: 0.3% to 50.0%) less likely to adopt at any given time. Second, exploiting democratization as a quasi-natural experiment, I estimate the effect of sharp changes in political regime on the cumulative number of policies adopted. I employ synthetic control methods to empirically construct a plausible counterfactual, comparing countries that experienced democratization to synthetic countries without such a change. The result shows that democratization causes adoption of about one (0.87, 95% CI: 0.05 to 1.7) fewer out of nine tools of macroprudential policies on average over ten years. Finally, I take a closer look at the policy implementation processes in the United States, China, and Hungary to examine how different governance systems shape the implementation of macroprudential policies. Political leaders in the two nonliberal democracies swiftly changed their economic institutions to implement macroprudential policies, whereas in the United States, reform of prudential regulations remained marginal.

The findings contribute to our understanding of the politics of regulation. Scholarship on the political economy of regulation emphasizes that special interest groups shape regulation by capturing politicians to exploit the rents regulation creates (Stigler 1971; Becker 1983; Shleifer and Vishny 1998; Barth, Caprio, and Levine 2005; Kroszner and Strahan 2002; Demirguc-Kunt, Kane, and Laeven 2008). In comparative approaches to regulation, others argue that institutions matter since policymakers are constrained by electoral rules, and the degree of competition in the last election (Barth, Caprio, and Levine 2005; Rosenbluth and Schaap 2003). This article builds on this literature by exploring how democratic governance, compared to autocratic governance, limits macroprudential actions. Empirically, only a few scholars have tested the effect of political regime on the adoption of banking regulations, largely because of the difficulty in constructing a panel data for financial regulations (Barth, Caprio, and Levine 2005; Jones and Zeitz 2019; Demirguc-Kunt, Kane, and Laeven 2008). Using panel data of macroprudential policy that has not been used in previous research,

this article is, to my knowledge, the first to estimate causal relationships between political regimes and banking regulation using time series data.

Finally, this article advances the literature on the disadvantages of democratic governance. A large body of scholarly work studies the negative influence of democratic institutions on economic stability (Lipscy 2019), trade (Kono 2006), migration (Breunig, Xun, and Luedtke 2012), capital formation (Dhillon, Pickering, and Sjö 2019), and financial crisis (Lipscy 2018). Moreover, a growing literature on climate change and pandemic response questions whether authoritarian or democratic governance better addresses contagious disease outbreaks and environmental issues (Cheibub, Hong, and Przeworski 2020; Thomson and Ip 2020; Cepaluni, Dorsch, and Branyiczki 2020; von Stein 2022; Beeson 2018). In line with these studies, the findings of this article speak to broader debates related to 21st-century challenges, which share the common features of negative externalities, highly heterogeneous distributional effects, and difficult retrospective evaluation.

Democracy and Financial Systems

A large literature in political economy has examined the relationship between democratic institutions and financial systems, including democracy's role in financial development and banking crises. However, the literature reaches a paradoxical conclusion on the question of democratic advantage, finding that democratic elements promote financial development (Keefer 2007, 2008; Barth, Caprio, and Levine 2005; Calomiris and Haber 2014; Menaldo and Yoo 2015), but are less effective in preventing crises (Lipscy 2018; Rochet 2008; Gandrud and Hallerberg 2015; Woll 2014). Although banking regulation could be the key factor in bridging the gap between financial development and stability, we have relatively little knowledge about the relationship between democracy and banking regulation.

Studies on financial development largely agree that democratic countries have larger and more sophisticated financial systems than autocratic countries. Because the median voter

tends to have significant debts relative to assets, politicians are under electoral pressure to provide access to affordable credit (Calomiris and Haber 2014; Menaldo and Yoo 2015). Because democracies tend to have a stricter rule of law and promote extensive civil liberties than autocracies, politicians in democracies are likely to develop a liberalized banking system by securing property rights, promoting new entries, and privatizing publically-owned financial institutions (Keefer 2008; Barth, Caprio, and Levine 2005; Bordo and Rousseau 2006; Haber, North, and Weingast 2008). Because executive constraints in democracies mitigate the establishment of crony connections, democratic countries are more likely to promote more competitive and efficient banking markets than autocracies (Keefer 2007; Calomiris and Haber 2014).

When it comes to the threat of banking crises, however, democracy's advantages turn into drawbacks. Lipscy (2018) empirically shows that democracies more face banking crises frequently than autocracies. As the traditional literature on political business cycles argues that myopic voters and short electoral cycles produce shortsighted outcomes in macroeconomic policies (Nordhaus 1975; Hibbs 1977; Tufte 1978), voters in democracies are more concerned with eliminating the short-term financial hurdle of the debt burden than with long-term financial stability. For instance, Antoniades and Calomiris (2020) find that voters punish incumbents for contractions in mortgage credit supply, while Kern and Amri (2021) suggest politicians use not only fiscal and monetary policy to court voters but also to implement credit policies like interest rate subsidies and tax breaks to enhance credit growth. Thus, vertical accountability through elections is unlikely to produce regulations that could reduce the risk of banking crises.

Moreover, greater executive constraints and multiple veto players inefficiently delay government responses to credit bubbles in democracies. The presence of multiple veto players provides more stability in policy outcomes (Tsebelis 2011), but constraints on decision-making processes render the state less able to act on emerging issues (Kim 2007; Lipscy 2019). In contrast, regulators in autocracies can control credit expansion with fewer veto

players. Thereby autocracies' inefficient banking systems could ironically better restrict the excesses of credit.

Likewise, bank bailouts are another case in which democracies produce shortsighted policy outcomes. Some argue that vertical accountability through electoral constraints drives politicians' reluctance to bail out banks because voters-as-taxpayers prefer to redress bank insolvency with minimum public costs (Rosas 2006; Keefer 2007). However, voters' aversion to bailouts reflects their ignorance of the positive outcome of bailouts, as well as their overestimation of bailouts' long-term fiscal costs. In the short run, bailouts can appear to be an unfair income transfer to the bankers who caused a crisis from taxpayers. But assets acquired through bailouts can yield profits for public entities which hold these assets in the long run because the price of assets is below the trend price under distressed markets [1]. This misconception of the fiscal costs of bailouts is rooted in the uncertainty about long-term costs and benefits, leading democracies to shortsighted policy outcomes in the decision of bailouts, because the final costs are determined by the future market conditions and thus endogenous to the success of the bailout itself (Gandrud and Hallerberg 2015; Woll 2014)[2]

However, less attention has been paid to the effect of shortsighted democratic governance on regulation. Instead, studies of the political economy of regulation have emphasized the role of horizontal accountability: because regulation is considered as a product of rent-seeking, prominent studies argue private interest groups that exploit regulation as a means of enhancing their profits will shape banking regulations regardless of the type of political regime[3]. However, the literature's focus on interest groups has led to mixed predictions on the effects of democracy. On the one hand, democratic governments may directly ameliorate

[1] For instance, the Japanese government's recapitalization of banks in late 1990, which costs 10.3 trillion yen, profits 1.3 trillion yen as of September 2021 (See URL: https://www.dic.go.jp/content/000029554.pdf). In the longest case, the recapitalized bank took 16 years to repay the capital to the government. Another example is the Troubled Asset Relief Program in the Obama administration, reporting a total net government profit is 109 billion dollars as of August 2021 (See URL: https://projects.propublica.org/bailout/).

[2] In contrast to Keefer (2007) that finds the negative relationship between electoral competitiveness and fiscal costs, Gandrud and Hallerberg (2015) empirically find no negative association between electoral when they estimate the relations over a longer time horizon than the original estimations by Keefer (2007).

[3] For democracies, Stigler (1971); Posner (1974); Peltzman (1976); Becker (1983), and for autocracies, see Shleifer and Vishny (1998); Barth, Caprio, and Levine (2005).

market failure by implementing regulation because greater executive constraints weaken the incentive to create a crony banking system (Calomiris and Haber 2014). On the other hand, democracies may be wary of enacting regulatory restrictions to avoid corruption (Barth, Caprio, and Levine 2005). This article aims to adjudicate these claims by examining banking regulations that pursue to prevent future banking crises.

Democratic Disadvantage in Banking Regulation

Vertical Accountability and Retrospective Evaluation

Political leaders in democracies are compelled to be myopic due to voters' preference for credit expansions and the risk of frequent turnover due to elections. An autocratic leader, on the other hand, is less sensitive to mass preferences, and thus more tolerant of the possibility that crisis-preventing regulation may cause credit contraction. Thus, voters and politicians in democracies are less incentivized to implement intertemporal policies that might only carry future benefits.

Moreover, the vertical accountability of democratic governments discourages action in areas, like macroprudential policy, where retrospective policy evaluation is difficult. Even if macroprudential policy provides a large aggregate economic benefit, in the long run, the realization of that benefit may not occur for many years until the next potential financial crisis. Moreover, if this event is successfully prevented, it may be hard for future retrospective voters to notice as no event occurred. Uncertainty in the future timing and magnitude of crises thus compounds the short-termism of democratic decision-making, resulting in policy inaction. In contrast, banking crises are a critical threat to authoritarian leaders, as exogenous shocks may undermine regimes by reallocating resources that support the ruling coalitions and galvanizing mass uprising (O'Donnell, Schmitter, and Whitehead 1986; Acemoglu and Robinson 2006; Haggard and Kaufman 1995; Shih 2020). Thus, authoritarian leaders have strong incentives to implement macroprudential policies to prevent future banking crises.

Horizontal Accountability and Heterogenous Distribution

To implement new policies, political leaders need to overcome political constraints. The presence of multiple veto players places greater constraints on a policymaking process, thereby making it harder to adopt substantial policy changes. Although the presence of multiple veto points may help governments commit to the policies they announce (North and Weingast 1989; Tsebelis 2011), the stability the veto players provide may be a drawback when governments respond to new issues emerge (Kim 2007; Lipscy 2019). In particular, banking regulation involves costly veto bargaining in democracies because special interest groups in financial industries are strong, employing ample resources for lobbying. On the other hand, in autocracies, discretion in the decision-making process implies that political transaction costs are internalized, and thus, costs of veto bargaining tend to be much lower.

Moreover, macroprudential regulation not only pits banks as veto players against actors from other economic sectors but also leads to fragmentation among financial institutions because these regulations create a heterogeneous distribution of benefits, depending on the business models, such as the size of assets, regions, target borrowers, and financial products. In contrast, political leaders in autocracies tend to capture the banking sector because financial industries generate rents that help maintain their ruling coalitions. Because they control the entire banking sector, their utility functions average over the mix of benefits and costs posed by regulation and crisis. If in the aggregate, a crisis is more costly than regulation, autocrats will favor and impose regulation, whereas, in a democracy, those banks which would lose more from regulation than crisis are likely to veto. Therefore, by internalizing the costs of crisis and regulation, autocrats solve the regulation problem better than high-veto-point democracies.

Macroprudential Policy: Concepts, Politics, and Measurement

Policy Concepts

Macroprudential policies are a novel concept that can be operationalized using a series of different policy tools, and which has been politically challenging to adopt and implement. Prior to the GFC, banking regulation focused on the soundness of individual banks, using a "microprudential" approach. This "microprudential" approach assumed that systemic risk was a matter of direct contagion from one failed institution to the other so that the regulatory goal is to maintain each bank's health (Armour et al. 2016). The GFC demonstrated the inadequacy of this approach. Scholars and regulators recognized that the root cause of systemic risk was the inefficiency of financial markets, where imperfect information, herding, and negative externalities drive actors' behavior (Borio 2003; Piroska, Gorelkina, and Johnson 2021), thereby creating demand for "macroprudential" policies that buttress the stability of the financial system as a whole.

Armour et al. (2016) illustrate the distinction between the microprudential and macroprudential approaches using an analogy between medicine and public health. They note that medicine is concerned with individual lives, while public health addresses the community as a whole. Just as medical treatment of sick patients does not necessarily prevent community spread of a contagious disease, regulations aimed at protecting individual institutions do not necessarily ensure the stability of the entire financial system. Borio (2003) also summarizes the assumptions about risk made by each approach. He notes macroprudential policy assumes that risk is in part endogenous to the behavior of the financial system, so this approach accounts for the negative externality that is created by a single bank failure. On the other hand, the microprudential approach assumes that risk is exogenous, and thus the approach does not take into account correlated risks and common exposures across financial institutions. Therefore, the macroprudential approach goes well beyond individual analysis

by monitoring the financial system and implementing pre-emptive regulation in anticipation of possible future shocks, rather than waiting until negative shocks occur (Borio 2003; Edge and Liang 2020).

Policy Tools

Although the concept of macroprudential policy is relatively new, some countries implemented some of these tools before the GFC without labeling them macroprudential. After the crisis, scholars and policymakers defined the range of individual tools that might be implemented. The IMF summarizes the key goals of macroprudential tools: 1) to promote resilience to shocks, 2) to avoid excessive credit growth, 3) to strengthen sectoral vulnerabilities to asset prices and exchange rates, and 4) to manage liquidity (International Monetary Fund 2013). To achieve these goals, policy tools are divided into two approaches: supply-side and demand-side.

The supply-side approach regulates banks and financial institutions by imposing capital and liquidity requirements. For instance, the implementation of Countercyclical Buffers (CCyB) requires banks to maintain additional capital on their balance sheets. The basic concept of this policy tool is equivalent to classical capital requirements, but is more stringent and builds on existing microprudential regulations to cover possible losses during a systemic crisis. On the other hand, the demand-side approach regulates aggregated credit growth by limiting the size of loans according to several different metrics. For instance, Limits to Loan-to-Value ratios (LTV) cap loans, including housing, automobile, and commercial real estate loans, relative to the value of the assets. Limits to the debt-service-to-income ratio (DSTI) restrict the size of debt service payments relative to total disposable income. A more holistic approach is Limits on Credit Growth (LCG) which governs credit growth by restricting an aggregated individual bank's credit growth to household and corporate sectors.

Politics of Macroprudential Policy

Macroprudential policy involves significant short-term costs, and policymakers are required to be forward-looking and pre-emptive for low-probability events (Edge and Liang 2020). This means that policymakers enforce macroprudential tools to slow down credit expansion when many stakeholders, including voters, are benefiting from credit expansion. In particular, several studies suggest short-term negative impacts of demand-side macroprudential regulation. Richter, Schularick, and Shim (2019) find, for instance, that a 10 percentage point decrease in the maximum LTV ratio leads to a 1.1% reduction in output over a four-year horizon. Also, the impact of LTV or DSTI on housing markets could cause a consumption cut because households would need to save more to get a mortgage. Of course, the long-term goal of macroprudential policies is to avoid the negative impact on GDP when a crisis occurs, but the balance between short-term economic and welfare costs imposed by macroprudential policy and future benefits of lower financial crisis likelihood is hard to estimate. In democracies, the mismatch between long and uncertain periods between crises and short and regular election cycles leads to a bias against new macroprudential regulations.

Another political issue is distributional consequences. Unlike monetary policy, macroprudential policy tends to create winners and losers in credit allocation (Edge and Liang 2020). In particular, demand-side macroprudential tools may increase income inequality in the short term, at least. For instance, LTV and DSTI have distributional consequences that favor the wealthy because these policies make it harder for poorer consumers to buy real estate or use real estate they own as collateral (Frost and van Stralen 2018). Moreover, it is difficult for interest groups, including banks, to assess their private net benefit from regulation. In the short run, macroprudential policy squeezes bank profits by imposing strict capital control and lending reductions, while in the future, banks will be beneficiaries of regulations that mitigate systemic crises. However, it is difficult to estimate each bank's long-term benefits mainly because the future negative externality depends on their business models and effectiveness of policy implementation, as well as the expected timing and severity of the next

crisis without additional regulation. Thus, uncertainty in (intertemporal) distributional effects prevents interest groups from assessing the utility they could gain in the future more than those of the status quo without short-term costs. This possible heterogenous distributional effect leads some banks to consider them as net losers, which increases political transaction costs in democracies.

Measuring Macroprudential Policy

To operationalize and measure the implementation of macroprudential policy, I use a database collected by the IMF. This recently published integrated Macroprudential Policy (iMaPP) database is a comprehensive examination of macroprudential policy, covering 17 policy instruments[4] for 134 countries from 1990 to 2020. This panel dataset covers the period before and after the GFC, which makes it advantageous for time series analysis compared to other data sets. For instance, World Bank and Barth, Caprio, and Levine (2005) have conducted surveys for several banking regulations, but their data is limited to sample years of cross-section data, which limits robust causal inference. Demirguc-Kunt, Kane, and Laeven (2008) create time-series data on banking regulation, but they only examine one policy adoption, deposit insurance. This article is, to my knowledge, the first to use these richer IMF data to explore the politics of macroprudential policy adoption.

The database records a monthly binary variable for policy actions, which I annualized to treat the country-year as the unit of analysis. While the database also captures the direction of policy actions, either tightening or loosening, this study focuses on the first adoption of each instrument in each country. Because macroprudential regulations are a novel tool for restricting credit expansion, the initial policy action in the study period is always a tightening of the regulation and is thus politically challenging. Thus, the initial policy adoption is a better measure of changes in regulatory frameworks than the changes in policy direction.

In this analysis, I analyze nine demand-side policy tools listed in Figure 1 and Table 1.

[4] International Monetary Fund (2014) provides the detailed definitions of each macroprudential policy instrument.

Table 1: **List of Macroprudential Policy Tools**

Macroprudential Tool	**Description**
Loan Restrictions	
Limits on Leverage of Bank (LVR)	Limits on leverage of banks, calculated by dividing a measure of capital by the bank's non-risk-weighted exposures.
Loan Loss Provision(LLP)	Loan loss provision requirements for macroprudential purposes, which include dynamic provisioning and sectoral provisions (e.g. housing loans).
Limits on Growth of Credit (LCG)	Limits on growth or the volume of aggregate credit, the household-sector credit, or the corporate-sector credit by banks, and penalties for high credit growth.
Loan Restrictions (LoanR)	Loan restrictions, that are more tailored than those captured in "LCG". They include loan limits and prohibitions, which may be conditioned on loan characteristics.
Limits to Loan-to-Value ratios (LTV)	Limits to the loan-to-value ratios, including those mostly targeted at housing loans, but also includes those targeted at automobile loans, and commercial real estate loans.
Limits to Debt-Service-to-Income Ratio (DSTI)	Limits to the debt-service-to-income ratio and the loan-to-income ratio, which restrict the size of debt services or debt relative to income. They include those targeted at housing loans, consumer loans, and commercial real estate loans.
Loan-to-Deposit Ratio (LTD)	Limits to the loan-to-deposit ratio and penalties for high LTD ratios.
Currency Restrictions	
Limits on Foreign Currency (LFC)	Limits on foreign currency (FC) lending, and rules or recommendations on FC loans.
Limits on Foreign Exchange (LFX)	Limits on net or gross open foreign exchange (FX) positions, limits on FX exposures and FX funding, and currency mismatch regulations.

Because demand-side tools have larger distributional and short-term impacts on the economy than supply-side tools, focusing on demand-side tools is appropriate to test the democratic disadvantage hypothesis.

Research Design

To analyze the effect of democracy on the adoption of macroprudential policy and the possible mechanisms through which democracy may influence policy adoption, I employ two different

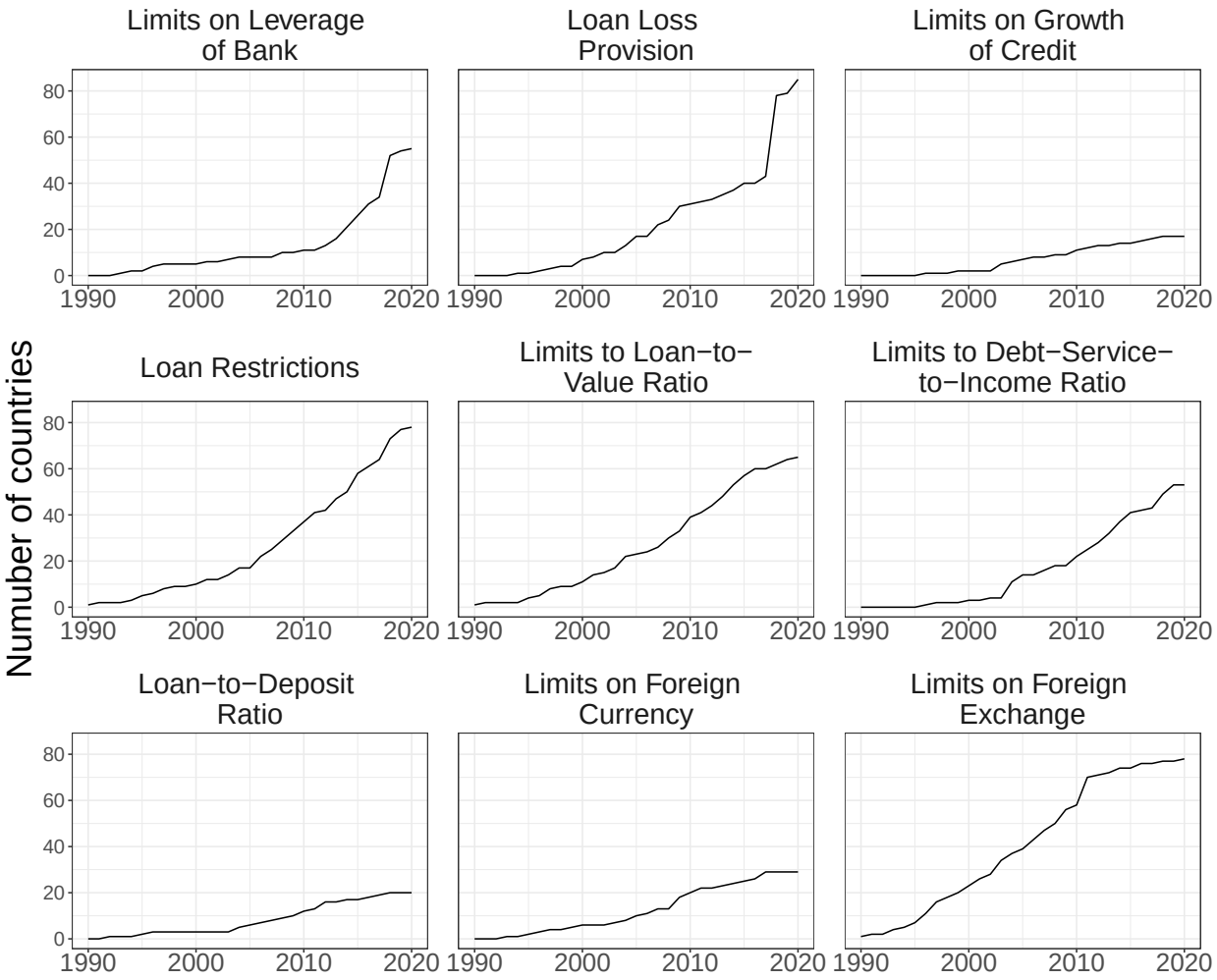

Figure 1: **Cumulative countries adopting macroprudential policies by policy tool.** Source: International Monetary Fund (2014).

estimation strategies. The first strategy uses an event history model to study the timing of adoption and the democratic characteristics which affect it. Considering each policy adoption as an event, this method can capture the underlying probability of event occurrence, in this case, of macroprudential policy adoption across nine policy tools. The second estimation strategy instead focuses on the relationship between large shifts in political regime and the cumulative number of policies adopted, using a synthetic control method. Exploiting the timing of democratization, I employ the synthetic control method to draw a valid causal inference.

Explanatory variables

My primary explanatory variable is *Democracy*. In the first study with the event history model, I use the liberal democracy index (`v2x_libdem`) provided by the V-Dem project (Coppedge et al. 2022). In contrast to binary measures of political regime, the liberal democracy index quantifies granular differences between and within democratic countries and autocracies that could affect the timing of policy adoption. The latent factor score of democracy provided by the V-Dem is more suitable for a panel data model or event history model with time-variant covariates. By contrast, I employ the dichotomous variable of political regime in the second study. Because the synthetic control model and difference-in-difference methods generally assume the existence of a natural experiment, I use a dichotomous measure of democracy as a treatment variable. The Boix-Miller-Rosato Dichotomous Index (Boix, Miller, and Rosato 2013) codes legislative actions, electoral turnovers, internal coups, and external interventions as the turning point of democratization when it satisfies conditions for both contestation and participation. Thus, their coding rule is consistent with a quasi-natural experiment assumption for synthetic control models.

In the event history models, I also examine the mechanism through which regimes aid or hinder banking regulation adoption. I consider two specific elements of democracy: 1) *Competitive Elections*, and 2) *Executive Constraints*. I operationalize competitive elections using the electoral democracy index (`v2x_polyarchy`), the main component of the V-dem liberal democracy index. The index quantifies the degree of suffrage, fairness and cleanness of elections. Likewise, to capture executive constraints, I use the legislative constraint on the executive index (`v2xlg_legcon`), which is one of the components of the V-dem liberal index. The index measures the degree to which the legislature and government agencies investigate and exercise oversight over the executive. Because the two variables, *Competitive Elections* and *Executive Constraints*, are highly correlated and difficult to disentangle in a single model, I estimate each effect separately.

Control variables

I also control for covariates that are linked to the adoption of macroprudential policies in the base model. First, I control the effect of *Banking crisis*, because politicians tend to implement these policy tools after banking crises. I take an updated version of the historical data of the banking crisis from Laeven and Valencia (2018) and convert it to a five-year moving average. Second, I include *GDP per capita* as a control variable that may impact the likelihood of adoption of macroprudential policy because, as countries develop economically, the banking sector tends to become more central to the economy.

I also conducted several additional analyses to test the robustness of the event history models. First, I consider a model that adds controls for the degree of crony expropriation. Since the political economy literature suggests that banking regulation can be employed as a rent-seeking tool by *any* regime, it is important to control for government's predatory actions. I operationalize the effect of crony expropriation as *Corruption* because, while cronyism and corruption are not the same, they are strongly correlated. To capture corruption, I use the Indicator Quality Government (IQG) index provided by the International Country Risk Guide (ICRG) following the previous studies (Norris 2012; Menaldo 2016; Rosas 2006). The ICRG measures investors' perceptions of bureaucratic quality of governance, combining bureaucratic quality, anti-corruption, law, and order. If autocracies are more likely to adopt regulation than democracies, holding constant the quality of government, then it is less likely that differences between democracies and autocracies are the result of rent-seeking or reflective of differences in the presence of predatory regulation.

Second, I use capital account liberalization as an alternate measure of financial liberalization in my robustness checks. To attract foreign investment, governments may liberalize their domestic banking systems by opening their capital accounts. However, countries that take steps to increase foreign investment may be reluctant to impose additional regulations that may reduce their comparative advantage. I use an updated version of *Capital openness* measured by Chinn and Ito (2006). The authors codify the tabulation of restrictions

on cross-border financial transactions reported in the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions.

Lastly, I control for the degree of financialization because less sophisticated banking systems require less regulation to prevent crises. I operationalize financialization as the log of private credit as a proportion of GDP. This variable is from the updated version of the Financial Development and Structure Dataset by the World Bank (Beck, Demirguc-Kunt, and Levine 1999).

Results

Event History Analysis

I investigate the timing of macroprudential policy adoption using a Cox proportional hazard model that allows me to examine the common factors affecting policy implementation by stratifying baseline hazards across nine policy tools (Cox 1972; Box-Steffensmeier and Jones 2004). In this semi-parametric model, the baseline hazard rate flexibly captures global trends, such as the shared tendency of countries to adopt macroprudential policies in response to economic and political events, while leaving cross-state variation to be explained by covariates. Robust standard errors are clustered by country.

Table 2 shows the estimated coefficients of Cox proportional hazards regression are largely consistent with my theoretical expectations. In order to substantively interpret the results, Figure 2 highlights the relative risk of adoption associated with the democracy index. Each plotted point shows the change in the probability of adopting an additional macroprudential policy tool when the liberal democracy index moves from the 25th to 75th percentile among the sample countries. The top bar in Figure 2 indicates, all else equal, the effect of changing the democracy index from autocracy level (25 percentile, e.g. Kenya and Mexico in early 1990s) to democracy level (75 percentile, e.g., Canada and United Kingdom) reduces the probability of adopting an additional macroprudential policy tool in any given year by a

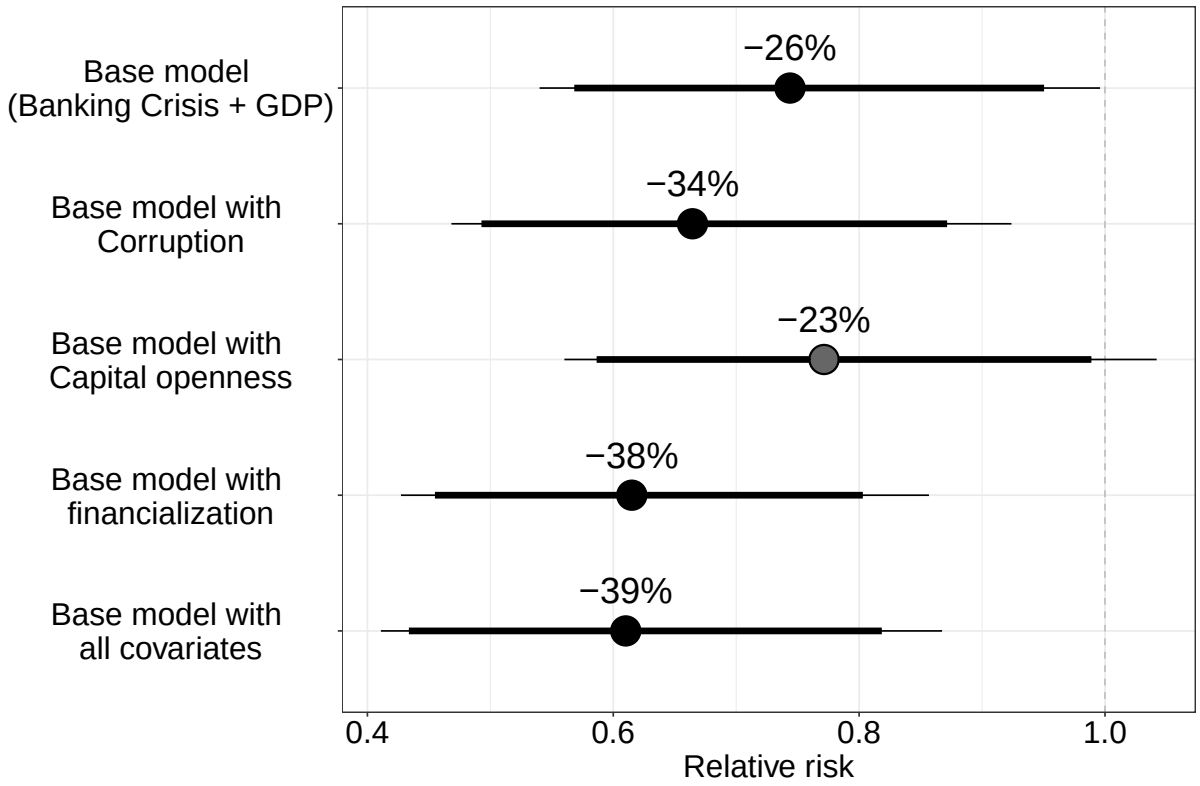

Figure 2: **Effect of Democracy on Macroprudential Policy**
Note: Horizontal thin and thick bars are the 95% and 90% confidence intervals, respectively. Dark, light, and white symbols indicate significance at the 5% level, and the 10% level, respectively.

statistically significant 26 percent (95% CI: 0.3% less likely to 50.0% less likely). Likewise, controlling for alternative explanations does not substantially change the effect of democracy on macroprudential policy adoptions. In the models controlling for a corrupted system, and financialization, democracy reduces the probabilities of adopting an additional macroprudential policy by a statistically significant 33 percent (95% CI: 7.8% to 54.0%) and 38 percent (95% CI: 15.0% to 57.1%), respectively. While the model that controls for capital openness finds that the probability of adding policies is not statistically significant at 5% level, it is statistically significant at 10% level, and the coefficient is negative that democracy reduces the probability by 23 percent. Lastly, the model with all covariates also is consistent with my theoretical expectation, showing that the probabilities of adding policies are decreased by 39 percent (95% CI: 12.8% to 58.7%).

Table 2: **Effect of Democracy on Macroprudential Policy.**

	DV: Macroprudential Policies on Lending and Currency Restrictions				
	(a)	(b)	(c)	(d)	(e)
Covariate	Base model				
Democracy	−0.563**	−0.770**	−0.497*	−0.921***	−0.932***
	(0.23)	(0.26)	(0.23)	(0.26)	(0.29)
Banking crisis	−0.039	−0.157	−0.066	0.194	0.062
	(0.26)	(0.28)	(0.27)	(0.27)	(0.29)
GDP per capita	0.097**	0.072	0.129**	−0.002	0.063
	(0.04)	(0.06)	(0.05)	(0.06)	(0.08)
Corruption		0.407			−0.001
		(0.46)			(0.56)
Capital account openness			−0.066		−0.125**
			(0.04)		(0.05)
Private Credit (% of GDP)				0.186	0.197
				(0.08)	(0.09)
Total country-years	28,033	23,466	26,489	25,040	20,394
Total countries	126	107	121	126	104
Total events	449	389	432	349	297
End of estimation year	2020	2020	2020	2017	2017
AIC	4,060	3,380	3,862	3,177	2,579
BIC	4,072	3,396	3,878	3,192	2,602

Note: *p<0.1; **p<0.05; ***p<0.01.
Robust country-clustered standard errors in parentheses.

Mechanisms

Next, I present the models that examine two mechanisms through which the democratic disadvantage occurs. I exploit *Competitive elections* and *Executive constraints* as the explanatory variables in separate models. I also conduct the same robustness checks as above by controlling for alternative explanations.

The results are reported in Figure 3 and Table A1. I find the results are largely consistent with the hypotheses that both vertical and horizontal accountability have a significant negative impact on the adoption of macroprudential policies. The top red bar in Figure

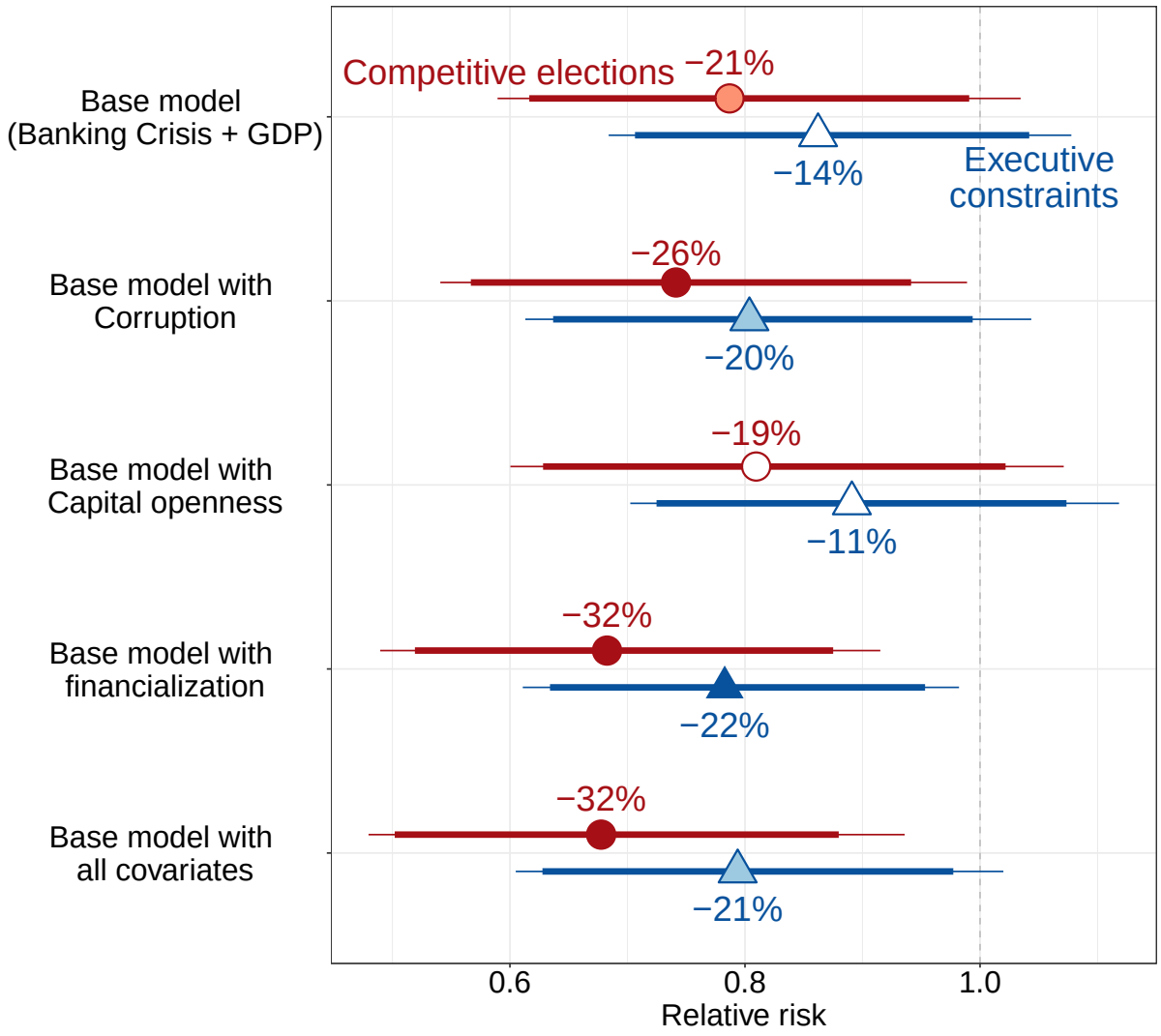

Figure 3: **Effect of Democratic Accountabilities on Macroprudential Policy.**

Note: Red circles and blue triangles indicate competitive elections (vertical accountability), and executive constraints (horizontal accountability). Horizontal thin and thick bars are the 95% and 90% confidence intervals, respectively. Dark, light, and white symbols indicate significance at the 5% level, the 10% level, and nonsignificance, respectively.

3 indicates that, all else equal, competitive elections reduce the probability of adopting an additional policy in a given year by a statistically significant 21 percent at the 10% level (90% CI: 2.0% to 39.4%) but not at the 5% level. However, in the model with all covariates, competitive election reduces by a statistically significant 32 percent at the 5% level (95% CI: 8.4% to 52.6%).

Likewise, the blue with triangle bars indicate the effect of *Executive Constraints*. In the base model, The result shows that executive constraints reduce the probability of adopting an additional policy in a given year by 14 percent, but it is not statistically significant at the 5% level (95% CI: -7.0% to 32.5%). However, overall, all results indicate the negative effect of executive constraints and are consistent with the theoretical expectation.

I also conducted the sensitivity analysis reported in Figure B1 in Appendix. If one policy tool influences the entire result, the estimation result of excluding that policy tool will not hold a negative association between democracy and macroprudential policy adoption. To test this concern, I take a leave-one-out approach in the policy tool dependent variables. As expected, all nine results support the negative association.

Synthetic Control Analysis

While Cox proportional hazard models provide a simple and useful model for quantifying the relationship between regulatory adoption and fine-grained measures of democratization, in these models, causal identification rests on the assumption that treating observed covariates as having time- and country-invariant proportional effects on hazard rates accounts for all time-varying confounders. To mitigate our reliance on this assumption (albeit at the cost of discarding higher precision measures of democracy), I exploit democratization as *treatment* to assume a quasi-natural experiment, using the generalized synthetic control (GSC) method Xu (2017) developed. Synthetic control models have become widely applied in comparative case studies to compare a treated unit with a synthetic control unit, a weighted average of the control units based on control variables (Abadie, Diamond, and Hainmueller 2010, 2015)[5]. In this study, using *Banking crisis* and *GDP per capita* as covariates, the method estimates simple trends of the outcome, the cumulative number of implemented macroprudential policies, for the treated countries and the synthetic unit. The trends are estimated to minimize the distance between the two in the pre-event period.

[5] Xu (2017) extends this method to the case of multiple treated unites and unbalanced panel data that fits to use regime changes that occurs at different timing across countries

I select treatment countries in three steps. First, I use the dichotomous variable of political regime by Boix, Miller, and Rosato (2013) to identify democratizing events. Second, I select the treated countries that had a one-time regime change toward democracy between 2000 and 2010. Thus, I exclude those countries that experienced democratization before 2000 or after 2010 and those with multiple regime shifts because the first ten years of the dataset is important to mitigate overfitting, (Abadie 2021) and because we need to keep the post-event period to capture gradual changes after the treatment. Third, I draw control countries from the set of countries that remained non-democracies throughout the study period. Based on three steps, eight treatment units are selected – Georgia (2004), Kenya (2002), Lesotho (2002), Mexico (2000), Paraguay (2003), Peru (2001), Senegal (2000), Zambia (2008) – and 31 units are available for creation of synthetic controls.

Figure 4 shows the main findings of the analysis, presenting the effect of the regime shift on the implementation of macroprudential policies. The top panel (the "path" plot) shows the estimated trajectories of the cumulative implemented macroprudential policies for treatment and control countries, and the bottom panel (the "gap" plot) shows the estimated cumulative difference between the two. In the pretreatment period, both the path plot and the gap plot show treated countries and control countries overlapping, suggesting the synthetic control estimator successfully constructs valid counterfactual units. On the other hand, the path plot indicates that democratized countries slow the pace of policy implementation after the treatment event occurred, whereas the counterfactual units maintain their trend from the pre-treatment period. The gap plot also shows the estimated difference increases. For the 10 years following the event, the treatment countries implement 0.87 (95% CI: 0.05 to 1.7) fewer out of nine policies than control countries on average.

I also conducted several robustness tests. First, a key concern is overfitting due to the nonparametric estimation in the GSC method. I conduct an in-time placebo test that assigns the regime shift to the different dates five years before and after the date of the actual events. If the timing of increasing the difference between treatment and control countries

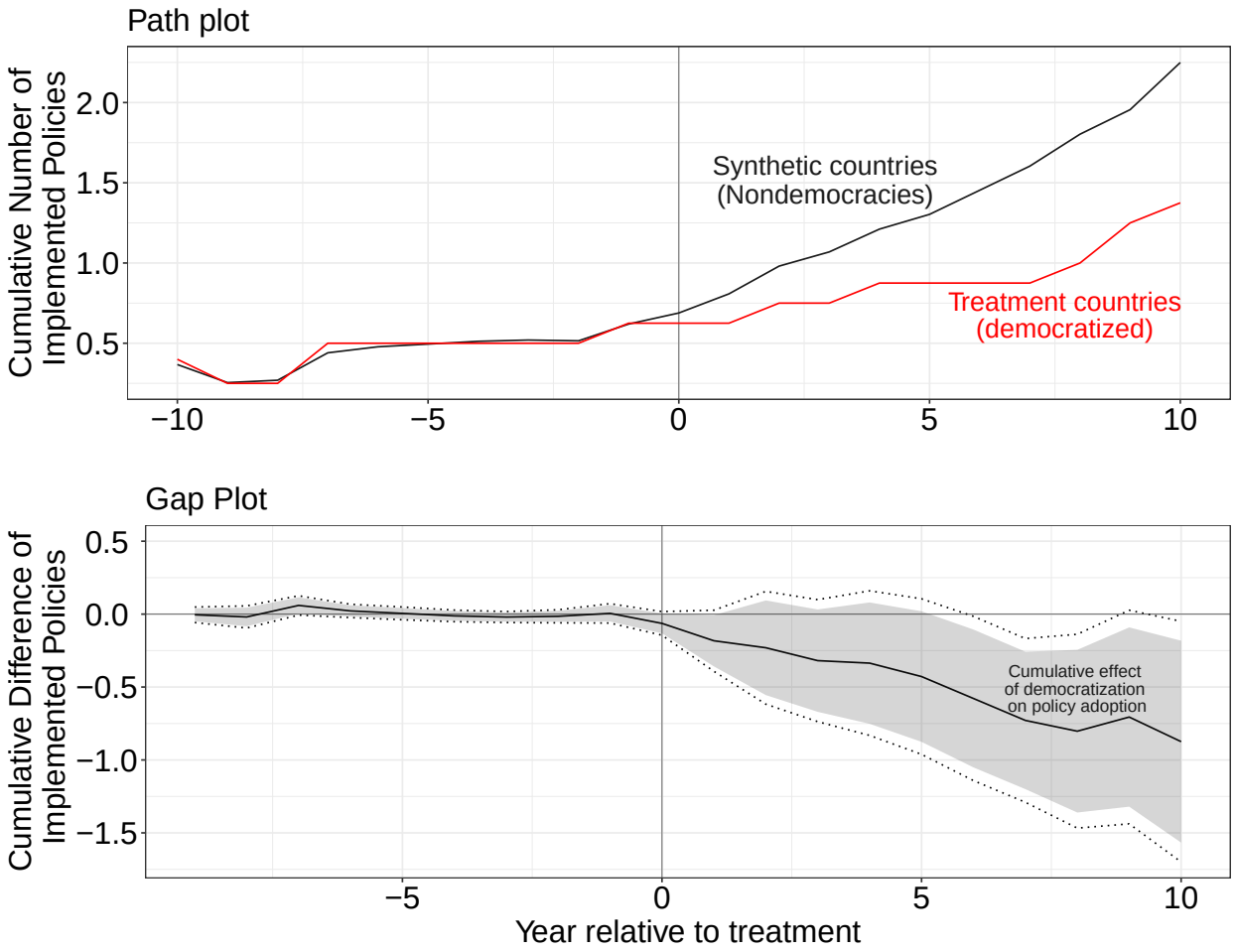

Figure 4: **Effect of Democratization on Cumulative Implementation of Macroprudential Policies.**
Note: Treatment countries included: Georgia (2004), Kenya (2002), Lesotho (2002), Mexico (2000), Paraguay (2003), Peru (2001), Senegal (2000), and Zambia (2008). Synthetic control countries are 31 countries. Shaded areas and dotted lines in the gap plot are the 90% and 95% confidence intervals, respectively.

in the placebo test does not change, the original estimation is causally plausible. Second, I conduct leave-one-out tests for control countries in order to check if one control country influence the entire result. As Figure C1 and C2 indicated, overall, the results of these tests are quite robust to these changes, suggesting the findings remain similar in substance.

Case Studies

In this section, I illustrate the causal mechanism of the influence of political regime on macroprudential policy implementation by looking at three countries that vary in their political regimes. The first case is the United States, a democratic country with an unusually large number of veto points. As the epicenter of the GFC, the US might be expected to have strong reasons to implement banking regulations to prevent future crises. However, as theoretically expected, strong and diversified veto players in the legislature preclude the implementation of more stringent regulations than international requirements. Moreover, short-termism led only to symbolic reform rather than the substantive delegation of regulatory power to the new authority. In contrast, reviewing one of the most stable single-party authoritarian states with centralized economic and regulatory institutions, the implementation process in China shows how macroprudential policies relate to the leader's ambition to stabilize the regime. China, leveraging a centralized decision-making process and with no need to fear short-term downfalls compared to democratic leaders, proactively reformed economic institutions to implement macroprudential policies for their long-term regime survival. In addition to two countries that are solidly democratic or autocratic, I review Hungary as a backsliding democracy that boosted the implementation of several diversified macroprudential tools after the nationalist government of Prime Minister Viktor Orbán came to power in 2010. In Hungary, an increasingly autocratic government employed macroprudential policy to achieve its financial nationalist goals.

United States: Fragmented, Stringent Constraints

Before the GFC, macroprudential policy tools were not implemented in the US. Adopted in 2010, the Dodd-Frank Act sought to legally define macroprudential regulations and decide which agencies would have authority to implement them. For instance, the Federal Reserve did not consider demand-side macroprudential tools as their policy option without clear

statutory authority, seeing these policies as more interventionist (Edge and Liang 2020). However, Congress paid little attention to macroprudential policies. During the drafting of the Dodd-Frank Act, while some Democrats, such as Elizabeth Warren, argued that the Dodd-Frank Act should include more stringent capital requirements and investment restrictions, most Democrats focused on consumer protections instead of banking regulations. On the other hand, GOP congressman Jeb Hensarling, who collaborated with industry lobbyists to pursue banking industry interests, opposed macroprudential regulation, claiming that the federal regulatory burden had been a significant contributor to economic stagnation (Stojkovic 2016). Thus, while the Dodd-Frank Act emphasized macroprudential regulation as an important component of the financial regulatory system, the Act did not authorize the use of demand-side macroprudential tools (Acharya, Engle, and Richardson 2012).

One of the institutional outcomes of the Dodd-Frank Act was to bring together the fragmented regulators— the Fed, the Federal Deposit Insurance Corporation, or Office of the Comptroller of the Currency, and others— as the Financial Stability Oversight Council (FSOC). However, the Act did not delegate macroprudential powers and responsibility of systemic risk to FSOC, nor any single regulator (Goodhart 2015). Given this weak role of the FSOC, Lombardi and Moschella (2017) argue that the Dodd-Frank is an example of symbolic delegation, in which the FSOC delegation reflects a short-term response by elected officials to show voters that they are taking action to fix past mistakes without having substantive policy delegation. As a result, the implementation of macroprudential policies in the US remained less stringent than other countries.

China: Authoritarian Stability Trumps Accountability

The Chinese government implemented credit control tools before the financial crisis, including traditional window guidance (informal lending restrictions) as well as some macroprudential policy tools. For instance, in 2004, the China Banking Regulatory Commission (CBRC) imposed a maximum LTV ratio of 80% for loans for purchasing homes and a maximum

DSTI ratio of 50% for borrowers to purchase homes without labeling them macroprudential. After the GFC, the Chinese government facilitated swift institutional reforms. The People's Bank of China (PBOC) first explicitly mentioned macroprudential policies as China's formal policy choice in the China Financial Stability Report 2010 and strengthened these policies in the 12th Five-Year Plan (2011–2016) for national development. Likewise, Xi Jingping delegated responsibility for "macro-prudential management and systemic risk prevention" to the PBOC in the 19th National Congress of the Chinese Communist Party in 2017. At the same time, fragmented financial regulators were centralized in the PBOC[6]. In effect, the PBOC assumed a "dual pillar" policy function, including both traditional monetary policy and macro-prudential management. This dual-pillar function was formalized in October 2020 when China's Central Bank Law was revised for the first time in 17 years (Kennedy and Wang 2021). These swift institutional changes, in contrast to the symbolic reform in the US, enabled the Chinese government and the PBOC to implement effective macroprudential policies.

Moreover, the concentration of macroprudential control is rooted in Xi's ambition to consolidate his power in the party. The ambition provides him with a longer-term view to proactively pursue financial stability because an economic crisis could reduce the resources of the consolidated power. To address concerns about rising house prices and overinvestment in real estate, Xi and the PBOC adopted additional macroprudential approaches even during the economic slowdown. For instance, the bailout of Evergrade illustrates China's forward-looking macroprudential approach. In 2020, the PBOC introduced the Three Red Lines Policy[7], which aims to improve the financial condition of the real estate sector by reducing developers' leverage. As a result, Evergrande, a Chinese real estate company founded in

[6] In the 1990s, the PBOC used to be responsible for comprehensive supervision of the banking, securities, insurance, and trust industries, but it had split into the CBRC (established in 2003), China Securities Regulatory Commission (CSRC) (established in 1992), and China Insurance Regulatory Commission (CIRC) (established in 1998)(Klingelhöfer and Sun 2019)

[7] The three red lines are a liability-to-asset ratio over 70 percent, a net debt-to-equity ratio greater than 100 percent, and a cash-to-short-term-debt ratio less than 100 percent. Restrictions are placed on developer debt levels depending on the number of red lines that they cross.

1996, faced liquidity issues, defaulting on some payments for its offshore bonds. In the short run, this new policy caused financial market distress, but in the long run, it contributed to deleveraging the Chinese economy. Meanwhile, Evergrande continued its operations with support from financial regulators and local governments. Moreover, the PBOC announced a new real estate loan concentration management system limiting the size of banks' loan assets. These policy implementations have been successful, in contrast to the discussion in the US, because of the top-down, centralized governance system of China's authoritarian regime.

Hungary: Becoming a Semi-Dictatorship

Before the GFC, Hungary was the most frequent adopter of demand-side macroprudential tools in the EU because these tools can help to protect national markets as a non-euro currency EU member country (Piroska, Gorelkina, and Johnson 2021). However, once Orbán came to power, the government increasingly employed macroprudential measures because he believed that the lack of government's power over financial institutions caused the 2002 election defeat (Johnson and Barnes 2015; Mérő and Piroska 2017; Piroska, Gorelkina, and Johnson 2021). In order to boost their implementation of macroprudential policies, Orbán delegated extraordinary power to the National Bank of Hungary (MNB). Similar to reforms in China, Orbán appointed his ally György Matolcsy as a governor in 2013 and merged financial supervisory authority into the MNB. At the same time, he restructured the banking sector to distribute rents to his coalition by increasing domestic ownership in banking to over 50% and merging three banks during the process of reprivatization (Miklós and Simons 2021). One of outcomes was to adopt a macroprudential tool that mitigated the external vulnerability of the banking sector by converting foreign-currency-denominated funds into Hungarian forint. Balog et al. (2015) argue that the improving maturity structure of foreign funds has mitigated risks arising from the drying up of foreign liquidity and the consequent intensification of exchange rate volatility. Overall, the MNB has effectively managed the Hungarian domestic

financial sector (International Monetary Fund 2017). While, in order to extend his tenure, Orbán's ambition of employing macroprudential policy serves an authoritarian, and perhaps corrupt purpose, the outcome of the policy implementation results in a robust financial system.

Discussion

The theoretical and empirical analyses presented in this article help explain why democracy does not yield better outcomes in macroprudential policy. Unifying the literature on the short-termism of democratic decision-making and policy stagnation stemming from multiple veto players, my theory states that vertical and horizontal accountabilities in democracies limit macroprudential policy implementation because retrospective policy evaluation is difficult, and heterogenous distributional effects increase the cost of veto bargaining. In contrast, authoritarian leaders have less fear of short-run economic downfalls than democratic leaders and thus have more reason to focus on regulatory reforms to implement macroprudential policies for their long-term regime survival. As the China and Hungry cases illustrated, because authoritarian leaders take advantage of their consolidated powers in the banking sector, authoritarian regimes are, all else equal, about 25% likely to implement macroprudential policy than democracies. The empirical result also shows that democratization causes one fewer cumulative implementation out of nine policy tools. The finding suggests that democratic countries may not be adequately prepared for future banking crises.

The mechanism of democratic disadvantage indicated in this article advances the literature on democratic governance. Recent studies argue the advantages of authoritarian states, especially in the debates on pandemics and climate change, because they are more likely to restrict civil liberties than democracies (Cheibub, Hong, and Przeworski 2020; Thomson and Ip 2020; Cepaluni, Dorsch, and Branyiczki 2020; Beeson 2018), but a few studies focus on how the democratic accountability system causes inefficient policy implementation (von

Stein 2022). In pandemic response, for instance, the policymakers may not be rewarded by voters in the long-term because the success of policy response results in controlling the spread of infection, in which voters may not retrospectively evaluate the policy effects. Moreover, given the amount of negative externality produced by climate change, the heterogeneity of possible winners and losers created by policy measures makes the transaction costs for stakeholder bargaining high, and thus it is likely to lean toward maintaining the status quo under a political system with high horizontal accountability. The mechanisms of democratic disadvantage shown in this article should open a further investigation into the politics of policy response to these global challenges.

Finally, my results provide a potential avenue to investigate how democracy overcomes its disadvantage by connecting the literature on delegation. The case studies in this article illustrated the importance of delegating regulatory authority to domestic agencies in order to implement macroprudential policies. The conventional wisdom of monetary policy, which causes the time-inconsistency problem argues for delegating monetary powers to independent agencies. Future research should examine these domestic delegation processes and the limitations of delegations not only in the area of banking regulation but also in other policy fields. Moreover, delegation to international organizations could be another solution to democratic disadvantages. When it comes to banking regulation, the Basel Committee has played a critical role in shaping the regulatory landscape in the banking sector, and these international agreements may diffuse democratic policies. In another area, the World Health Organization could serve a critical role in combating pandemics. Thus, future studies may also analyze the delegation forms to international organizations that could be feasible and effective for unknown future crises.

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Appendices

A Effect of Democratic Accountabilities on Macroprudential Policy

Table A1: **Effect of Democratic Accountabilities on Macroprudential Policy.**

	DV: Macroprudential Policies on Lending and Currency Restrictions									
	IV: Competitive elections					IV: Executive constraints				
	(a)	(b)	(c)	(d)	(a)	(a)	(b)	(c)	(d)	(a)
Covariate	Base model					Base model				
Competitice elections	−0.517*	−0.655**	−0.465	−0.815**	−0.839**					
	(0.22)	(0.24)	(0.22)	(0.24)	(0.26)					
Executive constraints						−0.334	−0.502*	−0.269	−0.553**	−0.547*
						(0.18)	(0.20)	(0.18)	(0.20)	(0.23)
Banking crisis	−0.038	−0.158	−0.065	0.186	0.067	−0.067	−0.189	−0.099	0.136	0.009
	(0.26)	(0.28)	(0.27)	(0.27)	(0.29)	(0.26)	(0.28)	(0.27)	(0.27)	(0.29)
GDP per capita	0.082*	0.066	0.118*	−0.021	0.06	0.062	0.043	0.096	−0.063	0.021
	(0.04)	(0.06)	(0.05)	(0.05)	(0.08)	(0.03)	(0.06)	(0.04)	(0.05)	(0.08)
Corruption		0.237			−0.172		0.259			−0.229
		(0.44)			(0.54)		(0.45)			(0.55)
Capital account openness			−0.067		−0.129**			−0.067		−0.125**
			(0.04)		(0.05)			(0.04)		(0.05)
Private Credit (% of GDP)				0.174	0.195				0.192	0.211
				(0.08)	(0.09)				(0.08)	(0.09)
Total country-years	28,141	23,574	26,597	25,130	20,484	28,067	23,527	26,532	25,074	20,437
Total countries	126	107	121	126	104	126	107	121	126	104
Total events	449	389	432	349	297	448	389	432	349	297
End of estimation year	2020	2020	2020	2017	2017	2020	2020	2020	2017	2017
AIC	4,060	3,381	3,862	3,179	2,580	4,052	3,382	3,864	3,182	2,584
BIC	4,073	3,397	3,878	3,194	2,602	4,064	3,398	3,880	3,197	2,606

Note: *p<0.1; **p<0.05; ***p<0.01.
Robust country-clustered standard errors in parentheses.

B Sensitivity Analysis: Leave-one-out Macroprudential Policy Tool

In this analysis, I take a leave-one-out approach in the dependent variable, a set of macroprudential policy tools, because one policy tool might strongly influence the results. If one policy tool influences the entire result, the estimation result of excluding that policy tool will not hold a negative association between Democracy and macroprudential policy adoption. Figure B1 shows that nine leave-one-out tests for five different combinations of covariates. All nine results that exclude one policy tool indicate the relative risk of adopting macroprudential policies when *Democracy* moves from the 25th to 75th percentile among the sample countries is below 1, suggesting that the effect of democracy on macroprudential policy implementation is robust. While some tests are not statistically significant at the 5% level, partly because of the smaller sample size, the relative risk is clearly negative, as expected.

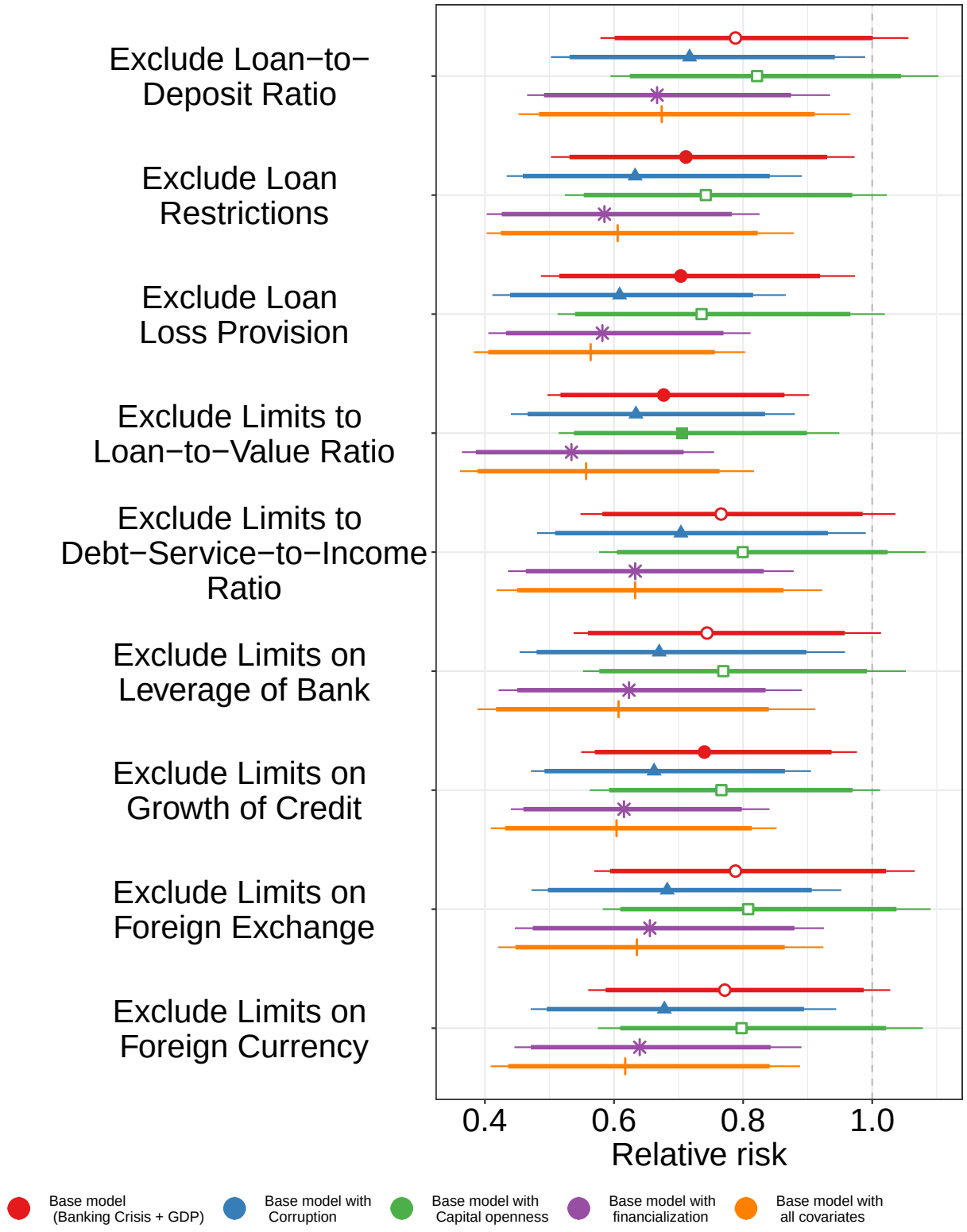

Figure B1: **Leave-One-Out Test for Effect of Democracy on Macroprudential Policy**

Note: Horizontal thin and thick bars are the 95% and 90% confidence intervals, respectively. Solid and open symbols indicate significance at the 5% level and nonsignificance, respectively.

C Placebo Test for Generalized synthetic control

C.1 In-Time Placebo Test: Changing Treatment Timing

In this analysis, I conduct an in-time placebo test that assigns the regime shift to the different dates five years before and after the date of the actual events. If the timing of increasing the difference between treatment and control countries in the placebo test does not change, the original estimation is causally plausible. On the top panel, I advance the timing of the treatment event to five years. The result shows the estimated difference between treatment countries and control countries become negatively wider, but the difference is not statistically significant at both 90% and 95% level. Likewise, on the bottom panel, I shift the timing of treatment five years before the actual event. The red line, the original estimation, and the black line, the placebo estimation, clearly overlap each other, suggesting that democratization's treatment effect is robust.

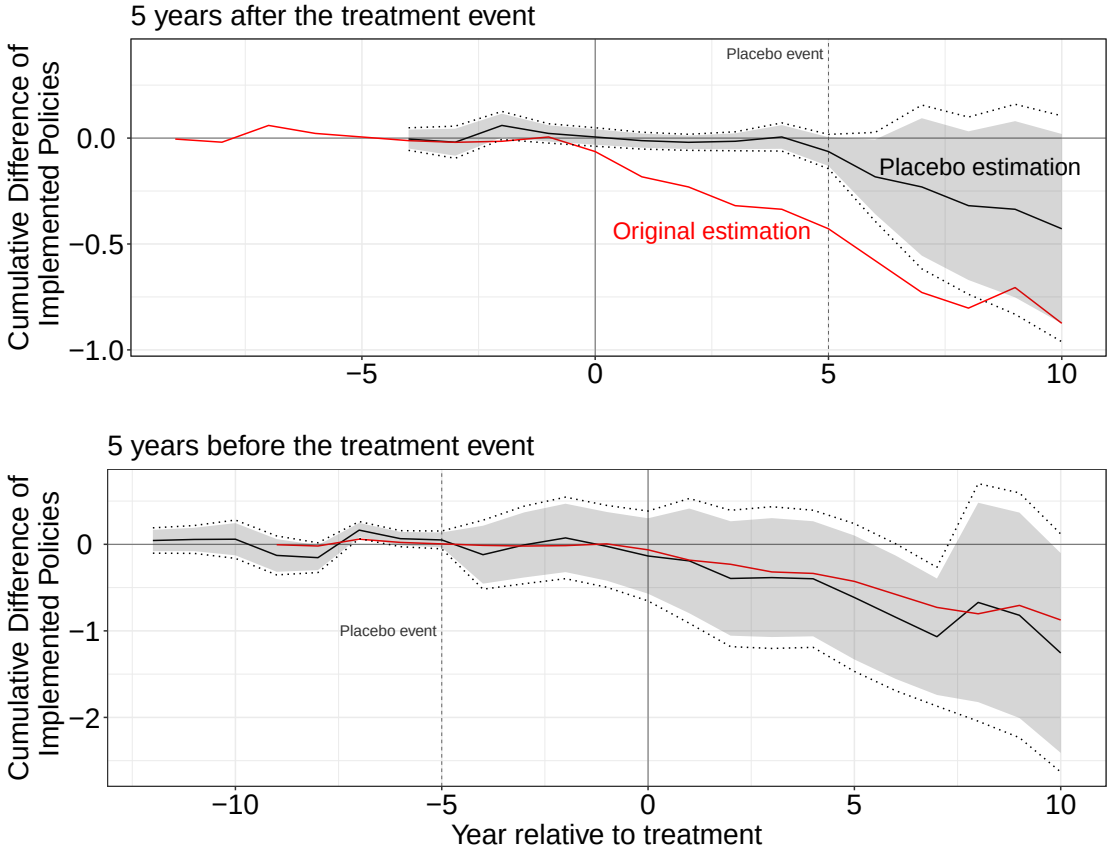

Figure C1: **In-Time Placebo Test for Effect of Democratization on Cumulative Implementation of Macroprudential Policies**

Note: Treatment countries included: Georgia (2004), Kenya (2002), Lesotho (2002), Mexico (2000), Paraguay (2003), Peru (2001), Senegal (2000), and Zambia (2008). Red lines indicate the original estimation. Synthetic control countries are 31 countries. Shaded areas and dotted lines in the gap plot are the 90% and 95% confidence intervals, respectively.

C.2 Leave-One-Out Test for Control Countries

In this analysis, I conduct leave-one-out tests for synthetic control countries, in which I remove each of the control countries and repeat the synthetic control estimations. Suppose the estimated weight is heavily toward one country, and the policy implementation in that country affects the trajectory of the synthetic country unit. In that case, that single country could generate the difference between the treatment and synthetic control countries. To address this issue, a leave-one-out test can identify the influence of each country as a control unit. The red line of Figure C2 indicates the difference between the treatment and the synthetic control countries in the original estimation, and the gray lines are the results of leave-one-out tests for all 31 control countries (31 estimations). Overall, the results are consistent with the original estimation, in which the estimated difference cumulatively increases after the event occurs. While the estimations excluding some countries that aggressively implement macroprudential policies, such as Kyrgyzstan, China, and Oman, are not statistically significant ten years after the event, these results still hold statistically significant seven and eight years after the event, and the amount of difference is as large as the original estimation, suggesting that democratization's treatment effect is robust.

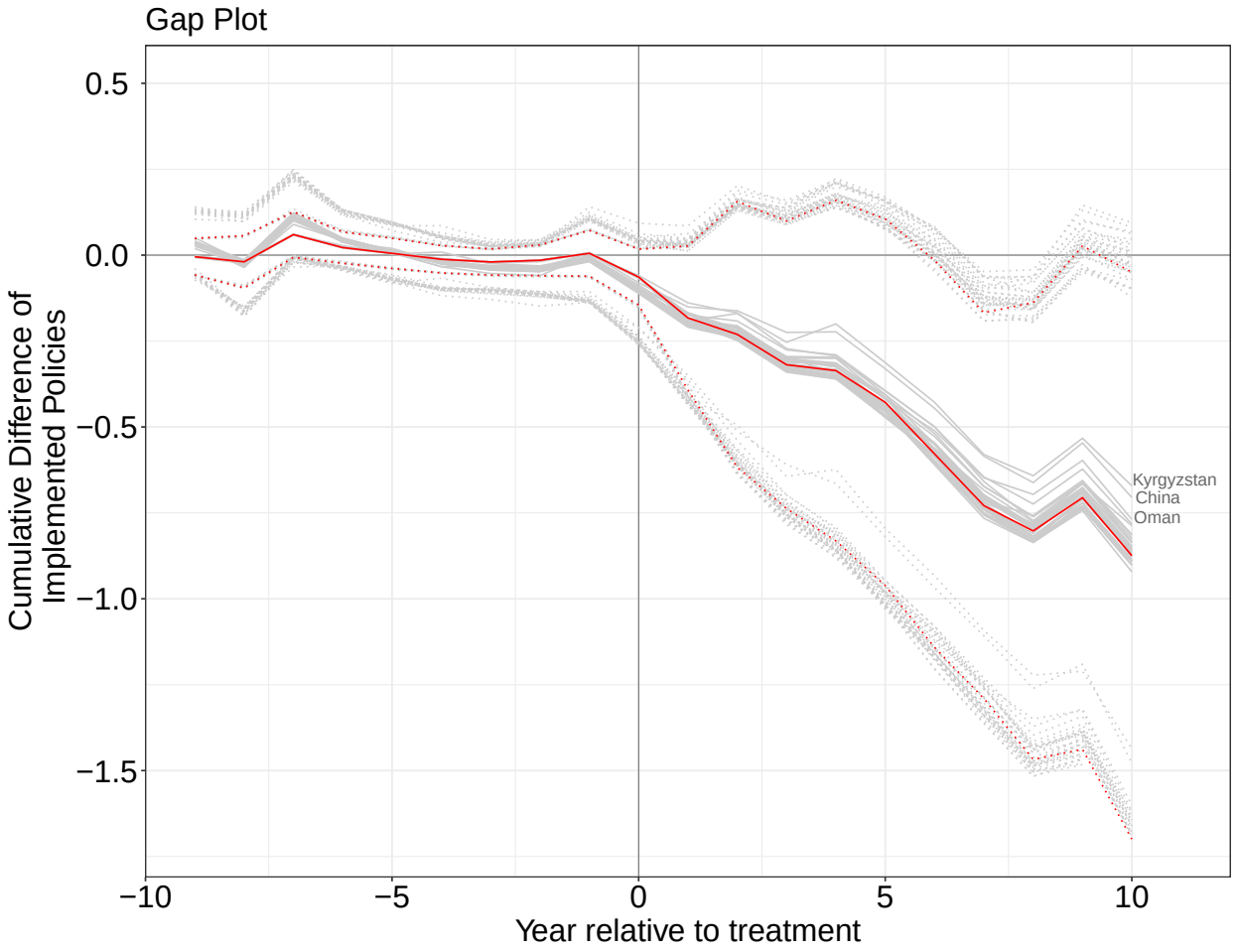

Figure C2: **Leave-One-Out Test for Effect of Democratization on Cumulative Implementation of Macroprudential Policies**

Note: Treatment countries included: Georgia (2004), Kenya (2002), Lesotho (2002), Mexico (2000), Paraguay (2003), Peru (2001), Senegal (2000), and Zambia (2008). Red lines indicate the original estimation. Synthetic control countries are 31 countries for original estimation (red line) and 30 countries for other estimations. Dotted lines in the gap plot are the 95% confidence intervals.