Policies in Hard Times: Assessing the Impact of Financial Crises on Structural Reforms*

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Abstract

It is commonly argued that crises open up a window of opportunity to implement policies that otherwise would not have the necessary political backing. The argument goes that the political cost of economic and social reforms declines as crises unravel structural problems that need to be urgently rectified and the public is more willing to bear the pains associated with such reforms. This paper casts doubt on this prevalent view by showing that not only the crises-reforms nexus is unfounded in the data, but rather crises are associated with a reversal of liberalization interventions depending on the institutional environment. In particular, we look at measures of liberalization in international trade, agriculture, network industries, and financial markets. We find that, in democratic countries, crises occurrences have no significant impact on liberalization measures. On the contrary, after a crisis, autocracies reduce liberalization in multiple economic sectors, which we interpret as the fear of regime change leading non-democratic rulers to please vested economic interests.

Keywords: Financial crises, structural reforms, liberalization, institutional systems, IMF programs, government crises, public opinion.

JEL classification codes: E44, G01, L51, P16.

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1 Introduction

It has long been argued that, to achieve economic health, countries often need to make changes to the basic structure of their economies. Structural reforms are deemed to raise productivity and growth by improving the technical efficiency of the markets and the broader institutional environment, or by reducing impediments to the efficient allocation of resources. These reforms range from measures as diverse as banking supervision and property right laws to changes in tariff rates or capital control. In the past few years, the debate on the causes and consequences of structural reforms has been ignited once again as the global economy has slowed, and monetary and fiscal policies have arguably reached their limits in helping countries rebound.

While a considerable body of work has been devoted to investigating the *consequences* of structural reforms,[1] what is much less examined are their potential *causes*.[2] One prevailing view on the causes of structural reforms is that (economic or financial) crises can favor deep reforms, because their political cost declines as crises unravel structural problems that need to be urgently rectified and the public is more willing to bear the pains associated with such reforms (Krueger, 1993; Drazen and Grilli, 1993). While anecdotal evidence suggests a catalytic role for crises in driving the reform process,[3] whether this constitutes an empirical regularity is missing in the literature, which needs to be addressed by looking at the data.

This paper empirically examines the crises-reforms nexus. Specifically, we implement a difference-in-differences analysis in a panel of 70 advanced and developing countries to examine whether financial crises are a major precursor to structural reforms. To measure the occurrence of financial crises, we use the extensive dataset by Reinhart and Rogoff (2009, 2011). To evaluate their impact on real and financial liberalizations, we use measures

[1] E.g., see Billmeier and Nannicini (2013), Easterly (2005), Rodrik (2006), Quinn and Toyoda (2008), Williamson and Mahar (1998), Rodrik et al. (2004), Ostry et al. (2009), and Prati et al. (2013).

[2] E.g., see Høj et al. (2007) and OECD (2012).

[3] A notable example where crises serve as a catalyst for reform is when crises require intervention by international financial institutions (IFIs), like the IMF, by means of financial support, technical assistance, and policy advice. In most cases, loans by IFIs are subject to conditionality on a set of reforms the country in crisis agrees to implement in return for the financial support.

constructed by the IMF (2008) in the late 2000s. These measures are smooth indicators of market oriented regulations and liberalizations, but in our analysis we also use sharp changes of these indicators to capture major legislative interventions.[4] Finally, to measure political regime differences, we use the classification by Cheibub et al. (2010), which is more accurate than the alternative Polity IV indicator.

The main findings of the paper are twofold. First, we provide empirical evidence contrasting the prevailing view in the literature —namely, we show that the crises-reforms nexus is unfounded in the data. Second, we document that crises could in fact trigger less liberalization depending on the institutional environment, democratic vs. autocratic.

In democracies, we find no effect of financial crises on reforms, while we show that crises raise the likelihood of both political instability and IMF intervention, whose combined pressure (internal and external) might lead to a stop-and-go strategy and a *de facto* stalemate in the liberalization agenda. These results are in line with Mian et al. (2014), who find that polarization and political gridlock in the aftermath of a crisis might hamper reform behavior in the financial sector.

In autocracies, we show that, after crises, liberalizations are rolled back in multiple sectors, while anti-government demonstrations, anti-market attitudes in the public opinion, and the probability of regime change all increase. We also show that autocracies are less likely to ask for IMF intervention, and this reduces external pressure in favor of market oriented reforms. This evidence conveys the picture of non-democratic rulers tending to please vested economic interests in an attempt to reduce the probability of regime change after a financial crisis.

We also develop a simple model to interpret our empirical results and explore the mechanisms behind them. The different political constraints at play in democracies vs. autocracies produce different equilibria in the ruling party's maximization problem when it must choose the reform action in the aftermath of a financial crisis. While in normal times

[4] As our empirical findings are robust to the use of both smooth indicators and discrete changes, throughout the paper we use the terms "liberalization," "market oriented regulation," and "reform" interchangeably.

reforms take place regardless of political regime, in times of economic crises reforms are reversed under autocracies, while stalemate persists without reforms being implemented under democracies. This is because democratic rulers face polarizing forces in the electorate in the aftermath of a crisis, whereas non-democratic rulers are more prone to shut down market oriented reforms due to the fear of being overthrown by the selected elite.

Section 2 frames the paper in the existing literature. Section 3 describes the datasets and presents some stylized facts. Section 4 presents the results and explores the potential mechanisms that can explain these results. Section 5 presents a simple model to help interpret the empirical evidence obtained. Section 6 concludes.

2 Related Literature

Mian et al. (2014) is the paper most closely related to ours. Their main focus is the political gridlock in the aftermath of financial crises as a mechanism of reform laggardness.[5] They look at reforms in the financial sector only and find a "zero effect", although they acknowledge that most of the zeros are not precisely estimated. We differ from their contribution both in our main focus on the effect of crises on all types of reforms (not only financial) and in the mechanisms at play. We find a negative and significant effect of crises on multiple reforms. In terms of mechanisms, their argument is mostly about democracies and how political power struggles may block the implementation of reforms when there is more ideological polarization. In contrast, we distinguish between regime types (democracies vs. autocracies) as the drivers of our results. We show that the negative reform behavior is driven by autocracies, and this may be explained by both the rulers' fear of regime change and people's attitudes against the market.

The literature on the causes and consequences of reforms can be traced back to the ideas in Adam Smith's *Wealth of Nations* about government's involvement in the economy

[5]McCarty et al. (2013) also stress the importance of politics in understanding financial crises. Evidence from American history suggests that legislative action following a financial crisis is typically "*limited and delayed*" (McCarty et al. 2013, p.153).

with controls such as tariffs. More recently, how to change the fundamental aspects of the structure of an economy has been considered in more depth —seminal contributions include McKinnon (1973), Sachs and Warner (1995), and Krueger (1997). The last two decades have seen a surge in many different kinds of reforms adopted (or imposed) by countries around the globe. These developments were accompanied by further interest in academic and policy circles to better understand the effects of reforms. Growing interest in the subject continues unabated with contributions over the last few years.[6]

There is a consensus in the literature that reforms can invigorate economic growth, especially in the medium term —see the reviews in IMF (2015) and OECD (2016). Structural reforms may serve to boost aggregate income by promoting both faster capital accumulation and a more efficient allocation of resources. Note, however, that there is no consensus on the particular role of reforms in the growth process (Easterly, 2005; Rodrik, 2006).[7]

Turning to the literature on the causes of reforms, admittedly it received less attention and there is little empirical evidence.[8] One prominent hypothesis on the causes of structural reforms is that the presence of crises may open up a window of political will to implement policies that otherwise would have been very costly (politically and economically) to see through (Krueger, 1993; Drazen and Grilli, 1993).[9] A crisis may create the potential for reform by destabilizing cooperation among interest groups (Drazen and Easterly, 2001). Abiad and Mody (2005) argue that shocks altering the balance of decision-making power may trigger reforms. Pitlik and Wirth (2003) document that severe inflation and growth

[6]Among others, Billmeier and Nannicini (2013), Christiansen et al. (2013), Estevadeordal and Taylor (2013), Prati et al. (2013), IMF (2015), Billmeier and Nannicini (2011), Quinn and Toyoda (2008), Ostry et al. (2009), and Duval and Furceri (forthcoming).

[7]Different strands of this literature focus on particular reforms including domestic financial sector (Levine, 1997, 2005; Williamson and Mahar, 1998; Abiad and Mody, 2005; Bekaert et al., 2005; Abiad et al., 2010), capital account (Quinn, 1997; Quinn and Toyoda, 2008; Quinn et al., 2011; Schindler, 2009; Fernández et al., 2016), product market (Conway and Nicoletti, 2006; Giuliano and Scalise, 2009; OECD, 2016), and trade tariffs (Sachs and Warner, 1995; Berg and Krueger, 2003).

[8]Exceptions include Kaminsky and Reinhart (1999), Drazen and Grilli (1993), Drazen and Easterly (2001), Abiad and Mody (2005), Alesina et al. (2006), Mian et al. (2014), and Campos et al. (2010).

[9]For example, Fernández-Villaverde et al. (2013) argue that the large capital inflow following the adoption of the Euro in Portugal, Spain, Greece and Ireland delayed the implementation of reforms. See Fernandez and Rodrik (1991) on the theoretical underpinnings of reform failure.

crises lead to more pronounced liberalization policies captured by the Fraser Institute's EFW-index of economic freedom. Furthermore, Alesina et al. (2006) find that stabilizations are more likely to take place in times of crises. We show, instead, that the crises-reforms hypothesis is unfounded in the data, at least, when we look at liberalization oriented reforms in multiple sectors.[10]

Turning to the link between institutions and reforms, Giuliano et al. (2013) and Pitlik and Wirth (2003) suggest that democracies are more likely to liberalize their economies. Grosjean and Senik (2011) find that democracy is accompanied by stronger support for market oriented policies. Our result on non-democratic regimes reducing reforms after a crisis also relates to the literature on the political economy of autocracies. In Acemoglu and Robinson (2000, 2001), the political equilibrium rests on the excluded groups' threat of unrest against the incumbent ruler. By a similar token, incumbents could exploit weak institutions to buy-off opposing groups whenever they try to coordinate to overthrow the regime (Acemoglu et al., 2004). The survival of autocratic leaders can also be explained by means of the "selectorate" model of Bueno de Mesquita et al. (2003), where the small winning coalitions of non-democratic regimes increase the loyalty of the leader's supporters. As a matter of fact, reducing reforms and closing down the economy might be an alternative tool to please key economic groups and reduce the likelihood of unrest, especially when the opportunity cost of government spending increases because of a financial crisis.

Finally, as we use newly collected data on IMF intervention as a proxy of external pressure on political decision making, our paper relates to the studies that have estimated the macroeconomic impact of IMF-sponsored programs. Przeworski and Vreeland (2000) show that growth rates remain lower as long as a country is under an IMF program, but rise once a country leaves the program. Barro and Lee (2005) find that a higher IMF loan-

[10]Dagher (2018) examines ten case studies of prominent financial crises that followed a private credit or stock market boom, and detects pro-cyclical regulatory policies whose inefficiency might be explained by political factors. His qualitative evidence is consistent with our findings. Almasi et al. (2018) also point at the pro-cyclical nature of regulation.

participation rate reduces growth, but has no significant effects on investment, inflation, government consumption, and trade openness.

3 Data and Stylized Facts

This section describes the data employed in the analysis and provides some stylized facts. We use information from the database "Dates for Banking Crises, Currency Crashes, Sovereign Domestic or External Default (or Restructuring), Inflation Crises, and Stock Market Crashes (Varieties)" compiled by Carmen Reinhart and Kenneth Rogoff to identify the years in which financial crises occur.[11] The database, spanning the period 1800–2010, covers 70 countries and builds upon Reinhart (2010) and Reinhart and Rogoff (2009, 2011). It provides information on the years of Banking Crises, Inflation Crises, Domestic Debt Crises, and External Debt Crises. The starting year of a Banking Crisis is identified by the occurrence of two events: "(1) bank runs that lead to closure, merging, or takeover by the public sector of one or more financial institutions; (2) if there are no runs, the closure, merging, takeover or large-scale government assistance of an important financial institution (or group of institutions), that marks the start of a string of similar outcomes for other financial institutions" (Reinhart and Rogoff 2009, p.11). An Inflation Crisis is identified by "an annual inflation rate of 20 percent or higher" (Reinhart and Rogoff 2009, p.7). A sovereign default on external debt (External Debt Crisis) is defined "as the failure to meet a principal or interest payment on due date (or within the specified grace period)," including also "instances where rescheduled debt is ultimately extinguished in less favorable terms than the original obligation" (Reinhart and Rogoff 2009, p.11).[12] Domestic Debt Crises are defined in a similar

[11] Data are available at http://www.carmenreinhart.com/data/browse-by-topic/topics/7.

[12] An external debt crisis refers to government obligations towards "creditors of a loan issued under another country's jurisdiction, typically (but not always) denominated in a foreign currency, and typically held mostly by foreign creditors" (Reinhart and Rogoff 2009, p.10).

manner but they also involve "the freezing of bank deposits and/or forcible conversions of such deposits from dollars to local currency" (Reinhart and Rogoff 2009, p.11).[13]

We combine Banking, Inflation, Domestic Debt, and External Debt Crises to create a single measure of financial crises given by the occurrence of any of the four crisis episodes under consideration. Table A.1 in the Appendix lists our crisis episodes. Out of 306 crisis episodes, 107 are banking crises, 106 are inflation crises, 25 are domestic debt crises, and 68 are external debt crises. We, then, construct an indicator of post-crisis period, *Post-Crisis*, which takes the value of one in the year of a crisis occurrence and in the following four years (five post-crisis years in total). *Post-Crisis* is our main variable of interest to evaluate reform behavior in the aftermath of financial crises.[14]

Structural reform indicators cover both the "financial" and the "real sectors" of the economy—see IMF (2008), Ostry et al. (2009) and Prati et al. (2013). The time series dimension is around 35 years (1973–2006) and it comprises a large number of countries (91 advanced and developing economies). After matching the Reinhart and Rogoff's data on financial crises with the IMF structural reforms data, we are left with a dataset containing information on 70 countries for the period 1973–2006.

More specifically, we consider seven measures of structural reforms in our analysis. Among the real sector reforms, *Agriculture* captures the degree of government regulation and intervention in the market of a country's main agricultural products and considers features such as the "incidence of administered prices" or the "presence of export marketing boards" (Prati et al. 2013, p. 948).[15] Two indicators measure openness to international trade. The first one, *Trade*, expands previous work by IMF (2004) and measures the extent of openness to international trade by considering average tariff rates applied on all products (IMF (2008)).

[13]Differently from external debt, "domestic public debt is issued under a country's own legal jurisdiction," often in the local currency, and is mainly held by residents (Reinhart and Rogoff 2009, p.13).

[14]Results are robust to excluding overlapping crises.

[15]Moving from higher to lower levels of government intervention, the index captures: (i) the existence of "public monopoly or monopsony in production, transportation, or marketing" of the good in question; (ii) the presence of "administered prices"; (iii) "public ownership in relevant producers, concession requirements"; (iv) "no intervention" (Prati et al. 2013, Appendix 2).

The second one, *Current Account*, measures the degree of government compliance with the IMF's Article VIII "to free from restrictions the proceeds from international trade in goods and services" (Prati et al. 2013, Appendix 2), as these limitations are often used to curb openness to international trade. Building on previous work by Quinn (1997), this indicator considers restrictions on trade in visibles and invisibles (e.g., financial and other services) and "distinguishes between restrictions on non-residents (payments for imports) from those on residents (receipts for exports)" (Prati et al. 2013, Appendix 2). A fourth indicator, *Networks*, refers to reforms in the telecommunication and electricity markets. The sub-index for the telecommunication market considers the following dimensions: (i) competition in local services; (ii) existence of a separate authority that issues licenses; (iii) interconnection. The sub-index for the electricity sector measures the degree of regulation in this market by looking at: (i) unbundling; (ii) existence of independent authority that sets tariffs and issues licenses; (iii) liberalized wholesale market. This indicator is constructed by relying on various sources, including Conway and Nicoletti (2006), as well as on national legislation and official documents.

Among the financial sector indicators, *Banking* and *Securities Markets* measure the degree of reforms in the banking and securities markets. These indicators are constructed by building on previous work by Abiad and Mody (2005) and Abiad et al. (2010). The indicator of reforms for the banking sector is coded by considering the removal or reduction of: (i) "credit controls, such as subsidized lending and directed credit"; (ii) "interest rate controls, such as floors or ceilings"; (iii) restrictions on competition, such as barriers to the entry in the banking market (e.g., licensing requirements or limits on foreign banks) and "limits on branches"; (iv) degree of ownership of banks by the public sector (Prati et al. 2013, p.948). The last dimension that this indicator considers is the quality of banking supervision and regulation (e.g., independence of bank supervisors, adoption of Basel capital standards or the existence of a framework for bank inspections) (Prati et al. 2013, p.948 and Appendix 2). The securities market index takes into consideration the presence of independent regulators

and of legal restrictions that impact the development of markets for equities and bonds (IMF 2008, p. 7). The last reform indicator on which we rely for our empirical analysis, *Capital Account*, measures the degree of openness of the external capital account. It considers the existence of a variety of restrictions such as those on external borrowing and lending between residents and non-residents and approval requirements for foreign direct investments (IMF 2008, p. 8 and 9). The coding of this index extends previous work by Quinn (1997) and Abiad et al. (2010), and relies on information on capital controls provided by Schindler (2009). All in all, the structural reform measures mainly capture legislative actions undertaken to reform both the real and financial sectors of the economy.

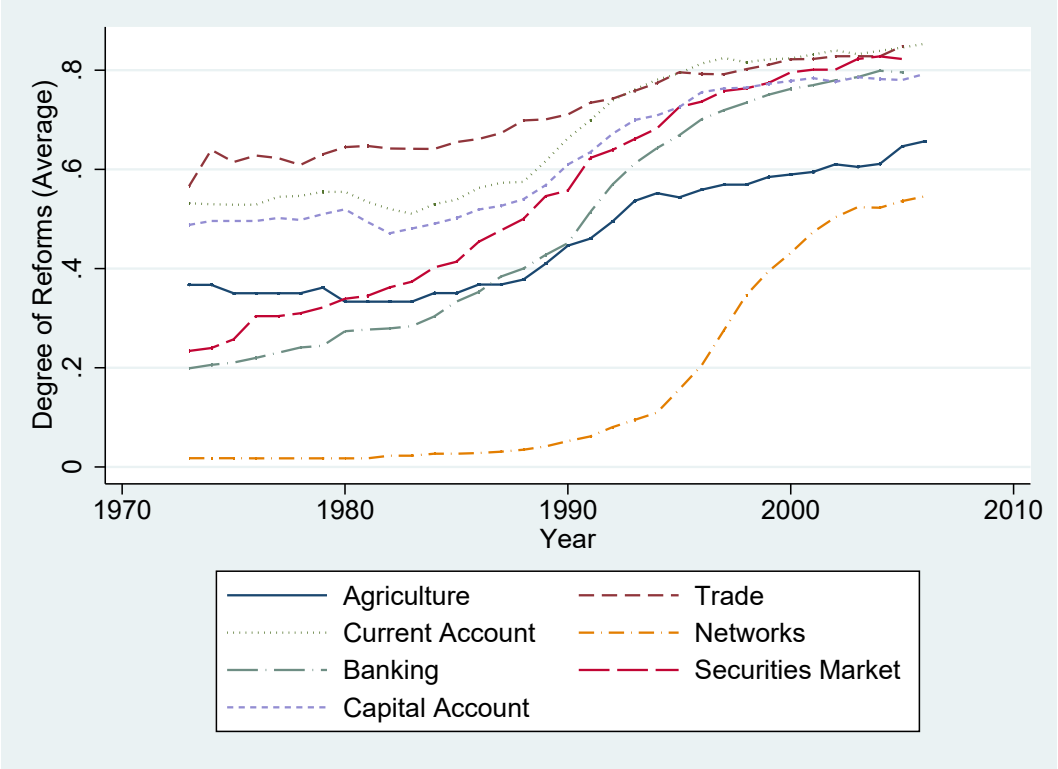


Figure 1 Average of Structural Reforms over Time

These indicators take values between zero and one, where higher values denote a greater degree of reforms in the sector under consideration (Prati et al. 2013, p.948). As a result, higher values imply market oriented reforms and less government intervention. In some sectors (e.g., banking), however, they also capture the extent of "effective regulation"

in presence of market failures (IMF 2008, p. 6). Because of the different methodologies used to construct the indicators, it is not possible to compare their respective values in a given period (e.g., in a specific year) to have a precise quantitative assessment of whether a sector is more or less liberalized than another (Prati et al. 2013, p.948). Figure 1 illustrates the evolution of these measures over time and suggests a tendency toward a higher degree of "market-oriented" reforms in the various sectors under consideration, with this trend becoming steeper in the early 1990s.[16]

In addition to the smooth indicators of market oriented regulations and liberalizations described above, in a robustness analysis, we also use sharp changes of these indicators to capture major legislative interventions. To this end, we created alternative categorical outcomes capturing large discrete variations in the underlying liberalization index, where the dependent variable takes 1 when there is a large positive change in the liberalization variable, -1 when there is a large negative change, and 0 otherwise. Large change is defined as a change in the liberalization variable greater than 5 or 10 percent compared to the average value of that index within the last two to five years. Similarly, we also created large anti-liberalization and pro-liberalization dummies when there are large negative and positive changes in the liberalization variables, respectively.

We also make use of a variety of variables that allow us to better understand the mechanisms driving our results. We first look into political regime differences across countries. We use regime classifications from Cheibub et al. (2010). Cheibub et al. (2010) categorize all countries as democracies and autocracies across different time periods, and this provides us with a dichotomous indicator of *Democracy*. Figure 2 provides some stylized facts on the total number of democratic and autocratic regimes over time, with the total number

[16]See Ostry et al. (2009) and Prati et al. (2013) for additional details on these indicators. Data are available at https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/24300.

of non-democratic regimes steadily declining from mid-1980s.[17] Table A.2 in the Appendix lists all democracies and autocracies in our sample.

In addition, for the period 1976–2013, we have digitized novel IMF country engagement data from the "IMF Archives" that reflect whenever the IMF was involved with a country in terms of loan provision and policy recommendation. This information allows us to create an *IMF Intervention* indicator whenever a country receives aid from the IMF. IMF involvement in a country in the aftermath of a crisis allows us to capture the degree of external pressure to reform and liberalize the economy.

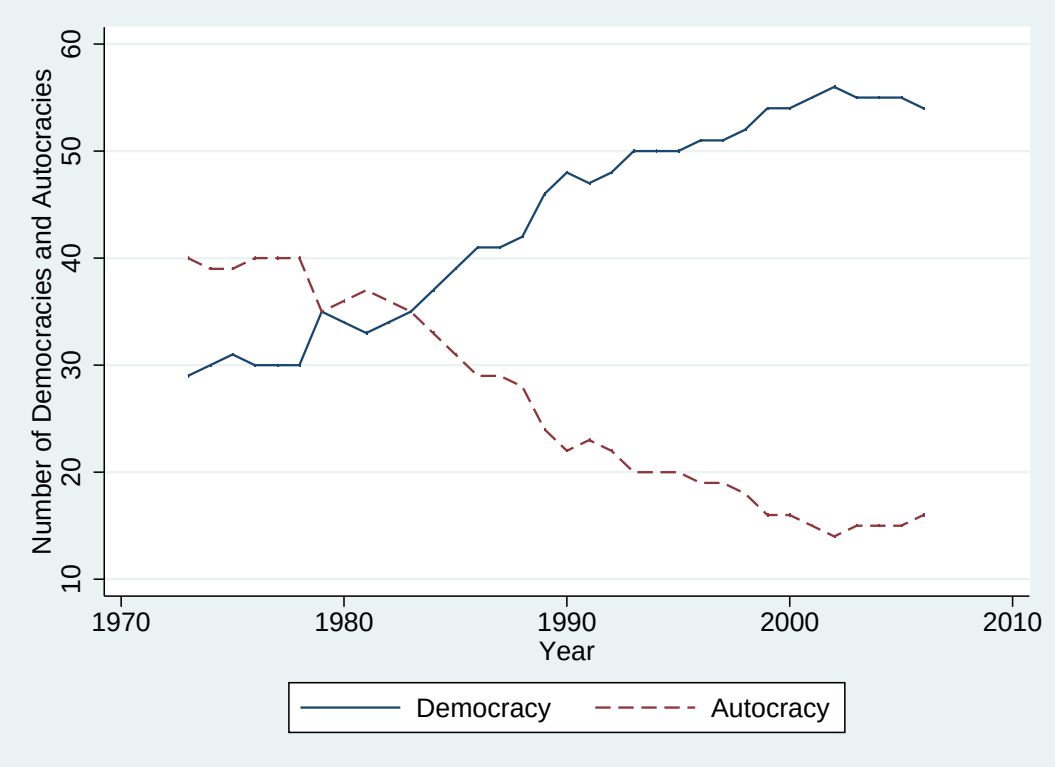


Figure 2 Total Number of Democracies and Autocracies over Time

To capture the internal political pressure on the government and the instances of political conflict in the aftermath of financial crises, we use measures of *General Strikes*, *Government Crisis*, and *Anti-Government Demonstrations* from the "Cross-National Time-

[17] A country is classified as a democracy if the following criteria are met: Direct elections; elective legislature; multiple parties are allowed both *de jure* and *de facto*, they exist outside the regime front and the legislature has multiple parties; in a regime-year qualified as democracy the incumbent should not have unconstitutionally closed the lower house and written new rules in his favor. Data are available at https://sites.google.com/site/joseantoniocheibub/datasets/democracy-and-dictatorship-revisited.

Series Data Archive."[18] In this dataset, *General Strikes* is defined as "any strike of 1,000 or more industrial or service workers that involves more than one employer and that is aimed at national government policies or authority;" *Government Crisis* as "any rapidly developing situation that threatens to bring the downfall of the present regime, excluding situations of revolt aimed at such overthrow;" *Anti-Government Demonstrations* as "any peaceful public gathering of at least 100 people for the primary purpose of displaying or voicing their opposition to government policies or authority." All of these variables refer to the number of associated episodes in a specific year.

Finally, we use data from the "World Values Survey" on general public attitudes toward market oriented policies.[19] The first question we use captures people's opinion about private ownership vs. state ownership in the economy (*Private vs State Ownership*). The second question is about people's attitude toward market competition (*Competition Good vs Bad*). These two variables are measured on an intensity scale from 1 to 10, and higher values indicate less market oriented sentiments. For both of them, we construct a dummy indicator associated with values of the underlying variable greater than 5. We also use answers to questions on the participation in protests (signing petitions, joining strikes or demonstrations, joining in boycotts, occupying buildings or factories).[20]

While we use the other variables described above for a country-specific analysis in a panel of 1,298 observations, we use the WVS variables for a respondent-specific analysis in repeated cross-sections of at most 56,516 observations. Table 1 provides descriptive statistics. We observe that more than half of the yearly observations are associated with the (five-year) aftermath of a financial crisis. A majority of countries are democracies, and less than half of them were involved in an IMF program.

[18]Data are available at https://www.cntsdata.com.

[19]Data are available at http://www.worldvaluessurvey.org.

[20]For the exact survey questions used to construct our variables, see Table A.3 in the Appendix. Table A.4 in the Appendix reports the list of countries for which we have WVS data, with the year of the crisis and the waves (immediately before and immediately after a crisis) that we use for the analysis.

Table 1 Summary Statistics

	Mean	Std. Dev.	Min	Max	Obs
Treatment and Institutions					
Post-Crisis	0.563	0.496	0	1	1,298
Democracy	0.633	0.482	0	1	1,298
Structural Reforms					
Agriculture	0.483	0.394	0	1	1,298
Trade	0.670	0.226	0	1	1,298
Current Account	0.633	0.268	0.1	1	1,298
Networks	0.152	0.247	0	0.9	1,298
Banking	0.448	0.290	0	1	1,298
Securities Market	0.479	0.355	0	1	1,298
Capital Account	0.578	0.274	0	1	1,298
External and Internal Factors					
IMF Intervention	0.409	0.492	0	1	1,298
General Strikes	0.282	0.716	0	6	1,298
Government Crisis	0.237	0.570	0	5	1,298
Anti-Government Demonstrations	1.094	2.261	0	26	1,298
World Values Survey Questions					
Private vs State Ownership	5.544	3.043	1	10	56,516
Competition Good vs Bad	3.651	2.734	1	10	56,516
Private vs State Ownership (dummy)	0.463	0.498	0	1	56,516
Competition Good vs Bad (dummy)	0.206	0.404	0	1	56,516
Signing Petitions	0.574	0.494	0	1	51,867
Joining Strikes or Demonstrations	0.484	0.500	0	1	51,867
Joining in Boycotts	0.325	0.468	0	1	51,867
Occupying Buildings or Factories	0.143	0.350	0	1	51,867

Figure 3 illustrates the evolution of structural reforms ten years before and after a financial crisis hits the countries in our sample (at time 0). As already captured by Figure 1, there is an increasing trend over time, both before and after a crisis. But it is now apparent that there is also a sharp and negative reversal in the reform behavior immediately after a crisis. The lost reform momentum is never fully recovered, as the subsequent (increasing)

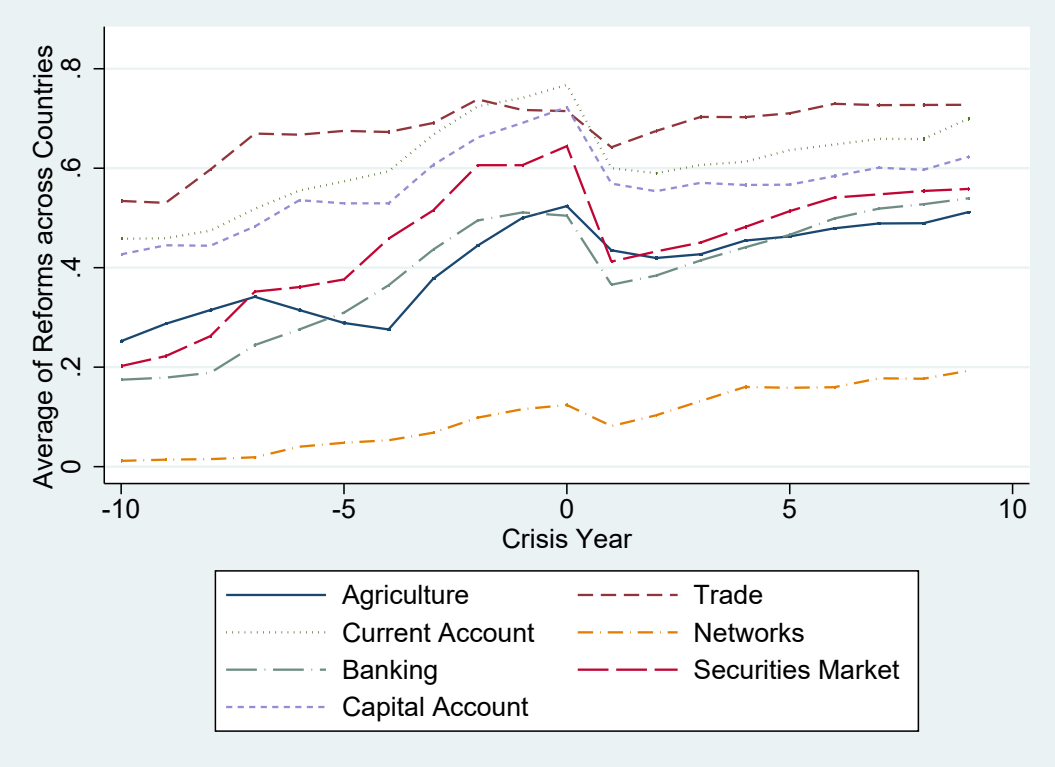


Figure 3 Average of Structural Reforms in the Pre- and Post-Crisis Periods

trend has a smaller derivative than before the crisis. In the next section, we investigate whether this stylized fact survives econometric testing.

4 Empirical Results

We ask three interrelated questions. First, are financial crises associated with subsequent structural reforms? Second, are policy responses to crises influenced by a country's institutional setting? More specifically, is there any heterogeneity in the policy impact of financial crises across democracies and autocracies? Third, what are the underlying mechanisms through which crises may influence reforms under different institutional environments? More specifically, do domestic conditions (e.g., government stability and the sentiment of the public opinion) or external actors (e.g., IMF engagement after crises) matter? In this section, we discuss the empirical findings related to these questions.

4.1 Econometric Specifications

We estimate the following difference-in-differences specification:

$$Y_{it} = \alpha + \beta PostCrisis_{it} + \rho_i + \gamma_t + \varepsilon_{it}, \tag{1}$$

where Y_{it} denotes the outcome of interest, e.g., the different types of structural reforms discussed in the previous section, at time t for country i; *PostCrisis* is a dummy variable equal to one within five years (including the crisis year) after the start of any of the four crises under analysis (Banking, Inflation, Domestic Debt, and External Debt); ρ_i and γ_t are country and time fixed effects, respectively; and ε_{it} is the error term. Standard errors are clustered at the country level. To better isolate the effect of the crises by comparing these episodes with the relevant set of countries and time periods, we restrict the time window in our estimations to 20 years around the start of a crisis and the sample to countries that experienced at least one crisis in the period 1973–2006.[21]

The causal interpretation of β as the effect of financial crises rests on the identifying assumption that countries experiencing a crisis episode were on parallel trends with respect to the other countries in the pre-treatment period. This means both that crises are not triggered by differential track records of structural reforms and that reforms are not determined by the anticipation of a future crisis. To (indirectly) test for the assumption of parallel trends and to assess the dynamics of the treatment effect (if any), we re-estimate the model including leads and lags of the crisis episode:

$$Y_{it} = \alpha + \sum_{k=-5}^{k=+4} \beta_k Crisis_{i(t-k)} + \rho_i + \gamma_t + \varepsilon_{it}. \tag{2}$$

[21] All of our findings are robust to the inclusion of countries that have experienced no crises in the control pool, and to the use of different time windows for the sample selection (i.e., 10, 15, or 30 years around the crisis year, instead of 20).

Here, β_0 is the instantaneous treatment effect in the year of the crisis. The coefficients β_k with $k < 0$ test for the existence of parallel trends, as they reflect the relationship between current outcomes and a future crisis episode. To validate our identifying assumption, we expect these coefficients not to be statistically different from zero. The coefficients β_k with $k > 0$ capture dynamic treatment effects (if any), as they reflect the relationship between current outcomes and a past crisis episode.

4.2 Baseline Results

In this section, we present the main results and the heterogeneity analysis across political regimes, i.e., democracies vs. autocracies. Panel A of Table 2 shows regressions of structural reforms on the post-crisis indicator controlling for country and year fixed effects. There is no evidence of a statistically significant relationship between the occurrence of financial crises and the adoption of more market oriented reforms. Quite the contrary. The coefficient on *Post-Crisis* is positive in columns (1) and (2), where reforms of the agricultural sector and openness to international trade are considered, but it is not statistically different from zero. The estimated coefficient is negative in all remaining columns and is statistically significant when the dependent variable measures the degree of openness of the current account—column (3)—and the reforming of the banking sector and of the capital account—columns (5) and (7), respectively. According to these estimates, the degree of liberalizing reforms of the current account shrinks by 0.04 points, of the banking sector by 0.036 points, and of the capital account by 0.05 points in the five years following the outbreak of a crisis. To put these magnitudes in perspective, note that they correspond to 6.3%, 8.0%, and 8.7% of their respective means. Differently from the previous literature, which argues that crises might trigger reforms (Krueger, 1993; Drazen and Grilli, 1993; Drazen and Easterly, 2001), these findings suggest that crises can be accompanied by the adoption of less market oriented

policies—an even more clear-cut negative result than the "zero effect" disclosed by Mian et al. (2014) for the financial sector.[22]

Table 2 Financial Crises and Structural Reforms

Dependent Variable	(1) Agriculture	(2) Trade	(3) Current Account	(4) Networks	(5) Banking	(6) Securities Market	(7) Capital Account
	Panel A: All Countries						
Post-Crisis	0.012	0.004	-0.040**	-0.013	-0.036***	-0.021	-0.050***
	(0.020)	(0.013)	(0.017)	(0.014)	(0.012)	(0.015)	(0.016)
R^2	0.18	0.41	0.45	0.61	0.81	0.64	0.38
Obs	1,298	1,298	1,298	1,298	1,298	1,298	1,298
	Panel B: Democratic Countries						
Post-Crisis	0.005	0.014	-0.022	-0.014	-0.019	-0.004	-0.028
	(0.018)	(0.014)	(0.017)	(0.016)	(0.013)	(0.020)	(0.017)
R^2	0.17	0.48	0.50	0.68	0.84	0.61	0.44
Obs	822	822	822	822	822	822	822
	Panel C: Autocratic Countries						
Post-Crisis	-0.014	0.012	-0.072**	-0.012	-0.077***	-0.064**	-0.080***
	(0.041)	(0.029)	(0.027)	(0.018)	(0.020)	(0.024)	(0.028)
R^2	0.21	0.26	0.34	0.46	0.75	0.62	0.28
Obs	476	476	476	476	476	476	476
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors (clustered by country) are reported in parentheses.

$*$ p-value < 0.10, $**$ p-value < 0.05, $***$ p-value < 0.01.

In order to tie better our liberalization indexes to observed occurrences of structural reforms reflecting sharp changes in the legislation, we have also created alternative categorical outcomes capturing large discrete variations in the underlying liberalization index. Arguably, we should observe large discrete changes in our indexes only when a structural reform actually takes place. Therefore, this robustness exercise informs us on how well our indexes are

[22]These results are robust to restricting the sample to non-overlapping crises, the inclusion of countries that have experienced no crises in the control pool, and to the use of different time windows for the sample selection (i.e., 10, 15, or 30 years around the crisis year, instead of 20). See Table A.5 in the Appendix.

reliable proxies for structural reforms. We observe in Table A.6 that financial liberalization measures of banking and capital account (and securities market to some extent) are likely to experience a large reduction in the aftermath of crises. Regressions with anti- and pro-liberalization indicators in Tables A.7 and A.8 support this, with a greater likelihood of large anti-liberalization changes and a lower likelihood of large pro-liberalization changes. Such large discrete changes in our indexes in the post-crisis period gives us more confidence that structural reforms actually take place, and therefore, our indexes approximate structural reforms well.

An important concern for our analysis is that financial crises may be driven by the same policy reforms under consideration, i.e., that countries hit by a crisis and the others are not on parallel trends before the treatment. To address this issue, in Table 3, we estimate two different specifications: Equation (1) augmented with the variable *Pre-Crisis*, which is a dummy equal to one in all five years preceding a crisis; and equation (2) with all leads and lags needed to capture both pre-trends and dynamic effects.

Estimates of equation (1)—reported in the odd-numbered columns of Table 3—suggest that our (negative) results on *Current Account*, *Banking*, and *Capital Account* are robust to the inclusion of pre-trends, and that, in the five years preceding a crisis, treated countries and the other countries are not on differential trends (only for *Networks* the variable *Pre-Crisis* is statistically different from zero at a 10% level, but the pre-trend is not statistically significant in the specification with yearly dummies). Estimates of equation (2)—reported in the even-numbered columns of Table 3—confirm that the existence of pre-trends is not a threat to our identification. With the partial exceptions of *Agriculture* (for which we have a zero result) and *Capital Account* (but only in two years and not on average), we find no evidence of significant pre-trends. These estimates also show the dynamics of the impact of financial crises on structural reforms. For *Current Account*, *Banking*, and *Capital Account*, the impact is equally distributed across the post-treatment years. Furthermore, the yearly estimates show some negative effect of crises on reforms also for *Networks* and

Securities Market. Figure A.1 in the Appendix reports the yearly estimates and visually highlights the sharp reduction in some of the reform indicators in the post-crisis period, as well as the lack of any statistical association beforehand.

We, then, investigate whether our findings are influenced by the different nature of political regimes. In Panels B and C of Table 2, we examine if our results systematically differ across democratic and autocratic countries. In doing so, we aim at understanding under which political conditions it is more likely to observe less market-oriented policies in the aftermath of financial crises. Panel B reports estimates of equation (1) obtained by restricting the sample only to democratic countries. Although the estimated coefficients are negative in all specifications, except those with *Agriculture* or *Trade* as dependent variables, we find no evidence of any statistically significant association between crises and structural reforms in this set of countries. It is important to bear in mind that this sample is larger than that with autocracies and should, therefore, be associated with more precise estimates.

Next, we turn our attention to autocracies. Panel C suggests that our results are driven by autocratic regimes: These countries are likely to adopt less market oriented policies in the aftermath of financial crises. The estimated coefficient of *Post-Crisis* is negative in all specifications except that with *Trade* as dependent variable. Similarly to the estimates in Panel A based on the whole sample of countries, this negative association between crises and reforms is statistically significant for international trade as measured by *Current Account*, for the domestic financial sector (*Banking*, *Securities Market*), and for the external capital account (*Capital Account*). The estimated magnitudes are also larger than the corresponding ones obtained from the sample with all countries. The reductions in the *Current Account*, *Banking*, and *Capital Account* reform indicators after a crisis correspond to 11.4%, 17.2%, and 13.8% of their respective means.

Table 3 Financial Crises and Structural Reforms, Parallel Trends vs. Dynamic Effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Dependent Variable	Agriculture	Agriculture	Trade	Trade	Current Account	Current Account	Networks	Networks	Banking	Banking	Securities Market	Securities Market	Capital Account	Capital Account
Pre-Crisis	-0.006		-0.005		-0.016		0.034*		0.007		0.003		-0.018	
	(0.019)		(0.016)		(0.016)		(0.019)		(0.014)		(0.021)		(0.017)	
Post-Crisis	0.010		0.003		-0.043**		-0.007		-0.034**		-0.020		-0.053***	
	(0.022)		(0.014)		(0.017)		(0.016)		(0.013)		(0.017)		(0.017)	
Pre-Crisis(t-5)		-0.045**		0.008		-0.012		0.006		0.004		0.008		-0.013
		(0.019)		(0.017)		(0.013)		(0.011)		(0.010)		(0.017)		(0.015)
Pre-Crisis(t-4)		-0.024		-0.008		-0.019		0.011		0.002		-0.000		-0.031**
		(0.018)		(0.016)		(0.014)		(0.012)		(0.013)		(0.018)		(0.014)
Pre-Crisis(t-3)		-0.034*		-0.004		-0.022		0.012		-0.004		-0.003		-0.028*
		(0.020)		(0.018)		(0.014)		(0.013)		(0.013)		(0.017)		(0.014)
Pre-Crisis(t-2)		-0.033*		-0.007		-0.015		0.009		-0.006		-0.005		-0.009
		(0.020)		(0.016)		(0.012)		(0.015)		(0.014)		(0.016)		(0.015)
Pre-Crisis(t-1)		-0.027		-0.014		-0.021*		-0.002		-0.007		-0.013		-0.011
		(0.019)		(0.016)		(0.012)		(0.015)		(0.013)		(0.014)		(0.013)
Crisis(t)		-0.028		-0.015		-0.028*		-0.002		-0.031**		-0.026*		-0.019
		(0.018)		(0.012)		(0.014)		(0.015)		(0.012)		(0.014)		(0.013)
Post-Crisis(t+1)		-0.036*		-0.015		-0.052***		-0.011		-0.039***		-0.038***		-0.034**
		(0.021)		(0.013)		(0.014)		(0.016)		(0.012)		(0.013)		(0.015)
Post-Crisis(t+2)		-0.039*		-0.005		-0.057***		-0.025		-0.045***		-0.027**		-0.046***
		(0.022)		(0.012)		(0.015)		(0.015)		(0.010)		(0.013)		(0.015)
Post-Crisis(t+3)		-0.017		0.007		-0.043***		-0.036**		-0.037***		-0.031**		-0.041**
		(0.023)		(0.012)		(0.014)		(0.014)		(0.011)		(0.012)		(0.016)
Post-Crisis(t+4)		0.004		0.004		-0.027**		-0.025*		-0.035***		-0.020*		-0.043***
		(0.024)		(0.012)		(0.013)		(0.014)		(0.011)		(0.012)		(0.015)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.18	0.19	0.41	0.38	0.45	0.48	0.61	0.54	0.81	0.78	0.64	0.59	0.39	0.42
Obs	1,298	1,078	1,298	1,078	1,298	1,078	1,298	1,078	1,298	1,078	1,298	1,078	1,298	1,078

Robust standard errors (clustered by country) are reported in parentheses.

$*$ p-value < 0.10, $**$ p-value < 0.05, $***$ p-value < 0.01.

Our baseline findings are robust to the breaking-down of crises by different types (see Table A.9 in the Appendix). For all countries, the baseline negative effect of crises on current account, banking, and capital account reforms holds for all crisis types except for banking crises (see Panel A of Table A.9).[23]

4.3 Potential Mechanisms

In this section, we analyze possible mechanisms through which crises may have a negative effect on reforms by paying particular attention to the distinction between democratic and autocratic countries. We start off by considering the extent to which external and domestic pressure on governments can affect policy choices in the aftermath of a crisis. We use the variable *IMF Intervention* to proxy for external inducement on governments to pass through more market oriented policies after a crisis. At the same time, internal political dynamics might either result in a push on governments to implement policy reforms or in a stalemate with little room for main policy changes. The variable *Government Crisis* is meant to capture stalemate in ruling governments, while *General Strikes* and *Anti-Government Demonstrations* measure the level of social unrest and mobilization against the government. We then look at whether democratic transitions (from autocracy) or autocratic transitions (from democracy) are more likely to occur in the aftermath of a financial crisis. We conclude our analysis on the domestic forms of pressure on governments by looking at whether crises are accompanied by a change in public attitudes toward state intervention in the economy and in people's readiness to take part in different forms of protest.

[23]The results on democracies and autocracies in Panels B and C of Table A.9 are also in line with our previous conclusions. Under democracies, no type of crisis leads to more reform, and there is no significant effect of crises on reforms (except for banking reform). Under autocracies, instead, all crisis types have some negative influence on structural reforms. The main results under autocracies seem to be partly driven by economic turmoil such as inflation and domestic debt crises. Unfortunately, there are no specific indicators of crisis magnitudes in the Reinhart and Rogoff (2009, 2011) data. However, to approximate the intensity of crises, we follow the intuition of Reinhart (2010) and calculate crises tally as the sum of overlapping crises in a given period—the idea being that if a crisis is strong enough it will propagate to other domains of the economy. Our results are robust to controlling for crises tally (see Table A.10 in the Appendix). Our baseline results are also robust to controlling for the pre-crisis level of reforms (see Table A.11 in the Appendix). However, the magnitudes of the coefficients shrink. For example, in the capital account regression under autocracies, the coefficient on post-crisis goes down from the baseline estimate of -0.080 to -0.021.

Results reported in column (1) of Table 4 suggest that countries hit by a financial crisis are more likely to request IMF intervention in the five years after the occurrence of this event, a 30% increase with respect to mean intervention. Interestingly though, this evidence holds only for democratic countries—column (1), Panel B—while crises appear not to trigger IMF intervention in autocracies—column (1), Panel C.

Table 4 External and Domestic Influence in a Post-Crisis Environment

	(1) IMF Intervention	(2) General Strikes	(3) Government Crisis	(4) Anti-Government Demonstrations
	Panel A: All Countries			
Post-Crisis	0.117***	0.081*	0.085**	0.375**
	(0.039)	(0.045)	(0.038)	(0.168)
R^2	0.16	0.05	0.05	0.04
Obs	1,298	1,298	1,298	1,298
	Panel B: Democratic Countries			
Post-Crisis	0.121**	0.046	0.073	-0.020
	(0.046)	(0.062)	(0.052)	(0.193)
R^2	0.12	0.08	0.07	0.06
Obs	822	822	822	822
	Panel C: Autocratic Countries			
Post-Crisis	0.029	0.072	0.096	0.756**
	(0.063)	(0.061)	(0.069)	(0.365)
R^2	0.25	0.06	0.08	0.11
Obs	476	476	476	476
Country FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Robust standard errors (clustered by country) are reported in parentheses.
$*$ p-value < 0.10, $**$ p-value < 0.05, $***$ p-value < 0.01.

Columns (2) to (4) of Panel A provide evidence that protests (strikes and anti-government demonstrations) as well as government crises are more likely to take place in countries that just experienced a financial crisis. In Panels B and C, although government

crises are still more likely in a post-crisis environment, the statistical power goes down due to the reduced number of observations. Yet, the economic magnitude is still significant. For example, after crises, democracies are 7.3 percentage points more likely to have a government crisis, which is an almost 20% raise compared to the mean—Panel B column (3).[24] In line with the literature, we interpret these findings as government stalemate in democracies. Mian et al. (2014) provide evidence that democratic politics after a crisis is plagued by polarized interests. They show that the size of the governing coalition shrinks after crises, while political fragmentation increases. In the end, weaker governments lead to political gridlock, with strong opposition and fragmented legislatures obstructing the implementation of reforms.

Table 4 also documents the existence of interesting heterogeneity across political regimes. The after-crisis incidence of general strikes and government stalemate is not statistically different between democracies and autocracies, meaning that both regimes explain the positive correlation detected in columns (2)–(3) of Panel A. On the other hand, only autocracies—according to the estimates reported in column (4) of Panel (C)—experience a significant and sizable increase (by about 70% of the mean) in the likelihood of anti-government demonstrations in the five years following a financial crisis.

The evidence we provide of a positive association between the occurrence of financial crises and anti-government demonstrations, in particular for non-democratic countries, leads us to investigate if a change of political regime is more likely to take place in the aftermath of a crisis. Estimates reported in Table 5 show that, from one year to the next, the likelihood of transitioning from autocracy to democracy increases by 2 percentage points in the five years following a financial crisis—see column (2).[25] As the mean of democratic change is 0.021,

[24] Although statistical power is lacking at conventional levels, the corresponding p-value is 0.16. However, note that if we do not constrain the sample to non-missing observations of all the variables and run the same regression on an unrestricted sample, then, for democracies, the coefficient is the same as in Panel B (0.073), while the standard error goes down to 0.04, with a p-value of 0.07.

[25] The dependent variables in columns (1) through (3) of Table 5 capture whether from one year to the next there is a regime change of any type (*Regime Change*), from autocracy to democracy (*Democratic Change*), or from democracy to autocracy (*Autocratic Change*), respectively.

this means that the probability of transitioning from autocracy to democracy doubles after a crisis. Instead, the occurrence of financial crises does not seem to increase the probability of a democratic crisis and a subsequent autocratic transition. Therefore, while a financial crisis might threaten an autocrat's survival as the likelihood of a democratic transition increases, it does not carry the risk of democracies falling back to an autocratic regime.

Table 5 Regime Change in a Post-Crisis Environment

	(1) Regime Change	(2) Democratic Change	(3) Autocratic Change
Post-Crisis	0.014	0.020**	-0.006
	(0.009)	(0.008)	(0.006)
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
R^2	0.03	0.03	0.03
Obs	1,298	1,298	1,298

Dependent variables in columns (1) through (3) capture whether from one year to the next there is a regime change of any type (*Regime Change*), from autocracy to democracy (*Democratic Change*), or from democracy to autocracy (*Autocratic Change*), respectively. Robust standard errors (clustered by country) are reported in parentheses.
$*$ p-value < 0.10, $**$ p-value < 0.05, $***$ p-value < 0.01.

In addition, we are interested in understanding how the general public opinion toward competition and the government's involvement in the economy changes as a reaction to financial crises, and how this, in turn, can put pressure on democratic and autocratic governments. As described in the data section, we use two questions from the WVS that reflect the general public attitudes toward a market oriented economy. These variables capture: (i) People's opinion about private ownership and state ownership (*Private vs State Ownership*), (ii) people's attitude toward competition (*Competition Good vs Bad*). As mentioned before, higher values indicate less market oriented sentiments.

In Table 6, we estimate equation (1) using as dependent variables the residuals from a set of regressions of the corresponding opinion outcome on country and year fixed effects as well as individual characteristics (education, marriage, children, and employment status). We report the estimated coefficients of *Post-Crisis* in the regression for each row-heading

variable. The general message is that public attitudes become much less supportive of market oriented policies in autocracies after a crisis, while there is no substantial change of public opinion in democracies (Panel A of Table 6). In particular, column (2) shows that there is no statistically significant change in average attitudes in democracies. On the contrary, column (3) shows that, in autocracies, the average number of people who are more in favor of state ownership rather than private ownership increases after a crisis. In non-democratic countries, also the average number of people who think competition is bad increases.

Table 6 Change in Average Attitudes After a Crisis, Democracies vs. Autocracies

	(1) All	(2) Democracies	(3) Autocracies
Panel A: Market vs. Government			
Private vs State Ownership	0.081***	-0.018	0.248***
	(0.026)	(0.034)	(0.04)
Competition Good vs Bad	0.013	-0.04	0.092***
	(0.023)	(0.032)	(0.034)
Private vs State Ownership (dummy)	0.011**	-0.001	0.032***
	(0.004)	(0.005)	(0.006)
Competition Good vs Bad (dummy)	-0.002	-0.006	0.004
	(0.003)	(0.005)	(0.005)
Obs	56,516	31,325	25,191
Panel B: Protest Sentiment			
Signing Petitions	0.004	0.008	0.002
	(0.004)	(0.005)	(0.006)
Joining Strikes or Demonstrations	0.008**	-0.002	0.03***
	(0.004)	(0.005)	(0.007)
Joining in Boycotts	0.001	-0.008*	0.023***
	(0.003)	(0.005)	(0.006)
Occupying Buildings or Factories	-0.000	-0.000	-0.001
	(0.003)	(0.003)	(0.005)
Obs	51,867	30,277	21,590

Robust standard errors for mean-difference tests are reported in parentheses.

A detailed variable description is given in Table A.3.

$*$ p-value < 0.10, $**$ p-value < 0.05, $***$ p-value < 0.01.

As in Quinn and Toyoda (2007), we thus find that ideological shifts may drive liberal reforms and closures. The fact that this is apparent only in autocracies should not be puzzling, as the zero average effect of crises on public attitudes in democratic countries is consistent with the emergence of more polarized opinions as in Mian et al. (2014). And a large literature has emphasized the responsiveness of non-democratic rulers to the public opinion, as they must respond to the relevant selectorate or minimize the probability of revolt (Bueno de Mesquita et al., 2003). In addition, a reverse causation channel might also lie behind this mechanism, as the public opinion might be manipulated with the market economy and foreign investors providing an easy scapegoat for autocrats after a crisis.

Finally, the (self-declared) propensity to join strikes, demonstrations, or boycotts increases in autocracies but not in democracies (see Panel B of Table 6). This is in line with our previous findings based on actual outcomes rather than attitudes.

The empirical results discussed in this section tell us two very different (political) tales of what happens in democratic vs. autocratic countries in the aftermath of a financial crisis. In democratic countries, the counter-balancing effects of internal and external (IMF) pressure—as well as more polarized public attitudes as in Mian et al. (2014)—produce a political stalemate and this may explain the zero effect of crises on reforms. The IMF conditionality applied to crises-countries that receive financial support is intended to lead policy makers toward implementing more market oriented policies. At the same time, the internal government crisis (crisis inside the government circles driven by popular sentiment) that often follows the financial crisis exerts a negative influence on reform behavior and pushes toward less market oriented policies. These two counter-balancing effects might offset each other on average (although one might prevail in one country and the other one in some other country). And this might be a reason why the association between financial crises and structural reforms under democracies is weak or absent.[26]

[26]The recent experience of Greece is a case study consistent with these general (cross-country) findings. In mid 2000s, the authorities introduced a spate of structural reforms such as corporate tax cuts, more flexible overtime arrangements, a new competition law, elimination of job tenure at public utility firms, simplification of business licensing. The IMF welcomed these reforms, but noted that there remained an unfinished agenda

Turning to non-democratic countries, our empirical results show that financial crises could in fact pave the way for a regime change, and the fear of such an outcome might lead autocratic rulers to take counter-balancing measures to pander vested economic interests.[27] Facing a tighter government budget constraint in the aftermath of a crisis, the only available policy tool for pandering might be to reverse reforms and shut down liberalizations, so as to increase rents for incumbent interests. This mechanism is indeed consistent with the negative effect of financial crises on reforms that we detect in autocratic countries.[28] We cannot completely rule out, however, the alternative mechanism of self-fulfilling expectations. If autocracies are more likely to be threatened by regime change after crises, then the increased probability of a future crisis might lead to capital outflows and decreased private investment.

in the product and labor markets. The former included improved tax administration, tax simplification, reduced red tape, modernization of bankruptcy law, liberalization of gas and electricity markets. The latter included relaxation of employment protection measures, and a reduction in the minimum wages (at least for sectors under economic stress). While the authorities were enthusiastic about product market reform, they were not sanguine about the prospects for labor market reform. On the crucial issue of pension reform, the IMF urged for a public dialogue to facilitate early action. However, the authorities wished to adhere to an election promise to not introduce corrective measures in that term of office, though they did agree with the IMF assessment that fiscal sustainability would be threatened in the absence of these measures. Amid escalating internal political pressure, with large and often disorderly demonstrations taking place during critical negotiations with the IMF, the authorities were hard-pressed to resist abiding by the IMF reforms agenda. In the end, the outcome was modest (but not negative) in terms of structural adjustment.

[27]It is worth noting that, looking at how the effect of crises depends on regime change for autocracies (i.e., democratic change), regime continuity drives our results. We see in the data that the autocracies which survive the threat of a regime change and keep their position reduce reforms, while the autocracies that did not survive the regime change, and have become democracies, have no significant association with reforms (available upon request). This is in line with our conjecture that autocrats close down the country to be able to secure their position. Those autocracies that remain in power by avoiding regime change are the ones reducing reforms, and those are the successful autocrats.

[28]This process may be illustrated using the case study of the so called "Arab Spring," which is said to have been triggered in late 2010 in Tunisia. The uncertainty and turmoil generated by the political transitions in Egypt, Jordan, Morocco, Tunisia, and Libya turned out to be more protracted than earlier anticipated. With the exception of Morocco and Jordan, growth declined sharply in 2011 and unemployment increased in many countries. Fiscal positions deteriorated as governments responded to surging commodity prices by increasing spending, even as their revenues declined due to slower economic activity, and by granting tax breaks. External positions also deteriorated due to higher food and commodity prices, and declines in tourism and capital inflows. By 2015, most Arab Countries in Transition (ACTs) had made progress toward reforming their generalized energy subsidies to create space for better-targeted social protection and higher spending on infrastructure, health care, and education. However, progress in reining in current spending, strengthening revenues, and implementing broad-based structural reforms, was found to be uneven. Non-conflict ACTs experienced positive growth in 2014 and the first half of 2015, supported by some recovery in European partner countries, lower oil and commodity prices, and the early impact of the above reform efforts. Fiscal and external positions also improved in many cases, which for the first time since 2010 led to a reversal in the growth of central government deficits and strengthened reserve coverage.

In response, the government might be forced to step in and take measures to reduce capital outflows (e.g., capital controls) or subsidize investment (and increase government control of the economy).

5 A Simple Model of Structural Reforms

In this section, we present a simple model to better interpret the above empirical evidence and the mechanisms at play. The model's key feature is that the likelihood of a turnover of the ruling government involves different political constraints depending on whether the ruling political regime is an autocracy or a democracy. The likelihood of a political turnover under autocracy depends only on the support from the selected few who support the autocracy, whereas it depends on the whole population under democracy.

The economy is populated by four groups of voters—the libertarians (L), the conservatives (C), the pivots (P), and the selected elite (S). The population sizes of the four groups are denoted by μ_L, μ_C, μ_P, and μ_S, respectively. Based on their own vested interests, the libertarians always advocate structural reforms, whereas the conservatives always resist them. The pivots support structural reforms when the economy is in a normal state, but resist them when the economy is in a crisis. In normal times, the pivots are assumed to have enough savings to mitigate the short-run costs of reforms and make a smooth transition when the positive returns from reforms materialize in the medium term. When the economy falls into a crisis, however, the pivots do not have sufficient economic buffers, and thus, the short-run cost of reforms become critical enough for the pivots to oppose reforms. In democratic regimes, the selected elites behave just like the conservatives without any particular privileges in the political decision making. In autocracies, however, under normal times, the elites end up supporting reforms that make the whole pie bigger, from which they can benefit disproportionately more given their close proximity to and favoritism by the autocratic regime. On the contrary, in a crisis, the selected elites oppose reforms because

the associated costs of reforms to their well-being is higher than the indirect benefits of reforms accruing from being close to power.

The likelihood of a political turnover is modeled as follows. Let $\pi(s, y, r)$ denote the probability for the ruling party to continue ruling the country—that is, the likelihood of a turnover is one minus $\pi(s, y, r)$—when the ruling party decides to take structural policy action s and the state of the economy is y, under the political regime r. Structural policy action s takes the value of 1, 0, or -1, corresponding to conducting reforms, doing nothing, or reversing previous reforms, respectively. The state of the economy y takes the value of C or N, corresponding to a crisis or normal time, respectively. Political regime r takes the value of A or D, corresponding to autocracy or democracy.

To keep the analysis parsimonious and tractable, we consider a simple form as follows:

$$\pi(s, y, r) = \overline{\pi}_0 - g(y, r)\, s,$$

where $\overline{\pi}_0$ is the base probability of political continuity and $g(y, r)$ is the sensitivity to reform action s. Under autocracy, only the support from the selected few matters, and thus, we have:

$$g(C, A) = \eta\left(\frac{\mu_S}{\mu_S}\right) = \eta, \quad g(N, A) = \eta\left(\frac{0}{\mu_S}\right) = 0,$$

where η is some constant to ensure $\pi(s, y, r)$ to range from 0 to 1. Under democracy, the whole population will get equal weights, and thus, we have:

$$g(C, D) = \eta\left(\frac{\mu_C + \mu_P + \mu_S}{\mu_L + \mu_C + \mu_P + \mu_S}\right), \quad g(N, D) = \eta\left(\frac{\mu_C + \mu_S}{\mu_L + \mu_C + \mu_P + \mu_S}\right).$$

In sum, we obtain the following inequalities: $g(C, A) > g(C, D) > g(N, D) > g(N, A)$. Under such political constraints, the ruling party maximizes its value $V(s, y, r)$ by choosing structural policy action s.

The maximization problem is as follows:

$$\max_{s} \; V(s,y,r)$$

$$s.t. \qquad V(s,y,r) = (1-\pi(s,y,r))\,\underline{V} + \pi(s,y,r)\left(\overline{V} + (\alpha+\theta_r)\,s\right),$$

$$\pi(s,y,r) = \overline{\pi}_0 - g(y,r)\,s,$$

where $\underline{V}$ is the value of being out of the ruling position; $\overline{V}$ is the value of staying in the ruling position; the sum $\alpha+\theta_r$ represents the total benefits (losses) from doing (reversing) reforms, of which α is the long-run economic gain or loss due to structural policy action s, with $\alpha > 0$ capturing future long-term benefits/losses for the ruling party from conducting (reversing) economic reforms (e.g., an increase in revenue as the economy performs better by reform); θ_r is the external support that can be received (withdrawn) when structural reforms are conducted (reversed), assuming that such support may also depend on political regime r (e.g., the support may be larger for democracy than autocracy). In this maximization problem, doing structural reforms faces a trade-off between the expected costs of getting a higher probability to be turned over and the benefits from a good economic outcome thanks to reforms.

Solving the maximization problem requires comparing the values depending on structural policy action s separately for each state y and regime r. The solution is as follows:[29]

$$s(y,r) = \begin{cases} -1 & \text{if} \quad g(y,r) \geq \frac{(\alpha+\theta_r)\overline{\pi}_0}{\overline{V}-\underline{V}-\alpha-\theta_r} \\ 0 & \text{if} \quad \frac{(\alpha+\theta_r)\overline{\pi}_0}{\overline{V}-\underline{V}-\alpha-\theta_r} \geq g(y,r) \geq \frac{(\alpha+\theta_r)\overline{\pi}_0}{\overline{V}-\underline{V}+\alpha+\theta_r} \\ 1 & \text{if} \quad \frac{(\alpha+\theta_r)\overline{\pi}_0}{\overline{V}-\underline{V}+\alpha+\theta_r} \geq g(y,r) \end{cases}$$

where we assume $\overline{V} - \underline{V} - (\alpha+\theta_r) > 0$, so that the benefits from ruling the country is much higher than the benefits of doing reforms per se. Then, we arrive at the following result.

[29] See the details of the derivation in the Appendix.

If the parameters satisfy

$$\eta > \frac{(\alpha+\theta_r)\,\overline{\pi}_0}{\overline{V}-\underline{V}-\alpha-\theta_r} > \eta\left(\frac{\mu_C+\mu_P+\mu_S}{\mu_L+\mu_C+\mu_P+\mu_S}\right) > \frac{(\alpha+\theta_r)\,\overline{\pi}_0}{\overline{V}-\underline{V}+\alpha+\theta_r}$$

$$> \eta\left(\frac{\mu_C+\mu_S}{\mu_L+\mu_C+\mu_P+\mu_S}\right),$$

then, we have

$$s\,(C,A)=-1, \quad s\,(C,D)=0, \quad s\,(N,D)=s\,(N,A)=1.$$

The first inequality is likely to hold when the benefits from ruling the country is much higher than the benefits from implementing reforms per se (for an autocrat for example). The second inequality (necessary for *stalemate*) is likely to hold when the population of the libertarians μ_L is large enough to prevent reversals of reforms. The third inequality (also necessary for *stalemate*) is likely to hold when the gains from reforms $\alpha+\theta_r$ are not large enough for the ruling party to always choose to implement reforms. Lastly, the fourth inequality (necessary for reforms to be conducted in normal times under democracy) is likely to hold when the population of the pivots μ_P is large or indeed *pivotal* enough to affect the political decision making.

The key finding here is that while in normal times reforms take place regardless of political regime (in line with the overall upward trajectory of reforms presented in Figure 1), in times of economic crises, reforms are reversed under autocracies, while stalemate persists without reforms being implemented under democracies.

The simple model presented in this section provides a more formal interpretation of our empirical findings, with politicians facing differential political constraints under different regime types in times of crises. More specifically, by displaying crisis as a trigger to political instability and the potential loss of power in autocracies, the interpretation of the model's key parameters as already discussed previously tell a story of different political incentives of

the maximizing ruling party in democracies versus autocracies. This is consistent with our argument that, on one hand, in democratic regimes, the ruling party responds to voters and diffuse interests, thereby, this generates a stalemate as voters polarize after a crisis along the pro/against market dimension. On the other hand, in autocracies, the government responds to its electorate and concentrated interests, and, as the fear to lose power increases after a crisis hits, this generates more pandering toward those concentrated interests (the selected elites in our model), more rent seeking, and less market openness.

The assumption that autocratic leaders solely rely on selected elites to stay in power is key to the model predictions but may not always be the case. In the case of anocracies where dictatorship exists under an election system that is democratic to some extent, autocratic leaders may still need to secure popular support to stay in power. If we drop this assumption, then the model prediction of stronger anti-reform pressures in times of crisis for autocracies than for democracies would almost disappear, although it would still hold, to a lesser extent, if external support is weaker for autocracies (i.e., lower θ_A than θ_D).[30]

6 Conclusion

This paper aims at taking a fresh look at the prevalent view that crises provide an opportunity for governments to promote structural reforms that would not be possible to implement under normal economic conditions. Our empirical analysis casts doubt on this view. For the economic sectors we consider, we show that crises do not trigger the implementation of structural reforms. On the contrary, they are often followed by a reduction in the degree of reforms. This appears to be particularly relevant for non-democratic regimes. In

[30]We also conjecture that a simple extension to this model would still predict that anti-reform motives upon a crisis are stronger for anocracies than democracies. The extension would be to assume that the base probability of political continuity ($\bar{\pi}_0$) depends on the economic state to make a political turnover more likely upon a crisis only in the case of dictatorship (either anocracy or autocracy), while letting the political constraints for anocracies be the same as democracies. This new assumption is consistent with our empirical finding that a democratic change is more likely in a crisis, but an autocratic change is not (Table 5). With this extension, the thresholds of the four inequalities would shift in the direction that anti-reform motives upon a crisis are stronger for anocracies than democracies.

democracies, the IMF pressure for adopting reforms is often counterbalanced by government crises, which play an opposite role for the implementation of reforms. In autocracies, crises are associated with less pro-market attitudes in the public opinion, larger anti-government demonstrations, and a higher probability of regime change, leading autocratic rulers to close the economy in an attempt to pander vested economic interests.

References

Abiad, Abdul and Ashoka Mody, "Financial Reform: What Shakes It? What Shapes It?," *American Economic Review*, 2005, *95* (1), 66–88.

_ , Enrica Detragiache, and Thierry Tressel, "A New Database of Financial Reforms," *IMF Staff Papers*, 2010, *57* (2), 281–302.

Acemoglu, Daron and James Robinson, "Why Did the West Extend the Franchise? Democracy, Inequality, and Growth in Historical Perspective," *Quarterly Journal of Economics*, 2000, *15* (4), 1167–1200.

_ and _ , "A Theory of Political Transitions," *American Economic Review*, 2001, *91* (4), 938–963.

_ , _ , and Thierry Verdier, "Kleptocracy and Divide-and-Rule: A Model of Personal Rule," *Journal of the European Economic Association*, 2004, *2* (2-3), 162–192.

Alesina, Alberto, Silvia Ardagna, and Francesco Trebbi, "Who Adjusts and When? On the Political Economy of Reforms," *IMF Staff Papers*, 2006, *53*, 1–29.

Almasi, Pooya, Jihad Dagher, and Carlo Prato, "Regulatory Cycles: A Political Economy Model," *Working Paper*, 2018.

Barro, Robert J. and Jong-Wha Lee, "IMF programs: Who is Chosen and What are the Effects?," *Journal of Monetary Economics*, 2005, *52*, 1245–1269.

Bekaert, Geert, Campbell R. Harvey, and Christian Lundblad, "Does Financial Liberalization Spur Growth?," *Journal of Financial economics*, 2005, *77* (1), 3–55.

Berg, Andrew and Anne O. Krueger, *Trade, Growth, and Poverty: A Selective Survey* number 3-30, International Monetary Fund, 2003.

Billmeier, Andreas and Tommaso Nannicini, "Economies in Transition: How Important Is Trade Openness for Growth?," *Oxford Bulletin of Economics and Statistics*, 2011, *73* (3), 287–314.

_ **and** _ , "Assessing Economic Liberalization Episodes: A Synthetic Control Approach," *The Review of Economics and Statistics*, July 2013, *95* (3), 983–1001.

Campos, Nauro, Cheng Hsiao, and Jeffrey Nugent, "Crises, What Crises? New Evidence on the Relative Roles of Political and Economic Crises in Begetting Reforms," *Journal of Development Studies*, 2010, *46* (10), 1670–1691.

Cheibub, José, Jennifer Gandhi, and James Vreeland, "Democracy and Dictatorship Revisited," *Public Choice*, 2010, *143* (1), 67–101.

Christiansen, Lone, Martin Schindler, and Thierry Tressel, "Growth and Structural Reforms: A New Assessment," *Journal of International Economics*, 2013, *89* (2), 347–356.

Conway, Paul and Giuseppe Nicoletti, "Product Market Regulation in the Non-Manufacturing Sectors of OECD Countries," *OECD Economics Department Working Papers No 530*, 2006.

Dagher, Jihad, "Regulatory Cycles: Revisiting the Political Economy of Financial Crises," *IMF Working Paper 18/8*, 2018.

de Mesquita, Bruce Bueno, Alastair Smith, Randolph M. Siverson, and James D. Morrow, *The Logic of Political Survival*, MIT Press, 2003.

Drazen, Allan and Vittorio Grilli, "The Benefit of Crises for Economic Reforms," *American Economic Review*, 1993, *83* (3), 598–607.

_ **and William Easterly**, "Do Crises Induce Reform? Simple Empirical Tests of Conventional Wisdom," *Economics and Politics*, 2001, *13* (2), 129–157.

Duval, Romain and Davide Furceri, "Time for a Supply-Side Boost? Yes but...," *IMF Survey Magazine*, forthcoming.

Easterly, William, "National Policies and Economic Growth: A Reappraisal," in Philippe Aghion and Steven Durlauf, eds., *Handbook of Economic Growth*, Vol. 1 of *Handbook of Economic Growth*, Elsevier, 2005, chapter 15, pp. 1015–1059.

Estevadeordal, Antoni and Alan M. Taylor, "Is the Washington Consensus Dead? Growth, Openness, and the Great Liberalization, 1970s–2000s," *Review of Economics and Statistics*, 2013, *95* (5), 1669–1690.

Fernández, Andrés, Michael W. Klein, Alessandro Rebucci, Martin Schindler, and Martín Uribe, "Capital Control Measures: A New Dataset," Technical Report 2016.

Fernandez, Raquel and Dani Rodrik, "Resistance to reform: Status quo bias in the presence of individual-specific uncertainty," *The American economic review*, 1991, pp. 1146–1155.

Fernández-Villaverde, Jesús, Luis Garicano, and Tano Santos, "Political Credit Cycles: The Case of the Eurozone," *Journal of Economic Perspectives*, 2013, *27* (3), 145–166.

Giuliano, Paola and Diego Scalise, "The Political Economy of Agricultural Market Reforms in Developing Countries," *The BE Journal of Economic Analysis & Policy*, 2009, *9* (1).

_ , Prachi Mishra, and Antonio Spilimbergo, "Democracy and Reforms: Evidence from a New Dataset," *American Economic Journal: Macroeconomics*, 2013, *5* (4), 179–204.

Grosjean, Pauline and Claudia Senik, "Democracy, Market Liberalization, and Political Preferences," *The Review of Economics and Statistics*, 2011, *93* (1), 365–381.

Høj, Jens, Vincenzo Galasso, Giuseppe Nicoletti, and Thai-Thanh Dang, "An Empirical Investigation of Political Economy Factors behind Structural Reforms in OECD Countries," *OECD Economic Studies*, 2007, *2006* (1), 87–136.

IMF, "World Economic Outlook, April 2004: Advancing Structural Reforms," 2004.

_ , "Structural Reforms and Economic Performance in Advanced and Developing Countries," Washington SM/08/166, International Monetary Fund 2008.

_ , "Structural Reforms and Macroeconomic Performance: Initial Considerations for the Fund," *IMF Policy Papers*, 2015.

Kaminsky, Graciela and Carmen Reinhart, "The Twin Crises: The Causes of Banking and Balance-of-Payments Problems," *American Economic Review*, 1999, *89* (3), 473–500.

Krueger, Anne O., *Political Economy of Policy Reform in Developing Countries*, Cambridge MA: MIT Press, 1993.

_ , "Trade Policy and Economic Development: How We Learn," NBER Working Papers 5896, National Bureau of Economic Research, Inc 1997.

Levine, Ross, "Financial Development and Economic Growth: Views and Agenda," *Journal of Economic Literature*, June 1997, *35* (2), 688–726.

_ , "Finance and Growth: Theory and Evidence," in Philippe Aghion and Steven Durlauf, eds., *Handbook of Economic Growth*, Elsevier, 2005, chapter 12, pp. 865–934.

McCarty, Nolan, Keith T. Poole, and Howard Rosenthal, *Political bubbles: financial crises and the failure of American democracy*, Princeton, New Jersey: Princeton University Press, 2013.

McKinnon, Ronald I., *Money and Capital in Economic Development*, Washington, D.C.: The Brookings Institution, 1973.

Mian, Atif, Amir Sufi, and Francesco Trebbi, "Resolving Debt Overhang: Political Constraints in the Aftermath of Financial Crises," *American Economic Journal: Macroeconomics*, April 2014, *6* (2), 1–28.

Nannicini, Tommaso and Roberto Ricciuti, "Autocratic Transitions and Growth," Working Papers Series 2967, CESifo 2010.

OECD, "Structural Reforms in Times of Crisis," *Economic Policy Reforms: Going for Growth*, 2012.

_ , "Going for Growth," *Economic Policy Reforms*, 2016.

Ostry, Jonathan D., Alessandro Prati, and Antonio Spilimbergo, "Structural Reforms and Economic Performance in Advanced and Developing Countries," IMF Occasional Papers 268, International Monetary Fund October 2009.

Pitlik, Hans and Steffen Wirth, "Do Crises Promote the Extent of Economic Liberalization?: An Empirical Test," *European Journal of Political Economy*, 2003, *19*, 565–581.

Prati, Alessandro, Massimiliano Gaetano Onorato, and Chris Papageorgiou, "Which Reforms Work and under What Institutional Environment? Evidence from a New Data Set on Structural Reforms," *Review of Economics and Statistics*, July 2013, *95* (3), 946–968.

Przeworski, Adam and James R. Vreeland, "The Effect of IMF Programs on Economic Growth," *Journal of Development Economics*, 2000, *62*, 385–421.

Quinn, Dennis, "The Correlates of Change in International Financial Regulation," *American Political Science Review*, 1997, *91* (3), 531–551.

_ **and A. Maria Toyoda**, "Ideology and Voter Preferences as Determinants of Financial Globalization," *American Journal of Political Science*, 2007, *51* (2), 344–363.

_ **and** _ , "Does Capital Account Liberalization Lead to Growth?," *Review of Financial Studies*, 2008, *21* (3), 1403–1449.

_ **, Martin Schindler, and A. Maria Toyoda**, "Assessing Measures of Financial Openness and Integration," *IMF Economic Review*, August 2011, *59* (3), 488–522.

Reinhart, Camen M. and Kenneth S. Rogoff, *This Time It's Different: Eight Centuries of Financial Folly*, Princeton: Princeton University Press, 2009.

Reinhart, Carmen M., "This Time is Different Chartbook: Country Histories on Debt, Default, and Financial Crises," NBER Working Papers 15815, National Bureau of Economic Research, Inc March 2010.

_ **and Kenneth S. Rogoff**, "From Financial Crash to Debt Crisis," *American Economic Review*, 2011, *101* (5), 1676–1706.

Rodrik, Dani, "Goodbye Washington Consensus, Hello Washington Confusion?," *Journal of Economic Literature*, 2006, *44*, 973–987.

_ **, Arvind Subramanian, and Francesco Trebbi**, "Institutions Rule: The Primacy of Institutions over Geography and Integration in Economic Development," *Journal of Economic Growth*, 2004, *9* (2), 131–165.

Sachs, Jeffrey D. and Andrew Warner, "Economic Reform and the Process of Global Integration," *Brookings Papers on Economic Activity*, 1995, *26* (1, 25th A), 1–118.

Schindler, Martin, "Measuring Financial Integration: A New Data Set," *IMF Staff Papers*, April 2009, *56* (1), 222–238.

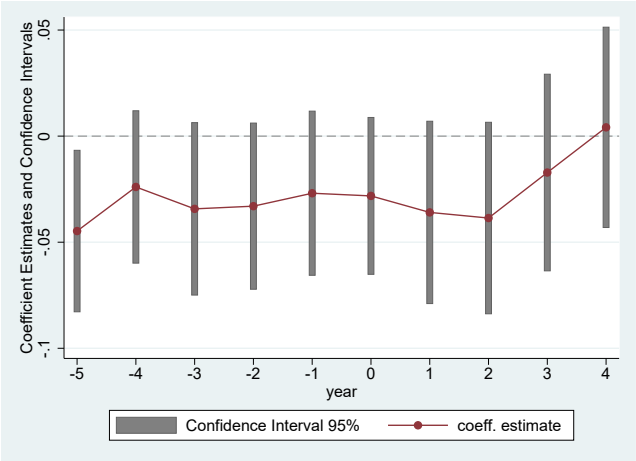
Williamson, John and Molly Mahar, *A Survey of Financial Liberalization* number 211, Princeton Univ International Economics, 1998.

Appendix for

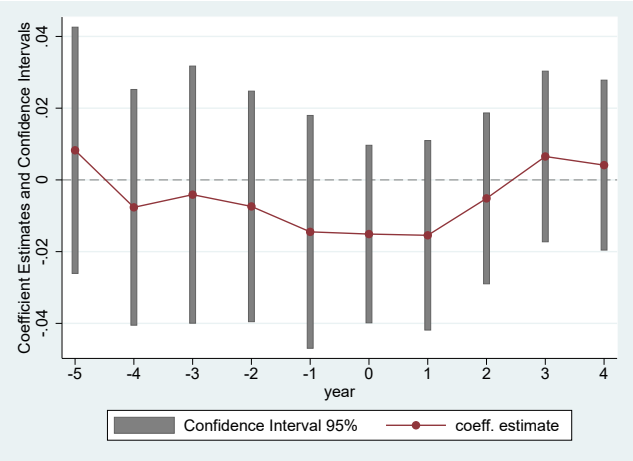
"Policies in Hard Times: Assessing the Impact of Financial Crises on Structural Reforms"

A. Figures and Tables

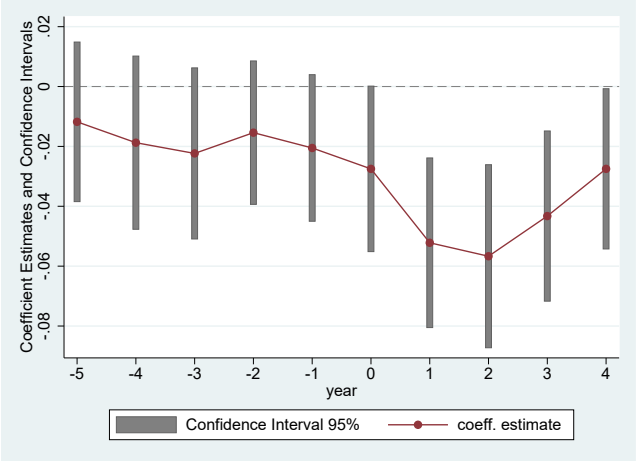
Figure A.1 Financial Crises and Structural Reforms, Pre- and Post-Trends



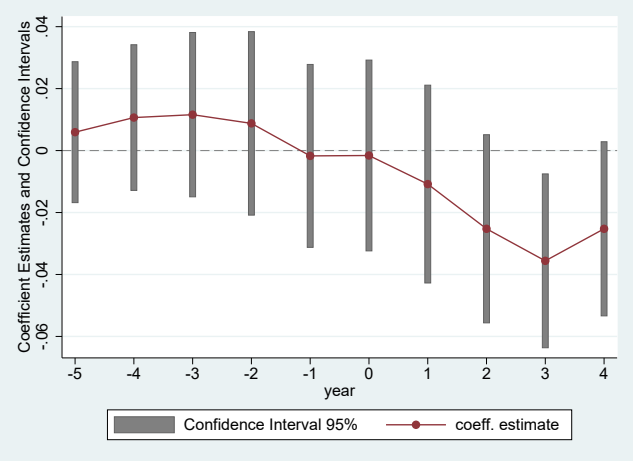
(a) Agriculture



(b) Trade

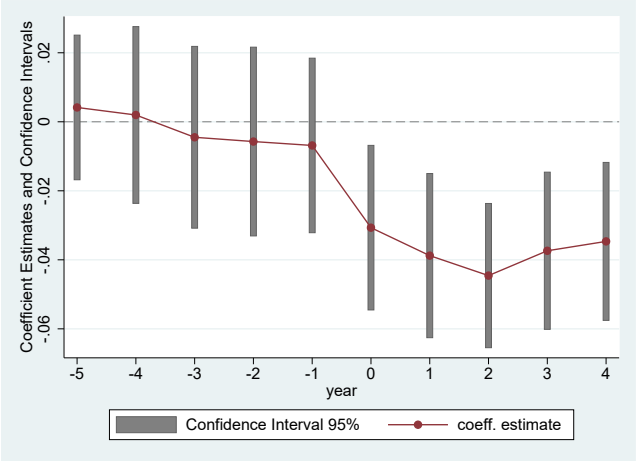


(c) Current Account

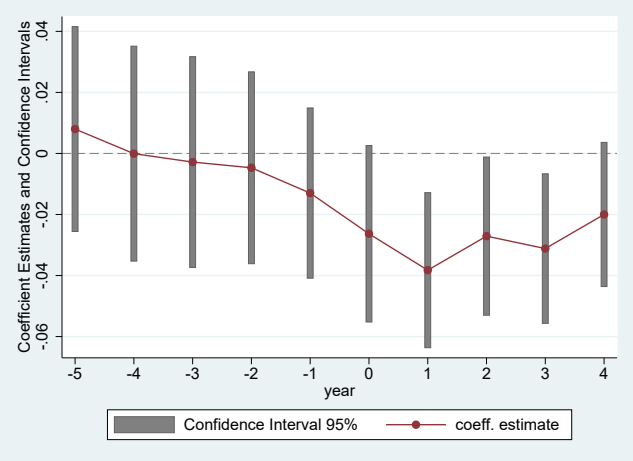


(d) Networks

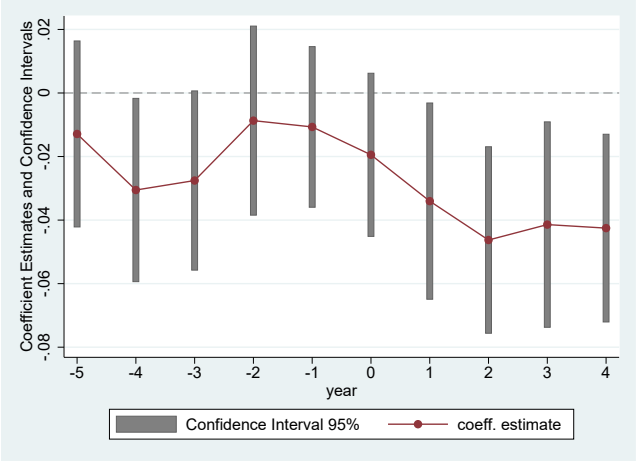
Figure A.1 (Continued) Financial Crises and Structural Reforms, Pre- and Post-Trends



(e) Banking



(f) Securities Market



(g) Capital Account

Table A.1 List of Financial Crises

Country	Crisis Year
Algeria	1990, 1991
Angola	1974, 1976, 1985, 1991, 1992
Argentina	1980, 1982, 1989, 1995, 2001, 2002, 2006
Australia	1975, 1989
Bolivia	1979, 1980, 1982, 1986, 1991, 1994, 1999
Brazil	1974, 1983, 1985, 1986, 1990, 1994, 2002
Canada	1983
Central African Republic	1976, 1981, 1983, 1988, 1994
Chile	1974, 1976, 1982, 1983, 1985, 1990
China	1992, 1994
Colombia	1979, 1982, 1985, 1987, 1998
Costa Rica	1974, 1981, 1983, 1987, 1988, 1991, 1994, 1995
Cote d'Ivoire	1977, 1979, 1983, 1988, 1994, 2000
Denmark	1987
Dominican Republic	1975, 1980, 1982, 1984, 1988, 1996, 2003, 2005
Ecuador	1974, 1981, 1982, 1983, 1998, 1999
Egypt	1980, 1981, 1984, 1986, 1989, 1990, 1992
El Salvador	1981, 1985, 1989, 1990, 1993
Finland	1991
France	1994
Germany	1977
Ghana	1974, 1976, 1979, 1982, 1986, 1987, 1993, 1997, 2000, 2003
Greece	1986, 1990, 1991
Guatemala	1974, 1986, 1989, 1990, 2001, 2006
Honduras	1981, 1990, 1994, 1999, 2001
Hungary	1990, 1991, 1995
Iceland	1974, 1985, 1988, 1993
India	1993
Indonesia	1979, 1992, 1994, 1997, 1998, 2002
Ireland	1975, 1981
Italy	1974, 1980, 1990
Japan	1974, 1992
Kenya	1984, 1985, 1992, 1994
Korea	1974, 1980, 1983, 1985, 1997
Malaysia	1985, 1997
Mauritius	1979
Mexico	1976, 1980, 1981, 1982, 1994, 1995
Morocco	1983, 1986
Myanmar	1984, 1988, 1996, 2001, 2002, 2006
New Zealand	1987
Nicaragua	1979, 1985, 1987, 2000
Nigeria	1975, 1977, 1981, 1982, 1983, 1988, 1992, 1997, 2001, 2004
Norway	1987
Panama	1983, 1988
Paraguay	1974, 1979, 1984, 1986, 1994, 1995, 2002, 2003
Peru	1975, 1976, 1978, 1980, 1983, 1984, 1985, 1999
Philippines	1981, 1984, 1997
Poland	1981, 1987, 1991
Portugal	1974, 1982
Romania	1981, 1986, 1990
Russia	1991, 1993, 1995, 1998
Singapore	1982
South Africa	1977, 1985, 1989, 1993
Spain	1977
Sri Lanka	1979, 1980, 1981, 1989, 1990, 1996
Sweden	1991
Taiwan	1983, 1995, 1997
Thailand	1974, 1980, 1996
Tunisia	1979, 1991
Turkey	1977, 1978, 1982, 1991, 1994, 2000, 2001
United Kingdom	1974, 1975, 1984, 1991, 1995
United States	1984
Uruguay	1981, 1983, 1987, 1990, 2002, 2003
Venezuela	1978, 1980, 1983, 1987, 1990, 1993, 1995, 2002, 2004
Zambia	1983, 1984, 1995
Zimbabwe	1983, 1991, 1995, 1998, 2000, 2006

Table A.2 List of Democratic and Autocratic Country Periods

Democracies	Autocracies
Argentina (1973-1975, 1983-2006), Australia (1973-2006), Bolivia (1979, 1982-2006), Brazil (1985-2006), Canada (1973-2006), Central African Republic (1993-2002), Chile (1990-2006), Colombia (1973-2006), Costa Rica (1973-2006), Denmark (1973-2006), Dominican Republic (1973-2006), Ecuador (1979-1999, 2002-2006), El Salvador (1984-2006), Finland (1973-2006), France (1973-2006), Germany (1973-2006), Ghana (1979-1980, 1993-2006), Greece (1974-2006), Guatemala (1973-1981, 1986-2006), Honduras (1982-2006), Hungary (1990-2006), Iceland (1973-2006), India (1973-2006), Indonesia (1999-2006), Ireland (1973-2006), Italy (1973-2006), Japan (1973-2006), Kenya (1998-2006), Korea (1998-2006), Mauritius (1973-2006), Mexico (2000-2006), New Zealand (1973-2006), Nicaragua (1984-2006), Nigeria (1979-1982, 1999-2006), Norway (1973-2006), Panama (1989-2006), Paraguay (1989-2006), Peru (1980-1989, 2001-2006), Philippines (1986-2006), Poland (1989-2006), Portugal (1976-2006), Romania (1990-2006), Spain (1977-2006), Sri Lanka (1973-1976, 1989-2006), Sweden (1973-2006), Taiwan (1996-2006), Thailand (1975, 1979-1990, 1992-2005), Turkey (1973-1979, 1983-2006), United Kingdom (1973-2006), United States (1973-2006), Uruguay (1985-2006), Venezuela (1973-2006).	Algeria (1973-2006), Angola (1975-2006), Argentina (1976-1982), Bolivia (1973-1978, 1980-1981), Brazil (1973-1984), Central African Republic (1973-1992, 2003-2006), Chile (1973-1989), China (1973-2006), Cote d'Ivoire (1973-2006), Ecuador (1973-1978, 2000-2001), Egypt (1973-2006), El Salvador (1973-1983), Ghana (1973-1978, 1981-1992), Greece(1973), Guatemala (1982-1985), Honduras (1973-1981), Hungary (1973-1989), Indonesia (1973-1998), Kenya (1973-1997), Korea (1973-1987), Malaysia (1973-2006), Mexico (1973-1999), Morocco (1973-2006), Myanmar (1973-2006), Nicaragua (1973-1983), Nigeria (1973-1978, 1983-1998), Panama (1973-1988), Paraguay (1973-1988), Peru (1973-1979, 1990-2000), Philippines (1973-1985), Poland (1973-1988), Portugal (1973-1975), Romania (1973-1989), Russia (1973-2006), Singapore (1973-2006), South Africa (1973-2006), Spain (1973-1976), Sri Lanka (1977-1988), Taiwan (1973-1995), Thailand (1973-1974, 1976-1978, 1991, 2006), Tunisia (1973-2006), Turkey (1980-1982), Uruguay (1973-1984), Zambia (1973-2006), Zimbabwe (1973-2006).

Table A.3 World Values Survey Questions

Variable Question	Scale
(1) Private vs State Ownership. "I'd like you to tell me your views on various issues. How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between. Sentences: Private ownership of business should be increased vs Government ownership of business should be increased."	1=Private ownership of business should be increased; 10=Government ownership of business should be increased.
(2) Competition Good vs Bad. "Now I'd like you to tell me your views on various issues. How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between. Sentences: Competition is good. It stimulates people to work hard and develop new ideas vs Competition is harmful. It brings the worst in people."	1=Competition is good; 10=Competition is harmful.
(3) Protest Sentiment (various indicators). "Now I'd like you to look at this card. I'm going to read out some different forms of political action that people can take, and I'd like you to tell me, for each one, whether you have actually done any of these things, whether you might do it or would never, under any circumstances, do it." - Signing petitions - Joining strikes or demonstrations. - Joining in boycotts - Occupying buildings or factories	1=Have done, Might do; 0=Would never do.

Notes: Questions (1) and (2) are also presented in the form of a dummy equal to 1 if the reported score is greater than 5.
The analysis on the protest dummies is robust to the exclusion of the "might do" answer from the indicator variable.

Table A.4 List of Countries and Waves in the WVS

Market vs. State	Protest Sentiment
Turkey **1991** (1990, 1996); **1994** (1990, 1996); **2000** (1996); **2001** (1996, 2007). South Africa **1993** (1990, 1996). Argentina **1995** (1999); **2001** (1999, 2006); **2002** (1999, 2006). Brazil **1994** (1991, 1997); **2002** (1997, 2006). Mexico **1994**, **1995** (1996). Peru **1999** (1996, 2001). Uruguay **2002** (1996, 2006); **2003** (1996, 2006). Taiwan **1995** (1994, 2006); **1997** (1994, 2006). India **1993** (1990, 1995). Indonesia **2002** (2006). Philippines **1997** (1996, 2001). Nigeria **1992** (1990, 1995); **1997** (1995). Russia **1991**, **1993**, **1998** (1995). China **1992**, **1994** (1995).	Turkey **1991** (1990, 1996); **1994** (1990, 1996); **2000** (1996, 2001); **2001** (1996). South Africa **1993** (1990, 1996). Argentina **1995**, **2001**, **2002** (1999). Brazil **1994** (1991, 1997); **2002** (1997). Colombia **1998** (1998). Mexico **1994**, **1995** (1996). Peru **1999** (1996, 2001). Uruguay **2002** (1996, 2006); **2003** (1996, 2006). Taiwan **1995**, **1997** (1994). India **1993** (1990, 1995). Indonesia **2002** (2001). Philippines **1997** (1996, 2001). Nigeria **1992** (1990, 1995); **1997** (1995, 2000). Russia **1991**, **1993**, **1998** (1995).

Notes: For all countries, years of crisis **(bold)** and World Value Survey years are indicated.

Table A.5 Financial Crises and Structural Reforms, Robustness Checks

Dependent Variable	(1) Agriculture	(2) Trade	(3) Current Account	(4) Networks	(5) Banking	(6) Securities Market	(7) Capital Account
	Panel A: Robustness to Restricting the Sample to Non-overlapping Crises						
Post-Crisis	0.012	0.000	-0.030*	0.004	-0.026**	-0.029*	-0.030*
	(0.019)	(0.013)	(0.017)	(0.010)	(0.012)	(0.016)	(0.016)
R^2	0.15	0.44	0.47	0.62	0.82	0.65	0.42
Obs	961	961	961	961	961	961	961
	Panel B: Robustness to Including all Countries with no Crisis						
Post-Crisis	0.012	0.008	-0.046***	-0.008	-0.035***	-0.019	-0.058***
	(0.019)	(0.013)	(0.016)	(0.015)	(0.013)	(0.017)	(0.015)
R^2	0.17	0.38	0.46	0.66	0.80	0.61	0.42
Obs	1641	1641	1641	1641	1641	1641	1641
	Panel C: Robustness to a 10-year Window around Crises						
Post-Crisis	0.010	-0.015	-0.033	-0.039**	-0.050***	-0.019	-0.046**
	(0.027)	(0.016)	(0.025)	(0.016)	(0.015)	(0.018)	(0.022)
R^2	0.19	0.42	0.42	0.65	0.80	0.64	0.36
Obs	1004	1004	1004	1004	1004	1004	1004
	Panel D: Robustness to a 15-year Window around Crises						
Post-Crisis	0.011	-0.000	-0.039**	-0.014	-0.035***	-0.024	-0.047***
	(0.021)	(0.013)	(0.018)	(0.013)	(0.012)	(0.014)	(0.017)
R^2	0.19	0.42	0.44	0.62	0.80	0.64	0.37
Obs	1197	1197	1197	1197	1197	1197	1197
	Panel E: Robustness to a 30-year Window around Crises						
Post-Crisis	0.012	0.010	-0.044**	-0.013	-0.035***	-0.016	-0.055***
	(0.019)	(0.013)	(0.017)	(0.014)	(0.013)	(0.016)	(0.015)
R^2	0.18	0.40	0.47	0.64	0.82	0.64	0.41
Obs	1437	1437	1437	1437	1437	1437	1437
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors (clustered by country) are reported in parentheses.

$*$ p-value < 0.10, $**$ p-value < 0.05, $***$ p-value < 0.01.

Table A.6 Financial Crises and Structural Reforms, with Categorical Reform Variables of Large Changes

Dependent Variable	(1) Agriculture	(2) Trade	(3) Current Account	(4) Networks	(5) Banking	(6) Securities Market	(7) Capital Account
	Panel A1: ΔReform>5%, Δ=t-mean[(t-1),(t-2),(t-3),(t-4),(t-5)]						
Post-Crisis	0.032	0.070	-0.082	-0.028	-0.138**	-0.088*	-0.142**
	(0.025)	(0.060)	(0.074)	(0.039)	(0.054)	(0.053)	(0.059)
	Panel A2: ΔReform>5%, Δ=t-mean[(t-1),(t-2),(t-3),(t-4)]						
Post-Crisis	0.024	0.089	-0.078	-0.037	-0.164***	-0.058	-0.122**
	(0.021)	(0.056)	(0.058)	(0.036)	(0.054)	(0.047)	(0.054)
	Panel A3: ΔReform>5%, Δ=t-mean[(t-1),(t-2),(t-3)]						
Post-Crisis	0.016	0.113**	-0.075	-0.045	-0.143***	-0.030	-0.084*
	(0.018)	(0.051)	(0.050)	(0.034)	(0.051)	(0.040)	(0.046)
	Panel A4: ΔReform>5%, Δ=t-mean[(t-1),(t-2)]						
Post-Crisis	0.014	0.072*	-0.028	-0.044	-0.095*	-0.020	-0.061
	(0.013)	(0.039)	(0.041)	(0.029)	(0.048)	(0.027)	(0.038)
	Panel B1: ΔReform>10%, Δ=t-mean[(t-1),(t-2),(t-3),(t-4),(t-5)]						
Post-Crisis	0.031	0.051	-0.049	-0.038	-0.151***	-0.088*	-0.128**
	(0.025)	(0.049)	(0.055)	(0.038)	(0.051)	(0.049)	(0.054)
	Panel B2: ΔReform>10%, Δ=t-mean[(t-1),(t-2),(t-3),(t-4)]						
Post-Crisis	0.023	0.053	-0.044	-0.040	-0.129**	-0.058	-0.104**
	(0.021)	(0.041)	(0.050)	(0.037)	(0.050)	(0.044)	(0.050)
	Panel B3: ΔReform>10%, Δ=t-mean[(t-1),(t-2),(t-3)]						
Post-Crisis	0.016	0.078*	-0.007	-0.048	-0.111**	-0.030	-0.074*
	(0.018)	(0.039)	(0.040)	(0.032)	(0.048)	(0.040)	(0.042)
	Panel B4: ΔReform>10%, Δ=t-mean[(t-1),(t-2)]						
Post-Crisis	0.014	0.087**	0.013	-0.042	-0.076*	-0.020	-0.058*
	(0.013)	(0.036)	(0.033)	(0.028)	(0.046)	(0.027)	(0.032)

Dependent variable takes 1 when there is a large positive change in the liberalization variable, -1 when there is a large negative change, and 0 otherwise. Large change is defined as a change in the liberalization variable greater than: 5 percent in Panels A, and 10 percent in Panels B. In various panels, change in a given index is defined with respect to the average value of that index in the window of last two to five years.

All regressions control for country and year fixed effects. Robust standard errors (clustered by country) are reported in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$

Table A.7 Financial Crises and Large Anti-Liberalization Reform Indicator

Dependent Variable	(1) Agriculture	(2) Trade	(3) Current Account	(4) Networks	(5) Banking	(6) Securities Market	(7) Capital Account
	Panel A1: ΔReform>5%, Δ=t-mean[(t-1),(t-2),(t-3),(t-4),(t-5)]						
Post-Crisis	-0.002	-0.039	0.031	0.000	0.048**	0.000	0.059**
	(0.009)	(0.024)	(0.031)	(.)	(0.022)	(.)	(0.028)
	Panel A2: ΔReform>5%, Δ=t-mean[(t-1),(t-2),(t-3),(t-4)]						
Post-Crisis	-0.005	-0.034	0.037	0.000	0.047**	0.000	0.054*
	(0.007)	(0.022)	(0.027)	(.)	(0.021)	(.)	(0.027)
	Panel A3: ΔReform>5%, Δ=t-mean[(t-1),(t-2),(t-3)]						
Post-Crisis	-0.003	-0.048*	0.060**	0.000	0.042**	0.000	0.043*
	(0.005)	(0.024)	(0.023)	(.)	(0.021)	(.)	(0.021)
	Panel A4: ΔReform>5%, Δ=t-mean[(t-1),(t-2)]						
Post-Crisis	-0.001	-0.028	0.053**	0.000	0.032**	0.000	0.031*
	(0.005)	(0.021)	(0.021)	(.)	(0.016)	(.)	(0.018)
	Panel B1: ΔReform>10%, Δ=t-mean[(t-1),(t-2),(t-3),(t-4),(t-5)]						
Post-Crisis	-0.002	-0.024	0.033	0.000	0.039**	0.000	0.048*
	(0.009)	(0.021)	(0.021)	(.)	(0.018)	(.)	(0.025)
	Panel B2: ΔReform>10%, Δ=t-mean[(t-1),(t-2),(t-3),(t-4)]						
Post-Crisis	-0.005	-0.019	0.038*	0.000	0.029*	0.000	0.043*
	(0.007)	(0.020)	(0.021)	(.)	(0.017)	(.)	(0.025)
	Panel B3: ΔReform>10%, Δ=t-mean[(t-1),(t-2),(t-3)]						
Post-Crisis	-0.003	-0.027	0.042**	0.000	0.021	0.000	0.040**
	(0.005)	(0.018)	(0.019)	(.)	(0.016)	(.)	(0.019)
	Panel B4: ΔReform>10%, Δ=t-mean[(t-1),(t-2)]						
Post-Crisis	-0.001	-0.035**	0.034*	0.000	0.022	0.000	0.036***
	(0.005)	(0.018)	(0.018)	(.)	(0.015)	(.)	(0.013)

Dependent variable takes 1 when there is a large negative change in the liberalization variable, and 0 otherwise. Large change is defined as a change in the liberalization variable greater than: 5 percent in Panels A, and 10 percent in Panels B. In various panels, change in a given index is defined with respect to the average value of that index in the window of last two to five years.

All regressions control for country and year fixed effects. Robust standard errors (clustered by country) are reported in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$

Table A.8 Financial Crises and Large Pro-Liberalization Reform Indicator

Dependent Variable	(1) Agriculture	(2) Trade	(3) Current Account	(4) Networks	(5) Banking	(6) Securities Market	(7) Capital Account
	Panel A1: ΔReform>5%, Δ=t-mean[(t-1),(t-2),(t-3),(t-4),(t-5)]						
Post-Crisis	0.030	0.030	-0.050	-0.028	-0.090**	-0.088*	-0.083*
	(0.022)	(0.044)	(0.052)	(0.039)	(0.040)	(0.053)	(0.046)
	Panel A2: ΔReform>5%, Δ=t-mean[(t-1),(t-2),(t-3),(t-4)]						
Post-Crisis	0.019	0.055	-0.041	-0.037	-0.117***	-0.058	-0.069
	(0.019)	(0.041)	(0.041)	(0.036)	(0.042)	(0.047)	(0.041)
	Panel A3: ΔReform>5%, Δ=t-mean[(t-1),(t-2),(t-3)]						
Post-Crisis	0.013	0.066*	-0.015	-0.045	-0.101**	-0.030	-0.041
	(0.017)	(0.037)	(0.039)	(0.034)	(0.039)	(0.040)	(0.039)
	Panel A4: ΔReform>5%, Δ=t-mean[(t-1),(t-2)]						
Post-Crisis	0.013	0.044	0.025	-0.044	-0.063	-0.020	-0.030
	(0.013)	(0.029)	(0.033)	(0.029)	(0.041)	(0.027)	(0.032)
	Panel B1: ΔReform>10%, Δ=t-mean[(t-1),(t-2),(t-3),(t-4),(t-5)]						
Post-Crisis	0.029	0.027	-0.016	-0.038	-0.112***	-0.088*	-0.080*
	(0.023)	(0.036)	(0.043)	(0.038)	(0.040)	(0.049)	(0.043)
	Panel B2: ΔReform>10%, Δ=t-mean[(t-1),(t-2),(t-3),(t-4)]						
Post-Crisis	0.018	0.034	-0.005	-0.040	-0.101**	-0.058	-0.062
	(0.019)	(0.032)	(0.038)	(0.037)	(0.040)	(0.044)	(0.038)
	Panel B3: ΔReform>10%, Δ=t-mean[(t-1),(t-2),(t-3)]						
Post-Crisis	0.013	0.051	0.034	-0.048	-0.090**	-0.030	-0.034
	(0.017)	(0.031)	(0.031)	(0.032)	(0.041)	(0.040)	(0.035)
	Panel B4: ΔReform>10%, Δ=t-mean[(t-1),(t-2)]						
Post-Crisis	0.013	0.051*	0.047*	-0.042	-0.054	-0.020	-0.022
	(0.013)	(0.029)	(0.027)	(0.028)	(0.039)	(0.027)	(0.028)

Dependent variable takes 1 when there is a large positive change in the liberalization variable, and 0 otherwise. Large change is defined as a change in the liberalization variable greater than: 5 percent in Panels A, and 10 percent in Panels B. In various panels, change in a given index is defined with respect to the average value of that index in the window of last two to five years.

All regressions control for country and year fixed effects. Robust standard errors (clustered by country) are reported in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$

Table A.9 Financial Crises and Structural Reforms, by Crisis Type

Dependent Variable	(1) Agriculture	(2) Trade	(3) Current Account	(4) Networks	(5) Banking	(6) Securities Market	(7) Capital Account
	Panel A: All Countries						
Post-Banking Crisis	0.015	-0.017	-0.016	-0.003	-0.015	-0.008	-0.022*
	(0.015)	(0.014)	(0.014)	(0.016)	(0.011)	(0.017)	(0.013)
Post-Inflation Crisis	0.023	0.004	-0.043*	-0.005	-0.052***	-0.037*	-0.062***
	(0.020)	(0.017)	(0.022)	(0.022)	(0.013)	(0.021)	(0.019)
Post-Domestic Debt Crisis	-0.025	-0.002	-0.095**	-0.066**	-0.072**	0.040	-0.081*
	(0.061)	(0.029)	(0.036)	(0.029)	(0.032)	(0.030)	(0.048)
Post-External Debt Crisis	-0.078*	0.039*	-0.062**	-0.042	-0.045**	-0.058**	-0.065**
	(0.039)	(0.022)	(0.028)	(0.025)	(0.022)	(0.022)	(0.029)
Obs	1,298	1,298	1,298	1,298	1,298	1,298	1,298
	Panel B: Democratic Countries						
Post-Banking Crisis	0.005	0.007	0.001	-0.005	-0.003	-0.006	-0.012
	(0.020)	(0.016)	(0.015)	(0.020)	(0.013)	(0.022)	(0.015)
Post-Inflation Crisis	0.035	-0.008	-0.056*	-0.024	-0.059***	-0.034	-0.046
	(0.022)	(0.020)	(0.030)	(0.030)	(0.017)	(0.033)	(0.032)
Post-Domestic Debt Crisis	-0.025	0.004	-0.066	-0.061*	-0.030	0.021	-0.103*
	(0.048)	(0.033)	(0.047)	(0.033)	(0.034)	(0.031)	(0.053)
Post-External Debt Crisis	-0.088*	-0.007	-0.047	-0.027	-0.059**	-0.014	-0.074
	(0.052)	(0.020)	(0.039)	(0.041)	(0.025)	(0.032)	(0.051)
Obs	822	822	822	822	822	822	822
	Panel C: Autocratic Countries						
Post-Banking Crisis	0.015	-0.045*	-0.032	0.000	-0.050***	-0.034	-0.041*
	(0.029)	(0.026)	(0.025)	(0.016)	(0.017)	(0.031)	(0.022)
Post-Inflation Crisis	-0.037	0.023	-0.046	-0.004	-0.055**	-0.059**	-0.082**
	(0.047)	(0.028)	(0.035)	(0.030)	(0.027)	(0.027)	(0.035)
Post-Domestic Debt Crisis	-0.184*	-0.051	-0.116***	-0.036	-0.139**	0.067	-0.006
	(0.108)	(0.047)	(0.030)	(0.043)	(0.051)	(0.071)	(0.043)
Post-External Debt Crisis	-0.075	0.095**	-0.066	-0.019	-0.052	-0.085**	-0.059*
	(0.057)	(0.038)	(0.044)	(0.022)	(0.032)	(0.033)	(0.035)
Obs	476	476	476	476	476	476	476
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors (clustered by country) are reported in parentheses.

$*$ p-value < 0.10, $**$ p-value < 0.05, $***$ p-value < 0.01.

Table A.10 Robustness of Baseline Results to Crises Tally

Dependent Variable	(1) Agriculture	(2) Trade	(3) Current Account	(4) Networks	(5) Banking	(6) Securities Market	(7) Capital Account
	Panel A: All Countries						
Post-Crisis	0.015	0.006	-0.039**	-0.014	-0.032**	-0.020	-0.050***
	(0.019)	(0.013)	(0.016)	(0.013)	(0.012)	(0.016)	(0.016)
Crisis Tally	-0.011	-0.006	-0.003	0.002	-0.012**	-0.004	0.001
	(0.009)	(0.006)	(0.007)	(0.005)	(0.005)	(0.006)	(0.007)
R^2	0.18	0.41	0.45	0.61	0.81	0.64	0.38
Obs	1298	1298	1298	1298	1298	1298	1298
	Panel B: Democratic Countries						
Post-Crisis	0.008	0.014	-0.022	-0.015	-0.015	-0.003	-0.027
	(0.017)	(0.014)	(0.016)	(0.017)	(0.013)	(0.019)	(0.016)
Crisis Tally	-0.012	-0.001	0.001	0.002	-0.015**	-0.004	-0.003
	(0.014)	(0.008)	(0.011)	(0.007)	(0.008)	(0.011)	(0.012)
R^2	0.17	0.48	0.50	0.68	0.84	0.61	0.44
Obs	822	822	822	822	822	822	822
	Panel C: Autocratic Countries						
Post-Crisis	-0.012	0.015	-0.070**	-0.011	-0.074***	-0.065**	-0.084***
	(0.039)	(0.029)	(0.027)	(0.018)	(0.019)	(0.025)	(0.030)
Crisis Tally	-0.004	-0.008	-0.007	-0.002	-0.008	0.003	0.009
	(0.013)	(0.009)	(0.011)	(0.007)	(0.009)	(0.010)	(0.011)
R^2	0.21	0.26	0.34	0.46	0.75	0.62	0.28
Obs	476	476	476	476	476	476	476
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors (clustered by country) are given in parentheses.

$*p < 0.10, **p < 0.05, ***p < 0.01$

Table A.11 Robustness to Controlling for Pre-Crisis Levels of Structural Reforms

Dependent Variable	(1) Agriculture	(2) Trade	(3) Current Account	(4) Networks	(5) Banking	(6) Securities Market	(7) Capital Account
	Panel A: All Countries						
Post-Crisis	0.002	0.006	-0.008	-0.007	-0.011**	-0.004	-0.016***
	(0.006)	(0.004)	(0.006)	(0.004)	(0.005)	(0.005)	(0.006)
Pre-Crisis Reform Variable (t-1)	0.837***	0.772***	0.826***	0.917***	0.824***	0.819***	0.826***
	(0.025)	(0.029)	(0.021)	(0.014)	(0.019)	(0.024)	(0.016)
R^2	0.79	0.79	0.83	0.92	0.94	0.89	0.81
Obs	1250	1250	1250	1250	1250	1250	1250
	Panel B: Democratic Countries						
Post-Crisis	0.010**	0.003	-0.004	-0.010	-0.009**	0.000	-0.012
	(0.005)	(0.004)	(0.008)	(0.007)	(0.004)	(0.007)	(0.007)
Pre-Crisis Reform Variable (t-1)	0.803***	0.803***	0.799***	0.878***	0.813***	0.798***	0.805***
	(0.042)	(0.039)	(0.020)	(0.027)	(0.028)	(0.030)	(0.026)
R^2	0.77	0.82	0.81	0.92	0.95	0.87	0.80
Obs	797	797	797	797	797	797	797
	Panel C: Autocratic Countries						
Post-Crisis	-0.021	0.010	-0.016	-0.005	-0.028***	-0.019*	-0.021**
	(0.013)	(0.011)	(0.010)	(0.005)	(0.009)	(0.010)	(0.010)
Pre-Crisis Reform Variable (t-1)	0.826***	0.695***	0.832***	0.944***	0.773***	0.817***	0.835***
	(0.042)	(0.050)	(0.057)	(0.020)	(0.033)	(0.038)	(0.033)
R^2	0.75	0.66	0.79	0.90	0.91	0.89	0.78
Obs	453	453	453	453	453	453	453
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Pre-crisis reform control is the pre-crisis level of the corresponding reform outcome of that column.

Robust standard errors (clustered by country) are given in parentheses.

$*p < 0.10, **p < 0.05, ***p < 0.01$

B. Derivation of the Maximization Problem

$$s(y,r)=\begin{cases} -1 & \text{if} \quad V(-1,y,r)\geq V(0,y,r) \quad \text{and} \quad V(-1,y,r)\geq V(1,y,r) \\ 0 & \text{if} \quad V(0,y,r)\geq V(-1,y,r) \quad \text{and} \quad V(0,y,r)\geq V(1,y,r) \\ 1 & \text{if} \quad V(1,y,r)\geq V(0,y,r) \quad \text{and} \quad V(1,y,r)\geq V(-1,y,r) \end{cases}$$

This means:

$$s(y,r)=\begin{cases} -1 & \text{if} \quad 0\geq V(0,y,r)-V(-1,y,r) \quad \text{and} \quad 0\geq V(1,y,r)-V(-1,y,r) \\ 0 & \text{if} \quad V(0,y,r)-V(-1,y,r)\geq 0 \quad \text{and} \quad 0\geq V(1,y,r)-V(0,y,r) \\ 1 & \text{if} \quad V(1,y,r)-V(0,y,r)\geq 0 \quad \text{and} \quad V(1,y,r)-V(-1,y,r)\geq 0 \end{cases}$$

Note that we have:

$$V(s,y,r)=\underline{V}+\pi(s,y,r)\left(\overline{V}-\underline{V}+(\alpha+\theta_r)s\right)$$

$$\begin{aligned} V(s,y,r)-V(s',y,r) &= [\pi(s,y,r)-\pi(s',y,r)]\left(\overline{V}-\underline{V}\right)+\pi(s,y,r)(\alpha+\theta_r)s-\pi(s',y,r)(\alpha+\theta_r)s' \\ &= -g(y,r)[s-s']\left(\overline{V}-\underline{V}\right)+(\alpha+\theta_r)[\pi(s,y,r)s-\pi(s',y,r)s'] \\ &= -g(y,r)[s-s']\left(\overline{V}-\underline{V}\right)+(\alpha+\theta_r)\left[\overline{\pi}_0(s-s')-g(y,r)\left(s^2-(s')^2\right)\right] \\ &= -g(y,r)[s-s']\left(\overline{V}-\underline{V}\right)+(\alpha+\theta_r)[\overline{\pi}_0(s-s')-g(y,r)(s+s')(s-s')] \\ &= -g(y,r)[s-s']\left(\overline{V}-\underline{V}\right)+(\alpha+\theta_r)[s-s'][\overline{\pi}_0-g(y,r)(s+s')] \\ &= [s-s']\left\{-g(y,r)\left(\overline{V}-\underline{V}\right)+(\alpha+\theta_r)[\overline{\pi}_0-g(y,r)(s+s')]\right\} \end{aligned}$$

That is:

$$V(1,y,r)-V(0,y,r)=\left\{-g(y,r)\left(\overline{V}-\underline{V}\right)+(\alpha+\theta_r)[\overline{\pi}_0-g(y,r)]\right\},$$

$$V(1,y,r)-V(-1,y,r)=2\left\{-g(y,r)\left(\overline{V}-\underline{V}\right)+(\alpha+\theta_r)\overline{\pi}_0\right\},$$

$$V(0,y,r) - V(-1,y,r) = \left\{ -g(y,r)\left(\overline{V} - \underline{V}\right) + (\alpha + \theta_r)\left[\overline{\pi}_0 + g(y,r)\right] \right\}.$$

Substituting these into the solution above yields:

$$s(y,r) = \begin{cases} -1 \quad \text{if} \quad g(y,r)\left(\overline{V} - \underline{V}\right) \geq (\alpha+\theta_r)\left[\overline{\pi}_0 + g(y,r)\right] & \text{and} \quad g(y,r)\left(\overline{V} - \underline{V}\right) \geq (\alpha+\theta_r)\overline{\pi}_0 \\ 0 \quad \text{if} \quad (\alpha+\theta_r)\left[\overline{\pi}_0 + g(y,r)\right] \geq g(y,r)\left(\overline{V} - \underline{V}\right) & \text{and} \quad g(y,r)\left(\overline{V} - \underline{V}\right) \geq (\alpha+\theta_r)\left[\overline{\pi}_0 - g(y,r)\right] \\ 1 \quad \text{if} \quad (\alpha+\theta_r)\left[\overline{\pi}_0 - g(y,r)\right] \geq g(y,r)\left(\overline{V} - \underline{V}\right) & \text{and} \quad (\alpha+\theta_r)\overline{\pi}_0 \geq g(y,r)\left(\overline{V} - \underline{V}\right) \end{cases}$$

Simplifying it yields:

$$s(y,r) = \begin{cases} -1 \quad \text{if} \quad g(y,r)\left(\overline{V} - \underline{V} - (\alpha+\theta_r)\right) \geq (\alpha+\theta_r)\overline{\pi}_0 & \text{and} \quad g(y,r)\left(\overline{V} - \underline{V}\right) \geq (\alpha+\theta_r)\overline{\pi}_0 \\ 0 \quad \text{if} \quad (\alpha+\theta_r)\overline{\pi}_0 \geq g(y,r)\left(\overline{V} - \underline{V} - (\alpha+\theta_r)\right) & \text{and} \quad g(y,r)\left(\overline{V} - \underline{V} + (\alpha+\theta_r)\right) \geq (\alpha+\theta_r)\overline{\pi}_0 \\ 1 \quad \text{if} \quad (\alpha+\theta_r)\overline{\pi}_0 \geq g(y,r)\left(\overline{V} - \underline{V} + (\alpha+\theta_r)\right) & \text{and} \quad (\alpha+\theta_r)\overline{\pi}_0 \geq g(y,r)\left(\overline{V} - \underline{V}\right) \end{cases}$$

$$= \begin{cases} -1 \quad \text{if} \quad g(y,r) \geq \frac{(\alpha+\theta_r)\overline{\pi}_0}{\overline{V} - \underline{V} - (\alpha+\theta_r)} & \text{and} \quad g(y,r) \geq \frac{(\alpha+\theta_r)\overline{\pi}_0}{\overline{V} - \underline{V}} \\ 0 \quad \text{if} \quad \frac{(\alpha+\theta_r)\overline{\pi}_0}{\overline{V} - \underline{V} - (\alpha+\theta_r)} \geq g(y,r) & \text{and} \quad g(y,r) \geq \frac{(\alpha+\theta_r)\overline{\pi}_0}{\overline{V} - \underline{V} + (\alpha+\theta_r)} \\ 1 \quad \text{if} \quad \frac{(\alpha+\theta_r)\overline{\pi}_0}{\overline{V} - \underline{V} + (\alpha+\theta_r)} \geq g(y,r) & \text{and} \quad \frac{(\alpha+\theta_r)\overline{\pi}_0}{\overline{V} - \underline{V}} \geq g(y,r) \end{cases},$$

$$= \begin{cases} -1 \quad \text{if} \quad g(y,r) \geq \frac{(\alpha+\theta_r)\overline{\pi}_0}{\overline{V} - \underline{V} - (\alpha+\theta_r)} \\ 0 \quad \text{if} \quad \frac{(\alpha+\theta_r)\overline{\pi}_0}{\overline{V} - \underline{V} - (\alpha+\theta_r)} \geq g(y,r) \geq \frac{(\alpha+\theta_r)\overline{\pi}_0}{\overline{V} - \underline{V} + (\alpha+\theta_r)} \\ 1 \quad \text{if} \quad \frac{(\alpha+\theta_r)\overline{\pi}_0}{\overline{V} - \underline{V} + (\alpha+\theta_r)} \geq g(y,r) \end{cases}$$

where we assume $\overline{V} - \underline{V} - (\alpha + \theta_r) > 0$.