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Testing the Crisis Hypothesis

A Dark Cloud Without A Silver Lining

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Abstract

This paper studies whether economic crises lead to more reforms as argued by the well-known crisis hypothesis. Based on the theoretical model by Prato and Wolton (2015) we argue that economic crises are likely to reduce the size of liberalizing reforms. To test this we use the IMF Structural Reform dataset, which contains unbalanced panel data on 161 countries and different types of reforms over 1960-2006, as well as the Doing Business indicators for 2007-2015. Included in the analysis are trade, finance, products, labor, and business regulation reforms. Using the different types of reforms we construct one total reform index. We find that crises lead to no or less reforms rather than more reforms and thus our results point in the opposite direction of what the conventional crisis hypothesis argues. These results hold when we use a broad range of different crisis indicators and are driven by middle- and high-income countries. The different types of reforms all respond similarly to the crises. Additionally, we find that both aid and political crises increase the change in reforms.

Keywords: Crisis Hypothesis, Structural Reform, Economic Crises, Political Economy

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Contents

1 Introduction

"You never want a serious crisis to go to waste" (Rahm Emanuel in an interview by Seib, 2008). These words were spoken by Rahm Emanuel, White House Chief of Staff under Barack Obama's presidency and former senior advisor to President Bill Clinton, in 2008 during an interview with the *Wall Street Journal*. With the financial crisis merging into a Great Recession, Rahm Emanuel's words became instant headlines in the United States. Emanuel was however not the first to point towards the opportunities that could accompany an economic crisis. On the one hand urban legend links the words to Winston Churchill, while others attribute them to a 1976 medical paper (Shapiro, 2006). Setting aside the question of its origin, the phrase repeatedly returns in discussions of one particular set of beliefs within economic literature: the "crisis-leads-to-reform" hypothesis. This hypothesis (hereafter referred to as the crisis hypothesis) argues for the beneficial effects of an economic crisis. Its occurrence in literature has followed two equally important definitional paths. On the one hand the theory claims that reforms are induced by bad times rather than good times, while the other branch goes further by contending that the economy must in fact be doing very bad in order for the crisis to induce reform. Some authors, such as Mariano Tommasi and Andrés Velasco (1996) claim that both definitions of the crisis hypothesis are a well-established part of the discussion. They even go as far as claiming that the crisis hypothesis itself is now essentially taken as a given, even referring to it as "conventional wisdom." Interestingly, the crisis hypothesis even gained attention outside the academic world through the well-known book *The Shock Doctrine* by Naomi Klein (2007). She uses the economic crisis in early 1990's Argentina to show that crises are taken advantage of by leaders in order to implement capitalist ideas with less resistance and personal political risk. She exemplifies this by arguing that the President and Minister of the Economy during the 1994 economic crisis in Argentina "had smuggled privatization in while the country was in shock of hyperinflation. Crisis had done its job" (Klein, 2007, p 168). While this is of course not peer-reviewed literature, it did help communicate the ideas to a broader audience.

The crisis hypothesis has more than enough cases of anecdotal evidence. The hypothesis gained momentum in the 1980s when several Latin American countries suffered severe economic crises and to a large extent implemented the necessary reforms (Pop-Eleches, 2009). These reforms were largely liberalizing in nature, making this continent a particularly interesting case (Pop-Eleches, 2009). More recently, the financial crisis and subsequent European debt crisis has re-introduced the question as a topic of interest. In their 2012 report the OECD found that member countries with a need for reforms implemented these as a response to the crises. It is worth noting that these results were mostly driven by the members with lower incomes levels. Based on their own definition of reform responsiveness rates, the report concludes that the countries on average implemented more OECD-recommended policy changes post-crisis than they did before the crisis (OECD, 2012).

In order to understand what the crisis hypothesis really entails, it is necessary to define reforms. In the literature, reforms are divided into two main categories. The first type of reform is referred to as macroeconomic stabilizations and mitigates the immediate negative consequences of problems such as high inflation and government deficits (Drazen and Easterly, 2001). The second category involves the type of reforms that will also be examined in this paper, namely structural reforms. These reforms are often categorized as market-oriented policies, as they aim to deregulate sectors of the economy. Such reforms are particularly important because they have been considered to lead to economic growth for less developed countries. Market-oriented policies were at the core of the Washington Consensus, and while criticism exists on the implementation process of such reforms, the idea of liberalization being important for growth remains widespread (Gore, 2000).

Liberalizing reforms are considered beneficial to a country's economy. In particular, reforms have been shown to increase productivity (IMF, 2015; Dabla-Norris, Ho, and Kyobe, 2016) and general economic growth (Khan, Qayyum, and Ghani, 2006; Wacziarg and Welch, 2008). It is important to understand the factors that influence reforms because through reforms these factors can indirectly have an impact on future economic growth. According to the crisis hypothesis, economic crises are one of the drivers behind reforms. However, more recent evidence for the crisis hypothesis has been mixed. Case studies in the field have found both situations that support the crisis hypothesis as well as proof that crises actually reduce the likelihood of

reforms (Corrales, 1997). Such empirical studies have been mostly focused on macroeconomic stabilizations, finding support for the hypothesis. Studies examining structural reforms are less common and give mixed results. Due to the uncertain result within the few tests on structural reform and the previous lack of frequent data, we aim to give an absolute answer to whether or not crises can actually be seen as a driving force for structural reforms. Based on previous empirical work we do not expect to find a positive correlation between crises and reform, and the theoretical model presented by Prato and Wolton (2015) even leads us to believe that we will rather find a negative relationship between the two.

This empirical paper sheds additional light on the "crisis-leads-to-reform" hypothesis and differentiates itself from existing work in several ways. Firstly we add to the current literature by using a larger data set than used in previous research. The reasons behind the limited number of studies on structural reforms so far are insufficient data and the difficulties of measuring and comparing structural reforms across countries (Alesina, Ardagna, and Trebbi, 2006; Campos, Hsiao, and Nugent, 2010). The structural reform dataset used in this paper was constructed by the IMF Research Department and contains data on the degree of liberalizations in four different sectors: financial, trade, labor, and product markets. While research has been done on one or two of these reform groups separately, we remain the first to include them all in one comprehensive study and the first to truly explore labor reforms. We create a total reform index based on the liberalization indices in the different sectors. Included in our analysis will also be the separate effects of economic crises on reforms in distinctive sectors. We also investigate the effects of crises on a fifth type of reform, namely business regulations, by focusing a segment of our analysis on the World Bank's Doing Business index. Furthermore, this paper adds to existing literature by using a broad range of crisis definitions. While high inflation and negative GDP per capita growth are the main crisis definitions, we also consider several other definitions to ensure all the effects of a crisis are captured by our results. Some examples of our measurements involve using standard deviations from country's average performance as well as the sum of the number of crises over a certain time period.

The main findings in this thesis suggest that economic crises will either reduce the change towards liberalization or lead to no change at all in reforms. This means that, as we expected, we find no support for the original crisis hypothesis. These results hold when considering a wide range of economic crises definitions, including GDP, inflation, banking, currency, and sovereign debt crises and whether crises occur several times in a limited number of years. These results are primarily driven by middle- and high-income countries. Moreover the results indicate that our different reform types, finance, trade, labor, product, and business regulations are affected in the same way: we observe negative or insignificant effects of crises. The results of the analysis do indicate that certain combinations of crises and reform definitions lead to stronger results than others. For example, sovereign debt crises have the strongest negative effect on trade and labor market liberalization, while GDP crises have a stronger effect on product markets and business regulation liberalization. When interacting crises variables with political variables such as quality of government and the ideology of the chief executive, our results are insignificant. Examining the effect of aid on reforms indicates that the receipt of aid has a positive effect on reform. The interaction of aid and crises, however, does not prove to be significant. Overall, the results of this thesis contradict the crisis hypothesis. They portray the short-term effects of economic crises on liberalization reform by considering crises taking place one or two years before the observed change in reforms. In the analysis, we also examined earlier years (up to five years) but have not included those in the paper, as the results did not prove significant. In the case of significant results, we elaborate on this through the text.

The structure of this paper is as follows. In Section 2, we present the main theoretical frameworks by Alesina and Drazen (1991) and Prato and Wolton (2015), which we then use to justify our final hypothesis. This is followed by Section 3, which summarizes the main literature in the field. Section 4 offers a description of the data and control variables we use, as well as an overview of the empirical model. Section 5 presents the results of our analysis in several subsections, examining not only the results of crises on the main reform index, but also its effect on finance, trade, product, labor, and business reforms. Finally, Section 6 summarizes the results of the thesis in the conclusion and offers a discussion of the limitations of this paper as well as suggestions for future research.

2 Theoretical Background

In order to delve deeper into the topic it has now become important for us to define both crisis and reform within the terms of the crisis hypothesis. Crises have traditionally been defined quite broadly as economic downturns, often characterized by negative economic growth or high inflation (above 40 percent) (Pitlik and Wirth, 2003; Alesina, Ardagna, and Trebbi, 2006; Campos, Hsiao, and Nugent, 2010). An essential component of our thesis and our contribution to current literature is our transparent inclusion of multiple measures of economic crisis, which we will discuss in further detail in our Data Section 4.2. The crisis hypothesis considers reforms without necessarily defining them, but the literature has interpreted reforms as to be either macroeconomic stabilizations or structural reforms. The reforms that we consider in our paper are structural reforms, but in order to understand its interpretation within the broader definition of reforms used in this area of research, we must also include a discussion on the importance of stabilizing reforms in more detail than the distinction presented in the introduction. Stabilization reforms refer to fiscal and macroeconomic stabilizations, and are focused on addressing for example inflation, public debt, and current account deficits (Drazen and Easterly, 2001). As the name suggests, their ultimate aim is to achieve economic stability (Rodrik, 1996). Structural reforms, on the other hand, tend to be more focused on changing regulation. This can for example be done by liberalizing trade, removing price distortions or reducing the influence of the government. Overall, structural reforms are interpreted as movements towards liberalization (Rodrik, 1996; Alesina, Ardagna, and Trebbi, 2006). The distinction between stabilization reforms and structural reforms has led to two different sections of research within the empirical crisis hypothesis literature.

The main theory within the field of the crisis hypothesis is the war of attrition model (Alesina and Drazen, 1991). This model portrays two groups that need to agree on how to share the costs of a reform. Each group knows their own cost of reforming but not the opposing group's cost. As each group does not know the cost of the other, they will try and wait for the other group to fold and therefore bear the cost of the reform. The model will reveal which group has the highest cost of waiting to reform. The game ends when, for one of the groups, the marginal benefit of waiting becomes less than the marginal cost - naturally this will occur sooner for the group with the highest waiting cost. A crisis in the form of a negative shock would further undermine the parties as it increases the cost of waiting, leading to a faster concession in which the weaker party folds even quicker. Various papers (including most famously Drazen and Grili, 1993) argue that the speedy concession could lower the amount spent on delaying reform to the extent that a crisis could actually enhance welfare. In such a case crises would actually be beneficial.

The war of attrition theory as presented by Alesina and Drazen (1991) has by some been interpreted to predict reforms in general, while others have only taken it to predict reforms in the form of macroeconomic stabilizations (Rodrik, 1996). In his paper "Understanding economic policy reform", Rodrik (1996) discusses how structural reforms can be a consequence of crises, even if they do not immediately address main economic problems. He argues that structural reforms can be bundled with stabilization efforts after a crisis. He illustrates this by introducing the political cost-benefit ratio. This ratio represents the ratio of total redistribution as a result of reform, to the efficiency benefits of that same reform, and takes on a value between zero and infinity. If the value of the ratio increases, it is harder to prove the efficiency of the reform. With this ratio, a crisis allows governments to combine structural reforms with macroeconomic policies as the latter benefit a larger part of society. Without a crisis, structural reforms can be more difficult to introduce, as they tend to have large distributional effects. In his earlier paper, Rodrik (1994) demonstrates how, using this ratio, trade liberalization becomes more acceptable during a crisis than during normal economic times as it can be bundled with macroeconomic stabilizations. This way, the predictions of the war of attrition model can also hold for structural reforms.

Although the war of attrition model has a wide range of applications, literature also questions its application to the crisis hypothesis. Rodrik (1996) provides a set of well-founded criticisms towards the crisis hypothesis and the war of attrition in its context. He maintains that the theory is essentially non-falsifiable in reality, this because any crisis not causing reform in the affected countries can be argued not to be severe enough. Since a lack of supportive empirical results can still be justified by the model it becomes less useful for prediction and explanation. Furthermore, Rodrik discusses a reverse causality issue,

namely that reforms only become items on the political agenda when previous policies have failed. Here, crises are equivalent to policies failing, making reforms of the policies inevitable. He even characterizes this phenomenon "no more surprising than smoke following fire" (Rodrik, 1996, p.27). The issues that Rodrik brings up are important to keep in mind while testing the hypothesis, and many authors have been trying to address his concerns in their work.

Our main cause for concern with the war of attrition is that its application is not necessarily well suited for a strong argument for reform. This is based on Rodrik's concern that the model is essentially non-falsifiable. This presents us with a need for a different model that captures a wider range of influences on the political process. We searched for a model that incorporates the political consequences for the politician of reforming. Ideally we also wanted a model that addresses the public's uncertainty of the success of a reform. One of the more compelling models set up to address the crisis hypothesis from this angle is presented in a working paper by Prato and Wolton (2015), who argue that voters' demand for reform can influence the likelihood of reform.

Prato and Wolton present a one-period three-player electoral game using a Perfect Bayesian Equilibrium in pure strategies. They consider a scenario of electoral competition where the success of a reform depends on the politicians' unobservable ability. The set-up includes two political candidates who observe their own ability before choosing to run on a platform promising reform or one promising to stick to the current policies. Some important observations about a candidate's competence is that while a reform is generally costly, the execution cost of a reform is lower for competent candidates and the reform will only benefit the representative voter if the winner is a competent politician. The voter cannot observe the competence of the candidates and only partly the platform, based on the cost spent on communication by the political candidate. The communication of the platform from candidate to voter is a costly process for both candidate and voter. A candidate's spending through making the platform more concise and understandable increases the chances that the candidate will observe his platform. On the other hand the voter has to spend time and effort on learning the contents of the platform and can choose the extent to which to do so.

The authors of the model define a time of crisis as one where the demand for reform is higher than the general trend, as this is a common definition used in earlier theoretical models on the crisis hypothesis. The probability of reform actually happening in such a time of crisis depends on what the authors refer to as the voter's selection concern, which reflects the voter's expected outcome of voting for a candidate. A low selection concern signifies a small expected payoff loss in the case of a botched reform, a reform performed by the least confident candidate, whereas a high selection concern means a large payoff loss. Prato and Wolton conclude that a high demand for reform will influence the actions taken by the two political candidates, as incapable candidates will be tempted to also promise a reform policy as it increases their chance of being elected. A crisis, through the effect it has on the voter's demand for reform, can then lead to less reform in one out of two ways. On the one hand, the crisis situation can lead to both candidates not proposing a reform at all due to the cost of reforming and communicating. On the other hand, the crisis can lead to an increased skepticism, a higher selection concern, of the voters towards candidates who propose reforms, which inhibits the electoral chances of those that do so. Putting in extra effort and time to learn the voter's platform will no longer be worth it, as it becomes more costly to understand the competence level of the candidate. The increased chance of botched reforms will lead voters to prefer to vote for a candidate that supports the status quo instead. The authors also acknowledge that when the selection concern is relatively low, due to communication of the candidate's platform or increased effort on the voter's side to understand the platform, crises may actually lead to reform as the probability of botched reforms is reduced. Prato and Wolton even address Drazen and Easterly's (2001) findings that reforms do not follow a crisis when there is no clear solution to the crisis. They do this by arguing that selection concern is similar to the difficulties experienced by politicians when trying to find the correct policies to solve the crisis.

To summarize, the war of attrition theory argues in support of the crisis hypothesis, while the model by Prato and Wolton allows for both positive and negative effects of crisis on reform. The Prato and Wolton model incorporates our main requirements for a more applicable theoretical framework. It successfully addresses the possibility of botched reforms as well as the importance of the quality of political leaders. The emphasis on the voter as a crucial component in the electoral process also highlights the importance of democracy as a factor that influences the relationship between crises and reforms. Based on this theoretical framework, our main hypothesis is that an economic crisis will reduce the likelihood of reforming. Notably our hypothesis then opposes the conventional hypothesis, by expecting to find a negative correlation between crisis and reform. The basis for our control variables originates from the theoretical models of both Alesina and Drazen (1991) and Prato and Wolton (2015) as well as relevant existing literature.

3 Literature Review

The crisis hypothesis is often considered to be the answer to the question of why some countries do not execute economic reforms, even when it would be clearly beneficial for them to do so (Alesina, Ardagna, and Trebbi, 2006). Structural reforms, when defined as movements towards economic liberalization, are widely considered to be beneficial for a country's economy. We recognize that by using this definition we are following a primarily western line of argument. There is, however, sufficient convincing literature from both western and non-western sources that we choose to incorporate this assumption in our paper. In empirical work reforms have been shown to increase productivity (IMF, 2015; Dabla-Norris, Ho, and Kyobe, 2016), investment (Alesina, et al., 2005), labor supply (Anderson, et al., 2014), and general economic growth (Khan, Qayyum, and Ghani, 2006; Wacziarg and Welch, 2008). A study by Swiston and Barrot (2011) even argues that introducing further structural reforms in Central America could significantly increase the economic growth rates in the region. As this is one of many studies within the field, it is unsurprising that the G20 stresses the important role of structural reforms in economic development (G20, 2016).

The benefits of reforming are spread over different sectors. Trade liberalization is the most commonly discussed type of reform. The increase in trade openness has been subject to many academic studies and shows an overwhelmingly positive impact on long run economic development. Both theoretical and empirical work indicates that trade liberalization will ultimately reduce poverty levels in a country (Winters, McCulloch, and McKay, 2004). Furthermore it is said to increase GDP per capita growth, albeit with a lagged effect (Greenaway, Morgan, and Wright, 2002). Financial sector reforms are shown to increase financial deepening if implemented under the right political circumstances (Tressel and Detragiache, 2008). Additionally, they are said to promote stability in the financial markets in the long run (Kaminsky and Schmukler, 2003). Liberalization in the telecoms market has shown to increase modernization (Gutiérrez and Berg, 2000) and a reduction of restrictions in terms of business regulations has been found to promote economic growth (Djankov, McLiesh, and Ramalho, 2006).

Although there is broad consensus on the benefits of reforming, it is important to take a closer look at the motivation of reforms. If we through empirical research can pinpoint the timing of and the drive behind reforms, this will extend our understanding of what factors need to be in place to encourage reform in countries where liberalization and growth are lacking. Such is often the case in many developing countries, and therefore results in this field would be particularly interesting in regions with greater need of reform.

In the previous section we outlined the distinction between macroeconomic stabilizations and structural reforms. A majority of the work in favor of the crisis hypothesis does in fact focus on macroeconomic stabilizations. Empirical testing of the hypothesis more or less began with the work of Bruno and Easterly (1996) who study countries with inflation and debt crises, and their following recovery. Countries that were in worse than average situations are seen to reform more, as results show that they perform better in terms of current account deficits after the crisis than countries that experienced no extreme inflation levels. In his later research Easterly also finds proof that periods with extremely high levels of inflation or high black market premiums result in following periods of better economic performance than do periods of less extreme crises. It is worth noting that he does not find similar support when economic crises are defined by high current account deficits, budget deficits or negative growth rates (Drazen and Easterly, 2001). Alesina, et al. (2006) present consistent findings, showing that macroeconomic stabilizations are more likely to follow inflation crises and recessions.

There is also support for the idea that economic crises do not only lead to macroeconomic stabilizations but to structural reform as well. Lora and Olivera (2004), for example, study Latin America, and find strong support for the crisis hypothesis. They include a broad range of liberalization reforms, including trade, privatization, labor, domestic finance and taxes. The authors do acknowledge that certain types of crises affect certain types of reforms, and therefore that all economic crises do not impact all types of structural reforms in the same way. Similarly, Pitlik and Wirth (2003) use the five-yearly Economic Freedom of the World index to show that deep economic crises, rather than medium or no crises, give rise to market-oriented reforms, supporting the view in the crisis hypothesis that economic times need to get significantly bad in

order to have an effect on reforms.

While these two studies certainly present convincing results in favor of the crisis hypothesis and structural reforms, we cannot ignore that a considerable proportion of the literature struggles to reach such clear-cut conclusions. After the 1982 debt crisis in Latin America, many countries responded by tightening rather than loosening regulation in the economy (Edwards, 1995). Through case studies Edwards provides insight into how countries react differently to economic crises. When comparing Argentina and Venezuela, Corrales (1997) questions the strength of the crisis hypothesis by showing how institutional factors are essential when trying to explain a country's response to an economic downturn. These two countries both experienced a crisis in the early 1990s, but had very different experiences with reforms. Venezuela initially responded to the crisis by increasing regulation, a path that the government followed by implementing price controls and by limiting privatizations. Liberalizing reforms only followed years later. Argentina, on the other hand, reacted by immediately introducing structural reforms. While Venezuela may be the exception to a well-established rule, the paper certainly raises the concern that other factors within a country may be stronger than crises themselves in driving liberalizing reforms.

Not only do countries respond differently to crises, Brooks and Kurtz (2007) argue that different types of reforms also can react differently to crises. Studying trade and capital account liberalization in Latin America, they find it matters whether the observed crisis is a growth recession or a period of high inflation. For example, a recession does not increase trade reforms towards liberalization while high inflation does. The authors therefore argue that a liberalizing reform can only occur following a crisis if it is seen as the solution to the problems that are at the root of a crisis. Consequently, whether or not the crisis hypothesis works depends heavily on the nature of the crisis and its relation to the reform.

This reasoning by Brooks and Kurtz (2007) could explain how, in some cases, crises seem to complicate reforms instead of enabling them, which goes against many of the theories that support the crisis hypothesis. Furthermore, Corrales addresses another issue with the crisis hypothesis in his 1997 paper, by stating that not only the responses to crises but also the success of these responses differ between countries. Countries with seemingly weak or no economic crises have managed to implement and keep structural reforms in place, while others with more severe crises have seen reforms retracted or not implemented at all. This highlights the importance of approaching crises with a broader range of definitions besides using the general definition of negative per capita economic growth, and trying to include the relativity of the crisis.

Further empirical work suggests that economic crises do not increase the likelihood of reforms at all. Using five-year data on labor market and trade reforms, Campos, Hsiao, and Nugent (2010) show that political crises rather than economic crises are the main factors that lead to reforms. Moreover, they find that economic crises do not lead to liberalization, and might even increase regulation in the labor and trade sector. This idea of economic crises reducing rather than increasing the probability of structural reforms is also supported by the work of Abiad and Mody (2005). While their work is limited to financial reforms, they show that banking crises can lead to increased rather than decreased restrictions in the sector. According to the authors this is because banking crises are crises particular to the financial sector. Governments would rather take on a stronger hold on the sector instead of liberalizing even further and potentially increasing the instability. Such developments could be observed during the most recent financial crisis. Also here reforms occurred more in the form of increased regulation, as illustrated by the adoption of the Basel III capital requirements (Claessens and Kodres, 2014).

What these studies show is not only that "crisis leads to reform" is a weak hypothesis, but also that its predictive power can differ amongst various types of reforms. The differences between types of reforms can already be illustrated by their effects on growth. A recent study by Cacciatore, et al. (2016) finds that while the impact of product market reforms does not respond strongly to business cycle conditions, labor market reforms can have different effects depending on whether they were implemented in a recession or in normal economic times. Different reforms thus react to economic times differently, and this may also show in how they react to economic crises. Campos, Hsiao, and Nugent (2010) and Brooks and Kurtz (2007), both referred to above, already investigated some of the different effects economic and political crises can have. Campos, et al. (2010) look at trade and labor market liberalization, while Brooks and Kurtz look at

trade and capital account reforms. In Latin America, trade reforms were shown to follow recession, while capital account liberalization does not seem to be influenced by GDP growth rates (Brooks and Kurtz, 2007). According to Campos, et al., political crises influence different types of reforms differently, as they have a positive effect on trade liberalization but a negative influence on labor market reforms.

The literature so far has thus found strong proof for the crisis hypothesis when looking at macroeconomic stabilizations. For structural reforms the results are much more mixed. This creates the possibility for this paper to add to the literature by further testing the hypothesis with different data and definitions. While this paper focuses on the role that crises have in liberalizing reforms, political factors can impact the likelihood of reform as well. If we aim to understand the role of economic crises on liberalization, it is important to see the exact effect of such other factors on the probability of liberalizing reform. The rest of this section will thus discuss other variables that theoretically and/or empirically have an impact on reforms.

Political fragmentation, defined as having a larger number of parties in the government, may significantly postpone reforms. The war of attrition theory shows as the number of parties increases, so does the delay until reforms occur (Alesina and Drazen, 1991). A study on privatizations in 21 developed economies shows that fragmented governments delay privatizations more than governments where the number of parties is limited (Bortolotti and Pinotti, 2008). The war of attrition, as we presented in Section 2, can be interpreted in such a way that with more parties the waiting game lasts longer, this because it will take a longer period for all parties to drop out of the game (Alesina, Ardagna, and Trebbi, 2006). Another control that we derived from the war of attrition model is the influence of whatever political system. Leaders with more political power and with the ability to act more independently of the opposition are more likely to implement reforms. In the war of attrition theory, having more power lowers the cost for the executive to wait. Presidential systems and parliamentary systems where power is concentrated in one or a few people would thus be expected to be quicker to implement reforms. Proof of this is readily available for stabilizing reforms (Alesina, Ardagna, and Trebbi, 2006), but the limited empirical studies considering structural reforms within this framework shed doubt over its strength (Lora and Olivera, 2004).

The political orientation of the governing party can also affect if and when reforms are implemented. In general, it is argued that right-wing governments are more supportive of implementing reforms, and therefore more market-oriented reforms should be observed in countries with right-wing governments (Alesina and Rubini, 1992; Potrafke, 2010). On the other hand, a study by Belloc and Nicita (2011) indicates that there is no significant difference between right- and left-wing governments: both have a positive impact on the liberalization initiatives. Finally, the extent to which democracy is adopted within the country is of great interest when considering the extent of liberalizing reform. Democratic leaders are argued to be able to be more inclusive when dealing with the reform process, which often comes with redistributive effects. Autocratic governments with strong elite groups would oppose this redistribution (Giuliano, Mishra, and Spilimbergo, 2013). There are however also many cases in which undemocratic governments implement market-oriented reforms. One example of this is the military dictatorship under Pinochet in Chile in the 1980s, which implemented a broad range of neoliberal policies (Boeninger, 1986). An opposite view is then that democracy can also be seen as hindering reform, as interest groups are stronger and are able to delay the reform process (Fernandez and Rodrik, 1991). Here, an autocracy would actually perform better in adopting reforms as they face less opposition.

Furthermore, it is worth discussing the potential effects of receiving development aid on reforms. Several authors argue that unconditional aid will postpone reforms (Drazen, 1999; Svensson, 2000) and others show that the crisis hypothesis when looking at macroeconomic stabilizations fails when a country receives foreign aid (Drazen and Easterly, 2001). Foreign aid programs that come with conditionality, such as certain IMF programs, are aimed at aiding the introduction of structural reforms. From this perspective, it is expected that they stimulate the liberalization process. Empirical work does not point in this direction however. Alesina, Ardagna, and Trebbi (2006) show that IMF programs do not have a significant impact on stabilization programs. The evidence on the effectiveness of aid as a reform inducement remains ambiguous.

Finally, the war of attrition, being the main theory in support of the crisis hypothesis, has been subject to different interpretations. While most scholars use the theory to explain the effects of an economic crisis,

some argue now that it, perhaps even more so, applies to political crises. A political crisis will within this theory move the costs of reforming to one of the remaining political groups, and thus ending the waiting game (Campos, Hsiao, and Nugent, 2010). In this way, a political crisis shortens the delay to reform and would thus lead to an increase of reforms. As mentioned above, Campos, et al. (2010) actually show that political crises can positively impact liberalization indices when looking at trade and labor market reforms, more so than economic crises. However, if we apply the theoretical model by Prato and Wolton one could interpret a political crisis in a different way, as here the main effect would be on the voter's selection concern. A political crisis instigates uncertainty, which could display itself in less communication from the agents running for office or less voter information available. This way, a political crisis could increase the voter's selection concern, which would reduce the probability of reform. However, the political crisis could also be seen as only affecting some of the candidates, which could actually increase the voter information available. This way, the political crisis could affect reforms in two different ways using Prato and Wolton's theoretical model.

As this section shows, there is extensive literature on reforms and the crisis hypothesis. We recognize the value of the work done and offer extensions in areas where empirical research so far has been lacking. We add to the existing literature in several ways. Firstly, the research on structural reforms so far is in many ways limited due to a lack of data availability. More specifically, a vast majority of the empirical studies in the field have been forced to use five-year data. The data used in our empirical analysis has so far only been used to determine other instigators for reform or for studying the effect of structural reforms on other economic variables. Another critical extension to the available data is the improved labor data. With these data we are able to extend the analysis of the effect of economic crises on labor reforms as well. A final improvement of data involves The Doing Business index from the World Bank. These data we use to investigate how business regulations are affected by crises, and more specifically what the top performers within liberalizing business reforms have in common. A second major contribution to this field is our use of multiple definitions of both crisis and reform. Previous definitions of crisis have been specific and limited, but we consider various definitions, allowing us to study the driving force with regards to liberalizing reform. Our use of such a broad range of reform variables additionally enables us to individualize the effect of crises and analyze whether a crisis in fact leads to reform in all or some of the classifications.

4 Data & Methods

In this section, we present the data and methods. Section 4.1 presents the data used in order to test the crisis hypothesis. While some data are available for longer periods, the analysis is limited to the period 1960-2006 based on overall data availability on structural reforms. The Section on business regulation however, only focuses on the period 2007-2015. When data is available for shorter time periods than specified here, it is noted in the description. Sections 4.2 and 4.3 present the data and variables for crises and controls. Section 4.4 then presents the empirical model with which we test the crisis hypothesis.

4.1 Data on Structural Reforms

As noted before, academic research on stabilization is considerably more common than that on structural reform. In order to measure the impact of crises on reforms we have obtained data on structural reforms from the IMF. This structural reform dataset was compiled by the IMF Research Department and first presented in the Board Paper (SM/08/166) titled "Structural Reforms and Economic Performance in Advanced and Developing Countries" (Ostry, et al., 2008). This database covers the period 1960-2006 and includes observations on 150 countries. It presents several reform indices; all normalized on a scale between zero and one, where one corresponds to a higher degree of liberalization. The normalized values have been obtained using the formula

$$Index_t = \frac{Value_t - min(value)}{max(value) - min(value)}$$

where $Value_t$ is the observed value of the index in year t. In other words, the file does not include any absolute values of liberalization, but rather a scale on which countries can be compared. The problem with defining reform as liberalization in this way is that changes towards more regulation are not categorized as reforms. For example, if Sweden were to increase the severance pay for workers, this would not be counted in our reform measure, as it is a movement away from liberalization. Furthermore, re-regulation is also not included in this reform definition, and there is no way of testing whether negative results mean altogether less reforms or more regulating reforms. However, focusing on the latter form of reform in this paper would be fruitless, as the available data does not include changes of this nature. We thus recognize this limitation and suggest it can be covered in future research.

The structural reform dataset provides a wide range of variables that are categorized in one of four areas: financial, trade, labor market and product markets. All indices are based on multiple subindices and a variety of sources. Below we outline the chosen reform measures obtained from the data compilation and in addition to their original sources. For a complete list of the variables used from this database, their construction, and the references, please consult Table 11 in the Appendix.

Financial Sector Liberalization. Financial sector liberalization is measured by two variables. First of all, for measures of liberalization in the financial sector we use the reform index on Domestic Financial Sector Liberalization (*DF*, data available for 1973-2005). This variable is based on six subindices, of which five are in the field of banking and the sixth is derived from security markets. The banking subindices describe areas such as interest rate controls, the degree of state ownership, and the quality of banking supervision and regulation. The subindex that covers security markets describes policies on the domestic security markets. Secondly, the financial sector liberalization is measured by the reform index on External Capital Account Liberalization (*CAP100*, data available for 1973-2005). This variable covers the extent to which the movement of capital into and out of the country is restricted. Here, the variable compares the intensity of these restrictions for residents versus nonresidents. We created an aggregate variable (*Finance*) by taking the average of the two variables we have discussed here: domestic finance (DF) and external capital account liberalization (Capital) measure. This creates a variable that captures movement in large areas of the financial market, and is therefore a sufficiently comprehensive measure for our purposes.

Trade Liberalization. The index for trade liberalization is also constructed of two variables. Tariff Rates (*Trade*, data available for 1960-2005) is an index measuring the average tariff rates. As all other variables in the IMF dataset, this variable is normalized and when equal to one the tariffs rates are zero. It takes on the value of zero when tariffs are equal to or above 60 percent. The second indicator used for measuring the degree of regulation in trade is the Current Account Restrictions (CUR100, data available for 1960-2005). This indicator measures the compliance of a government under IMF Article VII which requires countries to remove government restrictions on international trade. This index itself is a combination of two subindices, focusing on both trade in goods and trade in financial and other services. Just as for the financial liberalization, we have taken the average of both variables to create a new variable measuring trade liberalization (*TradeL*).

Product Markets Liberalization. The IMF database on structural reforms also includes two measures of product markets liberalization. One is a measure of regulation in Telecoms and Electricity Industries (*Networks*, data available for 1960-2006), which is an average of subindices found in both the telecoms sector and the electricity industry. For telecoms industry the indices cover the degree of competition, how regulation is executed, and the degree of liberalization of interconnection changes. For the electricity industry, the subindices capture how generation, transmission, and distribution are unbundled, how regulation is done, and how the wholesale market liberalizes. Additionally, the product markets liberalization also includes an index on Agriculture (*Agriculture*, data available for 1960-2006). This index is a summary measure considering the market of the leading agricultural export commodity for each separate country. Again, to obtain a measure for product markets liberalization (*Product*) we have taken the average of the agriculture measure and the telecoms and electricity industry measures.

Labor Market Liberalization. While a few other papers have also made use of the IMF structural reform database, the use of the labor market indices has been limited. The database includes observations on regulations in the labor market and covers the period from 1981 to 2004. Labor market reforms are built on employment protection and the ratio of minimum to mean wage. Employment protection measures are frequently used in studies assessing the effects of labor reforms on economic growth (Canton, et al., 2014). The employment protection itself is a combination of two main areas: severance pay and notice period. For both areas, the monthly salary equivalents are reported for workers with either nine months, four years and twenty years of experience. Based on this, we have created both a severance pay and notice period separately by taking the average of the three measures and normalized this on a zero to one scale, with one being a higher degree of liberalization. A final inclusion in this data compilation on labor reforms is a variable on the ratio of minimum wage to mean wage. Consequently our labor reforms variable (*LaborL*) is obtained by taking the average of the severance pay, notice period, and minimum wage to mean wage ratio variables.

As stated in each of the separate sections, the value of each of the liberalization indices (Finance, Trade, Product, Labor) is calculated by taking the average of the subindices. In case a country only has observations for one of the subindices, the index will take on the value of the average of the remaining subindices. For example, if a country has observations for the domestic finance index but not for the capital indicator, the finance index simply takes the value of the domestic finance index. This is done to optimize the number of observations in the analysis. Because we are aware of the implications of taking this simplistic approach to avoid too little data, the regressions will also be run with each of the subindices (domestic finance, capital, tariffs, current account restrictions, telecoms and electricity industries, agriculture, tax wedge, severance pay and notice period) separately. In addition to analyzing the effect of various economic crises on distinct types of reforms, it is also interesting to consider the overall effect of crises on reforms. To allow for this we compile the total reform index variable *SR_total* by taking on an average of the four reform indices (Finance, Trade, Product and Labor). The variable uses the average of the available indices, in a process similar to that for the separate liberalization indices described above. Our chosen time period for the total reform period is 1960-2005. For the separate reform types, we consider the periods for which data is available for that particular index. Table 1 presents the correlation between the four reform measures.

Structural Reforms	Finance	Trade	Product	Labor
Finance	1.0000			
Trade	0.8005*	1.0000		
Product	0.5667*	0.4492*	1.0000	
Labor	0.0269	0.0063	-0.1605*	1.0000

* $p < 0.05$. *Source:* IMF Structural Reforms dataset

Table 1: Correlations Between Types of Reforms

In Table 2, the summary statistics for the liberalization indices are presented for the period 1960-2006.

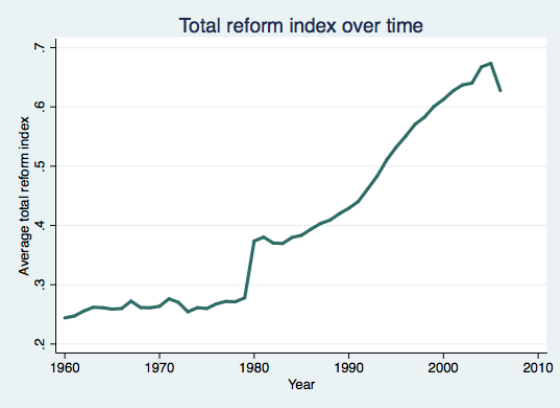
Statistics	Finance	Trade	Product	Labor	Total
N	2605	5363	6117	2356	7025
min	0	0	0	0	0
max	1	1	1	1	1
mean	.51388	.61919	.2161	.67078	.40442
sd	.31556	.25311	.25782	.18199	.26501

Source: IMF Structural Reforms dataset

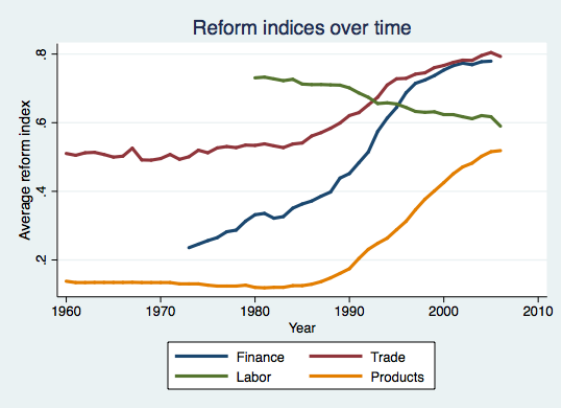
Table 2: Summary Statistics Structural Reforms

Due to the set-up of the variable, *SR_total* has a higher number of observations than any of its subindices. We recognize the concerns this could raise, as the reform index between countries and years are not always constructed in a similar way. This can impact any of the changes we observe as sometimes an increase (or decrease) in the index can simply reflect that more data on reforms has become available for that particular country. More data can affect the total reform index this way when the index for the different reform that is added to the total reform index is either higher or lower than the ones previously included. As a robustness check we will therefore also run the regressions for all reforms simultaneously, instead of all combined in one single index. This method is similar to what can be seen in Giuliano, Mishra, and Spilimbergo (2013). Giuliano, et al. use an older version of the IMF structural reform dataset to investigate the effects of democracy on reforms. Their use of a similar dataset enables us to use a comparable method when running the regressions as a robustness check. We do differ even in this approach as we control for heteroskedasticity and cross-sectional dependence, and have data on labor markets as well as a few additional years.

Based on the data on reforms presented here, we can already now investigate the general trend that these indicators present over time for all countries combined (Figure 1). Here we note that labor market liberalization displays a downward development, while the other reform indicators increase over time. While the labor market data only starts in 1981, meaning that a large part of the total reform index is not influenced by its movements, it will have a diminishing effect on the total reforms. The robustness check which we discussed in the previous paragraph, as well as the section in which we investigate the effects of crises on the reform types separately will show for whether this leads to any significant concerns in the total reform index measure.



(a) Average Total Reforms Over Time



(b) Average Different Refoms Over Time

Figure 1: Reform Indices Over Time
Source: IMF Structural Reforms dataset

Finally, we want to direct our research towards an investigation of another measure of reforms that is not included in the structural reform data provided by the IMF. Business regulations have a significant impact on economic activity, and changes in business regulations are thus also seen as reforms that impact economic growth. A measure of business regulations and differences between countries is provided by the World Bank's Doing Business indicators (2016). Every year, starting from 2008, Doing Business publishes a top ten list of the most improved countries. The most improved are those countries that have shown the most significant advance in the Doing Business indicators, which include for example the ease of starting a business, resolving a dispute, enforcing a contract and filing taxes. Countries are ranked both on the number reforms and their impact, but it is of course worth re-iterating that we are working under the somewhat western framework where the indicators encourage liberalization as a positive movement. The most improved countries are announced in the year after which the reforms took place. For example, in 2008 the countries that reformed best over 2006/2007 are titled most improved. To include these countries in our dataset, we have created a dummy variable that takes on the value of one in the year before the country is named most improved. In the example above, the country receives a dummy value of one in 2007. The most improved countries per year based on the Doing Business index are presented in Table 3. Countries named in bold are included in the most improved list more than twice over 2007-2015. We are aware that using business regulation data for 2007-2015 results in a temporal mismatch with the structural reform dataset previously presented. We do not believe however that this is a major concern for two reasons. Firstly, the business regulation reforms are an addition to, but not a component of, the main analysis. Secondly, after investigating GDP trends over both time periods we find no noticeable differences in the long run.

Year	Countries
2007	**Egypt**, Croatia, Ghana, **Macedonia**, Georgia
	Colombia, Saudi Arabia, Kenya, China, Bulgaria
2008	Azerbaijan, Albania, Kyrgyz Republic, Belarus, Senegal
	Burkina Faso, Botswana, **Colombia**, Dominican Republic, **Egypt**
2009	**Rwanda**, Kyrgyz Republic, **Macedonia**, Belarus, United Arab Emirates
	Moldova, **Colombia**, **Tajikistan**, **Egypt**, Liberia
2010	**Kazakhstan**, **Rwanda**, Peru, Vietnam, Cape Verde
	Tajikistan, Zambia, Hungary, Grenada, Brunei Darussalam
2011	Morocco, Moldova, **Macedonia**, Sao Tomé and Principe, Latvia, Cape Verde
	Sierra Leone, **Burundi**, Solomon Islands, South Korea, Armenia, **Colombia**
2012	Poland, Sri Lanka, Ukraine, Uzbekistan, **Burundi**
	Costa Rica, Mongolia, Greece, Serbia, **Kazakhstan**
2013	Ukraine, **Rwanda**, Russia, Philippines, Kosovo
	Djibouti, Côte d'Ivoire, **Burundi**, **Macedonia**, Guatemala
2014	**Tajikistan**, Benin, Togo, Côte d'Ivoire, Senegal, Trinidad and Tobago
	Dem. Rep. of Congo, Azerbaijan, Ireland, United Arab Emirates
2015	Costa Rica, Uganda, Kenya, Cyprus, Mauritania
	Uzbekistan, **Kazakhstan**, Jamaica, Senegal, Benin

Source: World Bank Doing Business, 2016.

Table 3: Doing Business Most Improved, In Order of Size Of Improvement

4.2 Crises

As discussed previously in Section 3, a common problem with testing the crisis hypothesis is the ambiguity of what a crisis actually entails and how bad the situation needs to get for the crisis hypothesis to hold. The general consensus so far is "very bad" (Drazen and Easterly, 2001, p.132). In order to improve upon existing literature, we have used multiple definitions of crises in an attempt to single out whether there exists a driving force behind reform. Parts of our definitions originate from other literature, while others are original measures.

GDP. The most intuitive method for defining an economic crisis is by simply using the growth rate of GDP per capita as a basis for our variables. We have created six main variables that reflect GDP crises in different ways. First, we use the GDP per capita growth rate as a basis for creating a dummy that takes on the value of one in years of negative economic growth. Secondly, in order to distinguish between general negative economic growth and more severe negative growth, we generate a dummy variable that takes on the value of one when annual GDP per capita growth dips below negative 5 percent. This value is chosen to separate severe GDP falls from smaller ones, while keeping enough observations. Using this relatively simple definition we also expand to include a third measure which sums up the number of years with GDP crises, defined by negative GDP per capita growth, over the last few years (either last three, four or five years). Fourth, we introduce a variable inspired by the method used by Pitlik and Wirth (2003) in which annual growth rates are scored. For years with positive growth zero points are assigned. When GDP per capita growth is between 0 and -2 percent we assign one point, while years with even worse economic growth are ascribed two points. These points are summed up over a three-, four- or five-year period, covering the previous years from any date. So far the main part of the existing literature has looked at the effects of no crises, medium crises, and severe economic crises on reforms. Here, crises are measured objectively, with negative economic growth or inflation above a certain percentage indicates a crisis in all countries. However, what is exceptionally bad for one country can be close to status quo for another depending on the trend of each country's economy. Thus, as we aim to investigate as well whether relative crises matter, we include a fifth variable. This dummy variable takes on the value of one in years in which the growth rate of a country

is one or more standard deviations below its average growth rate over the whole studied period. Just as with negative GDP growth, we add a measure that counts the number of years where this lower than average growth occurred (over the last three, four or five years). Finally, as a sixth measure we created a point system based on the number of standard deviations the growth rate is below the country's mean, starting with one point if GDP per capita growth is between a half and one standard deviation below the mean, and ending with five points when it is more than two and a half standard deviations below the mean.

Inflation. Besides GDP, inflation can be a clear indicator of an economic crisis. In the crisis hypothesis literature, it is common that both GDP growth rates and inflation are used as crisis measures. To reflect economic crises based on inflation rates, we have included six measures, all similar to those that reflect GDP crises. Firstly, based on the paper by Giuliano, Mishra and Spilimbergo (2013), we create a dummy with the value of one for years in which inflation exceeds 40 percent. For severe inflation crises, the dummy takes on a value of one when inflation reaches above 100 percent. Thirdly, we sum up the number of years in which the inflation rate was equal to or above 40 percent over the last three-, four- or five-year period. Similar as with GDP crises, we develop a fourth variable using a point system. Again, this point system is largely based on the method used by Pitlik and Wirth (2003). For years with an inflation rate between 0 and 10 percent, no points are assigned. A country receives one point if the inflation rate is equal or above 10 percent and below 40 percent in that year. Two points are given if the inflation rate is equal or above 40 percent and below 100 percent, while three points indicate inflation is equal or above 100 percent in a given year. Furthermore, as with the GDP crisis variables, we want to investigate whether crises can be different relative to the country's long-term average. Therefore, we include a fifth measure based on a country's average inflation level and its standard deviation from that mean. This dummy variable takes on the value of one in years where the country's inflation rate was at least one standard deviation above its average. Lastly, the sixth variable is a point system reflecting the number of standard deviations the inflation rate is above the average. One point is counted for the year in which inflation between a half and one standard deviation above the mean, and ending with five points when it is more than two and a half standard deviations above the mean.

Both the GDP per capita growth rate and the inflation rate data was obtained from the World Development Indicators from the World Bank (2016).

Other Crises. While GDP and inflation are the best and most commonly used indicators for economic crises, we have also retrieved dummy variables indicating banking, currency, and sovereign debt crises from the database on systemic banking crises by Laeven and Valencia (2013). This database includes starting years for banking crises, as well as the years of currency crises and default years in the case of sovereign debt crises in the period 1970 to 2011. Banking, currency, and sovereign debt crises can overlap with GDP crises as they affect economic growth and output. We therefore run the risk that these crises would already be covered by the GDP crisis indicators. However, the inclusion of separate dummies for banking, currency and sovereign debt crises in its own regressions enables us to investigate whether crises with specific characteristics have the same effect or not. In Table 4 we present the correlation between the dummy variable crisis indicators, which shows our crisis indicators are significantly correlated at a five percent level.

Crises	**GDP**	**Inflation**	**Banking**	**Currency**	**Sovereign Debt**
GDP	1.0000				
Inflation	0.1353*	1.0000			
Banking	0.0667*	0.0313*	1.0000		
Currency	0.1201*	0.1677*	0.0822*	1.0000	
Sovereign Debt	0.1353*	0.0498*	0.0864*	0.1248*	1.0000

Source: World Bank Development Indicators, Laeven and Valencia (2013)

Table 4: Correlations Crises Dummy Variables

As the main crisis indicators in our dataset are based on GDP per capita growth and inflation rate data, we have removed those countries for which no inflation or GDP per capita data was available from our dataset. This did not change the size of our dataset significantly as the IMF structural reform often

does not have observations for countries for which no basic GDP data is available. Please note that the IMF structural reform data is available for 161 countries, and the number of observations per reform type available for each country varies over the time period. For the full list of countries included in our analysis, please see Table 13 in the Appendix.

4.3 Control Variables

In order to increase the legitimacy of our results, we include multiple control variables in the regressions. The choice of control variables is based on the determinants of reform that were discussed in the literature review in Section 3. In this Section we present our main control variables, their sources, and explain the effect we expect them to have on the reform indices.

The main control variable based on the literature review is democracy. As we would like to capture the degree to which a country is democratic, we use the polity2 variable from the Polity IV Project of the Center for Systemic Peace (Marshall, Gurr, and Jaggers, 2014) which uses a scale to indicate the level of democracy. The scale starts at -10 for strongly autocratic countries to 10 indicating strongly democratic countries. As discussed in Section 3, the theoretical effects of democracy on reforms are unclear, as arguments exist for both its positive and negative impact on reforms. The empirical work is less split, so we expect to see the same results as Giuliano, et al. (2013), who find strong significant and positive effects of democracy on the reform index.

Based on previous literature, whether a country has a presidential system or not is also an important variable to address. This is represented by a dummy variable taking on the value of one if a country is classified as having a president or an assembly-elected president, and zero if a country has a parliamentary political system. This variable is based on the political system variable from the Database of Political Institutions of the World Bank (2012; see Beck, et al., 2001), which specifies a country's system in this way as well. It is important to note that for systems in which both a president and a prime minister exists, the classification depends on the veto power and whether the president can appoint and dissolve the prime minister and parliament. As shown in our discussion in Section 3, we expect, if any, a positive impact of this variable on the change in the reform index. Additionally, we also obtain the measure for ideology of the chief executive from the Database of Political Institutions. In this database this variable reflects the party orientation with respect to economic policy of the chief executive in a country. Based on this variable, we created a dummy variable for left-wing chief executives, which takes on the value of one if the chief executive ideology is classified as left-wing and zero if it is center or right-wing. The majority of existing literature suggests that right-wing leaders reform more (Alesina and Rubini, 1992; Potrafke 2010) and thus we would expect a negative or insignificant one for left-wing chief executives. We also include the fractionalization of the government from the same database, measured by a variable presenting the probability that two representatives picked at random from the legislature will be of different political parties. As discussed in Section 3, the fragmentation in the government can delay reforms by prolonging the war of attrition. Based on this argument, we would expect a negative coefficient for the fractionalization variable.

Based on the working paper we outlined in Section 2 we have concluded that two additional controls make theoretical sense to include: education and quality of government. While the theoretical model describes the role of information to the voters, we do not have a direct measure of this variable in our dataset. Therefore, we use education as an indicator of the level of information voters possess. We justify this by assuming that a population with a higher level of education has an easier time accessing information surrounding the election process. Lassen (2005) finds proof that such a relationship exists. In this paper, a measure of education is included by both looking at the share of the population with primary or secondary education, obtained from the World Development Indicators of the World Bank, or by looking at the average years of schooling for males and females at the age of 25 or above. The latter variable was obtained from the Quality of Government Institute of the University of Gothenburg (2015) and originates from Barro and Lee (2013). Based on the theoretical model by Prato and Wolton (2015), we expect that education will lead to more reforms as it increases the ability of voters to receive information about the politicians, and this

makes them more likely to accurately estimate their reform capabilities. Here, we would therefore expect a positive effect on the change in reforms.

Additionally, we include the quality of the government as measured by the CRG Indicator of Quality of Government, where higher values indicate a higher quality of the government. This variable was created by the PRS Group and obtained from the Quality of Government Institute of the University of Gothenburg (2015). It summarizes the findings for corruption, bureaucracy, and law and order in one variable, scaling it from zero to one, designating higher values to higher levels of government quality. Following the reasoning of Prato and Wolton (2015) we expect a higher quality of government to lead to a greater chance of reform. In the model, the voter cannot observe the competence of the candidates, but since a competent leader is necessary to successfully execute a reform, signals that the leader is competent increases the likelihood that they will vote for a leader proposing reform. The quality of government means lower rates of corruption, a higher strength of the legal system and higher bureaucratic quality. These factors all signal to voters that the government is more competent and that therefore there is a decreased chance of botched reforms. Consequently we expect the quality of government to show a positive coefficient in our later analysis.

We include a dummy variable based on the United Nations Development Policy and Analysis Division's classification of least developed countries (LDCs). Our developing variable takes on the value one for countries classified as LDCs. We expect this variable to capture variations between these two groups of countries that our other controls do not. In general, the liberalization of markets of developing countries has lagged behind, which leads us to expect a negative coefficient as we are considering a time period that includes the years before liberalization occurred on in most of the developing countries (Edwards, 1993). However, it is likely that other measures such as democracy, the lagged reform index, and the crisis variables take out most of the effects for which developing countries are less liberalized. On the other hand, we cannot exclude the possibility that the encouragement to follow the Washington Consensus (Gore, 2000) has induced developing countries to leave their protectionist policies behind which would cause us to expect no significant difference between developing and developed countries.

In order to check the effect that political crises can have on reforms we add variables from the Political Instability Task Force (PITF) in the form of State Failure Problem Set (Marshall, Gurr, and Harff, 2015). We include four political crisis variables that reflect episodes of adverse regime change, ethnic war, genocides and politicides and revolutionary war. For definitions of these events, please see the codebook that accompanies the State Failure Problem Set. We create a dummy for the years in which these crises occur according to the State Failure database. Similarly, we create a dummy for the beginning and ending years of the political crises. We combine the different political crises in one variable, reflecting whether any of the events above occur in a given year.

Finally, we obtain data on countries receiving aid using the World Bank indicator for net official development assistance and official aid received by a country, obtained from the World Development Indicators database (World Bank, 2016). This variable displays the amount in current US dollars and using it as such in our analysis would not lead to clear results due to the construction of our dependent variable. The total reform index is bounded between zero and one, and thus any dollar change in the aid received would lead to unobservable small changes. We therefore divide the dollar amount of aid received by one billion dollars to be able to measure the effect of an increase by one billion dollars in received aid on the reform index. We have also tested the variable with smaller divisions.

4.4 Empirical Model

In this Section we describe our empirical model and strategy for working with the available panel data. Following this we continue by analyzing the quality of the data and addressing any potential problems. Furthermore, we present an additional model with a different dependent variable which will be used as a robustness check.

The variable of interest in this analysis is the reform index. In the main regressions we will use the combined total reform index ($SR\_total_{t,c}$) which takes on the average of the four different reform types. Since our research question aims to understand whether crises decrease (or increase) the change in reforms, we are primarily interested in how the reform changes over time. Consequently our dependent variable will be the change in reform from one period to the next, denoted by $\Delta SR\_total_{t-1,c}$, which is equal to $SR\_total_{t,c} - SR\_total_{t-1,c}$. Here, t indicates the year and c the country of the observation. The coefficients of the crisis indicators will thus reflect whether they increase or decrease how much a country reforms. They measure how much the change in reforms responds. Our initial model seeks to estimate the following:

$$\Delta SR\_Total_{t,c} = \alpha + \beta CRISIS_{t-1,c} + \gamma SR\_Total_{t-1,c} + \lambda X_{t-1,c} + \epsilon_{t,c}$$

where both the crisis indicator $CRISIS_{t-1,c}$ and the set of controls $X_{t-1,c}$ are lagged by one period. The control variables will be drawn from those discussed in the previous section. During our analysis we also test the model with further lags, investigating the effects of crises not only if they occur the previous year but also as far back as five years. However as doing so achieved similar or insignificant results we will only present these results when they prove relevant to the discussion.

Performing a modified Wald test for group-wise heteroskedasticity in fixed effect regression model (Greene, 2000) with significant results, we conclude that our data shows signs of heteroskedasticity. Additional significant results during the Wooldridge test for serial correlation in panel data models suggest we also have serial correlation (Wooldridge, 2002). Moreover, cross-sectional dependence is known to occur in datasets with a larger time period, as spillover effects between countries can occur (Eberhardt and Teal, 2011). We test for this using the Pesaran test for cross-sectional dependence. The results for this test suggest cross-sectional dependence in the data. We feel it is worth mentioning that because the reform indices are bounded and range on a scale from zero to one, we do not have to be concerned with the existence of a unit root.

Based on the conclusion that we have potential cross-sectional dependence, autocorrelation, and heteroskedasticity in our data, we use Driscoll and Kraay standard errors. These standard errors are robust when autocorrelation and heteroskedasticity are present as well as when contemporaneous correlation occurs (Driscoll and Kraay, 1998; Hoechle, 2007). Driscoll and Kraay standard errors rely on large T asymptotics. In our sample the number of groups, namely countries, is larger than the number of years, which could indicate that our T may not be sufficiently large. The work by Hoechle (2007), however, demonstrates that the Driscoll and Kraay standard errors do better than other methods even in small samples, and once T is approximately 40 the standard errors do indeed perform well. Because our T is above 40, we therefore consider Driscoll and Kraay standard errors the appropriate option.

Since this model presented is dealing with multiple countries in a specific period, there will most likely be country-specific heterogeneity over time, which can be correlated with our independent variables. Therefore, we test both a random effects and a fixed effects model of the equation above. Performing the Hausman test (1978) gives a χ^2 value of 85.06 which is significant at a one percent level and thus we reject the null hypothesis that the country-level effects are appropriately modeled by a random effects model. As our dataset seems to struggle with country-specific heterogeneity we therefore include country-fixed effects. However, the Hausman test only produces valid results under the assumption of homoskedasticity, an assumption that does not hold for our data. Therefore we also find it necessary to provide a theoretical reasoning for choosing a fixed effects model. Because countries are bound to have unobservable time-invariant omitted variables that might impact the reform index development, we conclude that it is reasonable to control for unobserved heterogeneity. While we ultimately include country-fixed effects it is worth noting that testing

with a random effects model produces results of the same sign and similar significance.

Furthermore, we have found it to be necessary to include time fixed effects in the analysis as well. Including dummies for years in the fixed effects regression as specified above, we conduct a Wald test to see whether all coefficients for the year dummies are equal to zero. The test gives a F-statistic of 13.75, which is significant at a one percent level. The hypothesis that all the coefficients for all years are equal to zero is therefore rejected. Further justifying our decision, other similar papers have also used both country-level and year fixed effects in their estimations (Lora and Olivera, 2004; Alesina, Ardagna, and Trebbi, 2006; Giuliano, Mishra, and Spilimbergo, 2013).

The empirical model now reflects the use of both year- and country-fixed effects:

$$\Delta SR\_total_{t,c} = \alpha + \beta CRISIS_{t-1,c} + \gamma SR\_Total_{t-1,c} + \lambda X_{t-1,c} + \eta_c + \psi_t + \epsilon_{t,c}$$

where $SR\_total_{t,c}$ represents the total reform index, $SR\_total_{t-1,c}$ is the lagged reform index included to control for convergence over time, $X_{t-1,c}$ is the set of control variables, η_c are our country-level fixed effects, and ψ_t represents time fixed effects. We will also use this basic empirical model later when separating our dependent variable into the four distinct areas of reform: finance, trade, product, and labor.

Following our discussion of Rodrik's criticism on the crisis hypothesis in Section 2, it is crucial for us to address possible endogeneity. While endogeneity can potentially be a problem with our set-up it to some extent solves itself because we are using lagged variables. We are aware that this might not be a "perfect fix" but believe this is the best strategy to continue forward with as this is a common method used in other studies testing the crisis hypothesis or related topics. Furthermore, during the analysis we attempted to approach the problem by creating an instrumental variable for GDP crises. Using dummies for years in which commodity price indices decreased, we found this to only be a potential instrument in the case of middle-income countries. As we are focusing on a broader group of countries and have doubts about the exogeneity of the instrument, we have decided to not include this analysis in the thesis. We do want to stress the importance of investigating this in further research.

As a robustness test, we also run the regression for all of the reforms separately to address any concerns about the structure of the variable SR_Total, previously discussed in section 4.1. Our data format here is based on the one implemented by Giuliano, Mishra and Spilimbergo (2013). This causes the empirical model to look slightly different. The dependent variable now reflects the change in the reform: $reform_{t,c,sr} - reform_{t-1,s,sr}$ with subscript sr referring to the types of reforms included in our analysis: domestic finance, capital, tariffs, current account, telecoms and electricity industries, agriculture, and labor. This way, we can run an analysis with all reforms within a country simultaneously without having to take an average value. This analysis then takes the form of:

$$\Delta reform_{t,c,sr} = \alpha + \beta CRISIS_{t-1,c} + reform_{t-1,c,sr} + \lambda X_{t-1,c} + \eta_c + \psi_t + \epsilon_{t,c}$$

5 Empirical Results and Analysis

In this section we present the results from the analysis of the empirical model presented in Section 4.4. The first section presents the results of using the total reform index. This is followed by the results of using the change in different reform types as a dependent variable. Next we show the results of including additional variables in the analysis, namely political crises and receipt of aid. Finally, Section 5.4 presents the results for business regulation reforms, using the World Bank Doing Business index.

5.1 Total Reform Index

Table 5 presents the results of testing the impact of a GDP crisis, defined by a year of negative GDP per capita growth, on the change in the total reform index. The most simple model, column (1), includes only democracy and the lagged reform index as control variables. We note that education, included in column (3) by using the average years of schooling for males and females above the age of 25, reduces the sample size considerably and consequently also impacts the R-squared. Due to this discrepancy in the sample sizes we cannot infer much from the change in R-squared. Although we replace education with some other controls in column (4) the number of observations remains low. This will, again but to a lesser extent, have an impact on R-squared. We control for any undesirable effects of a reduced sample size by also performing the analysis of columns (1), (2) and (4) on the most restrictive sample size, which occurs in column (3). We rerun the regression for the same, smallest, sample size in each specification, thus for Tables 5-7, and the results of this robustness check are presented in the Appendix Section in Tables 14-16. We find that the sample size does not drive the results.

Overall, Table 5 suggests that a GDP crisis has a negative and significant impact on the change in the total reform index. This implies that a decrease in a country's GDP reduces the probability of reform, as long as reform is defined as liberalization. The GDP crisis dummy is significant and of similar magnitude in all four models. These results thus suggest that crises, rather than increase the change in reforms as the crisis hypothesis predicts, reduce reforms. A crisis seems to do the opposite of what the war of attrition suggests and rather increases the waiting time for politicians to take action. The lagged reform index has, as expected, a significant and negative influence on the change in the reform index in time period t. This supports our expectations of convergence over time, as countries with higher level of reforms will expect smaller changes in their reform index. While all coefficients for the variable are positive (as we would expect based on the work of Giuliano, et al., 2013), we find no significant impact of democracy in these models. Nor do we find much significance for education, fragmented governments, or a presidential head of state as these variables present large standard errors. Observing developing countries, however, the signs are indeed consistent with the literature. While in column (2) we find that left-wing governments have a significant and positive impact on the reform index, this effect disappears when we include more control variables in the analysis. These results indicate that left-wing leaders do not reform less than right and center-oriented chief executives, which is in line with findings in other empirical work (Belloc and Nicita, 2011).

VARIABLES	(1) ΔSR_total	(2) ΔSR_total	(3) ΔSR_total	(4) ΔSR_total
GDP Crisis	-0.00509***	-0.00544**	-0.00528**	-0.00546**
	(0.00170)	(0.00209)	(0.00221)	(0.00218)
Democracy	0.000184	0.000267	0.000447	0.000451
	(0.000208)	(0.000341)	(0.000347)	(0.000361)
Developing Country			-0.00655	-0.00777
			(0.00929)	(0.00864)
Fractionalization			0.00187	-0.00415
			(0.0115)	(0.00934)
Average Schooling Years			0.00128	
			(0.00174)	
Reform Index	-0.141***	-0.173***	-0.154***	-0.173***
	(0.0163)	(0.0257)	(0.0227)	(0.0247)
Left		0.00432*		0.00230
		(0.00219)		(0.00234)
Presidential		0.000195		-0.00329
		(0.00676)		(0.00613)
Constant	0.0440***	0.0630***	0	0.0750***
	(0.00542)	(0.00687)	(0)	(0.00846)
Within R-squared	0.1367	0.1482	0.1394	0.1503
Observations	4,971	3,805	2,826	3,166
Country FE	YES	YES	YES	YES
Time FE	YES	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: ΔSR_total. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 5: GDP Crises and Total Reforms

While results based on GDP crises were negative and significant in their effect on the change in reform, the results based on inflation are far less clear-cut. An inflation crisis is measured by years in which the inflation rate exceeds 40 percent, and based on Table 6, the coefficients are only significant in columns (3) and (4). We thus find more mixed results in the case of inflation crises then when looking at GDP crises. These results do not lead to a clear conclusion however they are in line with what we expect based on our theoretical framework. The results all show negative signs even when not significant. Additionally we again observe negative and strongly significant coefficients for the lagged reform index. The variable indicating whether a country is a developing country shows negative and mostly insignificant signs. We find some indication that left-wing governments reform more due to a positive and significant at a ten percent level coefficient in column (2). This significance disappears when adding more control variables as displayed in column (4).

VARIABLES	(1) ΔSR_total	(2) ΔSR_total	(3) ΔSR_total	(4) ΔSR_total
Inflation Crisis (>40%)	-0.000544	-0.00479	-0.0125***	-0.00974**
	(0.00543)	(0.00518)	(0.00370)	(0.00406)
Democracy	0.000267	0.000383	0.000364	0.000329
	(0.000210)	(0.000295)	(0.000255)	(0.000277)
Developing Country			-0.0186	-0.0194*
			(0.0158)	(0.0109)
Fractionalization			0.00681	0.00185
			(0.0103)	(0.00858)
Average Schooling Years			0.00150	
			(0.00203)	
Reform Index	-0.131***	-0.172***	-0.159***	-0.166***
	(0.0213)	(0.0348)	(0.0291)	(0.0293)
Left		0.00407*		0.00307
		(0.00214)		(0.00288)
Presidential		-0.00514		-0.00752
		(0.00485)		(0.00609)
Constant	0.0542***	0.132***	0.0562***	0.0729***
	(0.00717)	(0.0104)	(0.0118)	(0.0104)
Within R-Squared	0.1378	0.1519	0.1510	0.1524
Observations	4,302	3,314	2,551	2,802
Country FE	YES	YES	YES	YES
Time FE	YES	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: ΔSR_total. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 6: Inflation Crises and Total Reforms

In Table 7 we present a summary of the results we obtain when studying three further types of economic crises: banking, currency and sovereign debt crises. For both currency and banking crises we find no significant coefficients. The results for sovereign debt crises, on the other hand, suggest a negative impact on the change in reforms. These results further substantiate our conclusion that crises, if they influence the change in reforms at all, do so by reducing rather than increasing the probability of liberalization.

VARIABLES	(1) ΔSR_total	(2) ΔSR_total	(3) ΔSR_total	(4) ΔSR_total	(5) ΔSR_total	(6) ΔSR_total
Banking	-0.00103	-0.00412				
	(0.00500)	(0.00376)				
Currency			0.00204	-0.00179		
			(0.00755)	(0.00470)		
Sovereign Debt					-0.0122*	-0.0168***
					(0.00621)	(0.00583)
Democracy	0.000222	0.000332	0.000218	0.000332	0.000220	0.000330
	(0.000224)	(0.000392)	(0.000218)	(0.000387)	(0.000224)	(0.000392)
Developing Country		-0.00367		-0.00366		-0.00432
		(0.00698)		(0.00698)		(0.00690)
Fractionalization		-0.00154		-0.00132		-0.00155
		(0.00827)		(0.00834)		(0.00820)
Reform Index	-0.153***	-0.169***	-0.152***	-0.169***	-0.153***	-0.169***
	(0.0262)	(0.0309)	(0.0258)	(0.0307)	(0.0263)	(0.0310)
Left		0.00175		0.00176		0.00200
		(0.00245)		(0.00245)		(0.00247)
Presidential		-0.00579		-0.00575		-0.00575
		(0.00615)		(0.00617)		(0.00616)
Constant	0.0494***	0.0648***	0.0493***	0.0648***	0.0494***	0.0647***
	(0.00773)	(0.00826)	(0.00757)	(0.00817)	(0.00772)	(0.00827)
Within R-Squared	0.1589	0.1685	0.1589	0.1684	0.1595	0.1697
Observations	4,432	3,263	4,432	3,263	4,432	3,263
Country FE	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: ΔSR_total. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 7: Other Crises and Total Reforms

As we are particularly interested in the variations caused by different crisis measures, we have also analyzed the results of using different crisis indicators as discussed in Section 4.2. For the ease of the reader we have chosen not to include these tables in text. The tables presenting these results are instead included in the Appendix Section 8.4, in Tables 17-19, but the analysis follows here.

First, we consider the effects of more extreme crisis indicators, thus defining a GDP crisis as a year with GDP per capita growth of below -5 percent, as well as defining an inflation crisis as an inflation rate above 100 percent. These are included to test the part of the crisis hypothesis that argues that times need to get exceptionally bad in order for reforms to be positively affected. Here, no significant impact is found on the change in total reforms, indicating that more severe crises do not lead to any differences in the liberalization process. We also include the more broad measure of crisis, which takes on the value of one if any (GDP, inflation, banking, currency or sovereign debt) crisis is observed in that year. This does show a negative and significant impact on the change in reforms, reducing the probability of liberalization, supporting our earlier findings.

In Table 18 we consider the effects of the years where GDP per capita growth is below the country's average by one standard deviation. Similarly, we study the years in which inflation is more than one standard deviation above the mean. While both of these crisis definitions show negative coefficients, they are not significant. Furthermore, we evaluate the role of the standard deviation in more detail by using the point system for standard deviation outlined in Section 4.2. Finally, we also include the sum of the number of years in the last three years in which GDP growth was below the country's mean. As above, no significant impact is found on the change in the total reform index from any of these crisis indicators. While

not included in the table here, we also ran the regression with the sum of years with below average GDP growth over four and five years, but found no significant results. These estimations thus show similar results to those presented in Table 5 to 7. Using a relative crisis definition rather than an absolute one, depending on a country's average performance over the time period 1960-2015, we find no significant impact of crises on reforms. This could connect to earlier findings that have shown that a crisis needs to be really bad in order to have any effect.

Additionally, we consider the summed number of crises of a country over the last few years, rather than only looking at crises in the previous year. Included in Table 19 are the effects of the sums of GDP and inflation crisis dummies over the three-year period before the observed change in reforms. In our analysis we also investigated the effects of extending this summation period to four- or five-year periods, but did not find enough significant results to justify an analysis. If any significant results were observed, they showed the same sign as in the three-year period. Included are the sum of the years (over the last three-year period) in which a GDP crisis occurred, defined by negative GDP per capita growth, in which an inflation crisis occurred, defined by an inflation rate of above 40 percent, in which any type of crisis occurred (GDP, inflation, banking, currency or sovereign debt) and the sum of the point system by Pitlik and Wirth, as described in Section 4.2. All indicators show negative coefficients, but overall, the sum of years in which a crisis occurs does not show significant impact on the change in the reform index. The exception is the sum of the years in which an inflation crisis occurs in the last three years. The coefficient here is negative and significant at a one percent level. This suggests that a country with several years of high inflation is less likely to have reforms towards liberalization than those with no inflation crises in those years. Finally, the point system indicator for GDP (Pitlik and Wirth, 2003) does not show a significant influence.

As a robustness test, we also perform the analysis using all reforms simultaneously. This way, we avoid any problems that may come with using our total reform index. We control for heteroskedasticity and autocorrelation, and additionally we control for potential cross-sectional dependency, as in our original empirical model. The results of this analysis are presented in the Appendix, Section 8.4, Tables 20-22. The average years of schooling variable was not included in this analysis as it could not be interpolated correctly in the structure of the data. As this variable did not show significant results anyway, we do not believe this is a problem. The results in Tables 20-22 show how, overall, the crisis indicators have the same effects as in our specification: most of them, with the exception of currency crises, are significant and all show negative coefficients. The main difference between our results as discussed previously and those presented in Tables 20-22 is the significance of democracy. The coefficient of the democracy variable is positive and significant amongst most specifications while we found mostly insignificant results using our total reform index as the dependent variable.

In order to understand our results more clearly, we investigate whether the results are driven by a particular group of countries. We split the countries based on income levels retrieved from the World Bank. Countries are categorized in one of three groups, low-income, middle-income (containing the World Bank classification groups *lower-middle* and *upper-middle*) and high-income. Low-income countries are defined as having a GNI per capita of $1,045 or less, middle-income countries are those with a GNI per capita between $1,045 and $12,736, and high-income countries have a GNI per capita of $12,736 or more (World Bank, n.d.). In Table 8 we present the results using banking crises or sovereign debt crises as the crisis indicators. The results for GDP, inflation, and currency crises are included in the Appendix (Table 23 and 24). Column (1) and (4) show results for low-income, (2) and (5) for middle-income and (3) and (6) for high-income countries. These results do in fact illustrate that the effects of certain types of crises differ per income group. As shown in Table 8, banking crises have a significant negative impact for high-income countries only. Thus, here a banking crisis leads to smaller reforms towards liberalization. Similarly, the results for sovereign debt crises seem to be driven by both middle- and high-income countries, as these groups both present negative significant coefficients. However, it is important to note that low-income countries also show a negative coefficient here despite not being significant. The tables in the Appendix show that inflation crises seem to be affecting the change in the reform index most significantly in middle- and high-income countries. Currency crises have no significant effect on the reform index in any of the country groups. The results from separating the countries by income level show that the effects are mostly significant and negative for middle-

and high-income countries, while the reform indices in low-income countries are not significantly affected by any of the crisis indicators.

The variation in results between the groups of countries could be driven by the quality of government. Therefore, in addition to our earlier controls, we introduce the quality of government as a control variable as we hope this will capture some of the differences between the countries in each group. These results are presented in Table 25 (Appendix). Here, banking is still only significant for high-income countries, indicating that the quality of government is not the underlying factor causing the differences between countries within the income group. For sovereign debt crises, the results look slightly different as now both low- and high-income countries show significant and negative coefficients for the crisis indicator. We also note that the quality of government variable shows positive coefficients for both high- and low-income countries, with significance in the case of the latter. Interestingly, it shows a negative significant coefficient for middle-income countries, indicating that here an increase in the quality of government reduces the probability of liberalization. While this result can seem startling, it is primarily due to the composition of the variable and its development over time. The quality of government indicator reflects corruption, law and order, and bureaucracy quality (Quality of Government Institute, 2015). If we look at this variable independently, we observe that middle-income countries in particular have seen this measure decline over time. While it is outside of the scope of this thesis to speculate in the drivers of this trend, the fact remains that the negative trend is consistent with the negative coefficient attached to the quality of governance variable.

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	ΔSR_total	ΔSR_total	ΔSR_total	ΔSR_total	ΔSR_total	ΔSR_total
Banking Crisis	0.0220	-0.00610	-0.0138**			
	(0.0243)	(0.00469)	(0.00598)			
Sovereign Debt Crisis				-0.0110	-0.00933*	-0.0592***
				(0.0304)	(0.00480)	(0.0173)
Democracy	-0.000421	0.000127	0.000279	-0.000473	0.000120	0.000335
	(0.000699)	(0.000474)	(0.000698)	(0.000714)	(0.000470)	(0.000711)
Fractionalization	0.0256	-0.00287	-0.00504	0.0252	-0.00250	-0.0120
	(0.0226)	(0.00647)	(0.0114)	(0.0225)	(0.00652)	(0.0113)
Reform Index	-0.301***	-0.160***	-0.123***	-0.302***	-0.160***	-0.122***
	(0.0573)	(0.0317)	(0.0341)	(0.0563)	(0.0317)	(0.0335)
Left	0.0201**	-0.00400	0.00365	0.0212**	-0.00385	0.00377
	(0.00841)	(0.00445)	(0.00303)	(0.00828)	(0.00449)	(0.00302)
Presidential	-0.0111	-0.000900	-0.00339	-0.0122	-0.000763	-0.00414
	(0.0149)	(0.00596)	(0.00811)	(0.0151)	(0.00603)	(0.00815)
Constant	0.134***	0.0479***	0.0626***	0.136***	0.0477***	0.0659***
	(0.0160)	(0.00775)	(0.0166)	(0.0150)	(0.00774)	(0.0173)
Within R-Squared	0.2310	0.1891	0.2002	0.2294	0.1893	0.2124
Observations	495	1,712	1,025	495	1,712	1,025
Country FE	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: ΔSR_total. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed. Column (1) and (4) show results for low-income, (2) and (5) for middle-income and (3) and (6) for high-income countries.

Table 8: Banking and Sovereign Debt Crises by Income Level

To fully understand whether the quality of government causes differences between countries, we also include it as a control and an interaction term in our analysis when running the total reform index. Table 26 (Appendix) presents several interactions between political variables and GDP crises. In addition to the quality of government, interaction terms between GDP crises and left-wing governments as well as fractionalization of the government are included. We find no significant results for any of the combinations

except the one of crisis and quality of government, which is positive and significant before we add all the controls. This is not a strong result by any means, seeing as the effect disappears when we add our list of controls. On the other hand, its inclination towards positive does discretely suggest that even though liberalizing reforms are less likely following a GDP crisis, a high quality government would to a certain extent counteract this negative effect.

While an extensive analysis on the topic is outside the scope of our paper, we still feel it is necessary to address political crises, and how their effect on reform is noticeably different. As described in our Data Section, we have a dummy variable that equals one in the case of a political crisis taking place in the country. As can be seen in Table 27, when running our main regression using this variable instead of economic crises we find a positive and significant effect on total reforms. While it is beyond our scope to justify these results in any manner, they simply serve as proof that our results are limited to economic crises and cannot be extended to other discontinuities.

In summary, this section shows that crises display negative or no effect on the change in the total reform index. If a country experiences a crisis it liberalizes less in the following year. On the other hand, our relative crisis indicators (standard deviation measure) have no effect on reform. This indicates that the trend of a country is insignificant in the liberalization process; the absolute measurement of crisis is what shows results. These results hold when making use of different crisis indicators. The results correlate well with those predicted by Prato and Wolton's (2015) theoretical model, and confirm our hypothesis that if crises have any effect at all on the probability of liberalizing reform, the effect will be negative. The reasoning behind these results will be discussed at a later point in the paper, as the interpretation depends heavily on the type of reform, a distinction we will make in the next section.

5.2 Different Types of Reforms

In this section we show the effects of the crisis indicators on the different types of reforms. For the ease of the reader, the main findings will be presented in text. As a summary, Figure 2 presents the effects of the different types of crises on the different types of reforms, based on the specification including the respective lagged reform index, democracy, fractionalization and dummies for developing countries, left-wing governments and presidential systems as control variables. In this table, a zero reflects that we find insignificant results, while a red arrow indicates negative and significant coefficients. For the comprehensive results of all specifications, please see Appendix 8.6.

	Financial	Trade	Products	Labor
GDP	0	0	↘	0
Inflation	0	0	0	0
Banking	0	0	↘	0
Currency	0	0	↘	0
Sovereign Debt	0	↘	0	↘
Sum of GDP Crises	↘	0	0	0
Sum of Inflation Crises	↘	0	0	↘
Sum of Any Crises	↘	0	0	0

Figure 2: Summarized Results Different Reform Types

First, financial reforms are analyzed in Tables 28 to 31. The variable measuring GDP crises by the years with negative GDP per capita growth shows no significant impact and the coefficients for inflation crises are also mostly insignificant. However, all do show the by now expected negative sign. Similarly, banking, currency, and sovereign debt crises show no significant effect. As with total reforms, we also investigate the effects of crises during several years and different crisis indicators, using the standard deviation from the mean. When using the sum of the years in which a GDP crisis is observed over the last three years, we find a significant and negative coefficient (see Table 31). While not included in the presented table, similar results were found when looking at the sum of the years with a GDP crisis over the last four- and five-year period. This suggests that several and/or longer GDP crises in a few years time period decreases the probability of financial liberalization, rather than just a crisis in the previous year. These results hold when looking at the sum of crises over the last four- and five-year period as well. The same occurs when looking at years with inflation crises. The sum of the number of any type of crisis over the last three-year period also shows a negative coefficient significant at a one percent level. For financial reforms thus, the length of the crisis seems to matter. Additionally, in the case of financial reforms some of the relative crisis indicators show significance. Column (4) in Table 31 shows that years where inflation is one standard deviations or more above the country's average over our studied time period negatively impacts the change in reforms, and is significant on a ten percent level. The sum of years in which GDP per capita growth is one standard deviation below the average of the country shows the same, with a significance level of five percent. Our control variables, with the exception of democracy, show no significant effects and are generally close to zero and can, because of the size of the standard errors, even show mixed signs.

The change in trade liberalization reforms does not seem to be significantly affected by many of our crisis indicators (Tables 32 - 35). However, we find one exception in the form of a negative and significant at 1 percent impact of sovereign debt crises. A country that experiences sovereign default thus shows a decrease in the change in trade reforms in the following year, while other crises do not seem to reduce the extend of the liberalization reforms. For trade reforms, it is also interesting to note that our dummy variable for whether a country is a developing country is negative and significant in most specifications, indicating that developing countries experience smaller changes towards liberalization than developed countries. As we are looking at the time period 1960 to 2005, this is a time period in which many developed countries have strongly increased their trade openness and the WTO has driven this movement. Developing countries however, trade openness generally has come later and to a lesser extend, also as the WTO agreements tend include provisions and exceptions for developing countries (WTO, n.d.).

The change in product reforms seems to be negatively related to GDP crises. The coefficients presented in Table 36 for GDP crisis are all negative and significant on either a one or five percent level. For inflation and sovereign debt crises, no effect is found. However, we again do find negative and significant coefficients for banking and currency crises. The alternative crisis definitions, including the sum of years in which a crisis occurs, generally do not show significant findings (see Table 39). The average years of schooling, included in column (3) in Table 36 and 37 shows a positive sign and is significant on a ten percent level. This indicates the effect that the education level of the population can have. Additionally, the variable indicating a left-wing government also shows significance for these types of reforms. With a positive coefficient and significance at at least ten percent, the results here indicate that having a left-wing government increases the probability of reforming towards liberalization in the product markets.

Finally, the change in labor reforms is least affected by the different economic crises, as most coefficients are insignificant. This could be due to the different nature and perceptions of the labor market compared to the other sectors included in this analysis. While many agree on the benefits of for example trade liberalization, the perception of what benefits participants of the labor market is controversial, even throughout the western world. While government involvement is regarded as positive and even necessary in some countries, others focus more on the ease of doing business for employers (Belot, 2007). As an example, the difference in perception of labor market regulations can be illustrated by the comparison of the United States and Sweden. Both are democratic, Western countries, similar in many aspects, but also highly different in others. According to our measures, Sweden has a less liberalized labor market since it scores higher on employment protection. Consequently, it scores lower on our labor reform index than the United States. Sweden had a labor market reform index of .7245 in 2005, while the United States had an index value of .8912 that same year, and has been consistently higher in earlier years as well. With such conflicting political opinions on the involvement of the government in such a sector, some countries will aim for liberalizing reform while others idealize a more regulated labor market. We argue that these conflicting forces that are spread so evenly across countries leads to an average that provides us with insignificant results.

Furthermore, we find average years of schooling to have a significant positive effect on the change in labor reforms. Using the theoretical framework by Prato and Wolton this suggests that more informed voters support labor reforms more and affect the policy process through the electoral system. Fractionalization shows significance in part of the specifications but the signs on the coefficients are overall negative as expected by the literature. The indicator for being a least developed country is rarely showing a significant impact on the probability of labor market liberalization, but does overall show positive signs which points towards developing countries preferring less restrictions in the labor market.

Based on the results presented for the different reform types it is important to address the different signs of the coefficients we find for democracy. Democracy shows a positive and significant impact on trade and financial reforms, no significant influence on product markets reforms and a negative significant impact on the change labor market reforms. The results for trade and democracy are in line with previous research and literature. This effect on labor liberalization is perhaps driven by the large group of democratic European countries that place a high value on employment protection. The difference in perspectives on the benefits of labor market (de)regulation can explain the different sign of the coefficient. This also explains why in our overall regression, with the total reform index as the dependent variable, we do not find significant results for democracy, as the effects cancel each other out. Furthermore, it underlines the importance of analyzing the effects of the different types of reforms separately.

To summarize this section, our findings suggest that all reform types are negatively affected by an economic crisis in the previous year. There are differences however in which crises affect the reforms significantly. GDP, banking and currency crises seem to lead to less liberalization in the product markets, while labor and trade seem more affected by sovereign debt crises. Interestingly, financial liberalization seems mostly reduced by the sum of crises over a few year period. What these results show is that differences between reform types do exist, but they are not as clearly defined as one may have hoped. More differences can be found in the control variables, where different signs can be observed depending on the sector in which we are analyzing reforms.

5.3 Aid

A controversial topic within international organization is the effectiveness of aid in promoting growth. Due to the close relation of this research area to our own topic we felt it important to address how receiving aid affects a country's probability of reforming after a crisis. Many aid programs come with conditionality: policies that need to be implemented in order to be eligible for receiving aid (Montinola, 2010). These policies often concern structural reforms. This link would mean that aid is a positive determinant for the change in reforms. We have extended our empirical model in order to include various lags of aid in addition to an interaction term between aid and crisis. These are presented in the following model:

$$\Delta SR\_Total_{t,c} = \beta_0 + \sum_{s=1}^{2} \beta_1 AID_{t-s,c} * CRISIS_{t-s,c} + \sum_{s=1}^{2} \beta_2 CRISIS_{t-s,c}$$

$$+ \sum_{s=1}^{2} \beta_3 AID_{t-s,c} + \beta_4 SR\_Total_{t-1,c} + \beta_5 X_{t-1,c} + \epsilon_{t,c}$$

The results of this model are presented in Table 9, where columns (1) and (2) show the effects of the interaction of GDP and inflation crises with aid on the change in the total reform index. This is done for all countries. The following two columns, (3) and (4) run the same regressions exclusively for low-income countries (as defined by the World Bank), while columns (5) and (6) do so for middle-income countries. The effects of both inflation crises and GDP crises are, as can be expected based on our earlier analysis, either negative and significant or insignificant for both the first and second lag. The effect of aid on its own is positive and generally significant. This indicates that recipients of aid have a stronger probability introducing liberalizing reforms than non-recipients. This confirms Jeffrey Sachs' argument in "Life in the Economic Emergency Room" that even with a good reform team, struggling countries still need outside help in order to reform (Sachs, 1994). So far the results have been consistent with the expectations based on the literature. When combining the effects of aid and crisis in interaction terms, however, the results are insignificant in most cases. This means that while aid does induce a higher probability of liberalizing reform, it does not matter whether it is donated during a crisis or not. The few instances of significance in this section seem to indicate that middle-income countries tend to reform more after receiving aid during a crisis, while low-income countries reform less. Furthermore, the results in Table 9 suggest that, in support of our earlier findings, left-wing governments tend to increase the change in reforms.

VARIABLES	(1) ΔSR_total	(2) ΔSR_total	(3) ΔSR_total	(4) ΔSR_total	(5) ΔSR_total	(6) ΔSR_total
GDPCris x Aid (2lag)	0.00551		-0.0331*		0.0123*	
	(0.00732)		(0.0168)		(0.00701)	
GDPCris x Aid (1lag)	0.000764		-0.00826		0.00260	
	(0.00364)		(0.0145)		(0.00397)	
InfCris x Aid (2lag)		-0.00211		-0.00163		0.0154
		(0.00753)		(0.0427)		(0.0203)
InfCris x Aid (1lag)		0.00157		-0.0101		0.0295**
		(0.00741)		(0.0409)		(0.0126)
GDP Crisis (2lag)	-0.00187		-0.00115		-0.00119	
	(0.00254)		(0.00650)		(0.00251)	
GDP Crisis (1lag)	-0.00512**		-0.00684		-0.00474*	
	(0.00243)		(0.00797)		(0.00281)	
Inf Crisis (2lag)		-0.00524		-0.0581		-0.00286
		(0.00793)		(0.0377)		(0.00941)
Inf Crisis (1lag)		-0.00385		0.0139		-0.0131*
		(0.00690)		(0.0396)		(0.00761)
Aid (2lag)	0.00792***	0.00867***	0.00219	-0.00492	0.00729**	0.0109***
	(0.00260)	(0.00309)	(0.00795)	(0.00703)	(0.00329)	(0.00382)
Aid (1lag)	0.00385*	0.00546***	0.0174*	0.00525	0.000905	0.000448
	(0.00201)	(0.00187)	(0.0102)	(0.00746)	(0.00250)	(0.00245)
Democracy (1lag)	0.000143	0.000188	0.000560	0.000408	9.56e-06	0.000158
	(0.000299)	(0.000269)	(0.000534)	(0.000815)	(0.000368)	(0.000383)
Left (1lag)	0.00851***	0.00587**	0.0185***	0.0169**	0.00365	0.00136
	(0.00218)	(0.00259)	(0.00481)	(0.00683)	(0.00320)	(0.00307)
Reform index (1lag)	-0.172***	-0.163***	-0.221***	-0.271***	-0.153***	-0.125***
	(0.0212)	(0.0220)	(0.0484)	(0.0512)	(0.0198)	(0.0200)
Constant	0.0501***	0.00793	0.0461***	0.00369	0.0175***	0.0202***
	(0.00695)	(0.00690)	(0.0169)	(0.0111)	(0.00631)	(0.00627)
Within R-Squared	0.1621	0.1653	0.2003	0.2765	0.1759	0.1516
Observations	3,589	2,987	756	548	2,280	1,979
Country FE	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: ΔSR_total. FE = Fixed Effects. Time dummies are suppressed. Columns (1) and (2) show results for all countries, while (3) and (4) show results for low-income countries only and (5) and (6) for middle-income countries only.

Table 9: Aid as a Control and Interaction Variable

5.4 Doing Business Index

In previous sections we analyzed the effect of economic crises on the total reform index, constructed by combining financial sector, labor market, trade and product market liberalization. In this section we move away from this reform measure and focus instead on business regulations as a reform type. These are not included in the IMF structural reform dataset. As explained in section 4.1, we use the World Bank's Doing Business list of most improved countries. In order to do perform the analysis we set up a dummy variable equal to one for those countries that are named in the top ten most reformed countries each year between 2007 and 2015. Since our dependent variable is a dummy variable, the analysis is done using a logistic regression. Since the results we obtain when studying the effect of crisis on reform indicate that there is a smaller probability of liberalizing reform following a crisis, we would also like to follow up by considering under what economic conditions countries are more likely to opt for liberalizing reform. We thus focus our independent variables on GDP as a measure of economic conditions.

	(1)	(2)
VARIABLES	Doing Business	Doing Business
GDP Growth	0.0394**	
	(0.0191)	
GDP Crisis		-0.908**
		(0.357)
Democracy	-0.00974	-0.0171
	(0.0221)	(0.0220)
Developing	-0.134	-0.123
	(0.345)	(0.342)
Left	-0.371	-0.326
	(0.305)	(0.290)
Constant	-3.108***	-2.762***
	(0.254)	(0.249)
Within R-Squared		
Observations	1,413	1,413

*** p<0.01, ** p<0.05, * p<0.1. Robust Standard errors in parentheses. Dependent variable: Doing Business Most Improved Dummy. All variables are lagged by one period.

Table 10: Business Reforms

As can be seen in Table 10 our results suggest that positive GDP per capita growth indeed has a positive effect on the probability of becoming a top performer in this category. In order to ensure that our findings here are consistent with our previous results we also run the same regression with GDP crisis as the dependent variable and observe a negative relationship. This is indeed consistent with our earlier findings and suggests that instead of an economic crisis it is in fact positive economic growth that encourages a high probability of business regulation reforms. A potential reason for this specific result could be that a certain level of economic growth is necessary for a country to spend resources dealing with business regulations such as enforcing contracts and settling disputes. An obvious limitation of this section is of course that we only consider the ten top performers in each year and present no information on the effect of good economic times on the countries following them. There might exist small differences between countries that are the number ten in terms of number of reforms, and thus included in the list of most improved countries, and those that are number eleven and thus not included. This is unfortunate but unavoidable as the data provided by the World Bank is limited: while complete rankings do exist for several years, the method for creating these rankings has changed so significantly over the years that they recommend not comparing the full rankings before 2015. Also, we have to consider potential limitations due to reverse causality, as it has also been shown that improving the Doing Business index leads to higher economic growth (Djankov, McLiesh, and Ramalho, 2006). We attempt to address this by using lagged variables, however, some concerns may remain. Overall, we still consider our results to be a presentable addition to our general argument that investigates business reforms in particular as the results support what we have found looking at other reform types as well.

6 Conclusion and Discussion

This thesis aims to expand upon the empirical work on the crisis hypothesis through the use of a more comprehensive dataset to investigate the effects of crises on different reform types whilst applying a broad range of crisis definitions. Inspired by the theoretical framework developed by Prato and Wolton (2015), we set out to find an answer to the question: do economic crises really lead to increased liberalization or do they instead reduce the likelihood of reform? In line with our original hypothesis, our findings suggest that the crisis hypothesis does not hold when studying a large group of countries over several decades. Rather, countries that experience a crisis reform less in the following year. These effects also hold when examining countries in three different income level groups, with predominantly middle- and high-income countries driving the results. Our first extension involves exploring whether the relationship between crises and reforms changes when we separate reforms into four categories: financial, trade, product, and labor market liberalization. The findings from this confirm our initial hypothesis by showing that crises either have negative or no significant effects on the change in all types of reform. Product market reforms were diminished by GDP, banking, and currency crises while sovereign debt crises affect trade and labor market reforms. Financial reforms are those most susceptible to multiple years of crises. We further examine how economic conditions influence the ease of doing business. We use the World Bank's Doing Business index and consider the ten most improved countries per year according to this index. Alongside our general hypothesis we find that GDP crises have a negative effect on reforms, but that additionally a positive GDP per capita growth rate actually increases the probability of a country being a top reformer.

In support of existing research, we find that democracy has a positive significant effect on most types of reforms. However, when examining labor market changes, we find an opposite effect, as here an increase in democracy reduces the degree of liberalization. We argue that this could be due to the positive value placed on regulation of the labor market by many western democracies. For other control variables, the results are more ambiguous as the significance varies. We do find indications that developing countries experience smaller changes in their reform index and that left-wing governments generally signals an increased probability of reforms. In the section where we test the effect of aid on the likelihood of reform we find that there is indeed a positive correlation between the size of aid contributions and the probability of reform, but there is no increased effect of aid received during a crisis.

In this paper we add to the current literature by using a new IMF structural reform dataset, and by combining multiple definitions of both reforms and crises in order to critically analyze the crisis hypothesis. We find that economic crises decrease rather than increase the probability of liberalizing reforms. This could be because, during a crisis, leaders are more likely to focus on stabilizing the economy in the short term rather than introducing liberalizing sectors of the economy. This would also explain why existing literature such as Drazen and Easterly (2001) find support for the crisis hypothesis when examining macroeconomic stabilizations. Returning to the theoretical model by Prato and Wolton (2015) that drives our paper, a related explanation can be found in the public uncertainty that a crisis induces. Even though the demand for reform remains high, the crisis increases the likelihood of botched reforms, and voters are therefore increasingly skeptical of supporting candidates running on a reform platform. This is potentially due to the increased likelihood of botched reforms, which lead voters to not support any politicians proposing reform policies. As a result, candidates supporting the status quo are more likely to be elected, effectively reducing the probability of reform after a crisis.

Since our results contradict such a well-established hypothesis, this area of research has implications. Since crises do not lead to more structural reforms, crises cannot be seen as a blessing in disguise when hoping for liberalization. Because liberalization is considered beneficial it is important to understand what factors drives these reforms. Additionally, works like the Shock Doctrine by Klein (2007), which argue that national crises are misused by governments to force market-oriented reforms, should perhaps reevaluate this argument for economic crises in particular, as we find no proof that reform even follows crises. Our results when adding aid imply that while we should continue to support developing countries financially, we should not expect to see any additional reforms from increased aid during a crisis. The ultimate goal of research surrounding reforms would be to provide developing or highly regulated economies with the groundwork that

enables reforms. Since crises are not the solution, this leads us to further research that can be done to isolate other factors more likely to induce structural reform. For example, as political crises had a positive impact on liberalization, further research should investigate which factors of such crises prompt these results.

The findings in this paper are robust to using different crisis definitions, controls, and sample size restrictions. However, as with any academic paper on this level, we recognize our limitations. First of all, while the dataset used in this thesis is larger than many previously used in similar studies, one of the main limitations of this paper is the setup of the data. The dataset on structural reforms measures reforms on a scale from zero to one, where a higher value on the scale reflects a higher degree of liberalization in that sector. This limits the extent to which structural reforms can be analyzed in two ways. First, the construction of the variables makes it impossible to observe any forms of re-regulation. Re-regulation refers to changes in regulation that are rewriting policies without changing their degree of liberalization. This means that reforms could happen without our dataset registering them. Second, the indices as presented in the IMF structural reform file do not offer any absolute values, only normalized ones. This means that we cannot compare a country to itself, only study its position compared to other countries. While the normalized values are necessary in order to be able to study the degree of liberalization, this also makes it more difficult to understand what the changes in the reform indices truly reflect. While this will remain a major problem with structural reforms, further research is necessary to create a broader dataset that can reflect increased aspects of structural reforms.

The results of our tests using the Doing Business index suggest that instead of GDP crises it is rather GDP per capita growth that drives liberalization in the business sector. We address the existing concerns with reverse causality, but firmly believe that this result should be further investigated. Perhaps it is, instead of crisis, different developments in GDP that drive reform. It would be worth investigating this in further research to come to a deeper understanding of the drivers behind liberalization.

Furthermore, in this paper the results we present are lagged by one and sometimes two periods. While we have tested with up to five lags, this showed similar or no significant results. We did not look at longer periods because our data was limited and because more crises can occur in longer periods, making it difficult to disentangle the effects of the different crises. Naturally leaving this out prevents us from analyzing the long-term effects of crises. In further research, we suggest investigating both the short-term and long-term effects of crises. Labor market reforms is another area we felt that the lack of data availability limited our analysis. Ideally, we would have used a measure capturing the tax wedges in all countries to see how these respond to crises. The IMF structural reform dataset currently offers some data on taxes, however, due to inconsistent coverage we decided not to include this measure. The time period covered by the labor data is also significantly shorter than that of the other reforms. If better data becomes available in the future, the labor market analysis would be improved by including more variables related to taxation.

On a theoretical level, while Prato and Wolton outline an interesting model to explain why crises might not lead to reform, more work is necessary in order to fully understand the mechanisms behind these findings. Our paper does not necessarily aim to explain how economic crises influence reforms; it mainly hopes to provide evidence to show that they do impact the liberalization process. Expanding the theoretical framework would hopefully also allow for more direct testing of the mechanisms through which economic crises affect reforms. In the data that was available for this analysis, it was not possible to study the Prato and Wolton model in more detail. This may also be something that the authors wish to do themselves, as the theoretical model is currently presented in a working paper.

In conclusion this paper finds that there is either no relationship or a negative relationship between crises and liberalizing reforms. We do not want to entirely refute the crisis hypothesis as our research does not extend to stabilizing reforms, but for structural reform the "crisis-leads-to-reform" hypothesis does not hold.

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8 Appendix

8.1 Appendix: List of Tables

List of Tables

8.2 Appendix: Data Description

Data Description	
Variables	**Description**
Financial Reforms	The financial reform index (in our dataset indicated by SR_Finance) is constructed by taking the average of two subindices: that of domestic finance and that of external capital account liberalization. This variable thus covers 1973-2005 and has data on between 72 and 91 countries per year.
Domestic Finance	The domestic finance index covers a period from 1973 to 2005. At a minimum it has observations for 72 countries. At the maximum, there exist observations for 91 countries. It captures six subindices. One relates to securities markets and five cover the banking sector which includes interest rate controls, credit controls, competition restrictions, state involvement and the quality of supervision. For a full description, please see Abiad, et al. (2008).
Capital	This variable covers 1973-2005 and has data on between 72 and 91 countries per year. It reflects external capital account liberalization for residents versus nonresidents. For a full description, please see Quinn and Toyoda (2008).
Sources	Domestic Finance: Abiad, A., Detragiache, E. and Tressel, T., 2008, A New Database of Financial Reforms. *International Monetary Fund* (WP/08/266). Capital: : Quinn, D.P. and Toyoda, A.M., 2008. Does Capital Account Liberalization Lead to Economic Growth?. *Review of Financial Studies*, 21(3), pp.1403-1449.
Trade Reforms	The trade reform variable captures the degree of liberalization in the trade sector. It is based on the combination of tariff rates and current account restrictions.
Tariffs	The tariff rates index covers the period of 1960-2005. At a minimum it has observations for 47 countries in a year, at a maximum the observations exist for 142 countries per year. The variable is based on average tariff rates. While it is normalized (as all variables) on a scale from zero to one, it is important to note that zero here indicates tariff rates are higher or equal to 60%. When the index takes the value of one, this indicates tariff rates are zero.
Current Account	The current account indicator offers data for 1960-2006 and has a minimum of data observations for 76 per year. At the maximum, it offers data for 121 countries per year. The variable indicates the compliance of a government with obligations under IMF's Article VII. This article covers government restriction on the revenue from international trade. The index is based on the sum of two subindices covering restrictions on trade on goods and services. For a further description, please see Quinn (2008).
Sources	Tariff rates: based on various sources including but not limited to the IMF itself, the World Bank and the WTO. Current Account: Quinn, D.P. and Toyoda, A.M., 2008. Does Capital Account Liberalization Lead to Economic Growth? *Review of Financial Studies*, 21(3), pp.1403-1449.

Table 11: Description and Sources of Included Data, Part a

Data Description	
Variables	**Description**
Product Reforms	The product reform index is the combination of indices for telecoms and electricity industries on the one side and the agricultural market on the other.
Electricity & Telecoms	The telecoms and electricity market indicators provide data from 1960 to 2006 and have observations for between 127 and 132 countries, depending on the year. The telecom index reflects the competition in local services, whether the government is the regulator in the sector or another agency, and to what extent interconnection changes are liberalized. The electricity subindex reflects the degree to which generation, transmission and distribution are separated, whether the government is the regulator in the sector or another agency, and whether the wholesale market is liberalized.
Agriculture	This index is a summary measure of the market of the main agricultural export commodity in each country, and can only take on four values: (i) zero (public monopoly or monopsony); (ii) one-third (administered prices); (iii) two-thirds (public ownership of relevant producers or concession requirements); and (iv) one (no public intervention). Data for agriculture is available from 1960 to 2006. At a minimum, it has observations for 105 countries in a year, while at the maximum it has data for 122 countries.
Sources	Telecoms and electricity: The indices that form the base for the telecoms and electricity industries index are based on several existing studies and databases, including IMF commodities data and national legislation. Agriculture: based on existing studies, IMF commodities data and national legislation.
Labor Reforms	The labor reform index is constructed by taking the average of three measures: (i) severance pay, (ii) notice period and (iii) the ratio of minimum wage to mean wage. Data for this reform index is available from 1981 to 2004.
Severance Pay	The severance pay index is created by combining the severance pay measure (normalized on a scale from zero to one, where one indicates higher liberalization and thus lower severance pay) for workers after 9 months, 4 years and 20 years of experience. The severance pay measures are coded according to OECD methodology for this variable to ensure comparability. Please see Aleksynska and Schindhler (2011) for more information.
Notice Period	The notice period index is created by combining the notice period measure (normalized on a scale from zero to one, where one indicates higher liberalization and thus a shorter notice period) for workers after 9 months, 4 years and 20 years of experience. The notice period measures are coded according to OECD methodology for this variable to ensure comparability. Please see Aleksynska and Schindhler (2011) for more information.
Minimum Wage	The description on how the ratio of minimum to maximum wage is calculated can be found in Aleksynska and Schindhler (2011). The variable is normalized, taking on a value between zero and one.
Sources	Aleksynska, M., and Schindler, M., 2011. Labor Market Regulations in Low-, Middle- and High-Income Countries: A New Panel Database. *International Monetary Fund* (WP/11/154).

Table 12: Description and Sources of Included Data, Part b

Country List			
Albania	Dominical Republic	Liberia	Sierra Leone
Algeria	Ecuador	Libya	Singapore
Angola	Egypt, Arab Rep.	Lithuania	Slovak Republic
Argentina	El Salvador	Luxembourg	Slovenia
Armenia	Eritrea	Macedonia, FYR	Solomon Islands
Australia	Estonia	Madagascar	Somalia
Austria	Ethiopia	Malawi	South Africa
Azerbaijan	Fiji	Malaysia	Spain
Bahamas, The	Finland	Mali	Sri Lanka
Bahrain	France	Malta	St. Kitts and Nevis
Bangladesh	Gabon	Mauritania	St. Lucia
Barbados	Gambia, The	Mauritius	St. Vincent and the Grenadines
Belarus	Georgia	Mexico	Sudan
Belgium	Germany	Moldova	Suriname
Belize	Ghana	Mongolia	Swaziland
Benin	Greece	Morocco	Sweden
Bhutan	Guatemala	Mozambique	Switzerland
Bolivia	Guinea	Myanmar	Syrian Arab Republic
Botswana	Guinea-Bissau	Namibia	Tajikistan
Brazil	Guyana	Nepal	Tanzania
Bulgaria	Haiti	Netherlands	Thailand
Burkina Faso	Hungary	New Zealand	Togo
Burundi	Iceland	Nicaragua	Tonga
Cabo Verde	India	Niger	Trinidad and Tobago
Cambodia	Indonesia	Nigeria	Tunisia
Cameroon	Iran, Islamic Rep.	Norway	Turkey
Canada	Iraq	Oman	Turkmenistan
Central African Republic	Ireland	Pakistan	Uganda
Chad	Israel	Panama	Ukraine
Chile	Italy	Papua New Guinea	United Kingdom
China	Jamaica	Paraguay	United States
Colombia	Japan	Peru	Uruguay
Congo, Dem. Rep.	Jordan	Philippines	Uzbekistan
Congo, Rep.	Kazakhstan	Poland	Venezuela, RB
Costa Rica	Kenya	Portugal	Vietnam
Cote d'Ivoire	Korea, Rep.	Romania	Yemen, Rep.
Croatia	Kyrgyz Republic	Russian Federation	Zambia
Cuba	Lao PDR	Rwanda	Zimbabwe
Cyprus	Latvia	Saudi Arabia	
Czech Republic	Lebanon	Senegal	
Denmark	Lesotho	Serbia	

Table 13: Countries Included in the Analysis

8.3 Appendix: Sample Size Restrictions

VARIABLES	(1) ΔSR_total	(2) ΔSR_total	(3) ΔSR_total	(4) ΔSR_total
GDP Crisis	-0.00522**	-0.00522**	-0.00528**	-0.00531**
	(0.00216)	(0.00216)	(0.00221)	(0.00222)
Democracy	0.000431	0.000421	0.000447	0.000433
	(0.000375)	(0.000405)	(0.000347)	(0.000348)
Developing Country			-0.00655	-0.00749
			(0.00929)	(0.00932)
Fractionalization			0.00187	0.00201
			(0.0115)	(0.0118)
Average years of schooling			0.00128	
			(0.00174)	
Reform Index	-0.154***	-0.154***	-0.154***	-0.154***
	(0.0229)	(0.0229)	(0.0227)	(0.0227)
Left		0.00139		0.00134
		(0.00252)		(0.00262)
Presidential		-0.00108		-0.000820
		(0.00626)		(0.00662)
Constant	0.0632***	0.0632***	0	0.0631***
	(0.00749)	(0.00735)	(0)	(0.00735)
Within R-squared	0.1389	0.1390	0.1394	0.1394
Observations	2,826	2,826	2,826	2,826
Country FE	YES	YES	YES	YES
Time FE	YES	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: ΔSR_total. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 14: GDP Crises and Total Reforms - Sample Size Restricted

VARIABLES	(1) ΔSR_total	(2) ΔSR_total	(3) ΔSR_total	(4) ΔSR_total
Inflation Crisis	-0.0123***	-0.0124***	-0.0125***	-0.0127***
	(0.00385)	(0.00397)	(0.00370)	(0.00382)
Democracy	0.000416	0.000356	0.000364	0.000314
	(0.000314)	(0.000344)	(0.000255)	(0.000273)
Developing Country			-0.0186	-0.0198
			(0.0158)	(0.0154)
Fractionalization			0.00681	0.00672
			(0.0103)	(0.0105)
Average Years of Education			0.00150	
			(0.00203)	
Reform Index	-0.161***	-0.161***	-0.159***	-0.160***
	(0.0288)	(0.0289)	(0.0291)	(0.0291)
Left		0.00121		0.00124
		(0.00302)		(0.00314)
Presidential		-0.00594		-0.00517
		(0.00625)		(0.00670)
Constant	0.0640***	0.0673***	0.0562***	0.0662***
	(0.00983)	(0.0106)	(0.0118)	(0.0103)
Within R-squared	0.1488	0.1492	0.1510	0.1511
Observations	2,551	2,551	2,551	2,551
Country FE	YES	YES	YES	YES
Time FE	YES	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: ΔSR_total. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 15: Inflation Crises and Total Reforms - Sample Size Restricted

VARIABLES	(1) ΔSR_total	(2) ΔSR_total	(3) ΔSR_total	(4) ΔSR_total	(5) ΔSR_total	(6) ΔSR_total
Banking crisis	-0.00412	-0.00412				
	(0.00380)	(0.00376)				
Currency crisis			-0.00189	-0.00179		
			(0.00463)	(0.00470)		
Sovereign Debt crisis					-0.0164***	-0.0168***
					(0.00600)	(0.00583)
Democracy	0.000351	0.000332	0.000355	0.000332	0.000342	0.000330
	(0.000337)	(0.000392)	(0.000334)	(0.000387)	(0.000342)	(0.000392)
Developing country		-0.00367		-0.00366		-0.00432
		(0.00698)		(0.00698)		(0.00690)
Fractionalization		-0.00154		-0.00132		-0.00155
		(0.00827)		(0.00834)		(0.00820)
Reform Index	-0.168***	-0.169***	-0.168***	-0.169***	-0.168***	-0.169***
	(0.0311)	(0.0309)	(0.0309)	(0.0307)	(0.0311)	(0.0310)
Left		0.00175		0.00176		0.00200
		(0.00245)		(0.00245)		(0.00247)
Presidential		-0.00579		-0.00575		-0.00575
		(0.00615)		(0.00617)		(0.00616)
Constant	0.0607***	0.0648***	0.0609***	0.0648***	0.0607***	0.0647***
	(0.00948)	(0.00826)	(0.00934)	(0.00817)	(0.00950)	(0.00827)
Within R-squared	0.1680	0.1685	0.1679	0.1684	0.1691	0.1697
Observations	3,263	3,263	3,263	3,263	3,263	3,263
Country FE	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: ΔSR_total. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 16: Other Crises and Total Reforms - Sample Size Restricted

8.4 Appendix: Results

VARIABLES	(1) ΔSR_total	(2) ΔSR_total	(3) ΔSR_total
GDP Crisis (<-5%)	-0.00199		
	(0.00310)		
Inflation Crisis (>100%)		-0.00774	
		(0.00684)	
Any Crisis			-0.00656***
			(0.00198)
Democracy	0.000444	0.000348	0.000366
	(0.000355)	(0.000275)	(0.000386)
Developing Country	-0.00711	-0.0191*	-0.00590
	(0.00850)	(0.0109)	(0.00637)
Fractionalization	-0.00361	0.00132	-0.00169
	(0.00947)	(0.00845)	(0.00830)
Reform Index	-0.172***	-0.165***	-0.169***
	(0.0247)	(0.0290)	(0.0307)
Left	0.00231	0.00305	0.00129
	(0.00235)	(0.00292)	(0.00236)
Presidential	-0.00317	-0.00729	-0.00625
	(0.00624)	(0.00592)	(0.00622)
Constant	0.0732***	0.0725***	0.0695***
	(0.00796)	(0.0104)	(0.00878)
Within R-Squared	0.1487	0.1514	0.1665
Observations	3,166	2,802	3,368
Country FE	YES	YES	YES
Time FE	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: ΔSR_total. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 17: Extreme and Broader Crisis Definitions, Total Reform Index

VARIABLES	(1) ΔSR_total	(2) ΔSR_total	(3) ΔSR_total	(4) ΔSR_total	(5) ΔSR_total
Points SD Inflation	-0.000546				
	(0.00187)				
Inflation SD>Mean		-0.00297			
		(0.00372)			
GDP SD<Mean			-0.00150		
			(0.00339)		
Points SD GDP				-0.000519	
				(0.00114)	
Sum GDP<Mean(3yrs)					-0.000444
					(0.000827)
Democracy	0.000377	0.000384	0.000388	0.000385	0.000348
	(0.000316)	(0.000320)	(0.000365)	(0.000364)	(0.000381)
Developing Country	-0.0172	-0.0170	-0.00746	-0.00739	-0.00590
	(0.0108)	(0.0108)	(0.00823)	(0.00817)	(0.00621)
Fractionalization	-0.00126	-0.00107	-0.00210	-0.00215	-0.000920
	(0.00727)	(0.00752)	(0.00931)	(0.00925)	(0.00824)
Reform Index	-0.165***	-0.165***	-0.171***	-0.171***	-0.167***
	(0.0315)	(0.0314)	(0.0257)	(0.0258)	(0.0307)
Left	0.00212	0.00212	0.00235	0.00236	0.00148
	(0.00275)	(0.00277)	(0.00237)	(0.00237)	(0.00229)
Presidential	-0.00387	-0.00380	-0.00348	-0.00350	-0.00548
	(0.00733)	(0.00744)	(0.00575)	(0.00572)	(0.00617)
Constant	0.0715***	0.0739***	0.0726***	0.0727***	0.0671***
	(0.0101)	(0.0117)	(0.00844)	(0.00848)	(0.00822)
Within R-Squared	0.1495	0.1496	0.1482	0.1482	0.1642
Observations	2,832	2,832	3,188	3,188	3,368
Country FE	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: ΔSR_total. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 18: Standard Deviation from Mean, Total Reform Index

VARIABLES	(1) ΔSR_total	(2) ΔSR_total	(3) ΔSR_total	(4) ΔSR_total
Sum GDP crises(3yrs)	-0.00127			
	(0.000857)			
Sum Inflation crises(3yrs)		-0.00500***		
		(0.00175)		
Sum any crises(3yrs)			-0.00132	
			(0.000927)	
Sum point system(3yrs)				-0.000627
				(0.000617)
Democracy	0.000457	0.000238	0.000356	0.000452
	(0.000359)	(0.000303)	(0.000383)	(0.000357)
Developing country	-0.00778	-0.0186*	-0.00596	-0.00761
	(0.00847)	(0.0109)	(0.00627)	(0.00836)
Fractionalization	-0.00354	0.000176	-0.000913	-0.00357
	(0.00940)	(0.00780)	(0.00833)	(0.00940)
Reform Index	-0.173***	-0.168***	-0.168***	-0.172***
	(0.0245)	(0.0306)	(0.0308)	(0.0244)
Left	0.00228	0.00298	0.00143	0.00226
	(0.00236)	(0.00283)	(0.00234)	(0.00235)
Presidential	-0.00296	-0.00610	-0.00574	-0.00307
	(0.00622)	(0.00682)	(0.00617)	(0.00621)
Constant	0.0742***	0.0717***	0.0681***	0.0739***
	(0.00764)	(0.0102)	(0.00855)	(0.00756)
Within R-Squared	0.1488	0.1528	0.1645	0.1487
Observations	3,168	2,809	3,368	3,168
Country FE	YES	YES	YES	YES
Time FE	YES	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: ΔSR_total. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 19: Crises in Several Years, Total Reform Index

VARIABLES	(1) $\Delta reform$	(2) $\Delta reform$	(3) $\Delta reform$
GDP Crisis	-0.00177**	-0.00196*	-0.00186
	(0.000876)	(0.00101)	(0.00122)
Democracy	0.000335**	0.000329*	0.000619***
	(0.000169)	(0.000183)	(0.000216)
Developing country			0.00575
			(0.00749)
Fractionalization			-0.00368
			(0.00318)
Reform index	-0.108***	-0.121***	-0.115***
	(0.0170)	(0.0227)	(0.0215)
Left		0	0
		(0)	(0)
Presidential		0.00110	0.00275
		(0.00175)	(0.00181)
Constant	0.0288***	0.0427***	0.0414***
	(0.00668)	(0.00700)	(0.00759)
Within R-Squared	0.0657	0.0704	0.0680
Observations	28,428	23,394	20,255
Country FE	YES	YES	YES
Time FE	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: $\Delta reform$. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 20: Robustness Check: GDP Crises, All Reforms Simultaneously

VARIABLES	(1) $\Delta reform$	(2) $\Delta reform$	(3) $\Delta reform$
Inflation Crisis	-0.00213	-0.00440**	-0.00371*
	(0.00203)	(0.00220)	(0.00198)
Democracy	0.000324*	0.000301*	0.000593***
	(0.000165)	(0.000176)	(0.000207)
Developing Country			0.00571
			(0.00752)
Fractionalization			-0.00389
			(0.00319)
Reform Index	-0.107***	-0.122***	-0.117***
	(0.0170)	(0.0233)	(0.0222)
Left		0	0
		(0)	(0)
Presidential		0.00107	0.00261
		(0.00174)	(0.00184)
Constant	0.0309***	0.0879***	0.0454***
	(0.00668)	(0.0165)	(0.00792)
Observations	28,428	23,460	20,317
Country FE	YES	YES	YES
Time FE	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: $\Delta reform$. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 21: Robustness Check: Inflation Crises, All Reforms Simultaneously

VARIABLES	(1) $\Delta reform$	(2) $\Delta reform$	(3) $\Delta reform$	(4) $\Delta reform$	(5) $\Delta reform$	(6) $\Delta reform$
Banking Crisis	-0.00753***	-0.00808**				
	(0.00269)	(0.00348)				
Currency Crisis			-0.00265	-0.00333		
			(0.00281)	(0.00216)		
Sovereign Debt Crisis					-0.0137**	-0.0148**
					(0.00562)	(0.00639)
Democracy	0.000295*	0.000623***	0.000302*	0.000621***	0.000294	0.000612***
	(0.000176)	(0.000217)	(0.000174)	(0.000213)	(0.000179)	(0.000229)
Developing country		0.00632		0.00653		0.00581
		(0.00774)		(0.00762)		(0.00736)
Fractionalization		-0.00432		-0.00381		-0.00405
		(0.00318)		(0.00318)		(0.00306)
Reform Index	-0.115***	-0.117***	-0.115***	-0.117***	-0.115***	-0.117***
	(0.0204)	(0.0223)	(0.0203)	(0.0223)	(0.0204)	(0.0222)
Left		0		0		0
		(0)		(0)		(0)
Presidential		0.00307		0.00289		0.00257
		(0.00193)		(0.00180)		(0.00167)
Constant	0.0358***	0.0444***	0.0358***	0.0443***	0.0358***	0.0445***
	(0.00797)	(0.00795)	(0.00794)	(0.00786)	(0.00795)	(0.00784)
Observations	25,068	20,146	25,068	20,146	25,068	20,146
Country FE	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: $\Delta reform$. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 22: Robustness Check: Other Crises, All Reforms Simultaneously

8.5 Appendix: Income Level

VARIABLES	(1) ΔSR_total	(2) ΔSR_total	(3) ΔSR_total	(4) ΔSR_total	(5) ΔSR_total	(6) ΔSR_total
GDP Crisis	-0.0127	-0.00265	-0.00218			
	(0.00825)	(0.00244)	(0.00306)			
Inflation Crisis				-0.0169	-0.00886*	-0.00364
				(0.0225)	(0.00449)	(0.00953)
Democracy	-0.000145	0.000164	-0.000154	-0.000585	0.000248	0.000278
	(0.000878)	(0.000502)	(0.000569)	(0.000840)	(0.000434)	(0.000945)
Fractionalization	0.0291	-0.00694	-0.00410	0.0401*	0.000122	-0.0128
	(0.0262)	(0.00657)	(0.0122)	(0.0210)	(0.00857)	(0.0142)
Reform Index	-0.325***	-0.164***	-0.111***	-0.390***	-0.150***	-0.121***
	(0.0514)	(0.0269)	(0.0264)	(0.0752)	(0.0275)	(0.0363)
Left	0.0294***	-0.00305	0.00295	0.0395**	-0.00106	0.00246
	(0.00851)	(0.00427)	(0.00285)	(0.0150)	(0.00436)	(0.00237)
Presidential	-0.00652	0.000872	-0.00481	-0.0272	-0.00710	-0.00367
	(0.0122)	(0.00620)	(0.00923)	(0.0188)	(0.00724)	(0.00781)
Constant	0.0927***	0.0517***	0.0718***	0.116***	0.0530***	0.0747***
	(0.0207)	(0.00923)	(0.0113)	(0.0360)	(0.0101)	(0.0168)
Within R-Squared	0.2533	0.1701	0.1511	0.2796	0.1586	0.1893
Observations	462	1,654	1,033	337	1,439	995
Country FE	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: ΔSR_total. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed. Column (1) and (4) show results for low-income, (2) and (5) for middle-income and (3) and (6) for high-income countries.

Table 23: GDP and Inflation Crises by Income Level

VARIABLES	(1) ΔSR_total	(2) ΔSR_total	(3) ΔSR_total
Currency Crisis	0.0130	-0.00445	-0.00801
	(0.0109)	(0.00448)	(0.00758)
Democracy	-0.000474	0.000122	0.000334
	(0.000725)	(0.000467)	(0.000706)
Fractionalization	0.0238	-0.00226	-0.00611
	(0.0215)	(0.00675)	(0.0116)
Reform Index	-0.301***	-0.160***	-0.124***
	(0.0552)	(0.0316)	(0.0342)
Left	0.0218**	-0.00394	0.00373
	(0.00847)	(0.00444)	(0.00301)
Presidential	-0.0133	-0.00118	-0.00306
	(0.0146)	(0.00604)	(0.00821)
Constant	0.134***	0.0482***	0.0636***
	(0.0156)	(0.00772)	(0.0164)
Within R-Squared	0.2305	0.1890	0.1986
Observations	495	1,712	1,025
Country FE	YES	YES	YES
Time FE	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: ΔSR_total. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed. Column (1) shows results for low-income, (2) for middle-income and (3) for high-income countries.

Table 24: Currency Crises by Income Level

VARIABLES	(1) ΔSR_total	(2) ΔSR_total	(3) ΔSR_total	(4) ΔSR_total	(5) ΔSR_total	(6) ΔSR_total
Banking Crisis	0.0158	-0.00128	-0.0181***			
	(0.0341)	(0.00405)	(0.00608)			
Sovereign Debt Crisis				-0.0399***	0.00492	-0.0377***
				(0.0116)	(0.00511)	(0.00803)
Democracy	0.000808	-0.000449	0.000749	0.000843	-0.000468	0.000831
	(0.000757)	(0.000626)	(0.000727)	(0.000803)	(0.000631)	(0.000724)
Quality of Government	0.113**	-0.0478***	0.0245	0.116**	-0.0479***	0.0247
	(0.0486)	(0.00822)	(0.0158)	(0.0490)	(0.00826)	(0.0159)
Fractionalization	0.0322	0.00947	0.0194	0.0331	0.00991	0.0149
	(0.0301)	(0.0107)	(0.0129)	(0.0299)	(0.0109)	(0.0129)
Reform Index	-0.262**	-0.157***	-0.132***	-0.266**	-0.158***	-0.133***
	(0.101)	(0.0411)	(0.0373)	(0.103)	(0.0410)	(0.0380)
Left	0.00859	-0.00813	0.000766	0.0103	-0.00822	0.00103
	(0.0158)	(0.00521)	(0.00257)	(0.0165)	(0.00529)	(0.00251)
Presidential	0.0262	-0.00679	0.0126	0.0275	-0.00704	0.0124
	(0.0188)	(0.01000)	(0.0128)	(0.0187)	(0.01000)	(0.0128)
Constant	0.0220	0.0851***	0.0365	0.0205	0.0851***	0.0384
	(0.0257)	(0.0155)	(0.0225)	(0.0263)	(0.0155)	(0.0229)
Within R-Squared	0.2038	0.1399	0.1197	0.2034	0.1400	0.1204
Observations	255	1,074	751	255	1,074	751
Country FE	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: ΔSR_total. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed. Column (1) and (4) show results for low-income, (2) and (5) for middle-income and (3) and (6) for high-income countries.

Table 25: Banking and Sovereign Debt Crises by Income Level - Including Quality of Government

VARIABLES	(1) ΔSR_total	(2) ΔSR_total	(3) ΔSR_total	(4) ΔSR_total	(5) ΔSR_total	(6) ΔSR_total
GDP Crisis	-0.0125**	-0.0110**	-0.00360	-0.00761***	-0.00229	-0.00516**
	(0.00498)	(0.00515)	(0.00301)	(0.00221)	(0.00173)	(0.00216)
GDP Crisis x QoG	0.0151*	0.0136				
	(0.00775)	(0.0107)				
GDP Crisis x FRAC			0.00122	0.00481		
			(0.00629)	(0.00471)		
GDP Crisis x Left					-0.000772	-0.000910
					(0.00267)	(0.00293)
Quality of Gov.	-0.00831	-0.0129				
	(0.0109)	(0.0108)				
Democracy		.00003		0.000454		0.000451
		(0.000416)		(0.000361)		(0.000361)
Developing		-0.0154		-0.00809		-0.00788
		(0.0105)		(0.00855)		(0.00864)
Fractionalization		0.00752	-0.00319	-0.00605		-0.00418
		(0.0104)	(0.00665)	(0.00837)		(0.00929)
Left		-0.00102		0.00234	0.00557**	0.00253
		(0.00254)		(0.00238)	(0.00236)	(0.00238)
Presidential		0.00142		-0.00338		-0.00326
		(0.00597)		(0.00610)		(0.00619)
Reform Index	-0.182***	-0.156***	-0.166***	-0.173***	-0.130***	-0.173***
	(0.0363)	(0.0372)	(0.0239)	(0.0248)	(0.0147)	(0.0249)
Constant	0.0888***	0.0767***	0.0688***	0.0760***	0.0594***	0.0750***
	(0.0160)	(0.0106)	(0.00687)	(0.00836)	(0.00441)	(0.00843)
Within R-Squared	0.1101	0.1038	0.1383	0.1504	0.1242	0.1503
Observations	2,421	2,117	3,355	3,166	5,425	3,166
Country FE	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: ΔSR_total. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 26: Interaction Terms with GDP Crises

VARIABLES	(1) ΔSR_total
Political Conflict (2lag)	0.00824*
	(0.00440)
Political Conflict (1lag)	-0.00562
	(0.00385)
Democracy (1lag)	0.000323
	(0.000203)
Reform Index (1lag)	-0.126***
	(0.0183)
Constant	0.0500***
	(0.00567)
Within R-Squared	0.1390
Observations	5,573
Country FE	YES
Time FE	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: ΔSR_total. FE = Fixed Effects. Time dummies are suppressed.

Table 27: Political Crises

8.6 Appendix: Different Reform Types

VARIABLES	(1) $\Delta SR\_Finance$	(2) $\Delta SR\_Finance$	(3) $\Delta SR\_Finance$	(4) $\Delta SR\_Finance$
GDP Crisis	-0.00235	-0.00215	0.000159	-0.00135
	(0.00276)	(0.00306)	(0.00413)	(0.00390)
Democracy	0.000594	0.000664	0.00146***	0.00125**
	(0.000726)	(0.000828)	(0.000538)	(0.000507)
Developing country			0.0138	0.000866
			(0.0159)	(0.0104)
Fractionalization			0.00386	0.00242
			(0.0133)	(0.0123)
Average years of schooling			0.00428	
			(0.00502)	
Financial Reform Index	-0.176***	-0.184***	-0.168***	-0.169***
	(0.0234)	(0.0242)	(0.0252)	(0.0258)
Left		0.00780		0.00797
		(0.00672)		(0.00672)
Presidential		-0.00680		-0.00843
		(0.00769)		(0.0100)
Constant	0.135***	0.143***	0	0.0560***
	(0.0178)	(0.0180)	(0)	(0.0101)
Within R-Squared	0.1362	0.1432	0.1338	0.1353
Observations	2,420	2,296	1,851	2,005
Country FE	YES	YES	YES	YES
Time FE	YES	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: $\Delta SR\_Finance$. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 28: GDP Crises and Financial Reforms

VARIABLES	(1) $\Delta SR\_Finance$	(2) $\Delta SR\_Finance$	(3) $\Delta SR\_Finance$	(4) $\Delta SR\_Finance$
Inflation Crisis	-0.00481	-0.00572	-0.0183**	-0.00647
	(0.00813)	(0.00830)	(0.00739)	(0.00972)
Democracy	0.000700	0.000907*	0.00121***	0.00119***
	(0.000529)	(0.000519)	(0.000397)	(0.000381)
Developing country			0.0205	0.00196
			(0.0174)	(0.0113)
Fractionalization			0.00617	0.00135
			(0.0131)	(0.0133)
Average years of schooling			0.00524	
			(0.00433)	
Financial Reform Index	-0.177***	-0.183***	-0.175***	-0.185***
	(0.0272)	(0.0308)	(0.0287)	(0.0337)
Left		0.00890*		0.00992
		(0.00525)		(0.00623)
Presidential		-0.00465		-0.00371
		(0.00718)		(0.0112)
Constant	0.0509***	0.140***	0.0302	0.0447***
	(0.00628)	(0.0212)	(0.0247)	(0.00986)
Within R-Squared	0.1464	0.1510	0.1384	0.1543
Observations	2,162	2,046	1,694	1,814
Country FE	YES	YES	YES	YES
Time FE	YES	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: $\Delta SR\_Finance$. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 29: Inflation Crises and Financial Reforms

VARIABLES	(1) $\Delta SR\_Finance$	(2) $\Delta SR\_Finance$	(3) $\Delta SR\_Finance$
Banking Crisis	-0.0135		
	(0.00994)		
Currency Crisis		-0.00378	
		(0.00679)	
Sovereign Debt Crisis			-0.0138
			(0.00881)
Democracy	0.00143***	0.00143***	0.00141***
	(0.000493)	(0.000494)	(0.000508)
Developing country	0.00316	0.00390	0.00330
	(0.0114)	(0.0111)	(0.0113)
Fractionalization	-0.00356	-0.00262	-0.00255
	(0.0123)	(0.0125)	(0.0124)
Financial Reform Index	-0.176***	-0.176***	-0.176***
	(0.0302)	(0.0295)	(0.0296)
Left	0.00840	0.00843	0.00858
	(0.00691)	(0.00700)	(0.00696)
Presidential	0.000109	-6.41e-05	-0.000154
	(0.0117)	(0.0118)	(0.0118)
Constant	0.0434***	0.0431***	0.0429***
	(0.00975)	(0.00935)	(0.00958)
Within R-squared	0.1462	0.1453	0.1457
Observations	2,047	2,047	2,047
Country FE	YES	YES	YES
Time FE	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: $\Delta SR\_Finance$. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 30: Other Crises and Financial Reforms

VARIABLES	(1) ΔSR_Fin	(2) ΔSR_Fin	(3) ΔSR_Fin	(4) ΔSR_Fin	(5) ΔSR_Fin	(6) ΔSR_Fin
Sum GDP crises(3yrs)	-0.00490***					
	(0.00164)					
Sum Inflation crises(3yrs)		-0.00920***				
		(0.00319)				
Sum any crises(3yrs)			-0.00692***			
			(0.00178)			
Inflation SD>mean				-0.0110*		
				(0.00626)		
GDP SD<mean					-0.00325	
					(0.00413)	
Sum GDP SD<mean(3yrs)						-0.00274**
						(0.00117)
Democracy	0.00133**	0.00109***	0.00151***	0.00120***	0.00126**	0.00149***
	(0.000520)	(0.000387)	(0.000499)	(0.000404)	(0.000514)	(0.000498)
Developing Country	-0.00307	0.00497	0.00171	0.00169	0.00152	0.00224
	(0.0106)	(0.0118)	(0.0117)	(0.0104)	(0.0103)	(0.0110)
Fractionalization	0.00286	0.00283	-0.00259	0.00259	0.000795	-0.00311
	(0.0123)	(0.0140)	(0.0128)	(0.0133)	(0.0119)	(0.0126)
Financial Reform Index	-0.172***	-0.190***	-0.184***	-0.181***	-0.167***	-0.177***
	(0.0244)	(0.0356)	(0.0292)	(0.0330)	(0.0249)	(0.0296)
Left	0.00792	0.0100	0.00828	0.00971	0.00802	0.00796
	(0.00671)	(0.00612)	(0.00699)	(0.00594)	(0.00680)	(0.00689)
Presidential	-0.00781	-0.00460	-5.18e-05	-0.00392	-0.00776	0.000894
	(0.00977)	(0.0111)	(0.0116)	(0.0106)	(0.00988)	(0.0117)
Constant	0.0598***	0.0474***	0.0507***	0	0.0434***	0.0461***
	(0.00955)	(0.0102)	(0.00905)	(0)	(0.00962)	(0.0101)
Within R-Squared	0.1377	0.1581	0.1505	0.1510	0.1340	0.1464
Observations	2,005	1,814	2,047	1,828	2,016	2,047
Country FE	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: $\Delta SR\_Finance$. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 31: Other Crises Definitions and Financial Reforms

VARIABLES	(1) ΔSR_TradeL	(2) ΔSR_TradeL	(3) ΔSR_TradeL	(4) ΔSR_TradeL
GDP Crisis	-0.00160	0.000437	-0.00168	-0.000783
	(0.00249)	(0.00290)	(0.00311)	(0.00306)
Democracy	0.000613**	0.000870***	0.00107***	0.00134***
	(0.000236)	(0.000311)	(0.000383)	(0.000466)
Developing country			-0.0239*	-0.0204*
			(0.0126)	(0.0112)
Fractionalization			0.00205	-0.00771
			(0.0112)	(0.0102)
Average years of schooling			-0.00295*	
			(0.00159)	
Trade Reform Index	-0.145***	-0.190***	-0.172***	-0.186***
	(0.0224)	(0.0330)	(0.0284)	(0.0312)
Left		0.00251		0.000457
		(0.00289)		(0.00339)
Presidential		-0.00200		0.00785
		(0.00509)		(0.00695)
Constant	0.0884***	0.105***	0	0.106***
	(0.0106)	(0.0175)	(0)	(0.0158)
Within R-Squared	0.1057	0.1190	0.1074	0.1165
Observations	4,480	3,459	2,687	2,972
Country FE	YES	YES	YES	YES
Time FE	YES	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: ΔSR_TradeL. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 32: GDP Crises and Trade Reforms

VARIABLES	(1) ΔSR_TradeL	(2) ΔSR_TradeL	(3) ΔSR_TradeL	(4) ΔSR_TradeL
Inflation Crisis	-0.00438	-0.00951	-0.0101	-0.00694
	(0.00667)	(0.00597)	(0.00629)	(0.00584)
Democracy	0.000825***	0.000843***	0.00107***	0.00125***
	(0.000223)	(0.000230)	(0.000302)	(0.000321)
Developing Country			-0.0343*	-0.0267*
			(0.0192)	(0.0151)
Fractionalization			0.00304	-0.00615
			(0.00947)	(0.00814)
Average years of schooling			-0.00236	
			(0.00178)	
Trade Reform Index	-0.145***	-0.191***	-0.179***	-0.188***
	(0.0226)	(0.0341)	(0.0307)	(0.0317)
Left		0.00275		0.00130
		(0.00260)		(0.00341)
Presidential		-0.00479		0.00391
		(0.00427)		(0.00594)
Constant	0.0795***	0.111***	0	0.120***
	(0.0106)	(0.0179)	(0)	(0.0172)
Within R-Squared	0.1030	0.1133	0.1124	0.1145
Observations	4,045	3,106	2,474	2,695
Country FE	YES	YES	YES	YES
Time FE	YES	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: ΔSR_TradeL. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 33: Inflation Crises and Trade Reforms

VARIABLES	(1) ΔSR_TradeL	(2) ΔSR_TradeL	(3) ΔSR_TradeL
Banking Crisis	-0.00507		
	(0.00728)		
Currency Crisis		-0.000870	
		(0.00630)	
Sovereign Debt Crisis			-0.0275***
			(0.00671)
Democracy	0.00153***	0.00153***	0.00153***
	(0.000453)	(0.000450)	(0.000448)
Developing country	-0.0219**	-0.0219**	-0.0235**
	(0.0108)	(0.0108)	(0.0106)
Fractionalization	-0.00776	-0.00754	-0.00784
	(0.00922)	(0.00923)	(0.00900)
Trade Reform Index	-0.183***	-0.183***	-0.183***
	(0.0338)	(0.0338)	(0.0336)
Left	-0.00137	-0.00135	-0.000951
	(0.00394)	(0.00389)	(0.00401)
Presidential	0.00674	0.00674	0.00670
	(0.00696)	(0.00698)	(0.00681)
Constant	0.112***	0.112***	0.112***
	(0.0162)	(0.0161)	(0.0160)
Within R-Squared	0.1158	0.1157	0.1184
Observations	3,035	3,035	3,035
Country FE	YES	YES	YES
Time FE	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: ΔSR_TradeL. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 34: Other Crises and Trade Reforms

VARIABLES	(1) ΔSR_Tr	(2) ΔSR_Tr	(3) ΔSR_Tr	(4) ΔSR_Tr	(5) ΔSR_Tr	(6) ΔSR_Tr
Sum of GDP crises(3yrs)	-0.000635					
	(0.00149)					
Sum of Inflation crises(3yrs)		-0.00199				
		(0.00318)				
Sum of any crises(3yrs)			-0.000277			
			(0.00123)			
Inflation SD>mean				-0.00165		
				(0.00519)		
GDP SD<mean					-0.00303	
					(0.00327)	
Sum GDP SD<mean(3yrs)						0.000769
						(0.000805)
Democracy	0.00135***	0.00113***	0.00153***	0.00118***	0.00128***	0.00150***
	(0.000466)	(0.000393)	(0.000438)	(0.000398)	(0.000469)	(0.000425)
Developing country	-0.0207*	-0.0256	-0.0220**	-0.0223	-0.0201*	-0.0212*
	(0.0114)	(0.0155)	(0.0110)	(0.0155)	(0.0109)	(0.0111)
Fractionalization	-0.00768	-0.00824	-0.00763	-0.00912	-0.00701	-0.00743
	(0.0101)	(0.00691)	(0.00914)	(0.00749)	(0.0104)	(0.00907)
Trade Reform Index	-0.186***	-0.189***	-0.181***	-0.191***	-0.185***	-0.180***
	(0.0310)	(0.0327)	(0.0333)	(0.0318)	(0.0313)	(0.0335)
Left	0.000451	0.00135	-0.00129	0.00149	0.000497	-0.00109
	(0.00339)	(0.00339)	(0.00391)	(0.00331)	(0.00348)	(0.00381)
Presidential	0.00795	0.00518	0.00690	0.00892	0.00810	0.00689
	(0.00701)	(0.00671)	(0.00702)	(0.00632)	(0.00660)	(0.00700)
Constant	0.116***	0.120***	0.111***	0.120***	0.115***	0.110***
	(0.0144)	(0.0171)	(0.0162)	(0.0168)	(0.0143)	(0.0164)
Within R-Squared	0.1165	0.1139	0.1134	0.1158	0.1150	0.1136
Observations	2,974	2,702	3,108	2,718	2,987	3,108
Country FE	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: ΔSR_TradeL. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 35: Other Crises Definitions and Trade Reforms

VARIABLES	(1) $\Delta SR\_Product$	(2) $\Delta SR\_Product$	(3) $\Delta SR\_Product$	(4) $\Delta SR\_Product$
GDP Crisis	-0.00404**	-0.00654***	-0.00726**	-0.00604**
	(0.00199)	(0.00210)	(0.00306)	(0.00279)
Democracy	-7.05e-05	-0.000280	2.70e-05	5.28e-05
	(0.000231)	(0.000335)	(0.000311)	(0.000339)
Developing country			0.00289	-0.00328
			(0.00894)	(0.00715)
Fractionalization			-0.00363	-0.00680
			(0.00703)	(0.00597)
Average years of schooling			0.00743**	
			(0.00284)	
Product Reform Index	-0.0678***	-0.0963***	-0.0917***	-0.104***
	(0.0165)	(0.0245)	(0.0296)	(0.0320)
Left		0.00559**		0.00603***
		(0.00259)		(0.00229)
Presidential		0.00245		-0.000192
		(0.00653)		(0.00410)
Constant	0.0119***	0.0119***	0	0.0198***
	(0.00284)	(0.00335)	(0)	(0.00659)
Within R-Squared	0.0690	0.0790	0.0835	0.0870
Observations	4,302	3,256	2,479	2,727
Country FE	YES	YES	YES	YES
Time FE	YES	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: $\Delta SR\_Product$. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 36: GDP Crises and Product Reforms

VARIABLES	(1) $\Delta SR\_Product$	(2) $\Delta SR\_Product$	(3) $\Delta SR\_Product$	(4) $\Delta SR\_Product$
Inflation Crisis	0.00537	0.00227	-0.000597	0.000306
	(0.00487)	(0.00564)	(0.00419)	(0.00483)
Democracy	0.000174	0.000205	0.000554	0.000517
	(0.000280)	(0.000390)	(0.000440)	(0.000496)
Developing country			0.00423	-0.0127
			(0.0131)	(0.00913)
Fractionalization			-0.00442	-0.00446
			(0.00762)	(0.00768)
Average years of schooling			0.00479*	
			(0.00249)	
Product Reform Index	-0.0724***	-0.100***	-0.103***	-0.107***
	(0.0185)	(0.0270)	(0.0312)	(0.0317)
Left		0.00643**		0.00571**
		(0.00262)		(0.00222)
Presidential		-0.00144		-0.00240
		(0.00539)		(0.00629)
Constant	0.0119***	0.0139***	-0.0117	0.0175**
	(0.00302)	(0.00488)	(0.0134)	(0.00716)
Within R-Squared	0.0738	0.0817	0.0865	0.0862
Observations	3,665	2,802	2,213	2,388
Country FE	YES	YES	YES	YES
Time FE	YES	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: $\Delta SR\_Product$. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 37: Inflation Crises and Product Reforms

VARIABLES	(1) $\Delta SR\_Product$	(2) $\Delta SR\_Product$	(3) $\Delta SR\_Product$
Banking Crisis	-0.00753**		
	(0.00333)		
Currency Crisis		-0.0126***	
		(0.00458)	
Sovereign Debt Crisis			0.00525
			(0.0110)
Democracy	0.000250	0.000265	0.000240
	(0.000401)	(0.000401)	(0.000390)
Developing country	-0.00203	-0.00180	-0.00165
	(0.00675)	(0.00681)	(0.00681)
Fractionalization	-0.00320	-0.00243	-0.00282
	(0.00567)	(0.00528)	(0.00543)
Product Reform Index	-0.0940***	-0.0945***	-0.0941***
	(0.0318)	(0.0318)	(0.0318)
Left	0.00414*	0.00400*	0.00418*
	(0.00234)	(0.00234)	(0.00230)
Presidential	-0.00760	-0.00742	-0.00765
	(0.00578)	(0.00575)	(0.00580)
Constant	0.0185**	0.0185**	0.0184**
	(0.00751)	(0.00720)	(0.00746)
Within R-Squared	0.0817	0.0831	0.0814
Observations	2,863	2,863	2,863
Country FE	YES	YES	YES
Time FE	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: $\Delta SR\_Product$. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 38: Other Crises and Product Reforms

VARIABLES	(1) ΔSR_Pr	(2) ΔSR_Pr	(3) ΔSR_Pr	(4) ΔSR_Pr	(5) ΔSR_Pr	(6) ΔSR_Pr
Sum of GDP crises (3yrs)	0.00151					
	(0.00157)					
Sum of Inflation crises (3yrs)		-0.00248				
		(0.00239)				
Sum of any crises (3yrs)			0.000721			
			(0.00149)			
Inflation SD>mean				-0.00424		
				(0.00553)		
GDP SD< mean					-0.000294	
					(0.00332)	
Sum GDP SD<mean (3yrs)						0.00204**
						(0.000910)
Democracy	1.85e-05	0.000510	0.000255	0.000490	1.70e-05	0.000213
	(0.000320)	(0.000499)	(0.000386)	(0.000478)	(0.000320)	(0.000384)
Developing country	-0.00205	-0.0127	-0.00563	-0.0111	-0.00353	-0.00491
	(0.00769)	(0.00918)	(0.00660)	(0.00828)	(0.00682)	(0.00699)
Fractionalization	-0.00537	-0.00405	-0.00188	-0.00124	-0.00405	-0.00135
	(0.00561)	(0.00745)	(0.00521)	(0.00655)	(0.00552)	(0.00506)
Product Reform Index	-0.103***	-0.108***	-0.0938***	-0.107***	-0.101***	-0.0938***
	(0.0317)	(0.0320)	(0.0315)	(0.0320)	(0.0315)	(0.0316)
Left	0.00599***	0.00563**	0.00400*	0.00542**	0.00575**	0.00438*
	(0.00228)	(0.00221)	(0.00226)	(0.00221)	(0.00225)	(0.00229)
Presidential	-0.000317	-0.00229	-0.00733	-0.00212	-0.000979	-0.00751
	(0.00410)	(0.00625)	(0.00573)	(0.00642)	(0.00450)	(0.00577)
Constant	0.0156***	0.0180**	0.0174***	0.0221**	0.0164**	0.0156**
	(0.00553)	(0.00720)	(0.00654)	(0.00880)	(0.00668)	(0.00651)
Within R-Squared	0.0858	0.0865	0.0809	0.0865	0.0840	0.0819
Observations	2,727	2,389	2,907	2,415	2,749	2,907
Country FE	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: $\Delta SR\_Product$. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 39: Other Crises Definitions and Product Reforms

VARIABLES	(1) ΔSR_LaborL	(2) ΔSR_LaborL	(3) ΔSR_LaborL	(4) ΔSR_LaborL
GDP Crisis	-0.000250	-0.000211	-0.000516	-0.000482
	(0.00300)	(0.00302)	(0.00276)	(0.00269)
Democracy	-0.000807**	-0.00107***	-0.000289	-0.000756***
	(0.000392)	(0.000344)	(0.000448)	(0.000269)
Developing country			0.0855*	0.0534
			(0.0461)	(0.0324)
Fractionalization			-0.0248	-0.0193**
			(0.0169)	(0.00971)
Average years of schooling			0.00636**	
			(0.00307)	
Labor Reform Index	-0.183***	-0.185***	-0.153***	-0.160***
	(0.0506)	(0.0502)	(0.0513)	(0.0502)
Left		0.000562		0.000131
		(0.00244)		(0.00205)
Presidential		-0.0142*		-0.0111
		(0.00744)		(0.00874)
Constant	0.129***	0.139***	0.0234	0.125***
	(0.0341)	(0.0325)	(0.0399)	(0.0311)
Within R-Squared	0.0904	0.0925	0.1056	0.0884
Observations	2,050	2,050	1,697	1,855
Country FE	YES	YES	YES	YES
Time FE	YES	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: ΔSR_LaborL. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 40: GDP Crises and Labor Reforms

VARIABLES	(1) ΔSR_LaborL	(2) ΔSR_LaborL	(3) ΔSR_LaborL	(4) ΔSR_LaborL
Inflation Crisis	0.00679	0.00653	0.00481	0.00400
	(0.00520)	(0.00541)	(0.00394)	(0.00415)
Democracy	-0.000535	-0.000801**	-0.000159	-0.000554*
	(0.000473)	(0.000378)	(0.000556)	(0.000327)
Developing country			0.0967**	0.0467
			(0.0408)	(0.0286)
Fractionalization			-0.0245	-0.0194
			(0.0179)	(0.0119)
Average years of schooling			0.00758***	
			(0.00278)	
Labor Reform Index	-0.140***	-0.142***	-0.120***	-0.126***
	(0.0414)	(0.0405)	(0.0391)	(0.0336)
Left		0.000564		-0.000159
		(0.00241)		(0.00230)
Presidential		-0.0180*		-0.0165*
		(0.00982)		(0.00915)
Constant	0.0981***	0.110***	0	0.0829***
	(0.0274)	(0.0254)	(0)	(0.0175)
Within R-Squared	0.0590	0.0632	0.0719	0.0553
Observations	1,818	1,818	1,556	1,673
Country FE	YES	YES	YES	YES
Time FE	YES	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: ΔSR_LaborL. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 41: Inflation Crises and Labor Reforms

VARIABLES	(1) ΔSR_LaborL	(2) ΔSR_LaborL	(3) ΔSR_LaborL
Banking Crisis	-0.00612		
	(0.00479)		
Currency Crisis		-0.00113	
		(0.00374)	
Sovereign Debt Crisis			-0.0299*
			(0.0177)
Democracy	-0.000688***	-0.000691***	-0.000706***
	(0.000234)	(0.000241)	(0.000230)
Developing country	0.0466	0.0472	0.0455
	(0.0329)	(0.0327)	(0.0325)
Fractionalization	-0.0182*	-0.0178*	-0.0184*
	(0.0105)	(0.0106)	(0.0105)
Labor Reform Index	-0.150***	-0.149***	-0.150***
	(0.0492)	(0.0491)	(0.0478)
Left	0.000278	0.000362	0.000671
	(0.00190)	(0.00194)	(0.00205)
Presidential	-0.00873	-0.00871	-0.00878
	(0.00709)	(0.00706)	(0.00712)
Constant	0.0990***	0.110***	0.0990***
	(0.0283)	(0.0324)	(0.0272)
Within R-Squared	0.0822	0.0818	0.0877
Observations	1,920	1,920	1,920
Country FE	YES	YES	YES
Time FE	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: ΔSR_LaborL. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 42: Other Crises and Labor Reforms

VARIABLES	(1) ΔSR_Lab	(2) ΔSR_Lab	(3) ΔSR_Lab	(4) ΔSR_Lab	(5) ΔSR_Lab	(6) ΔSR_Lab
Sum of GDP crises(3yrs)	-4.42e-05					
	(0.00184)					
Sum of Inflation crises(3yrs)		-0.00285*				
		(0.00156)				
Sum any crises (3yrs)			-0.000889			
			(0.00164)			
Inflation SD>mean				-0.0106**		
				(0.00517)		
GDP SD<mean					-0.000189	
					(0.00323)	
Sum GDP SD<mean(3yrs)						0.000322
						(0.00115)
Democracy	-0.000757***	-0.000559*	-0.000677***	-0.000431	-0.000716***	-0.000705***
	(0.000270)	(0.000313)	(0.000244)	(0.000304)	(0.000270)	(0.000242)
Developing country	0.0534	0.0482*	0.0468	0.0424	0.0476	0.0475
	(0.0326)	(0.0288)	(0.0328)	(0.0269)	(0.0328)	(0.0326)
Fractionalization	-0.0193**	-0.0178	-0.0176	-0.0180	-0.0185*	-0.0179*
	(0.00959)	(0.0123)	(0.0107)	(0.0116)	(0.0102)	(0.0106)
Labor Reform Index	-0.160***	-0.121***	-0.149***	-0.122***	-0.149***	-0.150***
	(0.0501)	(0.0321)	(0.0492)	(0.0315)	(0.0500)	(0.0490)
Left	0.000125	-9.01e-05	0.000270	-0.000200	0.000423	0.000463
	(0.00202)	(0.00225)	(0.00188)	(0.00234)	(0.00196)	(0.00206)
Presidential	-0.0112	-0.0167*	-0.00870	-0.0141	-0.0104	-0.00893
	(0.00885)	(0.00894)	(0.00708)	(0.00990)	(0.00879)	(0.00721)
Constant	0.125***	0.0782***	0.0978***	0.0876***	0.0995***	0.0983***
	(0.0311)	(0.0163)	(0.0284)	(0.0156)	(0.0286)	(0.0283)
Within R-Squared	0.0884	0.0562	0.0819	0.0554	0.0810	0.0818
Observations	1,855	1,673	1,920	1,688	1,868	1,920
Country FE	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES

*** p<0.01, ** p<0.05, * p<0.1. Driscoll & Kraay Standard errors in parentheses. Dependent variable: ΔSR_LaborL. All variables are lagged by one period. FE = Fixed Effects. Time dummies are suppressed.

Table 43: Other Crisis Definitions and Labor Reforms