Do Crises Induce Reform? A Critical Review of Conception, Methodology and Empirical Evidence of the 'Crisis Hypothesis'

Mounir Mahmalat, Declan Curran[1];

Accepted and forthcoming in: Journal of Economic Surveys

Abstract. The notion that economic crises induce the adoption of reform ranks among the most widely accepted concepts in the political economics literature. However, the underlying mechanism of the so-called 'crisis hypothesis' has yet to be fully understood. This paper provides a comprehensive survey of the relevant empirical evidence to date, and scrutinizes the operationalization of the hypothesis' key concepts: crisis, reform, and the political mediation of reform during crises. We argue that the social perception of both crises and the subsequent cost of reform requires consideration of how these concepts are operationalized. As a product of the broader economic and institutional environment, social perceptions largely determine the manner in which the political mediation of reform during crises works. Present-day methodological approaches fail to adequately reflect social perceptions and consequently compromise the determination of what constitutes both crisis and the cost of reform in the context of the crisis hypothesis. Most notably, the identification of crises by fixed thresholds constructed around macroeconomic variables impedes the interpretation of the hypothesis' underlying mechanism. We find that a fuller treatment of social perception within the operationalization of the hypothesis' key concepts can enhance our understanding of how economic crises influence political dynamics in bringing about reform.

Keywords: Crisis Hypothesis, Reform, Economic Crises, Political Economics

1 This paper has been written at the Department of Economics, Finance and Entrepreneurship, Dublin City University, Dublin 9, Ireland.
Correspondent address: Mounir Mahmalat, mounir.mahmalat@gmail.com; Declan Curran, declan.curran@dcu.ie

1. Introduction

The theory of the political economy of reform predicts that economic crises beget the implementation of economic reform. This notion is commonly referred to as the 'crisis hypothesis' and argues that 'unsustainable' economic conditions (and the fear they could deteriorate even further) serve as a catalyst for subsequent reform (for example Drazen and Grilli, 1993; Rodrik, 1996; Tommasi and Velasco, 1996). The hypothesis has become well established in economic literature and is regarded as an "orthodoxy" of the political economy of reform (Drazen, 2000, p. 444).

When confronted with the global economic and financial turmoil experienced since the late-2000s, however, the central tenet of the crisis hypothesis appears to warrant further scrutiny. As noted by economist Nouriel Roubini in the aftermath of the 2008 financial crisis, reform in the wake of a crisis is by no means a given: "Had policy makers failed to arrest the crisis, as they failed during the Depression, the calls for reform today would be deafening: there's nothing like ubiquitous breadlines and 25 percent unemployment to focus the minds of legislators. But because the disaster was handled more deftly this time, the impetus for deep, structural reforms of the financial system has faltered." (Roubini and Mihm, 2011, p. 183)

Rather than characterizing the repercussions of the 2008 crisis as not having been 'severe enough' to trigger reform, this statement indicates that the impetus for reform might depend more on a government's (in)ability to manage the immediate short-term consequences of a crisis. Further, it suggests that the determinants which facilitate the initial introduction and the eventual implementation of a reform agenda are not the same. This paper argues that the way the crisis hypothesis commonly operationalizes its key concepts - namely, crisis, reform, and the political mediation surrounding the latter - make it difficult to take such distinctions into account for empirical testing. Empirical modeling then risks conflating the distinct causal connections between these three key concepts, which in turn undermines conclusive interpretation of results.

Among prominent theories of the political economy of reform, the correlation between crisis and reform has received great attention but has yet to be fully understood (see Brooks and Kurtz, 2007). The hypothesis has been repeatedly criticized for failing to adequately reflect the complexity of the mechanism that links crisis and reform (for example Campos *et al.*, 2010; Corrales, 1998; Edwards and Steiner, 2000; Williamson, 1994). In response to such critiques, empirical models testing the crisis-reform link have become increasingly sophisticated, leading to the growing recognition that "[i]t is the type of crisis, and not just the existence of one, that is most crucial" (Hallerberg and Scartascini, 2015, p. 72). The application of the hypothesis has become diversified and has been applied to a wide set of crisis and reform measures, from inflation to employment and political crises and from financial to tax and healthcare reform. More recent studies have emphasized the origins of a given crisis (Waelti, 2015), and particularly the domestic institutional and political context that mediates the adoption of reform (for example Brooks and Kurtz, 2007; Campos *et al.*, 2010; Galasso, 2014). Thus, the incidence of reform as a response to crisis appears to depend on a much more complex set of factors than solely unsustainable economic conditions. Empirical testing requires a nuanced operationalization of both the nature of the crisis event and the reform process, as well as the political mediation in facilitating or hindering reform.

This paper scrutinizes the crisis hypothesis by surveying empirical evidence and assessing its methodological operationalization. The survey finds the empirical evidence for many of the most widely discussed crisis-reform links (such as inflation to financial reform) to be inconclusive and, with it, the predictive power of the hypothesis to be weak despite its wide acceptance. In particular, the common procedure of indicating crises via fixed thresholds is problematic as it fails to take into account perceptions of what constitutes a crisis, how these perceptions may vary over times and across regions, and how they translate into the perception for the need of reform. Consequently, the political mediation of reform during crises is context dependent and influenced by the broader economic and institutional environment, which potentially alters the manner in which political mediation for reform is thought to work in crisis-free times. Empirical testing would thus benefit from reflecting social perception, as well as cross-regional and temporal heterogeneity of political mediation for reform within the hypothesis' key concepts. Comparative research methods that contrast the idiosyncrasies of different regions open up promising vistas for future research. They enable the integration of a political and institutional setting within a specific cultural, regional, and temporal context into a respective model. In

this way, future research on the crisis hypothesis can enhance our understanding of how economic crises influence political dynamics in bringing about reform.

The paper is organized as follows: The second section revisits relevant theoretical approaches on the crisis hypothesis. The third section surveys the empirical evidence and provides an overview of established crisis-reform links. Section four scrutinizes the general methodological operationalization of the hypothesis. Section five concludes by outlining implications for future research.

2. The Crisis Hypothesis in Theory

The idea that economic crisis facilitates reform appears in a variety of theoretical guises. This section reviews relevant theoretical approaches and pinpoints aspects that make a translation into empirical models difficult to operationalize (for a more detailed review see Drazen, 2000).

In explaining the dynamics of crises that enable reform, most theoretical approaches discuss variations of the interplay of social interest groups, which changes during crisis. In this vein, crises can be described as 'moments of critical choice' (Gourevitch, 1986). Crises enable a more open political environment by challenging established relationships between political actors and opening up opportunities for the creation of new ones. Olson (1982), for example, discusses social interest groups which become powerful in times of economic prosperity. Once those interest groups become powerful they tend to oppose the reforming of rules that made them powerful in the first place. Their vested interests block socially beneficial reform until conditions deteriorate and eventually turn into a crisis. According to Olson, only a crisis can weaken their vested interests sufficiently to be overcome. There exists no formal treatment of Olson's contribution to our knowledge.

Formal modelling to date largely takes the form of game-theoretic models. In such models, rational agents, here social interest groups, make decisions on adopting or blocking reform by projecting and comparing related streams of payoffs. Accordingly, reform becomes more likely when the payoffs associated with the option "non-reforming" diminish (see, for example, Velasco 1999). Reform occurs when the expected stream of payoffs associated with reform "first exceeds that associated with the status quo" (Tommasi and Velasco, 1996, p. 198). As within the contribution by Olson, crises arise because interest groups tend to delay reform in 'better times'. The delay, in turn, eventually causes economic conditions to deteriorate. Only when conditions 'deteriorate sufficiently' and eventually turn into a crisis, then, reform occurs. In Ranciere and Tornell (2015) and Tornell (1998), for example, powerful interest groups tend to overappropriate resources within an economy, which eventually is to the economy's detriment. As economic conditions deteriorate, declining aggregate resources limit the ability for future appropriations. According to Ranciere and Tornell, conflict among these interest groups erupts, which is resolved by the use of structural reform as a strategic tool to curb the power of rival groups within a new regime.

The model introduced by Alesina and Drazen (1991) appears to be the most widely discussed. Interest groups strive to shift the costs of reforming onto other social groups by embarking on a "war of attrition". They attempt to wait each other out until one group concedes, and acquiesces to reforms which may ultimately see them bearing a disproportionate share of the costs. The model assumes that information is distributed asymmetrically in that each group only knows with certainty its own costs of reform. It is important to note that it is not the distributional effect of income that is relevant for delayed reforming, but the conflict over the distribution of the burden. This implies that reforms whose cost distribution is dependent on political debate (such as tax reform or privatization) will be exposed to greater delay than reform for which less debate is required (such as financial reform) (see Lora and Olivera, 2004).

Crises hasten the deterioration of a given stream of payoffs. Drazen and Grilli (1993) elaborate on the war of attrition model and show that crises can even be welfare-enhancing and hence 'desirable'. A crisis enables an agreement on reform and on the distribution of related costs sooner than otherwise possible. The associated stabilization, then, would leave a country better off in the long-run.

Such models entail two notions of crises that make a meaningful conceptualization for empirical testing complex. Firstly, they do not qualify the extent to which economic conditions need to deteriorate in order to be deemed a crisis and thereby trigger reform. The argument then risks implying that crises must have prevailed when reform occurred. In that sense, the absence of reform could simply mean that the crisis has not yet become 'severe enough', making the argument 'virtually non-falsifiable'

(Rodrik, 1996). What makes the argument non-trivial then is the question why conditions often need to become *very* bad, and not just bad, in order to provoke reform (Drazen, 2000). As Drazen and Easterly (2001) put it: "Why is it "business as usual" until times get really bad?" (p. 131) Interpreting the crisis hypothesis as arguing that reform more likely follows extremely serious situations, rather that only moderately bad ones, then, makes the argument falsifiable (ibid.). This argument lends itself to comparative statements in the sense that 'more severe crises lead to more reform sooner' (as applied in Bruno and Easterly, 1996, Drazen and Easterly, 2001, Alesina *et al.*, 2006). Nevertheless, the absence of a reference point complicates the task of defining precise thresholds for empirical models, beyond which conditions can be considered as sufficiently serious to be indicative of a crisis (see Section 4.1).

Secondly, the models determine crises solely by means of economic variables. An economic deterioration then is thought to correlate somehow with the perceived need for reform. The mere deterioration of economic conditions, however, is not a sufficient condition for extant policies to be perceived as having failed and being in need of change. As Drazen (2000) puts it, "[i]t is not simply the view that the current situation is unacceptable, but that different types of policies must be tried." (p. 446) Reform following crisis is thus not merely a product of economic conditions having become 'bad enough'. Rather, it is the *perception* that change is needed which constitutes a central component for the political mediation of reform (see Harberger, 1993). However, the definition of crises based on economic variables offers no insights into role of perception regarding either the crisis itself or the need of change. As discussed below, making sense of this relationship requires a fuller consideration of the political context as well as the origins of a given crisis (see Section 4.3).

This strand of literature then puts forward reasons why reform is adopted sooner rather than later. Tommasi and Velasco (1996) argue that crises induce a 'sense of urgency' (p. 199). Something needs to be done *now*, as the crisis requires immediate political action. Still, the perceived urgency for reform would apply primarily to stabilization efforts in an economic environment that has experienced significant deterioration within a short period of time, such as exogenous shocks that lead to price instability. A lengthy deterioration of state variables by contrast, which evolved endogenously as a consequence of protracted reform in 'better times', does not 'suddenly' appear. While action might still be required urgently, the perception of the causes and consequences of either reforming or further delaying reform would be subject to different political dynamics (see Section 5). Rodrik (1992, 1996), for example, outlines how policy makers can act as 'agenda setters' in times of macroeconomic instability. According to Rodrik, because high inflation and macroeconomic instability harm the society as a whole, policymakers could take advantage of the high costs of further delaying reform by presenting domestic interests with a package of reform. They initiate reforms that specifically promise a return to stability while tying additional policies to the package. These additional policies may be incidental to the immediate crisis but pass through parliament in the shadow of the initial package.

The political dynamics in delaying or accelerating the adoption of reform are influenced by the uncertainty regarding the post-reform environment. Fernandez and Rodrik (1991) argue that the outcome of reform cannot be known ex ante, as political actors cannot determine who will win or lose out from a specific reform. It is only when economic conditions deteriorate sufficiently that interest groups accept the associated uncertainty (Laban and Sturzenegger, 1994). However, the specific challenges and risks politicians face due to ex ante uncertainty regarding the implications of their actions are substantially different depending on the reform in question (see Brooks and Kurtz, 2007). In other words, the 'sense of urgency' informs reform measures differently. While stabilization efforts in the form of, say, fiscal reform can be implemented rather quickly, far-reaching structural reform might require lengthy political mediation (see Section 4.2). As they might take significant time to design, implement and institutionalize they are not necessarily tied to the same 'level of urgency' throughout the reform process.

As a consequence, the theory of the crisis hypothesis offers little guidance as to how the key concepts for empirical testing – crisis, reform and political mediation – can be operationalized. As the remainder of the paper will discuss, the operationalization of empirical approaches regarding what *constitutes* a crisis proves elusive, in that a crisis creates the necessary social and political perception of the need of a specific reform.

3. Do Crises Beget Reform? Surveying Empirical Evidence

This section reviews relevant empirical evidence on the crisis hypothesis. Table 1 provides an overview of 19 research papers which have specifically focused on the crisis hypothesis and gives informa-

tion on the modelling structure, the country and time period under consideration, the categories of crises and reform under consideration, the specific measures implemented, and the findings derived. The papers have been selected on a "best evidence" basis (Slavin, 1995), by assessing both the papers' quality and their relevance to the research question at hand. Given the extent of the literature on the political economy of reform, the central selection criterion was the explicit elaboration on the crisis hypothesis within the papers' empirical model. The review thus excludes contributions that use crisis variables as mere control instruments. Finally, the papers had to be published in a peer-reviewed journal subsequent to the pioneering contribution of Drazen and Grilli in 1993. [1]

[Include Table 1 about here]

Two strands of empirical literature on the crisis hypothesis have emerged. The first strand (3 out of 19 papers) discusses the war of attrition model by Alesina and Drazen (1991) and its elaboration by Drazen and Grilli (1993). These models do not consider reform measures explicitly but draw conclusions about the occurrence of reform implicitly, following the amelioration of economic variables. The second strand uses regression and estimation models to test the effect of crises on specific types of reform. Both strands will now briefly be introduced.

Bruno and Easterly (1996) were the first to empirically test the Drazen and Grilli model. They compare two groups of developing countries, a group that experienced high inflation and stabilized afterwards and a group that did not experience a high-inflation period. By analyzing the countries' public sector deficit and current account deficit they show that countries in the inflation-and-stabilization group enjoyed lower deficits after they stabilized than countries that did not experience a high-inflation period. They conclude that countries that experienced high inflation and subsequently achieved stabilization appear to have reformed their economic domain, while countries without such 'crisis' did not. They confirm the theoretical results by Drazen and Grilli (1993) and conclude that crises can have a 'welfare-enhancing effect'.

Drazen and Easterly (2001) use a similar methodology to Bruno and Easterly and expand the scope of the analysis. As well as including a given country's inflation rate in their model, they also test the black-market premium, GDP growth, government deficit, and current account balances. They too find supporting evidence for welfare-enhancing effect of crises in the cases of inflation and black market premium, but fail to do so in case of GDP growth, government deficit, or current account balance. However, they find the hypothesis to hold only "at the most extreme values" of inflation and black market premium (both above 1,000 percent), rendering it somewhat irrelevant for the majority of their sample. Alesina, Ardagna, and Trebbi (2006) find support for the war of attrition model in cases of government budget deficits and inflation. They find stabilization more likely to occur in times of serious crises (rather than during periods of relatively moderate economic difficulties), after a new government has just entered office, and in countries with a 'strong' government (either a presidential system or a large ruling party majority) that faces few binding institutional constraints.

The second strand of research (16 out of 19 papers) disentangles the effects of different forms of crisis on reform measures. Table 2 provides an overview of the relationships between categories of crisis and reform identified by each paper. While the relatively small sample size does not lend itself to quantitative-statistical analyses, we opt for qualitative categorical analysis, by which several salient features across the studies in question can be identified.

[Include Table 2 about here]

Across the studies analyzed here, empirical results prove to be inconclusive for a number of the most intensely discussed crisis-reform relationships, such as the link of high inflation to financial reform and economic crises to trade liberalization. The results for inflation and economic crises in general are of particular interest, since much of the theoretical literature employs high inflation as an indicator of crisis. While Abiad and Mody (2005) find the effect of inflation crises to be insignificant, Agnello *et al.* (2015a, 2015b) both find inflation crises to trigger financial reform. While all contributions make use of the same data for indicating financial reform, the thresholds indicating inflation crises differ, with the former utilizing an inflation rate of 50% per annum and the latter a 20% inflation rate. As for economic crises and financial reform, Abiad and Mody (2005) find economic crises (in terms of negative GDP growth) to be insignificant, in contrast to Waelti (2015), Agnello *et al.* (2015b) and Galasso

(2014). These studies employ different measures for economic crises but all make use of the same dataset for reform. However, the relative measures employed by Lora and Olivera (2004) and Tornell (1998) yield significant indicators for reform in 6 of 7 cases (see Section 4.1 for further discussion).

Concerning the varying outcomes of currency and inflation crises (Agnello *et al.*, 2015a, 2015b), the high correlation between the two variables gives cause for concern. The measures in question (both currency and inflation crises) refer to a dataset by Reinhart and Rogoff (2011) which identifies currency crises by means of an exchange rate depreciation of more than 15% per annum and inflation crises by means of a threshold of 20% inflation per annum. As Reinhart and Rogoff note, the correlation between the two variables is high and "currency clashes and inflation crises go hand in hand" (p. 1678). As discussed further below, the differing outcomes between currency and inflation crises might then be indicative of the difficulty to make use of the variables in question appropriately.

The influence of banking and debt crises on financial reform appears to be the only one that enjoys consensus across empirical studies. Four papers investigate this relationship, all of which find a significant relationship between the two. However, three of these papers use the same dataset to indicate financial reform (Abiad and Mody, 2005; Agnello *et al.*, 2015a, 2015b). What is more, the nature of the established relationships is not uniform. While Agnello *et al.* (2015a) find that fiscal pressure and constrained governmental resources trigger, or at least do not inhibit, the occurrence of reform, Hallerberg and Scartascini (2015) find debt and banking crises to be negatively related to financial reforms as "fiscal pressure to find more money quickly restricts the government's ability to initiate fiscal reforms." (p. 71)

Evidence on the effect of government deficit crises, tested in three papers and yielding seven estimates, is uniformly insignificant. This may be indicative of to the "debt intolerance syndrome", defined as the extreme duress emerging economies experience even at debt to GDP ratios which are considered as manageable by the standards of advanced countries (Reinhart and Rogoff, 2010). Subsequently, emerging economies tend to default at comparably low debt to GDP ratios. The insignificant results for government deficit indicates that it does not appear to be the accumulation of debt per se which is significant for reform. Rather, weak institutional structures prevent governments from undertaking structural reforms to maintain market confidence and, with it, manageable interest rates. Only when governments eventually default and provoke a debt or banking crisis does the effect of debt accumulation appear to become relevant for reform. However, there exists no explicit empirical investigation of this phenomenon to our knowledge.

Privatization, labor and product market reforms give rise to contradictory results. Agnello *et al.* (2015b), Galasso (2014), Høj, Galasso, Nicoletti, and Dang (2006) and Campos *et al.* (2010) find the effect of economic crises on labor market reform insignificant, whereas Lora and Olivera (2004) find that a large drop in income per capita facilitates the adoption of labor market reform within the Latin American context. In the case of product market reform, both Agnello *et al.* (2015b), and Galasso (2014) fail to identify any significant crisis measure, while Høj *et al.* (2006) concludes that economic conditions are indeed significant for the adoption of product market reform, but in a positive direction. They seem to occur in times of economic prosperity rather than in times of crisis.

Roberts and Saeed (2012) draw a similar conclusion in the case of privatization. While economic conditions appear to have a limited influence, if any, privatization seems more likely to be fulfilled in prosperous times than to be triggered by crises. Galasso (2014) also finds privatization less likely to occur while a country is experiencing an economic crisis. However, in an analysis of 24 distinct case studies, Campos and Esfahani (1996) find that in some 80% of the cases privatizations were preceded by economic downturns (not necessarily crises). Banerjee and Munger (2004) too find that none of the privatization initiatives they investigate up to 1999 were implemented without having been driven by a serious economic crisis. They find inflation in particular to have a significant effect on timing and intensity of privatization, which they conclude to be much more crisis-driven rather than attributable to long-term economic planning. In a similar vein, Lora and Olivera (2004) find privatization to be triggered by a drop in income per capita.

The remainder of the paper presents a discussion of methodological issues that inform the outcomes and interpretation of empirical testing of the crisis hypothesis. We argue that conceptual compromises relating to the identification of crisis in terms of fixed thresholds as well as the use of indices to operationalize reform contribute to the inconclusive results in the papers reviewed. Moreover, the specific political and institutional setting for reform imposes distinct political challenges for different reform

agendas. This makes a meaningful delineation of factors for political mediation in large cross-country datasets difficult.

4. Methodological Operationalization of the Crisis Hypothesis – Compromises and Limitations

This section discusses conceptual compromises in the operationalization of the crisis hypothesis. These compromises affect the core of the hypothesis, namely the perception of what constitutes crisis, reform and how the associated costs and benefits are perceived within the process of political mediation. The section argues that the way in which crises and reforms are characterized largely determines the operationalization and, consequently, the meaningfulness of results and interpretations.

The difficulties inherent in empirical testing of the hypothesis crisis are neatly illustrated by the debate surrounding the study of Abiad and Mody (2005). Using a dataset comprising of 35 countries from 1973 to 1996, Abiad and Mody investigate which types of crises induce governments to undertake financial sector reform by using an ordered logit regression technique. The types of crises they investigate include balance of payment and banking crises, recessions and high inflation. To indicate financial liberalization, they introduce an index comprising of six parameters, including interest rate controls and operational regulations. Their findings indicate that while balance of payments crises hasten reform, banking crises set liberalization back. However, Huang (2009) challenges the robustness of the Abiad and Mody empirical modelling specification. He incorporates a new explanatory variable, 'institutional quality', into the analysis which he finds to have a significant negative effect on liberalization. Moreover, he introduces a common correlated effect pooled regression approach which allows for the possibility of error dependence across countries and concludes that a number of the findings by Abiad and Mody are not robust to error dependence across time and space. Zandberg, de Haan, and Elhorst (2012) in turn challenge the robustness of Huang's approach. By replicating the analysis with an updated and expanded data base (62 countries from 1975 to 2005), they find the effect of 'institutional quality' to diminish and become statistically insignificant.

4.1 Identification of Crises

Table 3 displays the range of crisis categories and their distribution within the papers under consideration. The overview distinguishes between indication by fixed thresholds or the utilization of raw data. The categories of crises refer to the classification deployed in Table 1 and 2 above. The majority of studies refer to crises classified in terms of financial and fiscal measures (such as inflation, or government debt), or negative GDP growth as an indicator for economic crises (27 out of a total of 34). Only eight measures provide alternative definitions of crisis: two instances each of political and employment crisis, as well as four instances of economic crises, which are indicated by a large output gap (Galasso, 2014; Høj *et al.*, 2006) and by a drop in real income per capita (Lora and Olivera, 2004; Tornell, 1998).

[Include Table 3 about here]

Measuring crises in terms of fixed thresholds of the deterioration of economic variables is a widespread practice in the literature on economic crises in general (see Reinhart and Rogoff, 2011; Scheemaekere *et al.*, 2015). As Table 3 indicates, it has found its way into most empirical examinations of the crisis hypothesis as well. The basic challenge for the indication of crisis by fixed thresholds is to decide what level of deterioration constitutes a 'crisis'.

Identifying crises via fixed thresholds has intuitive appeal as it suggests that crises share common features. However, this assumption only holds if the underlying variables responsible for the crisis were driven by an objective and invariant probability distribution (Scheemaekere *et al.*, 2015). Moreover, measurement by thresholds is prone to be tailored to fit recent crisis episodes and respective discourses (ibid.). As mentioned above, Agnello *et al.* (2015a, 2015b), for instance, follow Reinhart and Rogoff (2011) in defining an inflation crisis episode as a period marked by an inflation rate of more than 20% per year, while Abiad and Mody (2005) refer to a threshold of 50%. There is little guidance to assess which level of inflation would be more correct to identify a crisis than the other. And while robustness checks can address this problem they can do so only to a certain extent. Such distinctions

lack theoretical derivation Scheemaekere *et al.* (2015) and entail the implicit assumption that there exists a point after which a bad situation cannot deteriorate even further in that it would change the political response to the crisis.

As discussed in Section 2, the point at which the deterioration of a state variable is perceived a crisis varies among countries, regions, and times. The interpretation of economic crises in terms of its roots, intensity and possible resolutions is – at least to some extent – in the 'eye of the beholder' and "significantly shaped by the way key political actors interpret and react to these economic challenges" (Pop-Eleches, 2008, p. 1204). As a consequence, any statement that a given set of conditions became 'bad enough' in that they enforce political actors to act on reform is normative, leaving crisis measurement by thresholds exposed to subjectivity and difficult to employ in empirical analyses.

Threshold-based definitions of crises then touch upon a conceptual tenet of the crisis hypothesis by implying a somehow uniform perception across countries of a specific situation that reaches a certain degree of "unacceptableness" within groups of social and political actors. Fixed thresholds, by virtue of focusing on only one 'true' parameter of a crisis, ignore "other key issues such as citizens' perception of and tolerance for economic hardships, which can vary across countries and times" (Corrales, 1998, p. 618). It is the perception within a given political, socioeconomic and cultural context that, initially, determines whether or not a situation is 'sufficiently severe' to warrant the label of crisis and, subsequently, translates this crisis recognition into the perception for the need of reform. Placing the emphasis on perceptions leads to a very different approach to defining a crisis: instead of asking 'when are economic *conditions* bad enough', it might be more expedient to ask 'what determines the *perception* of economic hardship to be severe enough' to cause extant policies to be perceived as having failed and being in need of change.

An alternative to fixed thresholds would be the use relative measures to indicate the change from previous levels of the variable in question. However, of the 19 empirical papers considered in this study, only two use relative measures rather than fixed thresholds to proxy crises (Lora and Olivera, 2004; Tornell, 1998). For Tornell, crises are marked by a sudden deterioration of macroeconomic and political variables and hence refer to a shock-situation rather than a continuous deterioration of state variables. An inflation crisis is marked by an increase of 125% with respect to the previous year for an inflation rate higher than 40% per year. Economic crises occur when the income per capita decreases by more than 18% relative to the previous year. Political crises occur if the alteration of an index that measures political change year on year exceeds a certain threshold. Lora and Olivera indicate economic crises using the gap of real income per capita at the beginning of a current period and its previous maximum level after 1970. While they proxy other types of crises by fixed thresholds, like inflation and government deficit crises, they find the relative measure to be the 'best measure' for crises and to trigger a range of reforms. These findings suggest the application of relative thresholds to be promising for future empirical models.

What is more, an identification of crises which seeks to emphasize varying perceptions of both the crisis itself and the need for reform across countries requires the consideration of regional and temporal idiosyncrasies of a given sample. While such perceptions may vary due to development status and geographical region, they can also differ significantly within individual countries of a given region (Krueger, 1993). Of the extant empirical studies in this area, however, only Campos *et al.*, (2010) explicitly distinguish between regions in its modelling approach. They investigate the effects of both economic and political crises by pooling their data across regions (100 countries from 1960 to 2000, differentiating between developed, African, Asian, Latin American, MENA, and transition countries). Their results display considerable heterogeneity across these regions. They conclude "that the common procedure of pooling across countries in different regions may not be justified" (p.1687), which they find to be particularly relevant for the case of political crises. Other papers distinguish between either "developed" and "developing", or OECD and non-OECD countries. Only three papers take a regional focus by explicitly investigating Latin American countries (Brooks and Kurtz, 2007; Hallerberg and Scartascini, 2015; Lora and Olivera, 2004).

4.2 Indication of Reform

The categorization of Naim (1995) provides a useful framework to assess the range of reform indicators utilized within the empirical studies under consideration here. Naim's classification distinguishes between two "stages" of reform. Stage 1 reforms refer to an amendment of more basic aspects of eco-

nomic regulation, for which the effort to design and implement is comparably low. Such reforms can take the form of trade liberalization, fiscal adjustment and liberalization, or exchange controls. "Stage 2" reforms, in contrast, address significant institutional changes and intervene deeply into existing social structures. They require more institutional resources, a longer implementation period and are likely to create broader and more intense social resistance. Such reforms include, for example, labor or health care reforms (ibid.).

Table 4 displays an overview of the range of reform measures used in the papers under consideration here. The table shows that empirical studies predominantly focus on stage 1 reforms in form of financial or trade reform. Industrial policies do not appear to have been investigated, although such policies are frequently used to tackle economic crises, particularly recessions (OECD, 2012).

[Include Table 4 About Here]

As in the case of crisis measurement, the methodology of reform measurement warrants further scrutiny in order to assess its implication for empirical testing of the crisis hypothesis. The remainder of this section discusses, firstly, the epistemology of reform indices to elucidate their interpretation in empirical modeling. The discussion points, secondly, to the time dimension of a reform process by highlighting the methodological challenge to account for both reform reversals and the correct affiliation of a reform to a specific crisis in the form of periodical averages.

Application of Reform Indices – Assessing What's Measured

Indication and assessment of reform is a difficult exercise. Comparability across countries is particularly challenging since reforms reflect the specific institutional background and legal system of a country (see Acemoglu *et al.*, 2005). In order to enable meaningful cross-country comparison of reform, reform indices found widespread acceptance in literature (see Campos and Horváth, 2012; Wiese, 2014). Indices do not indicate reform directly by their incidence, but comprise a set of predefined indicators on the regulatory environment of a specific policy area. Reforms are approximated by the change of these indicators. For example, financial sector regulations can be depicted by the credit controls a country imposes, the regulation of the banking sector, or the restrictions on capital accounts (see Abiad and Mody, 2005). A score is subsequently assigned to each of the indicators to assess their relative level of regulation or liberalization, so that a change in a score can be interpreted as a policy change.

Despite their usefulness for cross-country comparisons, indices nevertheless tend to impede reliable assessments of reform determinants and processes (Campos and Horváth, 2012). A meta-analysis by Babecký and Campos (2011) illustrates the challenging application of reform indices. By reviewing 46 empirical studies on the impact of structural reforms on economic growth they find the t-values of more than 500 coefficients to follow a normal distribution with mean zero. As one possible explanation they put forward is measurement error within the reform indicators, as "the existing measures are mostly subjective, difficult to replicate and tend not to capture reform reversals." (p.153)

Wiese (2014) addresses this issue and develops a methodology to avoid reliance on indices by distinguishing between *de jure* and *de facto* reform. He uses structural break filters to identify significant shifts in the financing of a specific sector from public to private and validates identified breaks by de jure evidence of reform. This procedure ensures that the identified structural breaks represent *de facto* reform, as they exert a statistically significant influence on economic data *and* are induced by actual policy changes. Only the joint-occurrence of structural breaks in economic data and a legislative action is considered a reform in his analysis. He applies the methodology to the case of health care privatization and finds high unemployment and debt crises to be significant triggers for reform of health care financing.

With the exception of health-care reform within the contribution of Wiese, only the measurement of privatization does not avail of indices (Banerjee and Munger, 2004; Campos and Esfahani, 1996; Galasso, 2014; Lora and Olivera, 2004; Roberts and Saeed, 2012). All other reform measures within the papers reviewed indicate reform in terms of indices and either rely on aggregate measures that assess the general regulatory environment in relation to other countries (for example Abiad and Mody, 2005; Agnello *et al.*, 2015a; Pitlik and Wirth, 2003; Waelti, 2015) or the effective change in a regulative environment (for example Hallerberg and Scartascini, 2015; Tornell, 1998).

The difficulty in applying reform indices for the crisis hypothesis stems from their conceptual underpinning. A reform is characterized by 1) a positive change in the respective index and 2) not being reversed within a given number of years after the initial reform (see, for example, the Financial Liberalization Index by Abiad and Mody or the Economic Freedom of the World index (Gwartney, James; Lawson, Robert; Hall, 2015)). However, this characterization of reform entails three challenges for empirical testing. Firstly, the researcher is required to make a normative statement about the nature and type of reform that is taken into account for by describing reform as “effective for/against liberalization”. Secondly, some indices involve subjective judgement on the basis of observations from actors within a respective economy. Such indication constitutes a measure of perception rather than of actual change, which makes the measurement susceptible to exaggerate the implication of reform. Observers pay close attention to an environmental change when it occurs and might expect the impact of a reform to be greater than that which actually occurs (Kaufmann *et al.* 2011).

Lastly, a conceptual issue inherent in indices concerns the interpretation empirical results. As discussed above, indices do not reflect instances of actual reform, but instead indicate effective change in a regulatory environment according to a set of fixed criteria. That way, the categories in which the criteria of an index are measured form a ‘grid’ that is applied to a certain policy area. As a common challenge of measurement bias, such a grid of categories is implicitly selective as to which reforms it includes. Reforms which reside within a given policy area, but would not directly fall within the specified categories or adhere to pre-set criteria would potentially fall through the grid. This form of measurement bias however does not only restrict the scope of an analysis to those identifiable reform measures. It also risks insufficiently capturing the diversity and complexity of reform initiatives and packages for the specific relationship that is investigated, since reforms are tailored answers to specific economic and political challenges. For instance, the effect of economic crises for reform is mainly tested in terms of product market reform, financial reform, or liberalization (see Table 2). However, a country’s policy response to an economic crisis could potentially include additional measures, such as industrial policies, as an acknowledged measure to relieve crisis effects via government support for specific industries (Mazzucato, 2013; OECD, 2012; Wade, 2010). As industrial policies can be diverse in nature, it is not immediately clear to which extent they would be reflected in indices for economic regulation, such as product market reform or liberalization. They might hence partly ‘fall through the grid’ and subsequently leave a model with an incomplete reflection of the full political “reform answer” to a crisis.

These challenges are not problematic per se for empirical modeling but rather reflect the perspective taken by the researcher. However, they undermine the central component of the hypothesis, namely that *reform* follows crisis. Caution needs to be applied in order to avoid using the term reform interchangeably with specific aspects of economic regulation, such as liberalization or product market reform, as it conflates distinct phenomena.

The Dilemma of Periodical Averages – Accounting for Both Reversals and Correct Attribution of Reform

In order to prevent reform reversals from influencing the outcome of empirical analyses, the use of periodical averages of reform measures has become commonplace (for example Blanco and Grier, 2009; Campos *et al.*, 2010; de Haan *et al.*, 2009; Pitlik and Wirth, 2003). Periodical averages indicate the effective change of an index within a fixed period of time, often a five-year timespan. As the crisis hypothesis requires the consideration of three separate events, periodical averages introduce the methodological difficulty to find the appropriate time window. These events are, firstly, the occurrence of the crisis, secondly, the *de jure* issuing of a specific reform measure, and, lastly, the *de facto* institutional manifestation. Only when successfully implemented and sustained does reform eventually become measurable. There is usually a considerable time lag between each of these events as institutions can be quite rigid (Acemoglu *et al.*, 2005) and as crises do not lend themselves to a designated set of policy proposals. Time is needed to evaluate options, draft proposals and convince political actors and interest groups of the need for change. As Drazen (2009) points out, over time interest groups gather more information about the relative political strengths of their counterparts, forcing weaker groups to make concessions. It is the duration of a crisis that prompts political actors to re-evaluate their position in terms of opposing or accepting reform.

As discussed above, the timespans between the events vary according to the type of reform that is being implemented. Stage 1 reform can be implemented rather quickly, while stage 2 reforms require a lot more institutional resources and hence time. Especially governments with constrained resources are thought to concentrate on stabilization measures that unfold their impact in the short term, while saving more resource intensive reform for better times. Indeed, crises might tend to delay rather than spur structural (stage 2) reform, a pattern that, for example, the OECD observes for structural reform after the 2008 crisis (OECD, 2012, p. 19). Pitlik and Wirth (2003) confirm this relationship empirically by finding a U-shaped relationship between growth crises and economic liberalization in the time dimension. They investigate reform activity contingent on three degrees of "severity" of a crisis and find that most reform efforts are undertaken in times of deep growth crises (recessions), followed by crisis-free periods. They find the least reform activity to be apparent in times of "medium" crisis.

Selecting an appropriate time-span for the construction of periodical averages therefore gives rise to a dilemma. While longer periods increase the likelihood to fully comprehend long-termed structural (stage 2) reforms that might respond to a crisis but require lengthy implementation, they reduce the likelihood that a reform is correctly attributed to a specific crisis event. Moreover, similar to the case of crisis measurement, the probability distribution across countries of which reform occurs at what point in time is not necessarily equal, since the perceptions of what constitutes an appropriate response to crisis varies among factors like available institutional resources, cultural attitudes, contagion effects, the ideology and experience of a government, the development status of the country, or regime type (see next Section). Operationalizing these dependencies in empirical modeling requires reflection on how the political mediation of reform during crisis works.

4.3 Political Mediation of Reform During Crises

As discussed in Section 2, the cause for delay in the adoption of reform can be understood as the conflict over the distribution of the cost of reform among social interest groups, which necessitates deteriorating economic conditions to be resolved. The resolution of such conflict, then, can be interpreted as the political mediation which enables reform (see Lora and Olivera, 2004; Williamson, 1994). A crisis measure that is found to trigger reform in an empirical setup says, by itself, little about the determinants of political mediation. Understanding the causality between crisis and reform thus requires understanding the political mediation between them.

There exists a variety of theoretical explanations that aim at ascertaining which political factors impact the likelihood of reform during economic crises (see Williamson and Haggard (1994) for an encompassing discussion). For example, a country's participation in IMF programs is thought to facilitate the adoption of reform, in particular economic and financial liberalization, as a government can shift the blame for unpopular reform on the IMF (for example Biglaiser and DeRouen, 2011). Also, a government which just entered office is expected to face relatively fewer constraints to initiate reform as it enjoys greater legitimacy than its predecessor (commonly referred to as "honeymoon period"[2], see Williamson and Haggard, 1994; Haggard and Webb, 1994). A higher degree of institutional quality (Acemoglu *et al.*, 2005) and the right-wing partisanship of a government (Pop-Eleches, 2008) are thought to facilitate reform, specifically liberalization as well. On the other hand, a high degree of fractionalization (also referred to as 'fragmentation') of a country's parliament is expected to inhibit the adoption of reform as this makes a coalition rule more likely and increases the difficulty of making compromises (Haggard and Webb, 1994).

Table 5 displays the political parameters employed in the literature that are thought to mediate the reform process during crises. Of the 19 papers reviewed, 14 utilize political variables, mostly for the fractionalization of the parliament, and the time period in which the government in question is in office. Two studies explicitly include a dimension of political crisis in their models (Campos *et al.*, 2010; Tornell, 1998), which both find to have significant influence on the occurrence of reform. Campos and Esfahani (1996) fail to establish a significant relationship between variables for political crisis and privatization due to the difficulty "to identify periods of political downturn" (p. 457). And while the partisanship of the political leadership has received much attention, the background of the political leadership has not been featured in these empirical studies as a potential influencing factor for policy responses. This is notable since the background of political leaders has been found to be a significant factor for, for instance, the level of a country's budget deficit (Hayo & Neumeier, 2016), the willing-

ness to adopt reforms, specifically liberalization (Dreher *et al.,* 2009), and its preferences with regard to monetary policy (Göhlmann & Vaubel, 2007). Investigating whether the background of the political leadership makes reform more or less likely in times of crisis might open up a promising area of research.

[Include Table 5 about here]

The range of theoretical explanations for political mediation make empirical modeling of political mediation for reform during crises complex. The results emanating from the literature under consideration here illustrate this difficulty. The overview displays the inconclusive results arising from some of the most widely used variables, namely IMF involvement, government partisanship, a new government in office, and the fractionalization of a parliament. Some results for IMF involvement, for example, depart from much of the established literature by yielding an insignificant, or only weakly significant relationship between IMF programs and reform (Alesina *et al.*, 2006; Hallerberg and Scartascini, 2015; Lora and Olivera, 2004). Brooks and Kurtz (2007) and Drazen and Easterly (2001) even find the relationship to be inverse, the former finding higher levels of IMF involvement to lead to lower levels of trade liberalization for the case of Latin American countries, the latter finding foreign aid to delay reform.

The remainder of this section scrutinizes the operationalization of political mediation for the crisis hypothesis. The section concludes with a discussion of aspects that facilitate an accurate characterization of political mediation for empirical analysis.

Identifying the Trigger for Reform: Economic Crises or Political Instability?

Economic crises tend to induce political instability which affects a governments' ability to reform. More precisely, they can create political conditions in which resistance to necessary reform by non-cooperative, opportunistic behavior of social and political interest groups eventually delays rather than facilitates the adaptation of reforms (Alesina *et al.*, 2006; Corrales, 1998; Edwards and Steiner, 2000; Hugh-Jones, 2014; Williamson and Haggard, 1994). Sachs (1994) neatly captures this phenomenon: "You cannot think straight in the midst of hyperinflation." (p. 507)

Political instability, then, introduces an intermediate step into the causal connection of crises and reform which requires consideration in empirical modelling. Gasiorowskj (1995) finds the occurrence of economic crises, particularly inflation crises, to trigger democratic breakdown and to facilitate democratic transition, albeit with time-varying effects. In contrast, political instability (rather than outright regime change) has not been found to be influenced by macroeconomic variables, as Blanco and Grier (2009) conclude by examining Latin American countries from 1971 to 2000. Bussiere and Mulder (2000) find political instability to have a strong impact on economic vulnerability, particularly for countries with weak economic fundamentals and low reserves. Economic vulnerability increases in the time during and subsequent to an election, as well as when the outcome of an election produces an unstable government. A similar conclusion is drawn by Gallo, Stegmann, and Steagall (2006) in stating that financial crises are more likely to be induced by political and institutional problems rather than economic ones. Investigating the example of Argentina following the 2001 crisis, they argue that the breakdown of "democratic institutions, government transparency, regulatory oversight or the rule of law [increases] the likelihood that politicians will implement unsustainable economic policies" (p. 193). Political instability thus appears to become more likely when the delay in reaching a consensus on reform aggravates an underlying economic crisis.

Heightened political instability during economic crises might then alter the means by which reform is introduced and sustained in response to crises. In consequence, not reflecting political instability in empirical modeling hampers the delineation of two distinct causal effects, namely whether it is a crisis itself that prompts politicians to implement reform, or whether it is the effect of political instability in the shape of a new government coming to power. Alesina *et al.* (1996), for example, find that a government, which is already unstable and has experienced recent changes, faces an increased likelihood of further governmental change thereafter. When political instability tends to rise during economic crises, then, the likelihood increases of a new government entering office during or shortly after a crisis period. If a measure for crises is therefore found to beget reform it might not be the crisis itself that forces political actors to submit to proposed reforms. Instead, a new reformist government might have

come into power within the same time-period that averages reform without the researcher reflecting it in her/his empirical model.

In such setting, a new government may be viewed as the vehicle, as the form of political mediation under which post-crisis reform occurs. However, not considering governmental change in empirical analysis conflates two distinct arguments when interpreting the underlying causes for reform. In the game-theoretic models introduced in Section 2, reform occurs because interest groups realize that continued inertia will be costlier for them than conceding to bear a disproportionate cost of reform. The cost of inertia rises due to economic deterioration (as for example in Alesina and Drazen, 1991), and/or the fear of political disenfranchisement (as for example in Ranciere and Tornell, 2015), caused by the fear of a possible *future* reshuffling of power among interest groups. However, the honeymoon hypothesis is focused on the idea that power among interest groups has *already* been reshuffled, in that resistance to a new government has been reduced. Moreover, the honeymoon-hypothesis does not necessarily involve deteriorating economic conditions. Thus, not reflecting political instability in empirical analysis hampers the ability of empirical analysis to ascertain the actual underlying cause for reform.

The empirical results of Campos *et al.* (2010) and Tornell (1998) can be interpreted as supporting such conceptual considerations. Campos *et al.* find that political crises can be more powerful than economic ones in realigning political forces and reducing resistance to reform. Their measure for political crisis includes three determinants, firstly, an index of social and political stability by accounting for the number of revolutions and political assassinations, secondly, the regime durability as a measure for the absence of crisis, and thirdly, the degree of political fractionalization. They find political crises to be a more important trigger of structural reforms than economic ones, while the latter ones appear to rather inhibit structural reforms instead of facilitating them. Tornell constructs an index consisting of nine measures of political authority patterns that indicate the degree of autocracy or democracy in a country. He finds the joint occurrence of political *and* economic crises to have a significantly higher probability (60%) to induce reform than the occurrence of economic crises alone (27%).

As in the case of crisis measurement, the establishment of comparable measures for political crisis is challenging, as differing perceptions of acceptable levels of political instability vary among countries, regions, or regime type. A measure of political crisis can be operationalized in many different ways. And indeed, there seems to be no consensus in literature to do so, which might have contributed to the scarce utilization of political crisis measures in the empirical literature on the crisis hypothesis (see Campos and Esfahani, 1996; Campos *et al.*, 2010). Nonetheless, the results of Tornell and Campos *et al.* highlight the importance to make the link between economic crisis and political instability a central component of empirical analysis.

Modelling Political Mediation – Identification of Relevant Parameters

Understanding how best to identify and interpret relevant parameters for political mediation requires an assessment of what political mediation during crises entails. Political mediation is determined by the political risks and uncertainties associated with a reform, which in turn depends on its (perceived) short and long term costs (see Brooks & Kurtz, 2007; Fernandez & Rodrik, 1991). The perception of what reform implies in terms of economic and political costs is then influenced by contextual determinants, such as the national and international economic environment, the type of crisis and reform, regional contagion effects, or the specific qualities of domestic institutions (Brooks & Kurtz, 2007). This context-dependency may lead to political factors, such as government partisanship or the fractionalization of a parliament, to have country-specific effects. These effects vary particularly across the development status of a country and its institutional background and potentially alter the manner in which political mediation for reform is thought to work in crisis-free times (ibid., Pop-Eleches, 2008). Such changing patterns may contribute to explaining the inconclusive results for political variables in Table 5. Setting up empirical modelling for the crisis hypothesis then may benefit from specifically reflecting the institutional, political and economic context of the countries or regions in question.

A widely discussed and contentious political factor is the partisanship of a government, which neatly exemplifies how the broader economic context affects the manner in which political factors influence policy responses during crises. The political partisanship describes the ideological orientation of a government, generally in terms of being left-wing (socialist), right-wing (conservative), or centrist, as within the widely used Database of Political Institutions (Cruz, Keefer, and Scartascini, 2016). Pop-Eleches (2008) argues that policy responses to crises reflect a government's partisan interpretation of a

crisis. The partisan interpretation of a crisis in terms of its roots and possible solutions in turn depends largely on the nature of the crisis and the broader regional and international environment. Pop-Eleches finds that "certain types of crises, such as liquidity shortfalls, elicit similar [policy] responses across the ideological spectrum and regional contexts", while others, such as debt crises, have a regional dependency and are "more prone to divergent ideological interpretations." (p. 1179)

The influence of the partisanship of the government, then, becomes a contentious determinant of reform. Under 'normal' circumstances and in a 'crisis-free' economic environment, right-wing parties are found to be more prone to adopt policy in favor of liberalization (at least in a non-fractionalized setting) (Brooks and Kurtz, 2007), and privatization (Banerjee and Munger, 2004; Roberts and Saeed, 2012). Left-wing parties are thought to be more likely to adopt unconventional alternatives to liberalization measures, as they have deeper connections to organized labor which makes them more susceptible to short-term economic backlashes. During crises, however, Galasso (2014) finds political responses to depart from the established positions political groups take in 'crisis-free' times. While he finds left-wing parties to privatize more (as they might learn about the true cost of non-competitive regulation only during crisis and have more credibility to sell it to the electorate), right-wing parties in a more fractionalized setting are found to promote financial market regulation instead of liberalization (in an attempt to avoid being blamed as ultra-liberal and to suffer electoral backlashes). That way, the inclusion of a variable representing government partisanship in a large cross-country dataset might introduce causal heterogeneity due to the dependence on the regional context (see Pop-Eleches, 2008). In turn, as the manner in which government partisanship influences post-crisis reform can vary across regions, the investigation of a specific regional context, either singular or in a comparative approach, facilitates empirical analysis to elicit the underlying determinants for political mediation.

A further determinant influencing political mediation is the time-dynamic of environmental influences, such as contagion effects and the support of a specific school of policy ideals. The most prominent school of thought in this regard might have been the Washington-Consensus, whose policy recommendations over time influenced the acceptance of economic liberalization among political and social actors in developing countries (Rodrik, 2006). In Latin America, for example, the 1980s debt crisis has been regarded as a 'watershed' in the support and adoption of economic liberalization over protectionist policy (for example Edwards, 1995). Seen in this light, the measurement of liberalization efforts in Latin America prior that timeframe can be regarded as somewhat irrelevant. Hence, the time-span within which a given region is analyzed requires careful consideration in order to account for time-dynamic effects relevant to specific policy developments.

5. Concluding Remarks and Vistas of Future Research

This paper argues that well-crafted empirical analysis of the crisis hypothesis can enhance our understanding how economic crises influence political dynamics in bringing about reform. Although the hypothesis has reached a status of "conventional wisdom" in the eyes of many (Tommasi and Velasco, 1996, p. 197), the underlying mechanism that links crisis and reform still remains to be fully understood. We emphasize the role of social perceptions of both crises and the costs of subsequent reform in determining how political mediation of reform during crises hinders or promotes the adoption of reform. Such social perceptions consequently require reflection in the operationalization of the key concepts of the hypothesis, namely crisis, reform and the political mediation of reform during crisis.

In scrutinizing the operationalization of the hypothesis, we argue that it is most notably the identification of crises by fixed thresholds that undermines a central conceptual element of the hypothesis: social perception. It is the perception of the need of policy change among social interest groups that triggers reform, not merely the incidence of crisis (see Harberger, 1993). Fixed thresholds imply that there is a point after which a bad situation cannot deteriorate further in that it changes the political response that follows. However, this assumption is difficult to justify in heterogeneous cross-country datasets, as perceptions of what constitutes a crisis may be conditional on a given nation's institutional and cultural background. What is more, constructing indicators of reform based on periodical averages, which indicate the effective change of an index on reform within a fixed period of time, introduces a dilemma in terms of accounting for both reform reversals and the attribution of reforms to a specific crisis. Finally, taking into account the political factors that characterize prevalent political instability and political mediation would allow for the identification of the underlying causes of reform in response to crises. Political mediation of reform is moreover influenced by the broader economic and institutional

context. As discussed above via the example of governmental partisanship, such contextual determinants potentially alter the manner in which political mediation for reform is thought to work in crisis-free times.

The survey of empirical evidence presented in this paper supports the findings of recent literature that the type of crisis has a distinct impact on the type of reform that follows (Hallerberg and Scartascini, 2015; Waelti, 2015; Wiese, 2014). In particular, banking and debt crises appear to trigger the incidence of financial reform, while government deficit crises do not. Our analysis finds the empirical evidence for many of the most widely discussed crisis-reform links (such as inflation crises to financial reform) to be inconclusive and, therefore, to be weak in terms of predictive power.

In the light of the discussion in this paper, the question of whether and how crises induce reform appears to offer a range of promising vistas for future research. The 2008 financial crisis vividly illustrates both its contemporary relevance and the challenges that lie ahead in fully characterizing the mechanism that links crisis and reform. For example, industrial policies as a means to alleviate economic crises, particularly recessions, have received increased attention in recent years (see Aggarwal and Evenett, 2012; OECD, 2012; Rodrik, 2004; Wade, 2010). However, whether or not crises effectively spur industrial policies remains to be empirically investigated.

Moreover, the theoretical make-up of the crisis hypothesis has proven difficult to apply in the 2008 crisis context. Drazen (2009) argues that the interest groups involved in financial market lobbying might not have become weaker during the 2008 crisis, but stronger. Their expert knowledge of how to resolve the crisis would have been indispensable for policy makers to draft policy responses, which secured and strengthened their political influence. This consideration, however, runs counter to the theoretical models that underpin the hypothesis. These models, such as the war of attrition model by Alesina and Drazen, assume that the influence of interest groups opposing reform prior to a crisis, as the financial lobby did in the United States (see Roubini and Mihm, 2011), need to be weakened in order to enable reform. Further empirical and conceptual work might usefully seek to reconcile theory and observations in the aftermath of the 2008 crisis (see Drazen, 2009).

The crisis hypothesis' central tenet is based on extensive discussion of past crises-waves, particularly the Latin American debt-crises of the 1980s and early 90s (for example Edwards and Steiner, 2000; Edwards, 1995; Lora, 2001; Nelson, 1990; Teichman, 1997; Williamson, 1994). In the light of the valuable insights these contributions have provided, we advocate that future empirical analyses further develop this contextual approach based on exploring the experiences of specific world-regions. In particular, the application of the hypothesis within comparative regional approaches (see Basedau and Köllner, 2007) appears to be well suited to analyzing the crisis hypothesis. Comparative approaches facilitate a more detailed consideration of the political and institutional setting in the specific cultural, regional, and temporal context of the countries/regions in question (see Pop-Eleches, 2008). That way, they enable a more appropriate identification of crises and reform that take into account social perceptions of both economic hardship and the cost of reform. Moreover, in order to address the complexity of the political mediation of reform during crisis, qualitative or mixed method approaches, as well as case study approaches (Starr, 2014), might prove valuable in assessing the relative importance of determinants of political mediation and the role of social interest groups.

Notes

References

Abiad, A., Detragiache, E., & Tressel, T. 2008. A New Database of Financial Reforms. *IMF Staff Papers*, vol. 266. no. 266. https://doi.org/10.1057/imfsp.2009.23.

Abiad, A., & Mody, A. 2005. Financial reform: What shakes it? What shapes it? *American Economic Review*, 95(1): 66–88.

Acemoglu, D., Johnson, S., & Robinson, J. A. 2005. Institutions as a Fundamental Cause of Long-Run Growth. In P. Aghion & S. N. Durlauf (Eds.), *Handbook of Economic Growth* (1A ed.): 385–472. Amsterdam: Elsevier B.V.

Aggarwal, V. K., & Evenett, S. J. 2012. Industrial policy choice during the crisis era. *Oxford Review of Economic Policy*, 28(2): 261–283.

Agnello, L., Castro, V., Jalles, J. T., & Sousa, R. M. 2015a. Do debt crises boost financial reforms? *Applied Economics Letters*, 22(5): 356–360.

Agnello, L., Castro, V., Jalles, J. T., & Sousa, R. M. 2015b. What determines the likelihood of structural reforms? *European Journal of Political Economy*, 37: 129–145.

Alesina, A., Ardagna, S., & Trebbi, F. 2006. Who Adjusts and When? The Political Economy of Reforms. *IMF Staff Papers*, 53(2000): 1–29.

Alesina, A., & Drazen, A. 1991. Why Are Stabilizations Delayed? *American Economic Review*, 81(5): 1170–1188.

Alesina, A., Ozler, S., Roubini, N., & Swagel, P. 1996. Political Instability and Economic Growth. *Journal of Economic Growth*, 1: 189–211.

Babecký, J., & Campos, N. F. 2011. Does reform work? An econometric survey of the reform-growth puzzle. *Journal of Comparative Economics*, 39(2): 140–158.

Banerjee, S. G., & Munger, M. C. 2004. Move to markets? An empirical analysis of privatization in developing countries. *Journal of International Development*, 16(2): 213–240.

Basedau, M., & Köllner, P. 2007. Area Studies and Comparative Area Studies: A Primer on Recent Debates and Methodological Challenges. *Japan Aktuell*, (2): 3–34.

Biglaiser, G., & DeRouen, K. 2011. How soon is now? The effects of the IMF on economic reforms in Latin America. *Review of International Organizations*, 6(2): 189–213.

Blanco, L., & Grier, R. 2009. Long Live Democracy: The Determinants of Political Instability in Latin America. *Journal of Development Studies*, 45(1): 76–95.

Brooks, S. M., & Kurtz, M. J. 2007. Capital, trade, and the political economies of reform. *American Journal of Political Science*, 51(4): 703–720.

Bruno, M., & Easterly, W. 1996. Inflation's Children: Tales of Crises that Beget Reforms. *American Economic Review*, 86(2): 213–217.

Bussiere, M., & Mulder, C. 2000. Political Instability and Economic Vulnerability. *International Journal of Finance and Economics*, 5: 309–330.

Campos, J. E., & Esfahani, H. S. 1996. Why and when do governments initiate public enterprise reform? *World Bank Economic Review*, 10(3): 451–485.

Campos, N. F., & Horváth, R. 2012. Reform redux: Measurement, determinants and growth implications. *European Journal of Political Economy*, 28(2): 227–237.

Campos, N. F., Hsiao, C., & Nugent, J. B. 2010. Crises, What Crises? New Evidence on the Relative Roles of Political and Economic Crises in Begetting Reforms. *Journal of Development Studies*, 46(10): 1670–1691.

Corrales, J. 1998. Do Economic Crises Contribute to Economic Reform ? Argentina and Venezuela in the 1990s. *Political Science Quarterly*, 112(4): 617–644.

Cruz, C., Keefer, P., & Scartascini, C. 2016. *Database of Political Institutions Codebook, 2015 Update (DPI2015)*.

de Haan, J., Sturm, J. E., & Zandberg, E. 2009. The impact of financial and economic crises on economic freedom. In J. Gwartney, R. Lawson, & J. Hall (Eds.), *Economic Freedom of the World: 2009 Annual Report*: pp.25-36. Economic Freedom Network.

Drazen, A. 2000. *Political Economy of Macroeconomics*. Princeton: Princeton University Press.

Drazen, A. 2009. Financial market crisis, financial market reform: Why hasn't reform followed crisis. *DG ECFIN Sixth Annual Research Conference*. Brussels.

Drazen, A., & Easterly, W. 2001. Do Crises Induce Reform? Simple Empirical Tests of Conventional Wisdom. *Economics and Politics*, 13(2): 129–157.

Drazen, A., & Grilli, V. 1993. The Benefit of Crises for Economic Reforms. *American Economic Review*, 83(3): 598–607.

Dreher, A., Lamla, M. J., Lein, S. M., & Somogyi, F. 2009. The impact of political leaders' profession and educa-

tion on reforms. *Journal of Comparative Economics*, 37(1): 169–193.
Edwards, S. 1995. *Crisis and Reform in Latin America: From Despair to Hope*. Oxford: Oxford University Press and World Bank.
Edwards, S., & Steiner, R. 2000. On the Crisis Hypothesis of Economic Reform: Colombia 1989-91. *Cuadernos de Economia*, 37(112): 445–493.
Fernandez, R., & Rodrik, D. 1991. Resistance to Reform: Stats Quo Bias in the Presence of Individual Specific Uncertainty. *American Economic Review*, 81(5): 1146–1155.
Galasso, V. 2014. The role of political partisanship during economic crises. *Public Choice*, 158(1–2): 143–165.
Gallo, A., Stegmann, J. P., & Steagall, J. W. 2006. The Role of Political Institutions in the Resolution of Economic Crises: The Case of Argentina 2001–05. *Oxford Development Studies*, 34(2): 193–217.
Gasiorowskj, M. J. 1995. Economic Crisis and Political Regime Change : An Event History Analysis. *The American Political Science Review*, 89(4): 882–897.
Göhlmann, S., & Vaubel, R. 2007. The educational and occupational background of central bankers and its effect on inflation: An empirical analysis. *European Economic Review*, 51(4): 925–941.
Gourevitch, P. 1986. *Politics in Hard Times: Comparative Responses to International Economic Crises*. New York: Cornell University Press. https://doi.org/10.1111/b.9781444331899.2011.00023.x.
Gwartney, James; Lawson, Robert; Hall, J. 2015. Economic Freedom of the World: 2015 Annual Report. *Economic Freedom of the World: 2015 Annual Report*, vol. 83. Fraser Institute. www.fraserinstitute.org.
Haggard, S., & Webb, S. B. 1994. Voting for reform - Democracy, Political Liberalization and Economic Adjustment. *AHIP Coverage*, vol. 46. Washington: World Bank.
Hallerberg, M., & Scartascini, C. 2015. When Do Governments Improve Fiscal Institutions? Lessons from Financial Crisis and Fiscal Reform in Latin America. *Economica*, 16(1): 41–76.
Harberger, A. C. 1993. The Search for Relevance in Economics. *American Economic Review Papers and Proceedings*, 83: 1–17.
Hayo, B., & Neumeier, F. 2016. Political Leaders' Socioeconomic Background and Public Budget Deficits: Evidence from OECD Countries. *Economics & Politics*, 28(1): 55–78.
Høj, J., Galasso, V., Nicoletti, G., & Dang, T.-T. 2006. An Empirical Investigation of Political Economy Factors Behind Structural Reforms in OECD Countries. *OECD Economic Studies*, (42).
Huang, Y. 2009. The Political Economy of Financial Reform: Are Abiad and Mody right? *Journal of Applied Econometrics*, 24: 1207–1213.
Hugh-Jones, D. 2014. Why do crises go to waste? Fiscal austerity and public service reform. *Public Choice*, 158(1–2): 209–220.
Kaufmann, D., Kraay, A., & Mastruzzi, M. 2011. The Worldwide Governance Indicators: Methodology and Analytical Issues. *Hague Journal on the Rule of Law*, 3(2): 220–246.
Krueger, A. O. 1993. *Political economy of policy reform in developing countries*. Camebridge, Massachusetts: MIT Press.
Laban, R., & Sturzenegger, F. 1994. Distributional Conflict, Financial Adaptation and Delayed Stabilization. *Economics and Politics*, 6(3): 257–276.
Lora, E. 2001. Structural Reforms in Latin America : What Has Been Reformed and How to Measure it. *Inter-American Development Bank*. no. 4074. https://doi.org/10.2139/ssrn.909562.
Lora, E. A., & Olivera, M. 2004. What Makes Reforms Likely : Political Economy Determinants of Reforms in Latin America. *Journal of Applied Economics*, VII(I): 99–135.
Mazzucato, M. 2013. *The Entrepreneurial State: debunking public vs. private sector myths*. London: Anthem Press.
Naim, M. 1995. The Second Stage of Reform. In L. W. Goodman, J. M. Forman, M. Naim, & J. S. Tulchin (Eds.), *Lessons of the Venezuela Experience*. Washington, DC: Woodrow Wilson Center Press.
Nelson, J. 1990. *Economic Crisis and Policy Choice*. Princeton, NJ: Princeton University Press.
OECD. 2012. Structural reforms in times of crisis. *Economic Policy Reforms 2012: Going for Growth*: 17–50. Paris: OECD Publishing.
Olson, M. 1982. *The Rise and Decline of Nations: Economic Growth, Stagflation and Social Rigidities*. New Haven, CT: Yale University Press.
Pinea, J. 1994. Chile. In J. Williamson (Ed.), *The Political Economy of Policy Reform*. Washington, DC: Institute for International Economics.
Pitlik, H., & Wirth, S. 2003. Do crises promote the extent of economic liberalization?: An empirical test. *European Journal of Political Economy*, 19(3): 565–581.
Pop-Eleches, G. 2008. Crisis in the Eye of the Beholder. *Comparative Political Studies*, 41(9): 1179–1211.
Ranciere, R., & Tornell, A. 2015. Why Do Reforms Occur in Crises Times ? *Working Paper*. http://www.romain-

ranciere.com/.
Reinhart, C. M., & Rogoff, K. S. 2010. *This time is different - Eight centuries of financial folly*. Princeton, NJ: Princeton University Press.
Reinhart, C. M., & Rogoff, K. S. 2011. From Financial Crash to Debt Crisis. *American Economic Review*, 101(9): 1676–1706.
Roberts, B. M., & Saeed, M. A. 2012. Privatizations around the world: Economic or political determinants? *Economics and Politics*, 24(1): 47–71.
Rodrik, D. 1992. The rush to free trade in the developing world: Why so late? Why now? Will it last? *National Bureau of Economic Research*, (3947): No. w3947.
Rodrik, D. 1996. Understanding Economic Policy Reform. *Journal of Economic Literature*, 34(1): 9–41.
Rodrik, D. 2004. Industrial Policy for the Twenty-First Century. *Centre for Economic Policy Research Discussion Papers*. http://papers.ssrn.com/abstract=666808%5Cnpapers3://publication/uuid/98A89D83-095E-4B8F-A25F-60A883EFCC1E.
Rodrik, D. 2006. Goodbye Washington Consensus, Hello Washington Confusion? *Journal of Economic Literature*, XLIV(December): 1–29.
Roubini, N., & Mihm, S. 2011. *Crisis Economics - A crash course in the future of finance*. New York: Penguin Books.
Sachs, J. 1994. Life in the Economic Emergency Room. In J. Williamson (Ed.), *The Political Economy of Policy Reform*: 501–524. Washington, DC: Institute for International Economics.
Scheemaekere, X. De, Oosterlinck, K., & Szafarz, A. 2015. Identifying economic crises: insights from history. *Financial History Review*, forthcomin(May 2015): 1–18.
Slavin, R. E. 1995. Best evidence synthesis: An intelligent alternative to meta-analysis. *Journal of Clinical Epidemiology*, 48(1): 9–18.
Starr, M. A. 2014. Qualitative and mixed-methods research in economics: Surprising growth, promising future. *Journal of Economic Surveys*, 28(2): 238–264.
Teichman, J. 1997. Mexico and Argentina: Economic reform and technocratic decision making. *Studies in Comparative International Development*, 32(1): 31–55.
Tommasi, M., & Velasco, A. 1996. Where Are We in the Political Economy of Reform? *The Journal of Policy Reform*, 1: 187–238.
Tornell, A. 1998. Reform From Within. *National Bureau of Economic Research Working Paper Series*. no. 6497. http://www.nber.org/papers/w6497.
Velasco, A. 1999. A Model of Endogenous Fiscal Deficits and Delayed Fiscal Reforms. *Fiscal Institutions and Fiscal Performance*, No. 6336(January): 37–58.
Wade, R. 2010. After the Crisis: Industrial Policy and the Developmental State in Low-Income Countries. *Global Policy*, 1(2): 150–161.
Waelti, S. 2015. Financial crisis begets financial reform? The origin of the crisis matters. *European Journal of Political Economy*, 40: 1–15.
Wiese, R. 2014. What triggers reforms in OECD countries? Improved reform measurement and evidence from the healthcare sector. *European Journal of Political Economy*, 34: 332–352.
Williamson, J. 1994. *The Political Economy of Policy Reform*. Washington, DC: Institute for International Economics.
Williamson, J., & Haggard, S. 1994. The political conditions for economic reform. In J. Williamson (Ed.), *The political economy of policy reform*: 525–569. Washington, DC: Institute for International Economics.
Zandberg, E., de Haan, J., & Elhorst, J. P. 2012. The Political Economy of Financial Reform: How Robust are Huang's Findings? *Journal of Applied Econometrics*, 27: 695–699.

Table 1: Summary of relevant studies on the crisis hypothesis

Country Focus and Time Period	Model Focus	Independent Variable / Crises: Type	Independent Variable / Crises: Method	Dependent Variable / Reform: Type	Dependent Variable / Reform: Method	Findings
Abiad and Mody (2005): Financial Reform: What Shakes it? What Shapes it?						
Developed and Developing Countries (35) from 1973 - 1996	Relationship of financial reform and different types of crises	Balance of Payment / Debt	One of two conditions to be met: 1) a forced change in parity, abandonment of a pegged exchange rate, or an international rescue, and 2) an index of exchange market pressure exceeds a critical threshold of one and a half standard deviations above its mean	Financial Reform	Aggregate index on: 1) Directed credit/reserve requirements, 2) Interest rate controls, 3) Entry barriers and/or lack of pro-competition policies, 4) restrictive operational regulations, 5) degree of privatization in the financial sector, and 6) controls on international financial transactions	Balance of payment / debt crises positive and significant for financial liberalization Banking crises negatively significant for liberalization and hence lead to tightening of financial regulations Growth and inflation crises found insignificant Other influences: reforms promoted by a decline in US interest rates, by participation in IMF programs (pronounced mainly in countries with highly repressed financial sectors) and by openness to trade (where initial level of liberalization was low)
		Banking	Crisis for "period of financial distress resulting in the erosion of most or all of aggregate banking system capital." (p.85)			
		Economic	Negative GDP growth			
		Inflation	Inflation > 50% per year			
		Political Variables	1) Government partisanship, 2) Government structure (presidential or parliamentary)			
		External Influences	1) US Interest rates, 2) IMF involvement, 3) Openness to trade			
Agnello *et al.* (2015a): Do debt crises boost financial reforms?						
OECD and Non-OECD countries (no number) from 1980 - 2005	Role of different forms of financial crises for various aspects of financial reform	Debt	Differentiation between external and domestic debt crises, indicated by default on, repudiation or restructuring of debt. Dummy indicating the beginning of the crisis (based on Reinhart and Rogoff 2011)	Financial Reform	Dummy Variable based on financial liberalization index by Abiad *et al.* (2008), 1 = if yearly change of index > 0.05, 0 otherwise	Debt crises positive and significant for financial reform (sensitivity analysis only for external debt significant), as well as currency, inflation (no differentiation between 'inflation crisis' and 'hyperinflation episode'), and banking crises, with no difference between OECD and non-OECD countries Typology of crises appears to be insignificant for the occurrence of reform. Economic deterioration makes financial reform more likely in general. IMF stabilization programs, the quality of institutions and sovereign debt restructurings facilitate the implementation of financial reforms.
		Currency	Exchange rate depreciation > 15% per annum (based on Reinhart and Rogoff 2011)			
		Inflation	> 20% per annum, Hyperinflation if inflation rate > 500% per annum (based on Reinhart and Rogoff 2011)			
		Banking	Qualitative indication by occurrence of either of two points: 1) bank runs that lead to the closure, merging, or takeover by the public sector of one or more financial institutions; or 2) if there are no runs, the closure merging, takeover, or large-scale government assistance of an important financial institution (or			

			group of institutions) that marks the start of a string of similar outcomes for other financial institutions (based on Reinhart and Rogoff 2011)			
		Political Variables	Institutional quality			
		External Influences	1) IMF involvement, 2) 'ParisClub' (Debt rescheduling program)			
Agnello *et al.* (2015b): What determines the likelihood of structural reforms?						
Advanced, developing and emerging (55-60) from 1980 - 2005	Regression of several types of crises on reform indicators	Economic Debt Currency Inflation Banking Political Variables	Negative real GDP growth rate All other definitions as in Agnello *et al.* (2015a) and based on Reinhart and Rogoff (2011) See Reinhart and Rogoff (2011) See Reinhart and Rogoff (2011) See Reinhart and Rogoff (2011) Indication of 'distributional conflict' by using 1) Gini-coefficient and 2) total fractionalization index	Financial Reform Trade Reform Labor Market Reform Product Market Reform	Indicators on: Domestic finance liberalization, banking liberalization, international capital flow liberalization, external capital account liberalization (see Abiad *et al.* 2008) Index on average tariff rates, normalized between 0 (tariff rates of 60% or higher) and 1 (no tariff rates) Weighted average of: Centralized collective bargaining, conscription, cost of hiring, hiring regulations, mandated cost of worker dismissal, minimum wage Index for degree of flexibility of agriculture, electricity and telecommunications. Additionally, for OECD countries data of regulatory reform in industries: 1) Electricity, 2) gas supply, 3) Road fright, 4) air passenger transport, 5) rail transport, 6) post, 7) telecommunications	External debt crises main trigger of financial, banking and trade reforms Inflation and banking crises significant for external capital account reform Banking crises induce financial reforms (aggregate index) Economic recessions trigger financial, banking and trade reforms, especially in OECD countries No other significance found for labor market and product market reform. Only growth crises found significant for trade reform Political variables: only Gini-coefficient marginally significant for the likelihood of financial reforms
Alesina *et al.* (2006): Who Adjusts and When? The Political Economy of Reform						
Developing and developed countries ('large sample') from 1960 - 2003	Examination of the war of attrition model to indicate when and why stabilization occurs by regressing indicators of political systems on crisis indicators	Political Variables	Index on: 1) executive constraints (from 1 to 7), 2) years left in current term for executive. Dummy variables on: 3) Executive elections in a given year, 4) leftist party in power, 5) legislative elections in a given year, 6) direct presidential system, 7) electoral rule in lower house proportional, 8) party of executive holds absolute majority of legislative	Government Deficit Crisis Inflation Crisis	Government budget deficit as a share of GDP above the 75th percentile, = 4.75% Inflation above the 75th percentile, = 14.05%	War of attrition model consistent with the crisis hypothesis, as it appears to be easier to stabilize more decisively in times of crises than in times of more 'moderate' economic problems Stabilization after crises more likely under "strong" government, especially presidential systems, systems with fewer veto rights of institutions, in periods of a unified government (same party holding executive and legislature), with ruling parties having a large majority and after just having entered office (honeymoon pe-

							riod). External inducements of IMF have at best a moderate effect Results are similar for both crises modelled
Banerjee and Munger (2004): Move to markets? An empirical analysis of privatization in developing countries							
Low- and middle-income developing countries (35) from 1982 - 1999	Privatization indicated by three related, but distinct variables: (i) timing; (ii) pace; and (iii) intensity of privatization. Regressed on various political, economic and institutional factors	Government Deficit Inflation Economic External Influences Political Variables	Budget balance as a percentage of Gross Domestic Product (excluding grants) Annual inflation rate Annual growth rate 1) Foreign aid in percent of Gross National Investment, 2) Size of the public sector to GDP, 3) Size of public sector in the year of first privatization, 4) Stock market capitalization to GDP 1) Government years in office, 2) Right-wing executive, 3) Fractionalization 4) Democracy, 5) Institutional quality	Privatization	Based on three indicators: 1) Timing: 0 for the years of no privatization and 1 for the year of first privatization and thereafter; 2) Pace: Annual frequency of privatization transactions; 3) Intensity: Annual value of privatization proceeds		Privatization rather crisis driven than subject to long-term planning. No privatization found to be implemented without a preceding serious economic crisis Inflation significant for timing and intensity GDP growth significant only for timing Government deficit not significant Institutional quality significant, but not uniform. Countries with poor institutions privatize sooner, superior institutions lead to higher pace and intensity Fractionalization delays privatization, right-wing governments privatize more, democratic societies privatize sooner but delay implementation, government years in office insignificant
Brooks and Kurtz (2007): Capital, Trade, and the Political Economies of Reform							
Latin American countries (19) from 1985 - 1999	Influence of differing political contexts, particularly governmental partisanship, for liberalization during crisis	Economic Inflation Political Variables External Influences	Real per capita GDP growth rate Natural logarithm of inflation (only tested for trade reform) 1) Government partisanship, 2) Fractionalization 1) Fiscal deficits, 2) current account balance, 3) external debt to GDP, 4) aggregate size of economy (natural log of GDP in 2000 USD), 5) level of development (GDP per capita in 2000 USD), 6) IMF involvement	Trade Reform Financial Reform	See Lora and Olivera (2004), composite measure based on average tariff level and tariff dispersion Composite measure for capital account liberalization, based on 1) use of multiple exchange rates, 2) restriction on current and capital account, 3) compulsory turnover of export receipts		Recessions do not trigger both trade and cap. acc. liberalization. They rather occur during trade surpluses than in response to deficits Right-wing executives no more likely to liberalize trade than leftist executives in fragmented legislative settings; the lower the fragmentation though, right-wing executives liberalize, leftist executives rather do not. Fractionalization impels reform unconditional of governmental partisanship The higher the involvement of IMF, the lower the level of subsequent trade liberalization, while having no influence on cap. acc. liberalization. Lager economies have lower levels of trade and cap. acc. liberalization, while lower debt ratios are associated with higher cap. acc. openness
Bruno and Easterly (1996): Inflations Children: Tales of Crises that Beget Reform							
Developing countries (55) from 1960 - 1994	Testing war of attrition model by comparing macroeconomic	Inflation	Comparing inflation levels with lagged inflation levels in two groups of countries (high-inflation-and-stabilization and no-inflation)	Debt Crisis Current Account Crisis	Public sector deficit to GDP Current account deficits to GDP		Developing countries in the inflation-and-stabilization group had lower current account and public sector deficits after crisis compared to countries that did not experience high inflation.

	variables in inflation-and-stabilization countries and no-inflation countries pre- and post-crisis					Hence, countries that experienced high inflation appear to have reformed, others did not Confirmation of the results by Drazen and Grilli (1993) in concluding that crises can have a welfare-enhancing effect, at least at high levels of inflation (>1000%)
Campos and Esfahani (1996): When and why do governments initiate public enterprise reform?						
Developing countries (24) from 1972 - 1993	Relationship of privatization efforts and economic downturn by leveraging estimation models and 24 distinct case studies of developing countries	Economic Political	Negative GDP per capita growth Experimentation with "a few indicators", but none of them regarded in model	Privatization	Public enterprise reform indicated by "a proclamation of new policies and guidelines to enhance market incentives for public enterprises, followed by an initiation of some of the proposed policy changes (for example, changes in prices, regulation, layoffs, divestiture, and opening of public enterprise markets)." (p.463) Proclamation and preliminary action needed to be done during the downturn plus one year in order to be regarded	Economic downturns found to create conditions that facilitate the introduction of public enterprise reforms. In 80% of the case studies privatization was preceded by economic downturns Inconclusive results for political crises, no relationship could be found and hence the crisis hypothesis for political crises could not be confirmed, nor falsified
Campos *et al.* (2010): Crises, What Crises? New Evidence on the Relative Roles of Political and Economic Crises in Begetting Reforms						
Developed, developing and transition countries (100, differentiation in Developed, Africa, Asia, LAC, MENA and Transition) from 1960 - 2000	Relationship of economic to political crisis by regressing economic and political crises parameters on measures of labor and trade liberalization	Economic Political	Modelled by three indicators: 1) largest single year fall in GDP in % in 5-y period, 2) number of years of currency crisis in 5-y period and 3) current account balance Political factors modelled by three indicators: 1) Index of social and political instability, indicated by number of revolutions and political assassinations during 5-year period, 2) Regime durability in years as a measure for absence of crisis and 3) political fractionalization	Labor Market Reform Trade Reform	Different indices for different regions, as no coherent single series exist. General emphasis on labor laws, extended by measures of labor market regulations and rigidities Different indices for different regions. Index mainly reliant on information about Export Marketing Boards and Black Market Premiums	Economic crises either weakly significant or insignificant for structural reform; more frequently their influence is even found to inhibit rather than trigger reform Political crises strongly significant with positive effect in case of trade reforms, and frequently negative and significant for labor market reforms. Political crises as well as political institutions appear to be more important trigger of reforms than economic ones, especially for trade reform
Drazen and Easterly (2001): Do Crises Induce Reform? Simple Empirical Tests of Conventional Wisdom						
Developed and developing countries (84-169) model-dependent from 1952/1970 - 1996	Testing of the war of attrition model by examining the relationship of macroeconomic variables and its lagged values at t+5	Inflation	Two models: 1) Splitting observations into percentiles across countries at t-5 and considering median inflation in each percentile at t. Specifically concentrating on the 90th percentile and above. 2) Organizing data in small number of groups of inflation periods to trace inflation in subsequent years (40-100%, 100-1000% and 1000% +)			Results support the crisis hypothesis in case of inflation and black market premium. Median inflation in countries within the highest percentiles at t-5 is significantly lower at t compared to countries that only experienced moderate inflation at t-5. However, the hypothesis holds almost only at extreme levels of crisis, rendering it somehow irrelevant for the majority of the sample

		Black Market Premium	See Inflation, modelled in both ways			Little to no support for hypothesis in case of GDP growth, no support for current account deficit and budget deficit Foreign aid appears to delay reform
		GDP Growth	See inflation			
		Government Deficit	Public sector balance over GDP; See Inflation			
		Current Account Balance	See inflation			
		External Influences	Foreign aid			
Galasso (2014): The Role of Partisanship During Economic Crises						
OECD countries (25) from 1975 - 2008	Reform responses by governments of different ideological orientation to economic crises	Economic	Output gap below 90th percentile of sample average, equaling -3,4%	Product Market Reform	Index on restrictions on competition and private sector governance. Compiled of: 1) entry barriers, 2) public ownership (privatization), 3) market shares of dominant players, 4) price controls. Industries: see Agnello *et al.* (2015b)	Economic crises related to fewer privatizations but more financial regulation. No relation of crises to product and labor market reform. During crises, political party responses differ from their usual political orientation in 'good' times. Right-wing parties promote financial market regulation instead of liberalization, center parties liberalize product markets and retrench UB, left-wing parties privatize. Fractionalized governments associated with fewer privatizations and higher regulation of product market reform Years to next election, years of government in office and stock market cap. insignificant. EU members have greater liberalization of product markets and higher UB replacement rates. European single market membership leads to higher product market liberalization and privatization
		Political Variables	1) Government partisanship, 2) number of years to next election, 3) number of years in office, 4) government fractionalization	Labor Market Reform	Index by two indicators: 1) degree of employment protection legislation (EPL) and 2) unemployment benefit replacement rate (UB)	
		External Influences	1) EU membership (after 1999), 2) EU's single market program (after 1993), 3) government fiscal position, 4) trade openness, 5) financial market efficiency (stock market capitalization to GDP)	Financial Reform	Aggregate index on financial policy change: 1) credit controls and excessively high reserve requirements, 2) interest rate controls, 3) entry barriers, 4) state ownership in the banking sector, 5) policies on securities markets, 6) prudential regulations and supervision of the banking sector, 7) restrictions on capital accounts, see Abiad *et al.* (2008)	
Lora and Olivera (2004): What Makes Reforms Likely? Political Economy Determinants of Reforms in Latin America						

Latin American countries (20) from 1985 - 1995	Comparison of influence of various political economy determinants for the likelihood of reform	Economic	1) Gap between real income per capita at the beginning of the period and its previous maximum level (since 1970) and 2) Growth in the years of recession	Trade Reform	Index on: 1) Average tariffs (incl. surcharges) and 2) tariff dispersion	Gap of income per capita with respect to previous peak appears to be the ‘best measure’ of crisis and is significant for: trade reform, privatization, the overall index, and labor reform (in order of beta coefficient, although beta is small compared to overall reform index). GDP growth in years of recession only significant for tax reform
		Inflation	1) Log of inflation when > 30%, 2) inflation tax (log(1+inflation rate)*M1/GDP (standard liquidity ratio)) and 3) volatility of inflation (standard deviation of the monthly variations of the consumer price index)	Tax Reform	Index on: 1) Max. marginal income tax rate on corporations, 2) max. marginal income tax rate on individuals, 3) basic VAT rate, and 4) productivity of VAT (ratio between the basic rate and actual collection in % of GDP)	Inflation significant for tax and, to a lesser extent, labor market reform (only volatility of inflation)
		Government Deficit	Consolidated public sector balance when deficits > 3% of GDP	Financial Reform	Index on: 1) freedom of interest rates on deposits, 2) freedom of interest rates on loans, 3) real level of reserves of bank deposits and 4) quality of banking and finance oversight (subjective scale)	Reforms, especially fiscal ones, appear to be more likely at the beginning of government periods (honeymoon period). None of the other political variables appear to be of significance
		Political Variables	1) Political fragmentation (indicated by effective number of parties in parliament and government party representation) and 2) Intensity of distributional conflicts (indicated by Gini coefficient and its change over a 5-year period)	Privatization	Sums accumulated from privatizations since 1988, including sales and other property transfers, as proportion of average public investment between 1985 and 1987	
				Labor Market Reform	Flexibility of legislation by ‘objective’ criteria on a discrete 0-2 scale based on 5 aspects: 1) hiring, 2) costs of dismissal after one year of work, 3) costs of dismissal after ten years of work, 4) overtime pay, and 5) social security contributions	
Hallerberg and Scartascini (2015): When Do Governments Improve Fiscal Institutions? Lessons from Financial Crisis and Fiscal Reform in Latin America						
Latin American countries (17) from 1990 - 2005	Connection of fiscal institutional reform and two forms of financial crises against the backdrop of the common pool problem	Debt	Dummy variable for period from initial debt default to debt restructuring	Financial Reform	Dummy variable, indicating the incidence of one of three kinds of reforms: 1) a numerical rule establishes ex ante constraints on debts, deficits, or expenditures (or all three), 2) a procedural rule specifies the norms and prerogatives of actors in the budget process, 3) a transparency rule makes it easier to follow what the government is doing on the budget	Debt crises significantly increase the probability for financial reforms
		Banking	Dummy variable that "extends from beginning to the end of a given crisis" (p. 54)			Banking crises are negative significant to fiscal reforms, thus lowering the probability of reform in times of crises
		Political Variables	1) Presidential election year, 2) United government (one party controls all houses of congress), 3) Ideology of president			No significant dependence to the involvement of the IMF and other political variables.
		External Influences	IMF involvement			
Høj *et al.* (2006): An Empirical Investigation of Political Economy Factors Behind Structural Reforms in OECD Countries						
OECD countries (21) from 1975 - 2003	Examination of various political economy determi-	Economic	Output gap > 4% in a given year and country (at different time lags)	Labor Market Reform	Indicators on: Employment Protection Legislation (EPL), Unemployment Benefit (UB), Tax Wedges on	Large increase in unemployment increases EPL and UB for long-term unemployed Economic crises reduce government intervention

	nants' influence on labor and product market reforms	Employment	Increase in unemployment rate by more than two times its standard deviation in the overall sample		Labor Income, Implicit Tax rates on Older Age Work Income	in air transport and postal services, but increase it in gas and rail sectors. Generally, product market reform more likely in times of economic upwind
		Political Variables	1) Government Partisanship (left-of-center government), 2) Time in office ('Mature Government' dummy for office time >2y)	Product Market Reform	Indicators on: state control, barriers to entry, market structure and state involvement; Industries: see Agnello *et al.* (2015b)	'Mature governments' tend to reform more, leftist governments reform less
		External Influences	1) Structural policy indicator in main trading partner, 2) Int. tariff barriers, 3) EU membership, 4) EU single market program, 5) Financial market policy indicator			Reforms in trading partner countries tend to strengthen domestic product market reforms, while their effects on labor market reforms are more ambiguous; international factors generally positive significant
Pitlik and Wirth (2003): Do crises promote the extent of economic liberalization?: an empirical test						
Developed and developing countries (123) from 1970 - 1999	Impact of growth and inflation crises on economic liberalization efforts in three scenarios of economic conditions	Economic	Consideration of 5-year periods by allocating points according to types of GDP growth: 2 for <-1%, 1 for -1-0%, and 0 for >0%. Added up over the period, >5 points make a severe crisis, 3-5 points make a medium crisis, <3 make up no crisis	Liberalization	Economic Freedom of the World Index by the Fraser Institute. Comprising of: 1) government size, calculated by government consumption and transfers and subsidies; 2) reliance on markets (government enterprises, regulation, tax burdens and price controls); 3) price stability; 4) freedom to use alternative currencies; 5) rule of law and secure property rights; 6) free trade; and 7) reliance on markets for capital allocation	Economic growth triggers liberalization efforts in a U-shaped relationship. Most liberalization reform efforts undertaken in times of deep growth crises, while times of medium crises are least related to reform. More reform is undertaken in times without a crisis
		Inflation	See "Economic": 0 points for <10% inflation, 1 for <40%, 2 for <100%, 3 for >100%; deep crisis at >10 points, medium crisis 2-10 points, no crisis at <2 points			Inflation crises significant for liberalization
		Political Variables	1) Fractionalization, 2) Democratization, 3) Political constraints for executive, 4) Political system (autocratic vs. democratic)			Degree of democracy and political constraints significant for liberalization. No significant findings for fractionalization and the political system
Roberts and Saeed (2012): Privatizations around the world: Economic or Political Determinants?						
Developed, developing and transition countries (50) from 1988 - 2006	Testing of various determinants that are supposed to facilitate privatization	Economic	Annual GDP growth rate	Privatization	Consideration of all privatization deals that exceed US$1 million. Listing both in terms of number of deals and amount of revenue generated per year	Economic conditions with limited impact on privatizations which rather occur in prosperous times, than being crisis driven. Only in case of developed countries lower inflation and higher economic growth lead to more privatization
		Inflation	Annual inflation rate			
		Government Deficit	Government budget balance for a given year, in national currency in % of GDP			
		Political Variables	1) Government orientation, 2) government years in office (honeymoon), 3) Institutional quality (law and order index)			More privatizations under right-wing governments, except in transition economies. Honeymoon in office only significant for transition economies
		External Influences	1) Current account balance (to GDP), 2) financial development (stock market cap. to GDP), 3) economic freedom index			Current account balance insignificant; financial development by contrast generally creates the environment to intensify privatization
Tornell (1998): Reform from within						
Developed and developing	Comparison of the likelihood of trade	Inflation	Inflation > 40% and having increased > 125% with respect to the previous year	Trade reform	Reform in year t in either of two cases: 1) Removal of trade barriers	Occurrence of reform much more likely if economic crises are accompanied by political crises.

countries (108) from ~1970 - 1995	reform in case of occurrence of economic and political crisis	Economic Political	Income per capita in current USD decreases more than 18% relative to previous year Index on "political change", consisting of 9 different indicators of political authority patterns. "Drastic political change" occurs if index changes by more than 3 points with respect to the previous year		before t, or 2) increase of trade / GDP increased by more than 7% relative to previous year	Conditional on joint occurrence of economic and political crisis, likelihood of reform is 60%, while it is 27% in case of economic crisis alone
Waelti (2015): Financial crisis begets financial reform? The origin of the crisis matters						
Developing and developed countries (72) from 1980 - 2005	Distinction of origins of crisis, particularly externally and domestically induced crises. Regression on measures of financial liberalization	Economic Political Variables External Influences	Occurrence of 1) sudden stops (sudden stop in gross financial inflows from foreign investors) or 2) sudden flights (sudden increase in gross financial outflows) 1) New government first year in office (honeymoon), 2) Government partisanship, 3) Democracy Index 1) IMF involvement, 2) Globalization Index	Financial Reform	Financial liberalization index, based on Abiad and Mody (2005), Abiad *et al.* (2008)	Different origins of crisis do not affect the aggregate liberalization index, but individual dimensions differently. Sudden flights are significant for capital account restrictions, sudden stops for banking regulation and supervision Only few variables significant for reform, particularly government partisanship and IMF involvement for "state ownership" and "interest rate controls". IMF involvement furthermore significant for "entry barriers"
Wiese (2014): What triggers reforms in OECD countries? Improved reform measurement and evidence from the healthcare sector						
OECD countries (23) from 1960 - 2010	1) Development of a methodology to identify economic reforms using *de jure* evidence 2) Testing the crisis hypothesis to identify triggers of health care financing reforms	Employment Debt Growth Political Variables	Unemployment rate above 9.57%, equaling the sample mean plus the standard deviation Interest rate on long-term government debt > 11.42%, equaling the sample mean plus the standard deviation Negative annual accumulated economic growth 1) Government partisanship, 2) Fractionalization, 3) Government time in office	Health Care Reform	De-facto privatization of financing in the health care sector; measuring statistically significant policy induced shift from public to private sector financing of healthcare services	Unemployment rate and debt crises positive significant for health care privatization. Annual recession positive and significant for health care privatization, but not in raw form (growth rate) None of the political factors investigated appear to be significant for health care reform

Table 2. Overview of established relationships between crisis and reform measures in empirical models on the crisis hypothesis

Crises	Inflation		Currency		Economic		Banking		Debt		Government Deficit		Employment		Political	
Reform	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-
Financial	Agnello (2015a), Agnello (2015b)	Abiad (2005), Lora (2004)	Agnello (2015a)	Agnello (2015b)	Agnello (2015b), Galasso (2014), Waelti (2015)	Abiad (2005), Brooks (2007), Lora (2004),	Abiad (2005), Agnello (2015a), Agnello (2015b), Hallerberg (2015)		Abiad (2005)***, Agnello (2015a), Agnello (2015b), Hallerberg (2015)			Lora (2004)				
Labor Market	Lora (2004)	Agnello (2015b)		Agnello (2015b)	Lora (2004)	Agnello (2015b), Campos (2010), Galasso (2014), Høj (2006)		Agnello (2015b)		Agnello (2015b)		Lora (2004)	Høj (2006)		Campos (2010)	
Product Market		Agnello (2015b)		Agnello (2015b)	Høj (2006)	Agnello (2015b), Galasso (2014)		Agnello (2015b)		Agnello (2015b)				Høj (2006)		
Economic Liberalization	Pitlik (2003)				Pitlik (2003)											
Privatization	Banjeree (2004), Roberts (2012)**	Lora (2004)			Banjeree* (2004), Campos (1996), Galasso (2014), Lora (2004)	Roberts (2012)						Banjeree (2004), Lora (2004), Roberts (2012)				
Trade	Agnello (2015b), Brooks (2007), Tornell (1998)	Lora (2004)		Agnello (2015b)	Agnello (2015b), Lora (2004), Tornell (1998)	Brooks (2007), Campos (2010)		Agnello (2015b)		Agnello (2015b)		Lora (2004)			Campos (2010), Tornell (1998)	
Tax	Lora (2004)				Lora (2004)							Lora (2004)				
Health Care					Wiese (2014)				Wiese (2014)				Wiese (2014)			

Legend: '+': significant relationship; '-': insignificant relationship; '*': Only timing; '**': Relation negative and only for developed countries; '***': Classified as "Balance-of-Payment Crisis" in paper; Parameter of "Economic Crises" comprises indicators on GDP growth, output gap, income per capita. Debt Crises referring to outright debt default, an international rescue, or interest rates on long-term gov' bonds. Gov' Deficit Crises referring to negative gov' budget balance. Name of first author displayed only to conserve space.

Table 3. Overview of crisis indicators and their measurement method in empirical models on the crisis hypothesis

Crises	Total	Economic	Inflation	Banking	Debt	Government Deficit	Employment	Political
Threshold	**32**	10	8	4	5	1	2	2
Raw Data	**12**	4	5	0	0	3	0	0
Total	**44**	14	13	4	5	4	2	2

Table 4. Overview of reform indicators in empirical models on the crisis hypothesis

Reform	Total	Financial	Privatization	Labor Market	Trade	Economic Liberalization	Product Market	Health Care	Tax
Measures	**28**	8	4	5	5	1	3	1	1
Of which are indices	**23**	8	0	5	5	1	3	0	1

Table 5: Overview of political and institutional measures in empirical models on the crisis hypothesis

	IMF Involvement	Institutional Quality	Government Partisanship	Gini Coefficient	Parliamentary Fractionalization (Fragmentation)	Time in Office (Honeymoon Period)	Democracy Index	Political Constraints for Executive	Other
Abiad and Mody (2005)	+		-						-
Agnello *et al.* (2015a)	+	+							
Agnello *et al.* (2015b)				+	-				
Alesina *et al.* (2006)	(-)				+	+		+	-; +; +; +
Banerjee and Munger (2004)		+	+		+	-	+		
Brooks and Kurtz (2007)	-		+		+				
Galasso (2014)			+		+	-			
Lora and Olivera (2004)	-			-	-				
Hallerberg and Scartascini (2015)	-		-			-			-
Høj *et al.* (2006)			(+)			+			
Pitlik and Wirth (2003)					-		+	+	-
Roberts and Saeed (2012)		+	+			(-)			
Waelti (2015)	+		+			-	-		
Wiese (2014)			-		-	-			

Legend: '+': Significant relationship; '-': Insignificant relationship; '( )': conditional results

1 An exception from these criteria has been made for the contribution of Tornell (1998), which was not published in a peer-reviewed journal but as a working paper at *National Bureau of Economic Research.* The paper is a major contribution to the field of research and received widespread attention.

2 The honeymoon hypothesis states that governments face relatively fewer constraints to implement reform at the beginning of their term in office as they enjoy higher credibility and legitimacy than their predecessor (Haggard and Webb, 1994). Moreover, as Pinea (1994) suggests, reforms make things worse before they improve them. Reformist governments hence want to launch reform processes early in their legislature to be able to take corrective measures during their term in office.