# Sovereign Debt Disputes.

# Testing the role of politics and institutions in financial crisis resolution.


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**Abstract**

This article aims to identify which political and economic factors explain unilateral government actions towards international investors in times of financial distress. The cornerstone of our analysis is a novel, comprehensive index that measures coercive government behaviour towards creditors during sovereign debt crises since 1980. Overall, our results indicate that, once a default has occurred, democratic governments are more likely to act aggressively towards foreign creditors. We interpret this as evidence for high domestic audience costs in crisis situations. In contrast, elections and government orientation (left vs. right) do not seem to play a role for the degree of conflict in debt renegotiations.

# 1. Introduction

In debt crises, governments face a crucial dilemma. They can, on the one hand, do everything to solve the crisis in consensus with its external creditors, for example by continuing to devote large shares of the budget to debt servicing and arranging a voluntary debt restructuring. On the other hand, they can also decide to take a more aggressive stance towards creditors, e.g. by halting negotiations and enacting a complete suspension of payments.

This political dilemma is as old as sovereign debt crises itself. Over the years, politicians in charge have found different answers to it, as the example of the recent debt crises in Uruguay and Argentina shows. Argentina's government in December 2001 declared its inability to pay its debt and took a very hard stance in the debt negotiations until 2005. In contrast, the government in Uruguay worked out a quick and voluntary debt exchange deal in 2003.

From a political economy perspective the government's behaviour towards its creditors during crises is highly relevant. In particular, coercive government actions presumably have severe reputational costs for the country. A government that adopts creditor unfriendly policies is likely to be punished by international financial markets, contributing to a temporary cut-off of sovereign credit, trade financing or credit lines to private domestic companies and banks.[2] This, in turn can have severe consequences for the domestic economy. Additionally, coercive actions towards private creditors can lead to a breakdown in the relations to the International Monetary Fund (IMF), which usually is the lender of last resort in situations of sovereign distress.[3]

This article has two aims. First, it presents and discusses our database and the measurement approach of government behaviour in debt crises since 1980. We provide the first comprehensive and systematic account of government behaviour during debt crises that goes beyond a binary measure of default versus non-default. Second, we perform a series of empirical tests to understand the main determinants of non-cooperative government behaviour in financial distress. We focus particularly on the role of politics and domestic political institutions in explaining aggressive government action.

Generally, there is very little empirical work that has measured or systematically analysed differing degrees of government behaviour during financial crises over time. We believe this to be an important gap in the literature. As to the quantitative literature on

[2] See Borensztein and Panizza (2006), Rose (2005), Martinez and Sandleris (2006) and Arteta and Hale (2008) for some recent contributions on the costs of default.

[3] Its should be acknowledged, however, that in the cases of Argentina and Uruguay the IMF and the G7 countries actively promoted some form of "Private Sector Involvement" in talks with debtor countries. A more aggressive behaviour of debtor governments towards their private creditors than before was – at least implicitly- supported by the official donor community.

sovereign risk, it mostly relies on a simple dummy of default versus non-default. Here, we construct an index of government behaviour ranging from 0 to 9, which was coded on the basis of more than 20.000 pages of financial press, policy reports and book material. Based on this novel index, we aim to analyse the role of economic and political factors in debt crises in a more sophisticated way.

The structure of the paper is as follows: Section 2 provides an overview of the related literature. Section 3 describes the "Index of Government Coerciveness" and each of its 9 sub-indicators from a conceptual point of view. Section 4 outlines the coding procedure and the dataset that resulted from it, while section 5 puts forth some stylized facts on government behaviour and descriptive statistics. Section 6 presents our econometric approach, the data and the variables employed to investigate the determinants of coercive government behaviour. Section 7 presents the estimation results and a series of robustness checks. Section 8 concludes.

## 2. Related Literature

The literature on sovereign debt distress is large (see Eaton and Fernandez 1995 for an early review). We start by presenting the main quantitative and qualitative contributions to analyse sovereign default events (section 2.1). We then focus on the specific political economy literature, which is of particular relevance for this article (section 2.2), before drawing conclusions from the literature and deriving three main hypotheses to be tested on our new data (2.3).

### 2.1 Quantitative and Qualitative Research on Sovereign Default

Quantitative research on debt crises has mainly focused on the determinants of default and the construction of early warning systems (see, for example, Manasse, Roubini and Schimmelpfennig 2003 or Detraigache and Spilimbergo 2001). Recent years have also brought about an increasing number of empirical studies concerned with the consequences and costs of default (see Borensztein, Levy Yeyati and Panizza, 2006, chapter 12 for an extensive review).

It should be underlined that the overwhelming body of quantitative articles relies on a binary coding of default vs. non-default. Most researchers construct such dummy default indicator either with data from Standard and Poor's or from the World Bank's lists of restructuring events in the GDF reports (World Bank 2003). Given its clear-cut definition[4] and easy availability, the Standard and Poor's list of sovereigns in default is

[4] The S&P definition of default takes into account any payments missed on scheduled bond debt, notes or bills and on bank loan interest or principal (Standard & Poor's, 2006). On top of this, any exchange of new debt that contains less favourable terms than the original bond issue and any

particularly popular.[5] Some researchers have also combined these two key sources with additional data and definitions.[6]

Given the complex crisis mechanics, there is also a large body of work with insightful case study evidence on sovereign default events since 1980.[7] Among the main contributions, Cline (1995), Aggarwal (1996) and Boughton (2001) discuss 1980s debt crisis cases, while Roubini and Setser (2004), Andritzky (2006) and Sturzenegger and Zettelmeyer (2006) are mainly devoted to more recent cases of financial distress. In some of these monographs and in a series of further contributions, one can find attempts to categorize different types of debt crises and government behaviour during crises. Authors such as Aggarwal (1996), Cline (2004) Frankel and Roubini (2001), Roubini (2004), Roubini and Setser (2004) and Andritzky (2006) agree that crises vary on a spectrum from soft to hard or from voluntary to more involuntary cases. The articles by Cline (2004) and Roubini (2004) are particularly concerned with the categorisation of past crises as a function of the degree of private sector burden sharing. These contributions have been influential for our own categorization and coding. Nevertheless, we feel that the proposed categories are not fully suitable for a reliable (and replicable) coding of past crises. Often the categories are not general enough for a coding of cases over several decades. Moreover, the categories are often built inductively, based on researchers' own knowledge on particular crises.

### 2.2. Research on the Political Economy of Sovereign Risk

Compared to the large body of literature on economic determinants of sovereign risk and default there is relatively little quantitative work on the political and institutional influences of sovereign default. Manasse and Roubini (2003) and van Rijckeghem and Weder (2004) include tests of a large number of political and institutional factors in their analysis of determinants of default.[8] Their results indicate political economy variables to play a role in default. However, little is known about how they work. More recent empirical work on the political economy of sovereign debt crisis discusses individual

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rescheduling of principal and/or interest at less favourable terms than indicated in the original contract counts as a default.

[5] See e.g., Borensztein and Panizza, 2006; Gelos, Sahay and Sandleris, 2004; Manasse, Roubini and Schimmelpfennig, 2003; Kohlscheen, 2007; Reinhart, Rogoff and Savastano, 2003; Rijckeghem and Weder, 2004

[6] As an example, Detragiache and Spilimbergo (2001) consider arrears of principal or interest towards commercial creditors, while Manasse, Roubini and Schimmelpfennig (2003) define a country in default whenever the S&P criterion holds or if it receives a large non-concessional IMF loan meaning in excess of 100 % of quota.Pescatori and Sy (2007) suggested a further debt crisis measure, which explicitly takes into account the increase in bond financing since the early 1990s. In addition to default cases as of S&P they regard a country in severe financial distress, whenever the sovereign bond spread surpasses a critical threshold, such as 1000 basis points above U.S. Treasuries. Lastly, authors such as Reinhart, Rogoff, Savastano (2003), Gelos, Sahay and Sandleris (2004) and Fostel and Kaminsky (2007) have supplemented the S&P list of defaults with information of the qualitative list of debt crises by Beim and Calomiris (2001, pp. 32-36).

[7] There are also historical accounts of sovereign debt crises which go back into the past centuries of sovereign lending such as Suter (1992) Stasavage (2007) or Tomz (2007).

[8] In recent years some authors started to investigate political consequences, in addition to determinants, of debt default (see McGillivray and Smith 2003; Bordo and Oosterlinck 2005).

political and institutional effects on a more detailed level (e.g. Kohlscheen 2008, Saiegh 2005, Bordo and Osterlinck, 2005). Generally, however, contributions vary much in methods applied and in theoretical depth. In the following, we present the main hypotheses tested.

The studies by Saiegh (2005) and van Rijkeghem and Weder (2004) analyse the role of regime type i.e. whether a government is democratic or nondemocratic, for sovereign default. Saiegh (2005) uses a democracy coding based on Przeworski et al. (2000) and GDF (1999) data for 80 developing countries from 1971 to 1997. He finds that democracies have a higher propensity to reschedule than non-democracies. As Tomz (2002) pointed out, the effect of domestic audiences in democratic regimes can indeed push leaders towards non-compliance with international debt agreements, making default and coercive behaviour more likely. However, Tomz also points out that the relationship between democratic accountability and compliance depends largely on public opinion, which may change over time. Saiegh (2005) also finds no significant difference in risk premia for democratic countries, an argument that was previously made by Schultz and Weingast (2003). The latter argued that democracies would be rewarded by creditors with lower risk premia due to the constraints they impose on governments. This, in turn, would increase the likelihood that a state sticks to its payment obligations. Saiegh, however, finds no evidence in support of the "democratic advantage"-hypothesis. Van Rijkeghem and Weder (2004) test the effect of democracy on domestic and external default using non-parametric techniques. They use data from 73 low and middle income countries between 1970 and 2000 and rely on a democracy dummy based on the Polity IV score. When applying filters to predict safety from default, they find that very different factors matter in democracies and non-democracies. Overall, however, they conclude that "there are more ways to be safe [from default] in democracies" (p. 21). This stands in contrast to the domestic audience cost hypothesis and is more in line with an opposing argument suggested by Tullock (1987). Tullock highlights the element of instability in autocracies, comparable with the sort of instability commonly attributed to democratic coalition governments. In the context of autocratic rule, instability may arise from the short-term nature of rule, as the most common "succession rule" are frequent "coups from the inner circle" of government. Given the typical short tenure, autocrats would tend to favour short-term oriented policies. In the context of sovereign distress, such argument implies a higher risk of default.

Other authors have investigated the role of different constitutional systems for sovereign risk. Generally, the constitutional system type might matter for macroeconomic policies because power between government branches is shared differently in presidential and in parliamentary systems (Persson and Tabellini 2003). Power is thought to be more centralized in presidential systems. Usually, both the legislature and the chief executive are elected by popular vote in presidential regimes. The parliament serves as a "check" on the presidential power, but usually the president forms the cabinet without much interference from the legislature. Consequently, presidents rely more on the support of

the electorate than of the parliament. In contrast to that, the chief executive in a typical parliamentary regime relies on continuous "votes of confidence" of the legislature to remain in power (Persson and Tabellini 2003). This difference is thought to influence economic policy making.

In the context of sovereign risk, Kohlscheen (2008) finds that - among democracies - parliamentary systems are less likely to reschedule their debts and accumulate arrears on repayments. At first, this seems contra-intuitive and incongruent with the standard argument made by Persson and Tabellini. They predict parliamentary systems to be more likely to implement measures of short-term relief, i.e. rescheduling in the case of debt crisis. This is because they depend on a "vote of confidence" in their (economic) decision making. However, as Kohlscheen argues, the "confidence requirement" may actually work as a "check" on government economic policies, rationalizing its policy choices. Apparently, executives in a parliamentary system may have an even stronger motivation for external debt servicing than presidential governments. Rulers in parliamentary systems may thus be dependent on sound economic policy outcomes to remain in office. Also Van Rijkeghem and Weder (2004) infer that, among democracies, countries with parliamentary systems seem more likely to honour their debts. However, much depends on the interaction with economic factors like liquidity, inflation and debt-service/export ratios. Executives in parliamentary systems are only less likely to default "as long as debt service is not too high and/or liquidity conditions are not binding." To this date, however, empirical evidence on the effect of constitutions on default remains somewhat ambiguous. Contrary to Kohlscheen, for example, Bordo and Oosterlinck (2005) are unable to find a distinctive role for presidential versus parliamentary systems based on results from 29 countries between 1880 and 1913.[9]

Apart of regime types and constitutional set-ups, the governments' political orientation could play a role. Based on arguments made by Lijphart (1984, 1999) and Hibbs (1977, 1992) many authors have built their theory on the basic assumption that leftist governments are pursuing the interests of labour rather than capital.[10] Following this logic, one would assume leftist governments to be -on average- more prone to high deficits than center- and right-oriented governments (e.g. Roubini and Sachs 1989, Edin and Ohlsson 1991). Consequently, center and right-wing governments would be more likely to prefer creditor-friendly debt policies to default. To our knowledge, however, there is no study testing for the effect of left or right orientation on default decisions by governments.[11]

[9] Note that authors themselves hint at sources for bias due to the small number (9 altogether) of debt crisis episodes entailed in the sample.
[10] Approaches concerned with direct effects of ideology on concrete economic policy choices are discussed by Franzese (2002). See also Dutt and Mitra (2002) or Milner and Judkins (2004).
[11] Stasavage (2007) finds that political orientation was decisive for the financial credibility in the case of 18th century England under "Whig supremacy".

Another determinant of government default could be seen in political business cycles (PBS). Concretely, Manasse, Roubini and Schimmelpfennig (2003) find the probability of entering and remaining in crisis to increase in years with presidential elections. Similar effects of elections on the likelihood of default can be found in studies by Hefeken (2004) and Bordo and Oosterlinck (2005). A possible interpretation is that of political uncertainty in election years leading to economic uncertainty and a higher propensity to default. Similarly, there might be a "status-quo bias" noted in the context of currency crises. To increase their chances of being re-elected office holders under severe debt servicing pressures may refrain from hurtful policy adjustment and choose to stop servicing (external) creditors instead. With regard to sovereign risk, Pantzalis et al. (2000) find positive abnormal returns on bonds in the two weeks prior to the election, which is in line with the uncertainty assumption (compare also Brown et al. 1988). In a similar vein, Block and Vaaler (2004) find credit agencies to drop ratings by approximately one rating level on average in election years. Additionally, they find credit spreads on sovereign bonds to be higher in the 60 days before elections compared to the 60 days after.

### 2.4 Conclusions from the literature

Much more can be done to better understand the political economy of debt crises. While there is some evidence on the role of policies and institutions for default events and bond spread levels, very little is known on what explains government behaviour once a default has occurred. While policy actors (e.g. IMF, 1999 and 2002 or IIF 2006) have highlighted the role of cooperative behaviour and good faith efforts by governments, there is barely any quantitative work taking this into account. The present article aims to provide some new evidence in this regard.

As discussed, empirical research on sovereign default in both economic and political science has mainly relied on dummy variables to capture default and debt servicing choices during financial distress. A main novelty of this paper is that we use a more differentiated measure to grasp the scope of government behaviour. While being straightforward, we believe that the binary categorisation is too narrow to answer some of the most intriguing questions on the political economy of debt crises and sovereign risk. Here, we categorize government behaviour towards creditors using a set of 9 objective sub-indicators. We then investigate, which economic and political factors explain the degree of coercive bevahiour during crises.

In the remainder of the paper we focus on three major hypotheses. First, we want to test whether governments in democratic regimes behave more coercively towards creditors than in non-democracies. Second, we investigate whether left governments behave significantly more coercive than center or right governments. Third, we focus on the role of presidential versus parliamentary regimes. To further validate our findings, we

also take into account possible effects of political business cycles due to elections and other political shocks.

## 3. The Index of Government Coerciveness in Sovereign Debt Crisis

This section discusses the construction of our index from a conceptual point of view. An important point of departure for the construction of our index were the above cited categorization proposals by Cline, Roubini and others. Additionally, we drew on the IMF's criteria of *good faith efforts* for governments in default (IMF, 1999; 2002) and the criteria outlined in the *Principles* of fair debt restructuring by the IIF (2006) (See Enderlein et al. 2007 for a more extensive discussion)

The index of government coerciveness during debt crises consists of 9 sub-indicators. These are grouped in two broad categories of government behaviour: "Indicators of Payment Behaviour" and "Indicators of Negotiation Behaviour". Each sub-indicator is a dummy, which is coded 1 if the respective action by the government is observed and zero otherwise. The final index is additive, meaning that all scores are summed up.[12] The highest possible score is 9 and indicates the highest level of government coerciveness. A zero score - on the other extreme - indicates that the debt problem was resolved in a fully cooperative way without missed payments. Note again that throughout this paper we are concerned about government behaviour towards private international creditors. Coercive actions that solely affect official creditors, IFIs (International Financial Organizations) or domestic banks or investments funds are not taken into account. Furthermore it should be underlined that we focus only on debt crises cases and not on currency or banking crises such as during the Asian Crisis of 1997.

The 9 binary sub-indicators, discussed in detail below, are the following:

Indicators of Payment Behaviour:

1) Payments missed (yes/no)
2) Unilateral payment suspension (yes/no)
3) Suspension of interest payments (yes/no)
4) Freeze on assets of non-residents (yes/no)

Indicators of Negotiation behaviour:

5) Explicit moratorium or default declaration (yes/no)
6) Explicit threats to repudiate on debt (yes/no)
7) Breakdown or refusal of negotiations (yes/no)
8) Data disclosure problems (yes/no)
9) Forced and non-negotiated restructuring (yes/no)

[12] We discuss the issue of weighting in section 6 in more detail.

Data sources and specific coding issues are discussed in detail in the next section. The basis of coding was a thorough and standardized evaluation of more than 20,000 pages of articles from the financial press and of numerous policy reports, standard reference books and data sources on debt crises.

## 3.1. Indicators of Payment Behaviour

The following four indicators capture government actions that have a direct impact on financial flows towards international banks or bondholders.

**Payments missed**

The natural starting point when measuring the payment behaviour of a government during a debt crisis is to check whether it actually missed payments towards private creditors, or whether it was able to organize a restructuring before it breached its bond or loan contracts towards them. The category "payments missed" is coded 1 if the government missed interest or principal payments on bonds or loans. This includes cases in which the government arranged a temporary roll-over of debt payments, but it does not include missed payments that occurred within the grace period foreseen in the respective debt contract. Note that there are quite a few crisis cases in which the government was able to avoid missed payments, e.g. Chile in 1984, Algeria in 1992, Uruguay in 1988 and 2003 or Ukraine in 2000. Some authors have used the expression of pre-default restructurings to define such crises (ECB 2005, Bedford, Penalver and Salmon 2005 or Finger and Mecagni 2007). As a result, we regard this category as an important proxy of how early and how efficiently a government solved its debt payment difficulties.

**Unilateral payment suspension**

A second, closely related issue is whether any payment suspension is agreed with creditors or not. Even in severe crises, a debtor government has the option to admit its payment difficulties before any payments are missed. Officials can seek a preventative interim agreement, such as a temporary debt roll-over or other forms of bridge financing. Payments that are withheld unilaterally and without warning creditors are a clear sign of non-cooperative, unilateral behaviour. For this reason, we include the sub-indicator "unilateral payment suspension". It is coded 1 whenever the government incurs arrears unilaterally, without agreeing with its creditors on a payment deferral and/or if creditors are not notified of payment delays ahead of time. Although many payment suspensions are unilateral, there is a large number of exceptions: Roughly one third of debt deferrals and arrears were actually negotiated. Especially in the rescheduling deals of the early 1980s in Latin America and in Eastern Europe, temporary payment suspensions were often implemented with the approval of private creditors.

**Suspension of interest payments**

The suspension of interest payments has to be regarded as a separate indicator of payment behaviour. A government that fully suspends interest payments often sends a strong signal of its unwillingness to service its debt, even at a reduced pace. The IIF principles highlight the importance of partial debt servicing with regard to recent bond default cases.[13] Likewise, a key demand of commercial banks during the 1980s crises was that debtor governments kept up at least partial interest payments.[14] Nevertheless, a series of debtor governments have explicitly ignored such demands and even rejected to make symbolic token payments on interest. Some exemplary cases are Argentina from 2002 to 2005, Brazil in 1987, Bolivia in 1984 or Jordan in 1990. We include a sub-indicator on the suspension of interest payments to take into account such particularly coercive stance. It is coded 1 in case the government suspends interest payments on sovereign bonds or public syndicated bank loans for more than 90 days in a given year. One should note that this does not apply to cases in which there is a mere ceiling of interest payments such as in Peru from 1986 to 1989 and Nigeria in 1986, or if interest payments are suspended on a fraction of debt only, such as in Russia in 1998.[15]

**Freeze on assets of non-residents**

In a series of crisis cases, governments issued emergency decrees in an attempt to counter capital flight and foreign exchange outflows. Such actions often lead to an effective freeze of creditor assets in the country, preventing domestic residents to fully meet their obligations towards their international creditors. Therefore, such decrees should certainly be regarded as coercive government behaviour.[16] We thus include a sub-indicator "freeze on assets of non-residents". It is coded 1 for any kind of additional capital or exchange controls that are enacted during crisis years and that directly affect debt flows to foreign private creditors. Cases such as Argentina in 1982 or 2002, Russia in 1998 or Brazil in 1989 involved particularly tough capital controls, as the government explicitly prohibited private companies in the country to make any debt repayments to their foreign creditors. Other governments enacted harsh exchange controls that affected private sector debt repayments, e.g. in the Philippines and Venezuela in 1983, or Ukraine and Pakistan in 1998.

[13] Concretely the Principles state that "debtors should resume, to the extent feasible, partial debt service as a sign of good faith and resume full payment of principal and interest as conditions allow." (IIF 2006, p. 17).

[14] A key reason behind this demand was to avoid that national regulators classified the bank's sovereign loans as "value-impaired," obliging them to take a loss on their books (see Sachs, Huizinga and Shoven, 1987).

[15] The Russian government drew a sharp distinction between the foreign debts it had inherited from the Soviet Union and those borrowings it had assumed since becoming an independent sovereign country. While the government continued to service its post-1992 Eurobonds throughout the crisis, it fully suspended payments on its restructured Soviet-era debt.

[16] The IIF's Principles state that "Debtors should avoid additional exchange controls on outflows" (IIF 2006, p. 17). Similarly, Cline (2004) regards capital controls as a particularly coercive measure towards private creditors.

## 3.2. Indicators of Negotiation Behaviour

The following 5 sub-indicators aim to capture the negotiation behaviour and aggressive rhetoric of governments toward their international private creditors.

**Explicit moratorium or default declaration**

An official default or moratorium declaration is a particularly belligerent move of debtor governments. Usually, it is addressed to domestic audiences and aims to publicly shrug off international creditor demands underlining a government's national sovereignty and domestic expenditure priorities. An official declaration of default can be seen analogous to a declaration of war, and usually takes place in an already very conflictive situation.[17] The sub-indicator is therefore coded 1 in case a key government actor officially proclaims the decision to default. It is interesting to note that most de facto moratoria were actually not officially declared. In most cases governments have avoided such drastic step and incurred arrears or started debt renegotiation silently and without an official proclamation. The most famous example of a recent "war" declaration towards private creditors was certainly the default announcement of Argentine interim President Adolfo Rodriguez Saá on 24 December 2001, which was "celebrated in Congress as a victory" (Sturzenegger and Zettelmeyer, 2006, p. 182). Unilateral declarations of this type have also been made in a number of earlier cases, for example in Ecuador in 1987 and 1999, Bolivia in 1984, Peru in 1985 or Russia in 1998. An interesting case is Brazil, which first declared an official moratorium in 1987, which led to a drastic drop of international capital flows to the country. After the government returned to the negotiation table and resumed payments in 1988, it again fully suspended payments in 1989. This time, however, the government was keen to avoid some of the drastic consequences of its first moratorium and repeatedly assured that it had not officially declared a moratorium and that all debt would eventually be paid back. The press at the time termed Brazil's silent payment suspension as a "white moratorium".[18]

**Explicit threats to repudiate on debt**

A common, obviously non-cooperative move of governments during or before debt restructurings is to issue explicit threats to repudiate on debt. Such threats are often made to increase pressure on creditors for additional funding or to enforce better debt restructuring terms. The sub-indicator is coded 1 if a key government actor, namely the President, the Prime Minister, the chief debt negotiator or Ministers of Finance, Economy or Planning, publicly threatens to repudiate on debt or to impose a unilateral moratorium. Such threats, often issued by populist governments, are normally widely reported in the press and use to have a major public impact. In many cases threats did eventually lead to

[17] In a widely cited article by Jones, Bremer and Singer (1996) an official war declaration is coded as a particularly hostile government action.
[18] We obviously code the "white moratorium" as 0.

unilateral default, e.g. in Jordan in the wake of the first Iraq war or Bolivia in 1983/84. In other cases the threat was ultimately not followed by a unilateral default e.g. in Ecuador in 1982, Mexico in 1986 and 1989, Ukraine in 1998 or Moldova in 2002. A further interesting example is Chile in 1986, where Pinochet responded to US human rights pressure with a threat to default on the voluminous credits of major US banks.

**Breakdown or refusal of negotiations**

A close dialogue with creditors and efficient negotiations are a vital part of cooperative government behaviour during debt crises (see, among others, the above-mentioned IIF and IMF documents).[19] We therefore include an indicator that captures (i) the refusal of governments to engage in early negotiations with creditors and (ii) delays or even breakdowns in debt negotiations of more than 3 months that are caused by unilateral government behaviour. Note that delays that are caused by creditor coordination failure or outright inter-creditor disputes are not coded. Lengthy negotiations delays or negotiation stalemates are common and usually take place in the context of elections (e.g. Philippines 1992, Dominican Rep. 1994 and 2004), the government's refusal to adopt an IMF program (Nigeria 1984, Venezuela 1983) or the government's rejection to assume a formal guarantee on sovereign debt stocks (Morocco 1983-85, Russia 1993-95, Bulgaria 1990-92). In all such circumstances, the delay in the negotiation process is a clear sign of less cooperative government behaviour vis-à-vis the private creditors.

**Data disclosure problems**

As a further proxy for negotiation behaviour, we include a sub-indicator that is coded 1 if the government explicitly refuses to provide timely information on crucial negotiation related issues or if there is a dispute with creditors due to the provision of grossly inaccurate data. The provision of accurate macroeconomic and financial data by debtor governments is of high importance for private creditors seeking to understand the debtor government's financial stance and repayment capacity, in order to evaluate any potential restructuring offers. Correspondingly, information sharing is regarded as a crucial element of fair and faithful crisis resolution efforts by both the IMF and the IIF.[20] Data disclosure disputes were of high importance in the 80s e.g. in Brazil in 1987 , Nigeria 1983, or the Philippines in 1983, when the government rejected to disclose the true

[19] Critical conditions for IMF lending into arrears include that "(ii) negotiations between the member and its private creditors had begun; and (iii) there were firm indications that the sovereign borrower and its private creditors would negotiate in good faith on a debt restructuring plan." (IMF 2002, p. 6). Similarly, the IIF's Principles state that "Debtors and creditors agree that timely good faith negotiations are the preferred course of action" (IIF 2006, p. 16).

[20] The IIF's Principles regard the dissemination of accurate and timely data/information as a key element of best practice investor relations (IIF 2006, p. 15). The IMF's good faith efforts include a criterion that "Debtor governments should share relevant, non-confidential information with all creditors on a timely basis, which would normally include: - An explanation of the economic problems and financial circumstances that justify a debt restructuring; (…) - the provision of a comprehensive picture of the proposed treatment of all claims on the sovereign, including those of official bilateral creditors (…)" (IMF 2002, p. 10).

amount of exchange reserves or debt arrears. During the 1990s there were cases such as Peru in 1996, where President Fujimori refused to reveal the country's unofficial debt buy back operations, calling it a matter of "state security". More recently, the government of Russia shrugged bondholders in 1999 by rejecting for an extended period of time to share key details of the restructuring offer, even after it was launched. Contrarily, information on the the recent restructurings in Uruguay in 2003 and in Belize 2007 strongly emphasizes the proper provision of information on macro-economic fundamentals and specific matters related to the debt work-out.

**Forced and non-negotiated restructuring**

Lastly, we consider whether the restructuring was ultimately negotiated or not. This indicator captures instances (i) where the government enforced a fully unilateral restructuring or (ii) where the government issued a non-negotiated "take-it-or-leave-it (TILI)"-offer on a final agreement. [21] Both the IMF and the IIF highlight the importance of negotiating a restructuring offer ex-ante and to gain the acceptance of creditors before any offer is launched.[22] Note, that also bond exchanges can be the result of intense and creditor-friendly coordinated and negotiated process, even though, at the end of such process, they involve a final not-amendable (unilateral) offer by governments.[23] This sub-indicator thus aims to differentiate between cases involving close creditor consultations and other restructurings, e.g. in Argentina in 2001 or 2005, where the government rejected to engage in close negotiations before putting the offer to the market. Additionally, we aim to capture cases of forced restructurings such as in Peru 1986 and Nigeria 1990/91, where the government unilaterally decided to lower the interest rate on debt, or a case such as Argentina in 1982, where the government unilaterally restructured debt owed by the private sector without any prior consultations.

## 3.3. Accounting for the Change from Bank to Bond Financing

There are many differences between debt crises in the 1980s and more recent ones. The relative decline of syndicated bank loans and the parallel rise of bond financing have lead to substantial changes in debt restructuring processes and in the relation between governments and creditors. Despite these differences, we share the approach of Cline and others that a general categorization of debt crises over time is both possible and desirable.

[21] Those familiar with the war-literature will recognize the term "TILI" which James Fearon famously used in one of his rationalist explanations of war (Fearon, 1995).
[22] The IMF (2002, p. 10) states that a debtor government "should provide creditors with an early opportunity to give input on the design of restructuring strategies and the design of individual instruments". Similarly, the IIF (2006, p. 17), demands that "restructuring terms should be subject to a constructive dialogue focused on achieving a critical mass of market support before final terms are announced."
[23] With reference to the post 1998 bond restructurings, Bedford, Penalver and Salmon (2005, p. 95) state that "in several cases — notably Uruguay and the Dominican Republic — the launch of the exchange offer was preceded by a period of consultation between sovereign debtor and creditor representatives."

A main challenge in our coding efforts was therefore to find uniform, objectively derived criteria that are valid for both bank and bond restructurings.[24]

We believe that the above criteria are general enough to account for changes in debt restructuring characteristics. The exact type of data disclosure problems, asset freezes or threats might have changed over time, but the general idea to capture such events is the same for both 1980s and more recent cases. Also other indicators such as that on payment behaviour, on negotiation breakdowns or on non-negotiated restructurings should not be seriously distorted by changes in the exact restructuring process or creditor characteristics.

The overall impression of our coding results, in particular, the variability of our index (and sub-indicators) over space and time, suggests that the categories are indeed suitable for the 1980s and for more recent years. We believe that most sub-indicators would even be suited to measure government behaviour in restructurings of the 19th century, during the 1920th or in future sovereign default events.[25]

## 4. Coding and Resulting Dataset

This section describes the information sources and the procedure for coding the above 9 variables, as well as the datasets that result from it. Generally, we started to code cases from 1980 onwards.[26] Regarding the selection of countries, our list initially included all 136 developing and emerging economies in the Global Development Finance database. Obviously, there was no need to code countries, which did not feature a default since 1980. Given our focus on disputes between debtor governments and private creditors, we decided to exclude the poorest, least developed countries.[27] This was done because these countries usually have very limited access to private financing and their financing structure is clearly dominated by debt to official creditors such as donor governments or the IMF.[28] We also excluded countries with access to private finance for which we were

[24] Several of the crisis categories proposed by Cline (2004) and Roubini (2004) are closely linked to the actual instruments of crisis resolution of the 1990s and 2000s, making them difficult to generalize to periods such as the 1980s.

[25] As an example, Tomz (2007, p. 75) highlights that analysts in the 1920s already judged defaulting governments according to their "good faith".

[26] The main reason for this is the difficulty of gathering sufficient information on government behaviour in debt crises before 1980.

[27] The main selection criterion was the United Nations definition of Least Developed Countries (LDC). Further non-LDC defaulters not considered were the low-income countries of Cameroon, Congo, Ghana, Guyana, Honduras, Kenya, Mongolia, and Zimbabwe and countries of former Yugoslavia (Bosnia and Herzegovina, Croatia, Macedonia, Serbia and Montenegro, Slovenia).

[28] The debt restructuring process in these countries is mostly dominated by Paris Club and IMF talks while commercial creditors play a less important role. Moreover, negotiations with private creditors usually cover only small debt amounts and receive little attention in the press and in the literature. This makes it extremely difficult to draw any meaningful conclusions about public-private negotiations. Besides, Lex Rieffel notes that private financing follows a very different logic than financing by governments or IFIs: "commercial bank lending and bilateral donor agency lending are functionally quite distinct. The daily business of commercial banks is to make

not able to gather enough information for comprehensive and reliable coding.[29] Ultimately, we ended up coding cases in 31 countries, which featured a sovereign debt crisis since the year 1980. Table 1 in the Appendix provides an overview on the default periods covered, corresponding to 251 year-events.[30]

Subsection 4.1. outlines the sources and coding procedures. In subsection 4.2. we then describe the resulting dataset, which covers the 9 indicators for each individual year in which a given government was in financial distress.

### 4.1. Sources and Coding Procedure

The starting points of our coding were the two "classic" sources on debt crises cases used in the literature: The list of sovereign bond and loan restructurings in the World Bank's GDF reports (World Bank 2003, 2004 and 2006) and the inventory of sovereigns in default by Standard and Poor's (2006).[31] Using these sources we set up a list of default cases (see Table 1), for which we then gathered comprehensive additional information to measure our sub-indicators of government behaviour during the crisis. A list of data sources for each sub-indicator is provided in Table 2 in the Appendix.

The most rewarding general information source for detailed crisis information turned out to be the print-media. As stated, debt crises are highly publicized events. Particularly the financial press provides extensive and detailed day-to-day coverage on the entire negotiation and restructuring process during crises including any missed payments, unilateral government actions and rhetoric. We therefore followed the example of other researchers in the debt crisis literature, notably Suter (1992), Ozler (1993), Aggarwal (1996) and Arteta and Hale (2008), and relied on flagship media sources to gain much of the desired additional information.[32]

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profit by pricing and managing credit in a huge global market place. (…) By contrast bilateral donor agencies make loans to developing country borrowers to advance various foreign policy objectives: economic growth, alleviation of poverty, regional stability, civil order, and the like" (Rieffel, 2003, p. 105).

[29] These were Cote D'Ivoire, Gabon, Iran, Nicaragua, Trinidad und Tobago and Vietnam.

[30] Note that we included the Republic of Yugoslavia in our sample but decided not to code the defaults of the early 1990s in its follow-up Republics.

[31] We also took into account the list of restructurings by Stamm (1987).

[32] Concretely, we used the online news database factiva and restricted our standardized search to six flagship media sources: The Financial Times, Reuters, the Wall Street Journal, Dow Jones News Service, the New York Times and Associated Press. 32 The search algorithm that proved to be most efficient was "countryname w/10 debt".32 Based on this search algorithm we then extracted all relevant articles into backup-documents for each crisis episode. The next step was to extract the relevant pieces of information from the backup-documents by actually reading the articles therein. Altogether, we gathered and systematically evaluated more than 20,000 pages of articles from the financial press. [Note that all of these articles, including the selection of the relevant and cited information therein, can be made available upon request once the database is published.]

To complement and verify the information found in the standardized print media search, we cross-checked the information with those standard reference books in the field that contained rich information on specific crisis cases (Cline, 1995; Aggarwal, 1996; Boughton, 2001; Roubini and Setser, 2004; Rieffel, 2003; Andritzky, 2006; Sturzenegger and Zettelmeyer, 2006).[33] Much of the crisis insights in these important book publications are based on expert knowledge and detailed policy documents, thus complementing the newspaper sources with hands-on information. We also took into account a series of reports and papers by international financial institutions on the issue (Williams et al. 1983 ; Kincaid et al., 1985 ; Laursen and Fernandez-Ansola, 1995; Piñón-Farah, 1996 ; IMF 2001, 2003, ECB 2005, Finger and Mecagni 2007).[34] Further valuable sources were the comprehensive lists of debt restructurings by Stamm (1987) and the list of major policy events in developing countries by Henry (1999).[35]

Lastly, we used additional standard information sources for coding the sub-indicators on payment behaviour. For the sub-indicator "payments missed" and the sub-indicator "suspension of interest payments" we relied on data on interest payments and arrears from the GDF (2007) database. For the indicator on asset freezes we drew on the IMF's "Report on Exchange Arrangements and Exchange Restrictions" by systematically evaluating the annual volumes from 1980 to 2006.

The entire evaluation was completed over a period of 12 months by a team of two researchers and nine student research assistants. To minimize errors, each case was coded independently by at least two people on the basis of the same sources and procedures. Among the people in charge for a case was always one full-time researcher. The coding results for each sub-indicator were discussed with the entire team only at a final stage. Generally, the very rich press coverage on the crises allowed us to evaluate most facts, events and government actions from the perspective of several news sources independently.[36] To guarantee a transparent and replicable process, we backed each coding explanation with precise quotes from the original articles, books and papers including publication dates and pages. Additionally, we briefly justify each coding decision by summarizing the underlying facts in one or two sentences. These explanations and source references will be made available as soon as the entire database is published.

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[33] Sturzenegger and Zettelmeyer (2006), as an example, present deep insights into crises since 1998, namely the ones in Russia, Ukraine, Pakistan, Ecuador, Argentina, Moldova, Uruguay and the Dominican Republic.

[34] In some cases we also drew on further country-related publications such as Buchheit and Karpinski (2007), IMF Country Reports or IMF Poverty Reduction Strategy Papers (all sources are cited in detail in the datasets).

[35] Stamm (1987), which is available in German only, contains a very detailed list of restructurings, debt rollovers and new money deals between 1956 and 1987 and information on the negotiation process with official and private creditors. Henry (1999) provides a list of major policy events in developing countries from the mid 1970s to the mid 1990s that was used, amongst other, for the published article Henry (2000).

[36] If the press coverage was unsatisfactory, i.e. too few articles to allow for objective coding, we decided not to include the crisis cases in our database. This was so for the debt crises in Côte D'Ivoire, Gabon, Iran, Nicaragua, Trinidad und Tobago and Vietnam.

### 4.2. Resulting Year-to-Year Dataset

Our resulting Year-to-Year dataset provides indicator values for every debt crisis year since 1980.[37] In our definition a debt crisis starts whenever debt servicing difficulties become acute. Failed payments, debt exchanges, but also the beginning of debt restructuring negotiations are obvious signs that a government is in sever distress. Concretely, we consider those years as crisis episodes in which a government was in default according to the S&P definition (default or debt exchange) OR in which debt restructuring negotiations take place.[38] This second step assures that we also provide indicator values for years of pre-default negotiations.[39] A debt crisis ends whenever it is successfully resolved, without further default or negotiations. Accordingly, the successful implementation of a restructuring deal – be it with banks or bondholders – is defined as the end of the crisis episode. Altogether, 251 country-year events in 31 countries were coded (see Table 1 in the Appendix).

Recall that we have coded each of the 9 sub-indicators on a yearly basis. This also means that we consider coercive actions that are ongoing. This is relevant for the case of a moratorium declarations or newly enacted capital controls. In fact, we continue to code these as 1, as long as they are not revoked or phased out. In contrast, variables such as forced restructurings or explicit threats were only coded for those years in which a restructuring or a threat actually took place.

## 5. Stylised Facts on Government Behaviour during Crises

With the index and the coding of 9 separate categories we hope to make an important contribution to the categorization and understanding of past and future debt crises. When comparing our results to insights and analyses in the existing literature, our index appears to be a valid proxy for government behaviour; “Tough” negotiatons, “hard” restructuring cases and non-cooperative behaviour as reported for specific crises by Aggarwal (1996), Cline (1995 and 2004), Boughton (2001), Roubini and Setser (2004) or Andritzky (2006) have a high index value (of at least 4) according to our coding results. Additionally, our categorization of prominent cases corresponds to casuistic evidence in the press and to the judgements of a number of experienced Wall Street and policy experts in New York and Washington D.C..[40]

[37] Not that we also set up a second dataset that provides indicator values for each individual restructuring agreement. For this purpose, each sub-indicator was coded for the entire period leading to the respective debt restructuring agreement (see Enderlein, Müller and Trebesch 2007 for details)

[38] See Arteta and Hale, 2008, for a similar definition.

[39] To code crisis years we first took the S&P list of defaults to identify crisis years. Secondly, we relied on information from the press on the start of debt restructurings talks and coded such negotiation years as default periods.

[40] A series of interviews in New York and Washington, D.C. was carried out by our research team in early 2007.

As can be seen from the original data, each sub-indicator displays enough variability to be included in the index (Table 3 in the Appendix provides some descriptive statistics). Additionally, the correlation between each of the individual sub-indicators is relatively low in most cases, so that the sub-indicators can bee seen as sufficiently independent from each other (see Table 4 in the Appendix). In the following figures and tables we now provide some descriptive statistics and stylized facts derived from the country-year dataset of 251 yearly events.

Over half of our yearly sample consists of default events from the 1980s. This reflects the fact that the 1980s saw a global wave of debt defaults in developing countries and also a large number of rather preliminary rescheduling deals, which often had to be renewed in new rounds of negotiations (See Chuhan and Sturzenegger, 2005). Contrarily, the debt crises episodes in recent years were usually quite short, spanning over a period of one or two years only.

[Figure 1 about here]

As can be seen in Figure 1 in the Appendix, the average degree of coerciveness shows no clear **trend over time**.[41] During the 1980s debt crisis, there is a significant increase in coercive behaviour in 1987, when many countries were already in default for several consecutive years. After the conclusion of most Brady deals in 1994, both the number of countries in default and the average degree of coerciveness decrease. The new wave of financial crises of the end of the 1990s again leads to an increase in default events and coercive behaviour. Looking at the past three decades of debt defaults separately, it turns out that, on average, sovereign defaulters behaved less coercive during the 1980s (average of 2.37) compared to the era of Brady deals from 1990 to 1997 (average of 2.80) and the post-Brady era of modern type debt restructurings of 1998 to 2006 (average of 2.80).

[Figure 2 about here]

Regarding the **regional distribution**, the defaults in Latin America and the Caribbean clearly dominate our sample.[42] The region displays numerous very coercive but also many consensual crisis resolution processes. Keeping in mind the large difference in the number of observations, the degree of coerciveness is relatively low in crises in Europe and Central Asia, the Middle East, North Africa and Asia (all below the weighted mean of 2.5). In contrast, governments in Latin America and Sub Saharan Africa showed a more coercive negotiation stance on average. Figure 2 provides an overview on the regional distribution of the index.

[41] Obviously, outliers have a stronger effect on the average index value when the frequency of crises is low. This explains the larger variability in recent years.
[42] We coded 15 defaulting countries in Latin America and the Caribbean and 16 countries in the rest of the world.

[Table 5 about here]

We also calculated the **index average for each country** separately. This yields some additional insights, as can be seen in Table 5. Countries like Uruguay, Chile, Morocco or Mexico showed a cooperative stance throughout extended periods of sovereign debt distress. In contrast, governments of countries like Russia, Nigeria or Peru displayed repeatedly coercive behaviour over many years. An interesting pattern is that countries that opted for unilateral behaviour during the commercial bank restructurings of the 1980s, also tended to behave non-cooperatively during default periods of the 1990s and in more recent cases of sovereign bond defaults (e.g. Ecuador, Argentina). Apparently, some serial defaulters (Reinhart et al., 2003) also display serial patterns of coercive behaviour.

[Table 6 about here]

It is also worth to highlight a number of **particularly coercive crisis cases** listed in Table 6. The well known case of Argentina from 2002 to 2005 displays an exceptional degree of coerciveness, as the government officially declares a default, sticks to the proclaimed moratorium by stopping all payments to its bondholders for 4 years, freezes foreign assets and rejects to engage in any meaningful negotiations with its creditors.

In the case of Brazil of 1987, President Sarney decides to declare a unilateral moratorium and breaks off any negotiations with banks amid a serious political and economic crisis. The moratorium is accurately prepared, to a degree that Brazilian oil tankers were ordered to sail from foreign ports to deter sequestration.[43] After massive capital flight, a sharp drop in foreign investments and heavy political intervention by the United States government, President Sarney agrees to a series of cooperative interim agreements with official and private creditors in 1988 and publicly admits that his unilateral debt policy had been a mistake ("the worst the government had ever committed").[44] Nevertheless, after a devastating result for his party in municipal elections and facing eroding popularity, Sarney again adopts a fully unilateral stance towards international creditors in 1989.

In Nigeria of 1990 the military administration of President Ibrahim Babangida proclaims a ceiling on debt payments and decides to unilaterally reduce the rate of interest payments on its commercial debt. The government remains in deadlock both with commercial and official creditors (Paris Club), adopts an aggressive rhetoric and engages in extensive, but undercover buy-back operations on the secondary market on which it rejects to provide any information. Peru from 1985 to 1989 is a further prominent case of coercive government behaviour. Already in his inauguration speech as President in 1985, Alan Garcia declares his intention to impose a ceiling on debt payments and to abort negotiations with the IMF and private creditors. Until the end of his term in 1989, Garcia

[43] Financial Times, 23 February 1987.
[44] Financial Times, 4 February 1988.

remains "the bad boy of the international debt problem"[45] and adopts an entire range of coercive actions.

All the examples provided above hint at the close interplay between political factors and government behaviour. Differences in the constitutional system set-up of countries, policy cycles and particular political events that destabilize a country are likely to play a decisive role in the policy game over external debt default.

As a last exercise, we compare our index value of government behaviour in cases since 1999 to the ultimate outcome of the restructurings in terms of creditor losses ("haircuts") as calculated by Sturzenegger and Zettelmeyer (2005). This yields some surprising insights. The international bond restructurings in Ukraine, Ecuador and Pakistan all feature a haircut of about 30 percent. Yet, the international bond restructurings in Ukraine and Pakistan show a low degree of coercive behaviour, while Ecuador shows a very high index value. Similarly, the exchanges of international promissory notes (PRINs/IANs) in Russia feature a moderate degree of coerciveness, but involved a large haircut of over 50%. For Argentina and Uruguay the picture is clearer. Argentina's restructurings in Oct. 2001 and April 2005 both feature a high index value and a sizable haircut, while the international bond exchange in Uruguay of 2003 features both a low degree of coerciveness and a small haircut of only 12.9%. Altogether, however, it seems that coercive behaviour is not as closely linked to the degree of losses as sometimes believed.[46]

# 6. Econometric Approach and Data

## 6.1 Estimation Technique

For our econometric analysis, we construct a panel dataset that includes 52 emerging and developing economies, including 28 defaulters and 25 non-defaulters (a list is provided in Table 8 in the appendix).[47] The time period considered is 1980 to 2004 resulting in more than 1000 data points. Our key aim is to investigate what determines coercive government behaviour. Here, we take our novel index as a proxy for government behaviour employing it as dependent variable. With such ordinal dependent variable one might employ a random effects ordered probit model for panels, e.g. by following the routine developed by Rabe-Hesketh et al. (2000) and Frechette (2001a, 2001b). However, two major issues challenge the application of such panel estimation method: (i) the issue of weighting the individual indicators, and (ii) the problem of potential selection bias.

[45] Wall Street Journal, 24 March 1986.
[46] Of course, a systematic assessment involving econometric analysis and controlling for economic fundamentals is needed to validate this point.
[47] Note, that, as argued above, we consider only countries that had reasonable access to finance. Accordingly, LDCs and a number of other countries (see footnotes 16-18) are excluded. Moreover small countries with a population below 1,5 million are excluded due to notorious problems of data reliability in such countries, particularly in the 1980s.

Given that our own index is the key dependent variable in this analysis, appropriate weighting is of crucial importance. It is not straightforward to decide which weight each of the 9 sub-indicators of government behaviour should have in the overall index. In our view, an additive index is a good choice for illustrative purposes and to display main stylized facts. However, it will be more appropriate to employ objective weighting methods when it comes to data analysis. Here, we resort to the standard technique of principal component analysis (PCA) to derive appropriate weights of each sub-indicator. PCA is a very popular statistical method in social sciences and has been used for similar purposes in the economic literature as well (see e.g. Scully and Slottje 1991, Calvo and Reinhart 1996 or Filmer and Pritchett 2001). Jolliffe (2002) provides an encompassing discussion of PCA techniques.

The key idea behind principal component analysis is to summarize the information of a set of variables in a smaller set of newly created variables, while retaining as much information as possible. The newly created variables, the so called principal components, contain most of the variation inherent in the underlying variables and are mutually uncorrelated. The first principal component is the one that captures most of the variation of the original data. For the data at hand, the first principal component contains more than 30% of the variation of the original 9 sub-indicators. The correlation between our simple additive index value (from 0 to 9) and the first principal component is a high 0.99. The first principal component, which is a continuous variable, can thus be seen as a valid measure of government behaviour extracted from our original data.[48]

The second main issue is selection bias. For obvious reasons, we can only observe government behaviour during crises for crisis years, i.e. for the sub-sample of years in which countries actually default. Heckman (1979) pointed out that such incidental data truncation can lead to sample selection bias. Generally, it appears quite reasonable to argue that defaulting countries will not be randomly drawn from our sample of country-year observations. Instead, countries in default are likely to share common characteristics that can be observable or unobservable. Some of the unobservable explanatory factors of default might also affect the scope of government behaviour. In other words, the selection into default might not be exogenous. If we do not take this possibility into account, our estimations might lead to incorrect inference regarding the impact of economic of political factors on government behaviour. We might get biased results because the decision to default is not independent from the decision for unilateral, coercive behaviour.

Models that control for endogenous sample selection have been widely applied in both economics and political science. The standard approach is to use Heckman's two

[48] Note that in our context, principal component analysis provides a dependent variable of government behaviour with large variation and many parameter values. As a result, standard panel regression techniques may be employed instead of estimation techniques for limited dependent variables such as ordered response models.

step procedure, or other related techniques developed for a cross-section framework. However, only very few researchers have used sample selection models in a panel framework.[49] One likely reason pointed out by Greene (2002), is that the theoretical literature on panel data models for the sample selection is rather incomplete and ambiguous. Moreover, few econometric packages actually provide estimation routines. Here, we rely on a Panel Data Heckman Selection Model with fixed effects developed by Greene (2007). It builds on the contributions by Verbeek (1990), Zabel (1992) and Verbeek and Nijman (1992).

The sample selection model with fixed effects suggested by Greene is fit by a hybrid two step maximum likelihood procedure. In the first step (selection equation), a standard fixed effects probit model is estimated using maximum likelihood. In the second step, the log likelihood function to compute estimates for the main outcome equation is maximized conditional on the error terms obtained in step 1. The model can be written as follows:

$$\begin{aligned} z_{it}^{*} &= \alpha_i + \delta' w_{it} + u_{it} \\ z_{it} &= 1(z_{it}^{*} > 0) \end{aligned} \qquad i = 1,...,N; t = 1,...,T \qquad (1)$$

$$y_{it} = \omega_i + \beta' x_{it} + \varepsilon_{it}, \qquad (2)$$

where $z_{it}^{*}$ is the unobserved latent variable and $z_{it}$ the observed binary outcome taking the value of one if a country *i* is in default and zero otherwise. To identify distress years in the first stage (selection equation) we use our definition above, i.e. the standard binary default measure as of Standard&Poor's (2006) and add observations in which debt negotiatons took place. As pointed out, the endogenous dependent variable $y_{it}$ (index of coerciveness derived with PCA) is observed only when the selection variable $z_{it} = 1$, i.e. in debt distress years. The vectors $x_{it}$ and $w_{it}$ contain a set of observable explanatory variables. Note also, that the model includes fixed effects, so that $\alpha_i$ is the unobserved fixed effect in the selection equation (1) and $\omega_i$ the unobserved fixed effect in the outcome equation (2). Selection bias can be detected by correlating the conditional mean of the residuals in the regression equation with the error term in the selection equation. The respective error terms $u_{it}$ and $\varepsilon_{it}$ are assumed to be bivariate normally distributed. Formally, one can write $E = (u_{it} \mid \alpha_i, x_{it}, \varepsilon_{it}) = E(u_{it} \mid \varepsilon_{it}) = \rho\varepsilon_{it}$. In case the value of $\rho$ is not statistically different from 0, we would infer that no selection bias is present so

[49] Few economic papers have applied panel estimation set-ups with sample selection. Among the few examples are Bruno et al. (2005), Dustmann and Rochina-Barrachina (2007) and Razin et al. (2004). To our knowledge there is no such application in political science.

[49] The estimation for this model is performed with LIMDEP 9.0. All other estimations are performed in STATA 9.2.

that the estimation of (1) may be done using standard fixed or random effects probit models.

## 6.2 Explanatory Variables

The set of explanatory variables used in the estimations are fairly standard and chosen from the large empirical literature on the economic and political determinants of default described above. Table 9 in the Appendix provides an overview on the variables employed in the regressions and expected signs.

We start with a basic set of macroeconomic variables and sovereign debt indicators that have been shown to be main predictors of debt distress. We capture solvency and liquidity pressure by including the variable total external debt to GDP and short term debt to reserves respectively. Higher levels of both variables imply increasingly severe financial pressure and are thus expected to increase the likelihood of coercive behaviour. We also include a variable capturing the overall weight of private debt in a government's total obligations, namely the share of government debt owed to private creditors in total public debt. Moreover, we use key macroeconomic variables including the degree of openness (defined as the sum of exports and imports over GDP), the ratio of the current account to GDP as well as average real growth and average inflation (both measured as averages of the past 3 years). All of these variables are taken from the World Bank's GDF and WDI databases. The basic specification also includes dummies for world regions following the World Bank classification and a dummy capturing whether a country defaulted in the previous 5 years.

We then go on and extend our specifications to include main indicators of political institutions. As pointed out above, we focus particularly on the role of the regime type (democracy vs. autocracy) constitutional system type (presidential vs. parliamentary system) and government orientation (left vs. right governments).

To measure the degree of democracy we rely on the widely used PolityIV composite index ranging from -10 (very undemocratic) to +10 (very democratic).[50] A priori it is not clear whether democratic governments are more likely to act coercively towards private creditors or not. As described in the literature review, the empirical evidence on the effect of democracies is ambiguous. Democracies may be more likely to act aggressively towards external actors due to domestic audience costs attributed to default (Saiegh 2005). On the other hand, democracies could be more stable than autocracies (Tullock 1987; van Rijkeghem and Weder, 2004) and less prone to default opportunistically and behave coercively towards external creditors in times of distress.

[50] We employ the 2004 release of the Polity IV database.

As to the constitutional regime type, we rely on the Database of Political Institutions (DPI) (Beck et al. 2001).[51] We employ a dummy capturing purely presidential systems.[52] Again, the expected sign is not straightforward from a theoretical point of view. Generally, presidential systems are associated with more centralized power. Strong presidents may thus react swiftly and effectively in case of financial distress, without worrying about potential vetos and a loss of confidence in the legislature. On the other hand, stronger control by parliaments may work as a "check" on government economic policies, rationalizing the ruling parties' policy choices (Kohlscheen 2008). Accordingly, parliamentary systems may prevent too aggressive behaviour towards external creditors.

Polarization is coded 1 for left wing governments and zero otherwise, based on the classification in DPI 2004.[53] We expect the sign of this variable to be positive, i.e. left governments to behave more coercively than centre or right governments. The main theoretical argument behind is that leftist governments tend to pursue the interests of labour rather than capital. If this is true, they might be more likely to run into arrears, impose moratoria or adopt an aggressive rhetoric towards external capital owner in order to please their own electorate.

To this second group of variables, we also add an indicator capturing the role of IMF involvement and bailouts. In accordance with the literature, it is defined as outstanding IMF credits as percentage of national quotas and taken from the IMF's IFS database. We expect higher volumes of IMF credit to soften a government's stance towards creditors.

The third group of explanatory variables includes those capturing short-term political effects and other external and internal shocks. The aim of including them is to identify the potential role of political business cycles and political turmoil for government behaviour in financial distress. First, we construct dummies for presidential and legislative elections from the electoral dates in the DPI (2004) (the "EXELEC" and "LEGELEC" variables). We also draw on the comprehensive database of Arthur Banks,[54] and use his variables on the number riots and general strikes as well as a dummy for coups d'état. Lastly, we also add an index capturing major armed conflicts as indicated in the data by Gleditsch et al. (2001). We expect all of these variables to be positively related to the degree of coercive behaviour. During electoral years, politicians are expected to behave more hostile towards international actors and rebuff orthodox policies with domestic audience costs. Similarly, political turmoil as measured by coups, riots, wars and strikes is expected to negatively affect cooperative negotiations and debt payment flows towards externals creditors.

[51] We employ the 2004 release of the DPI.
[52] The variable takes a score of 0 in case of a mixed or a purely parliamentary system (i.e. a score of 1 or 2 of the DPI2004 SYSTEM variable)
[53] It is coded 1 if the EXECRLC-variable in DPI2004 is coded "L" and 0 otherwise.
[54] Cross-National Time-Series Data Archive

# 7. Results: What determines coercive behaviour?

## 7.1. Key Findings

As a first step, we present and discuss the results of the fixed effects sample selection model described above. Table 11 summarizes the estimation outputs for each of the three specifications. A short glance at the results of the main equation reveals a first key finding of this analysis: Political institutions matter. While very few of the financial and economic variables turned out to be significant explanatory factors of coercive behaviour, we found political variables to matter throughout. This overall result holds if we change specifications, e.g. by including further or alternative economic variables, when applying a general to specific approach for a more parsimonious estimation set-up, when running regressions with different estimation techniques (fixed and random effects, with and without sample selection) and when using different sub-samples.

A second remarkable overall insight from our estimations is that the determinants of default seem to differ systematically from the determinants of coercive behaviour once a default has occurred. When looking at Table 11, the coefficients and significance levels in the selection equation and in the outcome equation are markedly different. This finding is further strengthened when running separate fixed and random effects models for the two equations separately, i.e. for the equation on the determinants of default and for the one on the determinants of coercive behaviour.

A particularly interesting result in this regard is that the level of democracy, as measured by the PolityIV score, matters for government behaviour in default years, but does not have an influence on the probability of defaulting in the first place. Throughout different model specifications, including more parsimonious ones, the coefficient of the Polity variable is significant and positive in the main equation, indicating that democratic regimes tend to behave more coercively towards foreign creditors in years of financial distress. However, it remains insignificant in the selection equation. The same is true when running separate models for both equations. One can interpret this result in that domestic audience costs matter particularly once a government has already defaulted. The crisis resolution and renegotiation process in democracies seem to be messier and less creditor friendly. The finding can be related to the paper of Tomz (2002) who argues that voter preferences about the compliance of international debt contracts can change over time. While the domestic audience might not have a strong opinion about the compliance of debt contracts in ‘good’ times, this might change drastically when a severe crisis breaks out and a default occurs. In such a situation, the full impact of a crisis is likely to be felt by the population, often leading to strong anti-creditor sentiment and opposition against any belt-tightening adjustment policies demanded by creditors. In case large groups of the population become potential losers of fiscal adjustment and rigorous debt servicing, public opinion may turn from a neutral stance towards favouring a policy of non-compliance (see also Tomz 2004). In a democratic setting, politicians might then

give in to public pressure and pursue unilateral policies in favour of domestic audiences and against the interests of foreign creditors. This argument also fits anecdotal evidence of "messy" debt crises in democracies such as in Bolivia or Peru in the 1980s or in Argentina from 2002 to 2005

A similar story applies for presidential regimes. The dummy employed is insignificant in the selection equation, i.e. for the determinants of default, but robustly significant and positive in the main equation. This indicates that governments in purely presidential systems behave more coercively towards creditors on average, compared to those in mixed or parliamentary regimes. A theoretical explanation might again be the importance of popular support. As outlined above, power in a presidential system is more centralised so that presidents are strongly dependent on public opinion but less so on parliamentary support. Presidents with strong constitutional powers are not subject to a permanent check by parliament, which might deter them from pursuing unilateral policies that can be costly in the middle- and long run. One of several episodes that fit this line of thought is Brazil in the late 1980s. Political observes and the financial press agreed that President Sarney's aggressive debt policies and rhetoric in 1987 and 1989 could mainly be explained by his eroding popular support. Reportedly, he imposed the unilateral moratoria with the explicit aim to improve his approval ratings among the population and in order to appease opposition groups.

As to government polarization, which is the third key variable of interest here, it is insignificant in both the selection and main equation. Left wing governments do not appear to be more likely to default and the "colour" of governments does not seem to be systematically related to government behaviour towards creditors. This is a remarkable finding, given that financial market actors often attribute considerable attention to government orientation. A recent example is the rise of Brazil's sovereign risk spreads before the election of left-wing president Luiz Inácio Lula da Silva (see Santiso 2005).

The results for the third specification reveal that neither elections nor the variables capturing political turmoil are significant. Apparently, political business cycles and shocks such as riots, coups or general strikes have no strong systematic effect on government behaviour during crises. This is somewhat surprising, but is confirmed for all following estimations.

Before going on, it should be pointed out that results shown in Table 11 should be handled with some care. A main caveat of the approach is that estimates are somewhat sensible to the bootstrapping method performed by LIMDEP.[55] Coefficient sizes and significance levels can change for some variables depending on the result of the bootstrapping replications that are run to obtain an estimator of the asymptotic covariance matrix. While estimation results of our three main variables of interest - democracy, presidentialism and polarisation - are stable by and large, this is less so for variables such

[55] We chose a maximum of 1000 iterations and 50 as the number of bootstraps.

as the one capturing IMF credit or political turmoil such as riots, conflicts, general strikes and coups. The same is true for the coefficient of $\rho$ as well. For some specifications and bootstrapping runs $\rho$ is significant, albeit only at the 5% or 10% level, pointing to a sample selection problem. For others, however, the coefficient turns clearly insignificant. It is thus difficult to say whether selectivity is an important issue here.

One possible reason for the relative instability of the results is that our data might not be fully suited for a computationally demanding technique such as the fixed effects sample selection model employed here. Given that the level of coerciveness is observed in crisis years only, estimations in the second step rely on only about 200 observations and the respective panel is highly unbalanced. Moreover, we can only include observations from 53 countries, which might be a problem when drawing bootstraps in Greene's routine. Given these problems we run a series of additional estimations that are less sophisticated but important to validate our findings. The results are outlined in the following section.

### 7.2. Robustness Checks

As a first robustness check, we provide estimation results for the equation on the determinants of coercive behaviour without a two-stage setup, i.e. not controlling for potential selection bias. Accordingly, we run standard fixed and random effects panel models for our sub-sample of crisis years. Tables 12 and 13 provide the results for fixed and random effects estimations respectively.[56]

As can be seen, the results are roughly in line with those of the outcome equation in Table 11. The coefficient of external debt to GDP is again highly significant and positively related to the degree of coerciveness. Also the coefficients of the Polity variable of democracy and of the dummy for presidential systems are significant and positive, both with and without fixed effects. The size of IMF credit is significant in some settings and negatively signed, indicating that large rescue packages are associated with less coercive government behaviour. Given the potential endogeneity of this variable and the fact that the coefficient turns insignificant for some specifications, one should however be wary to infer any strong conclusions from this finding. [57]

Given that our sample is so unbalanced one might criticise the use of panel estimation techniques. In fact, for some countries that defaulted only over short periods of time since 1980, the sample only includes one or two observation. To address this issue, we run simple OLS regressions in the cross section as well. Table 14 provides the respective results. The Polity variable remains significant at the 10% level, while the

[56] In the random effects model, dummies for world regions are included, but they turned out to be insignificant.
[57] Often, IMF credits are given conditional on a government's behaviour. Thus, it could be that the cooperative stance of a government explains the volume of IMF credit and not vice versa.

presidential dummy turns clearly insignificant. The same is true when running a Heckman sample selection model in the cross section, although the significance level of the Polity variable increases to 5%.[58]

As an additional exercise, we expand our panel by simply scaling up our dependent variable of government behaviour by one. We do this by including a further sub-indicator in the PCA computation. This sub-indicator, which we call "distress", takes the value of one if a country is in financial distress (as defined above) and 0 otherwise. We then get PCA values for crisis years *as well as* for non-crisis years, i.e. from 1980 to 2004 for all 27 default countries included in the analysis.[59] Once missing values on the explanatory side are counted, the sample size increases from 200 to more than 500. Hence, we get a much more balanced panel. We then run standard fixed and random effects models. The estimation outputs are provided in Tables 15 and 16.

The random effect model in this new setting yields a significant and positive coefficient for democracy, further strengthening our finding above. However, the variable turns insignificant once fixed effects are included. As to the presidential dummy, the coefficient is insignificant with both random and fixed effects. The same is true for the left government dummy.

As a last robustness check, we excluded all formerly planned economies from the analysis. Overall, the results were reasonably stable in all of the above models, despite a smaller sample size. We also replaced some variables, e.g. by using annual inflation and growth rates instead to 3-year average values or by using short term debt to GDP instead of short-term debt to reserves. Likewise, we replaced the variable of IMF credits as % of national quotas with a variable measuring the net annual flow of IMF credits in relation to GDP (data from the WDI database). Yet, such minor specification provided no new insights and did not alter the results significantly.

## 8. Conclusions

This article provides the first comprehensive and systematic account of government behaviour during debt crises that goes beyond a binary measure of default versus non-default. Overall, we find a strong variability in government behaviour towards international private creditors across space and time.

In our econometric analysis, we aimed to identify which factors explain coercive government behaviour towards international creditors in times of financial distress. As expected, debt disputes are more severe when debt levels are high. Surprisingly, only few

[58] Results were included in an earlier version of the paper and are available upon request.
[59] PCA values are identical for all non-default years.

other financial and economic variables appear to matter. Political institutions, however, do seem to play a major role.

Overall, we find strong indications that debt crises are more dispute-laden in democracies compared to more autocratic regimes. The coefficient of the PolityIV score of democracy was significant and positive for most models and specifications. Interestingly, however, the level of democracy does not to appear to influence the probability to default in the first place. We interpret these two findings in that domestic audience costs and the degree of democracy seem to play a particularly pronounced role once a crisis has broken out.

The results are somewhat less convincing regarding the role of constitutional regimes. Nevertheless, we have found some weak evidence that governments in presidential regimes tend to behave more coercively towards foreign creditors. Contrarily, government polarisation is not found to matter. Left governments do not seem to act more aggressively, on average, than centre – or right governments. Likewise, elections, and variables capturing political turmoil such as general strikes, coups or riots do not seems to determine a government's stance towards creditors.

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# Appendix

**Table 1: Crisis Periods Covered in the Debt Disputes Database**

| | |
|---|---|
| Albania | 1991-1995 |
| Algeria | 1991-1996 |
| Argentina | 1982-1993 |
| | 2001-2005 |
| Belize | 2006-2007 |
| Bolivia | 1980-1993 |
| Brazil | 1983-1994 |
| Bulgaria | 1990-1994 |
| Chile | 1983-1990 |
| Costa Rica | 1981-1990 |
| Dominica | 2003-2005 |
| Dom. Rep. | 1982-1994 |
| | 2004-2005 |
| Ecuador | 1982-1994 |
| | 1999-2000 |
| Grenada | 2004-2005 |
| Jordan | 1989-1993 |
| Mexico | 1982-1990 |
| Moldova | 2002 |
| Morocco | 1983-1990 |
| Nigeria | 1982-1991 |
| Panama | 1983-1996 |
| Pakistan | 1998-1999 |
| Peru | 1983-1997 |
| Philippines | 1983-1992 |
| Poland | 1981-1994 |
| Romania | 1981-1983 |
| | 1986 |
| Russia | 1991-2000 |
| South Africa | 1985-1987 |
| | 1989 |
| | 1993 |
| Turkey | 1981-1982 |
| Ukraine | 1998-2000 |
| Uruguay | 1983-1991 |
| | 2003 |
| Yugoslavia | 1983-1988 |
| Venezuela | 1982-1990 |

## Table 2: Data and Information Sources for Each Sub-Indicator

| Sub-Indicator | Sources for Coding |
|---|---|
| **Payments missed** | Main Source: Arrears data from the GDF (2007) database. Supplementary information from the financial press, Stamm (1987), policy reports, book sources. |
| **Unilateral payment suspension** | Main Source: Financial press. Supplementary information from Stamm (1987), policy reports, book sources. |
| **Suspension of interest payments** | Main Source: Data on Interest Arrears and Interest Payments from the GDF (2007) database. Supplementary information from the financial press, Stamm (1987), policy reports, book sources. |
| **Freeze on assets (capital and exchange controls)** | Main Source: The IMF's "Annual Report on Exchange Arrangements and Exchange Restrictions" (1980-2006). Supplementary information from the financial press, Stamm (1987), policy reports, book sources. |
| **Explicit moratorium or default declaration** | Main Source: Financial press. Supplementary information from Henry (1999), Stamm (1987), policy reports, book sources. |
| **Explicit threats to repudiate on debt** | Main Source: Financial press. Supplementary information from Henry (1999), Stamm (1987), policy reports, book sources. |
| **Breakdown or refusal of negotiations** | Main Source: Financial press. Supplementary information from Stamm (1987), policy reports, book sources. |
| **Data disclosure problems** | Main Source: Financial press. Supplementary information from Stamm (1987), policy reports, book sources. |
| **Forced and non-negotiated restructuring** | Main Source: Financial press. Supplementary information from Stamm (1987), policy reports, book sources. |

**Financial Press:** Standardized search method in the *factiva* database. Evaluation of 20,000 pages of articles from the Financial Times, Reuters, the Wall Street Journal, Dow Jones News Service, the New York Times and Associated Press.
**Policy Reports:** ECB (2005), Finger and Mecagni (2007), IMF (2001, 2003), Kincaid et al. (1985), Laursen and Fernandez-Ansola (1995), Piñón-Farah (1996) and Williams et al. (1983).
**Book Sources:** Aggarwal (1996), Andritzky (2006), Boughton (2001), Cline (1995), Roubini and Setser (2004), Rieffel (2003), Sturzenegger and Zettelmeyer (2006).

## Table 3: Descriptive Statistics for Each Sub-Indicator

| Variable | Observations (default years) | Min | Max | Frequency of value 1 | Mean | Std. Dev. |
|---|---|---|---|---|---|---|
| Payments Missed | 250 | 0 | 1 | 190 | 0.760 | 0.428 |
| Suspension of Interest Paym. | 250 | 0 | 1 | 146 | 0.264 | 0.442 |
| Unilateral Payment Susp. | 250 | 0 | 1 | 66 | 0.584 | 0.494 |
| Freeze on Assets | 250 | 0 | 1 | 24 | 0.096 | 0.295 |
| Explicit Default Declaration | 250 | 0 | 1 | 30 | 0.120 | 0.326 |
| Forced or non-negotiated restr. | 250 | 0 | 1 | 14 | 0.056 | 0.230 |
| Explicit Threats to Repudiate | 250 | 0 | 1 | 41 | 0.164 | 0.371 |
| Data Disclosure Problems | 250 | 0 | 1 | 20 | 0.080 | 0.272 |
| Breakdown or Refusal of Negot. | 250 | 0 | 1 | 107 | 0.428 | 0.496 |

## Table 4: Correlation Matrix for the 9 Sub-Indicators

| | Payments Missed | Unilateral Payment Suspension | Suspension of Interest Payments | Freeze on Assets | Explicit Default Declaration | Explicit Threats to Repudiate | Breakdown or Refusal of Negotiations | Data Disclosure Problems | Forced or non-negotiated restructurings |
|---|---|---|---|---|---|---|---|---|---|
| Payments Missed | **1.00** | 0.67 | 0.34 | 0.09 | 0.18 | 0.05 | 0.32 | 0.13 | 0.10 |
| Unilateral Payment Suspension | 0.67 | **1.00** | 0.47 | 0.11 | 0.26 | 0.07 | 0.47 | 0.22 | 0.17 |
| Suspension of Interest Payments | 0.34 | 0.47 | **1.00** | 0.08 | 0.31 | 0.13 | 0.42 | -0.04 | 0.09 |
| Freeze on Assets | 0.09 | 0.11 | 0.08 | **1.00** | 0.21 | 0.19 | 0.13 | 0.10 | 0.16 |
| Explicit Default Declaration | 0.18 | 0.26 | 0.31 | 0.21 | **1.00** | 0.24 | 0.28 | 0.16 | 0.39 |
| Explicit Threats to Repudiate | 0.05 | 0.07 | 0.13 | 0.19 | 0.24 | **1.00** | 0.12 | -0.05 | 0.17 |
| Breakdown or Refusal of Negotiations | 0.32 | 0.47 | 0.42 | 0.13 | 0.28 | 0.12 | **1.00** | 0.13 | 0.14 |
| Data Disclosure Problems | 0.13 | 0.22 | -0.04 | 0.10 | 0.16 | -0.05 | 0.13 | **1.00** | 0.06 |
| Forced or non-negotiated restructurings | 0.10 | 0.17 | 0.09 | 0.16 | 0.39 | 0.17 | 0.14 | 0.06 | **1.00** |

**Figure 1: The Coerciveness-Index in Debt Crises over Time**

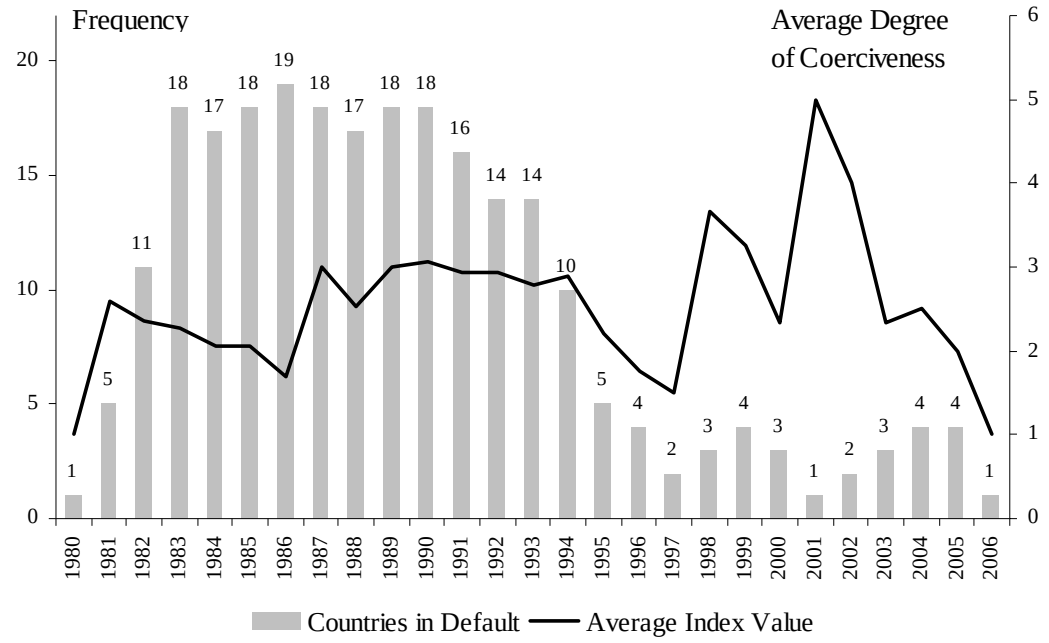
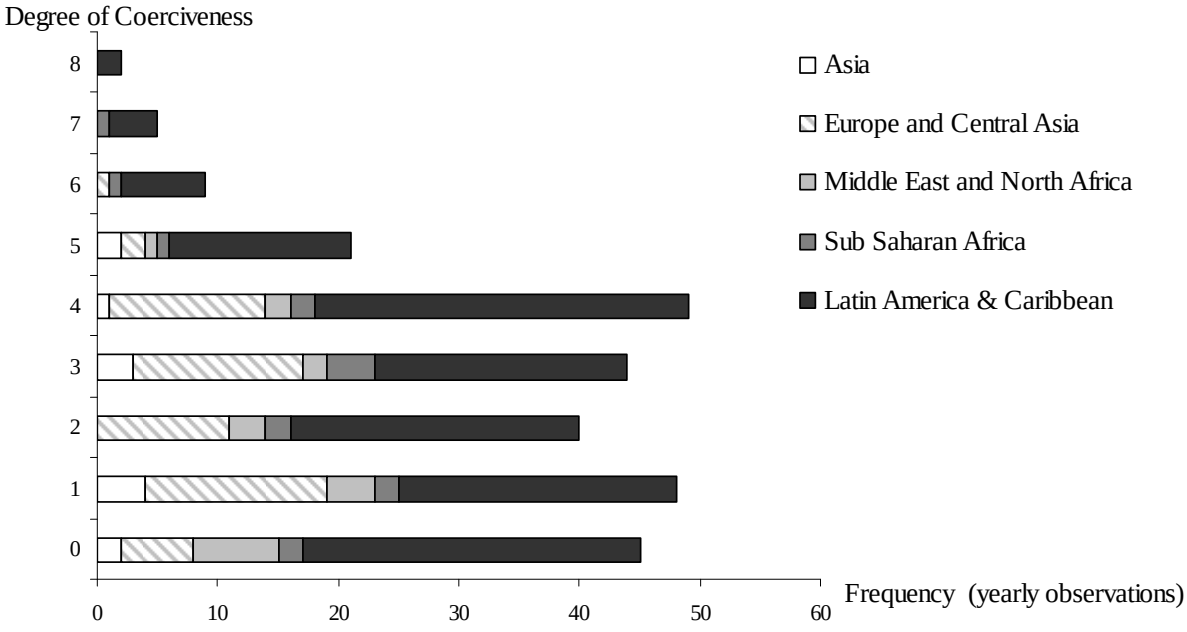



**Figure 2: Regional Distribution of the Index (since 1980)**



## Table 5: Average Degree of Coerciveness by Countries

**Low Degree of Coercive Behaviour** (in Crises since 1980):

| | Years in Default | Average Yearly Index Value |
|---|---|---|
| Uruguay | 10 | 0.2 |
| Chile | 8 | 0.5 |
| Algeria | 6 | 0.83 |
| Morocco | 8 | 0.88 |
| Mexico | 9 | 1.33 |

**High Degree of Coercive Behaviour** (in Crises since 1980):

| | Years in Default | Average Yearly Index Value |
|---|---|---|
| Jordan | 5 | 3.4 |
| Russia | 10 | 3.5 |
| Nigeria | 10 | 3.9 |
| Argentina | 17 | 4.18 |
| Peru | 15 | 4.33 |

## Table 6: Particularly Coercive Cases (index value of 6 or higher)

| **Country** | **Years** |
|---|---|
| Argentina | 2002 - 2005 |
| Brazil | 1987 and 1989 |
| Dominican Republic | 1989 - 1990 |
| Nigeria | 1990 - 1991 |
| Peru | 1985 - 1989 |

## Table 7: Recent Debt Restructuring Cases

(coding results from our second, agreement-based dataset
- see Enderlein, Müller and Trebesch 2007 for details)

| **Restructurings of Foreign Currency Bonds** | |
|---|---|
| **Country/Year** | **Comments** |
| Argentina 2001 | Megaswap (June) |
| Argentina 2005 | Global Bond Restructuring |
| Belize 2007 | Foreign Bond Restructuring |
| Dominica 2004 | Foreign Bond Restructuring |
| Dominican Republ. 2005 | Foreign Bond Restructuring |
| Ecuador 2000 | Foreign Bond Restructuring |
| Grenada 2005 | Foreign Bond Restructuring |
| Moldova 2002 | Foreign Bond Restructuring |
| Pakistan 1999 | Foreign Bond Restructuring |
| Russia 2000 | Foreign Bond Restructuring |
| Uruguay 2003 | Foreign Bond Restructuring |
| Ukraine 1999 | Restructuring of ING and Merrill Lynch bonds |
| Ukraine 2000 | Global bond restructuring |
| **Average Index Value** | **1.77** |

| **Restructurings of Domestic Currency Bonds and Bank Debt** | |
|---|---|
| **Country/Year** | **Comments** |
| Argentina 2001 | Restructuring of Domestic Bonds |
| Dominican Republ. 2005 | Restructuring of foreign bank debt |
| Moldova 2004 | Restructuring of Gazprom Notes |
| Pakistan 1999 | Restructuring of foreign bank debt |
| Russia 1999 | Restructuring of Domestic Bonds |
| Ukraine 1998 | Restructuring of Domestic Bonds |
| **Average Index Value** | **3.50** |

**Table 8: Countries included in the Regressions**

Albania (D)
Algeria (D)
Argentina (D)
Armenia
Azerbaijan
Belarus

Bolivia (D)
Brazil (D)
Bulgaria (D)
Chile (D)
China
Colombia
Costa Rica (D)
Czech Republic
Dominican Republic (D)
Ecuador (D)
Egypt, Arab Rep.
Estonia
Georgia
Hungary
India
Jordan (D)
Kazakhstan
Kyrgyz Republic
Latvia
Lebanon
Lithuania

Malaysia
Mexico (D)
Moldova (D)
Morocco (D)
Nigeria (D)
Oman
Pakistan (D)
Panama (D)
Papua New Guinea
Peru (D)
Philippines (D)
Poland (D)
Romania (D)
Russian Federation (D)
Slovak Republic
South Africa (D)
Sri Lanka
Syria
Tajikistan

Thailand
Tunisia
Turkey (D)
Ukraine (D)
Uruguay (D)
Uzbekistan
Venezuela (D)

D = Defaulted in the period 1980-2004
Total Number of Countries: 53

**Table 9: Variables included in the Regressions**

| Abbreviation | Name and Definition | Data Source | Expected Sign |
|---|---|---|---|
| Extdebt/GDP | External debt to gdp | GDF | + |
| Shortdebt/Reserv. | Volume of short-term debt to total long-term debt outstanding | GDF | + |
| Average Growth | Average growth previous 3 years | GDF | - |
| Average Inflation | Average inflation previous 3 years | WDI | + |
| Current Acc /GDP | Current account to GDP | GDF | - |
| Openness | Openness Index (Imports+Exports)/GDP | GDF | - |
| IMF Credit | IMF Quota (outstanding IMF credits as % of national quotas) | IFS | - |
| Share of Debt to Private | Share of Total Public Debt owed to Private Creditors | GDF | +/- |
| Polity (Democr.) | Polity-Index -10 (very undemocratic) to +10 (very democratic) | PolityIV | +/- |
| Presid. Dummy | Dummy for purely presidential system | DPI | +/- |
| Left Gov. Dummy | Dummy for left government ("COLOR") | DPI | + |
| Pres. Elect. Dummy | Dummy for a year with presidential elections | DPI | +/- |
| Leg. Elect. Dummy | Dummy for the year of parliamentary election | DPI | +/- |
| Riots | No of riots per year | Arthur Banks Database | + |
| General Strikes | No of general strikes per year | Arthur Banks Database | + |
| Coup Dummy | Dummy for coups d'etat | Arthur Banks Database | + |
| Conflict Dummy | Dummy for major armed conflicts | Gleditsch et al. (2001) | + |
| Past Default | Years in Default in previous 10 Years | S&P | + |
| Share of Bond Debt | Volume of public debt in bonds to total public debt | GDF | Only in Selection Equation |

**Table 10: Summary Statistics**
**Sample: 28 Defaulting Countries 1980-2004**

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| Extdebt/GDP | 590 | 0.59 | 0.31 | 0.01 | 2.31 |
| Shortdebt/Reserv. | 594 | 1.29 | 2.04 | 0.00 | 24.00 |
| Openness | 604 | 0.71 | 0.47 | 0.17 | 4.36 |
| Current Acc /GDP | 604 | -0.02 | 0.05 | -0.20 | 0.23 |
| Average Inflation | 625 | 111.01 | 529.86 | -16.87 | 8706.91 |
| Average Growth | 635 | 2.43 | 4.77 | -24.73 | 15.71 |
| Share of Debt to Private | 607 | 0.46 | 0.27 | 0 | 1 |
| Past Default | 675 | 0.56 | 0.50 | 0 | 1 |
| IMF Credit | 612 | 116.90 | 156.87 | 0 | 1685.24 |
| Polity (Democr.) | 610 | 3.67 | 6.48 | -9 | 10 |
| Presid. Dummy | 651 | 0.74 | 0.44 | 0 | 1 |
| Left Gov. Dummy | 651 | 0.32 | 0.47 | 0 | 1 |
| Pres. Elect. Dummy | 675 | 0.13 | 0.34 | 0 | 1 |
| Leg. Elect. Dummy | 675 | 0.21 | 0.41 | 0 | 1 |
| Riots | 611 | 0.68 | 1.87 | 0 | 23 |
| Coup Dummy | 615 | 0.02 | 0.13 | 0 | 1 |
| General Strikes | 611 | 0.44 | 0.88 | 0 | 6 |
| Dummy Conflict | 675 | 0.07 | 0.26 | 0 | 1 |
| Share of Bond Debt | 607 | 0.17 | 0.23 | 0.00 | 0.80 |

## Table 11: Results for the Fixed Effects Sample Selection Model

### Main equation

**Dependent variable: Index of coercive behaviour weighted through PCA**

| | Specification 1 | | Specification 2 | | Specification 3 | |
|---|---|---|---|---|---|---|
| | coef | se | coef | se | coef | se |
| **Extdebt/GDP** | 4.328 *** | 0.185 | 4.640 *** | 0.658 | 4.038 *** | 0.316 |
| **Shortdebt/Reserv.** | 0.176 | 0.169 | 0.190 | 0.168 | 0.193 * | 0.108 |
| **Openness** | 0.855 | 1.322 | 2.052 | 1.333 | 2.809 *** | 0.905 |
| **Current Acc /GDP** | -1.835 | 4.966 | -0.222 | 0.652 | 1.072 | 0.733 |
| **Average Inflation** | -0.063 | 0.067 | -0.071 | 0.064 | -0.085 | 0.125 |
| **Average Growth** | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 |
| **Share of Debt to Private** | -5.146 | 4.272 | -4.531 | 3.487 | -4.487 | 3.633 |
| **Past Default** | -0.807 | 0.728 | -1.433 ** | 0.786 | -1.365 * | 0.767 |
| **IMF Credit** | | | -0.002 | 0.004 | -0.003 | 0.003 |
| **Polity (Democr.)** | | | **0.107 ** ** | 0.053 | **0.129 ** ** | 0.056 |
| **Presid. Dummy** | | | **2.945 *** ** | 1.097 | **2.981 *** ** | 0.935 |
| **Left Gov. Dummy** | | | 0.181 | 1.446 | 0.335 | 1.081 |
| **Pres. Elect. Dummy** | | | | | 0.008 | 0.462 |
| **Leg. Elect. Dummy** | | | | | -0.062 | 0.352 |
| **Riots** | | | | | 0.263 | 0.183 |
| **Coup Dummy** | | | | | 0.292 | 1.698 |
| **General Strikes** | | | | | 0.213 | 0.878 |
| **Conflict Dummy** | | | | | -0.350 | 1.181 |
| **Rho** | -0.315 ** | 0.135 | -0.453 * | 0.232 | -0.472 * | 0.283 |

### Selection equation

**Dependent variable: Dummy for Default**

| | Specification 1 | | Specification 2 | | Specification 3 | |
|---|---|---|---|---|---|---|
| | **coef** | **se** | **coef** | **se** | **coef** | **se** |
| **Extdebt/GDP** | 6.697 *** | 0.791 | 5.414 *** | 0.929 | 6.386 *** | 1.203 |
| **Shortdebt/Reserv.** | 0.057 | 0.060 | -0.050 | 0.117 | 0.123 | 0.096 |
| **Openness** | -4.154 *** | 1.020 | -1.510 *** | 0.561 | -1.982 ** | 0.794 |
| **Current Acc /GDP** | 5.820 | 3.459 | 4.716 | 3.530 | 5.720 | 3.557 |
| **Average Inflation** | -0.028 * | 0.023 | -0.026 | 0.034 | 0.026 | 0.032 |
| **Average Growth** | 0.000 | 0.000 | 0.002 ** | 0.001 | 0.002 ** | 0.001 |
| **Share of Debt to Private** | 1.744 * | 0.998 | 1.628 | 1.116 | 1.823 | 1.490 |
| **Past Default** | 1.659 *** | 0.307 | 1.176 *** | 0.300 | 1.322 *** | 0.316 |
| **IMF Credit** | | | 0.000 | 0.001 | 0.002 ** | 0.001 |
| **Polity (Democr.)** | | | 0.004 | 0.026 | 0.028 | 0.031 |
| **Presid. Dummy** | | | -0.187 | 0.482 | 0.941 | 0.603 |
| **Left Gov. Dummy** | | | 0.156 | 0.326 | 0.133 | 0.446 |
| **Pres. Elect. Dummy** | | | | | -0.317 | 0.400 |
| **Leg. Elect. Dummy** | | | | | 0.439 | 0.321 |
| **Riots** | | | | | -0.019 | 0.090 |
| **Coup Dummy** | | | | | 2.455 * | 1.242 |
| **General Strikes** | | | | | 0.221 | 0.155 |
| **Conflict Dummy** | | | | | 0.579 | 0.724 |
| **Share of Bond Debt** | -4.664 *** | 0.734 | -5.344 *** | 0.841 | -5.907 *** | 0.819 |

*** indicate significance at a 1% level, ** at a 5% level, * at a 10% level.

Table 12 Results for the Random Effects Model

**Sample: Crisis years only**
**Dependent Variable: Index of Coercive Behaviour Weighted through PCA**

| | **Specification 1** | | **Specification 2** | | **Specification 3** | |
|---|---|---|---|---|---|---|
| | **coef** | **se** | **coef** | **se** | **coef** | **se** |
| **Extdebt/GDP** | 1.983*** | 0.465 | 2.605*** | 0.505 | 2.526*** | 0.608 |
| **Shortdebt/Reserv.** | 0.091 | 0.063 | 0.095 | 0.060 | 0.092 | 0.060 |
| **Openness** | -0.499 | 0.348 | -0.487 | 0.313 | -0.276 | 0.385 |
| **Current Acc /GDP** | -0.288 | 2.204 | 0.432 | 2.379 | 0.409 | 2.584 |
| **Average Inflation** | 0.000*** | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| **Average Inflation** | -0.044* | 0.024 | -0.043* | 0.025 | -0.045 | 0.033 |
| **Share of Debt to Private** | -1.463 | 0.988 | -1.184 | 1.015 | -1.316 | 1.107 |
| **Past Default** | 0.303 | 0.269 | -0.015 | 0.295 | -0.016 | 0.300 |
| **IMF Credit** | | | **-0.002*** | 0.001 | **-0.003**** | 0.001 |
| **Polity (Democr.)** | | | **0.057**** | 0.025 | **0.065***** | 0.023 |
| **Presid. Dummy** | | | **0.733**** | 0.310 | **0.806***** | 0.301 |
| **Left Gov. Dummy** | | | -0.297 | 0.459 | -0.216 | 0.454 |
| **Pres. Elect. Dummy** | | | | | -0.016 | 0.229 |
| **Leg. Elect. Dummy** | | | | | -0.101 | 0.172 |
| **Riots** | | | | | 0.109 | 0.092 |
| **Coup Dummy** | | | | | 0.498 | 0.596 |
| **General Strikes** | | | | | 0.028 | 0.094 |
| **Dummy Conflict** | | | | | 0.204 | 0.398 |
| **Constant** | -1.002** | 0.502 | -1.689*** | 0.636 | -1.854*** | 0.669 |
| **Number of observations** | 205 | | 199 | | 196 | |

*** indicate significance at a 1% level, ** at a 5% level, * at a 10% level
Robust standard errors clustered by country

Table 13: Results for the Fixed Effects Model

**Sample: Crisis years only**
**Dependent Variable: Index of Coercive Behaviour Weighted through PCA**

| | **Specification 1** | | **Specification 2** | | **Specification 3** | |
|---|---|---|---|---|---|---|
| | **coef** | **se** | **coef** | **se** | **coef** | **se** |
| **Extdebt/GDP** | 2.488*** | 0.596 | 2.979*** | 0.587 | 2.728*** | 0.713 |
| **Shortdebt/Reserv.** | 0.085 | 0.078 | 0.089 | 0.062 | 0.096 | 0.064 |
| **Openness** | 0.083 | 0.999 | 0.462 | 0.655 | 0.809 | 0.687 |
| **Current Acc /GDP** | -0.915 | 2.405 | -0.155 | 2.883 | 0.357 | 3.175 |
| **Average Inflation** | 0.000*** | 0.000 | -0.000 | 0.000 | -0.000 | 0.000 |
| **Average Inflation** | -0.036 | 0.031 | -0.040 | 0.030 | -0.043 | 0.036 |
| **Share of Debt to Private** | -2.327 | 2.111 | -1.732 | 1.931 | -1.681 | 1.923 |
| **Past Default** | -0.085 | 0.238 | -0.315 | 0.291 | -0.236 | 0.310 |
| **IMF Credit** | | | -0.003 | 0.002 | -0.003* | 0.001 |
| **Polity (Democr.)** | | | **0.049*** | 0.028 | **0.064**** | 0.026 |
| **Presid. Dummy** | | | **1.315***** | 0.384 | **1.296***** | 0.371 |
| **Left Gov. Dummy** | | | -0.029 | 0.515 | 0.034 | 0.456 |
| **Pres. Elect. Dummy** | | | | | -0.003 | 0.251 |
| **Leg. Elect. Dummy** | | | | | -0.094 | 0.180 |
| **Riots** | | | | | 0.131 | 0.091 |
| **Coup Dummy** | | | | | 0.398 | 0.650 |
| **General Strikes** | | | | | 0.037 | 0.088 |
| **Dummy Conflict** | | | | | 0.044 | 0.553 |
| **Constant** | -0.808 | 1.051 | -2.453* | 1.222 | -2.690** | 1.196 |
| **Number of observations** | 205 | | 199 | | 196 | |

*** indicate significance at a 1% level, ** at a 5% level, * at a 10% level
Robust standard errors clustered by country

Table 14 OLS Results (Cross Section)

**Sample: Crisis years only**
**Dependent Variable: Index of Coercive Behaviour Weighted through PCA**

| | Specification 1 | | Specification 2 | | Specification 3 | |
|---|---|---|---|---|---|---|
| | coef | se | coef | se | coef | se |
| **Extdebt/GDP** | 1.179** | 0.530 | 1.582*** | 0.552 | 1.451** | 0.595 |
| **Shortdebt/Reserv.** | 0.117* | 0.059 | 0.149** | 0.064 | 0.144** | 0.060 |
| **Openness** | -0.589 | 0.402 | -0.777* | 0.376 | -0.682* | 0.375 |
| **Current Acc /GDP** | -0.055 | 2.934 | 0.822 | 3.272 | 0.534 | 3.131 |
| **Average Inflation** | 0.000** | 0.000 | 0.000* | 0.000 | 0.000* | 0.000 |
| **Average Inflation** | -0.054* | 0.028 | -0.042 | 0.027 | -0.041 | 0.038 |
| **Share of Debt to Private** | -1.016 | 0.933 | -0.713 | 0.868 | -0.730 | 0.862 |
| **Past Default** | 0.837** | 0.345 | 0.547 | 0.395 | 0.537 | 0.359 |
| **IMF Credit** | | | -0.002 | 0.002 | -0.002 | 0.002 |
| **Polity (Democr.)** | | | **0.068*** | 0.035 | **0.065*** | 0.032 |
| **Presid. Dummy** | | | 0.414 | 0.378 | 0.394 | 0.355 |
| **Left Gov. Dummy** | | | -0.433 | 0.370 | -0.335 | 0.387 |
| **Pres. Elect. Dummy** | | | | | -0.070 | 0.229 |
| **Leg. Elect. Dummy** | | | | | -0.100 | 0.245 |
| **Riots** | | | | | 0.010 | 0.098 |
| **Coup Dummy** | | | | | 0.733 | 0.543 |
| **General Strikes** | | | | | 0.060 | 0.143 |
| **Dummy Conflict** | | | | | 0.491 | 0.646 |
| **Constant** | -0.883* | 0.452 | -1.251* | 0.623 | -1.230* | 0.640 |
| **Number of observations** | 205 | | 199 | | 196 | |

*** indicate significance at a 1% level, ** at a 5% level, * at a 10% level

Table 15: Random Effects Model for the Broader Sample

**Sample: Crisis and Non-Crisis Years**
**Dependent Variable: Index of Coercive Behaviour Weighted through PCA**

| | **Specification 1** | | **Specification 2** | | **Specification 3** | |
|---|---|---|---|---|---|---|
| | **coef** | **se** | **coef** | **se** | **coef** | **se** |
| **Extdebt/GDP** | 3.286*** | 0.496 | 3.663*** | 0.567 | 3.360*** | 0.481 |
| **Shortdebt/Reserv.** | 0.206*** | 0.061 | 0.211*** | 0.063 | 0.218*** | 0.062 |
| **Openness** | -1.065*** | 0.346 | -1.059*** | 0.388 | -1.010** | 0.397 |
| **Current Acc /GDP** | 1.105 | 2.035 | 0.684 | 2.192 | 0.573 | 2.220 |
| **Average Inflation** | 0.000** | 0.000 | 0.000* | 0.000 | 0.000* | 0.000 |
| **Average Inflation** | -0.043** | 0.020 | -0.044** | 0.021 | -0.043* | 0.024 |
| **Share of Debt to Private** | 0.979 | 0.638 | 1.126 | 0.689 | 0.822 | 0.641 |
| **Past Default** | 0.821*** | 0.164 | 0.755*** | 0.160 | 0.828*** | 0.154 |
| **IMF Credit** | | | -0.000 | 0.000 | -0.000 | 0.000 |
| **Polity (Democr.)** | | | **0.032**** | 0.016 | **0.036**** | 0.017 |
| **Presid. Dummy** | | | 0.348 | 0.325 | 0.428 | 0.340 |
| **Left Gov. Dummy** | | | -0.126 | 0.375 | -0.062 | 0.370 |
| **Pres. Elect. Dummy** | | | | | -0.047 | 0.197 |
| **Leg. Elect. Dummy** | | | | | -0.027 | 0.190 |
| **Riots** | | | | | -0.058 | 0.063 |
| **Coup Dummy** | | | | | 1.307 | 0.808 |
| **General Strikes** | | | | | 0.005 | 0.180 |
| **Dummy Conflict** | | | | | 0.693* | 0.376 |
| **Constant** | -2.129*** | 0.361 | -2.685*** | 0.532 | -2.623*** | 0.560 |
| **Number of observations** | 563 | | 534 | | 508 | |

*** indicate significance at a 1% level, ** at a 5% level, * at a 10% level
Robust standard errors clustered by country

Table 16: Fixed Effects Model for the Broader Sample

**Sample: Crisis and Non-Crisis Years**
**Dependent Variable: Index of Coercive Behaviour Weighted through PCA**

| | Specification 1 | | Specification 2 | | Specification 3 | |
|---|---|---|---|---|---|---|
| | **coef** | **se** | **coef** | **se** | **coef** | **se** |
| **Extdebt/GDP** | 3.865*** | 0.752 | 4.324*** | 0.839 | 4.396*** | 0.807 |
| **Shortdebt/Reserv.** | 0.172*** | 0.052 | 0.180*** | 0.052 | 0.175*** | 0.051 |
| **Openness** | -1.094** | 0.470 | -0.993 | 0.665 | -1.069 | 0.728 |
| **Current Acc /GDP** | 1.809 | 2.645 | 1.116 | 3.001 | 1.047 | 3.388 |
| **Average Inflation** | 0.000* | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| **Average Inflation** | -0.034 | 0.020 | -0.041* | 0.021 | -0.040 | 0.024 |
| **Share of Debt to Private** | 2.104 | 1.577 | 2.466 | 1.561 | 2.354 | 1.693 |
| **Past Default** | 0.525** | 0.207 | 0.585*** | 0.201 | 0.551** | 0.215 |
| **IMF Credit** | | | -0.001 | 0.000 | -0.001 | 0.000 |
| **Polity (Democr.)** | | | 0.027 | 0.018 | 0.030 | 0.019 |
| **Presid. Dummy** | | | 0.403 | 0.385 | 0.489 | 0.355 |
| **Left Gov. Dummy** | | | -0.290 | 0.506 | -0.290 | 0.527 |
| **Pres. Elect. Dummy** | | | | | -0.017 | 0.194 |
| **Leg. Elect. Dummy** | | | | | 0.001 | 0.191 |
| **Riots** | | | | | -0.076 | 0.071 |
| **Coup Dummy** | | | | | 1.258 | 0.999 |
| **General Strikes** | | | | | -0.024 | 0.177 |
| **Dummy Conflict** | | | | | 0.366 | 0.308 |
| **Constant** | -2.751*** | 0.658 | -3.536*** | 0.876 | -3.532*** | 0.866 |
| **Number of observations** | 563 | | 534 | | 508 | |

*** indicate significance at a 1% level, ** at a 5% level, * at a 10% level

Robust standard errors clustered by country