DEMOCRACIES AND SOVEREIGN DEFAULT

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ABSTRACT OF THE THESIS

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Sovereign defaults are a relatively common feature of (international) financial markets. They highlight the credibility problem in lending to governments: Creditors have no feasible means to enforce repayment of debts. Nevertheless, lending to countries takes place. Existing theories cite domestic representation or international reputation as explanations for ongoing lending. Empirical evidence, however, is mixed. In addition, neither approach manages to include both domestic and external defaults.

Building on existing research, a theory that accounts for the differences in between domestic and external defaults and lending is developed, connecting both types to countries' regime types and putting two distinct causal mechanisms – accountability and transparency – at the core of the theory. The argument is tested using data covering the past two centuries. Transparency is measured using the availability of military expenditure data, while accountability is measured using the Polity IV data set.

A positive relationship in between democracies and transparency is presented. As expected, coefficients for the change in transparency are significant and negative. However, contrary to theoretical expectations, coefficients for transparency itself are positive and significant. The coefficient of accountability yields mixed results. The analysis thus underlines the importance of transparency in explaining international sovereign lending.

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Chapter 1

Introduction

News in the past years since the 2008 crash of the US housing market have been dominated by all types of financial crises, starting from the turmoil in the banking system up to full scale sovereign defaults. In late 2009, global markets were rocked by fears of a default of Dubai. The emirate, until then rather associated with immense wealth, state of the art architecture, and futuristic constructions, had to reschedule its debt, a step which is by most definitions equal to a sovereign default. The situation was resolved when the emirate of Abu Dhabi took over and guaranteed the debt. Anything else would have amounted to the biggest default since Argentina's 2001 crisis.[1]

Investors had not expected anything like a default in the fancy, but autocratic, Gulf emirate. Instead, "the announcement was a shock [...] Unlike Argentina, Dubais announcement "was a surprise", said Alia Moubayed, a London-based economist at Barclays Plc."[2] The episode illustrates the relevance of information – or the lack thereof – for sovereign bond markets. It also brought a puzzle to the spotlight, which scholars have long sought to explain: Why should creditors lend money to states if they cannot enforce repayment?

Theories have highlighted democracies' advantage due to domestic creditors' ability to enforce the repayment of debt through representative institutions. Other theories argue that countries' reputations can explain international lending. However, empirical evidence is mixed and indicates that existing theories fail to explain sovereign borrowing and default in a holistic manner. Building on existing arguments, this thesis argues that domestic and external defaults, as well as borrowing, are theoretically different. Regime characteristics effect these distinct types through two different causal mechanisms, namely accountability

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[1] The words "default" and "crisis" are used interchangeably in this thesis.

[2] Bloomberg, 11/26/2009, `http://www.bloomberg.com/apps/news?pid=newsarchive&sid=azd17alFNikQ&pos=2`

and transparency. The latter is especially relevant for external borrowing, the transparent nature of democratic regimes is their key advantage for obtaining external credit.

The argument is tested using a dataset on domestic and external defaults for the years 1800–2010. The availability of military expenditure data is used as a proxy for transparency, results show that transparency increases the risk of default, but changes in transparency have the expected negative effect on default risk. In order to ensure robustness, the models are also computed using solely data prior to World War II. Results remain similar, but error margins decrease, indicating a better fit of the research design for that time period.

The remainder of this thesis will proceed as follows: First, an overview of the literature covering domestic and external lending will be given. Second, a theoretical argument linking regime type and default risk will be established and hypotheses will be deducted. In the following, an overview on the data used to test the hypotheses will be given, followed by a chapter that presents the empirical methods and results. Results are summed up and an outlook on future research is given in the final part.

Chapter 2

Literature review

Most of the literature concerning democratic governance and sovereign defaults is split in two different strains. One part focuses on domestic defaults, where the state does not repay the debt it owes to its own citizens. The main argument here is that domestic creditors can enforce repayment of debt through representation. The second part is concerned with external defaults, where foreign lenders, be they private or other states, are not repaid. Reputational arguments are cited to explain international lending. However, although there are strong interconnections between the two types of default, existing research has only recently started to integrate the two types into one single coherent theoretical perspective (see Guo, 2012; Reinhart and Rogoff, 2009; Van Rijckeghem and Weder, 2009, for examples).[1]

As for the relationship between external and domestic defaults, there is evidence that external defaults usually trigger domestic defaults in emerging economies but not the other way around (Kohlscheen, 2010). Default rates are much bigger for external defaults than for domestic defaults (external defaults double domestic defaults at a rate of 3.9% versus 1.65% in the analysis by Kohlscheen, 2010, and are also much higher in the data used by Reinhart and Rogoff, 2009).

In line with the "domestic versus external defaults" distinction in the literature, the following review will first discuss domestic defaults, followed by external defaults.[2] The third section is concerned with the role of central banks and the fourth and final section discusses the most important economic fundamentals explaining sovereign default.

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[1]There is a number of empirical studies that uses aggregate defaults (domestic and external) as dependent variables. However, a theoretical perspective encompassing an aggregate type of default rarely exists.

[2]I acknowledge that this distinction is quite artificial, but nevertheless necessary to structure this review. Despite the distinction, several articles and their results apply to both domestic and external defaults.

2.1 Debt repayment in the domestic context – the relevance of representative institutions

Starting from the assessment that "public borrowing is subject to a credibility problem" Stasavage (2003a, 1), researchers have tried to find possible solutions to the puzzle of public borrowing taking place despite the credibility problem. Schultz and Weingast (2003) argue that domestic representative institutions are able to mitigate the commitment problem. They are able to improve credibility and thus ease public spending and borrowing. This argument is also known as the "democratic advantage". The argument is refined by Stasavage (2003a), who argues that representative institutions are only relevant if a possibility for creditors to form coalitions with other groups of society exists. There is no reason why representative government itself would be an unconditional explanatory variable for debt repayment. The author uses France and England as historical case studies to confirm his argument.

Following Stasavage, there are three main features of representative government that are of interest in terms of solving the credibility problem, namely:

1. Checks and Balances – Multiple Veto Points: Checks and balances can increase commitment, but they are neither necessary nor sufficient.

2. Party formation in plural societies: One core cleavage of interest is the division between those who lend money to the government and those who pay taxes. While the first group is interested in having their investments repaid, the second group prefers to default in order to decrease the debt and thus the tax burden. However, "in societies where there are multiple dimensions of political conflict, even if government creditors are a small minority, other groups can face incentives to support timely repayment of debts in order to gain the support of government creditors" (Stasavage, 2003a, 3). Democratic compromise may thus solve the commitment problem even in the absence of constitutional checks and balances.

3. Possibility for rulers and politicians to delegate authority to individuals who are committed to pursuing a particular policy: Bureaucratic delegation can decrease default risk, but it will be ineffective unless creditors have power within a representative

assembly.

The commitment to repaying the debt can thus be based on democratic rule as argued in point two, however, delegation to bureaucrats, undemocratic by nature can also increase the commitment (point three). Following this line of argument, the author shows that Britain was more easily able to finance itself, not due to the establishment of the constitutional monarchy, but due to the development of cohesive political parties. In France, however, the establishment of the meeting of the Estat general (assembly) did not occur. Even if it had occurred, the members represented there would have been interested in less taxation and thus default. The cases show that those controlling representative institutions do not necessarily oppose defaults on public debt. Instead, veto points often ensure that a certain group can hold power. Using Stasavage's words, "constitutional checks and balances may have little effect on credibility unless there is some mechanism that ensures that government creditors are the ones to enjoy veto power" (Stasavage, 2003a, 13).

Dincecco (2009) provides historical evidence for the democratic advantage. In his analysis, he argues that states were able to increase their financing abilities through centralization and the establishment of limited governments. He supports this claims with data from European states from 1650 to 1913. While this study is concerned with states' financing abilities through taxation, it does not directly test for states' borrowing abilities.

Focusing on more recent episodes, Archer, Biglaiser, and DeRouen (2007) analyze the empirical relevance of the democratic advantage and show that political factors have only little effect on credit ratings. They study determinants of credit ratings for developing countries from 1987 to 2003 and find support for the relevance of economic variables. In another study (Biglaiser, DeRouen, and Archer, 2011), they find that political variables have only a minor or no effect. However, they are neither considering transparency nor accountability, but solely government stability and corruption.

By contrast, Kohlscheen (2010, 12) finds evidence for parliamentary democracies being less prone to both domestic and external default. This is in line with similar research by Kohlscheen (2006) where he confirms his argument that presidential systems are more prone to default using constitutions as an instrument, arguing that they are usually written at the time of independence and thus serve as a natural experiment. These patterns are

cautiously confirmed by Van Rijckeghem and Weder (2009), who also find that political constraints are only helpful in a supportive economic environment. Following this analysis, the variance in governance systems can thus explain the differences in the risk of default. The democratic advantage argument is shown to have effect once it is considered that countries only do enter international capital markets once they expect to get a positive rating. If this selection process is accounted for, democracies can obtain credit more easily and their ratings are better, as well (Beaulieu, Cox, and Saiegh, 2011).

There is also mixed evidence if the focus is on the democratic advantage for developing or least developed countries. Saiegh (2005) finds evidence for a democratic disadvantage for developing nations between 1971 and 1997. Developing countries that are democracies are at a higher risk of rescheduling their debt. However, no distinction in between external and domestic defaults is used in this analysis. Hence, the dependent variable is an aggregate measure of default. In addition, arrears in sovereign debt are excluded. His results remain similar when estimating the interest rates of sovereign debt. Similarly, Biglaiser, Hicks, and Huggins (2008) show that both democracy and credit ratings are important for least developed countries in order to attract portfolio investments. The effect is not present when analyzing developing nations. In addition, in a study concerned with emerging countries, Rodríguez and Santiso (2008) find that private bank borrowing is correlated with measurements for consolidated democracies and democracies in general. They find this to be especially relevant in Latin America and Eastern Europe.

Further doubts about the democratic advantage or investors' preferences for democracies are raised by the work of Block and Vaaler (2004) who find that credit rating agencies downgrade developing countries prior to elections. Similarly, bond values decrease prior to elections, which indicates that these – or the political uncertainty associated with them – are seen negatively by investors.

2.2 Debt repayment in the international context – reputational arguments

While representative governments are accountable to domestic citizens, the arguments presented in the previous section are hardly transferable to international lending. To start

with, investors abroad cannot enforce debt repayment by running for parliament. Hence, other arguments are needed to explain international lending and debt service.

Investors face three main risks when lending money to governments abroad. First, the government could default on that debt. Second, inflation may reduce the value of that debt, and third, the value of the currency might drop, if the debt is denominated in local currency. Countries may, however, limit the relevance of the two economic variables by selling short-duration debt in foreign denominations (Mosley, 2003).

Information is thus critical for investors in order to assess the real risk of default, and there is evidence that investors put even higher emphasis on information if the risk of sovereign default is higher. Default risk is perceived to be higher in developing economies, which "are associated with higher default risk, political uncertainty, and poor information quality" (Mosley, 2003, 140).

Starting from this problem of incomplete information and the lack of enforcement of credit contracts in the international sphere, Tomz (2007) tries to explain cooperation in the international anarchic environment. He argues that neither the concepts of repeat play nor issue linkage manage to solve the puzzle of why international lending to government exists despite the lack of an international authority that might enforce debt repayments. Tomz argues that reputation is the key to solving this puzzle. Incomplete information about governments' preferences on debt repayments forces investors to rely on past information. Repayment records and (incomplete) information on the countries' economic situation are the key sources of that information. Political instability and change can lead to positive or negative distortions in the reputation.

Tomz provides empirical support for his hypotheses and is able to show that neither military enforcement, nor trade punishment, nor the cohesion of all creditors is relevant in enforcing debt repayments. Using data from the 17th century, he can show that new borrowers had to pay higher yields. In addition, he presents information that shows that "new" countries, for example in Latin America, had to pay similar yields. The group of "new" countries also included a fraudulent case of an invented country that raised money at a similar price until the fraud was uncovered by settler reports. In addition, yield regularly increased in times of political turmoil. The adoption of the gold standard had a strong diminishing effect on the size of the bond yields (Tomz, 2007).

Analyzing 47 countries from 1970 to 2000, Manasse and Roubini (2009) find no support for the relevance of countries' reputations.[3] However, the relevance of reliable and transparent information is further underlined by Bernoth and Wolff (2008), who analyze the effects of creative balancing, which is nothing else than faking balances. They find evidence that the increase of the risk premium is stronger if financial markets are unsure about the true extent of creative accounting. Moreover, fiscal transparency in general is shown to reduce risk premia. Similarly, Shea (2012) argues that credit rating agencies are crucial financial intermediaries that are able to reduce informational asymmetries. He finds support for his argument using credit rating data, mostly from the years after 1989, and a case study of the Rothschilds' function as a financial intermediary for 19th century Austria.

2.3 Central banks and credible commitment

As guardians of an independent monetary policy, central banks are a key part in explaining the puzzle of sovereign borrowing. Broz (1998) points out that these institutions are collective goods in that they are able to solve the credibility problem of governments. Due to a centralized borrowing entity, creditors have a mechanism enabling them to organize credit boycotts. Being a collective good, the formation of central banks implied coordination problems that were, in the case that Broz analyzes[4] overcome by including private interests into the early formation of the central bank.

Broz (2002) then expands on this argument. According to him, central banks are a signaling mechanism for transparency. Truly independent central banks are a rather opaque technology, however, their transparency can be increased if they exist in a liberal political society where they are monitored and the possibility of sanctions exists. Lacking the monitoring and sanctioning mechanisms associated with a liberal democracy, central bank independence is relatively meaningless in autocracies. Countries then have to stick to other tools, such as pegging their currency. In effect, a commitment tool such as pegs is in itself very transparent and can thus substitute for the lack of government transparency

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[3]Reputation is measured as a count of prior defaults (Manasse and Roubini, 2009, 205).

[4]His analysis uses the formation of the Bank of England as a case study.

(Broz, 2002).

Building on the work of Broz (1998), Poast (2012) dismisses the notion that the representative government associated with the "democratic advantage" is key to explaining improved financing capabilities by democratic nations. He argues that instead, central banks are the mechanism accounting for these advantages. Using data from the 19th and the early 20th century, he is able to support this claim. Following his results, central banks matter, not representative institutions. This claim holds true for war victories and bond spreads. In line with this primacy of central banks over representative institutions, Stasavage (2003b) shows that central bank transparency has a negative effect on disinflation costs while the level of the central banks' democratic accountability is unclear.

2.4   Economic fundamentals, interest rates, and credit ratings

While domestic and external sovereign defaults are often aggregated, there are indications that even analyzing these two subcategories might not be sufficiently precise. Manasse and Roubini (2009) group debt crises and argue that there is no such thing as an unconditional predictor or explanatory variable for sovereign default but an interplay in between different characteristics. They identify three different groups of defaults, namely, 1) episodes of insolvency or debt unsustainability, 2) episodes of illiquidity, and 3) macroeconomic and exchange rate weaknesses. Key economic variables that are related to sovereign defaults are the gross national income, its growth, and the share of exports, as well as population size and general public debt (Eaton and Gersovitz, 1981).

The causal relationship between interest rates and sovereign defaults is well established in the literature. High interest rates on sovereign debt are both a cause of sovereign defaults and caused by the risk of default (McGee, 2007). A sudden rise in interest rates[5] can force even solvent countries into default. Given no external shock, interest rates should rise with public borrowing and debt, thus creating an "endogenous borrowing limit" (Stähler, 2011, 18) that governments do not exceed since further borrowing would have diminishing returns (caused by high future losses in consumption). This results in a de facto borrowing limit signaled by the interest rate (Stähler, 2011). Modeling interest rates and default risk

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[5]Caused by an exogenous shock, such as a global or regional crisis, a natural catastrophe, or similar.

as a game, McGee (2007) comes to similar results.

However, accounting for the IMF as a potential lender of last resort distorts this relationship: Investors' knowledge about the lender of last resorts causes interest rates to be lower than their expected value should be. As a result, governments are able to borrow more than their countries' public finances would allow. Unsustainable levels then lead to more defaults (McGee, 2007, see also Capie and Wood, 2007 for the potentially negative role of the IMF).

Recent studies have found that credit ratings are a good predictor of economic and sovereign debt crises (Biglaiser et al., 2011; Shea, 2012). Ratings have been used in several studies mentioned in the previous sections, however, they still are a relatively new phenomenon. Credit ratings did rarely exist prior to 1990 (Shea, 2012). Their utility for this analysis is thus limited as it aims at covering a broad range of time.

Chapter 3

Political Regimes and Sovereign Debt:
Theoretical Framework

Having presented the different arguments and empirical relationships identified in the literature, I will now develop a theoretical argument linking regime type and default risk and derive testable hypotheses. The first part of the chapter is again concerned with domestic defaults while the second part elaborates on external defaults. The final part presents the testable hypotheses.

This thesis aims at explaining the relationship between the regime type of a country and its propensity to domestic or external default. Domestic defaults are defined as a default on national creditors, whereas the government fails to pay external creditors' interests in the case of external default.

The institutional set up connected to a democratic regime affects a country's probability of default by mitigating the commitment problem that arises from the lenders' inability to enforce the repayment of debts by the creditor government. This problem is mitigated through two causal mechanisms, accountability and transparency.

3.1 Accountability: solving the domestic commitment problem

The accountability argument is mainly based on the works of Schultz and Weingast (2003) and Stasavage (2003a). Following their contributions, citizens that lend money to their government can form alliances in parliament in order to force the government to repay its debt. Representative institutions, together with cleavages that facilitate the formation of coalitions, can thus decrease the commitment problem and signal credibility.

In addition, governments can delegate monetary and/or fiscal authority to individuals or bureaucracies that are committed to following a policy of repayment. The probably most

common way to increase credibility through this mechanism is to establish an independent central bank. An independent central bank serves as an impediment to increase the money supplies. Sovereign debts, whether domestic or external, can thus not be "inflationed away". A stable monetary supply without high levels of inflation is not only in the interest of creditors, but also in the interest of big parts of the general population that cares about personal savings. The presence of a democracy is not a sufficient cause for the existence of a central bank. However, it is a necessary cause: only in systems of governance that provide a limitation to the ruler can a truly *independent* central bank exist. Formally independent central banks in autocracies cannot be understood as truly independent since the existence of an autocratic regime implies that the rule of law does not extend to all parts of society. The ruler can thus simply abolish the central bank, switch its governor, or force a policy change (Broz, 1998).

Following this model, the main source of the increase of credibility associated with democracy is based in the pressure that can be exerted by *national* creditors to force the government to repay its debts. The theoretical contribution is thus concerned with domestic defaults. Figure 3.1 combines these two arguments and their relationship to the propensity of domestic default in an arrow diagram. Democracy is associated with accountability. Accountability affects the propensity of domestic default[1] through representation and the existence of an independent central bank.

Figure 3.1: Causal Mechanisms between Democracy and Domestic Default
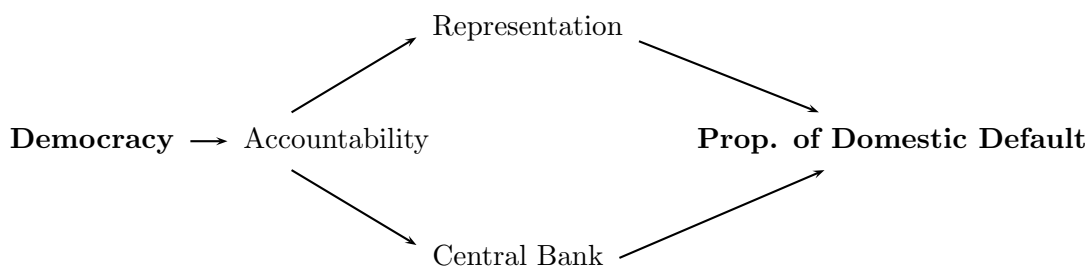
While Figure 3.1 models the relationship between democracy and domestic default, the arguments presented do not seem to be convincing if the analysis is also concerned with

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[1] Due to spatial limits, the figure (as well as Figure 3.2) is oversimplifying the relationship. The propensity of default is not affected directly, more exactly, interest rates are affected, which in turn affect the risk of default (McGee, 2007; Stähler, 2011). More accurately, we would speak of:

Democracy $\Rightarrow$ Accountability $\Rightarrow$ Representation/Central Banks $\Rightarrow$ Interest rates $\Rightarrow$ Propensity of default

external defaults. The inclusion of external defaults is, however, highly relevant since this type of defaults is much more common (Kohlscheen, 2010; Reinhart and Rogoff, 2009). In addition, the usual sequence of crises is started by an external default that is followed by a domestic default (Kohlscheen, 2010).

3.2   Transparency: solving the external commitment problem

Instead of accountability in the sense of representative government, transparency is the causal mechanism of relevance in channeling the effects of democracies on external defaults. Accountability only matters to external defaults in terms of the effect of establishing a central bank. Transparency, however, is the democracies' key safeguard against the loss of confidence associated with a financial crisis. More transparent governments provide more accurate information to investors that results in an increase in confidence and an interest rate on bonds that reflects the countries' factual abilities.

I argue that transparency is inherent to democracies by design. Opposition parties are inclined to attack the government on its economic records, making economic information public and forcing the government to present accurate information on a regular basis. In addition, the government's budget is usually discussed in parliament, thus providing credible information on the expectations of expenditure and income. Information on the state of the economy is public and is discussed in national and international media.

Investors can thus rely on a broad range of information that presents factual information on the state of the economy, policies, and societal changes. All this information is factored in to the yield of sovereign bonds which equal the prices creditors are inclined to pay for the debt. Worsening financial or economic conditions will result in higher bond yields. The yields will thus mirror the state of public finances and the economic and financial expectations. Given no external shock, such as a global crisis, states should be able to refinance themselves continually and will not default (Stähler, 2011).

At the same time, due to the population's interests in a stable monetary police and control over the government, the presence of a central bank is very likely in democracies. While this is caused by the accountability mechanism and domestic interests, its effects extend to the realm of external defaults. An existing central bank in a liberal democracy

is signaling to investors that a stable monetary policy will be pursued.

Figure 3.2: Causal Mechanisms between Democracy and External Default

Accountability ⟶ Central Bank

Democracy

Prop. of External Default
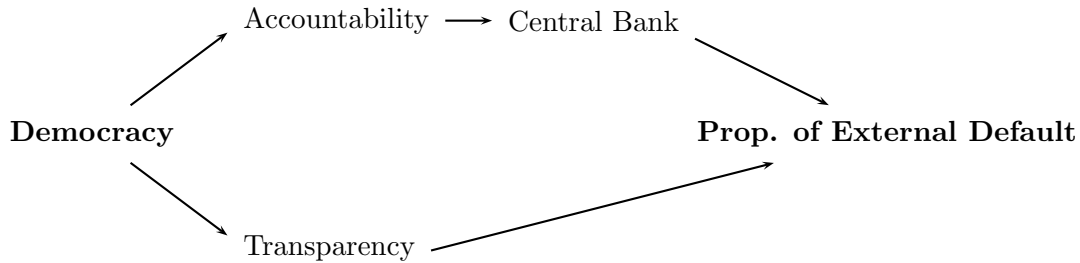
Transparency

3.3   Assumptions

The arguments brought forward about the role of transparency and accountability rest on several assumptions. It is assumed that actors (the government, investors, and citizens) are acting rationally, limited solely by incomplete information. Hence, multiple personal-agent dilemmas and observational costs will arise. The most important ones shall be mentioned now.

The government (whether democratic or not) tries to improve its individual position. Interest differs between regime type, autocratic governments aim at private gains and stability for themselves or their group. Democratic governments are monitored by citizens and, to a certain extent, their interest is bound to the citizens' interests. In addition, democratic governments want to be reelected (and might also aim at private gains). Both autocratic and democratic governments are under budgetary constraints. Citizens are against increased taxation, which are also costly to obtain. Instead, citizens want their private gains to be maximized. If lending to the government, they will aim at enforcing the repayment of the debts.

Investors are interested in maximizing their returns while minimizing their risks. They operate under time and information constraints. The first part of this sentence explains why they are actually lending money to governments abroad, while the latter part builds the foundation for the investors' need for information to assess the risk associated with a country's bond. They base their expectations on the country's past performance and its present outlook. However, the present value is valued higher than past performances.

3.4 Empirical implications

The theoretical arguments given above have clear and easily testable empirical implications, which will be derived in this section. Following the arguments concerning the relationship between democratic regimes and domestic defaults, a clear negative relationship between representative institutions and the risk of domestic defaults should exist.

Hypothesis 1 *Representative institutions lower the risk of domestic defaults.*

Since the enforcement mechanism of representative institutions cannot be used by international investors, representative institutions should not have any effect on the risk of external default. Instead, it might even be in the interest of the domestic citizens to push the government to external default, especially since evidence of creditors' collective punishment for defaults is vague.

Hypothesis 2 *Representative institutions have no effect on the risk of external defaults.*

Instead of the accountability mechanism, the transparency mechanism should be effective in lowering the risk of external defaults once we control for the effect of central banks. Transparent countries are signaling their factual state of public finances and economic abilities. Interest rates are not distorted by false or unavailable information and thus provide a natural barrier against default.

Hypothesis 3 *Transparent countries have a lower risk of external defaults.*

Once we account for transparency, other political variables, even the democratic or autocratic nature of a country, should not be relevant anymore.

Secondary Hypothesis 1 *Controlling for transparency, the political regime does not affect the risk of external defaults.*

Central banks serve as public goods that have positive effects that safeguard against both domestic and external defaults, namely transparency in the sense of a commitment to a stable monetary policy with low inflation and the centralization of borrowing that enables credit boycotts by (domestic and external) lenders. However, central banks can only fulfill these roles if they operate in democracies that allow for monitoring and potential punishment.

Secondary Hypothesis 2 *Central banks in democracies have a negative effect on the risk of both domestic and external defaults.*

Having deducted the hypotheses, the following section will now present the research design that will be used to test these hypotheses.

Chapter 4

Data

This chapter will present the data and operationalizations used to test the hypotheses. I will start with a discussion of the dependent variables, followed by the independent variables and the control variables. Lastly, summary statistics will be presented.

4.1 Dependent variables

The main dependent variables, namely domestic and external defaults are taken from Reinhart and Rogoff (2009). The variables are coded as dummy variables, obtaining the value "1" if a crisis occurs. Reinhart and Rogoff (2009, 11) define an external sovereign debt crisis as:

> The failure of a government to meet a principal or interest payment on the due date (or within the specified grace period.) These episodes include instances in which rescheduled debt is ultimately extinguished in terms less favorable than the original obligation.

Concerning domestic debt crises, the authors use the same definition, however, domestic debt crises also encompass "the freezing of bank deposits and/or forcible conversions of such deposits from dollars to local currency" (Reinhart and Rogoff, 2009, 10).

Instead of only determining the onset of domestic or external defaults, the variables are coded "1" for every year a country is experiencing a default. However, it is hard to determine the duration of the crisis up to its resolution and clear-cut ends of defaults (Reinhart and Rogoff, 2009, 10). Hence, to ensure more reliable results, the data was converted into data measuring the onsets of domestic or external defaults. There are other data sets measuring domestic and external defaults, yet the data compiled by Reinhart and Rogoff is the most comprehensive.[1] The time series data ranges back to 1800, which

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[1]Examples of other data sets include Sturzenegger and Zettelmeyer (2006); Tomz and Wright (2007), Van Rijckeghem and Weder (2009, with data for 73 countries from 1974 to 2000), and Dincecco (2009, for

allows for the analysis of multiple epochs.

4.2 Accountability – Representative government

The main tool to ensure accountability by the government to its citizens are competitive institutions. It seems thus intuitive to use measurements of institutional quality as a proxy for representative government. Probably the most used dataset on political institutions is the Polity IV index, which also has the largest coverage in both the temporal and spatial dimensions (Poast, 2012). Instead of using the aggregate Polity IV measurement, I will use a subindex of polity IV, namely the variable measuring political competitiveness.[2] The variable is coded from 0 to 5, increasing values indicate a higher level of institutionalized political competitiveness. Hence, a level of 0 indicates no civil interaction while a level of 5 indicates stable and enduring secular political groups that are competing for political influence on the national level on a regular basis (Marshall and Jaggers, 2012).

4.3 Transparency

"Transparency" is a concept that is hard to measure. At any stage, measurements of the concept can only be estimations – it is impossible to know what the state of total transparency is. Maybe it is due to these conceptual problems that no data set on long term transparency exists. More recently, an index measuring the transparency of government budgets, the open budget index, has been established. However, it only covers 59 countries, beginning in 2006 (Kaufmann and Kraay, 2008) and is thus not useful for the scope of this analysis. Other data sets coming the closest to measuring transparency are data sets on corruption. In this sense, corruption can be understood as an impediment to the rule of law and transparency. The higher the level of corruption, the lower the level of transparency will be.

In 1996, the World Bank introduced the World Governance Indicators (WGI) data set, which also measured the control of corruption. While the data covers almost all countries, it is very limited in terms of its temporal coverage. Another commonly used data set on

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data on government bond yields in eleven European countries, 1750 – 1913).

[2]This measurement strategy is identical to the strategy used by Poast (2012).

corruption is the Corruption Perception Index by the NGO Transparency International. As the WGI, this index measures the perception of corruption, not its 'real' extent.[3] Hence, the index has several problems, it might rather measure the general economic or political situation or the level of openness of corruption (Johnston, 2000). Leaving aside these conceptual problems, the fact that the index is rank-based makes it impossible to use for time series analysis: "A country's rank can change simply because new countries enter the index and others drop out. [...] year-to-year comparisons of a country's score may not only result from a changing perception of a country's performance, but also from a changing sample and methodology" (Lambsdorff, 2008). Hence, it should not be used in time series analysis (Treisman, 2007).

Facing these serious data limitations, scholars using the concept of transparency have made use of proxy variables that allow for inference about the level of transparency. In contrast to usual practices, some researchers have concluded that instead of measuring relative values of variables, the presence of an observation itself can be used as an indicator for transparency. One example for such an approach is the above mentioned paper by Hollyer, Rosendorff, and Vreeland (2011) that uses the fraction of 172 government self-reported economic policy and debt data within the World Bank's World Development Indicators (WDI). Similarly, Kim (2008) makes use of an Item-Response Theory model of the presence of 51 WDI economic indicators to capture a state's level of transparency.

The use of the WDI has some significant advantages as opposed to the above discussed measurements of corruption. First, the temporal coverage of the WDI extends until 1970 and is thus much larger than the coverage of WGI or the CPI data sets. Second, as opposed to the CPI, the WDI data is actually comparable over time and can be used in time series analyses. Third, the large amount of indicators allows for applications such as IRT or the use of mean values over a large number of different indicators. Nevertheless, even this data set has limitations. Only very capable administrations might be able to give information for all the indicators (Hollyer et al., 2011). The indicator might thus rather be measuring the level of administrative capacity instead of the level and the willingness to ensure transparency. In addition, indicators are often very similar and in some cases

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[3] Since corruption is by definition a hidden phenomenon, it is impossible to measure it directly.

only differ in the scale used (Kim, 2008, 2009). Some governments are by definition unable to give some of the data demanded for the WDI due to their structure of government[4] (Hollyer et al., 2011). Maybe the most crucial point that limits the use of the WDI for this analysis is the lack of data prior to 1970. Hence, the entire data set on financial crises could not be used.

To further advance a sensible operationalization with sufficient coverage, it can be helpful to reconsider transparency in its most basic definition, namely the provision of information as opposed to secrecy. One of the most secretive information a state would like to hide – and in fact often does hide – are military expenditures (Brzoska, 1995). Data on military expenditures suffers from problems with relatively low levels of comparability in between data sets since multiple definitions of military expenditures exist. While these problems affect the magnitude of the expenditures, they do not bias the actual presence of the information and can thus safely be used for inference about a government's willingness to share information. An advantage of military expenditures as opposed to the WDI is the fact that military expenditures are usually based at the central government level and can thus be easily reported, even in decentralized states.[5] While the governments' practice of often solely handing out budgeted information may be a caveat in terms of the interpretation of the magnitude of the expenditures, it may instead be helpful in providing the willingness of the government to share information at all since this practice only demands very basic information that does not necessarily rely on a complex administrative structure. In other words, the very crude nature of the measurement is actually a convenience for the measurement of the basics of transparency.

The availability of military expenditure has been used as a measurement of state transparency by Hassanpour (2011) in the context of civil conflict and the democratic peace. To the author's knowledge, this proxy has, however, not been used in the area of debt crises and political economy.

Military expenditure data is from the National Material Capabilities (NMC, version

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[4]For example, some federal countries do not have the central institutions that form a mayor part of the WDI data.

[5]For instance, in its Fiscal Decentralization Indicators, the World Bank subtracts defense expenditures since these are rarely decentralized (see `http://www1.worldbank.org/publicsector/decentralization/fiscalindicators.htm`).

4.0; Singer and Stuckey, 1972; Singer, 1988) by the Correlates of War Project. One of the subcomponents of the NMC is military expenditure data, which measures the total military expenditure per country in a given year. The data is interpolated, hence, there are no missing values. However, sources are listed in a separate column. An additional "notes" variable provides information of which data was estimated. The data sources are from the League of Nations Armaments Year-Book, Stockholm International Peace Research Institute (SIPRI), and from 1963 on the U.S. Arms Controls and Disarmament Agency (ACAD; COW, 2010). ACAD does not provide sources, and, since it is a governmental agency, it can not be assumed that the sources underlying this data set are voluntarily shared by other states.

Being interested in voluntarily provided information instead of estimates, the author decided to use the NMC data for the years prior to 1963. All observation points where the source variable was missing or the "notes" variable included the words "estima*", or "interpola*" were coded as missing values.[6]

For the years after 1963, military expenditure data from the Stockholm International Peace Research Institute (SIPRI) was used. The sources of the SIPRI consist of the following, "in order of priority: (a) primary sources, that is, official data provided by national governments, either in their official publications or in response to questionnaires; (b) secondary sources which quote primary data; and (c) other secondary sources, [such as] specialist journals and newspapers" (Stockholm International Peace Research Institute, 2012). Information in the SIPRI data set is thus voluntarily shared by the states and indicates an at least minimal level of transparency. The main problem encountered when using SIPRI data was data availability. The institute provides researchers with digitalized data for the years from 1988 onwards. However, data for the years prior to 1988 is not available digitally but only in the yearly published SIPRI yearbooks. Therefore, data after 1988 is from SIPRI's digital database (SIPRI, 2012), while the data prior to 1988 was coded manually based on the SIPRI yearbook versions 1972, 1988, and 1991 (SIPRI, 1972, 1988, 1991). One benefit of the manual coding were additional insights: The yearbooks' data contained additional information on which observations were estimates or "rough

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[6]The * operators indicate that different variations of that root word were used, for example "estimation", "estimate", or "estimated".

estimates".[7] Similarly to the approach used for the NMC data, all these observations were coded as missing since they indicated that this information was not given voluntarily or in a transparent manner by the states.

Concerning the key independent variables, there is a clear trend over time. Figure 4.1 plots the number of countries with available military expenditure data, the number of democracies, and the occurrence of domestic and external defaults against the years since 1800. While temporal patterns concerning the defaults are only minor, both the data on transparency and democracy are clearly increasing over time, especially after 1945.
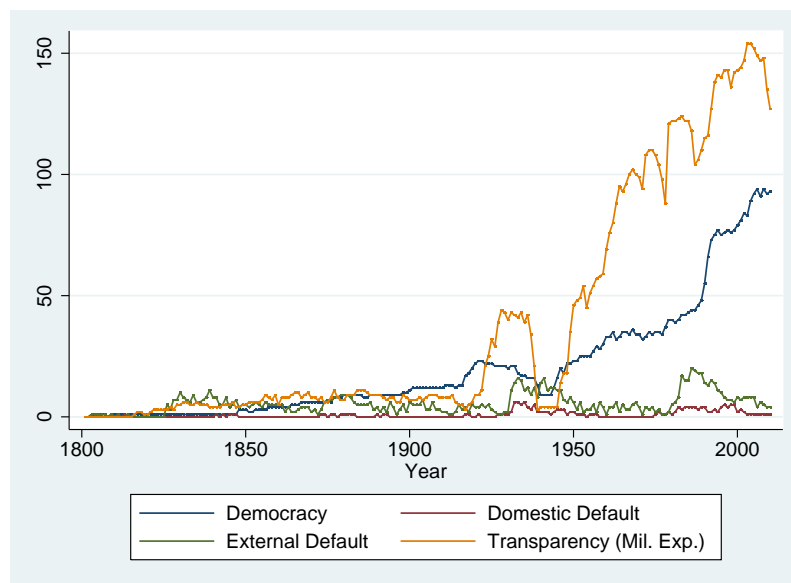
Figure 4.1: Transparency, democracy, and debt crises since 1800

The clear trend in the data indicates that regression analysis should include measurements that account for the non-stationary nature of the independent variables. Potential solutions could be the inclusion of count variables or the use of first differences (the change per time period in the variable). The data on transparency will thus be recoded as follows to generate a variable "Δ Transparency": changes in the previous year from "0" to "1" are coded as "1". No change is coded as "0" and changes from "1" to "0" are coded as "-1".

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[7]There is no such distinction in the digital data base, however, there are multiple missing values in the data set.

4.4 Central Banks

To determine whether a country possessed a central bank in a given year, I rely on a newly assembled data set by Poast (2012) for the years up to 1930. Data for the years after 1930 is based on the central bank directory by Morgan Stanley (Pringle and Morgan Stanley, 2005). As with other variables in the data set, the number of central banks increases strongly after World War II while their creation prior to 1930 usually took place during or directly after a war (Poast, 2012). The variable concerned with central banks is coded "1" if a central bank existed in a given year, and "0" if there was no central bank.

4.5 Democracy

The dummy variable indicating whether a country is a democracy or not is based on the Polity IV index. All country-years with a polity score of "6" or higher are coded as democracies ("1"). All other country-years are coded as "0". The decision to use the Polity IV index instead of other data sets stems from the fact that Polity IV is the most complete data set on political institutions. In addition, the variable measuring representative government also stems from that data set. Comparability might thus be increased.

4.6 Controls

This section presents information about the control variables used. A minimal set of control variables has been used in order to being able to make use of all country years. In addition, the inclusion of a broad number of control variables without thorough theoretical foundation does not seem sensible (Achen, 2005). Hence only the most important control variables as identified in the literature were used. Additional control variables were included in robustness tests, but were left out of the analysis since their inclusion had no effect on the results.[8]

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[8]These variables are: A measurement of inflation by Reinhart and Rogoff (2009) and a different democracy measurement by Vanhanen (2011, democracy and participation variables).

4.6.1 GDP per capita

The data on GDP per capita is from the historical data set on world population and GDP by Maddison (2012). It is important to mention that the data used are estimates for most of the years. A clear definition of GDP was only established in 1952, data prior to that year must be estimated. The inclusion of GDP is theoretically relevant since a country's borrowing abilities are directly related to its economic situation.

4.6.2 Gold Standard & Inflation

A binary measurement of whether a country in a given year pertained to the gold standard is taken from Reinhart and Rogoff (2009). The relevance of the gold standard is supported by existing research, especially in relation to reputational arguments (Tomz, 2007). In addition, tools such as the gold standard or hard pegs can increase transparency for undemocratic regimes.

Reinhart and Rogoff (2009) also provide a measurement of inflation levels that was included in robustness tests. In addition, they have data measuring different aspects of central government debt. However, this data does not cover the entire period of interest and decreases the number of observations in the analysis, if included. The further we go back in time, the less data on government debt is available. Hence, this variable, although theoretically important (Eaton and Gersovitz, 1981; Saiegh, 2005; Reinhart and Rogoff, 2011) was excluded from the analysis.

4.7 Descriptive Statistics

This chapter presented the dependent and independent variables, as well as the control variables that will be used in this analysis. Table 4.1 gives a descriptive summary of the variables, their mean values, range, standard deviation, and the number of observations in the dataset.

With the exception of GDP per capita and inflation, almost all variables are either binary or categorical (as is the measurement of representative government). To the author's knowledge, this approach does not cause mayor problems for the analysis. Instead, the interpretation of the binary variables' coefficients should be straight forward. The only

Table 4.1: Descriptive Statistics on Dependent and Independent Variables

Variable	Mean	SD	Min	Max	N
Domestic Default (onset)	0.0034529	0.0586622	0	1	14770
External Default (onset)	0.0144211	0.119223	0	1	14770
Representative Government	2.599922	1.472219	0	5	15317
Transparency	0.4593007	0.4983552	0	1	17359
Central Bank	0.2204465	0.4145527	0	1	41924
GDP per capita	4054.787	5023.96	83	42916	11912
Democracy	0.26488	0.4412831	0	1	16045
Goldstandard	0.141977	0.3490383	0	1	14770
Inflation	2.27e+07	2.19e+09	-74.7	2.11e+11	9339

Sources: Reinhart and Rogoff (2009); Marshall and Jaggers (2012); SIPRI (2012); Poast (2012); Pringle and Morgan Stanley (2005); Maddison (2012)

potential risk assumed from the data structure could be perfect separation.

Chapter 5

Empirical Analysis

5.1 A first look at the data

Table 5.1 shows the number of country years of default occurrence for both democracies and other regime types. It can be seen that the number of external defaults is significantly higher for both regime types. The relative share of democracies per default type is, however, bigger for domestic (47%) than external defaults (18%). The share remains similar in terms of onsets (43% for domestic and 22% for external defaults).

Table 5.1: Defaults and Regime Type

Regime Type	Domestic Default		External Default	
	Country-Years	Onset	Country-Years	Onset
Democracies	101	20	303	43
Other regime types	115	27	1398	154

Source: Own calculation using Reinhart and Rogoff (2009) and Polity IV (Marshall and Jaggers, 2012).

Table A.1 (in the appendix) lists the countries experiencing a domestic and/or external default. First patterns can already be identified by looking at the table. External debt crises are much more common, and many countries had long spells of either domestic or external crises. A special case are the Latin American countries that were in default almost constantly in the 19$^{\text{th}}$ century. Another outlier is the United States. Contrary to most other countries, the US never experienced an external debt crisis, however, some of the states had domestic debt crises (totaling 18 years). This is unique since even countries that have unusually few crises tend to experience external instead of domestic default.

These patterns are confirmed by the summary statistics. In total, there are 216 country-years of domestic defaults corresponding to 47 different crises. The number is much higher for external defaults, which total 1,701 country-years and 197 different crises. The massive difference in between domestic and external defaults might in part also be explained by

the lack of data. Reinhart and Rogoff (2009, 10) report that it is very hard to track down domestic debt crises precisely.

Figure 5.1 provides an overview of the temporal patterns of domestic and external default. The graph portrays the number of countries in default from 1800 onwards. Broadly speaking, there are more defaults in the post-World War II era than before, as there are also more new countries. The data has two mayor peaks, one around World War II with around fifteen countries in external default and again around 1970 with 20 countries in external default. Domestic defaults peak at the same point in time, but are on a much smaller scale with a maximum of six countries in domestic default in the WWII-years.
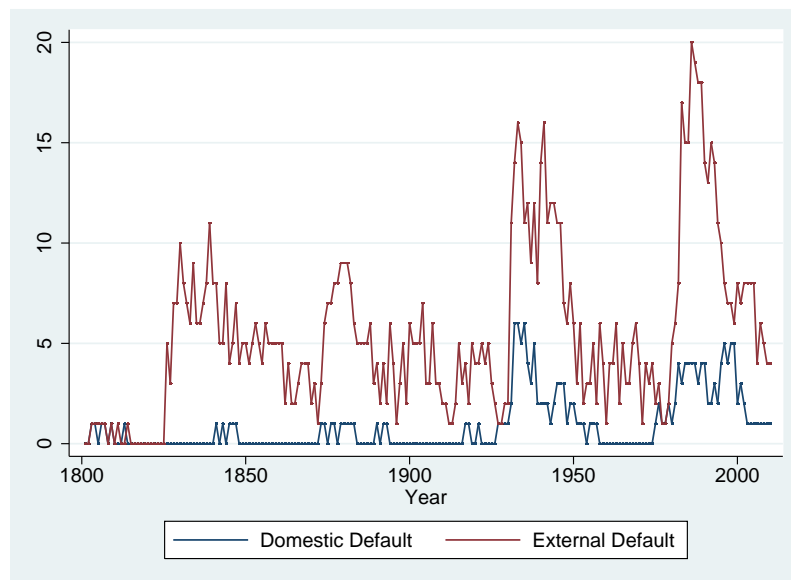
Figure 5.1: Ocurrence of debt crises since 1800

Correlation analysis provides first insights into some of the relationships. First, the pairwise correlation in between democracy and transparency is 0.2834, the correlation is significant at the 0.01 level (Pr = 0.000). Second, there are significant correlations in between the two types of defaults, democracy, and transparency. The pairwise correlation coefficients and their level of significance are presented in Table 5.2.

Somewhat in contrast to the literature on the democratic advantage, the relationship in between democracy and domestic defaults is positive while it is negative for external defaults. Similarly, transparency and domestic defaults are correlated in a positive way while the coefficient for transparency and external defaults yields mixed results: It is negative and significant for country years and positive but insignificant for onsets.

Table 5.2: Pairwise Correlations

Variable	Domestic Crisis		External Crisis	
	Country-Years	Onset	Country-Years	Onset
Democracy	0.0403***	0.0124	-0.1612***	-0.0379***
Transparency	0.0149	0.0349**	-0.1047***	0.0080

*** $p \leq 0.01$, ** $p \leq 0.05$,* $p \leq 0.1$

5.2 Estimation method for multivariate analysis

The estimation method used is a result of the data structure: A time series cross section (TSCS) data set is used, the dependent variables are binary. Hence logistic estimation models that correct for universal changes over time and unobservables related to the country will be used.

Most models used are random effects models. This modeling strategy was chosen in order to include variance of countries that did not experience any crisis during the observation period. Hence, a broad generalization should be possible. In order to nevertheless account for unobservable country characteristics, these models include country dummies. Some of the models used fixed effects, where only within country variation is analyzed. These models were used in cases where the assumption of no individual effects was no longer plausible. As a result, a large number of countries gets dropped.

It is common practice to include lagged dependent variables into the regression if serial correlation is assumed. Since this analysis is concerned with the onset of default periods and not its duration, serial correlation seems negligible. In addition, methods mentioned in the next paragraph account for potential serial correlation (that is, they account for the possibility that a country's risk of default might be influenced by whether the country already defaulted in an earlier point of time).

Another common issue is temporal dependence (present values in the dependent variable are caused by past levels of the independent variables). Theoretical considerations are clearly speaking against the relevance of temporal dependence. The time in between cause and effect is assumed to be very short in the realm of financial markets and defaults. While this claim seems to be intuitive for present-day financial markets, slightly more explanation might be needed if we go further back in time. Consider the example of

sovereign bonds for the "new" countries in Latin America discussed by Tomz (2007). One of these "new" countries was actually a fake country. Once information about the quality of that bond had reached markets, yield levels in the London exchange increased from around 10 to 120 percent within two months. The market closed for the bond, even at the Paris exchange. This example from 1823 illustrates that financial markets are relatively efficient in using the information available. Arguing that lagged variables influence present dependent variables seems thus implausible.

Lastly, it is important to mention that, instead of using cubic splines as recommended by Beck, Katz, and Tucker (1998), this paper follows the modeling strategy brought forward by Carter and Signorino (2010) and uses count variables measuring the time since the last event – onset of default in this case – and its squared and cubic polynomial version. This strategy limits potential problems associated with the "BTSCS"-standard, namely perfect separation and the potential of a wrong selection of the splines' knots.[1]

5.3 Estimation results

Table 5.3 presents the results of the estimation of the onset of domestic defaults for all country years since 1800. Column one presents the results for all country-years while results for undemocratic countries are given in column two.[2] Column three depicts the results for democratic, and column four developing countries.[3] The models presented here were estimated using logistic time series cross section models. Cubic polynomials (variables measuring the time since the last onset, and its square and cube, see section 5.2) were included as additional independent variables in order to account for temporal dependence. In addition, the polynomials could also potentially serve for the testing of reputation-related arguments.

The models provide a test for hypothesis 1. Following the hypothesis, we would expect a negative and significant coefficient for representative government. As expected, the sign

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[1]This is especially relevant since the data used has mainly binary independent variables (Carter and Signorino, 2010).

[2]Interaction terms with democracy are excluded in the models estimating defaults in democratic and undemocratic countries since the democracy-dummy and its interactions do not vary in this sample.

[3]The subsample of the developed countries includes all countries that were classified as "High Income Countries" by the World Bank in 2012.

of the coefficient is negative for all models, except democracies, but lacks significance. Prior calculations using random effects models presented, however, a significant value for this coefficient. Due to the switch to the fixed effects models, countries that had no variation on the dependent variable (that is, countries that did not experience an onset of a domestic default) were excluded from the analysis. The remaining within-country variation is the basis of this table. The massive standard errors for both the transparency and Δ transparency variables indicate that there is not much variation in that variable either.[4]

Surprisingly, the coefficients for both central bank and its interaction term with democracy are positive, yet insignificant throughout the models. This is contrary to the expectation stated in hypothesis secondary hypothesis 2, following which we would except negative values for the interaction or the central bank coefficient in the sample of democracies.

The dummy variable measuring democracy is positive in the overall sample and negative in the sample of developing nations. The interaction terms in between democracy and transparency are also positive, but insignificant and with a massive standard error. In sum, the results in Table 5.3 provide no support for the hypotheses concerned with domestic defaults.

We will now discuss the results concerning external defaults. Table 5.4 provides the results of the estimation of onsets of external defaults in the overall sample. The models used to estimate external onsets are random effects models with country dummies and cubic polynomials.

The coefficient for transparency is positive and significant in all samples except the democratic countries. Theoretically, the expected value for this coefficient would be negative, implicating a negative relationship in between transparency and the risk of external default. The resulting coefficient is thus unexpected, however, this might be due to the data structure – a strong positive trend towards transparency and a smaller but still recognizable positive trend towards more defaults – and is explicable in that context.

The variable Δ transparency accounts for potential distortions caused by the upward

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[4]Robustness tests using the direction of change in transparency as separate independent variables did not converge, which can be understood as another indicator for the lack of variance in that variable. The same modeling strategy was working well for external defaults, which are more common in the sample.

Table 5.3: Estimation of onsets of domestic defaults (1800–2010)

	All countries	Undemocratic	Democratic	Developing
GDP per capita	0.0009**	0.0007	0.0004	0.0008*
	(0.0004)	(0.0005)	(0.0005)	(0.0004)
Rep. Government	-0.0137	-0.0164	1.0497	-0.0158
	(0.0104)	(0.0107)	(0.6721)	(0.0107)
ΔTransparency	-18.5086	-29.3762	-16.872	-24.8918
	(1184.1)	(4580.4)	(5427.4)	(3497.9)
Transparency	17.8329	28.6714	31.9118	24.1824
	(1184.1)	(4580.4)	(7627.9)	(3497.9)
Democracy	0.9788			-0.8492
	(1.2861)			(1.6492)
Transp. $\times$ Dem.	18.1447			12.7891
	(1184.1)			(2660.5)
Central Bank	0.4465	16.6411	0.9699	2.6820
	(1.1946)	(3219.0)	(1.0593)	(2.2711)
CB $\times$ Transp.	1.972113			32.1307
	(1.4488)			(4373.9)
t since default	-49.6443	-48.5	-52.5978	-91.809
	(9485.1)	(6770.9)	(11250.5)	(134194.9)
t since default^2	1.8517	1.7904	1.7562	3.3100
	(1147.9)	(273.7)	(843.8)	(4967.4)
t since default^3	-0.0177	-0.0169	-0.015	-0.0301
	(20.7887)	(3.0325)	(13.1349)	(47.3746)
N (countries)	29	18	12	23
N	2633	1075	749	1876
chi^2	201.5	93.2	74.6	175.0

Fixed Effects Models; *** $p \leq 0.01$, ** $p \leq 0.05$,* $p \leq 0.1$; Standard errors in parenthesis

trend in the original transparency variable. As expected, its value is negative and significant. This indicates that a change towards transparency from observation t_{-1} to t has a negative effect on the risk of external default while a change in the opposite direction is associated with an increase in the risk of default. The coefficient is negative and significant in the overall sample and the group of developing countries. While the coefficient remains similar in size, it becomes insignificant in the analysis of undemocratic countries. Interestingly, the coefficient of Δ transparency in the sample of democratic countries is positive, although insignificant.

The significance and the size of the coefficient remain the same across three out of the four models. However, effects seem to be slightly stronger for the sample of democratic and developing nations.

Surprisingly, the level of GDP per capita is only significant for the overall sample. In the other two models, the coefficient remains insignificant and becomes even positive in the model concerned with developing countries. The coefficients for central bank and the democracy-dummy, as well as the interaction terms, remain insignificant through all the models.

Table 5.4: Estimation of onsets of external defaults (1800–2010)

	All	Undemocratic	Democratic	Developing
GDP per capita	-0.0001292*	0.0000414	-0.0002417*	0.0000385
	(0.0000563)	(0.0001165)	(0.0000966)	(0.0000756)
Rep. Government	-0.0104688*	-0.0109166*	0.7458828*	-0.0120589**
	(0.0042918)	(0.0043701)	(0.3361552)	(0.0046097)
ΔTransparency	-0.9586247*	-0.8887066	0.0950136	-1.027736*
	(0.4538669)	(0.4677211)	(0.8449231)	(0.4949631)
Transparency	0.9729117**	0.8949959*	0.9625382	0.9645599**
	(0.3008312)	(0.3566266)	(0.6981541)	(0.3528498)
Democracy	0.0776925			0.0495892
	(0.4150397)			(0.4539704)
Transp. $\times$ Dem.	1.06308			1.375283
	(1.005996)			(1.060253)
Central Bank	-0.0847177	-0.1954748	-0.1557803	-0.0043843
	(0.334263)	(0.3751742)	(0.6657373)	(0.3614111)
CB $\times$ Transp.	-0.006098			-0.093228
	(0.4780907)			(0.5287185)
t since default	-0.1818384**	-0.1888672*	-0.3103465**	-0.1753857**
	(0.056802)	(0.0794622)	(0.1179323)	(0.0592499)
t since default^2	0.0074921***	0.0074787*	0.0111297*	0.0075965**
	(0.0022423)	(0.0031016)	(0.0045243)	(0.0023334)
t since default^3	-0.0000715**	-0.0000711*	-0.0001005*	-0.0000756**
	(0.0000226)	(0.0000313)	(0.0000448)	(0.0000235)
Constant	-3.72686***	-4.361127***	-5.330668**	-3.93426***
	(0.388489)	(0.5346499)	(1.647461)	(0.4341305)
Panel-level var	-13.70359	-14.45134	-13.254	-13.74147
	(28.5569)	(24.16274)	(23.69602)	(27.66262)
N (countries)	69	59	60	44
N	6225	3354	2757	3164
chi^2	74.68218	55.41362	21.75099	57.79138

Random Effects Models including country dummies;
*** $p \leq 0.01$, ** $p \leq 0.05$,* $p \leq 0.1$; Standard errors in parenthesis

Although the difference in the coefficients and its significance may not be too strong, they have a substantial effect on the predicted probability of default. Figure 5.2 presents the predicted probability of an external default conditional on the change in transparency.

The left panel shows the predicted value for the overall sample while the right part is concerned with the effect changes in transparency have for undemocratic countries. The dot relates to the mean value while the lines are one standard deviation in each direction. The results are based on the models in column one and two of Table 5.4.

Standard deviations are very big.[5] However, there is a clear trend: Negative changes (from transparency to intransparency) are associated with a higher predicted probability of default than changes towards transparency. This is especially true for undemocratic countries. Note the small standard error associated with a change towards transparency: It can be argued that – assuming a normal distribution of the prediction – 85% of all undemocratic countries that become transparent have a probability of default smaller than 0.2. The predicted probabilities thus underline the relevance of transparency for the risk of default.
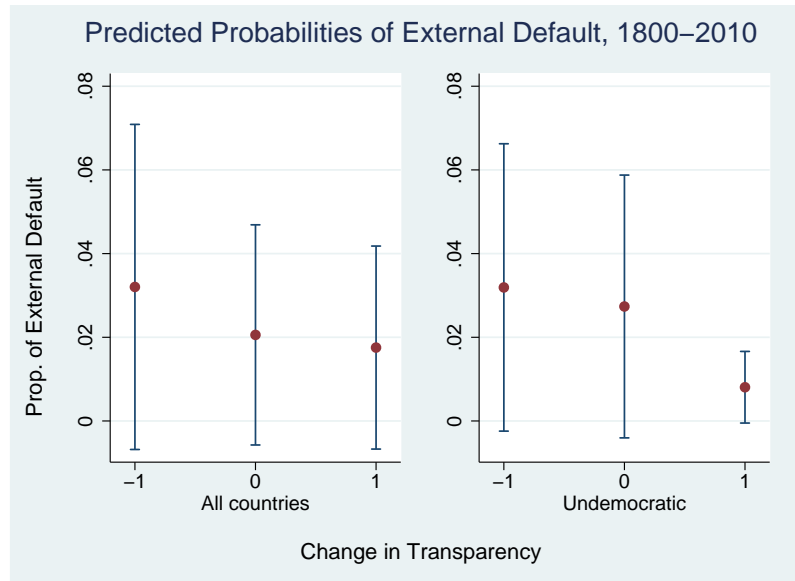
Figure 5.2: Predicted probabilities of external default conditional on Δ transparency

In order to undertake robustness test, the models presented in Table 5.3 and Table 5.4 were also computed using directional change variables instead of Δ transparency. Further tests included a measurement of whether the country pertained to the gold standard in a given year. However, results remained very similar to the results presented above.[6]

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[5]Actually big enough to produce a "statistical artifact": The values for the lower bound of the predictions using models from Table 5.4 are even below 0, indicating a need for further analysis of model fit.

[6]In most cases, the goldstandard-variable was dropped. In addition, some models did not converge,

5.3.1 Transparency before World War II

The main independent variable of interest, transparency, has a strong increase following the years after World War II (see Figure 4.1). At the same time, there is a gap in transparency data for the World War years. It can hardly be argued that the observations obtained in the time period in between 1939 and 1945 should be the basis for generalizations. Instead, defaults in that time period were probably rather due to the war. The same argument can be made for the secrecy of military expenditure data. It seems thus reasonable to limit the analysis to the time period before World War II. In addition, after the creation of the IMF in 1952, there might be distortions in one of the core theoretical mechanisms, namely the signaling effect of interest rates on government bonds (Stähler, 2011). Both arguments support a separate analysis of the years prior to World War II in order to make sure that the previous analysis was not distorted by these effects.

The results of a logistic regression using a fixed effects model are presented in Table 5.5. The results are similar to the model presented above using the entire sample. Probably the most striking of what we might call a result are the massive standard errors of all the coefficients for transparency and all its interactions.[7] Further analysis revealed that the overall models perform much better if the count variables of the time since the last onset are excluded from the analysis (see Table A.2 in the appendix). Also, standard errors are much smaller if the democracy dummy is excluded from the analysis (only column two of Table A.2 includes the democracy dummy).

What do we conclude from these odd results? The changes are not caused by differences in the number of missing values (which would decrease the number of observations that form part of the analysis). Instead, the massive changes by the count variables seem to be due to a combination of the few domestic defaults prior to 1939 (totaling only 10) and the fact that there is no onset prior to 1890.[8] As a result, the count variable has a value of "0" in 99.37 percent of the observations.

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especially when estimating domestic defaults. The additional results tables can be made available on request.

[7]It is also interesting to see that all undemocratic countries that experienced a domestic default in that period are developing nations at present – the values of the models in columns two and four are identical.

[8]Onsets of domestic defaults prior to 1939 are in the years 1890, 1917, 1921, 1927, 1928, 1931, 1932 (3 countries), and 1933.

Table 5.5: Estimation of onsets of domestic defaults (1800–1939)

	All	Undemocratic	Democratic	Developing
GDP per capita	-0.0001	-0.0022	-0.0027	-0.0022
	(0.0008)	(0.0018)	(0.0018)	(0.0018)
Rep. Government	-0.0490	-0.2478	26.7542	-0.2478
	(0.0499)	(325.7866)	(42163.99)	(325.7866)
ΔTransparency	-32.2345	-42.5757	-16.0768	-42.5757
	(5917.722)	(36664.75)	(4041.314)	(36664.75)
Transparency	30.3904	40.4751	28.6840	40.4751
	(5917.722)	(36664.75)	(5711.634)	(36664.75)
Democracy	44.84086			.
	(59409.71)			
Transp. $\times$ Dem.	16.1843			
	(4185.413)			
Central Bank	21.2944	24.5708	1.2204	24.5708
	(51048.85)	(107832.3)	(1.4247)	(107832.3)
CB $\times$ Transp.	-21.1953			
	(51048.85)			
t since last event	-47.8741	-21.4983	-43.3736	-21.4983
	(8142.966)	(6043.772)	(9541.107)	(6043.773)
t since last event^2	2.3206	2.3297	2.9914	2.3297
	(943.1688)	(1381.247)	(4268.663)	(1381.247)
t since last event^3	-0.0287	-0.0656	-0.0524	-0.0656
	(19.7856)	(68.2558)	(139.5162)	(68.2558)
N (countries)	13	7	6	7
N	652	312	211	312
chi^2	61.3622	40.6046	31.0136	40.6046

Fixed Effects Model; *** $p \leq 0.01$, ** $p \leq 0.05$,* $p \leq 0.1$; Standard errors in parenthesis

This indicates that the modeling strategy for this model is not a good fit. Instead of using a times series logit model, a survival model might have been more useful and should be pursued in further analyses. As a result of these problems, an interpretation of the results in Table 5.5 does not seem sensible. Instead, the results of the estimation of external defaults will now be discussed. Due to two reasons, the estimation of this type of crises is less prone to the problems described above. First, the number of onsets of external defaults prior to 1939 is much higher: 86 countries experienced an onset of a external crisis in that time period. Second, external defaults started much earlier than domestic defaults. The first observation dates back to 1826, 53 out of the 86 external defaults started prior to 1900.

Table 5.6 presents the results of the estimation of external defaults for the time period

prior to World War II. All models are fixed effects, and are computed with the variables counting the years since the last default (cubic polynomials).[9] The standard errors of the cubic polynomials are very high in all models, probably due to the same problems as discussed for the domestic model. The model estimating external defaults in democracies (Table 5.6, column three) is based solely on five countries, its χ^2 is lower than the other models' chi^2. In addition, its standard errors are very high. In sum, these irregularities indicate problems and I will restrain from interpreting these results.

Column one presents the model using all country types. Both transparency and Δ transparency are significant. Transparency itself is significant and positive while the first difference is significant, negative, and has an absolute value higher than transparency. The same is true for the model for the undemocratic subsample. Due to the high leverage and standard errors, the model in column three will not be interpreted. However, the results for the model estimating developing countries is more reliable. Note that there was almost no variance for the democracy dummy in this sample and no country in that group was a democracy and possessed a central bank at the same time.

These results are supportive of the relevance of transparency for external defaults. In addition, the level of significance and the size of the coefficients for the variables of interest are higher in the period prior to World War II, indicating that the relevance of the transparency operationalization used here has declined in the post war period. Since the models used are not regular OLS, the interpretation of substantive effects in terms of predicted probabilities can be more informative about the actual effects of the independent variables.

Figure 5.3 presents the predicted probabilities of an external default conditional on changes in transparency for the years prior to 1939. The left panel is concerned with the overall sample while the right panel is restricted to undemocratic countries. Looking at the right panel, note that the predicted probabilities for changes towards transparency in undemocratic countries are very low. In addition, the standard deviation of the prediction is very small. Combined with the significant and negative value for Δ transparency in the underlying model, we can conclude that changes towards transparency decrease the

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[9]Results remain similar if the count variables are excluded. Table A.3 presents the same estimation excluding cubic polynomials.

Table 5.6: Estimation of onsets of external defaults (1800–1939)

	All	Undemocratic	Democratic	Developing
GDP per capita	-0.0005352	-0.001041	-0.0051184	-0.0011457
	(0.0004846)	(0.0006226)	(0.0026671)	(0.000755)
Rep. Government	-0.0102694	-0.011132	14.47518	-0.0173664
	(0.0073969)	(0.0073481)	(32659.84)	(0.0096505)
Δ Transparency	-2.185725**	-2.141488**	-16.94933	-2.849021**
	(0.7280138)	(0.7562874)	(4325.163)	(0.9026095)
Transparency	1.490899**	1.234565*	29.65	1.472294*
	(0.5368025)	(0.5889)	(6128.996)	(0.689361)
Central Bank	0.1822414	0.6354121	-35.07871	1.032849
	(0.6066965)	(0.6360112)	(8.16e+07)	(0.7085172)
Democracy	1.119092			0
	(1.327692)			0
CB $\times$ Dem.	-0.6225205			.
	(1.451046)			.
Transp. $\times$ Dem.	0.5454576			2.017209
	(2.838568)			(4.387396)
t since default	-14.36188	-15.38401	-43.20461	-16.8152
	(995.81)	(1636.717)	(8232581)	(2222.977)
t since default^2	0.9448801	0.9887829	16.00123	1.119858
	(188.1521)	(264.0062)	(3713549)	(267.2427)
t since default^3	-0.0161842	-0.0164708	-1.588915	-0.0192687
	(6.038017)	(8.100352)	(414087)	(7.856932)
N (countries)	21	18	5	13
N	946	715	119	501
chi^2	26.27526	23.57379	14.01328	29.45067

Fixed Effects Model; *** $p \leq 0.01$, ** $p \leq 0.05$,* $p \leq 0.1$; Standard errors in parenthesis

risk of external defaults. On the other hand, changes from transparency to intransparency are associated with a higher risk of external default. Again, this is especially true for undemocratic countries, where the margins of the standard deviation of Δ transparency = "-1" and Δ transparency = "0" have almost no overlap.

While standard deviation and overlap are higher, the same can be said for the overall model including democracies. However, there is an interesting addition from the difference in between the predictions for the overall sample and undemocratic countries. The error margin for changes away from transparency in the overall sample is much higher than in the sample of undemocratic countries. This could indicate that democracies are relatively immune to changes towards intransparency.[10] This surprising finding is in line

[10]However, further tests are necessary since this result could partly be due to differences in GDP per
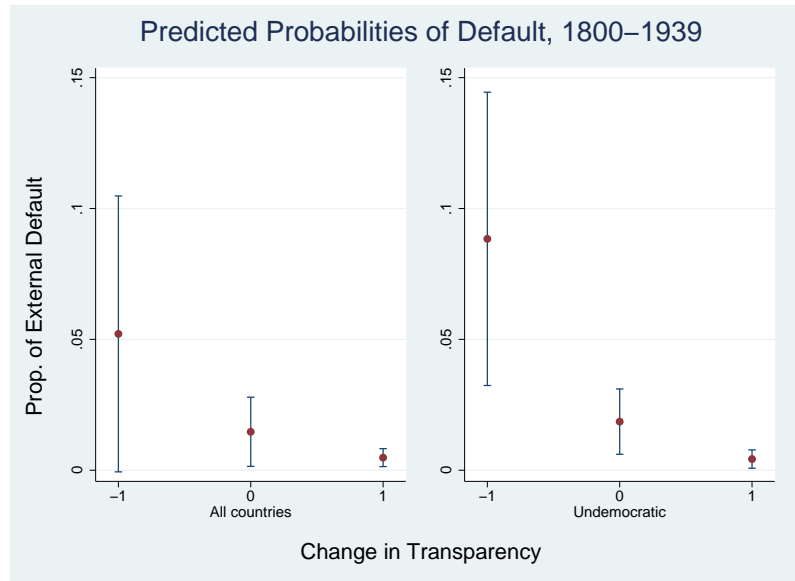
Figure 5.3: Predicted probabilities of external default conditional on Δ transparency (1800–1939)

with Kim and O'Neill (2012), who argue that democracies are easier to default since they can credibly argue that there is no other possibility, while other regime types lack this credibility.

The increased level of precision associated with the change in the time period is underlined by the graphs in Figure 5.4. Both panels are concerned with the overall sample. However, the left side presents the predictions based on the 1800–2010 period while the right panel presents the same estimation for the period 1800–1939. The direct comparison reveals the better fit of the predictions for the smaller sample and seems to support concerns that the research design is not suitable for the post World War II years.

Summing up, results remain ambiguous in several respects. However, there is substantial evidence for some hypotheses. Following this analysis, we have to refute hypothesis 1 which stipulated a negative relationship between representative government and domestic financial crises. Coefficients for this variable are neither negative nor significant in both time periods. Although different than expected, this result is in line with parts of the literature that argue that representative institutions are only relevant for debt service if

capita in between democratic and undemocratic countries. A t-test reveals that the difference in GDP per capita levels of the two groups is significant in the sample. Nevertheless, the relevance of this caveat is lowered due to the fact that the predictions are calculated with all other values (including GDP per capita) set at their mean value.
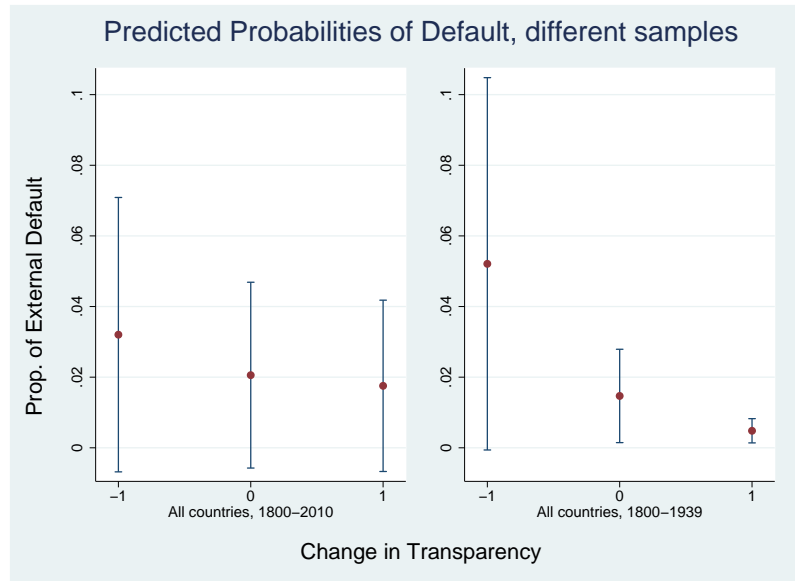
Figure 5.4: Predicted probabilities of external default conditional on Δ transparency, different time periods

the domestic cleavages support creditor control over the government (Stasavage, 2003a).

In contrast to hypothesis 1, hypothesis 2 argued that representative institutions did *not* matter for external defaults. The findings are ambiguous and differ in time periods. While coefficients are negative and significant in the models estimated using the overall time period, they are insignificant in the pre World War II years. Even if we focus on the overall period, results are far from straightforward. While the coefficient is negative for three out of four models, it is positive if democracies are the sample used. Further systematic research of this topic seems thus important.

At the core of this analysis, hypothesis 3 argued that transparent countries have a lower risk of external default. The positive and significant coefficient for transparency in almost all models is a clear indicator that this hypothesis should be refuted. Nevertheless, there are also clear and substantial results concerning the negative effect of changes in transparency on the risk of external default. These results are also supported by the predicted probabilities calculated. Overall, the results presented support the relevance of transparency for the risk of external defaults.

Similarly, secondary hypothesis 1 predicted that the political regime would not affect the risk of external defaults if the models would control for transparency. Indeed, the democracy dummy remains insignificant in the overall models. However, a negative and

significant correlation in between democracies and both the onset and the duration of external defaults was detected. The hypothesis can thus be accepted since the significant relationship in between political regime and external defaults becomes insignificant once transparency is included.

Lastly, secondary hypothesis 2 postulated that central banks had a negative effect on defaults in liberal democracies. Coefficients for central bank and the interaction of central bank × democracy remain insignificant in all models. The hypothesis can thus neither be refuted, nor accepted. The same is true for the cubic polynomials measuring the time since last default. They are only significant in the random effects model estimating external defaults using the entire period of observation, thus limiting conclusions about the relevance of reputational arguments.

In addition to the systematic quantitative evidence presented above, there is also anecdotal evidence for the relevance of transparency and its connection to democracies. Consider the East Asian financial crisis in the years following 1997, which was the last massive financial crisis prior to the global turmoil resulting from the 2008 collapse of the US housing market. The crisis was preceded by massive inflows of foreign capital and a boom in real estate. It started in Thailand where the government was unable to sustain the pegging of the currency to the US Dollar. Soon, the whole region got infected by the massive outflow of capital. The net inflow of capital switched from $93 billion to -$12.1 billion (Radelet and Sachs, 1998).

The crisis also hit the banking sector hard. Indonesia, Japan, South Korea, Malaysia, the Philippines, and Thailand all witnessed banking crises (Reinhart and Rogoff, 2009). However, the only country to default on its sovereign debt was Indonesia (Reinhart and Rogoff, 2004). Although economic fundamentals and debt share were similar to its neighbors, it was distinct in that it could neither rely on oil revenue nor was it democratic: President Suharto held power since a military coup 30 years earlier (Desai, 2003). Biglaiser et al. (2011, 81) recount the relevance of the lack of political transparency there had for the assessment of credit ratings: "Fitch analysts concurred and discussed a lack of political transparency in the context of Indonesias General Suharto in the 1990s. From their perspective, Suharto ruled a bent government and that factored into the bond ratings."

While the lack of transparency has probably contributed to Indonesia's external default

during the East Asian financial crisis, this episode also illustrates the mayor problem of the research design used here. SIPRI (2012) lists military expenditure data for Indonesia in all years in between 1988 and 2010, with the exception of 2000. However, the data by Reinhart and Rogoff (2009) dates the beginning of Indonesia's default in the year 1998. The lack of transparency prior to the external default is thus not covered at all in this data.

Generally speaking, the research design applied – especially the operationalization of the independent variable transparency and the dependent variables – is very raw in nature. Both are extreme points in what is probably better understood or measured as a continuum of transparency and states' borrowing abilities. It is thus no surprise that the models fit better once we go back in time. However, the discussion of the research design has also shown that useful operationalizations for the concepts that have an extended spatial and temporal coverage are rare.

Chapter 6

Conclusion

This analysis was concerned with the relationship between regime types and sovereign borrowing abilities, as well as, default. A theoretical argument that accounts for the fundamental differences in between the causes of domestic and external defaults was developed and tested against a dataset covering the past two centuries. It was argued that representative institutions are relevant in diminishing the risk of states defaulting on debt they owe to their citizens (domestic default) while the level of transparency is relevant in decreasing information asymmetries in order to obtain international credit at interest terms that reveal the actual performance of states and thus limit the risk of defaulting on debt owed to external creditors (external default). Empirical evidence for the relevance of transparency in explaining external defaults was presented. Changes in transparency were found to have a substantial an negative effects on the risk of external and domestic default while transparency itself had a positive effect, an unexpected result which is likely due to the non-stationary data used.

The empirical ambiguity indicates that the results presented should not be regarded as ultimate test, but rather as a step towards a holistic theory supported by empirical clarification. Temporal limitations did not allow for further tests that might be needed. Most importantly, survival models might serve better and limit some of the problems encountered. Future modeling should also account for the self-selection into capital markets. Several other issues that might affect the relationship in between democracies and sovereign defaults, such as debt in general and debt that is not given by private lenders, but international organizations or states in terms of foreign assistance, should be controlled for.

Broadly speaking, the research design used was very raw in nature. The main independent variable was operationalized using a very minimal level of transparency. However, it

is often nuances that matter in financial markets. A more detailed operationalization of transparency could thus prove useful for further analyses. Nevertheless, the results underline the importance of transparency for explaining sovereign borrowing and default. In a world of incomplete information, transparency is key to reducing the information asymmetry between creditors and governments. Future research into international lending should thus include this crucial mechanism.

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Appendix A

Table A.1: Countries in Sovereign Debt Crisis since 1800

Country	Domestic Debt Crisis	External Debt Crisis
Algeria		1991-1996
Angola	1976	
	1992-2002	1985-2003
Argentina	1890-1893	1827-1857
		1890-1893
		1951
		1956-1965
	1982	1982-1993
	1989-1990	1982-1993
	2001-2010	2001-2005
Austria		1802-1816
		1868-1870
		1914-1915
		1932-1933
		1938
	1945	1940-1952
Bolivia		1875-1879
	1927	1931-1948
	1982-1984	1980-1997
Brazil		1828-1834
		1898-1910
		1914-1919
		1931-1933
		1937-1943
		1961
		1964
	1986-1987	1983-1994
	1990	
	2002	2002
Canada	1935	
Central African Republic		1981
		1983-2010
Chile		1826-1842
		1880-1883
	1932	1931-1947
		1961

Table A.1 – continued from previous page

Country	Domestic Debt Crisis	External Debt Crisis
		1963
		1965
		1972
		1974-1975
		1983-1990
China	1921	1921-1936
	1932	1939-1949
Colombia		1826-1845
		1850-1861
		1873
		1880-1896
		1900-1904
		1932-1944
Costa Rica		1828-1840
		1874-1885
		1895-1897
		1901-1911
		1932-1952
		1962
		1981
		1983-1990
Cote d'Ivoire		1983-2010
Denmark	1813	
Dominican Republic		1872-1888
		1892-1893
		1897
		1899-1907
		1931-1934
	1975-2001	1982-1994
		2005
Ecuador		1826-1845
		1868-1890
		1894-1898
		1906-1911
		1914-1924
		1929-1954
		1982-1995
	1999	1999-2000
		2008
Egypt		1876-1880
		1984
El Salvador		1828-1860
		1898
		1921-1922
		1932-1935
		1938-1946

Country	Domestic Debt Crisis	External Debt Crisis
	1981-1996	
France		1812
Germany		1807
		1812-1814
		1850
	1948	1932-1953
Ghana		1966
		1968
		1970
		1974
	1979	
	1982	
		1987
Greece		1826-1878
		1894-1897
	1932-1951	1932-1964
Guatemala		1828-1856
		1876-1888
		1894
		1899-1913
		1933-1936
		1986
		1989
Honduras		1828-1867
		1873-1925
		1981-2010
Hungary		1931-1937
		1941-1967
India		1958
		1969
		1972-1976
Indonesia		1966-1970
	1997-1999	1998-2000
		2002
Italy		1940-1946
Japan	1946-1948	1942-1952
Kenya		1994-2003
Mexico		1828-1830
		1833-1841
		1844-1850
		1854-1864
		1866-1885
		1914-1922
	1928-1938	1928-1942
	1982	1982-1990
Morocco		1903-1904
		1983

Table A.1 – continued from previous page

<div align="center">**Table A.1 – continued from previous page**</div>

Country	Domestic Debt Crisis	External Debt Crisis
		1986-1990
Myanmar	1984	2002-2010
Netherlands	1802-1814	1802-1814
New Zealand	1932	
Nicaragua		1828-1874
		1894-1895
		1911-1912
		1915-1917
		1932-1937
	1985-1990	1979-2010
Nigeria		1982-1992
		2001
		2004-2005
Panama		1932-1946
	1988-1989	1983-1996
Paraguay		1874-1885
		1892-1895
		1920-1924
		1932-1944
		1968-1969
		1986-1992
		2003-2004
Peru		1826-1848
		1876-1889
	1931-1938	1931-1951
		1969
		1976
		1978
		1980
	1985-1987	1984-1997
Philippines		1981-1992
Poland		1932-1952
		1981-1994
Portugal		1828
		1837-1841
		1850-1856
		1892-1901
Romania	1933-1958	1933-1958
		1981-1983
		1986
Russia		1839
		1885
	1917-1918	1918-1986
	1947	
	1957	
	1998-1999	1991-2000
South Africa		1985-1987

Country	Domestic Debt Crisis	External Debt Crisis
Table A.1 – continued from previous page		
		1989
		1993
Spain		1809
		1820
		1824-1834
		1837-1867
		1877-1882
	1936-1939	
Sri Lanka		1979
	1996	1981-1983
Sweden		1812
Tunisia		1867-1870
		1956
		1958
		1963
		1979-1982
Turkey		1876-1881
		1915-1928
		1931-1932
		1940-1943
		1959
		1965
		1978-1979
		1982
	2001	2001
United Kingdom	1932	1932-1939
United States	1841-1848	
	1873-1883	
	1933	
Uruguay		1876-1878
		1891
		1915-1921
	1932-1938	1932-1938
		1965
		1983-1985
		1987
		1990-1991
		2003
Venezuela		1826-1840
		1848-1862
		1865-1881
		1892
		1898-1905
		1983-1988
		1990
	1995-1998	1995-1997

Table A.1 – continued from previous page

Country	Domestic Debt Crisis	External Debt Crisis
		2004-2005
Zambia		1983-1994
Zimbabwe		1965-1974
	2006	2000-2009

Source: Reinhart and Rogoff (2009)

Table A.2: Onset of domestic defaults (1800–1939, no count variables)

	All	All	Undemocratic	Democratic
GDP per capita	-.00094*	-.0013855**	-.0034403*	-.0034012*
	.0004445	.0004974	.0013559	.0014493
Rep. Government	-.0071153	-.0123459	-.0106452	19.36669
	.0147623	.0179591	.0198034	2909.901
Δ Transparency	-4.024818**	-4.713952**	-5.470231*	-5.581283
	1.338178	1.614712	2.158963	18.88736
Transparency	3.439337**	4.037003**	4.487143*	8.488915*
	1.169937	1.434176	2.067803	3.697281
Central Bank	.2924431	.4485728	3.041825	.4878262
	.7795833	.7888583	1.988678	1.24674
Democracy		19.08643		
		3238.626		
N (countries)	13	13	7	6
N	652	652	312	215
chi^2	18.75632	27.13061	20.86309	19.29329

Table A.3: Onset of external defaults (1800–1939, no count variables)

	All	Undemocratic	Democratic	Developing
GDP per capita	-.0007021	-.0008798	-.0014393*	-.0053213*
	.0004364	.000468	.0005718	.002655
Rep. Government	-.0101683	-.0120126	-.0125494	12.90302
	.0071077	.0074122	.0073596	6090.042
Δ Transparency	-1.960127**	-2.070119**	-2.085078**	-16.03929
	.6726961	.6982528	.7394839	2674.178
Transparency	1.389807**	1.413057**	1.14501*	27.73231
	.4982606	.5030938	.5521367	3807.104
Central Bank	-.2050248	-.1434926	.3005631	-9.88e+10
	.5626124	.5644442	.6005803	0
Democracy		.8787529		
		.8139154		
N (countries)	21	21	18	5
N	946	946	715	119
chi^2	15.37405	16.50436	16.18762	13.76313