Life after default? Private vs. official sovereign debt restructurings

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Abstract

This paper studies the relationship between sovereign debt default and annual GDP growth taking into account the depth of a debt restructuring and distinguishing between commercial and official sovereign debt restructurings. Analyzing 73 default episodes in 117 countries over the period 1975-2013, I find that defaults are correlated with contraction of short-term output growth. Most importantly, controlling for the severity of the default, I am able to detect a more lasting and negative link between default and growth. While higher private haircuts imply a negative stigma which is associated to lower growth over a longer period, higher amount of official restructuring may have some costs in the short-run, but are associated to an increase in growth in the long run. Adopting an alternative specification, in which the dependent variable is a country's credit rating, I find very similar results for private haircuts and official restructurings. They are both associated to lower ratings up to seven years after the default. To the extent that credit ratings is a good proxy for borrowing costs, positive growth prospects for official defaulters seem not to be influenced by a lower reputation in the credit markets.

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1 Introduction

Sovereign defaults and debt restructuring are not costless as a sovereign's unilateral decisions to stop servicing its debt implies important economic costs. At least this is what the sovereign debt literature has commonly assumed as a government's main incentive to honor its debt obligations. In sovereign debt theory defaults maybe costly due to direct punishment (mainly trade sanctions), capital market exclusion or higher cost of borrowing (the so called reputational effect) or mainly domestic costs, which in turn depend on negative spillovers on corporate access to foreign credit, investments and trade (Bulow and Rogoff 1989a, Cole *et al.* 1995, Eaton and Gersovitz 1981, Sandleris 2008, Mendoza and Yue 2012).[1]

The (empirical) literature analyzing sovereign defaults has mainly looked at their effects on international trade, international credit market and GDP growth. There is evidence documenting trade cost of defaults in particular for export-oriented industries (Rose 2005, Borensztein and Panizza 2010). Apparently the access to credit market is influenced by more recent repayments but not by distant repayment history (e.g., Ozler 1993), which is also confirmed in more recent papers documenting a short-lived effect of default on spreads and market access (Borensztein and Panizza 2009, Gelos *et al.* 2011 and Panizza *et al.* 2009).[2] Only very recently, Cruces and Trebesch (2013a) came to different conclusions, which are more in line with the effects of a default according to the theory. More specifically, by including in their analysis a measure of investors' losses (or "haircuts"), they show that restructuring involving higher haircuts are associated with significantly higher subsequent bond yield spreads and longer periods of capital market exclusion (that is credit markets do not seem to "forgive and forget," as in Bulow and Rogoff 1989b). Such different result with respect to the previous literature is remarkable and it is attributed to a more precise measurement of a country's repayment record. Therefore, their analysis does suggest that it is crucial to consider the magnitude of a default and not only its occurrence.

As the direct link between debt default and economic growth is concerned, a strong but *short-lived* negative contemporaneous effect on GDP growth is found by Sturzenegger (2004) and later confirmed by Borensztein and Panizza (2009) and De Paoli *et al.* (2006)

[1] For a survey see Panizza *et al.* (2009) and Tomz and Wright (2013).

[2] Studies that instead provide empirical evidence in support to the "reputation view" include English (1996) and Tomz (2007).

and (2009).[3] In all these cases, however, the effects specifically associated with a default (on the top of those related to the crisis itself) are quite difficult to identify. Therefore, while there is evidence that sovereign debt defaults are negatively correlated with economic growth, there is no study finding a causal relationship going from default to growth.

In this paper I focus on the relationship between annual GDP growth and both private haircut and official debt restructuring applying a similar methodology to Cruces and Trebesch (2013a) to the analysis of the relationship between debt default and economic growth.[4] Specifically, I take the creditors' losses as proxy of the severity of the default episode and I verify if higher private haircuts (or higher official restructurings) are correlated with a significant contraction of (annual) economic growth over a period of ten years. While the overall evidence indicates that default episodes are negatively correlated with growth, in this literature the decision of a default has been modelled as a binary decision ignoring the large variation in restructuring outcomes.[5]

Debt restructuring could affect growth in at least two alternative ways. Higher private haircuts (or official restructurings) may have negative effects on growth, as the adverse spillovers of a default are likely to be more severe in hard defaults (i.e., involving higher haircuts/restructurings) as compared to soft defaults (see Trebesch and Zebel 2014). Alternatively, there is the channel of debt relief operating in the opposite direction. Since higher haircuts/restructurings reduce the level of government's debt more substantially, such debt reduction might allow countries to exit a debt overhang improving in this way growth prospects, as described by Krugman (1988). The overall impact of a debt restructuring on growth is then theoretically ambiguous and remains an empirical question.

[3] Using higher frequency data, Levy Yeyati and Panizza (2011) actually show that output contraction precedes default and that default episodes seem actually already to mark the beginning of the economic recovery. Furceri and Zdzienicka (2012) find, instead, long-lasting output losses after debt crises, while Tomz and Wright (2007) find a negative but surprisingly weak relationship between economic output and default on loans from private foreign creditors.

[4] Defined narrowly, default occurs when the debtor violates the legal terms of the debt contract (e.g., the debtor might fail to pay interest or principal within the specified grace period). This narrow definition, however, overlooks situations in which the sovereign threatens to default and creditors respond by "voluntarily" revising the contract. In recognition of this problem, credit ratings agencies like Standard and Poor's define a default as beginning either when the sovereign breaks the contract, or when the sovereign "tenders an exchange offer of new debt with less favorable terms than the original issue" (Beers and Chambers 2007). This broader definition is usually preferred and this the one I adopt in this paper.

[5] The literature has mostly focused on the occurrence of debt crises, but not on their resolution. This circumstance implies, *de facto*, no distinction between the different degrees of severity of default episodes and could (at least partially) explain why previous literature has so far detected negligible medium-run effects of debt defaults on growth.

Despite the policy relevance of this issue, little is known about the characteristics and the economic relevance of debt restructuring.[6] I contribute towards filling this gap by studying the relationship between debt default and annual GDP growth over a ten-year period, by taking into account the depth of a debt restructuring.[7] Moreover, I do distinguish between commercial and official restructurings. In fact, given the different characteristics of these two types of defaulters (most importantly their different ability to access the credit market), I expect that the above mentioned trade-off between the reputational and the "debt-relief effect" of a debt restructuring may act differently for sovereign defaulters on private or official debt.[8] To the best of my knowledge, it is the first time in this literature that the link between GDP growth and debt restructuring is investigated over such a (relatively) long time period, and that the distinction between private and official restructuring is taken into account.

Analyzing 73 default episodes in 117 countries over the period 1975-2013, I find that defaults are correlated with contraction of short-term output growth. Moreover, controlling for the severity of the default, I am able to detect a more lasting and negative link between debt default and growth. For private haircuts, occurrence and magnitude goes into opposite direction and high haircuts seem to imply a negative stigma lowering growth over a longer period. Alternatively, higher amount of official restructuring may have some costs in the short-run, but they do have some positive effects over the long run, as the debt relief effect of high restructurings seems to improve recovery. In this case, no stigma is associated to the size of the restructuring, indeed defaulters seem to benefit from the debt relief effect of high restructurings (as in Arslanalp and Henry, 2005), which somehow soften the negative consequences of an official default.

Finally, in an alternative specification, in which the dependent variable is a country's credit

[6] More recently, however, some attention has been devoted to the specific analysis of debt renegotiations. Among others, Benjamin and Wright 2009, Asonuma and Trebesch (2015), Trebesch and Zebel (2014) and Reinhart and Trebesch (2015) have been specifically focusing on debt crisis resolution and renegotiation.

[7] Trebesch and Zabel (2014), by distinguishing between hard defaults (more confrontational) and soft defaults (adopting a consensual crisis resolutions), show that hard defaults are associated with a much steeper drop in output as compared to soft defaults. Surprisingly, however, after five years, neither high haircuts nor debtor coerciveness are associated with lower growth. Reinhart and Trebesch (2015), focusing only on the amount of debt relief achieved in the samples 1920-1939 and 1978-2010 find that while softer forms of debt relief, (e.g. maturity extensions) are not generally followed by higher economic growth, only debt write-offs are able to improve the economic situation of debtor countries.

[8] For example, private defaulters would be expected, on average, to be more likely to repay, as compared to official defaulters. As a consequence, when they default, the negative stigma of a higher haircut is likely to outweigh the benefits of a greater "debt-relief effect". This distinction might be related to the debate on "excusable vs. unexcusable" types of defaults (e.g., Grossman and Van Huyck 1988).

rating, I investigate whether one of the channels explaining the link between restructuring and growth may work through the credit market (borrowing conditions highly correlate with sovereign ratings). To my knowledge, it is the first time that both the occurrence and the magnitude of a restructuring are considered as possible determinants of a country's credit ratings.

In the case of private haircuts, my results confirm that higher haircuts are associated to lower ratings up to five years after the default (as well as higher haircuts negatively correlates with growth over a long period). The same holds, however, in the case of official restructurings, for which higher restructurings are associated to lower ratings up to seven years after the default. Therefore, in the case of credit ratings, I do not find anymore a systematic difference between sovereign defaulters on private debt with respect to defaulters on official debt. To the extent that credit ratings is a good proxy for borrowing costs, this evidence implies that growth prospects for official defaulters are not affected by a lower reputation in the credit markets.

The rest of this paper is organized as follows. Section 2 describes the empirical model and the data while the results are presented in Section 3. Section 4 describes some robustness checks while section 5 presents the results of an alternative specification in which the dependent variable is a country's credit rating. Finally, Section 6 summarizes and concludes.

2 Data and empirical model

In this section, I analyze the effects of a debt default on economic growth by controlling for the severity of the default episode. For this reason I include both a measure of private creditors' losses (the so called private haircuts) and a measure of official restructurings (Paris Club debt restructurings) as proxies for the magnitude of both private and official defaults.

2.1 Default coding and sample composition

Our analysis spans the years between 1975 and 2013 and includes 117 developing and emerging market economies.[9] I have selected this sample as follows. First, I excluded from the sample small countries with a population of less than 1 million (as measured at the end of the sample period in 2013) and all advanced economies, in order to make the sample as homogeneous as possible. Moreover, I dropped countries whose debt restructurings took place in the context of wars and state dissolution, such as Iraq, and successor states of the Socialist Republic of Yugoslavia (i.e., Kosovo, Macedonia, Bosnia and Herzegovina and Serbia). The resulting set of 117 countries includes 73 defaulting countries, which experienced at least one debt crisis during the sample period as well as 44 non-defaulters. Among defaulters, 51 countries had both private haircuts and official debt restructurings, 18 countries had only official debt restructurings (through the Paris Club) while only 4 countries had only private haircuts.[10] Table A1 in the Appendix shows all countries and years, including a list of debt crisis episodes studied here.

Table 1a shows summary statistics for different subsamples in the full sample of 150 restructurings. I find that the average private haircut between 1975 and 2013 is about 39 percent (simple mean). Looking at the three different subperiods, I detect a sizeable increase in the haircut size over time. Average haircut is about 39 percentage points higher during the last subperiod (2002-2013) as compared to haircuts implemented during the initial period (1975-1988) but only about 11 percentage points higher with respect to the intermediate one (1989-2001). One reason is that all the deals up to the beginning of the Brady plan (1989-1994) mainly implied maturity extensions without an actual debt reduction.[11] Figure 1 shows the frequency distribution of haircuts by percentage size.

I relied on the original dataset by Cruces and Trebesch (2013b) for the data on restructurings with foreign banks and bondholders (commercial creditors).[12] More specifically, the database of investor losses built by Cruces and Trebesch (2013b) is based on the

[9] More specifically, following the 2013 World Bank Country classification, I have included low, middle income and high income (non OECD) countries.

[10] 51 countries of the sample had instead both their commercial and official debt restructured.

[11] In the late 1980s (1989–1994), Brady deals addressed commercial bank lending to sovereign debtors (mostly middle-income countries) involving a combination of an IMF agreement and debt-service reduction and rescheduling from commercial banks. Brady deals, which eventually put an end to the 1980s debt crisis for 17 debtor countries, involved an average haircut of 45 percent (Cruces and Trebesch 2013).

[12] In August 2014, the authors provided an update of their data covering the year 2013 as well. Their data provides a list of 187 distressed sovereign debt restructurings with external private creditors (banks and bondholders) occurring between 1970 and 2013.

methodology proposed by Sturzenegger and Zettelmeyer (2008) and consider haircuts in "final" debt restructurings only. Final deals are those that enable countries to cure the default and exit a crisis spell without a renewed default in the following 4 years. This focus on final restructurings is in the spirit of related work such as Cline (1995), Arslanalp and Henry (2005) and Reinhart and Trebesch (2015) who also study the outcome of final deals and pay less attention to intermediate restructurings like most debt operations of the 1980s.[13]

Cruces and Trebesch then define haircuts as:

$$H_{sz} = 1 - \frac{\text{Present value of New Debt } (r_t^i)}{\text{Present value of Old Debt } (r_t^i)}$$

where r_t^i is the discount factor employed to calculate the present value of old and new debt instruments.[14]

Finally, for official debt restructurings, I relied on the original dataset built by Das *et al.* (2011) which contains a list of sovereign debt restructurings with the Paris Club (between 1950 and 2010).[15] Paris Club creditors may provide (official) debt treatments to debtor countries in the form of rescheduling (i.e., debt relief by postponement) or, in the case of concessional rescheduling, reduction in debt service obligations during a defined period (flow treatment) or as of a set date (stock treatment).

As low-income countries are concerned, Paris Club creditors agreed to provide them concessional reschedulings (conditional on the adoption of an IMF program) under the Toronto (1988), Trinidad (1990), Naples terms (1994). In 1996, the World Bank and the IMF have implemented the Heavily Indebted Poor Countries (or HIPC) Debt Initiative, which was first strengthened in 1999, and more recently in 2005, when, under the Multilateral Debt Relief Initiative (MDRI) multilateral institutions were encouraged to increase their specific contribution to debt reduction.

Table 1a also shows summary statistics for different subsamples in the full sample of 355 restructurings. I find that the average value over the years 1975-2013 is about 11 per-

[13] Examples of final restructurings include the Brady debt exchanges of the 1990s as well as all main recent emerging market bond exchanges such as Russia 2000 or Argentina 2005.

[14] While prior literature used a constant average rate for each restructuring, Sturzenegger and Zettelmeyer set-up a restructuring-specific discount rate, r_t^i, dataset (not country-specific), which is computed by the specific country situation and by the level of credit risk premium at that time.

[15] This dataset was last updated in November 2012.

cent, thus resulting much more frequent but much lower that the average private haircut. Looking at the three different subperiods, I find a sizeable increase in the size of official restructurings over time. Average size is about 25 percentage points higher during the last subperiod (2002-2013), as compared to restructurings implemented during the initial period (1975-1988), and 21 percentage points higher with respect to the intermediate period (1989-2001).[16] Figure 2 shows the frequency distribution of official restructuring by percentage size.

Table 2a also shows summary statistics for different subsamples according to a country's income. As the number of countries is concerned, I do not find much difference between countries having private haircuts with respect to those with official restructurings, at least in the case of high and middle income countries. Specifically, the number of high income countries involved in a default with private haircut is very similar to those having an official debt restructuring (4 and 3, respectively). The number of middle income countries involved in a default with a private haircut is also about the same as that of countries experiencing an official restructuring (35 vs. 38, respectively).[17] Conversely, official restructurings are much more common among low income countries than private haircuts (16 vs. 28 countries, respectively). Finally, I find that, for low income countries, the average size of both private haircuts and official restructuring is always the highest with respect to both high and middle income countries.

TABLE 1a & 1b HERE

FIGURE 1 & FIGURE 2 HERE

2.2 Method

In this subsection, I analyze the relationship between private and official restructuring and annual per capita GDP growth over the 1975-2013 period. I obtain an unbalanced panel which comprises a maximum of 117 developing countries, depending on the control variables I include. I use a fixed-effects GLS estimator in order to correct for heteroskedasticity across countries and obtain efficient estimates.[18] The results are qualitatively unchanged

[16] The average size is only 3.5 percentage points higher during the intermediate subperiod with respect to the initial one.

[17] Such number is, however, almost twice as much the number of low income countries experiencing a private haircut.

[18] A groupwise likelihood ratio heteroskedasticity test, performed on the residuals of the baseline model estimated by OLS, led to a rejection of the null hypothesis of homoskedasticity across groups (countries)

when I correct for both serial correlation and heteroskedasticity, I estimate the model using robust OLS or OLS with standard errors clustered at the country level.

Specifically I test:

$$y_{it} = \alpha + \beta X_{it} + \gamma_j R_{it+j} + \delta_j D_{it+j} + \eta_i + \tau_t + u_{it}, \qquad j = +1, -1, ..., -10 \quad (1)$$

where y_{it} represents per capita growth in country i at period t, R_{it+j} is the amount restructured (*private or official*) associated to the default of the year t in country i, D_{it+j} is an indicator variable equal to one when country i, in year t, has finalized its last restructuring, and X is a vector containing my control variables.

I then generated twelve variables denoting the anticipated default, current default and up to ten lags of each default episode; and twelve more variables denoting the haircut (and the official restructuring) at $t+1$, t and up to ten years following the sovereign debt restructuring. Finally, η_i and τ_t denote country and time dummies, respectively, which allow us to control for both countries unobservable and time invariant variation and common trends.[19]

The advantage of estimating equation (1) is that it allows me to disentangle the growth increase associated with the default *per se* from the growth increase associated with the size of the haircut: "occurrence" versus "magnitude."

My choice of control variables follows the literature on the impact of default on output growth, in particular I adopt the same specification as in Levy Yeyati and Panizza (2011). More specifically, I control for investments as a percentage of GDP, a measure of openness (exports and imports over GDP), government expenditure, annual rate of growth of population and total population (both in log), rate of variation of annual terms of trade, the percentage of the population that completed secondary education, the Freedom House index of civil liberties and a dummy for a banking crises (Laeven and Valencia 2013).

Table A2 in the Appendix provides a detailed description of each control variable and its source while table A3 shows some summary statistics.

for all regressions.

[19] In this way I can also accounts for global factors that might have influenced the simultaneous dating choice of debt restructuring events (e.g., Baker or Brady plan in the two periods, 1985-88, and, 1989-94, respectively).

3 Empirical results

3.1 Private haircuts

The results of the model of equation (1) are presented in table 2. In columns 1-3, I report only the coefficients of the private haircut dummy, the private haircut and of both variables together, in the year of the restructuring, one year before and one year after the restructuring episode without any control variables.[20] Column 4 reports the same specification of column 3 including control variables. In columns 5-8, I progressively add the coefficients of both the haircut dummies and size (from three to up to ten years after the default) to the specification of column 4. While all these results are reported for comparison, I largely base the discussion on the fully specified model of column 8.[21]

As can be seen, most of the control variables have the expected sign. Growth rates significantly increases with higher investment and civil liberties, while it decreases with higher population growth, higher public expenditure and after the occurrence of a banking crisis. The coefficients of terms of trade, population (in log) and openness are not significant.[22]

As our variables of interests are concerned, in column 8, I find that the relationship between growth and the private haircut dummy has generally the opposite sign with respect to that between growth and the haircut size. If I look at the short-term link between growth and private haircut, one year after the default, the coefficient of the haircut dummy is positive and significant at the five-percent level (growth increases by almost 1.9 percent), while an increase of one standard deviation in the size of the haircut is associated with a decrease in growth by about 0.3 percent. Current levels of both the haircut dummy and its size seem not to be significantly related to growth.

Over a longer period, correlation between the haircut dummy and growth remains positive (but not always significant) up to the ninth year after the default episode while, over the same period, the relationship between private haircut and growth is always negative (but not always significant). More specifically, the coefficient of the haircut dummy is positive

[20] We should be aware that the results of columns 1 and 2 do not allow differentiating between the growth variation associated with a restructuring and that associated with the size of the haircut. In particular equation 2 is problematic as it only includes the interacted variable (R_{it+j}) but not the constitutive term (D_{it+j}) (Cruces and Trebesch 2013).

[21] The best way to interpret the findings of table 2 is to consider the expected variation in growth as conditional on the haircut size, that is $\gamma_j R_{it-j} + \delta_j$.

[22] These results are indeed quite similar to those obtained by Levy Yeyati and Panizza (2011).

and significant, at the one-percent level, nine years after the default (growth increases by about 1.8 percent). On the other hand, an increase of one standard deviation in the size of the haircut nine is associated with a decrease in growth by about 0.25 percent. Clearly, this is an economically relevant magnitude. In figure 3, I summarize the results with two graphs that track the evolution over time of the size, sign and significance of the coefficients of both the haircut dummy and size.

To sum up, while the occurrence of a private haircut is positively associated to economic growth, its actual size, which proxies the magnitude of the default episode, seems to represent a negative stigma for the countries involved. Private haircuts are associated to some negative (reputational) costs which lower growth over a long period somehow delaying recovery.

Our results are indeed similar to those of Cruces and Trebesch (2013a). As in their ananlyis, controlling for both the occurrence and the magnitude of default is crucial to detect a more lasting (and negative) link between debt default and growth.[23] What I find is instead different from the results of Trebesch and Zebel (2014), who do not detect any evidence of a reduction in GDP growth in the aftermath of a default (in particular after five year from the default episodes). Our results also differ from Levy Yeyati and Panizza (2011), who show that output contractions actually precede default and that default episodes seem already to mark the beginning of an economic recovery.

I should emphasize, however, that the results in this section should be taken cautiously. In particular, they do not imply that imposing high haircuts have a long-lasting effects on growth. As I have explained, identification is difficult and there are competing channels, which are hard to disentangle in the data at hand. Moreover, it is possible that the timing of the restructuring is endogenous, which in turn may bias the haircut coefficients.[24]

TABLE 2 HERE

FIGURES 3 HERE

[23] In their paper the dependent variable were bond yield spreads and periods of capital market exclusion.

[24] Both sovereigns and creditors may have an incentive to settle in good times, when default risk is low and growth prospects are good (as shown by Benjamin and Wright, 2009).

3.2 Official Restructurings

The results for official restructurings are presented in table 3. Columns 1-3 of table 3 report only the coefficients of the official restructuring dummy, the official restructuring size and of both variables together in the year of the default, one year before and after the default episode, respectively, without any control variables. Column 4 reports the same specification of column 3 including control variables. In columns 5- 8, I progressively add, to the specification of column 4, the coefficients of both the official restructuring dummy and size from up to three to up to ten years after the default. As above, I largely base our discussion on the fully specified model of column 8.

Most of our control variables have the expected impact on growth. As our variables of interest are concerned, looking at column 8 of table 3, I find that the evidence of a correlation between growth and the simple event of an official restructuring becomes actually much weaker than in the case of a private haircut. The only coefficient which is significant, at five-percent level, and with a negative sign, is that of the anticipated event of an official restructuring, which is correlated with a growth contraction of about one percent. As the size of the restructuring is concerned, the anticipation of an official restructuring positively correlates with growth (in particular an increase of one standard deviation in the amount of official restructuring increases growth by about 0.55 percent). Once the default actually materializes, however, the size of the restructuring becomes correlated with a growth contraction [25]

Over a longer period, i.e., since four up to ten years after the restructuring episode, I find evidence of a positive correlation between growth and the amount of the official debt restructured. In particular, eight years after the default an increase of one standard deviation in the amount of official restructuring increases growth by about 0.22 percent.[26] Figure 4 shows more clearly the evolution over time of the size, sign and significance of the coefficients of official restructuring dummy and size.

TABLE 3 HERE

FIGURES 4 HERE

[25] In particular an increase of one standard deviation in the amount of official restructuring now reduces growth by about 0.33 percent.

[26] These results (available on request) are even stronger when I exclude HIPC countries from the sample.

In summary, the trade-off concerning the amount of a sovereign debt restructuring is associated to opposite outcomes for private and official defaulters. Higher amount of official restructuring may have some (social and political costs) in the short-run, but eventually they imply some positive effects over the long term, as the debt relief effect of high restructurings seems to improves recovery by freeing up new resources. As before, controlling for the severity of the default through the amount of official restructurings, allows me to detect a more lasting (and negative) link between debt default and growth which is however mitigated by the size of the restructuring. No stigma is now associated to the size of the restructuring, indeed official defaulters seem to benefit from the debt relief effect of high restructurings (as in Arslanalp and Henry, 2005), which possibly mitigate the negative consequences of an official default.

4 Robustness checks

This section aims to test the robustness of our main model of equation (1). More specifically, I try to control for the presence of (i) autocorrelated standard errors (ii) omitted variable bias, as common shocks could affect both output and haircuts, and (iii) reverse causality, since changes in output can potentially explain the type of default. All these results are shown in table 4.

Autocorrelated standard errors. I address concerns of serially correlated errors by both including lagged growth in my specification and by estimating the model correcting for AR(1) autocorrelation within panels and cross-sectional heteroskedasticity across countries. In a dynamic panel with country fixed effects the lagged dependent variable is correlated with the country-specific component of the error term and, thus, the OLS fixed-effects estimator produces biased estimates. However, Nickell (1981) shows that, in the AR(1) case, the bias declines as the time series dimension of the panel, T, increases. Judson and Owen (1999) testing the performance of the fixed-effects estimator on panels with typical macroeconomic dimensions find that the fixed-effects estimator performs well when $T = 30$. As in our sample $T = 39$, I expect any bias introduced by the inclusion of the lagged dependent variable to be very small. I then include growth at time $(t-1)$, in both columns one and four of table 4 and, as can be seen, both sign and significance of the restructuring variables remain overall the same. The same holds when I correct for AR(1) autocorrelation within panels and cross-sectional heteroskedasticity across countries

Additional controls. The results could still be biased due to the omission of time-varying country-specific variables correlated with both growth and the government payment behavior and growth, despite controlling for time and country fixed effects and standard macro controls. More specifically, following Trebesch and Zebel (2014), I include political risk (as debtor payment attitude may be affected by political crises) and control for the occurrence of currency crises (as well as the occurrence of banking crises).[27] Thus, I add the ICRG political risk indicator as well as a dummy for changes in the executive (taken from the Database of Political Institutions, DPI). Moreover, I also include inflation and the debt to GDP ratio, both taken form the World Development Indicators (WDI).[28]

In columns three and eight of table 4 I have then included additional controls, which, however, are available only for a reduced sample. As the number of observations drops dramatically (by almost half) these results are hardly comparable as changes in the coefficients of the interest variables might be due to changes in sample size rather than to their different effect. Nevertheless, the results are overall similar to those of previous specifications.

Reverse causality. Reverse causality can indeed be one of the main objection to comment our result. Therefore, I test the influence of lagged growth on our explanatory variables. More specifically, in columns 1-3 of table 5 I test the influence of lagged growth on the current level of private haircut, while in columns 4-6 I test the influence of lagged growth on the level of official restructuring. In both specifications I do not find any evidence that lagged growth is a good predictor for either private haircut or official restructuring.

Taken together, I find no evidence for reverse causality and no evidence for a confounder driving our main results. Nevertheless, I should interpret our result with caution as I cannot detect any causal effect but only strong conditional correlations.

TABLE 4 & 5 HERE

[27] Both indicators are taken from Laeven and Valencia (2013).

[28] More specifically, this specification allow me to control for several factors that may be associated to the occurrence of a sovereign debt crisis, such as proxies for countries' ability and willingness to repay (see Manasse and Roubini 2009). In particular, solvency crises are characterized by high level of external debt to GDP, together with monetary or fiscal imbalances, while liquidity crises are identified by moderate debt levels but greater political uncertainty, which, at least to some extent, can capture a country's willingness to pay.

5 Credit ratings

In this section I investigate whether one of the channels explaining the link between restructuring and growth may work through the capital market. More specifically, adopting an alternative specification in which the dependent variable is a country's credit rating, should allow me to investigate whether variations in the borrowing costs (represented by variation in the credit ratings) could, at least partially, explain corresponding variations in GDP growth.

Studies that measured the impact of default on borrowing costs have focused on both direct and indirect measures, the main indirect measure being a country's credit rating. This is a relevant measure because credit ratings tend to be highly correlated with borrowing costs. Cantor and Packer (1996) were among the first to focus on the relationship between default history and credit ratings. Collecting data for about 50 countries in 1995, they find that a dummy variable equal to one for countries that defaulted after 1970 is associated with a significant drop in a country's credit rating. Reinhart *et al.* (2003) find that a history of default is associated with lower ratings assigned by the Institutional Investor publication.[29]

5.1 Data

In this section my dependent variable is a country's (annual) sovereign rating provided by one of three rating agencies: Fitch, Moody's and Standard and Poor's. These ratings are overall available for only 70 of my initial sample of 117 countries, and only for the years 1990-2013.[30] In the analysis the ratings from these three agencies are pooled in order to increase the number of total observations. I then include a dummy for each agency to account for any systematic differences across them. For the empirical analysis, all ratings have been translated to a 21-point scale in accordance with the literature (e.g., see Borenstein and Panizza 2009 for a similar approach). This means that I assign the highest value of 20 for an "AAA" rating, 19 to AAþ (or AA+), 18 to AA, and so forth,

[29] More recently, Fuchs and Gehring (2015) investigates how the home country of rating agencies could affect rating decisions as a result of political economy influences and cultural distance. Using data from nine agencies (based in six countries), they find that agencies have biases in favor of the respective home countries, as well as in favor of culturally more similar countries, and countries in which home-country banks have a larger risk exposure.

[30] More specifically, I focus on sovereign's long term foreign currency rating, i.e., ratings for government bonds that are issued in a foreign currency and have a maturity of more than one year. For each agency, and for each year, I took the latest in the year available credit rating.

all the way down to selective default rating, SD, which is assigned a value of zero.

Alternatively, as in Reinhart *et al.* (2003), I take as dependent variable the Institutional Investor's crediworthiness index (Reinhart and Rogoff 2009). This index it is available for the period 1979-2008 and it further reduces our initial sample to only 39 countries and 30 years.[31]

The pair-wise correlation between sovereign ratings and the three credit rating agencies under analysis, and between the pooled credit rating by Fitch, Moody's and Standard and Poor's and the Institutional Investor's index, are all shown in Table A4.

5.2 Method

I analyze the relationship between private haircut and official restructuring and credit rating over the 1990-2013 period. I obtain an unbalanced panel which comprises a maximum of 70 developing countries, depending on the control variables I include. I use a fixed-effects GLS estimator in order to correct for heteroskedasticity across countries and obtain efficient estimates.[32] Generalized least squares treat the dependent variable as cardinal. This implies that the difference between an "AA" and an "AA+" rating, for example, is the same as between "BB" and "BB+." Nonetheless, as I will show in the appendix that results are robust to using an ordered probit model for the discrete 21-step rating at the end of each year.[33]

More specifically, I test:

$$c_{it} = \alpha + \beta Z_{it} + \gamma_j R_{it+j} + \delta_j D_{it+j} + \eta_i + \tau_t + \varepsilon_{it}, \qquad j = +1, -1, ... -3, -4\&5, -6\&7 \quad (2)$$

where c_{it} represents credit rating (credit index) in country i at period t, R_{it+j} is the amount restructured (*private or official*) associated to the default of the year t in country i, D_{it+j} is an indicator variable equal to one when country i, in year t, has finalized its last restructuring, and Z is a vector containing my control variables. Finally, η_i and τ_t denote

[31] Results are however qualitatively unchanged and they available on request.

[32] I have tested for the normality of the pooled credit rating by Fitch, Moody's and Standard and Poor's and the hypothesis that it is normally distributed could not be rejected at conventional levels.

[33] I can report only the direction of the effect and the significance levels as marginal effects are conditional on each respective rating level.

country and time dummies, respectively, which allow us to control for both countries unobservable and time invariant variation and common trends.

Since the number of observations is now much lower, following Cruces and Trebesch (2013a), I generated only seven variables denoting the anticipated restructuring dummy, current restructuring dummy and up to seven lags of each restructuring episode; and seven more variables denoting the haircut (and the official restructuring) at $t+1$, t and up to seven years following the sovereign debt restructuring. As above, the advantage of estimating equation (2) is that it allows me to disentangle the "occurrence" versus "magnitude" effect of a private (or official) restructuring.

As the control variables are concerned I also rely on the specification by Cruces and Trebesch (2013a). As they do, to capture the sovereign's domestic economic performance, I included, public debt to GDP, the general government net lending/borrowing, per capita GDP, GDP real growth, total population (in log), reserves to imports, inflation rate (based on consumer prices), current account, the ICRG political risk indicator and the number of years the chief executive has been in office.[34]

Table A2 in the Appendix provides a detailed description of each control variable and its source while table A3 shows some summary statistics.

5.3 Haircut

The results of the model of equation (2) are presented in table 6. In columns 1-2, I report only the coefficients of the private haircut dummy, the haircut and of both variables together, in the year of the restructuring, one year before and one year after the default episode, without, and including control variables. In columns 3-4, I progressively add the coefficients of both the haircut dummies and size (from three up to six and seven years after the default) to the specification of column 2. While all these results are reported for comparison, I largely base the discussion on the fully specified model of column 4.[35]

[34] As the variable "general government net lending/borrowing" reduces substantially the sample size I present the results excluding it. The results, which are available on request, are qualitatively unchanged when we include this control.

[35] In table A5 I also report the results of the same specification when using ordered probit instead of GLS. The statistic for computing an ordered probit (or logit) model with fixed effects does not provide consistent estimates, thus in this case I am able to estimate only a random-effect model. In Table A5 the results are qualitatively unchanged. Similar results (available upon request) are also obtained when using ordered logit.

As can be seen, most of the control variables have the expected sign. Credit rating significantly increases with per capita GDP, with higher population (in log), with current account surplus, with years in office and with (absence of) political risk, while it decreases with higher public debt and higher inflation. The coefficients of GDP real growth and reserves to imports are not significant at conventional levels. Among the credit agencies, I observe a higher downward bias for the ratings provided by Standard and Poor's.

Looking at our interest variables, in column 4 of table 6, I find that the evidence of a correlation between credit ratings and the simple event of a private haircut becomes actually much weaker than in the growth specification. The only coefficient which is strongly significant, at one-percent levels, and with a negative sign, is that of the anticipated event of a private haircut, which is associated with a reduction of about 3 notches in a country's credit (independently of the haircut size).[36]

As the amount of the haircut is concerned, the coefficients of the different lags are always negative but rarely significant. After four-five years since the restructuring, however, while the simple occurrence of a private haircut is not significant, the coefficient of the haircut is negative and significant, at five-percent level. In particular, an increase of one standard deviation in the haircut size is associated with a drop of about 0.2 notch in a country's credit ratings. Figure 5 summarizes the results by showing the evolution over time of the size, sign and significance of the coefficients of both the private haircut dummy and size.

Similarly to the case of growth, the haircut size seems to involve some reputational costs and correlation between private haircut and credit rating is negative in the medium run (i.e., up to five years after the restructuring episode). These results are similar to those of Cruces and Trebesch (2013a). As they do, by controlling for both the occurrence and the magnitude of sovereign default I am able to detect a more lasting (and negative) link between debt default and borrowing costs.

Even if the comparison between the two sets of results should be taken cautiously given that both the sample size and year period do not coincide, my results are, at least to some extent, consistent with the hypothesis that at least one of the channels explaining the growth pattern over the long period may depend on the perceptions of private investors in the credit market. In fact, the characteristics of the deal (the size of the haircut) seem

[36] A rating notch is a one-level difference on a rating scale, such as the difference between A1 and A2 for Moody's or between A+ and A for Standard and Poor's (Cantor and Packer 1996).

to be persistent: higher haircuts are still associated to lower ratings up to five years after the default. Therefore, the results confirm that the reputational costs of higher haircuts outweigh their benefits in term of debt reduction, as in the case of growth.

TABLE 6 HERE

FIGURES 5 HERE

5.4 Official Restructuring

The results for official restructurings are presented in table 6. In columns 4-6, I report only the coefficients of the official restructuring dummy, the amount of official restructuring and of both variables together, in the year of the restructuring, one year before and one year after the default episode, without, and including control variables. In columns 7-8, I progressively add the coefficients of both the official restructuring dummies and size (from three to up to six and seven years after the default) to the specification of column 6. As before, I largely base the discussion on the fully specified model of column 8.[37]

As can be seen, most of the control variables have the expected sign. Credit rating significantly increases with per capita GDP, with higher population (in log), with current account surplus and with (absence of) political risk, while it decreases with higher public debt and higher inflation. The coefficients of GDP real growth, years in office and reserves to imports are not significant at conventional levels.

Looking at my variables of interest, the coefficients of the official restructuring dummy are generally negative and turning positive only in the last period (i.e., after six-seven years since the restructuring episode). More specifically, the simple occurrence of an official restructuring is negatively correlated with credit rating since one year before up to five years after the default episode. Regarding the quantitative impact of our variables of interest, the anticipated event of an official restructuring is associated with a drop of about 0.8 notch in a country's credit ratings, while after four-five years since the restructuring this drop reduces to 0.33 (independently of the official restructuring size).

As the size of official restructuring is concerned, the coefficients of all lags are generally negative but not always significant. Seven year after the default, however, while the

[37] As it is shown in table A5, the results are qualitatively unchanged when using ordered probit instead of GLS. As above, similar results (available upon request) are also obtained when using ordered logit.

simple occurrence of the restructuring episode has a positive and significant coefficient (at five-percent level), the coefficient of the actual amount of the restructruring is negative and significant, at five-percent level. Specifically, an increase of one standard deviation in the haircut size is associated with a drop of about 0.15 notch in a country's credit ratings. Figure 6 shows the evolution over time of the size, sign and significance of the official restructuring coefficients.

FIGURES 6 HERE

In summary, in the credit rating specification, the results between private haircut and official restructuring are overall quite similar, as opposed to the case of growth. Correlation between official restructuring and credit rating is negative up to six-seven years after the restructuring episode, and the size of the official restructuring seems to involve some reputational costs. These results are again very similar to those of Cruces and Trebesch (2013a).

Contrary to the case of private haircuts, however, the results of official restructuring are not consistent with the hypothesis that the perceptions of private investors in the credit market is correlated with the growth pattern over the long period. Put differently, a penalized access to the credit market does not seem to negatively affect the growth prospects of official defaulters.

6 Conclusions

This paper studies the relationship between debt default and GDP growth, over a period of ten years, by taking into account the depth of a debt restructuring and by distinguishing between commercial and official sovereign debt restructuring. More specifically, the amount of restructured debt is used as a proxy of the severity of the default episode. Analyzing 73 default episodes in 117 countries over the period 1975-2013, consistently with previous results in this literature, I find that defaults are correlated with contraction of short-term output growth.

Moreover, controlling for the severity of the default, I find that while the simple occurrence of a (commercial debt) default is generally associated with an increase in economic growth, the amount which is actually restructured (the private haircut) carries a negative

stigma up to nine years after the default, somehow hampering recovery. For official debt restructuring, the simple event of a restructuring seems not to be related to growth, while the magnitude of the event (the amount of official restructurings) is indeed associated to an improvement in the growth prospect up to eight years after the default.

More generally, by controlling for both the occurrence and the magnitude of sovereign debt defaults, I am able to detect a more lasting and negative link between debt default and growth. For private haircuts, occurrence and magnitude goes into opposite direction and high haircuts seem to imply a negative stigma lowering growth over a longer period. Alternatively, higher amount of official restructuring may have some costs in the short-run, but they do have some positive effects over the long run, as the debt relief effect of high restructurings seems to improve recovery. In this case, no stigma is associated to the size of the restructuring, indeed defaulters seem to benefit from the debt relief effect of high restructurings (as in Arslanalp and Henry, 2005), which somehow soften the negative consequences of an official default.

Therefore, while more severe private haircuts seem more costly for private defaulters, the opposite holds for official restructuring. The trade-off concerning the amount of a sovereign debt restructuring provides opposite outcomes for private and official defaulters. Taken together, the results point to confirm that official and private default may have different effects and should then be treated differently. If defaulting on private or official debt is not the same, this could be particularly instructive, for example, in the case of Greece, where private debt has been replaced by official debt.

Adopting an alternative specification, in which the dependent variable is a country's credit rating, I investigate whether one of the channels of the relationship between restructuring and growth may depend on the borrowing conditions (which highly correlate with credit ratings). In this case, however, I find very similar results for both private and official restructuring.

In the case of private haircuts, my results confirm that higher haircuts are associated to lower ratings up to five years after the default (as well as higher haircuts negatively correlates with growth over a long period). The same also holds in the case of official debt for which higher restructurings are associated to lower ratings up to seven years after the default. Hence, in the case of credit ratings, I do not find any difference between official and private defaulters. To the extent that credit ratings is a good proxy for borrowing costs, this evidence implies that positive growth prospects for official defaulters are not

affected by a lower reputation in the credit markets.

The analysis is of course limited in several respects. I do not claim to draw causal inferences from the empirical analysis, given the nature of the data available. I do emphasize that the direction of causality in the relationship between sovereign defaults and growth raises some questions and thus a robust association between debt defaults and low growth can only be indicative of a correlation between the two variables. We could observe punishment effects, reputational effects or none of the two. Lower growth might not be the consequence of a default *per se* but of other factors affecting debt sustainability as well. Therefore, both the determinants and the effects of a debt restructuring should be more carefully investigated.

Furthermore, I also plan to check the robustness of the results by exploring the differences between different degrees of "concessionality" in the new debt contract (Trebesch and Reinarth 2015) and the differences between more "excusable vs. unexcusable" types of defaults (Grossman and Van Huyck 1988). I leave these questions for future research.

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Table 1a: Private Haircut and Official Restructuring

	Observations	Mean	SD	Min	Max
Private Haircut					
1975-1988	79	27.75	18.92	0.7	103.5
1989-2001	43	53.5	29.66	8.7	102.3
2002-2013	11	66.37	33.34	5.63	97
Official restructuring					
1975-1988	121	6.86	6.17	0.4	30.33
1989-2001	139	10.4	12.72	0.03	82.06
2002-2013	41	31.38	55.27	0.43	326.13

Note: Since there is only one case of an official restructuring equal to 326 percent of GDP (Liberia 2010), in Figure 2 this value was dropped.

Table 1b: Private Haircuts and Official Restructurings by country's income

Private Haircuts (Average size)		
High Income	Middle Income	Low Income
30.59	35.18	56.34
Official Restructurings (Average size)		
High Income	Middle Income	Low Income
8.50	10.78	12.03
Private Haircuts (# of countries)		
High Income	Middle Income	Low Income
4	35	16
Official Restructurings (# of countries)		
High Income	Middle Income	Low Income
3	38	28

Table 2: Private Haircuts and Growth, 1975-2013, GLS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Haircut dummy (+1)	-0.411		-2.412***	-1.734**	-1.765**	-1.383*	-1.181	-0.736
	(-1.283)		(-4.402)	(-2.208)	(-2.232)	(-1.808)	(-1.503)	(-0.799)
Haircut dummy	0.502		0.044	1.233	1.083	1.131	1.057	1.065
	(1.573)		(0.081)	(1.523)	(1.326)	(1.416)	(1.322)	(1.224)
Haircut dummy (-1)	0.924***		1.146**	1.726**	1.704**	1.750**	1.710**	1.872**
	(2.881)		(2.074)	(2.153)	(2.107)	(2.238)	(2.224)	(2.419)
Haircut dummy (-2)					0.528	0.501	0.599	1.010
					(0.660)	(0.648)	(0.778)	(1.378)
Haircut dummy (-3)					-0.903	-0.712	-0.583	-0.599
					(-1.172)	(-0.973)	(-0.800)	(-0.852)
Haircut dummy (-4)						1.049	1.155	1.216
						(1.307)	(1.456)	(1.602)
Haircut dummy (-5)						1.150	1.142	1.288*
						(1.513)	(1.515)	(1.806)
Haircut dummy (-6)							0.795	0.882
							(1.070)	(1.253)
Haircut dummy (-7)							0.863	0.688
							(1.088)	(0.924)
Haircut dummy (-8)								0.534
								(0.746)
Haircut dummy (-9)								1.846***
								(2.617)
Haircut dummy (-10)								0.216
								(0.296)
Haircut (+1)		0.011*	0.050***	0.032*	0.032*	0.028	0.024	0.015
		(1.713)	(4.458)	(1.705)	(1.702)	(1.581)	(1.343)	(0.797)
Haircut		0.014**	0.013	-0.006	-0.000	-0.002	-0.001	-0.004
		(2.120)	(1.128)	(-0.336)	(-0.023)	(-0.101)	(-0.054)	(-0.224)
Haircut (-1)		0.016**	-0.002	-0.028	-0.025	-0.026	-0.027	-0.033**
		(2.422)	(-0.207)	(-1.586)	(-1.458)	(-1.572)	(-1.610)	(-2.032)
Haircut (-2)					0.019	0.018	0.016	0.011
					(1.001)	(0.962)	(0.857)	(0.622)
Haircut (-3)					0.024	0.017	0.014	0.014
					(1.312)	(1.046)	(0.815)	(0.890)
Haircut (-4)						-0.004	-0.007	-0.011
						(-0.204)	(-0.429)	(-0.674)
Haircut (-5)						-0.018	-0.019	-0.024
						(-1.088)	(-1.174)	(-1.517)
Haircut (-6)							-0.004	-0.011
							(-0.276)	(-0.749)
Haircut (-7)							-0.024	-0.023
							(-1.297)	(-1.295)
Haircut (-8)								-0.005
								(-0.302)

Haircut (-9)								-0.028*
								(-1.842)
Haircut (-10)								0.006
								(0.464)
Investment				0.201***	0.205***	0.199***	0.196***	0.190***
				(11.573)	(11.284)	(10.657)	(10.224)	(9.576)
(delta) Population				-0.683***	-0.645***	-0.577**	-0.581**	-0.666***
				(-3.122)	(-2.864)	(-2.570)	(-2.559)	(-2.868)
Secondary Edu				-0.058***	-0.058***	-0.050***	-0.054***	-0.063***
				(-4.316)	(-4.167)	(-3.535)	(-3.771)	(-4.186)
(log) Popolation				-2.667**	-3.007**	-2.944**	-1.920	-2.077
				(-2.276)	(-2.487)	(-2.397)	(-1.499)	(-1.508)
Government Cons.				-0.153***	-0.168***	-0.196***	-0.211***	-0.224***
				(-4.719)	(-4.946)	(-5.978)	(-6.261)	(-6.135)
Civil Liberties				0.258**	0.306**	0.316**	0.219	0.334**
				(2.220)	(2.569)	(2.537)	(1.641)	(2.320)
(delta) Terms of Trade				0.308*	0.230	0.233	0.237	0.226
				(1.646)	(1.215)	(1.239)	(1.252)	(1.219)
Openness				-0.018***	-0.015**	-0.012*	-0.010	-0.011
				(-2.825)	(-2.342)	(-1.822)	(-1.392)	(-1.471)
Banking Crises				-1.464***	-1.333***	-1.232***	-1.351***	-1.193***
				(-4.803)	(-4.319)	(-4.023)	(-4.350)	(-3.782)
Observations	3,828	3,828	3,828	1,485	1,422	1,361	1,297	1,192
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES
Number of id	117	117	117	73	73	73	73	73

t-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 3: Official Restructurings and Growth, 1975-2013, GLS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Off. Restr. dummy (+1)	-0.385*		-0.609**	-0.860**	-0.963**	-0.891**	-0.859**	-0.954**
	(-1.665)		(-2.172)	(-2.169)	(-2.373)	(-2.238)	(-2.101)	(-2.281)
Off. Restr. dummy	-0.029		0.138	0.203	0.228	0.330	0.250	0.461
	(-0.125)		(0.488)	(0.509)	(0.553)	(0.813)	(0.601)	(1.104)
Off. Restr. dummy (-1)	0.757***		0.598**	0.655*	0.563	0.571	0.699*	0.548
	(3.316)		(2.119)	(1.742)	(1.431)	(1.442)	(1.712)	(1.344)
Off. Restr. dummy (-2)					0.001	0.030	0.226	0.272
					(0.002)	(0.079)	(0.574)	(0.690)
Off. Restr. dummy (-3)					0.346	0.411	0.462	0.591
					(0.895)	(1.072)	(1.164)	(1.496)
Off. Restr. dummy (-4)						-0.162	-0.260	-0.197
						(-0.426)	(-0.652)	(-0.500)
Off. Restr. dummy (-5)						0.212	0.163	0.128
						(0.549)	(0.405)	(0.326)
Off. Restr. dummy (-6)							0.404	0.410
							(0.979)	(0.997)
Off. Restr. dummy (-7)							-0.081	-0.102
							(-0.189)	(-0.235)
Off. Restr. dummy (-8)								-0.638
								(-1.542)
Off. Restr. dummy (-9)								0.114
								(0.261)
Off. Restr. dummy (-10)								0.543
								(1.208)
Official Restr (+1)		0.004	0.024	0.066***	0.067***	0.072***	0.068***	0.072***
		(0.305)	(1.380)	(2.644)	(2.680)	(2.937)	(2.758)	(2.982)
Official Restr		-0.012	-0.018	-0.029	-0.043*	-0.038	-0.038	-0.046*
		(-0.809)	(-0.985)	(-1.133)	(-1.702)	(-1.570)	(-1.568)	(-1.895)
Official Restr (-1)		0.039***	0.017	-0.020	-0.014	-0.016	-0.024	-0.012
		(2.608)	(0.911)	(-0.772)	(-0.582)	(-0.625)	(-0.948)	(-0.469)
Official Restr (-2)					-0.024	-0.018	-0.026	-0.023
					(-0.915)	(-0.736)	(-1.052)	(-0.932)
Official Restr (-3)					0.004	0.009	0.007	-0.002
					(0.169)	(0.377)	(0.262)	(-0.095)
Official Restr (-4)						0.040*	0.045*	0.042*
						(1.759)	(1.875)	(1.733)
Official Restr (-5)						-0.009	0.011	0.023
						(-0.366)	(0.466)	(0.929)
Official Restr (-6)							0.027	0.025
							(1.059)	(1.009)
Official Restr (-7)							0.042	0.034
							(1.436)	(1.116)
Official Restr (-8)								0.046*
								(1.746)

Official Restr (-9)								0.009
								(0.318)
Official Restr (-10)								0.001
								(0.016)
Investment				0.179***	0.180***	0.169***	0.167***	0.159***
				(9.598)	(9.137)	(8.206)	(7.752)	(7.059)
(delta) Population				-0.670***	-0.619***	-0.558**	-0.537**	-0.557**
				(-3.066)	(-2.749)	(-2.410)	(-2.250)	(-2.276)
Secondary Edu				-0.065***	-0.069***	-0.060***	-0.061***	-0.067***
				(-4.457)	(-4.584)	(-3.824)	(-3.787)	(-3.911)
(log) Popolation				-3.288**	-3.892***	-3.565**	-2.451	-2.473
				(-2.480)	(-2.848)	(-2.506)	(-1.631)	(-1.489)
Government Cons.				-0.197***	-0.218***	-0.228***	-0.238***	-0.259***
				(-5.990)	(-6.164)	(-6.778)	(-6.640)	(-6.743)
Civil Liberties				0.305**	0.386***	0.416***	0.351**	0.454***
				(2.479)	(3.002)	(3.032)	(2.401)	(2.825)
(delta) Terms of Trade				0.303**	0.304**	0.312**	0.313**	0.304**
				(2.377)	(2.350)	(2.492)	(2.494)	(2.467)
Openness				-0.019***	-0.018***	-0.012	-0.008	-0.006
				(-2.814)	(-2.619)	(-1.589)	(-0.999)	(-0.734)
Banking Crises				-1.453***	-1.329***	-1.238***	-1.401***	-1.225***
				(-4.750)	(-4.280)	(-4.017)	(-4.465)	(-3.747)
Observations	3,480	3,479	3,479	1,383	1,318	1,256	1,190	1,082
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES
Number of id	117	117	117	72	72	72	72	72

t-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 4: Robustness check for Private Haircut and Official Restructuring

	Private haircut			Official restructuring		
	(1)	(2)	(3)	(4)	(5)	(6)
Restr. dummy (+1)						
	-0.997	-0.547	-0.820	-0.832**	-0.819**	-0.724*
	(-1.060)	(-0.599)	(-0.775)	(-2.014)	(-2.007)	(-1.663)
Restr. dummy	0.958	1.133	1.224	0.693*	0.454	0.239
	(1.113)	(1.310)	(1.293)	(1.673)	(1.081)	(0.548)
Restr. dummy (-1)	1.289*	1.709**	0.868	0.709*	0.666	0.891**
	(1.697)	(2.250)	(1.016)	(1.746)	(1.606)	(2.104)
Restr. dummy (-2)	1.010	0.856	0.898	0.299	0.350	0.831**
	(1.358)	(1.178)	(1.065)	(0.762)	(0.875)	(2.053)
Restr. dummy (-3)	-0.409	-0.444	0.415	0.337	0.467	1.006**
	(-0.590)	(-0.641)	(0.530)	(0.851)	(1.169)	(2.475)
Restr. dummy (-4)	1.175	1.143	0.308	-0.185	-0.154	-0.285
	(1.580)	(1.534)	(0.376)	(-0.472)	(-0.382)	(-0.697)
Restr. Dummy (-5)	1.142*	1.312*	-0.268	0.245	0.219	-0.182
	(1.646)	(1.871)	(-0.328)	(0.652)	(0.548)	(-0.447)
Restr. dummy (-6)	0.776	1.039	0.211	0.731*	0.549	-0.087
	(1.147)	(1.502)	(0.253)	(1.831)	(1.324)	(-0.217)
Restr. dummy (-7)	0.470	0.592	1.237	-0.037	-0.225	-0.716*
	(0.653)	(0.812)	(1.543)	(-0.088)	(-0.520)	(-1.790)
Restr. dummy (-8)	0.267	0.579	-0.132	-0.725*	-0.793*	-0.664
	(0.387)	(0.826)	(-0.162)	(-1.825)	(-1.918)	(-1.627)
Restr. dummy (-9)	0.875	1.798***	0.711	0.016	0.025	-0.138
	(1.259)	(2.605)	(0.904)	(0.038)	(0.058)	(-0.323)
Restr. dummy (-10)	-0.210	0.067	0.320	0.777*	0.542	0.682
	(-0.307)	(0.095)	(0.391)	(1.789)	(1.244)	(1.541)
Restructuring (+1)	0.017	0.010	-0.001	0.056**	0.056**	0.067***
	(0.891)	(0.549)	(-0.056)	(2.487)	(2.372)	(2.801)
Restructuring	-0.004	-0.004	-0.015	-0.050**	-0.052**	-0.021
	(-0.214)	(-0.224)	(-0.791)	(-2.174)	(-2.154)	(-0.885)
Restructuring (-1)	-0.026*	-0.029*	-0.024	0.003	-0.016	-0.011
	(-1.669)	(-1.792)	(-1.525)	(0.115)	(-0.627)	(-0.452)
Restructuring (-2)	0.011	0.013	0.012	-0.026	-0.031	-0.032
	(0.642)	(0.739)	(0.672)	(-1.161)	(-1.259)	(-1.269)
Restructuring (-3)	0.011	0.012	-0.012	0.002	-0.002	-0.024
	(0.736)	(0.780)	(-0.748)	(0.078)	(-0.073)	(-0.950)
Restructuring (-4)	-0.016	-0.011	0.002	0.040*	0.039	0.020
	(-0.977)	(-0.670)	(0.135)	(1.819)	(1.604)	(0.797)
Restructuring (-5)	-0.018	-0.024	0.006	0.004	0.017	-0.012
	(-1.193)	(-1.571)	(0.365)	(0.184)	(0.696)	(-0.629)
Restructuring (-6)	-0.011	-0.015	-0.008	0.016	0.018	0.010
	(-0.863)	(-1.056)	(-0.549)	(0.693)	(0.747)	(0.545)
Restructuring (-7)	-0.019	-0.022	-0.039**	0.024	0.038	0.023
	(-1.104)	(-1.226)	(-2.369)	(0.845)	(1.274)	(1.079)
Restructuring (-8)	-0.001	-0.006	-0.000	0.044*	0.047*	0.024

	(-0.058)	(-0.355)	(-0.011)	(1.812)	(1.828)	(0.918)
Restructuring (-9)	-0.000	-0.027*	-0.001	0.004	0.009	0.011
	(-0.020)	(-1.823)	(-0.041)	(0.164)	(0.324)	(0.382)
Restructuring (-10)	0.014	0.009	-0.011	-0.020	-0.002	-0.006
	(1.088)	(0.702)	(-0.781)	(-0.728)	(-0.067)	(-0.182)
Growth (-1)	0.226***			0.261***		
	(7.792)			(8.165)		
Investment	0.122***	0.195***	0.184***	0.104***	0.164***	0.154***
	(5.948)	(9.260)	(8.521)	(4.630)	(6.651)	(6.235)
(delta) Population	-0.565**	-0.649***	-1.384***	-0.401	-0.583**	-1.096***
	(-2.441)	(-2.599)	(-4.356)	(-1.620)	(-2.153)	(-3.239)
Secondary Edu	-0.047***	-0.061***	-0.070***	-0.048***	-0.063***	-0.059***
	(-3.160)	(-3.735)	(-4.304)	(-2.848)	(-3.279)	(-3.119)
(log) Popolation	0.488	-1.885	-0.984	0.987	-1.574	-0.950
	(0.369)	(-1.251)	(-0.530)	(0.609)	(-0.838)	(-0.461)
Government Cons.	-0.185***	-0.238***	-0.163***	-0.203***	-0.288***	-0.267***
	(-5.356)	(-5.940)	(-3.508)	(-5.287)	(-6.607)	(-5.325)
Civil Liberties	0.227	0.285*	-0.208	0.349**	0.368**	-0.109
	(1.623)	(1.835)	(-1.243)	(2.244)	(2.099)	(-0.589)
(delta) Terms of Trade	0.171	0.230	0.088	0.250**	0.302***	0.194
	(0.933)	(1.297)	(0.427)	(1.994)	(2.593)	(1.182)
Openness	-0.006	-0.012	-0.007	-0.001	-0.006	-0.005
	(-0.785)	(-1.485)	(-0.838)	(-0.168)	(-0.694)	(-0.609)
Banking Crises	-0.932***	-1.113***	-0.996***	-0.861***	-1.198***	-1.010***
	(-2.978)	(-3.378)	(-2.871)	(-2.656)	(-3.471)	(-2.752)
Currency Crises			-3.452***			-3.391***
			(-5.982)			(-5.630)
Debt to GDP			-1.945***			-2.612***
			(-4.225)			(-4.764)
Gov. Change			-0.594**			-0.522*
			(-2.535)			(-1.844)
Inflation			6.965***			6.448***
			(3.583)			(2.957)
(Absence of) Political risk			0.029*			0.035*
			(1.651)			(1.787)
Observations	1,184	1190	823	1,074	1079	741
Country FE	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES
Number of id	73	71	56	72	69	54

In columns 1-3, the interest variable is the haircut, in columns 4-6 it is official restructuring.

t-statistics in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table 5: Reverse Causality, GLS

	Dependent variable: haircut			Dependent variable: off. restructuring		
	(1)	(2)	(3)	(4)	(5)	(6)
Growthpc (t-3)	0.003	0.006	0.006	-0.003	0.003	0.006
	(0.197)	(0.375)	(0.383)	(-0.197)	(0.173)	(0.348)
Growthpc (t-2)		-0.007	-0.007		-0.017	-0.019
		(-0.465)	(-0.458)		(-0.977)	(-1.008)
Growthpc (t-1)			0.003			0.003
			(0.178)			(0.184)
Observations	1,821	1,789	1,753	1,754	1,722	1,686
Country FE	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES
Macro controls	YES	YES	YES	YES	YES	YES
Number of id	69	69	69	69	69	69

In columns 1-3 the dependent variable is the haircut, in columns 4-6 it is official restructuring. t-statistics in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table 6: Private Haircuts, Official Restructurings and Credit Rating, 1990-2013, GLS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Private haircut				Official restructuring			
Default dummy (+1)	-1.791**	-2.772***	-2.847***	-2.935***	-1.265***	-0.606	-0.728*	-0.756*
	(-2.260)	(-4.005)	(-4.193)	(-4.265)	(-2.709)	(-1.550)	(-1.866)	(-1.881)
Default dummy	-1.429**	-0.395	-0.450	-0.499	-0.056	-0.271	-0.274	-0.209
	(-2.423)	(-0.738)	(-0.826)	(-0.893)	(-0.147)	(-0.801)	(-0.819)	(-0.641)
Default dummy (-1)	-0.880	0.353	0.032	0.106	0.034	-0.069	0.018	0.096
	(-1.408)	(0.634)	(0.054)	(0.173)	(0.131)	(-0.258)	(0.065)	(0.352)
Default dummy (-2)			-0.405	-0.431			0.119	0.058
			(-0.801)	(-0.831)			(0.671)	(0.183)
Default dummy (-3)			-0.008	0.009			-0.476***	-0.499**
			(-0.017)	(0.020)			(-3.293)	(-2.043)
Default dummy (-4 & 5)				0.295				-0.332*
				(0.912)				(-1.791)
Default dummy (-6 & 7)				-0.039				0.381**
				(-0.218)				(2.253)
Haircut/Restr. (+1)	-0.027*	-0.007	-0.004	-0.002	0.010	0.002	0.002	0.006
	(-1.732)	(-0.607)	(-0.396)	(-0.166)	(0.339)	(0.064)	(0.069)	(0.261)
Haircut/Restr.	0.002	-0.006	-0.006	-0.006	0.003	-0.012	-0.010	-0.005
	(0.194)	(-0.658)	(-0.625)	(-0.589)	(0.091)	(-0.420)	(-0.371)	(-0.198)
Haircut/Restr. (-1)	-0.008	-0.015	-0.012	-0.014	0.003	0.004	0.007**	-0.000
	(-0.545)	(-1.476)	(-1.088)	(-1.245)	(0.669)	(1.006)	(2.384)	(-0.028)
Haircut/Restr. (-2)			-0.003	-0.006			0.005	0.011
			(-0.335)	(-0.561)			(0.881)	(0.372)
Haircut/Restr. (-3)			-0.004	-0.007			0.009***	-0.007
			(-0.401)	(-0.700)			(4.000)	(-0.780)
Haircut/Restr. (-4 & 5)				-0.013**				-0.012
				(-2.166)				(-1.481)
Haircut/Restr. (-6 & 7)				-0.002				-0.021**
				(-0.575)				(-2.181)
Public debt to GDP		-0.030***	-0.028***	-0.030***		-0.024***	-0.024***	-0.025***
		(-8.459)	(-8.001)	(-8.449)		(-6.613)	(-6.680)	(-6.527)
Per capita GDP (log)		4.271***	4.263***	4.292***		5.364***	5.353***	5.170***
		(10.922)	(10.933)	(10.802)		(10.420)	(10.266)	(9.695)
GDP real growth		-0.011	-0.010	-0.010		-0.015	-0.011	-0.014
		(-1.163)	(-1.048)	(-1.003)		(-1.216)	(-0.961)	(-1.089)
(log) Popolation		0.954	1.187*	1.323**		1.501*	1.548*	1.690**
		(1.482)	(1.830)	(2.040)		(1.856)	(1.914)	(2.055)
Reserves to imports		0.007	0.005	0.003		-0.005	-0.004	-0.009
		(0.491)	(0.356)	(0.187)		(-0.271)	(-0.207)	(-0.448)
Inflation		-6.027***	-5.933***	-6.007***		-8.575***	-8.359***	-8.343***

		(-6.664)	(-6.476)	(-6.464)		(-8.869)	(-9.202)	(-8.412)
Current Account to GDP		-0.030***	-0.029***	-0.029***		-0.042***	-0.043***	-0.044***
		(-4.839)	(-4.747)	(-4.710)		(-5.987)	(-6.131)	(-6.029)
(Absence of) Political risk		0.073***	0.074***	0.080***		0.062***	0.062***	0.070***
		(6.140)	(6.211)	(6.702)		(4.955)	(4.945)	(5.368)
Years in Office		0.018**	0.018**	0.017**		0.007	0.006	0.002
		(2.303)	(2.324)	(2.203)		(0.863)	(0.810)	(0.193)
Fitch		-0.223***	-0.219***	-0.212***		0.016	-0.002	0.019
		(-2.897)	(-2.848)	(-2.736)		(0.194)	(-0.029)	(0.228)
Moody's		-0.239***	-0.235***	-0.244***		-0.148*	-0.152**	-0.150*
		(-3.277)	(-3.229)	(-3.309)		(-1.932)	(-1.978)	(-1.922)
Standard and Poor's		-0.403***	-0.407***	-0.390***		-0.434***	-0.382***	-0.416***
		(-5.188)	(-5.257)	(-4.981)		(-5.107)	(-4.609)	(-4.690)
Observations	863	605	605	605	719	485	485	482
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES
Number of id	64	56	56	56	64	54	54	54

t-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1

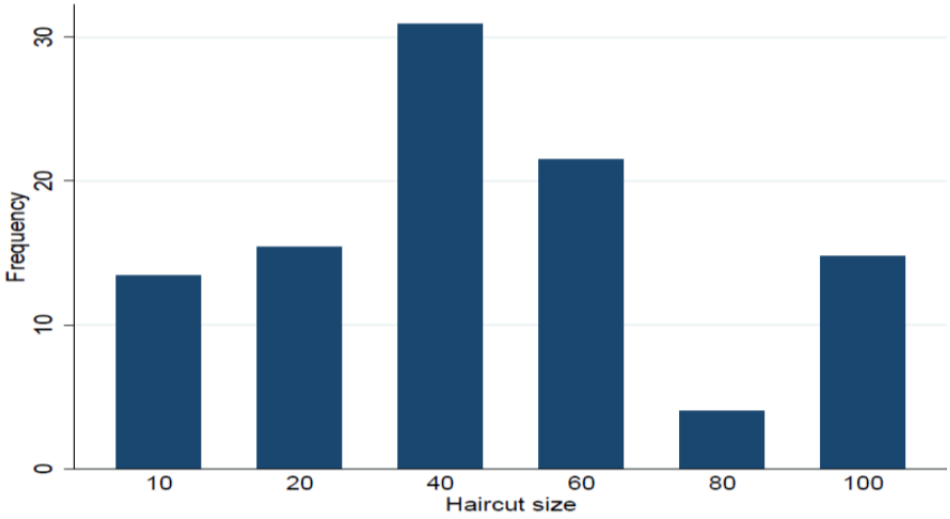

Figure 1: Private Haircuts frequency by size (percent)

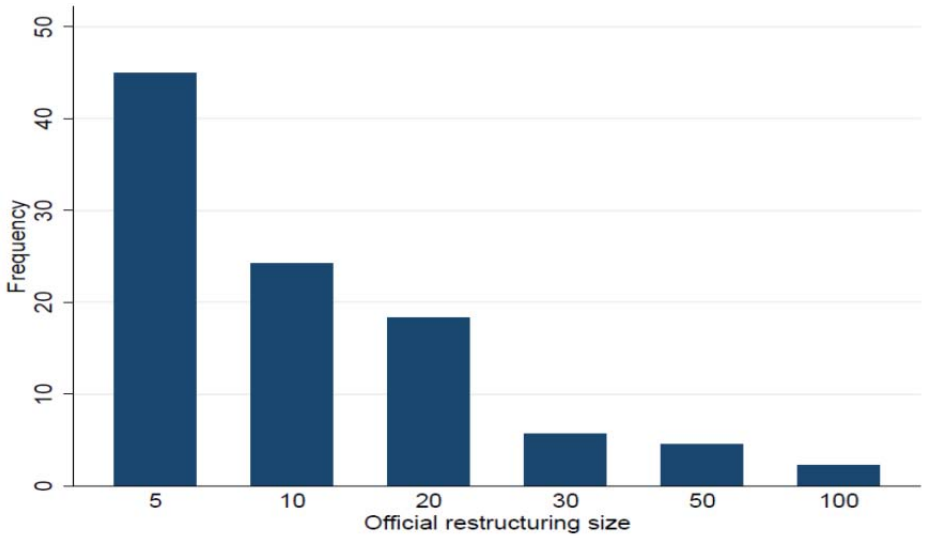

Figure 2: Official restructurings frequency by size (percent)

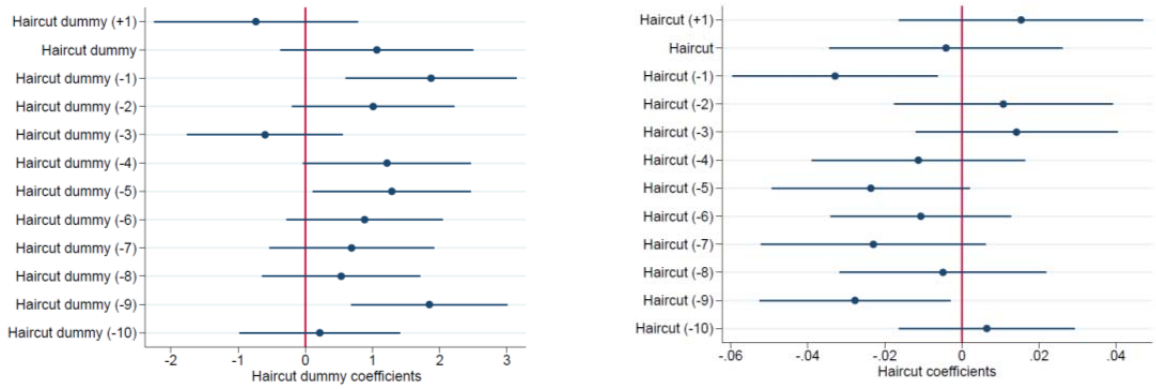

Figure 3: Private Haircuts and Growth, haircut coefficients over time

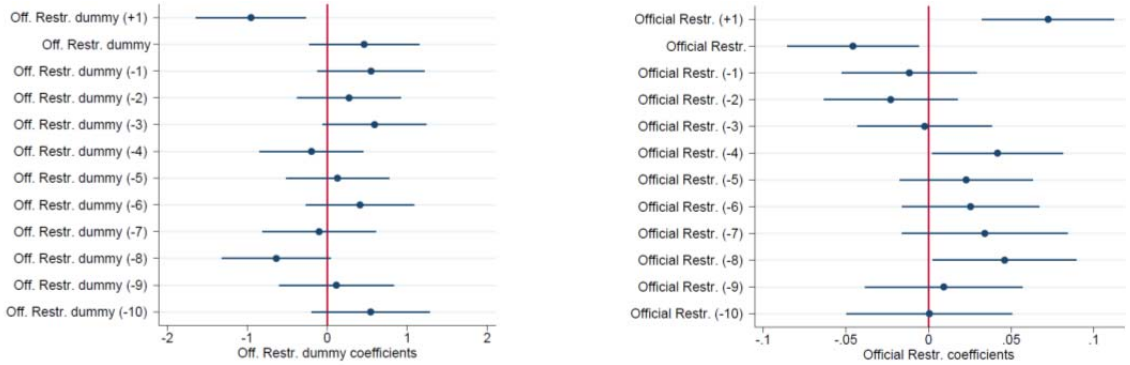

Figure 4: Official Restructurings and Growth, restructuring coefficients over time

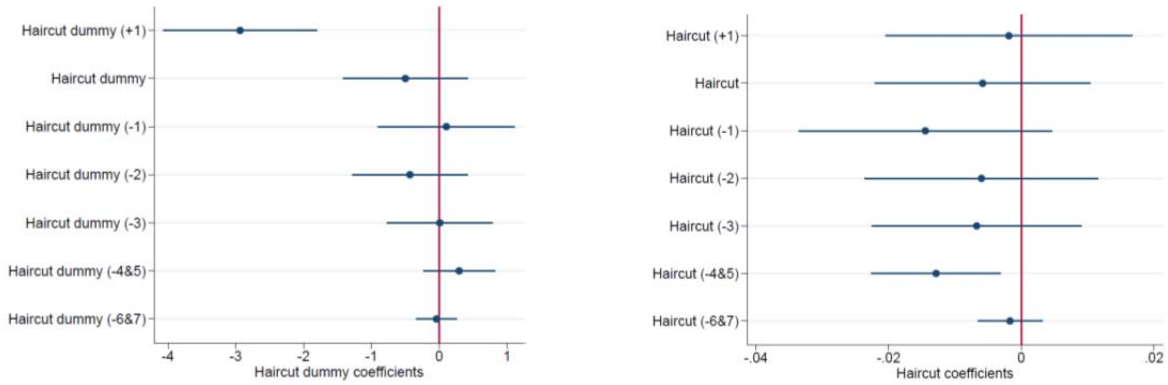

Figure 5: Private Haircuts and Sovereign Rating, haircut coefficients over time

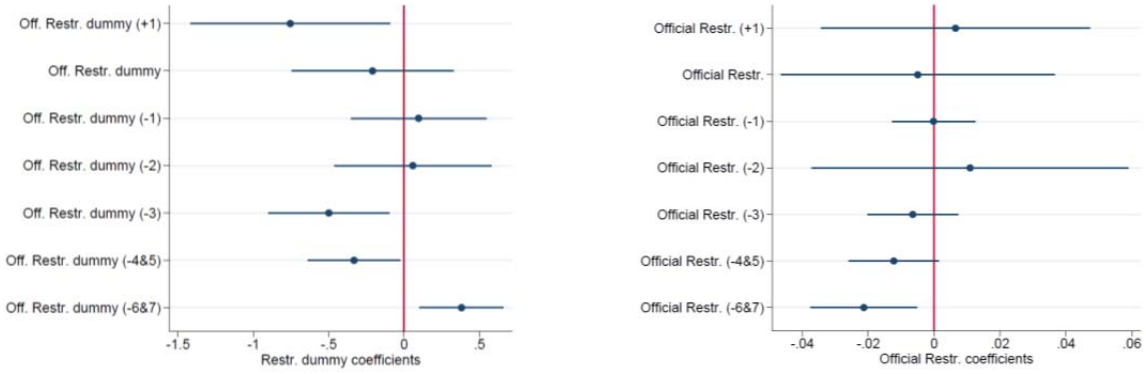

Figure 6: Official Restructurings and Sovereign Rating, restructuring coefficients over time

Appendix

Table A1: Country sample, defaulters

Haircut	(cont'd)
Albania: 1991-1995	Sudan: 1985
Algeria: 1991-1996	Tanzania: 2004
Argentina: 1982-1993; 2001-2005	Togo: 1985-88; 1997
Bolivia: 1980-1993	Turkey: 1981-1982
Brazil: 1983-1994	Uganda: 1980-93
Bulgaria: 1990-1994	Ukraine: 1998-2000
Cameroon: 1985-2003	Uruguay: 1983-1991; 2003
Chile: 1983-1990	Venezuela: 1982-1990; 2004-2005
Congo, Dem. Republic: 1980-1989	Vietnam: 1997
Congo, Republic: 1980-1988; 2007	Yemen: 1985-2001
Costa Rica: 1981-1990	Zambia: 1983-94
Cote d'Ivoire: 1983-1998; 2000-2012	
Cuba: 1980-1985	
Dominican Republic: 1982-1994; 2004-2005	
Ecuador: 1982-1995; 1999-2000; 2008-2009	
Ethiopia: 1991-1996	
Gabon: 1985-1994	
Gambia: 1985-1988	
Guinea: 1986-1998	
Jamaica: 1975-1990	
Jordan: 1989-1993	
Kenya: 1994-1998	
Liberia: 1980-1982; 2009	
Madagascar: 1981-1990	
Malawi: 1980-1988	
Mauritania: 1992-1996	
Mexico: 1982-1990	
Moldova: 1998-2002	
Morocco: 1983-1990	
Mozambique: 1983-1992	
Nicaragua: 1979-2007	
Niger: 1983-1991	
Nigeria: 1982-1992	
Pakistan: 1998-1999	
Panama: 1983-1996	
Paraguay: 1986-1993	
Peru: 1983-1997	
Philippines: 1983-1992	
Poland: 1991-1994	
Romania: 1981-1983; 1986	
Russia: 1991-2000	
Senegal: 1980-85; 1990-96	
Sierra Leone: 1986-95	
South Africa: 1985-1987; 1989; 1993	

Table A1 (cont'd): Country sample, defaulters

Official Rescheduling	(cont'd)	Non defaulters
Albania: 1993-2000	Morocco: 1983-92	Armenia
Algeria: 1994-95	Mozambique: 1984-96; 1999-2001	Azerbaijan
Angola: 1989	Nicaragua: 1991-95; 1998-2004	Bahrain
Argentina: 1985-92	Niger: 1983-96; 2001-2004	Bangladesh
Benin: 1989-2003	Nigeria: 1986-91; 2000-05	Belarus
Bolivia: 1986-2001	Pakistan: 1981; 1989-2001	Botswana
Brazil: 1983-92	Panama: 1985-90	China
Bulgaria: 1991-94	Peru: 1978-96	Colombia
Burkina Faso: 1991-2002	Philippines: 1984-94	Eritrea
Burundi: 2004-2009	Poland: 1981-91	Hong Kong
Cambodia: 1995	Romania: 1982-83	Hungary
Cameroon: 1989-2006	Russia: 1993-99	India
Central African Republic: 1981-2009	Rwanda: 1998-2005	Iran, Islamic Rep.
Chad: 1989-2001	Senegal: 1981-95; 1998-2004	Kazakhstan
Chile: 1975-87	Sierra Leone: 1977-96; 2001-2007	Kuwait
Congo, Dem. Rep.: 1976-89; 2002-10	Sri Lanka: 2005	Lao PDR
Congo, Republic: 1986-94; 1996-10	Sudan: 1979-84	Latvia
Costa Rica: 1983-93	Tanzania: 1986-92; 1997-2002	Lebanon
Cote d'Ivoire: 1984-94; 1998-2009	Togo: 1979-95; 2008-09	Lesotho
Cuba: 1986-86	Turkey: 1978-80	Libya
Dominican Republic: 1985-2005	Uganda: 1981-83; 1989-2000	Lithuania
Ecuador: 1983-2003	Ukraine: 2001	Malaysia
Egypt: 1987-91	Vietnam: 1993	Mauritius
El Salvador: 1990	Yemen: 1996-2001	Mongolia
Ethiopia: 1992-2004	Zambia; 1983-92; 1996-2005	Myanmar
Gabon: 1987-95; 2000-04		Namibia
Gambia: 1986; 2007-08		Nepal
Georgia: 2001-04		Oman
Ghana: 1996-2004		Papua New Guinea
Guinea: 1986-95; 1997-2008		Puerto Rico
Guinea-Bissau: 1987-95; 2001-10		Qatar
Haiti: 1995-2009		Saudi Arabia
Indonesia: 1994-2005		Singapore
Jamaica: 1984-93		Slovak Rep
Jordan: 1989-2002		Swaziland
Kenya: 1994-2004		Syrian Arab Rep.
Kyrgyz Republic: 2002-05		Tajikistan
Liberia: 1980-1984; 2008-10		Thailand
Madagascar: 1981-90; 197-2004		Tunisia
Malawi: 1982-88: 2001-06		Turkmenistan
Mali: 1988-96; 2000-03		United Arab Em.
Mauritania: 1985-95; 2000-02		Uzbekistan
Mexico: 1983-89		West Bank and Gaza
Moldova: 2006		Zimbabwe

Table A2: Variable definitions and sources

Variable	Definition	Source
DEPENDENT VARIABLE		
GDP growth	Per capita GDP (constant 2005 US$), Annual rate of change	GDP growth
VARIABLES OF INTEREST		
Haircut	Private debt restructurings, in percent	Cruces and Trebesch (2013)
Haircut Dummy	Dummy =1 in case of an haircut	Built by the author
Official Restructuring	Official debt restructurings, percent of total external debt	Das, Papaioannou and Trebesch (2011)
Official Dummy	Dummy =1 in case of an official restructuring	Built by the author
CONTROL VARIABLES		
Investment	Gross fixed capital formation, ratio to GDP	WDI (2015)
Gov. Consumption	Gen. government final consumption expenditure, ratio to GDP	WDI (2015)
Openness	Exports plus imports of goods and services, ratio to GDP	WDI (2015)
Inflation	Consumer price index (2010 = 100), Annual rate of change	WDI (2015)
External debt to GDP	Ratio of external debt to GDP	WDI (2015)
Political Risk	ICRG Political Risk Index	ICRG (2013)
Government change	Dummy variable with a value of one in years with a change in the executive	Database of Political Institutions (2012)
(delta) Population	Rate of population growth, annual	WDI (2015)
(log) Popolation	Log of total population	WDI (2015)
Secondary Education	Percentage of the population that completed secondary education	WDI (2015)
(delta) Terms of Trade	Annual change in terms-of-trade (in million)	WDI (2015)
Banking crisis	Dummy equal 1 in the case of a banking crisis, 0 otherwise	Laeven and Valencia (2013)
Currency crisis	Dummy equal 1 in the case of a currency crisis, 0 otherwise	Laeven and Valencia (2013)
Civil Liberties	the Freedom House index of civil liberties, range goes from-1 to 7	Freedom House (2015)

Table A2 (cont'd): Variable definitions and sources

Variable	Definition	Source
DEPENDENT VARIABLE		
FMSP	Pooled credit rating by Fitch, Moody's and Standard and Poor's	Built by the author
Credit Index	Institutional Investor's crediworthiness index	Reinhart and Rogoff (2009)
VARIABLES OF INTEREST		
Haircut	Private debt restructurings, in percent	Cruces and Trebesch (2013)
Haircut Dummy	Dummy =1 in case of an haircut	Built by the author
Official Restructuring	Official debt restructurings, percent of total external debt	Das, Papaioannou and Trebesch (2011)
Official Dummy	Dummy =1 in case of an official restructuring	Built by the author
CONTROL VARIABLES		
Public debt to GDP	General government gross debt	WDI (2015)
Net lending/borrowing	General government net lending/borrowing	IMF, WEO Database (2013)
Per capita GDP	Per capita GDP (constant 2005 US$)	WDI (2015)
GDP real growth	GDP (constant 2005 US$), Annual rate of change	WDI (2015)
(log) Popolation	Log of total population	WDI (2015)
Reserves to Imports	Ratio of external debt to GDP	IFS (2015)
Inflation	Consumer price index (2010 = 100), Annual rate of change	WDI (2015)
Current Account	Current account to GDP	WDI (2015)
Political Risk	ICRG Political Risk Index	ICRG (2013)
Years in office	Chief executive years in office	Database of Political Institutions (2012)
F	dummy=1 if credit ratings is made by Fitch	Fitch rating
M	dummy=1 if credit ratings is made by Moody's	Moody's rating
SP	dummy=1 if credit ratings is made by Standard and Poor's	Standard and Poor's rating

Table A3: Summary statistics

Variable	Mean	SD	Min	Max
Haircut (+1)	1.31	8.62	0	103.5
Haircut	1.28	8.51	0	103.5
Haircut (-1)	1.31	8.62	0	103.5
Haircut (-2)	1.35	8.73	0	103.5
Haircut (-3)	1.38	8.85	0	103.5
Haircut (-4)	1.41	8.93	0	103.5
Haircut (-5)	1.41	8.87	0	103.5
Haircut (-6)	1.45	9	0	103.5
Haircut (-7)	1.42	8.77	0	103.5
Haircut (-8)	1.47	8.9	0	103.5
Haircut (-9)	1.49	8.96	0	103.5
Haircut (-10)	1.5	8.93	0	103.5
Haircut dummy (+1)	0.03	0.18	0	1
Haircut dummy	0.03	0.18	0	1
Haircut dummy (-1)	0.03	0.18	0	1
Haircut dummy (-2)	0.03	0.18	0	1
Haircut dummy (-3)	0.04	0.18	0	1
Haircut dummy (-4)	0.04	0.19	0	1
Haircut dummy (-5)	0.04	0.19	0	1
Haircut dummy (-6)	0.04	0.19	0	1
Haircut dummy (-7)	0.04	0.19	0	1
Haircut dummy (-8)	0.04	0.19	0	1
Haircut dummy (-9)	0.04	0.2	0	1
Haircut dummy (-10)	0.04	0.2	0	1
Official restr. (+1)	0.98	7.3	0	326.13
Official restr.	0.95	7.2	0	326.13
Official restr. (-1)	0.95	7.2	0	326.13
Official restr. (-2)	0.95	7.2	0	326.13
Official restr. (-3)	0.95	7.2	0	326.13
Official restr. (-4)	0.86	4.93	0	326.13
Official restr. (-5)	0.87	4.96	0	326.13
Official restr. (-6)	0.86	4.94	0	326.13
Official restr. (-7)	0.87	4.9	0	326.13
Official restr. (-8)	0.87	4.86	0	326.13
Official restr. (-9)	0.84	4.22	0	326.13
Official restr. (-10)	0.8	4.11	0	326.13
Official restr. dummy (+1)	0.09	0.28	0	1
Official restr. dummy	0.08	0.28	0	1
Official restr. dummy (-1)	0.08	0.28	0	1
Official restr. dummy (-2)	0.08	0.28	0	1
Official restr. dummy (-3)	0.08	0.28	0	1
Official restr. dummy (-4)	0.09	0.28	0	1

Official restr. dummy (-5)	0.09	0.28	0	1
Official restr. dummy (-6)	0.09	0.28	0	1
Official restr. dummy (-7)	0.09	0.29	0	1
Official restr. dummy (-8)	0.09	0.29	0	1
Official restr. dummy (-9)	0.09	0.29	0	1
Official restr. dummy (-10)	0.09	0.29	0	1
Growth	1.69	6.52	-62.47	102.78
Investment	22.33	8.87	-5.74	74.82
(delta) Population	2.06	1.61	-7.6	17.48
Secondary Edu	53.87	30.27	0.64	122.9
(log) Popolation	16.1	1.44	12.01	21.06
Government Cons.	15.06	6.98	0	86.91
Civil Liberties	4.49	1.55	1	7
(delta) Terms of Trade	-0.99	0.62	-19.27	20.86
Openness	76.67	51.76	0	455.28
Banking Crises	0.1	0.3	0	1
Currency Crises	0.04	0.2	0	1
External debt to GDP	0.66	0.91	0	18.97
Gov. Change	0.14	0.34	0	1
Inflation	44.12	515.1	-13.06	23773.1
Political Risk	59.25	12.25	0	89.13

Table A3 (cont'd): Summary statistics

Variable	Mean	SD	Min	Max
Haircut (+1)	1.31	8.62	0	103.5
Haircut	1.28	8.51	0	103.5
Haircut (-1)	1.31	8.62	0	103.5
Haircut (-2)	1.35	8.73	0	103.5
Haircut (-3)	1.38	8.85	0	103.5
Haircut (-4 and 5)	2.86	13.01	0	148.3
Haircut (-6 and 7)	2.9	18	0	207
Haircut dummy (+1)	0.03	0.18	0	1
Haircut dummy	0.03	0.18	0	1
Haircut dummy (-1)	0.03	0.18	0	1
Haircut dummy (-2)	0.03	0.18	0	1
Haircut dummy (-3)	0.04	0.18	0	1
Haircut dummy (-4 and 5)	0.07	0.25	0	1
Haircut dummy (-6 and 7)	0.07	0.26	0	1
Official restr. (+1)	0.98	7.3	0	326.13
Official restr.	0.95	7.2	0	326.13
Official restr. (-1)	0.95	7.2	0	326.13
Official restr. (-2)	0.95	7.2	0	326.13
Official restr. (-3)	0.95	7.2	0	326.13
Official restr. (-4 and 5)	1.74	7.05	0	146.84
Official restr. (-6 and 7)	1.76	7.02	0	146.84
Official restr. dummy (+1)	0.09	0.28	0	1
Official restr. dummy	0.08	0.28	0	1
Official restr. dummy (-1)	0.08	0.28	0	1
Official restr. dummy (-2)	0.08	0.28	0	1
Official restr. dummy (-3)	0.08	0.28	0	1
Official restr. dummy (-4 and 5)	0.16	0.36	0	1
Official restr. dummy (-6 and 7)	0.16	0.37	0	1
FMSP	9.6	3.69	0	20
Public debt to GDP	57.36	56.29	0	789.83
Per capita GDP (log)	8.93	5.64	3.91	27.62
GDP real growth	1.69	6.52	-62.47	102.78
(log) Popolation	16.1	1.44	12.01	21.06
Reserves to imports	1.01	5.27	0	95.28
Inflation	0.11	0.14	-0.15	1
Current Account to GDP	-2.96	11.38	-242.19	106.84
Political Risk	59.25	12.25	0	89.13
Chief executive years in office	8.61	8.49	0	47
Fitch	0.11	0.31	0	1
Moody's	0.09	0.29	0	1
Standard and Poor's	0.16	0.36	0	1

Table A4: Credit rating correlations

	Fitch	Mood's	Standard and Poor's
Fitch	1		
Mood's	0.37	1	
Standard and Poor's	0.51	0.46	1

	Pooled Credit rating	Credit Index
Pooled Credit rating	1	
Institutional Investor's index	0.87	1

Table A5: Private Haircuts, Official Restructurings and Credit Rating, 1990-2013, Ordered Probit

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Private haircut				Official restructuring			
Default dummy (+1)	-0.781	-2.120***	-2.225***	-2.243***	-0.980**	-0.070	-0.138	-0.279
	(-1.002)	(-3.118)	(-3.240)	(-3.241)	(-2.550)	(-0.139)	(-0.291)	(-0.556)
Default dummy	-0.963**	-1.577**	-1.540**	-1.526**	-0.595	0.105	0.126	0.115
	(-2.039)	(-2.488)	(-2.409)	(-2.135)	(-1.513)	(0.267)	(0.335)	(0.281)
Default dummy (-1)	-0.703*	-0.076	-0.208	-0.137	-0.356	-0.027	-0.021	-0.037
	(-1.814)	(-0.121)	(-0.338)	(-0.190)	(-1.558)	(-0.075)	(-0.051)	(-0.090)
Default dummy (-2)			-0.439	-0.413			-0.032	-0.012
			(-0.633)	(-0.595)			(-0.098)	(-0.034)
Default dummy (-3)			0.135	0.197			-0.357**	-0.442**
			(0.291)	(0.376)			(-2.238)	(-2.290)
Default dummy (-4 & 5)				0.294				-0.564*
				(0.707)				(-1.716)
Default dummy (-6 & 7)				0.177				0.328
				(0.857)				(0.962)
Haircut/Restr. (+1)	-0.020	-0.002	-0.001	-0.005	0.012	-0.015	-0.014	-0.004
	(-1.149)	(-0.171)	(-0.070)	(-0.376)	(0.495)	(-0.617)	(-0.565)	(-0.202)
Haircut/Restr.	-0.001	0.011	0.008	0.003	0.015	-0.034***	-0.033***	-0.023*
	(-0.064)	(0.703)	(0.572)	(0.223)	(0.738)	(-2.577)	(-2.620)	(-1.762)
Haircut/Restr. (-1)	-0.005	-0.009	-0.009	-0.013	0.005	0.000	0.005	0.006
	(-0.764)	(-1.058)	(-0.967)	(-1.181)	(1.626)	(0.075)	(0.685)	(0.454)
Haircut/Restr. (-2)			-0.007	-0.013			0.011	0.013
			(-0.666)	(-0.994)			(1.313)	(0.735)
Haircut/Restr. (-3)			-0.011	-0.014			0.011***	0.004
			(-1.117)	(-1.206)			(2.722)	(0.247)
Haircut/Restr. (-4 & 5)				-0.019**				-0.006
				(-2.401)				(-0.418)
Haircut/Restr. (-6 & 7)				-0.006				-0.024*
				(-1.293)				(-1.658)
Public debt to GDP		-0.026**	-0.025**	-0.027***		-0.023*	-0.022*	-0.023*
		(-2.310)	(-2.349)	(-2.738)		(-1.783)	(-1.726)	(-1.766)
Per capita GDP (log)		0.210***	0.210***	0.210***		0.213***	0.216***	0.213***
		(4.026)	(4.208)	(4.369)		(3.391)	(3.406)	(3.405)
GDP real growth		0.005	0.007	0.011		0.005	0.006	0.005
		(0.253)	(0.392)	(0.576)		(0.229)	(0.275)	(0.227)
(log) Popolation		0.312	0.324*	0.350**		0.233	0.229	0.264
		(1.627)	(1.724)	(1.966)		(1.030)	(1.004)	(1.191)
Reserves to imports		-0.023	-0.025	-0.026		-0.022	-0.023	-0.019
		(-0.675)	(-0.805)	(-0.811)		(-0.530)	(-0.541)	(-0.437)
Inflation		-5.441***	-5.317***	-5.563***		-6.861***	-6.857***	-6.660***
		(-3.180)	(-3.088)	(-3.230)		(-3.161)	(-3.165)	(-3.152)

Current Account to GDP		-0.001	-0.000	0.001		-0.014	-0.015	-0.014
		(-0.124)	(-0.007)	(0.055)		(-0.929)	(-0.998)	(-0.951)
(Absence of) Political risk		0.141***	0.143***	0.150***		0.134***	0.135***	0.135***
		(5.401)	(5.448)	(5.589)		(4.793)	(4.778)	(4.670)
Years in Office		0.010	0.012	0.014		-0.005	-0.007	-0.008
		(0.684)	(0.864)	(1.046)		(-0.399)	(-0.538)	(-0.607)
Fitch		-0.285***	-0.291***	-0.286***		-0.152	-0.169	-0.166
		(-2.885)	(-2.923)	(-2.878)		(-1.315)	(-1.457)	(-1.424)
Moody's		-0.131	-0.124	-0.133		-0.066	-0.073	-0.080
		(-1.227)	(-1.153)	(-1.290)		(-0.536)	(-0.589)	(-0.659)
Standard and Poor's		-0.404***	-0.415***	-0.424***		-0.310*	-0.294*	-0.304*
		(-2.999)	(-3.003)	(-3.077)		(-1.947)	(-1.809)	(-1.823)
Observations	863	605	605	605	719	485	485	482
Country RE	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES
Number of id	64	56	56	56	64	54	54	54

Robust t-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1