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The Elusive Costs of Sovereign Defaults

by

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Abstract[*]

Few would dispute that sovereign defaults entail significant economic costs, including, most notably, important output losses. However, most of the evidence supporting this conventional wisdom, based on annual observations, suffers from serious measurement and identification problems. To address these drawbacks, we examine the impact of default on growth by looking at quarterly data for emerging economies. We find that, contrary to what is typically assumed, output contractions precede defaults. Moreover, we find that the trough of the contraction coincides with the quarter of default, and that output starts to grow thereafter, indicating that default episode seems to mark the beginning of the economic recovery rather than a further decline. This suggests that, whatever negative effects a default may have on output, those effects result from anticipation of a default rather than the default itself.

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"Hell, the last thing I should be doing is tell a country we should give up our claims. But there comes a time when you have to face reality."

"The problem historically has not been that countries have been to eager to renege on their financial obligations, but often too reluctant.[1]"

1. Introduction

As conventional wisdom has it, a sovereign's unilateral decision to stop servicing its debt carries important and persistent economic costs. This is what is assumed (either explicitly or implicitly) by the sovereign debt literature as a government's main incentive to honor its obligations.[2] In this paper, we argue that using higher-frequency data yields a starkly different message. In particular, we show that defaults have no significant negative impact on successive output growth and, if anything, mark the final stage of the crisis and the beginning of economic recovery.

The empirical literature has looked at the relationship between default and GDP growth mainly in three ways: (i) output regressions directly controlling for default events; (ii) tests of the effect of (current and past) defaults on access to the international credit market (more specifically, borrowing costs); and (iii) tests of the effects on international trade (either due to the drying up of trade credit or due to the implementation of trade sanctions). In all three cases, the costs specifically associated with default (that is, in excess of those related to the ongoing crisis, or to the memory of a recent crisis) are difficult to identify. While Ozler (1993) found that defaults in the 1930s were associated with an increase in spreads of approximately 20 basis points 40 years later, more recent work found that the effect of default on spreads is short-lived (Ades et al., 2000; Borensztein and Panizza, 2005a). Focusing on the trade cost of defaults Rose (2002) found that countries that defaulted on official (Paris Club) debt trade less with defaulted

[1] The first quote is from an unnamed financial industry official; the second comes from a memo prepared by the Central Banks of England and Canada. Both are taken from Blustein (2005, pp. 163 and 102).

[2] Sturzenegger (2004) finds a strong (albeit short-lived) negative contemporaneous effect on growth, and substantial output losses associated with defaults, a result confirmed by Borenzstein and Panizza (2005a). Both studies are based on annual observations.

countries, while Borensztein and Panizza (2005b) find that export-oriented industries tend to suffer more in the aftermath of a default, though the effect is transitory.[3]

However, all these are indirect costs, and growth regressions should be the main piece of evidence supporting the view that defaults have been costly. It is easy to see, though, how existing results may be misleading. Consider, for instance, two recent default episodes: Ecuador and Argentina. Judging from annual data, Ecuador contracted by 6 percent in 1999 (the default year), and Argentina's output declined by 12 percent in 2002 (the official date of the Argentinean default was December 2001). However, a closer look at the data reveals a starkly different picture. Once the quarterly evolution of GDP is taken into account, the default event appears to coincide not with the period of more pronounced contraction but rather with the beginning of the recovery (Figure 1). Quarterly and annual data yield different messages because GDP is an average, and high-frequency shocks tend to spill over to the subsequent period when output is reported at a lower frequency. Thus, the sharp GDP contraction in Argentina in late 2001 is largely registered as an output decline in 2002, despite the fact that the economy started to grow early that year. As the figure shows, the same could be said for the large defaults of the 1990s, such as those by Indonesia, Russia, Ukraine and Uruguay (indeed, recovery was already underway in the latter at the time of default).

Related with the previous point, a key reason why a look at quarterly data is in order is that default, rather than a strategic decision to withhold the surplus of the bonanza, as painted in the traditional sovereign debt literature (e.g., Eaton and Gersovitz, 1981), tends to reflect financial constraints in the midst of economic crises. It is easy to see how this poses a serious identification problem, namely, disentangling the effect of the default decision from that of the crisis per se on economic performance—and how one could spuriously attribute the peak of the crisis to the default event, capturing the incidence of financial distress on the decision to default, rather than the impact of default on financial and economic performance. Although the use of higher-frequency data does not fully solve this problem, it help to provide a more accurate picture. In particular, it shows more clearly the timing of the default in the context of the evolving crisis and sheds light on the timing of the events.

[3] Borensztein and Panizza (2005a) explore a fourth channel: the effect of defaults on the propensity to suffer a banking crises (presumably due to the fiscal exposure of the banking sector). They find that defaults do not present a systematic leading pattern (although this does not deny that expectations of a debt default could trigger a bank run).

With this in mind, in this paper we conduct a simple exercise: We replicate the standard tests of the effect of default on growth and output using quarterly data for emerging economies. The use of quarterly data allows us to date the default properly, to capture the evolution of output more accurately, and to control for slowly moving fundamentals to better isolate the effect of default.

We restrict our attention to a particular type of default, namely, default on debt with private international investors. For this reason, we focus on emerging economies, which by definition comprise globally integrated economies with a minimum volume of cross-border debt. The emerging class provides a reasonably homogenous group exhibiting comparable external vulnerability to capital account reversals (Sudden Stops) and, possibly, the highest propensity to suffer from default episodes.[4]

Moving from yearly to quarterly data entails properly dating the default, which poses non-trivial problems. Take, for instance, the recent events in Argentina. While Standard and Poor's gave a selective default rating in the last quarter of 2001 after a quasi-voluntary debt exchange, most observers argue that a more accurate date of the default on international bonds is January 2002, when the default was actually announced.[5]

In this paper, we compile a quarterly database on emerging market defaults and run panel growth regressions controlling for crisis variables, both annual (to check consistency with previous results reported in the literature) and quarterly. We include several leads and lags to ensure that the results are not driven by dating errors. We find that, when we look at quarterly data, growth rates in the post-default period are never significantly lower than in normal times. Moreover, the evidence indicates that, contrary to what is typically assumed, the output contractions often attributed to defaults actually precede them. Indeed, defaults mark the inflection point at which output reaches its minimum and starts to recover.

This should not be interpreted as proof that defaults in general do not matter. On the contrary, much in the way of a standard liquidity run, most of the financial distress that precedes the default decision may be due to its anticipation. However, our findings have distinct

[4] Extending this exercise to other countries is not straightforward. There are no recent defaults by industrial countries, and their inclusion as a control group is questionable. On the other hand, while there are defaults on debt with foreign banks in non-emerging, low income economies, availability of quarterly output data is in these case virtually null.

[5] Importantly, Argentina had not missed a payment before that date. This example, however, shows that dating errors are only magnified when we look at annual data, yet another reason to go quarterly.

implications from a policy perspective. If defaults were costly a posteriori, the decision to default should weigh these costs against the fiscal effort needed to service the debt. However, once the default is anticipated (and its concomitant cost brought forward) by the market, the formal decision to stop servicing the debt entails no tradeoff and is therefore optimal (and even overdue).

The paper proceeds as follows. Section 2 describes the data, and Section 3 presents the main empirical results. Finally, Section 4 discusses the implications of our findings for the optimal timing of default and concludes.

Section 2. The Data

Table 1 reports the summary statistics. Table A1 in the Appendix provides a definition of our variables and the sources of data, and Table A2 lists all countries and periods covered in the analysis.

Table 2 lists the default episodes in our sample. The tests below do not include all 23 default episodes listed in the table because some of them occurred within a relatively short window and should be considered as spin-offs of the previous episode; their inclusion may bias the results against finding a significant default cost. For this reason, we exclude default episodes that happen within three years of the previous default (which leaves out the Indonesian defaults of 2000 and 2002). Furthermore, we only include default on private lenders and hence exclude the Pakistani default on Paris Club debt of 1997. As a consequence, our working sample includes 20 default episodes. Ten of these episodes took place in the 1980s and mostly concerned international bank loans. The remaining 10 took place in the last 15 years and mostly involved sovereign bonds.

First Impressions

Figure 2 illustrates how the evolution of GDP around default episodes varies when we move from annual to quarterly observations. The first panel shows GDP levels over a 6-year window centered on the default period for a full sample of emerging and non-emerging economies.[6] The X axis is defined in event time, where 0 indicates the year of the default episode, -3 indicates

[6] Quarterly GDP levels are seasonally adjusted (excluding the default period) and normalized by the mean over the window.

three years before the episode and 3 indicates three years after the event. This shows that GDP starts decreasing two years before the event and keeps decreasing (albeit, at a slower rate) in the following three years, a picture broadly consistent with the output cost of defaults identified in panel growth regressions that use annual data.

In the second panel, we repeat the exercise for our emerging market sample. As before, we see a clear drop in GDP in the three years before the default episode, whereas now the output remains stable and close to its minimum in the following three years. Again, the declining trend precedes the default event, but growth remains either negative or close to zero thereafter.

The third panel replicates the exercise once more, this time for the emerging market sample and using quarterly data (now the X axis is measured in quarters). Now, we find a slightly negative trend in the three years preceding the default episode combined with a steep drop in the last three quarters of the pre-episode window. On the other hand, while GDP still falls in the quarter after the event, the trend reverses immediately thereafter to a quick and steady recovery to above pre-crisis levels. Thus, at least at this preliminary graphic level, going from annual to quarterly data appears to change the message in a significant way.

3. Results

Figure 2 provides suggestive evidence that the output costs of default are hard to find when measured using quarterly data, but does not amount to a formal test. Such a test is reported in this section. As before, we move gradually from the existing literature to our preferred specification.

3.1 Default and Growth

Table 3 estimates the cost of default using a standard growth regression based on yearly data. In columns 1 to 3, we take the specification adopted by Sturzenegger (2004) and Borensztein and Panizza (2005a) and add country fixed effects. In column 1, we capture the cost of default with a dummy variable that takes a value of 1 in the year in which a country defaults and zero otherwise (*def*). The regression shows the standard results: defaults are associated with a drop in growth of approximately 3 percentage points and the coefficient is highly significant. Column 2 also includes a dummy taking a value of 1 in the year that precedes the episode (*def T-1*) and a dummy taking a value of 1 in the year that follows the episode (*def T+1*). We find negative coefficients for both dummies, although only the lead (*def T-1*) is statistically significant. Column 3 replicates column 2, this time dropping the year of default episode, and finds identical

results. In columns 4 to 6, we run the same regressions without the control variables as an intermediate step towards our quarterly specification, which excludes controls due to data availability. Now *def T+1* becomes statistically significant and large, indicating that growth in the year after default is 2 percentage points lower than in tranquil times. Other than that, the results are strikingly similar to the previous ones. The same applies to column 7 (where we replicate the specification of column 4 for the sample of column 1), and to columns 8 to 10 (where we run similar regressions for our emerging market sample). Results are virtually unchanged in all cases. In sum, based on annual data, during the three-year window around default, growth rates appear to be significantly (and substantially) lower than average—although, judging from the value of the coefficients, there is no indication that the decline accelerates after the actual default event.

Reassured by the robustness of the previous results to sample and specification changes, in Table 4 we repeat the exercise using quarterly GDP data. Column 1 includes only two regressors: a dummy variable taking value 1 in the default quarter and a market pressure index along the lines of Kaminsky and Reinhart (1999). The coefficient of the default dummy is negative and very large, suggesting that at the time default materializes, (quarterly) growth is a hefty 2.8 percent lower than in normal times. As expected, the market pressure variable is also negative and statistically significant.[7] Column 2 adds dummies for the quarters that precede and follow the default event: unlike in the previous table, growth is now significantly lower in the quarter before, but not in the quarter after default. The same message is delivered when we include dummies for two and three periods before and after default (columns 3 and 4), and when we use two dummies to indicate the corresponding leads and lags (columns 5 and 6). In particular, growth is always significantly lower in the quarters leading to default but not in the quarters following default (we report the joint test of leads and lags at the bottom panel of the table).

Thus, a simple comparison of Tables 3 and 4 suggests that default materializes when the crisis are already underway: the negative link revealed by annual data simply captures the fact that defaults tend to occur in the context (and often as a result) of a crisis.

[7] Dropping this variable or including a variable measuring changes in the real exchange rate does not affect our results.

Quarterly data may be more sensitive to (autocorrelated) measurement error that tends to be corrected over time. However, the results are unaltered when we re-run the regressions including the lagged dependent variable (Table 5). In turn, in Table 6, we control for country-year fixed effects to capture the evolution of country-specific fundamentals at an annual frequency. As such, this test encompasses all annual variables typically used in standard specifications, including a crisis year dummy. The fact that the coefficients are never statistically significant provides further indication that, once the crisis is controlled for, default does not exert any visible influence on output.[8]

Table 7 explores the pre- and post-default periods in more detail by narrowing the estimation window to six-year period centered around the default event. The results are again unchanged. Table 8, in turn, explores the role of outliers (of particular relevance given the relatively small number of events in our sample) by running the regression of Table 4, column 2 dropping one country at a time. The table, which highlights extreme values for the coefficients and t-statistics, shows that the contemporaneous effect ranges between –1.79 and –2.88 and that it is always statistically significant. The effect at T-1 ranges between –2.17 and –3.53 and is statistically significant in 13 out of 14 regressions (when we exclude Peru, the p-value is 0.12). By contrast, the effect at T+1 ranges between –0.27 and –1.79 and it is never statistically significant (we obtain the lowest p value, 0.14, when we exclude Pakistan). Again, leads (but not lags) help explain the evolution of output.

Table 9 presents a different look at the evidence that tests the intuition provided by Figure 1: defaults mark the start of the recovery. To do that, we run an event-study like test that compares cumulative growth rate before and after the default event for different windows centered on the default quarter (which is dropped for the purposes of this computation).[9] In this way, we want to confirm not only that output trend declines before the actual default takes place, but also that the declining trend is attenuated and even reverts after default. The results strongly support this hypothesis: cumulative growth goes from negative to positive, and the difference between growth rates before and after increases (Figure 3) to become significant as the window widens. Default represents, rather than a trigger, the turning point of the crisis, possibly due to

[8] The coefficients should be interpreted here as the deviation form the average growth rate in the year of default, and not as the deviation from the average growth rate in normal times.

[9] Specifically, setting t = 0 for the default quarter, DGDP(-s) = [GDP(-1)/GDP(-s)]-1, and DGDP(+s) = [GDP(s)/GDP(+1)]-1.

non-trivial costs of avoiding default and to the fact that most of the consequences of default are typically reflected in the markets before the decision is made official.

3.2 Growth-Inducing Defaults?

The finding that defaults have been followed by periods of economic recovery should not be mistaken as prima facie evidence of causality—much in the same way as the correlation between default and annual growth should not be mistaken as saying that defaults are costly. A simple inspection of Figure 1 suggests that, to the extent that larger recessions are followed by steeper recoveries, the benign post-default outcome may be simply reflecting the association of defaults with particularly deep economic downturns.

Indeed, Beaudry and Koop (1993) have shown that output expansions depend positively on the "current depth of recession" (CDR), defined as the gap between current level of output and its historical maximum. More generally, a growing body of literature has highlighted the nonlinear nature of the business cycle and, in particular, the fact that growth rates depend positively on the depth of the current output gap.[10]

We examine whether this argument can explain the finding of "growth-inducing defaults" in two steps. First, we document that defaults are indeed associated with larger than average recessions (note that so far, we have only documented an association between recessions and defaults—more precisely, that the latter are typically preceded by the former—but not that the fact that recessions are more pronounced prior to default events). Second, we rerun the baseline regressions of Table 4 controlling for the current depth of the recession, captured by Beaudry and Koop's (1993) CDR variable, to see whether the link between defaults and growth is due to the omission of the recession depth variable.

Table 10 reports the results from the first step, showing that the depth of the recession is significantly larger for recessions leading to debt defaults. In the table, we first compare the maximum recession depth in the absence of default for the whole sample, with the maximum CDR reached in recessions that coincided with default events. As the means test indicates, recessions are a significant 3 percent deeper during default episodes. The difference is even larger when we restrict attention to countries that defaulted at least once in the period under

[10] The underlying assumption is that, because of the excess capacity during the contractionary phase of the cycle, positive real shocks will have more persistent effects than negative shocks. See also Hamilton (1989), Jansen and Oh (1999), and Neftci (2001).

study: for defaulters, recessions have been nearly twice as deep when they ended in default than otherwise. The same conclusion can be reached by looking at defaulters individually: pre-default recessions are always deeper (and often significantly so).

Table 11, in turn, replicates the baseline regressions of Table 4, including the CDR variable to test whether the expansionary effect of defaults can be attributed to the larger depth of the preceding recessions. As expected, we find that CDR has a positive and statistical significant effect on growth, which is robust to the inclusion of the lagged dependent variable (which replicates Beaudry and Koop's (1993) specification for the U.S.).[11] More to the point of our test, including the CDR variable does not alter our baseline result. First of all, we find that the leading effect of the crisis remains virtually unaltered (negative and statistically significant). Second, we find that including CDR and explicitly controlling for the effect of excess capacity somewhat reduces the post-default recovery documented in Table 4 (for instance, the coefficient at def T+1 in Reg 2 goes from 1.1 to 0.4), but the coefficients for the post-default dummies remain positive and insignificant. All this points out that our previous results were not driven by the fact that we were not controlling for differences in the depth of the recession.

3.3 Default and Growth in the Long Run

Default may not have immediate effects on output, but may exert its influence over the long run, either through lower investment or reduced access to capital markets.[12] Because of that, the analysis in this paper would not be complete without a look at the connection between default episodes and the evolution of long run growth.

We look at this issue in two ways. First, we compare growth rates before and after the event with the log linear trend growth. More precisely, we divide the defaults in our sample into three groups, according to whether post-default growth was below pre-default growth, above pre-default growth but below long-term growth, and above long-term growth. Table 12 reports the result. As can be seen, whereas growth was stronger after default in 70 percent of the cases (in line with our previous findings), it exceeded long-term growth in 50 percent of the cases, suggesting that default, on average, does not deteriorate growth prospects.

[11] Interestingly, the coefficient for our developing sample is roughly twice as large as the one found for the U.S., possibly as a combination of nonlinear output gap effects and deeper recessions.

[12] While the evidence on the effect of default on access to finance as measured by its cost (specifically, the sovereign risk premium) is mixed at best (see Borenzstein and Panizza, 2005a), there is evidence that defaults may affect access through a reduced volume of funds (Levy Yeyati, 2006).

In Table 13, we look at the same issue from a different angle. Exploiting the variability of HP-filtered long-term growth, we rerun the baseline regressions in Table 4, replacing the growth rate with the long-term growth rate (computed country by country over the full sample period). As can be seen, the decline in trend output that characterizes the period surrounding default precedes the default event, and it does not appear to elicit an additional negative impact ex-post. Thus, there seems to be no negative effect on the long-run output immediately after the default event. Indeed, long-run growth appears to increase in the post-default period, as illustrated by Figure 4, where we compare average HP-filtered output before and after the event. While the difference in trends is not significant (as the one standard deviation intervals indicate), the figure further confirms that defaults do not seem to exert a negative effect on output over the long run.

3.4 Default and Unemployment

Many observers would agree that, once income distribution is taken into account, unemployment may be a more important—and persistent—determinant of social welfare than output growth (Pernice and Sturzenegger, 2004). On the other hand, one would expect unemployment and real growth to be closely correlated, so that the conclusions from the previous tests should extend to this new variable. We show here that this is indeed the case.

Table 14 provides a preliminary look at the impact of sovereign defaults on unemployment. The table replicates the specifications of Table 7 using unemployment instead of real output growth as the dependent variable—that is, including the lagged dependent variable to control for unemployment persistence. As before, we find that whatever negative influence default may have on unemployment, it materializes before the actual default takes place. In particular, the increase in unemployment in the run-up to default (with the highest increase leading default by three quarters) reverts in the quarter of default.[13]

[13] Most of the findings reported here for output growth are also obtained for the case of the unempoyment rate. Results are available upon request.

4. Conclusions

This paper delivers a simple and sobering message: contrary to what it is typically presumed, defaults have not been followed by output contractions. In fact, we find that the opposite seems to be the case: the default quarter coincides with the trough of the output contraction and marks the start of the economic recovery. This, however, does not appear to reflect a "benign" effect of defaults but rather the fact that the latter are typically associated with particularly deep recessions and, as a result, particularly steep recoveries.

This finding has important policy implications for debt management policies—and, indirectly, for debt sustainability—that should be clarified. It does not imply that policies that lead to default have no cost; on the contrary, the large GDP decline that typically precedes a default may reflect in part the anticipation of the default decision. Indeed, it could be argued that, if strategic defaults are costly, policymakers would only choose to default when these costs are inevitable or have already been paid, hence the absence of observed costs documented in this paper.[14]

However, the findings that these costs are largely paid *before* the default decision is made also suggests that policymakers' effort to further postpone a default that has been widely anticipated and priced in by the market may be misguided. More generally, the argument bears the question about the optimal timing of default. If the default decision entails a tradeoff between the burden of servicing the debt (which grows as the crisis deepens and rollover costs mount), and the additional cost of default (which declines as the crisis takes its toll), is the absence of observed costs documented here an indication that defaults are often deferred for too long? Are politicians willing to have the economy make a suboptimal effort to avoid a default that has larger political than welfare costs?[15] Is this agency problem and the associated political cost the ultimate reason why countries honor their debts? Certainly fruitful questions for future research.

[14] The finding that virtually all defaults appear to be driven by an adverse external context rather than by opportunistic behavior in times of bonanza is consistent with this view.
[15] Borensztein and Panizza (2005a) discuss this hypothesis.

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Figures and Tables

Figure 1:
Default and GDP Growth. Argentina
(GDP seasonally adjusted)

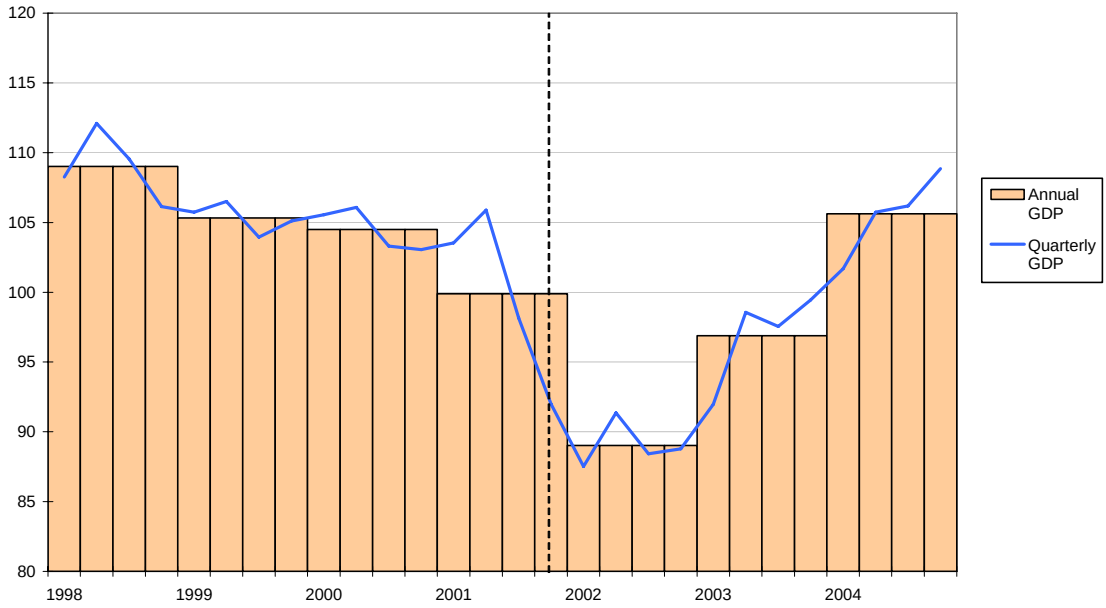

Figure 1:
Default and GDP Growth. Ecuador
(GDP seasonally adjusted)

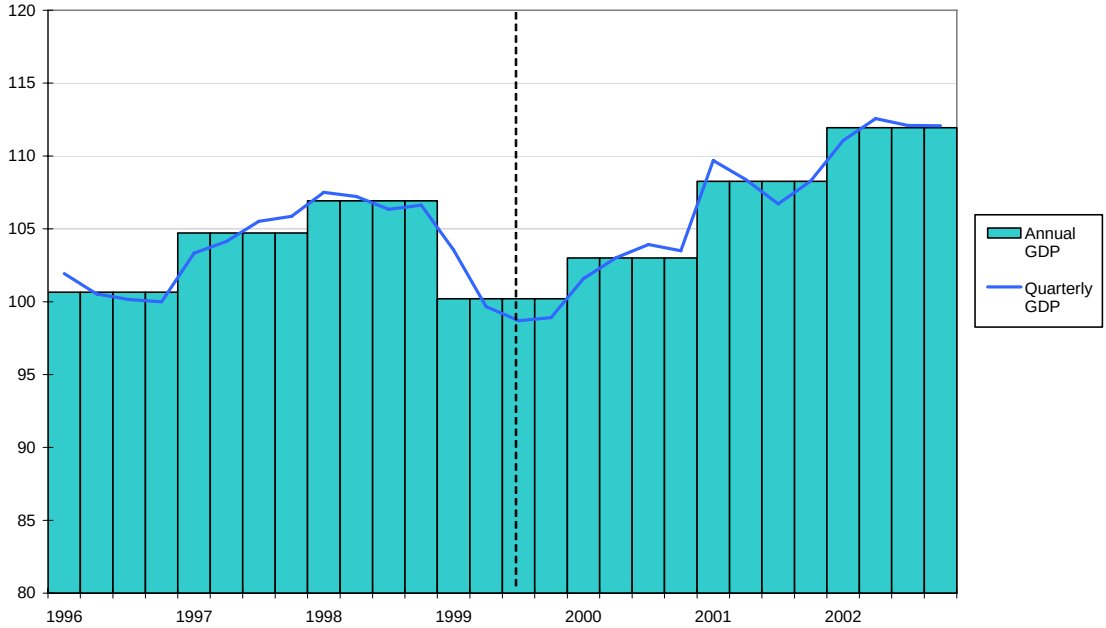

Figure 1:
Default and GDP Growth. Indonesia
(GDP seasonally adjusted)

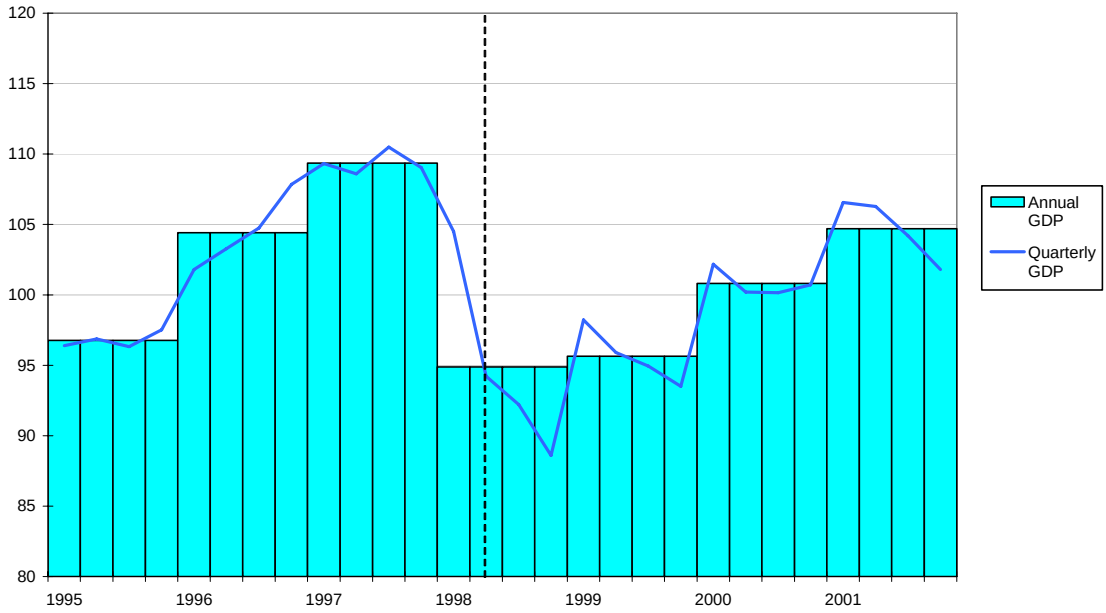

Figure 1:
Default and GDP Growth. Russia
(GDP seasonally adjusted)

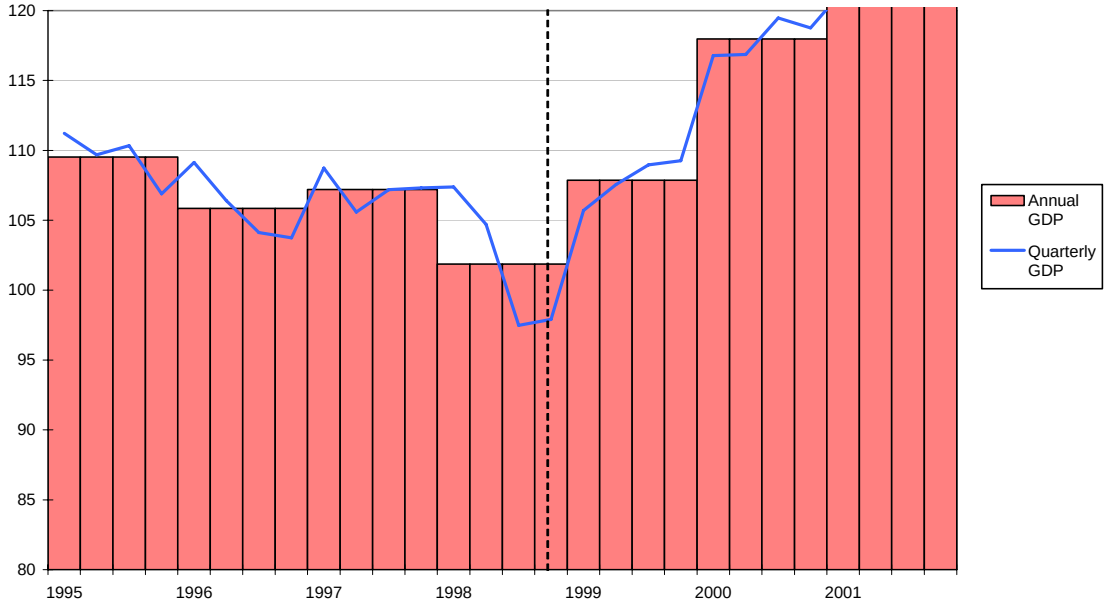

Figure 1:
Default and GDP Growth. Ukraine
(GDP seasonally adjusted)

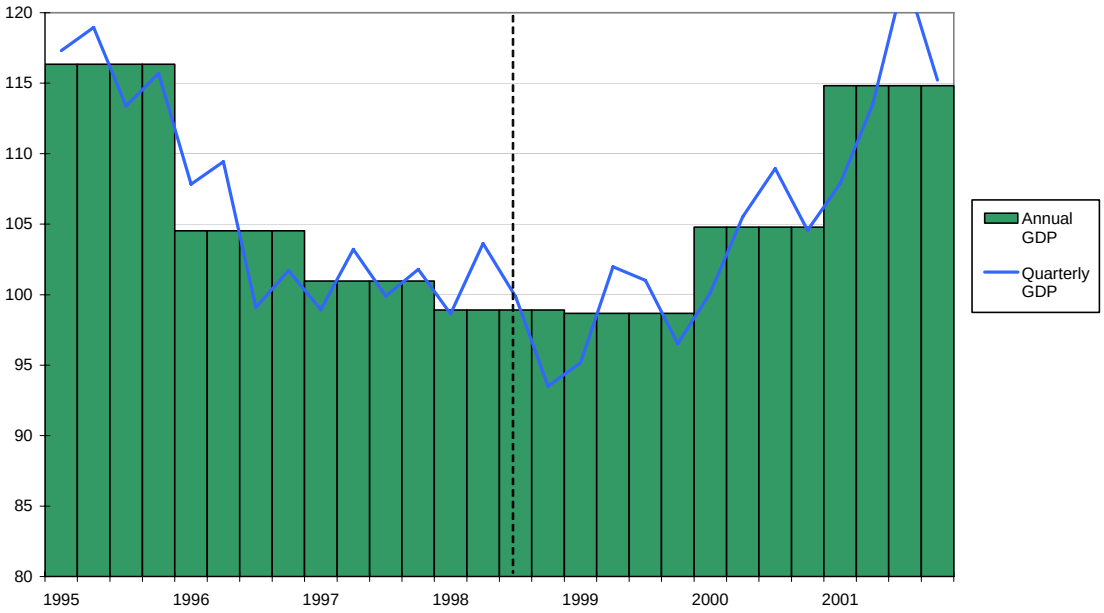

Figure 1:
Default and GDP Growth. Uruguay
(GDP seasonally adjusted)

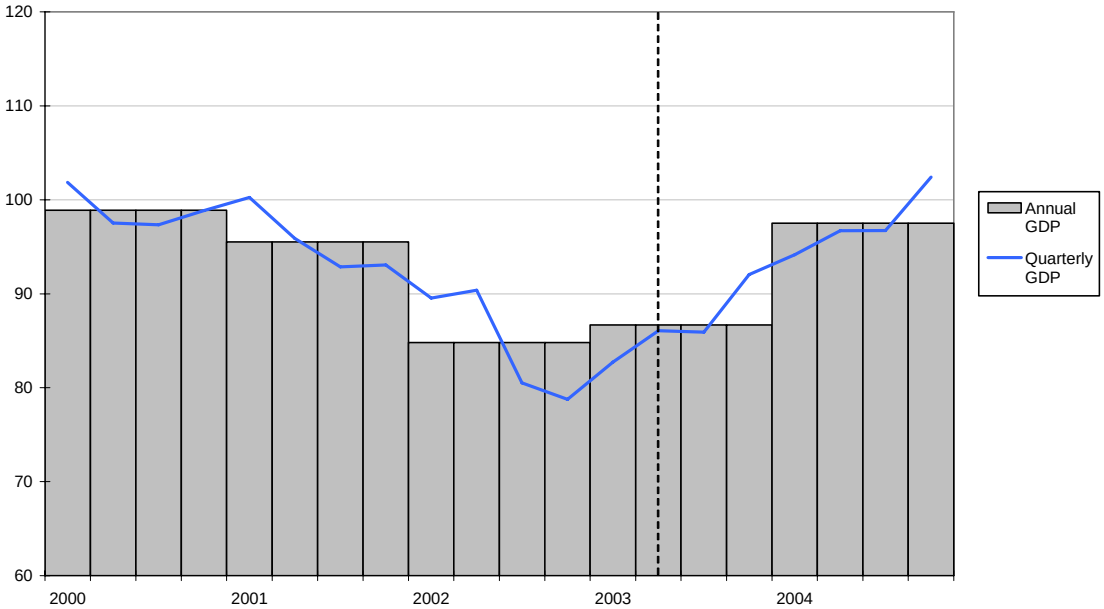

Figure 1:
Default and GDP Growth. Pakistan
(GDP seasonally adjusted)

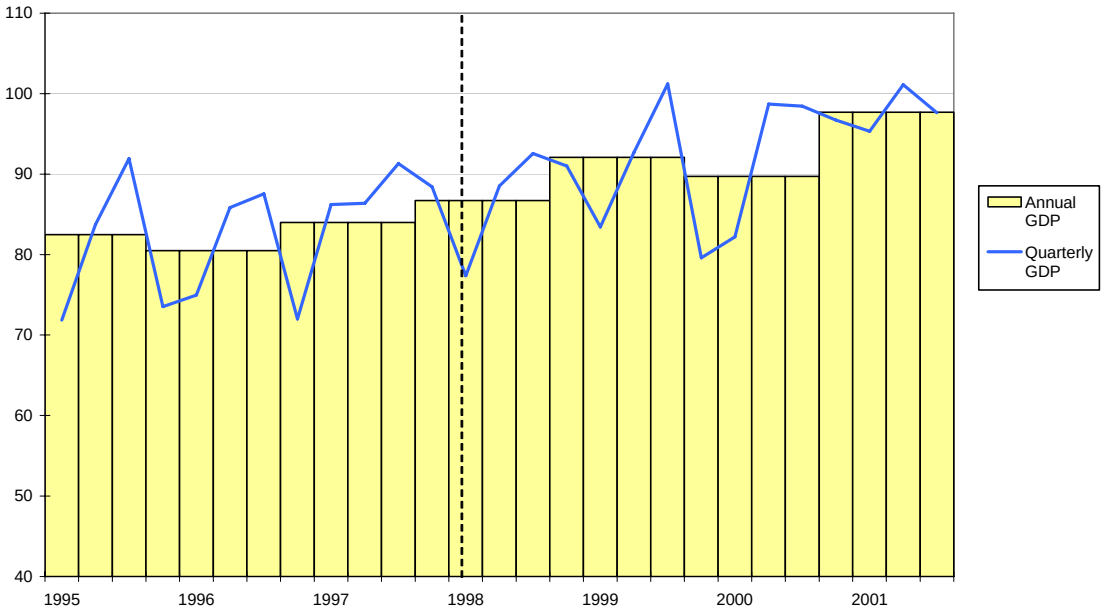

Figure 2:
GDP around Default
(GDP seasonally adjusted)

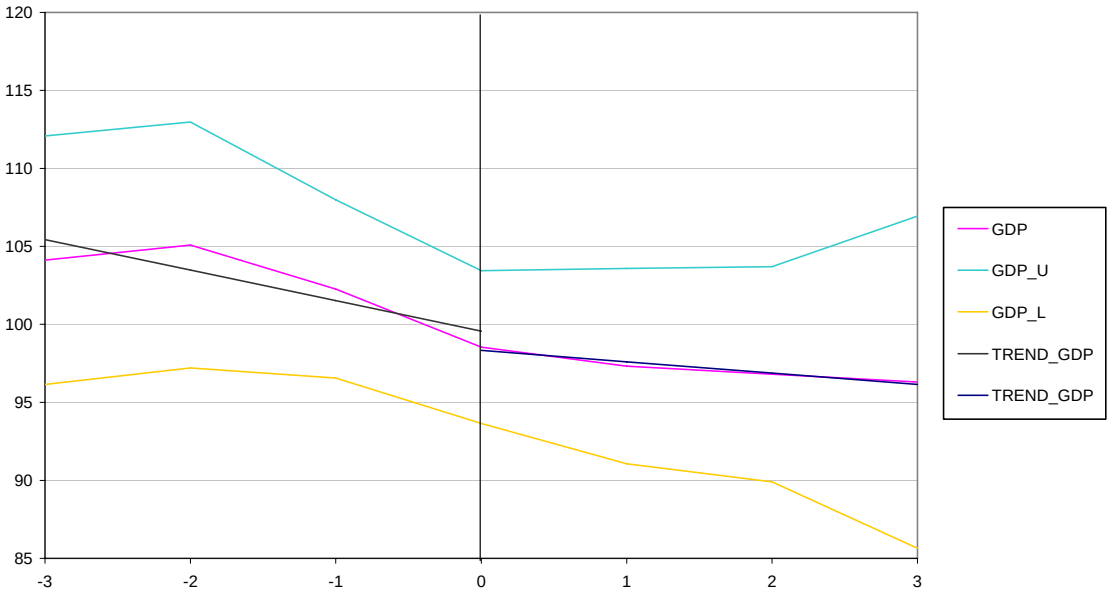

Figure 2:
GDP around Default
(GDP seasonally adjusted)

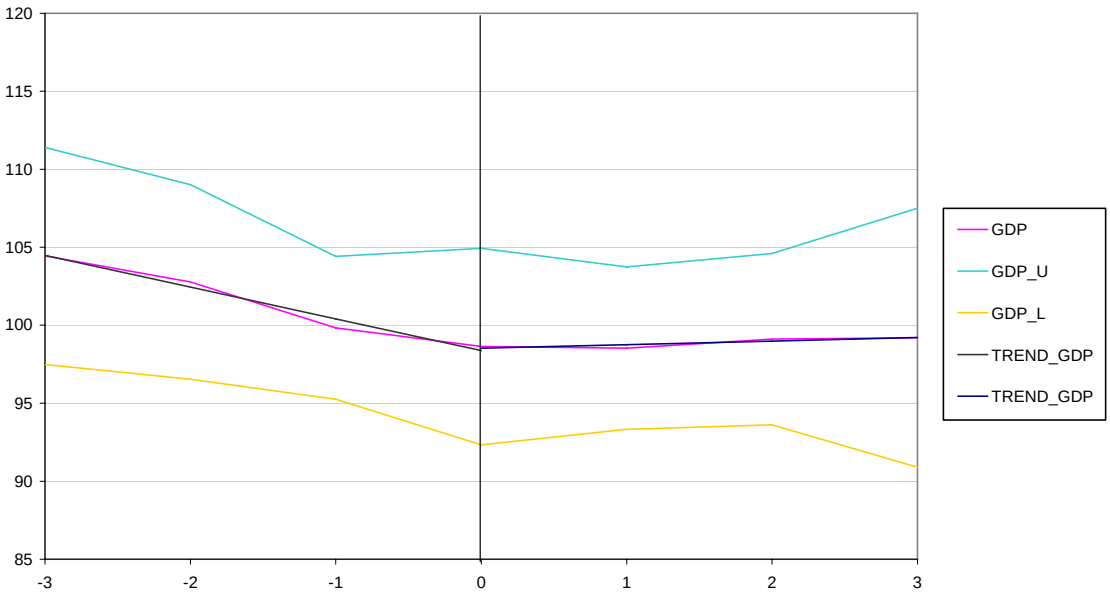

Figure 2:
GDP around Default
(GDP seasonally adjusted)

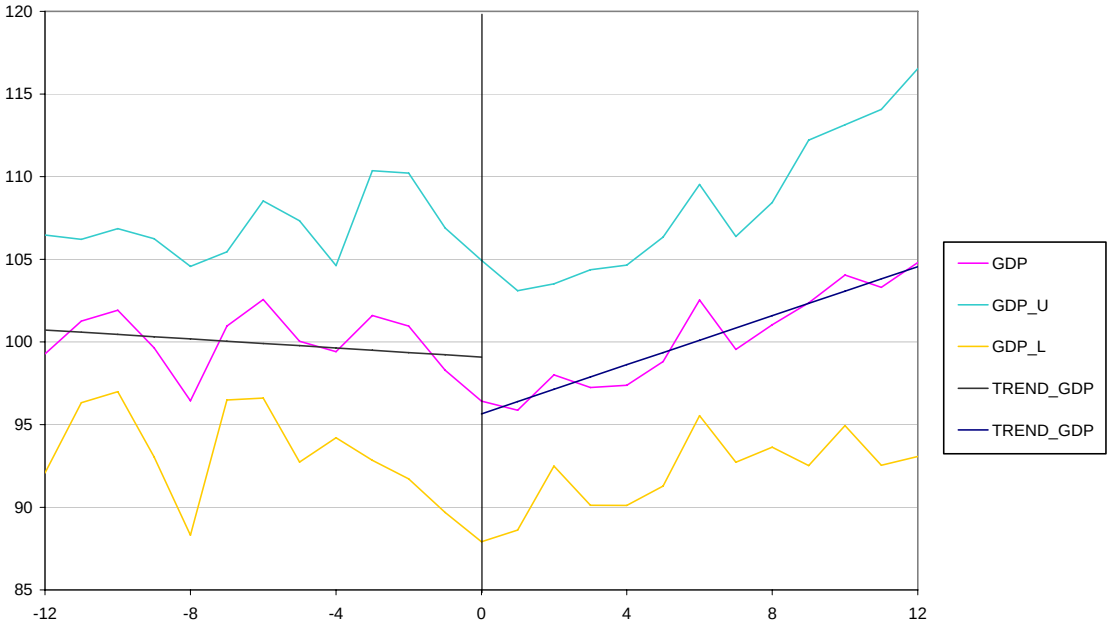

Figure 3:
Cumulative Output Growth before and after Default
(growth of GDP seasonally adjusted)

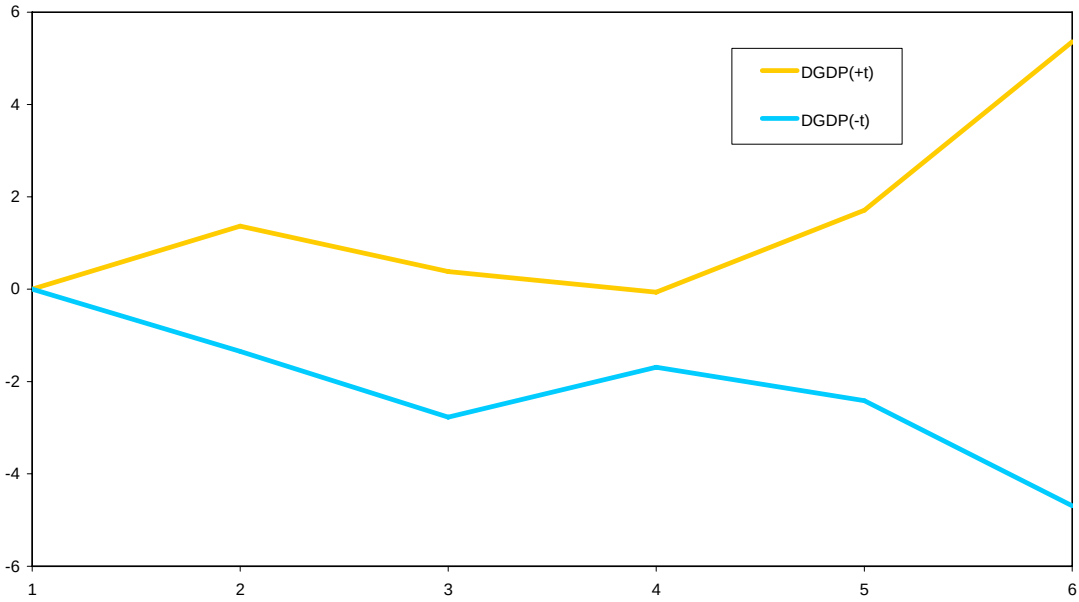

Figure 4:
GDP around Default
(HP filtered GDP)

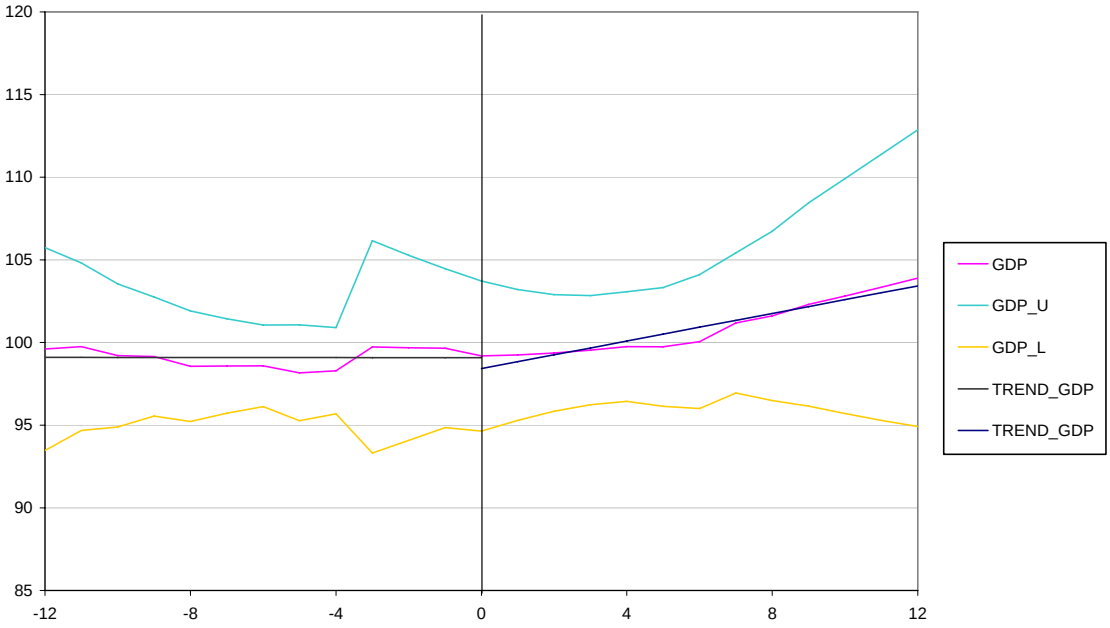

Table 1. Summary Statistics

A. Yearly Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
growth	482	1.675	4.877	-14.568	11.190
invgdp	460	1.773	0.725	0.329	4.215
pop growth	523	1.540	1.019	-3.248	3.390
sec	415	21.889	10.841	3.800	52.400
pop level	523	45.085	43.462	3.060	212.000
gov	460	0.035	0.095	-0.256	0.700
civil	495	3.741	1.228	1.000	7.000
tt	474	-0.010	0.158	-2.080	1.067
openness	484	0.299	0.168	0.052	1.146
bank2av1	533	0.167	0.373	0	1
def	533	0.043	0.203	0	1

B. Quarterly Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
growth	2,326	0.723791	5.558707	-27.3833	29.99361
external	2,298	90.78833	22.97053	13.93941	200.5199
mkt pressure	1,808	0.015815	0.487086	-5.32106	13.66791

Table 2: Default Episodes Included in the Sample

Country	Year	Quarter	Default
Argentina	1982	1	Default on external bank loans
	2001	4	Default on external bonds/Default on external bank loans
Chile	1983	1	Default on external bank loans
Dominican Republic	1982	4	Default on external bank loans
	1999	2	Default on domestic bonds
Ecuador	1999	3	Default on external bonds
Indonesia	1998	2	Default on external bank loans
Mexico	1982	3	Default on external bank loans
Nigeria	1983	3	Default on external bank loans
	1986	3	Default on external bonds
Pakistan	1997	3	Paris club default
	1998	2	Default on external bank loans
Peru	1980	1	Default on external bank loans
	1983	1	Default on external bank loans
Philippines	1983	4	Default on external bank loans
Russia	1991	4	Default on external bank loans
	1998	3	Default on domestic bonds
	1998	4	Default on external bonds
South Africa	1985	3	Default on external bank loans
	1989	4	Default on external bank loans
Ukraine	1998	3	Default on domestic bonds/Default on external bonds/Default on domestic bonds
Uruguay	1990	1	Default on external bank loans
	2003	2	Default on external bonds

Table 3. Growth regressions (yearly data)

	Dependent variable: yearly GDP growth										
	Full sample							Emerging economies			
Independent variables	**Reg 1**	**Reg 2**	**Reg 3**	**Reg 4**	**Reg 5**	**Reg 6**	**Reg 7[1]**	**Reg 8**	**Reg 9**	**Reg 10**	**Reg 11[2]**
invgdp	1.834	1.784	1.780								
	(7.18)***	(6.99)***	(6.95)***								
pop growth	-0.452	-0.444	-0.452								
	(3.10)***	(3.00)***	(3.07)***								
sec	-0.015	-0.018	-0.022								
	(0.99)	(1.22)	(1.47)								
pop level	0.003	0.003	0.003								
	(0.72)	(0.78)	(0.89)								
gov	3.161	3.201	3.086								
	(3.16)***	(3.20)***	(3.08)***								
civil	0.027	0.028	0.029								
	(0.24)	(0.25)	(0.27)								
Δtt	-0.331	-0.214	0.911								
	(0.28)	(0.18)	(1.93)*								
openness	5.809	5.993	6.797								
	(3.75)***	(3.87)***	(4.45)***								
bank2av1	-0.979	-0.920	-0.948								
	(4.04)***	(3.81)***	(3.95)***								
def (T-1)		-2.638	-2.618		-3.013	-3.001		-3.297	-3.410		
		(3.76)***	(3.75)***		(5.34)***	(5.31)***		(2.43)**	(2.54)**		
Def	-3.010	-3.207		-3.549	-3.824		-3.343	-3.715		-3.051	-3.505
	(3.45)***	(3.67)***		(6.56)***	(7.08)***		(3.98)***	(3.56)***		(3.15)***	(2.11)**
def (T+1)		-0.552	-0.458		-2.212	-2.188		-2.352	-2.348		
		(0.89)	(0.73)		(3.74)***	(3.64)***		(2.05)**	(2.01)**		
Constant	-2.179	-2.061	-2.236	1.604	1.689	1.697	1.724	2.080	2.118	1.814	1.828
	(2.69)***	(2.53)**	(2.74)***	(26.04)***	(27.11)***	(27.34)***	(21.14)***	(8.90)***	(9.20)***	(8.41)***	(7.37)***
Observations	2,153	2,153	2,114	4,841	4,839	4,763	2,153	454	433	482	287
Countries	89	89	89	181	181	181	89	28	28	28	14
R-squared	0.10	0.11	0.10	0.01	0.02	0.01	0.10	0.05	0.03	0.02	0.03

Notes: All regressions include country fixed effects. Robust t statistics in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%
[1] Same sample as in column (1). [2] Sample used in the quarterly regressions.

Table 4. Quarterly Data, Baseline Model

	Dependent variable: seasonally adjusted quarterly GDP growth					
Independent variables	**Reg 1**	**Reg 2**	**Reg 3**	**Reg 4**	**Reg 5**	**Reg 6**
def (T-3)				0.463		
				(0.37)		
def (T-2)			-1.002	-0.954		
			(1.39)	(1.31)		
def (T-1)		-2.916	-2.900	-2.854		
		(2.17)**	(2.17)**	(2.11)**		
def	-2.802	-2.833	-2.811	-2.763	-2.834	-2.835
	(2.00)**	(2.02)**	(2.02)**	(1.99)**	(2.01)**	(2.01)**
def (T+1)		1.142	1.161	1.208		
		(0.80)	(0.80)	(0.83)		
def (T+2)			1.017	1.066		
			(1.01)	(1.05)		
def (T+3)				-0.369		
				(0.23)		
def (T-1… T-2)					-1.970	
					(2.47)**	
def (T+2… T+1)					1.067	
					(1.21)	
def (T-1… T-3)						-1.183
						(1.65)*
def (T+3… T+1)						0.562
						(0.69)
mkt pressure	-0.833	-0.822	-0.776	-0.766	-0.821	-0.823
	(3.98)***	(3.94)***	(3.85)***	(3.82)***	(3.94)***	(3.95)***
Constant	0.858	0.862	0.896	0.884	0.862	0.863
	(6.48)***	(6.41)***	(6.53)***	(6.24)***	(6.33)***	(6.27)***
Observations	1,745	1,729	1,688	1,644	1,729	1,729
R-squared	0.01	0.02	0.02	0.02	0.02	0.02
$\sum_1 def(T-i)$			-3.902	-3.345		
			[0.012]	[0.105]		
$\sum_1 def(T+i)$			2.178	1.905		
			[0.225]	[0.437]		
$\sum_1 def(T+i) = \sum_1 def(T-i)$		-4.058	-6.080	-5.250	-3.037	-1.745
		[0.036]	[0.008]	[0.084]	[0.008]	[0.091]

Notes: All regressions include country fixed effects. Robust t statistics in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%. P-value of F-tests in brackets.

Table 5 Robustness I. Controlling for Lagged Growth

	Dependent variable: seasonally adjusted quarterly GDP growth					
Independent variables	**Reg 1**	**Reg 2**	**Reg 3**	**Reg 4**	**Reg 5**	**Reg 6**
def (T-3)				0.328		
				(0.28)		
def (T-2)			-0.936	-0.874		
			(1.18)	(1.07)		
def (T-1)		-3.216	-3.189	-3.156		
		(2.52)**	(2.48)**	(2.45)**		
def	-3.560	-3.611	-3.583	-3.587	-3.603	-3.602
	(2.44)**	(2.46)**	(2.43)**	(2.43)**	(2.45)**	(2.45)**
def (T+1)		0.409	0.436	0.435		
		(0.29)	(0.31)	(0.31)		
def (T+2)			1.248	1.325		
			(1.24)	(1.30)		
def (T+3)				-0.123		
				(0.08)		
def (T-1… T-2)					-2.083	
					(2.61)***	
def (T+2… T+1)					0.821	
					(0.95)	
def (T-1… T-3)						-1.301
						(1.85)*
def (T+3… T+1)						0.474
						(0.60)
mkt pressure	-0.823	-0.801	-0.798	-0.784	-0.803	-0.806
	(3.56)***	(3.52)***	(3.51)***	(3.43)***	(3.52)***	(3.53)***
dep var. (-1)	-0.244	-0.244	-0.244	-0.264	-0.244	-0.244
	(6.58)***	(6.53)***	(6.49)***	(7.09)***	(6.52)***	(6.53)***
Constant	1.145	1.161	1.160	1.172	1.158	1.158
	(8.66)***	(8.63)***	(8.44)***	(8.33)***	(8.51)***	(8.44)***
Observations	1,703	1,687	1,663	1,619	1,687	1,687
R-squared	0.08	0.08	0.08	0.09	0.08	0.08
$\sum_1 def(T-i)$			-4.125	-3.702		
			[0.008]	[0.067]		
$\sum_1 def(T+i)$			1.684	1.637		
			[0.331]	[0.489]		
$\sum_1 def(T+i) = \sum_1 def(T-i)$		-3.625	-5.809	-5.339	-2.904	-1.775
		[0.052]	[0.010]	[0.071]	[0.011]	[0.077]

Notes: All regressions include country fixed effects. Robust t statistics in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%. P-value of F-tests in brackets.

Table 6. Robustness II. Controlling for Country-Year Effects

	Dependent variable: seasonally adjusted quarterly GDP growth					
Independent variables	**Reg 1**	**Reg 2**	**Reg 3**	**Reg 4**	**Reg 5**	**Reg 6**
def (T-3)				1.681		
				(0.85)		
def (T-2)			-0.136	0.637		
			(0.08)	(0.29)		
def (T-1)		-2.455	-2.204	-1.457		
		(1.74)*	(1.28)	(0.71)		
def	-2.401	-2.805	-2.467	-1.797	-2.321	-1.643
	(1.54)	(1.70)*	(1.27)	(0.81)	(1.20)	(0.77)
def (T+1)		1.388	1.869	2.228		
		(0.74)	(0.93)	(1.04)		
def (T+2)			1.611	1.789		
			(1.21)	(1.26)		
def (T+3)				-0.154		
				(0.08)		
def (T-1… T-2)					-1.099	
					(0.73)	
def (T+2… T+1)					1.888	
					(1.45)	
def (T-1… T-3)						0.245
						(0.14)
def (T+3… T+1)						1.589
						(1.27)
mkt pressure	-0.668	-0.660	-0.627	-0.627	-0.671	-0.677
	(2.26)**	(2.22)**	(2.10)**	(2.09)**	(2.26)**	(2.28)**
Constant	0.852	0.853	0.867	0.821	0.828	0.791
	(5.84)***	(5.77)***	(5.46)***	(4.64)***	(5.30)***	(4.70)***
Observations	1,745	1,729	1,688	1,644	1,729	1,729
R-squared	0.12	0.12	0.11	0.12	0.12	0.12
$\sum_1 def(T-i)$			-2.340	0.861		
			[0.432]	[0.875]		
$\sum_1 def(T+i)$			3.480	3.863		
			[0.196]	[0.344]		
$\sum_1 def(T+i) = \sum_1 def(T-i)$		-3.843	-5.820	-3.002	-2.987	-1.344
		[0.079]	[0.054]	[0.545]	[0.054]	[0.392]

Notes: All regressions include country fixed effects. Robust t statistics in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%. P-value of F-tests in brackets.

Table 7. Robustness III. Restricting the Estimation to a 3+3 Years Window

	Dependent variable: seasonally adjusted quarterly GDP growth					
Independent variables	**Reg 1**	**Reg 2**	**Reg 3**	**Reg 4**	**Reg 5**	**Reg 6**
def (T-3)				0.696		
				(0.53)		
def (T-2)			-0.816	-0.725		
			(1.09)	(0.95)		
def (T-1)		-2.734	-2.723	-2.632		
		(2.03)**	(2.04)**	(1.95)*		
def	-2.606	-2.641	-2.622	-2.531	-2.628	-2.613
	(1.81)*	(1.82)*	(1.83)*	(1.76)*	(1.81)*	(1.80)*
def (T+1)		1.329	1.344	1.435		
		(0.89)	(0.87)	(0.92)		
def (T+2)			1.212	1.303		
			(1.21)	(1.29)		
def (T+3)				-0.128		
				(0.08)		
def (T-1… T-2)					-1.770	
					(2.17)**	
def (T+2… T+1)					1.272	
					(1.38)	
def (T-1… T-3)						-0.965
						(1.30)
def (T+3… T+1)						0.786
						(0.94)
mkt pressure	-0.763	-0.741	-0.680	-0.684	-0.742	-0.747
	(4.48)***	(4.42)***	(4.33)***	(4.36)***	(4.45)***	(4.48)***
Constant	0.536	0.563	0.553	0.489	0.552	0.539
	(2.43)**	(2.46)**	(2.23)**	(1.83)*	(2.26)**	(2.11)**
Observations	521	520	508	496	520	520
R-squared	0.04	0.05	0.04	0.04	0.05	0.04
$\sum_1 def(T-i)$			-3.539	-2.661		
			[0.027]	[0.221]		
$\sum_1 def(T+i)$			2.556	2.610		
			[0.176]	[0.307]		
$\sum_1 def(T+i) = \sum_1 def(T-i)$		-4.063	-6.095	-5.271	-3.042	-1.751
		[0.040]	[0.009]	[0.086]	[0.009]	[0.093]

Notes: All regressions include country fixed effects. Robust t statistics in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%. P-value of F-tests in brackets.

Table 8. Robustness IV. Dropping One Country at a Time

Dropping	Contemporaneous effect		T+1		T-1	
	Coefficient	|t-statistics|	Coefficient	|t-statistics|	Coefficient	|t-statistics|
	-2.37	2.18	-1.02	0.75	-3.09	2.13
Argentina	-2.31	2.10	-0.34	0.23	-2.81	1.79
Chile	-2.71	2.64	-1.22	0.83	-2.64	1.83
Dominican Republic	-2.35	2.15	-1.21	0.82	-3.45	2.38
Ecuador	-2.37	2.16	-1.02	0.68	-2.98	1.98
Indonesia	-1.87	1.88	-0.86	0.58	-2.93	1.95
Mexico	-2.37	2.16	-0.87	0.59	-2.96	1.97
Nigeria	-2.01	1.78	-0.27	0.19	-3.53	2.67
Pakistan	-1.79	1.92	-1.79	1.45	-3.04	2.03
Peru	-2.55	2.23	-1.11	0.72	-2.17	1.57
Philippines	-2.03	1.93	-1.49	1.07	-2.80	1.88
Russia	-2.77	2.50	-0.89	0.66	-3.23	2.10
South Africa	-2.41	2.08	-1.16	0.74	-3.23	2.03
Ukraine	-2.30	2.10	-0.75	0.51	-3.52	2.47
Uruguay	-2.88	2.65	-0.83	0.53	-3.51	2.30

Notes: Specification (2) of Table 4.

Table 9. Cumulative Output Growth before and after Default

Change in Growth	Obs	Mean	DGP(-T)-DGP(+T)	p-value DGP(-T)-DGP(+T)<0
DGDP(-2)	14	-1.35	-2.71	0.0766
DGDP(+2)	14	1.36		
DGDP(-3)	14	-2.77	-3.15	0.0797
DGDP(+3)	14	0.38		
DGDP(-4)	13	-1.69	-1.63	0.2804
DGDP(+4)	14	-0.06		
DGDP(-5)	12	-2.41	-4.13	0.0997
DGDP(+5)	14	1.71		
DGDP(-6)	12	-4.69	-10.04	0.0037
DGDP(+6)	13	5.36		

Notes: The table reports and compares the average cumulative growth rate before and after the default event, for windows of increasing length. For a window of length 2T+1, we drop the default quarter t = 0, and compute DGDP(-s) = $[GDP_{-1}/GDP_{-s}]$-1, and DGDP(+s) = $[GDP_{+s}/GDP_{+1}]$-1.

Table 10. Maximum Depth of the Recession and Default

Sample	max CDR	Obs	Mean	p-value CDRnodef-CDRdef<0	p-value CDRnodef-CDRdef different from 0	p-value CDRnodef-CDRdef>0
Full sample	no default	625	0.0578	0.0015	0.0030	0.9985
	default	20	0.1079			
Countries having at least one default	no default	309	0.0511	0.0007	0.0014	0.9993
	default	20	0.1079			
Argentina	no default	31	0.0452	0.0017	0.0034	0.9983
	default	2	0.1330			
Nigeria	no default	31	0.0614	0.0697	0.1394	0.9303
	default	2	0.1340			
Peru	no default	23	0.0567	0.6649	0.6702	0.3351
	default	2	0.0316			
Russia	no default	11	0.0641	0.0260	0.0521	0.9740
	default	2	0.1828			
Uruguay	no default	19	0.0322	0.6885	0.6230	0.3115
	default	2	0.0200			
South Africa	no default	27	0.0140	0.2348	0.4696	0.7652
	default	2	0.0208			

Notes: CDR is defined as cumulated drop since last peak, measured as $CDR_t = \max\{y_{t-s}\}_{s=0,\ldots,t} - y_t$, where y_t represents log of GDP, and s represents the periods since last peak.

Table 11. Current Depth of the Recession and Growth after Default

	Dependent variable: seasonally adjusted quarterly GDP growth					
Independent variables	**Reg 1**	**Reg 2**	**Reg 3**	**Reg 4**	**Reg 5**	**Reg 6**
def (T-3)				0.253		
				(0.20)		
def (T-2)			-1.072	-1.034		
			(1.23)	(1.15)		
def (T-1)		-3.263	-3.236	-3.223		
		(2.32)**	(2.30)**	(2.26)**		
def	-3.435	-3.491	-3.451	-3.463	-3.501	-3.510
	(2.70)***	(2.72)***	(2.73)***	(2.75)***	(2.73)***	(2.73)***
def (T+1)		0.409	0.448	0.428		
		(0.29)	(0.31)	(0.29)		
def (T+2)			0.579	0.586		
			(0.55)	(0.55)		
def (T+3)				-0.424		
				(0.29)		
def (T-1… T-2)					-2.192	
					(2.53)**	
def (T+2… T+1)					0.465	
					(0.52)	
def (T-1… T-3)						-1.408
						(1.87)*
def (T+3… T+1)						0.132
						(0.17)
mkt pressure	-0.885	-0.865	-0.820	-0.810	-0.863	-0.866
	(3.86)***	(3.83)***	(3.76)***	(3.70)***	(3.82)***	(3.83)***
CDR (-1)	0.209	0.211	0.206	0.224	0.210	0.210
	(5.04)***	(5.08)***	(4.93)***	(5.41)***	(5.05)***	(5.07)***
Constant	0.377	0.386	0.425	0.375	0.393	0.394
	(2.34)**	(2.37)**	(2.57)**	(2.22)**	(2.40)**	(2.40)**
Observations	1,744	1,728	1,687	1,643	1,728	1,728
R-squared	0.04	0.05	0.05	0.05	0.05	0.05
$\sum_1 def(T-i)$			-4.308	-4.004		
			[0.011]	[0.067]		
$\sum_1 def(T+i)$			1.027	0.590		
			[0.572]	[0.804]		
$\sum_1 def(T+i) = \sum_1 def(T-i)$		-3.672	-5.335	-4.594	-2.657	-1.540
		[0.065]	[0.027]	[0.135]	[0.028]	[0.138]

Notes: All regressions include country fixed effects. Robust t statistics in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%. P-value of F-tests in brackets. .

Table 12. Default and Long-Run Growth

Group 1

wbcode	cyname	year	quarter
MEX	Mexico	1982	3
PAK	Pakistan	1998	2
PER	Peru	1980	1
PHL	Philippines	1983	4
RUS	Russia	1991	4
ZAF	South Africa	1989	4

Notes: Group 1 are default episodes where growth in the four periods after the default was below growth in the four periods before the default (so if default is at time t, this group contains all observations where (GDP(t+5)-GDP(t+1))/GDP(t+1)< GDP(t-1)-GDP(t-5))/GDP(t-5)).

Group 2

wbcode	cyname	year	quarter
DOM	Dominican Republic	1982	4
IDN	Indonesia	1998	2
NGA	Nigeria	1983	3
ZAF	South Africa	1985	3

Notes: Group 2 contains all episodes in where growth in the four periods after the default was higher than growth in the four periods before the default but below long-run growth (so if default is at time t, this group contains all observations where LRGR>(GDP(t+5)-GDP(t+1))/GDP(t+1)>GDP(t-1)-GDP(t-5))/GDP(t-5)). Where long run growth (LRGR) is annual growth computed over the whole sample.

Group 3

wbcode	cyname	year	quarter
ARG	Argentina	1982	1
ARG	Argentina	2001	4
CHL	Chile	1983	1
ECU	Ecuador	1999	3
NGA	Nigeria	1986	3
PER	Peru	1983	1
RUS	Russia	1998	4
UKR	Ukraine	1998	3
URY	Uruguay	1990	1
URY	Uruguay	2003	2

Notes: Group 3 contains all episodes in where growth in the four periods after the default was higher than growth in the four periods before the default and also higher long-run growth (so if default is at time t, this group contains all observations where LRGR<(GDP(t+5)-GDP(t+1))/GDP(t+1)>GDP(t-1)-GDP(t-5))/GDP(t-5)). Where long run growth (LRGR) is annual growth computed over the whole sample.

Table 13. Long-Run Growth Regressions

	Dependent variable: HP filtered quarterly GDP growth					
Independent variables	**Reg 1**	**Reg 2**	**Reg 3**	**Reg 4**	**Reg 5**	**Reg 6**
def (T-3)				-0.378		
				(2.34)**		
def (T-2)			-0.337	-0.348		
			(2.07)**	(2.13)**		
def (T-1)		-0.284	-0.295	-0.307		
		(1.70)*	(1.76)*	(1.82)*		
def	-0.256	-0.264	-0.275	-0.286	-0.276	-0.289
	(1.48)	(1.52)	(1.57)	(1.62)	(1.60)	(1.68)*
def (T+1)		-0.214	-0.225	-0.237		
		(1.20)	(1.25)	(1.31)		
def (T+2)			-0.196	-0.207		
			(1.07)	(1.12)		
def (T+3)				-0.167		
				(0.87)		
def (T-1… T-2)					-0.317	
					(2.66)***	
def (T+2… T+1)					-0.212	
					(1.64)	
def (T-1… T-3)						-0.347
						(3.50)***
def (T+3… T+1)						-0.207
						(1.89)*
mkt pressure	-0.138	-0.134	-0.123	-0.119	-0.132	-0.130
	(2.48)**	(2.48)**	(2.47)**	(2.46)**	(2.48)**	(2.49)**
Constant	0.773	0.779	0.785	0.792	0.783	0.788
	(50.69)***	(50.03)***	(49.06)***	(48.05)***	(49.21)***	(48.34)***
Observations	1,769	1,752	1,710	1,666	1,752	1,752
R-squared	0.39	0.40	0.41	0.42	0.40	0.40
$\sum_1 def(T-i)$			-0.632	-1.033		
			[0.009]	[0.001]		
$\sum_1 def(T+i)$			-0.421	-0.611		
			[0.108]	[0.069]		
$\sum_1 def(T+i) = \sum_1 def(T-i)$		-0.070	-0.211	-0.422	-0.105	-0.140
		[0.770]	[0.532]	[0.313]	[0.530]	[0.306]

Notes: All regressions include country fixed effects. Robust t statistics in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%. P-value of F-tests in brackets.

Table 14. Default and Unemployment

	Dependent variable: seasonally adjusted quarterly unemployment rate					
Independent variables	**Reg 1**	**Reg 2**	**Reg 3**	**Reg 4**	**Reg 5**	**Reg 6**
def (T-3)				0.058		
				(1.00)		
def (T-2)			-0.068	-0.073		
			(1.32)	(1.37)		
def (T-1)		0.070	0.064	0.060		
		(0.69)	(0.63)	(0.60)		
def	-0.112	-0.113	-0.119	-0.122	-0.120	-0.127
	(2.86)***	(2.72)***	(2.70)***	(2.51)**	(2.81)***	(2.71)***
def (T+1)		-0.111	-0.118	-0.122		
		(5.20)***	(4.89)***	(4.41)***		
def (T+2)			-0.041	-0.046		
			(0.42)	(0.46)		
def (T+3)				-0.107		
				(1.68)*		
def (T-1… T-2)					-0.003	
					(0.04)	
def (T+2… T+1)					-0.079	
					(1.43)	
def (T-1… T-3)						0.003
						(0.04)
def (T+3… T+1)						-0.095
						(2.19)**
mkt pressure	0.102	0.098	0.098	0.095	0.102	0.102
	(2.50)**	(2.38)**	(2.39)**	(2.17)**	(2.51)**	(2.43)**
Constant	0.012	0.012	0.012	0.013	0.012	0.013
	(2.49)**	(2.48)**	(2.56)**	(2.62)***	(2.58)**	(2.68)***
Observations	457	457	457	457	457	457
R-squared	0.05	0.06	0.06	0.07	0.05	0.06
$\sum_1 def(T-i)$			-0.004	0.045		
			[0.968]	[0.765]		
$\sum_1 def(T+i)$			-0.159	-0.275		
			[0.139]	[0.037]		
$\sum_1 def(T+i) = \sum_1 def(T-i)$		0.181	0.155	0.320	0.076	0.098
		[0.069]	[0.289]	[0.059]	[0.355]	[0.152]

Notes: All regressions include country fixed effects. Robust t statistics in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%. P-value of F-tests in brackets.

Appendix

Table A1. Variable Definition and Sources

Yearly variables

Variable	Definition	Source
growth	GDP per capita growth (annual %)	World Development Indicators
invgdp	Investment share of CGDP (current prices)	World Development Indicators
pop growth	Population growth rate	World Development Indicators
sec	Percentage of secondary school attained in the total pop	Barro and Lee (2000).
pop level	Total population	World Development Indicators
gov	One period lag of general government final consumption expenditure (annual % growth)	World Development Indicators
civil	Index of Civil Rights	Freedom in The World
Δtt	Terms of trade (tt) variation, computed as tt-tt(-1)	World Development Indicators
openness	Average exports plus imports to GDP (current US$)	World Development Indicators
bank2av1	Bank Crisis Measure (binary, 1 = crisis)	Caprio and Kinglebiel (2003)
def	Beginning of Foreign Currency Bank and Bond Debt Default	Standard & Poor's
def (+1)	Forward of def	
def (-1)	Lag of def	

Quarterly variables

Variable	Definition	Source
growth	Real seasonally adjusted GDP growth (% change). In order to seasonally adjust the real GDP series, we proceed in the following way. First, we calculate the mean of real GDP by country. Next, we obtained the residuals of a regression of real GDP on quarterly dummies. Finally, we added the residuals to mean growth series. We dropped observations where the absolute value of quarterly GDP growth was greater than 30 percent.	International Financial Statistics and national sources
def	Beginning of Foreign Currency Bank and Bond Debt Default	Global Development Finance 2003 (Analysis and Statistical Appendix) and Standard & Poor's
x (-i)	i^{th} lag of variable *x*	
x (+i)	i^{th} lead of variable *x*	
External	Index of external factors	
mkt pressure	High-frequency market pressure index (reserves + depreciation weigthed by the inverse of their standard deviation)	International Financial Statistics

Table A2. List of Countries and Years Included in the Quarterly Analysis

Country	Years and quarters
Algeria	From 1995:2 to 2005:1
Argentina	From 1970:2 to 2005:4
Bangladesh	From 2000:2 to 2004:4
Barbados	From 2000:2 to 2005:3
Brazil	From 1991:2 to 2002:4
Bulgaria	From 2000:2 to 2005:3
Chile	From 1980:2 to 2002:4
Colombia	From 1994:2 to 2002:4
Cote D' Ivoire	From 2000:2 to 2003:4
Croatia	From 1991:2 to 2005:3
Cyprus	From 2000:2 to 2005:3
Dominican Republic	From 1980:2 to 2002:4
Ecuador	From 1991:2 to 2002:4
Fiji	From 2000:2 to 2002:4
Hungary	From 1979:2 to 2005:3
India	From 2000:2 to 2005:3
Indonesia	From 1993:2 to 2002:4
Korea	From 1970:2 to 2005:3
Luxembourg	From 2000:2 to 2005:3
Macedonia, FYR	From 2000:2 to 2004:4
Malawi	From 2000:2 to 2004:2
Malaysia	From 1970:2 to 2005:3
Mexico	From 1970:2 to 2005:3
Morocco	From 1993:2 to 2002:4
Nigeria	From 1970:2 to 2005:3
Pakistan	From 1995:3 to 2002:2
Peru	From 1979:2 to 2002:4
Philippines	From 1981:2 to 2005:2
Poland	From 1982:2 to 2005:3
Russia	From 1991:2 to 2002:4
Senegal	From 2000:4 to 2003:4
South Africa	From 1970:2 to 2002:4
Thailand	From 1993:2 to 2002:4
Trinidad y Tobago	From 2000:2 to 2004:4
Tunisia	From 1970:2 to 2005:3
Turkey	From 1980:2 to 2005:3
Ukraine	From 1993:2 to 2002:4
Uruguay	From 1988:2 to 2004:4
Venezuela	From 1993:2 to 2002:4