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## How costly are debt crises?

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### A B S T R A C T

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The aim of this paper is to assess the short and medium-term impact of debt crises on GDP. Using an unbalanced panel of 154 countries from 1970 to 2008, the paper shows that debt crises produce significant and long-lasting output losses, reducing output by about 10 percent after 8 years. The results also suggest that debt crises tend to be more detrimental than banking and currency crises. The significance of the results is robust to different specifications, identification and endogeneity checks, and datasets.

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### 1. Introduction

The recent general increase in public debt levels and severe funding pressures faced by some European countries have brought again attention to the problems of sovereign debt. Although it is a common view that debt crises may be detrimental and that large increases in public debt have frequently led to sovereign defaults, only few studies have tested the effect of debt crises on output, and even fewer papers have focused on the timing of the recovery after debt crisis episodes.<sup>2</sup>

The economic literature has identified three main channels through which sovereign debt crises affect output.<sup>3</sup> The first channel is through the exclusion from international capital markets. *Gelos et al. (2011)* show that after a sovereign default, countries were excluded from international capital markets for about four years on average. Similarly, *Richmond and Dias (2008)* find that exclusion from international capital markets after a sovereign default lasted on average 4 years: 5.5 years for debt crisis episodes in the 1980s, 4.1 years in the 1990s, and 2.5 years in the 2000s. The second channel is through an increase in the cost of borrowing. For example, *Borensztein and Panizza (2009)* find that for 31

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<sup>2</sup> *Cerra and Saxena (2008)*; *Panizza et al. (2009)*.

<sup>3</sup> See *Panizza et al. (2009)* for a survey of the recent literature on sovereign debt defaults, its determinants and effects.

emerging market economies in the period 1997–2004, in the year after a sovereign default episode spreads increased by about 400 basis points compared to tranquil times. The third channel is through international trade. Rose (2005) finds a significant reduction in bilateral trade of approximately 8 percent per year following the occurrence of a sovereign default.<sup>4</sup> In addition to these channels, debt crises can affect output indirectly by leading to banking and currency crises (De Paoli et al. 2009).

The results of the empirical literature on the relation between sovereign default and growth have in general confirmed that debt crises may lead to significant output contractions. Sturzenegger (2004), using cross-country and panel regressions, finds that debt defaults are associated with a reduction in output growth of about 0.6–2.2 percentage points. Similarly, Borensztein and Panizza (2009) find that defaults are associated with a decrease in growth of 1.2 percentage points per year. De Paoli et al. (2009), comparing output growth five years before and after the occurrence of a debt crisis, find that debt crises are associated with large output losses of at least 5 percent per year. In contrast, Levy-Yeyati and Panizza (2011), analyzing quarterly data for output growth, find that growth recovers in the quarters immediately after the occurrence of a debt crisis.<sup>5</sup>

However, the results of these growth regressions should be interpreted with some caution since they may suffer from two main biases. First, sovereign debt crises may be endogenous to output contractions. Indeed, many episodes of debt defaults have occurred in period of strong output contractions. Chiang and Coronado (2005) and Borensztein and Panizza (2009) attempt to address this issue by using a two-step approach in which the probability of sovereign defaults is estimated in the first stage regression, and then used as a regressor in the second stage in the growth regression. However, this approach does not fully address endogeneity problems given the impossibility to find *true* strongly exogenous instruments for debt crises. In addition, the results of the second stage regression may be very sensitive to the particular model used to estimate debt crises probabilities.

The second form of bias comes from the *indistinguishable* connection that exists between currency, banking and debt crises. This is particularly the case for emerging economies simultaneously hit by banking, currency, and debt crises. The simultaneous occurrence of these types of financial crises is often attributed to the so-called “original sin” syndrome (Eichengreen et al., 2003), taking place when most of the private and public debt is short-term denominated in foreign currency. Following large domestic exchange rate depreciations associated with currency crises, public debt (when mostly foreign denominated) can increase considerably and lead to defaults. Reinhart and Rogoff (2010a,b) suggest the following causality: private sector defaults precede banking sector crises that coincide or precede public debt defaults. At the same, the opposite may also occur: public debt defaults may lead to banking crises when banks are the main holders of government debt. Banking and debt crises could also lead to currency crises. For instance, *third generation* crises theory (Krugman, 1999) underlines the role of maturity mismatches and currency disequilibria in private (mostly banking sector) balance sheets as the main reason for the onset of currency crises.

This paper tries to address these issues. In particular, its contribution to the existing literature is fourfold:

- It analyzes the impact of debt crises on output both in the short and in the medium-term.
- It attempts to address endogeneity and reverse causality by using two approaches. The first, in line with the most recent empirical literature that analyzes the determinants of growth in a panel framework, consists of using a two-step GMM-system estimator. The second approach consists of estimating the impact of debt crises on growth using the two-step GMM *only* for those debt crises episodes that occurred in periods of relatively good economic performance.
- It tries to isolate the impact of debt crises from the effect of banking and currency crises using two different estimation strategies. The first approach consists of estimating the effect of debt crises on

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<sup>4</sup> Sovereign default can also affect economic output through domestic channels such as a reduction in consumption and investment or fall in total factor productivity.

<sup>5</sup> The authors argue that a more persistent impact of sovereign default found using annual data is likely to be driven by the anticipation of defaults. Panizza et al. (2009) comparing the impact of anticipated and non-anticipated defaults on output find no significant differences between the two types of crises.

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