

[On the costs of sovereign default in quantitative models](#)

CFM-DP2020-21

Bernardo Guimaraes^{1,3} and Lucas Tumkus²

¹Centre For Macroeconomics, ²Kinea Investimentos, ³Sao Paulo School of Economics – FGV

Quantitative models building on Eaton and Gersovitz (1981) have become the workhorse in the literature of sovereign default. The framework considers a small open economy that can borrow from abroad, cannot commit to repay lenders, and decides at every period whether to default or not and how much debt to issue.

The vast majority of this work assumes that in case of default, output falls according to an exogenous function. This paper argues that these models' predictions strongly depend on the default cost function, and commonly used functions yield entirely different results.

We study a standard model, with standard calibration, and consider four default cost functions used in prominent papers and widely employed. The average debt-to-output ratio varies between 11% and 163%. The default frequency varies between 0.02% and 5% per year. The correlation between debt-to-output and GDP varies between -0.98 and 0.89. Rollover risk can be irrelevant, crucial, or something in between.

Output losses from default are likely to result from a combination of factors. Owing to the difficulties in estimating these costs, choosing one or two parameters to match relevant targets seems to be a sensible strategy. The literature has gone one step further, choosing default cost functions that allow the model to fit moments from the data. This practice may be criticized, but it is arguably in line with the prescription in Kydland and Prescott (1996) that the model economy should "mimic the world as closely as possible along a limited, but clearly specified, number of dimensions."

This paper shows, however, that the set of admissible choices for the default cost function allows for drastically different results. The discipline needed for a sound computational experiment, as envisioned by Kydland and Prescott (1996), seems to be missing. A better understanding of how to incorporate default costs in quantitative models of sovereign default is a crucial bottleneck in this literature.