Quantitative Macroeconomics - PS VIII

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1 Quantitative Model of Sovereign debt

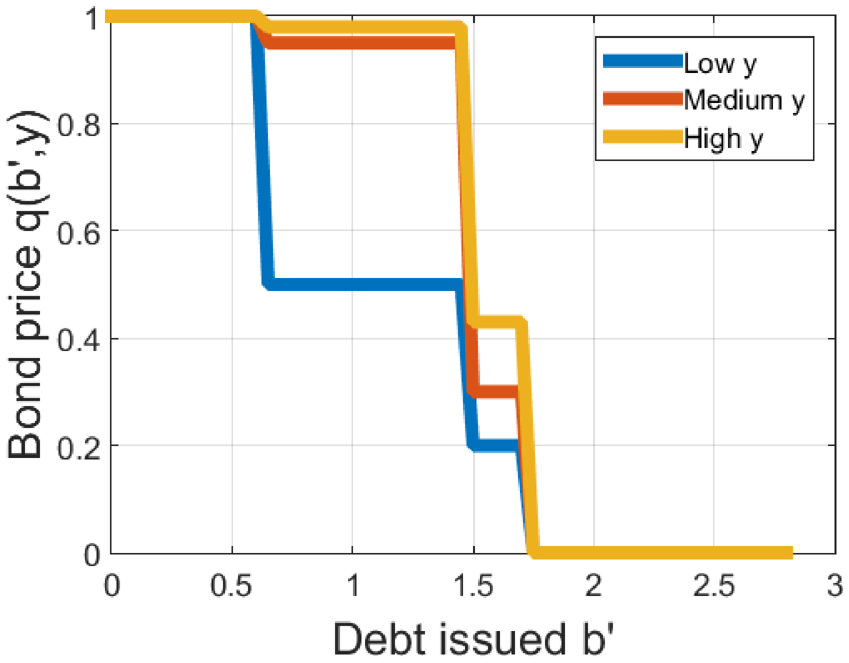

Figure 1: Bond price schedule: as we can observe with given debt, the price of new bond is higher for high gdp realizations (and the interest rate will be lower) and lower for low gdp realizations (and the interest rate will be higher). Moreover for a high level of debt issued there are no differences among the gdp realizations, the price of new bond is zero and no new debt will be issued.

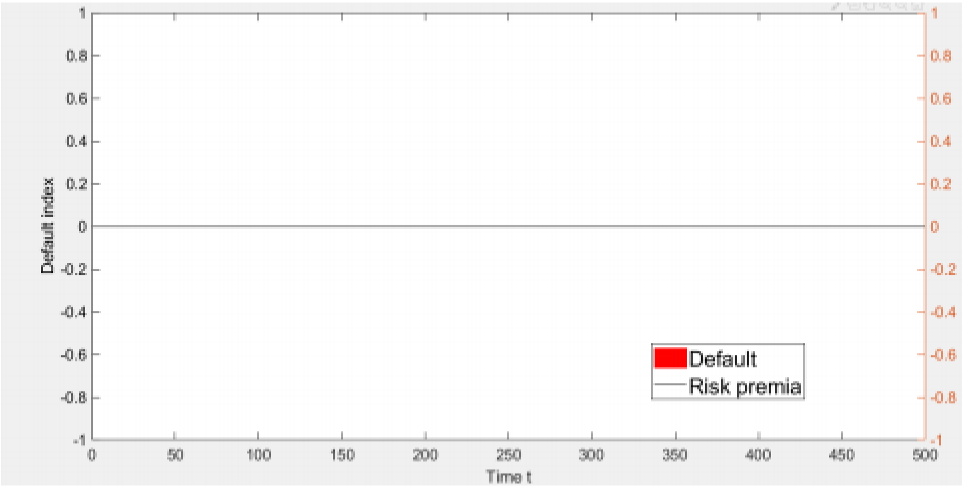

Figure 2: In equilibrium there is no default

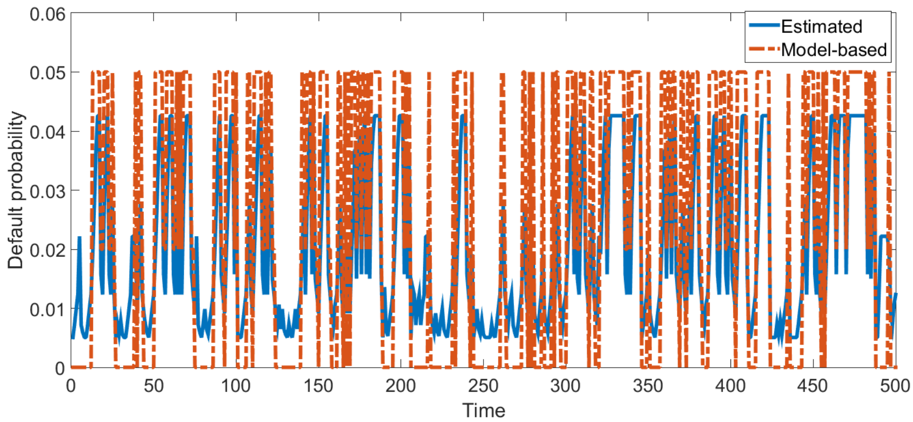

Figure 3: Parameters adjusted to have 3% of probability to default

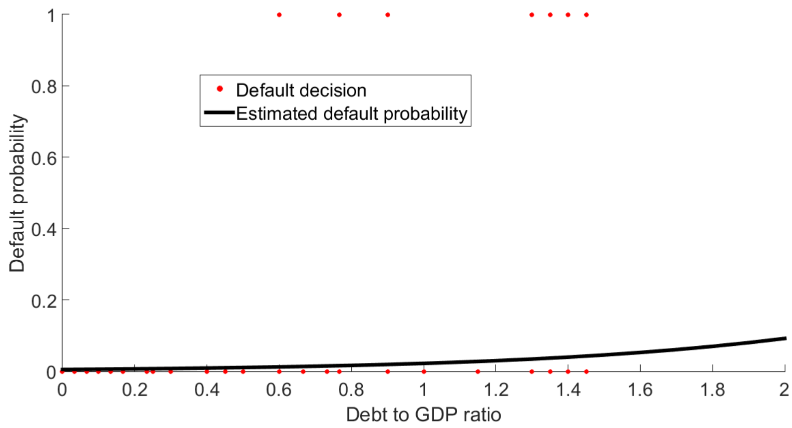

Figure 4: Probability of default conditional to debt-to-GDP ratio: as we can see the higher the Dept-to-GDP ratio, the higher the probability to default, as we expected.

1.1 Estimation using real data

Using real data and performing a Logit model we estimate a beta equal to 9.34, parameter of a logit regression is not interpretable but we can look at the marginal effect, which is positive. Then the estimation confirms that the probability of default increases with the debt GDP ratio.