Optimal fiscal policy and sovereign debt crises: Data Appendix

Stefan Niemann* Paul Pichler†

1 Data

Empirical data used for calibration and the discussion of Section 6 in the main text has been obtained mainly from Banco de México (`http://www.banxico.org.mx/`). The GDP deflator is constructed using data from Cuadra, Sanchez, and Sapriza (2010) and the Federal Reserve Bank of St. Louis (`https://fred.stlouisfed.org/`). Spread data is from World Bank Global Economic Monitor (`https://datacatalog.worldbank.org/dataset/global-economic-monitor`). We cover the period 1980:Q1-2018:Q4, where necessary extending the series available from Banco de México with data from the Federal Reserve Bank of St. Louis. In particular, we use or construct the following series:

- Gross domestic product (current prices): series SR16501
- Gross domestic product (constant prices, seasonally adjusted): series SR16515
- Private consumption (constant prices, seasonally adjusted): series SR16519
- Government consumption (constant prices, seasonally adjusted): series SR16520
- Exports (constant prices, seasonally adjusted): SR16524
- Imports (constant prices, seasonally adjusted): SR16516
- GDP deflator: Cuadra, Sanchez, and Sapriza (2010) and FRED
- Inflation rate: percentage change in GDP deflator
- Tax revenues (non-oil related, pesos): SG259
- Income tax (pesos): SG80
- Value added tax (pesos): SG81
- Excise taxes (pesos): SG54

*Department of Economics, University of Essex, United Kingdom. E-mail: sniem@essex.ac.uk
†Department of Economics, University of Vienna, Austria. E-mail: paul.pichler@univie.ac.at

- Real tax revenue: (SG80 + SG81 + SG54)/GDP deflator
- Tax rate: real tax revenue/private consumption
- Tax index: 0.842*tax rate + 0.158*inflation rate (see Section 1.1 below)
- International reserves (US dollars): SF31991
- Tesobonos (pesos): SF229692
- Cetes (pesos): SF65047
- Total government securities (pesos): SF65219
- Total broad economic debt of the public sector (pesos): SG193
- External broad economic debt of the public sector (pesos): SG195
- External broad economic debt of the public sector consolidated with Banco de México (pesos): SG201
- J.P. Morgan Emerging Markets Bond Spread (EMBI+): World Bank Global Economic Monitor

1.1 Tax index

The empirical measure for tax rates reported in Table 3 in the main text is constructed as a tax index based on revenue data from VAT taxes (series SG81), income taxes (series SG80), excise taxes (series SG54) and the inflation tax. Taken together, the revenue from the 'fiscal' taxes (that is, the sum of VAT taxes, income taxes and excise taxes) averages at approximately 12% of private consumption expenditures over the period 1980-2018. During the same period, seignorage amounted to about 1.5% of GDP, which corresponds to approximately 2.25% of private consumption. Notice that the respective percentages can be interpreted as an implicit tax rate applied to private consumption as a tax base. In line with their relative role for government revenue, the tax index assigns a combined weight of 12/(12+2.25) = 84.2% to VAT, income taxes and excise taxes, and the remaining 2.25/(12+2.25) = 15.8% to inflation. The resulting tax index is thus mainly determined via the fiscal side, but has a comprehensive enough coverage to also capture the non-negligible role of seignorage for public finances. Since the volume of the different sources of public revenue is observed at quarterly frequency, the tax index displays a fair amount of variability over the business cycle. Panel (d) of Figure 7 in the main text plots the tax index for a time window centered around the Mexican debt crisis of 1994-95.

References

Cuadra, G., J. Sanchez, and H. Sapriza (2010): "Fiscal Policy and Default Risk in Emerging Markets," *Review of Economic Dynamics*, 13(2), 452–469.