Household Debt Relief and the Debt Laffer Curve

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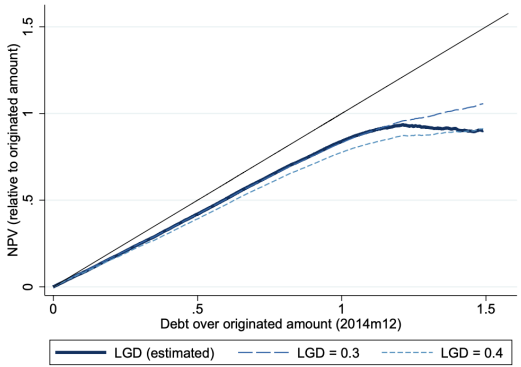
Motivation

- Should debt forgiveness be contentious in a crisis?
  - They use a structural model and micro data to answer this
  - Model features debt overhang
  - With debt overhang, when you have too much debt you do not want to pay it off, so increasing the face value of debt may not increase the NPV of debt
  - Use the policy change to study the causal effect of debt reduction on default
    - Use RDD to establish that the policy change had an effect
    - Use DiD to quantify the effect
- First paper to show that a Laffer curve for debt forgiveness can be inverted
  - Meaning that creditors can actually do better when debt is forgiven.

This Paper

- First paper to show that a Laffer curve for debt forgiveness can be inverted
  - The Laffer curve is in a single period:As face value of debt increases, how much you expect to collect?
  - Exogenous shock change face values of debt (without changing borrower characteristics) to study how it changes default



Background

- Household credit registry data from the Central Bank of Hungary
  - Loan level information on all outstanding loans as of May 2012
  - Monthly performance data
  - Income recorded in pension contributions data
- Before the Global Financial Crisis (GFC) >60% of mortgage debt was denominated in foreign currency (Swiss franc), due to:
  - Removal of subsidies for domestic currency loans in late 2003
  - Foreign banks had expanded lending in Hungary to gain market share
  - Hungary joined the EU in 2004
- After the GFC, the Hungarian Forint depreciated 70% against the Swiss franc
  - Increased value of borrowers' debt in the foreign currency relative to how much they earned in their local currency
  - Default especially prevalent when outstanding debt (in 2015) to amount borrowed (in 2004) is >1, Laffer curve inverts (Figure 8)

Policy Change

- **Shock:** Settlement and Conversion Program (SCP) - passed Nov. 2014
  - Required banks to repay borrowers unfair fees → took the form of prepayments according to a specific formula
  - Converted loans to local currency at exchange rate fixed in Nov. 2014
- Only loans originated May 1, 2004 or after were eligible

Comment 1 - Move DiD before RDD

- Put the DiD directly after Section 4, before the RDD
  - The DiD is used to find the theoretical quantities used in Section 4 (Dp'(D))- would be a smoother transition for the reader
    - Can make the RDD a robustness test for the DiD

Debt Laffer curve:
V(D) = D(1-p(D))+p(D)D(1-L(D))

- D - face value of debt
- p(D) - probability of default
- L(D) - loss given default

The derivative of the Laffer curve is:

$$\frac{dV(D)}{dD} = 1 - (p(D) + Dp'(D))L(D) - L'(D)Dp(D)$$

- $Dp'(D) = \frac{dp(D)}{dD/D}$
- semi-elasticity of probability of default to a unit change in debt (D)
- Calculated w/ DiD

Comment 2 - Estimating Dp'(d)

Paper uses:

$$\Delta D_i \times Post_t = \alpha_i^{FS} + \delta_t^{FS} + \pi^{FS} Eligible_i \times Post_t + \Gamma^{FS} X_i \times Post_t + \epsilon_{it}^{FS}$$

$$\Delta Default_{i,t} = \alpha_i^{SS} + \delta_t^{SS} + \beta_k^{SS} \widehat{\Delta D_i \times Post_t} + \Gamma^{SS} X_i \times Post_t + \epsilon_{it}^{SS}$$

- This sets both treated and control groups' changes in debt to zero in the pre-period, The face value of debt will also be changing in the pre-period due to exchange rate changes
  - Increase significance of first stage and mechanically
  - Removes any differential effect of changes in debt on default between treated and control groups in the in the pre-period
- Recommend testing first stage:

$$\Delta D_{i,t} = \alpha_i^{FS} + \delta_t^{FS} + \sum_{k \neq 2015m2} \pi_k^{FS} Eligible_i \times \mathbb{1}_k + \Gamma^{FS} X_i \times Post_t + \epsilon_{it}^{FS}$$

  - π_k^{FS} will estimate the effect of eligibility on the differential change in debt without removing information from the pre-period

Comment 2 - Estimating Dp'(d) (Cont'd)

- Comparison of pre-periods in DiD first stages

Change in Debt		
Month	Treated	Control
1	0	0
2	0	0
3	0	0
4	0	0
5	-0.06	0.02
6	-0.07	0.03
7	-0.08	0.04
8	-0.1	0.05

Change in Debt		
Month	Treated	Control
1	0.01	0.04
2	0.02	0.05
3	0.03	0.06
4	0.04	0.07
5	-0.06	0.02
6	-0.07	0.03
7	-0.08	0.04
8	-0.1	0.05

This Paper

- Marginal Effect of Debt on Loss Given Default (LGD) - L'(D) - paper states that they would expect $L'(D) > 0$, however use $L'(D) = 0$ since it makes it more difficult to find an inverted Laffer Curve
  - Given wage garnishment, is it possible LGD is actually decreasing as the face value of debt increases, so that $L'(D) < 0$?

Remaining Questions

- There were other contemporaneous changes such as The Exchange Rate Cap, and The Early Repayment Program, these could make the post period different, for example by lowering default and raising home prices, which may confound the effect from the Settlement and Conversion program.
  - Try controlling for home prices or related macro economic variables
  - Want to say that if you decrease borrowers' level of debt by this much, they will default less and it increases NPV of debt

- Will this hold in other countries? What is the external validity? Under what conditions the debt Laffer curve would invert in other settings?

- How necessary is the garnishing of wages? In default bank gets paid back a portion of the mortgage. If default meant no repayment, at what point would the Laffer curve invert?

Thank you!

Minor points

- Would be helpful to define every variable in each equation, as well as the control variables used in regressions.
- There are some typos here and there to clean up.