Project Proposal
The marginal propensity to consume out of liquidity

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May 22, 2014

Abstract

I present new tests of the permanent income hypothesis (PIH) and other models of inter-temporal behavior using proprietary data from a European financial institution. The data includes of credit card variables (limits, balances, debt, credit score, balances/limits at other banks), consumption, income and assets for a panel with average 100 months of depth. I focus on the marginal propensity to consume out of liquidity i.e. the debt response to an increase in credit capacity, as well as it's comovement with idiosyncratic and aggregate shocks. Initial analysis is carried out using observational data following 40000 individuals over 80 months, and the project in it's eventual form, will utilize data from a randomized controlled trial conducted throughout March 2014, where individuals were randomly assigned credit card limits.

The project aims to answer four questions:

- *What is the marginal propensity to consume out of 'liquidity'?* Increases in credit capacity do not entail any wealth effects, and under the PIH should have a MPC equal to zero. This moment is crucial to understanding the crisis through heterogenous agent incomplete market macroeconomic models, however has received much less attention than other parameters of PIH, such as sensitivity to transitory shocks and smoothness to permanent shocks. [7] [8] [9] [4] A distributed lag model on observational data suggest that a 1 unit increase in the credit limits increases unpaid credit card balances by up to 0.8 units, over a period of more than 80 months -this is hard to reconcile with the PIH. The results from observational data are confounded by the endogeneity of credit supply as 1.i n the cross-section of consumers, issuers identify those that are likely to incur balances, 2. in time-series, credit growth anticipates consumption growth. Both of these factors imply an over-estimate of the MPC out of liquidity, and the experiment intends to provide clean identification.
- *Why is the marginal propensity to consume out of 'liquidity' so high?* High cost of borrowing via credit cards implies a high marginal private return -what generates this high return? Models featuring borrowing constraints or myopia (either Keynesian hand-to-mouth, impatient or hyperbolic) would both predict a high MPC out liquidity. However these models have differential predictions in that, for a myopic consumer MPC is solely a function of cash-on hand, whereas a borrowing constrained individual is missing a market to transfer resources from the future to today, and should respond differentially to permanent and transitory income shocks. Using the panel structure, I decompose the income process into permanent and transitory components and investigate the comovement of consumption and debt to permanent and transitory income shocks. Under borrowing constraints, debt should increase with permanent income increases and transitory income decreases.
- *Is the 'excess sensitivity' of consumption due to borrowing constraints?* Contrary to the PIH, changes in consumption growth are significantly correlated predictable changes in income growth, i.e. consumption exhibits 'excess sensitivity' [5] [2] [1]. Models with borrowing constraints can predict the twin excesses [11] [3], however in practice it is difficult to identify those individuals that are borrowing constrained,

and being borrowing constrained correlates with other metrics related to income and consumption. The experiment will create two groups that differ only in their borrowing capacity, and decompose the excess sensitivity and excess smoothness of consumption due to borrowing constraints, by using data on credit utilization. If consumption is excessively smooth due to borrowing constraints, then one should observe an increase in credit utilization in the wake of a permanent shock, for those that have low cash-on-hand. Similarly, if consumption is excessively sensitive due to borrowing constraints, then individuals with available credit should use their borrowing capacity to smooth out transitory shocks, whereas constrained individuals will exhibit higher sensitivity.

- *Is a household debt overhang holding back consumption in the US?* With the plunge in US home prices and most households over-leveraged, commentators argued that household deleveraging is depressing spending and hampering recovery [10]. However, as leveraged and non-leveraged households are not otherwise identical, and change in leverage being correlated with change in wealth, the effects of change in wealth versus change in leverage cannot be identified separately. This project aims to revisit the hypothesis of a household debt overhang, by using the random assignment of credit card limits as an intent-to-treat to exogenous shifts in leverage, and looking at the consumption response of indebted households to income shocks.

The RCT

The RCT was conducted at a financial institution in Europe, throughout the months of March and April. The sample population is among the 1.5m customers of the bank that had been approved for an increased credit card limit. The banking legislation requires credit card limits be less than 4 times the monthly income, therefore individuals with current limits less than 3.5 times their monthly income are chosen, in order to have at least half a month worth of income of extension in credit lines. Individuals are then grouped into groups of six, based on 1. has direct deposit (wages observable) 2. credit card utilization (balance/limit from the bank) between 0-0.5, 0.5-0.8 and 0.8+. [6] find that in a MPC regression, over-utilizers have a higher standard error on the dummy coefficient, therefore over-utilizers are over-sampled proportional to the inverse of the standard error of the coefficient. The individuals are then entered to the central bank's credit limit clearing system, and are approved for a credit line extension. About 30% of the individuals are not approved for a limit increase, therefore are dropped from the experiment. For the remaining 30k individuals, randomization was done on a bin-by-bin basis.

Budget

The researcher is requesting $10000, for 5 round-trip flights to Europe, each at $2000 including ground transportation.

References

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Appendix

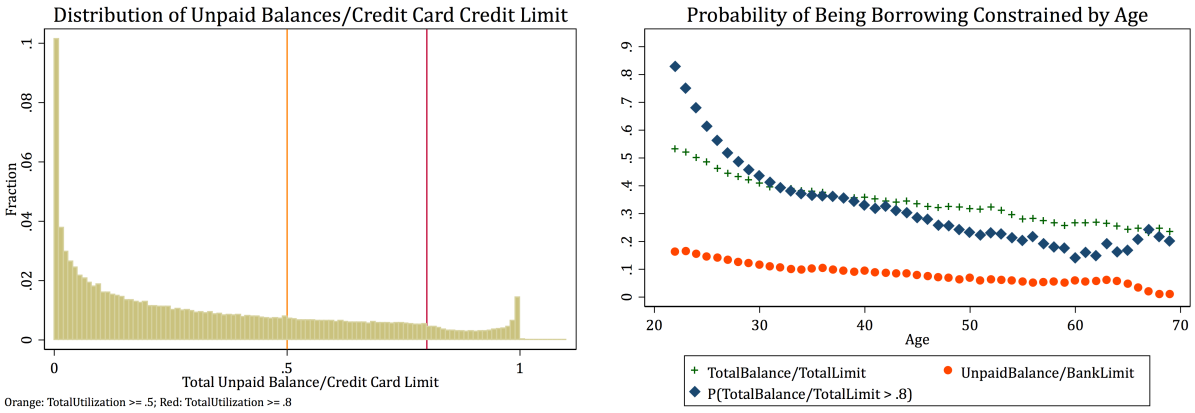

Figure 1: Left: Identifying borrowing constrained individuals from credit card utilization. Right: three metrics of the likelihood of being borrowing constrained, by age. Data from an unbalanced sample.

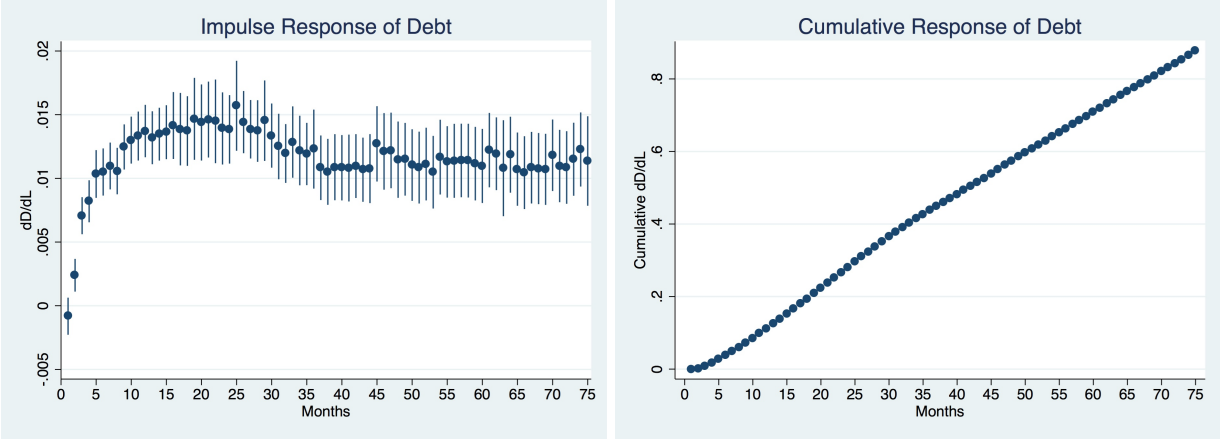

Figure 2: Left: the impulse response of debt (unpaid credit card balance) to increase in credit limits. Right: the cumulative response. Estimated via a distributed lag model including time dummies, errors clustered by individual