This problem set looks at “Credit Elasticities in Less-Developed Economies: Implications for Microfinance,” by Karlan and Zinman (2008). The first part will go through a simple model to motivate the paper’s approach. The second part asks you to interpret some results from the paper. You are welcome to work together, but remember that your answers must be in your own words.

1. Theory

Consider a consumer who earns income $y$ each month. She has to spend $c$ each month on essential goods, such as food and shelter. She has no access to reliable savings, so she must spend her entire income each month. The consumer is interested in taking a loan to finance a large purchase. The cost of capital for banks is fixed at $\rho$ each month and the monthly interest rate charged to borrowers is $r$. Both $\rho$ and $r$ are equal to one plus the interest rate as we are used to seeing it – e.g., if a loan charges 5% monthly interest, then $r = 1.05$.

(a) What is the largest purchase that the consumer can make each month without borrowing?

(b) Let $L$ be the size of the loan taken by the consumer. Write down the zero profit condition for lenders (i.e., banks) and solve for $r$ (assume there is no risk of default and no fixed costs of lending).

(c) Assume that the borrower must repay the loan in a single payment after one month or in two equal payments after one month and after two months. The borrower can only use one month’s income for repayment, since they are unable to save. Write down the constraint that this implies for the amount loaned $L$. Would the borrower ever take a one month loan? Why or why not? Remember that the borrower must repay the loan (no default).

(d) For a two month loan, interest is charged after one month, then a payment $m$ is made, then interest is charged on the remaining amount after the second month, and a final payment of $m$ is made. Write down this process as an equation, remembering that the final payment must completely repay the loan, and solve for the payment $m$ in terms of $L$ and $\rho$.

(e) Write down the constraint that defines the largest $m$ the borrower can afford (again, she can only use one month’s income to pay $m$). Substitute for $m$ and figure out the largest loan that the borrower can take.

(f) Will the consumer ever want to take a loan now? How does the decision to borrow depend on $\rho$ (no need to solve explicitly)? How does the decision to borrow depend on $y$, $c$, and the size of the desired purchase?

(g) Imagine now that the borrower can take an even longer term loan. Do you think this would encourage or discourage borrowing? Why or why not? Would the amount borrowed be higher or lower?

(h) Briefly, describe something realistic that you could add to the model and explain how it might change the results.
2. Paper Interpretation

You can download the paper from the assignment page on the Stellar website.

(a) Briefly explain the two main questions that the authors try to answer in this paper.
(b) How do the authors attempt to answer these questions?
(c) Briefly summarize the authors’ findings. What explanations do they give for what they find? Pick one of the results and argue for which explanation you think is most important (the explanation you choose need not be mentioned in the paper).
(d) Do their findings align with the predictions of our model in part 1? Explain why or why not.
(e) Do you expect that loan duration would also affect demand for business/production loans? Why or why not?
(f) Is there any downside for banks if they offer longer term loans? Describe why or why not.