A Quantitative Theory of Installment Loans

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The installment plan was to consumer credit what the moving assembly line was to the automobile industry. Without it, today's trillion-dollar consumer credit industry would be inconceivable.

Lendol Calder, *Financing the American Dream*

An installment loan is a consumer loan wherein the borrower commits to repay the borrowed sum, including interest, in a finite number of equal monthly payments. It is clear from the quote above that this form of unsecured consumer credit was common in the United States. Despite installment loans' historical and worldwide prominence, the modern quantitative theory of defaultable consumer debt has not analyzed this form of borrowing. Is there a way to quantify the installment loan contract and account for all empirical regularities? The paper develops a model of consumer debt where the only borrowing instruments are loan contracts with Equated Monthly Installments (EMIs).

The paper applies the competitive theory of defaultable installment loans. An installment contract is defined by the size of the loan and the period over which it is to be repaid. Given the contract interest rate, these two characteristics determine the equal periodic payments associated with the loan. The loan comes with the creditor's commitment not to alter the interest rates, i.e., re-price the loan, as information is revealed over time. On the other hand, the loan comes with options on the borrower's side: The borrower can choose to pay more than the installment[1] or default. The core of the theory of installment loans is the zero-profit pricing equation for a loan.

Further, the paper also seeks to quantify the above structure of the model using data from consumer credit market in India. To do this, the authors rely on a widely used large-scale survey of Indian households to obtain information on the time variation in household-level incomes and the frequency of household borrowings. In addition, the sample of EMIs is extended by two nonbank financial companies (NBFCs) and used to estimate the average loan-to-income ratio, as well as default and prepayment frequencies on EMI loans.

In the balance of the paper, the authors do three things. First, they examine the menu structure of interest rates implied by the model. They find that interest rates rise with the loan size and fall with the income but have a non-monotonic relationship with maturity. Second, they study why households borrow in the model. They find that neither precautionary balances nor debt can arise due to consumption smoothing in the face of income shocks. Households often save when their incomes are high but these savings — which earn a low rate of interest – are quickly depleted when incomes are low. Consequently, the long-run precautionary balances are effectively zero. Finally, they provide a rationale for the ubiquitous presence of prepayment penalties in the EMI market. Pre-payment penalties mitigate the adverse selection of potential defaulters into the borrower pool by reducing incentives for the pre-payers to close a loan early, thereby improving welfare.

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[1]End the loan before its contracted maturity date