ADVERSE SELECTION ON MATURITY: EVIDENCE FROM ON-LINE CONSUMER CREDIT

By Hertzberg, Liberman, Paravisini

Discussion by
Adair Morse, UC Berkeley

NBER Summer 2015 Household Finance

Contribution

- Loan Maturity Choice by consumers can be a screening device

- Idea: Borrowers selecting short term loans have lower income risk
  - An established literature on firms:
    - Taking of ST debt signals low LT income risk
  - But households are different… placement of this study

- The empirical result is strong, super (show more).
  - My comments are mainly about the interpretation/ theory / placement of contribution
  - Theme of comments: I think the paper is clouded a bit in firm-like interpretation, but these are households

Authors' Framing of Results

- Finding:

"…borrowers who choose the short maturity loan when the long maturity loan is available default less…"

- Interpretation

"Borrowers who have a privately observed lower willingness or ability to repay in the future select into long maturity loans."

- Ruling out constrained borrower selection:

"Borrowers who self-select into the long maturity loans are unconstrained in the short run but exhibit worse repayment behavior in the future."

Authors' Framing of Results

- Adamant that the selection is not about constraints and larger installment amounts (for ST) forcing the ex ante borrowers (those without a LT option) into default

- Their supporting evidence for this claim:
  1. Not higher early prepayments: Authors don't think about variance in income risk and distribution of borrowers.
  2. Takes time to default and constrained would default soon.
  3. Difference in installment payments between LT and ST is $200 per month. $200 is unlikely to constrain borrowers who have $6000 in unused credit

Maturity versus payments

- My view:
  - **Selecting Maturity is a reduced form for the Selecting Installment Payments**

- What goes into payment amount: rates, size of loan, maturity
  - Rates: Evidence shows people don't select maturity based on rates
    - Atanassio, et al (2008), survey work before then
  - Size of the loan… here, pretty fixed… let's see:

- Some data…

Lending Club Stats from Morse (2015, Annual Review of F.E.)

Census Income Quintile	Annual Income	Loan Amount	Interest Rate	Term Months	Loan-to-Income	Payment-to-Income	Count	% of Sample
1st	19,944	4,722	18.1%	36.2	0.237	0.100	423	1.9%
2nd	32,425	8,478	16.0%	36.8	0.261	0.107	2,464	10.9%
3rd	50,314	13,206	14.8%	40.8	0.262	0.097	7,694	33.9%
4th	80,216	17,636	13.6%	42.2	0.220	0.078	8,158	35.9%
5th	148,303	21,305	12.4%	42.1	0.144	0.050	3,968	17.5%
Total	75,674	15,542	14.1%	41.0	0.205	0.075	22,707	100.0%

Take Away 1: These are large, expensive debt-to-income loans.
Take Away 2: The borrowers are not low income.

Lending Club Stats from Morse (2015, Annual Review of F.E.)

Type of Loan	Annual Income	Loan Amount	Interest Rate	Term Months	Count	% of Sample	Payments
Car	65,993	8,556	0.134	39.2	185	0.8%	$267.29
Credit Card	74,017	15,406	0.134	39.8	5,680	25.0%	$475.58
Debt Consolidation	75,468	16,350	0.141	41.6	13,797	60.8%	$492.27
Home Improvement	87,893	15,056	0.129	41.8	1,120	4.9%	$444.33
House	82,617	16,912	0.139	41.7	138	0.6%	$506.25
Major Purchase	78,365	9,740	0.129	39.4	443	2.0%	$301.56
Medical	73,325	8,375	0.191	38.0	122	0.5%	$289.11
Moving	76,911	8,325	0.193	37.6	73	0.3%	$290.08
Other	68,913	9,702	0.197	40.0	696	3.1%	$324.56
Renewable Energy	99,977	12,602	0.194	42.5	11	0.0%	$401.91
Small Business	92,278	17,023	0.193	40.9	253	1.1%	$557.48
Vacation	63,913	6,003	0.190	36.9	55	0.2%	$211.76
Wedding	70,315	11,703	0.194	39.4	134	0.6%	$394.56
Total	75,674	15,542	0.141	41.0	22,707	100.0%	$473.86

Take Away 3: These loans are overwhelmingly debt consolidations (credit card debt generally). Thus, the borrower is not credit capacity constrained at the moment after the loan.

Survey of Consumer Finance Stats from Morse (2015)

Income Quintile	Mean Consumer Debt	Percent with No Borrowing	Debt Condi-tional on Borrowing	Household Income	Debt-to-Income
1st	7,968	52.4%	15,194	14,908	0.575
2nd	9,458	43.6%	21,702	31,358	0.306
3rd	16,777	30.0%	55,923	49,985	0.339
4th	22,198	22.6%	98,438	78,977	0.280
5th	35,351	33.0%	107,058	247,445	0.204
Average	17,208	37.5%	45,839	75,631	0.361

But….

	Education Loans	Vehicle Loans	Credit Card Debt	Line of Credit	Other Loans	Total Consumer Debt
Average	4,833	3,938	2,650	4,506	1,281	17,208

Take Away 4: The LC people consolidating $15k are extremely heavy on high-cost debt relative to the population

Lending Club Stats from Morse (2015, Annual Review of F.E.)

Type of Loan	Annual Income	Loan Amount	Interest Rate	Term Months	Count	% of Sample	Payments
Car	65,993	8,556	0.134	39.2	185	0.8%	$267.29
Credit Card	74,017	15,406	0.134	39.8	5,680	25.0%	$475.58
Debt Consolidation	75,468	16,350	0.141	41.6	13,797	60.8%	$492.27
Home Improvement	87,893	15,056	0.129	41.8	1,120	4.9%	$444.33
House	82,617	16,912	0.139	41.7	138	0.6%	$506.25
Major Purchase	78,365	9,740	0.129	39.4	443	2.0%	$301.56
Medical	73,325	8,375	0.191	38.0	122	0.5%	$289.11
Moving	76,911	8,325	0.193	37.6	73	0.3%	$290.08
Other	68,913	9,702	0.197	40.0	696	3.1%	$324.56
Renewable Energy	99,977	12,602	0.194	42.5	11	0.0%	$401.91
Small Business	92,278	17,023	0.193	40.9	253	1.1%	$557.48
Vacation	63,913	6,003	0.190	36.9	55	0.2%	$211.76
Wedding	70,315	11,703	0.194	39.4	134	0.6%	$394.56
Total	75,674	15,542	0.141	41.0	22,707	100.0%	$473.86

Take Away 5: Payments are about $480 per month. Is that constraining?

Consumer Expenditure Survey: Household Budget Share for Consumption Goods	
Clothing / Jewelry	0.033
Housing	0.191
Food at home	0.268
Food away	0.046
Alcohol/ Tobacco	0.021
Personal Care	0.009
Communication & Media	0.040
Entertainment Services	0.026
Utilities	0.061
Other Transportation	0.097
Health & Education	0.073
Other Non-durable	0.028
Home Furnishings	0.062
Entertainment Durables	0.004
Vehicles	0.041
Sum of yellow	0690

- Is $480 in monthly payments large relative to a $70,000 income?
- First, taxes. Assume 25%
  - Leaves $4400 per month
- Let's look at household budget shares
  - (table from Bertrand & Morse (2014))
  - Minimum of 69% absorbed by relatively inflexible items. Maybe 79%.
  - Leaves $900-$1300 in disposable income per month.
  - Is $480 constraining? Yes
  - Is $200 more or less relevant? Sure

So what is default for LC borrowers?

- People have credit capacity slack, but little disposable income breathing room

- Default =

  (1) lose income

  (2) continually run a deficit, re-ramping up credit cards and eventually getting into trouble again

  - Very common in consumer finance data
  - Evidence: FICO scores decline on average, because of distribution skewing to the left.

Main Result

	(1)	(2)	(3)
	$default$	$default$	$FICO$
$D_{i,t}$	-0.0116***	-0.0103**	2.5122*
	(0.004)	(0.004)	(1.360)
Sample	MAIN	MAIN	MAIN
Observations	55,784	52,949	55,784
R^2	0.167	0.175	0.308
# clusters	25	25	25

Wish List:
Show More to characterize. It's very interesting and important to understand how people manage their way out of high debt. (Bhutta, Skiba, Tobacman (2015))

- Who selections into LT: Those knowing (likely the interaction):
  - They just make-the-ends-meet each month
  - They face income risk.
- This is fine for the authors (and a super contribution), but changes the nature of the contribution:
  1. Existing literature on this
  2. Theory contribution?

Literature that payments matter

- How payment sizes affect performance: Willen (2013), Fuster and Willen (2013), Di Maggio, Kermani, and Ramcharan (2014) but Dobbie Song (2015)

- Not having enough money to handle shocks: Lusardi Tufano (2011)
- What people do with windfalls vis-à-vis expensive debt: Agrawal Liu Souleles (2007) and Bertrand and Morse (2009) building off: Gross and Souleles (2002), Johnson, Parker, and Souleles (2006)
- How rules/choices of loan size map to default: Dobbie Skiba (2012)
- Loan performance and credit scoring of those selecting downpayments (remove financial slack = signal low income risk or some liquidity slack)
  - Einav, Jenkins, Levin (2012, 2013), Adams, Einav, Levin (2009)

- Admittedly, most above are about subprime, but aren't these borrowers in this study "middle income subprime"?

Theory Contributions

- Contributions:

1. Loan maturity can be used to screen borrowers: we expect borrowers with lower creditworthiness to self select into long maturity loans.
2. Maturity rather than loan size will be the optimal screening device when information signals are increasing in the time from origination.

Two terminology points:

- Creditworthiness means income risk.
- “Signals are increasing” means that the observable signal comes later. Not repeated signal inference.

Theory Contribution 1: Prediction that short term selection signals lower income risk

- The authors are a bit too quick to dismiss the prior literature, saying Flannery (1986) is about transaction costs and Diamond (1991) is about increased chance of firm liquidation

  - In both of these models, driving issue is the asymmetric information of income risk causing a mid-term risk of not being able to refinance debt to match LT cash flows.

  - In Flannery: market knows those with confidence about refinancing can signal with short term selection and will price higher default premia to those who select into longer contract
  - In Diamond, costly signal of taking a short term contract is the risk of loss of control

Theory Contribution 1: Prediction that short term selection signals lower income risk

- The model here is also about income uncertainty
- Like prior paper, income is realized long term, and short term debt is refinanced at mid period to get to cash flows.
- Like Diamond, at midterm, those with a bad (medium) signal of income realization incur costly default (face expensive re-financing)

- So what is different from Diamond?

  1) In a firm, firm invests all immediately. Household borrowers have to consume now and later, but this does not matter here in results.

  2) Endogenizing debt amount (expected permanent consumption) choice.

Theory contribution 2: Amount of loan requested is not as good of a signal

- Amount of loan is less signal-informative
  - Sure… but in consumer credit, the loan amounts request comes from either:
    - Permanent income (more borrowing by those with highest future income)
    - Rational households with some reasonable probability of default should want to borrow more because the cost of bankruptcy is less than the cost of not consuming.
    - This does not map perfectly to the Stiglitz Weiss and follow-on literature because better types want to consume more today, dominating (?) price effect of signaling.

Empirical Comment
I am worried about Sample Selection

- Authors show that ST loan volume declines with introduction of LT offering
  - Previously the pool of ST borrowers included those wanting ST and LT loans.
- I understand why the authors want this, but isn't this a problem ST borrowers included those needing a LT loan in the period when LT loans were not offered by LC
  - Why did they not go elsewhere?
  - The ex ante mixture in ST perhaps includes those not using good judgement in taking the loan or those not eligible for other refinancing
  - The experiment may be sorting out a different bad type than the authors have in mind

Appendix: Seeing a menu

- Who sees the menu choices?
- Authors: No correlation between choice to see a menu and the borrowers default rate
  - Again, using the word creditworthiness strangely

- Don’t we want ex ante measures here
  - Surely visual of seeing the loan choice option and then the choice to go through a menu relates to other things
    - Behavioral
    - Media using to get loan (web versus app?)

  - A little quick to dismiss the selection of who pays attention to details.

Appendix: which comparison matters

- It would be informative to show 6-16 and 12-20 (or something like that)
- It would be nice to see the results separate for 5 credit grade mega buckets.
  - It's not the same as just putting in f.e.
  - Plus, I'd like to see where effect is.
  - Andres said it was high ex ante FICO score people
    - So among the best types, the credit grade find almost no default. That means that any default by these types show up as meaningful? Is that why?
- I think that I would do more with characterizing people in ST loans before and after by loan size bucket and maybe