The Impact of On-Bill Programs on Loan Performance

Evidence from the Green Jobs, Green New York Program

Jeff Deason

Goldman School of Public Policy, UC Berkeley

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Research question

Does a residential energy efficiency loan perform differently if placed on a utility bill?

Motivation

We're pushing forward with lots of on-bill programs, *in part* because we think they may have better loan performance - but we don't actually know whether this is true

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Cost-effectiveness test	less stringent	more stringent

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- Loans can transfer to a new owner and, in theory, survive foreclosure/bankruptcy
- Loan payments are *subordinate* to utility bill charges

Number of loans and raw 120-day default rates

	SE loans (default rate)	OBR loans (default rate)
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Means by loan type

	Amount	Date	Payment	Term	FICO	DTI
SEL	$9524	8/23/13	$79.33	159	746	0.341
OBRL	$10981	9/12/13	$80.41	175	751	0.328

	Tier 2	Gross Savings	Net Savings	AssistRate
SEL	11.9%	$936.52	$-15.44	31.4%
OBRL	9.6%	$1425.49	$460.56	25.1%

Econometric method

Survival analysis with a multistate Cox proportional hazards model

$$h_q(t) = h_{q0}(t)exp(\beta_q Z)$$

- t = time
- q indexes a "hazard" (default or prepayment)
- Z is a vector of covariates, including loan type
- $h_q(t)$ is the risk a current loan will default/be prepaid in period t
- $h_{q0}(t)$ is the "baseline hazard function"
- βs are estimated from the data

Regression results: Excluding DPAs

	Default		Prepayment	
	HazRatio	P-value	HazRatio	P-value
OBRL	2.054	0.009	1.314	0.128
Loan Amount	1.000	0.450	1.000	0.000
Loan Date	0.997	0.000	0.997	0.000
Loan Term	1.006	0.196	0.995	0.002
Credit Score	0.987	0.000	1.006	0.002
DTI	0.995	0.967	0.288	0.013
Tier 2	0.594	0.118	1.380	0.287
Projected Dollar Savings	1.000	0.617	1.000	0.284
Assisted Rate	3.024	0.000	0.821	0.256

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Loan Amount	1.000	0.410	1.000	0.000
Loan Date	0.997	0.000	0.997	0.000
Loan Term	1.010	0.175	0.999	0.856
Credit Score	0.982	0.000	1.002	0.326
DTI	0.884	0.840	0.717	0.571
Tier 2	0.664	0.318	0.946	0.883
Projected Dollar Savings	1.000	0.343	1.000	0.243
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- How much difference should we expect $13/month to make?

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- On-bill arrangements are bad in general

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For on-bill programs:

- Beware - and screen for - DPAs
- Avoid subordination
- Make sure utilities have incentive to respond to non-payment, or give that role to someone else
- Be skeptical of the ultimate impact of OBR on loan performance, even if you get all this right

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- We can learn things from even a few years of loan data: loan-level data are powerful
- We need more comparative studies of program design