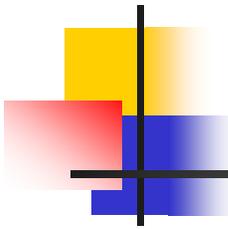


Rationality, Revolving, and Rewards

Revolving Behavior on New Credit Cards

Howard Beales
Lacey L. Plache



Behavioral Economics

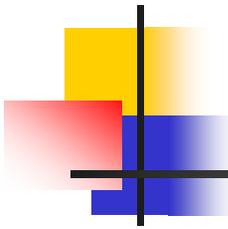
Hypotheses

- Rewards cards should increase the probability of revolving.
- The probability of revolving should increase over time.
- Cards with no annual fee should increase the probability of revolving.



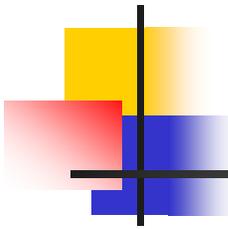
Rational Choice Hypotheses

- Consumers should be less likely to revolve on a rewards card
- Consumers who carry a balance should pay it off over time
- Consumers should be less likely to revolve on a card with no annual fee



Data – Payment System Panel Study

- Survey commissioned by Visa USA
- Nationally representative sample
- Eligibility:
 - At least 18
 - Household Income > \$10,000
 - At least one payment card
- Surveyed Quarterly
- Data from 1994 - 2003



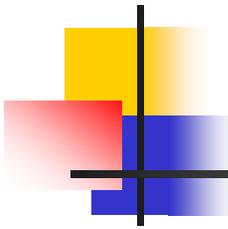
Data – Payment System Panel Study – Available Data

- Card Data for each payment card
 - Rewards Feature
 - APR
 - Annual Fee
- Demographic Data
- Purchase Diary



The Sample

- Consumers who acquired a new card in any quarter
- Prior revolving status requires data on at least one of the two prior quarters
- Considered a revolver if there was a balance on *any* card in *either* of the two prior quarters



The Sample

■ Rewards Cards

- 4,789 total cards
- 26% with data eight quarters after acquisition
- 16,076 observations

■ All Cards

- 12,536 total cards
- 28% with data eight quarters after acquisition
- 45,062 observations

Does acquiring a new rewards card change behavior?

Behavior
Before Acquisition

Behavior
After Acquisition

Non-revolvers
43%

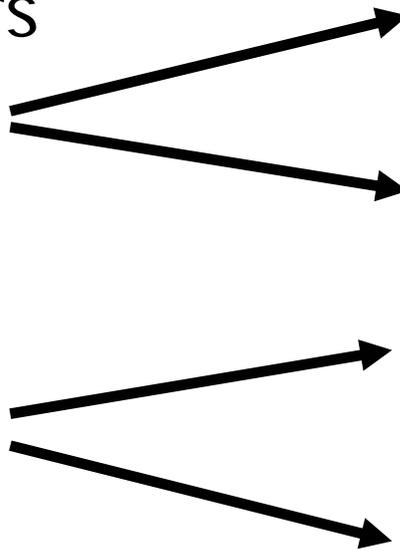
Don't Revolve

Revolve

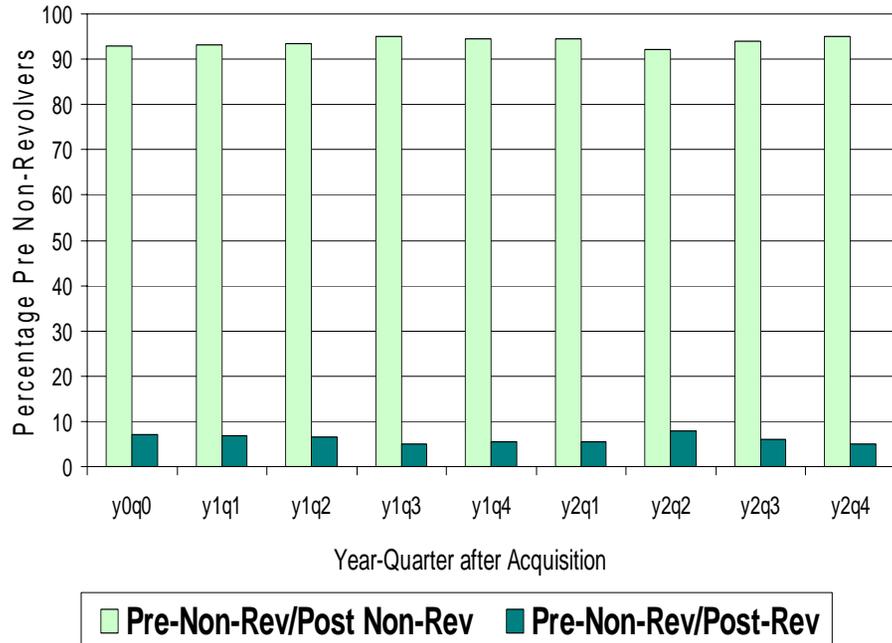
Revolvers
57%

Revolve

Don't Revolve

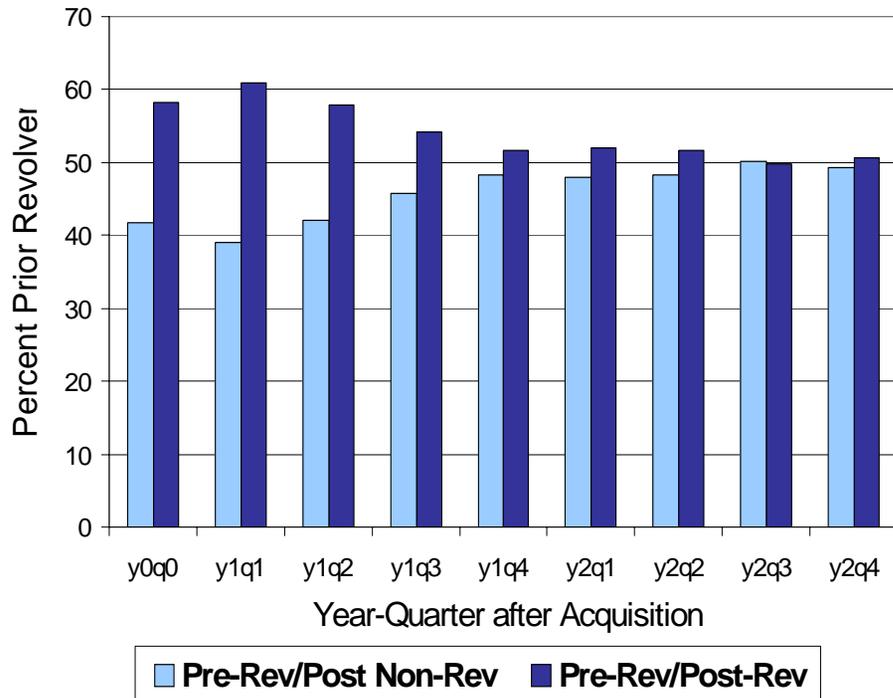


Prior Non-revolvers with a new rewards card



- Very unlikely to revolve on a new rewards card
- 92% do not revolve in Q1 after card acquisition
- Revolving behavior ebbs over time
- 95% are not revolving two years later

Prior Revolvers with a new rewards card

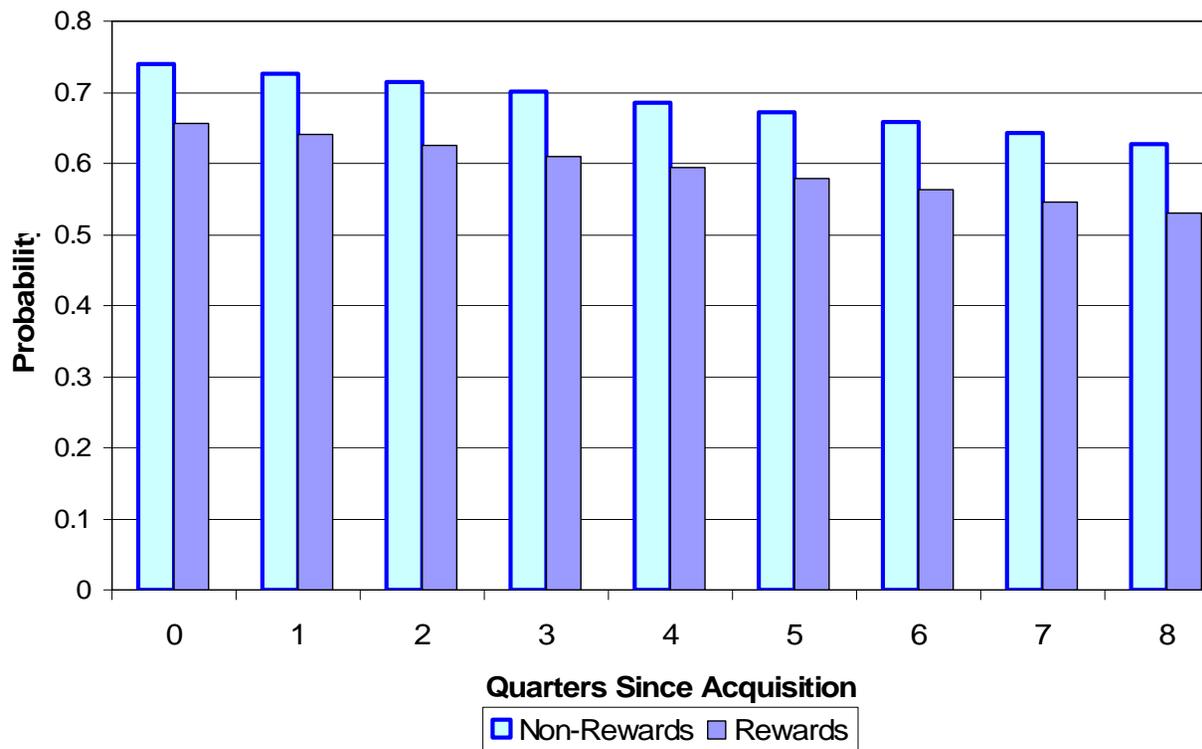


- Pre-period revolvers are more likely to revolve.
- 58% will revolve on a new rewards card in Q1.
- Revolving behavior *declines* over time.
- Two years later, only 50% are revolving.

Effect of Card Features on the Probability of Revolving

		Rewards Cards Only			All Cards		
<u>Explanatory Variable</u>		Coefficient	Std. Error		Coefficient	Std. Error	
	Intercept	-0.5664	0.1291	***	-0.4318	0.0735	***
	Pre-Revolver	2.581	0.0511	***	2.5442	0.0314	***
	Quarters Since Acquisition	-0.0351	0.0076	***	-0.0657	0.0044	***
<u>Card Features</u>							
	Rewards Card				-0.4019	0.0256	***
	APR	-0.0329	0.0036	***	-0.0175	0.002	***
	Annual Fee <\$20	0.5075	0.1164	***	0.6452	0.0738	***
	Annual Fee >=\$20	0.4262	0.0731	***	0.8846	0.0457	***

Calculated Probability of Revolving After Acquisition



Behavioral Economics vs. Rational Choice

■ Behavioral Economics

- More Revolving on Rewards Cards
- More Revolving over time
- More revolving with no annual fee

■ Rational Choice Economics

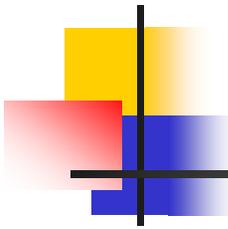
- Less Revolving on Rewards Cards
- Less Revolving over time
- Less Revolving with no annual fee

Demographic Variables and the Probability of Revolving

		Rewards Cards Only			All Cards		
<u>Demographic Variables</u>		Coefficient	Std. Error		Coefficient	Std. Error	
	Income Quintile	-0.3004	0.0197	***	-0.2434	0.0112	***
	Total Spending	-0.0143	0.0062	**	-0.0132	0.0035	***
	Household Size	0.0914	0.017	***	0.0899	0.0099	***
	Homeowner	-0.3218	0.0523	***	-0.1424	0.0283	***
	Age	-0.00334	0.0019	*	-0.00676	0.0011	***
<u>Quarter to Quarter Changes in Demographics</u>							
	Bought First House	0.4469	0.181	**	0.1466	0.0934	
	Household Size Decreased	-0.1661	0.1288		-0.2292	0.0707	***
	Household Size Increased	0.3572	0.1674	**	0.0128	0.0914	

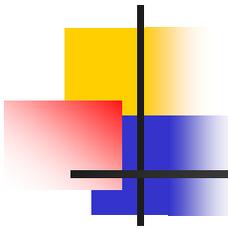
Employment Variables and the Probability of Revolving

	Rewards Cards Only			All Cards		
Employment variables	Coefficient	Std. Error		Coefficient	Std. Error	
Respondent Part Time Employed	-0.2298	0.067	***	-0.1176	0.038	***
Respondent Retired	-0.2019	0.079	**	-0.0946	0.046	**
Respondent Not Employed	0.0755	0.069		-0.0213	0.04	
Other Adult Full Time Employed	0.1163	0.054	**	0.0875	0.03	***
Other Adult Part Time Employed	-0.3043	0.081	***	-0.3315	0.046	***
Other Adult Retired	-0.2926	0.084	***	-0.1529	0.05	***
Other Adult Not Employed	-0.2134	0.087	**	-0.2489	0.048	***



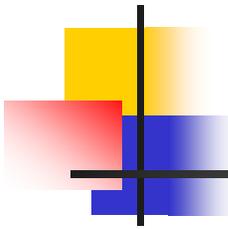
Sensitivity Tests of the Basic Results

- Rewards and Quarters Interaction
 - Positive, but not statistically significant.
 - No significant changes in key results.
- Rewards and Prior Status Interaction
 - Positive, but not statistically significant.
 - No significant changes in key results.



Sensitivity Tests of the Basic Results

- Dummy variables for each quarter
 - First quarter dummy is positive and significant.
 - Second quarter is negative, not significant.
 - Subsequent quarters all negative and significant.
 - Overall pattern is negative. Linear regression on coefficients is negative and significant.



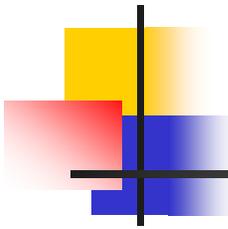
Sensitivity Tests of the Basic Results

- “Reduced Form”
 - Only prior revolving status, quarters, and card features included
 - Essential results unchanged:
 - Less likely to revolve on a rewards card
 - Less likely to revolve the longer they’ve had the card
 - Less likely to revolve on no annual fee card

Predicting the Size of the Balance

	Rewards Cards Only			All Cards		
<u>Explanatory Variable</u>	Coefficient	Std. Error		Coefficient	Std. Error	
Pre-Revolver	2.5883	0.051	***	2.5151	0.031	***
Quarters Since Acquisition	-0.0204	0.007	***	-0.0324	0.004	***
<u>Card Features</u>						
Rewards Card				-0.375	0.023	***
APR	-0.0445	0.003	***	-0.0384	0.002	***
Annual Fee <\$20	0.4176	0.099	***	0.3058	0.057	***
Annual Fee >=\$20	0.418	0.065	***	0.2965	0.035	***

Note: Models also include demographic variables used in logistic regressions.



Conclusions

- Consumers are *less* likely to revolve on a rewards card than another new card.
- The longer they have a card, the *less* likely consumers are to revolve.
- Consumers are *less* likely to revolve on a card with no annual fee.