

Payment Card Rewards Programs and Consumer Payment Choice

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Motivation

- **Rewards are a key part of competition in payment card systems**
- **Policy relevance**
 - **efficiency of payments system**
 - **equality among consumers**
- **Lack of good empirical results**

Objective

Examine the effects of rewards programs on consumer payment choice of payment methods for in-store transactions

- (1) Estimate a multinomial logit model that explains consumer's most preferred payment method at a given retail type**
- (2) Simulate policies that remove rewards from payment cards**

Data

2005/2006 Study of Consumer Payment Preferences by ABA and Dove Consulting

- 3008 responses → 1979 observations
- Higher educational level and higher income
- Contains rich information on consumer payments
 - whether receive rewards on credit/debit card
 - how many times each payment method used
 - most frequently used method by retail type
 - perceptions toward each payment method
 - which payment method is accepted by retail type

Data

Table I: Reward card holders

	Sample size	Percent of sample	Percent of reward holders
Rewards card holders	721	36.43	
Reward credit	634	32.03	87.93
Reward debit	269	13.59	37.31
Reward PIN debit	131	6.62	18.17
Reward signature debit	242	12.28	33.56
Reward credit & debit	182	9.20	25.24

Data

Table II: Consumer perceived payment method attributes (Attitudinal data)

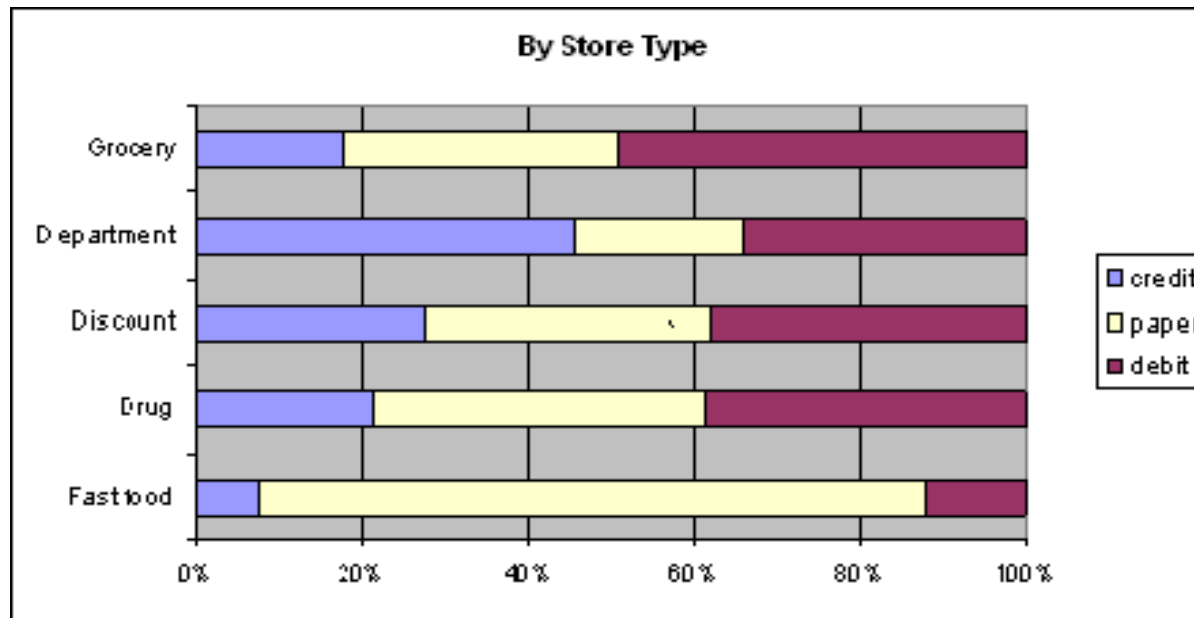
Rewards credit/signature debit card holders perceive credit/signature debit cards more positively

Table III: Consumer perceived payment method acceptance

- **Cash is most widely accepted**
- **Credit card is more widely accepted than signature debit**
- **PIN debit is more widely accepted than signature debit**

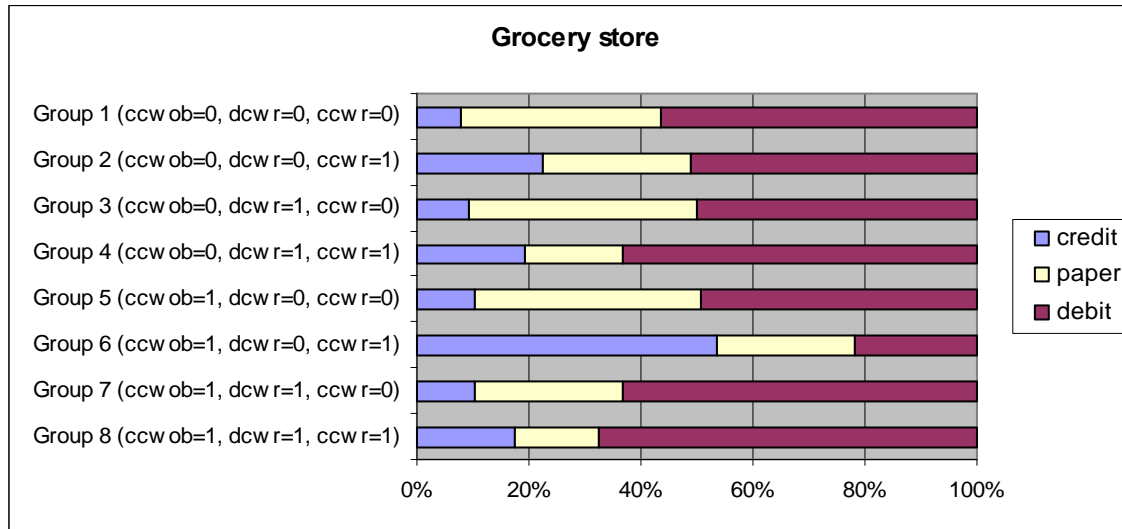
Data

Figure I (A): Share of most frequently used method by retail type



Data

Figure I (B): Share of most frequently used method by consumer group



ccwob=1, if consumers do not carry a credit card balance

dcwr=1, if consumers receive debit card rewards (either PIN, signature, or both)

ccwr=1, if consumers receive credit card rewards.

Model and Econometric Issue

- **Multinomial logit model that explains the most frequently used method by retail type.**

- **Utility to consumer i from using method j at type h**

$$U_{ijh} = \alpha_{jh} + X_i \beta_{jh} + C_{ij} \delta_{jh} + \varepsilon_{ijh} + e_{ijh}$$

- **X-consumer characteristics; C-rewards dummies; ε -unobserved preferences; e-measurement error.**
- **But C and ε are likely positively correlated.**
 - **The decision to obtain a reward card could be endogenous: consumers who have good perception about payment cards are more likely to have rewards cards.**
 - **Rewards may induce consumers to use the card more often and as a result the consumers learn about the card and improve their perception toward the card.**

Model and Econometric Issue

- To handle this positive correlation, we use data on individual consumer's perception toward each payment method (Z), which allows us to control the unobserved consumer heterogeneity in preference (ϵ) [Harris and Keane, 1999]

$$U_{ijh} = \alpha_{jh} + X_i \beta_{jh} + C_{ij} \delta_{jh} + Z_{ij} \gamma_h + e_{ijh}$$

- We also control for the heterogeneity in consumer's payment choice set.

Regression Results

Table IV: Log-likelihood

Specification	1	2	3	4
Perception	no	yes	no	yes
Choice set	homogeneous		heterogeneous	
Grocery	-2570.88	-1650.80	-2008.14	-1369.60
Department	-2266.67	-1637.62	-1733.26	-1336.83
Discount	-2487.85	-1885.18	-1631.47	-1278.67
Drug	-2559.81	-1856.88	-1883.21	-1479.99
Fast food	-1242.72	-1010.97	-800.77	-682.24

Regression Results

Table V: Coefficients for reward dummies
Grocery

Specification	1	2	3	4
Perception	No	Yes	No	Yes
Credit rewards	1.632*** (0.145)	1.013*** (0.174)	1.579*** (0.159)	1.019*** (0.192)
Pin Debit rewards	0.563*** (0.201)	0.150 (0.237)	0.452** (0.225)	0.085 (0.253)
Sig. Debit rewards	1.626*** (0.174)	1.187*** (0.208)	1.507*** (0.199)	1.092*** (0.231)
Zero balance	0.800*** (0.147)	0.516*** (0.175)	0.847*** (0.161)	0.558*** (0.191)

Figure II: Effect of removing credit card rewards based on specification 4

G-Grocery; De-Department; Di-Discount; Dr-Drug; F-Fast Food.

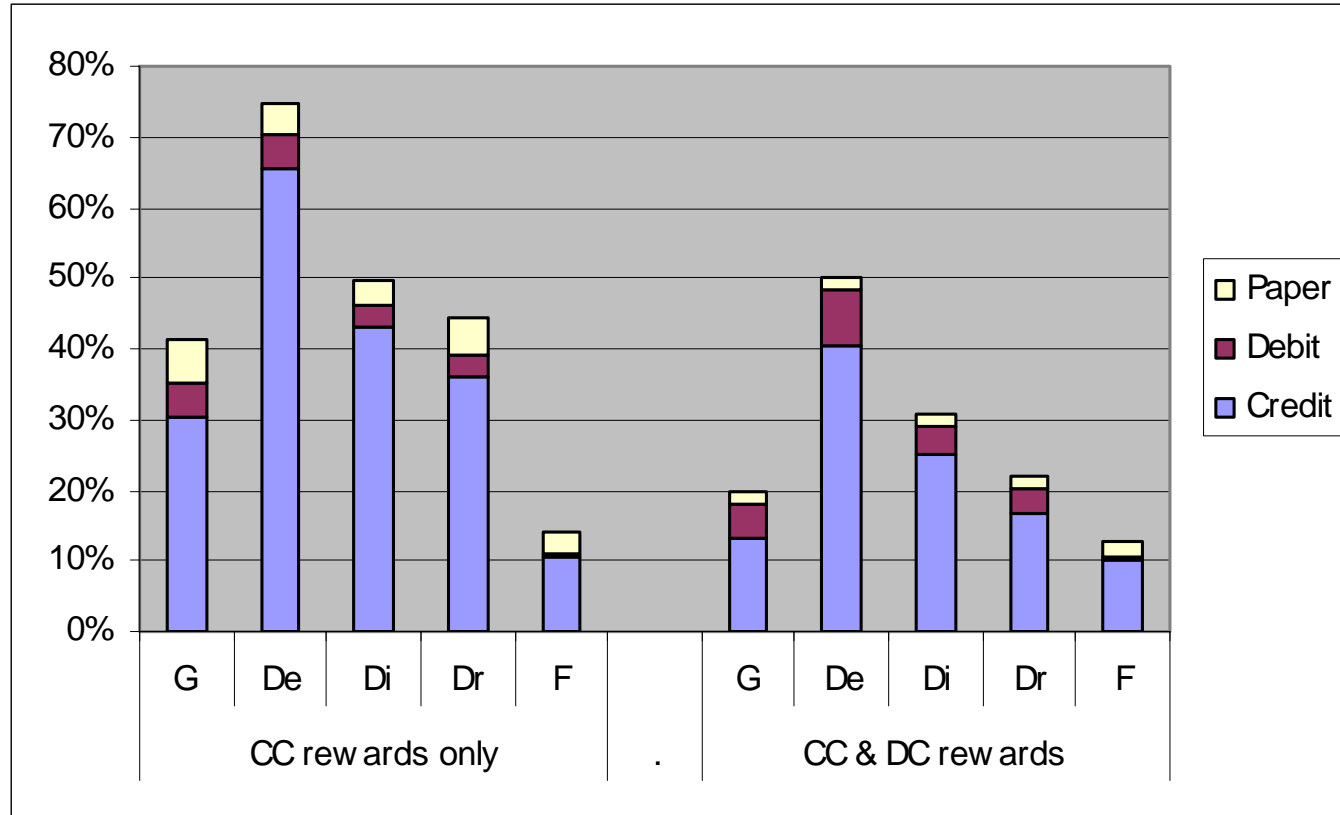


Figure III: Effects of removing credit card rewards based on specification 3 (without perception variables)

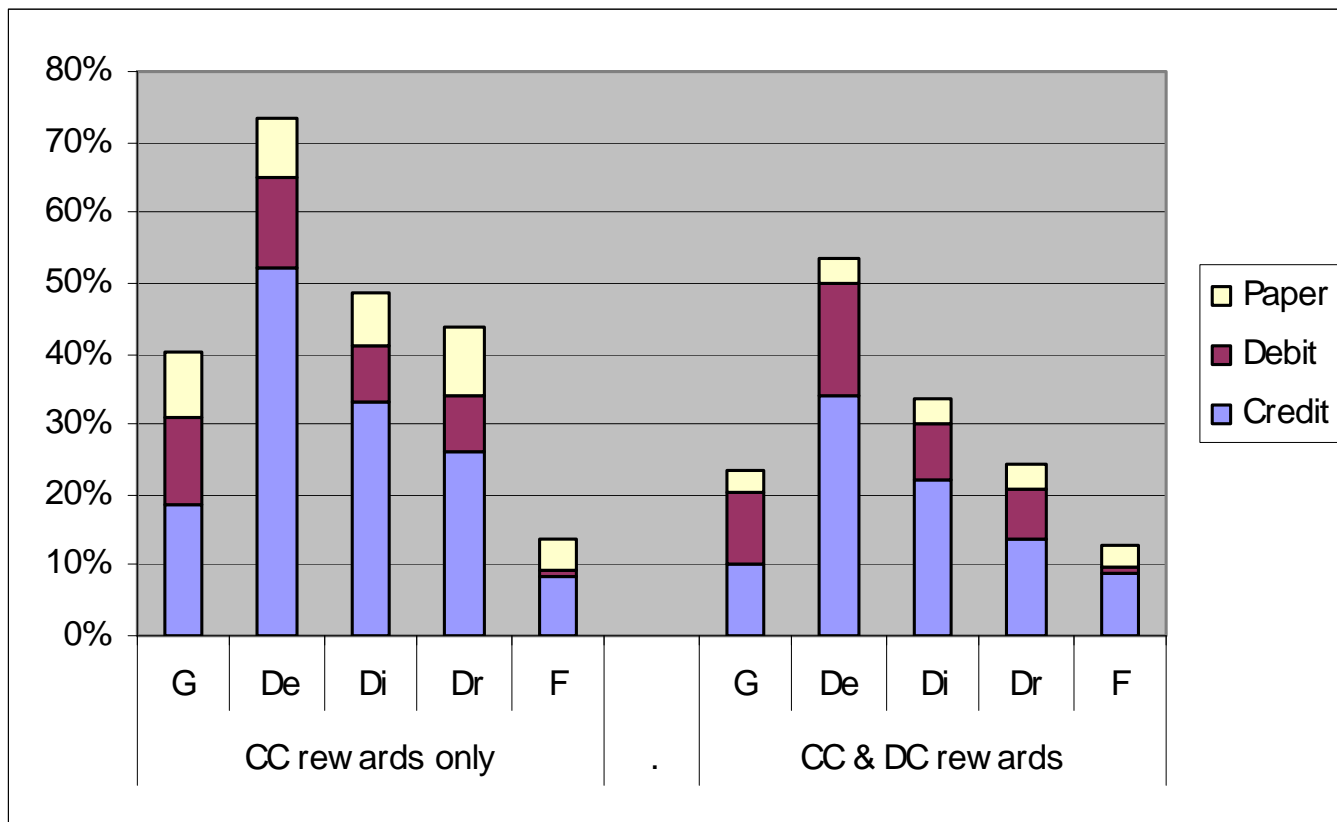
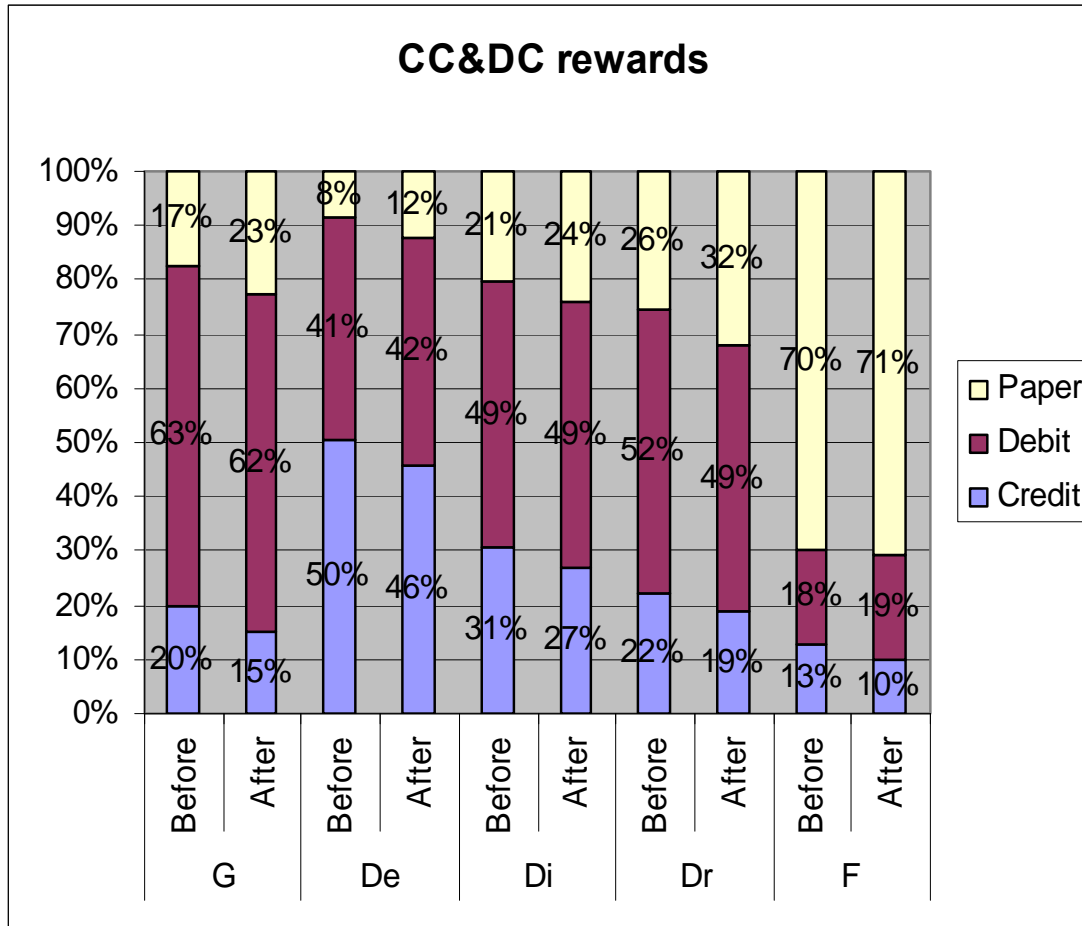


Figure V: The Effects of Removing Rewards on Consumers with Credit and Debit Rewards



Simulation Results

- **Reward cardholders reduce the probability of choosing payment cards.**
- **Percentage point reductions vary across retail types.**
- **Overall, the reductions are moderate → the majority of reward card transactions are replaced by non-reward card transactions.**

Simulation Results

Overall effects:

The change in share of certain payment methods at a given type of stores, assuming all consumers make the same number of transactions

	Policy 1: Removing Credit Rewards			Policy 2: Removing CC&DC Rewards		
	Credit	Debit	Paper	Credit	Debit	Paper
Grocery	-3.25	1.60	1.65	-3.00	0.86	2.14
Department	-3.12	1.93	1.18	-2.42	0.98	1.44
Discount	-2.02	1.00	1.02	-1.83	0.60	1.23
Drug	-2.43	0.99	1.44	-2.17	0.12	2.04
Fast food	-1.01	0.16	0.85	-1.03	0.27	0.75

Simulation Results

- **Overall, the share of paper-based methods would slightly increase (at most 2 to 3 percentage points)**
- **But the actual impact might be even smaller because our sample excludes consumers w/o a bank account, credit card, or debit card.**

Conclusion

- (1) Controlling for consumer heterogeneity in preferences and choice sets significantly improves the fit of our model, and allows us to alleviate the endogeneity problem of rewards.**
- (2) Removing rewards today would only cause a small percentage of consumers switching from electronic payment methods to paper-based methods and the increase in share of paper-based transactions at a given type of store is likely quite small (consistent with Australia's experience).**
- (3) But, we do not claim that the indirect effect of rewards is small.**

Data Table II: Consumer perceived payment method attributes

Attributes	Credit		PIN-debit		Signature-debit	
	w' reward	w/o reward	w' reward	w/o reward	w' reward	w/o reward
Comfortable (0-5)	4.49	3.74	4.18	3.45	4.43	3.27
Fast (0-5)	4.13	3.66	3.99	3.29	4.03	2.98
Convenient	0.82	0.61	0.54	0.57	0.61	0.44
Easy to use	0.84	0.61	0.55	0.55	0.62	0.44
Preferred by stores	0.65	0.54	0.38	0.41	0.43	0.30
Safe	0.54	0.33	0.39	0.38	0.46	0.28
M-taken right away	0.12	0.13	0.72	0.75	0.58	0.48
Helps me budget	0.27	0.14	0.50	0.43	0.50	0.31
For small amounts	0.14	0.10	0.29	0.28	0.27	0.18
Control	0.39	0.18	0.51	0.47	0.53	0.35
Easy-to-get refund	0.80	0.59	0.33	0.41	0.53	0.34

Data Table III: Consumer perceived acceptance

	Cash	Check	Credit	PIN-debit	Signature-debit
Grocery	89.3	77.0	81.0	81.6	58.1
Department	84.9	72.3	90.3	64.7	60.2
Discount	85.3	64.9	74.0	63.4	44.1
Drug	88.8	65.8	81.6	67.9	52.8
Fast food	96.1	11.2	55.5	35.7	34.1

Simulation Results

Removing rewards from credit cards (policy 1) or credit & debit cards (**policy 2**)

