

The Impact of Wealth on Inattention: Evidence from Credit Card Repayments

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Inattention

- **Standard Model:**
 - Agents make use of ALL AVAILABLE Information
 - Critique: Herb Simon (QJE, 1955)
- **Inattention (Supply of Attention is limited)**
 1. Agents neglect to fully utilize all available information
 2. Costly

Inattention – Finance Literature

- Huberman and Regev (JF, 2003)
 - Front page vs. Inside page of NY Times
- DellaVigna and Pollet (AER, 2007)
 - Stocks inattentive to Demographics
- Barber and Odean (RFS, Forthcoming)
 - Attention grabbing stocks
- DellaVigna and Pollet (JF, Forthcoming)
 - Inattention on Fridays
- Abel, Eberly and Panageas (AER 2007)
 - Optimal Inattention – (check portfolio every 8 months).
- Peng & Xiong (JFE, 2006); Huang and Liu (JF, 2007); Gabaix et al (AER, 2006) etc.

THIS PAPER:
INATTENTIVE TO CREDIT CARD
REPAYMENTS

Delinquent (don't pay minimum monthly
balance)

BUT:

*At the same time have **sufficient deposits**
available to avoid these costs*

Contribution 1:

This Paper vs. Literature

1. Inattention Literature:

- Most studies on Financial Markets
- We examine **Consumer Finance**

2. Consumer Finance Literature

- Impact of Wealth on Various Mistakes
- We examine **Inattention**

Contribution 2:

Behavioral Economics Theory Cannot Predict if Rich or Poor
More Inattentive – Need Evidence

Psychological explanations for Inattention

– DellaVigna, 2008 JEL Lit Survey: Psych and Econ

1. Number of Competing Stimuli
2. Salience of the Decision

Existing Theory Cannot Make Predictions on
impact of Wealth on Inattention

Are Rich or Poor more Inattentive?

1. Competing Stimuli

- Either Rich or Poor can face competing demands on limited supplies of attention.
- Both have limited supplies of attention in the face of competing demands (stimuli).

2. Salience

Rich care less about small dollar cost of penalty fee (\$30-\$50) – but rich could care more about FICO

We Provide First Data on This Issue

Data

This Paper Links 3 Data Bases

- 1. Monthly Credit Card Account Data from Canadian FI (Financial Mistakes)**
 - Unique Data base ~1 million data points
 - 19 Months, 75 000 Individuals, 2004-2006
- 2. Canadian Census Data by *Postal Code***
(Components of Wealth etc)
- 3. Land Title Registry – Residential Property Prices by *Postal Code***

Identifying Inattention

(Dependant Variables)

Costs of C. Card Delinquency (Payment not on Time)

1. Five Months Delinquent – Card Withdrawn
2. Negative Impact on FICO (Credit Score)
3. Imposition of Penalty Fee (approx \$40)
 - Some US banks have Penalty Interest Rate
4. Bank communicates with all Delinquent Individuals to determine future default (Embarrassment Cost)

Simplest Definition of Inattention

Minimum Payment Due < Deposits Available

Will Incur Costs (FICO, Fees, Lost Card, embarrassment etc)

But: What if **deliberately** decide to incur these costs (FICO, Fees, Lost Card, embarrassment etc)

Motivations for *Deliberately* Incurring Delinq Costs

Why would agents deliberately hold onto deposits rather incur the costs of not paying credit card debt on time?

1. Agents Fear Being Budget Constrained in the Future – hold precautionary balances
2. Agents are Currently Budget Constrained – need deposits for current expenses

Precautionary Balances Against Future Budget Constraints

Why hold Precautionary Deposit Balances?

1. Volatility of Cash Flows (Stultz et al, 1999, 2007 Tsiang, 1969, Fusaro, 2008)
2. Upcoming Pre-committed Expenses (Telyukova, 2008, Telyukova and Wright, 2008)

New Definition of Inattention

Min Payment Due < (Deposits – *Preq Balances*)

Preq Balances = SUM of:

1. Volatility of Deposits (over 19 Months)
2. Pre-committed Expenses (average rental payments in post code area)

Currently Budget Constrained Individuals

Take out of Sample – may not be inattentive

1. Credit Card Balance/Limit Ratio

- Above 75% or 90%

2. Low Level of Deposits

- Bottom Quintile – Below \$240

Drop Constrained (Cont)

3. Low FICO

- Use bank benchmarks (620 and 560)

4. Repeated Delinquency

- Single Delinquent – More likely to be inattentive

5. Bankruptcy

- Drop individuals who went bankrupt or in Default

Average Delinquency when (Deposits > Balance Due). Alternative specifications for Precautionary Balances and Budget Constraints

1	(1)Definition of Precautionary Balances Standard Deviation of Deposits (2) Drop Budget Constrained Individuals None	4.1%
2	(1)Definition of Precautionary Balances Standard Deviation of Deposits and Average Rent in DA (2) Drop Budget Constrained Individuals None	2.6%
3	(1)Definition of Precautionary Balances Standard Deviation of Deposits (2) Drop Budget Constrained Individuals Low Deposits, Multiple Mistakes, FICO<620, Card balance/limit<75%	1.1%
4	(1)Definition of Precautionary Balances Standard Deviation of Deposits and Average Rent in DA (2) Drop Budget Constrained Individuals Low Deposits, Multiple Mistakes, FICO<620, Card balance/limit<75%	0.7%
5	(1)Definition of Precautionary Balances Standard Deviation of Deposits and Average Rent in DA (2) Drop Budget Constrained Individuals Low Deposits, Multiple Mistakes, FICO<620, Card balance/limit<90%	0.7%
6	(1)Definition of Precautionary Balances Standard Deviation of Deposits and Average Rent in DA (2) Drop Budget Constrained Individuals Low Deposits, Multiple Mistakes, FICO<560, Card balance/limit<90%	0.7%

INDEPENDENT VARIABLES

WEALTH MEASURES

1. Government Income as % of Total
2. Business and Investment Income
3. Rent/Own Status
4. Residential Property Value
5. Credit Limit

OTHER

- Age, Education, etc

Database Matching and Minimum Geographic Size

Three Database	Variables	Minimum Geographic Size	Match By
1. Individual Credit Card Accounts (from Bank)	<ol style="list-style-type: none">1. Credit Card Mistakes2. FICO3. Credit Limit4. Card Type	Individual with known Postal Code (20 households)	Postal Code to Dissemination Area Conversion File
2. Statistics Canada Census Data	<ol style="list-style-type: none">1. Income from Business and Investments2. Income from Government Sources3. Rent/Own	Dissemination Area (DA) (Approx 200 Households)	Dissemination Area
3. Land Title Registry (Provincial Government)	<ol style="list-style-type: none">1. Prices of Residential Properties Sold2. Date of Sale	Postal Code, but aggregate up to DA to ensure enough transactions.	Postal Code to Dissemination Area Conversion File

Postal Code and Census Data

- Canada has six digit vs. US five digit
- US: ZIP Code ~ **10 000** people
- Canada: Post Code ~ **500** people
(**200** Households)

Full Census Definitions:

1. **Business and Investment Income**

- Dividends, interest on bonds, deposits and savings certificates, and other investment income, income from unincorporated business and/or professional practice and farms, retirement pensions, superannuation and annuities, including those from RRSPs and RRIFs.

2. **Income from Government Sources**

- Canada Child Tax benefits, Old Age Security pension and Guaranteed Income Supplement, Benefits from Canada or Quebec Pension Plan, Benefits from Employment Insurance.

Land Titles Registry Data

- Data on Every House Purchased in each Canadian Province
- Have *Legal Address* not *Postal Address*
- Use GIS and Geocoding to place each house in postal code.

METHODOLOGY

Panel Logit Models

Clustered Robust Standard Errors (Clustered by Individual)

Follow *Petersen (RFS, Forthcoming)*

Robustness Check: Random Effects

Sample Size 1,036,776 data points

LHS: MISTAKE = 1, NO MISTAKE = 0

NEGATIVE COEF = LESS MISTAKES

Results

Table 4: Inattentive Delinquency (Part 1)

Dependent Variable is delinquency with sufficient deposits after controlling for precautionary balances and budget constrained individuals (defined in Table 3). Data is panel data and dependent variable is binary (1 = delinquent and 0 = not delinquent). Methodology is panel logit methodology with clustered robust standard errors (as in Petersen, 2008), clustered by individual. For each model both logit coefficients as well as elasticity is reported.

Logit Model Number	1			2		
Precautionary Balances	Standard Deviation of Deposits			Standard Deviation of Deposits Plus Avg Rental Payment in Area		
Drop Budget Constrained	None			None		
	Coefficient	Std Error	Elasticity	Coefficient	Std Error	Elasticity
Credit Limit on Credit Card (\$)	-0.2052***	0.00782	-1.62148	-0.1372***	0.012063	-1.099882
Government Income (% of Total)	0.005767**	0.00264	0.068682	0.007**	0.003444	0.10147
Business & Investment Income (\$)	-0.01701	0.01771	-0.12516	0.013361	0.024019	0.099622
Rent/Own Status (% Rent)	0.002105***	0.00072	0.049268	-0.001245	0.001063	-0.030691
Residential Property Value (\$)	-0.01808	0.02298	0.002987	-0.0583*	0.032023	0.011402
Population per Household	-0.02073	0.05167	-0.05304	-0.1144*	0.066691	-0.290033
Type of Credit Card (No Fee Dummy)	-0.07966***	0.02007	-0.05086	-0.02292	0.031164	-0.015072
High School (% in DA)	0.001568	0.00206	0.017814	-0.00235	0.002878	-0.026259
Some Post Secondary (% in DA)	0.001063	0.00123	0.059194	-0.00302*	0.001676	-0.164803
Bachelor or Higher Degree (% in DA)	-0.00333**	0.00149	-0.04164	0.000208	0.001984	0.002555
Age 0 to 19 (% in DA)	0.006543**	0.00322	0.178332	0.0162***	0.004136	0.427572
Age 20 to 34 (% in DA)	0.000863	0.00229	0.017001	0.000609	0.003251	0.011842
Age 35 to 54 (% in DA)	0.003522	0.00257	0.101595	0.0085**	0.003433	0.248541
Age 55 to 64 (% in DA)	0.005943	0.00413	0.047161	0.00941*	0.005471	0.081433
Immigrant	-0.00082	0.00137	-0.00857	-0.0012	0.00189	-0.014387
Constant	-1.76867***	0.29991		-3.0098***	0.398526	
Number of Observations	1036776			707250		

Table 4: Inattentive Delinquency (Part 2)

Dependent Variable is delinquency with sufficient deposits after controlling for precautionary balances and budget constrained individuals (defined in Table 3). Data is panel data and dependent variable is binary (1 = delinquent and 0 = not delinquent). Methodology is panel logit methodology with clustered robust standard errors (as in Petersen, 2008), clustered by individual. For each model both logit coefficients as well as elasticity is reported.

Logit Model Number	3			4		
Precautionary Balances	Standard Deviation of Deposits			Standard Deviation of Deposits Plus Avg Rental Payment in Area		
Drop Budget Constrained	Low Deposits, Multiple Mistakes, FICO<620, Card balance/limit<75%			Low Deposits, Multiple Mistakes, FICO<620, Card balance/limit<75%		
	Coefficient	Std Error	Elasticity	Coefficient	Std Error	Elasticity
Credit Limit on Credit Card (\$)	-0.0902***	0.010985	-0.74557	-0.05425***	0.017008	-0.44938
Government Income (% of Total)	0.0082***	0.003386	0.101585	0.008102*	0.004464	0.112811
Business & Investment Income (\$)	0.01761	0.022832	0.133919	0.039875	0.029936	0.303754
Rent/Own Status (% Rent)	0.001156	0.000934	0.027231	-0.00031	0.001368	-0.00766
Residential Property Value (\$)	0.000608	0.030048	-0.0001	-0.08676**	0.042655	0.017042
Population per Household	0.070989	0.066858	0.187089	0.050526	0.085488	0.130365
Type of Credit Card (No Fee Dummy)	-0.1266***	0.026184	-0.08504	-0.04776	0.040514	-0.03255
High School (% in DA)	0.00145	0.00268	0.016927	0.001138	0.003631	0.012864
Some Post Secondary (% in DA)	0.000472	0.001586	0.027079	-0.00092	0.002116	-0.05085
Bachelor or Higher Degree (% in DA)	-0.00219	0.001905	-0.02859	0.00039	0.0025	0.004978
Age 0 to 19 (% in DA)	0.005687	0.004121	0.159419	0.010298*	0.005293	0.276381
Age 20 to 34 (% in DA)	0.0114***	0.00292	0.230352	0.009074*	0.004106	0.177044
Age 35 to 54 (% in DA)	0.0048	0.003343	0.144623	0.00181	0.004439	0.053637
Age 55 to 64 (% in DA)	0.0167***	0.005146	0.138289	0.019512***	0.006767	0.173118
Immigrant	-0.005***	0.001798	-0.05392	-0.00591**	0.00255	-0.06826
Constant	-4.758***	0.386784		-5.58355***	0.513176	
Number of Observations	685701			466700		
Wald Chi2	110.35			60.58		

Table 4: Inattentive Delinquency (Part 3)

Dependent Variable is delinquency with sufficient deposits after controlling for precautionary balances and budget constrained individuals (defined in Table 3). Data is panel data and dependent variable is binary (1 = delinquent and 0 = not delinquent). Methodology is panel logit methodology with clustered robust standard errors (as in Petersen, 2008), clustered by individual. For each model both logit coefficients as well as elasticity is reported.

Logit Model Number	5			6		
Precautionary Balances	Standard Deviation of Deposits Plus Avg Rental Payment in Area			Standard Deviation of Deposits Plus Avg Rental Payment in Area		
Drop Budget Constrained	Low Deposits, Multiple Mistakes, FICO<620, Card balance/limit<90%			Low Deposits, Multiple Mistakes, FICO>560, Card balance/limit<90%		
	Coefficient	Std Error	Elasticity	Coefficient	Std Error	Elasticity
Credit Limit on Credit Card (\$)	-0.0652***	0.01618	-0.5396	-0.06714***	0.015868	-0.55401
Government Income (% of Total)	0.00977**	0.004247	0.135863	0.010142***	0.004171	0.140849
Business & Investment Income (\$)	0.029069	0.028591	0.221212	0.039118	0.028153	0.297555
Rent/Own Status (% Rent)	-0.00057	0.001306	-0.01394	-0.00053	0.001285	-0.01301
Residential Property Value (\$)	-0.0795**	0.040108	0.015725	-0.07128*	0.039206	0.014088
Population per Household	0.07057	0.081829	0.182123	0.063381	0.080037	0.163595
Type of Credit Card (No Fee Dummy)	-0.01508	0.038676	-0.01009	-0.03456	0.037986	-0.02314
High School (% in DA)	0.000826	0.003475	0.009346	0.000547	0.003426	0.006189
Some Post Secondary (% in DA)	0.00031	0.002019	0.017163	-0.0003	0.001978	-0.01684
Bachelor or Higher Degree (% in DA)	0.000102	0.002392	0.001302	6.38E-05	0.002351	0.00081
Age 0 to 19 (% in DA)	0.008624*	0.005087	0.231571	0.009407*	0.004991	0.252673
Age 20 to 34 (% in DA)	0.007381*	0.003921	0.144558	0.007005*	0.003863	0.137404
Age 35 to 54 (% in DA)	0.001711	0.004235	0.050717	0.002698	0.004168	0.079989
Age 55 to 64 (% in DA)	0.0169***	0.006455	0.150065	0.016669***	0.006395	0.147438
Immigrant	-0.0058**	0.002413	-0.0675	-0.00556**	0.002364	-0.06424
Constant	-5.4559***	0.489104		-5.49433	0.47983	
Number of Observations	512518			527491		

Main Results:

Poor are MORE Inattentive

MORE INATTENTIVE IF:

1. Higher Government Income as a % of Total Income in Postal Code
2. Lower Residential Property Values OR higher Rental %
3. Lower Credit Card Credit Limit (Function of Income)

Robustness Tests

1. Cluster by Postal Code (DA) rather than Individual
2. Random Effects Models

CONCLUSIONS

- Theory cannot predict if RICH or POOR are more inattentive. Both can have Competing Stimuli.
- We find very strong evidence that poor people are more inattentive to their credit card repayments