Peers' Income and Financial Distress: Evidence from Lottery Winners and Neighboring Bankruptcies

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Social Comparisons Among Peers

- Keeping Up with the Joneses
- Conspicuous Consumption

- Very large Literature looking at Peer effects and Consumption

- Kuhn, Kooreman, Soetevent, and Kapteyn, AER, 2011
- Angelucci and De Giorgi, AER, 2009

New Question: Do Social Comparisons impact **Debt** and Financial **Distress**?

- Georgarakos, Haliassos, and Pasini (RFS, 2014)
- Bertrand and Morse (REStat, 2016)

- **THIS PAPER:**
- New evidence on this hypothesis.
- Use lottery win size as a plausibly exogenous shock to relative incomes
- Look at bankruptcies of close neighbors of lottery winners to measure Peers

Empirical Challenge of Peer Effects

- **Reflection Problem (**Manski, 1993)

- when examining how peers influence each other's choices - difficult to identify who affects whom and how.

- Our Solution: Have only **ONE PEER** receive exogenous shock – examine outcome of all other peers. (One to Many Strategy)

- Causality flows from **ONE PEER** (Lottery Winner) – to all other peers

Identification Strategy

- Identify how increasing **one** peer's income affects other peers' financial distress

- Exogenous income shocks from randomly sized lottery wins

- Compare large lottery wins vs. small lottery wins

- Examine very small neighborhoods Canadian six-digit postal codes (containing a median of 13 households).

Identification

- On the date of the lottery win:
  - income of the **lottery winner** will increase by the random and exogenous size of the lottery prize
  - income of her **very close neighbors** will remain unchanged.

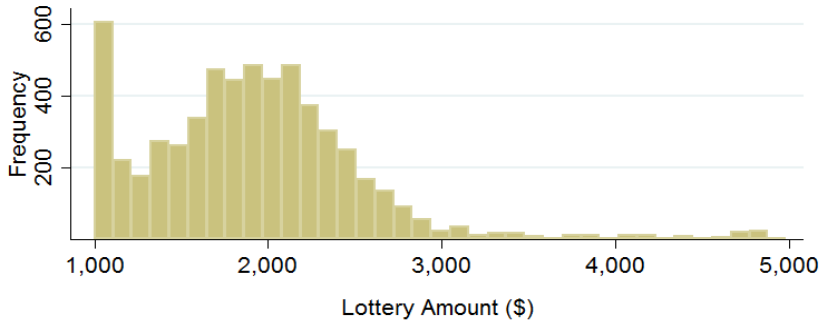

0 0.05 0.1 0.2 Kilometers
0 0.05 0.1 0.2 Miles

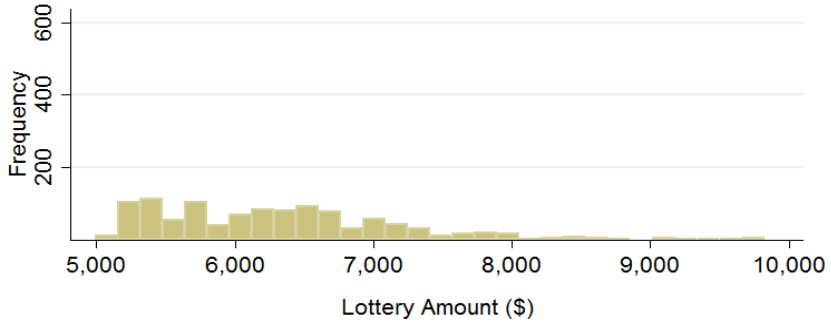
Data

- Matched data on the universe of lottery winners and the universe of bankruptcy filers in a single Canadian province.

- We can observe the name and address of the universe of lottery winners and the name and address of the universe of bankruptcy filers in that specific postal code.

- We can precisely identify which neighbor won the lottery and which other (nonlottery-winning) neighbors filed for bankruptcy.


Frequency
200
400
600
1,000
2,000
3,000
4,000
5,000
Lottery Amount ($)


Frequency
200
400
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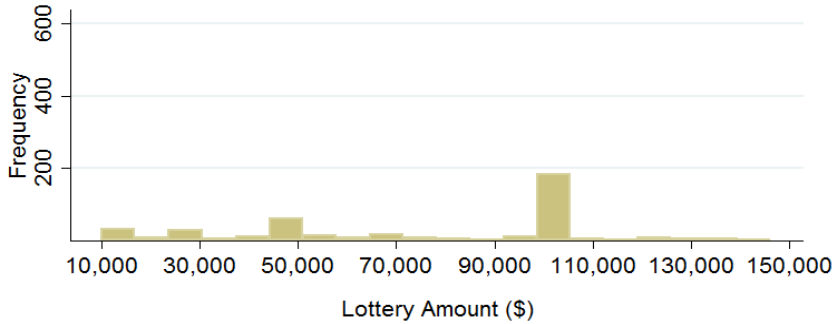
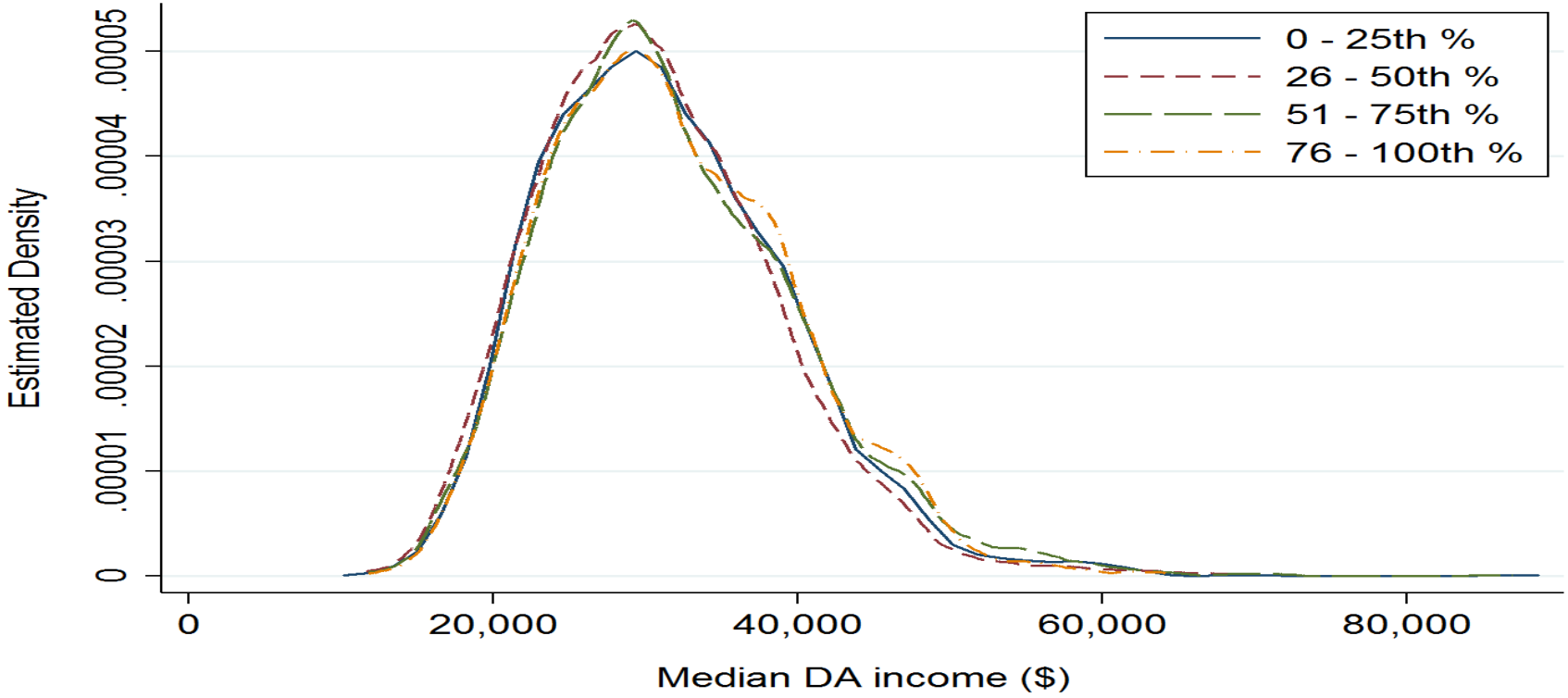
5,000
6,000
7,000
8,000
9,000
10,000
Lottery Amount ($)


Frequency
200
400
600
10,000
30,000
50,000
70,000
90,000
110,000
130,000
150,000
Lottery Amount ($)

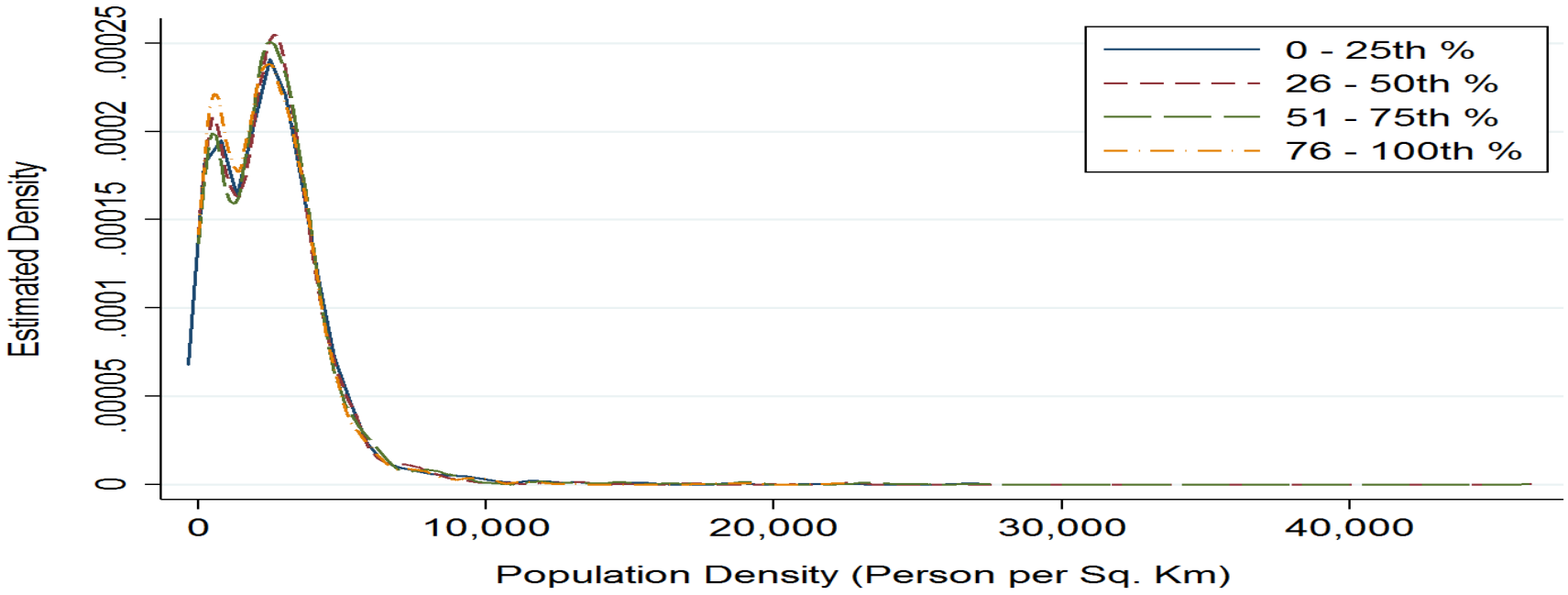
Evidence on Identification Assumptions

- By Definition – Only One Lottery Win per Neighborhood
- Identification Assumption: Dollar Magnitude of Lottery Win (Income Shock) is Random
- Can examine Dollar Magnitude of Lottery Win Size relative to Neighborhood Level Observables
- Have 23 different Neighborhood Level Observables – From DA Level Census Data

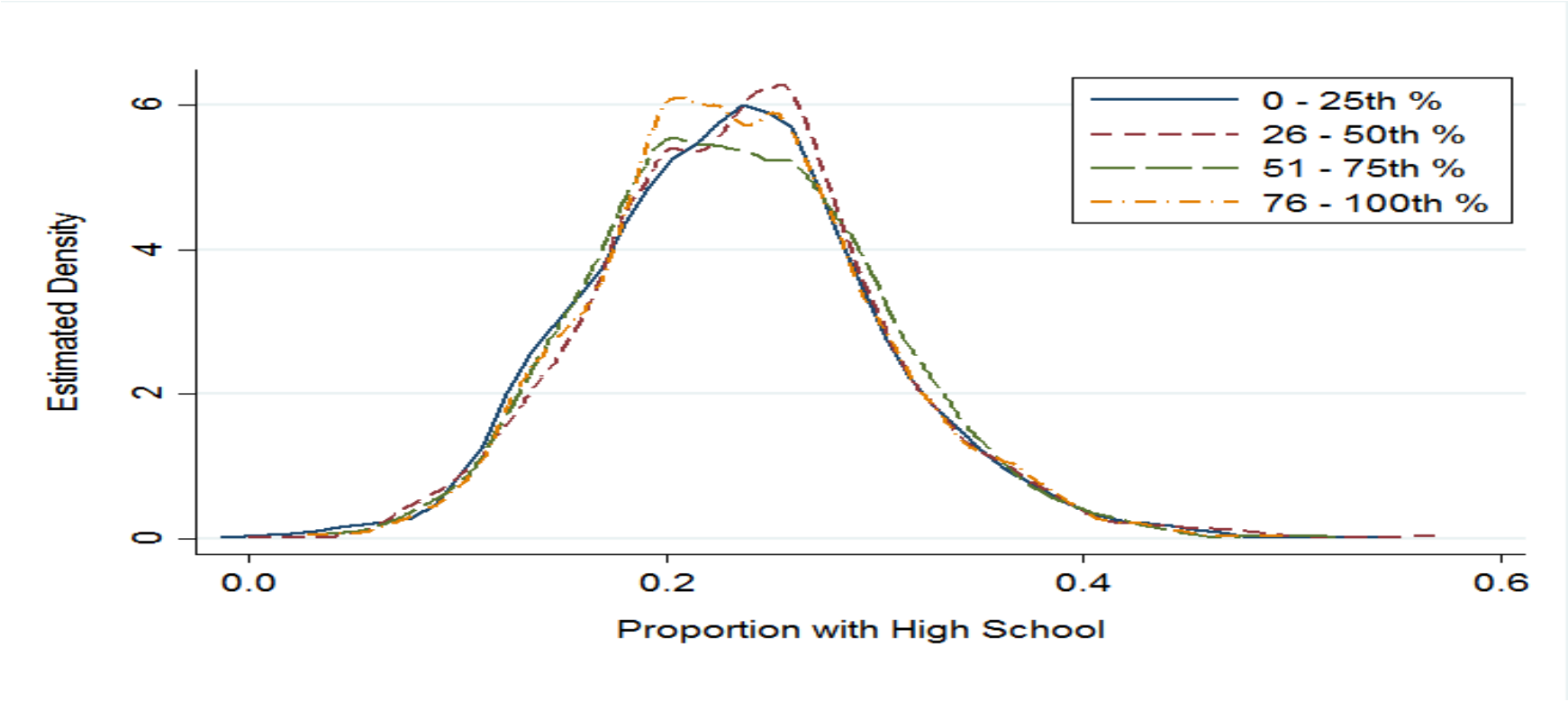
No Relation Between Lottery Amount and DA Median Income



No Relation Between Lottery Amount and DA Population Density



No Relation Between Lottery-Winning Amounts and Proportion of DA Population with High School



Specification: Relative income shocks increase the financial distress of nonwinning neighbors

(1) $$Y_p = \beta_1 \ln(lottery\ amount)_p + \beta_2 X_d + \delta_p + \alpha_p + \varepsilon_p,$$

- subscript *p* = the postal code of the winner
- subscript *d* =the DA of the winner.
- Main independent variable is the log of the lottery amount won by winner in neighborhood.
- dependent variable Y_p = the number of bankruptcies for neighbors of the lottery winner in postal code *p*
- Different Event Windows: pre and post relative to the lottery-winning year

The Effect of Lottery Win Size on the Number of Neighboring Bankruptcies

Event Window (Years)	-1 to -5	-3 to -5	-1 to -2	0 to 2	3 to 5	0 to 5
Panel A. Winners postal codes						
Log of winning amount	0.0046	-0.0045	0.0096	0.0199**	0.0266*	0.068***
	(0.0112)	(0.0086)	(0.0073)	(0.0101)	(0.0139)	(0.0189)
Number of observations	7,377	7,377	7,377	5,352	2,586	2,586
Panel B. Winners outer rings (DAs-postal codes)						
Log of winning amount	-0.0192	-0.0124*	-0.0069	-0.0088	0.0024	-0.0086
	(0.0122)	(0.0072)	(0.0056)	(0.0083)	(0.0112)	(0.0240)
Number of observations	7,361	7,361	7,361	5,342	2,582	2,582

Main Finding

The larger the dollar magnitude of a lottery prize of one individual in a very small neighborhood, the more subsequent bankruptcies there will be from other individuals in that neighborhood.

Estimated coefficient implies that a lottery win equal to the median annual income in our sample (C$29,229) increases bankruptcies of neighbors in the three years after the win by 0.03

This is a 6.59% increase relative to the average bankruptcy rate of 0.455 in all postal codes in this event window.

Placebo Tests on More Distant Neighbors

- Identification Assumption: Peer effects operate only within very small neighborhoods (i.e., peers are very close neighbors).

- Evidence on this assumption: run placebo-type test - effect of lottery winners on neighbors slightly farther away

- As predicted, we find no statistically significant results for the slightly more distant neighbors in Census Dissemination Areas (but excluding winner's postal code).

Possible Mechanisms: How Lottery Wins Can Lead to Neighbors' Bankruptcy?

1. Conspicuous Consumption

2. Financial Risk taking by Bankrupt Neighbor

3. Increased Borrowing by Neighbor of Lottery Winner

Conspicuous Consumption

Veblen, 1899, Duesenberry, 1949 etc.

- Individuals will attempt to **signal** increased status by consuming high-status goods that are more **visible** to their social reference groups.

Impact of lottery amount of neighbor on bankruptcy asset of (year 0-2 after event date) on:

1. Cars (signifcant)
2. House (signifcant)
3. Furniture (not significant)

The Effect of Lottery Prizes on Durable Consumption Assets of Neighboring Bankruptcies

Event Window (Years)	-3 to -5	-1 to -2	0 to 2	3 to 5
Cars	-0.1042	0.1291	0.2142**	-0.0024
	-0.1317	(0.0908)	(0.0910)	(0.1149)
Houses	0.1624	0.1245	0.2714**	-0.0006
	-0.1532	(0.1204)	(0.1285)	(0.1659)
Motorcycles	-0.0351	0.0032	0.0573*	0.0031
	-0.0383	(0.0286)	(0.0293)	(0.0352)
Recreational equipment	-0.0357	0.0654	0.0278	-0.0761
	-0.0636	(0.0437)	(0.0456)	(0.0665)
Furniture	-0.0325	0.0998*	-0.0245	0.1131
	-0.0834	(0.0548)	(0.0532)	(0.0718)
Number of observations	1,477	2,764	2,617	1,259

Financial Risk taking by Bankrupt Neighbor

(Previous test – Consumption Assets; This Test – Financial Assets)

- Hypothesis: Increase in Neighbors lottery win causes increased risk taking – leads to more financial distress

Impact of lottery amount of neighbor on bankrupts assets (years 0-2 after lottery win) on:

1. Financial Securities (significant)
2. Cash on Hand (not)
3. Insurance and Pensions (not)

The Effect of Lottery Prizes on the Financial Assets of Neighboring Bankruptcies

Event Window (Years)	-3 to -5	-1 to -2	0 to 2	3 to 5
Cash	0.0307	0.0268	-0.0004	0.0048
	-0.0388	(0.0285)	(0.0266)	(0.0352)
Securities	-0.0261	-0.0151	0.0867**	0.1033**
	-0.0678	(0.0388)	(0.0373)	(0.0493)
Insurance and pensions	0.0975	0.0355	-0.1581*	-0.1604
	-0.1112	(0.0822)	(0.0853)	(0.1145)
Number of observations	1,477	2,764	2,617	1,259

Increased Borrowing by Neighbor of Lottery Winner

- Bertrand and Morse (2016) and Georgarakos et al. (2014) highlight the role of unsustainable debt accumulation by peers can lead to financial distress.

- Two Databases

1. Bankruptcy Balance Sheet Data

2. **NEW** – Canadian Credit Bureau Data

The Lottery Prize Effect on the Liabilities of Bankruptcy Filers Within Winners' Postal Codes

Event Window (Years)	-3 to -5	-1 to -2	0 to 2	3 to 5
Log of secured debt	0.061	0.079	0.311**	-0.107
	(0.169)	(0.120)	(0.125)	(0.159)
Ratio of secured debt-to-assets	0.000	0.008	0.031***	-0.009
	(0.013)	(0.009)	(0.010)	(0.032)
Ratio of secured debt-to-total debt	0.011	0.007	0.021***	-0.010
	(0.010)	(0.007)	(0.008)	(0.010)
Log of unsecured debt	-0.035	0.002	-0.018	0.028
	(0.024)	(0.017)	(0.017)	(0.022)
Ratio of unsecured debt-to-assets	0.139	30.622	-3.808	1.968
	(17.281)	(35.847)	(17.427)	(3.082)
Log of total debt	-0.002	0.018	0.037	-0.003
	(0.032)	(0.024)	(0.025)	(0.031)
Ratio of total debt-to-assets	0.107	30.628	-3.751	1.959
	(17.282)	(35.846)	(17.426)	(3.080)
Number of observations	1,462	2,751	2,603	1,253

New Data – Canada Credit Bureau Data

- Look at ALL Neighbors (not just bankrupts)
- UNIVERSE of individuals with Credit File
- Unlike NY FED Bureau Data (5% Sample) – bad for neighborhoods

- Annual Panel Data
- Types of Liabilities
- Number of Accounts + Total $ value of Liabilities
- Amount Outstanding - Reflect Equilibrium Outcome of Both Demand and Supply

Credit Bureau Specification

$$Y_{jt} = \beta_0 + \sum_{s=-5}^{5} \beta_{1s} T_{st} \times \ln(lottery\ amount)_p + \beta_2 \ln(lottery\ amount)_p + \sum_{s=-5}^{5} \beta_{3s} T_{st} + \delta_p + \alpha_p + \mu_j + \varepsilon_{jt}.$$

The dependent variable *Y* are outcome variables taken from credit bureau

Subscript *j* = individuals; *t* = time relative to lottery-winning time (*t = 0*).

Independent variables: interactions of event-time dummies T_s (defined relative to the lottery-winning year, *t = 0*) with the log of the lottery amount.

Magnitudes: 10% increase in Lottery Win Size

- increase total debt balances across all account balances by 0.2%
- increase number of bankcards by 0.0007, card balance by 0.12%, and card limits by 0.13 %.
- Also: increase in Auto Loans and Installment Credit
- **Conclusion**: Lottery Win Size result in more debt held in the Neighborhood

Factors Mitigating Risk from Bankruptcy

1. Soft Information and Distance from Lenders

2. Credit Scores and Risk Mitigation

Soft Information and Distance to the Bank

- Do Close banks have more Soft info on neighborhoods (e.g. lottery wins).

- Examine Banks 0.5 km and 1.0 km away from lottery winner. Use Bankruptcy Filer Data and GIS Location Data

- Our main finding that lottery wins increase neighbors' bankruptcies is being driven by neighborhoods **without** nearby lenders.

- Consistent with Soft Information Hypothesis

The Effect of a Lottery Win on the Number of Bankrupt Neighbors (with and Without Proximate Lenders)

Event Window (years)	-1 to -5	-3 to -5	-1 to -2	0 to 2	3 to 5	0 to 5
Panel A. No financial institutions within 0.5 km						
Log of winning amount	0.0019	-0.0089	0.0115	0.0216*	0.0313**	0.0817***
	(0.0127)	(0.0097)	(0.0082)	(0.0113)	(0.0156)	(0.0208)
Panel B. With a financial institution within 0.5 km						
Log of winning amount	0.0197	0.0147	0.0039	0.0096	0.0025	-0.0031
	(0.0251)	(0.0191)	(0.0163)	(0.0235)	(0.0326)	(0.0478)
Panel C. No financial institutions within 1 km						
Log of winning amount	0.0046	-0.0045	0.0096	0.0199**	0.0266*	0.0681***
	(0.0112)	(0.0086)	(0.0073)	(0.0101)	(0.0139)	(0.0189)
Panel D. With a financial institution within 1 km						
Log of winning amount	0.0076	0.0040	0.0033	0.0178	0.0052	0.0235
	(0.0152)	(0.0116)	(0.0099)	(0.0138)	(0.0195)	(0.0267)

Credit Scores and Risk Mitigation

Do lenders segment debtors in neighborhoods based on observable credit risk ratings (e.g. risk scores)

Do banks Restrict credit to high-risk debtors in those neighborhoods.

Can observe Credit Scores in Credit Bureau Data:

Segment into Prime (> 660) and sub prime.

Finding: After Lottery Win - Credit increases in **Prime** but not **Sub-Prime** groups.

Conclusion: lenders use observable credit scores in allocating credit to prime borrowers but not sub-prime after lottery win in that neighborhood.

Ruling Out Alternative Explanations:

- Every bankruptcy filer is required answer the textual question "*Give Reasons for Your Financial Distress*" in their bankruptcy filing.

- Use textual analysis software to code these answers into 17 distinct categories (e.g. marital breakdown, gambling,… etc.)

- Test whether larger lottery wins lead to bankruptcies of nonwinning neighbors via (e.g.) increased marital breakdown, increased gambling etc.

- **Gambling**: test the (irrational) belief that "*good luck transmits*." Neighbors of a large lottery winner would increase their own gambling, causing bankruptcy

The Effect of a Lottery Win on 17 Categorical Reasons for Bankruptcy Provided by Filers

Dependent Variable	Years 0 to 2	Std Errors	Years 3 to 5	Std Errors
Marital breakdown	0.0050	(0.0086)	0.0014	(0.0108)
Unemployment	0.0040	(0.0101)	0.0066	(0.0124)
Insufficient income	0.0156	(0.0105)	-0.0186	(0.0142)
Business failure	-0.0269***	(0.0095)	-0.0031	(0.0109)
Health concerns	0.0056	(0.0095)	-0.0127	(0.0117)
Accidents/emergencies	0.0023	(0.0034)	0.0033	(0.0064)
Overuse of credit	0.0054	(0.0115)	0.0095	(0.0146)
Gambling	**0.0009**	**(0.0037)**	**-0.0004**	**(0.0061)**
Tax liabilities	0.0017	(0.0056)	-0.0029	(0.0082)
Loans cosigning	-0.0050	(0.0043)	-0.0004	(0.0044)
Bad/poor investments	-0.0058	(0.0053)	0.0027	(0.0045)
Garnishee	0.0026	(0.0027)	-0.0048	(0.0053)
Legal action	-0.0058	(0.0045)	-0.0048	(0.0057)
Moving/relocation	0.0056	(0.0043)	0.0014	(0.0059)
Substance abuse	-0.0056	(0.0044)	-0.0024	(0.0059)
Supporting relatives	-0.0058	(0.0066)	-0.0029	(0.0101)
Student loans	0.0000	(0.0049)	-	-

Summary of Results:

Main Result: $ Magnitude of Lottery win in Neighborhood increases the number of bankruptcies in that neighborhood.

Mechanisms

1. Conspicuous Consumption (More Visible Consumption Assets)
2. Financial Risk Taking (More Risky Financial Assets)
3. Increased Borrowing after lottery win in Neighborhood

Mitigating Factors

1. Soft Information (results driven by bankruptcies far from bank)
2. Banks use Observable data on Credit Risk (results driven by prime, not sub prime, neighbors).