

Bailing out the Kids

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Introduction

Insurance is highly important for welfare

- ex post: periods without food and shelter are costly
- ex ante: insurance affects choices involving risk

Huge literature on self-insurance and social insurance but little evidence on **informal insurance** through family or social networks

Intra-family insurance have potentially important implications for:

- design of social insurance
- inequality
- life-choices (e.g. education, entrepreneurship, mortgage loans)

Questions

How and how much do parents support adult children in adverse circumstances?

How does the support vary with parent resources?

What is the effect of parent insurance on choices involving risk? *[not today]*

Literature

Direct evidence on cash transfers from parents

- across-child: lower income \rightarrow less parent transfers (Cox, 1987)
 - within-child: lower income \rightarrow more parent transfers (McGarry, 2016)
- (implied insurance rate: 0.4 cent on the dollar)

Direct evidence on cohabitation (Kaplan, 2012)

Indirect evidence from income and consumption:

- Rejection of complete family risk sharing (Altonji et al., 1996)
- No rejection of zero risk sharing (Attanasio, 2018)

Conclusion: weak evidence of parent insurance with low
(if not zero) insurance rates

Key challenge: Measurement

Intra-family transfers sometimes recorded in surveys:

- Small samples (e.g. PSID 1988: 3,402 child-parent pairs)
- Cross-section or low-frequency panel (HRS: biennial)
- Limited background information

Cohabitation with parents sometimes recorded in surveys:

- Small samples (Kaplan (2012) studies 1,491 youth)

Sample size is critical: insurance is likely to be more important in the face of extreme events

Our data innovation

We combine data from two sources:

- **Transaction-level data** from retail bank
- **Administrative data** from government registers

We observe insurance outcomes (parent cash transfers, cohabitation, parent grocery expenses) and adverse events (income shocks, divorce, account overdraft notices, large unexpected expenses)

This addresses key shortcomings of survey data:

- large sample (around 1 million customers)
- high-frequency panel info (daily information for 2010-2014)
- rich background information (e.g. income information back to 1987)

Our contributions

New approach to intra-family economics drawing on combined financial and administrative data

Document parent support to children in various dimensions in response to a wide range of adverse circumstances and how it varies with parent resources

Identify the effect of parent insurance on the life choices of children *[not today]*

Data description

We combine two data sources

Customer records from Danske Bank (period: 2010-2016)

- transactions (card spending, wire transfers etc.)
- background info (account balances, overdraft notices etc.)

Administrative records (period: 1986-2015)

- family structure (annual)
- income information (monthly)
- address of residence (exact date of changes)
- bank account information (annual)

Sample selection

A key challenge is individuals with multiple banks

(potential mismeasurement of spending, transfers, balance sheet items etc.)

The administrative data allow us address this challenge:

Our baseline sample consists of individuals who *only* have DB accounts (beginning and end of year)

How does this sample selection criterion affect the observable characteristics?

Sample selection

(age: 20-39 - years: 2010-2014)

	All	At least one parent known	Customers in the Bank	Only have accounts in the Bank
Observations (max)	6,911,043	6,135,105	1,797,749	1,086,171
Demographics				
age	29.71	29.67	29.52	29.27
male	0.50	0.51	0.51	0.51
lives at home	0.09	0.10	0.11	0.13
Income				
total income	278,799	290,058	287,506	270,598
- salary	221,125	230,596	225,415	208,308
- business income	6,712	7,079	6,488	5,572
- government transfers	45,440	46,518	49,221	51,412
disposable income	191,044	198,342	196,540	186,728
unemployment rate	3.32%	3.30%	3.33%	3.53%
Assets and liabilities				
value of real estate	410,149	442,286	404,220	360,914
owns real estate	39%	41%	36%	33%
bank deposits	61,817	64,320	67,848	58,827
securities	11,732	12,648	15,178	12,723
liabilities	517,197	558,639	497,118	434,456
Parents				
at least one parent known	89%	100%	100%	100%
mother lives	82%	93%	92%	92%
father lives	76%	85%	84%	84%
parent past rank in income	50%	50%	51%	50%
parent current wealth	171,138	171,140	197,710	186,231
parent current income	330,801	330,801	336,966	331,334

Measuring intra-family transfers

Two ways to identify transfers to and from parents:

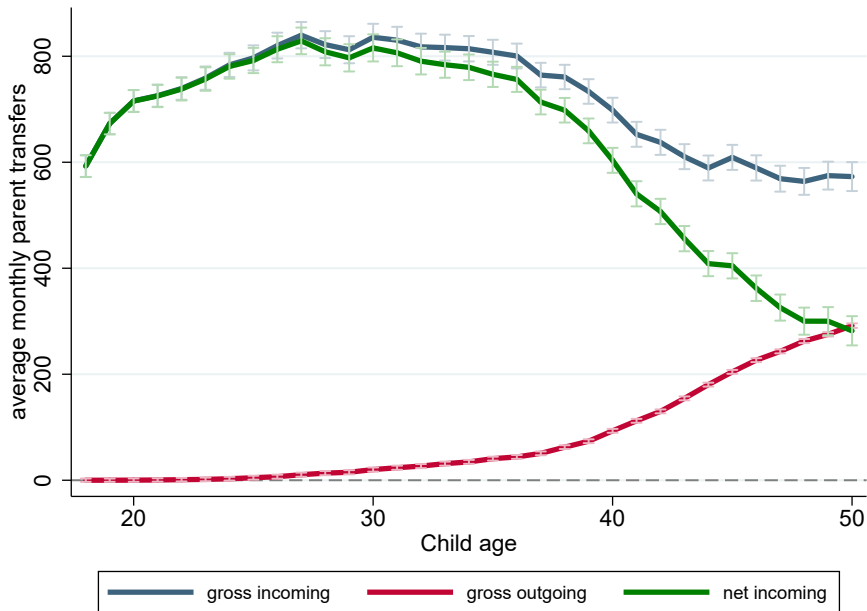
Bank data include unique personal ID of counterpart

- counterpart is customer at the bank OR
- transfer is done on mobile app

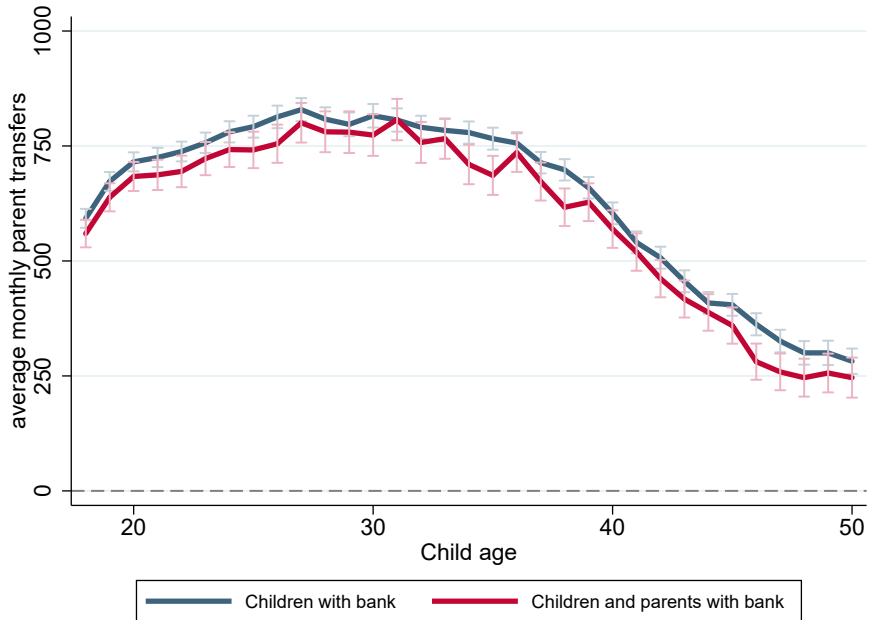
Bank data include unique branch ID of counterpart bank

If parents are not DB customers, we assume that transfers from parents' branch are from parents (3,000 branches in Denmark)

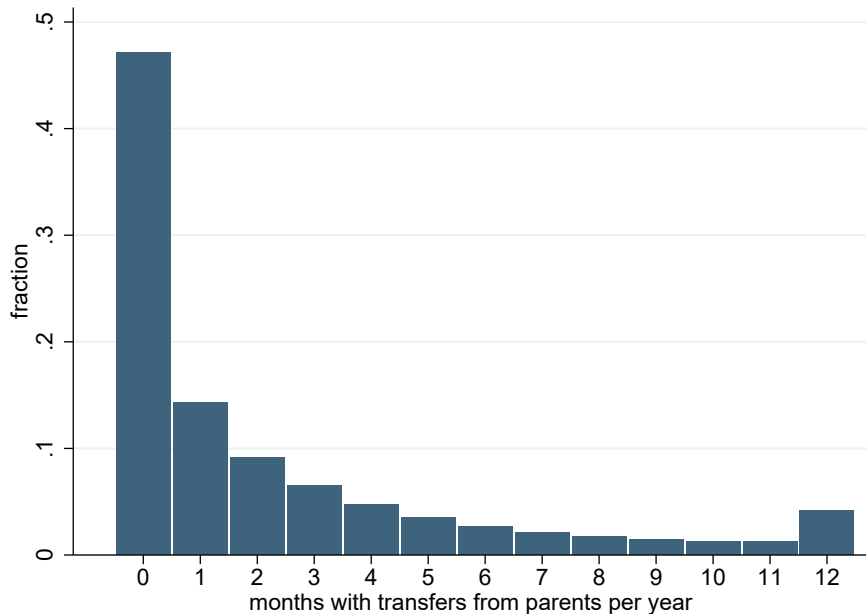
Net transfers stable through 20s and 30s - fall quickly through 40s



Very similar pattern for those whose parents are unique DB customers



Around half at age 20-39 receive nothing
- around 5% receive transfers each month



Measuring spending

We start from the universe of outgoing transactions for each customers:

We classify the following transaction types as spending

- payments by card (Dankort and others)
- payments by mobile application (MobilePay)
- payments of bills (PBS and giro)
- cash withdrawals

We classify card and bill spending according to standard Merchant Category Codes (e.g. grocery, dentist, auto repair)

We exclude payments related to tax and debt service and aggregate spending by month

Preliminary correlations

Estimating sample and income ranking

Core sample: Individuals age 20-39 with at least one living parent (except students)

Further sample restrictions:

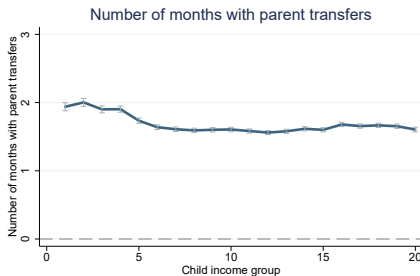
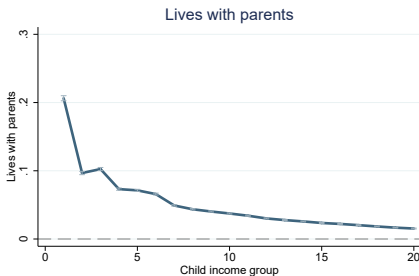
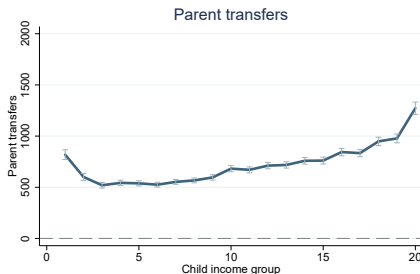
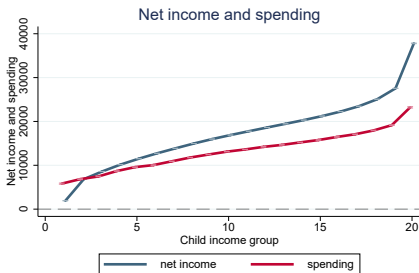
- transfers and spending: child exclusive DB customer
- parent spending: parents exclusive DB customers
- income and cohabitation: no further restrictions

Income ranks: Ranks in annual gross taxable income in full sample of individuals age 20-39

Parent income ranks: Ranks in 5-year average parent gross taxable income in childhood (age 11-15)

Simple correlations with child income

Simple averages



Intepretations

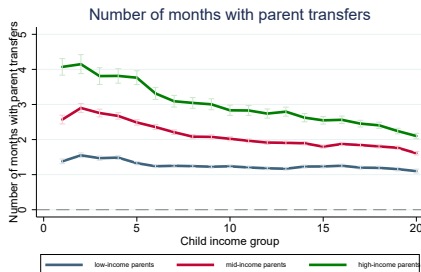
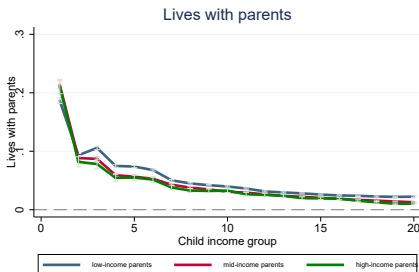
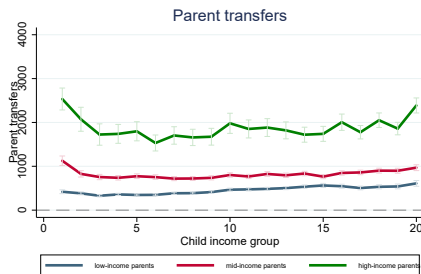
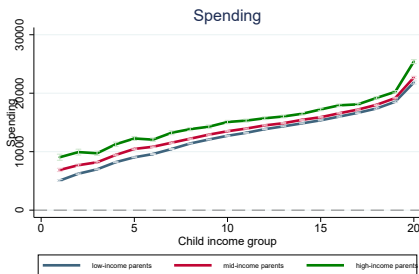
Parent transfers are generally *increasing* in child income except at the bottom where they are strongly *decreasing*

- insurance?
- heterogeneity in parent resources?
- carnegie effect?

Cohabitation is generally *decreasing* in child income

Simple correlations with child and parent income groups

Simple averages



Empirical strategies to identify parent insurance

Empirical strategies

We employ two empirical strategies to identify parent insurance

(1) **Panel models**: use all variation in annual income of children to identify the effect on parent transfers and cohabitation

(2) **Event models**: identify adverse events and estimate the effect on parent transfers and cohabitation by comparing to reference group

Annual Panel Models

Annual Panel Models

$$y_{it} = \alpha_i + \eta_t + \sum \beta^G inc_{it}^G + \sum \rho^A age_{it}^A + \varepsilon_{it}$$

where y refers to transfers or cohabitation and inc^G indicates income ventile G (omitted category is p50-p55)

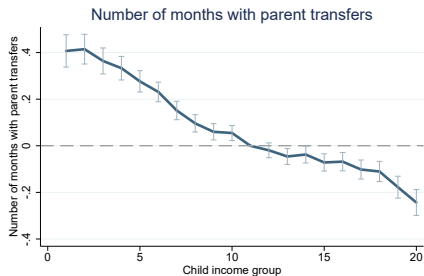
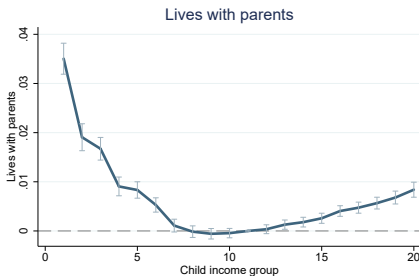
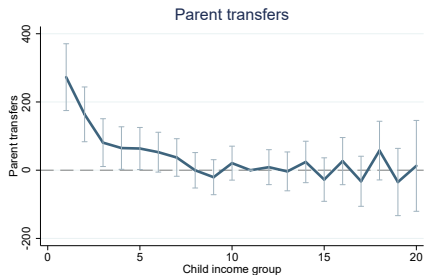
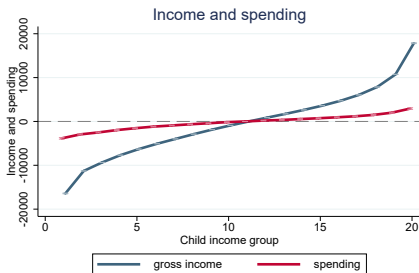
Individual FE captures

- fixed parent characteristics (lifetime income, preferences)
- fixed child characteristics (ability, diligence)

Identification comes from within-child *moves* across income groups → some concern about endogeneity

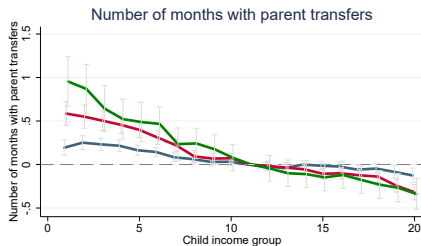
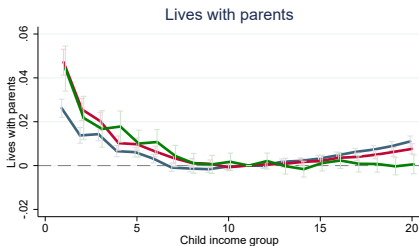
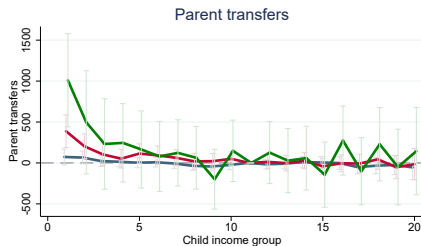
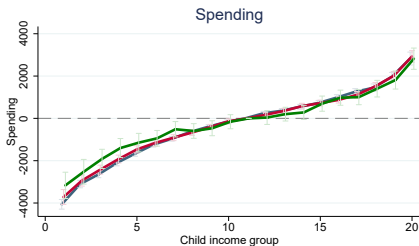
Both transfers and cohabitation respond strongly to income loss at the bottom

Coefficients from FE model



Transfers respond more for high-income parents - less so for cohabitation

Coefficients from FE model



— low-income parents — mid-income parents — high-income parents

Cash insurance rate

What fraction of child income losses is replaced by parent cash transfers?

Homogeneous insurance rate (like McGarry, 2016):

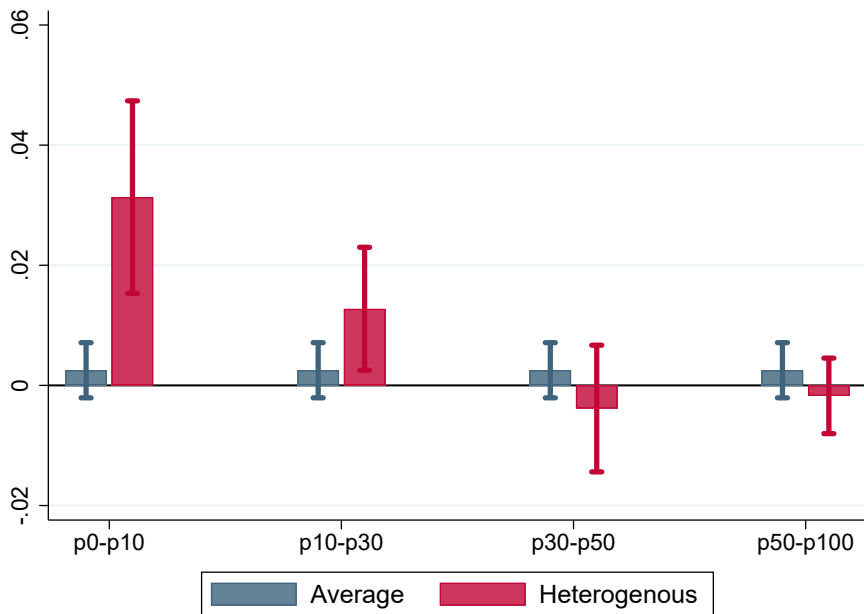
$$Transfers_{it} = \alpha_i + \eta_t + \beta inc_{it} + \sum \rho^A age_{it}^A + \varepsilon_{it}$$

Heterogeneous insurance rate by income range:

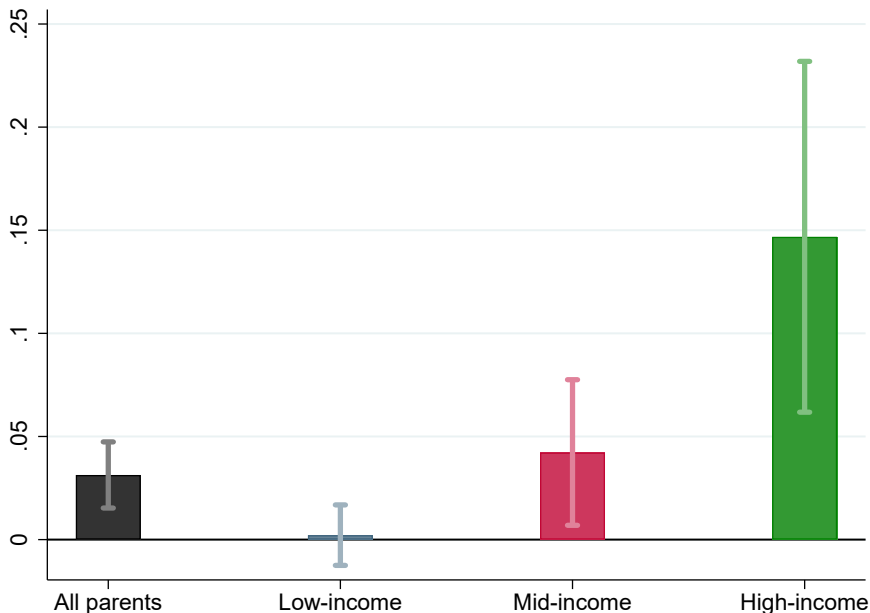
$$Transfers_{it} = \alpha_i + \eta_t + \sum \beta^R inc_{it}^R + \sum \rho^A age_{it}^A + \varepsilon_{it}$$

where inc denotes total income and inc^R denotes income in range R

Cash insurance rate around 3% at the bottom -



- and around 15% for high-income parents



Monthly Event Models

Define events

Job loss: first month where an individual receives monthly salary below DKK 1,000 after receiving above DKK 10,000 in 12 consecutive months

Divorce: first month where one individual in a cohabiting couple moves address within a year where the couple separates

Expenditure shocks: first month with a payment to dentist or auto repair shop above DKK 5,000

Financial distress: first month where an individual receives overdraft notice from the bank

Entrepreneurship: first month where an individual changes workplace within a year where the individual moves to self-employment

Social benefit reform: January 2014 for individuals age 25-29 receiving adult rate social security before and youth rate after

Monthly Event Models

We estimate the following model for each event type:

$$y_{it} = \alpha_i + \eta_t + \sum \beta^m D_{it}^m + \sum \rho^A age_{it}^A + \varepsilon_{it}$$

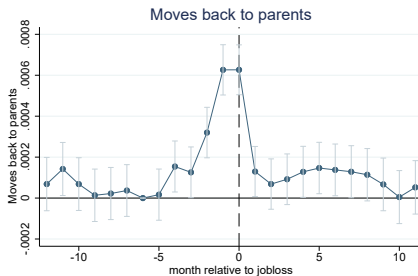
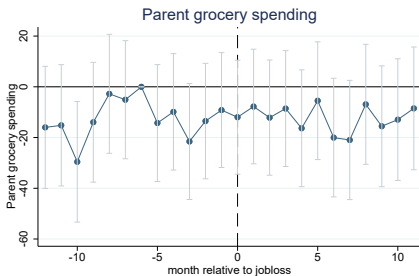
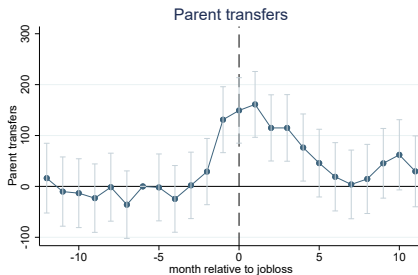
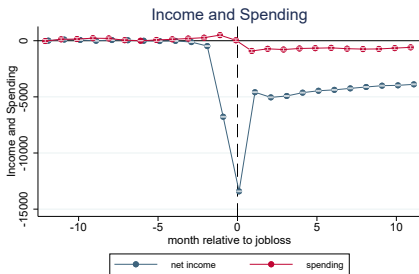
where m indicates the month relative to the event month ($m = -6$ is the omitted category).

Individuals are in the estimating sample during the event window ($m = -12, \dots, 12$) if they experience event and throughout the sample period if not

Individuals who experience no event identify calendar time trend and act as "control group"

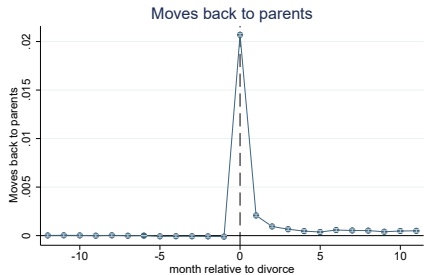
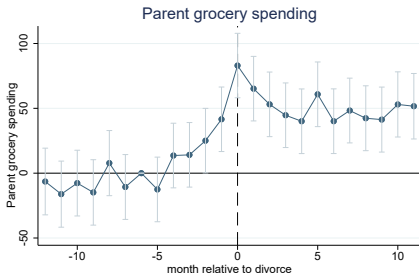
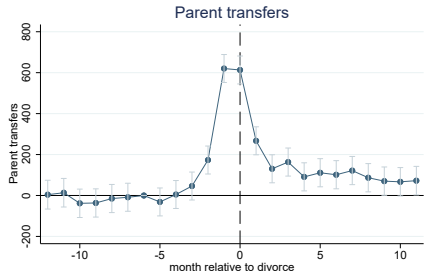
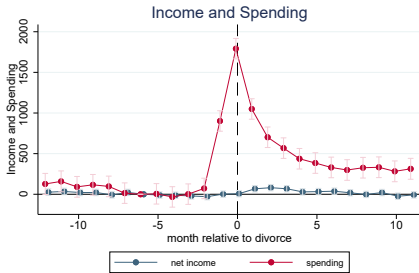
Event model: job loss

Job loss



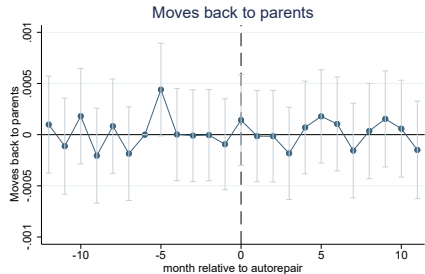
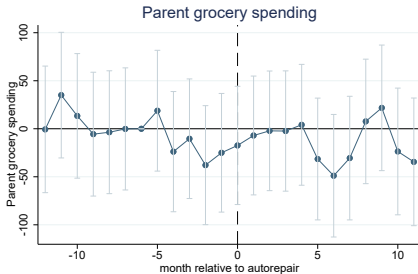
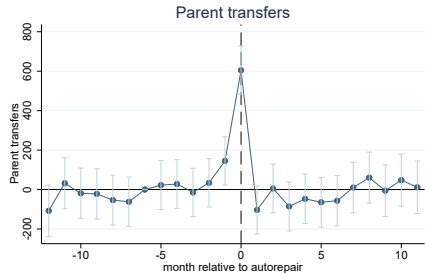
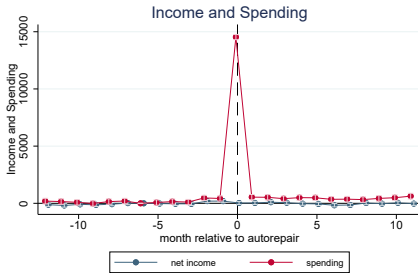
Event model: divorce

Divorce



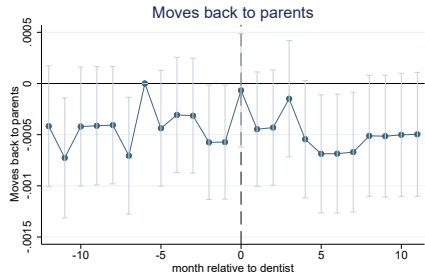
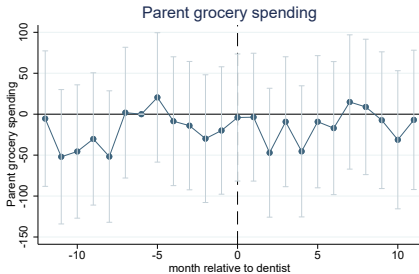
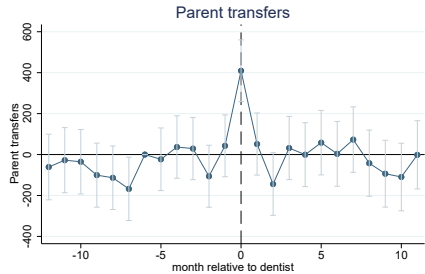
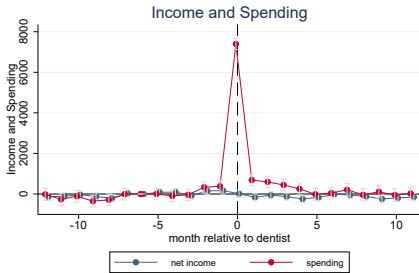
Event model: auto repair bill

Auto repair bill



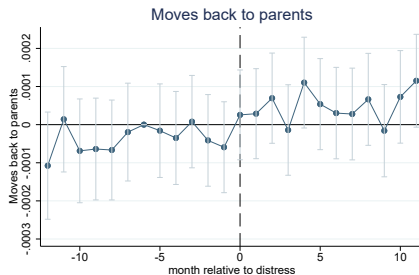
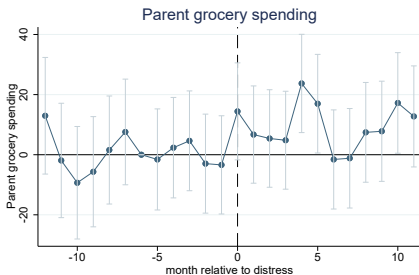
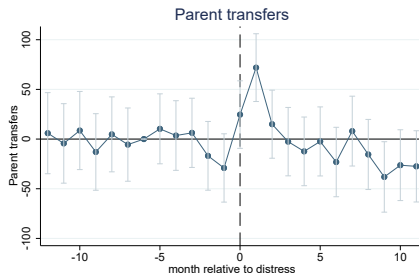
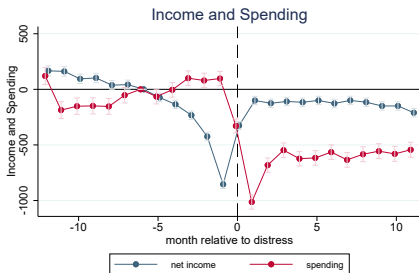
Event model: dentist bill

Dentist bill



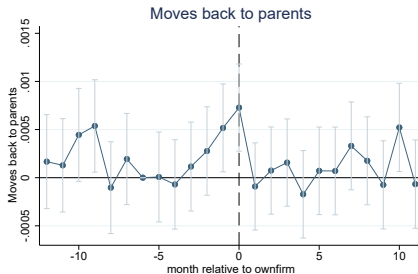
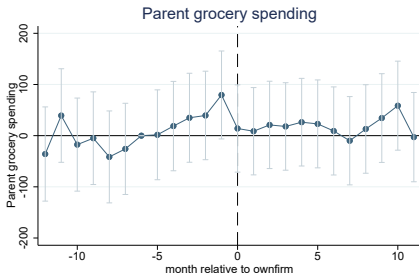
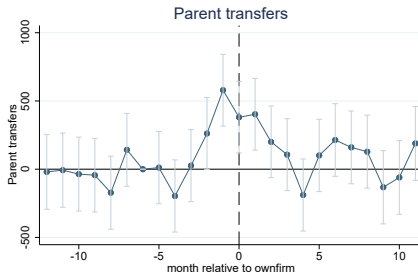
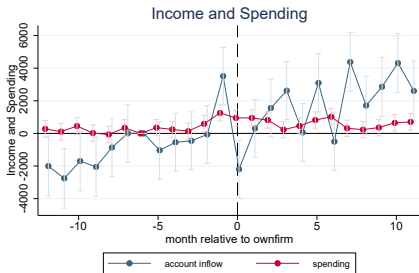
Event model: overdraft notice

Financial distress



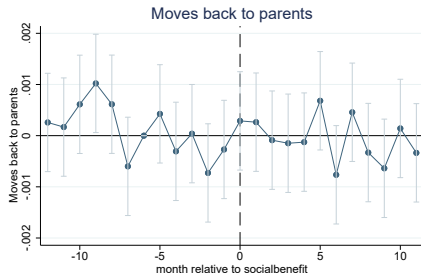
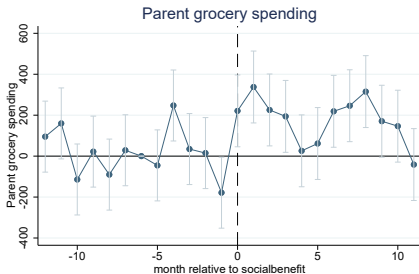
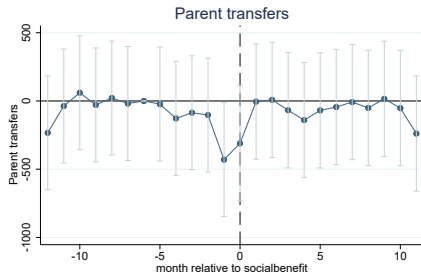
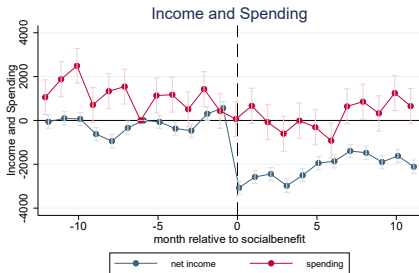
Event model: founding firm

Founding own firm



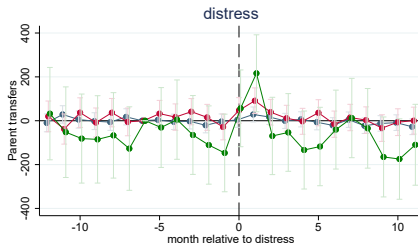
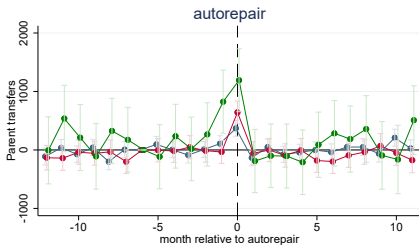
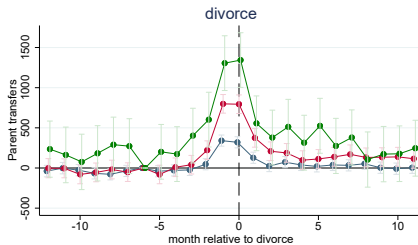
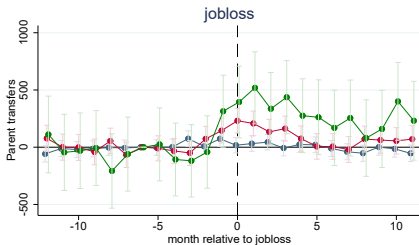
Event model: social benefit reform

Social benefit reform



Parent transfers by parent income

Cash transfers from parents



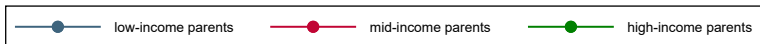
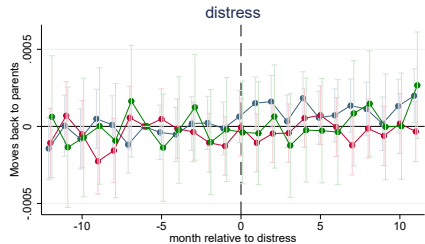
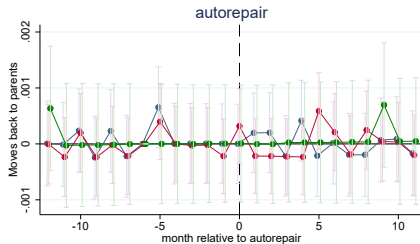
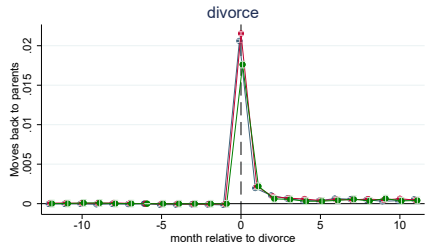
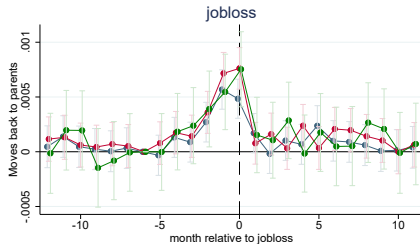
—●— low-income parents

—●— mid-income parents

—●— high-income parents

Moving to parents by parent income

Moves to parents



Cash insurance rate

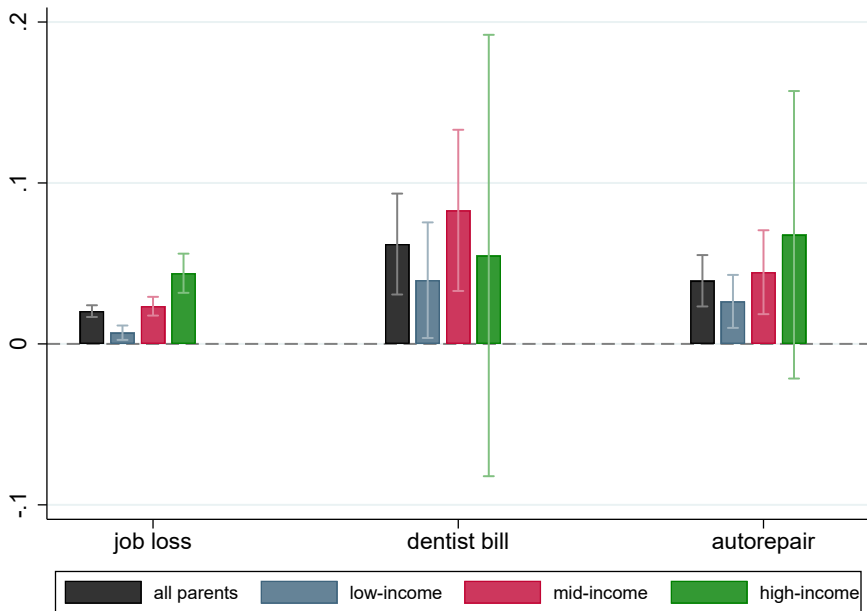
What fraction of child income losses and expenditure shocks is replaced by parent cash transfers?

$$transfers_{it} = \alpha_i + \eta_t + \beta x_{it} + \sum \rho^A age_{it}^A + \varepsilon_{it}$$

where x is income (for job losses) or spending (for expenditure shocks) instrumented with an indicator for event time m between -1 and 4 .

Individuals are in the sample during the event window ($m = -12, \dots, 4$) if they experience event and throughout the sample period if not

Cash insurance rates by parent income



Conclusion

New approach to studying intra-family economics:
combining customer data from bank and administrative data

Document parent support to children in various dimensions in response to a wide range of adverse circumstances:

Marginal cash insurance rates are highly heterogenous

- along child income distribution: 3% at the bottom but 0% elsewhere
- across parent resources: up to 15% for high-income parents
- across shocks: higher for expenditure shocks

Next steps: identify the effect of parent insurance on the life choices of children