The Impact of Social Insurance on Household Debt

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Social Insurance and Household Debt

Q: **How does social insurance affect household debt?**

→ **Theoretically ambiguous effect**

- **Direct insurance channel** $\Rightarrow$ **less debt**
  - Negative shocks have lower impact on household resources
- **Credit demand channel** $\Rightarrow$ **more debt**
  - Weakens precautionary savings motive
- **Credit supply channel** $\Rightarrow$ **more debt**
  - Reduces default risk $\rightarrow$ improves borrowing terms

This Paper

1. **Empirical analysis**

2. **Theoretical analysis**

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1. **Empirical analysis**
   - Study impact of **expanding Medicaid eligibility on household debt**
   - **Two approaches** exploit variation in states' timing and & heterogeneity in impact
     - **Medicaid expansion led to 2.2% increase in credit card debt and a 1.4% increase in HH debt**
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     - **Medicaid expansion led to 2.2% increase in credit card debt and a 1.4% increase in HH debt**
2. **Theoretical analysis**
   - Heterogeneous-agents model with delinquency option
   - Study the impact of Medicaid expansion on borrowing
   - Decompose the effect into direct, credit demand, and credit supply channels
     - **Credit-supply is fully responsible for increase in debt**
     - **Credit-supply accounts for 17% of welfare gain**

Literature Contributions

- **Distributional impact of social insurance**

  Kotlikoff (1986), Hubbard et al. (1995), Gruber and Yelowitz (1999), Engen and Gruber (2001)

  → **Introduce role for credit supply**

- **Models of unsecured household debt**

  Chatterjee et al. (2007), Livshits et al. (2007), Chatterjee and Gordon (2012), Mitman (2016), Nakajima and Rios-Rull (2019) → **Study impact of changes to availability of insurance**

- **Relationship between household debt and the macroeconomy**

  Jordá et al. (2015), Mian et al. (2017), Gomes et al. (2019), Mian et al. (2020)

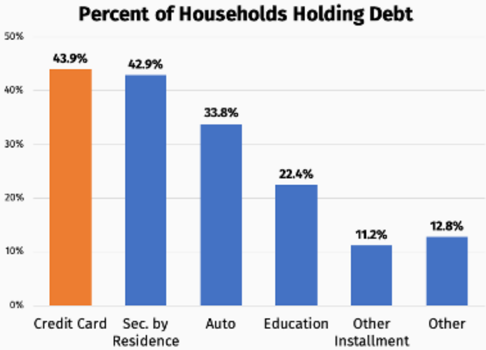
  → **Higher debt due to better social insurance may be a sign of financial resilience**

- **Health insurance weakens reliance on debt and default to cope with illness**

  Gross and Notowidigdo (2011), Finkelstein et al. (2012), Mahoney (2015), Barcellos and Jacobson (2015), Allen et al. (2017), Brevoort et al. (2017), Hu et al. (2018), Miller et al. (2018), Gallagher et al. (2019), Goldsmith-Pinkham et al. (2021) → **New focus on general equilibrium channels**

Empirical Analysis:
Credit Card Debt and Medicaid

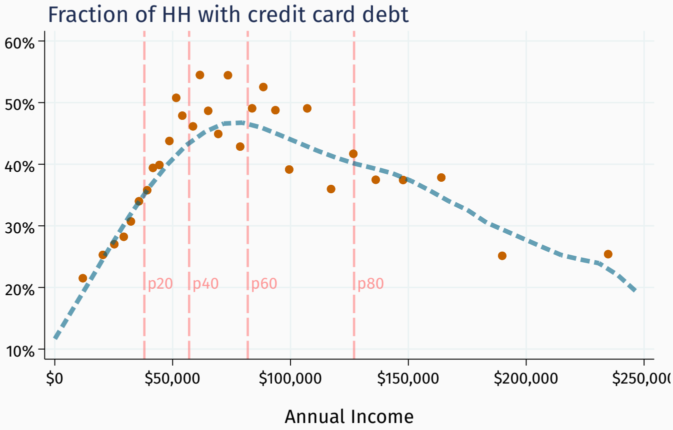
Credit Card Debt in the US



Source: 2016 SCF

- US households held **$927 bil.** in credit card balances in 2019 ($7,210 per household)
- Commercial banks earned $90 bil. in CC interest income in 2019
- The average APR is 14%, the legal max is 36%

Credit Card Debt along the Income Distribution



By Age Group

Source: PSID

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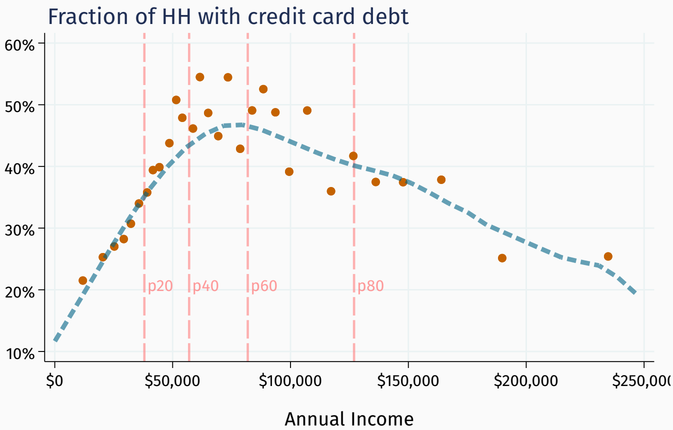

→ At odds with standard incomplete-market models (Aiyagari, Bewley, Imrohoroglu, Hugget)

→ Credit supply is first order → endogenous credit supply (Chatterjee et al., Livshits et al.)

By Age Group

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Medicaid Expansions

- Medicaid: gov't program providing health insurance to low-income households
- 64.7 million Americans received health insurance through Medicaid in 2019
- ACA provided federal funds for state expansions of Medicaid eligibility in 2014
  - But 2012 NFIB v. Sebelius Supreme Court ruling made take-up optional

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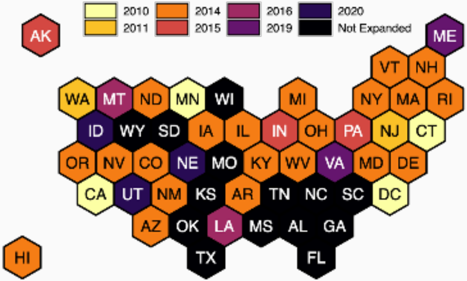
- ACA provided federal funds for state expansions of Medicaid eligibility in 2014
  - But 2012 NFIB v. Sebelius Supreme Court ruling made take-up optional
- Staggered expansion across states ensued:



Estimating the Causal Effect of Expanded Medicaid Eligibility on HH Debt

- Today: two empirical strategies
- **Strategy 1:** IV exploiting staggered timing of expansions
- **Strategy 2:** Recentered simulated IV (RSIV, Borusyak and Hull, 2021)

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- **Soon:** ZIP-level RSIV with CC *borrowing* and rich array of debt outcomes (Experian)

State-Level: Health Insurance and CC Debt

	TSLS		OLS	
	(1)	(2)	(3)	(4)
$\text{Insured}_{s,t}$	1.34**	1.41***	0.01	0.06
	(0.43)	(0.35)	(0.11)	(0.09)
	First Stage			
$1[\text{Adopted}]_{s,t}$	1.44***	1.56***		
	(0.19)	(0.19)		
Controls		✓		✓
Stage 1 F	55.7	65.8		
Obs.	765	765	765	765

$$ln(cc_{s,t}) = \text{Insured}_{s,t}\beta + X_{s,t}\gamma + \theta_s + \tau_t + \varepsilon_{s,t}$$

$$\mathbb{1}[\text{Adopted}]_{s,t} \xrightarrow{\text{IV}} \text{Insured}_{s,t}$$

Notes: Each regression includes state and year fixed effects and robust standard errors. Control variables include the unemployment rate, log(population), log(house prices), house price growth, and state-level GDP growth. Statistical significance: 5%*, 1%**, and 0.1%***. ▸ CC Debt

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Expanding Medicaid → ↑ **cc debt 2.2%**
→ ↑ **\$20.4 bil**

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County-Level: Recentered Simulated IV (RSIV)

- **Goal:** estimate causal effect of an increase in pop. Medicaid eligibility on DTI
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  - Step 3: construct RSIV as $(\text{eligibility}_{it} - \mu_{it})$, or control for μ_{it}
- The μ_{it} term accounts for a person's propensity to be exposed to higher eligibility
- Instrument $(\text{eligibility}_{it} - \mu_{it})$ is "excess" eligibility due to state's realized policy

County-Level Estimation of Effect of Eligibility on Debt-to-Income (DTI)

- Estimate the county-level equation below using TSLS:

$$\mathrm{DTI}_{it} = \beta_1 \mathrm{Elig}_{it} + \beta_2 \left(1[\mathrm{Low\ Inc}_{it}] \times \mathrm{Elig}_{it}\right) + X_{it}\gamma + \varepsilon_{it}$$

  - DTI_{it} is the *DTI* ratio in county i at year t
  - Elig_{it} is the % of county i's population that's eligible for Medicaid at t
  - $1[\mathrm{Low\ Inc}]_{it}$ indicates county i's income is the below median in year t
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- Alternatively, we can control for predicted eligibility μ_{it} in an OLS regression

$$DTI_{it} = \beta_1 \text{Elig}_{it} + \beta_2 \left(1[\text{Low Inc.}] \times \text{Elig}_{it}\right) + \alpha_1 \mu_{it} + \alpha_2 \left(1[\text{Low Inc.}] \times \mu_{it}\right) + X_{it}\gamma + \nu_{it}$$

RSIV First Stage

	Outcome = Elig	Outcome = Elig $\times$ 1[Low. Inc]
$\widetilde{\text{Elig}}$	0.978***	0.010
	(0.021)	(0.024)
$\widetilde{\text{Elig}} \times$ 1[Low Inc.]	-0.015	0.906***
	(0.011)	(0.055)
1[Low Inc.]	0.008***	0.235***
	(0.001)	(0.007)
log(Avg. Inc.)	-0.092***	-0.026***
	(0.006)	(0.006)
log(#HHs)	0.002***	1.00e-04
	(0.001)	(0.001)
Obs	15,513	15,513
R2	0.900	0.946
Stage 1 F	1,112	281.4
Dem x Year FE:		✓

Notes: All columns include state and year fixed effects. Standard errors clustered by state. $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

The Effect of Eligibility on DTI: RSIV Estimation Results

	(1)	(2)	(3)
Elig%	0.337	0.243	0.230
	(0.507)	(0.395)	(0.405)
Elig% × 1[Low Inc.]	1.096*	0.980*	0.989*
	(0.555)	(0.507)	(0.507)
1[Low Inc.]	-0.536***	-0.324**	-0.325**
	(0.167)	(0.154)	(0.154)
log(Avg. Inc.)		0.742***	0.742***
		(0.141)	(0.140)
log(# HHs)		-0.058	-0.058
		(0.055)	(0.055)
Obs.	15,513	15,513	15,513
R2	0.095	0.104	0.104
Dem x Year FE:			✓

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The Effect of Eligibility on DTI: Control Estimation Results

	(1)	(2)	(3)
Elig	0.031	0.010	-0.038
	(0.273)	(0.279)	(0.286)
Elig × 1[Low Inc.]	0.786**	0.795**	0.806**
	(0.380)	(0.384)	(0.383)
μ	-9.218***	-10.749***	-11.749***
	(1.624)	(2.477)	(2.577)
$\mu \times$ 1[Low Inc.]	0.057	0.374	0.210
	(1.396)	(1.362)	(1.387)
1[Low Inc.]	-0.160	-0.283	-0.235
	(0.307)	(0.317)	(0.323)
log(Avg. Inc.)		-0.267	-0.361
		(0.221)	(0.236)
log(# Inc.)		-0.034	-0.032
		(0.049)	(0.049)
Obs.	15,513	15,513	15,513
R2	0.121	0.122	0.125
Dem x Year FE:			✓

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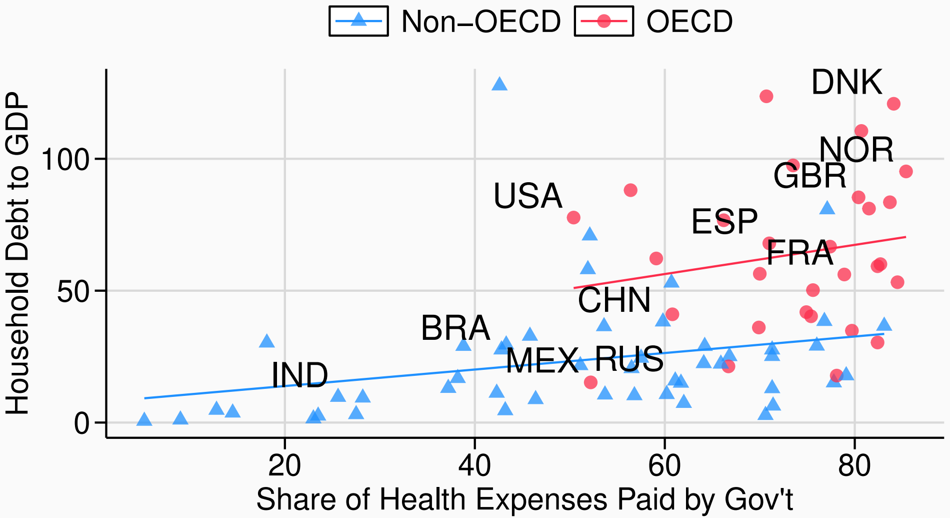
Expanding Medicaid →
↑ Elig. 6.3%
↑ DTI 5.1 pps for bottom 50% inc. group
↑ agg. HH debt 1.4% (avg. DTI = 187%)

Across Countries: Household Debt and Public Health Insurance



Model

Households

Income shocks

- Income: $$\ln y_{it} = \begin{cases} \rho \ln y_{it-1} + \epsilon^{y}_{it}, & \text{w.p. } \lambda_y \\ \ln y_{it-1}, & \text{w.p. } 1-\lambda_y \end{cases}$$

Expenditure shocks

- Medical expenditure: $X_{it} \sim \ln \mathcal{N}(\mu_x, \sigma_x^2)$
- Insurance by income: $M_{it} = oop\,(y_{it})X_{it}$

Debt

- Borrow (or save) using one-period debt securities: b_{it}
  - Can choose to go **delinquent** on debt (suffer utility cost)
  - Pay endogenous interest rate $r(y_{it}, b_{it+1}) = \frac{1}{q(y_{it}, b_{it+1})}$

Delinquency and Credit Supply

Households with delinquent debt:

- Cannot save or borrow
- Medical expenditure piles up on debt
- With some probability, stochastic fraction of debt is forgiven

Credit supply

- Perfect competition among lenders
- **Hybrid of short-term and long-term debt**

How health insurance affects borrowing

M — medical expenditure
b' — debt obligations
$q(\cdot)$ — price of debt
V^r — value of repayment
V^d — value of delinquency

Direct channel

- Insurance **raises disposable resources** $\Rightarrow$ **less debt**

Indirect channels

Borrowing optimality condition

$$\underbrace{u'(c)\frac{\partial\left(q(b',y)b'\right)}{\partial_{b'}}}_{\text{marginal benefit of borrowing}} = \underbrace{\beta\mathbb{E}\mathbb{1}_{V^r \geqslant V^d} u'(c(b'+M',y'))}_{\text{marginal cost if repaying}} + \underbrace{\beta\mathbb{E}\mathbb{1}_{V^r < V^d} V_1^d\left(b'+M',y'\right)}_{\text{marginal cost if delinquent}}$$

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- **Debt aversion motive:** $\mathbb{E}\mathbb{1}_{V^r \geqslant V^d}\uparrow$ increases mc of borrowing $\Rightarrow$ **less debt**
- **Credit supply channel:** $q(b',y)\uparrow$ increases mb of borrowing $\Rightarrow$ **more debt**

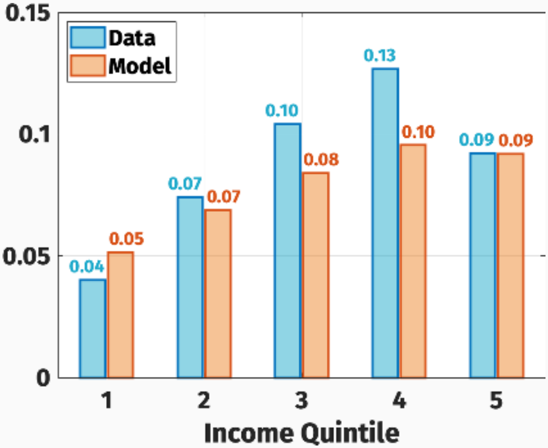
Medical Expenditure Panel Survey

- Distribution of medical expenditure
- Joint distribution of insurance type and income
- Out-of-pocket (OOP) expenses by insurance type

Calibrated Parameters

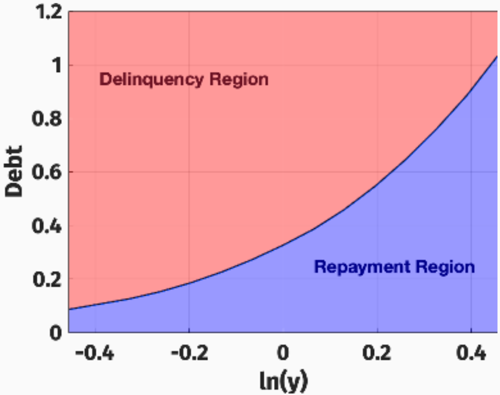
Panel Study of Income Dynamics

Credit card debt (% of median income)

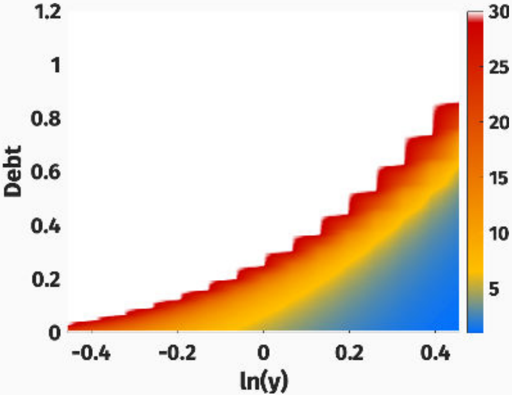


Equilibrium Features

Delinquency region



Equilibrium spreads (%)



Expansion of Medicaid

Experiment: **raise Medicaid coverage by 1.6 pp**

Decomposition → three channels

- **Direct insurance channel:** medical shocks less costly
- **Credit demand channel:** precautionary savings and *debt aversion*
- **Credit supply channel:** lower delinquency risk → better credit terms

Results:

	Medicaid Expansion Impact	Direct Effect	CD	CS
Credit debt level	+1.33%	-1.14%	-1.43%	+3.90%
Welfare	+0.18%	+0.15%	+0.0001%	+0.03%

Conclusion

Conclusion

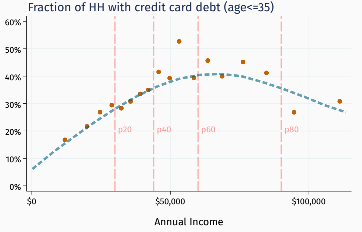
Q: **How does social insurance affect household debt?**

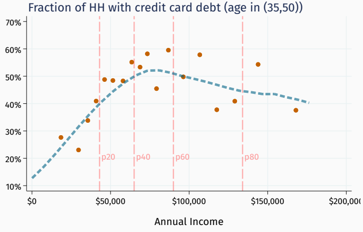
- We focus on expansion of health insurance through Medicaid
- Empirical evidence estimates
  - Medicaid expansion → **1.6 pp reduction in uninsured population**
  - Medicaid expansion → **2.2% increase in credit card debt**
  - Medicaid expansion → **1.4% increase in household debt**
- Quantitative model
  - Credit supply channel **drives the rise in debt**
  - Credit supply response leads to **first order welfare gains**
- Social insurance can crowd in private insurance (credit access) with large welfare gains

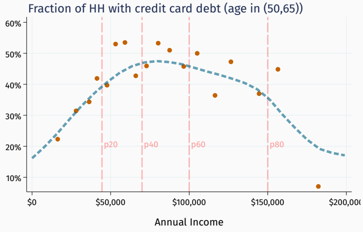
Thank You!

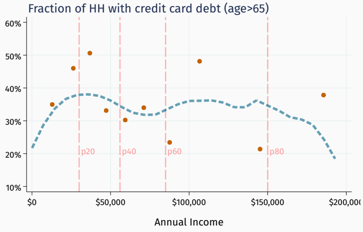
Empirical Appendix

Credit card debt versus income across age groups



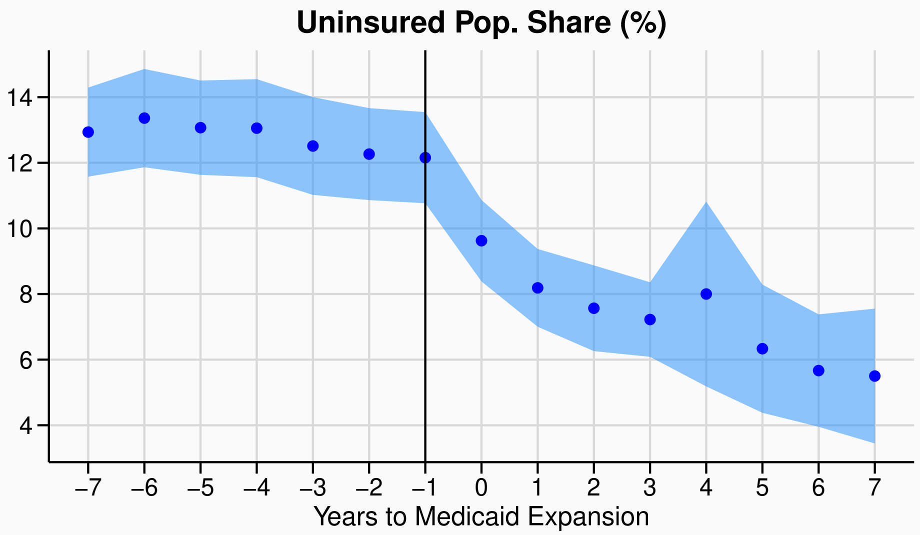






back

Uninsured rates fell after Medicaid expansion



Model Appendix

Calibrated parameters

Utility

$\beta = 0.92$

$\gamma = 3$

$\xi = 0.35$

$r_f = 2\%$

Income Process

$\lambda_y = 0.42$

$\rho_y = 0.88$

$\sigma_y = 0.07$

Haircut Process

$\lambda_d = 0.94$

$\beta_1^d = 1.7$

$\beta_2^d = 9$

Medical Shocks

$\mu_e = 0.08$

$\sigma_e = 1.6$

Insurance

$P_m = 0.1 - 0.15 \ln y$

$P_i = 0.78 + 0.21 \ln y$

$P_u = 1 - P_m - P_i$

Out of Pocket

$OOP = P_m O_m + P_i O_i + P_u O_u$

$O_m = 7\%$

$O_i = 27\%$

$O_u = 63\%$

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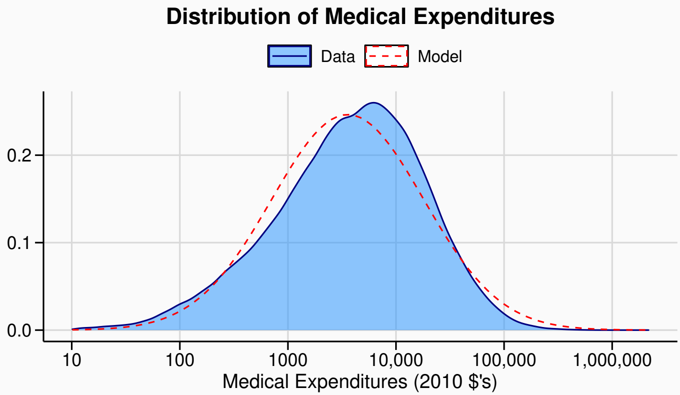
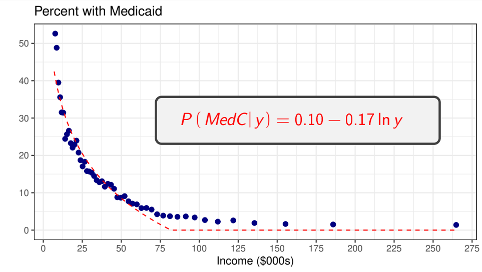
Distribution of expenditure shocks

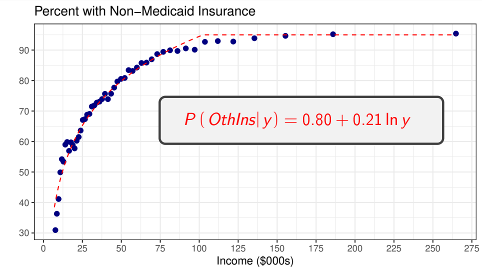


$$X_{it} \sim \ln \mathcal{N}\left(\ln(0.08), 2.62\right)$$

- Median expenditure shock = 8% annual income
- 1 s.d. above median = 40% annual income

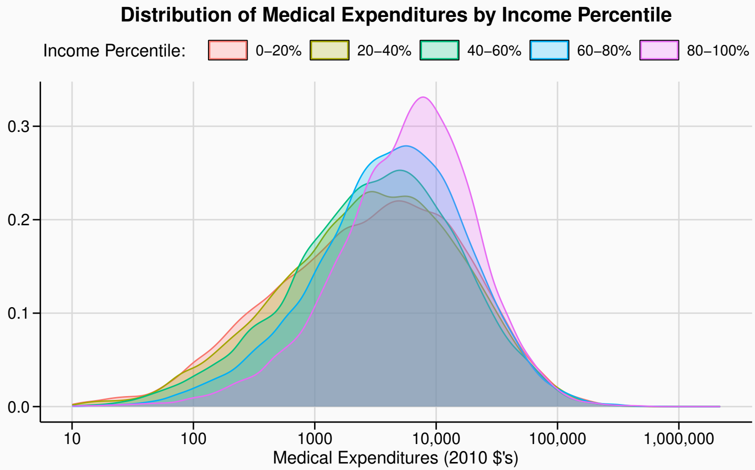
Out-of-pocket expenditure by income





$$oop(y) = P(MedC|y) \times 6.8\% + P(OthIns|y) \times 27.5\% + P(NoIns|y) \times 62.7\%$$

Medical expenditure distribution by income



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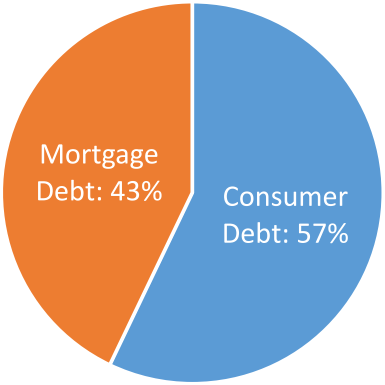
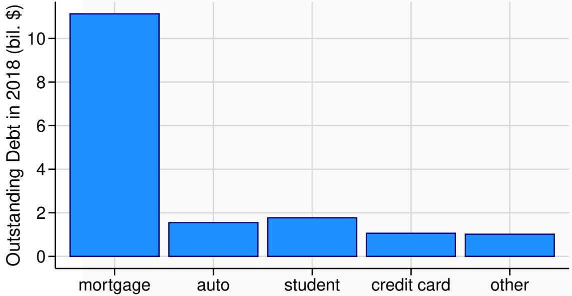
Share of Debt Service Payments (2018)





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Large uninsured pop. in some states