Borrowing to Save?
The Impact of Automatic Enrollment on Debt

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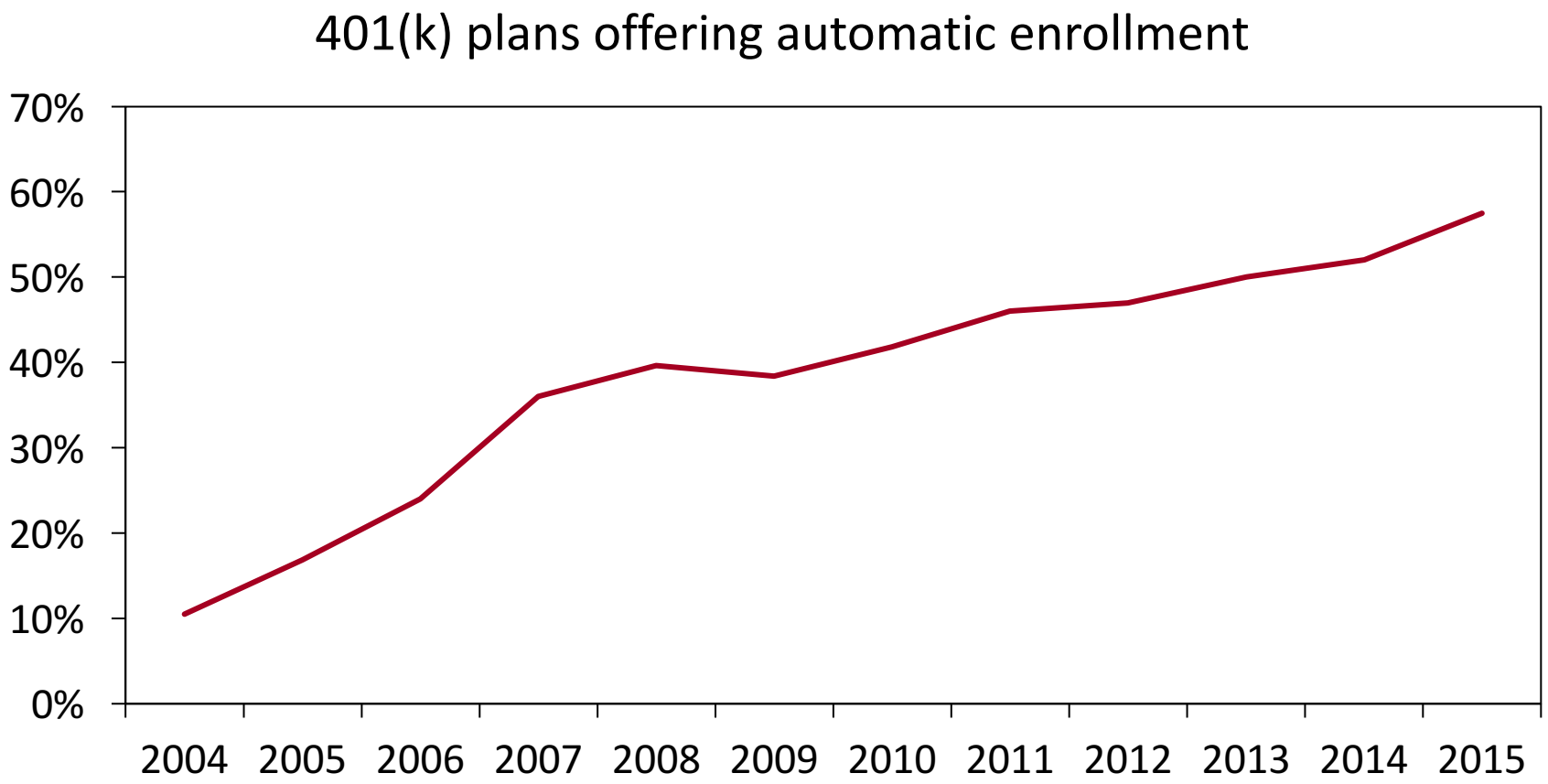
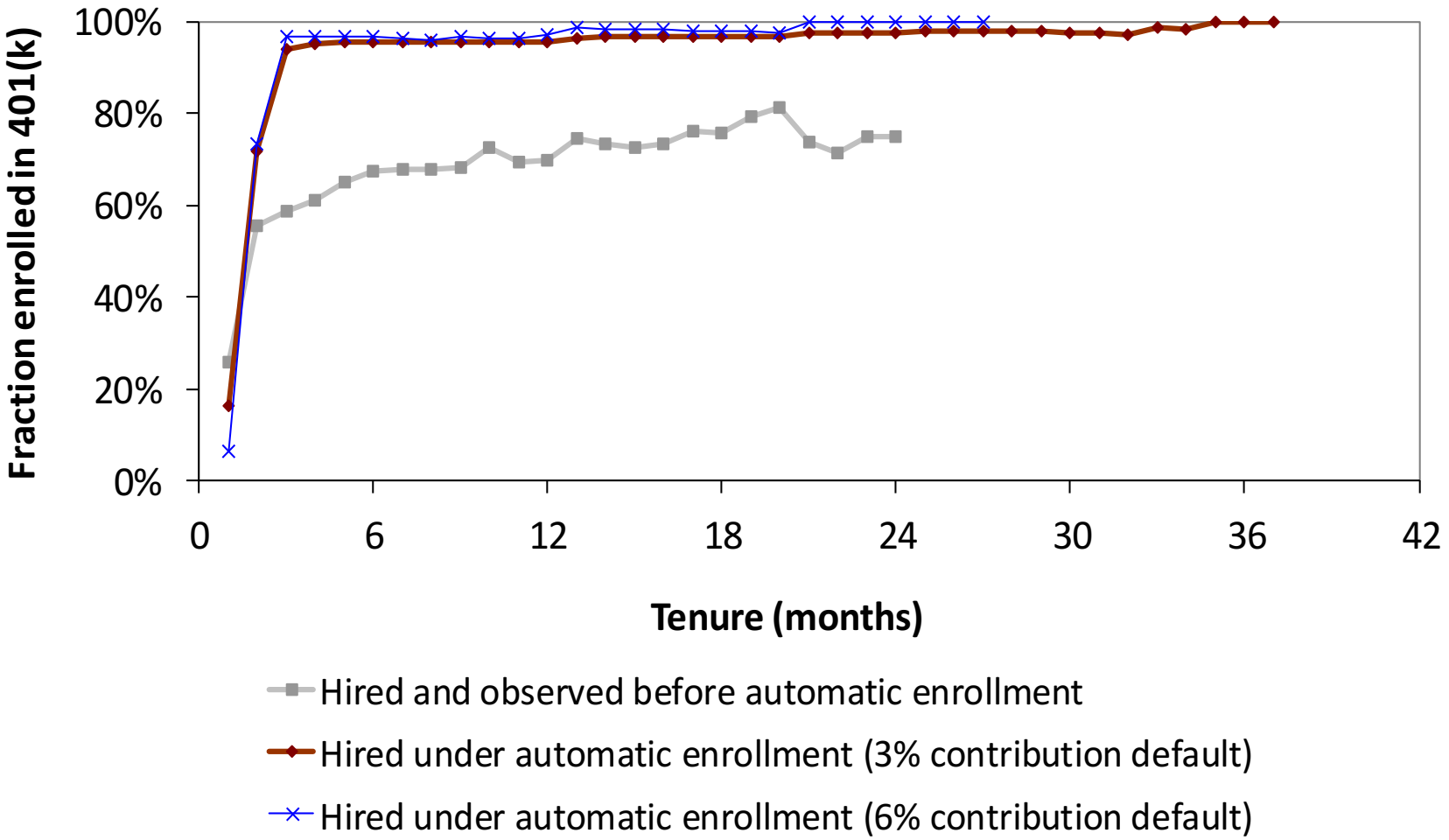
Auto-Enrollment in 401(k) is Growing Rapidly in U.S.



Source: Profit Sharing/401(k) Council of America

AE Increases 401(k) Participation



Source: Beshears, Choi, Laibson, and Madrian (2008)

Where Does 401(k) Savings Increase Come From?

Today's Research Question

Reduced consumption?

Reduced saving elsewhere?

Increased debt?

Setting

- U.S. Army civilian employees
- Before August 1, 2010, opt-in enrollment to Thrift Savings Plan (TSP)
- Starting August 1, 2010, automatic enrollment for new hires only
  - 3% of income default contribution rate
  - 100% in U.S. Treasury fund default
- 1% of income non-contingent employer contribution
- First 3% of income contributed matched at 100% rate, next 2% at 50%

Data

- Monthly payroll records from Dept. of Defense, 2007 – 2015
- Employee demographic info from Army personnel data
- June and December credit records from national credit bureau, 2007 – 2014

Empirical Strategy

- Compare two hire cohorts to each other at equivalent levels of tenure
  - Pre-AE Cohort: August 1, 2009 – July 31, 2010 hires
    n=32,073
  - Post-AE Cohort: August 1, 2010 – July 31, 2011 hires
    n=26,803
- Similar results with an RD strategy (see appendix).

Demographics

	Pre-AE (Aug '09 – Jul '10 hires)	Post-AE (Aug '10 – Jul '11 hires)	Difference	*p*-value of difference
Avg. starting salary	$56,418	$55,825	-593	0.009
Avg. deflated starting salary	$56,962	$55,825	-1137	0.000
Avg. age at hire	39.7	39.9	0.2	0.012
Male	61.2%	61.5%	0.3%	0.411
High school only	42.0%	47.1%	5.1%	0.000
Some college, no degree	13.1%	12.2%	-0.9%	0.001
Associate degree	5.4%	4.9%	-0.5%	0.012
Bachelor's degree	21.9%	18.5%	-3.3%	0.000
Graduate degree	16.6%	16.2%	-0.4%	0.227
Has credit report in six months before hire	83.0%	83.2%	0.1%	0.645
Avg. Vantage Score in six months before hire, conditional on having Vantage Score	686.4	687.4	1.0	0.245
N	32,073	26,803		

Main Outcomes

- Ratio of cumulative TSP contributions to first-year pay
  - Don't observe balances, capital gains, withdrawals, loans
- Debt measures:
  - D1: Debt excluding first mortgages and auto debt as a fraction of first-year pay
  - D2: Debt excluding first mortgages as a fraction of first-year pay
  - D3: All debt as a fraction of first-year pay
- "Net Wealth" measures reflect contributions minus debt as a fraction of first year pay
- Vantage credit score

Secured debt in frictionless market

When secured loan originated to purchase asset:

$$\Delta Durable\ asset + \Delta Financial\ assets = \Delta Debt$$

- Zero immediate net worth impact
- Larger secured loan implies:
  - More valuable asset purchased and/or
  - Fewer financial assets spent down

Why take out a larger loan?

- Feel wealthier
- A loan from the TSP eases down payment constraint
  - Ex: $1 of additional down payment in an FHA loan allows $27.57 larger mortgage with 96.5% LTV cap
- More liquid assets spent down *in the past*

Larger loan: Implications for future net worth

- Negative effect through higher interest costs
- Negative effect if asset depreciation is higher
- Positive effect if asset appreciation is higher
- Positive effect through “forced savings” channel

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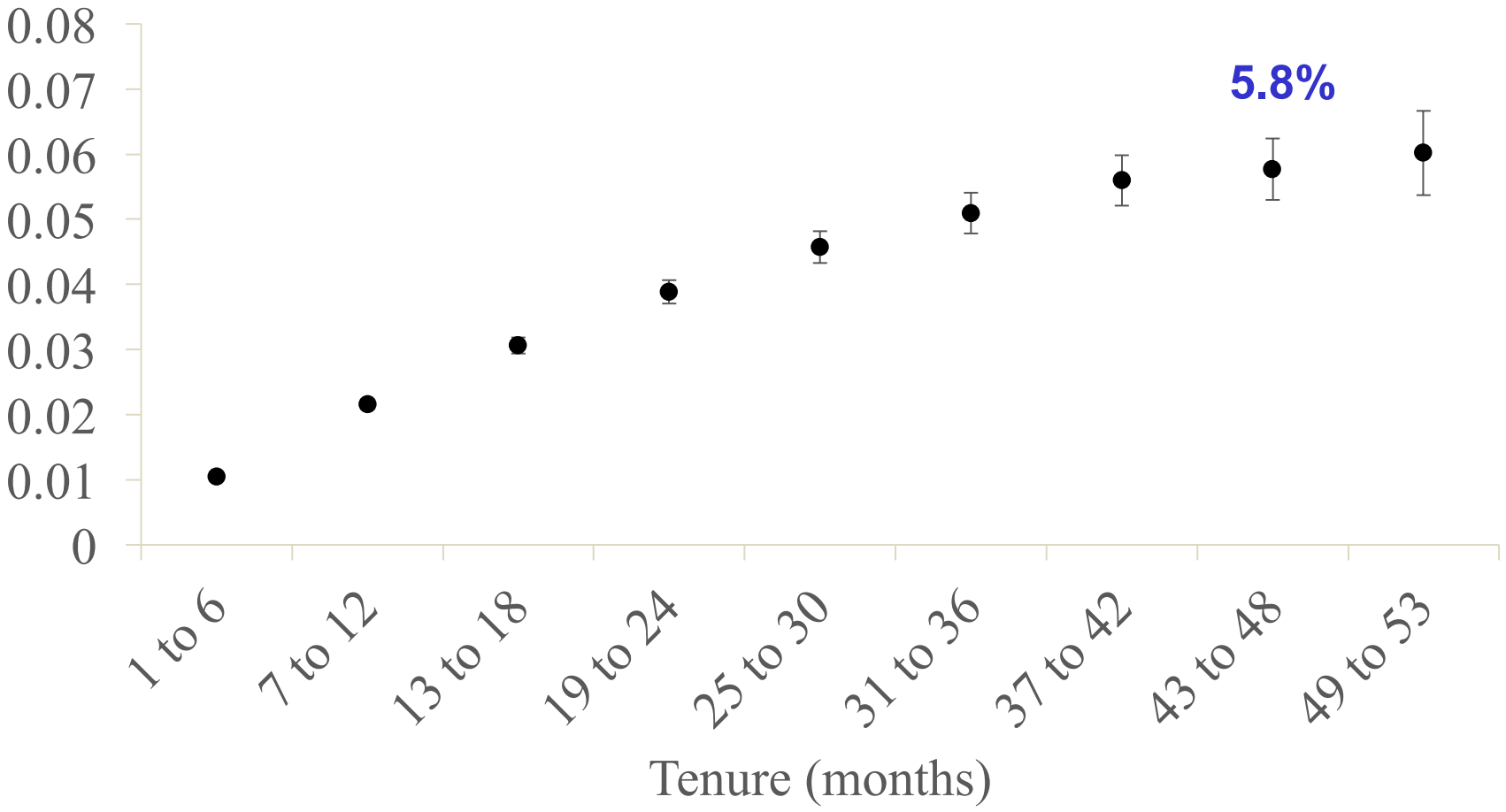
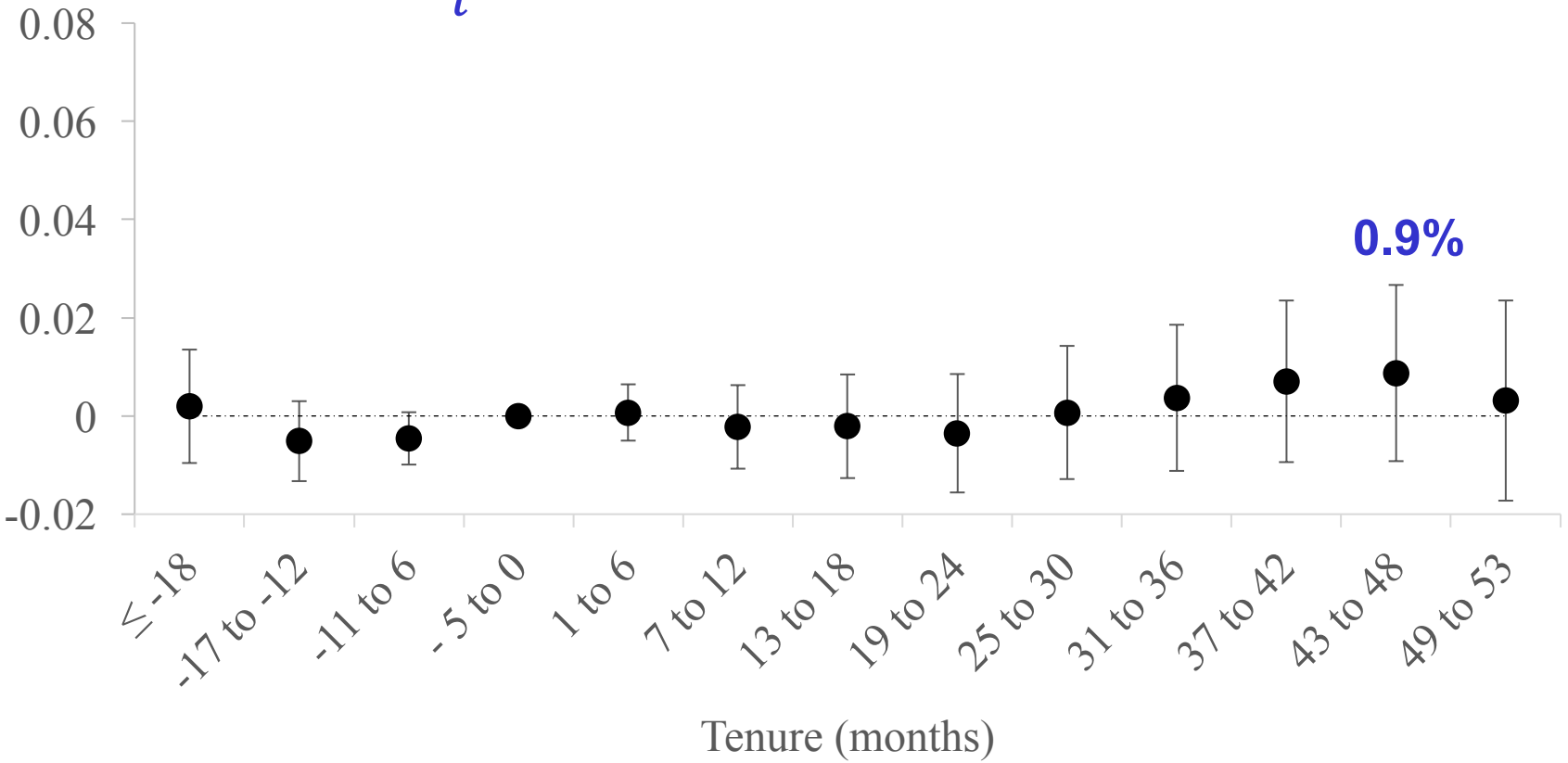
TSP Contributions (employer + employee) to Pay

$$y_{i\tau} = \sum_{s} [I(\tau \in T_s)(\alpha_s + \beta_s X_i + \gamma_s PostAE_i)] + \epsilon_{i\tau}$$



Debt excluding auto loans and first mortgages divided by pay

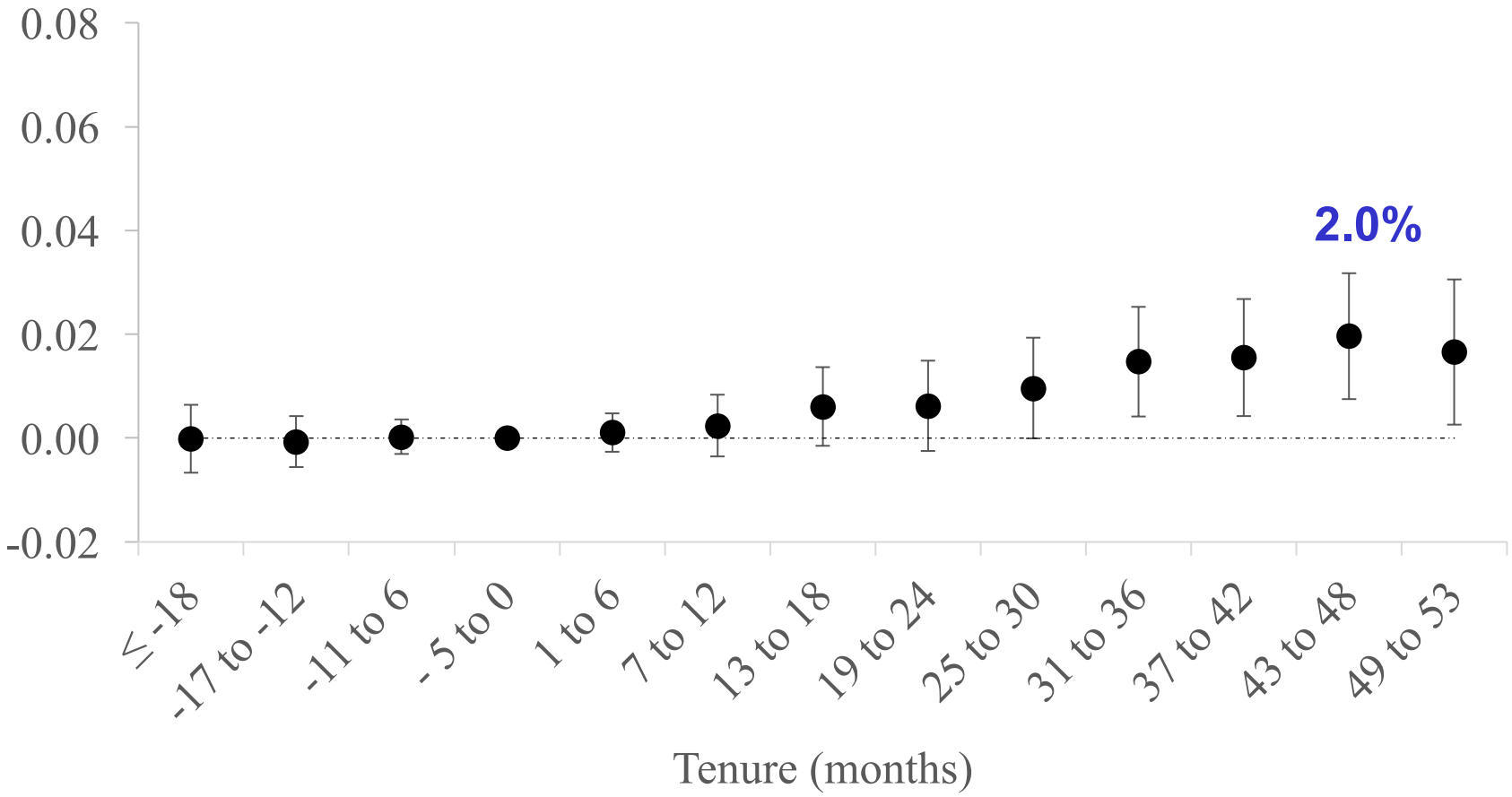
$$y_{i\tau t} = \alpha_i + \eta_t + \sum_{\tau} [I(t \in \tau)(\alpha_s + \beta_\tau + \gamma_\tau PostAE_i)] + \epsilon_{i\tau}$$



- AE effects on debt components in Table 3.
  - No effects on balances in third party collections

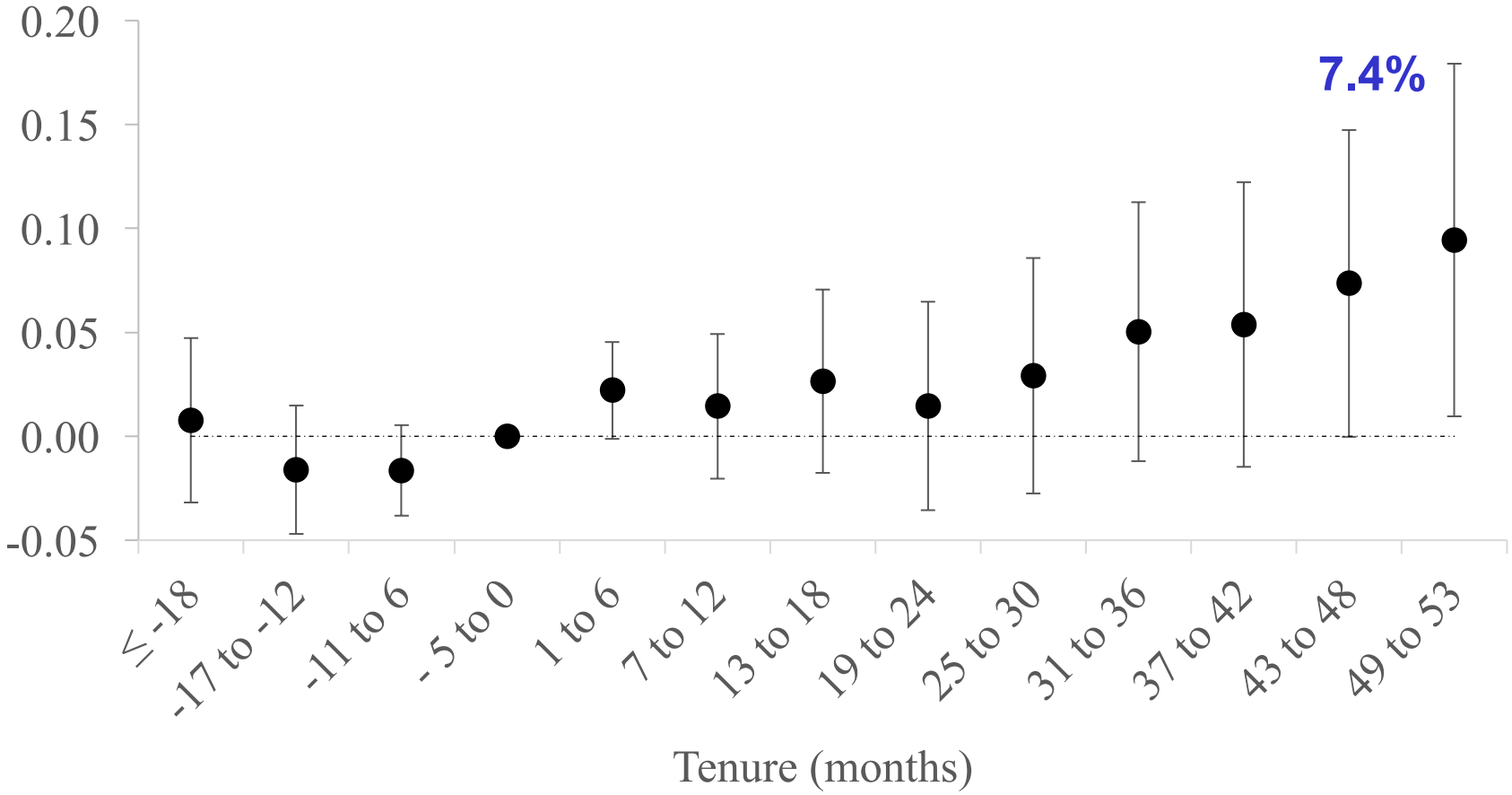
Auto loans divided by pay

$$y_{i\tau t} = \alpha_i + \eta_t + \sum_{\tau} [I(t \in \tau)(\alpha_s + \beta_\tau + \gamma_\tau PostAE_i)] + \epsilon_{i\tau}$$



First mortgage divided by pay

$$y_{i\tau t} = \alpha_i + \eta_t + \sum_{\tau} [I(t \in \tau)(\alpha_s + \beta_\tau + \gamma_\tau PostAE_i)] + \epsilon_{i\tau}$$

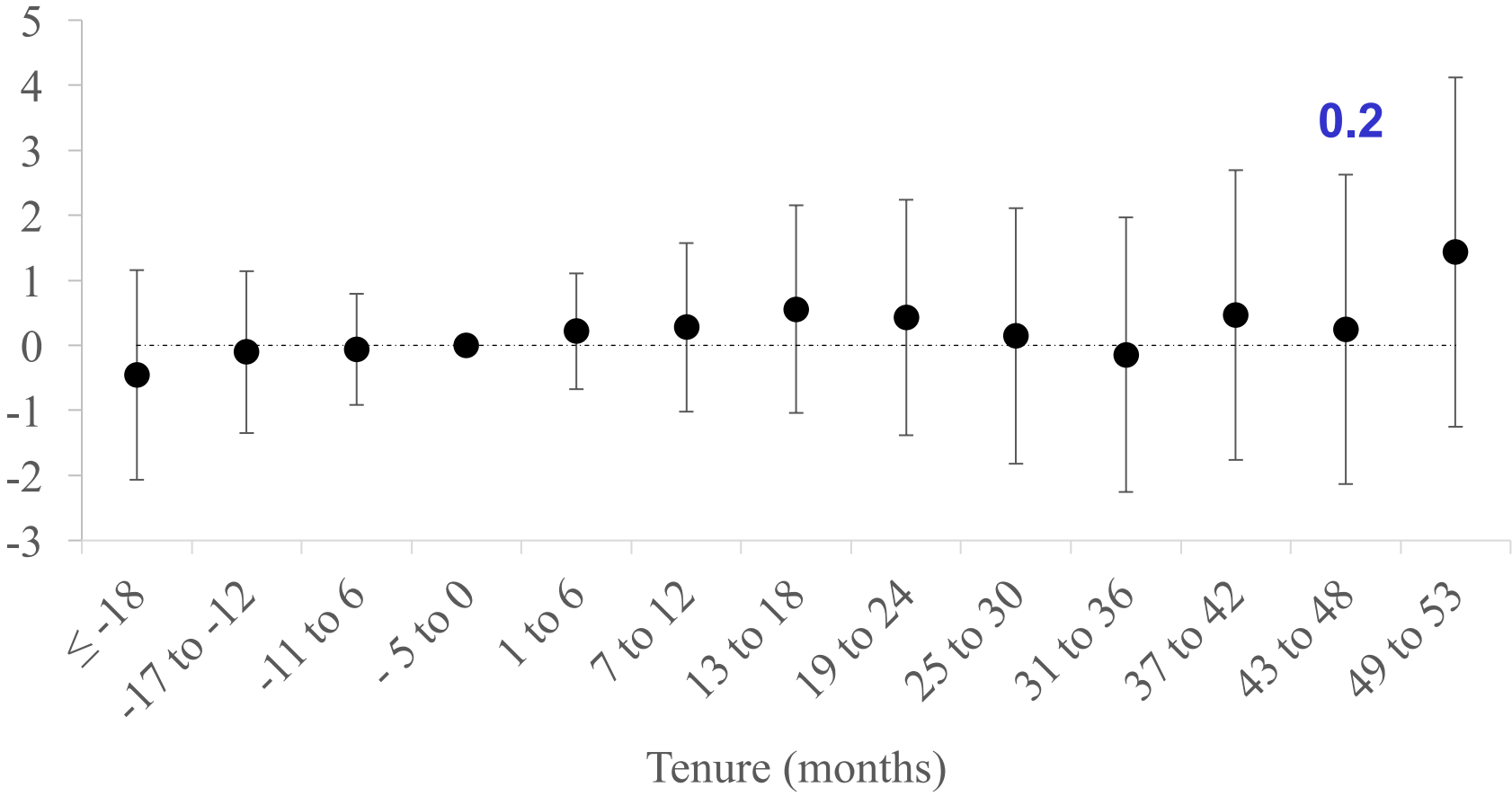


Debt and “net wealth” effects

	Effect at 43-48 months of tenure
D1	0.009
	(0.009)
D2	0.028*
	(0.011)
D3	0.102*
	(0.041)

Vantage score

$$y_{i\tau t} = \alpha_i + \eta_t + \sum_{\tau} [I(t \in \tau)(\alpha_s + \beta_\tau + \gamma_\tau PostAE_i)] + \epsilon_{i\tau}$$



Vantage score standard deviation = 95

Conclusions

- At four years of tenure, automatic enrollment increases cumulative employee plus employer contributions by 5.8% (se 0.2%) of starting salary on average
- The increase in debt excluding auto loans and first mortgages is not statistically significant
- Auto loans and first mortgages increase
- No evidence of increased financial distress as measured by Vantage scores and collections