The Effects of Financial Education on Financial Well-being

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Disclaimer

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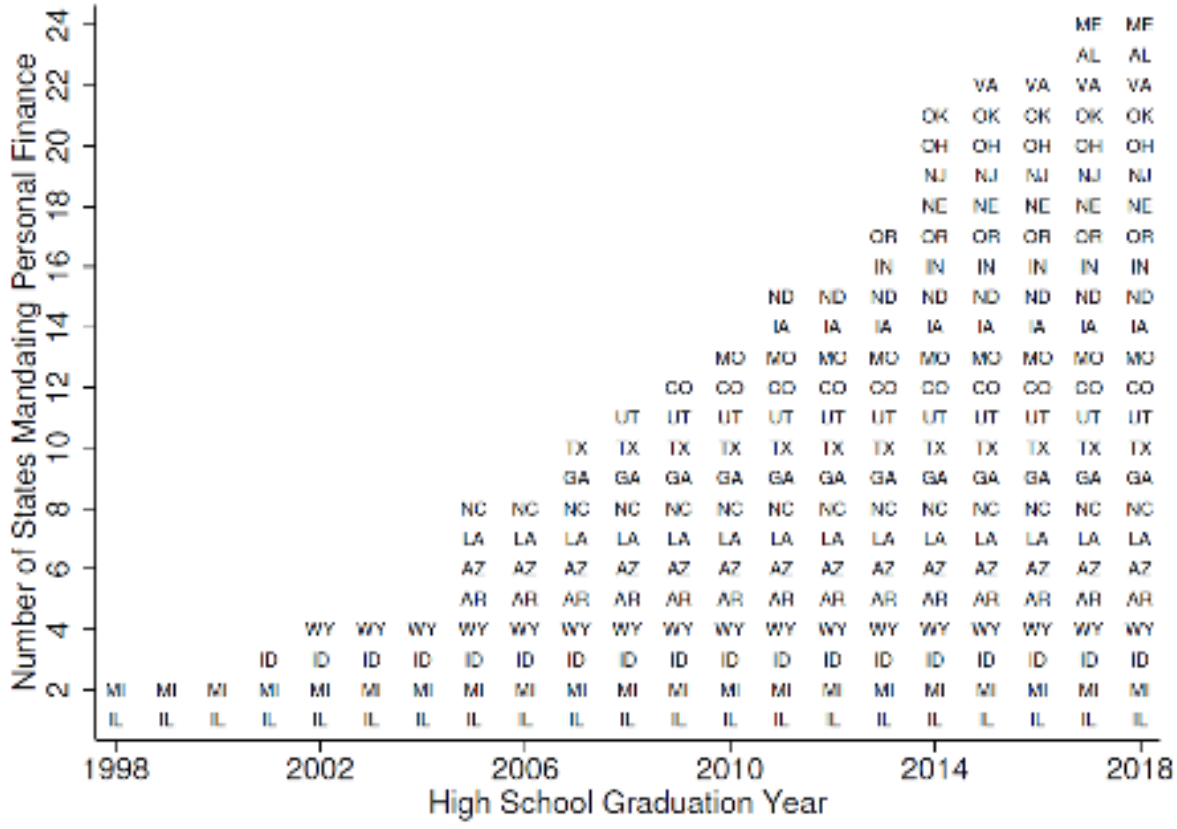
Motivation

- Many people struggle with financial decisions
- Policy response - financial education
- Past 20 years, considerable expansion in state-mandated financial education in high school

Policies


Number of States Mandating Personal Finance
2
4
6
8
10
12
14
16
18
20
22
24
1998
2002
2006
2010
2014
2018
High School Graduation Year

What Does Financial Education Do?

- Recent research finds that state-mandated financial education in high school:
  - increases credit scores and reduces delinquency rates (Urban et al 2020 and Brown et al 2016);
  - improves postsecondary financing decisions (Stoddard and Urban 2019);
  - increases student loan repayment for first-gen & low income students (Mangrum 2022);
  - decreases AFS use (Harvey 2018).

What About Subjective Measures?

- Prior work focuses on financial outcomes
- Less focus on subjective well-being, though to improve welfare need to improve utility
- Recent work developed measures of subjective financial well-being (FWB)

- Research questions
  - **Does state-mandated financial education affect FWB?**
  - Are the effects different for those who end education with high school? Or by gender?

Theory

Build on Lusardi, Michaud, Mitchell (JPE, 2017)

$$u(c) + \beta u(a) \tag{1}$$

$$a = Rs \tag{2}$$

$$c = E[y] - \pi R - \tfrac{a}{R} \tag{3}$$

$$a^{\star} = \tfrac{R\beta}{1+\beta} E[y] \tag{4}$$

Financial Well-being

Extensive work supported by the U.S. Consumer Financial Protection Bureau to define FWB:

- feeling in control over day-to-day, month-to-month finances;
- having the capacity to absorb a financial shock;
- being on track to meet financial goals; and
- having the financial freedom to make the choices that allow one to enjoy life.

NFCS Data

National Financial Capability Study (NFCS)

- Nationally representative study (also state-representative).
- 2018 data includes FWB measure.
- Restrict sample to 22-45, population for which we can document policy effects in a pre- and post- period. Want sample to be post- postsecondary education sorting.
- Final samples: 12,228 (2018).

NFCS Data

Pseudo-Financial Well-being (PFWB)

- Build a measure that mimics FWB but can be used across 2012, 2015, and 2018.
- Slightly more objective questions than in FWB, but overall quite similar.
- Use 2012, 2015, and 2018 data for PFWB measure.
- Final sample: 37,086 individuals.
- Correlation is 0.61.

FWB and PFWB Measures

CFPB FWB Question	NFCS Proxy Question
I am just getting by financially	How confident are you that you could come up with $2,000 if an unexpected need arose within the next month?
I am concerned that the money I have or will save won't last	Over the past year, would you say your household's spending was less than, more than, or equal to your household's income?
Because of my money situation, I feel like I will never have the things I want in life	Overall, thinking of your assets, debts and savings, how satisfied are you with your current personal financial condition?
My finances control my life	I have too much debt right now
I have money left over at the end of the month	In a typical month, how difficult is it for you to cover your expenses and pay all your bills?

Methods

Use a difference-in-difference model with two-way fixed effects (state and graduation year).

$$Y_{i,s,t} = \alpha_0 + \alpha_1 \text{Fin Ed}_{s,t}(+\beta X_i) + \delta_s + \gamma_t + \epsilon_{i,s,t} \qquad (5)$$

- $Y_{i,s,t}$ (P)FWB.
- Fin $\text{Ed}_{s,t}$ state required personal finance prior to graduation for individual i in state s graduating in year y.
- X_i contain: male, race/ethnicity dummies (white, Black, Hispanic, other).
- δ_s are state fixed effects.
- γ_t are graduation year fixed effects.
- In PFWB specifications, also include survey year fixed effects.
- We cluster standard errors at the state level.

Results

	FWB	Q1	Q2	Q3	Q4	Q5
Fin Ed	0.777	0.031	0.095*	0.087*	0.052	0.055
	(0.532)	(0.039)	(0.055)	(0.050)	(0.058)	(0.049)
N	12,228	11,989	12,089	11,928	11,940	11,887
Topic	Scale	Getting by	$ won't last	Won't have things	Control my life	$ left over
	PFWB	Q1	Q2	Q3	Q4	Q5
Fin Ed	0.755**	-0.011	0.060*	0.085**	0.049	0.087**
	(0.358)	(0.041)	(0.035)	(0.042)	(0.036)	(0.034)
N	37,086	36,488	35,396	35,508	36,487	36,057
Topic	Scale	Emerg Saving	Spend $\leq$ Income	Satisfied w assets, debt, savings	Too much Debt	Difficulty expenses

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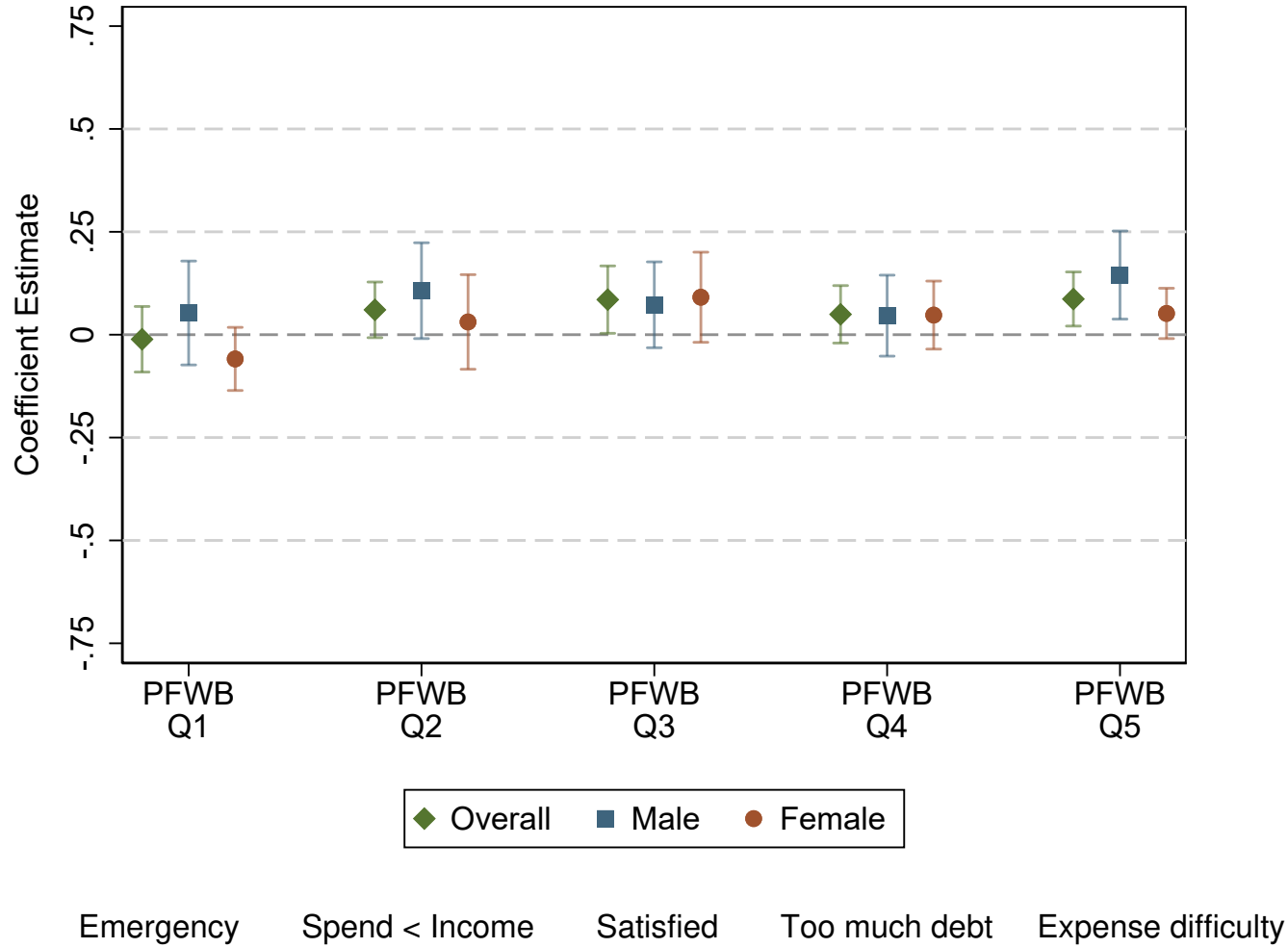
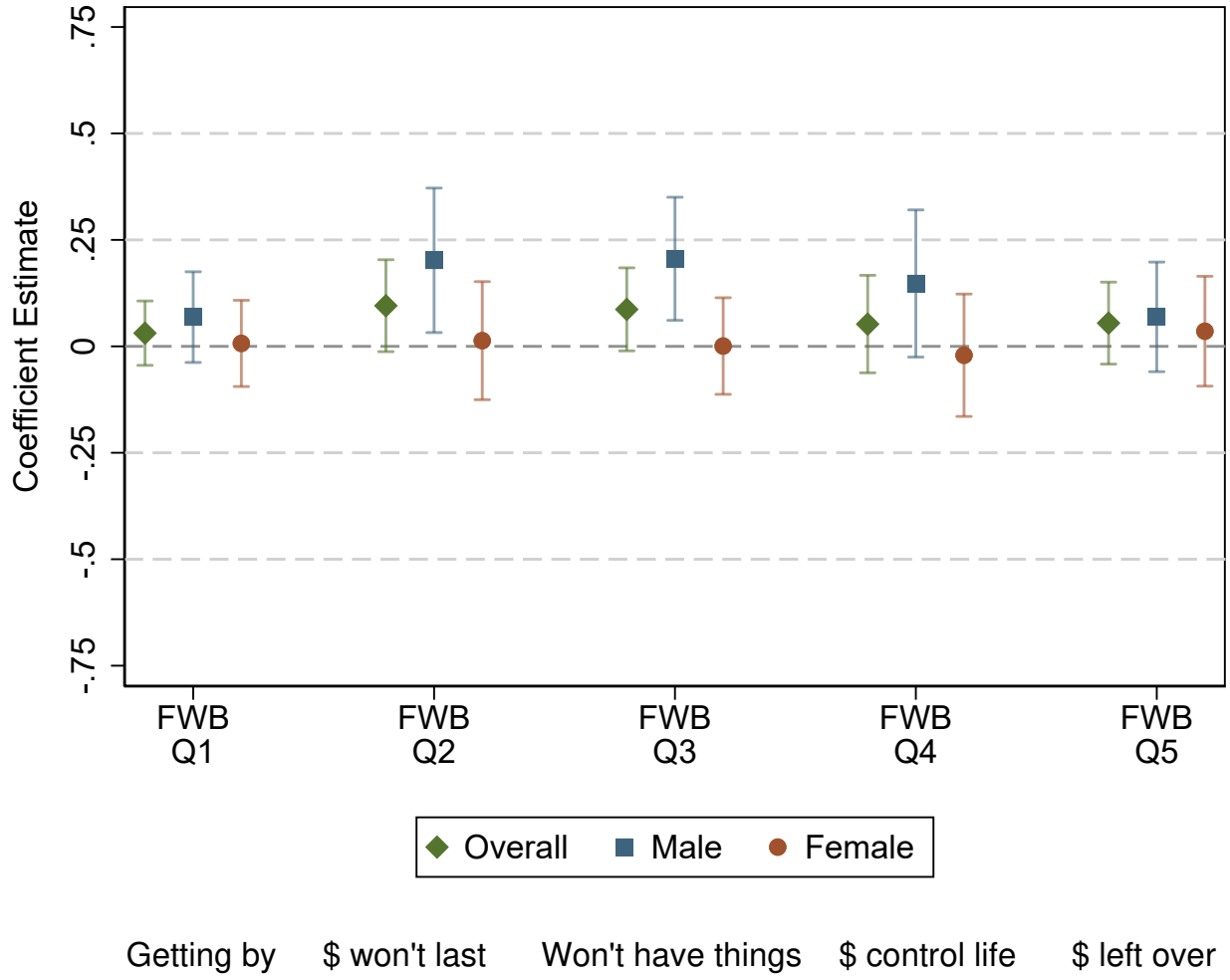
Results

	FWB			PFWB		
	Overall	Male	Female	Overall	Male	Female
Fin Ed	0.777	1.858**	-0.049	0.755**	1.220***	0.421
	(0.532)	(0.735)	(0.714)	(0.358)	(0.453)	(0.423)
N	12,228	5,182	7,046	37,086	15,762	21,324
Mean	47.54	49.23	46.30	51.25	53.81	49.35

Effects by Component: PFWB, Gender



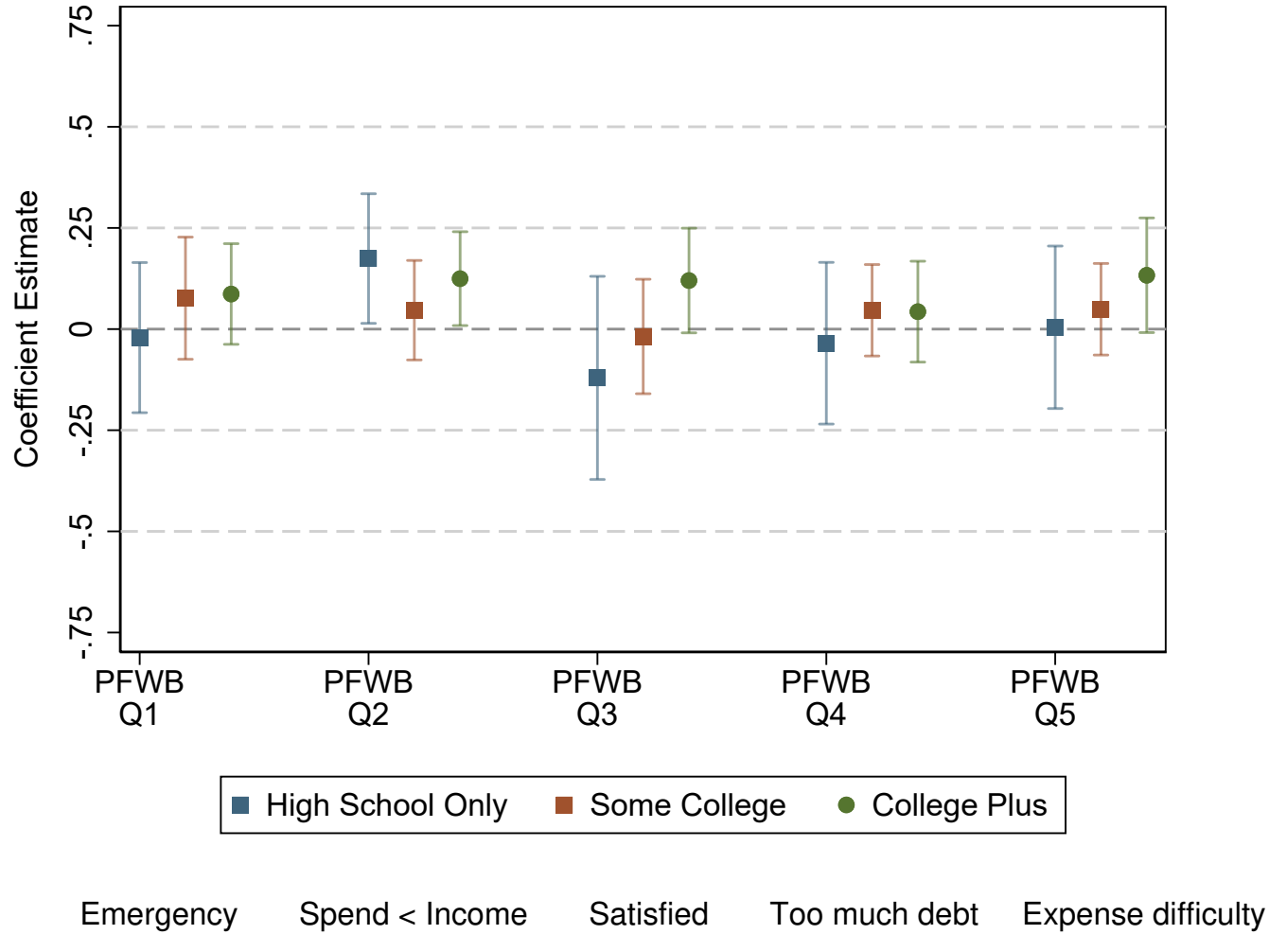
Effects by Component: FWB, Gender



Results

	FWB			PFWB		
	High School	Some College	College+	High School	Some College	College+
Fin Ed	-3.025**	1.921*	2.007*	0.011	0.539	1.508**
	(1.413)	(1.066)	(1.060)	(1.025)	(0.675)	(0.702)
N	2,258	3,893	3,951	6,553	13,470	10,008
Mean	45.38	45.35	51.10	48.21	49.73	56.03

Effects by Component: PFWB, Education



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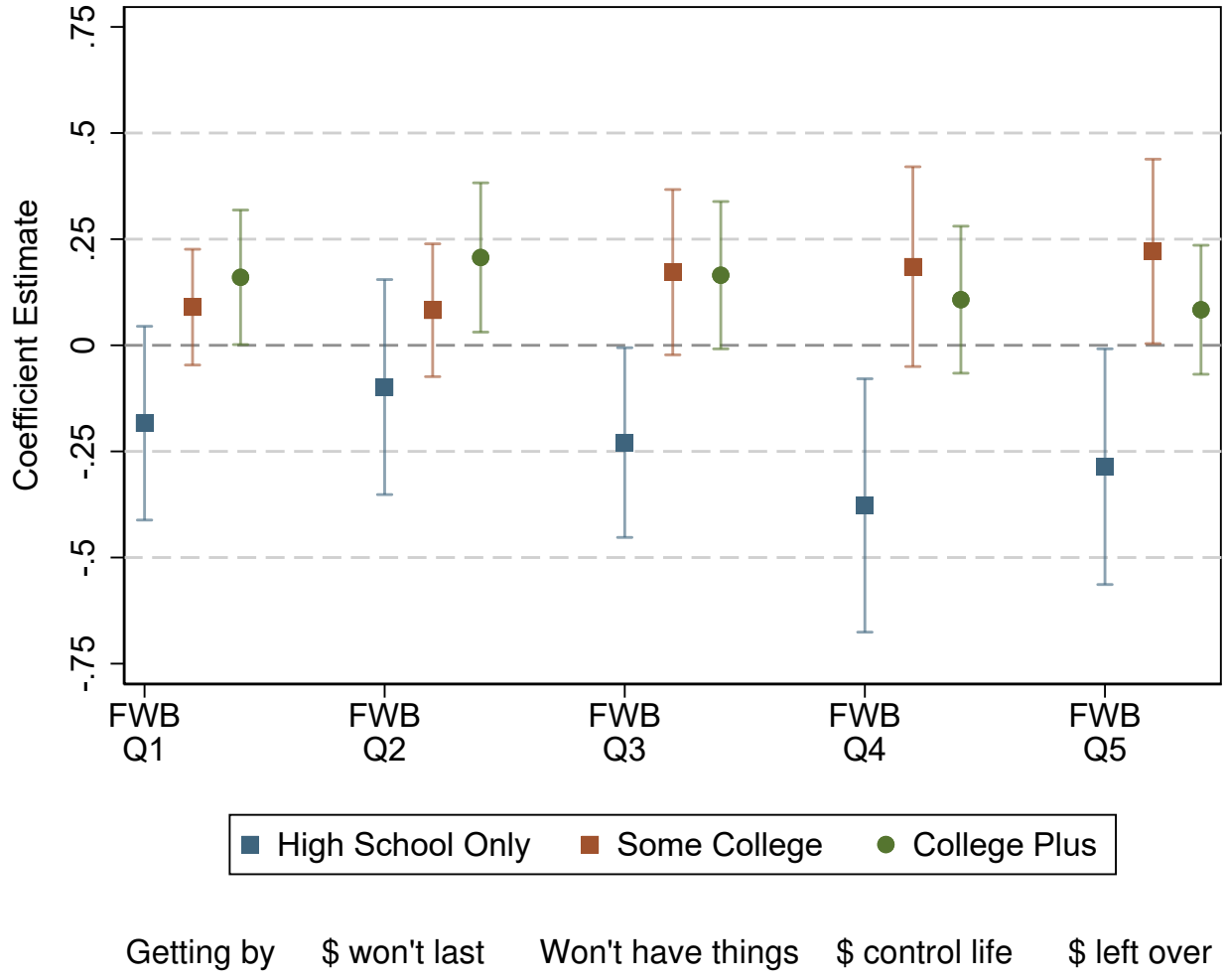


Conclusions

- State-mandated high school financial education improves objective financial outcomes, on average
- It also improves FWB for men and those with college degrees
- People who end their education with a HS diploma had lower FWB after mandated financial education...
  - Lowered expectations regarding future economic security
  - Policies promoting financial education in high school may be increasing the FWB gap across education levels
  - Current curricula may not be sufficiently tailored for this population

Extra Slides

What is Not Driving Our Effects?

- household formation: effects are similar for single and married individuals.
- changes in income: financial education does not really affect earnings.
- one specific state: drop each state one at a time and results do not change.
- objective financial situation: controlling for asset levels or household income does not change effects.
- presence of controls.
- functional form: quantile regressions show similar effects at the median.

Interpreting Effect Sizes

Compare to another shock: job loss.

- Use an individual-level fixed effects model for a panel sample in the UAS from 2016-2018 (N=872, roughly 300 individuals).
- Job loss reduces FWB by roughly 6.8 points for the full population, and 9.8 points for the HS diploma only population.
- **Fin ed decreases FWB those who end education with a HS diploma by 3.0 points, roughly 30% of the effect size of job loss.**
- Fin ed increases FWB for men in the full sample by 1.9 points, roughly 19% of the effect of job loss.

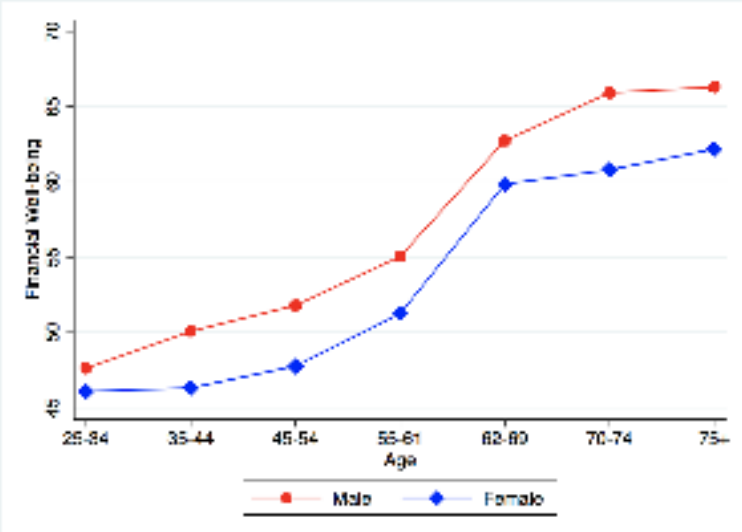
Interpreting Effect Sizes

ITT vs. TOT

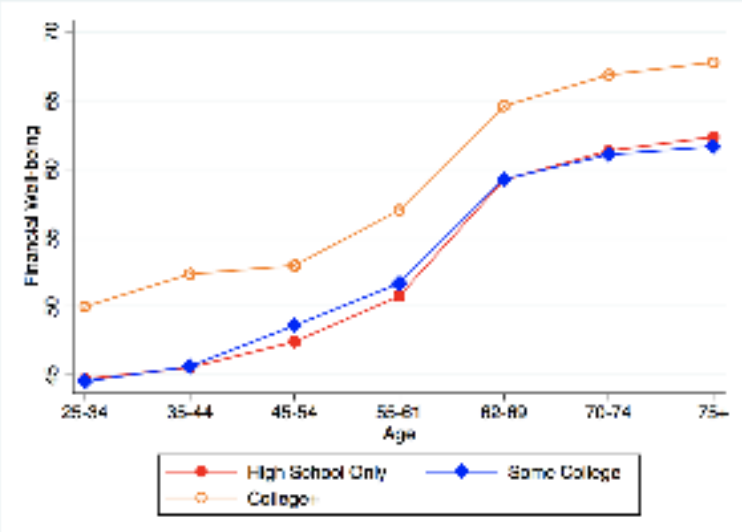
- Data from school course catalogs show that **only 48%** of schools within states that have graduation requirements have either a standalone personal finance course requirement or a course with personal finance content that is required for graduation.
- This means our effects are quite a bit larger for those that actually complete the required course.

Gaps exist in FWB over the life course by education level and gender

Gender



Education



Notes: Data from 2018 NFCS.

High School Financial Education

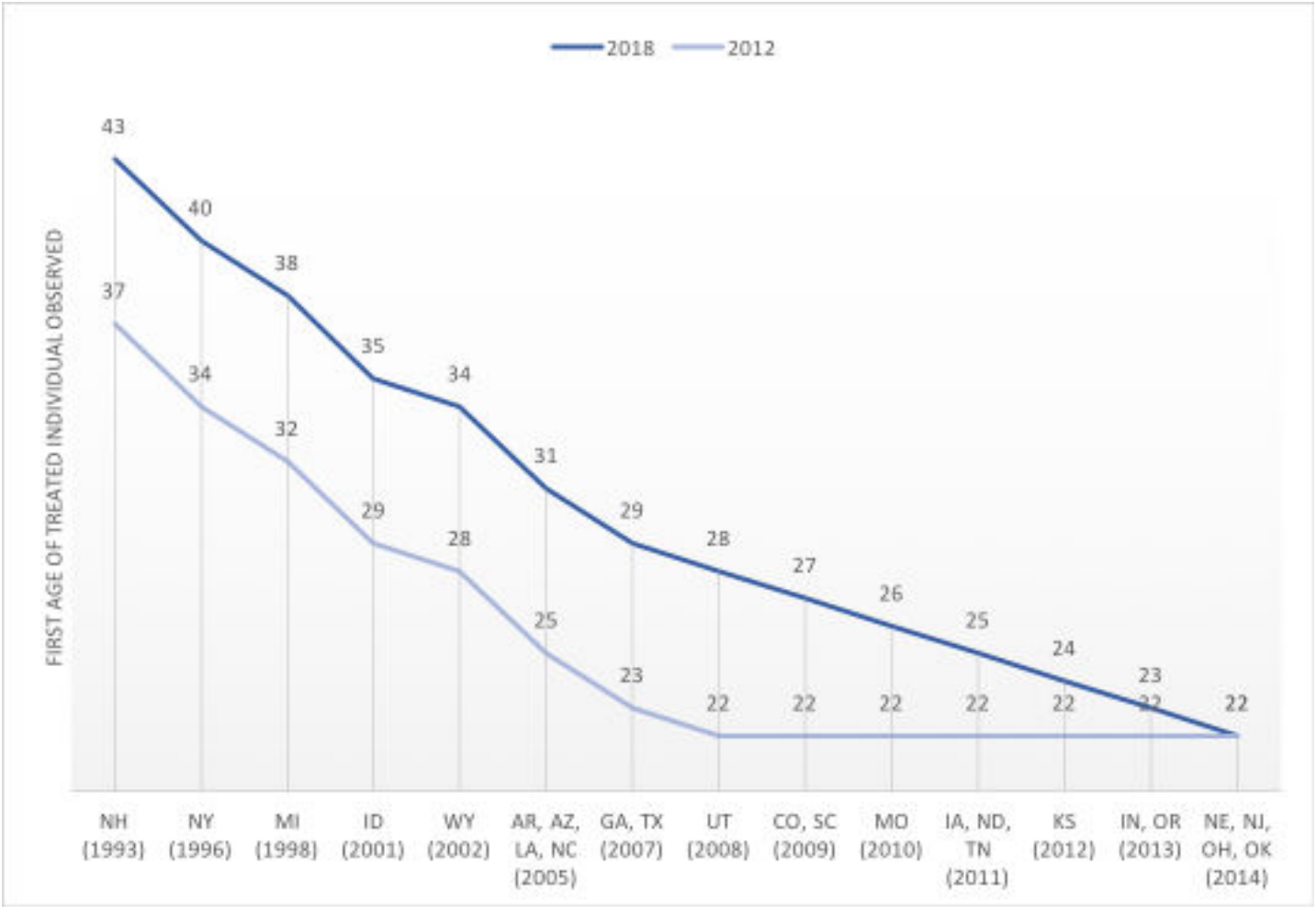
What happens in high school financial education courses?

- Calculating and comparing debt with different interest rates,
- Understanding credit scores,
- Incurring long-term debt: mortgages, auto loans, student debt,
- Using credit cards,
- Examining how incomes may fluctuate and insuring against risk,
- Comparing salaries across occupations and making monthly budgets.

Fin Ed Graduation Requirements

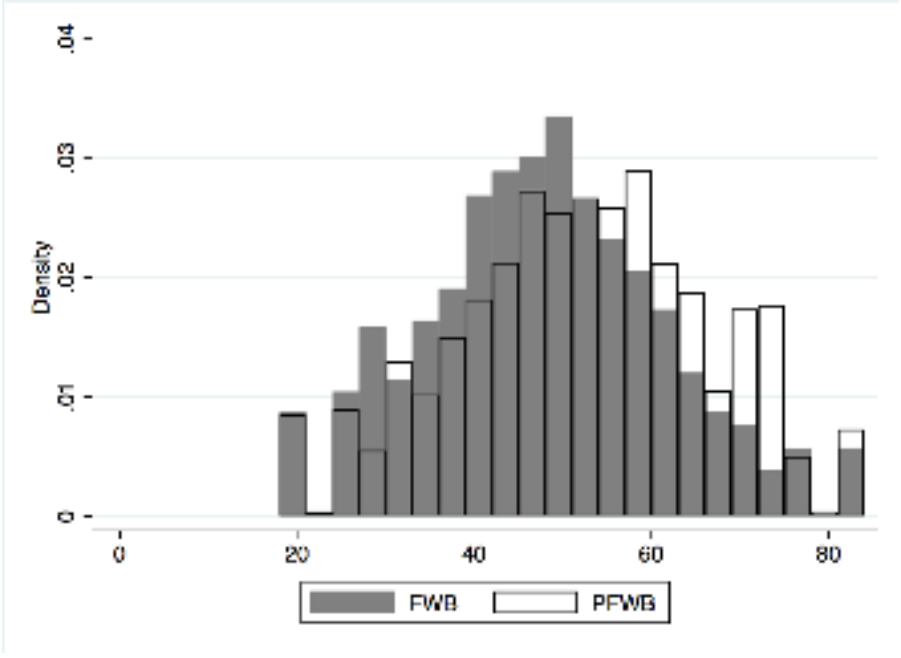
- Update all state-level financial education requirements dates from Schmeiser and Urban (2014).
  - Located at `www.carlyurban.com/home/financial-education`
- Include states that require students to:
  1. take a standalone course in personal finance prior to high school graduation,
  2. take a class that integrates personal finance into another class (e.g., economics),
  3. complete substantial standards in personal finance as part of a larger content area (e.g., social studies).
     - We define substantial to mean more than simply adding interest rates to a social studies curriculum, or having a set of math examples including personal finance without actually learning about the personal finance topics.

Latest age each state (policy year) can identify a treatment effect for



FWB and PFWB

- FWB is created using Item Response Theory (IRT), allowing people to skip questions.
- Rescale both FWB and PFWB such that "good" outcomes have higher numbers. An increase is always a positive finding.
- Use exact same program for FWB to create the PFWB measure.

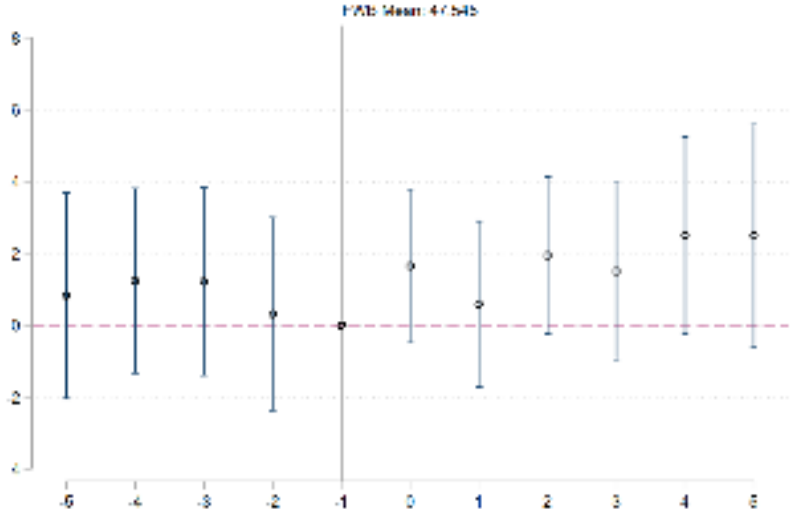


TWFE DD

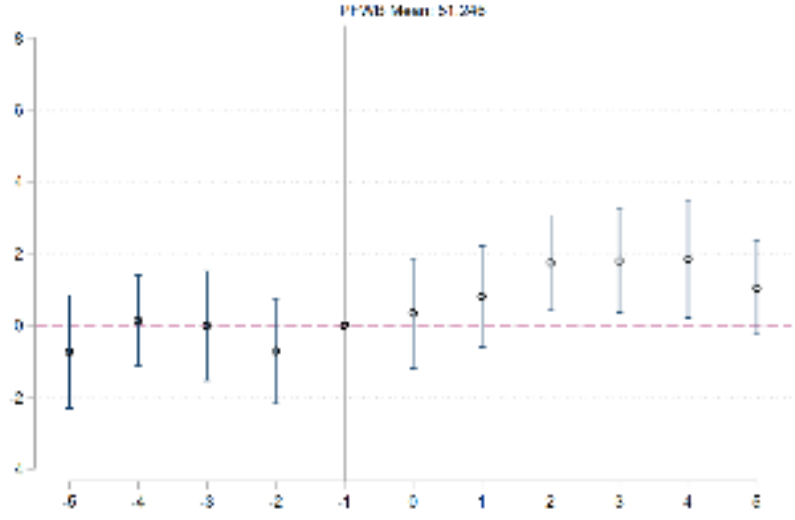
- Assume: trends across treatment and control groups would be parallel in the absence of the policy.
  - Cannot directly test, but can show that the trends appeared parallel prior to the policy.
  - Show event studies for (P)FWB.
- Assume: no contamination in untreated states.
  - States without requirements can still contain high school with requirements (23% do!).
    See `www.carlyurban.com/home/financial-education` for these high-school level data!
  - Will bias us against finding an effect.

Event Study: (P)FWB, including all period dummies (not all shown)

FWB

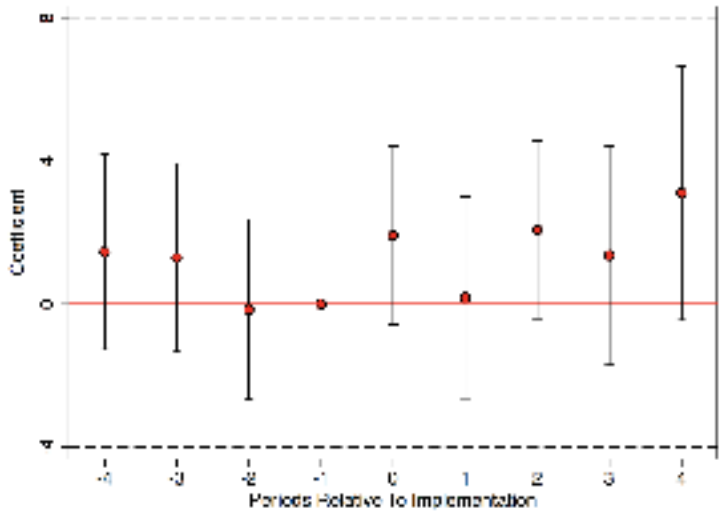


PFWB

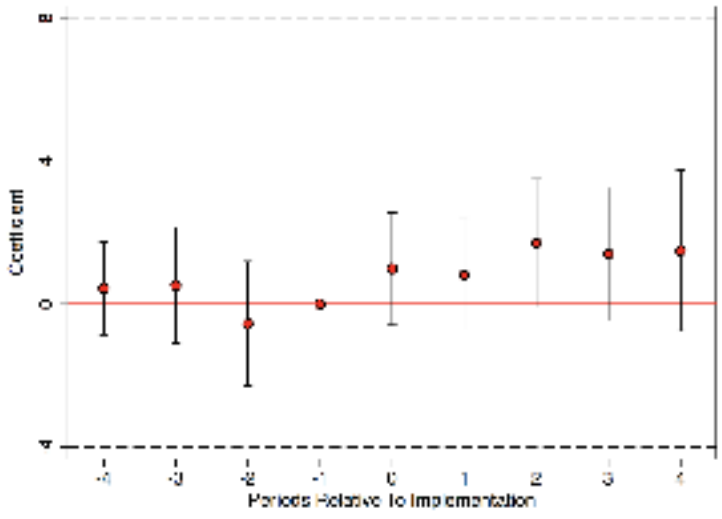


Event Study: (P)FWB, trimming data to only buckets shown

FWB



PFWB



TWFE DD

Recent econometric literature suggests TWFE DD have problems (Baker, Larcker, and Wang 2021; Callaway and Sant-Anna 2020; Goodman-Bacon 2019; Sun and Abraham 2020; ...)!!

Problem 1 : variation coming from always treated or already treated as a control.

Solution 1 : use Goodman-Bacon's diagnostic to see where variation is coming from. Note: only have 1 "always treated" state (Illinois). Drop this from some analysis.

Comparison	Weight
Earlier T vs. Later C	0.099
Later T vs. Earlier C	0.012
T vs. Never treated	**0.889**

TWFE DD

Problem 2 : Effects can grow over time or be heterogeneous.

"Solution" 2a : What we know from the literature

- Previous work suggests there is heterogeneity and effects on other outcomes do grow over time (Urban et al., 2020).
- This is particularly a problem if states that pass early have larger effects than those in later years. If anything, we expect the opposite to happen. Early mandates seemed to be less rigorously implemented and audited.

TWFE DD

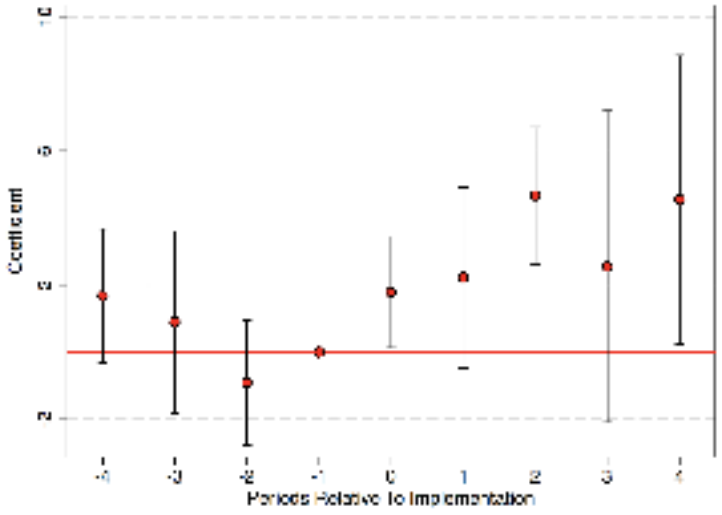
Problem 2 : Effects can grow over time or be heterogeneous.

Solution 2b : Creating a "clean" year.

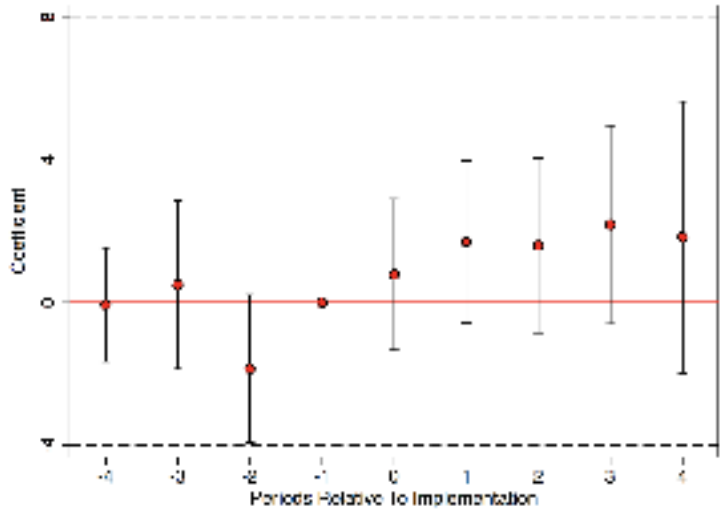
- Show effects for 2005 policies, where 4 states implemented that year. Build a sample of $t-4$ through $t+5$ of the 2005 states and the states that do not pass for at least 5 more years OR states that never pass. (e.g., we drop all those who pass before 2005 or between 2005 and 2010).

Event Study: 2005 Implementers vs. Never Implemented

FWB



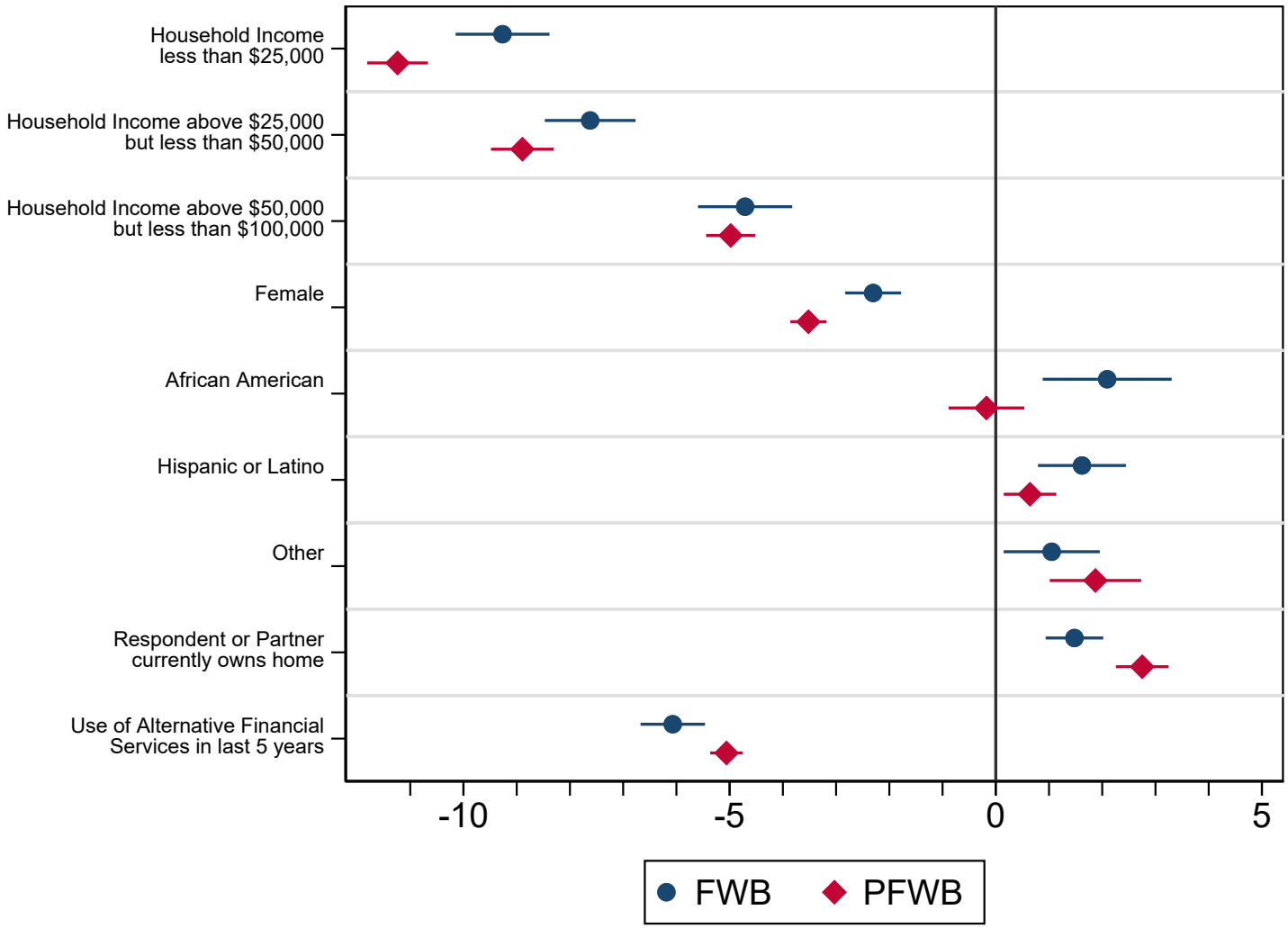
PFWB



Financial Literacy

	Don't Know = 0			Don't Know = Random Guess		
	Overall	Male	Female	Overall	Male	Female
Fin Ed	0.056	0.057	0.060	0.092***	0.099**	0.092*
	(0.038)	(0.049)	(0.052)	(0.032)	(0.045)	(0.047)
N	37,175	15,796	21,379	37,175	15,796	21,379
Mean	2.50	2.74	2.31	3.00	3.14	2.89
	High School	Some College	College+	High School	Some College	College+
Fin Ed	-0.036	-0.022	0.014	0.064	-0.013	-0.028
	(0.083)	(0.052)	(0.054)	(0.080)	(0.042)	(0.046)
N	6,580	13,496	10,023	6,580	13,496	10,023
Mean	1.98	2.62	3.05	2.61	3.05	3.51

Predicting FWB and PFWB



Note: The income group coefficients are relative to those making $100,000 or above. The race coefficients are relative to those that do not fall in any of the displayed racial groups.

Checking or Savings Account, Rainy Day

Checking or Savings Account

	Overall	Male	Female	High School	Some College	College+
Fin Ed	0.018**	0.014	0.022**	-0.037	-0.003	0.003
	(0.007)	(0.012)	(0.010)	(0.025)	(0.009)	(0.008)
N	36,188	15,341	20,847	6,340	13,255	9,863
Mean	0.89	0.89	0.89	0.82	0.92	0.97

Rainy Day Account

	Overall	Male	Female	High School	Some College	College+
Fin Ed	0.027**	0.036**	0.020	0.010	-0.010	0.040
	(0.011)	(0.018)	(0.013)	(0.037)	(0.023)	(0.026)
N	35,371	14,991	20,380	6,203	12,987	9,636
Mean	0.40	0.47	0.35	0.28	0.37	0.56