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The effect of government pensions on financial well-being

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Introduction

The past several decades have seen major changes in the nature of retirement benefits for workers. The shift from defined benefit to defined contribution plans has been more pronounced in the private sector, but similar changes have also taken place for public-sector workers. In 1986, the Federal Employees' Retirement System Act created a new three-tiered system (FERS) to replace the existing Civil Service Retirement System (CSRS), which had provided a traditional annuity benefit for federal government workers since 1920 (Kerns, 1986). FERS benefits include annuity payments from FERS and Social Security that are lower in total than the annuity under CSRS, as well as a defined-contribution component in the Thrift Savings Plan (TSP). All three components of FERS offered greater portability upon separation than CSRS. Overall, the 1986 statute represented a step toward making federal government pension benefits more similar to the defined contribution plans that were becoming popular in the private sector.[1]

We study the effects of this reform on plan choice and the labor and financial choices of civilian personnel in the Department of Army. Under the FERS Act, new employees hired after January 1, 1984 were eventually enrolled in FERS when it was implemented in 1987. Those hired prior to January 1 were initially enrolled in CSRS, and had the opportunity to opt in FERS during an open season in 1987.[2] We compare employees who were hired just before and just after the 1984 cutoff to compare the effects of the opt-in FERS regime to mandatory enrollment. We analyze both the characteristics of employees who opted-in to FERS versus remained in CSRS, as well as the financial outcomes of their choice.

[1] See Hustead and Hustead (2001).

[2] Chapter 10, CSRS and FERS Handbook (1998)

We combine administrative data from the Department of the Army and Department of Defense with consumer credit bureau data to construct measures of personnel, savings, and financial outcomes. This study provides some of the first causal evidence of the 1986 reform, which affected millions of federal employees, and sheds light on the effects of the broader trend toward defined-contribution retirement plans on employee choices and outcomes. Our preliminary results suggest that FERS enrollment reduced total debt (driven by mortgages) in the long run, but had no meaningful effect on creditworthiness as measured by credit scores.

A small number of studies have examined the effect of retirement benefits on labor force participation, retirement, and savings outcomes within the federal workforce (Asch and Warner 1999; Asch, Haider, and Zissimopoulos 2005; Koopman, McIntosh, and McHugh 2010; Asch, Hosek, and Mattock 2013). Our study builds on the largely descriptive analysis in the literature by deploying new econometric techniques that allow for causal inference. We also have the benefit of a long observation period, which allows us to observe the actual retirement decisions of workers affected by policy changes in the 1980s. A final key contribution is the use of credit bureau data, which allows us to measure new dimensions of retirement income and financial adequacy that have not been previously studied in this literature.

The Federal Retirement System and Regulatory background

Our setting relies on a natural experiment arising from changes in the U.S. federal government's pension system during the 1980s. The changes reflected a broader economy-wide movement away from traditional defined benefit plans, which were increasingly perceived as costly and risky for employers, to a plan combining defined benefit (DB) and defined contribution (DC) elements, thereby reducing employer obligations. In this case, the employer is the federal government and hence the American taxpayers reduced their future obligations and increased their risk sharing with federal employees.[3] We exploit the regime shift based on date of hire and limited switching options across the pension regimes to estimate the long-term financial effects of participation in a DB vs DB-DC system.

From 1920 through 1987, the primary retirement system for federal employees in the United States was the Civil Service Retirement System (CSRS). The system was a prominent example of a classic defined benefit (DB) pension system, wherein employees and the employer paid into an account from which eligible retirees would collect an annuity. Employees typically contributed 7%-8% of their pay, which the federal government matched, and employees could contribute additional funds (up to 10%) with no matching into a voluntary retirement account. Under CSRS, individuals also pay the Medicare tax, but they do not pay into Social Security retirement, disability or survivor programs. CSRS employees are also eligible to participate in the Thrift Savings Plan (TSP), the U.S. federal government's version of a 401(k) plan, in a traditional or ROTH capacity, though their TSP contributions are not matched either.[4] An individual's retirement annuity is a straightforward calculation based on total years of service and the average of the highest three years of annual salary. Like many traditional DB pensions, the generosity of CSRS coupled with low portability left many feeling that they had "golden handcuffs."

In 1986, Congress established the Federal Employees Retirement System (FERS) to replace CSRS. FERS combines a DB pension, reduced relative to the CSRS system (by approximately 50%), with a defined contribution (DC) pension component administered via the TSP, and mandatory participation in Social Security. The DC component includes a 1% Agency Automatic contribution, a dollar-for-dollar matching on the first 3%

[3] See https://federalnewsnetwork.com/federal-report/2012/12/fers-pioneers-examine-past-present-and-future-of-retirement-fund/ for a brief history on the development and adoption of FERS.

[4] The TSP enables individuals to select from one of five primary index funds (Government Securities, Fixed Income Index, Common Stock Index, Small Capitalization Stock Index, and International Stock Index) or lifecycle funds that hold a portfolio of these funds suitable for a target retirement date. See https://www.tsp.gov/index.html for more information on the TSP.

of pay contributed, and 50 cents on the dollar matching for the next 2% of pay. These contributions are made on a tax-deferred basis. As with CSRS, individuals can contribute additional money into the TSP up to the annual contribution limits ($19,000 in 2019). FERS exemplified the movement away from traditional DB plans to more modern and flexible pension plans.

Table 1 compares and contrasts the main eligibility rules and benefits of the CSRS and FERS programs. Importantly for our purposes, the eligibility requirements for participation in each pension system are well-specified, and allow sharp comparisons between otherwise-similar workers who were exposed to the two different pension plans. In general, individuals hired after January 1, 1984 were eligible for FERS, while individuals hired before were eligible for CSRS. Although there were some exceptions (e.g., some individuals hired after the cutoff with sufficient previous qualifying service could remain enrolled in CSRS, some individuals hired before the cutoff had the option to elect into FERS), the vast majority of employees hired around the cutoff date complied with the simple enrollment rule.[5]

Data description

We combine administrative personnel data from the Department of the Army with payroll data from the Department of Defense for all federal civilian employees hired by the Army between January 1, 1981 and December 31, 1987. The personnel data are quarterly records that includes detailed information on individual demographics (i.e., age, gender, race/ethnicity, marital status, previous federal service), human capital (i.e., education level, degree field), and occupational characteristics related to career fields, type of work (e.g., blue collar vs. white collar), and the level of the position work (e.g., grade/rank).

The payroll data are also quarterly and include information on salary, retirement plan (CSRS or FERS), and federal creditable service. The personnel data enable us to evaluate the effects of the pension program change on employment outcomes such as retention and promotion in future work.

In Table 2 we present summary statistics for our main sample of federal employees. The sample is just under half male, primarily white (approximately 70%), and relatively well-educated (over 60% have more than a high school degree). The table also provides comparisons of these demographic characteristics between our CSRS (1983 hires) and FERS (1984 hires) groups. The differences between the groups are small, and they do not occur sharply at the implementation threshold of January 1, 1984.

To measure the effects of the pension program change on financial outcomes, we combine the administrative data with individual-level data from a national credit bureau.[6] The credit bureau data occur bi-annually in June and December of 2003, 2004, 2008, 2009, 2015, and 2016. The data include credit attributes for debt balances and number of accounts, in total and by type of debt (e.g., mortgage, bankcard, student loans, and auto loans). They also include data on various measures of financial distress (e.g., late payments, delinquent accounts, open liens, bankruptcy proceedings). Finally, they include a Vantage score which reflects creditworthiness and varies from 350 (least creditworthy) to 850 (most creditworthy).

Research approach and validity

Our research approach compares the outcomes of employees hired prior to 1984 (who mostly remained in CSRS), to those hired in 1984 or later (who faced mandatory enrollment in FERS). This approach relies

[5] The CSRS to FERS transition also included the creation of a third program, called CSRS Offset for select employees. This program included typical CSRS benefits and access to Social Security benefits. The CSRS benefits were reduced by the claimed SSA benefits. This program applied to limited personnel and we currently treat them as normal CSRS participants.

[6] The U.S. Army Office of Economic and Manpower Analysis (OEMA) merged the administrative personnel and payroll data. They provided the merged data to a national credit bureau for matching to their credit data. OEMA deidentified the complete data set prior to use by our research team.

on two main conditions. First, we must verify that there was a sharp increase in FERS enrollment at the January 1984 threshold. Second, we rely on the assumption that other employee characteristics did not change sharply at the 1984 threshold, which could cause changes in outcomes that would spuriously be attributed to FERS enrollment.

We verify the first condition in Figure 1. Figure 1 documents the sharp increase in the probability of FERS coverage for individuals hired after January 1, 1984. Panel A depicts the lack of FERS enrollment as of December 1986, the last quarterly snapshot prior to the law taking effect in January of 1987. Panel B depicts enrollment as of March 1987, the snapshot just after the FERS's implementation, showing a sharp increase in FERS enrollment for employees hired after 1984. Note that our data identifies those who were automatically enrolled in FERS (blue dots) as well as those who elected to move from CSRS to FERS (red dots). In Panel B, we find that a small percentage (about 3%-5%) of pre-1984 employees opted into FERS, but the majority opted to stay with CSRS (or an alternate pension plan) despite the option to switch.

Figure 2 provides evidence on the second key condition, the assumption that no other sharp changes other than FERS eligibility affected new hires starting in 1984. Subfigure (a) shows the number of new hires per month. During this time period, about 1,000-3,000 employees started per month, with a fairly steady upward trend over time and no sharp change at the implementation threshold. The remaining subfigures show five other types of employee characteristics for hire cohorts before and after the implementation threshold: average starting salary, gender, white race/ethnicity, an education level of high school degree, and blue collar occupation. In all cases, these employee characteristics show a continuous evolution during the sample period. These findings seem plausible, since federal hiring practices did not change sharply during our period of study, and since individuals are not able to effectively manipulate their hiring date with the federal government, which we discuss below.

If individuals could manipulate their start date, then they could time their date of hire based on their desired retirement system, thereby resulting in misleading estimates of the effect of FERS enrollment. However, based on our review of federal hiring procedures (U.S. Office of Personnel Management, 2019), and DOD procedures (U.S. Department of Defense, 2019) as well as anecdotal evidence in this area, this manipulation seems unlikely. Actual start dates are the product of a complex process involving multiple organizations and relatively long periods of time. The federal job site (usajobs.gov) identifies ten distinct steps in the hiring process. The post-application steps include agency review (with multiple internal steps), interview (with the potential for multiple rounds), agency selection (with outreach to the candidate or subsequent candidates), and job offer, which, if accepted, initiates additional background and/or security clearance reviews. Furthermore, the evidence from Figure 2 (a) shows no clustering of hire dates either before or after the FERS threshold, suggesting little to no manipulation by employees.

The effect of FERS on financial well-being

Descriptive results

We first show some descriptive evidence of the financial outcomes of individuals hired around the 1984 threshold. Figures 3 and 4 show two summary measures of financial health and credit usage for the twelve bi-annual snapshots of credit bureau data between 2003 and 2016, split by hire cohort. Figure 3 shows Vantage score over time for the CSRS cohort (1983 hires) and FERS cohort (1984 hires). Vantage score is a common commercially available credit score based on various components of an individual's credit history. The score ranges from 350 to 850, and indicates an overall measure of financial health and credit worthiness. The graph shows Vantage scores for both cohorts increasing over time, consistent with the general increase in credit scores with age. The FERS cohort is on average younger than the CSRS cohort, and its credit scores are likewise shifted downward.

Figure 4 shows total debt balances over time. An inverse-u-shaped pattern is observed for both cohorts, peaking around 2008, consistent with the secular boom-bust cycle of credit during the 2000s. While credit usage is several thousand dollars lower for the FERS cohort compared with the CSRS cohort between 2003-2009, this gap disappears starting in 2015. In the next section, we examine the extent to which these descriptive differences in credit outcomes persist in a regression analysis after controlling for tenure and other employee characteristics.

Regression-adjusted results

To further investigate the impact of FERS enrollment on financial outcomes, we implement a regression framework that allows us to control for employee tenure and other employee characteristics. Table 3 shows these regression-based estimates of the effect of FERS eligibility on key financial outcomes. The regressions in Panel A include a basic set of controls including tenure, month, year, and month of hire. The regressions in Panel B include additional controls for salary at hire and fixed effects for gender, ethnicity, education level at hire, and occupational category at hire. The estimates in Panels A and B are of similar economic magnitude, providing reassurance on the validity of our results. Our discussion below focuses on the results in Panel B, which is our preferred set of estimates. Column (1) reveals that the Vantage scores of post-FERS hires do not differ statistically or economically from their pre-FERS counterparts, and FERS enrollment does not affect the long-run creditworthiness of employees. However, total debt for post-FERS employees is $16,333 lower, a statistically significant difference that reflects a 16% difference when compared to the average debt level in the sample.

In columns 3 through 7 we decompose the effect on total debt into different subcategories. The majority of the effect is driven by a reduction in mortgage debt. Post-FERS employees hold $13,185 less in mortgage debt (col 5, 16%) and $1,441 less in revolving debt (col 6, 21%). Auto and revolving (largely credit card) debt are about $1,000 lower for post-FERS employees, but the effects for these and other debt categories are not statistically significant.

Discussion and conclusions

This paper examines the causal effect of enrollment in a hybrid defined pension plan with defined contribution and defined benefit elements (FERS) relative to a traditional defined benefit plan (CSRS). We think this reform has the potential to generalize more widely, as the fraction of employers in the United States (McFarland, 2016; Brown and McInnes, 2014; Butricia et al., 2009, Poterba et al., 2007; Munnell and Sunden, 2004), and employers worldwide (Brown and McInnes, 2014; Broadbent, Palumbo and Woodman, 2006) who are making similar switches over the past few decades is significant and growing.

Our initial estimates suggest that individuals who enrolled in FERS have similar levels of creditworthiness in the long run, but hold substantially lower levels of debt relative to individuals in CSRS. Specifically, they appear to have significantly lower levels mortgage debt and, to a lesser extent, revolving and auto debt. These differences in debt usage could reflect differences in risk exposure, net wealth, or liquidity between FERS and CSRS employees. Since FERS employees face greater portfolio risk from their retirement savings, individuals may opt to lower their risk exposure to the housing market. In contrast, higher returns from equity investments may allow them to increase down payments and lower their leverage. The greater portability of FERS may also affect their labor market mobility, which in turn could influence borrowing pattern through changes in net wealth or income. Finally, the two pension regimes could lead to differences in liquidity effects due to contribution levels or access to loans against their pension assets. We plan to investigate these channels in further work on this topic.

References

Asch, B., Haider, S. J., & Zissimopoulos, J. (2005). Financial incentives and retirement: evidence from federal civil service workers. Journal of public Economics, 89(2-3), 427-440.

Asch, B. J., Hosek, J. R., & Mattock, M. G. (2013). A Policy Analysis of Reserve Retirement Reform. Rand Corporation.

Asch, B. J., & Warner, J. T. (1999). Separation and Retirement Incentives in the Federal Civil Service. RAND.

Benartzi, S., & Thaler, R. (2007). Heuristics and Biases in Retirement Savings Behavior. Journal of Economic Perspectives.

Beshears, J., Choi, J. J., Laibson, D., Madrian, B. C., & Skimmyhorn, W. L. (2019). Borrowing to Save? The Impact of Automatic Enrollment on Debt. Working paper.

Broadbent, J., Plumbo, M., and Woodman, E. (2006). The Shift from Defined Benefit to Defined Contribution Pension Plans – Implications for Asset Allocation and Risk Management.

Brown, R. L. and McInnes, C. (2014). Shifting Public Sector DB Plans to DC: The experience so far and implications for Canada.

Butricia, B.A., Iams, H. M., Smith, K. E., and Tober, E.J. (2009). The Disappearing Defined Benefit Pension and Its Potential Impact on the Retirement Incomes of Baby Boomers. Social Security Bulletin. 69(3): 1-27.

CSRS and FERS Handbook. (April, 1998). Chapter 10.

Hustead, E. C., & Hustead, T. (2001). Federal Civilian and Military Retirement System. In Olivia S. Mitchell & Edwin C. Hustead (Eds.), Pensions in the Public Sector. Wharton School. Pension Research Council

Kerns, W. L. (1986). Federal Employees' Retirement System Act of 1986. Social Security Administration.

Koopman, M. E., McIntosh, M. F., & McHugh, C. M. (2010). Causes and Consequences of Navy Civilians' Retirement Behavior.

McFarland, B. (2016). A Continuing Shift in Retirement Offerings in the Fortune 500. Insider.

Munnell, A., & Sundén, A. (2004). Coming Up Short: The Challenge of 401(k) Plans. Washington, D.C.: Brookings Institution Press.

Poterba, J., Rauh, J., Venti, S., & Wise, D. (2007). Defined Contribution Plans, Defined Benefit Plans, and the Accumulation of Retirement Wealth. Journal of public economics, 91(10), 2062-2086.

Stock, J. H. & Wise, D. A. (1990). Pensions, the Option Value of Work, and Retirement. Econometrica.

U.S. Department of Defense. (2019). Department of Defense Civilian Careers – Employment. Retrieved from url: https://godefense.cpms.osd.mil/employment.aspx. Accessed February 12, 2019.

U.S. Office of Personnel Management. (2019). USA Jobs Help Center. Retrieved from url: https://www.usajobs.gov/Help/faq/application/process/. Accessed February 12, 2019.

Yuh, Y. & DeVaney, S. A. (1996). Determinants of Couples' Defined Contribution Retirement Funds. Journal of Financial Counseling and Planning.

Table 1. Features of U.S. Federal Government Civilian Employee Retirement Systems

Category	Civil Service Retirement System (CSRS)	Federal Employees Retirement System (FERS)
Eligibility	New workers hired before 1/1/84 **OR** Worked for 5+ years before 1/1/87 + took at least 1 year off + re-hired after 1/1/84 *(CSRS-Offset)*	New workers hired on or after 1/1/84 **OR** Re-hired before 1/1/84 + Worked for <5 years before 1/1/87 + took at least 1 year off **OR** Hired before 1/1/84 and elected to switch from CSRS **OR** Worked for 5+ years before 1/1/87 + took at least 1 year off + re-hired on or after 1/1/84 + elected to switch from CSRS-Offset
Creditable Service	Covered Service, where pay is subject to retirement deductions **OR** Specific Statutes (i.e., the Peace Corps) **OR** Active military service terminated under honorable conditions	Covered Service, where pay is subject to retirement deductions AND Unused sick leave AND Service before 1989, not covered, as long as a deposit is paid
Retirement Age	Age 62 with 5 Years of Service (YOS) **OR** Age 60 with 20 YOS **OR** Age 55 with 30 YOS	Age 62 with 5 YOS **OR** Age 60 with 20 YOS **OR** Age 55-57 (depending on birth year) with 30 YOS
Early Retirement	Sometimes, but reduced by 2% for each YOS < age 55	Sometimes
Pension Type	Defined Benefit	Defined Benefit + Defined Contribution (TSP)
Standard Formula (a scaled multiple of the average of highest 3 salary years)	0.015 high-3 first 5 YOS + 0.0175 high-3, YOS 5-10 + 0.02 high-3, remaining YOS	0.01 high-3, all YOS *(If age <62, or <20 YOS)* **OR** 0.011 your high-3, all YOS *(If age 62+ with >= 20 YOS)*
Cost of Living Adjustment(s)	Receive full CPI	Nothing before age 62 (with rare exceptions) After age 62 receive CPI (up to 2%)
DC Automatic Contribution	None	Agency Automatic = 1% of salaries *Vested after 3 years*
DC Matching Contribution	None	100% for first 3% + 50% for the next 2% *Vested immediately*
Basic Survivor Annuity	55% of CSRS benefits, with the option to reduce it on a sliding scale by any amount. Full benefit costs 10% (or proportionally less, if reduced)	50% of FERS benefits, with the option to reduce it in blocks only, to 25% or 0%. Full benefit costs 10% (or 5%, 0% if reduced)
Disability Eligibility	Any age with 5 YOS +	Any age with 18 MOS +
Disability Benefits	Earned annuity calculated under regular formula **OR** the higher of: 1) 40% high-3 2) Regular annuity that would be obtained upon retirement at age 60 **OR** The above benefits offset by Social Security for those covered by CSRS-Offset	If over 62, receive normal earned annuity benefit **OR** 0.011 high-3, all YOS *(If 62 with 20 YOS)* **OR** 0.6 high-3, all YOS – 100% SS benefits *(For first 12 months)* **THEN** 0.4 high-3, all YOS – 60% SS benefits *(For next 12 months)* **THEN** Earned annuity calculate under regular formula *(After age 62)*
Social Security	No	Yes

Table 2. Comparison of CSRS and FERS-eligible hire cohorts

	CSRS (1983 hires)	FERS (1984 hires)	Difference	*p*-value of difference
Avg. starting salary	$15,149	$15,659	$511	0.000
Male	44.7%	46.8%	2.1%	0.000
White	73.3%	73.0%	-0.3%	0.489
Black	16.8%	17.8%	1.0%	0.021
Hispanic	5.0%	4.8%	-0.2%	0.419
Asian	3.9%	3.6%	-0.3%	0.234
Native American	1.0%	0.8%	-0.2%	0.064
Missing race	0.0%	0.0%	0.0%	0.389
High school only	38.4%	37.2%	-1.2%	0.025
Some college, no degree	28.0%	28.5%	0.5%	0.345
Associate degree	4.9%	4.9%	0.0%	0.923
Bachelor's degree	20.1%	20.5%	0.4%	0.387
Graduate degree	8.6%	8.9%	0.4%	0.213
Unknown education	0.0%	0.0%	0.0%	0.422
Administrative position	8.5%	12.7%	4.2%	0.000
Blue collar position	16.6%	15.9%	-0.6%	0.122
Clerical position	37.9%	39.2%	1.3%	0.020
Professional position	17.7%	15.0%	-2.7%	0.000
Technical position	13.3%	12.2%	-1.1%	0.004
Other position	6.0%	5.0%	-1.1%	0.000
N	13,935	18,798		

Table 3. Effect of FERS coverage on credit usage

LHS:	(1) Vantage Score	(2) Total Debt	(3) Auto	(4) HELOC	(5) Mortgage	(6) Revolving	(7) Student
Sample Mean:	730	101,980	7,161	4,619	82,070	6,864	1,308
Panel A: 1983-84 cohorts, basic controls							
Post-FERS	3.852	- 11142	- 1074	618	- 7994	- 1233	67
	(6.363)	(3470)	(610)	(610)	(3680)	(708)	(55)
	[0.551]	[0.004]	[0.091]	[0.321]	[0.040]	[0.095]	[0.238]
R^2	0.009	0.007	0.001	0.003	0.007	0.001	0.005
Panel B: 1983-84 cohorts, basic and demographic controls							
Post-FERS	3.818	- 16333	- 909	371	- 13185	- 1441	7
	(2.362)	(4041)	(639)	(648)	(3901)	(733)	(95)
	[0.120]	[0.001]	[0.168]	[0.572]	[0.003]	[0.062]	[0.943]
R^2	0.159	0.039	0.011	0.012	0.046	0.006	0.011

The table shows regression coefficients for post-1984 hire cohorts on the dependent variable in the column heading. The regressions are estimated according to equation (1). Panel A presents results for regressions with fixed effects for tenure bucket, month, year, and month of hire as controls. Panel B presents results that include the controls from Panel A and additional controls measured at hire: salary and fixed effects for gender, ethnicity, education level, and occupational category. Standard errors clustered by year-month of hire are in parentheses, and p values are in brackets. Each regression has 212,022 person-month observations.

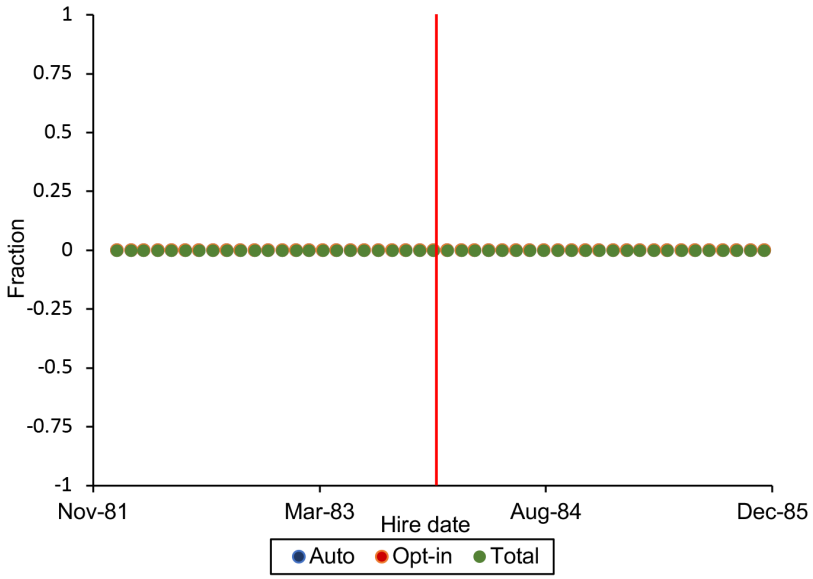
Table 4. Effect of FERS Coverage on credit usage (alternate sample)

LHS:	(1) Vantage Score	(2) Total Debt	(3) Auto	(4) HELOC	(5) Mortgage	(6) Revolving	(7) Student
Sample Mean:	730	101,980	7,161	4,619	82,070	6,864	1,308
Panel A: 1982-85 cohorts, basic controls							
Post-FERS	1.072	- 5963	- 178	- 103	- 5207	- 41	- 133
	(2.254)	(2224)	(243)	(263)	(2027)	(214)	(88)
	[0.636]	[0.010]	[0.466]	[0.698]	[0.013]	[0.848]	[0.139]
R^2	0.010	0.006	0.001	0.003	0.007	0.001	0.006
Panel B: 1982-85 cohorts, basic and demographic controls							
Post-FERS	1.502	- 5643	- 185	- 54	- 4923	- 35	- 125
	(2.084)	(2377)	(236)	(266)	(2064)	(221)	(89)
	[0.475]	[0.022]	[0.437]	[0.840]	[0.021]	[0.876]	[0.168]
R^2	0.159	0.036	0.011	0.010	0.042	0.007	0.011

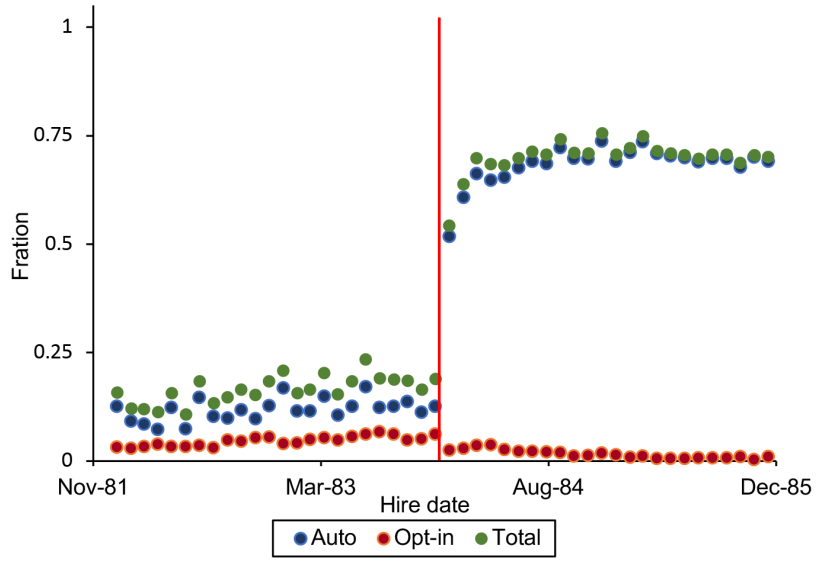
The table shows regression coefficients for post-1984 hire cohorts on the dependent variable in the column heading. The regressions are estimated according to equation (1). Panel A presents results for regressions with fixed effects for tenure bucket, month, year, and month of hire as controls. Panel B presents results that include the controls from Panel A and additional controls measured at hire: salary and fixed effects for gender, ethnicity, education level, and occupational category. Standard errors clustered by year-month of hire are in parentheses, and p values are in brackets. Each regression has 442,674 person-month observations.

Figure 1. Hire date and FERS coverage

(a) FERS Coverage in December 1986

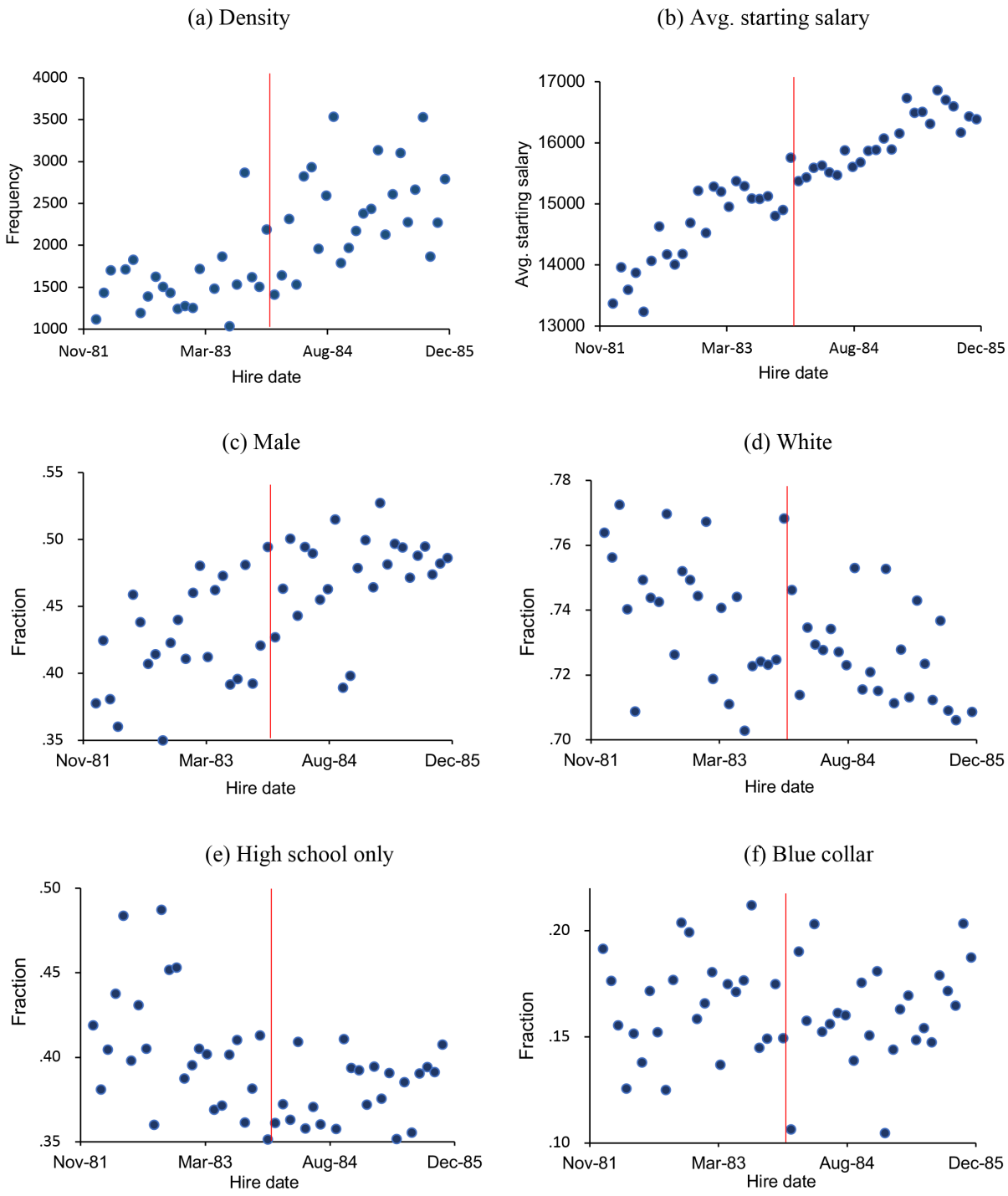


(b) FERS Coverage in March 1987



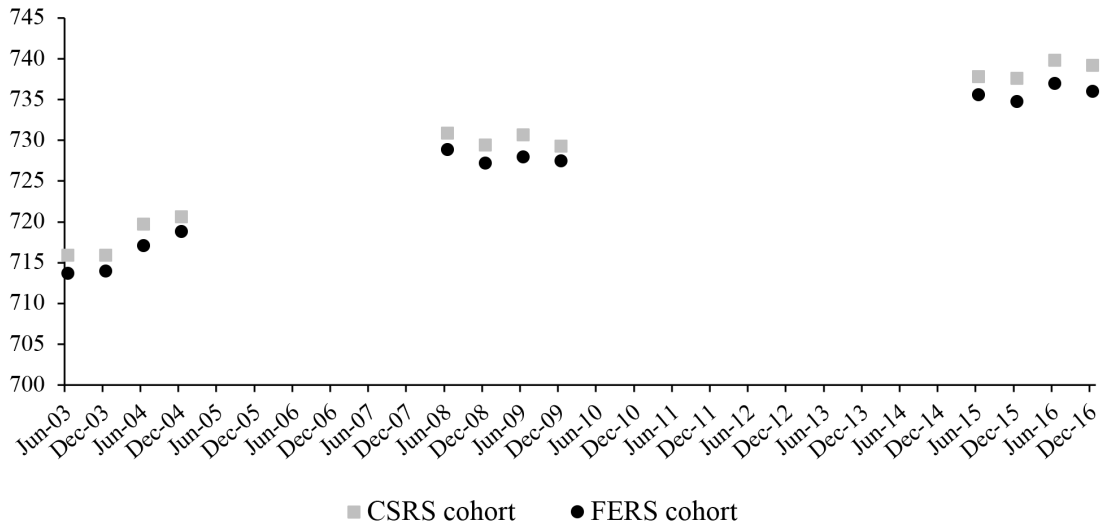
The figures show binscatter plots of FERS coverage for individuals hired in each calendar month represented on the x-axis. The vertical line indicates January of 1984, the eligibility threshold for automatic enrollment in FERS for new hires. The red dots indicate employees who actively opted into FERS, while the blue dots indicate those who were automatically enrolled in FERS. The green dots indicate the total fraction of individuals enrolled in FERS through either method.

Figure 2. Balance across covariates



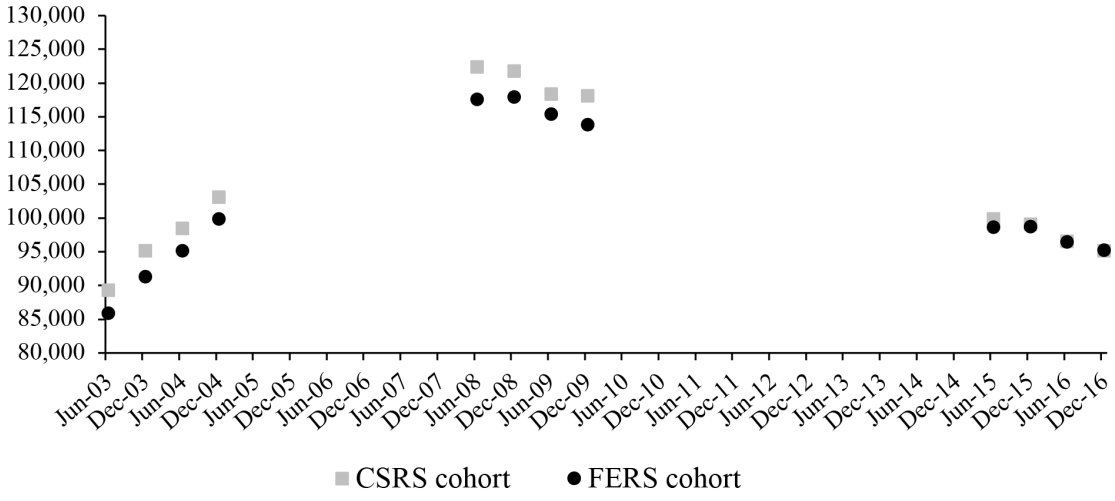
The figures show binscatter plots of the density, average salary, and demographic variables for individuals hired in each calendar month. The vertical line indicates January of 1984, the eligibility threshold for automatic enrollment in FERS for new hires.

Figure 3. Vantage score



The figure shows average vantage scores for each cohort from twelve snapshots of credit bureau files between 2003 and 2016. The CSRS cohort consists of 1983 hires, and the FERS cohort consists of 1984 hires.

Figure 4. Total debt balance



The figure shows average debt levels for each cohort from twelve snapshots of credit bureau files between 2003 and 2016. The CSRS cohort consists of 1983 hires, and the FERS cohort consists of 1984 hires.

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