CHICAGO PUBLIC SCHOOLS (ILLINOIS)

SUMMARY

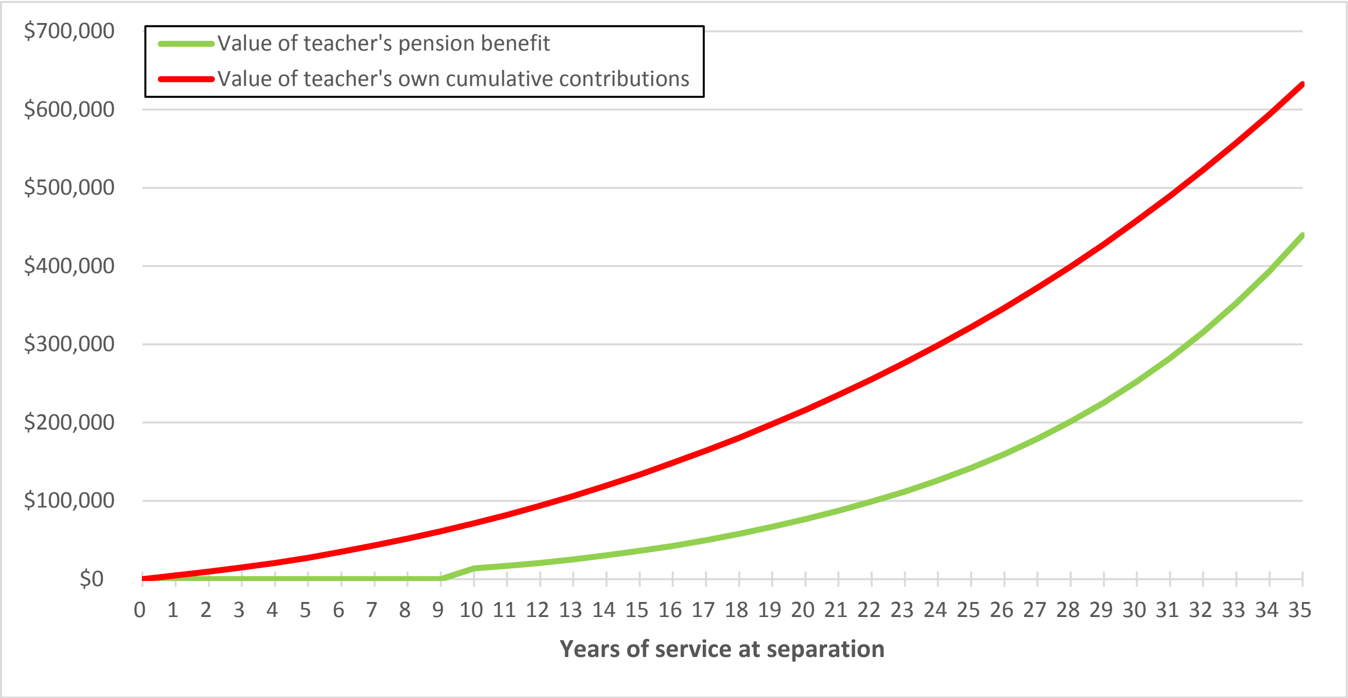
A new Chicago Public Schools teacher enrolls in a traditional defined benefit plan under the Chicago Teachers' Pension Fund. In Chicago, the crossover point never occurs, meaning that no matter how long a teacher stays, her retirement benefits will *always be worth less* than her contributions.

About the District	
Students	396,641
Teachers (FTE)	23,320

About the Retirement Plan	
Type	Defined benefit
Coverage	Local teachers
Active members	30,654
Total members	63,194

Sources: Enrollment: NCES (2013–14). Enrollment: NCES (2013–14). Retirement plan membership: [Chicago Teachers' Pension Fund annual report] *(membership as of 2014)*

Figure 1: No matter how long a new teacher in Chicago Public Schools remains in the pension system, she will never realize a return on her contributions



Note: Calculations assume inflation of 2.5 percent, a real interest rate of 2.5 percent, and a female teacher first hired in FY13 with an entry age of 25.

Take a look at Figure 1. The green line is the value of a teacher's pension wealth should she separate from the system after a given number of years of service. (She would not start receiving pension payments until she reaches the age of retirement eligibility, even if she leaves the system before that.) Where the green line jumps quickly away from $0 represents the time at which she vests. The red line shows the value of the total amount she has contributed to the system up to that point. Where the red line lies above the green, the teacher's contributions are worth more than her benefits. In other words, her "net benefit" is negative. (Should the green line be higher than the red, her benefits would be worth more than her contributions and her net benefit would be positive.) In Chicago, a new teacher never reaches the crossover point—the green line never crosses the red—and she will never receive any return on her contributions after retirement. Exact figures are shown in Tables 1 and 2.

Let's take a look at how this plays out should a teacher choose to separate from the system at different points.

WHAT IS THE CROSSOVER POINT?

This study asks: how long must a new teacher wait until the value of her retirement benefits exceeds the value of her contributions (the "crossover point")?[1] A new teacher begins contributing a percentage of her salary to her retirement system the day she receives her first paycheck. The idea is that, over her career, she and her employer will make contributions to prefund her benefit and, when she leaves the system, she receives retirement benefits. The total benefit the teacher receives after she leaves depends on the plan's parameters and provisions, among other factors.

In a traditional defined benefit (DB) plan, retirement benefits take the form of pension payments made periodically for the rest of her life after retirement. The pension benefit is based on a formula: the number of years of service in the system, multiplied by an average of her final years' salaries, times an accrual factor, which is a percentage generally around 1 percent to 2.5 percent. In order to receive any retirement benefits, a teacher must be vested in the system, meaning she has stayed long enough that she's eligible for a pension when she leaves. Vesting periods generally range from three to 10 years. A teacher can only begin to receive benefits once she reaches retirement eligibility, a condition usually determined by some combination of the teacher's age and years of service.[2] The *total* value of the retirement benefit the teacher receives under a DB plan—her pension wealth—depends on the yearly benefit, plus her age at retirement and life expectancy.[3] Before the crossover point in a DB plan, a teacher's expected lifetime retirement benefit is worth less than what she contributed over her career. After the crossover point, her benefit is worth more than what she contributed. The longer it takes a new teacher to reach the crossover point, the longer it takes for her to realize any return on her contributions.

In a defined contribution (DC) plan, retirement benefits are equal to what the retirement account is worth: her and her employer's contributions, plus any gains (or losses) from investment performance over time. She typically can transfer the balance of her account to another retirement system, withdraw it completely as a lump-sum amount, or draw down balances as periodic payments (less taxes, should she leave early). In a DC plan there is no crossover point, and the value of her benefits will always be greater than her contributions (assuming the investment gained value over time).

A hybrid plan combines elements of both DB and DC plans. A teacher's total benefits are equal to the balance of her retirement savings account plus whatever pension benefits she is eligible for. Depending on the specific terms of the plan, there may or may not be a crossover point.

In all three cases, to calculate the crossover point we compare the value of a teacher's contributions with her expected benefits.[4] While the concept of retirement "benefits" implies a positive return on contributions, the analyses presented in this study show that, in order to reach the crossover point and receive a true benefit, new teachers in many of the nation's largest districts must remain in their retirement system for 20 or 30 years—or more. These teachers, usually enrolled in traditional DB plans, are financially penalized if they leave at any point before the crossover. Moreover, they cannot enroll in a different system that would give them larger, or more short-term, benefits. New teachers in DC plans, and most of the hybrid plans we consider, do see a return on their contributions even early in their career.

EARLY CAREER

A Chicago teacher who leaves after **five years** of service (or at any point before the vesting point of 10 years) is not eligible to receive pension benefits at all, because she has not vested (Table 1). Her pension wealth is zero, and at five years she has contributed $27,375 into the retirement system.[5] (In reality, should this teacher separate from the system before she vests, she can only take a refund, which may or may not be credited with interest.)

Table 1. At key points in a teacher's career, what is the value of her pension? What is the value of her contribution? And what is the difference between the two?

Age	Years of Service	Value of teacher's pension benefit (A)	Value of teacher's cumulative contributions to date (B)	Net benefit (A-B)
30	5	$ 0	$ 27,375	-$ 27,375
40	15	$ 36,049	$ 133,647	-$ 97,598
50	25	$ 142,103	$ 322,038	-$ 179,935

MID-CAREER

If she leaves the system with at least **10 years** of service, she has now vested and is eligible to start receiving pension benefits once she reaches age 67. Say she separates from the system after 15 years—the average experience of a teacher who leaves the profession.[6] Her pension wealth is $36,049, but at this point she has contributed a total of $133,647. Not only has she not yet reached the crossover point, but her pension wealth is worth only about one-quarter of her cumulative contributions.

AFTER 25 YEARS OF SERVICE

A 25-year career is longer than most teachers' careers—fewer than one out of four teachers nationwide stays more than 20 years.[7] But even after 25 years, a Chicago teacher still has not reached the crossover point. In fact, the difference between her contributions and pension wealth is even greater than it was mid-career. At this point, she's contributed $322,038 but would only expect to receive $142,103 in benefits. And because the crossover point in Chicago is infinite, no matter how many more years she stays, her benefits will *always* be worth less than her cumulative contributions (and her net benefit will *always* be negative).

Bottom line: Teachers who start at age 25 under the Chicago Public Schools salary schedule will never reach a crossover point. Teachers who exit the retirement system early, or even after a lengthy career, are financially disadvantaged as they will never see any net benefits from their contributions.

TECHNICAL MATTERS

Retirement System

Teachers working in Chicago belong to a traditional defined benefit pension plan in the Chicago Teachers' Pension Fund. (Illinois teachers who work in any district other than Chicago Public Schools have a separate pension system, with service credit and wage history reciprocity.)[8]

Plan Provisions by the Numbers

Eligibility for pension benefits

- Vesting requirement: 10 years
- Normal retirement eligibility requirements (age/years of service): 67/10
- Early retirement eligibility requirements for reduced benefits (age/years of service): 62/10

Employer and employee contributions

- Employee contribution rate: 9 percent of salary
- Employer contribution rate: 26.21 percent of salary
- Refundable contributions: 8 percent of earnings with no interest (employee contribution less a 1 percent survivor benefit contribution)

Defined benefit formula

A new teacher's normal retirement benefit is equal to the formula below:

Annual benefit = (2.2%) x (YOS) x (FAS)

Where YOS = number of years of service, and FAS = final average salary, the average of the eight highest years of creditable earnings.

Summary of Plan Provisions

Benefits under public pension plans are typically based on a combination of age and years of service. Under normal retirement eligibility requirements, Chicago teachers qualify for full pension benefits at age 67 with 10 years of service. The annual benefit is equal to a teacher's years of service, multiplied by her average salary of her final eight years, times an accrual factor of 2.2 percent. A teacher vests into the pension system after 10 years—meaning after 10 years of service she qualifies for a pension benefit payable for life, starting at the earliest age that she becomes eligible for normal retirement.[9] The plan does offer reduced pension benefits for early retirement, available at age 62 with 10 years of service.

The employer contribution rate is set at 26.21 percent of earnings. The employee contribution rate is set at 9 percent of earnings. Chicago Public Schools teachers do not pay into Social Security.

Assumptions for Computing Pension Wealth

- Entry age: 25 years old
- Gender: female
- Teacher has bachelor's degree for first five years; master's degree for the remainder[10]
- Survival probabilities from *2007 CDC Life Tables*[11]
- Teacher salary schedule for 2012–13 school year[12]
- Overall rate of return: we use each system's own assumptions for return on investments

Sources: Teacher salary schedule is from district website (or requested directly from the district where required). The salary schedule is supplemented by the district collective bargaining agreement and/or teacher work rules for the 2012–13 school year where applicable/necessary.[13] Retirement plan parameters are primarily taken from a database assembled by the National Council on Teacher Quality, and supplemented where necessary with information from plan documents.[14]

Table 2: Benefits, contributions, and net benefit for a representative new teacher in Chicago Public Schools

Age	Years of Service	Value of teacher's pension benefit (A)	Value of teacher's cumulative contributions to date (B)	Net benefit (A-B)
25	0	$ 0	$ 0	$ 0
26	1	$ 0	$ 4,574	-$ 4,574
27	2	$ 0	$ 9,470	-$ 9,470
28	3	$ 0	$ 14,873	-$ 14,873
29	4	$ 0	$ 20,818	-$ 20,818
30	5	$ 0	$ 27,375	-$ 27,375

31	6	$ 0	$ 34,867	-$ 34,867
32	7	$ 0	$ 42,993	-$ 42,993
33	8	$ 0	$ 51,733	-$ 51,733
34	9	$ 0	$ 61,159	-$ 61,159
35	10	$ 13,654	$ 71,292	-$ 57,637
36	11	$ 16,957	$ 82,163	-$ 65,206
37	12	$ 20,824	$ 93,814	-$ 72,990
38	13	$ 25,308	$ 106,274	-$ 80,966
39	14	$ 30,337	$ 119,572	-$ 89,235
40	15	$ 36,049	$ 133,647	-$ 97,598
41	16	$ 42,542	$ 148,540	-$ 105,998
42	17	$ 49,782	$ 164,196	-$ 114,414
43	18	$ 57,823	$ 180,653	-$ 122,830
44	19	$ 66,717	$ 197,954	-$ 131,236
45	20	$ 76,507	$ 216,140	-$ 139,634
46	21	$ 87,247	$ 235,259	-$ 148,012
47	22	$ 98,994	$ 255,356	-$ 156,362
48	23	$ 111,956	$ 276,483	-$ 164,527
49	24	$ 126,228	$ 298,692	-$ 172,464
50	25	$ 142,103	$ 322,038	-$ 179,935
51	26	$ 159,757	$ 346,580	-$ 186,823
52	27	$ 179,386	$ 372,380	-$ 192,994
53	28	$ 201,204	$ 399,500	-$ 198,296
54	29	$ 225,452	$ 428,010	-$ 202,559
55	30	$ 252,394	$ 457,980	-$ 205,587
56	31	$ 282,329	$ 489,485	-$ 207,156
57	32	$ 315,595	$ 522,604	-$ 207,009
58	33	$ 352,574	$ 557,419	-$ 204,845
59	34	$ 393,704	$ 594,017	-$ 200,313
60	35	$ 439,483	$ 632,490	-$ 193,008
61	36	$ 490,477	$ 672,934	-$ 182,457
62	37	$ 547,326	$ 715,449	-$ 168,122
63	38	$ 599,562	$ 760,141	-$ 160,579
64	39	$ 651,615	$ 807,123	-$ 155,508
65	40	$ 681,057	$ 856,511	-$ 175,454
66	41	$ 667,067	$ 908,429	-$ 241,362
67	42	$ 652,605	$ 963,005	-$ 310,401

Pension wealth, contributions, and net pension wealth for a female teacher who begins teaching at age 25. Ex: After her fifth year of service, her pension benefits are worth $0 (A) and her cumulative contributions are worth $27,375 (B). Her net pension wealth accrued at this point is -$27,375, which is her pension wealth minus her cumulative contributions (A-B). All values are adjusted for inflation.

ENDNOTES

[1] Results are based on the retirement plan's rules as they apply to new hires who began in FY13. Provisions for state-covered plans were obtained from the National Council on Teacher Quality pension database (http://www.nctq.org/statePolicy/2015/nationalFindings.do?policyIssueId=4&masterGoalId=22).

[2] A vested teacher who leaves a DB pension plan *before* reaching retirement eligibility faces a choice: She can leave her contributions in the pension fund and wait until she reaches retirement age to receive benefits. Or she can "cash out" and immediately receive a refund of what she has contributed up to that point, sometimes with interest. In rare cases, refunds may also include some or all of the employer contributions, potentially with interest, depending on the terms of the plan and whether the teacher is vested. There are also exceptions where a refund benefit is actually less than what the teacher put in. For instance, Illinois keeps 1 percent of earnings for survivor benefits (see https://trs.illinois.gov/members/pubs/tier2guide/Refunds.pdf).

[3] In technical terms, pension wealth is the total expected value of a teacher's yearly stream of pension payments over her lifetime, discounted back to the present and accounting for life expectancy, conditional on the age of separation. See *Appendix B*.

[4] The value of a teacher's contribution is the employee's required payment into the retirement system, grown by each system's assumed rate of return.

[5] "Contributions" here and throughout refer to the value of a teacher's total contributions—the amount she contributes, grown by each system's assumed rate of return.

6 S. Provasnik and S. Dorfman, Mobility in the Teacher Workforce (Washington, D.C.: NCES, 2005), http://nces.ed.gov/pubs2005/2005114.pdf.

7 NCES, Digest of Education Statistics, Table 209.10, http://nces.ed.gov/programs/digest/d14/tables/dt14_209.10.asp.

8 http://www.ctpf.org/Brochures/sheet_leaving.pdf

9 A teacher who opts for a refund receives 8 percent of earnings with no interest (employee contribution less a 1 percent survivor benefit contribution). A teacher who leaves the system prior to vesting can receive a refund only; one who leaves after vesting but before retirement eligibility can choose either a refund or deferred pension benefits.

10 According to the Beginning Teacher Longitudinal Study, 80 percent of beginning teachers had a bachelor's degree. See NCES, Beginning Teacher Longitudinal Study, http://nces.ed.gov/surveys/btls/cohort.asp (accessed October 30, 2016). Additionally, given that about 55 percent of the current teaching workforce has a master's degree or higher, but approximately 21 percent of current teachers have five or fewer years of teaching, the analysis assumes that a teacher who remains five years will have a master's degree by that point.

11 E. Arias, "United States Life Tables, 2007," National Vital Statistics Reports 59, no. 9 (Hyattsville, MD: National Center for Health Statistics, September 2011).

12 "Professional growth" credits are not included in salary calculations. First, they cannot be applied uniformly across districts: one district may give teachers a salary increase when they earn, for example, 10 credits, while another may specify a salary increase at 20 credits. Second, there are no data available as to the rate at which teachers earn salary credits throughout their career. As others have demonstrated, however, the provisions governing public pension plans will be the primary determinants of benefit accrual patterns (see R. Costrell and M. Podgursky, "Peaks, Cliffs, and Valleys: The Peculiar Incentives in Teacher Retirement Systems and their Consequences for School Staffing," Education Finance and Policy 4, no. 2 (2009), 175–211). Variation in a teacher's earnings path, such as that just described, will likely have limited impact on pension wealth accrual patterns or the timing of the crossover point.

13 For example, some districts specify longevity payments in the contract instead of in the salary schedule.

14 NCTQ, "2015 Pension Flexibility," http://www.nctq.org/statePolicy/2015/nationalFindings.do?policyIssueId=4&masterGoalId=22. Some plan parameters were also independently verified using the Urban Institute's State and Local Employee Pension Plan Database (http://apps.urban.org/features/SLEPP/data.html).