A History of Public Sector Pensions in the United States

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Chapter 10
Early Pension Plans for State and Local Workers

The federal government lagged behind the states, which in turned lagged behind a number of cities, in establishing pension plans for its workers. Decades before the states or the federal government provided civilian workers with a pension plan, several large American cities established plans for at least some of their employees. Until the first decades of the twentieth century, however, these plans were generally limited to three groups of employees: police officers, firefighters, and teachers. New York City established the first such plan for its police officers in 1857. Like the early military plans, the New York City police pension plan was a disability plan until a retirement feature was added in 1878 (Mitchell et al. 2001). Only a few other (primarily large) cities joined New York with a plan before 1900. In contrast, municipal workers in Austria-Hungary, Belgium, France, Germany, the Netherlands, Spain, Sweden, and the United Kingdom were covered by retirement plans by 1910 (Squier 1912).

Despite the late start, the subsequent growth of such plans in the United States was rapid. By 1916, 159 cities had a plan for one or more of these groups of workers, and 21 of those cities included other municipal employees in some type of pension coverage (*Monthly Labor Review* 1916). Strictly speaking, many of these early plans were disability plans rather than retirement plans. Thus, the development of retirement pension plans for civilian public employees was similar to that found in the history of the original navy and army pension plans. Furthermore, many of these early pension plans were funded entirely by workers' contributions, making them more like forced savings plans rather than retirement plans in the contemporary sense of that term. Still, like those early military plans, either the city plans evolved into retirement plans or retirement plans were created de novo. So by the early twentieth century, pension plans were fairly common for big city workers.

The establishment of these early municipal plans hinged on an important aspect of public finance in the United States. Specifically, the political

relationship between the cities and the states was such that the exact conditions under which a city could create a pension plan for its workers was not always explicitly spelled out. The Constitution determines the manner in which U.S. territories become states. With the notable exception of the original thirteen states, much of the land in the rest of the contiguous states was originally "public land." As such, it was surveyed, organized into sections and townships or other small political units, and then auctioned by the Land Office or one of its manifestations under one or more of the numerous land ordinances passed after the Treaty of Paris of 1783. In short, the federal government created the states, and within the states, federal law was responsible for creating townships; however, the states typically found it useful or administratively more efficient to aggregate townships into larger political units typically called counties. In addition, within many counties there were areas of sufficient population density and/or commercial activity that they became cities. While there was no doubt that the states had the power to create cities, the boundary of the states' powers over their creations was an issue of great political dispute during the late nineteenth and early twentieth centuries. Not surprisingly, the history of local pension plans became entwined with this dispute since this was exactly the period that saw an expansion of local pension plans.

From the end of the American Revolution, municipal corporate charters were granted by the state legislatures, generally on a case-by-case basis. Each corporate charter specified what types of public services could or would be offered, what types of taxes could be levied, and what types of liabilities could be incurred by these "minor" political units. This process lent itself to certain political abuses. Specifically, the state political machines could include clauses in the charter or subsequently pass special acts that promoted their objectives regardless of the welfare of the municipalities' citizens. The clauses or acts included just about any conceivable aspect of city administration, including, among other items, taxation, public works projects, and police administration. The typical objective of these actions was simply the control of political patronage or the public purse through employment and/or public contracts. Among the liabilities that were typically constrained by state control or corporate charter, either explicitly or implicitly, was compensation of public employees, including pension plans. Thus, many local municipalities could not unilaterally create a pension plan for public employees because the cities were either constrained in their ability to create an unfunded liability or constrained in their ability to create and maintain a fund to pay pension liabilities, or both.

Obviously, there was an incentive on the part of local politicians and citizens to wrest control of this process from the state legislature. Beginning with the state of Ohio in 1851, a number of states ratified or amended their state constitutions to prohibit such actions on the part of the legislature.[1] By the early twentieth century, nearly three-fourths of the states had such a

constitutional provision. These constitutional remedies typically took the form of clauses that required the legislature to provide for the organization of smaller political units by the creation of "general laws" rather than specific charters. However, there were two problems with the constitutional approach to limiting state involvement in municipal affairs. First, the constitutions typically only indicated what states *could* do. They did not explicitly say what cities could do or what states could *not* do. Second, state legislatures quickly learned how to circumvent the spirit of their state constitutions by creating "classes" of cities and then defining the classes in such a way that only one city might be in a class. Thus, by passing a "general" law for all cities of a certain "class" (usually defined by population), the state legislature could in fact pass a specific law for the city with that population. So, for example, Pennsylvania had one "first class" city, one "second-class" city, and one "2a class" city.

It was such problems that led to the so-called "home-rule" movement of the late nineteenth and early twentieth centuries. Home-rule in this context meant explicit constitutional or legislative recognition of municipal control over specific aspects of local public finance. As with legislation aimed at settling other multifaceted disputes, it was difficult to employ language that would apply to all or even most of the possible issues that might be disputed. Some examples include those that grant local control over "municipal affairs," "local and municipal matters," and local "property, government and affairs." Exactly what constituted municipal "affairs" or "matters" was left to the courts to decide. In practice, the states typically maintained the right to regulate education, courts, and utilities. The cities obtained the right to control municipal employees, including police and firefighting personnel, zoning, and so forth. However, the disputes that persisted during the period in question included municipal finance, taxation, and debt. These and other aspects of municipal administration were clearly linked to municipal pension plans. Eventually, some states passed enabling legislation that either created pension funds or explicitly permitted cities do so.

The pernicious effects of the absence of home rule were felt most acutely in the southern states. After Reconstruction the Democratic machines that took control of the state legislatures attempted to maintain that control by denying home rule to the county and municipal governments. The experience of North Carolina offers an example of the practice. Almost immediately after the end of Republican rule, the state legislature passed an act in which the legislature possessed the power to appoint all local justices of the peace, who in turn elected the county commissioners. Thus control of the counties was vested in the legislature through the patronage appointments of justices of the peace (Woodward 1951). In this system, the state had no interest in seeing the local governments establish pensions. In general this system proved more stubborn and damaging in the south than elsewhere, and, as our discussion and evidence below suggests, this fact manifest itself

in the almost complete absence of pension plans at the state and local level until well into the twentieth century.

Early Municipal Pension Plans

At least partly as a result of the constitutional changes of the late nineteenth century and the home-rule movement, by the early decades of the twentieth century almost every city of any size in America had some type of pension plan for its police officers and firefighters, and many cities, as well as some states, had created plans for teachers. In 1917, 85 percent of cities with 100,000 or more residents paid some form of police pension, as did 66 percent of those with populations between 50,000 and 100,000, and 50 percent of cities with population between 30,000 and 50,000 had some pension liability (James 1921). These data were compiled from municipal accounts. So, it is important to note that these figures do not mean that all of these cities had a formal pension *plan*. They only indicate that a city had at least $1.00 of pension liability among its accounts. This liability could have been from a disability pension, a forced savings plan, or a discretionary pension. Still, by 1928, the *Monthly Labor Review* (April 1928) could characterize police and fire plans as "practically universal." At that time, all cities with populations of over 400,000 had a pension plan for either police officers or firefighters or both. Only one, St. Louis, did not have a plan for police officers. Several of those cities had plans for their other municipal employees and some cities maintained pension plans for city schoolteachers separately from state teachers' plans, which are reviewed in the next section.[2]

In this section, these plans will be discussed in four groups—those for police officers, firefighters, other municipal employees, and teachers. Seven characteristics of these plans are examined for each group, including the number of workers covered, the nature of the employee's contribution, the nature of the employer's contribution, how the administration costs of the plan were paid, the qualifications for a pension, the manner in which the pension benefit was calculated, and a summary of any dependents' benefits.

Table 10.1 contains a summary of early police pensions. New York, the nation's largest city, established the first police pension plan in 1857. As Table 10.1 shows, the New York plan remained the largest in the country by far, though because of differences in the types of personnel covered by the various plans, the figures in the second column are not strictly comparable across cities. A few other plans dated in one form or another from the late nineteenth century. Chicago, Detroit, Indianapolis, and St. Louis all had plans in place before 1900—though the St. Louis plan was inoperative for a period after its creation.

The plans certainly differed across cities, but they also share some general characteristics. For example, when reviewing the contributions and level of benefits, it is worth keeping in mind that the typical patrolman in a

TABLE 10.1. Municipal Police Pension Plans in the United States, c. 1920s

City	*Police personnel covered*	*Employee contributions*	*Employer contributions*	*Administration costs*	*Conditions*	*Benefit*	*Dependent benefits*
Baltimore	1,864	1-3% of annual salary	100% of the difference between employee contributions and outlays	Municipality paid 100%	No age or years of service requirements	One-half of annual salary at the time of retirement	If officer died while on duty, then widow receives a pension at the commissioner's discretion
Boston	Police officers were covered with other municipal employees; see Table 10.3	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Buffalo	1,144	1–3% of annual salary	100% of the difference between employee contributions and outlays	Municipality paid 100%	20 years of service with no age requirements	One-half of annual salary at the time of retirement	$300–1,200 or one-half officer's salary
Chicago	6,080	3.5% of annual salary up to $2,600	Municipal police retirement tax	0.125% of annual salary up to $2,600	Retirement after 20 years of service and 50 years of age; but no service requirement beyond age 57	Annuity of twice the officer's accumulation up to 75% of annual salary up to $2,600	Widow's benefits up to 60% of officer's salary, and $10–25 for each child under age 18

TABLE 10.1. *Continued*

City	*Police personnel covered*	*Employee contributions*	*Employer contributions*	*Administration costs*	*Conditions*	*Benefit*	*Dependent benefits*
Cincinnati	525	$1 per month	Municipal police retirement tax	Municipality paid 100%	25 years of service with no age requirements	One-half of annual salary at the time of retirement	$300–1,200 or one-half officer's salary
Cleveland	1,421	$1 per month	Municipal police retirement tax	Municipality paid 100%	25 years of service with no age requirements	$87.66 to $125 per month depending on rank at retirement	$300–1,200 or one-half officer's salary
Detroit	2,762	1% of annual salary	Municipal police retirement tax	Municipality paid 100%	25 years of service with no age requirements	One-half of annual salary at the time of retirement	Widow receives $100 a month and $20 per month for each child under age 16
Los Angeles	Plan includes police officers and firemen; no figures on participation are availible	4% of annual salary	100% of the difference between employee contributions and outlays	Municipality paid 100%	35 years of service, with no age requirements, for full benefits; after 25 years of service	66% of average annual salary during the last three years of service (50% for 25 years of service)	Widow receives 50% of the employees' average annual salary during the last three years of service

Milwaukee	938	3% of annual salary	Municipal police retirement tax	0.125% of annual salary	Retirement after 20 years of service and 50 years of age, or 15 years of service and 57 years of age	Annuity equal to twice the officer's accumulated contributions up to 75% of highest annual salary	Widow's benefits up to 75% of officer's salary, and $10–15 per month per child under age 18
Minneapolis	499	1% of annual salary	Municipal police retirement tax	$2.00 annually	Retirement after 20 years of service and 50 years of age	One-half of annual salary at the time retirement	$300–$1,200 or one-half officer's salary
Newark	Plan includes police officers and firemen; no figures on participation are available	2% of annual salary for those entering service before age 35; 4% otherwise	4% of annual departmental appropriations for salaries	Police and Fire Departments paid 100%	20 years of service with no age requirements	One-half of annual salary at the time of retirement	Widow receives $1000 annually; orphans under the under the age of 16 receive $25 per month
New Orleans	877	1–3% of annual salary	2% of annual police department appropriations	Municipality paid 100%	20 years of service with no age requirements	One-half of annual salary at the time of retirement	Widow receives $150 annually
New York	15,950	1–3% of annual salary	100% of the difference between employee contributions and outlays	Municipality paid 100%	Retirement after 25 years of service; 20 years at age 55; mandatory at age 60	One-half of annual salary at the time of retirement	Lump-sum payment equal to annual salary, plus either the larger of $600 or one-half annual salary

TABLE 10.1. *Continued*

City	*Police personnel covered*	*Employee contributions*	*Employer contributions*	*Administration costs*	*Conditions*	*Benefit*	*Dependent benefits*
Philadelphia	5,600	1 day's pay up to $3,000 in annual salary	100% of the difference between employee contributions	Municipality paid 100%	Retirement after 20 years of service and 50 years of age	One-half of average annual salary during the last ten years of service	Widow receives $20 a month and $6 per month for each child under age 14
Pittsburgh	904	1%-3% of annual salary	2% of municipal tax revenues	Municipality paid 100%	20 years of service with no age requirements	$50 to $75 per month depending on on rank at retirement	$1,200 lump-sum payment
St. Louis	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
San Francisco	1,186	$1 per month	Funds raised from various fines and municipal licenses	Municipality paid 100%	20 years of service with no age requirements; retirement mandatory at age 65	One-half of average annual salary during the last three years of service	Widow or other dependent(s) receives one-half the officer's salary
Washington	Plan includes police officers and firemen; no figures on participation are availible	2.5% of annual salary	100% of the difference between employee contributions and outlays	Municipality paid 100%	No service of age requirements	One-half of at the time of of retirement	Widow receives $60 a month at and $10 per month for each child under age 16

Sources: *Monthly Labor Review,* various issues.

big city police department would have earned between $1,500 and $2,000 annually in the late 1920s. So the 4 percent employee's contribution in Los Angeles or 3.5 percent in Chicago would have been large relative to the $1.00 a month an employee contributed in Cincinnati, Cleveland, or San Francisco. Still, every city with a police pension plan required some contribution from the employees. With respect to the city's contribution, there were basically two types of plans: those that had some type of revenue stream, however uncertain, which was dedicated to the pension fund, typically a share of the city property tax or fines, and those that had no such funds. Although one might use the term "funded" in this context to mean that a specific public revenue stream was dedicated to pay for the city's pension liabilities, this is not to be confused with a fully funded plan in which the city contributed an amount that was consistent with the actuarially determined liabilities of the pension plan. None of the plans in Table 10.1 meet that standard. The two largest plans provide an example of the contrast. Chicago's plan was funded by an assessment on the city's property tax, whereas New York simply paid, through annual municipal revenues, the difference between current liabilities and the current contributions of employees. Neither of these methods ensured the long-run viability of these plans, at least not in any actuarial sense.

Curiously, and perhaps as a consequence of the lack of sound funding, many of these cities turned to other sources of revenues to fund their police pensions. These included but were not limited to the following:

- fines imposed on police officers for disciplinary purposes,
- rewards or donations bestowed for special services or valor,
- fees for street permits or other permits for public entertainment,
- permits for dancing schools,
- permits for boxing contests,
- fees for physician licenses,
- fees for private detective licenses,
- fees for dog licenses,
- unclaimed monies or monies received from the sale of unclaimed property, and
- proceeds from the sale of condemned property.

If nothing else, this lists suggests how some cities partially solved the problem of patrolmen shirking when it came to the enforcement of city licensing laws. Reliance on these sources for revenue was similar in nature to the use of prizes to fund the navy pension system. This system of funding had the same disadvantages. Plan liabilities were relatively certain, varying largely according to the number of participants, their age distribution, and the generosity of the plan. At the same time revenues were relatively uncertain, and there was no actuarial reason why the two should balance.

In retrospect, dancing school permits and dog licenses seem like uncertain (and unremunerative) assets against which the liabilities of Table 10.1 should be balanced.

To receive a benefit, the officer typically had to work at least 20 years; however, in several cities the minimum service required for a benefits was 25 years or more, and in Los Angeles 35 years of service were required for a full benefit. Benefits were typically determined as some fraction, usually 50 percent, of an officer's pay at the time of retirement though there were several notable exceptions. Chicago and Milwaukee purchased an annuity equal to twice the officer's contribution, with some credit for interest (see below), up to 75 percent of the officer's salary. Chicago also specified a maximum annual retirement benefit of $2,600. Every city maintained some type of survivor's benefit, though in Baltimore the benefit was at the discretion of the police commissioner.

There were several other cities that had created pension plans for their police officers around the turn of the twentieth century, including Camden, New Jersey; Chattanooga, Tennessee; Columbus, Ohio; Des Moines, Iowa; Indianapolis, Indiana; Omaha, Nebraska; Rochester, New York; Seattle, Washington; Springfield, Illinois; Springfield, Massachusetts; Superior, Wisconsin and; Toledo, Ohio. These cities were generally smaller than those in Table 10.1, but their plans were usually similar to the ones in the table. Interestingly, although the Dallas, Texas city charter explicitly permitted the city to create a pension plan, Dallas had not done so by the time these data were compiled. Also, police officers in Kansas City, Missouri and Richmond, Virginia maintained their own private plans through benevolent societies. Funded by officers' contributions, the Kansas City plan offered benefits on par with those of the plans in Table 10.1, paying $80 per year for every year of service greater than three up to a maximum annual pension of $1,200. However, the Richmond plan was considerably less secure, paying whatever "the condition of the fund will warrant." The payment was adjusted according to the "demands on the fund" (Squier 1912). It was exactly this type of uncertainty that a pension "plan" is designed to avoid.

Firefighters in the nation's largest cities also had pension plans by the early part of the twentieth century. Table 10.2 contains a summary of fire department pension plans. In general, these were similar to those for police personnel; however, there were some notable differences. For example, all of the early pension plans in major municipalities for police department personnel required an employee contribution. In contrast, three of the major fire department plans, those in Detroit, New York, and San Francisco, required no employee contribution. The New York plan is noteworthy because it was much like that of police officers with one other exception. New York firefighters could retire with full benefits after 20 years while police officers had to work 25 years unless they were under age 55 at the time of retirement.

Another noteworthy difference between police and fire plans was the fact that only one of the fire department plans was explicitly funded in any fiscal sense of the term. Only Milwaukee had some source of tax revenue explicitly dedicated to fund fire department pensions, this was the property tax assessment. As with police pensions, most cities dedicated a number of minor sources of revenues toward their fighters' pensions. These included but were not limited to the following:

- fines imposed on firefighters for disciplinary purposes,
- rewards or donations bestowed for special services or valor,
- fines imposed for violations of fire regulations,
- a percentage of city license fees,
- monies received from the sale of unclaimed property, and
- proceeds from the sale of condemned property.

The system of placing fines in the retirement fund probably encouraged enforcement of city fire ordinances if nothing else. Finally, in several states, all or part of the tax on fire insurance premiums was dedicated towards the firefighter's retirement plan. As with the police plans, several of these, including the plans for Chicago, Pittsburgh, and St. Louis, dated from the nineteenth century.

There were several smaller cities that maintained plans for their firefighters. These included: Chattanooga, Tennessee; Columbus, Ohio; Denver, Colorado; Des Moines, Iowa; Omaha, Nebraska; Rochester, New York; Seattle, Washington; Springfield, Massachusetts; Tacoma, Washington; Toledo, Ohio; and Superior, Wisconsin. There was one private retirement plan managed by a benevolent society in St. Paul, Minnesota. The St. Paul plan paid $40 a month to firemen over age 50 with 20 years of service. The Tacoma firefighters began a private plan in 1902, but it was taken over as part of the city plan when the state of Washington passed an enabling act in 1909.

Early municipal plans for other employees were not nearly as common as they were for policemen and firefighters. Table 10.3 contains a summary of pension plans for other municipal employees. Whereas 17 of the 18 largest cities had police plans and the same number had plans for firefighters, only half of these cities had plans for other municipal employees. Curiously, although there were relatively few municipal employee plans at the time, these tended to be explicitly funded on an actuarially sound basis. Typically, the employee's annual contribution was a percentage of salary at the time of retirement. The contribution was based on worker characteristics, including the age at which the employee entered public service, the employee's occupation, the employee's gender, and the expected or "targeted" pension annuity. The last of these characteristics was typically something like the product of some fraction, say one sixty-sixth or one one-hundredth

TABLE 10.2. Municipal Fire Department Pension Plans in the United States, c. 1920s

City	*Firemen covered*	*Employee contributions*	*Employer contributions*	*Administration costs*	*Conditions*	*Benefit*	*Dependent benefits*
Baltimore	Firemen were covered with other municipal employees; see Table 10.3	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Boston	Firemen were covered with other municipal employees; see Table 10.3	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Buffalo	946	4% of annual salary	100% of the difference between employee contributions and outlays	Municipality pays 100%	20 years of service with no age requirements	One-half of annual salary at the time of retirement	Widow or other dependent(s) receives fireman's pension or its equivalent
Chicago	2,341	2.5% of annual salary	100% of the difference between employee contributions and outlays	Municipality pays 100%	Retirement after 20 years of service or 50 years of age, but contributions must continue until age 50	One-half of annual salary at the time of retirement, with $600 (annual) minimum and $3,000 maximum	Widow or other dependent(s) receives fireman's pension or its equivalent

Cincinnati	624	$0.50 per month	100% of the difference between employee contributions and outlays	Municipality pays 100%	25 years of service with no age requirements	One-half of annual salary at the time of retirement, with $75 (monthly) minimum and $100 maximum	Widow or other dependent(s) receives fireman's pension or its equivalent
Cleveland	1,061	$0.50–1.25 per month depending on rank	100% of the difference between employee contributions and outlays	Municipality pays 100%	25 years of service with no age requirements	One-half of annual salary at the time of retirement, with $87.66 (monthly) minimum and $100 maximum	Widow or other dependent(s) receives fireman's pension or its equivalent
Detroit	1,698	No contribution required of firemen	100% of the difference between employee contributions and outlays	Municipality pays 100%	25 years of service with no age requirements	One-half of annual salary at the time of retirement	Lump-sum payment of undetermined amount
Los Angeles	Firemen were covered with police officers; see Table 10.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

TABLE 10.2. *Continued*

City	*Firemen covered*	*Employee contributions*	*Employer contributions*	*Administration costs*	*Conditions*	*Benefit*	*Dependent benefits*
Milwaukee	723	3% of annual salary	Municipality contributes 9% of a fireman's annual salary to the retirement fund, paid by $0.0005 sales tax	0.125% of annual salary	Retirement after 15 years of service at age 57; 20 years at age 50; 10 years at age 50 (with reduced benefit)	Annuity equal to twice the fireman's accumulated contributions up to 75% of highest annual salary	Widow's benefits up to 75% of fireman's salary, and $10–15 per month per child under age 18
Minneapolis	513	$10 initiation fee and $1.50 per month, plus plus $1–2 upon the death of a fireman	100% of the difference between employee contributions and outlays	Municipality pays 100%	Retirement after 20 years of service or 50 years of age, but payments do not begin until age 50	$600 per year for 20 years of service; plus a bonus for each 5-year increment above 20 years	Widow or other dependent(s) receives fireman's pension or its equivalent
Newark	Firemen were covered with. police officers; see Table 10.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
New Orleans	628	1% of annual salary, plus $1–2 upon the death of a fireman	100% of the difference between employee contributions and outlays	Municipality pays 100%	20 years of service with no age requirements	One-half of annual salary at the time of retirement	$1,000 lump-sum payment
New York	6,078	No contribution required of firemen	100% of the difference between employee contributions and outlays	Municipality pays 100%	20 years of service with no age requirements	One-half of annual salary at the time of retirement	Widow or other dependent(s) receives fireman's pension or its equivalent

Philadelphia	2,100	1 day's pay annually	100% of the difference between employee contributions and outlays	Municipality pays 100%	Retirement after 20 years of service or 45 years of age	One-half of average annual salary during the last four years of service	Widow or other dependent(s) receives fireman's pension or its equivalent
Pittsburgh	931	2.5% of annual salary, plus $1–2 upon the the death of a fireman	100% of the difference between employee contributions and outlays	Municipality pays 100%	20 years of service with no age requirements	$50 to $75 per month depending on rank at retirement	$1,100 lump-sum payment
St. Louis	940	$5 initiation fee and $2 per month	100% of the difference between employee contributions and outlays	Municipality pays 100%	20 years of service with no age requirements	$600 per year	Widow or other dependent(s) receives fireman's pension or its equivalent
San Francisco	967	No contribution required of firemen	100% of the difference between employee contributions and outlays	Municipality pays 100%	Retirement after 25 years of service; 20 years at age 55	One-half of annual salary at the time of retirement	Widow or other dependent(s) receives fireman's pension or its equivalent
Washington	Firemen were covered with police officers; see Table 10.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Source: *Monthly Labor Review,* various issues.

of the employee's average annual salary during his last five years of service and the number of years of service at, say, age 60. The city typically purchased an annuity of (roughly) equal value to the worker's accumulated monies, with interest. We say "roughly" because the worker's contribution in any particular year was based on estimations of future earnings, time to retirement, and so forth. Furthermore, exactly where the city obtained its half of the annuity's value was seldom explicitly determined, a point we consider is some detail below.

In addition to this innovation, these plans essentially ushered in the era of the defined benefit pension plans in which the benefit was based on years of service and end-of-career earnings, a feature that was to become increasingly common. For example, in New York, a broad class of public workers received one-seventieth of the average of their last five years of service multiplied by the number of years of service. Thus the benefit for a worker with 35 years on the job would have been approximately 50 percent of the average salary at the end of her career. These features are not unlike any number of contemporary public sector pension plans.

After police officers and firefighters, the other major group of municipal workers to receive a pension plan was teachers. Despite a strong commitment, by any historical or contemporary standard, to public education, the United States was quite late in offering universal old-age pensions to its public schoolteachers. For a comparison, consider that, by 1911, at least twenty countries around the world had created pension plans for their public schoolteachers. England, France, Saxony, and even Russia had done so before 1860 (Squier 1912). At the same time, only roughly one-third of the states in the United States had some type of pension plan for at least some of their teachers—though the number of states with a plan was growing. By the late 1920s, 23 of the states maintained pension plans for their teachers. Four other states passed legislation allowing individual school districts to provide plans for their teachers. In one state, Missouri, the teachers themselves organized a plan. The majority of these plans were created between 1896 and 1911, during the height of the Progressive movement. Prior to this time, indeed dating back into the late nineteenth century, a number of local school districts provided pension plans for their teachers, and several of the country's larger cities maintained pension plans for their teachers separately from the state plans.

It would be easy to misinterpret and make too much of the fact that local school districts typically offered pensions to their teachers before overall state plans were adopted. The nature of state and local public finance in most states required enabling acts by the state legislatures before local school boards could create pension plans. Schools were typically financed largely through local property taxes, and local boards of education administered the school districts. However, the state oversaw the actual spending by local school districts. For local school boards to establish a pension plan

TABLE 10.3. Municipal Employees' Pension Plans in the United States, c. 1920s

City	*Municipal workers covered*	*Employee contributions*	*Employer contributions*	*Administration costs*	*Conditions*	*Benefit*	*Dependent benefits*
Baltimore	Municipal employees, including firemen and teachers; for police pensions, see Table 10.1	Annual contribution is actuarially determined	Actuarially determined based on expected future benefits	Municipality 100%	Retirement optional at age 60, mandatory at 70, with no years of service requirement	Determined by the product of service multipliers, years of service, and salary	Employee has the option of receiving a smaller pension in return for a guaranteed survivor's benefit
Boston	Municipal employees, including police officers, firefighters, and teachers	4% of annual salary	Actuarially determined based on expected future benefits	N.A.	Retirement optional at age 60, mandatory at 70, with no years of service requirement	Determined by the product of service multipliers, years of service, and salary, with a minimum of $480	N.A.
Buffalo	Only police officers and firefighters were covered; see Tables 10.1 and 10.2.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Chicago	Municipal employees other than police officers, firefighters, and teachers; see Tables 10.1, 10.2 and 10.4	3.25% of annual salary	Actuarially determined based on expected future benefits	0.10% of annual salary	10 years of service with no age requirements	Determined by the product of of service and salary, up to $1,800	Male employees contribute 1% of their annual salaries for a widow's annuity

TABLE 10.3. *Continued*

City	*Municipal workers covered*	*Employee contributions*	*Employer contributions*	*Administration costs*	*Conditions*	*Benefit*	*Dependent benefits*
Cincinnati	Only police officers and firefighters were covered; see Tables 10.1 and 10.2.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Cleveland	Only police officers and firefighters were covered; see Tables 10.1 and 10.2.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Detroit	Municipal employees other than police officers, firefighters, and teachers; see Tables 10.1, 10.2, and 10.3	No contribution required of municipal employees	Municipality pays 100%	Municipality pays 100%	25 years of service with no age requirement; only 15 years of service required for age 70	One-half of annual salary at the time of retirement, with with a $900 maximum	Employee has the option of receiving a smaller pension in return for a guaranteed survivor's benefit
Los Angeles	Only police officers and firefighters were covered; see Tables 10.1,	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Milwaukee	Only police officers and firefighters were covered; see Tables 10.1, 10.2 and 10.4.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Minneapolis	Municipal employees other than police officers, firefighters, and teachers; see Tables 10.1, 10.2, 10.4	Workers earning less than $750 are exempt; above that the annual contribution is actuarially determined	Actuarially determined based on expected future benefits	Municipality pays 100%	Retirement optional at age 62 (60 for women), mandatory at 72 (70), with no years of service requirement	Determined by the product of service multipliers, years years of service, and salary; exempt workers face a $500	Employee has the option of receiving a smaller pension in return for a guaranteed survivor's benefit
Newark	Only police officers and firefighters were covered; see Tables 10.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
New Orleans	Only police officers and firefighters were covered; see Tables 10.1, 10.2. and 10.4	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
New York	Municipal employees other than police officers, firefighters, and teachers; see Tables 10.1, 10.2 and 10.4	Annual contribution is actuarially determined	Actuarially determined based on expected future benefits	Municipality pays 100%	Retirement optional 58–60, depending on occupation, mandatory at 70, with no years of service requirement	Determined by the product of service multipliers, years years of service, and salary	Employee has the option of receiving a smaller pension in return for a guaranteed survivor's benefit

TABLE 10.3. *continued*

City	*Municipal workers covered*	*Employee contributions*	*Employer contributions*	*Administration costs*	*Conditions*	*Benefit*	*Dependent benefits*
Philadelphia	Municipal employees other than police officers and firefighters; see Tables 10.1 and 10.2	2.5% of annual salary up to $72 per year	100% of the difference between employee contributions and outlays	Municipality pays 100%	20 years of service and 60 years of age	One-half of annual salary at the time of of retirement, with a $1,200 maximum	Employee has the option of receiving a smaller pension in return for a guaranteed survivor's benefit
Pittsburgh	Municipal employees other than police officers and firefighters see Tables 10.1 and 10.2	4% of annual salary up to $48 per year	100% of the difference between employee contributions and outlays	Municipality pays 100%	Retirement after 20 years of service and 60 years of age; earlier retirement with contributions to age 60	One-half of annual salary at the time of retirement, with a $1,200 maximum	Employee has the option of receiving a smaller pension in return for a guaranteed survivor's benefit

St. Louis	Only firefighters were covered; see Table 10.2.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
San Francisco	Municipal employees (and teachers) other than police officers and firefighters; see Tables 10.1 and 10.2	Annual contribution is actuarially determined	Actuarially determined based on expected future benefits	Municipality pays 100%	10 years of service and 62 years of age, or at age 60 with 30 years of service; mandatory retirement at 70	Determined by the product of service multipliers, years of service, and salary, with a minimum of $480	Employee has the option of receiving a smaller pension in return for a guaranteed survivor's benefit
Washington	Only police officers and firefighters were covered; see Tables 10.1, and 10.4	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Sources: *Monthly Labor Review,* various issues.

that was financed on either a pay-as-you-go or a funded basis would have typically exceeded their mandates and their capacity to finance such a plan. The New York state legislature had considered enabling legislation since 1879; however, it was not until 1894 and 1895 that acts permitted New York City and Brooklyn, respectively, to offer a pension plan to their teachers. Over the next decade or so at least seven other cities, including Albany, Buffalo, Elmira, Rochester, Schenectady, Syracuse, and Troy, received approval to offer plans. However, with the exception of the New York City system, these plans were eventually reorganized and subsumed by the New York state pension plan of 1921.

This pattern for development of local pension plans was repeated elsewhere. In 1907, the Indiana legislature created a plan for teachers in the city of Indianapolis, and in the same year the Illinois legislature created a plan for Chicago. In 1909, Denver and Omaha received state approval of plans for their teachers, as did New Haven, Connecticut in 1911. Shortly thereafter, both Kansas and Utah passed enabling legislation that permitted cities of a certain size or "class" to establish pensions for their teachers. In some cases, such as Connecticut, Indiana, and New York, the city plans were absorbed into subsequent state plans. In others, such as New York City and Chicago, the municipal plan remained more or less intact and separate from the broader state plans.

By 1928, there were at least twelve major municipalities, which were offering, or recently had offered, a pension plan to their teachers. Of these twelve, three—Denver, Omaha, and New Orleans—were in states that did not have separate plans for their teachers. Eleven of these municipal pension plans for teachers are summarized in Table 10.4. We omit the Denver plan, which was a disability plan, though infirmities associated with old age were considered disabilities. It paid $30 a month to "disabled" teachers. Some of the teachers' plans in Table 10.4 do not look all that different from those for either police or fire or other municipal personnel. Indeed, in three of the cities teachers were on the same plan as other municipal workers. However, several of the teachers' plans contain two characteristics not associated with the plans for other workers. One is the graduated nature of the teacher's contribution; that is, it rises with income and experience. The other is the willingness of the cities to accept time on the job in other school districts as credit toward the pension benefit. Note that none of the pension plans for police officers, firefighters, or other personnel explicitly contained such provisions.

It is difficult to offer a logical economic explanation for the graduated nature of these benefits. If one had the actual salaries by seniority for workers in a graduated plan like that of, say, Michigan or Minnesota, the dollar amounts contributed by the teacher could be converted to a percentage of annual earnings. These percentages could then be compared to the contributions of teachers and other city workers to see who was actually

contributing a larger proportion of their salaries to their pensions. The counting of service in other school districts in the calculation of the city pension may have been related to the changing nature of the academic labor market. Schoolteaching had become an acceptable occupation for women in the previous generation, and this provision for counting other service might be an example of municipalities lowering the cost of married teachers moving (presumably with their working spouses) to the city. Since women were often forced to resign from teaching when they married, it is likely that another factor was involved. More likely, giving credit for time in another system was related to the large scale rural-to-urban migration of the era. In a time of rapid urbanization, this feature of these plans may have been designed to encourage rural and small town teachers to migrate to the city with their students.

Early State Pensions

In many states, general old-age relief plans, like Social Security, antedated pension plans for the state employees. Indeed, the states antedated the federal government by more than a decade in offering general old-age relief. Arizona abolished its "almshouses" and replaced them with "outdoor relief" in the form of a general pension plan in 1915, but it was quickly declared unconstitutional (Schneider 1937). Alaska also created a plan in 1915, and Montana, Nevada, and Pennsylvania did so in 1925. The last of these was subsequently declared unconstitutional, though a constitutional amendment rectified that situation in 1934, on the eve of the creation of the federal Social Security plan. In general, progress was slow until the Depression. By 1929 there were only 1,003 elderly individuals receiving old-age support from five states (Millis and Montgomery 1938). However, by 1934, 28 states and two territories had some type of state social security plan. Four more plans were added in 1935. A contemporary review of these plans noted that there were over 400,000 elderly individuals receiving state benefits at the time the federal Social Security plan was created. The benefits were minimal, ranging from $1.08 (North Dakota) to $27.74 (Nevada) (Schneider 1937).

When compared with the timing of the passage of enabling legislation for local teacher pension plans adopted by cities, the states were quite slow to establish pension plans for their civil service employees. However, after individual municipalities began adopting plans for their teachers in the early twentieth century, the states moved fairly aggressively in the 1910s and 1920s to create or consolidate plans for their other teachers. Table 10.5 contains a summary of 21 of the 24 state plans in existence in the late 1920s. Before turning to a comparison of the plans in the table, first consider the plans not listed there. Recall from above that 28 states in all had at least some public schoolteachers covered by a plan. In Colorado, Kansas,

TABLE 10.4. City School Teachers' Pension Plans in the United States, c. 1920s

City	*Teachers covered*	*Employee contributions*	*Employer contributions*	*Administration costs*	*Conditions*	*Benefit*	*Dependent benefits*
Baltimore	Teachers were covered with other municipal employees; see Table 10.3	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Boston	Teachers were covered with other municipal employees; see Table 10.3	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Chicago	11,927	$1 monthly for the first 4 years, $1.50 monthly for the next 4 years, $2.50 for the next 4, and $5 thereafter	Municipality contritbutes $2 for each $1 contributed by teachers	Administration expenses are are paid from interest on the assets of the fund	25 years of service (15 of which must be in Chicago), increased benefit up to 35 years	$800 annually after 25 years of service, increased by $20 per for every year over 25 up to $1,000	No provision for dependents
Detroit	6,300	3% of annual salary up to to $1,500	Municipality contributes daily interest on balances in the teachers' salary fund plus nonresident student tuition	Administration expenses are paid from interest on the fund	30 years of service (last 20 of which must be in Detroit)	$1,200 annually	No provision for dependents

Milwaukee	2,054	$4 monthly for the first 10 years, $6 monthly for for the next 5 years, $8 monthly thereafter	45% of surtax on incomes above $3,000	Administration expenses are paid from interest on the assets of the fund	Must be age 62 or older and have at least 25 years of service (15 Milwaukee), or 35 years of service	$600 annually after 25 years of service, increased by $20 per for every year over 25 up to $900	No provision for dependents
Minneapolis	2,344	5% of annual salary for teachers over the age of 25	Actuarially determined based on expected future benefits	Administration expenses are paid from interest on the assets of the fund	No age or service requirements, though benefits cannot begin until age 50	An annuity equal in value to the sum of the employee's and city's contributions	Employee has the option of receiving a smaller pension in return for a guaranteed survivor's benefit
New Orleans	1,619	2% of annual salary	Appropriates 3% of teachers' salaries, with a minimum appropriation of $3000	Department of education pays 100%	Must be age 65 or older and have at least 40 years of service, with benefit reduced by 1/40 per year to 75%	One-half of annual salary at the time of retirement after 40 years of service, $300 minimum and $600 maximum	No provision for dependents
New York	25,995	Annual contribution is actuarially determined	Actuarially determined based on expected future benefits	Municipality 100%	35 years of service (20 of which must be in New York), mandatory retirement at age 70	An annuity equal in value to the sum of the employee's and city's contributions	Employee has the option of receiving a smaller pension in return for a guaranteed survivor's benefit

TABLE 10.4. *Continued*

City	*Teachers covered*	*Employee contributions*	*Employer contributions*	*Administration costs*	*Conditions*	*Benefit*	*Dependent benefits*
Omaha	N.A.	N.A.	1–1.5% of state teacher salary appropriations plus 1–1.5 times that amount "as needed"	N.A.	35 years of service (20 of which must be in Omaha), with retirement after 20 years due to disabilty	$500 annually with 35 years, reduced proportionally for early retirement due to disability	Employee has the option of receiving a smaller pension in return for a guaranteed survivor's benefit
San Francisco	Teachers were covered with other municipal employees; see Table 10.3	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Washington	2,761	Annual contribution is actuarially determined	Actuarially determined based on expected future benefits	Department of education pays 100%	Must be age 62 and have at least 10 years of service, and 100% of service after age 52, mandatory at age 70	An annuity equal in value to the sum of the employee's and city's contributions	No provision for dependents

Sources: *Monthly Labor Review,* various issues.

Nebraska, and Oregon, the state legislatures had passed acts that enabled either specific cities or specific "classes" of cities, which, as we have seen, was often the same thing, to establish pension plans for their teachers. In Kansas and Oregon, the "first class" cities, typically defined according to population and/or municipal services offered, were permitted to create pension plans, though in practice they were quite slow to do so.

The other three states not shown in the table were Missouri, West Virginia, and Utah. In Missouri, the teachers themselves organized a plan in 1907. Teachers contributed up to one percent of their salary; males could retire after 30 years and females after 25 years; and pension benefits were determined by an executive committee and the board of trustees. In 1907, West Virginia established that teachers who had served 30 consecutive years could be placed on the "substitute teachers' list" at three-quarters pay. Although nominally still eligible for service, they were apparently rarely called upon, essentially leaving them with a retirement pension. Finally, Utah passed legislation enabling every school district in the state to establish a pension plan for its teachers, but as late as 1912 only Salt Lake City had done so.

For the 21 states that offered a general state teachers' plan by the 1920s, data in the table allow one to compare and contrast the different features in the various state plans. The most striking aspect of these state pension plans for teachers is that they seem to have a little of everything. There doesn't seem to be any feature of the municipal plans that is not a feature of at least one state plan. There were, however, a few features of the state plans that were not observed elsewhere. Some of the more interesting features include:

- In two states, Michigan and Montana, the state made no contribution. These systems were like the older, nineteenth-century public sector pension plans, which were really nothing more than forced savings plans. They also resembled the private plans established by the workers themselves in the absence of an employer-provided plan.
- In two states, Arizona and Rhode Island, teachers made no contribution, and the state paid teachers' pensions on a pay-as-you-go basis from general revenues.
- In four states—Arizona, California, Montana, and Nevada—teachers received a flat $500 or $600 annual pension.
- Finally, like the municipal plans, the state plans generally did not contain dependent benefits.

As for other state employees, by 1930 only six states offered pension plans to their civil servants. Massachusetts was the first state to do so; however, the Massachusetts plan was not adopted until 1911. In its essential features, the plan was similar to those that would be created by a number of states and local governments over subsequent decades. Indeed some of the plans

TABLE 10.5. State Teachers' Pension Plans, c. 1920s

City	*Teachers covered*	*Employee contributions*	*Employer contributions*	*Administration costs*	*Conditions*	*Benefit*	*Dependent benefits*
Arizona	N.A.	No contribution required of teachers	State paid 100%	State paid 100%	25 years of service with no age requirements	$600 annually	No provision for dependents
California	36,108	$12 annually	5% of the state inheritance tax	State paid 100%	Retirement after 30 years of service (15 of which, including the last ten, must have been in the state)	$500 annually	No provision for dependents
Connecticut	9,749	5% of annual salary, with a $25 annual minimum and $100 maximum	Actuarially determined based on expected future benefits	State paid 100%	Retirement after 15 years of service (in state) and 60 years of age; mandatory at age 70	Determined by the product of service multipliers, years of service, and salary, with with $350 min and $1,000 max	Employee has the option of receiving a smaller pension in return for a guaranteed survivor's benefit
Illinois	38,888	$5 annually for the first 10 years, $10 for the next 5 years, and $30 for the next 10 years	State teachers' retirement tax	State paid 100%	Retirement after 25 years of service (in state, outside Chicago and Peoria) and 50 years of age	$16 for each year of service, with a $400 maximum	No provision for dependents

Indiana	12,341	$18.04–32.45 annually based on age at entrance and actuarial calculations based on a $300 benefit	Actuarially determined based on expected future benefits	State paid 100%	Full retirement benefits after 40 years (75% in state), partial benefits after 25 years, and 60 years of age	Determined by the product of service multipliers, years of service, and salary, with with $131 min and $700 max	No provision for dependents
Maine	N.A.	5% of annual salary	State matches employee's contribution plus 100% of liabilities accrued before the plan was in place	State paid 100%	Must be age 60 or older and have at least 30 years of service	Annuity equal to twice the value of the employee's contribution	No provision for dependents
Maryland	N.A. .	4.08–7.75% of annual salary based on sex, age and length of service	Actuarially determined based on expected future benefits	State paid 100%	Must be age 60 or older to begin drawing benefit, mandatory at age 70	Determined by the product of service multipliers, years of service, and salary	Employee has the option of receiving a smaller pension in return for a guaranteed survivor's benefit
Massachusetts	20,019	5% of annual salary, with a $35 annual minimum and $100 maximum	Actuarially determined based on expected future benefits	State paid 100%	Must be age 60 or older to begin drawing benefit, mandatory at age 70	Determined by the product of service multipliers, years of service, and salary, with $1,000 maximum	Employee has the option of receiving a smaller pension in return for a guaranteed survivor's benefit

TABLE 10.5. *Continued*

City	*Teachers covered*	*Employee contributions*	*Employer contributions*	*Administration costs*	*Conditions*	*Benefit*	*Dependent benefits*
Michigan	24,471	1% up to $10 annually for the first 5 years, 2% to $20 for the next 10 years, and 3% to $30 for the next 15 years	No state contributions	State paid 100%	Full retirement benefits after 30 years (15 in state), partial benefits after 25 years, and 60 years of age	One-half of annual salary at the time of retirement, with $300 minimum and $500 maximum	No provision for dependents
Minnesota	16,866	$5 annually for the first 5 years, $10 for the next 5 years, $20 for the next 10 years, and $30 for the next 5	State teachers' retirement tax	State paid 100%	Retirement after 20 years of service (15 of which must have been in the state)	$350 annually after 20 years of service, increased to $500 for 25 years of service	No provision for dependents
Montana	5,600	$1 for each month school is in session	No state contributions	State paid 100%	Must have paid at least $600 into the	$600 annually	No provision for dependents
Nevada	N.A.	$12 annually	100% of the difference between employee	State paid 100%	Retirement after 30 years of service (15 of which must have been in the state)	$600 annually	No provision for dependents

New Jersey	19,830	3.60–7.42% of annual salary based on sex, age and length of service	Actuarially determined based on expected future benefits	State paid 100%	Must be age 62 or older to begin drawing benefit, mandatory at age 70	Determined by the product of service multipliers, years of service, and salary	Employee has the option of receiving a smaller pension in return for a guaranteed survivor's benefit
New York	39,648	4% of annual salary	Actuarially determined based on expected benefits	State paid 100%	Retirement after 25 years of service and 60 years of age, or 35 years of service, mandatory at age 70	Determined by the product of service multipliers, years of service, and salary, with $400 minimum	Employee has the option of receiving a smaller pension in return for a guaranteed survivor's benefit
North Dakota	8,226	1% up to $10 annually for the the first 10 years, and 2% up to $40 for the next 15 years	$0.10 annually contributed from the general fund for each child between the ages of 6 and 21	State paid 100%	Retirement after 25 years of service (18 of which must have been in the state)	2% of final salary with $250 minimum and $700 maximum	No provision for dependents
Ohio	42,972	4% of annual salary up to $2,000	Actuarially determined based on expected future benefits	$1 annually paid by teachers	Must be age 60 or older to begin drawing benefit, mandatory at age 70	Determined by the product of service multipliers, years of service, and salary, with $300 minimum	Employee has the option of receiving a smaller pension in return for a guaranteed survivor's benefit

TABLE 10.5. *Continued*

City	*Teachers covered*	*Employee contributions*	*Employer contributions*	*Administration costs*	*Conditions*	*Benefit*	*Dependent benefits*
Pennsylvania	58,409	3.33–6.59% of annual salary based on sex, age and length of service	Actuarially determined based on expected future benefits	State paid 100%	Retirement after 10 years of service and 62 years of age, mandatory at age 70	Determined by the product of service multipliers, years of service, and salary	Employee has the option of receiving a smaller pension in return for a guaranteed survivor's benefit
Rhode Island	3,599	No contribution required of teachers	State paid 100%	State paid 100%	Retirement after 35 years of service (25 of which must have been in the state)	One-half of annual salary at the time of retirement, with $500 minimum and $700 maximum	No provision for dependents
Vermont	2,956	5% of annual salary, with a $16 annual minimum and $100 maximum	Actuarially determined based on expected future benefits	Fund is maintained by by donations and interest on past donations	Retirement after 30 years of service (20 of which must have been in state) and age 65 for men (60 for women)	Determined by the product of service multipliers, years of service, and salary	No provision for dependents

Virginia	N.A.	1% of annual salary plus a special assessment for those with total contributions below a specified minimum	100% of the difference between employee contributions and outlays	State paid 100%	Retirement after 30 years of service (all in state) and age 58 for men (60 for women)	One-half of annual salary at the time of retirement, with $500 maximum	No provision for dependents
Wisconsin	18,054	5% of annual salary for teachers over the age of 25	Actuarially determined based on expected future benefits, paid by a state teachers' retirement\ tax	Administration expenses are paid from interest on the assets of the fund	No age or service requirements	Determined by the product of service multipliers, years of service, and salary	Employee has the option of receiving a smaller pension in return for a guaranteed survivor's benefit

Sources: *Monthly Labor Review,* various issues.

already discussed above used the Massachusetts plan as a blueprint. The plan required all qualified employees to contribute up to 5 percent of their salaries to a pension "trust." Under the Massachusetts plan a state employee could retire upon reaching age 60 and retirement was mandatory at age 70. At retirement, the state purchased an annuity in the retiree's name equal to twice the value of the employee's accumulated contribution *with interest.* Thus, in theory the state paid 50 percent of each employee's pension, which makes this plan not all that different from current so-called cash balance plans. The Massachusetts plan was submitted before the House Committee on Reform in the Civil Service during testimony on a Civil Service Retirement bill in 1912 (U.S. House of Representatives 1912), and it served as a model for the U.S. civil service pension plan created in 1920.

Table 10.6 contains a summary of the six state plans in effect in the late 1920s.[3] Notice that in Maine no contribution was required from state employees, but a pension benefit was at the discretion of the governor. Little else was unique among the features of the various state plans. One of the interesting and progressive features of the New York plan was that smaller political units such as cities and counties could enroll their employees in the state retirement plan on par with the state workers, making it a truly *state* plan. To fully appreciate and understand such an arrangement, recall that the connection between the state pension plans and municipal, and county, employees results from a fundamental characteristic of public finance in the United States. Counties and cities were generally creations of the states, although these subordinate political units exercised their authority to collect certain taxes and provide certain services. Even though they maintained their own balance sheets, debts and so forth, the states were typically the de facto receivers of subordinate units that became fiscally insolvent. Hence the states had a vested interest in overseeing the management of, say, a municipality's police pension fund. Given this interest, it is not surprising that the states simply offered cities the option of enrolling their workers in a common state plan.

This summary of state pension plans suggests that, of all of the political units in the United States, the states themselves were the slowest to create pension plans for their civil service workers. However, this observation is slightly misleading. In 1930, 40 percent of all state and local employees were schoolteachers, and 21 (24 depending on what one calls a "pension") of the states, including the most populous states at the time, maintained a plan for their teachers. Of the roughly 400,000 state employees covered by a pension plan in 1929, 370,000 were teachers (Millis and Montgomery 1938). There were also 7,600 college and university professors covered by the Carnegie fund teachers' retirement plan. While public sector pensions at the state and local level were far from universal by the 1920s, they did cover a substantial proportion of public sector workers, and that proportion was growing rapidly in the early decades of the twentieth century.

TABLE 10.6. State Employees' Pension Plans, c. 1920s

City	*State employees covered*	*Employee contributions*	*Employer contributions*	*Administration costs*	*Conditions*	*Benefit*	*Dependent benefits*
Connecticut	N.A.	No contribution required of state employees	State paid 100%	State paid 100%	30 years of service with no age requirement; only 20 years of service required for age 70	50% of the average salary during the last five years of service, 75% for 40 years of service	No provision for dependents
Maine	N.A.	No contribution required of state employees	State paid 100%	State paid 100%	25 years of service with a "good record"	At governor's discretion, but not to exceed 50% of the average salary of the last five years	No provision for dependents
Massachusetts	8,693	5% of annual salary up to $1,560	100% of the difference between employee contributions and outlays	State paid 100%	35 years of service with no age requirement; only 15 years of service required for age 60, mandatory at 70	Annuity equal to twice the value of the employee's contribution, with $300 minimum and 50% maximum	Employee has the option of of receiving a smaller pension in return for guaranteed survivor's benefit
New Jersey	2,883	Annual contribution is actuarially determined	State matches employee's contribution plus 100% of liabilities accrued before the plan was in place	State paid 100%	Must be age 60 or older to begin drawing benefit mandatory at 70	Determined by the product of servic multipliers, years of service, and salary	Employee has the option of of receiving a smaller pension in return for guaranteed survivor's benefit

TABLE 10.6. *Continued*

City	*State employees covered*	*Employee contributions*	*Employer contributions*	*Administration costs*	*Conditions*	*Benefit*	*Dependent benefits*
New York	19,996	Annual contribution is actuarially determined	State matches employee's contribution plus 100% of liabilities accrued before the plan was in place	State paid 100%	Must be age 60 or older to begin drawing benefit mandatory at 70	Determined by the product of servic multi-pliers, years of service, and salary	Employee has the option of of receiving a smaller pension in return for guaranteed survivor's benefit
Pennsylvania	58,409	Annual contribution is actuarially determined	State matches employee's contribution plus 100% of liabilities accrued before the plan was in place	State paid 100%	Must be age 60 or older and have at least 5 years of service	Determined by the product of service multipliers, years of service, and salary	Employee has the option of of receiving a smaller pension in return for guaranteed survivor's benefit

Sources: *Monthly Labor Review*, various issues.

Funding Early State and Local Pension Plans

In the previous sections, the term "funded pension" was used to mean a pension plan that had a specific source of public revenues dedicated to pay for the plan's liabilities. In addition, from time to time in this and other chapters, the term "actuarially sound" has been used to describe a pension plan in which the present value of tangible assets was roughly equal to the present value of expected liabilities. Most of the plans discussed above required a contribution from the employees covered by the plan, and this represented a partial funding of the plans with such a feature. However, this ignores the state or municipality's share of pension liabilities. As noted, only a few of the plans reviewed were "fully" funded in this sense. Many were not funded at all; and fewer still were actuarially sound. Of course, in another sense, all public sector pension plans are implicitly funded and actuarially sound in the sense that they are backed by the coercive powers of the state. Through its monopoly of taxation, the state can collect whatever revenues are required to meet its liabilities, and so the pension promise is based on the taxing power of the government. Although this is exactly how these plans were ultimately financed, this is not what is typically meant by the term "funded plan." Still, an important part of the history of state and local pensions revolves around exactly what happened to the funds (mostly employee contributions) that were maintained on behalf of the public sector workers.

In at least one respect, the chronic underfunding of most of the early state and municipal pension plans in understandable. When the plans were created, initially there were very few recipients, so the "pay-as-you-go" nature of the plans presented no short-run burden on state or municipal finances. Of course, in an actuarial sense, the plans were grossly underfunded, but the politicians who created the plans, and who were ultimately responsible to voters for the plans' success, could afford to wait, often for many years, before addressing funding. Given the vagaries of political life, it was quite likely that the politicians in question would not be the same politicians who had to face the inevitable funding crisis a generation or two down the road. In this, as in other respects, the history of these early public sector plans mirrors that of Social Security.

Although the maintenance and operation of the state and local pension funds varied greatly during this era, to examine this issue, we review the operation of the Connecticut state teachers plan. It was considered, along with the Massachusetts and Pennsylvania plans, as a good, though not ideal, pension plan by contemporaries (Studenski 1920). As noted in Table 10.5, the law required a contribution of up to 5 percent of earnings from workers. This contribution was to be deposited in an "annuity fund," and the assets of the fund were to be invested "in accordance with the laws of the state governing the investment of savings bank funds," which we discuss below.[4] The

investments of the fund were to be credited "regular interest," which was defined as "the rate determined by the retirement board, and shall be substantially that which is actually earned by the fund of the retirement association." This "rate" varied from state to state. In Connecticut it was literally a realized rate—that is, a market rate. In Massachusetts, it was initially set at 3 percent by the retirement board, but subsequently it became a realized rate, which turned out to be roughly 4 percent in the late 1910s. In Pennsylvania, the rate was set by law at 4 percent. In addition, all three state acts created a "pension fund," which contained the state's contribution to the workers' retirement annuity. In Connecticut and Massachusetts, this fund simply consisted of "such amounts as shall be appropriated by the general assembly from time to time." In other words, the state's share of the pension was on a "pay-as-you-go" basis. In Pennsylvania, however, the state actually contributed 2.8 percent of a teacher's salary semi-annually to the state pension fund.

With respect to funding, Massachusetts took a different approach with its teachers' pension plan. The original Massachusetts teachers plan worked much like its original plan for civil servants. The retirement annuity was twice the accumulated value of a teacher's contributions with interest as noted. This plan was subsequently revised, and its replacement, the plan in Table 10.5, is a traditional defined benefit plan based on years of service, a service multiplier (or "generosity parameter"), and end-of-career salary. By the late 1920s the state's contribution to the teachers' pension fund was based on actuarial calculations. The first states to adopt such a plan were New Jersey, Ohio, and Vermont (Studenski 1920). What this meant in practice was that the state essentially estimated its expected future liability based on a worker's experience, age, earnings, life expectancy, and so forth, and then deposited that amount into the pension fund. This was originally referred to as a "scientific" pension plan. These were truly funded and actuarially sound defined benefit plans. They represent a landmark in the history of public sector pension plans.

As noted, several of the early plans paid an annuity based on the performance of the pension fund. The return on the fund's portfolio is important because it would ultimately determine the soundness of the funding scheme and in some cases the actual annuity the worker would receive. Even the funded, defined benefit plans determined the worker's and the employer's contributions in conjunction with expected earnings on the invested funds. How did these early state and local pension funds manage the assets they held? Several state plans, including the Connecticut plan, restricted the plans to holding only those assets that could be held by state-chartered mutual savings banks. Typically, these banks could hold federal, state, or local debt. In most states, they could usually hold debt issued by private corporations and occasionally private equities. In the first half of the twentieth century, there were 19 states that chartered mutual savings banks. They were

overwhelmingly in the northeast, midwest, and far west—the same regions in which state and local pension plans were most prevalent (Hickman 1958). However, in most cases the corporate securities were limited to those on a so-called "legal list," which was supposed to contain only the safest corporate investments. Admission to the legal list was based on a compilation of corporate assets, earnings, dividends, prior default records, and so forth. The objective was to provide a list that consisted of the bluest of blue chip corporate securities. In the first decades of the twentieth century, these lists were dominated by railroad and public utility issues (Hickman 1958). States such as Massachusetts that did not restrict investments to those held by mutual savings banks nonetheless placed similar limits on state pension funds. Massachusetts limited investments to those that could be made in state-established "sinking funds." Ohio explicitly limited its pension funds to U.S. debt, Ohio state debt, and the debt of any "county, village, city, or school district of the state of Ohio" (Studenski 1920). Collectively, the objective of these restrictions was to minimize risk at the expense of returns.

Of course, minimizing risk is not necessarily the sole investment strategy. Almost all of the states and cities that maintained pension funds invested in their own or other local securities. Although state and local bonds were relatively secure investments, there were two potential problems with a political unit investing heavily in its own debt. The first problem is that a moral hazard existed in the use of these bonds. For example, a city might force its employees to contribute a certain proportion of their earnings to their pension funds. If the city then purchased debt at par from itself for the pension fund when that debt might for various reasons not circulate at par on the open market, then the city could be tempted to go to the pension fund rather than the market for funds.[5] This process would tend to insulate the city from the discipline of the bond market, which would in turn tend to cause the city to overinvest in activities financed in this way. In short, the pension fund, and hence the workers, are essentially forced to subsidize other city operations—for example, sewer or road construction. The second and potentially more troublesome problem was the potential that the pension fund would receive a below market return for the risk inherent in the bonds. Since state and local bonds are exempt from federal income tax, *ceteris paribus*, they trade at a premium relative to other issues. Thus, municipalities and states that invest in their own securities sacrifice income without a compensating reduction in risk. Obviously, this premium is going to depend on the federal tax rate on interest income and the number of taxpayers subject to the tax.

Municipal bond income is exempt from federal taxes. In most cases, municipal bond income is also tax-exempt at the state level for municipalities within that state. The federal tax exemption has been in place since the advent of the federal income tax in 1913, but the rate of taxation on interest

income and capital gains, even for relatively high income earners, was quite low by any standard prior to the early 1940s. Since World War II, municipal yields have been lower than yields for industrial bonds, public utility bonds, and railroad/transportation bonds. In large part, this outcome is due to the tax exemption, but it also reflects a risk differential. Prior to the dramatic increase in personal income tax rates in 1942, any yield differential between the source of the issuer of a bond was due almost entirely to the risk of the borrower. Of course, the risk differential is itself a function of the public finance issues we outlined earlier in this chapter. In particular, it ultimately derived from the coercive powers of the state.

For the purposes of this discussion, the key period was from 1900 through 1933. For this period, the median yields in annual percentage terms for the highest to lowest risk for the four groups were 4.92 percent for industrial bonds, 4.83 percent for utilities, 4.42 percent for rails, and 4.05 percent for municipals. The overall median yield for the 60-bond average was 4.55 percent.[6] The ratios of municipal yields to those of the bonds from the other sectors were

Industrials	0.8240
Public utilities	0.8385
Railroads	0.9163
All	0.8901

One should be careful about focusing too closely on the *average* relative risk. Municipal bond risk changed over time, as did the risk of bonds of other sectors. For example, the risk of municipal bonds increased sharply at the beginning of the Great Depression. Indeed, the ratio of municipal yields to those of the bonds from the other sectors exceeded unity in 1931. This period was one in which the delinquency rate on property taxes in the 200 largest cities increased from 5 percent in 1928 to over 25 percent in 1933. The rate had fallen back to less than 5 percent by the end of World War II (Hempel 1971).

Other factors involved in the risk of municipals was (and largely still is) the size of the debt relative to the tax base, sinking fund considerations, refunding experience, sound debt management processes, and so forth (Hillhouse 1936). Table 10.7 contains the annual figures for yield ratios summarized above. Although these data suggest that the tax-free status of municipal bonds played a *smaller* role in their prices and yields in the past, they also suggest that even in the 1920s there was an effect from these factors. Indeed while only a small proportion of the labor force (roughly 6 percent) paid income tax in the late 1920s, and while the highest marginal rate was one percent, it was exactly these taxpayers who typically held municipal bonds (Lent 1955).

Obviously, in the absence of the effect of tax treatment for municipal bonds, if the risk of holding municipal bonds was less than that associated with holding corporate bonds, a yield differential might make sense to a prudent investor. It might make sense to a state or municipal employee retirement fund. In such situations, the question becomes one of the return-risk tradeoff. However, beginning with the period of World War II, with a distinct tax advantage to individuals investing in municipal bonds, the market price of municipals was driven up by a factor of one minus the marginal tax rate. With the lower yields resulting from the lower effective tax rates

TABLE 10.7. Annual December Bond Yields of Municipals, Industrials, Railroads, and Utilities, and the Ratio of the Sector Yields to Municipal Yields, 1900–1929

	Bond yield by sector				*Ratio of municipal to sector yield*		
Year	*Muni.*	*Ind.*	*RR.*	*Util.*	*Ind.*	*RR.*	*Util.*
1900	3.08	4.83	3.97	4.51	.6377	.7758	.6829
1901	3.17	4.79	3.87	4.50	.6618	.8191	.7044
1902	3.25	4.75	3.93	4.50	.6842	.8270	.7222
1903	3.48	5.05	4.10	4.68	.6891	.8488	.7436
1904	3.38	4.69	3.92	4.47	.7207	.8622	.7562
1905	3.44	4.48	3.91	4.42	.7679	.8798	.7783
1906	3.67	4.65	4.03	4.67	.7892	.9107	.7859
1907	4.17	5.43	4.46	5.26	.7680	.9350	.7928
1908	3.79	4.76	4.03	4.79	.7962	.9404	.7912
1909	3.85	4.75	4.11	4.71	.8105	.9367	.8174
1910	4.01	4.81	4.17	4.81	.8337	.9616	.8337
1911	4.00	4.81	4.17	4.78	.8316	.9592	.8368
1912	4.09	4.87	4.25	4.83	.8398	.9624	.8468
1913	4.23	5.10	4.54	5.02	.8294	.9317	.8426
1914	4.15	5.03	4.71	4.96	.8250	.8811	.8367
1915	4.02	4.87	4.48	4.84	.8255	.8973	.8306
1916	3.84	4.88	4.42	4.78	.7869	.8688	.8033
1917	4.51	5.49	5.28	5.48	.8215	.8542	.8230
1918	4.36	5.35	4.98	5.63	.8150	.8755	.7744
1919	4.47	5.55	5.57	6.33	.8054	.8025	.7062
1920	5.10	6.23	5.79	6.98	.8186	.8808	.7307
1921	4.52	5.55	5.09	5.99	.8144	.8880	.7546
1922	4.15	5.16	4.88	5.27	.8043	.8504	.7875
1923	4.35	5.26	4.94	5.49	.8270	.8806	.7923
1924	4.12	5.13	4.74	5.14	.8031	.8692	.8016
1925	4.13	5.00	4.63	5.01	.8260	.8920	.8244
1926	4.07	4.87	4.43	4.84	.8357	.9187	.8409
1927	3.90	4.79	4.17	4.72	.8142	.9353	.8263
1928	4.15	4.98	4.47	4.77	.8333	.9284	.8700
1929	4.22	5.03	4.80	4.80	.8390	.8792	.8792

Source: Yields from Standard Statistics Company (1931), using the December average yield for each year for each sector from monthly data. The ratios were calculated by the authors.

on the income of individuals holding municipal bonds, it makes little sense for a tax-exempt retirement fund to hold state and local bonds, *ceteris paribus* of course.

The individual income tax in the United States had its origin as a temporary tax during the Civil War, 1862–71. An income tax was reinstated in 1894, but was declared unconstitutional in 1895 by the Supreme Court. The income tax enacted in 1913, following a Constitutional amendment, has been in effect in one form or another to the present day. This income tax is "applied to wages, salaries, interest, dividends, rents, entrepreneurial income, and capital gains. It allowed deductions for personal interest, federal excise taxes, and all state taxes, as well as for business expenses. *It exempted federal, state, and local government bond interest"* (Pechman 1987). Many of these initial exemptions were eliminated—specifically that of interest on federal bonds was discontinued in 1941—but the exemption for state and local bond interest was maintained. Initially, the rates of the federal income tax were quite low. Pechman (1987) provides the tax rates for the first (lowest) and the top (highest) tax brackets from 1913. During 1913–15, the first bracket taxes were one percent of taxable income up to $20,000, and for the top bracket the rate was 7 percent of taxable income over $500,000. These rates went up somewhat during World War I, but eased back down after 1923.

In an attempt to measure returns on common stocks and federal bonds from 1925, Fisher and Lorie (1977) calculated effective marginal tax rates on investment income for individuals with "lower tax rates" and for those facing "higher tax rates." These rates were broken down into the categories of stock dividends, capital gains, and bond interest. A version of those rates is shown in Table 10.8. For the lower-rate taxpayer, the tax on interest was zero from 1926 through 1939, one percent in 1940, then increasing to 7 percent in 1941 and to 13 percent in 1942. For the higher-rate taxpayer, the marginal rates on interest income was one percent in 1926–30, decreasing to zero in 1931, and then back up to one percent in 1932–34. In 1935 this higher-rate taxpayer moved into a 6 percent marginal rate bracket, then 7 or 8 percent through 1939, then into higher brackets. By the end of World War II, the marginal rates were up to 18 percent for the lower-rate taxpayer, and over 60 percent for the higher-rate taxpayer. Therefore, it seems that the tax exemption of state and local bond income was quite small prior to 1940 or so, but it has been a major factor affecting yields of tax-exempt bonds relative to their taxable counterpart of federal and corporate bonds.

Table 10.8 shows the "low" and "high" rate taxpayer marginal rates by income source through 1976, and in the far right-hand column of the table is the ratio of municipal yields to corporate yields. The relative tax rates by income source, with the tax-exemption for state and municipal interest income, interacts with the capital gains marginal rates and dividend rates in competition for investor's choices for their portfolios. Also, the relative

TABLE 10.8. Marginal Tax Brackets for a Low-Rate Taxpayer and for a High-Rate Taxpayer, by Income Sources, with the Ratio of the Yield on Municipal Bonds to the Yield on Corporate Bonds, 1925–1979 (percent)

	Low Bracket			*High Bracket*			
Year	*Dividend*	*Cap. Gain*	*Interest*	*Dividend*	*Cap. Gain*	*Interest*	*Ratio*
1925	0.0	0.0	0.0	1.0	6.0	1.0	.8320
1926	0.0	0.0	0.0	1.0	6.0	1.0	.8611
1927	0.0	0.0	0.0	1.0	6.0	1.0	.8718
1928	0.0	0.0	0.0	1.0	6.0	1.0	.8956
1929	0.0	0.0	0.0	1.0	6.0	1.0	.9000
1930	0.0	0.0	0.0	1.0	6.0	1.0	.8954
1931	0.0	0.0	0.0	0.0	5.0	0.0	.8720
1932	0.0	0.0	0.0	1.0	9.0	1.0	.9379
1933	0.0	0.0	0.0	1.0	9.0	1.0	1.0559
1934	0.0	0.0	0.0	1.0	9.0	1.0	.9923
1935	0.0	0.0	0.0	6.0	8.0	6.0	.9433
1936	0.0	0.0	0.0	11.0	6.6	8.0	.9649
1937	0.0	0.0	0.0	11.0	6.6	8.0	.9478
1938	0.0	0.0	0.0	10.0	5.0	7.0	.8995
1939	0.0	0.0	0.0	10.0	5.0	7.0	.9003
1940	4.0	2.0	1.0	15.4	7.7	12.4	.8819
1941	10.0	5.0	7.0	36.0	15.0	33.0	.8562
1942	13.0	6.5	13.0	42.0	25.0	42.0	.8216
1943	22.0	11.0	22.0	58.0	25.0	58.0	.7467
1944	25.0	12.5	25.0	62.0	25.0	62.0	.6789
1945	25.0	12.5	25.0	62.0	25.0	62.0	.6368
1946	24.7	12.4	14.7	58.9	25.0	58.9	.6338
1947	24.7	12.4	14.7	58.9	25.0	58.9	.7623
1948	17.4	8.7	17.4	41.4	20.7	41.4	.8564
1949	17.4	8.7	17.4	41.4	20.7	41.4	.8301
1950	18.0	9.0	18.0	42.8	21.4	42.8	.7909
1951	20.3	10.1	20.3	51.0	25.0	51.0	.7113
1952	22.1	11.1	22.1	56.0	26.0	56.0	.7165
1953	22.1	11.1	22.1	59.0	26.0	59.0	.8468
1954	19.8	9.9	19.8	53.0	25.0	53.0	.8162
1955	15.8	9.9	19.8	49.0	25.0	53.0	.8128
1956	15.8	9.9	19.8	52.0	25.0	56.0	.8194
1957	15.8	9.9	19.8	52.0	25.0	56.0	.8469
1958	15.8	9.9	19.8	52.0	25.0	56.0	.8357
1959	15.8	9.9	19.8	55.0	25.0	59.0	.8099
1960	18.0	11.0	22.0	55.0	25.0	59.0	.7964
1961	18.0	11.0	26.0	55.0	25.0	59.0	.7921
1962	22.0	13.0	26.0	55.0	25.0	59.0	.8252
1963	22.0	13.0	26.0	58.0	25.0	62.0	.7416
1964	21.5	11.8	23.5	54.0	25.0	56.0	.7256
1965	22.0	11.0	22.0	53.0	25.0	53.0	.7240
1966	22.0	11.0	22.0	55.0	25.0	55.0	.7431
1967	22.0	11.0	22.0	55.0	25.0	55.0	.7153
1968	26.9	13.4	26.9	59.1	26.9	59.1	.7195
1969	27.5	13.8	27.5	63.8	27.5	63.8	.8180
1970	25.6	12.8	25.6	59.5	25.6	59.5	.7822
1971	25.0	12.5	25.0	60.0	25.0	60.0	.7328
1972	28.0	14.0	28.0	59.6	25.0	59.6	.7298
1973	28.0	14.0	28.0	61.6	25.0	61.6	.7064
1974	28.0	14.0	28.0	61.6	25.0	61.6	.7215
1975	32.0	16.0	32.0	61.6	25.0	61.6	.7956
1976	32.0	16.0	32.0	63.6	25.0	63.6	.7895
1977	—	—	—	—	—	—	.7080
1978	—	—	—	—	—	—	.6917
1979	—	—	—	—	—	—	.6739

Source: The marginal tax rates are from Fisher and Lorie (1977), and the ratio of municipal yields to corporate yields are from various sources explained in the text.

risk factors between municipal and corporate debt instruments is not factored into the calculated levels of the yield ratios. The changes in the effective tax rates over time that are shown in the table would be factors in changing the relative yields of state and municipal bonds to corporate bonds. Another major factor in the yield differentials would be the changing relative risks of the two classes of bonds.

There have been several episodes of debt repudiation and/or default in American history, and the major ones tended to impact the public sector pension funds. In the 1840s, there were a very large number of defaults and repudiations—as we saw in the history of the U.S. navy pension fund. The Florida Territory and Mississippi repudiated completely. Partial repudiation occurred by Arkansas, Louisiana, and Michigan. Illinois, Indiana, Maryland, and Pennsylvania defaulted temporarily, with resumption at a later date (English 1996; Sylla, Legler, and Wallis 1987). The primary cause of the problems during this period had to do with building canals or otherwise expanding and improving the transportation networks. The actual public finance machinations that led to default were often quite arcane (Wallis 2001), and public infrastructure per se was not always the culprit. Another cause was the problem of states issuing bonds to guarantee bonds of commercial banks. The 1840s period was basically a troublesome one for state government finance, but the problems were not generally reflected in municipal indebtedness. However, the first recorded municipal default, of Mobile, Alabama in 1839, did occur during this era (Hempel 1971).

The history of state and local public finance shows an increase up to about 10 defaults per year during the Civil War, and then an increase beyond 25 defaults per annum in the late 1870s (Hempel 1971).

The defaults of the 1870s were in many cases directly related to the end of Reconstruction (Woodward 1951). Between 1868 and 1874 the carpetbagger regimes in the former Confederate states had increased overall state debt from $174 million to $275 million. Given the economic damage wrought by the Civil War, the taxes levied to support this debt proved burdensome. Or at least that's one view! Another view is that the debt was incurred to support "pet" projects, largely railroads, of the Republicans and was paid for with local, that is, Democratic, tax dollars. In any case, once the Democrats gained control of the southern state legislatures, they began repudiating the carpetbagger debt. Collectively, the southern states defaulted on $150 million of Reconstruction bonds.

In the mid-1890s the number of defaults peaked up to about 60 per year, and continued at a relatively high level into the early 1900s. Causes included the panic of 1893, municipal indebtedness associated with real estate speculation, and failed irrigation projects in the west. Hempel's chart also shows a buildup of municipal defaults during the late 1920s, but these were mainly located in Washington, Arkansas, and Florida and were due to the failure of various special assessment bonds, as well as the Florida real estate collapse.

The size of a political unit's debt and the rate of increase in the level are relevant factors in considerations of risk. Hillhouse (1936) provides some examples of the growth of municipal debt from 1902 to 1932, with the comment that "Every ten years brought practically a doubling in debt" (see Table 10.9). The level of municipal debt, in millions of dollars, was $1,603 in 1902, $3,476 in 1912, $7,754 in 1922, and $15,216 in 1932. Hillhouse presents a table showing the increase in state and in municipal debt from 1840 to 1932, by approximate decade intervals, by total and by per capita levels. Because the annual data shed light on the vagaries of municipal bond risk, the summary data in the table correspond with the time period covered in this volume (Hillhouse 1936).

It is evident from the values in the table that there was tremendous growth in municipal debt relative to state debt over the period in question. The increases in the 1930s, in both state and local debt, is rather phenomenal, and seems to have come at an unfortunate time, when various state and local governments were ill equipped to handle the burden. Property taxes were the primary source of revenue for local governments. At the onset of the Great Depression, with unemployment rising dramatically and agricultural prices falling, individuals simply could not afford to pay their taxes, and the value of property fell sharply. According to Dun & Bradstreet the tax delinquency in 151 large cities and their average (median) delinquency rates were 10 percent in 1930, 14 percent in 1931, 20 percent in 1932, 26 percent in 1933, and 23 percent in 1934. As a contemporary observer commented: "Thus the average municipality in 1933 was trying to meet its obligations with a fourth of its expected revenue unpaid" (Hillhouse 1936). This situation during the Depression is what led to the dramatic change in the ratio of municipal yields to those on other bonds, and resulted in a ratio that exceeded unity in 1933 (Table 10.8).

TABLE 10.9. Growth of State and Municipal Debt by Decades, 1840–1932, by Total Level and Per Capita Amounts

	Total (millions)		*Per capita*		
Year	*State*	*Local*	*State*	*Local*	*Combined*
1840	$174	$25	$10.25	$1.17	11.42
1850	190	—	8.19	—	—
1860	257	200	8.17	6.36	14.53
1870	353	516	9.15	13.38	22.53
1880	275	821	5.48	16.37	21.85
1890	211	926	3.37	14.79	18.16
1902	239	1,630	3.03	20.74	23.77
1912	346	3,476	3.57	35.81	39.38
1922	936	7,754	8.64	71.32	79.96
1932	2,374	15,216	19.17	123.06	142.23

Source: Hillhouse (1936, 36).

The levels of bond risk varied considerably during this period. An estimate of the percentage of bonds in default by sector for 1932 shows municipals at a rate of 1.8 percent. The rate for other sectors was foreign bonds at 19.4 percent, railroads at 3.5 percent, utilities at 5.4 percent, and industrials at 7.2 percent (Hillhouse 1936). Although the absolute level of default risk for municipal bonds was high, it was low relative to alternative bonded debt during this period. This difference in absolute and relative risk of debt between "state and local" and "corporate" debt, relative to the marginal tax rates, presented portfolio managers with a very complex decision. At this time, with every asset at extremely high levels of risk, and with expectations of returns and default in flux, it still might have been a rational decision for a retirement fund to invest in local municipal bonds, even if there were no tax advantages.

Because of the income loss that results from states and municipalities holding their own securities, government units that purchased tax-exempt bonds for their pension funds have been accused of poor investment practices (Tilove 1976). Although on the surface this practice of a city purchasing its own debt seems a bit like a shell game, at another level it makes perfect sense. One set of government accounts—the pension fund—was currently in surplus, while another—the road construction fund, for example—was in deficit. The city simply borrowed the money from one fund to pay for the other. The resulting debt would be amortized through either a specific tax, on property, for example, or the general coercive powers of the state. Furthemore, it is not altogether clear that the *net* return the pension fund received on those bonds was lower than other potential assets. It is clear that the city or state that purchased its own debt sacrificed *gross* income as a result of the tax-free premium placed on those securities. However, by purchasing its own debt a political unit avoided the transaction costs associated with both selling its own debt in the market and purchasing other assets for the pension fund. Hence whether or not these investments were in fact unwise remains an open question. If one assumes that much of the difference in the bond yield ratios before 1930 was driven by differences in risk and if one keeps in mind that brokerage charges were several percent of the value of an issue, the back-of-the-envelope calculation would suggest that, historically, these investments were safe *and* relatively high-yielding.

We have calculated the shares of pension assets held in various types of investments between 1915 and 1930. It should be noted that the absence of records and the lack of accounting standards make interpreting the status of these funds quite difficult in some cases. Also, in some cases the difference between the current liabilities of the fund and its assets was so small that the funds simply maintained what essentially amounted to a perpetual cash position of 100 percent, with, one assumes, a local financial institution.

This was particularly true of small and medium-sized city funds. In the case of most of the larger cities, however, the funds accumulated a substantial amount of money and invested it by purchasing financial assets. This was true from early on in many cases. For example, an annual report of the Police Fund of the City of Cleveland for 1910 showed that the fund had an outlay for the year of $68,487, while it maintained $213,535 in assets, of which $188,000 was "safely invested" with the remainder in cash (Squier 1912). While it is impossible to determine exactly what assets were held by the Cleveland pension fund in 1910, by 1915 roughly one-third of these assets were in fact held in Cleveland municipal bonds. While the early Cleveland funds might have been safely invested that was not always the case with other cities. As with the navy pension fund, the accumulation of funds often creates a moral hazard for trustees. In the case of Chicago police pension fund, an early scholar of these issues had to report that: "It is to be regretted that there are no complete statistical records showing the operation of this fund in the city of Chicago" (Squier 1912). It is hard to imagine that the records were simply misplaced by accident.

Table 10.10 contains the share of pension assets municipalities held in their own debt between 1915 and 1930. There are at least four characteristics of these data that are important to our narrative. First, the data show tremendous variation across cities and over time. For example, in 1915 Baltimore held 99 percent of its pension fund's assets in its own debt, as did New York City in 1930. In contrast, several other cities held none of their own debt. Baltimore's share fell to 30 percent by the end of the period while Los Angeles's fluctuated between zero and 66 percent. Second, the unweighted mean declined over time. This suggests that, on average, cities reduced the share of their pension assets held in their own debt. However, the weighted mean increased. The reduction in the weighted mean resulted from the general growth in public debt during the period and the availability of alternative investment opportunities. As the pension funds grew and other investments became available, the opportunity cost of alternative investments tended to increase. The growth of the weighted mean was largely the result of two of the largest cities (New York and Detroit) substantially increasing the share of their assets composed of their own debt. Third, over the period there was a general trend toward convergence among the cities. This is shown by the decline in the coefficient of variation (the ratio of the standard deviation to the mean). A decline in the coefficient suggests that the dispersion of own-debt held across cities was declining over time. Finally, the chi-square test statistic suggests that one can reject the hypothesis that the portfolio distribution between cash, a city's own debt, and other investments remained the same between 1915 and 1930. In other words, it is safe to say that cities shifted out of cash and their own debt and into other investments in a statistically meaningful sense.

Table 10.11 contains the same information for the states that offered teacher or other pension plans in the 1920s. The data show that three of the four conclusions drawn from the municipal data apply to the states as well. There was tremendous dispersion; Pennsylvania held 100 percent of its pension funds in state debt in 1915, while three states—Connecticut, Montana, and North Dakota—held none of their own debt. The unweighted mean fell over time, and the coefficient of variation fell as well, suggesting a reduction in the dispersion among the states as well as a reduction in the mean holdings. Also, the chi-square test statistic suggests that one can reject the hypothesis that the states had the same portfolio distributions in 1930 as they did in 1915. What differs between Table 10.10 and 10.11 is the trend in the weighted means. There was no large state driving the weighted mean the way that New York and Detroit did for the cities. The same two factors driving these trends for the cities were most likely at work at the state level as well. There were a more diverse set of investment opportunities and the price premium associated with the state and local bonds' tax-exempt status.

TABLE 10.10. Share of Pension Assets Held in a City's Own Municipal Securities, 1915–30 (percent)

City	*1915*	*1925*	*1930*
Baltimore	99.4	94.2	30.1
Boston	82.0	47.0	37.6
Buffalo	37.1	8.7	0.0
Chicago	11.3	25.5	27.9
Cincinnati	43.5	9.7	9.4
Cleveland	35.4	0.0	9.1
Detroit	24.0	56.8	97.4
Los Angeles	0.0	65.6	22.9
Milwaukee	36.1	26.0	77.5
Minneapolis	34.1	12.9	8.8
Newark	32.0	34.8	10.6
New Orleans	57.2	27.3	8.6
New York	68.2	93.6	98.8
Philadelphia	16.6	9.0	17.4
Pittsburgh	26.7	6.3	41.6
St. Louis	16.3	21.5	24.1
San Francisco	0.0	49.2	21.7
Washington, D.C.	24.2	0.0	0.0
Median	32.0	25.5	21.7
Mean (unweighted)	35.8	32.7	30.2
Coefficient of variation	0.90	0.73	0.59
Mean (weighted)	29.4	40.2	52.1
Chi-square test statistic	(1915–30)	32.2	

Source: Authors' calculations from U.S. Department of Commerce, Bureau of the Census (various years).
Some fund data include assets from funds other than those held for pensions, such as library funds.

Summary

Four points can be used to summarize the early history of state and local plans. First, after a long, slow start the number of local pension plans began to accelerate in the early decades of the twentieth century. Second, although in general state plans came somewhat later, given that schoolteachers were the largest group of state employees at the time, a substantial proportion of state workers were covered by a plan in the 1920s. Third, the date of establishment and characteristics of local pension plans were largely driven by the relationship between the state legislatures and the cities they created. Finally, the investments of the state and local pension plans were influenced by the state legislation that created them. Often the cities were

TABLE 10.11. Share of Pension Assets Held in a State's Own Public Securities, 1915–30 (percent)

State	*1915*	*1925*	*1930*
Maine	99.6	95.1	53.8
Vermont	19.4	28.9	35.4
Massachusetts	7.6	2.9	14.5
Rhode Island	0.3	3.4	2.9
Connecticut	0.0	0.1	0.0
New York	10.1	3.6	1.9
New Jersey	7.5	1.1	0.7
Pennsylvania	75.1	1.8	11.4
Ohio	100.0	17.5	10.0
Indiana	4.7	1.7	0.2
Illinois	83.5	42.4	47.3
Michigan	94.7	28.1	20.1
Wisconsin	30.8	9.8	4.1
Minnesota	1.3	7.2	19.0
North Dakota	0.0	0.0	0.2
Maryland	55.1	30.7	23.2
Virginia	51.4	38.8	16.9
Montana	0.0	12.3	11.0
Nevada	19.0	35.1	22.5
California	19.4	8.4	9.0
Median	19.4	9.8	11.4
Mean (unweighted)	34.0	18.4	15.2
Coefficient of variation	2.77	2.46	1.54
Mean (weighted)	13.4	9.3	10.0
Chi-square test statistic (1915–30)		9.6	

Source: Authors' calculations from U.S. Department of Commerce, Bureau of the Census, (various years).
Note: Some fund data include assets from funds other than those held for pensions, such as state hospital funds. In only one case have we adjusted these figures. Montana's figures exclude public lands held in trust for nonpension purposes.

severely restricted, by law, in the investments they could make, and they invested a relatively large amount in their own debt. This practice continued well into the twentieth century, and it was subsequently criticized by a variety of scholars and financial analysts. Despite these assessments, this practice probably made good sense at the time not withstanding the moral hazard and tax issues.

Despite their late start relative to that of European public sector pension plans, the state and local governments had a jump on the U.S. government when it came to offering a universal plan for its nonmilitary workers. Prior to the inclusion of most other public sector workers, early municipal pension plans were largely offered to police officers and firefighters, just as early federal plans were offered first to uniformed military personnel and then to civil servants. The higher risk of disability in these occupations probably accounted for the early disability pension plans, while the specific nature of their tasks accounted for the early retirement programs. More generally, this history of the early nonmilitary, public sector pension plans demonstrates the origins of many characterisitics common to modern public sector plans. For example, many public sector plans had replacement rates in the neighborhood of 50 percent, which is similar to those offered today. In addition, the early plans were mainly defined benefit plans that required employee contributions. The contributions component is interesting because it contrasts with private sector defined benefit plans that generally do not require a contribution from workers. The contribution requirement was probably related to the public finance issues discussed above. In particular, the need for an immediate cash flow to fund near-term pension liabilities was crucial.

Notes

1. The material on state and local public finance owes much to Bromage (1936) and James (1921).

2. Many of these early municipal pension plans were described or otherwise referred to in Squier (1912) and/or a series of articles in the *Monthly Labor Review* in the 1920s.

3. For a discussion of the subsequent development of state pension plans, see Steffen (2001).

4. The original document is Connecticut (Laws of 1917, Chapter 411). It is discussed at length in Studenski (1920).

5. Such transactions are similar to those conducted between the U.S. navy pension fund and the Second Bank of the United States. In that case, the U.S. Treasury sold Second Bank stock to the fund at par, while the fund was selling at the market price, which included a 15 to 20 percent premium.

6. These data are available from sources of the Standard Statistics Company, which merged in 1940 with Poor's to become Standard & Poor's. These monthly data exist for 15 selected bonds each of four sectors—an industrial sector, public utilities, railroads, and municipal bonds. Also calculated was a composite yield,

which was the arithmetic average of the 60 bonds. Essentially, this was a time period of effective federal tax rates on income and capital gains of zero percent (Fisher and Lorie 1977, and Appendix Table 1 below). As with the previous period, any yield differential during this period would be primarily a measure of risk differences. These data are of high quality, and were maintained with very little change in definition over long periods of time. The basic sources are the *Standard Statistical Bulletin Base Books* (March 1930 and the update of April 1934). As time passed, the sectors changed slightly, and recently less attention has been paid to bond yields and returns by S&P than to stock returns. However, the monthly municipal yield series has been maintained for over 100 years in essentially the same form. Since January 1929, the monthly average yields are based on the weekly quotes within month.