Status of Pennsylvania's Municipal Pensions

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Executive Summary

This research examined Pennsylvania's rural and urban municipal pension plans and trends in pension data over the 10-year period of 2001 to 2011.

Overall, the research found that urban municipal pension plans rather than rural municipal pension plans tended to have unfunded liability over the study period.

The trends in the data indicate that urban municipalities have had pension plans with unfunded liabilities since 2001 and that the liabilities have increased over time, especially since 2009. Despite the upswing in the market from 2010 to 2011, the urban plans' unfunded liability continued to increase. This indicates that urban municipal pension plans may not be underfunded due to the downturn in the market, but instead may have systematic structural issues within the plans.

This project was sponsored by the Center for Rural Pennsylvania, a legislative agency of the Pennsylvania General Assembly.

The Center for Rural Pennsylvania is a bipartisan, bicameral legislative agency that serves as a resource for rural policy within the Pennsylvania General Assembly. It was created in 1987 under Act 16, the Rural Revitalization Act, to promote and sustain the vitality of Pennsylvania's rural and small communities

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Introduction

The ability of local governments to fund pension plans has been the subject of many research papers and articles published during the last several years. However, none of these recent studies have examined the differences in funding status between urban and rural municipal plans.

This research addresses this difference and provides a 10-year trend analysis of the funding of Pennsylvania municipal pension plans. Based on the findings, the researchers provided policy considerations that may serve to reduce future underfunded pension liabilities facing Pennsylvania local governments.

Background

New York City established the first municipal pension plan for its police officers in 1857 (Clark, et.al. 2003). By 1916, 159 cities, including Philadelphia and Pittsburgh, had established pension plans for police, firefighters, and municipal employees. By the 1960s, municipal pension plans had become widespread throughout the U.S. (Clark et al., 2003). According to Clark et al. (2003), the purpose of public pension systems was to provide local and state governments with a mechanism to finance public employment. Public employees were paid low salaries in comparison to the private sector, but had the promise of deferred compensation through a pension plan after retirement. Consequently, local and state governments would be able to finance a workforce at a lower amount than the private sector could by delaying some of the employee’s compensation until retirement.

Definitions

A pension is a form of deferred compensation that provides payments to employees after retirement. Pension plans are established as either a “defined contribution plan” or a “defined benefit plan.” A defined contribution plan is where the employer and the employee make periodic contributions to the pension account that are invested in bonds and securities. Benefits are based on the actual amount in the pension account at the time of retirement. Consequently, defined contribution plans do not generate an unfunded liability.

In a defined benefit plan, the employee is contractually promised a specific benefit at retirement based on years of service, annual earnings, and age at the time of retirement. The contribution rates to the defined benefit plan are typically based on a fixed periodic contribution by the employee, combined with the income generated from the investments in the account, with the employer being obligated to pay into the account the amount necessary to ensure that the plan is fully funded (GAO, 2012:5).

According to Clark et al. (2003), local and state governments purposively established defined benefit plans as a mechanism to encourage a long-term stable workforce. Since defined contribution plans promise a larger benefit based on a formula of years of service, average annual salary, and age at retirement, they provide an incentive for a stable, long-term workforce.

Pennsylvania’s Municipal Plans

As of 2011, Pennsylvania had 3,228 municipal pension plans, four times as many as any other state (PERC, 2012:3). Altogether, 73 percent (2,346) of Pennsylvania’s municipal pension plans are defined benefit plans, and 27 percent (882) are defined contribution. In 2011, 78 percent of all local government plans in the U.S. were defined benefit plans (GAO, 2012). Therefore, Pennsylvania has slightly fewer defined benefit plans than nationally.

Pennsylvania’s municipal pension plans are either “self-insured” or “fully-insured.” A self-insured plan is one in which some or all of the risk of providing benefits remains with the municipality (PERC, 2012:6). A fully-insured plan is where all the risk is borne by an insurance instrument that guarantees payment of benefits (PERC, 2012:6). Also, some municipal plans are “provided by municipalities participation in Taft-Hartley Act collectively bargained, jointly trusteed, multi-employer pension plans” (PERC, 2012:6). In Taft-Hartley plans, the municipality does not assume any of the risk in the plan, but is required to provide a fixed contribution amount. According to PERC (2012:6-7), 2,247 plans are self-insured and defined benefit plans; three were fully-insured defined benefit plans; and 96 were defined benefit plans under Taft-Hartley.

The management of municipal pension plans in Pennsylvania is diverse and is dependent upon the municipality. The Pennsylvania Municipal Employee Retirement System manages 949 municipal pension plans, which is 29 percent of all Pennsylvania municipal pension plans (PMERS, 2012:24). The other municipalities established their own management system for their pension plans, typically through a financial institution, which has led to as many management systems as there are pension plans (University of Pittsburgh, 2009:5).

This study did not specifically look at the management of the different municipal pension funds.

Unfunded Liability

Overall, most municipal pension plans offered by Pennsylvania municipalities (as well as those of other states) are structured as defined benefit plans. A defined benefit plan is one that “establishes a contribution formula based on actuarial techniques that are sufficient to fund a fixed benefit amount to be paid on retirement” (Pope, 2013). This type of plan is much more expensive for the municipality to maintain than a defined contribution plan, where amounts contributed on behalf of employees are based on a specific formula (Pope, 2013). Therefore, actuarially calculated pension benefits paid under defined benefit plans determine employer contributions while payments made to defined contribution plans determine the benefits paid.

Defined benefit plans, by the nature of their funding, contribute to the current underfunding condition (GAO, 2012). Funding consists of employee contributions that are a fixed percentage of salaries and wages and employer contributions that vary on a yearly basis due to changes in the earnings of the plan assets (Pope, 2013). The plan’s assets are invested in stocks and bonds and are therefore subject to market fluctuations.

According to PERC, in 2011, municipal pension systems had 73,974 active members, actuarial assets of $13.5 billion, and actuarial accrued liabilities of $20.3 billion (PERC, 2012). These numbers reflect a $6.9 billion aggregate underfunded pension liability. Altogether, 55.3 percent of municipal pension plans are adequately funded, covering only 19.3 percent of all active members (PERC, 2012: 29). Consequently, 80.7 percent (54,331) of all active members in municipal pension plans are in plans that are not adequately funded (PERC, 2012:29).

In the past 5 years, several studies have determined the following reasons for the unfunded liability situation in municipal pension plans: 1) decline in the plan’s asset investment value due to overall economic conditions; 2) insufficient contributions by employers and employees; and, 3) overly generous benefits with cost of living increases (University of Pittsburgh, 2009; PEW, 2010; Jensen, 2012). Prior to 2000, Pennsylvania plans did not invest in equity securities (stocks) (PERC 2011). The shift from investing solely in bonds to investing in stocks and bonds, has likely contributed to the current underfunding due to market fluctuations (PEW, 2010).

Two additional issues that should be noted are: these underfunded liabilities are not reported on the balance sheets of local governments, thus creating a situation of off-balance sheet debt; and local governments' typically use an 8 percent return for calculating future income, possibly artificially reducing the present value of the debt, which in-turn reduces the liability balance (Schrager, 2013). A Moody's Investor Service report (2013) listed the discount rates for each state's largest municipal pension plan; Pennsylvania's rate was 8 percent. Novy-Marx and Rauh (2009) and others (Adonov, Bauer, and Cremers, 2012; Schrager, 2013) have stated that future benefits should be discounted at a rate that is closer to the risk-free rate (rate paid by a 3-month Treasury Bill, which was approximately 4 percent in August 2013).

Other States

It should be noted, however, that the underfunding issue is not unique to Pennsylvania. According to a study of 30 of the country's most populated cities, pension plans were only 74 percent funded as of fiscal year 2009 (PEW, 2010). The Congressional Budget Office suggested that additional funding for state and local pension plans will likely need to be provided by those municipalities, thus requiring higher taxes and/or reduced services (CBO, 2011).

Much has been written on the status of various types of retirement plans by the Center for Retirement Research (CRR) at Boston College. This group reports on any issues that affect retirement income, including economic and behavioral factors. In the area of municipal plans, the CRR reported on a study of 32 state-run (state level) pension plans before and after the fiscal crisis of 2007-2009 and found that 29 plans enacted fiscal reforms, such as increased employee contributions, tightened age requirements, and lengthened salary averaging periods (Munnell, Aubrey, Belbase, and Hurwitz, 2013).

Statutory Requirements

Act 205 of 1984, the Municipal Pension Plan Funding Standard and Recovery Act addressed standardized actuarial and financial reporting and minimum employer contribution requirements. It required that each municipality and authority prepare a biennial actuarial report. Additionally, it required that the amount of unfunded liability on January 1, 1985 be amortized over the lesser of 30 years or the average future service of active participants (PaCS, 2013). Another provision of Act 205 was to change the formula for distributing state funds to aid municipalities in meeting pension costs. The new formula divided the total amount of aid by the total number of employees in all municipal plans to arrive at a "unit value" and then multiplying the unit value by the number of employees in each plan. The result was the amount of aid that each municipality received, limited by the total pension cost for that period. Total allocations provided by the commonwealth rose from $62.3 million in 1985 to $217.9 million in 2010 (PERC, 2011). These funds are distributed by the Department of the Auditor General.

The Department of the Auditor General distributes funds to municipalities to help defray the costs of various municipal, police and fire pension plans maintained by municipalities, regional police forces and councils of government. In addition, funds are allocated through the municipalities to nearly 2,000 volunteer relief associations in Pennsylvania. Revenue to support the act comes from a 2 percent tax on premiums for both casualty and fire insurance sold in Pennsylvania by foreign (out-of-state) insurance companies. The Special Ad Hoc Post Retirement Adjustment Act (Act 147 of 1988) provides increased pensions paid to police officers and paid firefighters who retired prior to January 1, 1985. Municipal pension plans that have paid post retirements under this act may apply for reimbursement to the Department of the Auditor General. Funding for these reimbursements is derived from the insurance premiums on foreign casualty insurance premiums.

In 2009, Act 44 amended Act 205 by providing actuarial tools that would allow short-term fiscal relief to local governments. Act 44 revised amortization schedules to lengthen the amortization period for plan gains and losses from 15 years to 20 years. Act 44 also established a new distress determination method, and assigned each plan a distress score based on the funded ratio (ratio of plan assets to plan liabilities). Funds that are at least 90 percent funded have a distress score of 0; plans that have a funded ratio of 70 percent to 89 percent have a distress score of 1; those with a funded ratio of 50 percent to 69 percent have a distress score of 2; and those plans with a funded ratio of less than 50 percent have a distress score of 3.

Additionally, municipal governments must follow the provisions of Government Accounting Standards Board (GASB) Statement No. 68, enacted in 2012. This statement prescribes the calculation of annual pension expense. The expense is calculated as an amount needed to pay retirement benefits based on current and future earnings plus interest cost on unfunded liabilities minus what was earned on assets already invested in the account. The unfunded liability is the difference between the current value of future pension benefits and the market value of the plan assets.

The GASB requirements that pension obligations be calculated as current and future benefits to be paid out and that pension plans have to demonstrate the ability to cover present and future pension obligations have created significant liabilities for all governmental units, including municipalities (Munnell et al., 2013). Given the potentially large number of municipalities within states, these plans can collectively create a vast liability for individual states. A municipal pension plan in Pennsylvania is defined as one established by municipalities subject to the reporting requirements on Act 205 of 1984 (PERC, 2012).

Oversight of Municipal Pension Plans

Three state agencies oversee the commonwealth's municipal plans: PERC, the Pennsylvania Municipal Retirement Board (PRMB), and the Auditor General. PERC was established in 1981, and its principal responsibilities include reviewing legislation affecting public retirement systems and studying public employee retirement system policies implemented at the state and local government levels (PERC, 2009). Additional responsibilities charged to PERC in 1984 include administration of the Financially Distressed Municipal Pension System Recovery Program (PERC, 2009).

PMRB publishes policies and investment guidelines (PERC, 2009) and the Auditor General audits plans annually and administers the state aid program.

Goals and Objectives

This study was conducted in 2013 to: conduct an analysis of Pennsylvania's municipal pension plans using existing data from the Pennsylvania Municipal Retirement System (PMRS), PERC, and the Auditor General's office to determine the differences in pension status between rural and urban municipalities; determine if there are any relationships among a municipality's pension status and the type of pension plan, the number of active members in the pension plan, and the municipality's financial status; and provide policy considerations.

This study did not address the administrative costs involved in municipal pensions, but focused on the unfunded liability of the pension plans. In its *Status Report on Local Government Pension Plans* (January 2011), PERC provided an analysis of administrative costs.

Methods

This study used trend analyses combined with a series of cross-tabulations and regression analyses. It analyzed 5 years of existing data from all 67 counties, covering a 10-year period of 2001-2011. These years provided the most recent years of available data and allowed for the trend analysis. The available data only cover every other year during the 10-year period, specifically 2001, 2003, 2005, 2007, 2009, and 2011. Also, this 10-year period encompassed two economic recessions and recoveries, which helped in assessing trends. By using all counties, the researchers could make comparisons between rural and urban municipalities, as categorized using the Center for Rural Pennsylvania's (2013) definition of rural and urban. According to that definition, a municipality is rural when the population density within the municipality is less than the statewide average density of 284 persons per square mile, or the total population is less than 2,500, unless more than 50 percent of the population lives in an urbanized area as defined by the U.S. Census Bureau. All other municipalities are considered urban.

PERC provided the primary data for the study. Its data is published in *Status Report on Local Government Pension Plans*, which is statutorily mandated by Act 205 of 1984 and is published every 2 years.

According to PERC, there are 3,228 local government pension plans in Pennsylvania. "General purpose local governments establish separate pension plans for their police, firefighters, and non-uniformed employees, while counties and municipal authorities generally establish one pension plan for all employees" (PERC, 2012:3). This study focused only on pension systems for municipalities; therefore the study did not include counties, authorities, regional agencies, or councils of government. Additionally, since PERC does not collect any data on municipalities whose pension plans are classified as "multi-employer pension plans," which fall under the federal Employee Retirement Income Security Act of 1974 and come under the purview of the federal government, they were not included in the study. Altogether, the researchers analyzed 2,586 municipal pension plans in 2011 or 80.1 percent of all Pennsylvania municipal pension plans.

The Center for Rural Pennsylvania provided the researchers with a list of municipalities categorized as rural and urban, and the researchers applied the list to municipalities with pension plans. In 2011, 36 percent of all the pension plans studied were with rural municipalities, and 64 percent were with urban municipalities.

The researchers conducted frequency counts of all municipal pension plans in each of the following areas for each year of the study (2001, 2003, 2005, 2007, 2009, and 2011): (1) plan type, or the type of employee covered by the pension plan, which is divided into the following categories - firefighter (F), police (P), and non-uniformed employees (N); (2) type of benefit plan - defined contribution (DC), and defined benefit (DB); (3) number of active members in the plan; (4) plan's accrued liability; (5) plan's assets; and (6) plan's funding ratio.[1] While PERC already reports the frequencies within its reports, this study goes further by dividing the frequency counts into rural/urban categorization, and by examining the trends in the frequencies over a 10-year period (2001 to 2011).

In addition to the frequency counts, the researchers performed multiple statistical tests to determine if there were any relationships among the data that would indicate if the characteristics of a pension plan or the type of municipality (city, borough, or township) improved the likelihood of the plan being fully funded. Specifically, the researchers sought to determine if a plan's funding ratio was influenced by: the plan type; the type of benefit plan; the number of active members in the plan; and, the type of municipality (city, borough, or township).

Findings

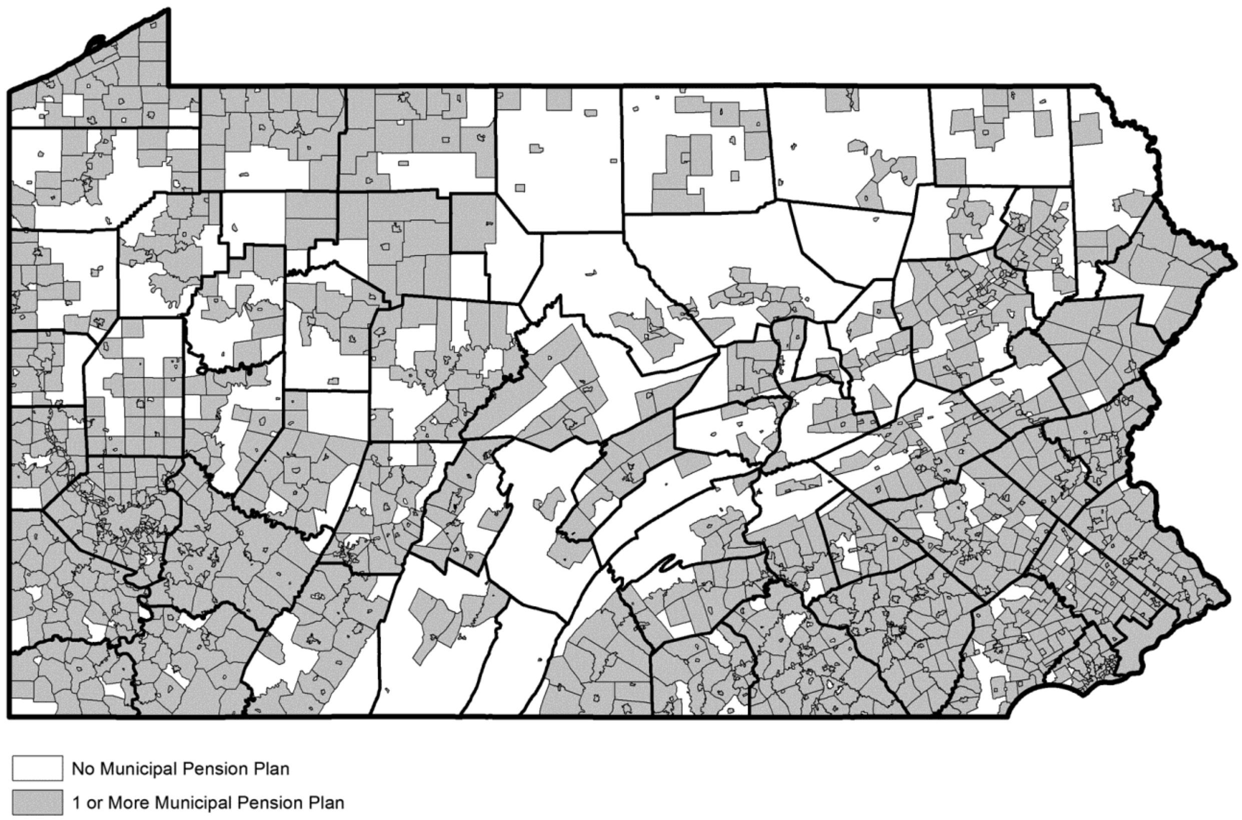
In 2011, a total of 1,528 municipalities had one or more pension plans, which is about 59 percent of all municipalities in Pennsylvania.[2] The following map depicts municipalities with one or more pension plans. The gray shaded areas depict those municipalities that have at least one plan. Municipalities with pension plans are concentrated in the south eastern and south western parts of the state. The remainder is interspersed through the state. Fulton and Sullivan counties have the fewest municipal pension plans, with

[1] See the glossary for definitions of each of the terms.
[2] The number of pension plans does not take into account municipal authorities and councils of government.

only one municipality in each county with a pension plan. Except for Philadelphia, no county has 100 percent of its municipalities with pension plans, though Lancaster has the most with 97 percent of its municipalities with at least one pension plan.

Municipalities with Pension Plans, 2011

(Gray indicates municipality has one or more pension plans)



According to data from the U.S. Census Bureau, from 2001 to 2011, there was a 2.5 percent decrease in the number of local government employees in Pennsylvania. During this same time, the number of pension plans increased by 5 percent (See Table 1), with the largest growth occurring in townships. The number of pension plans decreased slightly among city governments (1 percent). The number of plans decreased in boroughs from 2001 to 2009 by 1 percent but increased from 2009 to 2011, so that there was only a small change in the number of plans. The number of plans steadily increased in townships from 2001 to 2011, with an 11 percent increase over the study period.

Table 1: Number of Pension Plans by Municipality Type and Year

Year	Cities	Boroughs	Townships	TOTAL
2001	165	1,042	1,184	2,391
2003	163	1,032	1,214	2,409
2005	163	1,034	1,239	2,436
2007	164	1,029	1,267	2,460
2009	164	1,025	1,279	2,468
2011	164	1,044	1,307	2,515

Note: All classes of cities, boroughs, and townships were used in this study due to a lack of data for all years in the study for all classes of municipalities. For the research, Bloomsburg Town was classified as a borough and all townships of the first and second class were combined. Additionally, the numbers in the table do not reflect pension plans for municipal authorities, councils of government, and plans that are covered under the federal program.

The municipality's rural/urban categorization was applied to each respective pension plan. Table 2 shows the number of rural/urban pension plans by city, borough and township for 2011 and indicates that the majority of growth in municipal pension plans occurred in rural municipalities. From 2001-2011, the number of urban pension plans grew 2 percent while the number of rural pension plans grew 12 percent.

Table 2: Pension Plans by Rural/Urban Category, 2001 - 2011

Year	Rural	Urban	Total
2001	813	1,578	2,391
2003	835	1,574	2,409
2005	854	1,582	2,436
2007	875	1,585	2,460
2009	877	1,591	2,468
2011	904	1,611	2,515

Table 3 shows the number of active members by municipality type, and by rural/urban categorization. An "active member" is a member of a pension plan who is currently employed and contributing to the pension plan. In 2011, 5 percent of all active members were in rural municipal pension plans. Sixty-one percent of all active members were in urban city pension plans, and 20 percent of active members were in urban township pension plans.

Table 3: Active Members by Rural/Urban and Type of Municipality

	Rural Municipalities			Urban Municipalities		
	City	Borough	Township	City	Borough	Township
2001	48	743	2,303	43,127	7,869	11,523
2003	48	738	2,364	42,703	7,988	12,000
2005	50	751	2,434	40,688	8,000	12,274
2007	50	747	2,592	40,619	8,026	12,624
2009	51	732	2,592	40,804	8,062	12,980
2011	51	730	2,621	38,344	7,951	12,796

Table 4 illustrates the aggregate of the following pension plan data categorized by rural/urban municipalities: total active members; total accrued liability; total assets; total unfunded liability; and total funding ratio. The totals in each data area of the pension plans are shown across 2001, 2003, 2005, 2007, 2009, and 2011. The data in this table helped establish trends in the pension data.

The data displayed in Table 4 show that, in the aggregate, urban municipal pension plans have more unfunded liability than rural municipal pension plans in that only urban municipalities have unfunded liabilities across all years, while rural municipalities have surpluses every year. In 2001, rural municipalities were fully funded at 115 percent, while urban municipalities were funded at 89 percent. In 2003, urban municipalities were funded at 74 percent, while rural municipalities were still fully funded at 106 percent. By 2009, urban municipalities' funding ratio fell to 61 percent, while rural municipalities' funding ratio was 100 percent. Most recently, in 2011, urban municipalities remained underfunded, but improved to 64 percent, while rural municipalities remained fully funded at 101 percent.

It should be noted that urban municipalities experienced a 5 percent drop in the number of active members from 2001 to 2011, while rural municipalities experienced a 10 percent increase in active members. If the increase in the membership trend continues in rural municipalities, the increase could generate a future unfunded liability because of additional future liability in member benefits. The possibility of rural municipalities developing an unfunded liability can be seen in the growth of assets and liabilities. Rural municipal pension assets increased 82 percent from 2001 to 2011, while the corresponding liabilities increased 106 percent. Therefore, the liabilities are increasing at a faster rate than the assets. If the trend continues, there is a possibility of rural municipalities developing an unfunded liability.

The researchers did not have sufficient data for this study to fully explain why rural pension plans are doing better than urban pension plans. One possible reason is that 40 percent of all rural pension plans are defined contribution plans while only 16 percent of all urban pension plans are defined contribution plans (See Table 6). Since defined contribution plans base the pay out to the beneficiary on the total amount actually in the pension fund and not on an established fixed amount, as in a defined benefit plan, defined contribution plans are always fully funded. Therefore, an increase in the number of defined contribution plans decreases the unfunded liability.

Table 4: Rural vs. Urban Municipal Pension Plans

		2001	2003	2005	2007	2009	2011
Active Members	Rural	3,091	3,150	3,235	3,389	3,383	3,402
	Urban	62,519	62,691	60,962	61,269	61,846	59,091
Accrued Liability ($)	Rural	160,933,485	183,610,488	219,077,186	252,392,061	279,991,054	332,227,967
	Urban	11,527,048,560	13,004,558,553	14,494,597,004	15,557,049,859	17,168,431,812	18,589,129,324
Assets ($)	Rural	185,347,847	195,534,393	235,681,472	274,076,920	281,221,583	336,808,265
	Urban	10,245,052,170	9,582,064,866	9,825,550,978	10,813,399,224	10,398,462,256	11,960,383,855
Unfunded Liability ($)	Rural	24,414,362	11,923,905	16,604,286	21,684,859	1,230,529	4,580,298
	Urban	-1,281,996,390	-3,422,493,687	-4,669,046,026	-4,743,650,635	-6,769,969,556	-6,628,745,469
Funded Ratio	Rural	115%	106%	108%	109%	100%	101%
	Urban	89%	74%	68%	70%	61%	64%

Note: As with the entire study this table does not include "U" classification pension plans because no data were provided for those plans, nor does it include pension plans for municipal authorities. Throughout the study, all dollar figures were not adjusted for inflation.

Graph 1 illustrates unfunded liability by type of municipality per active member in the plans. The graph shows how the unfunded liability per active member increases each year in urban municipalities, while rural municipalities maintain more fully funded plans per active member until 2009, when rural townships' funding status decreased and then slightly improved in 2011.

Graph 1: Unfunded Liability by Type of Municipality and Rural/Urban Per Active Member, 2001-2011

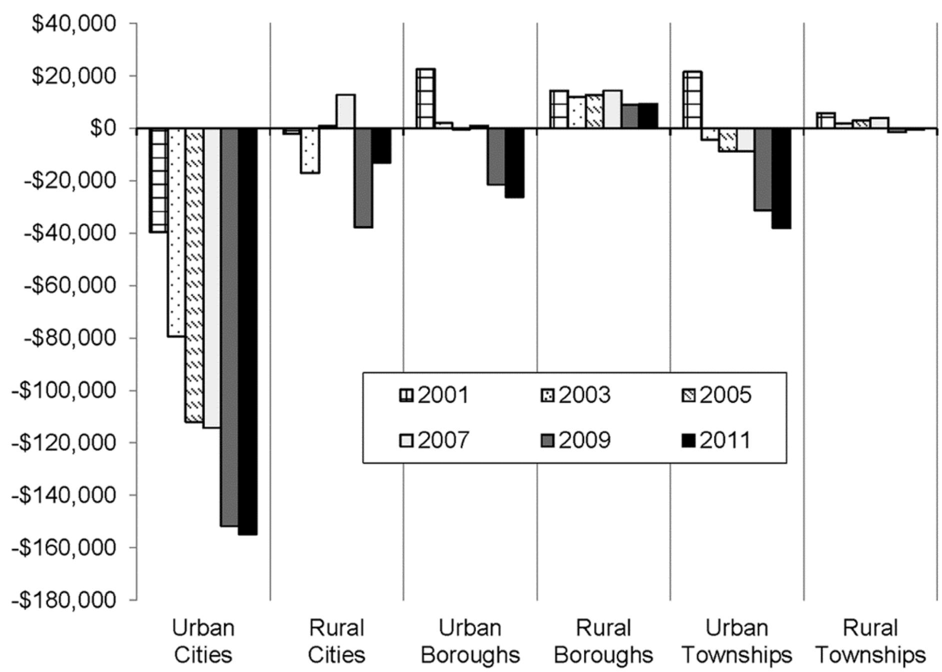


Table 5: Unfunded Accrued Liability by Rural/Urban and Type of Municipality

	Rural Municipalities			Urban Municipalities		
	City	Borough	Township	City	Borough	Township
2001	-105,118	11,023,130	13,496,350	-1,707,300,534	177,498,915	247,805,229
2003	-820,731	8,826,034	3,918,602	-3,386,765,458	15,859,576	-51,587,805
2005	39,878	9,530,598	7,033,810	-4,557,624,424	-3,109,383	-108,312,219
2007	637,908	10,772,100	10,274,851	-4,641,172,922	7,030,801	-109,508,514
2009	-1,925,165	6,539,942	-3,384,248	-6,189,953,645	-173,412,772	-406,603,139
2011	-668,930	6,813,601	-1,564,373	-5,934,204,073	-208,144,696	-486,396,700

Note: Dollar figures were not adjusted for inflation.

Table 5 shows the total unfunded liability by rural/urban municipality and by type of municipality across all years. The dollar figures are in current dollars. Positive numbers indicate that those plans are more than fully funded, while negative numbers indicate an unfunded liability. Table 5 shows that the majority of municipal pension plan unfunded liability is found in urban municipalities, specifically within urban cities and townships. City municipal pensions have been underfunded since 2001 and have progressively become worse. Consequently, the progressive consistency of city pensions unfunded liability points more to systematic issues rather than cycles in the market. If cycles in the market were responsible for the city unfunded liability, one would see an improvement in the unfunded liability during up swings in the market cycle, specifically 2003, 2005, and 2007, when the market was steadily improving each year. Since then, the city unfunded liability steadily becomes worse each year, and it appears to indicate a systematic problem within city pension plans. The actual identification of a systematic problem is beyond the scope of this study, but the continual increase in city unfunded liability, despite improvements in market conditions, does serve as an indication that a systematic problem exists.

It is important to note that anywhere from 87 percent to 101 percent of the city unfunded liability, depending on the year, is accounted for by the City of Philadelphia and by Pittsburgh City. Even taking Philadelphia and Pittsburgh out of the analysis, cities still have an unfunded liability for all years of the study. Additionally, looking at the most recent year, the total unfunded liability is $6.6 billion, with urban municipalities comprising 100 percent of the total unfunded liability.

Interestingly, urban townships have an unfunded liability that has grown since 2003, with the largest growth (271 percent) occurring between 2003 and 2009. Urban boroughs did reasonably well from 2001 to 2007, but since 2009, their unfunded liability has significantly grown.

Conversely, rural municipalities, for the most part, do not have any unfunded liability, except for rural townships and cities beginning in 2009; however, the unfunded liability improved in both types of municipalities by 2011. Multiple studies (PEW, 2010; GAO, 2012; and Munnell et al., 2013) have demonstrated a relationship between the stock market indices (DOW, S&P500, Russell 3000) and the unfunded liability of local government pension plans. One possible explanation for the increase in unfunded liability followed by its improvement could be the 2008-09 market downturn followed by the market recovery in 2010-11.

One major reform that is often cited is switching from defined benefit plans to defined contribution plans (PEW, 2010). In defined benefit plans, the risk of having the funds needed to pay retirement benefits is borne by the employer, while employees who are participants in defined contribution plans bear that risk (Munnell, Haverstick and Soto, 2007). This is because defined benefit plans must have sufficient assets to pay benefits in the future, often adjusting the benefits for inflation, and do not know how long the benefits will be paid (due to the longevity of the recipient). Total payouts from defined contribution plans can’t exceed the contributions to and the earnings from the individual plan. Thus, this type of plan poses less risk for employers.

Table 6 shows the number of pension plans categorized by rural/urban municipality and defined contribution/defined benefits, and the percent of plans that year in each of the categories.

Table 6: Percent of Municipal Pension Plans that are Defined Contribution vs. Defined Benefit by Rural and Urban Municipalities

<table>
<tr><th></th><th>Year</th><th>2001</th><th>2003</th><th>2005</th><th>2007</th><th>2009</th><th>2011</th></tr>
<tr><td rowspan="2">Rural</td><td>DC</td><td>324
(40%)</td><td>330
(40%)</td><td>337
(39%)</td><td>348
(40%)</td><td>350
(40%)</td><td>361
(40%)</td></tr>
<tr><td>DB</td><td>489
(60%)</td><td>517
(61%)</td><td>517
(61%)</td><td>527
(60%)</td><td>527
(60%)</td><td>543
(60%)</td></tr>
<tr><td colspan="8"></td></tr>
<tr><th></th><th>Year</th><th>2001</th><th>2003</th><th>2005</th><th>2007</th><th>2009</th><th>2011</th></tr>
<tr><td rowspan="2">Urban</td><td>DC</td><td>246
(16%)</td><td>245
(16%)</td><td>252
(16%)</td><td>250
(16%)</td><td>250
(16%)</td><td>264
(16%)</td></tr>
<tr><td>DB</td><td>1,332
(84%)</td><td>1,329
(84%)</td><td>1,330
(84%)</td><td>1,335
(84%)</td><td>1,341
(84%)</td><td>1,347
(84%)</td></tr>
</table>

Note: DC=Defined Contribution Plan; DB=Defined Benefit Plan.

The data show that about 40 percent of all rural plans in a given year are defined contribution. As previously stated, defined contribution plans by design do not have an unfunded liability. Conversely, only 16 percent of urban plans in any given year are defined contribution. Consequently, the higher percentage of defined contribution plans in rural municipalities is one reason why rural municipalities do not have aggregate unfunded liability.

Table 7 shows that the number of active members in rural defined contribution and defined benefit plans and urban defined contribution plans has increased, while the number of active members in urban defined benefit plans has decreased. Additionally, the defined contribution plans are increasing at a faster rate than the defined benefit plans. The faster growth of defined contribution plans shows a movement in the direction that some are advocating as a reform for public pension plans – namely switching to defined contribution (PEW, 2011; McLaughlin et al., 2010).

Table 7: Active Members by Year in Defined Contribution vs. Defined Benefit By Rural and Urban Municipalities

		2001	2003	2005	2007	2009	2011	% chg. 2001-2011
Rural	DC	1,229	1,271	1,322	1,373	1,372	1,400	13.9%
	DB	1,862	1,879	1,913	2,016	2,011	2,002	7.5%
Urban	DC	2,856	2,946	3,078	3,177	3,222	3,235	13.3%
	DB	59,663	59,745	57,884	58,092	58,624	55,856	-6.4%

As previously explained, the researchers also analyzed the data for possible relationships among the municipal pension plan characteristics and unfunded liability. The only statistically significant relationship determined was a relationship between the number of active members in a plan and unfunded liability.

The analysis found as the number of active members increased, unfunded liability increased, and that this relationship was statistically significant.

It is important to note that correlation does not equal causation; therefore the researchers are not concluding that fewer active members lead to less unfunded liability.

Conclusions

Overall, the research found that urban municipal pension plans rather than rural municipal pension plans tended to have unfunded liability over the study period. While some rural municipalities have unfunded liability, in the aggregate, they have not had unfunded liability since 2001 and have been more than 100 percent funded. Conversely, urban municipalities have had ever increasing unfunded liability.

The researchers believe that one of the possible reasons why rural municipal pension plans may be better funded is that 40 percent of rural municipal pension plans are defined contribution, while only 16 percent of urban pension plans are defined contribution.

The trends in the data show that urban municipalities have had unfunded liability since 2001 and that it has increased over time – significantly since 2009. Despite the upswing in the market from 2010 to 2011, the urban plans' unfunded liability continued to increase. This indicates that urban municipal pension plans may not be underfunded due to the downturn in the market but may have systematic structural issues within the plans.

Policy Considerations

While PERC has recommended for the past 20 years that municipal pension plans be consolidated to decrease administrative costs, this research suggests that rural pension plans should not be consolidated into urban pension plans.

While this study was not able to study administrative costs and does not dispute PERC's findings concerning administrative costs, PERC did not examine pension plans according to rural/urban designation. Consequently, a consolidation of municipal pension plans would result in shifting employees from pension plans that are fully funded to plans with an unfunded liability in excess of $6 billion.

The researchers also suggest that municipal pension reform begin with urban municipalities, specifically with cities of the first, second, and third class. As indicated in the findings, a significant portion of the unfunded liability over time is attributed to cities.

While rural townships' unfunded liability in 2009 and 2011 improved with improved market conditions, cities' unfunded liability did not, which suggests there is a systematic problem with cities' pension plans. Systematic problems could be anything from the amount employees pay into the plan, the amount that is paid out in benefits, or the management of the plan. Before any major policy changes are made, the systematic problems should be identified so as to ensure that the policy changes actually address the problem.

References

Adonov, A., R. Bauer, and M. Cremers. (2012) *Pension fund allocation and liability discount rates: camouflage and reckless risk taking by US public plans?* www.aeaweb.org/.../program/retrieve. (Accessed January 2014).

Bradford, H. (2013) *Pew study finds dismal funded status for most U.S. city pension plans.* Pensions and Investments. http://www.pionline.com/article/20130121/printsub/301219981 (Accessed May 29, 2013).

The Center for Rural Pennsylvania. (2013) "Rural/Urban Definitions," http://www.rural.palegislature.us/demographics_rural_urban.html. (Accessed November 2013), Harrisburg, PA.

Clark, R.L., L.A. Craig, and J.W. Wilson, (2003*), A History of Public Sector Pensions in the United States,* Philadelphia, PA: University of Pennsylvania Press.

Congressional Budget Office (2011) *The Underfunding of State and Local Pension Plans.* Economic and Budget Issue Brief (May).

Farmer, L. (2013) "Pension Transparency Debate Kicks off on Capitol Hill." *Governing.com* (Accessed April 23, 2013).

Government Accountability Office (2012). *State and Local Pension Plans: Economic Downturn Spurs Efforts to Address Costs and Sustainability.* Report GAO – 12-322.

Grosskopf, S., K. Hayes, and S. Porter-Hudak. "Pension Funding and Local Labor Costs: A Dynamic Analysis of Illinois Police Pension Funds." *Southern Economic Journal* 54.3 (1988): 572-82.

Hu, C.D. "Reforming Public Pensions In Rhode Island." *Stanford Law & Policy Review* 23.2 (2012): 523-33.

Jensen, B.K. (2012), "Pennsylvania Municipal Pensions" Testimony before the Pennsylvania Employee Retirement Commission. September 5, 2012, Harrisburg, PA.

Lemov, P. *Irvine, California plans to prepay its pension bill.* http://www.governing.com/columns/public-finance/col-irvine-california-plansprepay- pension-bill.html (July 31, 2013). (Accessed July 31, 2013).

McLaughlin, J.P. and P.J. Harvey. (2010) *Pennsylvania's Municipal Pension Crisis: Townships Face Difficult Decisions.* PA Township News, Pennsylvania State Association of Township Supervisors, September.

Moody's Investor Service (2013). *Adjusted Pension Liability Medians for US States.* http://www.ncsl.org/documents/summit/summit2013/online-resources/Moody-Adjusted-Pension-Liability-Medians.pdf (Accessed January 2014).

Mumy, G.E. "The Economics of Local Government Pensions and Pension Funding." *Journal of Political Economy* 86.3 (1978).

Munnell, A., J.P. Aubry, A. Belbase, and J. Hurwitz. (2013) *State and Local Pension Costs: Pre-Crisis, Post-Crisis, and Post-Reform.* Center for Retirement Research at Boston College (No. 30).

Munnell, A.L., K. Haverstick, J.P. Aubry, and A. Golub-Sass. (2008) *Why Don't Some States and Localities Pay their Required Pension Contributions?* Center for Retirement Research at Boston College (No. 7).

Munnell, A., K. Haverstick, and M. Soto. (2007) *Why Have Defined Benefit Plans Survived the Public Sector?* Center for Retirement Research at Boston College (No. 2).

Novy-Marx, R., and J.D. Rauh. (2009) *The Liabilities and Risks of State Sponsored Pension Plans.* Journal of Economic Perspectives 23(4) 191-210.

Pennsylvania Consolidated Statutes, Act 205 of 1984.

Pennsylvania Department of the Auditor General. (2013) "Allocations by County" http://www.auditorgen.state.pa.us/Allocations/45alloc.html. (Accessed January 2014).

Pennsylvania Public Employee Retirement Commission. (2012) *Comprehensive Annual Financial Report for Year Ending December 31, 2012,* Harrisburg, PA.

Pennsylvania Public Employee Retirement Commission. (2009, January). *Public Employee Retirement Laws for Pennsylvania Local Governments.* Harrisburg, PA: Author.

Pennsylvania Public Employee Retirement Commission. (2011, January) *Status Report on Local Government Pension Plans: A Summary and Analysis of 2009 Municipal Pension Plan Data submitted pursuant to Act 205 of 1984 and 2008 County Pension Plan Data submitted pursuant to Act 293 of Act 1972.* Harrisburg, PA.

Pennsylvania Public Employee Retirement Commission. (2012) *Status Report on State and Local Government Pension Plans.*

PEW. (2010) *The Trillion Dollar Gap: Underfunded State Retirement Systems and the Roads to Reform.* PEW and the Center on the States. Philadelphia, PA.

Pope, A. (2013) *Prentice Hall Federal Taxation Comprehensive.* Saddle River: Pearson Education.

Roberts, G.E. (2004) "Municipal Government Benefits Practices and Personnel Outcomes: Results From a National Survey." *Public Personnel Management* 33.1 (2004): 1-22.

Schrager, A. (2013) *Detroit's bankruptcy is proof that states are calculating public pensions all wrong*. http://qz.com/107843/detroits-bankruptcy-is-proof-that-states-are-calculating-public-pensions-all-wrong. (Accessed January 2014).

United States Government Accountability Office (2012). Report to Congressional Requesters: State and Local Government Pension Plans – *Economic Downturn Spurs Efforts to Address Costs and Sustainability,* March.

University of Pittsburgh, Institute of Politics. (2009) *What to Do about Municipal Pensions, A Report of the Pension Subcommittee.* Pittsburgh, PA.

Glossary

Accrued pension liability: excess of future pension benefits over current value of plan assets.

Active member: member of a pension plan currently employed and contributing to the plan.

Administrative costs: day-to-day operating expenses, such as recordkeeping, legal, and accounting fees.

Balance sheet: financial statement that lists the assets, liabilities, and equity (fund balance) of an entity.

Defined benefit plan: offers a fixed retirement income to members, based on current and future salary, number of years to retirement, and expected return (earnings) on plan assets.

Defined contribution plan: plan in which a certain dollar amount is contributed each year for the benefit of each member.

Funding ratio: ratio of a plan's assets to its liabilities.

Plan assets: amounts available to pay pension benefits.

Unfunded liability: excess of pension plan liabilities (future pension benefits due) over pension plan assets.

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