

Forensic Mysteries from the MBTA Retirement Fund's Actuarial Reports

by Iliya Atanasov, PhD



Pioneer's Mission

Pioneer Institute is an independent, non-partisan, privately funded research organization that seeks to improve the quality of life in Massachusetts through civic discourse and intellectually rigorous, data-driven public policy solutions based on free market principles, individual liberty and responsibility, and the ideal of effective, limited and accountable government.



This paper is a publication of Pioneer Public, which seeks limited, accountable government by promoting competitive delivery of public services, elimination of unnecessary regulation, and a focus on core government functions. Current initiatives promote reform of how the state builds, manages, repairs and finances its transportation assets as well as public employee benefit reform.



Pioneer Education seeks to increase the education options available to parents and students, drive system-wide reform, and ensure accountability in public education. The Center's work builds on Pioneer's legacy as a recognized leader in the charter public school movement, and as a champion of greater academic rigor in Massachusetts' elementary and secondary schools. Current initiatives promote choice and competition, school-based management, and enhanced academic performance in public schools.



Pioneer Health seeks to refocus the Massachusetts conversation about health care costs away from government-imposed interventions, toward market-based reforms. Current initiatives include driving public discourse on Medicaid; presenting a strong consumer perspective as the state considers a dramatic overhaul of the health care payment process; and supporting thoughtful tort reforms.



Pioneer Opportunity seeks to keep Massachusetts competitive by promoting a healthy business climate, transparent regulation, small business creation in urban areas and sound environmental and development policy. Current initiatives promote market reforms to increase the supply of affordable housing, reduce the cost of doing business, and revitalize urban areas.

Table of Contents

1. Executive Summary	4
2. Introduction	4
3. Forensic Overview	5
4. Reasonable Assumptions for Administrative Expenses?	6
5. How Suspect Are Mortality Tables?	8
6. What Is the Real Normal Cost of MBTARF Pensions?	9
7. Is There Evidence of Underestimating Liabilities and Required Contributions?	10
8. Fallout	11
9. The Path Forward	13



1. Executive Summary

Actuarial valuation is intended to provide a reasonable approximation of the cost of long-term financial liabilities. Valuations are particularly relevant to the provision of postemployment benefits such as pensions and retiree health care, which require long-term preparation and management. The valuating actuary's work is essential not only to ensure that the benefits are reliably provided for, but also to enable employers and employees to accomplish the "meeting of the minds" necessary to craft a binding and mutually advantageous labor contract.

This report documents significant deficiencies in the actuarial valuations produced by the Massachusetts Bay Transportation Authority Retirement Fund (MBTARF) since 1990. Analysis of about a quarter-century of data suggests that the MBTARF's actuarial reports may have deviated considerably from the true cost of pension benefits. As of yearend 2015, the fund had an estimated unfunded liability of about \$944 million. The MBTA is contractually responsible for filling three quarters of that gap, or \$708 million.

The MBTARF's valuation methods and assumptions frequently appear to favor a higher funded ratio and lower total pension liability and/or unfunded actuarial liability. If indeed such underestimation of the liabilities has occurred, current and future employees may have to fund retirees' benefits until the employer is left with no choice but to terminate the plan, ultimately leading the pension fund to become insolvent. In the MBTARF's case, an inauspicious outcome may be unavoidable.

Actual administrative expenses alone ranged between two and more than six times assumptions approved by the MBTARF's board and its actuary. This discrepancy compounded to an estimated \$200 million of the underfunding that accumulated between 1991 and 2015. The valuations also used dated mortality tables and applied male mortality rates to female employees, who tend to have higher life expectancies. No clear rationale was provided for these choices.

Questionable actuarial practices may have built multimillion-dollar contribution "surprises" into the MBTA's financial future and undermined its position in collective bargaining. At a time when the authority is struggling to develop a long-term financial plan, there is no alternative to retaining a rigorous and reliable actuarial team to assess the true size of the liabilities and especially the real cost of MBTARF pensions. Under its existing pension agreement, the MBTA has the right to conduct an independent actuarial valuation of the Public Employee Retirement Administration Commission (PERAC). Such a valuation is long overdue.

"I believe that these assumptions are reasonable."

– David L. Driscoll,
Principal, Buck Consultants¹

2. Introduction

The actuarial process at a typical public pension plan produces two key types of outputs—experience studies and actuarial valuations. Experience studies are intended to gauge the congruence of actuarial assumptions and actual plan experience. Ideally, they drive appropriate changes to actuarial assumptions and methods to align projections with observed reality. An experience study usually covers a period of five years before the measurement date, although the period may vary across systems and over time. The measurement date of an actuarial report is the date as of which the value of the pension obligation is determined (e.g., the last day of the fiscal year).

Valuations are conducted a lot more often than experience studies, frequently taking place every year, as is the case with the Massachusetts Bay Transportation Authority Retirement Fund (MBTARF). The purpose of the valuation is to estimate the cost of benefits provided by the plan (known as the "normal cost") and the size of the corresponding liability. The most essential output of the valuation for management purposes and benchmarking is the annual required contribution (ARC) for the pension system. The ARC is typically expressed as a percentage of covered payroll (the payroll on which contributions to a pension plan are based). However, the ARC typically is not really "required" in a legal or customary sense. Rather, it is supposed to capture the amount necessary to keep the plan solvent in the long run given certain goals and assumptions. The truly "required" contribution rates are often determined statutorily or contractually.

In most cases, the ARC can be broken into five (groups of) components:

- the normal cost of benefits expected to be earned during the year
- amortization payments due to discrepancies between assumptions (e.g., investment return, mortality, retirement age) and actual experience
- adjustments due to changes in plan terms (e.g., one-time COLAs, changes in vesting)
- interest on accumulated unpaid pension liabilities from prior years offset by projected investment income on accumulated assets for the current year
- plan expenses (administrative costs)

"Under its existing pension agreement, the MBTA has the right to conduct an independent actuarial valuation of the MBTARF. Such a valuation is long overdue."

The purpose of an experience study is to measure the difference between actuarially expected and assumed elements on one hand and actual events on the other. Governmental accounting standards have historically allowed for deferral of the differences in each measure and amortization over the expected average remaining service lives of the affected employees. Experience studies are very important for developing an effective actuarial process because their outputs—demographic, investment, service and other data—also help develop future valuation assumptions, which ultimately determine the all-important ARC. Without well-calibrated future assumptions and without making up for funding shortfalls due to prior assumptions, the annual payments into the plan can deviate substantially from what is necessary to ensure its viability.

The juncture between experience and valuation is also a major pressure point for fiduciary risk because, especially in the public sector, valuation assumptions have to be approved by the retirement board or employer controlling the plan. Boards may choose to reject the actuary's recommendations or compel the actuary to change them. The ultimate responsibility for plan mismanagement therefore lies with the retirement board. However, professional standards prohibit actuaries from engaging in "conduct involving dishonesty, fraud, deceit, or misrepresentation"² and require actuaries to "take reasonable steps to ensure that [their] services are not used to mislead other parties"³.

Whether actuaries work as part of the organization they serve or as outside contractors, they face immense pressures that may distort valuation results. Pension plan principals (e.g., a retirement board or company management) may want valuations to show costlier benefits in order to gain bargaining leverage. Or they may want benefits to appear cheaper so that the employer's financial results look better and required contributions are smaller and more affordable. In the latter situation, employers may push the actuary to underestimate the liabilities based on a particular contribution rate or funded ratio desired by the retirement board.

Pressure to underestimate liabilities essentially distort actuarial assumptions and methods in order to make the plan appear to be in better condition and require smaller contributions. While intent to underestimate a liability is difficult to prove, frequent and unsubstantiated changes to actuarial practices or the unjustified use of questionable methods could be considered telltale signs.

Ethically suspect valuation not only undermines the legitimacy of collective bargaining, but puts in jeopardy workers'

pensions and retirees' livelihoods because it allows contributions to undershoot what truly is needed to keep a plan funded. In addition, such misrepresentation is a fundamental threat to the financial stability of any employer which has taken the long-term responsibility for retirement benefits, as the MBTA has under its labor agreements. Overstating funding levels, whether intentional or not, results in understating the cost of pension benefits and engenders insufficient contributions towards the plan, ultimately leading employer and employees to financial ruin.

“Overstating funding levels, whether intentional or not, results in understating the cost of pension benefits and engenders insufficient contributions towards the plan, ultimately leading employer and employees to financial ruin.”

An analysis of 24 years of MBTARF valuations reveals a variety of suspect practices, some of which could potentially indicate underestimation pressures from the retirement board. The MBTARF's valuation assumptions and methods were approved by the board and, even recently, deemed "reasonable" by the actuary from Buck Consultants. However, certain questions arise about compliance with best practices advocated by professional organizations as well as by legal requirements and customary methods established in other sectors. In addition, the adopted valuation parameters and

their evolution over time do not appear terribly consistent with the retirement board's stated objective⁴ of convergence with the assumptions and practices of the Massachusetts State Employees' Retirement System (MSERS) and other public pension systems in the commonwealth.

3. Forensic Overview

Pioneer Institute obtained from external sources the MBTARF's actuarial valuations for 24 years, from 1991 through 2014. The valuations for 1991-2001 were all signed by principal actuary Stephen G. Peterson of Buck Consultants. Peterson's valuation team was apparently replaced when MBTARF Executive Director John Gallahue was forced out around 2001.⁵ The signature page of the 2002 report was missing. The rest of the valuations were approved by David Driscoll,⁶ sometimes in conjunction with other Buck actuaries.

The valuations of the other 104 Massachusetts public retirement systems typically take 6-12 months from the measurement date to complete. Many of these valuations are conducted directly by the Public Employee Retirement Administration Commission (PERAC), Massachusetts's regulatory agency for public pension systems. Tardy valuations may correlate with problems keeping internal controls and bookkeeping in order. Statutorily, PERAC is the actuary for the MSERS and

the Massachusetts Teachers' Retirement System (MTRS). The agency issued the last five annual valuation reports (2012-2016) for the \$23 billion MSERS less than six months (180 days) into the year.

The average MBTARF valuation from the 24-year sample took twice as long — just about 365 days (Fig. 1).⁷ Only one report took less than 180 days to complete (but was made public still another year later). Nine valuations took more than a year after the measurement date to complete. Some also appear to have been modified during the valuation process or restated afterwards. The 2007 report, for example, was dated November 2008 on the front page, but December 2009 on the signature page. Because it was not possible to establish whether every version of every report had been obtained in data collection, these times to final report may not reflect reality and in some cases the actual completion times may be substantially longer.

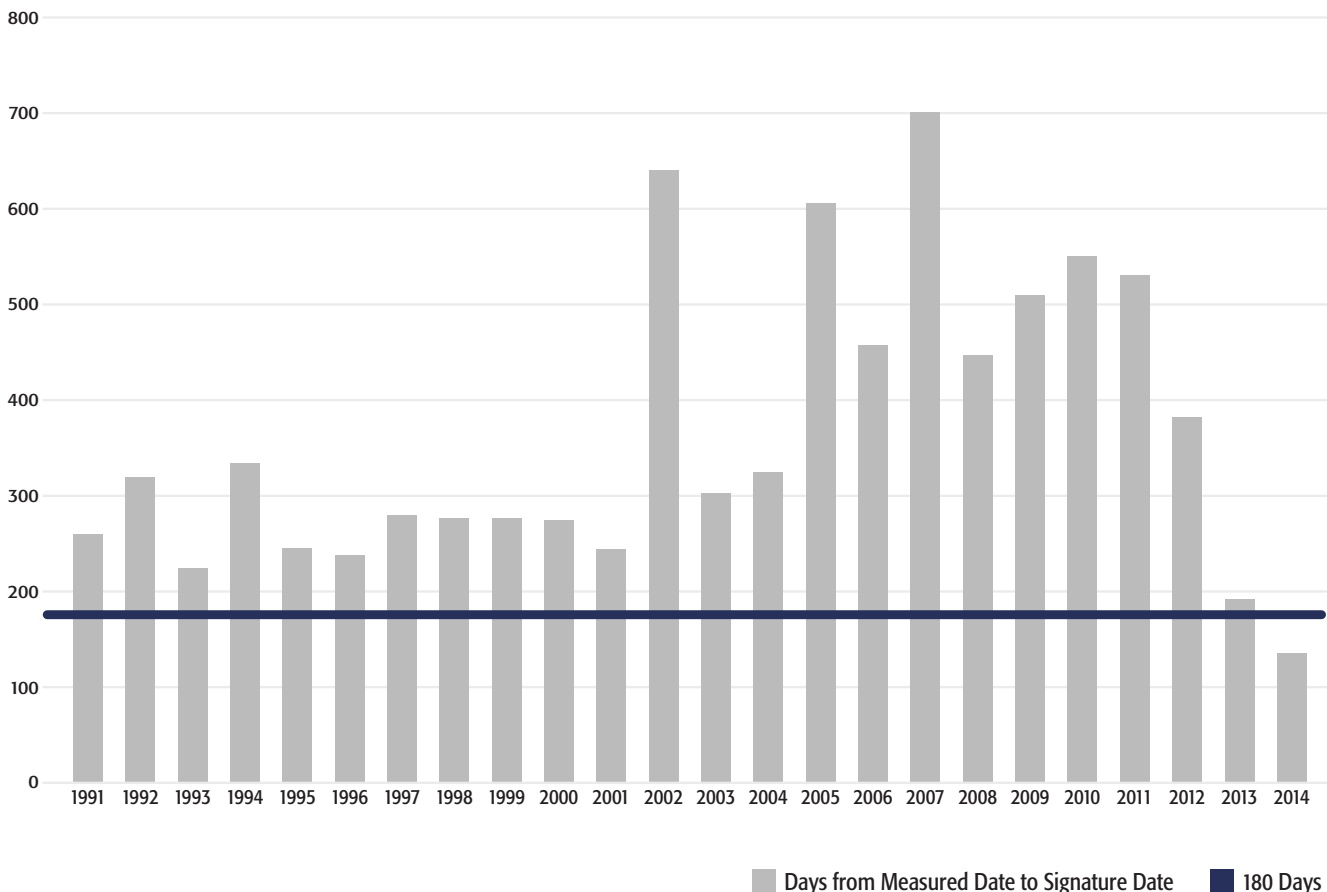
In addition to the suspect length of examination and the revisions (possibly forced by the retirement board), a number of

the actuarial valuations had to rely on incomplete member data (Fig. 2). It is unclear whether the missing data were due to mishandling at the MBTARF or because of the MBTA's poor recordkeeping practices. No missing records were reported in the 2013 and 2014 valuations of the MBTARF.

4. Reasonable Assumptions for Administrative Expenses?

The handling of administrative expenses could be the most blatant violation of reasonable actuarial practices encountered in the MBTARF's valuation reports. For the quarter-century ending in 2015, the MBTARF assumed an administrative-expense rate of 0.45 percent of covered payroll, which was repeatedly deemed "reasonable" by Buck actuaries alongside the other assumptions in the reports. The actual expense rate was at least twice as high in all but one year (Fig. 3). In the late 1990s, real administrative expenses⁸ reached more than six times the assumed rate, yet there was no apparent impetus to revise it and increase contributions to offset the excess costs.

Fig. 1. MBTARF Actuarial Valuations' Time in Days from Measurement Date to Signature Date



Source: MBTARF actuarial valuations

Fig. 2. Missing Member Records

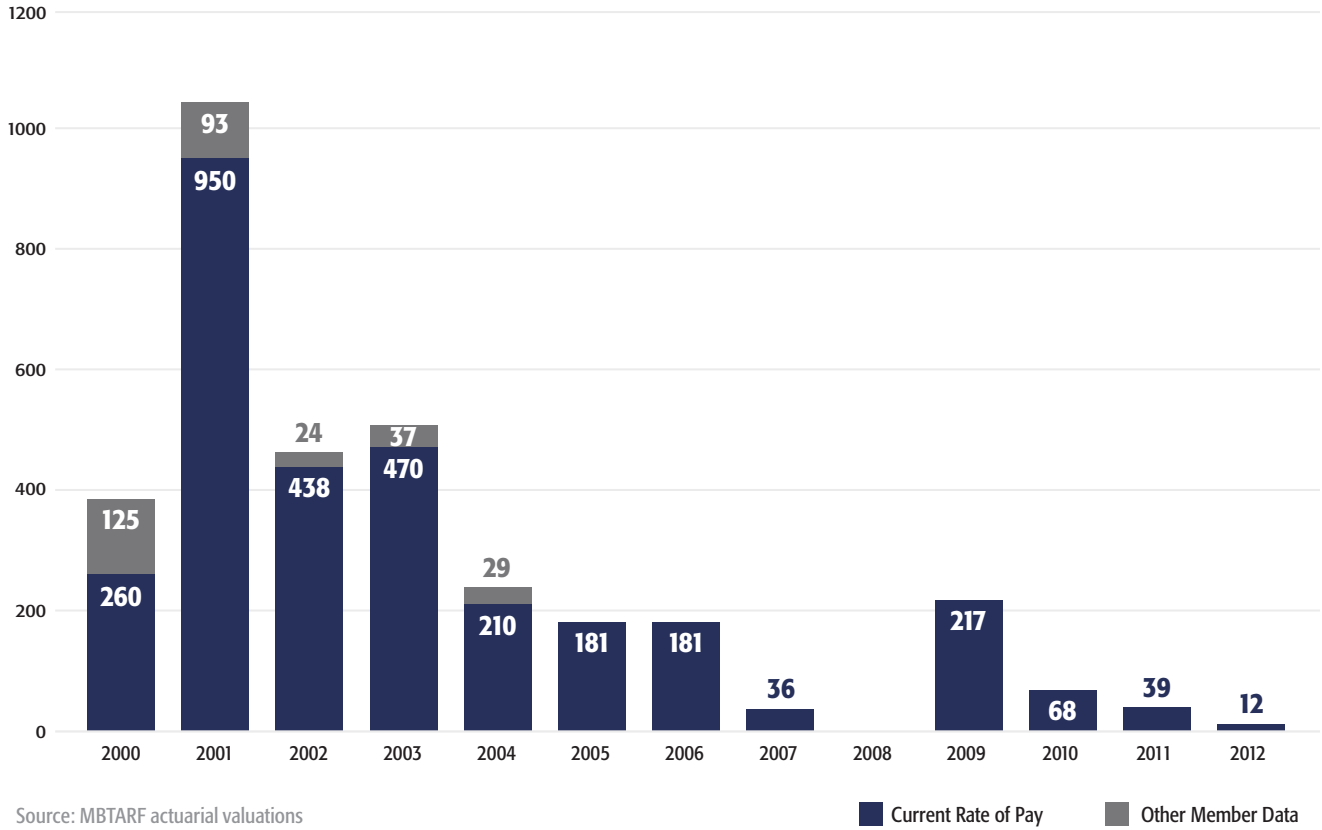
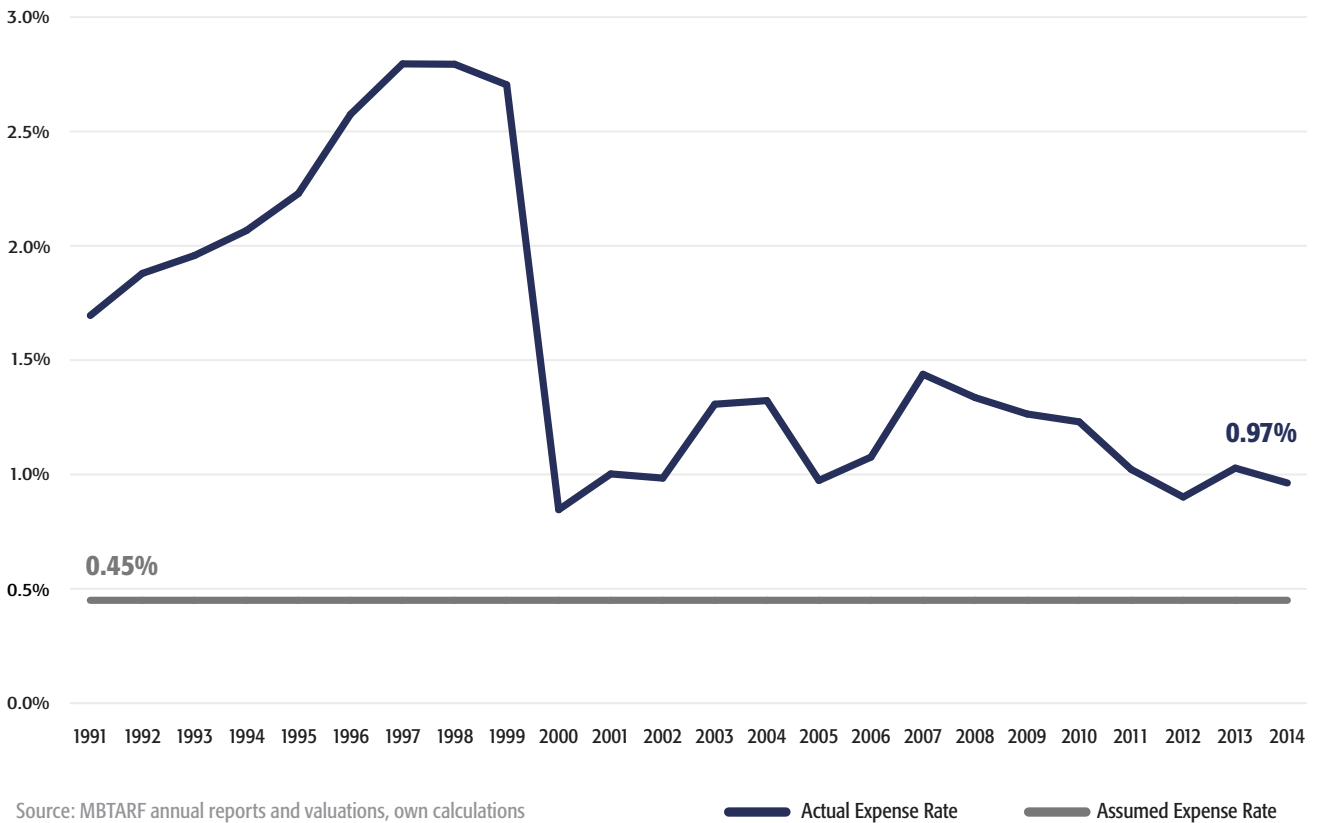


Fig. 3. Administrative Expenses as Percentage of Covered Payroll (1991-2014)



Only in the experience study released in 2016 did the actuary finally note that the expenses had been about 1 percent of covered payroll “in recent years” and so the assumption should be adjusted upwards.⁹ It took the actuarial consultants a quarter-century to suggest the most obvious of necessary modifications to the valuation assumptions.

The effect on the pension plan’s health has been nothing short of devastating. The difference between actual and real administrative expenses resulted in a contribution shortfall of more than \$80 million between 1991 and 2014. The insufficient contributions cost the MBTARF nearly \$120 million in unrealized returns from 1992 to 2015. Putting these numbers together, an estimated \$200 million, or about a quarter of the \$815 million unfunded liability at yearend 2014, was directly attributable to the actuarial assumption for administrative expenses which had persisted since 1991.¹⁰

5. How Suspect Are Mortality Tables?

Mortality tables can have an even more pronounced effect on actuarial liability estimates and the corresponding normal cost and required contributions. The MBTARF’s actuarial practices in this area are suspect at best. For the 1991 valuation, the actuary still used the 1963 George B. Buck Mortality Table for

“Buck actuaries continued using dated mortality tables despite the fact that both PERAC and the professional guilds unequivocally encouraged implementation of the most recent benchmarks. When the actuary would finally update mortality assumptions, it often happened on the basis of already obsolete standards.”

non-disability retirements¹¹ —Buck Consultants’ proprietary standard. The valuation report is mute on any adjustments that may have been applied to the original 1963 mortality table.

The 1992 valuation switched to the 1989 Buck Mortality Table set forward one year for retirements prior to 1993. Since mortality rates have been declining for most of the past century,¹²

updating the mortality table typically increases the associated liability because of longer lives in retirement. However, the assumed rate of return (ARR) on the plan’s assets was simultaneously increased from 7 to 7.25 percent, a move which would have worked to help offset an increased ARC due to

any improved mortality assumptions. A higher ARR means smaller initial contributions are needed to meet long-term pension obligations.

“An estimated \$200 million, or about a quarter, of the \$815 million unfunded liability at yearend 2014 was directly attributable to the actuarial assumption for administrative expenses, which had persisted since 1991.”

The 1989 Buck Mortality Table remained in place at the MBTARF for 18 years. Buck actuaries continued using dated mortality tables despite the fact that both PERAC and the professional guilds unequivocally encouraged implementation of the most recent benchmarks.¹³ When the MBTARF actuary would finally update mortality assumptions, it often happened on the basis of already obsolete standards.

In the 2010 MBTARF valuation, the 1989 Buck table was replaced with a more general standard—the UP-1994 Mortality Table for males projected 10 years from the valuation date using Scale AA.¹⁴ This update was followed the next year by a hike in the ARR from 7.5 to 8 percent, which helped keep the ARC around 21 percent of payroll. By that time, PERAC had long adopted the RP-2000 Mortality Table (the US standard that superseded UP-1994) for the other 105 public retirement systems in Massachusetts.

The befuddling practice of sticking to old standards without clear justification persisted with the 2010-2014 experience study, which recommended replacing UP-1994 with RP-2000 even though the new RP-2014 Mortality Table was available by the time the study was issued in February 2016. Available primary documents do not provide any explanation for the MBTARF’s choosing RP-2000 over the RP-2014 standard that had already superseded it.

In contrast, PERAC explained that it chose to stick with the RP-2000 for its valuation of the MSERS because “the final [RP-2014] table did not include any experience related to public plans [and] does not match [MSERS] experience.”¹⁵ PERAC did implement RP-2014 for its 2015 valuation of the Massachusetts Teachers’ Retirement System.¹⁶

The observed practices regarding mortality assumptions do not appear to adhere to generally accepted standards for private defined-benefit plans either. In a 2001 letter to the Department of the Treasury detailing the most comprehensive study of the RP-2000 mortality tables to date, the chairman of the Pension Committee to the American Academy of Actuaries stated in regards to private plans subject to the Internal Revenue Code (IRC):

While many actuaries independently develop and publish mortality tables that are designed to reflect the experience of specific plans, groups of plans or plans within certain industries, we are not aware of any table or set of tables

that has been developed with the breadth of experience as to number of covered participants nor as comprehensive as to types of plans and industries. Further, many of these independently developed tables do not reflect the restrictions set forth in the IRC for the table that is to be used for determining current liability.¹⁷

The purpose of the letter was to recommend that RP-2000 (with appropriate adjustments) be adopted as the regulatory standard for private plans. The Internal Revenue Service followed that recommendation and subsequently established a valuation standard based on RP-2000. If a pension plan were to deviate from RP-2000, the regulation required that any

[s]ubstitute mortality tables must reflect the actual mortality experience of the pension plan for which the tables are to be used and that mortality experience must be credible mortality experience. There is credible mortality experience for a gender within a plan if and only if, over the period covered by the experience study [...], there are at least 1,000 deaths within that gender.¹⁸

There were 695 actual male and 470 female deaths in the 2010-2014 experience study of the MBTARF.¹⁹ The experience study and the 24 valuation studies did not directly establish any clear rationale for not using the widely accepted RP-2000 standard prior to 2014 and for not adopting the superseding RP-2014 table after that date. Prior experience studies (if any exist) were not available for review.

The apparent tardiness in adopting best practices goes beyond using obsolete mortality tables. Until the 2010 valuation, the actuary did not utilize a gendered table for separations from service. Women comprised more than 20 percent of active plan membership as early as 1991.²⁰ With adoption of the

“The MBTARF’s use of a male mortality table for all members may have resulted in material understatement of the normal cost and the actuarial liability because women’s life expectancy tends to be significantly higher than men’s.”

UP-1994 Mortality Table in 2010, the outline of actuarial assumptions also disclosed that the male mortality rates were used for all employees and retirees, whereas the female version was used for all beneficiaries. The structure of previous valuation reports implies that they did not use gender-specific mor-

tality tables either, although the relevant disclosure is absent from those reports. The use of male mortality tables appears to have continued through the 2014 valuation, the most recent obtained before the completion of this report.

The application of male mortality tables for all active and

retired members is another blow to the credibility of the actuarial valuations. The MBTARF’s use of a male mortality table for all members may have resulted in material understatement of the normal cost and the actuarial liability because women’s life expectancy tends to be significantly higher than men’s²¹. If such a discrepancy persists, the ultimate outcome would again be a chronically underfunded and ultimately insolvent pension plan.

6. What Is the Real Normal Cost of MBTARF Pensions?

The overall development of the reported normal cost raises a number of questions. Although liabilities piled on at a rapid clip, the normal cost expressed as a percentage of covered payroll fell more than 25 percent from 1991 to 2014 (Fig. 4). Normal cost was over 12 percent of covered payroll in 1991, but below 9 percent in 2014. Only two of the disclosed valuation changes during this period appear sufficient to have justified such a large drop in normal cost: raising the ARR assumption from 7 to 8 percent and cutting the pay growth assumption from 5 to 4 percent.

However, during the same period a number of plan factors changed in the exact opposite direction, with the expected effect of increasing normal cost:

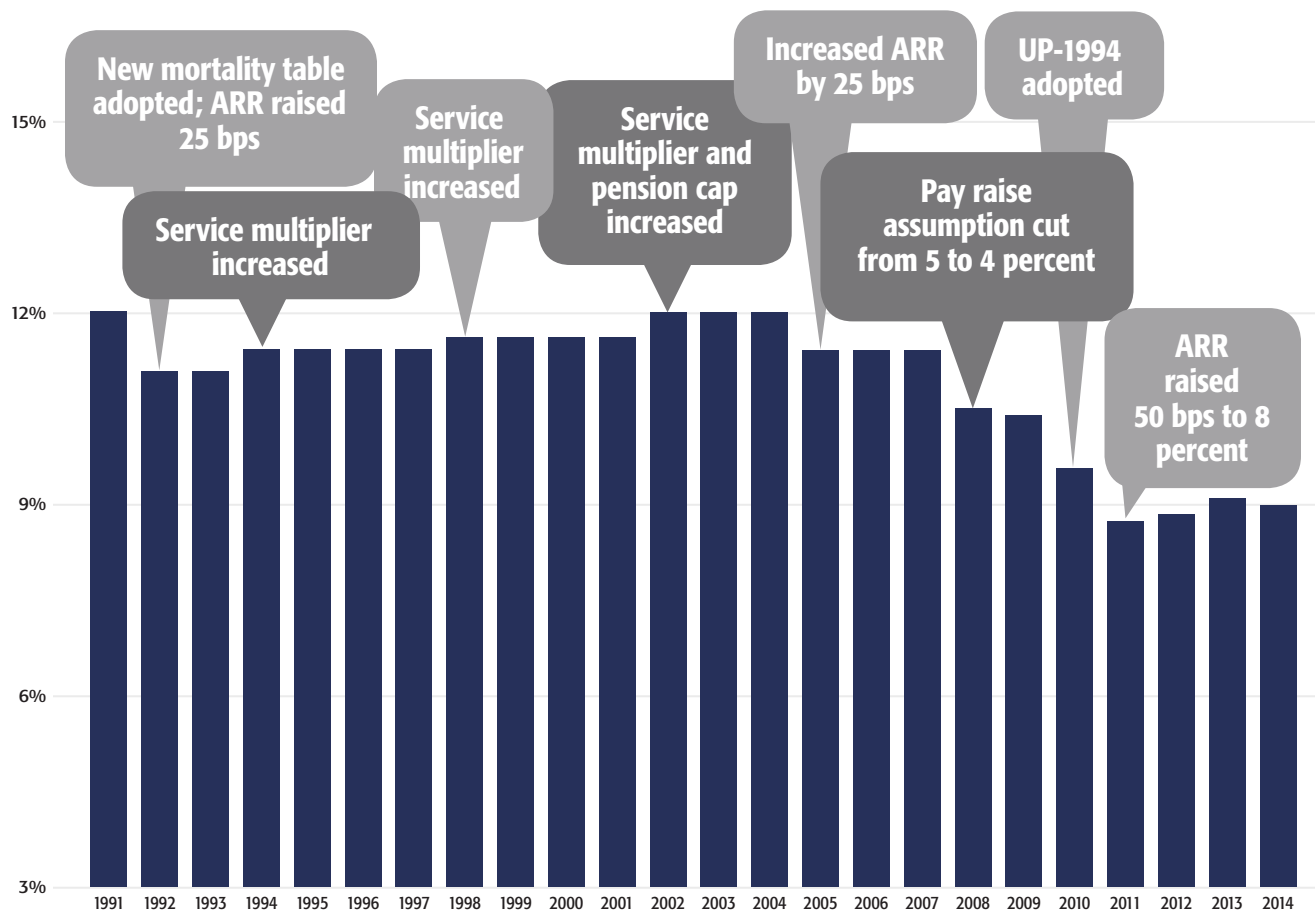
- mortality assumptions were updated to reflect better life expectancies
- the service-allowance multiplier rose nearly 11 percent, from 2.22 to 2.46 percent per year of pensionable service
- the pension cap was lifted from 73 to 75 percent of maximum pensionable pay (the average of the three highest annual compensations)
- the number of active members fell in absolute terms as well as relative to retirees, while the number of retired members increased significantly

With all these adverse developments in play, the supposition that normal cost could fall by a quarter seems tenuous at best.

The reported normal cost does not seem to mesh well with other valuation components either. Covered payroll grew at an annualized rate of 2.15 percent during the examined period, whereas the total accrued actuarial liability (AAL) grew at a rate of 3.75 percent, 75 percent faster than covered payroll. Meanwhile, the aforementioned ARR increases and reduction of the expected pay raises would have served to suppress the AAL estimate. How did the normal cost manage a 25 percent decline over the period even as the total liability grew 75 percent faster than payrolls?

The total normal cost of MSERS for 2014 was 13 percent of covered payroll according to PERAC²², while Buck found a normal cost of less than 9 percent for the MBTARF²³. The

Fig. 4. Reported Normal Cost and Actuarial Events Affecting It



Source: MBTARF valuation studies

natural conclusion is that the MBTARF's normal cost may have been undervalued considerably, especially given that the terms of the pension agreement have not reduced benefits in a significant way.

7. Is There Evidence of Underestimating Liabilities and Required Contributions?

The apparent discrepancies related to accounting for the normal cost of benefits are just one likely symptom of potential actuarial underestimation pushed by the retirement board and undersigned by the actuary. The board sporadically changed methods and assumptions, but those decisions somehow tended to improve the reported financial condition of the MBTARF and reduce the ARC or its growth rate relative to what would have happened otherwise.

The retirement board raised its ARR in 2004, after disastrous losses associated with the bursting of the dotcom bubble, and again in 2011, after the full impact of the financial crisis became clear. In June 2007, the retirement board voted to use the yearend 2006 market value to develop the contributions

for fiscal 2008. The MBTARF's then-existing practice, previously adopted by the board, had been to use a five-year moving average within a 20 percent band around the market value. The new approach allowed it to book investment gains from the housing bubble more swiftly than the prior method would have.

In 2008, the board moved to use the prior year ARC, an altogether arbitrary decision which reduced required payments during the incipient financial crisis. After the 2008 crash, the board also suspended the 20 percent corridor around market value, thus avoiding immediate recognition of most of the investment losses. The following year, it switched to a 30-year funding schedule, thus resetting its full-funding deadline and essentially sidestepping the huge losses from 2008-2009 permanently by pushing funding requirements further into the future.

“How did the normal cost manage a 25 percent decline over the period even as the total liability grew 75 percent faster than payrolls?”

The recognition of investment returns was reset again in 2013. This was a good excuse to instantaneously book gains made from the recovery in asset values since 2009. Of course, board documents claimed a different motivation:

To further the alignment of its funding policies with those prevalent among the Commonwealth's public retirement systems and to enhance the transparency of its actuarial calculations, the Fund is changing its actuarial asset valuation method to one under which differences in investment earnings from their expected levels are recognized gradually over a five-year period.²⁴

The same rationalization was used in raising the ARR from 7.5 to 8 percent, the level then used by the MSERS. However, when the MSERS cut its ARR down to 7.5 percent, the MBTARF suddenly was not so eager to mirror that system. The actuary "recommended" that the fund continue to use the 8 percent rate adopted in 2011.²⁵

8. Fallout

The poor actuarial practices at the MBTARF enabled MBTA management to grant pension increases instead of pay raises while leaving the plan insufficiently funded. Pension increases were granted in the form of higher service-allowance rates

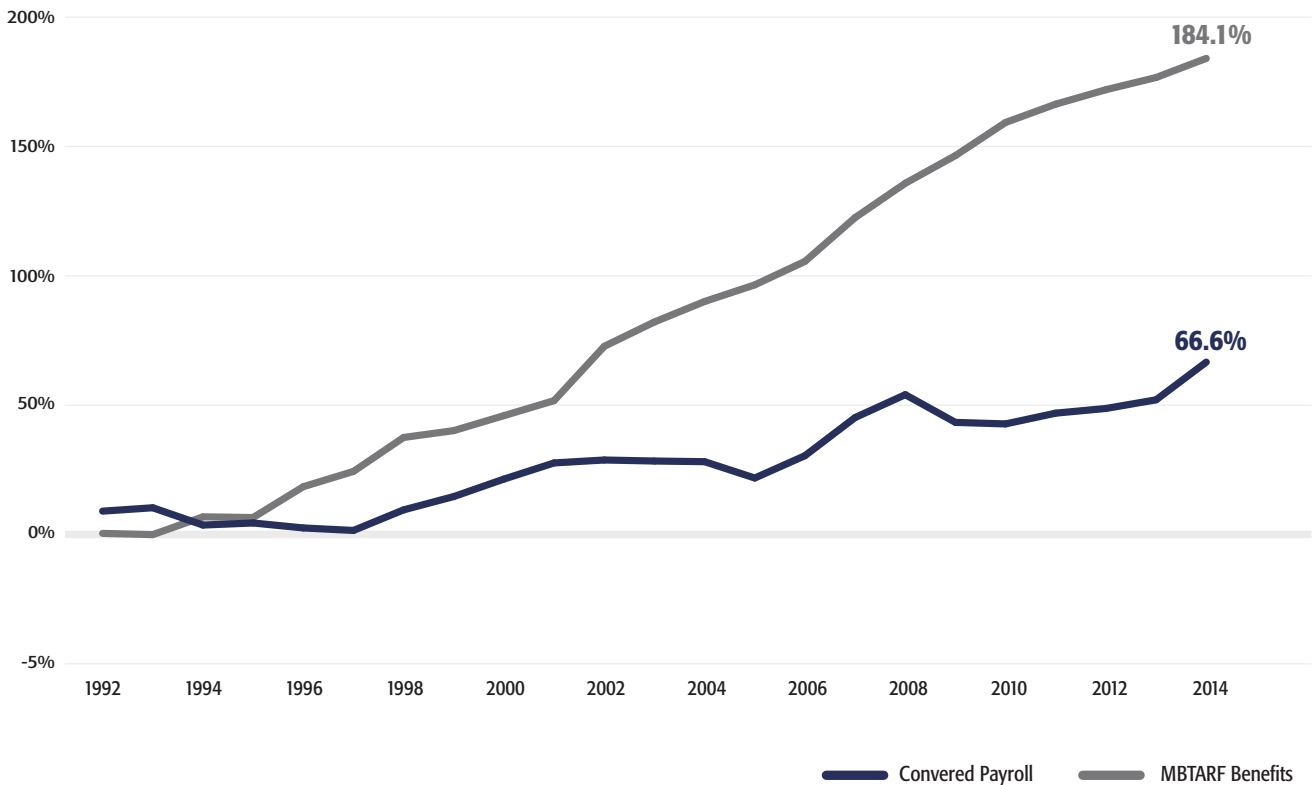
in 1994, 1998 and 2002 and as COLAs in 1997 and 2007.²⁶ The last two pension hikes, in 2002 and 2007, appear to have occurred during Michael Mulhern's tenure as MBTA general manager. Mulhern went on to become executive director of the MBTARF, reaping millions of dollars in salary and a third pension.²⁷

In addition to benefit boosts, the MBTA allowed to persist a pension system whereby employees can retire as early as age 55. Shockingly, that situation was an "improvement" on terms which allowed anyone with 23 years of service to retire with a full pension. The deleterious effects of this myopic approach are clear when MBTARF

"The poor actuarial practices at the MBTARF enabled MBTA management to grant pension increases instead of pay raises while leaving the plan insufficiently funded."

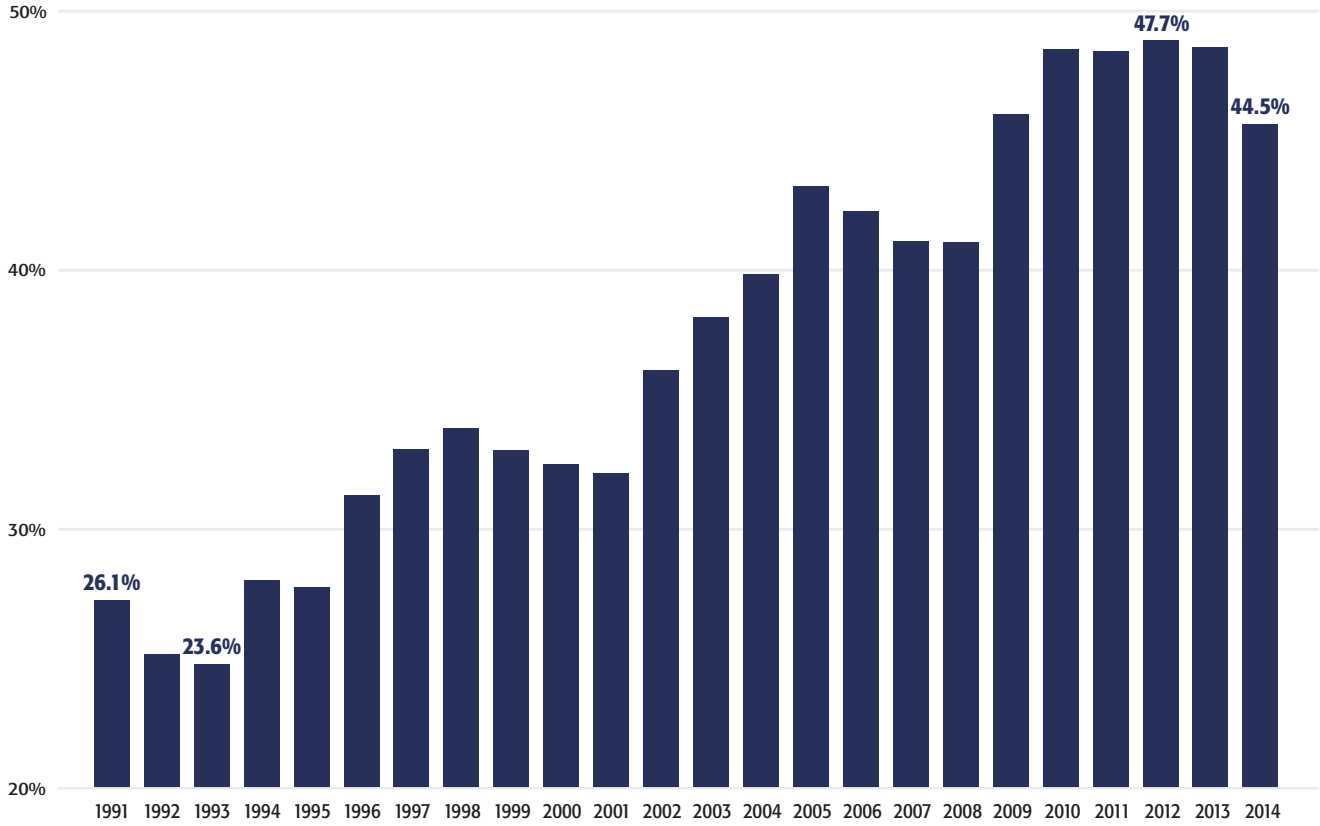
and MBTA outlays are put side by side. While covered payroll increased 67 percent over 1992-2014, the MBTARF's benefit outlays jumped by more than 184 percent (Fig. 5). As a percentage of covered payroll, benefits paid more than doubled—from 23.6 percent in 1993 to 47.7 percent in 2012 (Fig. 6).

Fig. 5. Cumulative Growth of Benefits and Covered Payroll 1992–2014



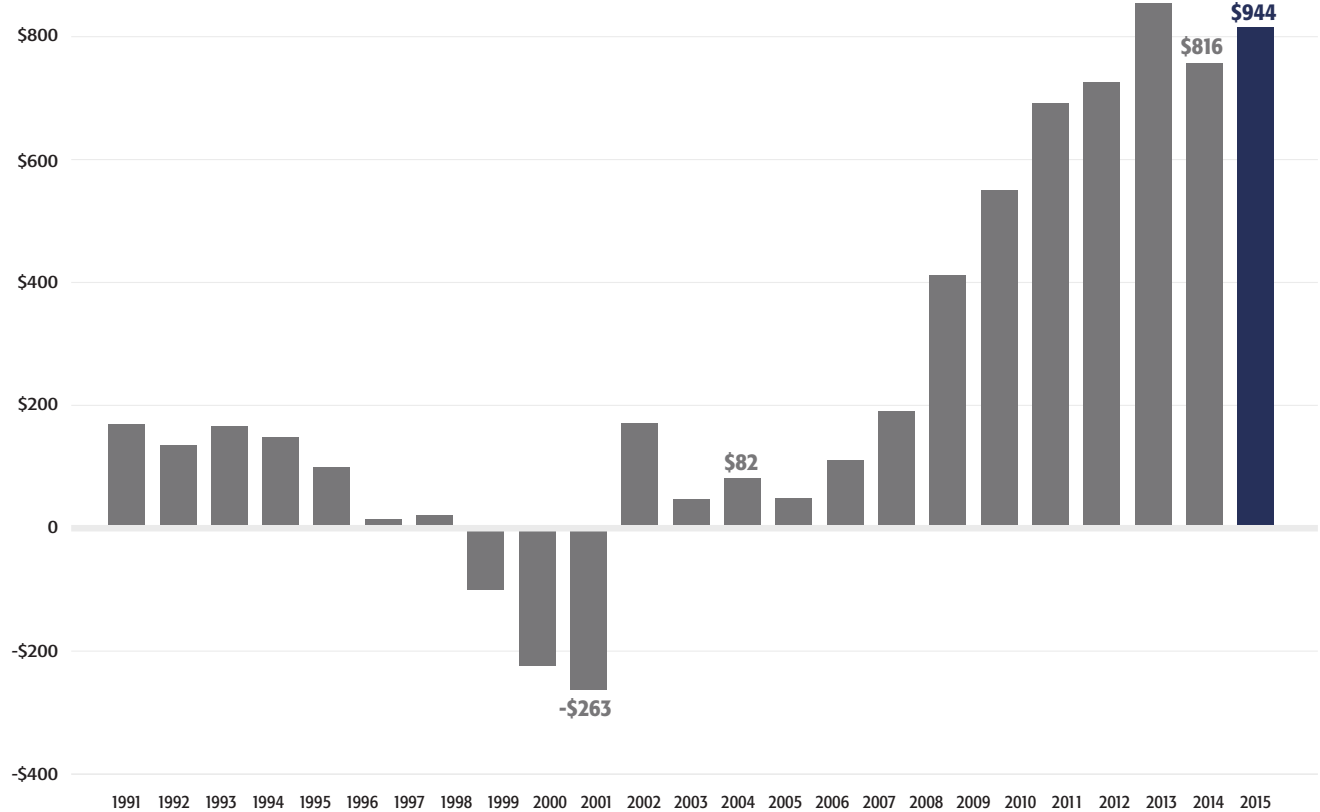
Source: MBTARF annual reports, own calculations

Fig. 6. Benefits Paid as Percentage of Covered Payroll



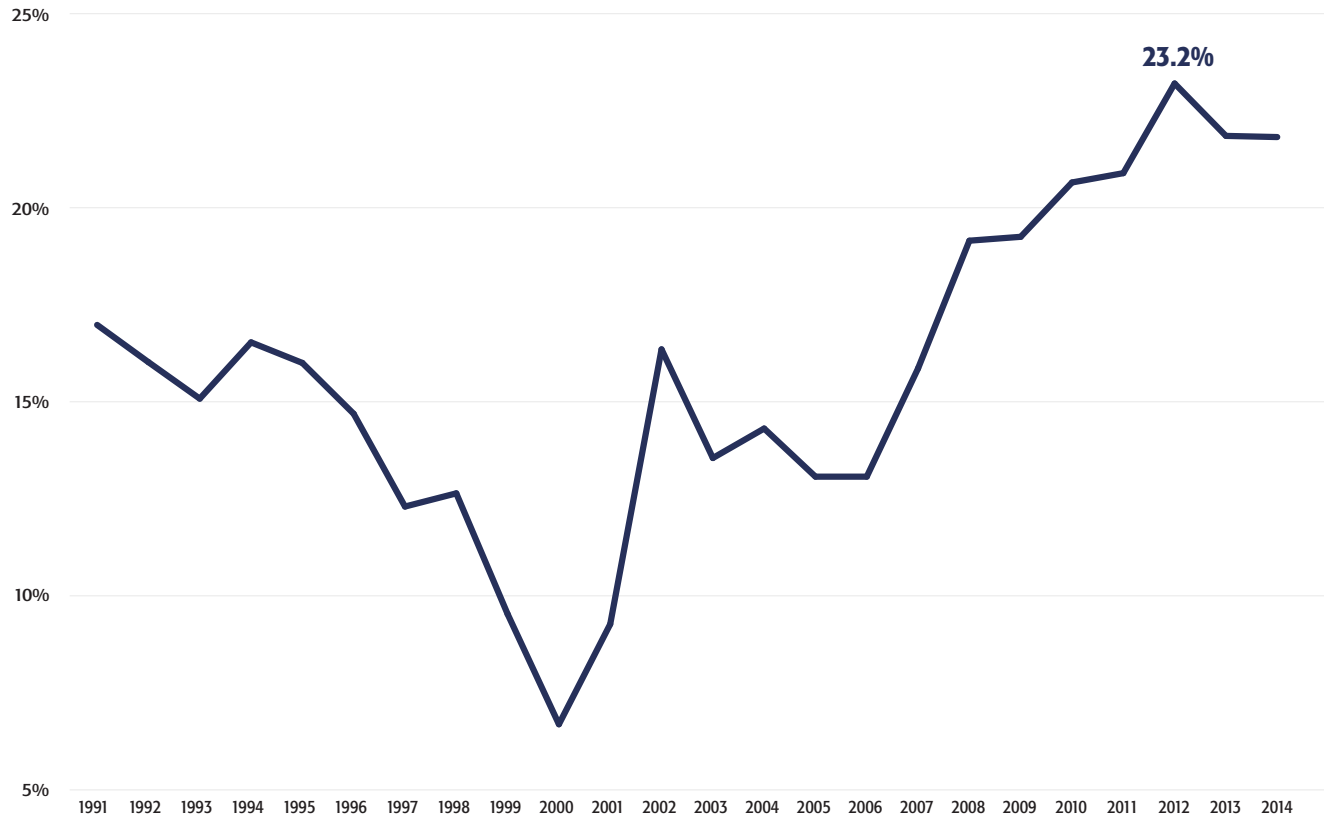
Source: MBTARF annual reports, own calculations

Fig. 7. MBTARF Unfunded Liability (\$mn)



Source: MBTARF actuarial valuations, MBTA estimate

Fig. 8. MBTARF ARC as Percentage of Covered Payroll



Source: MBTARF actuarial valuations

As previously mentioned, the annualized growth rate of covered payroll for 1992-2014 was 2.15 percent. Meanwhile, total benefits paid increased at an annual clip of 4.47 percent—more than twice as fast. Even accounting for the rise in the number of retirees and the decline in the number of active members, the average benefit rose at an annualized rate 28 percent faster than that of average payrolls. Together, the figures suggest that MBTA management may have been ever-greater pension promises (accrued liabilities someone else has to worry about) for current pay increases (immediate cash outlays).

Meanwhile, the unfunded liability increased tenfold over a decade, from \$82 million in 2004 to \$816 million in 2014 (Fig. 7). It was expected to grow further, to over \$944 million, in the 2015 valuation according to MBTA estimates.²⁸

The plan may have been rendered unsustainable even on a pay-as-you-go basis, as total annual contributions have been far below benefits paid since at least 2001, indicating that the fund is being depleted.

“Together, the figures suggest that MBTA management may have been substituting ever-greater pension promises (accrued liabilities someone else has to worry about) for current pay increases (immediate cash outlays).”

Meanwhile, the ARC has been on an upward path for the past 15 years, more than tripling from 6.7 percent of covered payroll in the 2000 valuation to 21.8 percent in 2014 (Fig. 8). Despite these substantially increased payments, the unfunded liability has continued to grow, driven by lower investment returns in addition to structural problems embedded in the fund’s financial management and the pension agreement that governs benefits. The MBTA’s strained finances could hardly sustain the continued growth of pension contributions at such rates.

9. The Path Forward

The MBTA’s new management and the Fiscal Management and Control Board (FMCB) appointed by Governor Baker have a fiduciary responsibility to obtain the reliable information needed to make

effective decisions about how taxpayer dollars are spent. The MBTA, and therefore taxpayers, are contractually obliged to cover 75 percent of any pension underfunding. The authority

cannot possibly be restored to fiscal stability without dressing the bleeding wound that is the MBTARF.

The examined documentary record of the MBTARF and its actuary raises questions about:

- potential actuarial underestimation to suppress the size of the pension costs and liabilities
- enabling insufficient contributions to the pension plan and thereby planting a ticking time bomb in the MBTA's balance sheet, and
- the retirement board and its consultant's ability to provide dependable data in line with cutting-edge standards and practices of actuarial valuation.

The MBTA can take immediate steps to assess the long-term impairment inflicted by the MBTARF's actuarial problems and limit further damage to the system:

1. MBTA representatives on the retirement board can demand the immediate termination of Buck Consultants' contract with the MBTARF.
2. The MBTA can hire its own actuary to conduct an independent and unbiased valuation of the MBTARF. Such a process will only be credible if the MBTA follows a transparent process to retain an outside actuary.

Beyond these initial steps, however, the statutory and constitutional responsibility lies with the Massachusetts governor and legislature:

3. The legislature can amend Chapter 7 and Chapter 32 of the Massachusetts General Laws to put all of the MBTA's retirement plans under the regulatory oversight of PERAC.
4. The legislature can designate PERAC as the statutory auditor and actuary of the MBTA's retirement plans, just as it is the statutory provider for the MSERS and the MTRS.
5. The legislature can make the MBTA's retirement plans subject to the state's open-meeting and conflict-of-interest laws.

From the MBTA's perspective, the most urgent measure is to obtain a proper valuation of its pension costs. A credible valuation of the MBTARF would contain three critical components:

- a reasonable estimate of the true liabilities associated with the plan and the corresponding required contributions
- a realistic estimate of the normal cost of the pension benefit
- a comparison of these costs and the costs of alternative plans such as the state employees', utilizing the same methods and assumptions

To be meaningful from a management perspective, the cost comparison has to include comparable estimates for the

normal cost and the fiscal risks associated with the following pension benefits:

- A. Tier I - legacy plan allowing MBTA employees to retire after only 23 years of service.
- B. Tier II - current plan (post-2012) allowing MBTA employees to retire after 25 years of service and 55 years of age.
- C. MSERS Group I (post-2012).

A complete cost estimate would include the expected contribution rates of the employees themselves and take into account contributions to Social Security, differences in overtime and sick-time treatment etc.

Without urgent action on these measures, the MBTARF's financial condition will continue to deteriorate, even as the MBTA proceeds to pour more taxpayer dollars into the plan every year. Meanwhile, the MBTA's management will have no credible estimate of the real cost of the pension benefit or the true extent of the long-term obligations associated with the MBTARF. Given the fund's reported \$2.5 billion accrued liability, the lack of reliable actuarial data automatically renders the authority's long-term financial planning moot. Only decisive reform can put the pension on a firmer footing and give the FMCB a chance to get the MBTA back on track.

Endnotes

1. David L. Driscoll, "Report on an Actuarial Valuation of the Massachusetts Bay Transportation Authority Retirement Fund Prepared as of December 31, 2012" (Boston, MA: Buck Consultants LLC, January 17, 2014), 1.
2. Society of Actuaries, "Code of Professional Conduct," October 15, 2000, 3, <https://www.soa.org/about/governance/about-code-of-professional-conduct/>.
3. *Ibid.*, 5.
4. David L. Driscoll, "Report on an Actuarial Valuation of the Massachusetts Bay Transportation Authority Retirement Fund Prepared as of December 31, 2013" (Boston, MA: Buck Consultants LLC, July 11, 2014), 1.
5. For historical perspective on these events see Iliya Atanasov, "Hard Lessons for Institutional Investors from the MBTA Retirement Fund," *Pioneer Institute White Paper* 118 (July 2014), <http://pioneerinstitute.org/download/hard-lessons-for-institutional-investors-from-the-mbta-retirement-fund/>; Iliya Atanasov, "The Reckless Cost of Investment Mismanagement at the MBTA Retirement Fund," Policy Brief (Boston, MA: Pioneer Institute, May 9, 2016), <http://pioneerinstitute.org/download/reckless-cost-investment-mismanagement-mbta-retirement-fund/>.
6. One report was not signed but the signature page identified David Driscoll as the approver.
7. Exact dates of release were not available for the 1995, 2000-2002 and 2006 valuations. In each of these cases, the most favorable first date of the month was assumed in calculating the time since the measurement date.
8. Before 2000, certain investment expenses were classified as administrative. It was not possible to disaggregate these amounts from the available documentation, so administrative expenses prior to 2000 are reported here as originally listed by the MBTARF. However, since any intermingled investment expense would still have to be subtracted from gross returns, the overall effect of any reclassification on the ARC would be neutral. In addition, the actuary's concept of administrative expense applies to whatever accounting definition is used by the board, not to any general widely accepted concept, so any concern about the actuary's assumption is just as valid regardless of the specific accounting definition utilized at any particular time by the pension system.
9. David L. Driscoll and Kai Petersen, "Report on the Results of the Experience Study of the Massachusetts Bay Transportation Authority Retirement Fund January 1, 2010 - December 31, 2014" (Buck Consultants LLC, February 5, 2016), 16.
10. Gross investment returns in 2015 were only negligibly above an assumed investment expense ratio of 50 basis points. Reported data available for 2000-2014 produced an average investment expense of about 51 basis points. An expense ratio of 60 basis points was assumed for years before 2000 for which actual data were not available.
11. Stephen G. Peterson, "Report on an Actuarial Valuation of the Massachusetts Bay Transportation Authority Retirement Fund Prepared as of December 31, 1991" (Boston, MA: Buck Consultants Inc., September 16, 1992), 10.
12. "Between 1935 and 2010, age-adjusted death rates decreased by 56 percent for males and 62 percent for females", according to the NCHS: Donna L. Hoyert, "75 Years of Mortality in the United States, 1935—2010," NCHS Data Brief (National Center for Health Statistics, March 2012), 4, <http://www.cdc.gov/nchs/data/databriefs/db88.pdf>.
13. Donald J. Segal, "RP-2000 Mortality Table," April 27, 2001, https://www.actuary.org/pdf/pension/rp2000_043001.pdf.
14. Stephen G. Peterson, "Report on an Actuarial Valuation of the Massachusetts Bay Transportation Authority Retirement Fund Prepared as of December 31, 1991" (Boston, MA: Buck Consultants Inc., September 16, 1992), 14.
15. James R. Lamenzo, "PERAC Recommends Generational Mortality Assumption," *PERAC Pension News* 40 (July 2015): 3, <http://www.mass.gov/perac/docs/pension-news/040-2015.pdf>.
16. James R. Lamenzo and Joseph E. Connarton, "Commonwealth Actuarial Valuation Report" (Public Employee Retirement Administration Commission, August 17, 2016), 31, <http://www.mass.gov/perac/docs/forms-pub/reports/valuation-reports/2016commonwealth.pdf>.
17. Segal, "RP-2000 Mortality Table," 2.
18. 26 CFR § 1.430(h)(3)-2(c)(1)(i) and (ii).
19. Driscoll and Petersen, "Report on the Results of the Experience Study of the Massachusetts Bay Transportation Authority Retirement Fund January 1, 2010 - December 31, 2014," 24.
20. Peterson, "Report on an Actuarial Valuation of the Massachusetts Bay Transportation Authority Retirement Fund Prepared as of December 31, 1991," September 16, 1992, 2.
21. E.g., for certain cohorts the RP-2014 table projected a life expectancy of 21.6 years for males and 23.8 years for females at age 65 — a difference of more than 10 percent; Society of Actuaries, "RP-2014 Mortality Tables Report" (Schaumburg, IL, November 2014), 52.
22. James R. Lamenzo and Joseph E. Connarton, "State Retirement System Actuarial Valuation Report" (Public Employee Retirement Administration Commission, May 1, 2015), 8.
23. David L. Driscoll, "Massachusetts Bay Transportation Authority Retirement Fund Actuarial Valuation Report" (Boston, MA: Buck Consultants LLC, May 1, 2015), 2.
24. Driscoll, "Report on an Actuarial Valuation of the Massachusetts Bay Transportation Authority Retirement Fund Prepared as of December 31, 2013," 1.
25. Driscoll and Petersen, "Report on the Results of the Experience Study of the Massachusetts Bay Transportation Authority Retirement Fund January 1, 2010 - December 31, 2014," 16.
26. This list is not necessarily exhaustive. Additional benefit increases may not have been attested in the available reports.
27. See Atanasov, "The Reckless Cost of Investment Mismanagement at the MBTA Retirement Fund," 2—4 for further details on Mulhern's involvement with the MBTA and the MBTARF.
28. Beth Healy, "MBTA Pension Fund's Money Shortage Worsens," *The Boston Globe*, June 27, 2016, <https://www.bostonglobe.com/business/2016/06/26/mbta-pension-fund-money-shortage-worsens/nNmxb8QRAIVkBNpmvTrGL/story.html>.

Author

Iliya Atanasov is Pioneer's former Senior Fellow on Finance, who spearheaded research on pension management, budget analysis, public transportation and municipal performance. Iliya received his PhD in Political Science from Rice University, where he was a Presidential Fellow. He also holds BAs in Business Administration, Economics and Political Science/International Relations from the American University in Bulgaria.

