

HOW PENSION FUNDS WORK

Understanding Guaranteed Pension Funds

August 3, 2010

My home County, Mendocino County in Northern California (as well as most state and local governments in the USA) provides guaranteed pension benefits to qualified employees. "Guaranteed Benefit" means that the County is obligated to pay the benefit (pensions) to retirees for the rest of their lives. No one really knows how much will be paid or how much needs to be set aside to make sure pensions can be paid.

This simple fact creates incredible financial complexities - how do we know what these benefits are really costing today? How do we know how much our local governments really owe? How do we know we aren't creating the type of financial crisis that is decimating Mendocino County's services today? How do employees and retirees know if their pension fund isn't in good shape?

This is a "Plain Language" (as much as possible) explanation of the basic finances of a local government Pension Fund in California. It is primarily written within the context of understanding the Pension Funds of the 21 California Counties that have independent Retirement Associations and don't participate in CalPERS. However it has general applicability to all guaranteed pension programs.

The actual financial calculations and systems used to manage and report the finances of Pension Funds are extremely complex - far more complex than this paper attempts to explain. This paper focuses on a dozen or so key aspects in these systems and simplifies them so that officials and concerned citizens can have a chance to grasp them without having to invest amounts of time they don't have.

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I. FUNDAMENTAL ECONOMICS - GUARANTEED PENSION BENEFITS

A. The Finances of "Guaranteed Pension Benefits" Are Very Uncertain

Almost all retirement benefits in the private sector are **Guaranteed Contribution** plans - like 401k's, IRA's, etc. The employer pays a certain amount into a retirement fund while the employee is working. Once the employee leaves the company, the employer's obligation is over. It's easy to figure out the finances of this benefit. The expense to the employer is simply the amount paid into the retirement plan. And, the employer has no debt.

Most state and local government pension benefits are **Guaranteed Benefits**. The Government agrees to pay a guaranteed pension during a former employee's entire retirement. Even if a retiree were to live 100 years after retirement he or she will get a pension check every month. Therefore the Government can't know with precision how much it's going to pay until the former employee's lifespan is over. Therefore, it doesn't really know how much its debt is. And it isn't easy to figure out what needs to be done so that future pensions can be paid without imposing a huge burden on future generations.

B. Pensions Are Current Expenses & Debt - Not Future Expenses

The Government Accounting Standards Board (**GASB**) establishes "Generally Accepted Accounting Principles" (GAAP) for state and local governments in the US. This is GASB's understanding of the fundamental nature of guaranteed pensions:

*GASB believes that **pension benefits ...and Other Post Employment Benefits ... are a part of the compensation that employees earn each year, even though these benefits are not received until after employment has ended. Therefore, the cost of these future benefits is a part of the cost of providing public services today.***¹

It is essential you understand this concept.

The economic truth is that **all the expense** of guaranteed retirement benefits **happens while employees are working**. They **never** happen **when they are retired**. The payments of those benefits are a **payment of a debt** - they are not when the expense happened.

It's **imperative** that governments **report the true cost** of the retirement benefit promises they make today, **and the debt** those promises create. If they don't report these costs until they are paid, they will almost certainly build up huge unreported debts that could financially swamp them in the future.

C. Unfunded Pensions Means Past Expenses Were More Than Reported

Well - almost always.

If your local government has significant debt caused by unfunded pensions (or other retiree benefits), you need to realize that almost always means that - economically - past operating expenses were proportionally higher than were reported. This will be further discussed at the end of this paper.

¹ Other Postemployment Benefits: A Plain-Language Summary of GASB Statements No. 42 and No. 45, Governmental Accounting Standards Board, page 1

II. ORGANIZATION OF STATE AND LOCAL GOVERNMENT PENSION FUNDS

By law local **governments can't retain their Pension Funds** - the Funds must be conveyed to an **independent Retirement Trust Fund**. There are several reasons for this, some of which are, first, it takes the funds out of the hands of the employing government that might be tempted to use the funds for other purposes. Second, the management of a Pension Fund is quite different from managing a government. Third, it's important to specifically assign fiduciary responsibility for the pension funds held in a trust fund.

Most local governments in California participate in the State-wide California Public Employees Retirement System (CalPERS). Twenty one Counties (including Mendocino County) elected to have their own **independent** retirement systems. All but one is organized under the **1937 County Employees Retirement Act**.² Many California cities, such as San Diego, have their own retirement systems as well.

The governing bodies of the Retirement Trust Funds are always independent - that is, the sponsoring government(s) can't tell them what to do - in general. However, the governing body of the sponsoring governments establishes what retirement benefits are. Usually the sponsoring governments appoint anywhere up to half the members of their Retirement Boards.

III. ACTUARIAL VALUATIONS

Actuaries produce "**Actuarial Valuations**" for Pension Funds that provide a considerable amount of information. The Retirement Board chooses which Actuary to use.

A. The Core "Products" in Actuarial Valuations

There are **two key calculations** in Actuarial Valuations of concern in this paper:

- **Yearly Contributions**: The Amount that must be Contributed in the Coming Year
- **Funding Position**:
 - How Much Should Be in the Fund?
 - How Much Is?
 - If There Is an Imbalance, What Needs to be Done?

B. Actuarial Valuations are Pension Funding Plans

Actuarial Valuations are the **government's funding plan for its pension** benefits. If everything works out the way it's expressed in the Valuation, the pensions will be properly funded. If significant unfunded retiree benefits develop, they result from deviations or variances from this plan.

² The Mendocino County Employees Retirement Association (MCERA) is the smallest of these 21 independent systems both in terms of capital and number of participants.

C. The Timing of Valuations

Valuations are produced to analyze the situation as of a specific date referred to as the "Valuation Date", which is almost always the end of a fiscal year. Larger retirement systems produce annual Valuations.

Much of the data needed to produce a Valuation isn't available until well after the end of a fiscal year. Valuations are complex and take time to produce. Therefore Valuations are typically produced several months into the fiscal year following the Valuation Date. It's too late for the Valuation to define the annual contributions for the year in which it is produced.

Therefore there is almost always a year's "lag time" between the Valuation Date and the year in which the findings of the Valuation are made effective. For example, if a Valuation Date is the last day of fiscal year 2009, it will be produced during fiscal year 2010, and its findings will be implemented at the beginning of fiscal year 2011.

D. The Way Pension Funds Are Supposed to Work

If everything works the way it is supposed to as defined in the Actuarial Valuations there would **only be two sources of funds ever needed** to fully fund future pension payments:

- **Yearly Contributions** - enough to eventually pay each year's pensions being earned
- **Investment Profits** - ultimately around $\frac{3}{4}$ of the total needed.

IV. YEARLY CONTRIBUTIONS

The first major result Actuaries produce in Pension Fund Valuations is to figure out - as best they can - what **amount of future pension payments will be earned next year**, and **how much needs to be contributed next year** so those amounts will be available when future payments are made.

Be sure you "get" this - this first set of calculations **focuses only on pensions earned next year**.

There are two main steps in figuring out next year's contribution.

- Estimate the part of future pension payments that will be earned next year
- Then calculate how much needs to be invested next year so those payments can be made.

A. Future Pension Payments and the Portion Earned Next Year

Actuaries perform very complex calculations to estimate future pension payments. These calculations are based on dozens of complex assumptions and calculations such as the number of years employees will work, when they will retire, what their salary history will be, how long they will live, etc.

The end result is the Actuary's best estimate of future payments, and when the right to receive those payments was or will be earned by employees. **Future yearly payments are divided into 3 parts:**

- The amount already **earned in past years**.
- The amount that will be earned by employees **next year**.
- The amount that will be earned by employees **after that**.

Assume the County will pay exactly \$5 million a year in pensions in each of the next 65 years (a big simplification). The bottom axis of this figure is the year in which the pensions are paid.

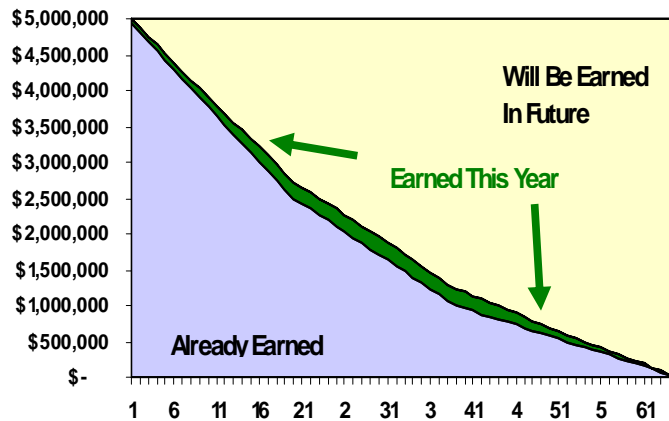


Figure 1 - Model When Pensions are Earned and Paid

Most of year 2's pension payments has already been earned. Only a small amount will be earned next year by employees who will retire and receive pensions next year.

The amount of future pension payments earned in the past declines each year for obvious reasons.

The dollar amount of future pension payments that will be earned next year increases for many years because most current employees will not retire for many years. Then about 35 years from now the amount paid out that will be earned next year declines, again for obvious reasons.

Finally we assume at some point there will be no more pensions paid out that were either earned in the past or will be earned next year. The Actuary doesn't need to extend this projection past that point.

This graph shows the amount of each future year's pension payments that will be earned next year in this simplified model.

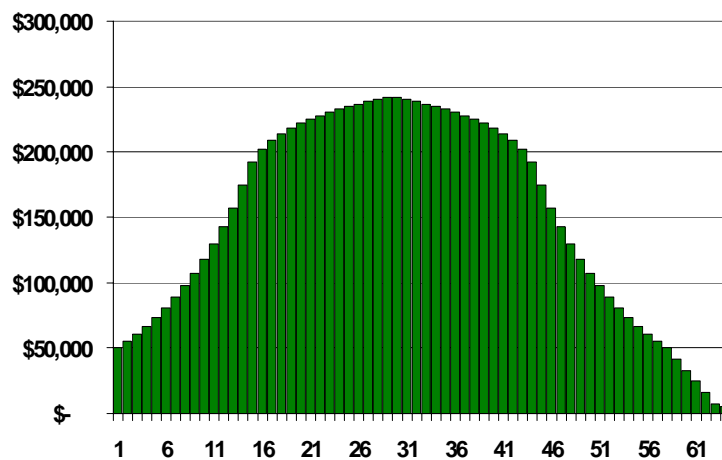


Figure 2 - Model Amounts of Future Pension Payments Earned Next Year

The total that is expected to be paid as pensions in the future that are being earned this year is calculated to be \$9.7 million in this model.

B. Next Year's Contribution

The next step is to determine how much needs to be contributed to the Pension Fund next year so that all the future pension payments being earned that year can be paid when they are due.

1. The Math of "Net Present Value"

If you already understand "Net Present Value" and "Discounting" you can skip to the next section. This is a very simple example of the math involved in this second set of calculations.

How much do you need to invest in a 10 year bond to have \$1 million at the end of 10 years from now? Assume you will earn 8% a year "simple interest" - that is, one interest payment at the end of each year.

This graph is your goal.

Basically you work your way backwards.

If you earn 8% a year and you want \$1 million at the end of 10 years from now, then at the beginning of the 10th year the value of your investment needs to be an amount that when it grows 8% over that year will be the \$1 million you need. You need \$925,926 at the beginning of the 10th year (or the end of the 9th). Eight percent of that amount is what is needed to get to \$1 million, that is, \$74,074.

How much does your investment have to be worth at the end of the 8th year? And so on through all the years.

Now enters the concept of "compound interest".

It's really a simple concept. The first year you earn a rate of return, or interest rate, of 8% on your investment. In the second year you not only earn 8% on your original investment again, but now you earn 8% on the interest you earned in the first year. Every year you earn interest on top of the interest you earned in earlier years. This means the growth of the value of your investment is greater than the 8% yearly interest - because the growth rate is growing "on top of itself" - that is, it is "compounding".

So, if you work your way backward through all 10 years, you conclude you need to invest \$463,193 in a 10 year bond that receives 8% yearly interest at the end of each year in order to have the \$1 million you want at the end of 10 years.

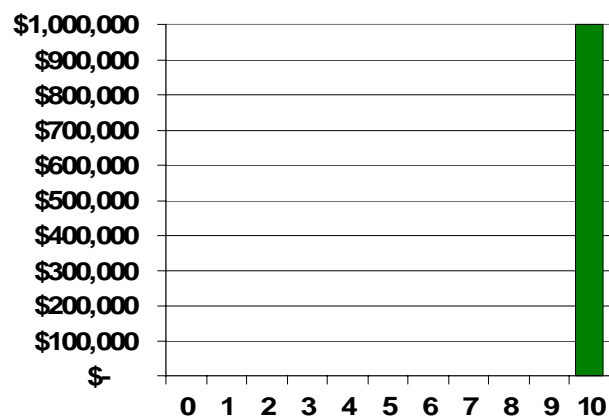


Figure 3 - Conceptual Investment Goal

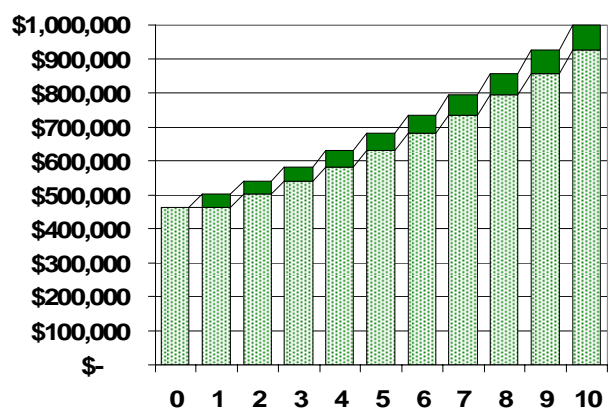


Figure 4 - Net Present Value and Compounding Interest

Some technical financial terms used in discussions about pension financing are:

- ***Discounting***: The process of calculating how much you need to invest today at a given rate of return in order to have a specified amount of money in the future.
- ***Discount Rate***: The assumed rate of return.
- ***Future Value***: An amount of money specified in the future.
- ***Net Present Value***: The amount you need to invest today to achieve the Future Value.

"Discounting" and "Discount Rate" apply to the process in which you know an amount of money in the future and you have to calculate how much that would be "worth" today at a given rate of return to achieve that future number.

If the time frame is the opposite - that is you specify the Present Value and you want to know what it will be worth in the future - then the "Discount Rate" becomes the "Growth Rate".

2. Next Year's Contribution - Present Value of Future Payments Earned Next Year

The Actuary "discounts" the amount to be paid in each future year that will be earned next year as shown in Figure 2 above. For example, we figure \$50,000 of year 2's pension payments will be earned next year, and therefore we have to invest an amount that will grow over one year at 8% to equal \$50,000. That amount - the Present Value - is \$46,296. As a comparison, the most money to be paid in a future year that is being earned this year is \$242,035 - 29 years from now. In order to have that amount of money in 29 years, assuming the Pension Fund will earn 8% a year, we need to invest \$25,997. Even though the amount that needs to be paid 29 years from now is 5 times bigger than what will be paid 2 years from now, we can invest half as much because of the power of "compounding interest".

All told, we need to invest \$1,616,335 today assuming we will earn an average of 8% a year. The responsibility to contribute that amount is divided between the government and its employees. The part paid by the government is called the "Normal Cost" - the amount it needs to contribute to the Pension Fund during a year to pay for the pensions being earned that year.

3. Next Year's Contribution = Next Year's Pension Expense

Remember the concept described in Pensions Are Current Expenses & Debt on page 1.

*GASB believes that **pension benefits ...and Other Post Employment Benefits ... are a part of the compensation that employees earn each year, even though these benefits are not received until after employment has ended. Therefore, the cost of these future benefits is a part of the cost of providing public services today.***³

Once again - **make sure you understand this**: the present value of the part of future pension payments that is being earned this year is part of the cost of providing government services today.

The amount the government **contributes this year** - the "**Normal Cost**" - is **reported as this year's pension expense** in the government's financial statements. (We will confront the issue of "what if everything doesn't work out" later.)

³ Other Postemployment Benefits: A Plain-Language Summary of GASB Statements No. 42 and No. 45, Governmental Accounting Standards Board, page 1

C. Investment Profits

If everything “works” the way it’s supposed to this is where the money will come from to pay the future pensions that will be earned next year:

Contribution Next Year	\$1,6 million	17%
Investment Profit	8,0 million	83%
Total to be Paid	\$9.6 million	100%

Remember, this is a simplified model.

Typically investment profits are expected to produce about 75% of the eventual pension payments.

In a perfect world, each year the Actuary would be exactly accurate in estimating future pension payments and the Pension Fund would earn exactly its target rate of return. This figure shows what would happen to the year to year balance relating to next year’s contribution. When the last pension payment that will be earned next year is paid, the balance remaining from next year’s contribution and investment profits on that contribution will finally equal zero. Most of the pension payments will have been funded by investment profits, not the original contributions.

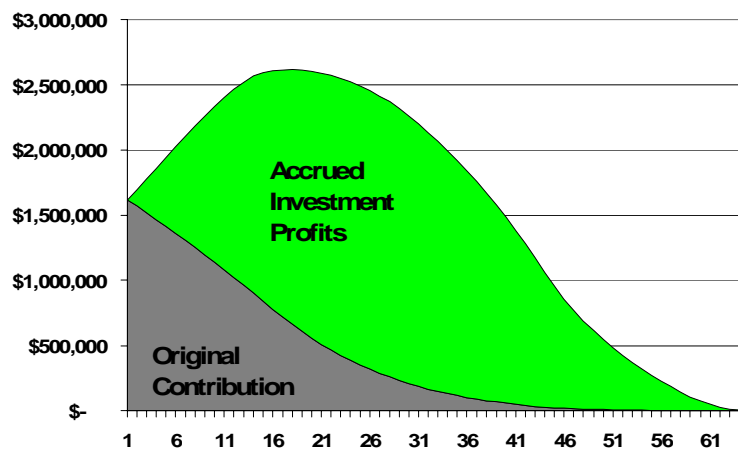


Figure 5 - The “Balance” of Original Contribution & Investment Profits

V. PENSION FUND’S FUNDING POSITION

The calculations above focus on defining how much the yearly contribution to the Pension Fund needs to be in order to fully fund the pensions being earned by employees that year. Part of that contribution is assigned to the County as its “Normal Yearly Contribution”; the other is assigned to employees.

If the Pension Fund works the “way it’s supposed to” the only money the County should ever have to pay to the Pension Fund is the yearly “Normal Contribution”.

But - **Pension Funds never work exactly according to plan.** And thus we have the second major calculation in Actuarial Valuations - the overall **current Funding Position** of the Pension Fund as of the Valuation Date.

- **How much money should be in the Pension Fund** as of the Valuation Date so that if it grows at the target rate of return **all the pensions that have been earned before the current year will be paid (pension obligation/liability)?**
- **How much money is actually in the Fund (assets)?**
- **If they aren’t the same, what needs to be done?**

The **general goal** for a Pension Fund is to have exactly the amount of money it’s supposed to have - that is, to be “**fully funded**”. As a practical matter Pension Funds are never exactly fully funded.

If the Fund has **more money than it needs**, it is “**over funded**”. If the Fund has **less money than needed**, it is “**under funded**”.

Calculation of the Value of Assets is Easy: This calculation is based on **real numbers easily available** at the time the calculation is made and the calculations are **pretty simple and easy to understand** if you invest a short amount of time to understand them.

Calculation of the Pension Obligation is Hard: The opposite is true in calculating how much money should be in a Fund - the **Pension liability**. Most of the numbers needed in these calculations are projections and estimates - the **actual numbers don't yet exist** (life span, age at retirement, rate of investment return, etc.). Further, the **calculations are complex and difficult to understand**.

A. Only the Government Must Eliminate Unfunded Pensions

Both the **government and its employees** make **annual contributions to the Pension Fund**. These are intended only to **fund the pensions that are being earned by employees that year**. But if a significant **Unfunded Pension Obligation develops only the government** is obligated to make **additional payments** to eliminate the deficit.

B. How Much Money Should the Pension Fund Have?

1. Same Formulas as Determining Current Year Contribution

Essentially the math is the same as discussed in Next Year's Contribution on page 5.

First you estimate the **value of all future pension payments that have already been earned** in the past. You do not include future payments to be earned next year. Second, you calculate **how much money needs to be in the Pension Fund today** so that if it grows at the target rate of return all those future pension payments that have already been earned will be paid.

2. Future Pension Payments Earned in Past Years

This repeats Figure 1 except that now the focus is on future pension payments that have already been earned in the past. We are not concerned with pensions being earned next year, but we do include pensions that will be paid next year earned in the past.

These future yearly pension payments were earned a year at a time, and were the subject in previous Actuarial Valuations of the calculations to determine the required yearly contributions - including the County's "Normal Yearly Contribution".

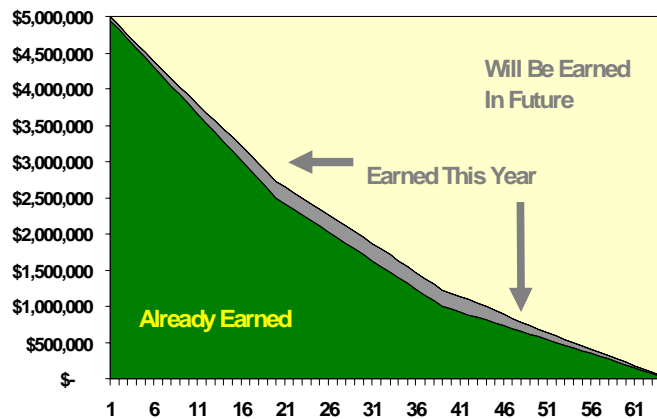


Figure 6 - Future Pension Payments Earned in the Past

Those previous Actuarial Valuations were also based on the core assumption that the Pension Fund would earn its target rate of return - and that the only two sources of funds needed to make the portion of future pension payments that have already been earned are the yearly contributions and the expected investment profits on those contributions.

The total value of future payments that have already been earned shown in Figure 6 is \$119.5 million.

3. Present Value of Those Future Payments = Total Liability

The next step is to **discount each future year's payment** by the **target rate of return** which is the "**Discount Rate**" - the math is the same as described above in Next Year's Contribution on page 5. The result of this calculation is that the Net Present Value of all those future payments that have already been earned is about \$43.9 million.

Given this simple example, if this Pension Fund has \$43.9 million today, and its investments earn 8% a year, and these future payments shown above are actually made, and all other things "remain equal", then when the last payment that has already been earned in the past has been made, the balance of funds held in the Pension Fund to pay for those payments will have been reduced exactly to zero.

Therefore the calculation of where the money is supposed to come from to pay these future payments that have already been earned is:

Beg Balance	\$43,920,489	37%
Investment Profit	<u>75,579,511</u>	<u>63%</u>
Total to be Paid	<u>\$119,500,000</u>	<u>100%</u>

Remember - the Beginning Balance is partly the money contributed in previous years and partly investment profits made in previous years. In the long run - given this simple example - each year will pretty much work out as every other year - in this simplified model about 83% of pension payments will be funded from investment profits and the rest from original contributions. The proportions above are different because previous year investment profits are included in the Beginning Balance.

4. Total Liability = "Actuarially Accrued Liability"

At this time the total Net Present Value of Future Pension Payments that have already been earned in previous years is referred to as the "Actuarially Accrued Liability". The Actuary's calculations are more complex than described above, and partly for that reason the term is "Actuarially Accrued".

5. Today's Total Pension Debt Was Completely Earned in the Past

As stated above in "Pensions Are Current Expenses & Debt" on page 1, guaranteed pension benefits such as the County's are always earned while employees are working - not after they retire. Payments of pensions after retirement are payments of debt. The right to receive pensions in retirement is a part of the compensation provided to employees while they are working. When they retiree they are 100% "vested" in the right to receive pensions (if they meet standards qualifications).

Now - as is true of just about everything related to Actuarial Valuations, the assumptions and calculations are more complex than this simple understanding. However, at most such complexities only slightly compromise this **simple understanding** - the **Total Pension Liability** is for **pension payments that have already been earned**.

C. How Much Money Does the Pension Fund Have?

At this point we confront **one of the most misunderstood and misused actuarial calculations** - "how much money does the Pension fund have?"⁴

1. Market Value

We've been using the term "money", but most of the Pension Fund's money is not cash - it's invested in stocks, bonds, real estate and other investments from which the Fund is attempting to achieve its target return - the rate used by the Actuary as the Discount Rate in calculating the Pension Fund's Actuarially Accrued Liability - or, Total Pension Liability.

At first glance it wouldn't appear too hard to figure out "how much money" the Pension Fund's investments are worth - it would be what the Fund could sell them for (assuming there is a broad and active market where the investments could be easily sold).

This is called the "**Market Value**" of assets - the actual **amount of money the Pension Fund is worth given the market value of its investments** (plus cash, receivables, etc.).

But Actuaries don't use the Market Value of Assets when calculating the Funding Position of a Pension Fund. Why?

2. The Problem Created by Stock Market Volatility

If there is a significant Unfunded Pension Liability, the Actuary has to calculate how much the government must pay to eliminate the Unfunded Liability over a given number of years. But since the **stock market is notoriously volatile** if the Actuary used the Market Value of investments, these **government payments to eliminate unfunded pensions** would occasionally **change radically** from year to year. This would play havoc with **budget stability**.

Pension Funds are long-lived financial entities. The point is to maintain the Fund's financial strength over the long run rather than immediately correct small short falls. Right or wrong, **Actuaries decided** that over the long run the **damage to year to year government budgetary stability would cause more harm than misstating the Value of Pension Fund Assets, within limits**.

Actuaries developed a formula to "slow down" the rate of change of the County's required payments. This is a **reasonable objective as long as the use of the modified Actuarial Value doesn't lead to a dangerous distortion of real Asset Value or obscure poor performance**.

3. Actuarial Value

An Actuary **modifies the Market Value** to produce the Actuarial Value of Assets using two formulas - "**Smoothing**" and "**Corridor Limits**". While perhaps in more "normal" times it wouldn't be that important for concerned citizens to know these things, it happens that at the present time they play a major role in creating the very dangerous financial situation for many state and local governments including Mendocino County.

⁴ This topic - the value of a Pension Fund's assets - is examined more completely in a previous paper titled *Lies, Damn Lies, and Actuarial Statistics*, YourPublicMoney.com, 9/9/09.

The purpose of smoothing is to slow down rapid changes in the Market Value of assets so that changes in additional government payments to eliminate unfunded pensions won't be too drastic. This is to allow for more stability in government budgets. The Corridor Limit prevents Smoothing from going too far.

a) Smoothing

MCERA uses a five year smoothing period.⁵ The amount that its actual returns are over or under its target in any year is "spread" in equal amounts over 5 years- 20% a year.

(1) How It Works

Assume a County's Pension Fund starts with \$100 million, earns its target of 8% a year for 5 years, then loses 8% a year (16% below target) for 4 years, and then earns its 8% target for the following 6 years. Assume a 5 year smoothing period. This shows both the Market and Smoothed Actuarial Value:

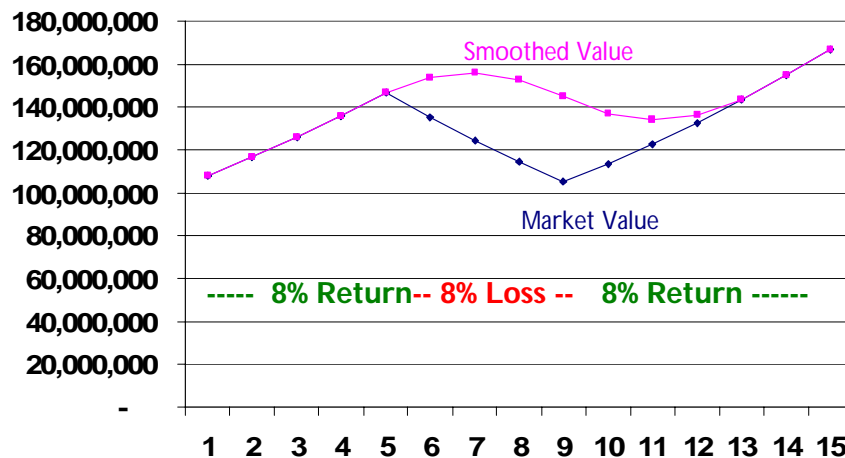


Figure 7 - Model: Smoothed v. Market Value of Assets

For the first 5 years the Fund is earning its target, and therefore there is no "smoothing" because there is no over or under target performance.

The Market Value responds immediately to the Fund's decline in years 6 and 7. However, the smoothed value in year 6 and 7 continues to go up because it is still adding in amounts over target in the previous years and is not including most of the under target performance during those years. Then the smoothed value begins to decline for 5 years as it incorporates the sub-target performance. It actually declines for 2 years after the Fund gets back to earning its target. But - it never gets anywhere near as low as the market value because it "smoothed" the Fund's under-target performance.

⁵ Pension Funds aren't required to use Smoothing, and those that do range from 3 to 7 year smoothing periods.

(2) *Smoothing's Purpose - Avoid Chaotic Unfunded Pension Payment Changes*

The purpose of "smoothing" is to prevent sudden precipitous changes in Unfunded Pension Amortization payments. Period.

To demonstrate, we add the Pension Liability - the heavy red line.

Assume that immediately on seeing they were going to be significantly below target for a few years the government significantly reduced the growth of its pension obligations - the red line at the top of the graph.

The smoothed Actuarial Value continues to climb for a couple of years after the market decline began, and so there is no unfunded liability until year 8 through 15 (the pink area on the graph). The biggest unfunded liability that would be reported during this period would be \$26.4 million in year 11.

In contrast if the Market Value were used to calculate the Unfunded Pension, we would add the dark red area to the unfunded pension value. The Market Value of Unfunded Pensions would be the triangle beginning in year 5 extending to year 15, with the largest unfunded pension balance of \$49.4 million in year 9 at the bottom of the market. The County would have to make much larger unfunded pension amortization payments if Market Value of Assets were used.

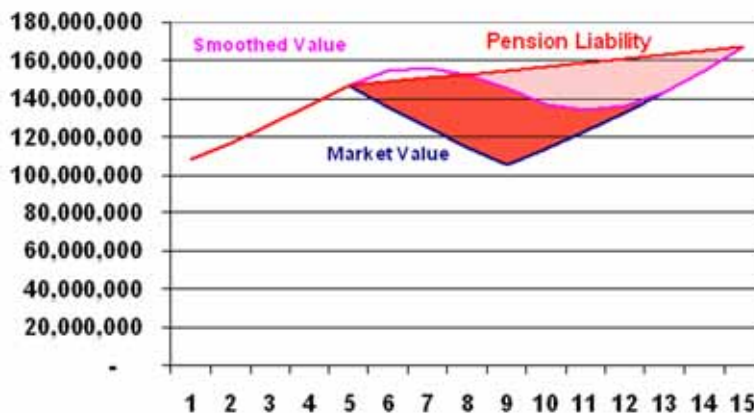


Figure 8 - Model: Smoothed v. Market Unfunded Pensions

(3) *Smoothed Value of Assets is NOT the Real Value of Assets.*

This is **one of the most dangerous mistakes** you can make. As explained above, the **purpose of smoothing** is only to **prevent sudden precipitous increases in required Unfunded Pension Obligation Amortization payments**, which can cause great **havoc in government budgets**. It's designed first to "smooth" those changes in payments to allow the government more time to adjust to increased demand for cash, and second to give time for the market to recover and make up lost ground.

But **all too often people think of the Actuarial Value of Assets as the "real" value - it isn't. The real value is the Market Value.** (The important implications of this are explained in "A Pension Fund's Funding Position" beginning on page 13.)

(4) *What's Important is Actual Earnings Compared to Target - Not Profit or Loss*

It's very important to realize that whether or not the Pension Fund "makes" or "loses" money is not what's really important - **what's important is whether the Fund's earnings are "more" or "less" than its target.**

b) Corridor Limits - A Limit on Smoothing

Most Pension Funds that use smoothing also have Corridor Limits. This **limits how much the Actuarial Value of Assets may differ from the Market Value**. It's a necessary safeguard to prevent abuses of smoothing - if officials discipline themselves to not abuse this safeguard.⁶

The gray area is the Corridor Limit - 25% more or less than the actual Market Value of Assets. The final net Actuarial Value of Assets each year can not be outside this Corridor.

The smoothed value of assets in year 8 is \$9.6 million more than the upper Corridor Limit, and in year 9 it is \$13.6 million higher (red on the graph.)

Therefore, in those years the Actuary would not use the smoothed value - the Upper Corridor Limit would be used.

This means the government's Unfunded Pension Amortization payments would be a bit higher than they would be if there were no Corridor Limit - but still considerably lower than those that would be required if the Market Value was used.

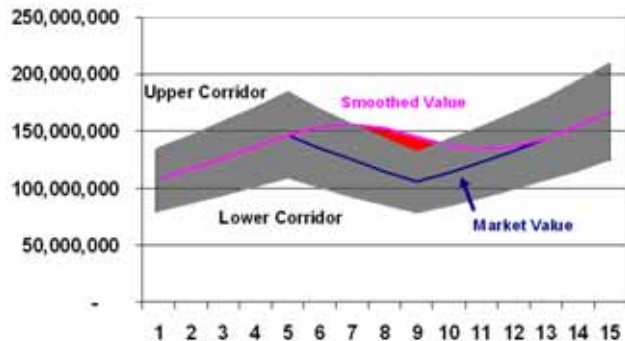


Figure 9 - Model Corridor Limit

D. A Pension Fund's Funding Position

1. Over or Under Funded

As stated above, the Funding Position of a Pension Fund is calculated:

$$\frac{\text{Pension Fund Assets} - \text{Pension Fund Obligations}}{\text{Unfunded or Over-Funded Pension Obligations}}$$

If **Assets are less than Obligations**, there is an **"Unfunded Obligation"**. If **greater**, the Fund is **"Over-Funded"**. Two values can be calculated for Pension Fund Assets:

- Market Value of Assets
- Actuarial Value of Assets

Therefore two values can be calculated for Unfunded (or Over-Funded) Pension Obligations - the "real" Market Value and the "Smoothed" (as limited by the Corridor Limit) Actuarial Value.

⁶ Until 2009 the Corridor Limit for Mendocino County's Pension Fund was 20%. The Actuarial Value couldn't be more than 20% different from the real Market Value. Last year the Mendocino County Employees Retirement Association (MCERA), the organization that holds and manages the County's Pension Fund changed the Corridor Limit to 25%, which allows the Actuarial Value to be an additional 5% different from the actual Market Value. This was done to reduce the County's unfunded pension payments.

This shows the value of Over and Under Funded Pensions in our simplified example on a Market and Actuarial Value basis. The shaded part above the Actuarial Value is the effect of the Upper Corridor Limit that kept the Actuarial Value from being more than 25% above the real Market Value. Even so, you can see the Actuarial Value greatly diminishes the apparent value of Unfunded Pensions.

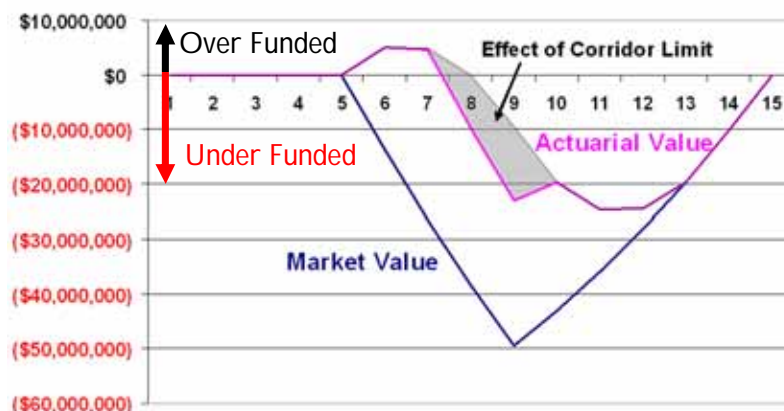


Figure 10 - Model Over-Under Funded

This leads us to a **MAJOR observation - make sure you understand it** - it is **fundamental** to understanding **why many local governments including Mendocino County are in such financial trouble today**.

2. A Pension Fund Can't Earn Investment Returns on Money It Doesn't Have

If the **Market Value** of a Pension Fund's assets is **significantly below its Pension Obligations** the Pension Fund will **fall behind even if it earns its target rate of return** on the assets it has.⁷

Many Mendocino County and Retirement Officials continue to refer to the smoothed Actuarial Value of the County's Pension Fund as if it were the actual value of the Pension Fund's assets. This is hugely false - and dangerous.

As of June 2009 the Pension Fund's assets at market value were about \$271 million whereas the actuarial value was about \$336 million. Pension Obligations were \$400 million. The real market value was about \$65 million less than the actuarial value.

The Pension Fund really needed to earn \$32 million in investment profits in fiscal year 2010 - which is 8% of the \$400 million that should be in the Fund. But the Fund actually had only about \$270 million. If it earned its target 8% it would earn \$21.6 million - \$10.4 million less than it needed. It would fall farther behind. To prevent falling farther behind in terms of investment earnings, it needs to earn over 11% in fiscal year 2010.

⁷ Even if a Pension Fund is fully funded, not all its assets are invested - office equipment, non-interest bearing receivables, etc. - assets that don't produce investment profits. But it needs to earn its target rate of return on the value of all its assets, not just the assets it has invested. If a Pension Fund with a target rate of 8% is fully funded but 5% of its assets aren't invested - then it actually needs to earn about 8 1/2 % to make up for its assets that are not invested.

3. Target Rate of Return Turns Into Interest Expense on Unfunded Pensions

The **importance** of this **can't be overstated**. **You must understand this** to see how financially dangerous significant unfunded pensions are.

If a government has an **unfunded pension obligation**, it is essentially incurring an **effective interest expense equal to the target rate of return**. As stated above, if a Fund has less actual Market Value of assets than its calculated pension liability (the present value of future pension payments that have already been earned), even if it earns its target rate of return on the assets it has it will still fall further behind.

Assume an extremely simplified model: two Pension Funds - each has a current Pension Obligation of \$100 million - that's how much should be in the Fund today. One Fund has a Market Value Funding Ratio of 100% - which means it is fully funded. The second has a Market Value Funding Ratio of 50% - it has only half the assets it's supposed to have.

Further, both have a target rate of return of 8% and each will earn 8% on its assets over the next 10 years.

What happens, assuming all other things "remain equal"?

First - right off the bat we know that the sponsoring government of the second Pension Fund will have to make up that \$50 million deficit at some point. But since its Pension Fund is going to earn 8% on the assets it has it won't be able to "fill the deficit" with investment profits.

Here's what happens to the investment profits when both earn 8% of the total value of their assets.

Figure 12 shows the yearly returns for the two Funds. As expected, the fully funded Fund earns twice as much as the 50% funded Fund throughout the 10 years.

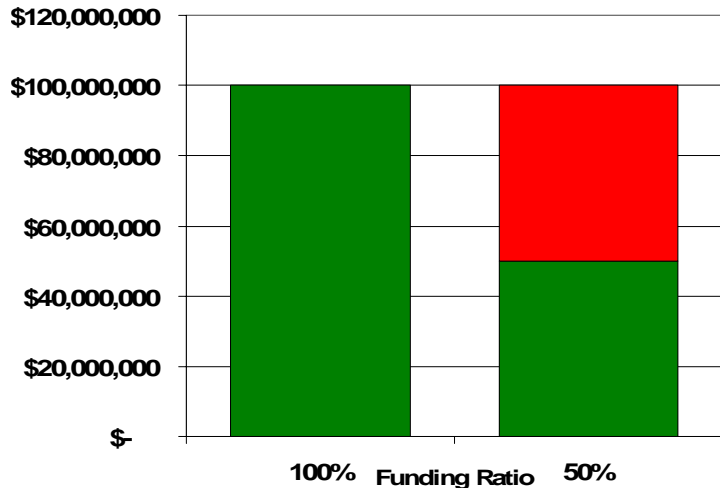


Figure 11 - Model Two Pension Funds

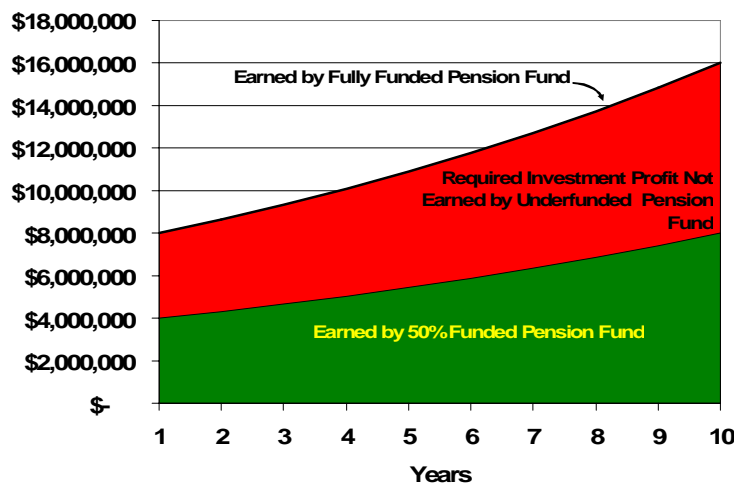


Figure 12 - Model Deficient Investment Earnings

Figure 13 is what happens to the cumulative returns.

The 50% funded Fund will earn \$58 million over those 10 years. The fully funded Fund will earn twice that - \$116 million. But the underfunded fund has the same pension liability - so it is going to have to come up with the \$58 million it didn't earn because it only had half of the assets it was supposed to have - therefore it couldn't earn returns on those assets it didn't have.

If all other things remain equal and an underfunded Pension Fund earns exactly its target percentage rate of return, the

underlying unfunded pension obligation will grow by the target rate of return. That amount that wasn't earned - \$58 million - **must be paid** (given the simplifying assumptions behind this model) **by the government.**

This is - in effect - an **interest expense imposed on the Market Value of the unfunded pensions.**

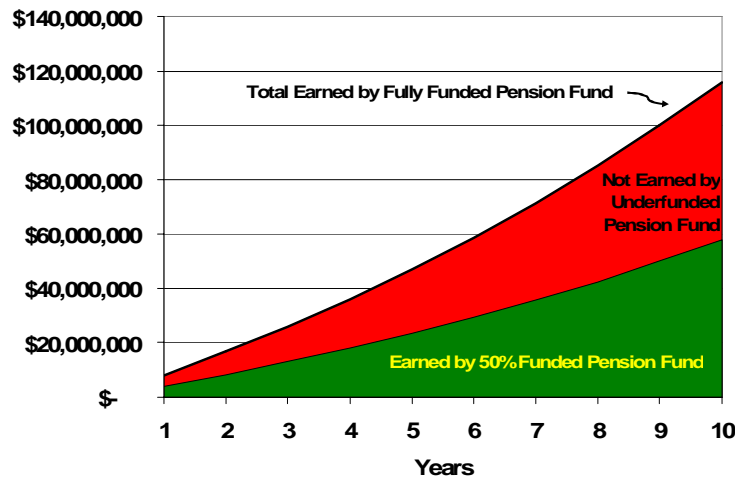


Figure 13 - Model - Cumulative Deficient Earnings

4. "Acceptable" v. "Unacceptable" Unfunded Pensions

As a practical matter Pension Funds will never work out exactly as planned. Pension Funds will always be over or under funded to some degree. Where is the dividing line between tolerable Unfunded Pensions and intolerable Unfunded Pensions that must be eliminated? As is usual in life - there isn't a hard and fast line - but there are some distinguishing characteristics.

a) Acceptable

This hypothetical Pension Fund begins with \$100 million in Pension Obligations and Market Value of Assets. Its Funding Ratio therefore is 100% (the dotted line). Over 25 years its Funding Ratio varies from a high of 109% to a low of 91% - but the long term average is 100% funding. It is never underfunded for more than four years. It's over funded as many years as it's underfunded - **constantly correcting course around the 100% funding goal.**

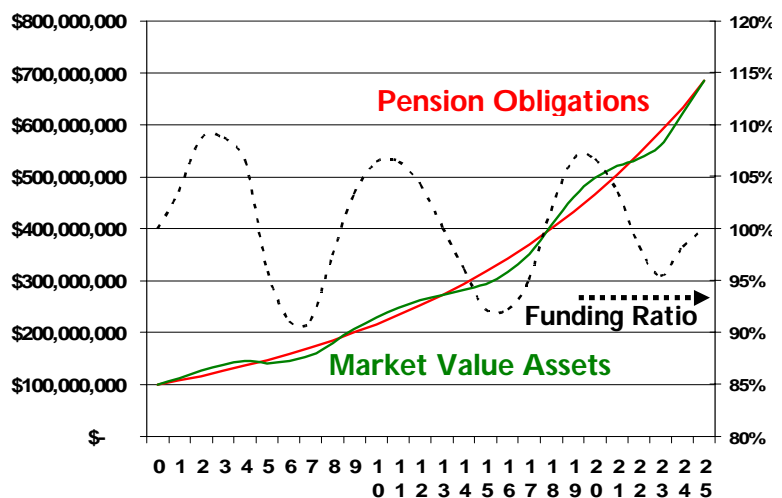


Figure 14 - Model Moderate Unfunded Pensions

A few years of underfunding are reversed, and periods of overfunding generate reserves to protect against underfunding.

In the big picture, this is a comforting picture of a Pension Fund that is being well managed - or is exceedingly lucky - more likely the former.

b) Unacceptable

Figure 15 shows **Mendocino County's Pension Obligations** and the **Market Value of its assets without** including the **\$110 million borrowed** by the County to eliminate unfunded pensions in 1996 and 2002. This shows **how far the Pension Fund was below the goal of having the yearly contributions and investment returns be the only required sources of funds.**

The Pension Fund's **highest Funding Ratio** was **74%**. As of **June 30, 2009** the Fund was down to about **40%**. This is a very unacceptable and intolerable level of Unfunded Pensions.

The Market Value of Unfunded Pensions incurs an effective interest expense equal to the target rate of return. **Mendocino's Pension Fund would have generated nearly \$120 million of interest expense over these 14 years** if the County hadn't borrowed money by selling POBs. The County incurred \$20 million less interest expenses over these years because the **POBs have a lower interest rate** - about 4.5% on average. However, **Unfunded Pensions even with the lower POB interest created \$100 million of effective interest expense for the County since 1996.**

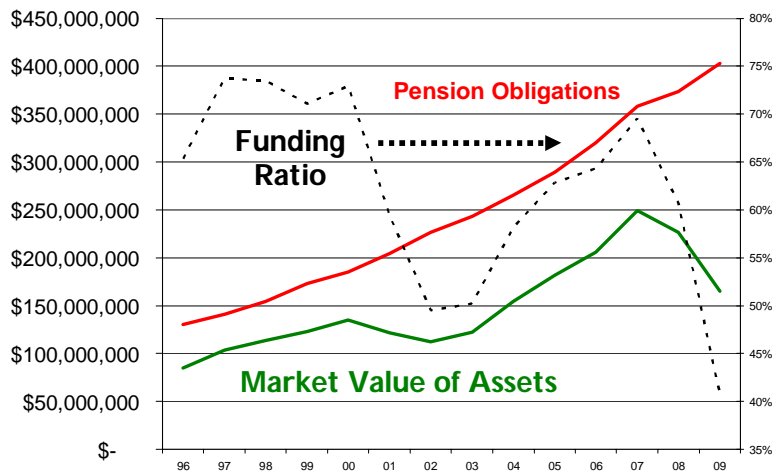


Figure 15 - Mendocino County's Pension Fund Funding Position Without POBs

c) Can You "Earn" Your Way Out of Unfunded Pensions?

A year ago I calculated **what it would take for Mendocino County's Pension Fund to "grow" out of its underfunded status.**

Figure 16 shows the Pension Fund's target rate of return and actual market value rate of return on investments for 1997 through 2009.⁸ The green zone is what the Fund would have to do to "grow" its way out of the hole it's in - **15% a year on its total assets for 8 years.** And that **assumes the County would be paying in the full 8% interest expense on the remaining balance of Unfunded Pensions.**

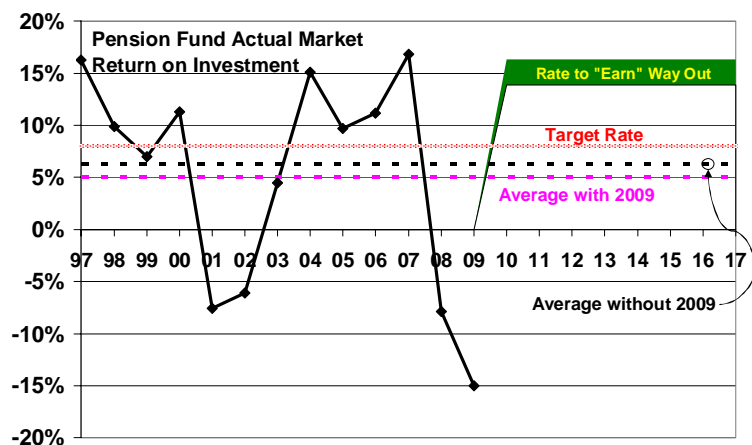


Figure 16 - Can Mendocino's Pension Fund "Grow" It's Way Out of Its Hole?

⁸ Remember - that's only for the assets it has - it can't earn returns on the assets it doesn't have.

Especially given its past performance, it is **highly unlikely** that Mendocino County's Pension Fund can grow its way out of its hole.

It would always be preferable to eliminate unfunded pensions by having enough Pension Fund investment profits to eliminate Unfunded Pensions.

Actually, part of the "**way Pension Funds are supposed to work**" accepts that Funds will become underfunded occasionally, if for no other reason than no one exactly obtains target rates of return year after year. But the idea is that **over time your earnings will average out to be the target**. This implicitly assumes **you can "earn your way out" of "normal" periods of being underfunded**.

Again - where is the line? It's a "gray area" - but the deeper the hole is, the less likely you are to be able to grow your way out of it.

d) If Significant Unfunded Pensions Develop, Something Is Wrong!

There is no other conclusion. **Everyone** - officials, employees, retirees, and concerned citizens **should be alarmed if significant Unfunded Pensions develop**.

As stated on page 2, Actuarial Valuations are a government's funding plans for its retiree benefits. If everything in the Plan works as it's supposed to there will never be significant Unfunded Pensions.

If significant Unfunded Pensions develop - County officials should demand that the **actual results be compared to the assumptions and calculations** in the Valuation to determine how "reality" was different from the Plan and how that caused unacceptable Unfunded Pensions to develop.

And - in fact - employees and retirees and their representative organizations, as well as concerned citizens groups should demand such an analysis as well.

If government and retirement officials responsible for the financial management of the government and retirement benefits can't **precisely identify (1) what factors significantly varied** from the Valuation Plan, **(2) how those variances created the Underfunded Pensions**, and **(3) what they are going to do to "fix" the fundamental causes of the Unfunded Pensions** - and communicate the results of their analysis to all interested parties - they aren't doing their duty and should be replaced.

e) Is it "OK" to Maintain a Moderate Unfunded Pension Level? NO!

Mendocino County Retirement officials used to say that "industry best practice" was to target a 90% funding ratio. That was said to be a "good" funding level.

But it's very important to understand that if the **funding ratio is below 100%, past operating costs are being imposed on future residents and taxpayers**.

I submit a major goal of a pension system should be "**intergenerational equity**" - that is, that we treat our kids fairly and don't impose unfair burdens on them because we want more services for less money than they really cost.

Always remember - as a practical matter you can assume **unfunded pensions are past pension expenses that are being forced onto future residents to pay** - they should already be funded.

Any tolerance of funding levels less than fully funded is acceptance of the idea that we should force future generations to pay our living expenses in the past.

E. Unfunded Pensions - Government's Obligation to Eliminate

If the Pension Fund doesn't have an amount of assets equal to or greater than the net present value of its Total Pension Obligations (or Liability), then it is "Underfunded". The amount the Fund is underfunded is called various things - Actuaries call it the "Unfunded Actuarially Accrued Liability". It's also called Unfunded Pensions, Unfunded Pension Obligation, etc.

Whereas both the government and its employees are obligated to contribute to the Pension Fund each year for the pensions that are being earned that year, **only the government is obligated to eliminate any Unfunded Pension Obligations that develop.**

The Governmental Accounting Standards Board (GASB) has presented this clarification of their understanding of what Unfunded Pension Obligations are in its documents seeking public comment on currently proposed major changes in state and local government accounting and reporting for pensions:

*Once earned, a (state or local) government has a present obligation to pay those (pension) benefits in the future. Most governments attempt to meet that obligation by making annual contributions to a pension plan to accumulate resources for the purpose of making future payments when they come due. The GASB's preliminary view is that **the employer is primarily responsible for the portion of the pension obligation not covered by assets in the pension plan—the unfunded obligation.** Furthermore, that unfunded obligation is a **liability of the employer**, referred to as a net pension liability.*

The pension plan is primarily responsible for the obligation to the extent that assets have been accumulated specifically to fund the obligation. The employer government also is secondarily responsible for that part of the obligation.

In other words, GASB considers the unfunded portion of the current value of pensions that have already been earned to be part of the government's official debt. It remains a "guarantor" for the funded portion.

There are **three main ways an Unfunded Pension Obligation can be eliminated.**

- **Large Payment from County Funds**
- **Pension Obligation Bonds**
- **Amortization Payments**

1. Large Payment from Government Funds

This is self-explanatory; the County would pay an amount equal to the Unfunded Obligation out of its own funds. If the County hadn't built up a reserve for such contingencies, then almost surely if such a payment was significant it would force the County to make immediate spending cuts to free up the cash to make such a payment.

2. Pension Obligation Bonds (“POB”)

Pension Obligations Bonds are special-purpose Bonds used to eliminate a state or local government’s Unfunded Pension Debt. State and Local governments all over the US have borrowed money to eliminate a portion of their unfunded pension obligations by selling POBs.

Mendocino County has twice sold Pension Obligation Bonds:

- 1996 - \$31 Million
- 2002 - Net of \$76 Million in 2002.

The 2002 POBs actually totaled \$92 million, but some was used to pay off part of the previous bonds - so the net was \$76 million.

How do Pension Obligation Bonds “work”?

One of the nation’s largest and most influential bond counsel firms, Orrick, Herrington & Sutcliffe (“Orrick”), has this to say:

California public entities do not have specific authority to issue POBs.6 With the exception of one ... POB, all ... have been issued under the local agency refunding law (drafted by Orrick a few years before for other purposes). ... the local agency refunding law authorizes all local public entities in California to refund prior bonds or “other evidence of indebtedness.” The pension obligation to the county pension system... is memorialized as a “debenture9,” thereby becoming an “evidence of indebtedness,” which can be refunded by POBs under the local agency refunding law. 10

There are a couple of things to explain:

The “**local agency refunding law**” simply states that if a debt already exists, then a local public entity in California can refinance it. It’s important to note that POBs simply restructure unfunded pension debt. What used to be an unfunded pension liability becomes a Bonded Liability - it changes form, but its substance - its origin remains the same. It is debt generated by unfunded pensions and needs to be included in the County’s pension-related debt.

But how do you get an unfunded pension obligation to be recognized as a pre-existing debt so that it can be “refunded”?

GASB’s is currently proposing reforms that, if adopted, will cause Unfunded Pensions to be listed directly on public entities’ financial statements as a liability. There will be no question it is a legal debt.

But until that change is made Unfunded Obligations are not listed as “official liabilities” on financial statements. They are disclosed as “Required Supplementary Information”. For example, the table below is the entry¹¹ in the June 30, 2009 audited financial statements for Mendocino County regarding pensions:

⁹ A “debenture” is a form of an unsecured liability.

¹⁰ An Introduction to Pension Obligation Bonds and Other Post-Employment Benefits, Third Edition, Roger L Davis, Orrick, 2006, Pages 49

¹¹ How many citizens know what the explanatory sentence means - “actuarial value of assets”, “actuarial accrued liability”, “unfunded actuarial accrued liability”, “annual covered payroll”, “Entry Age ...” much less

COUNTY OF MENDOCINO							
Required Supplementary Information For the Year Ended June 30, 2009							
SCHEDULE OF FUNDING PROGRESS – RETIREMENT PLAN							
The table below shows a three-year analysis of the actuarial value of assets as a percentage of the actuarial accrued liability and the unfunded actuarial accrued liability as a percentage of the annual covered payroll as of June 30 (in thousands):							
Valuation Date	Entry Age Actuarial Liability (AAL)	Actuarial Value of Assets	Unfunded/ (Overfunded) Liability (UAAL)	Funded Ratio	Annual Covered Payroll ⁽¹⁾	UAAL as a % of Payroll	
6/30/07	\$ 358,259	\$ 317,937	\$ 40,322	88.7%	\$ 65,879	61.2%	
6/30/08	373,852	353,421	20,411	94.5%	70,880	28.8%	
6/30/09	403,196	336,263	66,933	83.4%	72,235	92.7%	

As of 6/30/09 the Unfunded Liability (UAAL) was \$66.9 million. However, that \$66.9 million is not listed on the County's "Balance Sheet" as a liability. Since it is not recognized as an "official" liability, normally the County couldn't sell Pension Obligation Bonds to restructure that debt because at this point it isn't an "official" debt (except for one thing discussed further below).

The County was able to sell its 1996 POB because it filed a "**Validation Action**" at the County **Superior Court** asking the Court to "validate" that its Unfunded Pension Obligation was indeed a "real debt". The Court so ruled - and suddenly instead of a "sort of" debt it became an officially recognized debt. The County suddenly had a debt it could restructure through the provisions of the local agency refunding law.

Orrick continued in its "Introduction to POBs ..."

*The POBs are typically structured as obligations payable from the general fund of the issuer. They are not full faith and credit taxing power general obligation bonds backed by the issuer's taxing power, because the **California Constitution's debt limitation requires** such type of bonds issued by the state, cities, counties or school districts ("Debt Limit Entities") to be **approved by two-thirds of the electorate**. Instead, **California POBs issued by Debt Limit Entities have generally been designed to be valid without voter approval under a judicially created exception to the State Constitutional debt limitation**, which exception is generally referred to as "**obligations imposed by law**."¹²*

To put it bluntly, this is the legal means by which Mendocino County (and all other local governments in California that have sold POBs) got around the State Constitutional requirement that such a level of debt must be approved by a 2/3 vote of the people.

what the significance of this information is? It's there because GASB forces Mendocino County to put it there - but the County makes no effort to explain to its citizens what this information means.

¹² An Introduction to Pension Obligation Bonds and Other Post-Employment Benefits, Third Edition, Roger L Davis, Orrick, 2006, Pages 50

No one has ever challenged a California local government's right to avoid a vote of the people under the "obligations imposed by law" theory. The governments argue that since the State Constitution requires the County to pay pensions if they are provided, then pension debt is "imposed by law".

The **State of California** has twice attempted to sell POBs using this "imposed by law" exemption to the Constitutional requirement to submit the issue to a vote of the people. But it was **blocked** both times because unlike in the situation of all local governments that have sold POBs, someone objected to the State's "Validation Action" in the Sacramento County Superior Court.

The winning argument was that while there are legal requirements that once the State provided pensions it must pay them, the fact is **the State was not obligated by any law to provide pensions**. It does so because the State Legislature voluntarily chose to provide those benefits. Therefore the unfunded pensions are not essentially imposed by law - **they were created by a voluntary act of the government**.

No one has legally challenged a California local governments' "Validation Action". But the logic is the same - no one puts a gun to local government's head and forces them by law to provide guaranteed pensions.

After Mendocino County obtained the Superior Court's validation of the debt in 1996 it sold the Bonds without a vote of the people. But they not only got the unfunded pension obligation that existed in 1996 to be declared a "real debt", they got the Court to declare that **if any unfunded obligations develop at any time in the future then those future values will also be considered legal debt**.

So - now Mendocino County and any other California local government with good Bond Counsel that has sold POBs has the legal authority to sell whatever amount of POBs the governing body decides to sell in the future without submitting the debt to a vote of the people.

3. Unfunded Pension Amortization Payments

The final option a state or local government has to eliminate unfunded pensions is to pay them down as if they were a loan with a payment schedule. "Amortization" literally means "to put to death". In finance it refers to a payment schedule over time that pays off a debt - that is, it "kills" the debt.

The County can choose whether or not it will either make a large payment from its own funds or borrow Pension Obligation Bonds to eliminate unfunded pensions. If it does neither of those, it will have to make amortization payments¹³.

There are a number of amortization¹⁴ methods that can be used - we will describe two of the most common - the "Level Dollar" and "Level Percent of Payroll" method.

As discussed in "Target Rate of Return Turns Into Interest Expense on Unfunded Pensions" on page 15 an **interest rate** equal to the **target rate of return** is imposed on the amount to be amortized regardless of which amortization method is used?

¹³ In the past MCERA agreed to give Mendocino County an allowable amount of unfunded pensions that would not trigger amortization payments - up to 10%. As long as the Actuarial Valuation showed that the Actuarial Value of Assets (not the Market Value) was at least 90% of the Actuarially Accrued Liability (the present value of future pension payments that have already been earned) the County would not be required to make amortization payments. However, that provision no longer exists.

¹⁴ "Amortization" literally means "put to death" - in finance it means to eliminate a debt by making payments over a number of periods (months, years, etc.).

Let's assume:

Unfunded Pension Liability	\$50 Million
Target Rate of Return (Interest Rate)	8%
Number of Years (Term)	30
Beginning Total Payroll	\$75 Million
Annual Growth of Payroll	4%

We'll also assume one payment per year at the end of the year.

a) Level Dollar Amortization

This is the same as the well-known traditional 30-year home mortgage payment schedule except the number of years can vary. The **government will pay the same amount of dollars over an established amount of time.**¹⁵

Using this amortization method the **yearly payment** would be about **\$4.44 Million**, **total interest** expense will be **\$83.3 Million**, and **total payments** will be **\$133.3 Million**.

During the early years far more interest expense is being paid than the principal amount of the debt - the balance of unfunded pensions. But as the principal balance gets paid down, less interest expense is generated and more of the payment goes to reduce principal. At the end of the amortization period almost all the payments are going to pay down principal.

The percent of the government's budget taken by these debt payments would be expected to decline as the government's budget grows. Since payroll is the main expense of almost all governments, these payments will be an increasingly smaller percentage of each future year's payroll.

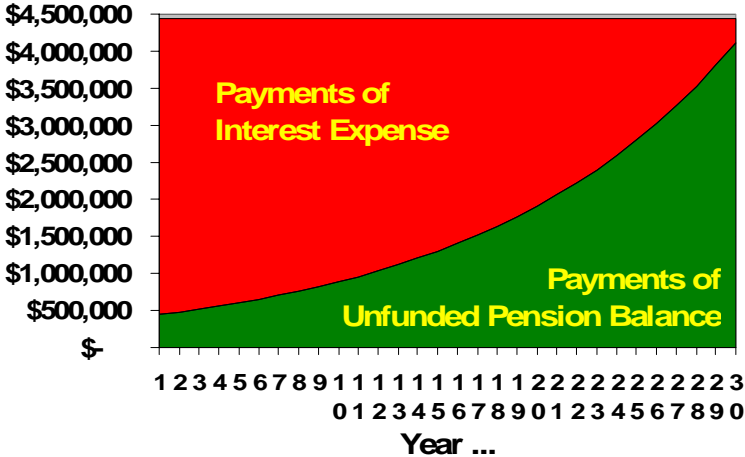


Figure 17 - Model Amortization Level Dollar Method

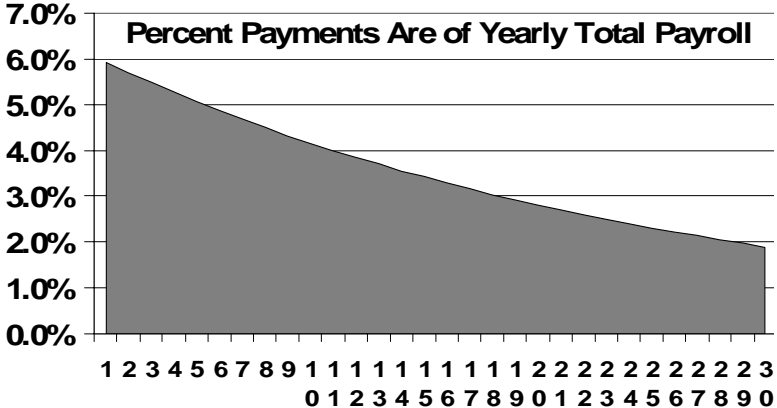


Figure 18 Model Percent of Payroll Payments Using Level Dollar Method

¹⁵ I believe the maximum number of years allowable is 40 - but I'm not absolutely sure.

b) Level Percent of Payroll

(1) How It Works

Instead of making the same dollar payment every year (Level Dollar), this method makes the **payments the same percentage each year of the projected total payroll of all staff over the amortization period** (30 years in our case). First total payroll is projected for each of the next 30 years assuming it will grow by the same percentage each year. Then a set percentage of that payroll is calculated that would eliminate the unfunded pensions over 30 years (in this example). That percentage of each year's payroll is then defined as the amount of unfunded pension payments for each year.

Figure 19 shows the projected payroll for the next 30 years in this model and the amount of annual unfunded pension payments. The left vertical axis shows total payroll, the right vertical axis shows the amount of each year's payment.

The growth curves for both payroll and the payments is exactly the same - in this model 4% a year.

It turns out that if the payment is 3.93% of each year's payroll the beginning balance of unfunded pensions would be eliminated at the end of 30 years of payments.

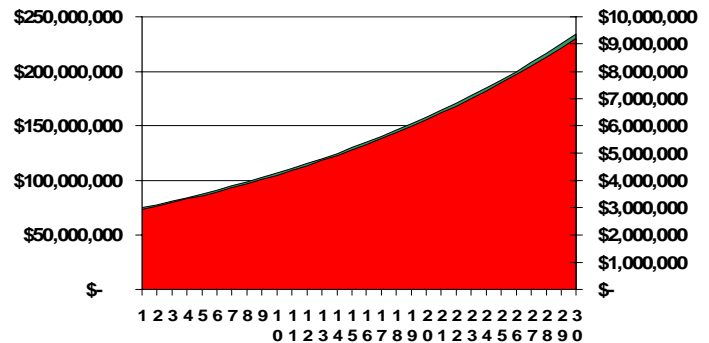


Figure 19 - Level Percent of Payroll

(2) Arguments For

There are **two rationalizations** for this method.

First, Actuaries usually define a percent of a government's payroll that must be paid into the Pension Fund as its "Normal Yearly Contribution". It's argued that the **easiest thing to do** is to add a steady percentage for the unfunded pension amortization payment on top of the percentage for the normal yearly payment.

A second argument is that the Level Dollar method takes a much bigger "bite" out of the government's budget in the early years than later, and in contrast the Level Percent method is **less disruptive** of the government's budget.

Beginning payments would be about **\$2.9 million** - about **\$1.5 million less than in the Level Dollar amortization payment method** above. **Ending payments** would be about **\$9.2 million** - more than double yearly payments under the Level Dollar method and more than three times more than the first year's payment under the Level Percent of Payroll method.

(3) Arguments Against

First, there is an **inherent problem** built into the Level Percent method - "**Negative Amortization**". As seen above, "amortization" means "to put to death" - in finance terms to pay off a debt over time. "Negative Amortization" means that instead of reducing a debt, **the payments actually increase the debt**. This amortization produces negative amortization in the early years because the **payments aren't enough to pay the interest expense**.

As shown above in this model the amount of unfunded pensions that has to be eliminated is \$50 million and the interest rate is 8%. That means in the **first year's interest expense** will be **\$4 million**. But the **first year's payment** under the Level Percent of Payroll method is **\$2.9 million - \$1.1 million less** than the first year's interest expense. That means at the end of the first year the County would owe \$1.1 million more than it owed at the beginning of the year - all other things remaining equal.

Figure 20 shows what happens. The **debt increases through the 12th year** until it reaches a total of **\$58.2 million**. That means all the previous payments were \$8.2 million less than the interest expense incurred during those years.

Then the increased dollar amount of debt payments driven by the increase in payroll finally becomes more than the yearly interest expense and the debt begins to be reduced.

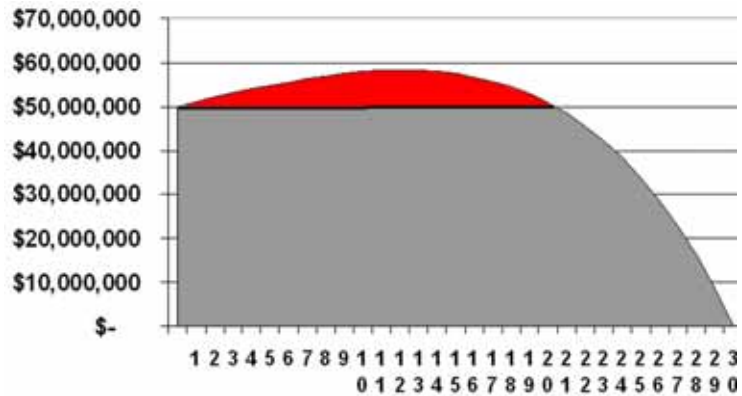


Figure 20 - Model Negative Amortization

Second, we **don't get back to the original \$50 million debt until the 21st year**.

In this example - not too far different from many actual Pension Funds - we won't start paying down today's debt until 21 years from now. **All the original balance of unfunded pensions - \$50 million - would be paid in the last 10 years.**

The value of the beginning unfunded pensions won't start to be paid down until two decades from now. This directly imposes the burden of paying for pensions that were earned before this series of amortization payments began on County residents and taxpayers two decades in the future.

Third, this method produces considerably more interest expense. This table compares the two amortization methods as applied to this example:

	Level	
	Dollar	Percent of Payroll
Debt Paid	\$ 50,000,000	\$ 50,000,000
Interest Paid	83,241,150	115,520,463
Total Payments	\$133,241,150	\$165,520,463

The County would wind up paying about **40% more interest expense** (about \$32.2 million) under the Level Percent of Payroll method than the Level Dollar Method.

I believe the **main reason officials choose the Level Percent of Payroll method** over the Level Dollar method is **they don't have to pay as much in the short run** when they are in office. Basically - they are doing fundamentally what got them in trouble in the first place - they are **not paying the full cost of pensions today** and are **shoving significant costs onto the next generation**.

VI. THE DANGER OF GOVERNMENT'S DEEPLY FLAWED PENSION ACCOUNTING

No other issue regarding unfunded pensions and other retiree benefits is **more important**.

Microsoft Chairman Bill Gates stated the issue recently at the Aspen Ideas Festival¹⁶. He was interviewed on education issues that transitioned to larger economic issues. He was asked **"Do we have a huge unaccounted for pension overhang problem that's going to hurt our (government) budgets?"**

His response:

Absolutely, *it's pretty mind-blowing.*

*The way that State budget's are presented is so **fraudulent** - there's a thing called the Government Accounting Standards Board that allows you (state and local governments) not to take (report) full pension cost, not to take (report) retiree health care benefits.*

Whenever something's free it gets overused.** Improving the pensions of people who have already retired never shows up on the State (or local) budget. Letting people retiree early; have overtime factored into their retirement. All these things come from when the person who says yes to those things - **the government person** - **doesn't feel any pain at all because there's no number that ever shows up.

***We need a lot more transparency** (in state and local government budgets and financial reporting).*

It's like when stock options were free and people were saying "Oh we would use them even if they cost a lot because they are so magical".

No. In fact when the true cost was accounted for they were still used, but they were used about a fifth as much when they were than before when they were in this accounting limbo that they looked free.

***Pension payments to government employees, lots of that, looks free** and we've messed up long enough that we have a huge overhang here.*

*It looks really free to continue ... state (and local) deficit spending which is nominally is a balanced budget but **only accounting fraud allows you to pretend it's balanced.***

Gates is absolutely completely right. This **"accounting fraud"** has **allowed state and local governments** all over the country **to drive their finances into disaster**.

Government accounting standards allow governments to make very expensive promises to employees about retiree benefits without having to report to the people the true cost of those promises. Those standards allowed governments to hugely underfund their retiree benefit funds without having to report the resulting debt or the real expenses that created the debt.

They were able to **promise far more than they delivered** and **shove the reporting of the dire consequences far into the future** when they would no longer be in office.

¹⁶ Aspen Ideas Festival, July 7, 2010 - 7:30PM, "Ideas in Education", produced by the Aspen Institute, video available at http://www.aifestival.org/audio-video-library.php?menu=3&title=604&action=full_info

VII. WHEN DOES THE EXPENSE RELATED TO UNFUNDED PENSIONS HAPPEN?

If your organization's real expenses are significantly higher than you know, you're in trouble. If you build up a massive debt because of these unreported expenses you will eventually find yourself in a very hard place. That's what Mendocino County and many other state and local governments have done.

The **cause of significant unfunded pension debt is almost always that real actual historical expenses were higher than were reported in financial statements**, and certainly higher than projected in Actuarial Valuations.

No reform is more important than forcing governments to report the true cost of unfunded retiree benefits as they develop - not when they are paid.

Governments should never be allowed to defer reporting the expenses that caused unfunded pensions more than a few years after they really occur - and they should probably be reported as "Prior Year Adjustments" (more below).

A. Pension Expenses Happen While Future Retirees are Employed

This point has been made repeatedly in this paper. From a "pure" economic point of view - **all future pension payments are earned while future retirees are still working for the government.** Therefore to be completely accurate economically the pension expenses related to employees should always have been fully reported by the time employees retire.

B. Long Run Results are Supposed to "Average Out"

As discussed in "The Way Pension Funds Are Supposed to Work" on page 3 the simple theory that underlies Pension Funding plans in Actuarial Valuations is that the only money that a government should ever have to pay a Pension Fund are the normal yearly contributions for that year as calculated by an Actuary. These contributions along with those from employees would be properly invested and would earn enough money so that when that year's pensions that were earned are paid there is enough money to pay them. The Funding Position calculated each year would show the Pension Fund has exactly the amount of money it needs that year.

But as a practical matter no Guaranteed Pension Fund will ever exactly work out that way. The Funding Position will practically always indicate an over or underfunded position.

But that is also a part of "how it's supposed to work". **While short term differences between the target and actual returns are expected, over the long run Pension Funds are expected to "average out" to be pretty close to the results projected by the Actuary.**

C. What if Long-Term Results are Significantly Lower Than Projected?

What if long-run results are consistently and significantly below what the Actuary projected? We'll use Mendocino County's actual experience in analyzing this question.

Figure 21 shows Mendocino County's cumulative Unfunded Pension Debt using the Market Value of assets without incorporating the proceeds from the 2 Pension Obligation Bonds. If Pension Funds work according to the government's plan, the only money the government should ever have to pay to the Fund is the "normal" yearly contribution that is supposed to fully fund the pensions that are being earned by employees each year. If the government ever has to make additional payments to eliminate unfunded pensions, the government's pension funding plan failed. Those additional payments are the cost of failure.

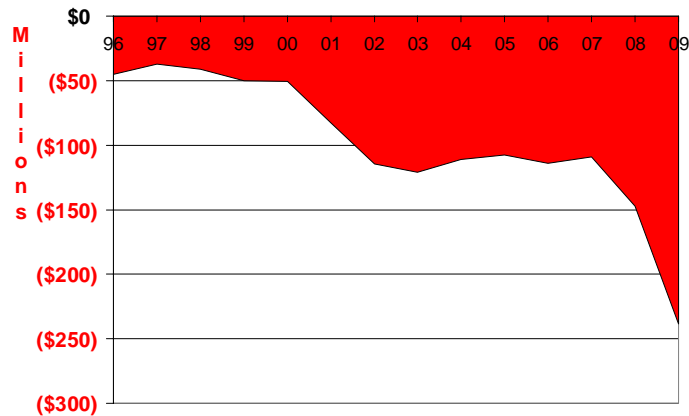


Figure 21 - Cumulate Unfunded Pension Liability at Market Value

This is a picture of badly Mendocino County's Pension Fund was below the County's funding plan.

Mendocino's Pension Fund developed a total value of **unfunded pensions** of around **\$250 million over these 14 years**. **Mendocino's pension funding plan failed by \$250 million!**

This clearly is a very significant negative variance from the Actuary's projections. As a comparison the Pension Fund's Total Pension Obligation as of the end of 2009 was \$400 million. \$250 million is nearly 2/3 that number.

It's extremely important to realize that something caused this failure. It didn't fall from the sky. Further in almost every case almost all the causes are expenses that haven't yet been reported.

D. Causes of Unfunded Pension Debt

I'll use Mendocino County's experience to discuss this issue.

This is an approximate listing of the main causes of the \$250 million Unfunded Pension Debt (in \$millions).

Earnings Below Target	\$130
Diversion of Pension Funds to pay Retiree Healthcare	50
Increase Payroll Faster than Actuary Was Told	15
Retroactive Pension Increases	15
Higher Rate of Disability Than Actuary Assumed	"na"
Yearly Contributions Less Than Specified by Actuary	10
Other	30
	\$250

I'll use these numbers in this discussion. While I believe these numbers are "in the ball park" more information is needed from the County to make them more certain. I'll defer a discussion of the biggest cause - earnings below target - until after we deal with the other causes.

1. Government Purposefully Underfunds

This occurs when the **government does not contribute the amount the Pension Fund's Actuary calculates** it must as its "**Normal Yearly Contribution**". By law Counties with non-CalPERS retirement systems are obligated to pay their Normal Contributions as calculated by their Pension Fund's Actuary. Mendocino County did not do so in a number of years. I think the amount of Unfunded Pensions created by this under-payment is around \$10 million.

In this case, if the government reported the value the Actuary specified as its yearly expense in its financial statements but it just didn't make the full payment, then the government has already reported the pension expense. It should, however, report interest expense each subsequent year caused by having not paid its required contribution (see "Target Rate of Return Turns Into Interest Expense on Unfunded Pensions" on page 15). **In essence the government is "borrowing money" from the Pension Fund - which it's not supposed to do.**

2. Actual Expenses Were Higher Than Assumed by Actuary

a) Higher Payroll Growth

The Actuary for Mendocino County's Pension Fund was provided an assumed rate of growth of the County's total payroll in the early part of the 1990's that was significantly lower than the actual growth. If the Actuary had been told to expect what the County actually did, then the County would have been required to report a higher pension expense and make larger contributions to the Pension Fund.

Clearly the actual pension expense during those years was higher than reported. My estimate is the pension expense in that period was about \$15 million under-reported.

b) Higher Rate of Disability Retirements

Mendocino County has **nearly the highest percentage of "safety employees"** (deputy sheriffs, probation officers, etc.) that **retire with disability claims** of all 21 non-CalPERS County Retirement Systems. A retiree with a service-related disability can receive up to 50% more pension payments than normal. If the actual rate of disability retirements is greater than the Actuarial assumption, yearly contributions will not be under-calculated. The funding problem is not necessarily the actual rate of disability retirements - the funding problem could stem from underestimating that rate.

While I believe the possibility that disability retirements may have been granted when they shouldn't have been should be examined, I choose not to indicate I believe that occurred. Public Safety County employees should not game the system by "faking" disabilities - I am absolutely committed to that principle. But the folks who perform these duties put their lives and bodies on the line and I respect them for that.

But anyone who "games" government pension requirements deserves to be called out for it.

3. Unfunded Retroactive Increases in Pension Benefits

In the late '90's the California Legislature greatly increased pension benefits for state workers, in particular for "safety employees". Most counties and cities followed suit.

Many of these increased benefits were made retroactive - employees and even retirees were given credit for prior service at the new enhanced benefit rates. But most **governments did not contribute extra funds to prevent the immediate significant increase in Unfunded Pensions.**

In effect government officials voluntarily increased the pension expense associated with past employee service. Was that an expense of the past when the pensions were earned - an expense of the moment the decision was made as if it was a "gift" - or will it be an expense of the future?

How can it be an expense of the future? The payment of a pension is the payment of a debt. But I could see the expense having been created at the moment the County granted that retroactive benefit increase.

GASB is recommending a **reform** that would require the very real increase in pension expenses associated with this action to be **completely reported within the average number of years the employees who received the benefit will remain employed** by the government. The number of retirees who received this enhanced retroactive benefit would be included in that calculation of the number of years over which the increased expense must be reported. (The number of years a retiree will continue to work is zero.)

I tentatively estimate this caused perhaps \$15 million in increased pension expense for Mendocino County and I believe that entire amount should have been reported by now.

4. Diversion of Funds from an Underfunded Pension Fund

The Mendocino County Employees Retirement Association **diverted about \$35 million from its underfunded Pension Fund** to pay **retiree healthcare benefits over the past 2 decades.**¹⁷ They claimed these funds were derived from "Pension Fund Excess Earnings". The **1937 County Employees Retirement Act** has a number of **big problems - none bigger than how it defines "Excess Earnings"**.

Essentially, if in any year a Pension Fund earns more than its target return the Retirement Association can declare those funds to be "Excess Earnings" and use those funds to pay other benefits if the County Board of Supervisors has agreed the Association may do so.

Whether or not the Pension Fund is underfunded is not a factor - the "letter of the law" only considers what happens in any one year. Mendocino County's Pension Fund has been underfunded for at least the past 20 years. **Every dime diverted to pay retiree healthcare simply increased the County's Unfunded Pension Debt.** Retiree healthcare was funded by long-term County debt.

Mendocino County's Pension Fund had to completely absorb yearly shortfalls, but could never retain its yearly surpluses. It was **doomed to be underfunded** by this **deceitful practice** allowed by the law.

Financially, there can't be Excess Earnings if the Pension Fund is underfunded. It's an absurd notion.

¹⁷ See our video on this subject "First Do No Harm" - available at our website.

But the Retirement Association went beyond this loophole allowed by the law. Between **2004 and 2006** they actually **directly diverted nearly half the County's Normal Yearly Contributions** during a time in which they didn't have "Excess Earnings" as defined by the law. They continued to tell everyone they were paying retiree healthcare from Excess Earnings - but it wasn't true. They purposefully diverted County contributions to a purpose for which they were not intended. I'm not an attorney, but I believe this was a significant violation of law.

If you divert funds from an underfunded Pension Fund you simply drive the Fund deeper into the hole.

I believe this practice created about \$50 million of Unfunded Pension Debt.

E. Insufficient Pension Fund Investment Earnings

I saved the most important for last. I figure over half of Mendocino County's Unfunded Pension-created debt was caused by the Pension Fund's insufficient investment earnings- about \$130 million.

As described in "Investment Profits" on page 7 most of the funding for pension payments will be generated from investment profits assuming the Pension Fund earns its target rate of return. This is the single most powerful assumption in the entire Actuarial Valuation - and the most likely culprit if a Pension Fund develops significant Unfunded Pensions.

1. A Simple Example - Investment Returns Significantly Less Than Expected

What happens when a Pension Fund earns less than its target rate of return? Let's go back to the investment in a Bond described in "The Math of "Net Present Value" on page 5.

In that example you wanted to have \$1 million at the end of 10 years from now. You could buy a bond for any amount you wanted that was guaranteed to earn 8% a year interest (payable at the end of each year). We calculated you would need to invest \$463,193. That would grow to be worth \$1 million at the end of 10 years.

Let's change the situation slightly. Let's say you had a debt that was due at the end of 10 years at which time you'd have to pay \$1 million. You intend to use the \$1 million you expect to get back from the Bond to pay that debt.

But this time the amount of interest the Bond will earn is not guaranteed; it can vary. The Bond salesman tells you the Bond is expected to earn 8% a year. If it does just as in the earlier example you would have to invest \$463,193 today to have your \$1 million in 10 years.

Let's say you buy the bond, put it in a safety deposit box and forget about it until the Bank calls you up 10 years later when you asked them to - the Bond is now "mature" and you can exchange it for cash.

But to your shock you find out when you get to the Bank that instead of having earned 8% it only earned 4% over those 10 years. So - instead of being worth the \$1 million you wanted, it's only worth \$685,640. You're \$314,360 short! You're going to have to pull that amount out of your wallet to have enough to pay your \$1 million debt!

Now - if you had known you were only going to earn 4% instead of 8% and you still wanted to buy a Bond that would provide you the \$1 million you need at the end of 10 years, you would have had to buy the Bond for \$675,564. You needed to have invested \$212,371 more than you did to have the \$1 million you needed 10 years later.

I submit that is in a nutshell the real economics of Mendocino's Pension Fund's actual rate of return having been significantly lower than its assumed target rate.

2. Past Pension Expenses Were Much Larger Than Reported

Mendocino County's Pension Fund's **target rate of return** has been **8%** for about 20 years. The Pension Fund's Actuary reports the average investment return on the Market Value of the Pension Fund's assets for the 13 years from **1997 through 2009** was **4.4%**

Remember - the **target rate of return** is a **guess** - an **estimate** - hopefully an informed estimate, but it is an estimate none the less. The County and Retirement Association hoped the yearly contributions would grow at 8% a year, but they didn't. They grew at 4.4%. Just as in the example of the Bond above, Mendocino County and its employees really needed to have contributed considerably more than it did to have the money it should have today.

If the Actuary had known what the actual rate of return was going to be the County would have been required to pay in nearly 50% more than it did AND report that higher number as its pension expense each year.

The **amounts that were reported earlier as pension expenses were estimates that have turned out to have been significantly low** - so low that the County today is in your position when your Bond didn't earn your expected 8% - the **County now has to pull a lot of money out of its current budget because the Pension Fund's actual rate of return was much lower than its target** and the County now has to make up the difference.

F. When is the County Reporting Those Much Larger "Real" Pension Expenses

I believe this analysis applies to all California local governments and the state itself. However, I have only analyzed Mendocino County's finances - I'd have to analyze others to be sure.

1. Pension Obligation Bonds

The County twice sold Pension Obligation Bonds (POB) for a net total of \$110 million. How does this affect the County's reporting of pension expenses.

We'll simplify the situation¹⁸ for analysis. Assume the County sold \$100 million of POBs in 2000. There were two main transactions involved at that time.

- **Borrowing**: The County received \$100 million cash (an asset) and now had a \$100 million liability.
- **Paying Off Debt**: The County paid off its debt for Unfunded Pensions by giving the Retirement Association \$100 million. But why did it owe the money? At that point it had never reported any pension related expenses that created that \$100 million debt.

There's the rub. **I believe the County really incurred roughly \$100 million more pension expenses in the past than it ever reported**, and that was the cause of the \$100 million debt.

Financial Reports are supposed to tell you what really happened. **Most of what happened** is that **earlier estimates of how much the Pension Fund would earn were much higher than what actually**

¹⁸ The situation was considerably more complicated. There were costs of preparing and selling the Bond some of which was financed by the Bonds. This is simplified to show the most important aspects of how the County - and other California local governments disclose the finances of POBs in their financial statements - and how their way of reporting is such a huge distortion of economic reality.

happened¹⁹, and therefore the amount reported for pension expenses in the past were correspondingly much too low.

I believe Fundamental Accounting Principles would have required the County to have made a series of **“Prior Year Adjustments”**. They **should have reported** to the people that **although they didn’t know it at the time, it turned out that pension expenses in the past were really much higher than they thought**, and so they are **increasing the reported pension expenses in past years** and also reporting that the County’s “Net Worth” - the amount of the County’s assets that are “owned” by the County free and clear - is being reduced by that amount.

But that’s not what the County is doing.

The **County did not report that past pension expenses were higher than reported**. The County paid a \$100 million debt without reporting that debt existed because of past expenses that turned out to be higher than originally thought and that had to be paid.

Here’s what they are reporting.

Figure 22 shows Mendocino County’s actual and scheduled payments on its Pension Bonds.²⁰ Total payments are now about \$8 million a year and will extend through 2027.

The County first borrowed money by selling POBs December 1996, and issued a second round of POBs in December 2002. The second POB was much bigger than the first and caused the jump up in payments at that time.

As usual interest expense is higher in the early years of the Bonds and lower in the later years as more and more of the underlying Bond debt is paid down. In the later years most of the payments are going to the debt itself. **Each year’s interest expense** is reported as **part of that year’s total interest expense**. So far so good.

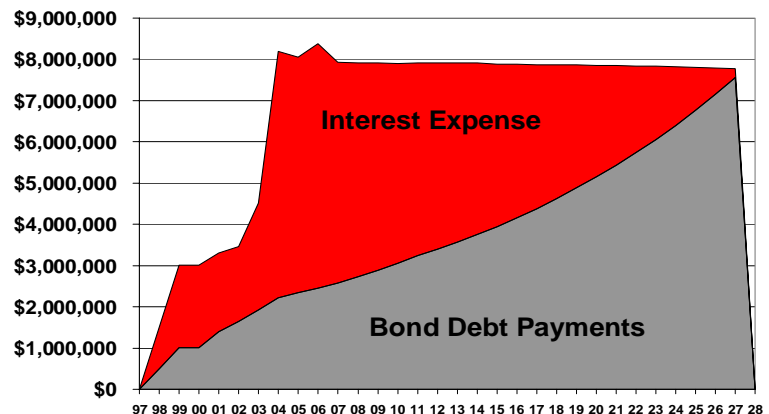


Figure 22 - Payments on Mendocino County’s Pension Obligation Bonds

¹⁹ In addition, the other factors discussed above in this section also occurred - total payroll growth faster than projected by the Actuary, retroactive increases of pension benefits without any funding for the immediate increase in pension debt, yearly contributions that were less than the Actuary said they needed to be, etc.

²⁰ We have found a high degree of inconsistency among the County’s and Retirement Association’s financial statements from year to year and other financial reports and documents. The County has provided conflicting information regarding its POB payments. This is a “best effort” to show what appears to have actually happened - but there are probably some slight differences from “reality”. However, this is substantially correct.

But **what about** the **unreported pension expenses**? Basically **Mendocino County is reporting their payments on the Pension Debt Principal as part of each year's pension expense.**

This means that in 2027 about \$8 million of the pension expense it will report that year is in reality the amount it is paying that year on its Pension Bond debt.

Instead of reporting the economic truth - that past pension expenses were higher than they had originally thought because the Pension Fund's investment performance was significantly below its target, they are **taking pensions that were truly earned by employees before the County borrowed the Bonds** and are **reporting them over the 30 years after they borrowed the Bonds**. This is, in effect, a process called "**capitalizing expenses**". The real expense happened before 2002 and all of that expense is being spread out from 2002 through 2027.

Ask yourself this question - **do you believe the County staff in 2027 will be the beneficiaries of that \$8 million pension expense? Of course not.** This is a **horrible distortion** of the truth and has allowed the County to continue to build up its long-term debt because the County didn't have to confront the real cost of its year to year operations.

2. Unfunded Pension Amortization Payments

Figure 23 shows Mendocino County's Unfunded Pension Obligation based on the Market Value of the Pension Fund's assets and when the County restructured most of the previous unfunded pensions into Pension Obligation Bonds.

As of June 2009 the County's unfunded pensions were the most they've ever been (based on Market Value). However, this time the County didn't attempt to borrow more money by selling more POBs. Instead they have elected to make Unfunded Pension Obligation amortization payments using the Level Percent of Payroll method (see "Unfunded Pension Amortization Payments" on page 22).

As seen in the "Level Percent of Payroll" section that begins on page 24, this method produces payments in the early years that are less than the interest expense in those years. This produces "negative amortization" in which the debt actually increases for some time. As the years go by and presumably the County's payroll steadily increases the payments also grow until they are about 4 times larger than the first yearly payments.²¹ And the County's original unfunded pensions don't start getting actually paid down until 2/3 of the way through the 30 year amortization period.

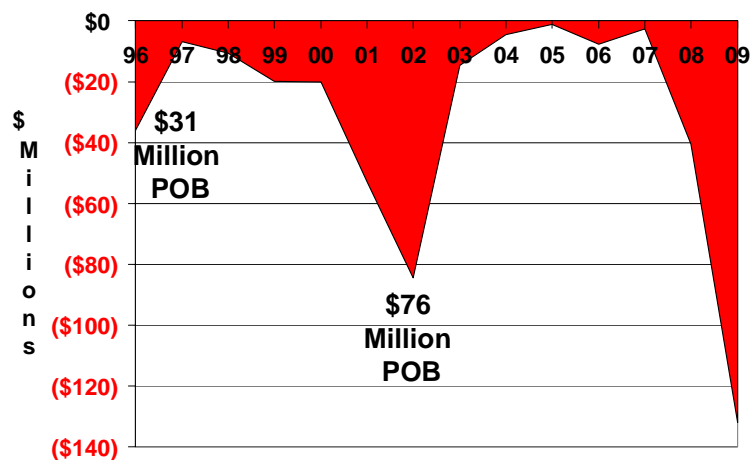


Figure 23 - Mendocino County Unfunded Pensions Based on Market Value of Assets

²¹ This results from the assumed growth rate of County payroll. The higher the growth rate assumption the more the ending payments will be greater than the beginning payments.

Since the **County just started making these payments this year** we **don't know how they will report the pension expenses** related to these payments. What will they do?

If they do the same thing they are doing for the Pension Bonds, they would report the payment on principal as an additional amount of pension expenses in each year. But the negative amortization inherent in this method is projected to extend 12 years. That means that the principal debt payment is negative - the debt is going up. Does that mean they would subtract these "negative" principal payments (that is, the amount the debt is increasing) from the pension expenses that would have been reported over the next 12 years? Will the pension expense reported for the first fiscal years be significantly than it would have been?

Also - since the debt actually increases for the first 12 years will the total pension expense that eventually gets reported be significantly more than the unfunded pension balance to begin with?

VIII. SUMMING UP

One core purpose of financial accounting and reporting is to **provide decision makers with accurate information** so they can **understand the financial impacts of their decisions and actions**. **Another core purpose** is to **empower citizens to hold government officials accountable** for their actions and results.

The **financial accounting, reporting, and management of state and local government retiree benefits** has been **disastrous**. It may be the most significant reason so many state and local governments are facing an extreme financial threat over the next few years.²² The Government Accounting Standards Board is proposing a series of new accounting standards that would constitute a very significant reform of state and local accounting and reporting related to their pensions. Information about these proposals can be obtained at GASB's website:

- www.gasb.org/
- On "Projects" tab, select "Current Projects"
- Click "Postemployment Benefit Accounting and Financial Reporting"

The next few years are going to be very rough in many state and local governments. **Citizens will see a collapse of services unprecedented in their life times**. It is **imperative** for **concerned citizens** all over the political spectrum to **recognize the great danger** our governments are in and **learn what the problems are**. There will be disagreements about what to do - but **there should be no disagreement about the desperate need to make very fundamental changes** in how state and local governments manage their retiree benefits.

²² There are many other sources of the County's problems, including extremely short term thinking, a disregard for fiduciary responsibility, placing personal ambition above the long-term financial health of the County, etc. But this paper is about describing the key actuarial and financial accounting/reporting practices needed for non-actuaries to understand how those systems work and how they can go wrong. I've reported on these other types of problems in several other documents. See our website for more information.

IX. POST SCRIPT

YourPublicMoney.com takes **no position** on **what retiree benefits should be**.

We absolutely take the position that **whatever they are**, their **finances should be correctly reported** to the people and they should be **properly funded**.

We believe **local government officials** have **four key financial duties** to the people:

- **Tell us the important truths** about our government's finances.
- **Manage** our public money **competently** and **transparently**.
- **Protect** and **build** our governments' **financial strength**.
- **Don't force unfair payments onto our kids**.

We believe many Mendocino County Officials **spectacularly failed** to live up to these duties over the past two decades. We also believe **these duties aren't "left wing" or "right wing"** ideas. We believe most people active in local politics agree with these values.

The **most important change** needed is to build a **consensus** across the political spectrum of people active in local politics that **County officials** are expected to **fulfill these duties** and will be **held accountable** if they don't.

YOURPUBLICMONEY.COM's mission is to **help citizens understand the County's finances and debt** and **help create such a consensus**.

A more general explanation of these concepts is provided in an excellent booklet that I highly recommend:

Actuarially Speaking

*A Plain Language Summary of Actuarial Methods
and Practices for Public Employee Pension
and Other Post-Employment Benefits*

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The document is available through the Internet at the California State Library's home page (<http://www.library.ca.gov/>) under California Research Bureau Reports.

The main difference between this paper and the Research Bureau's booklet is this paper was written from the point of view of a citizen who happened to be a professional financial analyst and planner who slowly uncovered how deeply flawed his County's funding of its retiree benefits was, how extensive the damage has been, and how long it will take his County to get beyond it.