“People prefer to stay with problems they understand rather than look for solutions they’re uncomfortable with.” -Anonymous

In his book, *Pension Fund Excellence*, Keith Ambachtsheer asks some very basic questions that trustees of a pension fund should consider in developing sound pension fund policy. Keith has briefly discussed each of these questions with us at previous board retreats. Given the board’s expressed interest in additional education on this subject, we thought it would be time well spent to consider each question. The questions relate to liabilities, surplus, and assets as follows:

### Liabilities
- What is the defined benefit (DB) pension deal and who are the stakeholders?
- How much pension debt is outstanding?

### Surplus
- What is the target asset/liability ratio?
- How are balance sheet gains and losses allocated among plan stakeholders?

### Assets
- What is the risk-free asset mix that would “immunize” the pension debt outstanding?
- Should the plan undertake asset mix policy risk?
- Should the plan undertake active management risk?

In this issue of *Value Added*, we will address these seven questions as a preview to the December board meeting where the topic will be discussed in greater detail.
While these appear to be pretty basic questions, they alone can lead to extensive discussion and multiple viewpoint answers. The state has a contract with each state employee promising that under certain circumstances, the state will pay a retirement benefit that is based on years of service and the highest consecutive 36 months of pay. This contract becomes an obligation (liability) for the state and is the point at which MOSERS steps into the picture. It is MOSERS’ responsibility to administer the plan and to pay the benefits as instructed by the law. In order to assure that funds are available when they are needed and that obligations are being paid for as they accrue, the state makes contributions to MOSERS each year based on the recommendations of an independent third party. That third party (an actuary) calculates how much the state should contribute (expressed as a percent of covered payroll) so that these obligations will be met responsibly. The actuary can only make an informed estimate as to how much will be needed, because there are many unknowns (notably future inflation and investment return) in the total equation.

In this plan, the state bears the risk that the contributions plus the investment earnings will be adequate to pay the benefits over the long term. The employees/retirees have no risk - their benefits are promised to them as part of the terms of employment. If investment returns are below expectations or other actuarial assumptions vary from predictions, the state will be called upon to increase the contribution rate.

The pension deal that exists between the state and state employees is tied very closely to inflation. Inflation impacts the pension deal in a couple of key areas. The amount of each employee’s benefit is based on the highest consecutive 36 months of pay and pay raises granted each year are ultimately influenced by the rate of inflation. Therefore, inflation-related pay increases will increase the nominal amount of the retirement benefit. The contribution that the state makes to MOSERS is based on the amount of payroll dollars actually spent by the state. In effect, the contribution is inflation-adjusted. The contribution rate is based on assumptions, including an assumption about inflation. If inflation is higher than the assumed rate for an extended period of time, benefit payments will be larger than assumed. If, at the same time, investment returns are below the assumptions made, the stated contribution rate would be inadequate over an extended period of time, and additional funds would have to be raised. This would generally mean an increase in the contribution rate. Historically, investment returns have been lower than assumed during periods of high inflation.

Inflation also plays a part in the benefits that retired employees receive. Each year retiree benefits are adjusted for inflation through a cost-of-living allowance (COLA). In recent years, the COLA for new retirees has actually outpaced inflation due to the fact that the minimum increase during the first 12 or so years of retirement is 4 percent. Inflation has been less than 4 percent during this time period; so many retirees have actually received a “real” raise in retirement benefits. (Employees hired after August 1997 do not receive a minimum increase as part of their retirement COLA provision.) Conversely, in times of high inflation, as in the 1970s, the maximum COLA of 5 percent will not keep pace.

Who are the stakeholders? There are many potential stakeholders in our plan. The members and their beneficiaries are stakeholders. They have been promised a benefit and are dependent upon MOSERS to pay this benefit. The members, by working for the state for sufficient years to qualify for a benefit, have the right to expect that the benefit promised will be paid. It can be argued that the members are also concerned with the investment decisions made. This is the case because lacking superior investment results, benefit increases will not take place without an increase in the contribution rate.

The taxpayers are stakeholders because they are ultimately obligated to pay the benefits that have been promised. The legislature has committed taxpayers to provide financing for the pension fund. The decisions made by the board regarding investments will have a direct impact on the contribution that the state will be required to make (and the taxpayers will be required to fund) in the future. When the legislature
and executive branch increase benefits, they are putting the taxpayers on the line for a larger payment than would otherwise have been the case in the future. Is there a point where the taxpayers get involved and demand that the benefits not be increased further? Or, in higher inflationary periods in which the contribution rate may be increased, will the state find itself unable to fund other needed programs?

For the most part, state employees provide services to the taxpayers of the state. It is in the best interest of the taxpayers to have a qualified, stable workforce providing these services. The pension benefit is one piece of the compensation package. Part of the logic behind increasing benefits over the years has been to attract and retain quality employees. The state is an employer and must compete with all other employers for talent. If the pension benefit does not keep pace with the competition, the state will be at a disadvantage in recruiting and keeping good employees. Our current multiplier of 1.7 percent is in line with other retirement plans, and our COLA benefits are above average. The chart above shows how the benefits multiplier has changed since 1957 when the plan was established. The chart on the following page shows how the contribution rate has changed over this same time period.

**How much pension debt is outstanding?**

This can be restated as, “How well funded is the pension system?” MOSERS’ plan is currently 89.2 percent funded (as of June 30, 1999). This means, based on current estimates, we have 89.2 percent of the money needed to cover our liabilities for benefits. This number was previously 91.4 percent in 1993. However, the funded status decreased in 1997 due to the enactment of HB 356 which allowed the unreduced joint & 50 percent survivor benefit to become the normal form of payment and which significantly altered the post retirement COLA provision. COLAs are provided annually based on 80 percent of the change in the Consumer Price Index (CPI) with a minimum of 4 percent (for members hired prior to 1997) and a maximum of 5 percent until the cumulative COLAs equal 65 percent of the original
benefit. Thereafter, the 4 percent floor and the 65 percent cap are eliminated. Anytime the benefits are increased or actual plan experience is not as favorable as projected, the percent funded will decrease. Over the past few years, most funds have seen the percent funded increase due to the higher than expected returns experienced in the equity markets. By law, we must have a plan in place that says how we will make up the unfunded liability of 10.8 percent. Our plan presently calls for this shortfall to be made up over a period of 36 years. The unfunded piece can be thought of as one of the retirement system’s investments. It is like a debt security that the state has agreed to pay off over the next 36 years including annual interest at 8.5 percent. The payment on this debt is included in the contribution rate that the board certifies to the state. The amount of the debt outstanding is recalculated each year when the contribution rate for the coming year is determined. This past year, due to investment credits exceeding the assumed rate, the amount required to retire this unfunded piece in 36 years actually decreased. In can be thought of as if a $229 million prepayment was made on a mortgage of $827 million (the $229 million being the amount that favorable financial experience exceeded expectations for last year).

A recent change in accounting rules requires that the amortization period for the unfunded liability must not exceed 30 years after 2006. We are on course to meet this requirement. It should be noted that this change would remove one of the “tricks of the trade” for increasing benefits without increasing the contribution rate. In the past, a pension fund with an amortization period of less than 40 years could extend the amortization period out to 40 years in order to keep from increasing the contribution rate when the unfunded amount was increased. This could be thought of as refinancing the mortgage on your house. If you take some of the equity out as cash, thereby increasing the balance, you can keep the payments the same by increasing the number of years over which you pay off the loan. Under the new accounting requirements, a fund will only be able to use a maximum of 30 years for the amortization period. This change will also make the yearly contribution rate more volatile because the investment and inflation-related gains and losses would be spread over a shorter time period.

Conversely, if investment results are below expectations the unfunded liabilities will grow and the payment required to retire this debt will be increased. The process for calculating the contribution rate has a couple of elements that help to keep it stable. To “smooth” investment returns, a three-year return number is used instead of an annual number. The second piece is the long time period over which the debt is repaid. With a 30-year plus life for the loan, the variability of
the required payments is reduced. If you tried to pay off a large debt that changed each year the payment required would change drastically. Most plan sponsors, including the state, would prefer to have a more stable number for budgeting purposes. While the legislature and administration probably liked the extra $229 million that came in last year, it is likely that they would not have been so happy if it had gone the other way and an extra $229 million in funding was required this year.

**Surplus**

**What is the target asset/liability ratio?**

We noted in the previous section that we have more liabilities than assets. What should the target be for our unfunded liabilities? Is the board comfortable with the current level of funding? Our plan is relatively young and we have the time to make up this gap. While there are no hard and fast rules for establishing the proper funding level, something below 75 percent would probably produce a good deal of discomfort. The board cannot unilaterally control the unfunded percent. If the legislature and administration approve benefit increases, it is very likely that the unfunded percent will increase (additional liabilities without an immediate increase in the assets). The contribution rate would then be increased and these additional benefits would be paid for over time. The size of the unfunded liability is a legitimate concern for the board. Although the state has agreed to pay off this loan over a period of years, the board could become uncomfortable if the debt piece becomes too large. At the current unfunded level of 11 percent, the loan repayment is a fairly minor part of the current contribution rate of 11.9 percent of pay. However, if the unfunded liability were to grow to 50 percent, the contribution rate applicable to the unfunded liability would increase dramatically. During a slow economy, tax receipts could fall and budget surpluses could be a thing of the past. The state may not be willing or able to make the contributions to MOSERS that are required. The state has an excellent credit rating at this time; however, it is important to also remember that MOSERS’ unfunded liability can affect this rating. MOSERS’ liabilities are projected to grow to $50 billion over the next 50 years. Would the board be comfortable with a 50 percent unfunded liability on a $50 billion fund? Another way of looking at this is to ask the following question: Would the board be comfortable with a $25 billion loan to a single entity?

Being over funded can also cause problems. This may encourage groups to work for increases in benefits which may not be aligned with the interests of all stakeholders. (The stimulus comes from the appearance that the benefits increases are free if the contribution rate does not increase). Or special interest groups may seek to divert the excess funding to other purposes.

Some believe that the required return on investments needs to be higher if there is an unfunded liability. This is not completely accurate. The unfunded liability will be paid off over a number of years as long as assumed and actual experiences coincide. This is because the contribution rate certified by the board includes a component to amortize the unfunded liability. It is true that if the unfunded liability were eliminated the contribution rate would go down, but the required return to fund the benefits promised would not be lowered.

**How are balance sheet gains and losses allocated between plan stakeholders?**

In the MOSERS’ plan, it is pretty clear that the balance sheet losses are the responsibility of the state, because the employees/retirees do not see increases in costs or reduced benefits if the system does not meet objectives. This might
be somewhat misleading, as it is quite possible that employees
could see a reduction in the pay increases they would have
otherwise received, if the state is required to increase their
contribution to MOSERS because objectives are not being
met. During the budget process, a dollar contributed to
MOSERS is just as real as a dollar spent in payroll. Retirees,
on the other hand, should see no decrease in retirement
benefits but may see an increase in health care or other costs.
Ownership of the gains on the balance sheet is not as clear.
Balance sheet gains should be viewed here not just as gains
in excess of a plan’s 100 percent funded status. Over the last
several years, there have been large balance sheet gains which
have accrued to the plan participants through increases in
benefits. In effect, the legislature and administration
determined these gains would be distributed to employees
and retirees through benefit enhancements. Those same gains
could have been used to increase the funded status (and,
consequently, reduce contribution rates). More than likely, if
the increases in benefits that have taken place in the last five
years had not happened, the plan would be fully funded today
and the contribution rate would be substantially less than it
is today. It has not been decided to whom the gains over the
100 percent funding level should go, because we have never
had such a surplus to fight about (the system has never been
over-funded). Realistically, the employees/retirees have
enjoyed the gains in the past, as the benefits have been
increased regularly over the past forty years. The benefits
have been increased and the contribution has remained fairly
stable due to the performance of the investments. It is unlikely
that many of the benefit increases would have been made if
it had meant a large increase in the amount the state needed
to contribute.
It should be noted that the potential exists for the trend
described above to reverse. If investment results should
be below expectations for an extended time period, the
state’s contribution would increase and the benefits would
remain flat. It is dangerous to make long-term promises
(increased benefits) based on short-term investment results.
If the average real return from investments does not meet
the assumed rate, a rate that has steadily increased over the
years, the state’s contribution could be significantly
increased. Just as a 1 percent increase in investment results
can decrease the contribution by 10-20 percent, a 1 percent
decrease in investment results could increase the
contribution by 10-20 percent.
It could be argued that benefits have been increased to keep
pace with the employment market. If the retirement package
were not up to industry standards the state would have had a
more difficult time recruiting and especially retaining staff.

**Assets**

**What is the risk-free asset mix that would “immunize” the pension
debt outstanding?**

If the liabilities are known and it is expected that the pension
deal will remain constant into the future (as is the case in
many corporate plans), the expected performance of the
liability can be reasonably estimated. If you know how the
liability is expected to perform, and assuming you are able to
purchase an asset that acts like the liability and produces the
required real return to fund the liability, you have matched
or “immunized” the pension debt outstanding. For example,
assume that you owe someone $10,000 a year for the next ten
years. You could go into the bond market today and buy a set
of government bonds that would mature in $10,000
increments on each of the ten upcoming payment dates. If
you total the price of the ten bonds, you now know what you
need to pay today to “immunize” this liability. It is now
possible to do something similar with a liability that is tied
to inflation. In the previous example, instead of a flat $10,000
per year, what if the payment was $10,000 in the first year
and then each following payment was adjusted for inflation
(that is, the payment is adjusted by a COLA)? This liability
can be “immunized” by purchasing Treasury Inflation
Protected Securities (TIPS). TIPS adjust each month for the
change in inflation from a prior month. The change in
inflation is measured by the CPI. A person with the yearly
payments of $10,000 plus inflation could go to the market
today and buy a set of TIPS that mature on each payment date. With a single purchase today, you have “immunized” this liability and are no longer concerned about inflation for the next ten years.

Now let’s move this to a larger scale. What risk-free asset mix could we purchase today that would “immunize” the liabilities of the pension fund? This group of assets would need to make all of the payments to retirees for which the system is liable. These assets would need to be tied to inflation because the liabilities will certainly behave differently based on the rate of inflation.

Based on our analysis, which is by no means precise, we would estimate that a set of TIPS with a duration of 15.9 years would “immunize” the liabilities of the pension fund today. In theory, we could take all of MOSERS’ assets and purchase a portfolio of TIPS with a duration of 15.9 years and this portfolio would (in addition to the state’s amortization payment on the unfunded liability) pay all of the accrued benefits as they come due. This is possible because, currently, the real return available from TIPS, with a duration approximately equal to that of our liabilities, is in excess of our 4 percent real return requirement. In the future, it may not be possible to actually receive this real return. Our actuarial investment return is 8.5 percent. The difference between the 8.5 percent and the 4 percent real is the assumed inflation rate. The TIPS would provide the 4 percent real, which is what we need to meet the assumptions. One possible problem is that the TIPS are adjusted based on CPI while the inflation that we must beat by 4 percent is wage inflation. Over shorter time periods, CPI and wage inflation can differ fairly substantially, however, over longer periods the two are highly correlated.

Should the plan undertake asset mix policy risk?

As stated earlier, there is a general rule of thumb that says an additional 1 percent of long-term return can reduce required contribution rates by 10-20 percent in a mature pension plan. In the previous section it was explained that the system could purchase a set of risk-free assets today that would “immunize” the liabilities of the system. Is this something that makes sense for the fund? Some would argue that it makes a lot of sense for the state because the potential for unexpected increases in the contribution rate to cover investment returns below the assumed rate would be greatly reduced if not eliminated. Others would argue the reverse and say that MOSERS should take asset mix risk to beat the assumed rate. If the assumed rate is exceeded a couple of things can happen. The contribution rate can be decreased so that the state does not contribute as much each year. The second option is that the benefits can be increased while holding the contribution rate flat. In recent history, MOSERS’ benefits have been increased with little or no increase in the contribution rate because of the decision (whether conscious or not) to take asset mix risk relative to a risk-free asset mix.

If the decision were made to “immunize” the liabilities with risk-free assets, it is likely that one of the two following questions would be asked. If financial markets continue to offer returns above the assumed real rate of 4 percent, some might ask, “What is preventing us from lowering our contribution rate or increasing the benefits like all of the other states are doing?” And if the financial markets return less than a 4 percent real rate of return, the statement might be, “Isn’t it great that we do not have to increase the contribution rate to pay for the current level of benefits like all of the other states are doing?” Which scenario will play out is impossible to know.

Should the plan take on asset mix policy risk? What is the mission of the board? If it is to insure that current liabilities based on current benefit levels are paid, then you would not want to take on asset mix risk. If it is to take “reasonable” or “acceptable” levels of risk so that benefits might be increased or the contribution rate decreased, then asset mix risk should be assumed if the board believes the 4 percent real return could be exceeded. What does it mean to have the best interest of the members as the board’s guiding principle? In the short run, a member might want the board to take the asset mix risk so that if returns are good benefits can be increased. This is because the member is not immediately at risk if the returns do not make the assumed rate, because it is up to the state to makeup this shortfall, not the member. On the other hand, what if benefit increases ultimately result in higher contribution rates with less available for pay increases or other benefits? We believe it would be safe to say that the legislature and administration have probably not given this issue a great deal of thought. Times have been good; they have not had to give it much thought. Now is the time to be considering this issue, not when times are bad.
What does the state want the board to do? How risk averse is the state? What does the state believe will happen in the financial markets in the future? The state also needs to understand that benefit increases may be required to keep up with the employment market. If all of our competition for labor is providing retirement benefits that exceed ours, it will be difficult to hire and retain a quality workforce. These are not easy questions to answer and in most cases there is not a right and wrong choice. What is very important is to make an informed decision and to make sure that all parties affected understand the consequences of the decisions.

**Should the plan undertake active management risk?**

After the board decides if it should take on asset mix risk, it must then consider the extent to which active management makes sense. A portfolio can be built passively that matches the benchmark returns at a very low cost. By adding active management, we are subjecting the system to a new risk—it’s called benchmark risk. Active management comes with the expectation of beating a benchmark. It can also come with much higher fees. Is this a risk that the board wants to take? In our situation, we have taken active management risk but have chosen to take the majority of this risk through strategic style, capitalization, or sector biases as opposed to positioning large portions of the portfolio with active managers.

This approach has saved the system large amounts of money management fees, however, many of the strategic decisions have not worked in our favor. Therefore, a totally passive portfolio would have performed as well as our actual experience over the last several years.

What the performance will be over the next several years is impossible to tell. What is important is that the board understands the risk of active management and makes a conscious decision to either accept or reject it.

**In Conclusion**

This is more than likely the most important newsletter we have ever published. In our opinion, the issues addressed here are “big picture” policy type questions that can only be answered by the board. We look forward to the opportunity to discuss each of these issues in more detail at the December board meeting. Ultimately, if consensus can be reached on these questions, many of the risks the fund is now subjected to will be better understood and more easily explained.