September 8, 2008

MEMORANDUM

TO: Senator John Arthur Smith, LFC Chair
Legislative Finance Committee Members

FROM: Dan White, LFC Economist
Michelle Aubel, LFC Senior Fiscal Analyst

SUBJECT: LFC Report of Investment Performance – FY2008 Fourth Quarter

Attached please find the latest quarterly investment report that covers FY08 fourth quarter performance of the State Investment Council (SIC), the Educational Retirement Board (ERB), and the Public Employees Retirement Association (PERA.) The data shown in the report is current as of June 30, 2008.

Highlights:

- Returns for all funds significantly improved compared to last quarter, despite increasingly volatile market conditions that are expected to continue throughout the first half of FY09. All of the funds beat both their internal benchmarks by as many as 210 basis points as well as beating the 60/40 Index[1] by as much as 310 basis points (bps). However, absolute returns remained slightly negative for both pension funds.
- The combined asset value of all funds totaled $35.6 billion at quarter's end, a net increase of $13.3 million, improving upon the $2.4 billion decrease the funds suffered the prior quarter. Despite the first quarter's positive returns and this quarter's overall increase, total combined asset value of all funds decreased by more than $2.5 billion for FY08.
- Peer rankings for the SIC permanent funds dramatically improved from a quarter earlier, progressing from the sixtieth and fifty-seventh percentiles to the eighth and seventh percentiles, respectively. The agency's equity hedging program was successful, helping to produce positive returns for both permanent funds.
- This quarter's Special Focus section highlights different risk-adjusted return measures which are used to gauge actively managed fund performance.

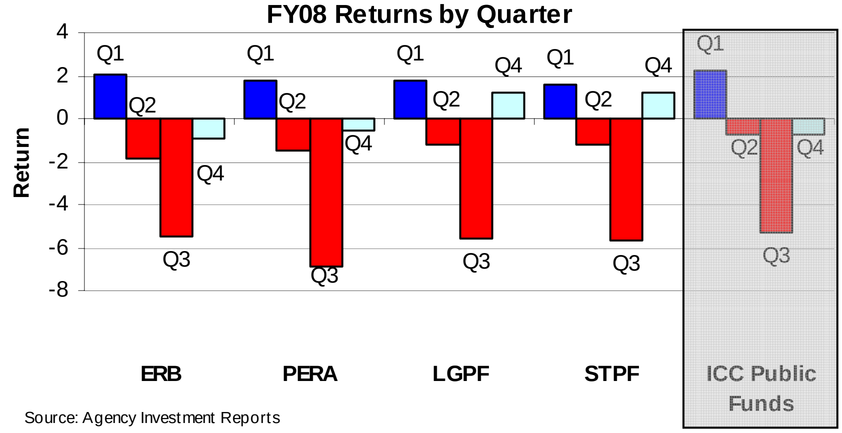
In reviewing performance among the funds, it is important to keep in mind that the funds have different asset allocations, different strategies and different restrictions. All of the funds have entered alternative investment asset classes -- which include private equity, hedge funds, real assets and real estate -- but the State Investment Council (SIC) has been allocating to these asset classes considerably longer than the Public Employees Retirement Association (PERA) and the Educational Retirement Board (ERB), so it has higher allocations and more mature investments. SIC also has a constitutional restriction on the amount it can invest in the equity asset class. Asset allocation is discussed in more detail on page 5.

[1] The 60/40 Index is a theoretical benchmark consisting of 60 percent equity measured by the S&P 500 and 40 percent fixed income measured by the Lehman Brothers Aggregate Bond Index.

SUMMARY OF FUND PERFORMANCE

Quarter Ending June 30, 2008. As shown in Figure 1, investment returns for the fourth quarter were significantly improved from a quarter earlier. The fourth quarter was the first of FY08 in which not all funds were bested by the ICC Public Funds Median. ERB was the only one not to outperform the benchmark; however, it only missed by 20 bps.

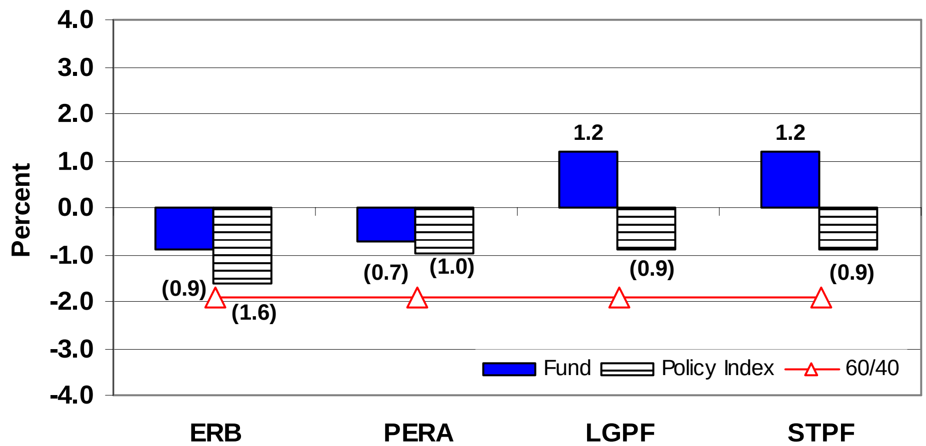
Figure 1
FY08 Returns by Quarter



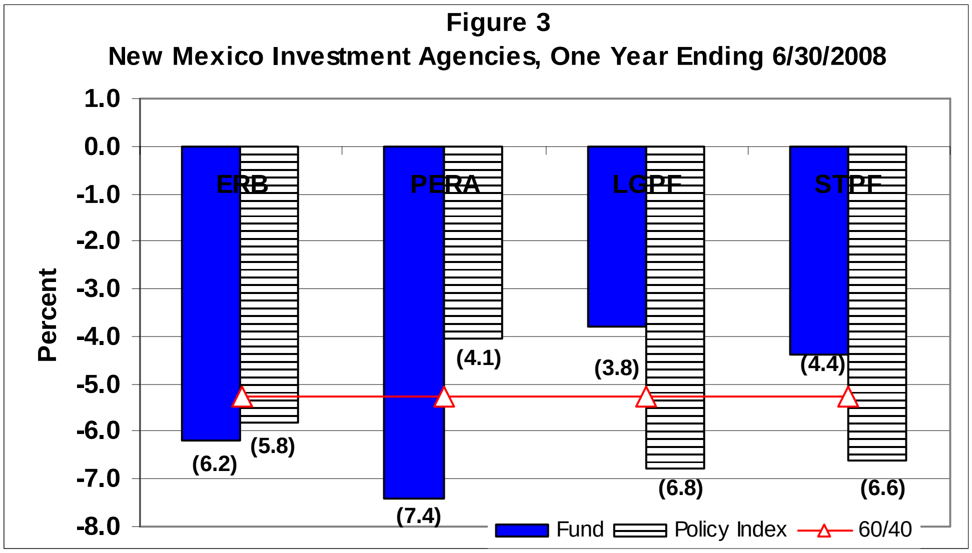
Source: Agency Investment Reports

Figure 2 provides additional return detail relative to performance benchmarks. Returns ranged between negative 0.9 percent and positive 1.2 percent on the quarter. The Land Grant Permanent Fund (LGPF) and the Severance Tax Permanent Fund (STPF), each managed by the SIC, gained 1.2 percent on the quarter—beating their respective policy indices by 210 bps and the 60/40 index by 310 bps. While ERB and PERA returned a negative 0.9 percent and negative 0.7 percent, respectively, each beat their policy indices and the 60/40 index by significant margins. This mixed performance of the pension funds illustrates how relative performance can be positive while absolute performance—total fund return—can be negative. Both evaluations are important for gaining insight into how management decisions and market conditions are translating into outcomes.

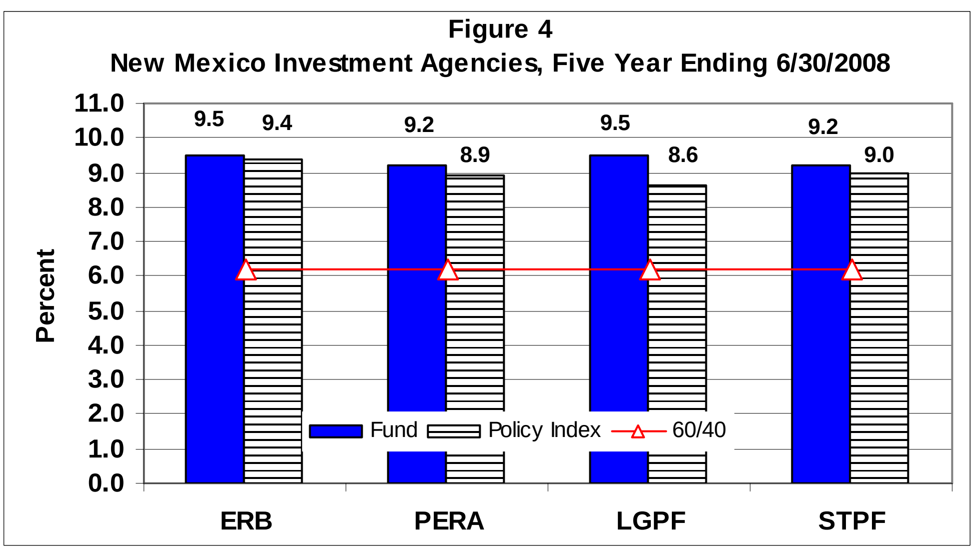
Figure 2
New Mexico Investment Agencies, Quarter Ending 6/30/2008



Year Ending June 30, 2008. Figure 3 shows that FY08 was dismal for both state investments and financial markets, with mixed results relative to benchmarks. Both SIC permanent funds convincingly beat both their policy indices and the 60/40 index. The pension funds, on the other hand, significantly underperformed both their policy indices and the 60/40 index. Of the two, ERB performed the best, missing its policy index and the 60/40 index by only 30 bps and 85 bps whereas PERA missed its policy index and the 60/40 index by 334 bps and 215 bps, respectively. Policy indices for the permanent funds were much lower than for the pension funds due to their high exposure to equities which performed especially poorly over the last twelve months.



Five Years Ending June 30, 2008. Despite weaker returns for the investment funds and financial markets as a whole throughout the last twelve months, five-year returns have continued to remain relatively strong. All of the funds have beaten both their policy indices and the 60/40 index over the last five years. The strongest returns relative to benchmarks have been delivered by the LGPF, which beat its policy index and the 60/40 index by 90 bps and 328 bps, and ERB, which beat the 60/40 index by 328 bps as well.



FUND ASSET VALUES

Table 1 presents changes in asset values as of June 30, 2008. The quarterly and annual asset value changes in the table reflect both contributions and disbursements to each of these funds in addition to investment returns. Thus, the change in asset values does not exactly reflect the reported returns for comparable periods because of the added net effect of cash flows in and out of the funds. The total value of the funds on June 30, 2008 was $35.57 billion, an increase of approximately $13.3 million for the quarter. For the year, the total fund value has declined by more than $2.5 billion from the June 30, 2007 total value of $38.1 billion, a decrease of 6.6 percent. The fund values of both pension funds and the STPF show 12-month declines ranging from 7.1 percent to 8.2 percent, while assets within the LGPF declined just under 4 percent. PERA's asset values do not include those monies held at the State Treasurer's Office (STO) for operational purposes.

Table 1
Current Asset Values (millions)
For Quarter and Year Ending June 30, 2008

Quarterly	ERB	PERA*	LGPF	STPF	TOTAL
Current Asset Values (6/30/08)	$ 8,741	$ 12,191	$ 10,270	$ 4,368	$ 35,571
Value Change (Previous Quarter)	(91)	(111)	162	54	13
Percent Change	-1.0%	-0.9%	1.6%	1.2%	0.0%

Annual	ERB	PERA*	LGPF	STPF	TOTAL
Ending Asset Values (6/30/07)	$ 9,439	$ 13,283	$ 10,673	$ 4,704	$ 38,100
Value Change (Year Ago)	(697.9)	(1,092.5)	(402.7)	(335.9)	(2,529.0)
Percent Change	-7.4%	-8.2%	-3.8%	-7.1%	-6.6%

*Excludes assets held at STO

ECONOMIC AND FINANCIAL MARKET ENVIRONMENT

Economic conditions continued to be less than spectacular throughout the fourth quarter of FY08. One bright spot was U.S. Gross Domestic Product (GDP) growth for the quarter recently being revised upwards from 1.9 percent to 3.3 percent, fueled mostly by tax rebate checks issued by the Federal Government. Despite improvement in GDP growth numerous key economic indicators, though marginally improving from the prior quarter, continued to show signs of an economic downturn. Rising commodity prices had a considerable effect upon the financial markets, discouraging consumer spending and intensely fueling inflation fears. These fears were augmented by Federal Open Market Committee (FOMC) comments made at the end of the quarter which alluded that interest rate increases to combat inflation were likely to occur in the near future. The fourth quarter thus saw these inflationary fears begin to strongly affect investor behavior in both the equity and fixed income markets.

Conditions in the fixed income markets improved marginally at the beginning of the quarter; however, they continue to be negatively affected by a variety of factors. Due in part to higher inflation fears, Treasuries finally unwound after investors in a "flight to quality" had driven yields to historic lows. This, coupled with the actions of the Federal Reserve at the end of the first quarter to increase broker liquidity, returned investors to relatively riskier securities such as municipal bonds and corporate debt offerings. This rally was short lived, however, as the nation's two largest bond insurers suffered significant rating downgrades. Ambac Financial Group and MBIA Inc., who guarantee a combined value of more than $1 trillion in debt, suffered the largest downgrades in recent memory, transforming their policies from assets to liabilities for debt issuers. This event was particularly significant for New Mexico because it resulted in the credit quality of certain revenue bonds issued by the New Mexico Finance Authority (NMFA) being called into question. The insurance company downgrades resulted in Fitch Ratings, which recently withdrew its ratings of both MBIA and Ambac, placing the NMFA's Subordinate Lien Public Project Revolving Fund (PPRF) Revenue Bonds on Rating Watch Negative because they carry insurance provided by MBIA.

Equity markets continued to disappoint investors' hopes of a turnaround in the fourth quarter, suffering some of their largest losses since the 1930's. Although the NASDAQ composite was able to eke out a gain of 0.6 percent, the broader Dow Jones Industrial and Standard & Poor's 500 (S&P 500) Indexes lost 7.4 percent and 3.2 percent, respectively. The worst performing stocks continued to be those most affected by the credit crisis -- mainly those in the financial sector. The Dow Jones Wilshire Bank Index, which is made up of a diversified portfolio of bank stocks from around the country, dropped nearly 26 percent during the quarter. The only blue-chip stocks that seemed to perform positively were Exxon Mobil and Chevron, both adding significant market capitalization due to the more than 38 percent increase in crude-oil prices during the quarter.

ASSET ALLOCATION AND RETURN BY ASSET CLASS

Table 2 below shows asset allocations by fund, which remained relatively close to those reported at the close of the third quarter. In general, changes were driven primarily by the continued fallout of the mortgage crisis rolling through the financial markets. All of the funds have been reallocating to alternative assets, which saw the largest allocation increases throughout the quarter. SIC, which has the most experience in alternative assets, had over 32 percent of its STPF invested in alternatives. Unlike the other funds, STPF invests in "economically targeted investments," or ETI, which include economic development as a goal for the investment. The STPF had approximately $230 million, or 5.3 percent, of its total portfolio allocated to ETI as of June 30, 2008. Approximately $170 million of the overall allocation were outstanding film loans, including about $15 million in loans that had not been "closed" or finalized at the end of the quarter. The SIC currently estimates that its ETI film loans have thus far generated more than $203 million of additional spending within the State of New Mexico, excluding multiplier effects.

Table 2
Fund Asset Allocation Detail, Quarter Ending June 30, 2008

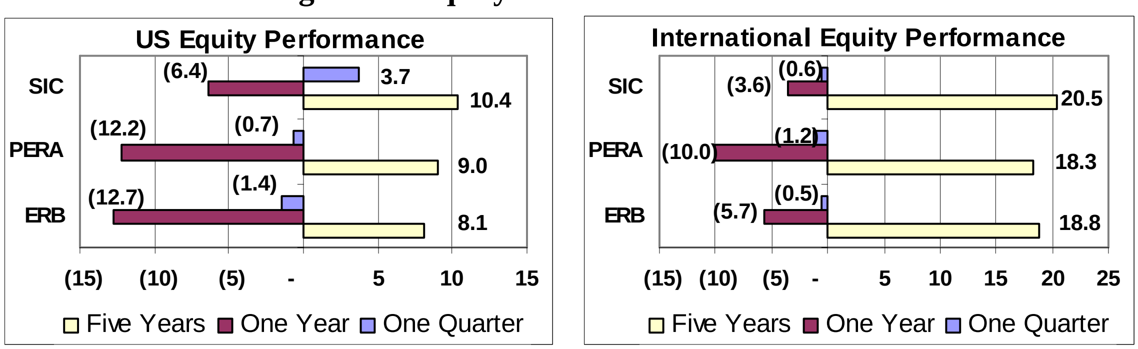
	ERB*		PERA		LGPF		STPF	
	Actual	Target	Actual	Target**	Actual	Target	Actual	Target
Total US Equity	**37.0%**	**40.0%**	**39.8%**	**40.0%**	**50.7%**	**53.0%**	**49.0%**	**53.0%**
International Equity	**18.4%**	**20.0%**	**28.0%**	**25.0%**	**11.6%**	**10.0%**	**13.3%**	**10.0%**
Total Fixed Income	**29.4%**	**29.0%**	**25.8%**	**30.0%**	**15.6%**	**18.0%**	**4.0%**	**11.0%**
Total Alternatives	**14.3%**	**11.0%**	**6.1%**	**5.0%**	**21.3%**	**19.0%**	**32.2%**	**26.0%**
Private Equity	1.1%	1.0%	0.8%		7.5%	6.0%	12.3%	12.0%
Hedge Funds	8.7%	5.0%	5.0%		10.4%	10.0%	10.5%	10.0%
Real Estate/Real Assets	4.5%	5.0%	0.3%		3.4%	3.0%	4.2%	3.0%
Economically Targeted Investments	N/A	0.0%	N/A	0.0%	N/A	0.0%	5.3%	1.0%
Cash Equivalents	0.6%	0.0%	0.0%	0.0%	0.4%	0.0%	1.4%	0.0%
Total Fund %	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100.0%**	**100%**

**ERB is is adopting a new asset allocation mix that will raise the commitment to alternatives to 35% and correspondingly reduce equity and fixed income asset classes.*

***Due to the long implementation period for some alternatives, both PERA and ERB targets for some alternatives will be increased over time to match the long term targets.*

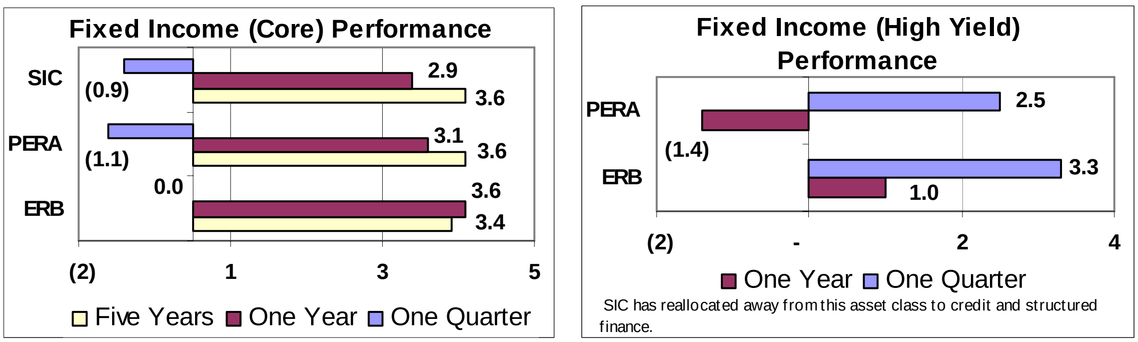
<u>Traditional Asset Classes.</u> Figure 5 shows how extreme volatility in equity markets throughout the quarter affected fund returns. The SIC permanent funds were able to net more than 3 percent in overall equities during the quarter while returns from both pension funds, despite beating relevant benchmarks, remained negative. This difference in performance was due primarily to the fact that last quarter the SIC began hedging its domestic equity positions using derivatives relating to the performance of the S&P 500 index. Given the recent volatility throughout equity markets, these hedges were extremely helpful to the SIC's overall returns. During the fourth quarter all major domestic equity benchmarks were substantially negative, but due to its hedging program, the SIC's domestic equity portfolio was able return a positive 3.7 percent. Without these derivatives in place, the permanent funds' returns would most likely have been more in line with those of ERB and PERA.

Figure 5 – Equity Performance as of 6/30/08



In sharp contrast to last quarter, high yield fixed income outperformed core by a significant margin. Core fixed income, which helped to anchor fund performance in the third quarter, generally dragged down overall results throughout the fourth quarter. This underperformance was driven primarily by an unwinding of Treasury markets as investors, willing to accept more risk in their portfolios due to marginally improved economic data, shied away from Treasuries and took advantage of higher yields elsewhere. While both pension funds benefited substantially from the turn around in fixed income markets, the permanent funds were not able to take advantage of this market condition as they no longer have exposure to the high yield asset class.

Figure 6 – Fixed Income Performance as of 6/30/08

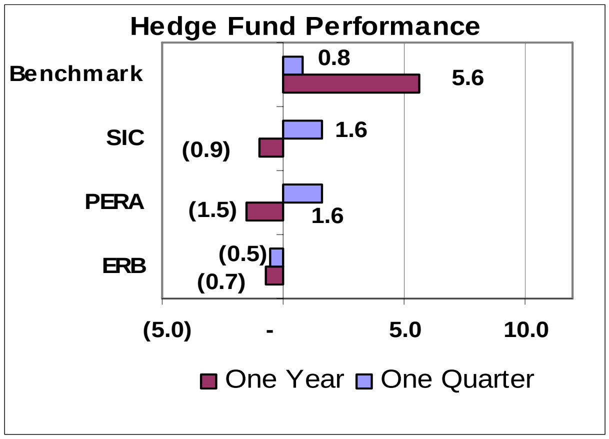


Alternatives. To provide greater diversification, the agencies have been transitioning from the traditional asset classes of equity and fixed income to alternatives – such as hedge funds, real estate, and private equity. SIC has been investing in alternatives for several years while ERB and PERA began to focus on this policy shift over the last year. Using a fund-of-funds (a fund that is composed of several funds) approach, ERB has completed its initial rollout into hedge funds—or an absolute return strategy—for over a year; this is a similar strategy that has been effective for SIC over the last several years. PERA implemented its strategy through direct investments in individual hedge fund managers. STPF has significantly expanded the allocation to alternatives, particularly private equity by way of its ETI program. Alternative investment returns proved an important factor in fourth quarter results for all State investment agencies.

Hedge fund or absolute return investments performed fairly well during the fourth quarter, especially compared to returns over the last twelve months. These returns helped to anchor overall performances given the recent downturn in equity markets. However, both ERB and SIC report their hedge fund performance on a one-month lagged basis. Therefore their quarterly returns do not include the month of June, which was arguably one of the most volatile quarters for financial markets in decades. In addition to the poor performance of core fixed income investments, the S&P 500 Index had one of its worst monthly performances since the 1930s. It is interesting to see that both SIC and PERA had near identical hedge fund returns for the quarter while ERB, whose return should be more highly correlated with SIC's return, is more than 200 basis points lower. The lack of correlation between ERB and SIC is most likely due to market timing effects which could be attributable to ERB's relative newness to hedge fund investments.

Regardless of the funds' reporting periods, all of the agencies' hedge fund investments dramatically underperformed the one-year hedge fund benchmark of positive 5.6 percent. In fact, none of the funds had positive returns for the last twelve months. This continued underperformance calls manager performance into question, particularly the decision to invest directly into hedge funds or to use fund of funds investments to better diversify absolute return portfolios.

Figure 7: Hedge Fund and Real Estate Performance as of 6/30/08

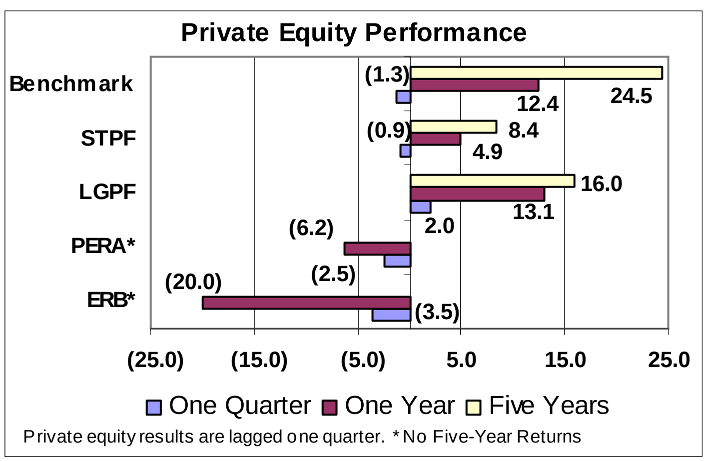


Notes:

(1) Benchmark shown is 90-day Treasury bill plus 200 bp for hedge funds (as of 5/31/08).
(2) SIC and ERB performance is three months ending 5/31/08 while PERA is 6/30/08 so direct comparisons are inappropriate.

In terms of real estate investments, all of the funds did well relative to quarterly benchmarks but substantially underperformed on the year. It should be noted, however, that it can at times be difficult to evaluate real estate investments on a quarter-by-quarter basis as most are not "marked to market". With the exception of ERB, which invests its real estate portfolio in Real Estate Investment Trusts (REITs) that are marked to market, returns on real estate investments are lagged and thus not necessarily indicative of actual returns during the relevant time period. ERB's marked-to-market REIT portfolio, although negative, outperformed Dow Jones Wilshire REIT index returns for both the quarter and the fiscal year.

Figure 8: Private Equity Performance as of 6/30/08



Private equity returns were mixed throughout the fourth quarter. Both SIC permanent funds beat quarterly benchmarks, with the LGPF outperforming the STPF. The difference in private equity performance between the two permanent funds is driven primarily by the STPF's ETI portfolio, which puts more emphasis on economic development and less on overall profitability. There are also a considerable number of STPF private equity investments that are relatively young and in the early stages of their "j-curve", which can result in poor initial returns. The pension funds' private equity portfolios are very young and also suffer from j-curve effects.

ADDITIONAL DETAIL ON FUND PERFORMANCE FOR QUARTER

Table 3 shows detailed fund performance for the quarter ending June 30, 2008. For comparison purposes, the table also provides the returns for a set of market benchmarks commonly used for particular asset classes. As previously noted, PERA reports performance for its hedge fund portfolio on a current basis while both ERB and SIC report performance for this asset class as of the prior month, or in this case, as of May 31, 2008. Due to the different reporting periods, comparisons between PERA and the other funds for this asset class are not meaningful.

Table 3
Fund Performance Detail (Quarter Ending 6/30/2008)

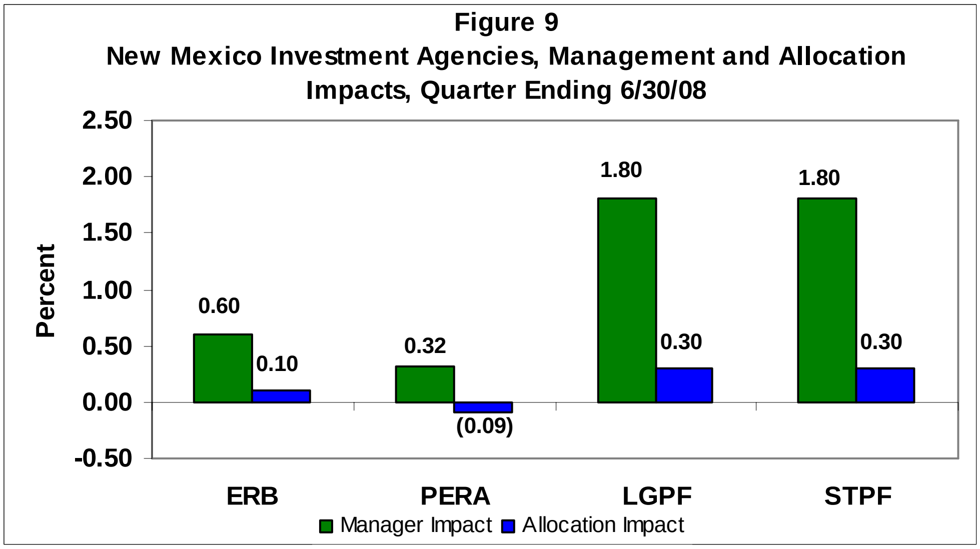
Asset Class	**Benchmark[3]**	**ERB**	**PERA**	**LGPF**	**STPF**
U.S. Equity (S&P 500)	*-2.7%*	-1.4%		3.7%	3.7%
U.S. Equity (Russell 3000)	*-1.7%*		-0.7%	3.7%	3.7%
U.S. Equity (Wilshire 5000 Cap Wtd)	*-1.5%*			3.7%	3.7%
Real Estate Investment Trusts (REITS) (DJ Wilshire REIT)	*-5.4%*	-4.5%	n.a.	n.a.	n.a.
U.S. Core Fixed Income (LB Aggregate)	*-1.0%*	0.0%	-1.1%	-1.8%	-1.8%
U.S. High Yield Bonds (LB High Yield)	*0.3%*	3.3%	2.5%	n.a.	n.a.
International Dev Equity (MSCI EAFE Net)	*-2.3%*	-0.7%	-1.4%	-2.2%	-2.2%
Emerging Markets Equity (MSCI EMF)	*-0.8%*	0.3%	-0.2%	1.2%	1.2%
Private Equity/Venture Capital (Cambridge Venture Capital)[1]	*-1.8%*	n.a.	n.a.	2.0%	-0.9%
Private Equity (Cambridge Private Equity)[1]	*-1.3%*	-3.5%	-2.5%	2.0%	-0.9%
Real Estate (NCREIF)	*0.6%*	n.a.	-2.1%	1.3%	2.3%
Real Assets		n.a.	-3.8%	n.a.	n.a.
Absolute Return[2] (Hedge Funds) (90-day T-bill + 200 bp)	*0.8%*	-0.5%	n.a.	0.8%	0.8%
Absolute Return (Hedge Funds) (LIBOR + 400 bp)	*1.7%*	n.a.	1.6%	n.a.	n.a.
Individual Fund Policy Target		-1.60%	-0.99%	-0.90%	-0.90%
Total Fund Return		**-0.90%**	**-0.73%**	**1.20%**	**1.20%**

[1] *Performance for private equity is reported on a 3 to 4-month lag.*
[2] *Performance for hedge funds is reported on a 1-month lag for ERB and SIC.*
[3] *Benchmarks are for comparison purposes and do not necessarily correlate to the individual fund's policy targets.*

MANAGEMENT PERFORMANCE

The fund performance compared to the internal targets is made up of two primary components: manager impact and asset allocation impact. The manager impact is a measure of the individual manager's performance contrasted against the performance of the relevant benchmark. The allocation impact is the impact resulting from portfolio allocation that deviates from the fund's target or policy allocation.

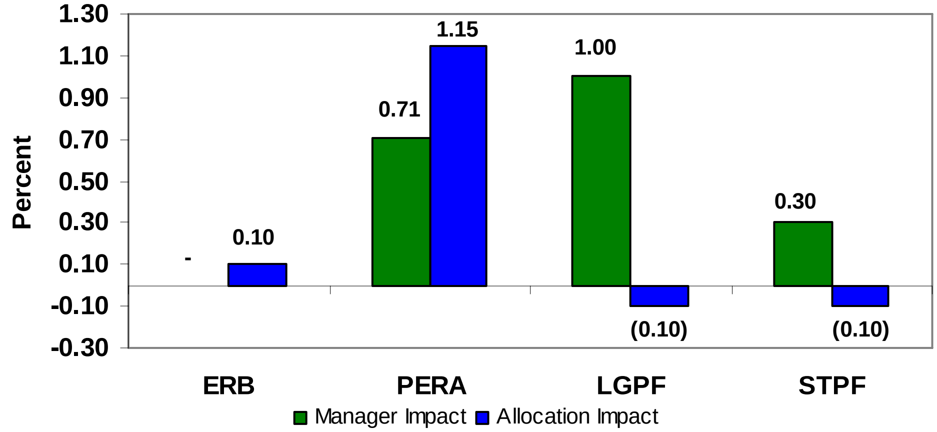
In contrast to prior quarters, active management paid off across all funds, particularly in the SIC permanent funds where the management impact produced 180 bps for each fund. This added performance was likely the result of the SIC's hedging program, which is not used by either pension fund. PERA has recently terminated two managers for underperformance, one in fixed income and one in domestic value equities.



- PERA finished 26 bps above its benchmark due largely to manager performance. This is a stark divergence from last quarter when PERA missed its benchmark by 157 bps due almost exclusively to manager underperformance. PERA was the only fund this quarter to have a negative allocation impact.
- ERB beat its benchmark by 70 bps supported by a large improvement in manager performance from a quarter earlier. Drastic improvement was seen primarily in its high yield fixed income portfolio, but overall returns were weighed down considerably by disappointing alternative investment results.
- LGPF and STPF both had positive returns of 1.2 percent, which were supported by extremely strong manager performance. The funds beat both their policy index benchmarks and the 60/40 index by 210 bps and 310 bps, respectively, anchored in large part by its equity hedging program that helped its domestic equity returns beat the S&P 500 by 640 bps.

It is encouraging to see that all funds significantly increased their active manager performance relative to benchmarks. Active management performed extremely poorly in the third quarter and raised questions as to the added benefit of active management in general. Figure 10 below shows that active management has had marginal effects upon fund performance over a five year period. However, both pension funds have received more benefit over the last five years from allocation impacts than from manager impacts. PERA was the only fund to have a negative allocation impact this quarter, marking four straight quarters of negative impact, while at the same time, it has received the most positive allocation impact over the longer period. This is most likely due to PERA's substantial allocation to international equities, which outperformed other asset classes in prior years but showed a relatively poor performance throughout FY08.

Figure 10
New Mexico Investment Agencies, Management and Allocation Impacts, 5 Years Ending 6/30/08



RISK/RETURN MANAGEMENT

Table 4 below presents the risk-adjusted return measures for each fund, which are discussed in more detail within the Special Focus section. Volatility of returns, measured by the standard deviation of returns, decreased for all funds and benchmarks compared to the third quarter. Volatility for the two permanent funds improved the most on the quarter, most likely due to the SIC's equity hedging program.

Table 4
Risk Profiles as shown by Standard Deviations, Five Years Ending 6/30/08

	ERB	PERA	LGPF	STPF
FUND				
Standard Deviation*	7.4	7.1	6.7	6.8
Sharpe Ratio**	0.8	0.8	0.9	0.9
BENCHMARK				
Standard Deviation*	7.3	6.2	6.7	6.7
Sharpe Ratio**	0.8	0.9	0.8	0.8

* Standard deviation measures the fund's expected variability (deviation) from the expected return
** Sharpe Ratio measures the risk-adjusted performance of a portfolio The higher the number, the higher the return-to-risk level. Risk free return is a 5 Year Treasury.

The five-year Sharpe Ratios declined significantly for all funds from the third quarter, indicating that active manager performance declined relative to risk free rates of return over this period. This sharp decline occurred despite marginal improvements in volatility and fourth quarter management performance because of substantial changes in the five-year returns, which decreased by 223 bps on average from the third quarter. This decline was due to dropping a very positive quarter from the five-year average calculation and adding a quarter where returns were lackluster.

Table 5
Five Year Agency Percentage Returns

	ERB	PERA	LGPF	STPF
Ending 3rd Quarter FY08	12.10	11.30	11.60	11.30
Ending 4th Quarter FY08	9.5	9.17	9.5	9.2

CURRENT ISSUES

- The three New Mexico investment entities recently filed a joint lawsuit in state court against Countrywide Financial, which was recently acquired by Bank of America. The lawsuit alleges violation of the Securities Act of 1933 and Negligent Misrepresentation relating to the marketing of certain collateralized debt obligations (CDOs) as to their safety and liquidity. The CDOs in question were mortgage backed securities (MBSs), which in the prospectus were marketed as having been "originated and verified using prudent, defined loan underwriting guidelines." The state investment entities have disagreed and alleged that the mortgages should be qualified as sub-prime loans, and that Countrywide and its subsidiaries "routinely ignored their own stated underwriting procedures and guidelines in an effort to generate high volume loan business regardless of credit risk, and shifted bad loans upon unsuspecting…investors."
- The SIC, ERB, and PERA had a combined exposure of nearly $400 million to the securities in question. ERB liquidated its positions in April suffering just over a 12 percent loss on approximately $2.3 million of exposure. PERA is exposed to approximately $20.4 million of the securities in question and expects losses of approximately $6.5 million. The SIC has the largest exposure with more than $370 million on its books but has not reported any potential write-downs at this point.
- Possible write downs are difficult to estimate as the losses suffered thus far, with the exception of ERB, are unrealized due to the fact that the securities have not yet been sold. CDO's have recently been sold at monumental discounts however, as reported this week in *The Wall Street Journal*. Merrill Lynch recently liquidated some of its MBS portfolio at a mere 22 cents on the dollar while other MBS have been sold at markdowns of only 85 cents on the dollar.

SPECIAL FOCUS – Risk-Adjusted Return Measures

The Sharpe Ratio is a risk-adjusted return measure that helps gauge the effectiveness of the additional risk assumed by active management as compared to a risk-free return. The ratio is computed by taking the difference between the actual portfolio percentage return and the risk-free equivalent of the same maturity (such as a Treasury) and dividing the result by the portfolio risk as measured by the fund's standard deviation (or volatility). For this report, the difference is generated by subtracting the five-year Treasury note from each fund's five-year return. By then dividing the additional returns by the fund's standard deviation, the return is adjusted to better reflect the additional risks associated with the fund because higher returns are generally accompanied by higher risks. This indicates the additional returns being generated per unit of volatility as a result of actively managing the fund instead of putting everything into risk-free securities. Thus, the higher the ratio, the better the manager is performing relative to risk-free options.

Although the Sharpe Ratio remains the industry standard for measuring actively managed portfolio performance, a number of other risk-adjusted-return measures can be used.

<u>Sortino Ratio.</u> Although the calculations of both the Sortino Ratio and the Sharpe Ratio are very similar, the concept behind the Sortino Ratio differs quite a bit. The Sortino Ratio maintains that while additional volatility can have a strong affect upon a manager's performance, a manager should not be penalized for excess *positive* volatility. Therefore, this ratio replaces the risk-free return with the fund's Minimum Acceptable Return

(MAR), which is more commonly known as a portfolio's required rate of return. Furthermore, the ratio eliminates penalties related to positive volatility by using the volatility of returns (standard deviation) below the MAR in the denominator instead of the volatility of all returns as is done in the Sharpe Ratio. The Sortino Ratio is not widely used for a number of reasons, primarily because of the lack of a universal MAR that would apply to all funds.

The Treynor Measure. The Treynor Measure is also similar to the Sharpe Ratio in that it seeks to relate excess returns to risks assumed by the manager. It is also calculated in a similar way to the Sharpe Ratio, with one major distinction. The Treynor Measure uses the portfolio's beta[2] in the denominator to quantify risk instead of the portfolio's standard deviation. While a portfolio's beta can be a strong standalone indicator of a portfolio's risk, it doesn't always fully quantify the amounts of systematic or market risk associated with the manager's portfolio decisions as does the portfolio's standard deviation. Therefore, the Treynor Measure can lead to a manager's results not being adjusted as much as is appropriate, resulting in an artificially high ratio. Additionally it can be difficult to calculate the beta for funds as complex as the State investment funds due to their large exposure to alternative investments. Market standard deviations and correlation would be extremely tricky to calculate due to the fact that most private equity investments are not marked to market.

Information Ratio. The Information Ratio is slightly altered version of the Sharpe Ratio in that it measures the actively managed funds performance against a benchmark return instead of a risk-free return. Although we currently do not use the Information Ratio, our analysis does compare the Sharpe Ratios of both a fund's actual return and its benchmark return as a measure similar to the Information Ratio.

Conclusion. Because of the increasing complexity within large investment funds as a result of alternative investment strategies, risk-adjusted return measures are being constantly debated as to their relevancy. The LFC staff is continually looking at newer measures to assist in comparing manager performance across the spectrum of state investment funds. Staff and consultants for the state investment and pension funds as well are constantly monitoring portfolios with a number of different tools in order to continuously improve investment performance. Despite the debate as to the measure's relevancy, the Sharpe Ratio is the most comprehensive and relevant measure of risk-adjusted performance available at this time and will continue to be used for the LFC Quarterly Investment Report.

[2] A beta coefficient is a measure of a security or fund's market risk in as much as its returns move with the market. It can be calculated by taking the standard deviation of the fund or individual security and dividing it by the standard deviation of the entire market then multiplying by the correlation between the two.