

**The Financial Contribution of Oil and Natural Gas Investments
To Public Employee Pension Plans in Seventeen States,
Fiscal Years 2005 – 2013**

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The Financial Contribution of Oil and Natural Gas Investments To Public Employee Pension Plans in Seventeen States, Fiscal Years 2005 – 2013

Executive Summary

This report examines the financial impact of investments in oil and natural gas companies on the overall performance of the two largest public employee pension funds in each of seventeen states, as well as the overall retirement systems of those states. The data show that investments in U.S. oil and natural gas stocks significantly out-performed the other assets held by those funds. Over the eight years from FYs 2005 to 2013, spanning vigorous expansion, deep recession and economic recovery, investments in oil and natural gas company assets by these public employee pension plans accounted for an average of 4.0 percent of plan assets and 8.0 percent of their returns. Therefore, the share of the funds' returns attributable to oil and natural gas investments was, on average, twice as great as their share of the funds' assets.

**Table ES-1. Total Assets, Oil and Natural Gas Assets, and Returns on Those Assets,
Two Largest Pension Funds in Seventeen States, FYs 2005 – 2013**

| State | Total Assets (\$ billions) | Oil and Natural Gas Assets (\$ billions) | Oil and Natural Gas Assets as a Share of All Assets | Returns from Oil and Natural Gas Assets as a Share of All Returns | Ratio of Oil and Natural Gas Asset Returns to Their Share of All Assets |
|--------------|-------------------------------|---|--|--|--|
| CA | \$370.4 | \$14.0 | 3.8% | 8.1% | 2.14 |
| FL | \$83.1 | \$3.4 | 4.1% | 8.5% | 2.04 |
| IL | \$47.7 | \$1.8 | 3.7% | 8.9% | 2.40 |
| IN | \$19.3 | \$0.7 | 3.5% | 10.1% | 2.90 |
| IA | \$14.4 | \$0.4 | 3.1% | 6.3% | 2.04 |
| MI | \$51.2 | \$2.1 | 4.2% | 6.9% | 1.65 |
| MN | \$29.4 | \$1.6 | 5.3% | 9.5% | 1.78 |
| MO | \$33.6 | \$1.1 | 3.3% | 6.4% | 1.91 |
| NE | \$7.1 | \$0.3 | 4.5% | 9.0% | 2.00 |
| NH | \$4.5 | \$0.2 | 4.9% | 11.5% | 2.33 |
| NM | \$20.9 | \$0.9 | 4.2% | 8.1% | 1.92 |
| NY | \$224.4 | \$11.3 | 5.0% | 9.8% | 1.95 |
| ND | \$3.4 | \$0.1 | 4.0% | 8.6% | 2.18 |
| OH | \$141.4 | \$5.5 | 3.9% | 6.7% | 1.71 |
| PA | \$81.2 | \$2.1 | 2.6% | 5.4% | 2.04 |
| SC | \$17.0 | \$0.3 | 1.6% | 5.5% | 3.41 |
| WV | \$7.8 | \$0.2 | 3.2% | 6.3% | 1.96 |
| Total | \$1,156.7 | \$46.2 | 4.0% | 8.0% | 2.01 |

- The covered membership of the two largest plans in the seventeen states totaled an average of 9.63 million current and former employees over this period, accounting for more than 49 percent of all those covered in the United States by state and local government employee pension plans.

- The seventeen states pension systems account for nearly 55 percent of all assets held by all state and local government employee pension systems, and the two largest public pension funds in those seventeen states account for more than 35 percent of the total assets of all state and local public pension systems.
- The level and extent of the funds' investments in U.S. oil and natural gas assets vary greatly across the seventeen states: The two largest plans in South Carolina, for example, held an average of \$300 million in those assets over this period, representing just 1.6 percent of their total holdings; while the two largest plans in New York held an average of \$11.3 billion in U.S. oil and natural gas assets, representing 5.0 percent of their total holdings.
- On average, the share of these funds' combined returns attributable to their oil and natural gas assets was 2.01 times greater than those assets' share of the funds' total assets. Across the seventeen states, this ratio ranged from a low of 1.71-to-1 to a high of 3.41-to-1.
- On average, \$1 invested in U.S. oil and natural gas stocks by the two largest plans in these seventeen states in FY 2005 was worth \$2.30 in FY 2013, with a range across the seventeen states of \$2.18 to \$2.40. By contrast, \$1 invested in FY 2005 in all other assets by the two largest plans in these seventeen states was worth an average of \$1.68 in FY 2013, with a range of \$1.50 to \$1.79.¹

¹ See Table 2.

The Financial Contribution of Oil and Natural Gas Company Investments To Major Public Pension Plans in Seventeen States, Fiscal Years 2005 – 2013²

Robert J. Shapiro

I. Introduction and Summary of Results

This report examines the financial impact of investments in oil and natural gas companies on the overall performance of state public employee pension funds.³ For many years, most public pension funds have faced daunting challenges in preparing to meet their future obligations; and since January 2008, more than 35 states enacted changes that ultimately reduce those benefits.⁴ In this study, we analyze an aspect of a traditional investment approach to meeting this challenge by charting the impact over eight years of investments in oil and natural gas companies by the two largest public pension funds in seventeen states. These states cover roughly half of all U.S. public state and local employees and more than half of all public state and local pension fund assets. We found that from 2005 to 2013, spanning years of vigorous expansion, deep recession and economic recovery, these funds' oil and natural gas assets, on average, accounted for 4.0 percent of their assets and 8.0 percent of their returns. Therefore, the returns from the oil and natural gas assets held by state and local government pension funds were twice as great as those assets' share of the funds' total holdings.

The seventeen states examined here include large and small states from every region of the country: California (CA), Florida (FL), Illinois (IL), Indiana (IN), Iowa (IA), Michigan (MI), Minnesota (MN), Missouri (MO), Nebraska (NE), New Hampshire (NH), New Mexico (NM), New York (NY), North Dakota (ND), Ohio (OH), Pennsylvania (PA), South Carolina (SC), and West Virginia (WV).

In each state, we analyzed the portfolio and performance of the two largest public pension systems, which in every case were the pension program for public teachers and public school employees, and the pension program for state government employees. The members of these plans include eligible current workers, former workers and retirees covered by the plans. The covered membership of the two largest plans in the seventeen states totals 9.6 million current and former workers, accounting for roughly half (49.1 percent) of those covered by all state and local government pension plans in those states. (Table 1, below) The two largest plans in these seventeen states also account for some 60 percent of the total assets of all public employee pension programs in those states. From 2005 to 2013, the two largest plans from the

² The authors wish to acknowledge the superb research assistance of Tripp Herr, as well as research support from the American Petroleum Institute. The analysis and conclusions are solely those of the author.

³ We use "oil and gas company holdings" synonymously with "energy sector holdings" in this report, as oil and gas companies comprise 98 percent of the value of the S&P Energy Sector Index and the vast majority of energy sector holdings in the public employee pension funds examined here. The current S&P 500 Energy Sector Index is comprised of 60.3 percent integrated oil & gas companies; 17.8 percent oil & gas exploration and production firms; 14.1 percent oil and gas equipment and services firms; 2.7 percent oil and gas storage and transportation companies; .20 percent oil and gas drilling firms; and 1.3 percent oil & gas refining & marketing. Coal and consumable fuels account for the remaining 1.9 percent of the Index.

⁴ GAO (2012).

seventeen states examined here held combined assets averaging \$1,157 billion per-year, including an annual average of \$46.2 billion in oil and natural gas company assets or 4.0 percent of the total. Their total assets also accounted for 35.2 percent of the \$3,287 billion in assets held by all state and local government pension funds. The level and extent of a pension fund's investments in oil and natural gas assets varied greatly across the seventeen states. (Table 1 below) For example, the two largest government pension plans in South Carolina held just over 1.6 percent of their total assets in oil and natural gas holdings assets, \$300 million of \$17.0 billion; compared to the two largest plans in New York, with \$11.3 billion in oil and natural gas assets or more than 5.0 percent of their total holdings of 224.4 billion.

Table 1: Membership, Assets, and Oil and Natural Gas Holdings of the Two Largest Pension Funds in Seventeen States, Annual Average, FYs 2005 – 2013⁵

| State | Membership | Total Assets (\$ billions) | Oil and Natural Gas Assets (\$ billions) | Oil and Natural Gas Assets as a Share of Total Assets |
|--------------|------------------|----------------------------|--|---|
| CA | 2,391,984 | \$370.4 | \$14.0 | 3.78% |
| FL | 651,610 | \$83.1 | \$3.4 | 4.09% |
| IL | 484,916 | \$47.7 | \$1.8 | 3.77% |
| IN | 374,949 | \$19.3 | \$0.7 | 3.47% |
| IA | 195,379 | \$14.4 | \$0.4 | 2.78% |
| MI | 539,567 | \$51.2 | \$2.1 | 4.18% |
| MN | 437,281 | \$29.4 | \$1.6 | 5.33% |
| MO | 236,441 | \$33.6 | \$1.1 | 3.27% |
| NE | 88,127 | \$7.1 | \$0.3 | 4.50% |
| NH | 64,881 | \$4.5 | \$0.2 | 4.94% |
| NM | 208,331 | \$20.9 | \$0.9 | 4.24% |
| NY | 1,326,990 | \$224.4 | \$11.3 | 5.04% |
| ND | 46,608 | \$3.4 | \$0.1 | 3.96% |
| OH | 1,432,507 | \$141.4 | \$5.5 | 3.89% |
| PA | 714,580 | \$81.2 | \$2.1 | 2.59% |
| SC | 299,389 | \$17.0 | \$0.3 | 1.63% |
| WV | 135,099 | \$7.8 | \$0.2 | 3.20% |
| Total | 9,628,639 | \$1,156.8 | \$46.2 | 4.0% |

Our analysis found that the public pension funds examined here achieved eight-year cumulative returns on their oil and natural gas investments averaging 130 percent, compared to eight-year average returns of 68 percent for the same funds' non-oil and natural gas holdings. (Table 2, below) From state to state, the eight-year cumulative returns on the plans' oil and natural gas investments ranged from 118 percent to 140 percent, compared to eight-year returns of 50 percent to 79 percent for the same funds' non-oil and natural gas investments. The returns on oil and natural gas investments, therefore, were both greater and relatively more uniform across the seventeen states than the returns on other assets. The larger differences in the returns on other assets, across states, reflect mainly the varying asset allocations of the portfolios of the

⁵ Comprehensive Annual Financial Reports of different retirement systems. For details of sources, see Tables CA-1, FL-1, IL-1, IN-1, IA-1, MI-1, MN-1, MO-1, NE-1, NH-1, NM-1, NY-1, ND-1, OH-1, PA-1, SC-1 and WV-1.

seventeen states. Some states had relatively large holdings in fixed income assets, which rose sharply in the later years of this period, and other states had significant investments in alternative assets with highly variable returns, such as hedge funds and commodities. The asset allocations for each state are provided in the Appendix. Some of the differences in the returns on both non-oil and natural gas assets and oil and natural gas holdings reflect differences in the fiscal years of states. New York State's fiscal year, for example, ends on March 31, so that the returns in FY 2013 do not take account of movements in equity values later that year.

Table 2: Returns on All Assets and Oil and Natural Gas Assets of the Two Largest Pension Funds in Seventeen States, FYs 2005 – 2013⁶

| State | Return on \$1 Invested in US Oil and Natural Gas Stocks | Return on \$1 Invested in All Other Assets |
|----------------|---|--|
| CA | \$2.31 | \$1.65 |
| FL | \$2.31 | \$1.69 |
| IL | \$2.31 | \$1.60 |
| IN | \$2.31 | \$1.54 |
| IA | \$2.31 | \$1.79 |
| MI | \$2.18 | \$1.75 |
| MN | \$2.31 | \$1.78 |
| MO | \$2.31 | \$1.74 |
| NE | \$2.28 | \$1.61 |
| NH | \$2.31 | \$1.64 |
| NM | \$2.31 | \$1.64 |
| NY | \$2.40 | \$1.68 |
| ND | \$2.31 | \$1.63 |
| OH | \$2.28 | \$1.75 |
| PA | \$2.28 | \$1.79 |
| SC | \$2.31 | \$1.50 |
| WV | \$2.31 | \$1.71 |
| Average | \$2.30 | \$1.68 |

Table 2 above provides a summary of the cumulative performance of the oil and natural gas assets held by these public pension funds from FY 2005 to FY 2013, compared to those funds' other investments. By this measure, the oil and natural gas investments outperformed other investments by 1.91-to-1: Their oil and natural gas assets achieved a 130 percent average eight-year cumulative return, compared to a 68 percent average eight-year cumulative return for the funds' other holdings. This comparison uses simple averaging and therefore does not take account of differences in asset allocations and fund size across the seventeen states.

An alternative measure is the ratio of the gains by these oil and natural gas holdings as a share of a fund's total gains, and their share of that fund's total assets. This measure focuses exclusively on the performance of the oil and natural gas assets and is less influenced by the different asset allocations across states and the impact of the timing of fiscal years on the value

⁶ Comprehensive Annual Financial Reports of different retirement systems. For details of sources, see Tables CA-2, FL-2, IL-2, IN-2, IA-2, MI-2, MN-2, MO-2, NE-2, NH-2, NM-2, NY-2, ND-2, OH-2, PA-2, SC-2 and WV-2.

of different categories of assets. Using this weighted approach, we found that oil and natural gas assets accounted for a share of these funds' returns that was twice as large as their share of the funds' total assets. (Table 3 below) These ratios still varied substantially across the seventeen states, ranging from less than 1.7-to-1 to more than 3.4-to-1. To illustrate, the oil and natural gas investments held by South Carolina's two largest public pension plans accounted for just over 1.6 percent of those funds' total assets (Table 1, above) while contributing 5.5 percent of those funds' total gains, for a ratio of 3.4-to-1. (Table 3, below) By contrast, oil and gas assets held by Michigan's two largest public pension funds accounted for nearly 4.2 percent of those funds' total assets while contributing 6.9 percent of their total returns, for a ratio of 1.65-to-1.

Table 3: Returns on All Assets and Oil and Natural Gas Assets of the Two Largest Pension Funds in Seventeen States, FYs 2005 – 2013⁷

| State | Returns from Oil and Natural Gas Investments (\$ millions) | Returns from All assets (\$ millions) | Returns from Oil and Natural Gas Investments, Share of All Returns | Ratio of Oil and Natural Gas Stocks' Share of Returns to their Share of Assets |
|--------------|--|---------------------------------------|--|--|
| CA | \$21,338.3 | \$264,443.8 | 8.1% | 2.13 |
| FL | \$4,975.6 | \$58,854.4 | 8.5% | 2.07 |
| IL | \$2,962.6 | \$33,359.1 | 8.9% | 2.40 |
| IN | \$1,121.7 | \$11,130.1 | 10.1% | 2.90 |
| IA | \$661.7 | \$10,465.5 | 6.3% | 2.27 |
| MI | \$2,449.9 | \$35,597.7 | 6.9% | 1.65 |
| MN | \$2,203.9 | \$23,194.3 | 9.5% | 1.78 |
| MO | \$1,487.5 | \$23,297.6 | 6.4% | 1.91 |
| NE | \$451.2 | \$4,999.5 | 9.0% | 2.00 |
| NH | \$371.0 | \$3,221.3 | 11.5% | 2.33 |
| NM | \$1,144.6 | \$14,060.4 | 8.1% | 1.92 |
| NY | \$16,442.8 | \$167,396.4 | 9.8% | 1.95 |
| ND | \$208.3 | \$2,409.7 | 8.6% | 2.18 |
| OH | \$7,334.9 | \$109,709.2 | 6.7% | 1.71 |
| PA | \$3,562.4 | \$66,286.6 | 5.4% | 2.07 |
| SC | \$475.6 | \$8,569.6 | 5.5% | 3.41 |
| WV | \$345.1 | \$5,504.4 | 6.3% | 1.96 |
| Total | \$67,537.0 | \$842,499.5 | 8.0% | 2.01 |

We also have estimated the impact of oil and natural gas investments on the returns of the overall, statewide public employee pension system in each state, using aggregate state-by-state data issued by the Census Bureau. This analysis of statewide public pension systems is not as complete as our analysis of the two largest plans in each state, because the Census Bureau has not yet issued 2013 data on statewide public pension systems. The data covering FYs 2005-2012 provide a less complete picture of the performance of pension fund assets, including oil and natural gas stocks, over recent years. In some cases, this limitation is increased by the fact that

⁷ Comprehensive Annual Financial Reports of different retirement systems, and author's calculations. For details of sources, see Tables CA-2, FL-2, IL-2, IN-2, IA-2, MI-2, MN-2, MO-2, NE-2, NH-2, NM-2, NY-2, ND-2, OH-2, PA-2, SC-2 and WV-2.

the fiscal year of a number of states, such as New York, Illinois and Minnesota, ends on March 31 or June 30, so their FY 2012 data cover only one-fourth or one half of that year.

With this caveat, our analysis of the state-wide Census data produced very similar results to those based on our analysis of the two largest public pension funds in these states. (Table 4 below) Based on statewide data, oil and natural gas investments significantly out-performed the rest of the portfolios of the public pension systems of these seventeen states over this period. The cumulative net capital gains from the oil and natural gas investments of the seventeen state public pension systems totaled \$92.5 billion over FYs 2005-2012, or 9.2 percent of those funds' total cumulative net capital gains of \$1,002.3 billion. Since oil and natural gas assets accounted for a weighted average of 4.3 percent of the total assets of the public pension systems of these 17 states, the ratio of the oil and natural gas assets' share of total returns to their share of total assets was 2.14-to-1 over this period. This is slightly higher than the 2.01-to-1 ratio we found for the two largest plans in each state. (Table 3, above) The difference mainly reflects the time periods, since the data for the statewide pension systems do not include the 2013 fiscal year.

Table 4: Cumulative Returns from All Assets and from Oil and Natural Gas Investments By Statewide Public Employee Pension Systems, Seventeen States, FYs 2005-2012⁸

| State | Cumulative Capital Gains/Losses for All Assets (\$ millions) | Cumulative Capital Gains/ Losses on Oil and Natural Gas Assets (\$ millions) | Oil and Natural Gas Assets As a Share of All Assets | Returns from Oil and Natural Gas Investments as a Share of All Returns |
|--------------|--|--|---|--|
| CA | \$311,473.4 | \$28,697.2 | 4.1% | 9.2% |
| FL | \$80,020.4 | \$7,782.2 | 4.4% | 9.7% |
| IL | \$70,676.1 | \$7,021.1 | 3.7% | 9.9% |
| IN | \$13,611.9 | \$1,558.1 | 4.1% | 11.4% |
| IA | \$15,248.3 | \$1,038.3 | 3.1% | 6.8% |
| MI | \$42,646.9 | \$3,461.1 | 4.6% | 8.1% |
| MN | \$30,507.9 | \$1,511.3 | 2.9% | 5.0% |
| MO | \$28,519.0 | \$1,726.2 | 3.0% | 6.1% |
| NE | \$5,581.4 | \$600.3 | 4.6% | 10.8% |
| NH | \$3,009.3 | \$378.9 | 4.7% | 12.6% |
| NM | \$10,902.8 | \$1,103.5 | 4.0% | 10.1% |
| NY | \$215,265.6 | \$24,826.6 | 5.7% | 11.5% |
| ND | \$2,008.2 | \$168.4 | 3.7% | 8.4% |
| OH | \$92,959.7 | \$8,101.0 | 4.4% | 8.7% |
| PA | \$63,941.2 | \$3,530.2 | 2.6% | 5.5% |
| SC | \$11,834.0 | \$707.8 | 1.6% | 6.0% |
| WV | \$4,125.1 | \$304.4 | 3.4% | 7.4% |
| Total | \$1,002,331.2 | \$92,516.6 | 4.3% | 9.2% |

⁸ Comprehensive Annual Financial Reports of different retirement systems, and author's calculations. For details of sources, see Tables CA-3&4, FL-3&4, IL-3&4, IN-3&4, IA-3&4, MI-3&4, MN-3&4, MO-3&4, NE-3&4, NH-3&4, NM-3&4, NY-3&4, ND-3&4, OH-3&4, PA-3&4, SC-3&4 and WV-3&4. The average for oil and natural gas assets as a share of all assets is a weighted average.

Finally, we calculated the return in FY 2012 on \$1 invested in oil and natural gas stock in FY 2005 by the overall public pension systems of the seventeen states, compared to the return in FY 2012 on \$1 invested in FY 2005 in all other assets held by those public pension systems. These calculations are based on the allocation of the total assets of each state's public pension plans and the average returns for each of various assets classes over this period. Again, these calculations do not include the market movements in oil and natural gas shares and all assets in late 2012 and 2013. These data show that \$1 invested in FY 2005 in oil and natural gas stocks by the public pension systems of these seventeen states was worth \$2.02 in FY 2012, a return of 102 percent. (Table 5, below) By contrast, \$1 invested in FY 2005 in all other assets by the public pension plans in the seventeen states was worth an average of \$1.48 in FY 2012, a return of 48 percent. Over the seven-year period, therefore, the return on oil and natural gas investments by these seventeen state public pension systems was 2.13 times greater than those systems' average returns on their other investments.

Table 5: Returns on All Assets and the Oil and Natural Gas Assets of Statewide Public Employee Pension Systems in Seventeen States, FYs 2005 – 2012⁹

| State | Return in FY 2012 on \$1 Invested in FY 2005 in Oil and Natural Gas Stocks | Return in FY 2012 on \$1 Invested in FY 2005 in All Other Assets |
|----------------|--|--|
| CA | \$2.01 | \$1.41 |
| FL | \$2.01 | \$1.49 |
| IL | \$2.01 | \$1.47 |
| IN | \$2.01 | \$1.41 |
| IA | \$2.01 | \$1.62 |
| MI | \$1.99 | \$1.54 |
| MN | \$2.01 | \$1.56 |
| MO | \$2.01 | \$1.43 |
| NE | \$2.01 | \$1.46 |
| NH | \$2.01 | \$1.42 |
| NM | \$2.01 | \$1.35 |
| NY | \$2.30 | \$1.50 |
| ND | \$2.01 | \$1.43 |
| OH | \$2.01 | \$1.56 |
| PA | \$2.01 | \$1.56 |
| SC | \$2.01 | \$1.36 |
| WV | \$2.01 | \$1.52 |
| Average | \$2.02 | \$1.48 |

The Role of Oil and Natural Gas Prices in the Value of Oil and Natural Gas Assets

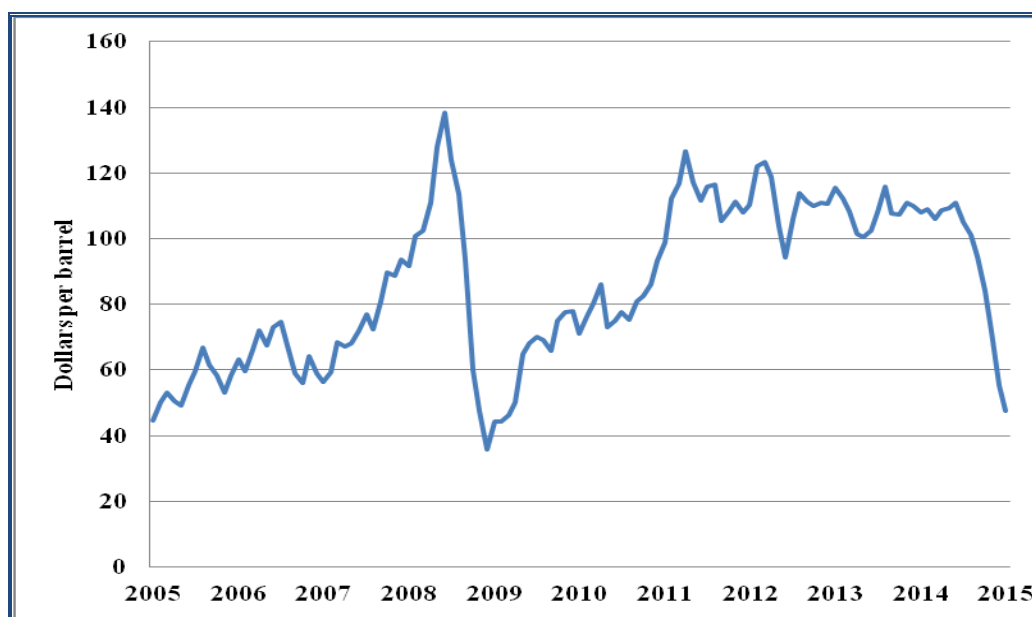
The returns on oil and natural gas company shares reflect, in part, changes in oil and natural gas prices. Those prices were fairly stable from the mid-1980s to 1997; declined in

⁹ Comprehensive Annual Financial Reports of different retirement systems, and author's calculations. For details of sources, see Tables CA-4, FL-4, IL-4, IN-4, IA-4, MI-4, MN-4, MO-4, NE-4, NH-4, NM-4, NY-4, ND-4, OH-4, PA-4, SC-4 and WV-4.

1998-1999, and then recovered in the early part of this century. In the eight-year period covered by this analysis, those prices rose substantially from 2005 to the onset of the financial-system crisis in mid-2008, and then fell sharply: From July 2008 to December 2008, oil prices plunged from a record high of \$140 per-barrel to a low of \$33 per-barrel. Prices began to recover in mid-2009, when the U.S. recession ended; and from that time through 2013, the end of the period covered by this analysis, prices fluctuated while generally increasing. (Figure 1 below)

Since then, prices remained generally high through the first half of 2014, closing at \$107 per-barrel in June 2014; and then prices began to fall sharply with increases in U.S. oil production and the slowdowns in economic growth in Europe and China. Spot oil prices averaged \$95.54 per-barrel in August 2014 and \$93.21 per-barrel in September 2014. The monthly average spot price has fallen steadily since September 2014, to \$84.40 per-barrel in October, \$75.79 per-barrel in November, \$59.29 per-barrel in December, and \$47.20 per-barrel in January 2015. This study includes the period from mid-2008 to mid-2009, when oil and natural gas prices declined sharply; however, the study ends in 2013 and does not cover the price declines since mid-2014, because 2014 data on the asset holdings of state and local pension plans is not yet available.

Figure 1: Brent Crude Spot Oil Prices, January 2005 – January 2015 (current dollars)¹⁰



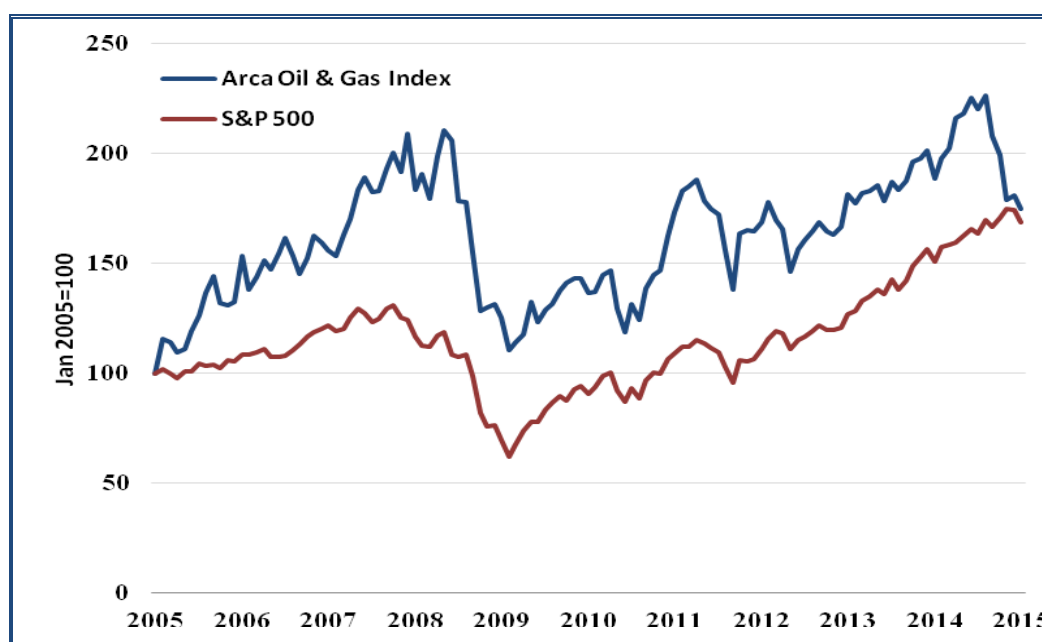
The recent performance of oil and natural gas stocks has been historically strong. We tracked the daily returns of the major index of oil and natural gas companies, the NYSE Arca Oil Index, and the returns of the overall market as measured by the S&P 500 Index, from January 1986 to January 2015. From 1986 to 1991, the returns of oil and natural gas companies generally tracked the overall market; and from 1991 to 2004, the oil and natural gas index underperformed the economy-wide averages. From 2005 to 2011, however, the Arca index strongly outperformed the S&P 500 Index; and from 2011 to mid-2014, the returns on oil stocks

¹⁰ Energy Information Administration, 2014. Cushing, OK WTI Spot Price FOB.

generally tracked or modestly outpaced the overall market. With the recent sharp fall in oil prices, the returns on oil stocks have underperformed the broader index since August 2014. This recent decline in energy stocks, however, has been less severe than the decline from late-summer 2008 to spring 2009: During the financial crisis, from August 2008 to April 2009, the Arca index declined from 1326.7 to 876.4, or 33.9 percent; during the recent sharp fall in oil prices, from August 2014 to January 2015, the Arca index fell from 1689.3 to 1303.99 or 22.8 percent.

Figure 2, below, tracks the returns of the Arca Index and the S&P 500 Index from January 2005 to January 2015.

Figure 2: Returns for the U.S. Oil Sector Compared to the Overall Economy: NYSE Arca Oil Index and S&P 500 Index, January 2005 – January 2015¹¹



U.S. oil prices are generally determined by worldwide supply and demand; because natural gas is more difficult and expensive to ship by tanker, U.S. natural gas prices are broadly set by North American supply and demand. No one can predict the prices of oil and natural gas later this year and into 2016 and 2017. Nevertheless, when demand recovers in China and Europe, it is possible oil prices will rise again. In addition, the sharp price increases from mid-2009 to 2013 supported expanded investments in relatively costly extraction technologies, including shale, oil sands and deep-water extraction. Those investments increased oil supplies in 2014 as worldwide demand was slowing. However, those investments have declined recently with lower oil prices, which could produce a slowdown in production later this year and into 2016. If these supply and demand dynamics occur, prices may increase as they have after other sharp price declines in recent decades.

¹¹ The NYSE Arca Oil Index (XOI) is a price-weighted index that tracks the oil industry through changes in the prices of a cross section of public companies involved in exploring for, producing and developing petroleum.

II. Methodology

This study estimates the financial impact of oil and gas company stocks on the returns achieved by the major public pension plans in the seventeen states of California, Florida, Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Nebraska, New Hampshire, New Mexico, New York, North Dakota, Ohio, Pennsylvania, South Carolina, and West Virginia, over the eight-year period from FY 2005 to FY 2013. For each state, we selected the two largest state pension funds, covering public school employees and state government employees. Across the seventeen states analyzed here, these two public pension plans account for 48 percent of the total membership and 60 percent of the total assets of all public pension plans in those states. The public pension systems in each state follow broadly similar investment patterns. Our estimates of the contribution of oil and natural gas company stocks to all public pension plans in a state are derived by applying the energy holdings as a share of the total assets and the annual returns of those holdings for the two largest pension plans to the aggregate holdings of each state's public pension system.

For each state, we collected eight years of investment data from the Comprehensive Annual Financial Reports (CAFRs) of the two largest public pension funds, including their total assets, asset allocations across classes of financial instruments, holdings by sector (including energy), and annual returns by asset class and sector. The asset allocations are reported for U.S. equities, international equities, fixed income securities, and other asset classes (cash, short-term instruments, real estate and alternative investments), in dollar amounts and as percentages of assets. When a pension plan did not report its investments in the oil and natural gas sector, we used the energy sector's share in the S&P 500 to estimate its' holdings of oil and natural gas stocks. Energy companies accounted for 9.3 percent of the value of the S&P 500 index in 2005, 9.8 percent in 2006, 12.9 percent in 2007, 13.3 percent in 2008, 11.5 percent in 2009, 12.0 percent in 2010, 12.3 percent in 2011, 11.0 percent in 2012, and 10.2 percent in 2013.¹² (In February 2015, energy stocks comprised 10.7 percent of the total value of the S&P500.) We also use each pension fund's reported exposure to the oil and natural gas sector and the S&P 500 Energy Sector as a proxy for oil and gas company holdings and the return of those holdings. Oil and natural gas companies account for 98.1 percent of the current S&P Energy Sector.¹³

To estimate the holdings and returns for all public employee pension plans in a state, we use aggregate data reported by the U.S. Census Bureau for each state, including total assets, asset allocations, memberships, and benefits. Since the Census Bureau does not report oil and natural gas sector holdings by state, we apply the share of total holdings in oil and natural gas stocks for the state's largest pension plan in each year to the state-wide level. If a state's two largest public pension plans do not report their oil and natural gas sector holdings, we apply the share of oil and natural gas stocks in the S&P 500 and the returns of the S&P 500 Energy Sector.

¹² The domestic equity benchmark for public pension fund systems is typically based on a blend of several index benchmarks, such as the S&P 500, the Russell 3000, and the Wilshire 5000. Since the returns of financial indices are highly correlated over time, our results are not biased by our reliance on the S&P's index.

¹³ Again, the breakdown of the current S&P Energy Index: 60.3 percent integrated oil & gas companies; 17.75 percent oil & gas exploration and production; 14.11 percent oil and gas equipment and services; 2.66 percent oil and gas storage and transportation; 1.96 percent oil and gas drilling; and 1.29 percent oil & gas refining & marketing. Coal and consumable fuels account for 1.92 percent of the Index.

In calculating the contribution of oil and natural gas stocks to each plan's assets and returns, we first estimate the plan's annual capital gains and losses based on its annual returns and assets. Next, we estimate the capital gains and losses of the plan's oil and natural gas sector holdings each year based on its oil and natural gas assets and the annual return of the S&P 500 Energy Sector Index. Finally, we use the fund's total capital gains and losses each year and the capital gains and losses of its oil and natural gas sector holdings to estimate the contribution of oil and natural gas sector companies to the fund's overall returns.¹⁴

One caveat in interpreting and comparing the investment performances of these states, as we noted earlier, is that data are reported for each state's fiscal year; and the beginning and end of these fiscal years differs from state to state. For example, the fiscal year ends on June 30 in Illinois, March 31 in New York, September 30 in Michigan, and December 31 in Ohio. These differences can affect our calculations of both annual asset performance and the annual performance of oil and gas company assets, especially when stock prices are volatile. Two states with identical pension plan holdings but different fiscal years will report different annual returns on their total assets and their oil and natural gas stocks, depending on when the fiscal year begins and ends. For example, the FY 2008 returns for states with fiscal years that end relatively early in the year will not include the sharp drops in the second half of 2008. However, since this analysis covers eight years, the impact of those differences is reduced. Moreover, one basic pattern holds across all seventeen states: Over this entire period, the returns on investments in oil and gas companies held by state public pension plans significantly outperformed the average returns from their other investments.

The remainder of this study provides the analysis, state by state, of the impact of oil and natural gas company investments on the performance of state public employee pension funds.

¹⁴ The funds do not report dividends by company or sector, so we could not separately track dividend. However, following standard economic analysis, the value of a company's dividends is reflected in its stock price.

III. State-By-State Analysis

CALIFORNIA

The Two Largest Public Pension Plans

We collected data on the investment portfolios and performance of the two largest public employee retirement plans in California, the California State Teachers Retirement System (CalSTRS) and the California Public Employees' Retirement System (CalPERS), for FYs 2005-2013. Over those years, the two plans had total assets averaging \$370.4 billion and a combined average of 2,391,984 members, including current retirees, current employees, and former or inactive employees. (Table CA-1, below) The two plans held oil and natural gas investments averaging \$13.95 billion or 3.8 percent of the plans' assets. The two plans represent 72.4 percent of all members and 65.7 percent of all assets of all California public employee retirement plans.

Table CA-1: California's Two Largest Public Employee Retirement Plans: Members, Total Assets and Oil and Natural Gas Assets, Annual Average, FYs 2005-2013¹⁵

| | Total Members | Total Assets (\$ billions) | Oil and Natural Gas Assets (\$ billions) | Oil and Natural Gas Assets as a Share of All Assets |
|----------------|------------------|-------------------------------|--|---|
| Total | 2,391,984 | \$370.380 | \$13.952 | 3.8% |
| CalSTRS | 833,783 | \$147.509 | \$6.374 | 4.3% |
| CalPERS | 1,558,200 | \$222.871 | \$7.578 | 3.4% |

The cumulative rate of return on the assets of these two large plans was 8.1 percent for the eight years. (Table CA-2, below) Their oil and natural gas assets produced a 131 percent return, while the return on the rest of the portfolios was 65 percent. The two plans generated gains of \$264.4 billion, including \$21.3 billion from investments in oil and natural gas stocks.

Over FYs 2005-2013, oil and natural gas assets which represented 3.8 percent of the two plans' total assets provided 8.1 percent of their total gains.

Table CA-2: California's Two Largest Public Employee Retirement Plans: Rates of Return and Gains, Overall and Oil and Natural Gas Investments, FYs 2005-2013¹⁶

| | Return on \$1 Invested in Plans | Return on \$1 Invested in Oil and Natural Gas Stocks | Return on \$1 Invested in Non-Oil and Natural Gas Stocks | Total Gains by Plans (millions) | Gains from Oil and Natural Gas Investments (millions) | Gains from Oil and Natural Gas as Share of All Gains |
|----------------|--|--|--|--|---|--|
| Total | \$1.72 | \$2.31 | \$1.65 | \$264,443.8 | \$21,338.3 | 8.1% |
| CalSTRS | \$1.76 | \$2.31 | \$1.67 | \$111,238.6 | \$9,034.0 | 8.1% |
| CalPERS | \$1.69 | \$2.31 | \$1.63 | \$153,205.2 | \$12,304.3 | 8.0% |

¹⁵ Comprehensive Annual Financial Report of State Teachers' Retirement Systems and Public Employees Retirement System and author's estimates.

¹⁶ *Ibid.*

All California Public Employee Retirement Programs

To estimate the impact of oil and natural gas stocks on the returns on all California public employee retirement programs, we use annual Census Bureau data on public employee retirement systems by state. The available data cover only FYs 2005 to 2012; and these data show that all public employee retirement plans in California over this seven-year period covered an average of 983,194 retirees and beneficiaries, 1,746,771 active employees, and 489,943 inactive employees. The average monthly benefit of the retirees under these pension plans was \$2,181. The Census data also allocate the allocation of assets class for all public employee retirement plans in California by asset class for FYs 2005-2012. (Table CA-3, below)

**Table CA-3: California Public Employee Retirement System (All Plans):
Asset Allocations, FYs 2005-2012¹⁷**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|-------------|---------------------------|-------------------------------------|---------------------------|-----------------|-----------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 39.2% | 3.6% | 19.3% | 24.5% | 17.1% |
| 2006 | 100.0% | 38.4% | 3.8% | 21.5% | 21.2% | 18.9% |
| 2007 | 100.0% | 38.9% | 5.0% | 22.0% | 18.9% | 20.2% |
| 2008 | 100.0% | 33.2% | 4.4% | 21.6% | 22.0% | 23.2% |
| 2009 | 100.0% | 31.3% | 3.6% | 22.1% | 24.7% | 22.0% |
| 2010 | 100.0% | 31.5% | 3.8% | 22.1% | 23.7% | 22.7% |
| 2011 | 100.0% | 32.2% | 4.0% | 23.6% | 20.3% | 23.9% |
| 2012 | 100.0% | 37.7% | 4.2% | 22.2% | 20.3% | 19.8% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$513,611.1 | \$201,104.2 | \$18,702.7 | \$98,937.9 | \$125,974.7 | \$87,594.4 |
| 2006 | \$562,972.3 | \$216,200.7 | \$21,187.7 | \$120,904.8 | \$119,549.7 | \$106,317.1 |
| 2007 | \$644,798.5 | \$251,072.0 | \$32,388.3 | \$141,790.5 | \$121,618.5 | \$130,317.5 |
| 2008 | \$613,502.3 | \$203,601.1 | \$27,078.9 | \$132,383.4 | \$135,118.1 | \$142,399.7 |
| 2009 | \$458,824.5 | \$143,587.3 | \$16,512.5 | \$101,248.6 | \$113,271.0 | \$100,717.6 |
| 2010 | \$515,359.7 | \$162,213.6 | \$19,465.6 | \$113,771.2 | \$122,235.8 | \$117,139.1 |
| 2011 | \$603,598.3 | \$194,496.6 | \$23,923.1 | \$142,357.7 | \$122,484.9 | \$144,259.1 |
| 2012 | \$594,772.9 | \$224,280.8 | \$24,760.6 | \$131,826.5 | \$120,951.5 | \$117,714.1 |

The data further show that the overall performance of California's two largest plans from July 2004 to June 2013 (the California fiscal year ends June 30) was stronger than that of the entire state public pension system from FY 2005 to FY 2012. This largely reflects the differences in the time periods: In FY 2013, from July 1, 2012 to June 30, 2013, the value of all assets held by the two largest funds increased 13.5 percent, and the value of their oil and gas assets rose 15.0 percent. (See Appendix, Tables A-CA-3 and A-CA-6) The seven-year data show that \$1.00 invested in the California public employees' retirement system in July 2004 grew to \$1.49 in June 2012, while \$1.00 invested in oil and gas stocks grew to \$2.01. (Table CA-

¹⁷ U.S. Census' State & Local Government Employee Retirement Systems; Comprehensive Annual Financial Reports; and author's estimates.

4 below) If the system had not held oil and natural gas stocks, \$1.00 invested over this period would have grown to \$1.41 in 2012.

Even without data from mid-2012 forward, the annual returns fluctuated sharply over this seven-year cycle, ranging from 21.7 percent to negative 24.0 percent for all assets and from 49.8 percent to negative 42.7 percent for oil and natural gas assets. (Table CA-4, below) Without the second half of 2012 and the first half of 2013, we estimate that oil and natural gas investments contributed \$28.7 billion of the system's net \$311.5 billion in returns over the period.

From July 2004 to June 2012, oil and natural gas investments representing less than 4.1 percent of California's public pension system's holdings contributed 9.2 percent of its gains.

**Table CA-4: California Public Employee Retirement System (All Plans):
Returns and Gains for All Assets and for Oil and Natural Gas Investments, FYs 2005-2012¹⁸**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 Invested in All Assets in 7/2004 | Return on \$1 Invested in Oil and Natural Gas Assets in 7/2004 | Return on \$1 Invested in Non-Oil and Natural Gas Assets in 7/2004 | Capital Gains from All Assets (\$ millions) | Capital Gains From Oil and Natural Gas Investments (\$ millions) |
|-------------|-----------------------------|---|--|--|--|---|--|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 12.3% | 36.8% | \$1.12 | \$1.37 | \$1.07 | \$63,174.2 | \$6,874.3 |
| 2006 | 11.8% | 22.5% | \$1.26 | \$1.68 | \$1.19 | \$66,430.7 | \$4,777.3 |
| 2007 | 19.1% | 26.0% | \$1.50 | \$2.11 | \$1.39 | \$123,156.5 | \$8,426.3 |
| 2008 | -5.1% | 23.1% | \$1.42 | \$2.60 | \$1.30 | (\$31,288.6) | \$6,251.5 |
| 2009 | -24.0% | -42.7% | \$1.08 | \$1.49 | \$1.02 | (\$110,117.9) | (\$7,044.7) |
| 2010 | 13.3% | -0.1% | \$1.22 | \$1.49 | \$1.17 | \$68,542.8 | (\$25.0) |
| 2011 | 21.7% | 49.8% | \$1.49 | \$2.23 | \$1.40 | \$130,980.8 | \$11,924.4 |
| 2012 | 0.1% | -10.0% | \$1.49 | \$2.01 | \$1.41 | \$594.8 | (\$2,486.9) |
| Total | | | | | | \$311,473.4 | \$28,697.2 |

FLORIDA

The Two Largest Public Pension Plans

We collected data on the investment portfolios and performance of the two largest public employee retirement plans in Florida, the Public School Employees' Retirement System (FPSERS) and the Florida Retirement System (FRS), for fiscal years 2005-2013. Over these eight years, the two plans had total assets averaging \$83.1 billion and a combined average of 651,610 members, including current retirees, beneficiaries and current employees. (Table FL-1, below) The two plans held oil and natural gas-sector investments averaging \$3.4 billion or 4.1 percent of the plans' total assets. The two plans represent 59.7 percent of all members and 58.3 percent of all assets of Florida public employee retirement plans.

¹⁸ *Ibid.*

**Table FL-1: Florida's Two Largest Public Employee Retirement Plans:
Members, Total Assets and Oil and Natural Gas Assets, Annual Average, FYs 2005-2013¹⁹**

| | Total Members | Total Assets (\$ billions) | Oil and Natural Gas Assets (\$ billions) | Oil and Natural Gas Assets as a Share of All Assets |
|---------------|----------------|-------------------------------|---|---|
| Total | 651,610 | \$83.060 | \$3.444 | 4.1% |
| FPSERS | 453,741 | \$57.853 | \$2.398 | 4.1% |
| FRS | 197,869 | \$25.208 | \$1.046 | 4.1% |

The cumulative rate of return on the total assets of these large plans was about 76 percent over the eight years. (Table FL-2, below) Their oil and natural gas assets produced a 131 percent return over this period, while the return on the rest of their portfolios was 69 percent. The two plans generated total gains of \$58.9 billion in this period, including nearly \$5.0 billion in gains from oil and natural gas investments.

Over FYs 2005-2013, oil and natural gas investments representing 4.1 percent of the total assets of Florida's two largest public employee pension plans contributed 8.5 percent of their total gains.

**Table FL-2: Florida's Two Largest Public Employee Retirement Plans:
Rates of Return and Gains, Overall and from Oil and Natural Gas Investments, FYs 2005-2013²⁰**

| | Return on \$1 Invested in Plans | Return on \$1 Invested in Oil and Natural Gas Stocks | Return on \$1 Invested in Non-Oil and Natural Gas Stocks | Total Gains (\$ millions) | Gains from Oil and Natural Gas Investments (\$ millions) | Gains from Oil and Natural Gas as Share of All Gains |
|---------------|--|--|--|------------------------------|--|--|
| Total | \$1.76 | \$2.31 | \$1.69 | \$58,854.4 | \$4,975.6 | 8.5% |
| FPSERS | \$1.76 | \$2.31 | \$1.69 | \$40,977.9 | \$3,464.5 | 8.5% |
| FRS | \$1.76 | \$2.31 | \$1.69 | \$17,876.5 | \$1,511.1 | 8.5% |

All Florida Public Employee Retirement Programs

To estimate the impact of oil and natural gas stocks on the returns on all Florida public employee retirement programs, we use annual Census Bureau data on public employee retirement systems by state. Once again, the available data cover only FYs 2005 to 2012; and as the returns on all investments and in oil and natural gas investments increased in late 2012 and 2013, the seven years of aggregate data by state cannot be strictly compared to the eight years of data on the two largest plans. The Census data provide the allocation of assets by asset-class for all public employee retirement plans in Florida for FYs 2005-2012. (Table FL-3, below)

¹⁹ Pension Plan & Other State-Administered Systems: Annual Report of Public Schools Employees Retirement Systems and State Employees Retirement System and author's estimates.

²⁰ *Ibid.*

**Table FL-3: All Florida Public Employee Retirement Plans:
Asset Allocations, FYs 2005-2012²¹**

| Fiscal Year | Total | US Stocks: All Sectors | Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|-------------|---------------------------|-------------------------------|---------------------------|-----------------|-----------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 47.9% | 4.5% | 15.6% | 19.3% | 17.2% |
| 2006 | 100.0% | 50.9% | 5.0% | 16.9% | 19.2% | 12.9% |
| 2007 | 100.0% | 42.8% | 5.5% | 11.3% | 18.3% | 27.5% |
| 2008 | 100.0% | 35.5% | 4.7% | 16.3% | 31.8% | 16.4% |
| 2009 | 100.0% | 34.8% | 4.0% | 16.1% | 27.5% | 21.6% |
| 2010 | 100.0% | 37.2% | 4.5% | 16.0% | 25.6% | 21.2% |
| 2011 | 100.0% | 29.5% | 3.6% | 25.5% | 21.2% | 23.9% |
| 2012 | 100.0% | 29.3% | 3.2% | 25.7% | 23.1% | 21.9% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$131,376.3 | \$62,894.3 | \$5,849.2 | \$20,493.7 | \$25,411.5 | \$22,576.8 |
| 2006 | \$135,805.7 | \$69,167.7 | \$6,778.4 | \$22,988.2 | \$26,066.5 | \$17,583.2 |
| 2007 | \$155,871.1 | \$66,776.3 | \$8,614.1 | \$17,665.5 | \$28,546.8 | \$42,882.5 |
| 2008 | \$148,692.3 | \$52,736.2 | \$7,013.9 | \$24,294.8 | \$47,312.2 | \$24,349.1 |
| 2009 | \$123,771.2 | \$43,049.8 | \$4,950.7 | \$19,963.2 | \$34,058.6 | \$26,699.6 |
| 2010 | \$135,195.6 | \$50,328.1 | \$6,039.4 | \$21,604.1 | \$34,627.6 | \$28,635.8 |
| 2011 | \$157,814.1 | \$46,509.2 | \$5,720.6 | \$40,193.0 | \$33,451.6 | \$37,660.2 |
| 2012 | \$150,369.7 | \$44,005.5 | \$4,858.2 | \$38,671.9 | \$34,721.8 | \$32,970.5 |

These data show that the overall performance of Florida's two largest public pension plans from July 2004 to June 2013 (the Florida fiscal year ends June 30) was stronger than that of the overall Florida public pension system from FY 2005 to FY 2012. This reflects the differences in the two time periods: In FY 2013, from July 1, 2012 to June 30, 2013, the value of all assets held by the two largest funds increased 13.1 percent, and the value of their oil and gas assets rose 15.0 percent. (See Tables A-FL-3 and A-FL-6) The seven year data show that that \$1.00 invested by the Florida public employees' retirement system in July 2004 grew to \$1.55 in June 2012. Over this period, \$1.00 invested in oil and gas stocks grew to \$2.01. If the system had not held oil and natural gas stocks, \$1.00 invested in July 2004 would have grown to \$1.49 in FY 2012.

Even without data from mid-2012 on, the annual returns fluctuated sharply over the seven years, ranging from 22.1 percent to negative 19.0 percent for all assets and from 49.8 percent to negative 47.3 percent for oil and natural gas assets. (Table FL-4, below) Although these years are less complete without the second half of 2012 and the first half of 2013, we estimate that oil and natural gas investments contributed \$7.8 billion of the system's net \$80.0 billion in returns over the period.

For the period July 2004 to June 2012, oil and natural gas investments representing 4.4 percent of the Florida state system's total holdings contributed over 9.7 percent of its gains.

²¹ U.S. Census' State & Local Government Employee Retirement Systems; The Florida Retirement System, Pension Plan & Other State-Administered Systems: Annual Report; and author's estimates.

**Table FL-4: All Florida Public Employee Retirement Plans,
Returns and Gains for All Assets and for Oil and Natural Gas Investments, FYs 2005-2012²²**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 Invested in All Assets in 7/2004 | Return on \$1 of Invested in Oil and Natural Gas Assets in 7/2004 | Return on \$1 Invested in Non-Oil and Natural Gas Assets in 7/2004 | Capital Gains from All Assets (\$ millions) | Capital Gains From Oil and Natural Gas Investments (\$ millions) |
|-------------|-----------------------------|---|--|---|--|---|--|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 10.2% | 36.8% | \$1.10 | \$1.37 | \$1.04 | \$13,374.1 | \$2,149.9 |
| 2006 | 10.6% | 22.5% | \$1.22 | \$1.68 | \$1.13 | \$14,341.1 | \$1,528.4 |
| 2007 | 18.1% | 26.0% | \$1.44 | \$2.11 | \$1.32 | \$28,165.9 | \$2,241.1 |
| 2008 | -4.4% | 23.1% | \$1.37 | \$2.60 | \$1.25 | (\$6,572.2) | \$1,619.2 |
| 2009 | -19.0% | -42.7% | \$1.11 | \$1.49 | \$1.05 | (\$23,553.7) | (\$2,112.1) |
| 2010 | 14.0% | -0.1% | \$1.27 | \$1.49 | \$1.20 | \$18,967.9 | (\$7.8) |
| 2011 | 22.1% | 49.8% | \$1.55 | \$2.23 | \$1.47 | \$34,861.1 | \$2,851.4 |
| 2012 | 0.3% | -10.0% | \$1.55 | \$2.01 | \$1.49 | \$436.1 | (\$487.9) |
| Total | | | | | | \$80,020.4 | \$7,782.2 |

ILLINOIS

The Two Largest Public Pension Plans

We collected data on the investment portfolios and performance of the two largest public employee pension plans in Illinois, the Illinois Teachers' Retirement System (ITRS) and the Illinois State Employees' Retirement System (ISERS), for FYs 2005-2013. Over these eight years, the two plans had total assets averaging \$47.7 billion and a combined average of 484,916 members, including current retirees, current employees, and former or inactive employees. (Table IL-1, below) The two plans held oil and natural gas-sector investments averaging \$1.76 billion or 3.7 percent of their total assets. The two plans represent about 35.9 percent of all members and 38.6 percent of all assets of Illinois public employee pension plans.

**Table IL-1: Illinois's Two Largest Public Employee Retirement Plans:
Members, Total Assets and Oil and Natural Gas Assets, Annual Average, Fys 2005-2013²³**

| | Total Members | Total Assets (\$ billions) | Oil and Natural Gas Assets (\$ billions) | Oil and Natural Gas Assets as a Share of All Assets |
|-------|---------------|----------------------------|--|---|
| Total | 484,916 | \$47.665 | \$1.763 | 3.7% |
| ITRS | 356,382 | \$36.540 | \$1.218 | 3.3% |
| ISERS | 128,534 | \$11.125 | \$0.544 | 4.9% |

²² *Ibid.*

²³ Comprehensive Annual Financial Report of Teachers' Retirement Systems and State Employees Retirement System and author's estimates.

The cumulative rate of return on the assets of these two large plans was about 67 percent for the eight years. (Table IL-2, below) Their oil and natural gas assets produced a 131 percent return over this period, while the return on the rest of their portfolios was just 60 percent. The two plans generated gains of \$33.4 billion over this period, including nearly \$3.0 billion in gains from their investments in oil and natural gas stocks.

Over FYs 2005-2013, oil and natural gas investments representing 3.7 percent of the total assets of Illinois' two largest public employee pension plans contributed 8.9 percent of their total gains.

**Table IL-2: Illinois's Two Largest Public Employee Pension Plans:
Rates of Return and Gains, Overall and from Oil and Natural Gas Investments, FYs 2005-2013²⁴**

| | Return on \$1 Invested in Plans | Return on \$1 Invested in Oil and Natural Gas Stocks | Return on \$1 Invested in Non-Oil and Natural Gas Stocks | Total Gains by Plans (\$ millions) | Gains from Oil and Natural Gas Investments (\$ millions) | Gains from Oil and Natural Gas as Share of All Gains |
|--------------|--|--|--|--|--|--|
| Total | \$1.67 | \$2.31 | \$1.60 | \$33,359.1 | \$2,962.6 | 8.9% |
| ITRS | \$1.72 | \$2.31 | \$1.67 | \$26,106.1 | \$2,156.5 | 8.3% |
| ISERS | \$1.63 | \$2.31 | \$1.53 | \$7,252.9 | \$806.2 | 11.1% |

All Illinois Public Employee Retirement Programs

To estimate the impact of oil and natural gas stocks on the returns on all Illinois public employee retirement programs, we use annual Census Bureau data on public employee retirement systems by state covering FYs 2005 to 2012. Once again, as the returns on all investments and investments in oil and natural gas investments increased in late 2012 and 2013, the seven years of aggregate data by state cannot be strictly compared to the eight years of data on the two largest plans. The Census data provide the allocation of assets by asset-class for all public employee retirement plans in Illinois for FYs 2005-2012. (Table FL-3, below)

²⁴ *Ibid.*

**Table IL-3: All Illinois Public Employee Retirement Plans:
Asset Allocations, FYs 2005-2012²⁵**

| Fiscal Year | Total | US Stocks: All Sectors | Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|-------------|---------------------------|-------------------------------|---------------------------|-----------------|-----------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 40.7% | 3.8% | 10.7% | 24.9% | 23.7% |
| 2006 | 100.0% | 39.9% | 3.9% | 11.1% | 23.3% | 25.6% |
| 2007 | 100.0% | 39.4% | 5.1% | 16.7% | 24.5% | 19.4% |
| 2008 | 100.0% | 35.6% | 4.7% | 18.5% | 23.7% | 22.2% |
| 2009 | 100.0% | 32.2% | 2.4% | 15.2% | 27.2% | 25.4% |
| 2010 | 100.0% | 33.9% | 2.8% | 18.5% | 24.1% | 23.5% |
| 2011 | 100.0% | 35.1% | 3.7% | 19.6% | 22.2% | 23.2% |
| 2012 | 100.0% | 34.5% | 2.9% | 19.6% | 22.4% | 23.4% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$120,512.1 | \$49,067.9 | \$4,563.3 | \$12,923.6 | \$29,988.6 | \$28,532.0 |
| 2006 | \$126,956.3 | \$50,684.9 | \$4,967.1 | \$14,124.9 | \$29,599.5 | \$32,547.0 |
| 2007 | \$138,706.1 | \$54,698.9 | \$7,056.2 | \$23,100.3 | \$33,987.7 | \$26,919.1 |
| 2008 | \$131,703.7 | \$46,838.3 | \$6,229.5 | \$24,388.0 | \$31,240.6 | \$29,236.8 |
| 2009 | \$101,829.8 | \$32,782.5 | \$2,425.9 | \$15,518.7 | \$27,693.8 | \$25,834.7 |
| 2010 | \$113,027.5 | \$38,298.6 | \$3,140.5 | \$20,939.5 | \$27,273.0 | \$26,516.5 |
| 2011 | \$127,739.3 | \$44,773.8 | \$4,746.0 | \$24,975.6 | \$28,328.6 | \$29,661.3 |
| 2012 | \$127,736.1 | \$44,126.5 | \$3,750.8 | \$25,086.3 | \$28,593.1 | \$29,930.3 |

These data show that the overall performance of the state's two largest public pension plans was significantly stronger than that of the entire Illinois public pension system from July 2004 to June 2012 (the Illinois fiscal year ends June 30). This reflects the strong performance of all assets and oil and natural gas stocks in particular from July 2012 to June 2013: In FY 2013, the value of all assets held by these funds increased 13.5 percent, while the value of the their oil and gas assets rose 15.0. (See Appendix, Table A-IL) The seven-year data show that that \$1.00 invested in the Illinois public employees' retirement system in July 2004 grew to \$1.53 in June 2012. (Table IL-4 below) For this period, \$1.00 invested in oil and gas stocks grew to \$2.01. If the system had held no oil and natural gas stocks, \$1.00 invested in FY 2005 would have grown to \$1.47 in FY 2012.

The annual returns of the state's public pension system fluctuated greatly over the seven years, ranging from 23.6 percent to negative 22.7 percent for all assets and from 49.8 percent to negative 42.7 percent for oil and natural gas assets. (Table IL-4, below) Over the seven years, we estimate that oil and natural gas investments contributed \$7.02 billion of the system's net \$70.68 billion in returns over the period.

From July 2004 to June 2012, oil and natural gas investments representing less than 3.7 percent of the total holdings of the Illinois state pension system contributed 9.9 percent of its gains.

²⁵ U.S. Census' State & Local Government Employee Retirement Systems; Comprehensive Annual Financial Report; and author's estimates.

**Table IL-4: All Illinois Public Employee Retirement Plans,
Returns and Gains for All Assets and for Oil and Natural Gas Investments, FYs 2005-2012²⁶**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 Invested in All Assets in 7/2004 | Return on \$1 of Invested in Oil and Natural Gas Assets in 7/2004 | Return on \$1 Invested in Non-Oil and Natural Gas Assets in 7/2004 | Capital Gains from All Assets (\$ millions) | Capital Gains From Oil and Natural Gas Investments (\$ millions) |
|--------------|-----------------------------|---|--|---|--|---|--|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 10.8% | 36.8% | \$1.11 | \$1.37 | \$1.06 | \$13,015.3 | \$1,677.3 |
| 2006 | 11.8% | 22.5% | \$1.24 | \$1.68 | \$1.17 | \$14,980.8 | \$1,120.0 |
| 2007 | 19.2% | 26.0% | \$1.48 | \$2.11 | \$1.37 | \$26,631.6 | \$1,835.8 |
| 2008 | -5.0% | 23.1% | \$1.40 | \$2.60 | \$1.28 | (\$6,585.2) | \$1,438.2 |
| 2009 | -22.7% | -42.7% | \$1.08 | \$1.49 | \$1.05 | (\$23,115.4) | (\$1,035.0) |
| 2010 | 12.9% | -0.1% | \$1.22 | \$1.49 | \$1.18 | \$14,580.6 | (\$4.0) |
| 2011 | 23.6% | 49.8% | \$1.51 | \$2.23 | \$1.43 | \$30,146.5 | \$2,365.6 |
| 2012 | 0.8% | -10.0% | \$1.53 | \$2.01 | \$1.47 | \$1,021.9 | (\$376.7) |
| Total | | | | | | \$70,676.1 | \$7,021.1 |

INDIANA

The Two Largest Public Pension Plans

We collected data on the investment portfolios and performance of the two largest public employee retirement plans in Indiana, the Indiana Teachers' Retirement Fund (INTRF) and the Indiana Public Retirement System (INPRS) for fiscal years 2005-2013. Over these eight years, the two plans had total assets averaging \$19.3 billion and a combined average of 374,949 members, including current retirees, current employees, and former or inactive employees. (Table IN-1, below) The two plans held oil and natural gas-sector investments averaging \$670 million or 3.5 percent of the plans' total assets. The two plans represent 93.9 percent of all members and 76.3 percent of all assets of all Indiana public employee retirement plans.

**Table IN-1: Indiana's Two Largest Public Employee Retirement Plans:
Members, Total Assets and Oil and Natural Gas Assets, Annual Average, FYs 2005-2013²⁷**

| | Total Members | Total Assets (\$ billions) | Oil and Natural Gas Assets (\$ billions) | Oil and Natural Gas Assets as a Share of All Assets |
|--------------|----------------|----------------------------|--|---|
| Total | 374,949 | \$19.307 | \$0.670 | 3.5% |
| INTRF | 150,183 | \$5.299 | \$0.182 | 3.4% |
| INPRS | 224,766 | \$14.008 | \$0.488 | 3.5% |

²⁶ *Ibid.*

²⁷ Comprehensive Annual Financial Report of Indiana State Teachers' Retirement Fund and Public Retirement System and author's estimates.

The cumulative rate of return on the assets of these two large plans was about 57 percent for the eight years. (Table IN-2, below) Their oil and natural gas assets produced a 131 percent return over this period, while the return on the rest of their portfolios was about 54 percent. The two plans generated total gains of \$11.1 billion over this period, including nearly \$1,122 million in gains from investments in oil and natural gas stocks:

Over FYs 2005-2013, oil and natural gas investments which represented 3.5 percent of the total assets of Indiana's two largest public pension plans contributed 10.1 percent of their total gains.

**Table IN-2: Indiana's Two Largest Public Employee Pension Plans:
Rates of Return and Gains, Overall and from Oil and Natural Gas Investments, FYs 2005-2013²⁸**

| | Return on \$1 Invested in Plans | Return on \$1 Invested in Oil and Natural Gas Stocks | Return on \$1 Invested in Non-Oil and Natural Gas Stocks | Total Gains by Plans (\$ millions) | Gains from Oil and Natural Gas Investments (\$ millions) | Gains from Oil and Natural Gas as Share of All Gains |
|--------------|--|--|--|--|--|--|
| Total | \$1.57 | \$2.31 | \$1.54 | \$11,130.1 | \$1,121.7 | 10.1% |
| INTRF | \$1.60 | \$2.31 | \$1.57 | \$3,079.7 | \$292.6 | 9.5% |
| INPRS | \$1.54 | \$2.31 | \$1.51 | \$8,050.4 | \$829.1 | 10.3% |

All Indiana Public Employee Retirement Programs

To estimate the impact of oil and natural gas stocks on the returns on all Indiana public employee retirement programs, we use annual Census Bureau data on public employee retirement systems by state covering FYs 2005 to 2012. Once again, as the returns on all investments and investments in oil and natural gas investments increased in late 2012 and 2013, the seven years of aggregate data by state cannot be strictly compared to the eight years of data on the two largest plans. The Census data provide the allocation of assets by asset-class for all public employee retirement plans in Indiana for FYs 2005-2012. (Table IN-3, below)

²⁸ *Ibid.*

**Table IN-3: All Indiana Public Employee Retirement Plans:
Asset Allocations, FYs 2005-2012²⁹**

| Fiscal Year | Total | US Stocks: All Sectors | Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|------------|---------------------------|-------------------------------|---------------------------|-----------------|-----------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 49.4% | 4.6% | 0.4% | 28.4% | 21.8% |
| 2006 | 100.0% | 43.8% | 4.3% | 4.2% | 30.9% | 21.0% |
| 2007 | 100.0% | 37.3% | 4.8% | 4.2% | 25.4% | 33.1% |
| 2008 | 100.0% | 42.2% | 5.6% | 5.3% | 27.1% | 25.4% |
| 2009 | 100.0% | 30.9% | 3.6% | 4.1% | 35.4% | 29.5% |
| 2010 | 100.0% | 29.4% | 3.5% | 3.4% | 37.5% | 29.8% |
| 2011 | 100.0% | 34.1% | 4.2% | 3.8% | 31.6% | 30.5% |
| 2012 | 100.0% | 21.0% | 2.3% | 9.5% | 43.3% | 26.2% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$23,610.1 | \$11,670.9 | \$1,085.4 | \$83.7 | \$6,713.8 | \$5,141.8 |
| 2006 | \$27,672.1 | \$12,130.7 | \$1,188.8 | \$1,168.8 | \$8,555.3 | \$5,817.2 |
| 2007 | \$30,875.3 | \$11,518.8 | \$1,485.9 | \$1,285.7 | \$7,840.2 | \$10,230.7 |
| 2008 | \$24,112.8 | \$10,172.8 | \$1,353.0 | \$1,284.2 | \$6,524.4 | \$6,131.4 |
| 2009 | \$20,426.0 | \$6,314.1 | \$726.1 | \$847.7 | \$7,240.2 | \$6,024.1 |
| 2010 | \$22,689.0 | \$6,667.1 | \$800.0 | \$767.7 | \$8,500.0 | \$6,754.3 |
| 2011 | \$26,979.4 | \$9,188.0 | \$1,130.1 | \$1,030.2 | \$8,529.5 | \$8,231.7 |
| 2012 | \$25,942.7 | \$5,439.3 | \$600.5 | \$2,454.3 | \$11,243.6 | \$6,805.4 |

These data show that the overall performance of the state's two largest public pension plans was stronger than that of the entire Indiana public pension system from July 2004 to June 2012 (the Indiana fiscal year ends June 30). This reflects the strong performance of all assets and oil and natural gas stocks in particular from July 2012 to June 2013: In FY 2013, the value of all assets held by these funds increased 6.0 percent, while the value of the their oil and gas assets rose 15.0. (See Appendix, Table A-IN-3 and A-IN-6) The seven-year data show that that \$1.00 invested in the Indiana public employees' retirement system in July 2004 grew to \$1.45 in June 2012. (Table IN-4 below) For this period, \$1.00 invested in oil and gas stocks grew to \$2.01. If the system had held no oil and natural gas stocks, \$1.00 invested in FY 2005 would have grown to \$1.41 in FY 2012.

The annual returns of the state's public pension system fluctuated greatly over the seven years, ranging from 20.1 percent to negative 20.6 percent for all assets and from 49.8 percent to negative 42.7 percent for oil and natural gas assets. (Table IN-4, below) Over the seven years, we estimate that oil and natural gas investments contributed \$1.56 billion of the system's net \$13.61 billion in returns over the period.

From July 2004 to June 2012, oil and natural gas investments representing 4.1 percent of the total holdings of the Indiana state pension system contributed 11.5 percent of the gains.

²⁹ U.S. Census' State & Local Government Employee Retirement Systems; Comprehensive Annual Financial Report; and author's estimates.

**Table IN-4: All Indiana Public Employee Pension Plans,
Returns and Gains for All Assets and for Oil and Natural Gas Investments, FYs 2005-2012³⁰**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 Invested in All Assets in 7/2004 | Return on \$1 of Invested in Oil and Natural Gas Assets in 7/2004 | Return on \$1 Invested in Non-Oil and Natural Gas Assets in 7/2004 | Capital Gains from All Assets (\$ millions) | Capital Gains From Oil and Natural Gas Investments (\$ millions) |
|--------------|-----------------------------|---|--|---|--|---|--|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 9.8% | 36.8% | \$1.10 | \$1.37 | \$1.04 | \$2,313.8 | \$398.9 |
| 2006 | 10.7% | 22.5% | \$1.22 | \$1.68 | \$1.14 | \$2,960.9 | \$268.0 |
| 2007 | 18.2% | 26.0% | \$1.44 | \$2.11 | \$1.34 | \$5,619.3 | \$386.6 |
| 2008 | -7.6% | 23.1% | \$1.33 | \$2.60 | \$1.18 | (\$1,832.6) | \$312.4 |
| 2009 | -20.6% | -42.7% | \$1.05 | \$1.49 | \$1.00 | (\$4,207.8) | (\$309.8) |
| 2010 | 13.9% | -0.1% | \$1.20 | \$1.49 | \$1.15 | \$3,153.8 | (\$1.0) |
| 2011 | 20.1% | 49.8% | \$1.44 | \$2.23 | \$1.35 | \$5,422.9 | \$563.3 |
| 2012 | 0.7% | -10.0% | \$1.45 | \$2.01 | \$1.41 | \$181.6 | (\$60.3) |
| Total | | | | | | \$13,611.9 | \$1,558.1 |

IOWA

The Two Largest Public Pension Plans

We collected data on the investment portfolios and performance of the two largest public employee retirement plans in Iowa, the Iowa Teachers' Retirement System (ITRS)) and the Iowa Public Employees' Retirement System (IPERS), for fiscal years 2005-2013. Over these eight years, the two plans had total assets averaging \$14.3 billion and a combined average of 195,379 members, including current retirees, current employees, and former or inactive employees. (Table IA-1, below) The two plans held oil and natural gas-sector investments averaging \$446 million or 3.1 percent of the plans' total assets. The two plans represent 59.3 percent of all members and 60.2 percent of all assets of Iowa public employee retirement plans.

**Table IA-1: Iowa's Two Largest Public Employee Retirement Plans:
Members, Total Assets and Oil and Natural Gas Assets, Annual Average, FYs 2005-2013³¹**

| | Total Members | Total Assets (\$ billions) | Oil and Natural Gas Assets (\$ billions) | Oil and Natural Gas Assets as a Share of All Assets |
|--------------|----------------|----------------------------|--|---|
| Total | 195,379 | \$14.378 | \$0.446 | 3.1% |
| ITRS | 152,281 | \$11.203 | \$0.348 | 3.1% |
| IPERS | 43,098 | \$3.175 | \$0.099 | 3.1% |

³⁰ *Ibid.*

³¹ Comprehensive Annual Financial Report of Iowa Public Employees Retirement System and author's estimates.

The cumulative return on the assets of these two large plans was about 85 percent for the five years. (Table IA-2, below) Their oil and natural gas assets produced a 131 percent return over this period, while the return on the rest of their portfolios was about 79 percent. The two plans generated total gains of \$10.5 billion over this period, including nearly \$662 million from investments in oil and natural gas stocks.

Oil and natural gas investments which represented 3.1 percent of the total assets of Iowa's two largest public employee pension plans contributed 6.3 percent of their total gains for FYs 2005 to 2013.

**Table IA-2: Iowa's Two Largest Public Employee Retirement Plans:
Rates of Return and Gains, Overall and from Oil and Natural Gas Investments, FYs 2005-2013³²**

| | Return on \$1 Invested in Plans | Return on \$1 Invested in Oil and Natural Gas Stocks | Return on \$1 Invested in Non-Oil and Natural Gas Stocks | Total Gains by Plans (\$ millions) | Gains from Oil and Natural Gas Investments (\$ millions) | Gains from Oil and Natural Gas as Share of All Gains |
|--------------|--|--|--|--|--|--|
| Total | \$1.85 | \$2.31 | \$1.79 | \$10,465.5 | \$661.7 | 6.3% |
| ITRS | \$1.85 | \$2.31 | \$1.79 | \$8,162.4 | \$511.9 | 6.3% |
| IPERS | \$1.85 | \$2.31 | \$1.79 | \$2,303.1 | \$149.7 | 6.5% |

All Iowa Public Employee Retirement Programs

To estimate the impact of oil and natural gas stocks on the returns on all Iowa public employee retirement programs, we use annual Census Bureau data on public employee retirement systems by state covering FYs 2005 to 2012. Once again, as the returns on all investments and investments in oil and natural gas investments increased in late 2012 and 2013, the seven years of aggregate data by state cannot be strictly compared to the eight years of data on the two largest plans. The Census data provide the allocation of assets by asset-class for all public employee retirement plans in Iowa for FYs 2005-2012. (Table IA-3, below)

³² *Ibid.*

**Table IA-3: All Iowa Public Employee Retirement Plans:
Asset Allocations, FYs 2005-2012³³**

| Fiscal Year | Total | US Stocks: All Sectors | Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|------------|---------------------------|-------------------------------|---------------------------|-----------------|-----------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 33.3% | 3.1% | 14.6% | 34.4% | 17.7% |
| 2006 | 100.0% | 30.7% | 3.0% | 15.6% | 33.1% | 20.6% |
| 2007 | 100.0% | 29.7% | 3.8% | 15.6% | 32.5% | 22.2% |
| 2008 | 100.0% | 24.8% | 3.3% | 14.4% | 35.0% | 25.8% |
| 2009 | 100.0% | 21.2% | 2.4% | 13.4% | 35.7% | 29.8% |
| 2010 | 100.0% | 25.2% | 3.0% | 13.5% | 33.4% | 27.9% |
| 2011 | 100.0% | 27.3% | 3.4% | 15.1% | 27.5% | 30.0% |
| 2012 | 100.0% | 26.2% | 2.9% | 13.7% | 27.8% | 32.2% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$21,550.4 | \$7,176.3 | \$667.4 | \$3,146.4 | \$7,413.3 | \$3,814.4 |
| 2006 | \$23,449.9 | \$7,199.1 | \$705.5 | \$3,658.2 | \$7,761.9 | \$4,830.7 |
| 2007 | \$27,859.9 | \$8,274.4 | \$1,067.4 | \$4,346.1 | \$9,054.5 | \$6,184.9 |
| 2008 | \$25,758.6 | \$6,388.1 | \$849.6 | \$3,709.2 | \$9,015.5 | \$6,645.7 |
| 2009 | \$19,168.2 | \$4,057.9 | \$466.7 | \$2,560.9 | \$6,843.0 | \$5,706.4 |
| 2010 | \$21,753.9 | \$5,477.6 | \$657.3 | \$2,934.6 | \$7,263.6 | \$6,078.0 |
| 2011 | \$25,933.7 | \$7,090.3 | \$872.1 | \$3,926.4 | \$7,142.1 | \$7,774.9 |
| 2012 | \$25,695.8 | \$6,737.4 | \$743.8 | \$3,528.0 | \$7,151.1 | \$8,279.2 |

These data show that the overall performance of the state's two largest public pension plans was stronger than that of the entire Iowa public pension system from July 2004 to June 2012 (the Iowa fiscal year ends June 30). This reflects the strong performance of all assets and oil and natural gas stocks in particular from July 2012 to June 2013: In FY 2013, the value of all assets held by these funds increased 10.1 percent, while the value of the their oil and gas assets rose 15.0. (See Appendix, Table A-IA-3 and A-IA-6) The seven-year data show that \$1.00 invested in the Iowa public employees' retirement system in July 2004 grew to \$1.68 in June 2012. (Table IA-4 below) For this period, \$1.00 invested in oil and gas stocks grew to \$2.01. If the system had held no oil and natural gas stocks, \$1.00 invested in FY 2005 would have grown to \$1.62 in FY 2012.

The annual returns of the state's public pension system fluctuated greatly over the seven years, ranging from 19.9 percent to negative 16.3 percent for all assets and from 49.8 percent to negative 42.7 percent for oil and natural gas assets. (Table IA-4, below) Over the seven years, we estimate that oil and natural gas investments contributed \$1.04 billion of the system's net \$15.25 billion in returns over the period.

From July 2004 to June 2012, oil and natural gas investments representing 3.1 percent of the total holdings of the Iowa state pension system contributed 6.8 percent of its gains.

³³ U.S. Census' State & Local Government Employee Retirement Systems; Comprehensive Annual Financial Report; and author's estimates.

**Table IA-4: All Iowa Public Employee Retirement Plans,
Returns and Gains for All Assets and for Oil and Natural Gas Investments, FYs 2005-2012³⁴**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 Invested in All Assets in 7/2004 | Return on \$1 of Invested in Oil and Natural Gas Assets in 7/2004 | Return on \$1 Invested in Non-Oil and Natural Gas Assets in 7/2004 | Capital Gains from All Assets (\$ millions) | Capital Gains From Oil and Natural Gas Investments (\$ millions) |
|-------------|-----------------------------|---|--|---|--|---|--|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 11.3% | 36.8% | \$1.11 | \$1.37 | \$1.07 | \$2,435.2 | \$245.3 |
| 2006 | 11.1% | 22.5% | \$1.24 | \$1.68 | \$1.19 | \$2,602.9 | \$159.1 |
| 2007 | 16.3% | 26.0% | \$1.44 | \$2.11 | \$1.36 | \$4,541.2 | \$277.7 |
| 2008 | -1.3% | 23.1% | \$1.42 | \$2.60 | \$1.33 | (\$334.9) | \$196.1 |
| 2009 | -16.3% | -42.7% | \$1.19 | \$1.49 | \$1.15 | (\$3,124.4) | (\$199.1) |
| 2010 | 13.8% | -0.1% | \$1.35 | \$1.49 | \$1.31 | \$3,006.4 | (\$0.8) |
| 2011 | 19.9% | 49.8% | \$1.62 | \$2.23 | \$1.55 | \$5,163.4 | \$434.7 |
| 2012 | 3.7% | -10.0% | \$1.68 | \$2.01 | \$1.62 | \$958.5 | (\$74.7) |
| Total | | | | | | \$15,248.3 | \$1,038.3 |

MICHIGAN

The Two Largest Public Pension Plans

We collected data on the investment portfolios and performance of the two largest public employee retirement plans in Michigan, the Michigan Public School Employees' Retirement System (MPERS) and the Michigan State Employees' Retirement System (MSERS), for fiscal years 2005-2013. Over these eight years, the two plans had total assets averaging \$51.2 billion and a combined average of 539,567 members, including current retirees, current employees, and former or inactive employees. (Table MI-1, below) The two plans held oil and natural gas-sector investments averaging \$2.14 billion or 4.2 percent of the plans' total assets. The two plans represent 74.0 percent of all members and 65.3 percent of all assets of all Michigan public employee retirement plans.

**Table MI-1: Michigan's Two Largest Public Employee Retirement Plans:
Members, Total Assets and Oil and Natural Gas Assets, Annual Average, FYs 2005-2013³⁵**

| | Total Members | Total Assets (\$ billions) | Oil and Natural Gas Assets (\$ billions) | Oil and Natural Gas Assets as a Share of All Assets |
|--------------|----------------|----------------------------|--|---|
| Total | 539,567 | \$51.217 | \$2.141 | 4.2% |
| MPERS | 456,648 | \$41.158 | \$1.721 | 4.2% |
| MSERS | 82,919 | \$10.059 | \$0.420 | 4.2% |

³⁴ *Ibid.*

³⁵ Comprehensive Annual Financial Report of Michigan Public Schools Employees' Retirement Systems and State Employees Retirement System and author's estimates.

The cumulative return on the assets of these two large plans was about 81 percent for the eight years, FYs 2005 to 2013. (Table MI-2, below) Their oil and natural gas assets produced a 118 percent return over this period, while the return on the rest of their portfolios was about 75 percent. The two plans generated total gains of \$35.6 billion over this period, including nearly \$2.45 billion from their investments in oil and natural gas stocks.

Oil and natural gas investments which represented 4.2 percent of the total assets of Michigan two largest public employee pension plans contributed 6.9 percent of their total gains over the period, FYs 2005 to 2013.

**Table MI-2: Michigan's Two Largest Public Employee Retirement Plans:
Rates of Return and Gains, Overall and from Oil and Natural Gas Investments, FYs 2005-2013³⁶**

| | Return on \$1 Invested in Plans | Return on \$1 Invested in Oil and Natural Gas Stocks | Return on \$1 Invested in Non-Oil and Natural Gas Stocks | Total Gains by Plans (\$ millions) | Gains from Oil and Natural Gas Investments (\$ millions) | Gains from Oil and Natural Gas as Share of All Gains |
|---------------|---------------------------------|--|--|------------------------------------|--|--|
| Total | \$1.81 | \$2.18 | \$1.75 | \$35,597.7 | \$2,449.9 | 6.9% |
| MPSERS | \$1.82 | \$2.18 | \$1.76 | \$28,651.2 | \$1,973.8 | 6.9% |
| MSERS | \$1.81 | \$2.18 | \$1.75 | \$6,946.5 | \$476.1 | 6.9% |

All Michigan Public Employee Retirement Programs

To estimate the impact of oil and natural gas stocks on the returns on all Michigan public employee retirement programs, we use annual Census Bureau data on public employee retirement systems by state covering FYs 2005 to 2012. Once again, as the returns on all investments and investments in oil and natural gas investments increased in late 2012 and 2013, the seven years of aggregate data by state cannot be strictly compared to the eight years of data on the two largest plans. The Census data provide the allocation of assets by asset-class for all public employee retirement plans in Michigan for FYs 2005-2012. (Table MI-3, below)

³⁶ *Ibid.*

**Table MI-3: All Michigan Public Employee Retirement Plans:
Asset Allocations, FYs 2005-2012³⁷**

| Fiscal Year | Total | US Stocks: All Sectors | Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|------------|---------------------------|-------------------------------|---------------------------|-----------------|-----------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 45.3% | 4.8% | 9.3% | 18.8% | 26.6% |
| 2006 | 100.0% | 41.9% | 4.6% | 10.0% | 17.0% | 31.1% |
| 2007 | 100.0% | 46.0% | 5.3% | 8.9% | 18.5% | 26.6% |
| 2008 | 100.0% | 47.8% | 5.1% | 6.3% | 17.5% | 28.4% |
| 2009 | 100.0% | 39.3% | 4.1% | 8.9% | 20.0% | 31.8% |
| 2010 | 100.0% | 39.5% | 4.7% | 9.4% | 19.3% | 31.8% |
| 2011 | 100.0% | 34.0% | 4.2% | 10.3% | 18.0% | 37.7% |
| 2012 | 100.0% | 33.5% | 3.7% | 11.1% | 18.4% | 37.0% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$74,130.0 | \$33,604.7 | \$3,558.2 | \$6,858.1 | \$13,937.7 | \$19,729.5 |
| 2006 | \$89,201.6 | \$37,410.4 | \$4,103.3 | \$8,911.0 | \$15,128.8 | \$27,751.3 |
| 2007 | \$92,893.3 | \$42,700.8 | \$4,923.3 | \$8,275.9 | \$17,211.3 | \$24,705.4 |
| 2008 | \$86,775.8 | \$41,437.7 | \$4,425.6 | \$5,484.3 | \$15,208.3 | \$24,645.6 |
| 2009 | \$70,182.9 | \$27,549.8 | \$2,877.5 | \$6,232.3 | \$14,063.2 | \$22,337.6 |
| 2010 | \$71,918.9 | \$28,401.3 | \$3,408.2 | \$6,747.4 | \$13,865.5 | \$22,904.7 |
| 2011 | \$70,462.7 | \$23,940.9 | \$2,944.7 | \$7,281.0 | \$12,677.5 | \$26,563.3 |
| 2012 | \$72,133.1 | \$24,162.7 | \$2,667.6 | \$7,991.5 | \$13,299.5 | \$26,679.5 |

These data show that the overall performance of the state's two largest public pension plans was stronger than that of the entire Michigan public pension system from October 2004 to September 2012 (the Michigan fiscal year ends September 30). This reflects the performance of all assets and oil and natural gas stocks in particular from October 2012 to September 2013: In FY 2013, the value of all assets held by these funds increased 12.5 percent, while the value of their oil and gas assets rose 9.7 percent. (See Appendix, Tables A-MI-3 and A-MI-6) The seven-year data show that \$1.00 invested in the Michigan public employees' retirement system in October 2004 grew to \$1.62 in September 2012. (Table MI-4 below) For this period, \$1.00 invested in oil and gas stocks grew to \$1.99. If the system had held no oil and natural gas stocks, \$1.00 invested in FY 2005 would have grown to \$1.54 in FY 2012.

The annual returns of the state's public pension system fluctuated greatly over the seven years, ranging from 17.2 percent to negative 12.3 percent for all assets and from 45.9 percent to negative 16.4 percent for oil and natural gas assets. (Table MI-4, below) Over the seven years, we estimate that oil and natural gas investments contributed \$3.46 billion of the system's net \$42.65 billion in returns over the period.

From July 2004 to June 2012, oil and natural gas investments representing less than 4.6 percent of the Michigan public pension system's holdings contributed 8.1 percent of their gains.

³⁷ U.S. Census' State & Local Government Employee Retirement Systems; Comprehensive Annual Financial Report; and author's estimates.

**Table MI-4: All Michigan Public Employee Retirement Plans,
Returns and Gains for All Assets and for Oil and Natural Gas Investments, FYs 2005-2012³⁸**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 Invested in All Assets in 7/2004 | Return on \$1 of Invested in Oil and Natural Gas Assets in 7/2004 | Return on \$1 Invested in Non-Oil and Natural Gas Assets in 7/2004 | Capital Gains from All Assets (\$ millions) | Capital Gains From Oil and Natural Gas Investments (\$ millions) |
|-------------|-----------------------------|---|--|---|--|---|--|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 12.8% | 45.9% | \$1.13 | \$1.46 | \$1.06 | \$9,488.6 | \$1,631.8 |
| 2006 | 12.8% | 1.8% | \$1.27 | \$1.49 | \$1.20 | \$11,417.8 | \$75.4 |
| 2007 | 17.2% | 40.9% | \$1.49 | \$2.09 | \$1.38 | \$15,977.7 | \$2,011.7 |
| 2008 | -12.3% | -15.6% | \$1.31 | \$1.77 | \$1.22 | (\$10,673.4) | (\$688.3) |
| 2009 | -6.1% | -16.4% | \$1.23 | \$1.48 | \$1.17 | (\$4,281.2) | (\$470.7) |
| 2010 | 8.8% | 2.4% | \$1.34 | \$1.51 | \$1.26 | \$6,328.9 | \$82.9 |
| 2011 | 6.6% | 5.6% | \$1.42 | \$1.60 | \$1.36 | \$4,650.5 | \$165.2 |
| 2012 | 13.5% | 24.5% | \$1.62 | \$1.99 | \$1.54 | \$9,738.0 | \$653.0 |
| Total | | | | | | \$42,646.9 | \$3,461.1 |

MINNESOTA

The Two Largest Public Pension Plans

We collected data on the investment portfolios and performance of the two largest public employee retirement plans in Minnesota, the Minnesota Teachers' Retirement Association (MTRA) and the Minnesota State Retirement System (MSRS), for fiscal years 2005-2013. Over these eight years, the two plans had total assets averaging \$29.4 billion and a combined average of 437,281 members, including current retirees, current employees, and former or inactive employees. (Table MN-1, below) The two plans held oil and natural gas-sector investments averaging \$1.57 billion or 5.3 percent of their total assets. The two plans represent 64.2 percent of all members and 61.3 percent of all assets of all Minnesota public employee retirement plans.

**Table MN-1: Minnesota's Two Largest Public Employee Retirement Plans:
Members, Total Assets and Oil and Natural Gas Assets, Annual Average, FYs 2005-2013³⁹**

| | Total Members | Total Assets (\$ billions) | Oil and Natural Gas Assets (\$ billions) | Oil and Natural Gas Assets as a Share of All Assets |
|--------------|----------------|----------------------------|--|---|
| Total | 437,281 | \$29.445 | \$1.570 | 5.3% |
| MTRA | 162,472 | \$16.920 | \$0.903 | 5.3% |
| MSRS | 274,809 | \$12.524 | \$0.666 | 5.3% |

³⁸ *Ibid.*

³⁹ Comprehensive Annual Financial Report of Minnesota Teachers Retirement Association and Public Employees Retirement Association and author's estimates.

The cumulative rate of return on the assets of these two large plans was about 88 percent over the eight years, 2005 to 2013. (Table MN-2, below) By contrast, the plans' oil and gas assets produced a 131 percent return over the same period. The two plans generated total gains of \$23.2 billion over this period, including \$2.2 billion in gains from their investments in oil and natural gas stocks.

Over FYs 2005-2013, oil and natural gas investments which represented 5.3 percent of the total assets of Minnesota's two largest public employee pension plans contributed 9.5 percent of their total gains.

**Table MN-2: Minnesota's Two Largest Public Employee Retirement Plans:
Rates of Return and Gains, Overall and from Oil and Natural Gas Investments, FYs 2005-2013⁴⁰**

| | Return on \$1 Invested in Plans | Return on \$1 Invested in Oil and Natural Gas Stocks | Return on \$1 Invested in Non-Oil and Natural Gas Stocks | Total Gains by Plans (\$ millions) | Gains from Oil and Natural Gas Investments (\$ millions) | Gains from Oil and Natural Gas as Share of All Gains |
|--------------|--|--|--|--|--|--|
| Total | \$1.88 | \$2.31 | \$1.78 | \$23,194.3 | \$2,203.9 | 9.5% |
| MTRA | \$1.88 | \$2.31 | \$1.78 | \$13,273.9 | \$1,282.5 | 9.7% |
| MSRS | \$1.88 | \$2.31 | \$1.78 | \$9,920.4 | \$921.4 | 9.3% |

All Minnesota Public Employee Retirement Programs

To estimate the impact of oil and natural gas stocks on the returns on all Minnesota public employee retirement programs, we use annual Census Bureau data on public employee retirement systems by state covering FYs 2005 to 2012. Once again, as the returns on all investments and investments in oil and natural gas investments increased in late 2012 and 2013, the seven years of aggregate data by state cannot be strictly compared to the eight years of data on the two largest plans. The Census data provide the allocation of assets by asset-class for all public employee retirement plans in Minnesota for FYs 2005-2012. (Table MN-3, below)

⁴⁰ *Ibid.*

**Table MN-3: All Minnesota Public Employee Retirement Plans:
Asset Allocations, FYs 2005-2012⁴¹**

| Fiscal Year | Total | US Stocks: All Sectors | Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|------------|------------------------|----------------------------|------------------------|--------------|--------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 17.6% | 1.6% | 5.0% | 9.1% | 68.3% |
| 2006 | 100.0% | 17.7% | 1.7% | 5.6% | 8.4% | 68.3% |
| 2007 | 100.0% | 17.5% | 2.3% | 6.5% | 8.7% | 67.3% |
| 2008 | 100.0% | 16.0% | 2.1% | 5.9% | 9.1% | 69.1% |
| 2009 | 100.0% | 26.7% | 3.1% | 9.9% | 13.5% | 49.9% |
| 2010 | 100.0% | 27.7% | 3.3% | 9.6% | 15.6% | 47.1% |
| 2011 | 100.0% | 39.1% | 4.8% | 15.8% | 21.9% | 23.2% |
| 2012 | 100.0% | 38.9% | 4.3% | 15.0% | 22.3% | 23.9% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$47,274.5 | \$8,297.1 | \$771.6 | \$2,385.2 | \$4,284.6 | \$32,307.7 |
| 2006 | \$52,089.6 | \$9,204.4 | \$902.0 | \$2,922.2 | \$4,368.3 | \$35,594.8 |
| 2007 | \$54,103.4 | \$9,471.4 | \$1,221.8 | \$3,520.3 | \$4,692.0 | \$36,419.7 |
| 2008 | \$51,335.0 | \$8,191.0 | \$1,089.4 | \$3,004.0 | \$4,657.8 | \$35,482.2 |
| 2009 | \$39,211.9 | \$10,456.7 | \$1,202.5 | \$3,900.6 | \$5,302.1 | \$19,552.5 |
| 2010 | \$42,223.2 | \$11,705.8 | \$1,404.7 | \$4,059.9 | \$6,575.8 | \$19,881.8 |
| 2011 | \$49,299.6 | \$19,261.2 | \$2,369.1 | \$7,788.3 | \$10,819.2 | \$11,430.9 |
| 2012 | \$48,976.4 | \$19,039.9 | \$2,102.0 | \$7,323.5 | \$10,917.7 | \$11,695.2 |

These data show that the overall performance of the state's two largest public pension plans was stronger than that of the entire Minnesota public pension system from July 2004 to June 2012 (the Minnesota fiscal year ends June 30). This reflects the performance of all assets and oil and natural gas stocks from July 2012 to June 2013: In FY 2013, the value of all assets held by these funds increased 14.2 percent, while the value of the oil and gas assets rose 15.0 percent. (See Appendix, Table A-MN-3 and A-MN-6) The seven-year data show that \$1.00 invested in the Minnesota public employees' retirement system in July 2004 grew to \$1.65 in June 2012. (Table MN-4 below) For this period, \$1.00 invested in oil and gas stocks grew to \$2.01. If the system had held no oil and natural gas stocks, \$1.00 invested in FY 2005 would have grown to \$1.56 in FY 2012.

The annual returns of the state's public pension system fluctuated greatly over the seven years, ranging from 23.3 percent to negative 18.8 percent for all assets and from 49.8 percent to negative 42.7 percent for oil and natural gas assets. (Table MN-4, below) Over the seven years, we estimate that oil and natural gas investments contributed \$1.5 billion of the system's net \$30.5 billion in returns over the period.

Oil and natural gas investments representing 3.9 percent of the total holdings of the Minnesota state pension system contributed 5.0 percent of its gains over the period, July 2004 to June 2012.

⁴¹ U.S. Census' State & Local Government Employee Retirement Systems; Comprehensive Annual Financial Report; and author's estimates.

**Table MN-4: All Minnesota Public Employee Retirement Plans,
Returns and Gains from All Assets and for Oil and Natural Gas Investments, FYs 2005-2012⁴²**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 Invested in All Assets in 7/2004 | Return on \$1 of Invested in Oil and Natural Gas Assets in 7/2004 | Return on \$1 Invested in Non-Oil and Natural Gas Assets in 7/2004 | Capital Gains from All Assets (\$ millions) | Capital Gains From Oil and Natural Gas Investments (\$ millions) |
|--------------|-----------------------------|---|--|---|--|---|--|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 10.7% | 36.8% | \$1.11 | \$1.37 | \$1.08 | \$5,058.4 | \$283.6 |
| 2006 | 12.3% | 22.5% | \$1.24 | \$1.68 | \$1.21 | \$6,407.0 | \$203.4 |
| 2007 | 18.3% | 26.0% | \$1.47 | \$2.11 | \$1.42 | \$9,900.9 | \$317.9 |
| 2008 | -5.0% | 23.1% | \$1.40 | \$2.60 | \$1.34 | (\$2,566.8) | \$251.5 |
| 2009 | -18.8% | -42.7% | \$1.13 | \$1.49 | \$1.09 | (\$7,371.8) | (\$513.0) |
| 2010 | 15.2% | -0.1% | \$1.31 | \$1.49 | \$1.26 | \$6,417.9 | (\$1.8) |
| 2011 | 23.3% | 49.8% | \$1.61 | \$2.23 | \$1.50 | \$11,486.8 | \$1,180.9 |
| 2012 | 2.4% | -10.0% | \$1.65 | \$2.01 | \$1.56 | \$1,175.4 | (\$211.1) |
| Total | | | | | | \$30,507.9 | \$1,511.3 |

MISSOURI

The Two Largest Public Pension Plans

We collected data on the investment portfolios and performance of the two largest public employee retirement plans in Missouri, the Missouri Public School Retirement System (MPSRS) and the Missouri State Employees' Retirement System (MSERS), for fiscal years 2005-2013. Over these eight years, the two plans had total assets averaging \$33.6 billion and a combined average of 236,441 members, including current retirees, current employees, and former or inactive employees. (Table MO-1, below) The two plans held oil and natural gas-sector investments averaging \$1.13 billion or 3.3 percent of their total assets. The two plans represent 49.8 percent of all members and 64.2 percent of all assets of all Missouri public employee retirement plans.

**Table MO-1: Missouri's Two Largest Public Employee Retirement Plans:
Members, Total Assets and Oil and Natural Gas Assets, Annual Average, FYs 2005-2013⁴³**

| | Total Members | Total Assets (\$ billions) | Oil and Natural Gas Assets (\$ billions) | Oil and Natural Gas Assets as a Share of All Assets |
|--------------|----------------|----------------------------|--|---|
| Total | 236,441 | \$33.622 | \$1.125 | 3.3% |
| MPSRS | 132,988 | \$26.258 | \$0.933 | 3.6% |
| MSERS | 103,453 | \$7.365 | \$0.192 | 2.6% |

⁴² *Ibid.*

⁴³ Comprehensive Annual Financial Report of Public School & Education Employee Retirement Systems of Missouri and Missouri State Employees Retirement System and author's estimates.

The cumulative rate of return on the assets of these two large plans was about 81 percent over the eight years, 2005 to 2013. (Table MO-2, below) By contrast, the plans' oil and gas assets produced a 131 percent return over the same period. The two plans generated total gains of \$23.2 billion over this period, including \$1.49 billion in gains from their investments in oil and natural gas stocks.

Over FYs 2005-2013, oil and natural gas investments which represented 3.3 percent of the assets of Missouri's two largest public employee pension plans contributed 6.4 percent of their total gains.

**Table MO-2: Missouri's Two Largest Public Employee Retirement Plans:
Rates of Return and Gains, Overall and from Oil and Natural Gas Investments, FYs 2005-2013⁴⁴**

| | Return on \$1 Invested in Plans | Return on \$1 Invested in Oil and Natural Gas Stocks | Return on \$1 Invested in Non-Oil and Natural Gas Stocks | Total Gains by Plans (\$ millions) | Gains from Oil and Natural Gas Investments (\$ millions) | Gains from Oil and Natural Gas as Share of All Gains |
|--------------|--|--|--|--|--|--|
| Total | \$1.81 | \$2.31 | \$1.74 | \$23,297.6 | \$1,487.5 | 6.4% |
| MPSRS | \$1.70 | \$2.31 | \$1.60 | \$17,583.7 | \$1,244.7 | 7.1% |
| MSERS | \$1.91 | \$2.31 | \$1.88 | \$5,713.9 | \$242.7 | 4.2% |

All Missouri Public Employee Retirement Programs

To estimate the impact of oil and natural gas stocks on the returns on all Missouri public employee retirement programs, we use annual Census Bureau data on public employee retirement systems by state covering FYs 2005 to 2012. Once again, as the returns on all investments and investments in oil and natural gas investments increased in late 2012 and 2013, the seven years of aggregate data by state cannot be strictly compared to the eight years of data on the two largest plans. The Census data provide the allocation of assets by asset-class for all public employee retirement plans in Missouri for FYs 2005-2012. (Table MO-3, below)

⁴⁴ *Ibid.*

**Table MO-3: All Missouri Public Employee Retirement Plans:
Asset Allocations, FYs 2005-2012⁴⁵**

| Fiscal Year | Total | US Stocks: All Sectors | Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|------------|---------------------------|-------------------------------|---------------------------|-----------------|-----------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 34.2% | 2.7% | 15.8% | 28.6% | 21.4% |
| 2006 | 100.0% | 31.5% | 2.8% | 16.8% | 32.3% | 19.5% |
| 2007 | 100.0% | 33.0% | 2.6% | 20.6% | 26.8% | 19.6% |
| 2008 | 100.0% | 29.0% | 3.2% | 18.2% | 23.8% | 29.0% |
| 2009 | 100.0% | 28.2% | 3.1% | 14.8% | 26.3% | 30.6% |
| 2010 | 100.0% | 26.9% | 3.0% | 16.4% | 22.6% | 34.1% |
| 2011 | 100.0% | 23.4% | 3.0% | 13.9% | 19.3% | 43.4% |
| 2012 | 100.0% | 32.2% | 3.9% | 14.1% | 23.4% | 30.4% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$49,739.0 | \$17,009.9 | \$1,360.8 | \$7,843.4 | \$14,226.2 | \$10,659.4 |
| 2006 | \$57,538.3 | \$18,126.2 | \$1,631.4 | \$9,641.4 | \$18,564.9 | \$11,205.8 |
| 2007 | \$60,235.4 | \$19,905.6 | \$1,592.4 | \$12,411.1 | \$16,116.9 | \$11,801.8 |
| 2008 | \$53,378.5 | \$15,456.1 | \$1,700.2 | \$9,735.1 | \$12,709.4 | \$15,477.8 |
| 2009 | \$42,596.8 | \$12,032.4 | \$1,323.6 | \$6,322.3 | \$11,213.7 | \$13,028.4 |
| 2010 | \$46,545.4 | \$12,497.8 | \$1,374.8 | \$7,649.2 | \$10,511.6 | \$15,886.8 |
| 2011 | \$54,596.9 | \$12,776.8 | \$1,661.0 | \$7,590.3 | \$10,517.9 | \$23,711.9 |
| 2012 | \$54,144.8 | \$17,429.8 | \$2,091.6 | \$7,622.3 | \$12,647.2 | \$16,445.6 |

These data show that the overall performance of the state's two largest public pension plans was stronger than that of the entire Missouri public pension system from July 2004 to June 2012 (the Missouri fiscal year ends June 30). This reflects the performance of all assets and oil and natural gas stocks in particular from July 2012 to June 2013: In FY 2013, the value of all assets held by these funds increased 11.5 percent, while the value of the their oil and gas assets rose 15.0 percent. (See Appendix, Table A-MO-3 and A-MO-6) The seven-year data show that \$1.00 invested by the Missouri public employees' retirement system in July 2004 grew to \$1.51 in June 2012. (Table MO-4, below) For this period, \$1.00 invested in oil and gas stocks grew to \$2.01. If the system had held no oil and natural gas stocks, \$1.00 invested in FY 2005 would have grown to \$1.43 in FY 2012.

The annual returns of the state's public pension system fluctuated greatly over the seven years, ranging from 21.8 percent to negative 19.3 percent for all assets and from 49.8 percent to negative 42.7 percent for oil and natural gas assets. (Table MO-4, below) Over the seven years, we estimate that oil and natural gas investments contributed more than \$1.7 billion of the system's net \$28.5 billion in returns over the period.

Oil and natural gas investments representing on average just over 3.0 percent of the total holdings of the Missouri state pension system contributed nearly 6.1 percent of its gains over the period, July 2004 to June 2012.

⁴⁵ U.S. Census' State & Local Government Employee Retirement Systems; Comprehensive Annual Financial Report; S&P's; and author's estimates.

**Table MO-4: All Missouri Public Employee Retirement Plans,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2012⁴⁶**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 Invested in All Assets in 7/2004 | Return on \$1 of Invested in Oil and Natural Gas Assets in 7/2004 | Return on \$1 Invested in Non-Oil and Natural Gas Assets in 7/2004 | Capital Gains from All Assets (\$ millions) | Capital Gains From Oil and Natural Gas Investments (\$ millions) |
|-------------|-----------------------------|---|--|---|--|---|--|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 9.2% | 36.8% | \$1.09 | \$1.37 | \$1.05 | \$4,576.0 | \$500.2 |
| 2006 | 9.8% | 22.5% | \$1.20 | \$1.68 | \$1.15 | \$5,638.8 | \$367.8 |
| 2007 | 16.6% | 26.0% | \$1.40 | \$2.11 | \$1.34 | \$9,999.1 | \$414.3 |
| 2008 | -4.6% | 23.1% | \$1.33 | \$2.60 | \$1.25 | (\$2,455.4) | \$392.5 |
| 2009 | -19.3% | -42.7% | \$1.08 | \$1.49 | \$1.03 | (\$8,221.2) | (\$564.7) |
| 2010 | 13.0% | -0.1% | \$1.22 | \$1.49 | \$1.17 | \$6,050.9 | (\$1.8) |
| 2011 | 21.8% | 49.8% | \$1.48 | \$2.23 | \$1.41 | \$11,902.1 | \$827.9 |
| 2012 | 1.9% | -10.0% | \$1.51 | \$2.01 | \$1.43 | \$1,028.8 | (\$210.1) |
| Total | | | | | | \$28,519.0 | \$1,726.2 |

NEBRASKA

The Two Largest Public Pension Plans

We collected data on the investment portfolios and performance of the two largest public employee retirement plans in Nebraska, the Nebraska Public School Employees' Retirement System (NPSERS) and the Nebraska Public Employees' Retirement System (NPERS), for fiscal years 2005-2013. Over those eight years, the two plans had total assets averaging \$7.1 billion and a combined average of 88,127 members, including current retirees, current employees, and former or inactive employees. (Table NE-1, below) The two plans held oil and natural gas-sector investments averaging \$320 million or 4.5 percent of their total assets. The two plans represent 75.1 percent of all members and 71.0 percent of all assets of all Nebraska public employee retirement plans.

**Table NE-1: Nebraska's Two Largest Public Employee Retirement Plans:
Members, Total Assets and Oil and Natural Gas Assets, Annual Average, FYs 2005-2013⁴⁷**

| | Total Members | Total Assets (\$ billions) | Oil and Natural Gas Assets (\$ billions) | Oil and Natural Gas Assets as a Share of All Assets |
|--------------|---------------|----------------------------|--|---|
| Total | 88,127 | \$7.110 | \$0.320 | 4.5% |
| NPSERS | 73,907 | \$6.531 | \$0.295 | 4.5% |
| NPERS | 14,219 | \$0.579 | \$0.026 | 4.4% |

⁴⁶ U.S. Census' State & Local Government Employee Retirement Systems; Comprehensive Annual Financial Report; S&P's; and author's estimates.

⁴⁷ Actuarial and Annual Financial Reports of Nebraska Public Employees Retirement Systems and author's estimates.

The cumulative rate of return on the assets of these two large plans was about 69 percent over the eight years, 2005 to 2013. (Table NE-2, below) By contrast, the plans' oil and gas assets produced a 128 percent return over the same period. The two plans generated total gains of \$5.0 billion over this period, including \$451 million in gains from their investments in oil and natural gas stocks.

Over FYs 2005-2013, oil and natural gas investments which represented 4.5 percent of the total assets of Nebraska's two largest public employee pension plans contributed 9.0 percent of their total gains.

**Table NE-2: Nebraska's Two Largest Public Employee Retirement Plans:
Rates of Return and Gains, Overall and from Oil and Natural Gas Investments, FYs 2005-2013⁴⁸**

| | Return on \$1 Invested in Plans | Return on \$1 Invested in Oil and Natural Gas Stocks | Return on \$1 Invested in Non-Oil and Natural Gas Stocks | Total Gains by Plans (\$ millions) | Gains from Oil and Natural Gas Investments (\$ millions) | Gains from Oil and Natural Gas as Share of All Gains |
|---------------|--|--|--|--|--|--|
| Total | \$1.69 | \$2.28 | \$1.61 | \$4,999.5 | \$451.2 | 9.0% |
| NPSERS | \$1.73 | \$2.31 | \$1.65 | \$4,606.5 | \$431.7 | 9.4% |
| NPERS | \$1.65 | \$2.26 | \$1.56 | \$393.0 | \$19.6 | 5.0% |

All Nebraska Public Employee Retirement Programs

To estimate the impact of oil and natural gas stocks on the returns on all Nebraska public employee retirement programs, we use annual Census Bureau data on public employee retirement systems by state covering FYs 2005 to 2012. Once again, as the returns on all investments and investments in oil and natural gas investments increased in late 2012 and 2013, the seven years of aggregate data by state cannot be strictly compared to the eight years of data on the two largest plans. The Census Bureau data appear to use different asset allocation definitions than the individual public pension funds in Nebraska. We use the asset allocation of the largest public pension fund in Nebraska (public teachers) to estimate the economic impacts of the entire state. (Table NE-3, below)

⁴⁸ *Ibid.*

**Table NE-3: All Nebraska Public Employee Retirement Plans:
Asset Allocations, FYs 2005-2012⁴⁹**

| Fiscal Year | Total | US Stocks: All Sectors | Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|------------|---------------------------|-------------------------------|---------------------------|-----------------|-----------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 46.6% | 4.3% | 20.6% | 29.7% | 3.1% |
| 2006 | 100.0% | 46.0% | 4.5% | 22.4% | 27.3% | 4.3% |
| 2007 | 100.0% | 46.6% | 6.0% | 23.5% | 25.3% | 4.6% |
| 2008 | 100.0% | 42.7% | 5.7% | 19.9% | 31.3% | 6.1% |
| 2009 | 100.0% | 33.4% | 3.8% | 28.8% | 31.8% | 6.0% |
| 2010 | 100.0% | 34.2% | 4.1% | 27.8% | 31.8% | 6.2% |
| 2011 | 100.0% | 35.7% | 4.4% | 29.5% | 27.4% | 7.4% |
| 2012 | 100.0% | 35.7% | 3.9% | 26.7% | 28.7% | 8.9% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$8,280.5 | \$3,858.7 | \$358.9 | \$1,705.8 | \$2,459.3 | \$256.7 |
| 2006 | \$9,565.4 | \$4,400.1 | \$431.2 | \$2,142.7 | \$2,611.4 | \$411.3 |
| 2007 | \$11,028.8 | \$5,139.4 | \$663.0 | \$2,591.8 | \$2,790.3 | \$507.3 |
| 2008 | \$10,466.2 | \$4,469.1 | \$594.4 | \$2,082.8 | \$3,275.9 | \$638.4 |
| 2009 | \$8,405.7 | \$2,807.5 | \$322.9 | \$2,420.8 | \$2,673.0 | \$504.3 |
| 2010 | \$9,620.1 | \$3,290.1 | \$394.8 | \$2,674.4 | \$3,059.2 | \$596.4 |
| 2011 | \$11,210.2 | \$4,002.0 | \$492.2 | \$3,307.0 | \$3,071.6 | \$829.6 |
| 2012 | \$11,520.5 | \$4,112.8 | \$454.1 | \$3,076.0 | \$3,306.4 | \$1,025.3 |

These data show that the overall performance of the state's two largest public pension plans was stronger than that of the entire Nebraska public pension system from July 2004 to June 2012 (the Nebraska fiscal year ends June 30). This reflects the performance of all assets and oil and natural gas stocks in particular from July 2012 to June 2013: In FY 2013, the value of all assets held by these funds increased 12.9 percent, and the value of their oil and gas assets rose 18.7 percent. (See Appendix, Tables A-NE-3 and A-NE-6) The seven-year data show that \$1.00 invested by the Nebraska public employees' retirement system in July 2004 grew to \$1.54 in June 2012. (Table NE-4, below) For this period, \$1.00 invested in oil and gas stocks grew to \$2.01. If the system had held no oil and natural gas stocks, \$1.00 invested in FY 2005 would have grown to \$1.46 in FY 2012.

The annual returns of the state's public pension system fluctuated greatly over the seven years, ranging from 23.3 percent to negative 19.1 percent for all assets and from 49.8 percent to negative 42.7 percent for oil and natural gas assets. (Table NE-4, below) Over the seven years, we estimate that oil and natural gas investments contributed more than \$600 million of the system's net \$5.58 billion in returns over the period.

Oil and natural gas investments representing on average of 4.6 percent of the total holdings of the Nebraska state pension system contributed more than 10.7 percent of its gains over the period, July 2004 to June 2012.

⁴⁹ U.S. Census' State & Local Government Employee Retirement Systems; Actuarial and Annual Financial Reports; and author's estimates.

**Table NE-4: All Nebraska Public Employee Retirement Plans,
Returns and Gains for All Assets and for Oil and Natural Gas Investments, FYs 2005-2012⁵⁰**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 Invested in All Assets in 7/2004 | Return on \$1 of Invested in Oil and Natural Gas Assets in 7/2004 | Return on \$1 Invested in Non-Oil and Natural Gas Assets in 7/2004 | Capital Gains from All Assets (\$ millions) | Capital Gains From Oil and Natural Gas Investments (\$ millions) |
|-------------|-----------------------------|---|--|---|--|---|--|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 9.8% | 36.8% | \$1.10 | \$1.37 | \$1.04 | \$811.5 | \$131.9 |
| 2006 | 10.4% | 22.5% | \$1.21 | \$1.68 | \$1.14 | \$994.8 | \$97.2 |
| 2007 | 17.7% | 26.0% | \$1.43 | \$2.11 | \$1.30 | \$1,952.1 | \$172.5 |
| 2008 | -5.8% | 23.1% | \$1.34 | \$2.60 | \$1.20 | (\$607.0) | \$137.2 |
| 2009 | -19.1% | -42.7% | \$1.09 | \$1.49 | \$1.03 | (\$1,605.5) | (\$137.7) |
| 2010 | 13.6% | -0.1% | \$1.24 | \$1.49 | \$1.17 | \$1,308.3 | (\$0.5) |
| 2011 | 23.3% | 49.8% | \$1.52 | \$2.23 | \$1.43 | \$2,612.0 | \$245.4 |
| 2012 | 1.0% | -10.0% | \$1.54 | \$2.01 | \$1.46 | \$115.2 | (\$45.6) |
| Total | | | | | | \$5,581.4 | \$600.3 |

NEW HAMPSHIRE

The Two Largest Public Pension Plans

We collected data on the investment portfolios and performance of the two largest public employee retirement plans in New Hampshire, the New Hampshire Public School Employees' Retirement System (NHPSERS) and the New Hampshire Retirement System (NHRS), for FYs 2005-2013. Over those eight years, the two plans had total assets averaging \$4.53 billion and a combined average of 64,881 members, including current retirees, current employees, and former or inactive employees. (Table NH-1, below) The two plans held oil and natural gas-sector investments averaging \$224 million or 4.9 percent of their total assets. The two plans represent 79.2 percent of all members and 84.0 percent of the assets of all New Hampshire public employee retirement plans.

**Table NH-1: New Hampshire's Two Largest Public Employee Retirement Plans:
Members, Total Assets and Oil and Natural Gas Assets, Annual Average, FYs 2005-2013⁵¹**

| | Total Members | Total Assets (\$ billions) | Oil and Natural Gas Assets (\$ billions) | Oil and Natural Gas Assets as a Share of All Assets |
|----------------|---------------|----------------------------|--|---|
| Total | 64,881 | \$4.533 | \$0.224 | 4.9% |
| NHPSERS | 26,690 | \$1.855 | \$0.092 | 4.9% |
| NHRS | 38,190 | \$2.678 | \$0.132 | 4.9% |

⁵⁰ *Ibid.*

⁵¹ Comprehensive Annual Financial Report of New Hampshire Retirement System and author's estimates.

The cumulative rate of return on the assets of these two large plans was about 76 percent over the eight years, 2005 to 2013. (Table NH-2, below) By contrast, the plans' oil and gas assets produced a 131 percent return over the same period. The two plans generated total gains of \$3.22 billion over this period, including \$371 million in gains from their investments in oil and natural gas stocks.

Over FYs 2005 to 2013, oil and natural gas investments which represented 4.9 percent of the total assets of New Hampshire's two largest public employee pension plans contributed 11.5 percent of the plans' total gains.

**Table NH-2: New Hampshire's Two Largest Public Employee Retirement Plans:
Rates of Return and Gains, Overall and from Oil and Natural Gas Investments, FYs 2005-2013⁵²**

| | Return on \$1 Invested in Plans | Return on \$1 Invested in Oil and Natural Gas Stocks | Return on \$1 Invested in Non-Oil and Natural Gas Stocks | Total Gains by Plans (\$ millions) | Gains from Oil and Natural Gas Investments (\$ millions) | Gains from Oil and Natural Gas as Share of All Gains |
|----------------|--|--|--|--|--|--|
| Total | \$1.76 | \$2.31 | \$1.64 | \$3,221.3 | \$371.0 | 11.5% |
| NHPSERS | \$1.76 | \$2.31 | \$1.64 | \$1,318.2 | \$151.0 | 11.5% |
| NHRS | \$1.76 | \$2.31 | \$1.64 | \$1,903.1 | \$220.0 | 11.6% |

All New Hampshire Public Employee Retirement Programs

To estimate the impact of oil and natural gas stocks on the returns on all New Hampshire public employee retirement programs, we use annual Census Bureau data on public employee retirement systems by state covering FYs 2005 to 2012. Once again, as the returns on all investments and investments in oil and natural gas investments increased in late 2012 and 2013, the seven years of aggregate data by state cannot be strictly compared to the eight years of data on the two largest plans. The Census data also show the allocation of assets by asset-class for all public employee retirement plans in New Hampshire for FYs 2005-2012. (Table NH-3, below)

⁵² *Ibid.*

**Table NH-3: All New Hampshire Public Employee Retirement Plans:
Asset Allocations, FYs 2005-2012⁵³**

| Fiscal Year | Total | US Stocks: All Sectors | Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|-----------|---------------------------|-------------------------------|---------------------------|-----------------|-----------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 43.1% | 4.8% | 12.7% | 16.0% | 28.2% |
| 2006 | 100.0% | 43.2% | 5.2% | 14.4% | 15.8% | 26.5% |
| 2007 | 100.0% | 43.8% | 3.5% | 19.2% | 23.4% | 13.6% |
| 2008 | 100.0% | 40.8% | 4.0% | 19.6% | 27.1% | 12.6% |
| 2009 | 100.0% | 39.6% | 3.2% | 20.9% | 26.6% | 12.9% |
| 2010 | 100.0% | 43.4% | 3.3% | 22.0% | 24.4% | 10.2% |
| 2011 | 100.0% | 44.7% | 7.2% | 23.0% | 20.6% | 11.6% |
| 2012 | 100.0% | 44.6% | 5.9% | 22.3% | 20.5% | 12.7% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$4,914.3 | \$2,119.8 | \$236.0 | \$622.1 | \$784.9 | \$1,387.5 |
| 2006 | \$5,296.3 | \$2,288.5 | \$274.6 | \$764.7 | \$837.7 | \$1,405.4 |
| 2007 | \$5,963.3 | \$2,613.6 | \$211.4 | \$1,142.4 | \$1,395.9 | \$811.5 |
| 2008 | \$5,603.3 | \$2,283.7 | \$226.7 | \$1,095.9 | \$1,517.2 | \$706.5 |
| 2009 | \$4,433.4 | \$1,753.9 | \$140.7 | \$928.6 | \$1,177.6 | \$573.4 |
| 2010 | \$5,011.3 | \$2,173.1 | \$164.9 | \$1,103.4 | \$1,222.6 | \$512.2 |
| 2011 | \$6,043.6 | \$2,704.0 | \$437.3 | \$1,389.7 | \$1,245.9 | \$704.0 |
| 2012 | \$5,885.0 | \$2,623.2 | \$347.3 | \$1,309.7 | \$1,205.6 | \$746.5 |

These data show that the overall performance of New Hampshire's two largest public pension plans was stronger than that of the entire New Hampshire public pension system from July 2004 to June 2012 (the Nebraska fiscal year ends June 30). This reflects the differences in the two time periods: In FY 2013, from July 1, 2012 to June 30, 2013, the value of all assets increased 14.5 percent, and the value of oil and natural gas assets rose 15.0 percent. (See Appendix, Tables A-NH-3 and A-NH-6) The seven-year data show that \$1.00 invested in the New Hampshire public employees' retirement system in July 2004 grew to \$1.54 in June 2012. Over this period, \$1.00 invested in oil and gas stocks grew to \$2.01. If the system had held no oil and natural gas stocks, \$1.00 invested in July 2004 would have grown to \$1.42 in 2012.

The annual returns of the state's public pension system fluctuated greatly over the seven years, ranging from 23.0 percent to negative 18.1 percent for all assets and from 49.8 percent to negative 42.7 percent for oil and natural gas assets. (Table NH-4, below) Over the seven years, we estimate that oil and natural gas investments contributed nearly \$379 million of the system's net \$3.01 billion in returns over the period.

From July 2004 to June 2012, oil and natural gas investments representing on average of 4.6 percent of the total holdings of the New Hampshire state pension system contributed nearly 12.6 percent of its gains over this period.

⁵³ U.S. Census' State & Local Government Employee Retirement Systems; Comprehensive Annual Financial Report; and author's estimates.

Table NH-4: All New Hampshire Public Employee Retirement Plans, Returns and Gains for All Assets and for Oil and Natural Gas Investments, FYs 2005-2012⁵⁴

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 Invested in All Assets in 7/2004 | Return on \$1 of Invested in Oil and Natural Gas Assets in 7/2004 | Return on \$1 Invested in Non-Oil and Natural Gas Assets in 7/2004 | Capital Gains from All Assets (\$ millions) | Capital Gains From Oil and Natural Gas Investments (\$ millions) |
|-------------|-----------------------------|---|--|---|--|---|--|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 10.1% | 36.8% | \$1.10 | \$1.37 | \$1.04 | \$496.3 | \$86.7 |
| 2006 | 10.0% | 22.5% | \$1.21 | \$1.68 | \$1.12 | \$529.6 | \$61.9 |
| 2007 | 16.0% | 26.0% | \$1.40 | \$2.11 | \$1.33 | \$954.1 | \$55.0 |
| 2008 | - 4.6% | 23.1% | \$1.34 | \$2.60 | \$1.24 | (\$257.8) | \$52.3 |
| 2009 | -18.1% | - 42.7% | \$1.10 | \$1.49 | \$1.05 | (\$802.5) | (\$60.0) |
| 2010 | 12.9% | -0.1% | \$1.24 | \$1.49 | \$1.19 | \$646.5 | (\$0.2) |
| 2011 | 23.0% | 49.8% | \$1.52 | \$2.23 | \$1.36 | \$1,390.0 | \$218.0 |
| 2012 | 0.9% | -10.0% | \$1.54 | \$2.01 | \$1.42 | \$53.0 | (\$34.9) |
| Total | | | | | | \$3,009.3 | \$378.9 |

NEW MEXICO

The Two Largest Public Pension Plans

We collected data on the investment portfolios and performance of the two largest public employee retirement plans in New Mexico, the New Mexico Educational Retirement Board System (NMERB) and the New Mexico Public Employees Retirement Association (NMPERA), for FYs 2005-2013. Over those years, the two plans had total assets averaging \$20.94 billion and a combined average of 208,331 members, including retirees, current employees, and former or inactive employees. (Table NM-1, below) The two plans held oil and natural gas-sector investments averaging \$887 million or 4.2 percent of their total assets. New Mexico and the Census Bureau use different accounting systems that preclude accurate estimates of the share of all New Mexico public pension plan members and assets which the two largest plans represent.

Table NM-1: New Mexico's Two Largest Public Employee Retirement Plans: Members, Total Assets and Oil and Natural Gas Assets, Annual Average, FYs 2005-2013⁵⁵

| | Total Members | Total Assets (\$ billions) | Oil and Natural Gas Assets (\$ billions) | Oil and Natural Gas Assets as a Share of All Assets |
|--------|---------------|----------------------------|--|---|
| Total | 208,331 | \$20.936 | \$0.887 | 4.2% |
| NMERB | 126,269 | \$9.595 | \$0.366 | 3.8% |
| NMPERA | 82,062 | \$11.341 | \$0.521 | 4.6% |

⁵⁴ *Ibid.*

⁵⁵ Comprehensive Annual Financial Report of State of New Mexico Educational Retirement Board System and Public Employees Retirement Association and author's estimates.

The cumulative rate of return on the assets of these two large plans was about 71 percent over the eight years, 2005 to 2013. (Table NM-2, below) By contrast, the plans' oil and gas assets produced a 131 percent return over the same period. The two plans generated total gains of \$14.06 billion over this period, including \$1.15 billion from their investments in oil and natural gas stocks.

Over FYs 2005 to 2013, therefore, oil and natural gas investments which represented 4.2 percent of the total assets of New Mexico's two largest public employee pension plans contributed 8.1 percent of the plans' total gains.

**Table NM-2: New Mexico's Two Largest Public Employee Retirement Plans:
Rates of Return and Gains, Overall and from Oil and Natural Gas Investments, FYs 2005-2013⁵⁶**

| | Return on \$1 Invested in Plans | Return on \$1 Invested in Oil and Natural Gas Stocks | Return on \$1 Invested in Non-Oil and Natural Gas Stocks | Total Gains by Plans (\$ millions) | Gains from Oil and Natural Gas Investments (\$ millions) | Gains from Oil and Natural Gas as Share of All Gains |
|---------------|--|--|--|--|--|--|
| Total | \$1.71 | \$2.31 | \$1.64 | \$14,060.4 | \$1,144.6 | 8.1% |
| NMERB | \$1.80 | \$2.31 | \$1.74 | \$6,867.9 | \$544.4 | 7.9% |
| NMPERA | \$1.62 | \$2.31 | \$1.53 | \$7,192.5 | \$600.2 | 8.3% |

All New Mexico Public Employee Retirement Programs

To estimate the impact of oil and natural gas stocks on the returns on all New Mexico public employee retirement programs, we use annual Census Bureau data on public employee retirement systems by state covering FYs 2005 to 2012. Once again, as the returns on all investments and investments in oil and natural gas investments increased in late 2012 and 2013, the seven years of aggregate data by state cannot be strictly compared to the eight years of data on the two largest plans. The Census data also show the allocation of assets by asset-class for all public employee retirement plans in New Mexico for FYs 2005-2012. (Table NM-3, below)

⁵⁶ *Ibid.*

**Table NM-3: All New Mexico Public Employee Retirement Plans:
Asset Allocations, FYs 2005-2012⁵⁷**

| Fiscal Year | Total | US Stocks: All Sectors | Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|------------|---------------------------|-------------------------------|---------------------------|-----------------|-----------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 44.5% | 4.1% | 19.7% | 26.8% | 9.0% |
| 2006 | 100.0% | 41.9% | 4.1% | 23.5% | 26.2% | 8.5% |
| 2007 | 100.0% | 41.5% | 5.3% | 23.9% | 18.4% | 16.3% |
| 2008 | 100.0% | 35.9% | 4.8% | 21.6% | 16.8% | 25.7% |
| 2009 | 100.0% | 31.6% | 3.6% | 17.5% | 20.2% | 30.7% |
| 2010 | 100.0% | 28.5% | 3.4% | 18.8% | 26.6% | 26.1% |
| 2011 | 100.0% | 27.4% | 3.4% | 21.3% | 24.1% | 27.2% |
| 2012 | 100.0% | 29.5% | 3.3% | 20.6% | 20.0% | 29.9% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$18,980.3 | \$8,450.3 | \$785.9 | \$3,742.2 | \$5,080.5 | \$1,707.3 |
| 2006 | \$20,236.7 | \$8,473.9 | \$830.4 | \$4,747.8 | \$5,304.6 | \$1,710.4 |
| 2007 | \$23,302.1 | \$9,660.1 | \$1,246.1 | \$5,561.0 | \$4,287.6 | \$3,793.4 |
| 2008 | \$22,378.6 | \$8,035.9 | \$1,068.8 | \$4,835.3 | \$3,753.4 | \$5,754.0 |
| 2009 | \$15,953.9 | \$5,035.8 | \$579.1 | \$2,796.1 | \$3,225.2 | \$4,896.8 |
| 2010 | \$20,103.3 | \$5,729.2 | \$687.5 | \$3,783.5 | \$5,347.7 | \$5,242.9 |
| 2011 | \$22,222.5 | \$6,093.7 | \$749.5 | \$4,726.2 | \$5,349.0 | \$6,053.7 |
| 2012 | \$21,143.2 | \$6,237.1 | \$688.6 | \$4,361.7 | \$4,226.4 | \$6,318.0 |

These data show that the overall performance of New Mexico's two largest public pension plans from July 2004 to June 2013 (the New Mexico fiscal year ends June 30) was stronger than the overall system. This reflects the differences in the two time periods: In FY 2013, from July 1, 2012 to June 30, 2013, the value of all assets increased 12.2 percent, and the value of oil and natural gas assets rose 15.0 percent. (Appendix, Tables A-NM-3 and A-NM-6) The seven-year data show that \$1.00 invested in the New Mexico public employees' retirement system in July 2004 grew to \$1.43 in June 2012. (Table NM-4 below) Over this period, \$1.00 invested in oil and gas stocks grew to \$2.01. If the system had held no oil and natural gas stocks, \$1.00 invested in July 2004 would have grown to \$1.35 in 2012.

The annual returns of the state's public pension system fluctuated greatly over the seven years, ranging from 22.5 percent to negative 24.1 percent for all assets and from 49.8 percent to negative 42.7 percent for oil and natural gas assets. (Table NM-4, below) Over the seven years, we estimate that oil and natural gas investments contributed nearly \$1.1 billion of the system's net \$10.9 billion in returns over the period.

From July 2004 to June 2012, oil and natural gas investments representing on average of 4.0 percent of the total holdings of the New Mexico state pension system contributed 10.1 percent of its gains over this period.

⁵⁷ U.S. Census' State & Local Government Employee Retirement Systems; Comprehensive Annual Financial Report; and author's estimates.

**Table NM-4: All New Mexico Public Employee Retirement Plans,
Returns and Gains for All Assets and for Oil and Natural Gas Investments, FYs 2005-2012⁵⁸**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 Invested in All Assets in 7/2004 | Return on \$1 of Invested in Oil and Natural Gas Assets in 7/2004 | Return on \$1 Invested in Non-Oil and Natural Gas Assets in 7/2004 | Capital Gains from All Assets (\$ millions) | Capital Gains From Oil and Natural Gas Investments (\$ millions) |
|-------------|-----------------------------|---|--|---|--|---|--|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 9.9% | 36.8% | \$1.10 | \$1.37 | \$1.04 | \$1,879.1 | \$288.9 |
| 2006 | 11.7% | 22.5% | \$1.23 | \$1.68 | \$1.18 | \$2,367.7 | \$187.2 |
| 2007 | 18.1% | 26.0% | \$1.45 | \$2.11 | \$1.39 | \$4,217.7 | \$324.2 |
| 2008 | -7.4% | 23.1% | \$1.34 | \$2.60 | \$1.26 | (\$1,656.0) | \$246.7 |
| 2009 | -24.1% | -42.7% | \$1.02 | \$1.49 | \$0.97 | (\$3,844.9) | (\$247.1) |
| 2010 | 15.0% | -0.1% | \$1.17 | \$1.49 | \$1.13 | \$3,019.5 | (\$0.9) |
| 2011 | 22.5% | 49.8% | \$1.44 | \$2.23 | \$1.37 | \$5,000.1 | \$373.6 |
| 2012 | -0.4% | -10.0% | \$1.43 | \$2.01 | \$1.35 | (\$80.3) | (\$69.2) |
| Total | | | | | | \$10,902.8 | \$1,103.5 |

NEW YORK

The Two Largest Public Pension Plans

We collected data on the investment portfolios and performance of the two largest public employee retirement plans in New York, the New York State Teachers Retirement System (NYSTRS) and the New York State and Local Employees' Retirement System (NYERS), for FYs 2005-2013. Over those eight years, the two plans had total assets averaging \$224.4 billion and a combined average of 1,326,990 members, including current retirees, current employees, and former or inactive employees. (Table NY-1, below) The two plans held oil and natural gas-sector investments averaging \$11.3 billion or 5.0 percent of their total assets. The two plans represent about 62.1 percent of all members and 67.2 percent of all assets of all New York public employee retirement plans.

**Table NY-1: New York's Two Largest Public Employee Retirement Plans:
Members, Total Assets and Oil and Natural Gas Assets, Annual Average, FYs 2005-2013⁵⁹**

| | Total Members | Total Assets (\$ billions) | Oil and Natural Gas Assets (\$ billions) | Oil and Natural Gas Assets as a Share of All Assets |
|--------|---------------|----------------------------|--|---|
| Total | 1,326,990 | \$224.356 | \$11.328 | 5.0% |
| NYSTRS | 358,338 | \$87.241 | \$5.035 | 5.8% |
| NYERS | 968,652 | \$137.116 | \$6.293 | 4.6% |

⁵⁸ *Ibid.*

⁵⁹ Comprehensive Annual Financial Report of New York State Teachers' Retirement System and State and Local Retirement System and author's estimates.

The cumulative rate of return on the assets of these two large plans was 78 percent over the eight years, 2005 to 2013. (Table NY-2, below) By contrast, the plans' oil and gas assets produced a 140 percent return over the same period. The two plans generated total gains of \$167.4 billion over this period, including \$16.4 billion from their investments in oil and natural gas stocks.

Over FYs 2005-2013, therefore, oil and natural gas investments which represented 5.0 percent of the total assets of New York's two largest public employee pension plans contributed 9.8 percent of the plans' total gains.

**Table NY-2: New York's Two Largest Public Employee Retirement Plans:
Rates of Return and Gains, Overall and from Oil and Natural Gas Investments, FYs 2005-2013⁶⁰**

| | Return on \$1 Invested in Plans | Return on \$1 Invested in Oil and Natural Gas Stocks | Return on \$1 Invested in Non-Oil and Natural Gas Stocks | Total Gains by Plans (\$ millions) | Gains from Oil and Natural Gas Investments (\$ millions) | Gains from Oil and Natural Gas as Share of All Gains |
|---------------|--|--|--|--|--|--|
| Total | \$1.78 | \$2.40 | \$1.68 | \$167,396.4 | \$16,442.8 | 9.8% |
| NYSTRS | \$1.77 | \$2.31 | \$1.67 | \$63,633.8 | \$7,622.0 | 12.0% |
| NYERS | \$1.78 | \$2.49 | \$1.69 | \$103,762.6 | \$8,820.8 | 8.5% |

All New York Public Employee Retirement Programs

To estimate the impact of oil and natural gas stocks on the returns on all New York public employee retirement programs, we use annual Census Bureau data on public employee retirement systems by state covering FYs 2005 to 2012. Once again, as the returns on all investments and investments in oil and natural gas investments increased in late 2012 and 2013, the seven years of aggregate data by state cannot be strictly compared to the eight years of data on the two largest plans. The Census data also show the allocation of assets by asset-class for all public employee retirement plans in New York for FYs 2005-2012. (Table NY-3, below)

⁶⁰ *Ibid.*

**Table NY-3: All New York Public Employee Retirement Plans:
Asset Allocations, FYs 2005-2012⁶¹**

| Fiscal Year | Total | US Stocks: All Sectors | Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|-------------|------------------------|----------------------------|------------------------|--------------|--------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 52.6% | 4.9% | 12.2% | 20.8% | 14.4% |
| 2006 | 100.0% | 52.7% | 5.2% | 13.4% | 19.5% | 14.4% |
| 2007 | 100.0% | 50.0% | 6.5% | 11.1% | 19.4% | 19.4% |
| 2008 | 100.0% | 47.5% | 6.3% | 14.4% | 22.8% | 15.3% |
| 2009 | 100.0% | 43.0% | 4.9% | 12.8% | 27.8% | 16.4% |
| 2010 | 100.0% | 48.2% | 5.8% | 14.7% | 24.3% | 12.9% |
| 2011 | 100.0% | 53.2% | 6.5% | 13.8% | 18.6% | 14.4% |
| 2012 | 100.0% | 45.3% | 5.0% | 15.7% | 24.3% | 14.8% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$311,670.4 | \$163,867.5 | \$15,239.7 | \$37,921.3 | \$64,899.4 | \$44,982.2 |
| 2006 | \$343,678.0 | \$181,024.9 | \$17,740.4 | \$46,021.6 | \$67,014.6 | \$49,616.9 |
| 2007 | \$394,139.4 | \$197,203.0 | \$25,439.2 | \$43,946.1 | \$76,464.4 | \$76,525.8 |
| 2008 | \$356,208.0 | \$169,167.3 | \$22,499.3 | \$51,319.7 | \$81,299.7 | \$54,421.3 |
| 2009 | \$263,764.6 | \$113,480.7 | \$13,050.3 | \$33,762.9 | \$73,242.4 | \$43,278.6 |
| 2010 | \$302,285.7 | \$145,668.4 | \$17,480.2 | \$44,313.9 | \$73,443.7 | \$38,859.8 |
| 2011 | \$343,495.8 | \$182,722.4 | \$22,474.9 | \$47,518.3 | \$63,732.8 | \$49,522.3 |
| 2012 | \$356,218.9 | \$161,202.8 | \$17,796.8 | \$55,822.9 | \$86,398.1 | \$52,795.1 |

These data show that the overall performance of New York's two largest public pension plans from April 2004 to March 2013 (the New York fiscal year ends March 31) was stronger than the overall system. This reflects the differences in the two time periods: In FY 2013, from April 1, 2012 to March 31, 2013, the value of all assets held by these funds increased 12.1 percent, and the value of the oil and natural gas assets rose 11.8 percent. (Appendix, Tables A-NY-3 and A-NY-6) The seven-year data show that \$1.00 invested in the New York public employees' retirement system in April 2004 grew to \$1.62 in March 2012. (Table NY-4 below) Over this period, \$1.00 invested in oil and gas stocks grew to \$2.30. If the system had held no oil and natural gas stocks, \$1.00 invested in July 2004 would have grown to \$1.50 in 2012.

The annual returns of the state's public pension system fluctuated greatly over the seven years, ranging from 25.9 percent to negative 26.4 percent for all assets and from 44.1 percent to negative 39.1 percent for oil and natural gas assets. (Table NY-4, below) Over the seven years, we estimate that oil and natural gas investments contributed nearly \$24.8 billion of the system's net \$215.3 billion in returns over the period.

From April 2004 to March 2012, oil and natural gas investments representing on average of 5.6 percent of the total holdings of the New York state pension system contributed 11.5 percent of its gains over this period.

⁶¹ U.S. Census' State & Local Government Employee Retirement Systems; Comprehensive Annual Financial Report; and author's estimates.

**Table NY-4: All New York Public Employee Retirement Plans,
Returns and Gains for All Assets and for Oil and Natural Gas Investments, FYs 2005-2012⁶²**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 Invested in All Assets in 7/2004 | Return on \$1 of Invested in Oil and Natural Gas Assets in 7/2004 | Return on \$1 Invested in Non-Oil and Natural Gas Assets in 7/2004 | Capital Gains from All Assets (\$ millions) | Capital Gains From Oil and Natural Gas Investments (\$ millions) |
|-------------|-----------------------------|---|--|---|--|---|--|
| 4/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 8.5% | 44.1% | \$1.09 | \$1.44 | \$1.01 | \$26,523.2 | \$6,723.1 |
| 2006 | 14.6% | 19.8% | \$1.24 | \$1.73 | \$1.15 | \$50,142.6 | \$3,512.6 |
| 2007 | 12.6% | 14.5% | \$1.40 | \$1.98 | \$1.27 | \$49,582.7 | \$3,682.2 |
| 2008 | 2.6% | 20.3% | \$1.44 | \$2.38 | \$1.29 | \$9,118.9 | \$4,577.8 |
| 2009 | -26.4% | -39.1% | \$1.06 | \$1.45 | \$0.99 | (\$69,581.1) | (\$5,101.0) |
| 2010 | 25.9% | 26.7% | \$1.33 | \$1.84 | \$1.22 | \$78,201.3 | \$4,663.9 |
| 2011 | 14.6% | 37.0% | \$1.52 | \$2.51 | \$1.36 | \$50,047.3 | \$8,304.5 |
| 2012 | 6.0% | -8.6% | \$1.62 | \$2.30 | \$1.50 | \$21,230.6 | (\$1,536.5) |
| Total | | | | | | \$215,265.6 | \$24,826.6 |

NORTH DAKOTA

The Two Largest Public Pension Plans

We collected data on the investment portfolios and performance of the two largest public employee retirement plans in North Dakota, the North Dakota Teachers Fund for retirement (NDTFFR) and the North Dakota Public Employees' Retirement System (NDPERS), for FYs 2005-2013. Over those eight years, the two plans had total assets averaging nearly \$3.4 billion and a combined average of 46,608 members, including current retirees, current employees, and former or inactive employees. (Table ND-1, below) The two plans held oil and natural gas-sector investments averaging \$133 million or 4.0 percent of their total assets. The two plans represent 89.3 percent of all members and 94.8 percent of all assets of North Dakota public employee retirement plans.

**Table ND-1: North Dakota's Two Largest Public Employee Retirement Plans:
Members, Total Assets and Oil and Natural Gas Assets, Annual Average, FYs 2005-2013⁶³**

| | Total Members | Total Assets (\$ billions) | Oil and Natural Gas Assets (\$ billions) | Oil and Natural Gas Assets as a Share of All Assets |
|--------|---------------|----------------------------|--|---|
| Total | 46,608 | \$3.356 | \$0.133 | 4.0% |
| NDTFFR | 18,082 | \$1.658 | \$0.065 | 3.9% |
| NDPERS | 28,527 | \$1.697 | \$0.069 | 4.0% |

⁶² *Ibid.*

⁶³ Comprehensive Annual Financial Report of North Dakota Public Employees Retirement System and Retirement and Investment Office and author's estimates.

The cumulative rate of return on the assets of these two large plans was 69 percent over the eight years, 2005 to 2013. (Table ND-2, below) By contrast, the plans' oil and gas assets produced a 131 percent return over the same period. The two plans generated total gains of \$2.4 billion over this period, including \$208 million from investments in oil and natural gas stocks.

Over FYs 2005-2013, oil and natural gas investments which represented 4.0 percent of the total assets of North Dakota's two largest public employee pension plans contributed 8.6 percent of the plans' total gains.

**Table ND-2: North Dakota's Two Largest Public Employee Retirement Plans:
Rates of Return and Gains, Overall and from Oil and Natural Gas Investments, FYs 2005-2013⁶⁴**

| | Return on \$1 Invested in Plans | Return on \$1 Invested in Oil and Natural Gas Stocks | Return on \$1 Invested in Non-Oil and Natural Gas Stocks | Total Gains by Plans (\$ millions) | Gains from Oil and Natural Gas Investments (\$ millions) | Gains from Oil and Natural Gas as Share of All Gains |
|---------------|--|--|--|--|--|--|
| Total | \$1.69 | \$2.31 | \$1.63 | \$2,409.7 | \$208.3 | 8.6% |
| NDTFFR | \$1.67 | \$2.31 | \$1.62 | \$1,208.9 | \$101.4 | 8.4% |
| NDPERS | \$1.70 | \$2.31 | \$1.65 | \$1,200.8 | \$106.9 | 8.9% |

All North Dakota Public Employee Retirement Programs

To estimate the impact of oil and natural gas stocks on the returns on all North Dakota public employee retirement programs, we use annual Census Bureau data on public employee retirement systems by state covering FYs 2005 to 2012. Because the returns on all investments and investments in oil and natural gas investments were strong in the second half of 2012 and the first half of 2013, the seven years of aggregate data by state cannot be strictly compared to the eight years of data on the two largest plans. The Census data also show the allocation of assets by asset-class for all public employee retirement plans in North Dakota for FYs 2005-2012. (Table ND-3, below)

⁶⁴ *Ibid.*

**Table ND-3: All North Dakota Public Employee Retirement Plans:
Asset Allocations, FYs 2005-2012⁶⁵**

| Fiscal Year | Total | US Stocks: All Sectors | Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|-----------|---------------------------|-------------------------------|---------------------------|-----------------|-----------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 29.3% | 2.7% | 18.0% | 19.7% | 33.0% |
| 2006 | 100.0% | 28.1% | 2.8% | 16.1% | 24.5% | 31.2% |
| 2007 | 100.0% | 28.1% | 3.6% | 18.5% | 19.4% | 33.9% |
| 2008 | 100.0% | 29.1% | 3.9% | 18.2% | 18.3% | 34.5% |
| 2009 | 100.0% | 26.5% | 3.0% | 12.6% | 25.2% | 35.7% |
| 2010 | 100.0% | 43.6% | 5.2% | 9.4% | 29.9% | 17.1% |
| 2011 | 100.0% | 39.7% | 4.9% | 9.4% | 23.4% | 27.5% |
| 2012 | 100.0% | 30.5% | 3.4% | 12.8% | 22.8% | 33.9% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$3,184.7 | \$932.7 | \$86.7 | \$573.0 | \$627.7 | \$1,051.3 |
| 2006 | \$3,653.8 | \$1,026.4 | \$100.6 | \$589.5 | \$896.4 | \$1,141.5 |
| 2007 | \$4,180.3 | \$1,176.5 | \$151.8 | \$773.6 | \$811.8 | \$1,418.4 |
| 2008 | \$3,792.0 | \$1,102.7 | \$146.7 | \$689.9 | \$692.7 | \$1,306.7 |
| 2009 | \$2,796.4 | \$740.1 | \$85.1 | \$352.9 | \$705.3 | \$998.1 |
| 2010 | \$3,142.5 | \$1,369.1 | \$164.3 | \$296.1 | \$939.9 | \$537.4 |
| 2011 | \$3,697.5 | \$1,469.5 | \$180.8 | \$347.5 | \$865.1 | \$1,015.3 |
| 2012 | \$3,872.2 | \$1,179.8 | \$130.2 | \$496.7 | \$884.8 | \$1,311.0 |

These data show that the overall performance of North Dakota public pension plans from July 2004 to June 2012 (the North Dakota fiscal year ends June 30) was not as strong as the two largest plans. This reflects the differences in the two time periods: In FY 2013, from July 1, 2012 to June 30, 2013, the value of all assets held by these funds increased 13.6 percent, and the value of the system's oil and natural gas assets rose 15.0 percent. (Appendix, Tables A-ND-3 and A-ND-6) The seven-year data show that \$1.00 invested in the North Dakota public employees' retirement system in July 2004 grew to \$1.50 in March 2012. (Table ND-4 below) Over this period, \$1.00 invested in oil and gas stocks grew to \$2.01. If the system had held no oil and natural gas stocks, \$1.00 invested in July 2004 would have grown to \$1.43 in 2012.

The annual returns of the state's public pension system fluctuated greatly over the seven years, ranging from 21.4 percent to negative 24.4 percent for all assets and from 49.8 percent to negative 42.7 percent for oil and natural gas assets. (Table ND-4, below) Over the seven years, we estimate that oil and natural gas investments contributed \$168 million of the system's net \$2.0 billion in returns over the period.

From July 2004 to June 2012, oil and natural gas investments representing on average of 3.7 percent of the total holdings of the North Dakota state pension system contributed 8.4 percent of its gains...

⁶⁵ U.S. Census' State & Local Government Employee Retirement Systems; Comprehensive Annual Financial Report; and author's estimates.

**Table ND-4: All North Dakota Public Employee Retirement Plans,
Returns and Gains for All Assets and for Oil and Natural Gas Investments, FYs 2005-2012⁶⁶**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 Invested in All Assets in 7/2004 | Return on \$1 of Invested in Oil and Natural Gas Assets in 7/2004 | Return on \$1 Invested in Non-Oil and Natural Gas Assets in 7/2004 | Capital Gains from All Assets (\$ millions) | Capital Gains From Oil and Natural Gas Investments (\$ millions) |
|-------------|-----------------------------|---|--|---|--|---|--|
| 4/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 14.1% | 36.8% | \$1.14 | \$1.37 | \$1.10 | \$448.1 | \$31.9 |
| 2006 | 12.0% | 22.5% | \$1.28 | \$1.68 | \$1.23 | \$438.5 | \$22.7 |
| 2007 | 19.0% | 26.0% | \$1.52 | \$2.11 | \$1.44 | \$792.6 | \$39.5 |
| 2008 | -5.6% | 23.1% | \$1.43 | \$2.60 | \$1.33 | (\$212.4) | \$33.9 |
| 2009 | -24.4% | -42.7% | \$1.08 | \$1.49 | \$1.04 | (\$682.9) | (\$36.3) |
| 2010 | 13.7% | -0.1% | \$1.23 | \$1.49 | \$1.15 | \$429.6 | (\$0.2) |
| 2011 | 21.4% | 49.8% | \$1.50 | \$2.23 | \$1.39 | \$792.4 | \$90.1 |
| 2012 | 0.1% | -10.0% | \$1.50 | \$2.01 | \$1.43 | \$2.3 | (\$13.1) |
| Total | | | | | | \$2,008.2 | \$168.4 |

OHIO

The Two Largest Public Pension Plans

We collected data on the investment portfolios and performance of the two largest public employee retirement plans in Ohio (OH), the Ohio State Teachers Retirement System (OSTRS) and the Ohio Public Employees' Retirement System (OPERS), for FYs 2005-2013. Over those eight years, the two plans had total assets averaging \$141.4 billion and a combined average of 1,432,507 members, including current retirees, current employees, and former or inactive employees. (Table OH-1, below) The two plans held oil and natural gas-sector investments averaging more than \$5.5 billion or 3.9 percent of their total assets. The two plans represent 90.1 percent of all members and 96.2 percent of all assets of Ohio public employee retirement plans.

**Table OH-1: Ohio's Two Largest Public Employee Retirement Plans:
Members, Total Assets and Oil and Natural Gas Assets, Annual Average, FYs 2005-2013⁶⁷**

| | Total Members | Total Assets (\$ billions) | Oil and Natural Gas Assets (\$ billions) | Oil and Natural Gas Assets as a Share of All Assets |
|--------------|------------------|----------------------------|--|---|
| Total | 1,432,507 | \$141.388 | \$5.537 | 3.9% |
| OSTRS | 482,848 | \$66.217 | \$2.707 | 4.1% |
| OPERS | 949,659 | \$75.171 | \$2.830 | 3.8% |

⁶⁶ *Ibid.*

⁶⁷ Comprehensive Annual Financial Report of State Teachers Retirement System of Ohio and Ohio Public Employees Retirement System and author's estimates.

The cumulative rate of return on the assets of these two large plans was 82 percent over the eight years, 2005 to 2013. (Table OH-2, below) By contrast, the plans' oil and gas assets produced a 128 percent return over the same period. The two plans generated total gains of \$109.7 billion over this period, including more than \$7.3 billion from investments in oil and natural gas stocks.

Over FYs 2005 to 2013, therefore, oil and natural gas investments which represented 3.9 percent of the total assets of Ohio's two largest public employee pension plans contributed 6.7 percent of the two plans' total gains.

**Table OH-2: Ohio's Two Largest Public Employee Retirement Plans:
Rates of Return and Gains, Overall and from Oil and Natural Gas Investments, FYs 2005-2013⁶⁸**

| | Return on \$1 Invested in Plans | Return on \$1 Invested in Oil and Natural Gas Stocks | Return on \$1 Invested in Non-Oil and Natural Gas Stocks | Total Gains by Plans (\$ millions) | Gains from Oil and Natural Gas Investments (\$ millions) | Gains from Oil and Natural Gas as Share of All Gains |
|--------------|--|--|--|--|--|--|
| Total | \$1.82 | \$2.28 | \$1.75 | \$109,709.2 | \$7,334.9 | 6.7% |
| OSTRS | \$1.86 | \$2.31 | \$1.78 | \$52,052.8 | \$3,978.3 | 7.6% |
| OPERS | \$1.78 | \$2.26 | \$1.73 | \$57,656.4 | \$3,356.6 | 5.8% |

All Ohio Public Employee Retirement Programs

To estimate the impact of oil and natural gas stocks on the returns on all Ohio public employee retirement programs, we use annual Census Bureau data on public employee retirement systems by state covering FYs 2005 to 2012. Because the returns on all investments and investments in oil and natural gas investments were strong in the second half of 2012 and the first half of 2013, the seven years of aggregate data by state cannot be strictly compared to the eight years of data on the two largest plans. The Census data also show the allocation of assets by asset-class for all public employee retirement plans in Ohio for FYs 2005-2012. (Table OH-3, below)

⁶⁸ *Ibid.*

**Table OH-3: All Ohio Public Employee Retirement Plans:
Asset Allocations, FYs 2005-2012⁶⁹**

| Fiscal Year | Total | US Stocks: All Sectors | Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|-------------|------------------------|----------------------------|------------------------|--------------|--------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 42.9% | 4.0% | 19.4% | 21.1% | 16.6% |
| 2006 | 100.0% | 41.9% | 4.1% | 20.5% | 22.7% | 14.8% |
| 2007 | 100.0% | 40.9% | 5.3% | 21.9% | 22.1% | 15.1% |
| 2008 | 100.0% | 37.6% | 5.0% | 21.9% | 22.0% | 18.5% |
| 2009 | 100.0% | 36.6% | 4.2% | 20.6% | 19.7% | 23.1% |
| 2010 | 100.0% | 36.2% | 4.3% | 21.7% | 19.6% | 22.5% |
| 2011 | 100.0% | 35.5% | 4.4% | 23.6% | 20.5% | 20.4% |
| 2012 | 100.0% | 33.8% | 3.7% | 21.3% | 21.8% | 23.1% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$136,819.2 | \$58,741.1 | \$5,462.9 | \$26,490.6 | \$28,897.6 | \$22,689.8 |
| 2006 | \$149,874.3 | \$62,865.8 | \$6,160.9 | \$30,705.3 | \$34,089.2 | \$22,214.0 |
| 2007 | \$166,416.4 | \$68,054.5 | \$8,779.0 | \$36,483.0 | \$36,784.1 | \$25,094.8 |
| 2008 | \$163,853.7 | \$61,677.1 | \$8,203.1 | \$35,818.9 | \$35,979.9 | \$30,377.8 |
| 2009 | \$124,179.9 | \$45,441.1 | \$5,225.7 | \$25,519.0 | \$24,523.9 | \$28,695.9 |
| 2010 | \$134,248.4 | \$48,640.5 | \$5,836.9 | \$29,149.7 | \$26,264.9 | \$30,193.3 |
| 2011 | \$152,478.6 | \$54,126.5 | \$6,657.6 | \$36,001.6 | \$31,267.3 | \$31,083.3 |
| 2012 | \$148,019.9 | \$50,078.2 | \$5,528.6 | \$31,586.1 | \$32,211.0 | \$34,144.5 |

These data show that the overall performance of Ohio public pension plans from July 2004 to June 2012 (the Ohio fiscal year ends June 30) was not as strong as the two largest plans. This reflects the differences in the two time periods: In FY 2013, from July 1, 2012 to June 30, 2013, the value of all assets held by these funds increased 13.9 percent, and the value of the system's oil and natural gas assets rose 18.7 percent. (Appendix, Tables A-OH-3 and A-OH-6) The seven-year data show that \$1.00 invested in the Ohio public employees' retirement system in July 2004 grew to \$1.63 in June 2012. (Table OH-4 below) Over this period, \$1.00 invested in oil and gas stocks grew to \$2.01. If the system had held no oil and natural gas stocks, \$1.00 invested in July 2004 would have grown to \$1.56 in 2012.

The annual returns of the state's public pension system fluctuated greatly over the seven years, ranging from 22.6 percent to negative 21.7 percent for all assets and from 49.8 percent to negative 42.7 percent for oil and natural gas assets. (Table OH-4, below) Over the seven years, we estimate that oil and natural gas investments contributed \$8.1 billion of the system's net \$93.0 billion in returns over the period.

From July 2004 to June 2012, oil and natural gas investments representing on average of 4.4 percent of the total holdings of the Ohio state pension system contributed 8.7 percent of its gains over this period.

⁶⁹ U.S. Census' State & Local Government Employee Retirement Systems; Comprehensive Annual Financial Report; and author's estimates.

**Table OH-4: All Ohio Public Employee Retirement Plans,
Returns and Gains for All Assets and for Oil and Natural Gas Investments, FYs 2005-2012⁷⁰**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 Invested in All Assets in 7/2004 | Return on \$1 of Invested in Oil and Natural Gas Assets in 7/2004 | Return on \$1 Invested in Non-Oil and Natural Gas Assets in 7/2004 | Capital Gains from All Assets (\$ millions) | Capital Gains From Oil and Natural Gas Investments (\$ millions) |
|--------------|-----------------------------|---|--|---|--|---|--|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 12.3% | 36.8% | \$1.12 | \$1.37 | \$1.07 | \$16,760.4 | \$2,007.9 |
| 2006 | 13.7% | 22.5% | \$1.28 | \$1.68 | \$1.21 | \$20,577.7 | \$1,389.1 |
| 2007 | 21.2% | 26.0% | \$1.55 | \$2.11 | \$1.44 | \$35,346.8 | \$2,284.0 |
| 2008 | -5.4% | 23.1% | \$1.46 | \$2.60 | \$1.33 | (\$8,913.6) | \$1,893.8 |
| 2009 | -21.7% | -42.7% | \$1.15 | \$1.49 | \$1.08 | (\$26,897.4) | (\$2,229.4) |
| 2010 | 13.5% | -0.1% | \$1.30 | \$1.49 | \$1.24 | \$18,177.2 | (\$7.5) |
| 2011 | 22.6% | 49.8% | \$1.60 | \$2.23 | \$1.50 | \$34,444.9 | \$3,318.4 |
| 2012 | 2.3% | -10.0% | \$1.63 | \$2.01 | \$1.56 | \$3,463.7 | (\$555.3) |
| Total | | | | | | \$92,959.7 | \$8,101.0 |

PENNSYLVANIA

The Two Largest Public Pension Plans

We collected data on the investment portfolios and performance of the two largest public employee retirement plans in Pennsylvania (PA), the Pennsylvania Public School Employees' Retirement System (PPSERS) and the Pennsylvania State Employees' Retirement System (PSERS), for FYs 2005-2013. Over those eight years, the two plans had total assets averaging \$81.2 billion and a combined average of 714,580 members, including current retirees, current employees, and former or inactive employees. (Table PA-1, below) The two plans held oil and natural gas-sector investments averaging more than \$2.1 billion or 2.6 percent of their total assets. The two plans represent 79.1 percent of all members and 82.2 percent of all assets of Pennsylvania public employee retirement plans.

**Table PA-1: Pennsylvania's Two Largest Public Employee Retirement Plans:
Members, Total Assets and Oil and Natural Gas Assets, Annual Average, FYs 2005-2013⁷¹**

| | Total Members | Total Assets (\$ billions) | Oil and Natural Gas Assets (\$ billions) | Oil and Natural Gas Assets as a Share of All Assets |
|---------------|----------------|----------------------------|--|---|
| Total | 714,580 | \$81.192 | \$2.135 | 2.6% |
| PPSERS | 492,691 | \$53.737 | \$1.442 | 2.7% |
| PSERS | 221,889 | \$27.456 | \$0.693 | 2.5% |

⁷⁰ *Ibid.*

⁷¹ Comprehensive Annual Financial Report of Pennsylvania Public Schools Employees' Retirement System and Commonwealth of Pennsylvania State Employees' Retirement System and author's estimates.

The cumulative rate of return on the assets of these two large plans was 78 percent over the eight years, 2005 to 2013. (Table PA-2, below) By contrast, the plans' oil and gas assets produced a 126 percent return over the same period. The two plans generated total gains of \$66.3 billion over this period, including almost \$3.6 billion from investments in oil and natural gas stocks.

Over FYs 2005-2013, oil and natural gas investments which represented 2.6 percent of the total assets of Pennsylvania's two largest public employee pension plans contributed 5.4 percent of the two plans' total gains.

**Table PA-2: Pennsylvania's Two Largest Public Employee Retirement Plans:
Rates of Return and Gains, Overall and from Oil and Natural Gas Investments, FYs 2005-2013⁷²**

| | Return on \$1 Invested in Plans | Return on \$1 Invested in Oil and Natural Gas Stocks | Return on \$1 Invested in Non-Oil and Natural Gas Stocks | Total Gains by Plans (\$ millions) | Gains from Oil and Natural Gas Investments (\$ millions) | Gains from Oil and Natural Gas as Share of All Gains |
|---------------|--|--|--|--|--|--|
| Total | \$1.82 | \$2.28 | \$1.79 | \$66,286.6 | \$3,562.4 | 5.4% |
| PPSERS | \$1.87 | \$2.31 | \$1.85 | \$44,549.2 | \$2,614.8 | 5.9% |
| PSERS | \$1.78 | \$2.26 | \$1.73 | \$21,737.4 | \$947.6 | 4.4% |

All Pennsylvania Public Employee Retirement Programs

To estimate the impact of oil and natural gas stocks on the returns on all Pennsylvania public employee retirement programs, we use annual Census Bureau data on public employee retirement systems by state covering FYs 2005 to 2012. Because the returns on all investments and investments in oil and natural gas investments were strong in the second half of 2012 and the first half of 2013, the seven years of aggregate state data cannot be strictly compared to the eight years of data on the two largest plans. The Census data also show the allocation of assets by asset-class for all public employee retirement plans in Pennsylvania for FYs 2005-2012. (Table PA-3, below)

⁷² *Ibid.*

**Table PA-3: All Pennsylvania Public Employee Retirement Plans:
Asset Allocations, FYs 2005-2012⁷³**

| Fiscal Year | Total | US Stocks: All Sectors | Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|-------------|---------------------------|-------------------------------|---------------------------|-----------------|-----------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 32.3% | 3.0% | 18.1% | 20.7% | 28.9% |
| 2006 | 100.0% | 33.5% | 3.3% | 19.8% | 20.3% | 26.3% |
| 2007 | 100.0% | 31.1% | 4.0% | 24.4% | 18.9% | 25.5% |
| 2008 | 100.0% | 15.1% | 2.0% | 19.1% | 16.5% | 49.3% |
| 2009 | 100.0% | 11.3% | 1.3% | 16.0% | 20.9% | 51.8% |
| 2010 | 100.0% | 14.7% | 1.8% | 9.5% | 16.6% | 59.2% |
| 2011 | 100.0% | 13.5% | 1.7% | 9.0% | 15.6% | 62.0% |
| 2012 | 100.0% | 33.2% | 3.7% | 10.6% | 19.6% | 36.5% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$95,165.4 | \$30,778.9 | \$2,862.4 | \$17,210.5 | \$19,718.4 | \$27,457.6 |
| 2006 | \$103,314.2 | \$34,588.2 | \$3,389.6 | \$20,500.0 | \$21,005.4 | \$27,220.6 |
| 2007 | \$115,506.2 | \$35,970.1 | \$4,640.1 | \$28,240.4 | \$21,803.9 | \$29,491.8 |
| 2008 | \$117,163.5 | \$17,639.1 | \$2,346.0 | \$22,388.4 | \$19,356.8 | \$57,779.3 |
| 2009 | \$84,771.1 | \$9,604.0 | \$1,104.5 | \$13,555.7 | \$17,720.6 | \$43,890.8 |
| 2010 | \$88,403.4 | \$13,027.6 | \$1,563.3 | \$8,373.8 | \$14,643.8 | \$52,358.2 |
| 2011 | \$94,196.9 | \$12,673.2 | \$1,558.8 | \$8,439.9 | \$14,683.4 | \$58,400.5 |
| 2012 | \$92,081.3 | \$30,554.3 | \$3,373.2 | \$9,788.9 | \$18,086.1 | \$33,652.0 |

These data show that the overall performance of Pennsylvania public pension plans from July 2004 to June 2012 (the Pennsylvania fiscal year ends June 30) was not as strong as the two largest plans. This reflects the differences in the two time periods: In FY 2013, from July 1, 2012 to June 30, 2013, the value of all assets held by these funds increased 14.3 percent, and the value of the system's oil and natural gas assets rose 18.7 percent. (Appendix, Tables A-PA-3 and A-PA-6) The seven-year data show that \$1.00 invested in the Pennsylvania public employees' retirement system in July 2004 grew to \$1.63 in June 2012. (Table PA-4 below) Over this period, \$1.00 invested in oil and gas stocks grew to \$2.01. If the system had held no oil and natural gas stocks, \$1.00 invested in July 2004 would have grown to \$1.56 in 2012.

The annual returns of the state's public pension system fluctuated greatly over the seven years, ranging from 22.9 percent to negative 26.5 percent for all assets and from 49.8 percent to negative 42.7 percent for oil and natural gas assets. (Table PA-4, below) Over the seven years, we estimate that oil and natural gas investments contributed more than \$3.5 billion of the system's net \$63.9 billion in returns over the period.

From July 2004 to June 2012, oil and natural gas investments representing on average of 2.6 percent of the total holdings of the Pennsylvania state pension system contributed 5.5 percent of its gains over this period.

⁷³ U.S. Census' State & Local Government Employee Retirement Systems; Comprehensive Annual Financial Report; and author's estimates.

**Table PA-4: All Pennsylvania Public Employee Retirement Plans,
Returns and Gains for All Assets and for Oil and Natural Gas Investments, FYs 2005-2012⁷⁴**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 Invested in All Assets in 7/2004 | Return on \$1 of Invested in Oil and Natural Gas Assets in 7/2004 | Return on \$1 Invested in Non-Oil and Natural Gas Assets in 7/2004 | Capital Gains from All Assets (\$ millions) | Capital Gains From Oil and Natural Gas Investments (\$ millions) |
|-------------|-----------------------------|---|--|---|--|---|--|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 12.9% | 36.8% | \$1.13 | \$1.37 | \$1.09 | \$12,247.8 | \$1,052.1 |
| 2006 | 15.3% | 22.5% | \$1.30 | \$1.68 | \$1.25 | \$15,765.7 | \$764.3 |
| 2007 | 22.9% | 26.0% | \$1.60 | \$2.11 | \$1.51 | \$26,485.6 | \$1,207.2 |
| 2008 | -2.8% | 23.1% | \$1.55 | \$2.60 | \$1.50 | (\$3,304.0) | \$541.6 |
| 2009 | -26.5% | - 42.7% | \$1.14 | \$1.49 | \$1.12 | (\$22,498.3) | (\$471.2) |
| 2010 | 14.6% | - 0.1% | \$1.31 | \$1.49 | \$1.28 | \$12,898.0 | (\$2.0) |
| 2011 | 20.4% | 49.8% | \$1.57 | \$2.23 | \$1.54 | \$19,187.9 | \$777.0 |
| 2012 | 3.4% | -10.0% | \$1.63 | \$2.01 | \$1.56 | \$3,158.4 | (\$338.8) |
| Total | | | | | | \$63,941.2 | \$3,530.2 |

SOUTH CAROLINA

The Two Largest Public Pension Plans

We collected data on the investment portfolios and performance of the two largest public employee retirement plans in South Carolina (SC), the South Carolina Public School Employees' Retirement System (SCPSERS) and the South Carolina Retirement System (SCRS), for FYs 2005-2013. Over those eight years, the two plans had total assets averaging almost \$17.0 billion and a combined average of 299,389 members, including current retirees, current employees, and former or inactive employees. (Table SC-1, below) The two plans held oil and natural gas-sector investments averaging just \$276 million or 1.6 percent of their total assets. The two plans represent 60.7 percent of all members and 61.7 percent of all assets of South Carolina public employee retirement plans.

**Table SC-1: South Carolina's Two Largest Public Employee Retirement Plans:
Members, Total Assets and Oil and Natural Gas Assets, Annual Average, FYs 2005-2013⁷⁵**

| | Total Members | Total Assets (\$ billions) | Oil and Natural Gas Assets (\$ billions) | Oil and Natural Gas Assets as a Share of All Assets |
|---------|---------------|----------------------------|--|---|
| Total | 299,389 | \$16.975 | \$0.276 | 1.6% |
| SCPSERS | 169,924 | \$9.882 | \$0.157 | 1.6% |
| SCRS | 129,465 | \$7.093 | \$0.119 | 1.7% |

⁷⁴ *Ibid.*

⁷⁵ Comprehensive Annual Financial and Actuarial Reports of South Carolina Retirement System and author's estimates.

The cumulative rate of return on the assets of these two large plans was 51 percent over the eight years, 2005 to 2013. (Table SC-2, below) By contrast, the plans' oil and gas assets produced a 131 percent return over the same period. The two plans generated total gains of almost \$8.6 billion over this period, including almost \$476 million from investments in oil and natural gas stocks.

Over FYs 2005 to 2013, therefore, oil and natural gas investments which represented 1.6 percent of the total assets of South Carolina's two largest public employee pension plans contributed 5.5 percent of the two plans' total gains.

**Table SC-2: South Carolina's Two Largest Public Employee Retirement Plans:
Rates of Return and Gains, Overall and from Oil and Natural Gas Investments, FYs 2005-2013⁷⁶**

| | Return on \$1 Invested in Plans | Return on \$1 Invested in Oil and Natural Gas Stocks | Return on \$1 Invested in Non-Oil and Natural Gas Stocks | Total Gains by Plans (\$ millions) | Gains from Oil and Natural Gas Investments (\$ millions) | Gains from Oil and Natural Gas as Share of All Gains |
|----------------|--|--|--|--|--|--|
| Total | \$1.51 | \$2.31 | \$1.50 | \$8,569.6 | \$475.6 | 5.5% |
| SCPSERS | \$1.51 | \$2.31 | \$1.50 | \$5,186.1 | \$269.2 | 5.2% |
| SCRS | \$1.51 | \$2.31 | \$1.50 | \$3,383.5 | \$206.4 | 6.1% |

All South Carolina Public Employee Retirement Programs

To estimate the impact of oil and natural gas stocks on the returns on all South Carolina public employee retirement programs, we use annual Census Bureau data on public employee retirement systems by state covering FYs 2005 to 2012. Because the returns on all investments and investments in oil and natural gas investments were strong in the second half of 2012 and the first half of 2013, the seven years of aggregate data by state cannot be strictly compared to the eight years of data on the two largest plans. The Census data also show the allocation of assets by asset-class for all public employee retirement plans in South Carolina for FYs 2005-2012. (Table SC-3, below)

⁷⁶ *Ibid.*

**Table SC-3: All South Carolina Public Employee Retirement Plans:
Asset Allocations, FYs 2005-2012⁷⁷**

| Fiscal Year | Total | US Stocks: All Sectors | Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|------------|---------------------------|-------------------------------|---------------------------|-----------------|-----------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 17.4% | 1.6% | 0.0% | 38.4% | 44.3% |
| 2006 | 100.0% | 20.6% | 2.0% | 0.0% | 34.8% | 44.5% |
| 2007 | 100.0% | 18.4% | 2.4% | 0.0% | 22.9% | 58.7% |
| 2008 | 100.0% | 20.5% | 2.7% | 13.3% | 20.4% | 45.8% |
| 2009 | 100.0% | 10.8% | 1.2% | 16.4% | 16.1% | 56.6% |
| 2010 | 100.0% | 7.2% | 0.9% | 12.4% | 17.1% | 63.3% |
| 2011 | 100.0% | 7.9% | 1.0% | 16.5% | 14.3% | 61.3% |
| 2012 | 100.0% | 7.3% | 0.8% | 12.7% | 15.2% | 64.7% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$29,637.9 | \$5,142.8 | \$478.3 | \$0.0 | \$11,376.8 | \$13,118.2 |
| 2006 | \$30,247.2 | \$6,240.1 | \$611.5 | \$0.0 | \$10,535.5 | \$13,471.6 |
| 2007 | \$33,515.5 | \$6,166.0 | \$795.4 | \$0.0 | \$7,666.5 | \$19,683.0 |
| 2008 | \$30,254.3 | \$6,192.6 | \$823.6 | \$4,014.8 | \$6,175.9 | \$13,870.9 |
| 2009 | \$20,948.2 | \$2,269.5 | \$261.0 | \$3,435.8 | \$3,381.5 | \$11,861.5 |
| 2010 | \$22,845.8 | \$1,641.5 | \$197.0 | \$2,838.1 | \$3,907.7 | \$14,458.5 |
| 2011 | \$26,874.5 | \$2,112.0 | \$259.8 | \$4,444.6 | \$3,831.7 | \$16,486.2 |
| 2012 | \$25,645.3 | \$1,884.0 | \$208.0 | \$3,255.3 | \$3,901.3 | \$16,604.6 |

These data show that the overall performance of South Carolina public pension plans from July 2004 to June 2012 (the South Carolina fiscal year ends June 30) was not as strong as the two largest plans. This reflects the differences in the two time periods: In FY 2013, from July 1, 2012 to June 30, 2013, the value of all assets held by these funds increased 10.0 percent, and the value of the system's oil and natural gas assets rose 15.0 percent. (Appendix, Tables A-SC-3 and A-SC-6) The seven-year data show that \$1.00 invested in the South Carolina public employees' retirement system in July 2004 grew to \$1.38 in June 2012. (Table SC-4 below) Over this period, \$1.00 invested in oil and gas stocks grew to \$2.01. If the system had held no oil and natural gas stocks, \$1.00 invested in July 2004 would have grown to \$1.36 in 2012.

The annual returns of the state's public pension system fluctuated greatly over the seven years, ranging from 18.6 percent to negative 19.0 percent for all assets and from 49.8 percent to negative 42.7 percent for oil and natural gas assets. (Table SC-4, below) Over the seven years, we estimate that oil and natural gas investments contributed \$708 million of the system's net \$11.8 billion in returns over the period.

From July 2004 to June 2012, oil and natural gas investments representing on average of 1.6 percent of the total holdings of the South Carolina state pension system contributed 6.0 percent of its gains over this period.

⁷⁷ U.S. Census' State & Local Government Employee Retirement Systems; Comprehensive Annual Financial and Actuarial Reports; and author's estimates.

**Table SC-4: All South Carolina Public Employee Retirement Plans,
Returns and Gains for All Assets and for Oil and Natural Gas Investments, FYs 2005-2012⁷⁸**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 Invested in All Assets in 7/2004 | Return on \$1 of Invested in Oil and Natural Gas Assets in 7/2004 | Return on \$1 Invested in Non-Oil and Natural Gas Assets in 7/2004 | Capital Gains from All Assets (\$ millions) | Capital Gains From Oil and Natural Gas Investments (\$ millions) |
|-------------|-----------------------------|---|--|---|--|---|--|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 7.0% | 36.8% | \$1.07 | \$1.37 | \$1.05 | \$2,074.7 | \$175.8 |
| 2006 | 5.1% | 22.5% | \$1.12 | \$1.68 | \$1.09 | \$1,542.6 | \$137.9 |
| 2007 | 13.4% | 26.0% | \$1.28 | \$2.11 | \$1.23 | \$4,491.1 | \$206.9 |
| 2008 | -2.6% | 23.1% | \$1.24 | \$2.60 | \$1.17 | (\$786.6) | \$190.1 |
| 2009 | -19.0% | -42.7% | \$1.01 | \$1.49 | \$0.99 | (\$3,980.2) | (\$111.3) |
| 2010 | 14.6% | -0.1% | \$1.15 | \$1.49 | \$1.14 | \$3,340.1 | (\$0.3) |
| 2011 | 18.6% | 49.8% | \$1.37 | \$2.23 | \$1.35 | \$4,996.0 | \$129.5 |
| 2012 | 0.6% | -10.0% | \$1.38 | \$2.01 | \$1.36 | \$156.4 | (\$20.9) |
| Total | | | | | | \$11,834.0 | \$707.8 |

WEST VIRGINIA

The Two Largest Public Pension Plans

We collected data on the investment portfolios and performance of the two largest public employee retirement plans in West Virginia (WV), the West Virginia Teachers' Retirement System (WVTRS) and the West Virginia Public Employees' Retirement System (WVPERs), for FYs 2005-2013. Over those years, the two plans had total assets averaging \$7.75 billion and a combined average of 135,099 members, including retirees, current employees, and former or inactive employees. (Table WV-1, below) The two plans held oil and natural gas-sector investments averaging \$248 million or 3.2 percent of their total assets. West Virginia and the Census Bureau use different accounting systems that preclude accurate estimates of the share of all West Virginia public pension plan members and assets which the two largest plans represent.

**Table WV-1: West Virginia's Two Largest Public Employee Retirement Plans:
Members, Total Assets and Oil and Natural Gas Assets, Annual Average, FYs 2005-2013⁷⁹**

| | Total Members | Total Assets (\$ billions) | Oil and Natural Gas Assets (\$ billions) | Oil and Natural Gas Assets as a Share of All Assets |
|--------------|----------------|----------------------------|--|---|
| Total | 135,099 | \$7.753 | \$0.248 | 3.2% |
| WVTRS | 63,210 | \$3.775 | \$0.115 | 3.1% |
| WVPERs | 71,890 | \$3.978 | \$0.132 | 3.3% |

⁷⁸ *Ibid.*

⁷⁹ Comprehensive Annual Financial Report of West Virginia Consolidated Public Retirement Board System and author's estimates.

The cumulative rate of return on the assets of these two large plans was 80 percent over the eight years, 2005 to 2013. (Table WV-2, below) By contrast, the plans' oil and gas assets produced a 131 percent return over the same period. The two plans generated total gains of \$5.5 billion over this period, including \$345 million from investments in oil and natural gas stocks.

Over FYs 2005 to 2013, oil and natural gas investments which represented 3.2 percent of the total assets of West Virginia's two largest public employee pension plans contributed 6.3 percent of the two plans' total gains.

**Table WV-2: West Virginia's Two Largest Public Employee Retirement Plans:
Rates of Return and Gains, Overall and from Oil and Natural Gas Investments, FYs 2005-2013⁸⁰**

| | Return on \$1 Invested in Plans | Return on \$1 Invested in Oil and Natural Gas Stocks | Return on \$1 Invested in Non-Oil and Natural Gas Stocks | Total Gains by Plans (\$ millions) | Gains from Oil and Natural Gas Investments (\$ millions) | Gains from Oil and Natural Gas as Share of All Gains |
|---------------|--|--|--|--|--|--|
| Total | \$1.77 | \$2.31 | \$1.71 | \$5,504.4 | \$345.1 | 6.3% |
| WVTRS | \$1.75 | \$2.31 | \$1.69 | \$2,621.9 | \$144.6 | 5.5% |
| WVPERS | \$1.80 | \$2.31 | \$1.74 | \$2,882.5 | \$200.5 | 7.0% |

All West Virginia Public Employee Retirement Programs

To estimate the impact of oil and natural gas stocks on the returns on all West Virginia public employee retirement programs, we use annual Census Bureau data on public employee retirement systems by state covering FYs 2005 to 2012. Because the returns on all investments and investments in oil and natural gas investments were strong in the second half of 2012 and the first half of 2013, the seven years of aggregate data by state cannot be strictly compared to the eight years of data on the two largest plans. The Census data also show the allocation of assets by asset-class for all public employee retirement plans in West Virginia for FYs 2005-2012. (Table WV-3, below)

⁸⁰ *Ibid.*

**Table WV-3: All West Virginia Public Employee Retirement Plans:
Asset Allocations, FYs 2005-2012⁸¹**

| Fiscal Year | Total | US Stocks: All Sectors | Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|-----------|---------------------------|-------------------------------|---------------------------|-----------------|-----------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 40.5% | 3.8% | 20.0% | 39.5% | 0.0% |
| 2006 | 100.0% | 36.9% | 3.6% | 19.3% | 43.8% | 0.0% |
| 2007 | 100.0% | 33.9% | 4.4% | 19.4% | 46.7% | 0.0% |
| 2008 | 100.0% | 28.4% | 3.8% | 24.7% | 35.9% | 11.0% |
| 2009 | 100.0% | 24.6% | 2.8% | 26.5% | 26.5% | 22.5% |
| 2010 | 100.0% | 22.6% | 2.7% | 24.8% | 23.8% | 28.8% |
| 2011 | 100.0% | 24.7% | 3.0% | 24.7% | 23.3% | 27.3% |
| 2012 | 100.0% | 24.5% | 2.7% | 25.0% | 20.8% | 29.8% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$4,998.6 | \$2,022.4 | \$188.1 | \$999.9 | \$1,976.4 | \$0.0 |
| 2006 | \$5,775.4 | \$2,132.3 | \$209.0 | \$1,113.5 | \$2,529.6 | \$0.0 |
| 2007 | \$7,927.3 | \$2,684.9 | \$346.4 | \$1,538.7 | \$3,703.6 | \$0.0 |
| 2008 | \$7,282.0 | \$2,066.6 | \$274.9 | \$1,797.0 | \$2,617.4 | \$801.0 |
| 2009 | \$6,756.8 | \$1,661.6 | \$191.1 | \$1,790.3 | \$1,787.9 | \$1,517.0 |
| 2010 | \$7,781.5 | \$1,758.2 | \$211.0 | \$1,933.1 | \$1,850.2 | \$2,240.0 |
| 2011 | \$9,369.2 | \$2,310.9 | \$284.2 | \$2,316.6 | \$2,184.3 | \$2,557.3 |
| 2012 | \$9,320.7 | \$2,279.2 | \$251.6 | \$2,330.2 | \$1,934.4 | \$2,776.9 |

These data show that the overall performance of West Virginia public pension plans from July 2004 to June 2012 (the West Virginia fiscal year ends June 30) was not as strong as the two largest plans. This reflects the differences in the two time periods: In FY 2013, from July 1, 2012 to June 30, 2013, the value of all assets held by these funds increased 13.1 percent, and the value of the system's oil and natural gas assets rose 15.0 percent. (Appendix, Tables A-WV-3 and A-WV-6) The seven-year data show that \$1.00 invested in the West Virginia public employees' retirement system in July 2004 grew to \$1.57 in June 2012. (Table WV-4 below) Over this period, \$1.00 invested in oil and gas stocks grew to \$2.01. If the system had held no oil and natural gas stocks, \$1.00 invested in July 2004 would have grown to \$1.51 in 2012.

The annual returns of the state's public pension system fluctuated greatly over the seven years, ranging from 20.6 percent to negative 15.9 percent for all assets and from 49.8 percent to negative 42.7 percent for oil and natural gas assets. (Table WV-4, below) Over the seven years, we estimate that oil and natural gas investments contributed \$304 million of the system's net \$4.1 billion in returns over the period.

From July 2004 to June 2012, oil and natural gas investments representing on average of less than 3.5 percent of the total holdings of the West Virginia state pension system contributed almost 7.4 percent of its gains over this period.

⁸¹ U.S. Census' State & Local Government Employee Retirement Systems; Comprehensive Annual Financial Report; and author's estimates.

**Table WV-4: All West Virginia Public Employee Retirement Plans,
Returns and Gains for All Assets and for Oil and Natural Gas Investments, FYs 2005-2012⁸²**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 Invested in All Assets in 7/2004 | Return on \$1 of Invested in Oil and Natural Gas Assets in 7/2004 | Return on \$1 Invested in Non-Oil and Natural Gas Assets in 7/2004 | Capital Gains from All Assets (\$ millions) | Capital Gains From Oil and Natural Gas Investments (\$ millions) |
|--------------------|------------------------------------|--|---|--|---|--|---|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 10.7% | 36.8% | \$1.11 | \$1.37 | \$1.06 | \$532.4 | \$69.1 |
| 2006 | 9.6% | 22.5% | \$1.21 | \$1.68 | \$1.15 | \$551.6 | \$47.1 |
| 2007 | 17.5% | 26.0% | \$1.42 | \$2.11 | \$1.33 | \$1,387.3 | \$90.1 |
| 2008 | -7.1% | 23.1% | \$1.32 | \$2.60 | \$1.23 | (\$517.0) | \$63.5 |
| 2009 | -15.9% | -42.7% | \$1.11 | \$1.49 | \$1.07 | (\$1,070.9) | (\$81.5) |
| 2010 | 15.6% | -0.1% | \$1.29 | \$1.49 | \$1.25 | \$1,213.9 | (\$0.3) |
| 2011 | 20.6% | 49.8% | \$1.55 | \$2.23 | \$1.48 | \$1,930.1 | \$141.7 |
| 2012 | 1.1% | -10.0% | \$1.57 | \$2.01 | \$1.51 | \$97.9 | (\$25.3) |
| Total | | | | | | \$4,125.3 | \$304.4 |

⁸² *Ibid.*

IV. Conclusion

The long-term solvency of the public employee pension funds of state and local governments has become a matter of importance and controversy. The economic difficulties of recent years have slowed the growth of the state and local revenues used to fund these plans as well as many of the assets held by them. In addition, the statutory benefits owed to current retirees and the large numbers of baby boom public workers nearing retirement entail legal obligations that exceed the current and projected capacities of the funds in many states. In some cases, these pressures have led to significant reductions in future benefits; in all cases, these pressures call for serious analysis of the investment performance and strategies of all public employee retirement systems.

This study has focused on one aspect of the investment strategies and performance of these systems in seventeen states – the rates of return and net capital gains and losses associated with investments in oil and natural gas stocks, as compared to investments in all other assets, including overall U.S. equities, international equities, fixed-income instruments, and alternative assets such as hedge funds, real estate, private equity funds and cash balances. We have tracked the financial performance of these different classes of assets over the eight year period from 2005 to 2013, focusing on the two largest public employee pension plans in each of those seventeen states as well as their overall public retirement systems. These years cover times of strong growth, severe recession, and economic recovery, as well as rising and falling energy prices; and the seventeen states include large and small jurisdictions from every major region.

The findings are striking and consistent. On average, \$1 invested in U.S. oil and natural gas stocks by the two largest plans in each of these states in FY 2005 was worth \$2.30 in FY 2013, ranging from \$2.18 to \$2.40 across the seventeen states. By contrast, \$1 invested in all other assets by these two largest plans in FY 2005 was worth an average of \$1.68 in FY 2013, with a range of \$1.50 to \$1.79. Therefore, the average rate of return on the investments earned by these public employee pension funds in oil and natural gas stocks was 36.9 percent higher than their average returns on their investments in all other assets.

The available data allow us to analyze the performance of the overall public employee pension plans in these seventeen states over only seven rather than eight years (FYs 2005-2012). Without FY 2013, the rates of return their oil and natural gas assets as well as all other assets are necessarily lower. However, the contrast is very similar: \$1 invested in U.S. oil and natural gas stocks by the overall public employee retirement system in each of these states in FY 2005 was worth \$2.02 in FY 2012, ranging from \$1.99 to \$2.30 across the states. By contrast, \$1 invested in all other assets by these systems in FY 2005 was worth an average of \$1.48 in FY 2012, with a range of \$1.35 to \$1.62. Therefore, the average rate of return on the investments by these seventeen public employee retirement systems in oil and natural gas stocks was 36.5 percent higher than their average returns on their investments in all other assets.

The superior performance of these investments in oil and natural gas stocks also can be expressed in terms of their contributions to the total returns of the states' two largest plans, relative to their share of those funds' total assets. U.S. oil and natural gas stocks accounted for an average of 4.0 percent of the total assets of these funds over the period FYs 2005 to 2013, ranging from 1.76 percent to 5.44 percent of all assets. However, these oil and natural gas stocks also accounted for an average of 8.0 percent of the total returns achieved by these funds

on all assets over the same period, ranging from 5.4 percent to 11.5 percent. Therefore, on average, oil and natural gas assets accounted for twice the share of the returns achieved by these large funds as their share of those funds' assets, or a ratio of 2.01 to 1. Across the seventeen states, this ratio ranged from a low of 1.7 to 1 to a high of 3.4 to 1.

Focusing on the overall retirement systems of these seventeen states over the shorter period, FYs 2005 to 2012, we found that U.S. oil and natural gas stocks accounted for an average of 4.3 percent of the total assets of these funds, ranging from 1.7 percent to 5.7 percent of their assets. However, these oil and natural gas stocks also accounted for an average of 9.2 percent of the total returns achieved by these funds on those assets over the same period, ranging from 5.5 percent to 12.6 percent. Therefore, on average, oil and natural gas assets accounted for more than twice the share of the returns achieved by these large funds as their share of those funds' assets, or a ratio of 2.14 to 1.

Many factors influence the investment strategies, asset allocations and overall performance of state and local public employee pension plans. This analysis, covering years of economic expansion, deep recession and economic recovery, has found conclusively that over this period, investments in U.S. oil and natural gas equities have produced consistently stronger returns than the average returns on the other assets held by state and local public employee pension plans. These pension funds differ widely in their preferences for U.S. and foreign equities, and for fixed-income instruments and alternative investments. Regardless of those differences, however, the returns and performance of all of the plans and of the overall retirement systems of all of these states would have been improved, had they invested a larger share of their resources in U.S. oil and natural gas company stocks.

APPENDIX

Background Data on the Two Largest Public Employee Retirement Plans in Seventeen States

CALIFORNIA

California State Teachers' Retirement System

The California State Teachers' Retirement System (CalSTRS) provides pension benefits for all public school employees in the State. The System's membership consists of retirees and beneficiaries; current employees, both vested and non-vested; and inactive employees entitled to benefits at some time. Members (including retirees, current and inactive employees) averaged 833,783 over FYs 2005-2013, and the monthly pension payments paid to its qualified retirees and beneficiaries averaged \$3,854.

**Table A-CA-1: California State Teachers' Retirement System,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013⁸³**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|--------------------|-----------------------------------|-------------------------|---------------------------|----------------|---|
| 2005 | 201,241 | 450,282 | 124,394 | 775,917 | \$3,535 |
| 2006 | 207,846 | 453,365 | 133,601 | 794,812 | \$3,600 |
| 2007 | 215,641 | 455,693 | 141,450 | 812,784 | \$3,835 |
| 2008 | 223,968 | 461,378 | 147,997 | 833,343 | \$4,015 |
| 2009 | 232,617 | 459,009 | 156,207 | 847,833 | \$4,158 |
| 2010 | 243,796 | 441,544 | 166,976 | 852,316 | \$4,059 |
| 2011 | 253,041 | 429,600 | 173,719 | 856,360 | \$3,911 |
| 2012 | 262,038 | 421,499 | 178,655 | 862,192 | \$3,764 |
| 2013 | 269,274 | 416,643 | 182,576 | 868,493 | \$3,811 |
| Average | 234,385 | 443,224 | 156,175 | 833,783 | \$3,854 |

The public school pension fund's investments are well diversified. Domestic equities accounted for the largest share of assets averaging 37.9 percent of total holdings. Investments in energy companies, more than 98 percent in oil and gas companies, are estimated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for an average of 4.3 percent of total assets over this period.

⁸³ California Public School Employees Retirement System, Comprehensive Annual Financial Report.

**Table A-CA-2: California State Teachers' Retirement System,
Asset Allocation, FYs 2005-2013⁸⁴**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 42.8% | 4.0% | 21.0% | 24.4% | 11.8% |
| 2006 | 100.0% | 42.0% | 4.1% | 23.0% | 22.0% | 13.0% |
| 2007 | 100.0% | 41.0% | 5.3% | 21.0% | 23.0% | 15.0% |
| 2008 | 100.0% | 38.0% | 5.1% | 19.8% | 19.2% | 23.0% |
| 2009 | 100.0% | 36.3% | 4.2% | 17.9% | 21.8% | 24.0% |
| 2010 | 100.0% | 34.6% | 4.1% | 17.0% | 21.9% | 26.5% |
| 2011 | 100.0% | 35.0% | 4.3% | 18.0% | 17.6% | 29.4% |
| 2012 | 100.0% | 34.9% | 3.8% | 14.9% | 18.3% | 31.9% |
| 2013 | 100.0% | 36.4% | 3.7% | 17.2% | 16.8% | 29.6% |
| Average | 100.0% | 37.9% | 4.3% | 18.9% | 20.6% | 22.7% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$129,600.0 | \$55,468.8 | \$5,158.6 | \$27,216.0 | \$31,622.4 | \$15,292.8 |
| 2006 | \$143,800.0 | \$60,396.0 | \$5,918.8 | \$33,074.0 | \$31,636.0 | \$18,694.0 |
| 2007 | \$171,900.0 | \$70,479.0 | \$9,091.8 | \$36,099.0 | \$39,537.0 | \$25,785.0 |
| 2008 | \$161,500.0 | \$61,370.0 | \$8,162.2 | \$31,977.0 | \$31,008.0 | \$37,145.0 |
| 2009 | \$118,875.0 | \$43,168.3 | \$4,964.4 | \$21,262.0 | \$25,914.8 | \$28,530.0 |
| 2010 | \$129,961.0 | \$44,930.1 | \$5,391.6 | \$22,129.8 | \$28,461.5 | \$34,439.7 |
| 2011 | \$155,513.0 | \$54,398.4 | \$6,691.0 | \$28,023.4 | \$27,370.3 | \$45,720.8 |
| 2012 | \$150,611.0 | \$52,503.0 | \$5,796.3 | \$22,501.3 | \$27,561.8 | \$48,044.9 |
| 2013 | \$165,820.0 | \$60,438.1 | \$6,188.9 | \$28,441.4 | \$27,857.8 | \$49,082.7 |
| Average | \$147,508.0 | \$55,905.7 | \$6,373.73 | \$27,858.2 | \$30,107.73 | \$33,637.2 |

Using the CalSTRS' reported annual returns, we calculate that \$1.00 invested in the System in July 2004 grew to \$1.10 in June 2013 (the fiscal year ends on June 31). Over this period, \$1.00 invested in energy stocks grew to \$2.31. If the System had not invested in oil and natural gas stocks, \$1.00 invested in 2004 would have grown to \$1.67 in 2013. We next estimate the annual capital gains and losses of the public school pension system's total assets and the portion invested in oil and natural gas stocks. Over this period, the System's net gains totaled nearly \$111.2 billion, including \$9.0 billion in net gains from investments in the oil and natural gas sector. The System's oil and natural gas investments, which accounted for 4.3 percent of its total assets, provided 8.1 percent of its total gains.

⁸⁴ *Ibid.*, S&P's; and author's estimates.

Table A-CA-3: California State Teachers' Employees' Retirement System, Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013⁸⁵

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|---------------|-----------------------------|---|--|--|--|--|---|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 11.1% | 36.8% | \$1.11 | \$1.37 | \$1.06 | \$14,372.6 | \$1,896.1 |
| 2006 | 13.2% | 22.5% | \$1.26 | \$1.68 | \$1.19 | \$18,996.0 | \$1,334.5 |
| 2007 | 21.0% | 26.0% | \$1.52 | \$2.11 | \$1.41 | \$36,150.6 | \$2,365.4 |
| 2008 | -3.7% | 23.1% | \$1.47 | \$2.60 | \$1.33 | (\$5,959.4) | \$1,884.3 |
| 2009 | -25.0% | -42.7% | \$1.10 | \$1.49 | \$1.04 | (\$29,754.4) | (\$2,117.9) |
| 2010 | 12.2% | -0.1% | \$1.23 | \$1.49 | \$1.17 | \$15,855.2 | (\$6.9) |
| 2011 | 23.1% | 49.8% | \$1.52 | \$2.23 | \$1.42 | \$35,923.5 | \$3,335.1 |
| 2012 | 1.8% | -10.0% | \$1.55 | \$2.01 | \$1.47 | \$2,771.2 | (\$582.2) |
| 2013 | 13.8% | 15.0% | \$1.76 | \$2.31 | \$1.67 | \$22,883.2 | \$925.6 |
| Total | | | | | | \$111,238.6 | \$9,034.0 |

California Public Employees' Retirement System

The California Public Employees' Retirement System (CalPERS) provides retirement, survivor and disability benefits to state government employees. The System's members include retirees and beneficiaries currently receiving benefits, current employees including those vested and non-vested, and inactive employees entitled to benefits but not yet receiving them. The monthly pension payments to qualified retirees and beneficiaries averaged \$2,181 per-month over this period.

Table A-CA-4: California Public Employees' Retirement System, Membership Classes and Monthly Benefit Payments, FYs 2005-2013⁸⁶

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|----------------|----------------------------|------------------|--------------------|------------------|----------------------------------|
| 2005 | 368,176 | 789,195 | 227,787 | 1,385,158 | \$1,944 |
| 2006 | 382,841 | 807,589 | 241,306 | 1,431,736 | \$2,048 |
| 2007 | 395,450 | 822,624 | 264,276 | 1,482,350 | \$2,160 |
| 2008 | 408,026 | 836,914 | 289,219 | 1,534,159 | \$2,260 |
| 2009 | 484,955 | 821,113 | 313,284 | 1,619,352 | \$2,033 |
| 2010 | 505,862 | 804,294 | 311,750 | 1,621,906 | \$2,137 |
| 2011 | 528,343 | 791,219 | 312,207 | 1,631,769 | \$2,246 |
| 2012 | 543,722 | 786,586 | 315,854 | 1,646,162 | \$2,354 |
| 2013 | 566,975 | 759,509 | 344,728 | 1,671,212 | \$2,445 |
| Average | 464,928 | 802,116 | 291,157 | 1,558,200 | \$2,181 |

⁸⁵ California State Teachers' Retirement System, Comprehensive Annual Financial Report; S&P's; and author's estimates.

⁸⁶ California Public Employees Retirement System, Comprehensive Annual Financial Report.

The public employees' pension system's investments are well diversified across and within asset classes. Domestic equities accounted for the largest share of assets, averaging 29.9 percent of all assets. Investments in the energy sector, more than 98 percent in oil and gas companies, are calculated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for between 2.4 percent and 5.2 percent of the System's total assets over this period.

**Table A-CA-5: California Public Employees' Retirement System,
Asset Allocation, FYs 2005-2013⁸⁷**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 40.3% | 3.7% | 20.5% | 28.8% | 10.5% |
| 2006 | 100.0% | 40.4% | 4.0% | 21.5% | 24.8% | 13.3% |
| 2007 | 100.0% | 40.4% | 5.2% | 19.7% | 24.6% | 15.4% |
| 2008 | 100.0% | 31.2% | 4.1% | 20.5% | 25.3% | 23.0% |
| 2009 | 100.0% | 20.8% | 2.4% | 22.9% | 28.1% | 28.2% |
| 2010 | 100.0% | 23.6% | 2.8% | 26.0% | 24.5% | 25.9% |
| 2011 | 100.0% | 25.1% | 3.1% | 27.6% | 17.3% | 30.0% |
| 2012 | 100.0% | 23.0% | 2.5% | 25.3% | 18.2% | 33.5% |
| 2013 | 100.0% | 24.5% | 2.5% | 26.9% | 15.5% | 33.1% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$188,926.0 | \$76,042.7 | \$7,072.0 | \$38,786.5 | \$54,354.0 | \$19,742.8 |
| 2006 | \$209,871.0 | \$84,808.9 | \$8,311.3 | \$45,101.3 | \$52,027.0 | \$27,933.8 |
| 2007 | \$249,582.0 | \$100,756.3 | \$12,997.6 | \$49,192.6 | \$61,322.3 | \$38,310.8 |
| 2008 | \$236,854.0 | \$73,874.8 | \$9,825.3 | \$48,507.7 | \$59,947.7 | \$54,523.8 |
| 2009 | \$183,370.7 | \$38,141.1 | \$4,386.2 | \$41,991.9 | \$51,527.2 | \$51,710.5 |
| 2010 | \$203,753.3 | \$48,102.6 | \$5,772.3 | \$52,959.1 | \$49,919.6 | \$52,772.1 |
| 2011 | \$239,384.2 | \$60,046.5 | \$7,385.7 | \$66,108.9 | \$41,413.5 | \$71,815.3 |
| 2012 | \$233,934.9 | \$53,780.4 | \$5,937.4 | \$59,210.1 | \$42,576.1 | \$78,368.2 |
| 2013 | \$260,162.4 | \$63,648.7 | \$6,517.6 | \$70,074.8 | \$40,325.2 | \$86,113.8 |

Using the System's reported returns, we calculate that \$1.00 invested in the System in July 2004 grew to \$1.69 in June 2013 (the fiscal year ends on June 30). During this period, \$1.00 invested in the System's oil and gas stocks grew to \$2.31. If the System had not invested in oil and natural gas stocks, \$1.00 invested in June 2004 would have barely grown, to \$1.63 in June 2013. We next estimate the capital gains and losses of the System's assets and the portion invested in oil and natural gas stocks. Over this period, the System's net gains totaled \$153.2 billion, including nearly \$12.3 billion in net gains from investments in the oil and natural gas sector. The oil and natural gas investments, which accounted for 3.4 percent of the System's total assets, provided 8.0 percent of the System's total gains.

⁸⁷ *Ibid.*, and S&P's; and author's estimates.

**Table A-CA-6: California Public Employees' Retirement System,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013⁸⁸**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|---------------|-----------------------------|---|--|--|--|--|---|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 12.3% | 36.8% | \$1.12 | \$1.37 | \$1.07 | \$23,237.9 | \$2,599.3 |
| 2006 | 11.8% | 22.5% | \$1.26 | \$1.68 | \$1.19 | \$24,764.8 | \$1,874.0 |
| 2007 | 19.1% | 26.0% | \$1.50 | \$2.11 | \$1.39 | \$47,670.2 | \$3,381.5 |
| 2008 | -5.1% | 23.1% | \$1.42 | \$2.60 | \$1.31 | (\$12,079.6) | \$2,268.3 |
| 2009 | -24.0% | -42.7% | \$1.08 | \$1.49 | \$1.04 | (\$44,009.0) | (\$1,871.3) |
| 2010 | 13.3% | -0.1% | \$1.22 | \$1.49 | \$1.18 | \$27,099.2 | (\$7.4) |
| 2011 | 21.7% | 49.8% | \$1.49 | \$2.23 | \$1.42 | \$51,946.4 | \$3,681.4 |
| 2012 | 0.1% | -10.0% | \$1.49 | \$2.01 | \$1.44 | \$233.9 | (\$596.3) |
| 2013 | 13.2% | 15.0% | \$1.69 | \$2.31 | \$1.63 | \$34,341.4 | \$974.8 |
| Total | | | | | | \$153,205.2 | \$12,304.3 |

FLORIDA

Florida Public School Employees' Retirement System

The Florida Public School Employees' Retirement System provides pension benefits for all public school employees in the State. The System's membership consists of retirees and beneficiaries; employees, both vested and non-vested; and inactive employees entitled to benefits. Members averaged 453,741 over FYs 2005-2013, and monthly payments to retirees and beneficiaries averaged \$1,400.

**Table A-FL-1: Florida Public School Employees' Retirement System,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013⁸⁹**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|----------------|----------------------------|------------------|--------------------|----------------|----------------------------------|
| 2005 | 110,021 | 315,736 | N/A | 425,757 | \$1,239 |
| 2006 | 116,370 | 325,288 | N/A | 441,658 | \$1,277 |
| 2007 | 121,969 | 332,416 | N/A | 454,385 | \$1,313 |
| 2008 | 126,662 | 336,597 | N/A | 463,259 | \$1,353 |
| 2009 | 132,779 | 323,390 | N/A | 456,169 | \$1,398 |
| 2010 | 140,028 | 316,785 | N/A | 456,813 | \$1,446 |
| 2011 | 147,073 | 314,363 | N/A | 461,436 | \$1,487 |
| 2012 | 154,236 | 304,073 | N/A | 458,309 | \$1,524 |
| 2013 | 160,564 | 305,317 | N/A | 465,881 | \$1,562 |
| Average | 134,411 | 319,329 | N/A | 453,741 | \$1,400 |

⁸⁸ California Public Employees Retirement System, Comprehensive Annual Financial Report; S&P's; and author's estimates.

⁸⁹ California State Teachers' Retirement System, Comprehensive Annual Financial Report.

The public school pension fund's investments are well diversified. Domestic equities accounted for the largest share, averaging 36.9 percent of all holdings. Investments in oil and gas companies are estimated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for an average of 4.1 percent of total assets over this period.

**Table A-FL-2: Florida Public School Employees' Retirement System,
Asset Allocation, FYs 2005-2013⁹⁰**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 51.0% | 4.7% | 19.0% | 21.7% | 8.3% |
| 2006 | 100.0% | 50.4% | 4.9% | 19.5% | 21.3% | 8.8% |
| 2007 | 100.0% | 42.9% | 5.5% | 16.4% | 22.9% | 17.8% |
| 2008 | 100.0% | 35.5% | 4.7% | 18.7% | 27.6% | 18.2% |
| 2009 | 100.0% | 35.2% | 4.0% | 20.5% | 26.1% | 18.2% |
| 2010 | 100.0% | 35.6% | 4.3% | 18.9% | 28.5% | 17.0% |
| 2011 | 100.0% | 26.9% | 3.3% | 26.5% | 24.8% | 21.8% |
| 2012 | 100.0% | 26.3% | 2.9% | 23.8% | 25.5% | 24.4% |
| 2013 | 100.0% | 28.1% | 2.9% | 24.8% | 22.0% | 25.2% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$52,837.7 | \$26,947.2 | \$2,506.1 | \$10,039.2 | \$11,465.8 | \$4,385.5 |
| 2006 | \$57,108.2 | \$28,782.5 | \$2,820.7 | \$11,136.1 | \$12,164.0 | \$5,025.5 |
| 2007 | \$65,631.8 | \$28,156.0 | \$3,632.1 | \$10,763.6 | \$15,029.7 | \$11,682.5 |
| 2008 | \$61,340.5 | \$21,775.9 | \$2,896.2 | \$11,470.7 | \$16,930.0 | \$11,164.0 |
| 2009 | \$47,484.2 | \$16,714.5 | \$1,922.2 | \$9,734.3 | \$12,393.4 | \$8,642.1 |
| 2010 | \$52,121.0 | \$18,555.1 | \$2,226.6 | \$9,850.9 | \$14,854.5 | \$8,860.6 |
| 2011 | \$61,646.9 | \$16,553.0 | \$2,036.0 | \$16,340.2 | \$15,288.4 | \$13,465.3 |
| 2012 | \$58,821.7 | \$15,489.1 | \$1,710.0 | \$13,991.5 | \$14,999.5 | \$14,341.5 |
| 2013 | \$63,683.2 | \$17,863.4 | \$1,829.2 | \$15,779.9 | \$14,010.3 | \$16,029.5 |

Using the public school pension system's reported annual returns, we calculate that \$1.00 invested in the System in July 2004 grew to \$1.76 in June 2013 (fiscal year ends on June 31). Over this period, \$1.00 invested in energy stocks grew to \$2.31. If the System had not invested in oil and natural gas stocks, \$1.00 invested in 2004 would have grown to \$1.69 in 2013. We next estimate the annual capital gains and losses of the public school pension system's total assets and the portion invested in oil and natural gas stocks. Over this period, the System's net gains totaled \$41.0 billion, including nearly \$3.5 billion in net gains from investments in the oil and natural gas sector. The System's oil and natural gas investments, accounting for 4.1 percent of its total assets, provided 8.5 percent of its total gains.

⁹⁰ *Ibid.*, S&P's; and author's estimates.

**Table A-FL-3: Florida Public School Employees' Retirement System,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013⁹¹**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|---------------|-----------------------------|---|--|--|--|--|---|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 10.2% | 36.8% | \$1.10 | \$1.37 | \$1.04 | \$5,378.9 | \$921.1 |
| 2006 | 10.6% | 22.5% | \$1.22 | \$1.68 | \$1.14 | \$6,030.6 | \$636.0 |
| 2007 | 18.1% | 26.0% | \$1.44 | \$2.11 | \$1.32 | \$11,859.7 | \$944.9 |
| 2008 | -4.4% | 23.1% | \$1.37 | \$2.60 | \$1.25 | (\$2,711.3) | \$668.6 |
| 2009 | -19.0% | -42.7% | \$1.11 | \$1.49 | \$1.05 | (\$9,036.3) | (\$820.0) |
| 2010 | 14.0% | -0.1% | \$1.27 | \$1.49 | \$1.21 | \$7,312.6 | (\$2.9) |
| 2011 | 22.1% | 49.8% | \$1.55 | \$2.23 | \$1.48 | \$13,617.8 | \$1,014.8 |
| 2012 | 0.3% | -10.0% | \$1.55 | \$2.01 | \$1.50 | \$170.6 | (\$171.7) |
| 2013 | 13.1% | 15.0% | \$1.76 | \$2.31 | \$1.69 | \$8,355.2 | \$273.6 |
| Total | | | | | | \$40,977.9 | \$3,464.5 |

Florida Retirement System

The Florida Retirement System for public employees provides retirement, survivor and disability benefits to state government employees. The System's members include retirees and beneficiaries currently receiving benefits, current employees including those vested and non-vested, and inactive employees entitled to benefits but not yet receiving them. Monthly pension payments to qualified retirees and beneficiaries averaged \$1,309 per-month over this period.

**Table A-FL-4: Florida Retirement System,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013⁹²**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|----------------|----------------------------|------------------|--------------------|----------------|----------------------------------|
| 2005 | 49,884 | 139,969 | N/A | 189,853 | \$1,126 |
| 2006 | 52,727 | 141,354 | N/A | 194,081 | \$1,169 |
| 2007 | 55,371 | 141,372 | N/A | 196,743 | \$1,215 |
| 2008 | 57,881 | 141,154 | N/A | 199,035 | \$1,263 |
| 2009 | 60,400 | 140,280 | N/A | 200,680 | \$1,310 |
| 2010 | 62,841 | 140,198 | N/A | 203,039 | \$1,355 |
| 2011 | 65,903 | 136,223 | N/A | 202,126 | \$1,403 |
| 2012 | 68,744 | 128,910 | N/A | 197,654 | \$1,444 |
| 2013 | 71,224 | 126,390 | N/A | 197,614 | \$1,492 |
| Average | 60,553 | 137,317 | N/A | 197,869 | \$1,309 |

⁹¹ The Florida Retirement System, Pension Plan & Other State-Administered Systems: Annual Report; S&P's; and author's estimates.

⁹² The Florida Retirement System, Pension Plan & Other State-Administered Systems: Annual Report.

The state employees' pension system's investments are diversified across and within asset classes. Domestic equities accounted for the largest share of assets, averaging 36.9 percent of all assets. Investments in the energy sector, more than 98 percent in oil and gas companies, are calculated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for between 2.9 percent and 5.5 percent of the System's total assets over this period.

**Table A-FL-5: Florida Retirement System,
Asset Allocation, FYs 2005-2013⁹³**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 51.0% | 4.7% | 19.0% | 21.7% | 8.3% |
| 2006 | 100.0% | 50.4% | 4.9% | 19.5% | 21.3% | 8.8% |
| 2007 | 100.0% | 42.9% | 5.5% | 16.4% | 22.9% | 17.8% |
| 2008 | 100.0% | 35.5% | 4.7% | 18.7% | 27.6% | 18.2% |
| 2009 | 100.0% | 35.2% | 4.0% | 20.5% | 26.1% | 18.2% |
| 2010 | 100.0% | 35.6% | 4.3% | 18.9% | 28.5% | 17.0% |
| 2011 | 100.0% | 26.9% | 3.3% | 26.5% | 24.8% | 21.8% |
| 2012 | 100.0% | 26.3% | 2.9% | 23.8% | 25.5% | 24.4% |
| 2013 | 100.0% | 28.1% | 2.9% | 24.8% | 22.0% | 25.2% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$23,561.3 | \$12,016.3 | \$1,117.5 | \$4,476.6 | \$5,112.8 | \$1,955.6 |
| 2006 | \$25,095.5 | \$12,648.1 | \$1,239.5 | \$4,893.6 | \$5,345.3 | \$2,208.4 |
| 2007 | \$28,417.7 | \$12,191.2 | \$1,572.7 | \$4,660.5 | \$6,507.7 | \$5,058.4 |
| 2008 | \$26,354.4 | \$9,355.8 | \$1,244.3 | \$4,928.3 | \$7,273.8 | \$4,796.5 |
| 2009 | \$20,889.5 | \$7,353.1 | \$845.6 | \$4,282.3 | \$5,452.2 | \$3,801.9 |
| 2010 | \$23,166.1 | \$8,247.1 | \$989.7 | \$4,378.4 | \$6,602.4 | \$3,938.2 |
| 2011 | \$27,003.6 | \$7,250.8 | \$891.8 | \$7,157.6 | \$6,696.9 | \$5,898.3 |
| 2012 | \$25,367.9 | \$6,679.9 | \$737.5 | \$6,034.1 | \$6,468.8 | \$6,185.0 |
| 2013 | \$27,012.9 | \$7,577.2 | \$775.9 | \$6,693.5 | \$5,942.8 | \$6,799.4 |

Using the System's reported returns, we calculate that \$1.00 invested in the System in July 2004 grew to \$1.76 in June 2013 (the fiscal year ends on June 30). During this period, \$1.00 invested in the System's oil and gas stocks grew to \$2.31. If the System had not invested in oil and natural gas stocks, \$1.00 invested in June 2004 would have grown to only \$1.69 in June 2013. We next estimate the capital gains and losses of the System's assets and the portion invested in oil and natural gas stocks. Over this period, the System's net gains totaled \$17.9 billion, including nearly \$1.5 billion in net gains from investments in the oil and natural gas sector. The oil and natural gas investments, which accounted for 4.1 percent of the System's total assets, provided 8.5 percent of the System's total gains.

⁹³ *Ibid.*, and S&P's; and author's estimates.

**Table A-FL-6: Florida Retirement System,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013⁹⁴**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|---------------|-----------------------------|---|--|--|--|--|---|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 10.2% | 36.8% | \$1.10 | \$1.37 | \$1.04 | \$2,398.5 | \$410.7 |
| 2006 | 10.6% | 22.5% | \$1.22 | \$1.68 | \$1.14 | \$2,650.1 | \$279.5 |
| 2007 | 18.1% | 26.0% | \$1.44 | \$2.11 | \$1.32 | \$5,135.1 | \$409.2 |
| 2008 | -4.4% | 23.1% | \$1.37 | \$2.60 | \$1.25 | (\$1,164.9) | \$287.3 |
| 2009 | -19.0% | -42.7% | \$1.11 | \$1.49 | \$1.05 | (\$3,975.3) | (\$360.8) |
| 2010 | 14.0% | -0.1% | \$1.27 | \$1.49 | \$1.21 | \$3,250.2 | (\$1.3) |
| 2011 | 22.1% | 49.8% | \$1.55 | \$2.23 | \$1.48 | \$5,965.1 | \$444.5 |
| 2012 | 0.3% | -10.0% | \$1.55 | \$2.01 | \$1.50 | \$73.6 | (\$74.1) |
| 2013 | 13.1% | 15.0% | \$1.76 | \$2.31 | \$1.69 | \$3,544.1 | \$116.0 |
| Total | | | | | | \$17,876.5 | \$1,511.1 |

ILLINOIS

Illinois Teachers' Retirement System

The Illinois Teachers' Retirement System (ITRS) provides pension benefits for all public school employees in the State. The System's membership consists of retirees and beneficiaries; employees, both vested and non-vested; and inactive employees entitled to benefits. Members averaged 356,382 over FYs 2005-2013, and the monthly pension payments paid out averaged \$3,599.

**Table A-IL-1: Illinois Teachers' Retirement System,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013⁹⁵**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|----------------|----------------------------|------------------|--------------------|----------------|----------------------------------|
| 2005 | 82,572 | 155,850 | 87,328 | 325,750 | \$3,043 |
| 2006 | 85,103 | 159,272 | 81,218 | 325,593 | \$3,173 |
| 2007 | 89,236 | 160,317 | 94,879 | 344,432 | \$3,344 |
| 2008 | 91,462 | 165,572 | 98,550 | 355,584 | \$3,461 |
| 2009 | 94,424 | 169,158 | 101,606 | 365,188 | \$3,597 |
| 2010 | 97,754 | 170,275 | 104,222 | 372,251 | \$3,737 |
| 2011 | 101,288 | 166,013 | 94,820 | 362,121 | \$3,871 |
| 2012 | 105,447 | 162,217 | 99,052 | 366,716 | \$4,018 |
| 2013 | 108,783 | 160,692 | 120,325 | 389,800 | \$4,150 |
| Average | 95,119 | 163,263 | 98,000 | 356,382 | \$3,599 |

⁹⁴ The Florida Retirement System, Pension Plan & Other State-Administered Systems: Annual Report; S&P's; and author's estimates.

⁹⁵ Teachers' Retirement System of the State of Illinois, Comprehensive Annual Financial Report.

The teachers' pension fund's investments are well diversified. Domestic equities accounted for the largest share of assets averaging 32.6 percent of total holdings. Investments in energy companies, more than 98 percent in oil and gas companies, are estimated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for an average of 3.3 percent of total assets over this period.

**Table A-IL-2: Illinois Teachers' Retirement System,
Asset Allocation, FYs 2005-2013⁹⁶**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 44.4% | 4.1% | 17.5% | 24.1% | 14.0% |
| 2006 | 100.0% | 41.8% | 4.1% | 19.4% | 23.3% | 15.5% |
| 2007 | 100.0% | 40.1% | 5.2% | 22.0% | 18.6% | 19.3% |
| 2008 | 100.0% | 33.2% | 4.4% | 21.4% | 17.2% | 28.2% |
| 2009 | 100.0% | 31.2% | 2.3% | 19.1% | 18.6% | 31.1% |
| 2010 | 100.0% | 28.6% | 2.3% | 19.3% | 17.7% | 34.4% |
| 2011 | 100.0% | 27.5% | 2.9% | 19.7% | 16.7% | 36.1% |
| 2012 | 100.0% | 23.7% | 2.0% | 20.2% | 16.4% | 39.7% |
| 2013 | 100.0% | 22.8% | 2.0% | 21.1% | 15.9% | 40.2% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$34,898.0 | \$15,508.7 | \$1,442.3 | \$6,107.2 | \$8,410.4 | \$4,871.8 |
| 2006 | \$37,580.0 | \$15,708.4 | \$1,539.4 | \$7,290.5 | \$8,756.1 | \$5,824.9 |
| 2007 | \$42,231.0 | \$16,934.6 | \$2,184.6 | \$9,290.8 | \$7,855.0 | \$8,150.6 |
| 2008 | \$39,495.0 | \$13,112.3 | \$1,743.9 | \$8,451.9 | \$6,793.1 | \$11,137.6 |
| 2009 | \$28,961.0 | \$9,035.8 | \$668.7 | \$5,531.6 | \$5,386.7 | \$9,006.9 |
| 2010 | \$31,482.0 | \$9,003.9 | \$738.3 | \$6,076.0 | \$5,572.3 | \$10,829.8 |
| 2011 | \$37,748.0 | \$10,380.7 | \$1,100.4 | \$7,436.4 | \$6,303.9 | \$13,627.0 |
| 2012 | \$36,782.0 | \$8,717.3 | \$741.0 | \$7,430.0 | \$6,032.2 | \$14,602.5 |
| 2013 | \$39,682.0 | \$9,047.5 | \$805.2 | \$8,372.9 | \$6,309.4 | \$15,952.2 |

Using the teachers' pension system's returns, \$1.00 invested in the System in July 2004 grew to \$1.72 in June 2013 (fiscal year ends on June 31). (Table A-IL-3, below) In this period, \$1.00 invested in energy stocks grew to \$2.31. If the System had not invested in oil and natural gas, \$1.00 invested in 2004 would have grown to \$1.67 in 2013. We next estimate the capital gains and losses of the public school pension system's total assets and the portion invested in oil and natural gas. For this period, the System's gains totaled \$26.1 billion, including \$2.16 billion from investments in oil and natural gas. The System's oil and natural gas investments, which accounted for 3.3 percent of all assets, provided 8.3 percent of its gains.

⁹⁶ *Ibid.*, S&P's; and author's estimates.

**Table A-IL-3: Illinois Teachers' Retirement System,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013⁹⁷**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|--------------------|------------------------------------|--|---|---|---|---|--|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 10.8% | 36.8% | \$1.11 | \$1.37 | \$1.05 | \$3,769.0 | \$530.1 |
| 2006 | 11.8% | 22.5% | \$1.24 | \$1.68 | \$1.17 | \$4,434.4 | \$347.1 |
| 2007 | 19.2% | 26.0% | \$1.48 | \$2.11 | \$1.37 | \$8,108.4 | \$568.3 |
| 2008 | -5.0% | 23.1% | \$1.40 | \$2.60 | \$1.29 | (\$1,974.8) | \$402.6 |
| 2009 | -22.7% | -42.7% | \$1.08 | \$1.49 | \$1.05 | (\$6,574.1) | (\$285.3) |
| 2010 | 12.9% | -0.1% | \$1.22 | \$1.49 | \$1.19 | \$4,061.2 | (\$0.9) |
| 2011 | 23.6% | 49.8% | \$1.51 | \$2.23 | \$1.45 | \$8,908.5 | \$548.5 |
| 2012 | 0.8% | -10.0% | \$1.53 | \$2.01 | \$1.48 | \$294.3 | (\$74.4) |
| 2013 | 12.8% | 15.0% | \$1.72 | \$2.31 | \$1.67 | \$5,079.3 | \$120.4 |
| Total | | | | | | \$26,106.1 | \$2,156.5 |

Illinois State Employees' Retirement System

The Illinois State Employees' Retirement System (ISERS) provides retirement, survivor and disability benefits to state government employees. The System's members include retirees and beneficiaries currently receiving benefits, current employees including those vested and non-vested, and inactive employees entitled to benefits but not yet receiving them. The monthly pension payments to retirees and beneficiaries averaged \$2,540 per-month in this period.

**Table A-IL-4: Illinois State Employees' Retirement System,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013⁹⁸**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|--------------------|-----------------------------------|-------------------------|---------------------------|----------------|---|
| 2005 | 54,828 | 69,163 | 4,672 | 128,663 | \$2,091 |
| 2006 | 54,868 | 68,075 | 4,605 | 127,548 | \$1,974 |
| 2007 | 55,262 | 67,699 | 4,606 | 127,567 | \$2,183 |
| 2008 | 56,111 | 66,237 | 4,702 | 127,050 | \$2,434 |
| 2009 | 57,009 | 65,599 | 4,672 | 127,280 | \$2,574 |
| 2010 | 58,392 | 64,143 | 4,646 | 127,181 | \$2,665 |
| 2011 | 59,786 | 66,363 | 4,489 | 130,638 | \$2,853 |
| 2012 | 62,788 | 62,732 | 4,391 | 129,911 | \$3,056 |
| 2013 | 65,050 | 61,545 | 4,376 | 130,971 | \$3,034 |
| Average | 58,233 | 65,728 | 4,573 | 128,534 | \$2,540 |

⁹⁷ Teachers' Retirement System of the State of Illinois, Comprehensive Annual Financial Report; S&P's; author's estimates.

⁹⁸ Illinois State Employees Retirement System, Comprehensive Annual Financial Report.

The state employees' pension system's investments are well diversified across and within asset classes. Domestic equities accounted for the largest share of assets, averaging 43.1 percent of all assets. Investments in the energy sector, more than 98 percent in oil and gas companies, are calculated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for between 4.0 percent and 6.7 percent of the System's total assets over this period.

**Table A-IL-5: Illinois State Employees' Retirement System,
Asset Allocation, FYs 2005-2013⁹⁹**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 51.0% | 4.7% | 9.0% | 26.0% | 14.0% |
| 2006 | 100.0% | 51.0% | 5.0% | 10.0% | 23.0% | 16.0% |
| 2007 | 100.0% | 52.0% | 6.7% | 11.0% | 20.0% | 17.0% |
| 2008 | 100.0% | 37.0% | 4.9% | 17.0% | 18.0% | 28.0% |
| 2009 | 100.0% | 40.0% | 4.6% | 17.0% | 18.0% | 25.0% |
| 2010 | 100.0% | 40.0% | 4.8% | 17.0% | 18.0% | 25.0% |
| 2011 | 100.0% | 40.0% | 4.9% | 17.0% | 18.0% | 25.0% |
| 2012 | 100.0% | 38.0% | 4.2% | 18.0% | 21.0% | 23.0% |
| 2013 | 100.0% | 39.0% | 4.0% | 18.0% | 19.0% | 24.0% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$10,902.0 | \$5,560.0 | \$517.1 | \$981.2 | \$2,834.5 | \$1,526.3 |
| 2006 | \$11,316.0 | \$5,771.2 | \$565.6 | \$1,131.6 | \$2,602.7 | \$1,810.6 |
| 2007 | \$12,552.0 | \$6,527.0 | \$842.0 | \$1,380.7 | \$2,510.4 | \$2,133.8 |
| 2008 | \$11,315.0 | \$4,186.6 | \$556.8 | \$1,923.6 | \$2,036.7 | \$3,168.2 |
| 2009 | \$8,684.1 | \$3,473.6 | \$399.5 | \$1,476.3 | \$1,563.1 | \$2,171.0 |
| 2010 | \$9,678.7 | \$3,871.5 | \$464.6 | \$1,645.4 | \$1,742.2 | \$2,419.7 |
| 2011 | \$11,527.6 | \$4,611.1 | \$567.2 | \$1,959.7 | \$2,075.0 | \$2,881.9 |
| 2012 | \$11,283.9 | \$4,287.9 | \$473.4 | \$2,031.1 | \$2,369.6 | \$2,595.3 |
| 2013 | \$12,866.5 | \$5,017.9 | \$513.8 | \$2,316.0 | \$2,444.6 | \$3,087.9 |

Using the System's reported returns, we calculate that \$1.00 invested in the System in July 2004 grew to \$1.63 in June 2013 (the fiscal year ends on June 30). During this period, \$1.00 invested in the System's oil and gas stocks grew to \$2.31. If the System had not invested in oil and natural gas stocks, \$1.00 invested in June 2004 would have barely grown, to \$1.53 in June 2013. We next estimate the capital gains and losses of the System's assets and the portion invested in oil and natural gas stocks. Over this period, the System's net gains totaled \$7.25 billion, including nearly \$806 million in net gains from investments in the oil and natural gas sector. The oil and natural gas investments, accounting for about 4.9 percent of the System's total assets, provided 11.1 percent of the System's total gains. (Table IL-6)

⁹⁹ *Ibid.*, and S&P's; and author's estimates.

**Table A-IL-6: Illinois State Employees' Retirement System,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹⁰⁰**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|---------------|-----------------------------|---|--|--|--|--|---|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 10.1% | 36.8% | \$1.10 | \$1.37 | \$1.04 | \$1,101.1 | \$190.1 |
| 2006 | 11.0% | 22.5% | \$1.22 | \$1.68 | \$1.14 | \$1,244.8 | \$127.5 |
| 2007 | 17.1% | 26.0% | \$1.43 | \$2.11 | \$1.29 | \$2,146.4 | \$219.1 |
| 2008 | -6.2% | 23.1% | \$1.34 | \$2.60 | \$1.21 | (\$701.5) | \$128.5 |
| 2009 | -20.1% | -42.7% | \$1.07 | \$1.49 | \$1.00 | (\$1,745.5) | (\$170.4) |
| 2010 | 9.1% | -0.1% | \$1.17 | \$1.49 | \$1.10 | \$880.8 | (\$0.6) |
| 2011 | 21.7% | 49.8% | \$1.42 | \$2.23 | \$1.31 | \$2,501.5 | \$282.7 |
| 2012 | 0.1% | -10.0% | \$1.43 | \$2.01 | \$1.34 | \$11.3 | (\$47.5) |
| 2013 | 14.1% | 15.0% | \$1.63 | \$2.31 | \$1.53 | \$1,814.2 | \$76.9 |
| Total | | | | | | \$7,252.9 | \$806.2 |

INDIANA

Indiana Teachers' Retirement Fund

The Indiana Teachers' Retirement Fund provides pension benefits for public school employees. The membership consists of retirees, beneficiaries, and active and inactive employees entitled to benefits. Membership averaged 150,183 over FYs 2005-2013, and monthly pension payments averaged \$1,485.

**Table A-IN-1: Indiana Teachers' Retirement Fund,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013¹⁰¹**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|----------------|----------------------------|------------------|--------------------|----------------|----------------------------------|
| 2005 | 38,512 | 73,923 | 37,302 | 149,737 | \$1,314 |
| 2006 | 39,849 | 73,350 | 38,215 | 151,414 | \$1,395 |
| 2007 | 41,253 | 75,833 | 43,425 | 160,511 | \$1,405 |
| 2008 | 42,817 | 76,256 | 43,337 | 162,410 | \$1,449 |
| 2009 | 44,492 | 74,343 | 38,897 | 157,732 | \$1,495 |
| 2010 | 45,659 | 72,872 | 35,847 | 154,378 | \$1,517 |
| 2011 | 47,975 | 71,343 | 27,168 | 146,486 | \$1,561 |
| 2012 | 49,971 | 70,573 | 13,322 | 133,866 | \$1,590 |
| 2013 | 53,010 | 70,414 | 11,693 | 135,117 | \$1,636 |
| Average | 44,838 | 73,212 | 32,134 | 150,183 | \$1,485 |

¹⁰⁰ Illinois State Employees Retirement System, Comprehensive Annual Financial Report; S&P's; and author's estimates.

¹⁰¹ Indiana State Teachers' Retirement Fund, Comprehensive Annual Financial Report.

The Indiana Teachers' Retirement Fund's investments are well diversified. Domestic equities accounted for an average of 32.0 percent of total holdings. Investments in energy companies, more than 98 percent in oil and gas companies, are estimated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for an average of 3.6 percent of total assets over this period.

**Table A-IN-2: Indiana Teachers' Retirement Fund,
Asset Allocation, FYs 2005-2013¹⁰²**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 57.2% | 5.3% | 19.6% | 21.5% | 1.7% |
| 2006 | 100.0% | 45.6% | 4.5% | 20.3% | 23.2% | 10.9% |
| 2007 | 100.0% | 45.7% | 5.9% | 21.2% | 20.8% | 12.3% |
| 2008 | 100.0% | 37.8% | 5.0% | 22.5% | 23.4% | 16.3% |
| 2009 | 100.0% | 33.1% | 3.8% | 19.3% | 29.8% | 17.8% |
| 2010 | 100.0% | 19.3% | 2.3% | 15.3% | 47.3% | 18.1% |
| 2011 | 100.0% | 23.9% | 2.9% | 15.2% | 37.3% | 23.6% |
| 2012 | 100.0% | 13.4% | 1.5% | 11.8% | 35.6% | 39.2% |
| 2013 | 100.0% | 12.3% | 1.3% | 11.9% | 32.0% | 43.8% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$4,041.0 | \$2,311.5 | \$215.0 | \$792.0 | \$868.8 | \$68.7 |
| 2006 | \$4,521.0 | \$2,061.6 | \$202.0 | \$917.8 | \$1,048.9 | \$492.8 |
| 2007 | \$5,501.0 | \$2,514.0 | \$324.3 | \$1,166.2 | \$1,144.2 | \$676.6 |
| 2008 | \$5,252.0 | \$1,985.3 | \$264.0 | \$1,181.7 | \$1,229.0 | \$856.1 |
| 2009 | \$4,235.9 | \$1,402.1 | \$161.2 | \$817.5 | \$1,262.3 | \$754.0 |
| 2010 | \$5,073.0 | \$979.1 | \$117.5 | \$776.2 | \$2,399.5 | \$918.2 |
| 2011 | \$5,984.0 | \$1,430.2 | \$175.9 | \$909.6 | \$2,232.0 | \$1,412.2 |
| 2012 | \$6,157.9 | \$822.4 | \$90.8 | \$729.3 | \$2,192.2 | \$2,413.9 |
| 2013 | \$6,925.1 | \$854.7 | \$87.5 | \$821.2 | \$2,216.0 | \$3,033.2 |

Using the public school pension system's reported annual returns, we calculate that \$1.00 invested in the System in July 2004 grew to \$1.60 in June 2013 (the fiscal year ends on June 31). Over this period, \$1.00 invested in energy stocks grew to \$2.31. If the System had not invested in oil and natural gas stocks, \$1.00 invested in July 2004 would have grown to \$1.57 in FY 2013. We also estimate the annual capital gains and losses of the public school pension system's assets and the portion invested in oil and natural gas stocks. Over this period, the System's net gains totaled \$3.1 billion, including nearly \$293 million in net gains from investments in the oil and natural gas sector. The System's oil and natural gas investments, which accounted for 3.6 percent of its assets, generated 9.5 percent of its net gains.

¹⁰² *Ibid.*, S&P's; and author's estimates.

**Table A-IN-3: Indiana Teachers' Retirement Fund,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹⁰³**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|---------------|-----------------------------|---|--|--|--|--|---|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 9.1% | 36.8% | \$1.09 | \$1.37 | \$1.02 | \$367.7 | \$79.0 |
| 2006 | 11.2% | 22.5% | \$1.21 | \$1.68 | \$1.14 | \$506.4 | \$45.6 |
| 2007 | 17.9% | 26.0% | \$1.43 | \$2.11 | \$1.31 | \$984.7 | \$84.4 |
| 2008 | -6.0% | 23.1% | \$1.34 | \$2.60 | \$1.21 | (\$315.1) | \$61.0 |
| 2009 | -18.0% | -42.7% | \$1.10 | \$1.49 | \$1.05 | (\$762.5) | (\$68.8) |
| 2010 | 14.8% | -0.1% | \$1.27 | \$1.49 | \$1.23 | \$750.8 | (\$0.2) |
| 2011 | 18.2% | 49.8% | \$1.50 | \$2.23 | \$1.43 | \$1,089.1 | \$87.7 |
| 2012 | 0.7% | -10.0% | \$1.51 | \$2.01 | \$1.48 | \$43.1 | (\$9.1) |
| 2013 | 6.0% | 15.0% | \$1.60 | \$2.31 | \$1.57 | \$415.5 | \$13.1 |
| Total | | | | | | \$3,079.7 | \$292.6 |

Indiana Public Retirement System

The Indiana Public Retirement System for state employees provides retirement, survivor and disability benefits to state government employees. The System's members include retirees and beneficiaries currently receiving benefits, current employees including those vested and non-vested, and inactive employees entitled to benefits but not yet receiving them. The monthly pension payments to qualified beneficiaries averaged \$1,369.00 per-month in this period.

**Table A-IN-4: Indiana Public Retirement System,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013¹⁰⁴**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|----------------|----------------------------|------------------|--------------------|----------------|----------------------------------|
| 2005 | 57,121 | 141,428 | 10,531 | 209,080 | \$2,189 |
| 2006 | 58,283 | 140,563 | 11,552 | 210,398 | \$2,264 |
| 2007 | 60,332 | 138,863 | 14,789 | 213,984 | \$2,334 |
| 2008 | 62,424 | 140,146 | 15,450 | 218,020 | \$2,328 |
| 2009 | 65,099 | 147,792 | 10,670 | 223,561 | \$611 |
| 2010 | 67,166 | 149,877 | 14,759 | 231,802 | \$618 |
| 2011 | 70,380 | 147,933 | 20,634 | 238,947 | \$639 |
| 2012 | 72,992 | 145,519 | 21,200 | 239,711 | \$658 |
| 2013 | 75,950 | 137,937 | 23,504 | 237,391 | \$678 |
| Average | 65,527 | 143,340 | 15,899 | 224,766 | \$1,369 |

¹⁰³ Indiana State Teachers' Retirement Fund, Comprehensive Annual Financial Report; S&P's; and author's estimates.

¹⁰⁴ Indiana Public Retirement System, Comprehensive Annual Financial Report.

The state employees' pension system's investments are diversified across and within asset classes. Domestic equities accounted for an average of 30.5 percent of all assets. Investments in the energy sector, more than 98 percent in oil and gas companies, are calculated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for between 1.3 percent and 6.2 percent of the System's total assets over this period.

**Table A-IN-5: Indiana Public Retirement System,
Asset Allocation, FYs 2005-2013¹⁰⁵**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 49.5% | 4.6% | 21.8% | 28.5% | 0.3% |
| 2006 | 100.0% | 49.2% | 4.8% | 24.8% | 25.4% | 0.6% |
| 2007 | 100.0% | 48.0% | 6.2% | 28.2% | 22.2% | 1.6% |
| 2008 | 100.0% | 39.3% | 5.2% | 28.0% | 25.4% | 7.3% |
| 2009 | 100.0% | 27.0% | 3.1% | 23.5% | 31.9% | 17.6% |
| 2010 | 100.0% | 17.2% | 2.1% | 22.5% | 35.8% | 24.5% |
| 2011 | 100.0% | 18.6% | 2.3% | 24.0% | 31.5% | 25.9% |
| 2012 | 100.0% | 13.4% | 1.5% | 11.8% | 35.6% | 39.2% |
| 2013 | 100.0% | 12.3% | 1.3% | 11.9% | 32.0% | 43.8% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$12,435.3 | \$6,156.7 | \$572.6 | \$2,704.7 | \$3,537.8 | \$36.1 |
| 2006 | \$13,694.9 | \$6,737.9 | \$660.3 | \$3,396.3 | \$3,478.5 | \$82.2 |
| 2007 | \$16,114.3 | \$7,734.9 | \$997.8 | \$4,544.2 | \$3,577.4 | \$257.8 |
| 2008 | \$14,851.0 | \$5,836.4 | \$776.2 | \$4,158.3 | \$3,772.2 | \$1,084.1 |
| 2009 | \$11,795.1 | \$3,184.7 | \$366.2 | \$2,771.8 | \$3,762.6 | \$2,075.9 |
| 2010 | \$13,314.0 | \$2,290.0 | \$274.8 | \$2,995.7 | \$4,766.4 | \$3,261.9 |
| 2011 | \$15,796.6 | \$2,938.2 | \$361.4 | \$3,791.2 | \$4,975.9 | \$4,091.3 |
| 2012 | \$13,551.0 | \$1,809.9 | \$199.8 | \$1,605.0 | \$4,824.2 | \$5,312.0 |
| 2013 | \$14,523.6 | \$1,792.5 | \$183.6 | \$1,722.2 | \$4,647.6 | \$6,361.3 |

Using the System's reported returns, we calculate that \$1.00 invested in the System in July 2004 grew to \$1.54 in June 2013 (the fiscal year ends on June 30). During this period, \$1.00 invested in the System's oil and gas stocks grew to \$2.31. If the System had not invested in oil and natural gas stocks, \$1.00 invested in June 2004 would have barely grown, to \$1.51 in June 2013. We next estimate the capital gains and losses of the System's assets and the portion invested in oil and natural gas stocks. Over this period, the System's net gains totaled \$8.1billion, including \$829 million in net gains from investments in the oil and natural gas sector. The oil and natural gas investments, which accounted for about 3.5 percent of the System's total assets, provided 10.3 percent of the System's total gains.

¹⁰⁵ *Ibid.*, and S&P's; and author's estimates.

**Table A-IN-6: Indiana Public Retirement System,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹⁰⁶**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|---------------|-----------------------------|---|--|--|--|--|---|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 9.8% | 36.8% | \$1.10 | \$1.37 | \$1.04 | \$1,218.7 | \$210.5 |
| 2006 | 10.7% | 22.5% | \$1.22 | \$1.68 | \$1.13 | \$1,465.4 | \$148.9 |
| 2007 | 18.2% | 26.0% | \$1.44 | \$2.11 | \$1.31 | \$2,932.8 | \$259.6 |
| 2008 | -7.6% | 23.1% | \$1.33 | \$2.60 | \$1.19 | (\$1,128.7) | \$179.2 |
| 2009 | -20.6% | -42.7% | \$1.05 | \$1.49 | \$1.01 | (\$2,429.8) | (\$156.2) |
| 2010 | 13.9% | -0.1% | \$1.20 | \$1.49 | \$1.17 | \$1,850.6 | (\$0.4) |
| 2011 | 20.1% | 49.8% | \$1.44 | \$2.23 | \$1.39 | \$3,175.1 | \$180.1 |
| 2012 | 0.7% | -10.0% | \$1.45 | \$2.01 | \$1.42 | \$94.9 | (\$20.1) |
| 2013 | 6.0% | 15.0% | \$1.54 | \$2.31 | \$1.51 | \$871.4 | \$27.5 |
| Total | | | | | | \$8,050.4 | \$829.1 |

IOWA

Iowa Teachers' Employees' Retirement System

The Iowa Teachers' Retirement System provides pension benefits for all public school employees in the State. The System's membership, including retirees and beneficiaries, and current employees both vested and non-vested, averaged 152,281 over FYs 2005-2013, and the monthly pension payments paid to its qualified retirees and beneficiaries averaged \$1,303.

**Table A-IA-1: Iowa Teachers' Retirement System,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013¹⁰⁷**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|----------------|----------------------------|------------------|--------------------|----------------|----------------------------------|
| 2005 | 39,277 | 79,392 | N/A | 118,669 | \$1,335 |
| 2006 | 42,642 | 84,600 | N/A | 127,242 | \$1,445 |
| 2007 | 43,951 | 85,493 | N/A | 129,444 | \$1,570 |
| 2008 | 45,223 | 86,761 | N/A | 131,984 | \$1,552 |
| 2009 | 46,171 | 86,183 | 34,347 | 166,702 | \$1,100 |
| 2010 | 48,188 | 85,202 | 33,699 | 167,088 | \$1,111 |
| 2011 | 50,366 | 84,062 | 33,717 | 168,145 | \$1,231 |
| 2012 | 54,064 | 87,077 | 36,565 | 177,706 | \$1,308 |
| 2013 | 56,209 | 88,435 | 38,902 | 183,545 | \$1,316 |
| Average | 47,343 | 85,245 | 35,446 | 152,281 | \$1,330 |

¹⁰⁶ Iowa Public Employees' Retirement System, Comprehensive Annual Financial Report; S&P's; and author's estimates.

¹⁰⁷ Iowa Public Employees' Retirement System, Comprehensive Annual Financial Report.

The public school pension fund's investments are well diversified. Domestic equities accounted for an average of 27.3 percent of total holdings. Investments in energy companies, more than 98 percent in oil and gas companies, are estimated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for an average of 3.1 percent of total assets over this period.

**Table A-IA-2: Iowa Teachers' Retirement System,
Asset Allocation, FYs 2005-2013¹⁰⁸**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|---------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 33.3% | 3.1% | 14.6% | 34.4% | 17.7% |
| 2006 | 100.0% | 30.7% | 3.0% | 15.6% | 33.1% | 20.6% |
| 2007 | 100.0% | 29.7% | 3.8% | 15.6% | 32.5% | 22.2% |
| 2008 | 100.0% | 24.8% | 3.3% | 14.4% | 35.0% | 25.8% |
| 2009 | 100.0% | 21.2% | 2.4% | 13.4% | 35.7% | 29.8% |
| 2010 | 100.0% | 25.2% | 3.0% | 13.5% | 33.4% | 27.9% |
| 2011 | 100.0% | 27.3% | 3.4% | 15.1% | 27.5% | 30.0% |
| 2012 | 100.0% | 26.2% | 2.9% | 13.7% | 27.8% | 32.2% |
| 2013 | 100.0% | 27.7% | 2.8% | 14.9% | 25.9% | 31.5% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$9,249.0 | \$3,079.9 | \$286.4 | \$1,350.4 | \$3,181.7 | \$1,637.1 |
| 2006 | \$10,572.2 | \$3,245.7 | \$318.1 | \$1,649.3 | \$3,499.4 | \$2,177.9 |
| 2007 | \$11,994.0 | \$3,562.2 | \$459.5 | \$1,871.1 | \$3,898.1 | \$2,662.7 |
| 2008 | \$11,555.2 | \$2,865.7 | \$381.1 | \$1,663.9 | \$4,044.3 | \$2,981.2 |
| 2009 | \$9,247.7 | \$1,957.7 | \$225.1 | \$1,235.5 | \$3,301.4 | \$2,753.0 |
| 2010 | \$10,212.4 | \$2,571.5 | \$308.6 | \$1,377.6 | \$3,409.9 | \$2,853.3 |
| 2011 | \$12,111.4 | \$3,311.3 | \$407.3 | \$1,833.7 | \$3,335.5 | \$3,631.0 |
| 2012 | \$12,459.3 | \$3,266.8 | \$360.7 | \$1,710.7 | \$3,467.4 | \$4,014.4 |
| 2013 | \$13,427.6 | \$3,724.8 | \$381.4 | \$2,003.4 | \$3,472.4 | \$4,227.0 |

Using the public school pension system's annual returns, we calculate that \$1.00 invested in the System in July 2004 grew to \$1.85 in June 2013 (the fiscal year ends on June 31). During this period, \$1.00 invested in energy stocks grew to \$2.31. If the System had not invested in oil and natural gas stocks, \$1.00 invested in July 2004 would have grown to \$1.79 in 2013. We also estimate the annual capital gains and losses for the public school pension system's entire portfolio and the portion invested in oil and natural gas stocks. In this period, the System's net gains totaled \$8.16 billion, including \$512 million in net gains from investments in oil and natural gas stocks. The System's oil and natural gas investments, which accounted for 3.1 percent of total assets, provided 6.3 percent of its total gains.

¹⁰⁸ *Ibid.*, S&P's; and author's estimates.

**Table A-IA-3: Iowa Teachers' Retirement System,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹⁰⁹**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|--------------------|------------------------------------|--|---|---|---|---|--|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 11.3% | 36.8% | \$1.11 | \$1.37 | \$1.07 | \$1,045.1 | \$105.3 |
| 2006 | 11.1% | 22.5% | \$1.24 | \$1.68 | \$1.19 | \$1,173.5 | \$71.7 |
| 2007 | 16.3% | 26.0% | \$1.44 | \$2.11 | \$1.36 | \$1,955.0 | \$119.6 |
| 2008 | -1.3% | 23.1% | \$1.42 | \$2.60 | \$1.33 | (\$150.2) | \$88.0 |
| 2009 | -16.3% | -42.7% | \$1.19 | \$1.49 | \$1.15 | (\$1,507.4) | (\$96.1) |
| 2010 | 13.8% | -0.1% | \$1.35 | \$1.49 | \$1.31 | \$1,411.3 | (\$0.4) |
| 2011 | 19.9% | 49.8% | \$1.62 | \$2.23 | \$1.55 | \$2,411.4 | \$203.0 |
| 2012 | 3.7% | -10.0% | \$1.68 | \$2.01 | \$1.62 | \$464.7 | (\$36.2) |
| 2013 | 10.1% | 15.0% | \$1.85 | \$2.31 | \$1.79 | \$1,358.9 | \$57.0 |
| Total | | | | | | \$8,162.4 | \$511.9 |

Iowa Public Employees' Retirement System

The Iowa Public Employees' Retirement System provides retirement, survivor and disability benefits to state government employees. The System's members averaged 43.098 over the FYs 2005-2013. The monthly pension payments to qualified retirees and beneficiaries averaged \$1,635 per-month over this period.

**Table A-IA-4: Iowa Public Employees' Retirement System,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013¹¹⁰**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|--------------------|-----------------------------------|-------------------------|---------------------------|---------------|---|
| 2005 | 11,977 | 24,209 | N/A | 36,186 | \$1,560 |
| 2006 | 12,568 | 24,935 | N/A | 37,503 | \$1,463 |
| 2007 | 12,891 | 25,076 | N/A | 37,967 | \$1,936 |
| 2008 | 13,514 | 25,927 | N/A | 39,441 | \$1,901 |
| 2009 | 13,794 | 25,747 | 10,261 | 49,802 | \$1,412 |
| 2010 | 13,964 | 24,691 | 9,766 | 48,421 | \$1,354 |
| 2011 | 14,685 | 24,510 | 9,832 | 49,027 | \$1,564 |
| 2012 | 13,639 | 21,967 | 9,224 | 44,830 | \$1,705 |
| 2013 | 13,691 | 21,541 | 9,476 | 44,708 | \$1,818 |
| Average | 13,414 | 24,289 | 9,712 | 43,098 | \$1,635 |

¹⁰⁹ Iowa Public Employees' Retirement System, Comprehensive Annual Financial Report; S&P's; and author's estimates.

¹¹⁰ Iowa Public Employees' Retirement System, Comprehensive Annual Financial Report.

The state employees' pension system's investments are quite well diversified. Domestic equities accounted for an average of 27.3 percent of all assets. Investments in the energy sector, more than 98 percent in oil and gas companies, are calculated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for between 2.4 percent and 3.8 percent of the System's total assets over this period.

**Table A-IA-5: Iowa Public Employees' Retirement System,
Asset Allocation, FYs 2005-2013¹¹¹**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 33.3% | 3.1% | 14.6% | 34.4% | 17.7% |
| 2006 | 100.0% | 30.7% | 3.0% | 15.6% | 33.1% | 20.6% |
| 2007 | 100.0% | 29.7% | 3.8% | 15.6% | 32.5% | 22.2% |
| 2008 | 100.0% | 24.8% | 3.3% | 14.4% | 35.0% | 25.8% |
| 2009 | 100.0% | 21.2% | 2.4% | 13.4% | 35.7% | 29.8% |
| 2010 | 100.0% | 25.2% | 3.0% | 13.5% | 33.4% | 27.9% |
| 2011 | 100.0% | 27.3% | 3.4% | 15.1% | 27.5% | 30.0% |
| 2012 | 100.0% | 26.2% | 2.9% | 13.7% | 27.8% | 32.2% |
| 2013 | 100.0% | 27.7% | 2.8% | 14.9% | 25.9% | 31.5% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$2,820.3 | \$939.2 | \$87.3 | \$411.8 | \$970.2 | \$499.2 |
| 2006 | \$3,116.1 | \$956.6 | \$93.8 | \$486.1 | \$1,031.4 | \$641.9 |
| 2007 | \$3,518.0 | \$1,044.8 | \$134.8 | \$548.8 | \$1,143.4 | \$781.0 |
| 2008 | \$3,453.1 | \$856.4 | \$113.9 | \$497.2 | \$1,208.6 | \$890.9 |
| 2009 | \$2,762.7 | \$584.9 | \$67.3 | \$369.1 | \$986.3 | \$822.5 |
| 2010 | \$2,959.5 | \$745.2 | \$89.4 | \$399.2 | \$988.2 | \$826.9 |
| 2011 | \$3,531.3 | \$965.5 | \$118.8 | \$534.6 | \$972.5 | \$1,058.7 |
| 2012 | \$3,143.1 | \$824.1 | \$91.0 | \$431.5 | \$874.7 | \$1,012.7 |
| 2013 | \$3,270.7 | \$907.3 | \$92.9 | \$488.0 | \$845.8 | \$1,029.6 |

Using the System's reported returns, we calculate that \$1.00 invested in the System in July 2004 grew to \$1.85 in June 2013 (the fiscal year ends on June 30). During this period, \$1.00 invested in the System's oil and gas stocks grew to \$2.31. If the System had not invested in oil and natural gas stocks, \$1.00 invested in June 2004 would have grown to \$1.79 in June 2013. We next estimate the capital gains and losses of the System's assets and the portion invested in oil and natural gas stocks. For this period, the System's net gains were \$2.3 billion, including \$150 million from investments in oil and natural gas. Oil and natural gas investments, which accounted for 3.1 percent of the System's total assets, provided 6.5 percent of its total gains.

¹¹¹ *Ibid.*, and S&P's; and author's estimates.

**Table A-IA-6: Iowa Public Employees' Retirement System,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹¹²**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|---------------|-----------------------------|---|--|--|--|--|---|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 11.3% | 36.8% | \$1.11 | \$1.37 | \$1.07 | \$318.7 | \$32.1 |
| 2006 | 11.1% | 22.5% | \$1.24 | \$1.68 | \$1.19 | \$345.9 | \$21.1 |
| 2007 | 16.3% | 26.0% | \$1.44 | \$2.11 | \$1.36 | \$573.4 | \$35.1 |
| 2008 | -1.3% | 23.1% | \$1.42 | \$2.60 | \$1.33 | (\$44.9) | \$26.3 |
| 2009 | -16.3% | -42.7% | \$1.19 | \$1.49 | \$1.15 | (\$450.3) | (\$28.7) |
| 2010 | 13.8% | -0.1% | \$1.35 | \$1.49 | \$1.31 | \$409.0 | (\$0.1) |
| 2011 | 19.9% | 49.8% | \$1.62 | \$2.23 | \$1.55 | \$703.1 | \$59.2 |
| 2012 | 3.7% | -10.0% | \$1.68 | \$2.01 | \$1.62 | \$117.2 | (\$9.1) |
| 2013 | 10.1% | 15.0% | \$1.85 | \$2.31 | \$1.79 | \$331.0 | \$13.9 |
| Total | | | | | | \$2,303.1 | \$149.7 |

MICHIGAN

Michigan Public School Employees' Retirement System

The Michigan Public School Employees' Retirement System (MPERS) provides pension benefits for all public school employees in the State. The System's membership averaged 456,648 over FYs 2005-2013, and the monthly pension payments averaged \$1,625.

**Table A-MI-1: Michigan Public School Employees' Retirement System,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013¹¹³**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|----------------|----------------------------|------------------|--------------------|----------------|----------------------------------|
| 2005 | 151,706 | 316,151 | 16,806 | 484,663 | \$1,453 |
| 2006 | 157,163 | 305,445 | 15,739 | 478,347 | \$1,500 |
| 2007 | 162,844 | 295,984 | 14,999 | 473,827 | \$1,542 |
| 2008 | 167,265 | 278,642 | 14,312 | 460,219 | \$1,580 |
| 2009 | 171,922 | 268,208 | 14,454 | 454,584 | \$1,617 |
| 2010 | 187,722 | 242,568 | 15,026 | 445,316 | \$1,693 |
| 2011 | 192,435 | 236,660 | 15,090 | 444,185 | \$1,727 |
| 2012 | 196,661 | 223,769 | 16,167 | 436,597 | \$1,752 |
| 2013 | 200,952 | 214,906 | 16,235 | 432,093 | \$1,758 |
| Average | 176,519 | 264,704 | 15,425 | 456,648 | \$1,625 |

¹¹² Iowa Public Employees Retirement System, Comprehensive Annual Financial Report; S&P's; and author's estimates.

¹¹³ Michigan Public School Employees Retirement System, Comprehensive Annual Financial Report.

The public school employees' pension fund's investments are well diversified. Domestic equities accounted for an average of 37.8 percent of total holdings. Investments in energy companies, more than 98 percent in oil and gas companies, are estimated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for an average of 4.2 percent of total assets over this period.

**Table A-MI-2: Michigan Public School Employees' Retirement System,
Asset Allocation, FYs 2005-2013¹¹⁴**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | Internationa l Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|------------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 48.5% | 4.8% | 12.3% | 16.4% | 22.8% |
| 2006 | 100.0% | 48.4% | 4.6% | 12.2% | 16.3% | 23.1% |
| 2007 | 100.0% | 47.0% | 5.3% | 11.3% | 16.4% | 25.3% |
| 2008 | 100.0% | 42.1% | 5.1% | 8.9% | 17.2% | 31.8% |
| 2009 | 100.0% | 36.5% | 4.1% | 12.6% | 18.8% | 32.1% |
| 2010 | 100.0% | 35.2% | 4.2% | 13.4% | 16.5% | 34.9% |
| 2011 | 100.0% | 28.5% | 3.5% | 12.4% | 15.1% | 44.0% |
| 2012 | 100.0% | 26.8% | 3.0% | 13.8% | 13.0% | 46.4% |
| 2013 | 100.0% | 27.0% | 2.8% | 14.8% | 12.1% | 46.1% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$42,205.9 | \$20,469.9 | \$2,025.9 | \$5,191.3 | \$6,921.8 | \$9,622.9 |
| 2006 | \$43,145.6 | \$20,882.5 | \$1,984.7 | \$5,263.8 | \$7,032.7 | \$9,966.6 |
| 2007 | \$48,938.4 | \$23,001.0 | \$2,593.7 | \$5,530.0 | \$8,025.9 | \$12,381.4 |
| 2008 | \$41,339.6 | \$17,404.0 | \$2,108.3 | \$3,679.2 | \$7,110.4 | \$13,146.0 |
| 2009 | \$36,437.5 | \$13,299.7 | \$1,493.9 | \$4,591.1 | \$6,850.3 | \$11,696.4 |
| 2010 | \$37,568.3 | \$13,224.1 | \$1,586.9 | \$5,034.2 | \$6,198.8 | \$13,111.4 |
| 2011 | \$37,156.1 | \$10,589.5 | \$1,302.5 | \$4,607.4 | \$5,610.6 | \$16,348.7 |
| 2012 | \$40,410.3 | \$10,830.0 | \$1,195.6 | \$5,576.6 | \$5,253.3 | \$18,750.4 |
| 2013 | \$43,220.8 | \$11,669.6 | \$1,195.0 | \$6,396.7 | \$5,229.7 | \$19,924.8 |

Using the public school pension system's annual returns, we calculate that \$1.00 invested in the System in October 2004 grew to \$1.82 in September 2009 (fiscal year ends September 30). In this period, \$1.00 invested in the S&P Energy Sector grew to \$2.18. If the System had not invested in oil and natural gas, \$1.00 invested in 2004 would have grown to \$1.76 in 2013. We also estimate the capital gains and losses of the public school pension system's portfolio and its oil and natural gas stocks. Over this period, the System's net gains totaled nearly \$28.7 billion, including nearly \$2.0 billion in net gains from investments in the oil and natural gas sector. The System's oil and natural gas investments, which accounted for 4.2 percent of its total assets, provided 6.9 percent of its total gains. (Table A-MI-3)

¹¹⁴ *Ibid.*, S&P's; and author's estimates.

**Table A-MI-3: Michigan Public School Employees' Retirement System,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹¹⁵**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 10/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 10/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 10/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|--------------------|------------------------------------|--|--|--|--|---|--|
| 10/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 12.8% | 45.9% | \$1.13 | \$1.46 | \$1.06 | \$5,402.4 | \$929.1 |
| 2006 | 12.8% | 1.8% | \$1.27 | \$1.49 | \$1.20 | \$5,522.6 | \$36.5 |
| 2007 | 17.2% | 40.9% | \$1.49 | \$2.09 | \$1.38 | \$8,417.4 | \$1,059.8 |
| 2008 | -12.3% | -15.6% | \$1.31 | \$1.77 | \$1.22 | (\$5,084.8) | (\$327.9) |
| 2009 | -6.1% | -16.4% | \$1.23 | \$1.48 | \$1.17 | (\$2,222.7) | (\$244.4) |
| 2010 | 8.8% | 2.4% | \$1.34 | \$1.51 | \$1.27 | \$3,306.0 | \$38.6 |
| 2011 | 6.6% | 5.6% | \$1.42 | \$1.60 | \$1.37 | \$2,452.3 | \$73.1 |
| 2012 | 13.5% | 24.5% | \$1.62 | \$1.99 | \$1.56 | \$5,455.4 | \$292.7 |
| 2013 | 12.5% | 9.7% | \$1.82 | \$2.18 | \$1.76 | \$5,402.6 | \$116.4 |
| Total | | | | | | \$28,651.2 | \$1,973.8 |

Michigan State Employees' Retirement System

The Michigan State Employees' Retirement System (MSERS) provides retirement, survivor and disability benefits to the state government employees. The System's total membership includes averaged 82,919 over this period, and the average monthly pension payment to qualified retirees and beneficiaries was \$1,531 per-month over FYs 2005-2013.

**Table A-MI-4: Michigan State Employees' Retirement System,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013¹¹⁶**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|--------------------|-----------------------------------|-------------------------|---------------------------|---------------|---|
| 2005 | 45,801 | 33,770 | 7,200 | 86,771 | \$1,360 |
| 2006 | 45,980 | 32,575 | 7,217 | 85,772 | \$1,394 |
| 2007 | 46,886 | 30,864 | 6,663 | 84,413 | \$1,425 |
| 2008 | 48,078 | 28,568 | 6,912 | 83,558 | \$1,460 |
| 2009 | 49,029 | 27,455 | 6,613 | 83,097 | \$1,497 |
| 2010 | 50,462 | 25,478 | 6,243 | 82,183 | \$1,543 |
| 2011 | 55,648 | 19,650 | 6,094 | 81,392 | \$1,668 |
| 2012 | 56,288 | 18,376 | 5,755 | 80,419 | \$1,693 |
| 2013 | 56,854 | 16,912 | 4,897 | 78,663 | \$1,741 |
| Average | 50,558 | 25,961 | 6,399 | 82,919 | \$1,531 |

¹¹⁵ Michigan Public School Employees Retirement System, Comprehensive Annual Financial Report; S&P's; and author's estimates.

¹¹⁶ Michigan State Employees' Retirement System, Comprehensive Annual Financial Report.

The state employees' pension system's investments are well diversified across and within asset classes. Domestic equities accounted for an average of 37.8 percent of all assets. Investments in the energy sector, more than 98 percent in oil and gas companies, are calculated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for between 2.8 percent and 5.3 percent of the System's total assets over this period.

**Table A-MI-5: Michigan State Employees' Retirement System,
Asset Allocation, FYs 2005-2013¹¹⁷**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 48.9% | 4.8% | 11.8% | 16.0% | 23.3% |
| 2006 | 100.0% | 48.5% | 4.6% | 12.3% | 16.3% | 22.9% |
| 2007 | 100.0% | 47.3% | 5.3% | 11.5% | 16.6% | 24.6% |
| 2008 | 100.0% | 41.9% | 5.1% | 9.0% | 16.7% | 32.4% |
| 2009 | 100.0% | 36.6% | 4.1% | 12.9% | 18.4% | 32.1% |
| 2010 | 100.0% | 35.0% | 4.2% | 13.6% | 16.0% | 35.4% |
| 2011 | 100.0% | 28.1% | 3.5% | 12.7% | 15.2% | 44.0% |
| 2012 | 100.0% | 26.6% | 2.9% | 14.2% | 13.2% | 46.0% |
| 2013 | 100.0% | 27.1% | 2.8% | 14.8% | 12.1% | 46.0% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$10,058.9 | \$4,918.8 | \$482.8 | \$1,187.0 | \$1,609.4 | \$2,343.7 |
| 2006 | \$10,835.9 | \$5,255.4 | \$498.5 | \$1,332.8 | \$1,766.3 | \$2,481.4 |
| 2007 | \$12,041.2 | \$5,695.5 | \$638.2 | \$1,384.7 | \$1,998.8 | \$2,962.1 |
| 2008 | \$10,183.3 | \$4,266.8 | \$519.3 | \$916.5 | \$1,700.6 | \$3,299.4 |
| 2009 | \$8,920.2 | \$3,264.8 | \$365.7 | \$1,150.7 | \$1,641.3 | \$2,863.4 |
| 2010 | \$9,249.2 | \$3,237.2 | \$388.5 | \$1,257.9 | \$1,479.9 | \$3,274.2 |
| 2011 | \$8,857.6 | \$2,489.0 | \$306.1 | \$1,124.9 | \$1,346.4 | \$3,897.4 |
| 2012 | \$9,727.8 | \$2,587.6 | \$285.7 | \$1,381.3 | \$1,284.1 | \$4,474.8 |
| 2013 | \$10,656.8 | \$2,888.0 | \$295.7 | \$1,577.2 | \$1,289.5 | \$4,902.1 |

Using the System's reported annual returns, we calculate that \$1.00 invested in the System in October 2004 grew to \$1.81 in September 2013 (the fiscal year ends on September 30). During this period, \$1.00 invested in the S&P Energy Sector grew to \$2.18. If the System had not invested in oil and natural gas stocks, \$1.00 invested in October 2004 would have grown to \$1.75 in FY 2013. We next estimate the annual capital gains and losses of the System's assets and the portion invested in oil and natural gas stocks. Over this period, the System's net gains totaled more than \$6.9 billion, including \$476 million in net gains from investments in the oil and natural gas sector. The oil and natural gas investments, which accounted for about 4.1 percent of the System's total assets, provided 6.9 percent of the System's total gains.

¹¹⁷ *Ibid.*, and S&P's; and author's estimates.

**Table A-MI-6: Michigan State Employees' Retirement System,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹¹⁸**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 10/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 10/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 10/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|--------------------|------------------------------------|--|--|--|--|---|--|
| 10/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 12.8% | 45.9% | \$1.13 | \$1.46 | \$1.06 | \$1,287.5 | \$221.4 |
| 2006 | 12.8% | 1.8% | \$1.27 | \$1.49 | \$1.20 | \$1,387.0 | \$9.2 |
| 2007 | 17.2% | 40.9% | \$1.49 | \$2.09 | \$1.38 | \$2,071.1 | \$260.8 |
| 2008 | -12.3% | -15.6% | \$1.31 | \$1.77 | \$1.22 | (\$1,252.5) | (\$80.8) |
| 2009 | -6.1% | -16.4% | \$1.23 | \$1.48 | \$1.17 | (\$544.1) | (\$59.8) |
| 2010 | 8.5% | 2.4% | \$1.33 | \$1.51 | \$1.27 | \$786.2 | \$9.5 |
| 2011 | 6.5% | 5.6% | \$1.42 | \$1.60 | \$1.36 | \$575.7 | \$17.2 |
| 2012 | 13.4% | 24.5% | \$1.61 | \$1.99 | \$1.55 | \$1,303.5 | \$69.9 |
| 2013 | 12.5% | 9.7% | \$1.81 | \$2.18 | \$1.75 | \$1,332.1 | \$28.8 |
| Total | | | | | | \$6,946.5 | \$476.1 |

MINNESOTA

Minnesota Teachers' Retirement Association

The Minnesota Teachers' Retirement Association provides pension benefits for all public school employees in the State. Its membership averaged 162,472 over FYs 2005-2013, and its monthly pension payments averaged \$2,329.

**Table A-MN-1: Minnesota Teachers' Retirement Association,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013¹¹⁹**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|--------------------|-----------------------------------|-------------------------|---------------------------|----------------|---|
| 2005 | 38,957 | 74,552 | 29,031 | 142,540 | \$2,424 |
| 2006 | 44,683 | 79,164 | 33,729 | 157,576 | \$2,422 |
| 2007 | 46,538 | 77,694 | 35,550 | 159,782 | \$2,465 |
| 2008 | 46,981 | 76,515 | 34,283 | 157,779 | \$2,524 |
| 2009 | 50,208 | 77,162 | 35,563 | 162,933 | \$2,144 |
| 2010 | 51,853 | 77,356 | 36,407 | 165,616 | \$2,177 |
| 2011 | 53,537 | 76,755 | 38,433 | 168,725 | \$2,277 |
| 2012 | 55,425 | 76,649 | 39,792 | 171,866 | \$2,258 |
| 2013 | 57,168 | 76,765 | 41,495 | 175,428 | \$2,268 |
| Average | 49,483 | 76,957 | 36,031 | 162,472 | \$2,329 |

¹¹⁸ Michigan State Employees' Retirement System, Comprehensive Annual Financial Report; S&P's; and author's estimates.

¹¹⁹ Minnesota Teachers Retirement Association, Comprehensive Annual Financial Report.

The public school pension association's investments are well diversified. Domestic equities accounted for the largest share of assets averaging 46.7 percent of total holdings. Investments in energy companies, more than 98 percent in oil and gas companies, are estimated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for an average of 5.3 percent of total assets over this period.

**Table A-MN-2: Minnesota Teachers' Retirement Association,
Asset Allocation, FYs 2005-2013¹²⁰**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 50.6% | 4.7% | 15.0% | 24.1% | 10.3% |
| 2006 | 100.0% | 48.1% | 4.7% | 15.6% | 23.4% | 12.9% |
| 2007 | 100.0% | 49.5% | 6.4% | 16.4% | 22.8% | 11.3% |
| 2008 | 100.0% | 49.5% | 6.6% | 16.4% | 22.8% | 11.3% |
| 2009 | 100.0% | 44.6% | 5.1% | 16.3% | 22.3% | 16.8% |
| 2010 | 100.0% | 42.3% | 5.1% | 15.5% | 24.9% | 17.3% |
| 2011 | 100.0% | 45.0% | 5.5% | 15.8% | 22.2% | 17.0% |
| 2012 | 100.0% | 45.2% | 5.0% | 14.9% | 22.3% | 17.6% |
| 2013 | 100.0% | 45.1% | 4.6% | 14.9% | 23.0% | 17.0% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$15,900.0 | \$8,045.4 | \$748.2 | \$2,385.0 | \$3,831.9 | \$1,637.7 |
| 2006 | \$17,760.0 | \$8,542.6 | \$837.2 | \$2,770.6 | \$4,155.8 | \$2,291.0 |
| 2007 | \$19,860.0 | \$9,830.7 | \$1,268.2 | \$3,257.0 | \$4,528.1 | \$2,244.2 |
| 2008 | \$18,050.0 | \$8,934.8 | \$1,188.3 | \$2,960.2 | \$4,115.4 | \$2,039.7 |
| 2009 | \$13,819.6 | \$6,163.5 | \$708.8 | \$2,252.6 | \$3,081.8 | \$2,321.7 |
| 2010 | \$14,933.3 | \$6,316.8 | \$758.0 | \$2,314.7 | \$3,718.4 | \$2,583.5 |
| 2011 | \$17,291.8 | \$7,781.3 | \$957.1 | \$2,732.1 | \$3,838.8 | \$2,939.6 |
| 2012 | \$16,673.1 | \$7,536.3 | \$832.0 | \$2,484.3 | \$3,718.1 | \$2,934.5 |
| 2013 | \$17,995.4 | \$8,115.9 | \$831.1 | \$2,681.3 | \$4,139.0 | \$3,059.2 |

Using the public school pension Association's reported returns, we calculate that \$1.00 invested in July 2004 grew to \$1.88 in June 2013 (the fiscal year ends on June 30). Over this period, \$1.00 invested in the S&P Energy Sector grew to \$2.31. If the Association had not invested in oil and natural gas stocks, \$1.00 invested in July 2004 would have grown to \$1.78 in FY 2013. We also estimate the capital gains and losses of the public school pension association's portfolio and for the portion invested in oil and natural gas stocks. Over this period, the Association's net gains totaled nearly \$13.3 billion, including \$1.3 billion in net gains from investments in the oil and natural gas sector. The Association's oil and natural gas investments, which accounted for 5.3 percent of its total assets, provided 9.7 percent of its total gains.

¹²⁰ *Ibid.*, S&P's; and author's estimates.

**Table A-MN-3: Minnesota Teachers' Retirement Association,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹²¹**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|---------------|-----------------------------|---|--|--|--|--|---|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 10.7% | 36.8% | \$1.11 | \$1.37 | \$1.04 | \$1,701.3 | \$275.0 |
| 2006 | 12.3% | 22.5% | \$1.24 | \$1.68 | \$1.16 | \$2,184.5 | \$188.8 |
| 2007 | 18.3% | 26.0% | \$1.47 | \$2.11 | \$1.34 | \$3,634.4 | \$329.9 |
| 2008 | -5.0% | 23.1% | \$1.40 | \$2.60 | \$1.23 | (\$902.5) | \$274.3 |
| 2009 | -18.8% | -42.7% | \$1.13 | \$1.49 | \$1.06 | (\$2,598.1) | (\$302.4) |
| 2010 | 15.2% | -0.1% | \$1.31 | \$1.49 | \$1.23 | \$2,269.9 | (\$1.0) |
| 2011 | 23.3% | 49.8% | \$1.61 | \$2.23 | \$1.49 | \$4,029.0 | \$477.1 |
| 2012 | 2.4% | -10.0% | \$1.65 | \$2.01 | \$1.55 | \$400.2 | (\$83.6) |
| 2013 | 14.2% | 15.0% | \$1.88 | \$2.31 | \$1.78 | \$2,555.4 | \$124.3 |
| Total | | | | | | \$13,273.9 | \$1,282.5 |

Minnesota Public Employees' Retirement Association

The Minnesota Public Employees' Retirement Association provides retirement, survivor and disability benefits to state government employees. The Association's membership in this period averaged 274,809, including inactive employees still enrolled in the system. The monthly pension for qualified retirees and beneficiaries averaged \$1,098 per-month over this period.

**Table A-MN-4: Minnesota Public Employees' Retirement Association,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013¹²²**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|----------------|----------------------------|------------------|--------------------|----------------|----------------------------------|
| 2005 | 56,650 | 142,303 | N/A | 198,953 | \$1,061 |
| 2006 | 59,078 | 144,244 | N/A | 203,322 | \$1,065 |
| 2007 | 61,436 | 146,226 | N/A | 207,662 | \$1,076 |
| 2008 | 63,880 | 143,562 | N/A | 207,442 | \$1,090 |
| 2009 | 66,059 | 143,353 | 121,690 | 331,102 | \$1,103 |
| 2010 | 68,474 | 140,389 | 126,027 | 334,890 | \$1,119 |
| 2011 | 71,821 | 139,952 | 109,630 | 321,403 | \$1,119 |
| 2012 | 75,535 | 139,330 | 115,287 | 330,152 | \$1,120 |
| 2013 | 79,083 | 139,763 | 119,509 | 338,355 | \$1,125 |
| Average | 66,891 | 142,125 | 118,429 | 274,809 | \$1,098 |

¹²¹ Minnesota Teachers Retirement Association, Comprehensive Annual Financial Report; S&P's; and author's estimates.

¹²² Public Employees Retirement Association of Minnesota, Comprehensive Annual Financial Report.

The state employees' pension system's investments are well diversified: Domestic equities accounted for the largest share, averaging 46.7 percent of all assets. Investments in the energy sector, more than 98 percent in oil and gas companies, are calculated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for between 4.6 percent and 6.6 percent of the System's total assets over this period.

**Table A-MN-5: Minnesota Public Employees' Retirement Association,
Asset Allocation, FYs 2005-2013¹²³**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 50.6% | 4.7% | 15.0% | 24.1% | 10.3% |
| 2006 | 100.0% | 48.1% | 4.7% | 15.6% | 23.4% | 12.9% |
| 2007 | 100.0% | 49.5% | 6.4% | 16.4% | 22.8% | 11.3% |
| 2008 | 100.0% | 49.5% | 6.6% | 16.4% | 22.8% | 11.3% |
| 2009 | 100.0% | 44.6% | 5.1% | 16.3% | 22.3% | 16.8% |
| 2010 | 100.0% | 42.3% | 5.1% | 15.5% | 24.9% | 17.3% |
| 2011 | 100.0% | 45.0% | 5.5% | 15.8% | 22.2% | 17.0% |
| 2012 | 100.0% | 45.2% | 5.0% | 14.9% | 22.3% | 17.6% |
| 2013 | 100.0% | 45.1% | 4.6% | 14.9% | 23.0% | 17.0% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$10,728.1 | \$5,428.4 | \$504.8 | \$1,609.2 | \$2,585.5 | \$1,105.0 |
| 2006 | \$11,798.0 | \$5,674.8 | \$556.1 | \$1,840.5 | \$2,760.7 | \$1,521.9 |
| 2007 | \$13,727.8 | \$6,795.3 | \$876.6 | \$2,251.4 | \$3,129.9 | \$1,551.2 |
| 2008 | \$12,760.6 | \$6,316.5 | \$840.1 | \$2,092.7 | \$2,909.4 | \$1,441.9 |
| 2009 | \$10,152.7 | \$4,528.1 | \$520.7 | \$1,654.9 | \$2,264.0 | \$1,705.7 |
| 2010 | \$11,330.6 | \$4,792.8 | \$575.1 | \$1,756.2 | \$2,821.3 | \$1,960.2 |
| 2011 | \$13,601.3 | \$6,120.6 | \$752.8 | \$2,149.0 | \$3,019.5 | \$2,312.2 |
| 2012 | \$13,555.0 | \$6,126.8 | \$676.4 | \$2,019.7 | \$3,022.8 | \$2,385.7 |
| 2013 | \$15,064.6 | \$6,794.1 | \$695.7 | \$2,244.6 | \$3,464.9 | \$2,561.0 |

Using the Association's annual returns, we calculate that \$1.00 invested in the system in July 2004 grew to \$1.88 in June 2013 (the fiscal year ends on June 30). Over this period, \$1.00 invested in the S&P Energy Sector grew to \$2.31. If the Association had not invested in oil and natural gas stocks, \$1.00 invested in FY 2005 would have grown to \$1.78 by FY 2013. We next estimate the capital gains and losses of the Association's assets and the portion invested in oil and natural gas stocks. Over this period, the system's net gains totaled more than \$9.9 billion, including \$921 million in net gains from investments in the oil and natural gas sector. The oil and natural gas investments, which accounted for 5.3 percent of the System's total assets, provided 9.3 percent of the system's total gains.

¹²³ *Ibid.*, and S&P's; and author's estimates.

**Table A-MN-6: Minnesota Public Employees' Retirement Association,
Returns and Gains for All Assets and Oil and Natural Gas Investments, 2005-2013¹²⁴**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|---------------|-----------------------------|---|--|--|--|--|---|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 10.7% | 36.8% | \$1.11 | \$1.37 | \$1.04 | \$1,147.9 | \$185.6 |
| 2006 | 12.3% | 22.5% | \$1.24 | \$1.68 | \$1.16 | \$1,451.2 | \$125.4 |
| 2007 | 18.3% | 26.0% | \$1.47 | \$2.11 | \$1.34 | \$2,512.2 | \$228.1 |
| 2008 | -5.0% | 23.1% | \$1.40 | \$2.60 | \$1.23 | (\$638.0) | \$193.9 |
| 2009 | -18.8% | -42.7% | \$1.13 | \$1.49 | \$1.06 | (\$1,908.7) | (\$222.2) |
| 2010 | 15.2% | -0.1% | \$1.31 | \$1.49 | \$1.23 | \$1,722.3 | (\$0.7) |
| 2011 | 23.3% | 49.8% | \$1.61 | \$2.23 | \$1.49 | \$3,169.1 | \$375.2 |
| 2012 | 2.4% | -10.0% | \$1.65 | \$2.01 | \$1.55 | \$325.3 | (\$67.9) |
| 2013 | 14.2% | 15.0% | \$1.88 | \$2.31 | \$1.78 | \$2,139.2 | \$104.1 |
| Total | | | | | | \$9,920.4 | \$921.4 |

MISSOURI

Missouri Public School Retirement System

The Missouri Public School Retirement System provides pension benefits covering all public school employees in the State. The System's membership includes retirees and beneficiaries receiving benefits, employees including those vested and non-vested, and inactive employees entitled to benefits but not yet receiving them. The average membership over the years FYs 2005-2009 was 132,988.

**Table A-MO-1: Missouri Public School Retirement System,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013¹²⁵**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|----------------|----------------------------|------------------|--------------------|----------------|----------------------------------|
| 2005 | 36,321 | 73,850 | 11,692 | 121,863 | N/A |
| 2006 | 38,110 | 75,539 | 11,753 | 125,402 | N/A |
| 2007 | 39,828 | 77,121 | 11,607 | 128,556 | N/A |
| 2008 | 41,738 | 78,436 | 11,580 | 131,754 | N/A |
| 2009 | 43,746 | 79,335 | 11,570 | 134,651 | N/A |
| 2010 | 45,467 | 79,256 | 11,159 | 135,882 | N/A |
| 2011 | 48,065 | 77,708 | 11,580 | 137,353 | N/A |
| 2012 | 50,344 | 77,529 | 11,523 | 139,396 | N/A |
| 2013 | 52,306 | 78,076 | 11,649 | 142,031 | N/A |
| Average | 43,992 | 77,428 | 11,568 | 132,988 | N/A |

¹²⁴ Public Employees Retirement Association of Minnesota, Comprehensive Annual Financial Report; S&P's; and author's estimates.

¹²⁵ Public School & Education Employees Retirement System of Missouri.

The System's investments are well diversified. U.S. equities accounted for the largest share of assets, averaging 33.7 percent of all assets. Investments in the oil and natural gas sector are estimated based on the System's asset allocation and benchmarks. Those oil and natural gas investments accounted for between 3.0 percent and 4.3 percent of the System's total assets over this period.

**Table A-MO-2: Missouri Public School Retirement System,
Asset Allocation, FYs 2005-2013¹²⁶**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 39.7% | 3.2% | 17.6% | 30.6% | 12.1% |
| 2006 | 100.0% | 38.5% | 3.5% | 20.4% | 27.9% | 13.2% |
| 2007 | 100.0% | 36.9% | 3.0% | 21.6% | 23.7% | 17.8% |
| 2008 | 100.0% | 34.2% | 3.8% | 19.5% | 20.9% | 25.4% |
| 2009 | 100.0% | 32.3% | 3.6% | 17.8% | 27.0% | 22.9% |
| 2010 | 100.0% | 27.9% | 3.1% | 17.1% | 30.5% | 24.5% |
| 2011 | 100.0% | 30.2% | 3.9% | 17.5% | 25.5% | 26.8% |
| 2012 | 100.0% | 30.5% | 3.7% | 14.8% | 24.3% | 30.4% |
| 2013 | 100.0% | 32.7% | 4.3% | 15.3% | 21.5% | 30.5% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$23,594.2 | \$9,366.9 | \$749.4 | \$4,152.6 | \$7,219.8 | \$2,854.9 |
| 2006 | \$25,458.9 | \$9,801.7 | \$882.2 | \$5,193.6 | \$7,103.0 | \$3,360.6 |
| 2007 | \$29,116.9 | \$10,744.1 | \$859.5 | \$6,289.2 | \$6,900.7 | \$5,182.8 |
| 2008 | \$27,268.4 | \$9,325.8 | \$1,025.8 | \$5,317.3 | \$5,699.1 | \$6,926.2 |
| 2009 | \$21,501.8 | \$6,945.1 | \$764.0 | \$3,827.3 | \$5,805.5 | \$4,923.9 |
| 2010 | \$23,637.8 | \$6,595.0 | \$725.4 | \$4,042.1 | \$7,209.5 | \$5,791.3 |
| 2011 | \$27,929.1 | \$8,434.6 | \$1,096.5 | \$4,887.6 | \$7,121.9 | \$7,485.0 |
| 2012 | \$27,635.7 | \$8,428.9 | \$1,011.5 | \$4,090.1 | \$6,715.5 | \$8,401.2 |
| 2013 | \$30,176.8 | \$9,867.8 | \$1,282.8 | \$4,617.1 | \$6,488.0 | \$9,203.9 |

Using the Missouri Public School Retirement System's reported returns, we find that \$1.00 invested in July 2004 grew to \$1.70 in June 2013 (the fiscal year ends on June 30). Over this period, \$1.00 invested in the S&P Energy Sector grew to \$2.31. If the System had not invested in oil and natural gas stocks, \$1.00 invested in July 2004 would have grown to \$1.60 in June 2013. We also estimate the capital gains and losses from this portfolio: The System's net gains totaled nearly \$17.6 billion, including \$1.2 billion from oil and natural gas investments. These oil and natural gas investments, accounting for 3.6 percent of total assets, provided 7.1 percent of all gains.

¹²⁶ Public School & Education Employees Retirement System of Missouri, Comprehensive Annual Financial Report; S&P's; and author's estimates.

**Table A-MO-3: Missouri Public School Retirement System,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹²⁷**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|---------------|-----------------------------|---|--|--|--|--|---|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 9.2% | 36.8% | \$1.09 | \$1.37 | \$1.05 | \$2,170.7 | \$275.4 |
| 2006 | 9.8% | 22.5% | \$1.20 | \$1.68 | \$1.14 | \$2,495.0 | \$198.9 |
| 2007 | 16.6% | 26.0% | \$1.40 | \$2.11 | \$1.34 | \$4,833.4 | \$223.6 |
| 2008 | -4.6% | 23.1% | \$1.33 | \$2.60 | \$1.24 | (\$1,254.3) | \$236.8 |
| 2009 | -19.3% | -42.7% | \$1.08 | \$1.49 | \$1.02 | (\$4,149.8) | (\$325.9) |
| 2010 | 13.0% | -0.1% | \$1.22 | \$1.49 | \$1.17 | \$3,072.9 | (\$0.9) |
| 2011 | 21.8% | 49.8% | \$1.48 | \$2.23 | \$1.39 | \$6,088.6 | \$546.5 |
| 2012 | 1.9% | -10.0% | \$1.51 | \$2.01 | \$1.44 | \$525.1 | (\$101.6) |
| 2013 | 12.6% | 15.0% | \$1.70 | \$2.31 | \$1.60 | \$3,802.3 | \$191.9 |
| Total | | | | | | \$17,583.7 | \$1,244.7 |

Missouri State Employees' Retirement System

The Missouri State Employees' Retirement System provides retirement, survivor and disability benefits retired employees of the state government. The System's membership averaged 103,453 persons over this period. The pension payments to qualified retirees and beneficiaries averaged \$1,128 per-month over this period.

**Table A-MO-4: Missouri State Employees' Retirement System,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013¹²⁸**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|----------------|----------------------------|------------------|--------------------|----------------|----------------------------------|
| 2005 | 26,117 | 56,336 | 14,789 | 97,242 | \$941 |
| 2006 | 27,450 | 54,887 | 15,829 | 98,166 | \$914 |
| 2007 | 29,129 | 54,763 | 16,578 | 100,470 | \$945 |
| 2008 | 30,572 | 54,943 | 17,123 | 102,638 | \$926 |
| 2009 | 32,100 | 55,454 | 17,304 | 104,858 | \$1,270 |
| 2010 | 33,716 | 53,880 | 17,441 | 105,037 | \$1,281 |
| 2011 | 35,801 | 52,059 | 17,757 | 105,617 | \$1,285 |
| 2012 | 37,796 | 51,730 | 18,075 | 107,601 | \$1,291 |
| 2013 | 39,636 | 51,233 | 18,581 | 109,450 | \$1,300 |
| Average | 32,480 | 53,921 | 17,053 | 103,453 | \$1,128 |

¹²⁷ Public School & Education Employees Retirement System of Missouri, Comprehensive Annual Financial Report; S&P's; and author's estimates.

¹²⁸ Missouri State Employees' Retirement System, Comprehensive Annual Financial Report.

The System's investments are well diversified across and within asset classes. Domestic equities and fixed-income instruments were the two largest classes of investment assets, accounting for an average of 24.0 percent and 29.6 percent, respectively, of the total portfolio. Investments in the energy sector, more than 98 percent in oil and gas companies, were calculated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for an average of 2.6 percent of the System's total assets over this period.

**Table A-MO-5: Missouri State Employees' Retirement System,
Asset Allocation, FYs 2005-2013¹²⁹**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | Internationa l Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|------------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 28.7% | 2.7% | 21.4% | 29.4% | 20.5% |
| 2006 | 100.0% | 28.5% | 2.8% | 23.1% | 28.9% | 19.5% |
| 2007 | 100.0% | 27.7% | 3.6% | 23.9% | 28.1% | 20.3% |
| 2008 | 100.0% | 28.3% | 3.8% | 15.9% | 30.9% | 24.9% |
| 2009 | 100.0% | 28.3% | 3.3% | 19.2% | 29.4% | 23.1% |
| 2010 | 100.0% | 18.7% | 1.6% | 21.6% | 27.3% | 32.4% |
| 2011 | 100.0% | 20.5% | 2.0% | 25.0% | 28.4% | 26.1% |
| 2012 | 100.0% | 22.5% | 2.5% | 23.9% | 28.0% | 25.6% |
| 2013 | 100.0% | 13.0% | 1.3% | 16.0% | 36.1% | 34.9% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$6,475.6 | \$1,855.9 | \$172.6 | \$1,386.4 | \$1,903.3 | \$1,330.1 |
| 2006 | \$7,037.9 | \$2,005.8 | \$196.6 | \$1,625.8 | \$2,034.0 | \$1,372.4 |
| 2007 | \$8,123.3 | \$2,250.1 | \$290.3 | \$1,941.5 | \$2,282.6 | \$1,649.0 |
| 2008 | \$8,020.0 | \$2,269.7 | \$301.9 | \$1,275.2 | \$2,478.2 | \$1,997.0 |
| 2009 | \$6,225.0 | \$1,761.7 | \$202.6 | \$1,195.2 | \$1,830.2 | \$1,438.0 |
| 2010 | \$6,805.9 | \$1,270.2 | \$108.0 | \$1,472.5 | \$1,858.0 | \$2,205.1 |
| 2011 | \$7,846.5 | \$1,608.5 | \$159.2 | \$1,961.6 | \$2,228.4 | \$2,047.9 |
| 2012 | \$7,664.9 | \$1,724.6 | \$190.4 | \$1,831.9 | \$2,146.2 | \$1,962.2 |
| 2013 | \$8,082.5 | \$1,050.1 | \$107.5 | \$1,293.8 | \$2,917.8 | \$2,820.8 |

Using the System's reported returns, \$1.00 invested in the Missouri State Employees' Retirement System in July 2004 grew to \$1.91 in June 2013 (the fiscal year ends on June 30). During this period, \$1.00 invested in the S&P Energy Sector grew to \$2.31. If the System had not invested in oil and gas stocks, \$1.00 invested in 2004 would have grown to \$1.88 in 2013. We also estimate the annual capital gains and losses from the System's total assets and from the portion invested in oil and natural gas stocks. Over this period, the System's net gains totaled \$5.7 billion, including nearly \$243 million in net gains from investments in the oil and natural gas sector. The oil and natural gas investments, which accounted for 2.6 percent of the System's total assets, provided 4.2 percent of its total gains.

¹²⁹ Missouri State Employees' Retirement System, Comprehensive Annual Financial Report; S&P's; and author's estimates.

**Table A-MO-6: Missouri State Employees' Retirement System,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹³⁰**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|--------------------|------------------------------------|--|---|---|---|---|--|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 12.6% | 36.8% | \$1.13 | \$1.37 | \$1.09 | \$815.9 | \$63.4 |
| 2006 | 11.5% | 22.5% | \$1.26 | \$1.68 | \$1.21 | \$809.4 | \$44.3 |
| 2007 | 18.7% | 26.0% | \$1.49 | \$2.11 | \$1.41 | \$1,519.1 | \$75.5 |
| 2008 | 1.6% | 23.1% | \$1.51 | \$2.60 | \$1.42 | \$128.3 | \$69.7 |
| 2009 | -19.1% | -42.7% | \$1.22 | \$1.49 | \$1.18 | (\$1,189.0) | (\$86.4) |
| 2010 | 14.3% | -0.1% | \$1.40 | \$1.49 | \$1.38 | \$973.2 | (\$0.1) |
| 2011 | 21.0% | 49.8% | \$1.69 | \$2.23 | \$1.65 | \$1,647.8 | \$79.4 |
| 2012 | 2.2% | -10.0% | \$1.73 | \$2.01 | \$1.68 | \$168.6 | (\$19.1) |
| 2013 | 10.4% | 15.0% | \$1.91 | \$2.31 | \$1.88 | \$840.6 | \$16.1 |
| Total | | | | | | \$5,713.9 | \$242.7 |

NEBRASKA

Nebraska Public School Employees' Retirement System

The Nebraska Public School Employees' Retirement System provides pension benefits for all public school employees in the State. The System's membership averaged 73,907 over FYs 2005-2013, and the monthly pension payments paid to its qualified retirees and beneficiaries averaged \$1,518.

**Table A-NE-1: Nebraska Public School Employees' Retirement System,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013¹³¹**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|--------------------|-----------------------------------|-------------------------|---------------------------|---------------|---|
| 2005 | 13,052 | 36,042 | 16,924 | 66,018 | \$1,206 |
| 2006 | 13,727 | 36,414 | 17,755 | 67,896 | \$1,295 |
| 2007 | 14,408 | 37,152 | 17,705 | 69,265 | \$1,397 |
| 2008 | 15,339 | 37,832 | 18,995 | 72,166 | \$1,493 |
| 2009 | 15,949 | 39,231 | 19,413 | 74,593 | \$1,518 |
| 2010 | 16,912 | 39,764 | 19,762 | 76,438 | \$1,576 |
| 2011 | 17,814 | 39,886 | 20,326 | 78,026 | \$1,653 |
| 2012 | 19,097 | 39,477 | 20,971 | 79,545 | \$1,735 |
| 2013 | 19,790 | 40,314 | 21,116 | 81,220 | \$1,792 |
| Average | 16,232 | 38,457 | 19,219 | 73,907 | \$1,518 |

¹³⁰ *Ibid.*.

¹³¹ Nebraska Public Employees Retirement System, Comprehensive Annual and Actuarial Financial Reports.

The public school pension fund's investments are well diversified. Domestic equities accounted for the largest share of assets, averaging 39.7 percent of total holdings. Investments in energy companies, more than 98 percent in oil and gas companies, are estimated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for an average of 4.5 percent of total assets over this period.

**Table A-NE-2: Nebraska Public School Employees' Retirement System,
Asset Allocation, FYs 2005-2013¹³²**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 46.6% | 4.3% | 20.6% | 29.7% | 3.1% |
| 2006 | 100.0% | 46.0% | 4.5% | 22.4% | 27.3% | 4.3% |
| 2007 | 100.0% | 46.6% | 6.0% | 23.5% | 25.3% | 4.6% |
| 2008 | 100.0% | 42.7% | 5.7% | 19.9% | 31.3% | 6.1% |
| 2009 | 100.0% | 33.4% | 3.8% | 28.8% | 31.8% | 6.0% |
| 2010 | 100.0% | 34.2% | 4.1% | 27.8% | 31.8% | 6.2% |
| 2011 | 100.0% | 35.7% | 4.4% | 29.5% | 27.4% | 7.4% |
| 2012 | 100.0% | 35.7% | 3.9% | 26.7% | 28.7% | 8.9% |
| 2013 | 100.0% | 36.5% | 3.7% | 26.9% | 27.8% | 8.8% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$5,393.0 | \$2,513.1 | \$233.7 | \$1,111.0 | \$1,601.7 | \$167.2 |
| 2006 | \$5,974.0 | \$2,748.0 | \$269.3 | \$1,338.2 | \$1,630.9 | \$256.9 |
| 2007 | \$7,024.0 | \$3,273.2 | \$422.2 | \$1,650.6 | \$1,777.1 | \$323.1 |
| 2008 | \$6,578.0 | \$2,808.8 | \$373.6 | \$1,309.0 | \$2,058.9 | \$401.3 |
| 2009 | \$5,265.6 | \$1,758.7 | \$202.3 | \$1,516.5 | \$1,674.5 | \$315.9 |
| 2010 | \$5,940.4 | \$2,031.6 | \$243.8 | \$1,651.4 | \$1,889.0 | \$368.3 |
| 2011 | \$7,264.0 | \$2,593.2 | \$319.0 | \$2,142.9 | \$1,990.3 | \$537.5 |
| 2012 | \$7,246.3 | \$2,586.9 | \$285.6 | \$1,934.8 | \$2,079.7 | \$644.9 |
| 2013 | \$8,093.0 | \$2,953.9 | \$302.5 | \$2,177.0 | \$2,249.8 | \$712.2 |

Using the public school pension system's reported annual returns, we calculate that \$1.00 invested in the System in July 2004 grew to \$1.73 in June 2013 (the fiscal year ends on June 31). (Table A-NE-3, below) During this period, \$1.00 invested in energy stocks grew to \$2.31. If the System had not invested in oil and natural gas stocks, \$1.00 invested in 2004 would have grown to \$1.65 in 2013. We also estimate the annual capital gains and losses of the public school pension system's total assets and the portion invested in oil and natural gas stocks. In this period, the System's net gains totaled some \$4.6 billion, including \$432 million in net gains from oil and natural gas investments. Those oil and natural gas investments, accounting for 4.5 percent of its total assets, provided 9.4 percent of its total gains.

¹³² *Ibid.*, S&P's; and author's estimates.

**Table A-NE-3: Nebraska Public School Employees' Retirement System,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹³³**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|--------------------|------------------------------------|--|---|---|---|---|--|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 9.8% | 36.8% | \$1.10 | \$1.37 | \$1.04 | \$528.5 | \$85.9 |
| 2006 | 10.4% | 22.5% | \$1.21 | \$1.68 | \$1.14 | \$621.3 | \$60.7 |
| 2007 | 17.7% | 26.0% | \$1.43 | \$2.11 | \$1.30 | \$1,243.2 | \$109.9 |
| 2008 | -5.8% | 23.1% | \$1.34 | \$2.60 | \$1.20 | (\$381.5) | \$86.2 |
| 2009 | -19.1% | -42.7% | \$1.09 | \$1.49 | \$1.03 | (\$1,005.7) | (\$86.3) |
| 2010 | 13.6% | -0.1% | \$1.24 | \$1.49 | \$1.17 | \$807.9 | (\$0.3) |
| 2011 | 23.3% | 49.8% | \$1.52 | \$2.23 | \$1.43 | \$1,692.5 | \$159.0 |
| 2012 | 1.0% | -10.0% | \$1.54 | \$2.01 | \$1.46 | \$72.5 | (\$28.7) |
| 2013 | 12.7% | 15.0% | \$1.73 | \$2.31 | \$1.65 | \$1,027.8 | \$45.2 |
| Total | | | | | | \$4,606.5 | \$431.7 |

Nebraska Public Employees' Retirement System

The Nebraska Public Employees' Retirement System for state government employees had an average of 14,219 members over this period. The monthly pension payments to qualified retirees and beneficiaries averaged \$1,070 per-month.

**Table A-NE-4: Nebraska Public Employees' Retirement System,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013¹³⁴**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|--------------------|-----------------------------------|-------------------------|---------------------------|---------------|---|
| 2005 | N/A | N/A | N/A | N/A | N/A |
| 2006 | N/A | N/A | N/A | N/A | N/A |
| 2007 | 263 | 9,051 | 1,314 | 10,628 | \$903 |
| 2008 | 329 | 10,878 | 1,679 | 12,886 | \$927 |
| 2009 | 420 | 11,323 | 2,477 | 14,220 | \$983 |
| 2010 | 500 | 11,739 | 2,151 | 14,390 | \$1,074 |
| 2011 | 599 | 11,200 | 2,797 | 14,596 | \$1,137 |
| 2012 | 737 | 11,263 | 3,380 | 15,380 | \$1,187 |
| 2013 | 910 | 11,956 | 4,569 | 17,435 | \$1,279 |
| Average | 537 | 11,059 | 2,624 | 14,219 | \$1,070 |

¹³³ Nebraska Public Employees Retirement System, Comprehensive Annual and Actuarial Financial Reports.; S&P's; and author's estimates.

¹³⁴ Nebraska Public Employees Retirement System, Comprehensive Annual and Actuarial Financial Reports..

The state public employees' pension system's investments are well diversified, with domestic equities accounting for an average of 39.7 percent of all assets. Investments in the energy sector, more than 98 percent in oil and gas companies, are calculated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for between 3.7 percent and 6.0 percent of the System's total assets over this period.

**Table A-NE-5: Nebraska Public Employees' Retirement System,
Asset Allocation, FYs 2005-2013¹³⁵**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 46.6% | 4.3% | 20.6% | 29.7% | 3.1% |
| 2006 | 100.0% | 46.0% | 4.5% | 22.4% | 27.3% | 4.3% |
| 2007 | 100.0% | 46.6% | 6.0% | 23.5% | 25.3% | 4.6% |
| 2008 | 100.0% | 42.7% | 5.7% | 19.9% | 31.3% | 6.1% |
| 2009 | 100.0% | 33.4% | 3.8% | 28.8% | 31.8% | 6.0% |
| 2010 | 100.0% | 34.2% | 4.1% | 27.8% | 31.8% | 6.2% |
| 2011 | 100.0% | 35.7% | 4.4% | 29.5% | 27.4% | 7.4% |
| 2012 | 100.0% | 35.7% | 3.9% | 26.7% | 28.7% | 8.9% |
| 2013 | 100.0% | 36.5% | 3.7% | 26.9% | 27.8% | 8.8% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$322.0 | \$150.1 | \$14.0 | \$66.3 | \$95.6 | \$10.0 |
| 2006 | \$356.0 | \$163.8 | \$16.0 | \$79.7 | \$97.2 | \$15.3 |
| 2007 | \$421.0 | \$196.2 | \$25.3 | \$98.9 | \$106.5 | \$19.4 |
| 2008 | \$624.0 | \$266.4 | \$35.4 | \$124.2 | \$195.3 | \$38.1 |
| 2009 | \$469.9 | \$156.9 | \$18.0 | \$135.3 | \$149.4 | \$28.2 |
| 2010 | \$594.3 | \$203.3 | \$24.4 | \$165.2 | \$189.0 | \$36.8 |
| 2011 | \$689.2 | \$246.0 | \$30.3 | \$203.3 | \$188.8 | \$51.0 |
| 2012 | \$702.5 | \$250.8 | \$27.7 | \$187.6 | \$201.6 | \$62.5 |
| 2013 | \$1,033.4 | \$377.2 | \$38.6 | \$278.0 | \$287.3 | \$90.9 |

Using the System's reported returns, we calculate that \$1.00 invested in the System in July 2004 grew to \$1.65 in June 2013 (the fiscal year ends on December 31). During this period, \$1.00 invested in oil and gas stocks grew to \$2.26. If the System had not invested in oil and natural gas stocks, \$1.00 invested in January 2005 would have remained worth \$1.56 in June 2013. We also estimate the capital gains and losses of the System's assets and the portion invested in oil and natural gas stocks. Over this period, the System's net gains totaled \$393 million, including nearly \$20 million in net gains from investments in the oil and natural gas sector. The oil and natural gas investments, which accounted for 4.5 percent of the System's total assets, provided 5.0 percent of the System's total gains.

¹³⁵ *Ibid.*, and S&P's; and author's estimates.

**Table A-NE-6: Nebraska Public Employees' Retirement System,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹³⁶**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 1/2005 | Return on \$1 of Oil and Natural Gas Assets Invested in 1/2005 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 1/2005 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|---------------|-----------------------------|---|--|--|--|--|---|
| 1/2005 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 10.8% | 29.1% | \$1.11 | \$1.29 | \$1.05 | \$34.8 | \$4.1 |
| 2006 | 6.4% | 22.2% | \$1.18 | \$1.58 | \$1.11 | \$22.7 | \$3.6 |
| 2007 | 15.1% | 32.4% | \$1.36 | \$2.09 | \$1.23 | \$63.7 | \$8.2 |
| 2008 | 7.9% | -35.9% | \$1.46 | \$1.34 | \$1.39 | \$49.1 | (\$12.7) |
| 2009 | -27.4% | 11.3% | \$1.06 | \$1.49 | \$1.01 | (\$128.7) | \$2.0 |
| 2010 | 21.2% | 17.9% | \$1.29 | \$1.76 | \$1.22 | \$125.9 | \$4.4 |
| 2011 | 13.0% | 2.8% | \$1.46 | \$1.80 | \$1.38 | \$89.5 | \$0.8 |
| 2012 | 0.3% | 2.3% | \$1.46 | \$1.85 | \$1.39 | \$1.8 | \$0.6 |
| 2013 | 13.0% | 22.3% | \$1.65 | \$2.26 | \$1.56 | \$134.2 | \$8.6 |
| Total | | | | | | \$393.0 | \$19.6 |

NEW HAMPSHIRE

New Hampshire Public School Employees' Retirement System

The New Hampshire Public School Employees' Retirement System provides pension benefits for all public school employees in the State. The System's membership averaged 26,690 over FYs 2005-2013, and the monthly pension payments paid to its qualified retirees and beneficiaries averaged \$1,695.

**Table A-NH-1: New Hampshire Public School Employees' Retirement System,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013¹³⁷**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|----------------|----------------------------|------------------|--------------------|---------------|----------------------------------|
| 2005 | 5,904 | 18,474 | N/A | 24,378 | \$1,537 |
| 2006 | 6,141 | 18,719 | N/A | 24,860 | \$1,576 |
| 2007 | 6,928 | 18,477 | N/A | 25,405 | \$1,615 |
| 2008 | 7,654 | 18,509 | N/A | 26,163 | \$1,674 |
| 2009 | 8,507 | 18,709 | N/A | 27,216 | \$1,736 |
| 2010 | 9,087 | 18,603 | N/A | 27,690 | \$1,781 |
| 2011 | 9,427 | 18,466 | N/A | 27,893 | \$1,777 |
| 2012 | 9,956 | 18,161 | N/A | 28,117 | \$1,777 |
| 2013 | 10,407 | 18,084 | N/A | 28,491 | \$1,780 |
| Average | 8,223 | 18,467 | N/A | 26,690 | \$1,695 |

¹³⁶ Nebraska Public Employees Retirement System, Comprehensive Annual and Actuarial Financial Reports.

¹³⁷ New Hampshire Retirement System, Comprehensive Annual Financial Report.

The public school pension fund's investments are well diversified. Domestic equities accounted for the largest share of assets averaging 44.6 percent of total holdings. Investments in energy companies, more than 98 percent in oil and gas companies, are estimated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for an average of 4.9 percent of total assets over this period. (Table A-NH-2)

**Table A-NH-2: New Hampshire Public School Employees' Retirement System,
Asset Allocation, FYs 2005-2013¹³⁸**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 51.2% | 5.7% | 10.1% | 23.1% | 15.6% |
| 2006 | 100.0% | 50.0% | 6.0% | 12.0% | 23.6% | 14.4% |
| 2007 | 100.0% | 44.5% | 3.6% | 15.8% | 28.2% | 11.5% |
| 2008 | 100.0% | 40.3% | 4.0% | 17.1% | 32.5% | 10.1% |
| 2009 | 100.0% | 39.9% | 3.2% | 19.3% | 32.3% | 8.5% |
| 2010 | 100.0% | 44.8% | 3.4% | 17.4% | 30.8% | 7.0% |
| 2011 | 100.0% | 43.9% | 7.1% | 20.6% | 27.8% | 7.7% |
| 2012 | 100.0% | 42.3% | 5.6% | 18.3% | 27.9% | 11.5% |
| 2013 | 100.0% | 44.4% | 5.4% | 20.0% | 23.1% | 12.5% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$1,646.2 | \$842.9 | \$93.8 | \$166.3 | \$380.3 | \$256.8 |
| 2006 | \$1,633.6 | \$816.8 | \$98.0 | \$196.0 | \$385.5 | \$235.2 |
| 2007 | \$2,030.7 | \$903.7 | \$73.1 | \$320.8 | \$572.7 | \$233.5 |
| 2008 | \$1,903.9 | \$767.3 | \$76.2 | \$325.6 | \$618.8 | \$192.3 |
| 2009 | \$1,527.8 | \$609.6 | \$48.9 | \$294.9 | \$493.5 | \$129.9 |
| 2010 | \$1,702.0 | \$762.5 | \$57.9 | \$296.1 | \$524.2 | \$119.1 |
| 2011 | \$2,033.9 | \$892.9 | \$144.4 | \$419.0 | \$565.4 | \$156.6 |
| 2012 | \$1,995.2 | \$844.0 | \$111.7 | \$365.1 | \$556.7 | \$229.5 |
| 2013 | \$2,224.0 | \$987.5 | \$120.1 | \$444.8 | \$513.7 | \$278.0 |

Using the public school pension system's reported annual returns, we calculate that \$1.00 invested in the System in July 2004 grew to \$1.76 in June 2013 (the fiscal year ends on June 31). During this period, \$1.00 invested in energy stocks grew to \$2.31. If the System had not invested in oil and natural gas stocks, \$1.00 invested in July 2004 would have grown to \$1.64 in June 2013. We also estimate the annual capital gains and losses of the public school pension system's total assets and the portion invested in oil and natural gas stocks. Over this period, the System's net gains totaled \$1.3 billion, including about \$151 million in net gains from investments in the oil and natural gas sector. The System's oil and natural gas investments, which accounted for 4.9 percent of its total assets, provided 11.5 percent of its total gains.

¹³⁸ *Ibid.*, S&P's; and author's estimates.

**Table A- NH-3: New Hampshire Public School Employees' Retirement System,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹³⁹**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|--------------------|------------------------------------|--|---|---|---|---|--|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 10.1% | 36.8% | \$1.10 | \$1.37 | \$1.02 | \$166.3 | \$34.5 |
| 2006 | 10.0% | 22.5% | \$1.21 | \$1.68 | \$1.11 | \$163.4 | \$22.1 |
| 2007 | 16.0% | 26.0% | \$1.40 | \$2.11 | \$1.33 | \$324.9 | \$19.0 |
| 2008 | -4.6% | 23.1% | \$1.34 | \$2.60 | \$1.24 | (\$87.6) | \$17.6 |
| 2009 | -18.1% | -42.7% | \$1.10 | \$1.49 | \$1.05 | (\$276.5) | (\$20.9) |
| 2010 | 12.9% | -0.1% | \$1.24 | \$1.49 | \$1.19 | \$219.6 | (\$0.1) |
| 2011 | 23.0% | 49.8% | \$1.52 | \$2.23 | \$1.37 | \$467.8 | \$72.0 |
| 2012 | 0.9% | -10.0% | \$1.54 | \$2.01 | \$1.43 | \$18.0 | (\$11.2) |
| 2013 | 14.5% | 15.0% | \$1.76 | \$2.31 | \$1.64 | \$322.5 | \$18.0 |
| Total | | | | | | \$1,318.2 | \$151.0 |

New Hampshire Retirement System

The New Hampshire Retirement System provides retirement, survivor and disability benefits to state government employees. The System's membership averaged 38,190 over this period, including retirees and beneficiaries currently receiving benefits, and current employees including those vested and non-vested. The monthly pension payments to qualified retirees and beneficiaries averaged \$968 over this period.

**Table A-NH-4: New Hampshire Retirement System,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013¹⁴⁰**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|--------------------|-----------------------------------|-------------------------|---------------------------|---------------|---|
| 2005 | 9,973 | 26,414 | N/A | 36,387 | \$843 |
| 2006 | 10,373 | 26,764 | N/A | 37,137 | \$875 |
| 2007 | 10,859 | 26,474 | N/A | 37,333 | \$906 |
| 2008 | 11,580 | 26,507 | N/A | 38,087 | \$948 |
| 2009 | 12,192 | 26,352 | N/A | 38,544 | \$975 |
| 2010 | 12,802 | 25,987 | N/A | 38,789 | \$1,017 |
| 2011 | 13,487 | 25,539 | N/A | 39,026 | \$1,039 |
| 2012 | 14,141 | 24,747 | N/A | 38,888 | \$1,049 |
| 2013 | 14,712 | 24,809 | N/A | 39,521 | \$1,063 |
| Average | 12,235 | 25,955 | N/A | 38,190 | \$968 |

¹³⁹ New Hampshire Retirement System, Comprehensive Annual Financial Report; S&P's; and author's estimates.

¹⁴⁰ New Hampshire Retirement System, Comprehensive Annual Financial Report.

The state employees' pension system's investments are well diversified across and within asset classes. Domestic equities accounted for the largest share of assets, averaging 44.6 percent of all assets. Investments in the energy sector, more than 98 percent in oil and gas companies, are calculated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for between 3.2 percent and 6.0 percent of the System's total assets over this period.

**Table A-NH-5: New Hampshire Retirement System,
Asset Allocation, FYs 2005-2013¹⁴¹**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 51.2% | 5.7% | 10.1% | 23.1% | 15.6% |
| 2006 | 100.0% | 50.0% | 6.0% | 12.0% | 23.6% | 14.4% |
| 2007 | 100.0% | 44.5% | 3.6% | 15.8% | 28.2% | 11.5% |
| 2008 | 100.0% | 40.3% | 4.0% | 17.1% | 32.5% | 10.1% |
| 2009 | 100.0% | 39.9% | 3.2% | 19.3% | 32.3% | 8.5% |
| 2010 | 100.0% | 44.8% | 3.4% | 17.4% | 30.8% | 7.0% |
| 2011 | 100.0% | 43.9% | 7.1% | 20.6% | 27.8% | 7.7% |
| 2012 | 100.0% | 42.3% | 5.6% | 18.3% | 27.9% | 11.5% |
| 2013 | 100.0% | 44.4% | 5.4% | 20.0% | 23.1% | 12.5% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$2,444.0 | \$1,251.3 | \$139.3 | \$246.8 | \$564.6 | \$381.3 |
| 2006 | \$2,433.3 | \$1,216.7 | \$146.0 | \$292.0 | \$574.3 | \$350.4 |
| 2007 | \$2,979.4 | \$1,325.8 | \$107.3 | \$470.7 | \$840.2 | \$342.6 |
| 2008 | \$2,769.6 | \$1,116.2 | \$110.8 | \$473.6 | \$900.1 | \$279.7 |
| 2009 | \$2,189.7 | \$873.7 | \$70.1 | \$422.6 | \$707.3 | \$186.1 |
| 2010 | \$2,397.8 | \$1,074.2 | \$81.5 | \$417.2 | \$738.5 | \$167.8 |
| 2011 | \$2,909.9 | \$1,277.4 | \$206.6 | \$599.4 | \$808.9 | \$224.1 |
| 2012 | \$2,833.9 | \$1,198.7 | \$158.7 | \$518.6 | \$790.7 | \$325.9 |
| 2013 | \$3,144.0 | \$1,395.9 | \$169.8 | \$628.8 | \$726.3 | \$393.0 |

Using the System's reported returns, we calculate that \$1.00 invested in the System in July 2004 grew to \$1.76 in June 2013 (the fiscal year ends on June 30). In this period, \$1.00 invested in the System's oil and gas stocks grew to \$2.31. If the System had not invested in oil and natural gas stocks, \$1.00 invested in June 2004 would have grown to \$1.64 in June 2013. We also estimate the capital gains and losses of the System's assets and the portion invested in oil and natural gas stocks. For this period, the System's gains totaled \$1.9 billion, including \$220 million from the oil and natural gas sector. Oil and natural gas investments, accounting for 4.9 percent of the System's total assets, provided 11.6 percent of the System's total gains.

¹⁴¹ *Ibid.*, and S&P's; and author's estimates.

**Table A-NH-6: New Hampshire Retirement System,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹⁴²**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|---------------|-----------------------------|---|--|--|--|--|---|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 10.1% | 36.8% | \$1.10 | \$1.37 | \$1.02 | \$246.8 | \$51.2 |
| 2006 | 10.0% | 22.5% | \$1.21 | \$1.68 | \$1.11 | \$243.3 | \$32.9 |
| 2007 | 16.0% | 26.0% | \$1.40 | \$2.11 | \$1.33 | \$476.7 | \$27.9 |
| 2008 | -4.6% | 23.1% | \$1.34 | \$2.60 | \$1.24 | (\$127.4) | \$25.6 |
| 2009 | -18.1% | -42.7% | \$1.10 | \$1.49 | \$1.05 | (\$396.3) | (\$29.9) |
| 2010 | 12.9% | -0.1% | \$1.24 | \$1.49 | \$1.19 | \$309.3 | (\$0.1) |
| 2011 | 23.0% | 49.8% | \$1.52 | \$2.23 | \$1.37 | \$669.3 | \$103.0 |
| 2012 | 0.9% | -10.0% | \$1.54 | \$2.01 | \$1.43 | \$25.5 | (\$15.9) |
| 2013 | 14.5% | 15.0% | \$1.76 | \$2.31 | \$1.64 | \$455.9 | \$25.4 |
| Total | | | | | | \$1,903.1 | \$220.0 |

NEW MEXICO

New Mexico Educational Retirement Board

The New Mexico Educational Retirement Board provides pension benefits for all public school employees in the State. The System's membership averaged 126,269 over FYs 2005-2013, and monthly pension payments averaged \$1,604.

**Table A-NM-1: New Mexico Educational Retirement Board,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013¹⁴³**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|----------------|----------------------------|------------------|--------------------|----------------|----------------------------------|
| 2005 | 26,100 | 63,362 | 25,428 | 114,890 | \$1,466 |
| 2006 | 28,539 | 61,829 | 29,950 | 120,318 | \$1,472 |
| 2007 | 29,969 | 62,687 | 29,942 | 122,598 | \$1,523 |
| 2008 | 31,192 | 63,698 | 29,982 | 124,872 | \$1,566 |
| 2009 | 32,497 | 63,822 | 30,576 | 126,895 | \$1,606 |
| 2010 | 33,749 | 63,297 | 31,837 | 128,883 | \$1,649 |
| 2011 | 35,457 | 61,673 | 33,011 | 130,141 | \$1,673 |
| 2012 | 37,337 | 60,855 | 34,033 | 132,225 | \$1,716 |
| 2013 | 39,088 | 61,211 | 35,304 | 135,603 | \$1,764 |
| Average | 32,659 | 62,493 | 31,118 | 126,269 | \$1,604 |

¹⁴² New Hampshire Retirement System, Comprehensive Annual Financial Report; S&P's; and author's estimates.

¹⁴³ State of New Mexico Educational Retirement Board, Comprehensive Annual Financial Report.

The public school pension fund's investments are well diversified. Domestic equities accounted for the largest share of assets averaging 33.5 percent of total holdings. Investments in energy companies, more than 98 percent in oil and gas companies, are estimated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for an average of 3.8 percent of total assets over this period.

**Table A-NM-2: New Mexico Educational Retirement Board,
Asset Allocation, FYs 2005-2013¹⁴⁴**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 46.2% | 4.3% | 21.0% | 26.3% | 6.5% |
| 2006 | 100.0% | 46.1% | 4.5% | 22.2% | 25.3% | 6.4% |
| 2007 | 100.0% | 41.2% | 5.3% | 19.9% | 26.3% | 12.6% |
| 2008 | 100.0% | 37.0% | 4.9% | 18.0% | 29.0% | 16.0% |
| 2009 | 100.0% | 30.0% | 3.5% | 17.0% | 37.0% | 16.0% |
| 2010 | 100.0% | 26.0% | 3.1% | 18.0% | 35.0% | 21.0% |
| 2011 | 100.0% | 24.0% | 3.0% | 16.0% | 30.0% | 30.0% |
| 2012 | 100.0% | 26.0% | 2.9% | 14.0% | 33.0% | 27.0% |
| 2013 | 100.0% | 25.0% | 2.6% | 14.0% | 33.0% | 28.0% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$8,288.5 | \$3,826.0 | \$355.8 | \$1,743.1 | \$2,183.2 | \$536.3 |
| 2006 | \$9,289.2 | \$4,282.3 | \$419.7 | \$2,062.2 | \$2,350.2 | \$594.5 |
| 2007 | \$11,612.6 | \$4,784.4 | \$617.2 | \$2,310.9 | \$3,054.1 | \$1,463.2 |
| 2008 | \$10,321.5 | \$3,819.0 | \$507.9 | \$1,857.9 | \$2,993.2 | \$1,651.4 |
| 2009 | \$8,062.3 | \$2,418.7 | \$278.1 | \$1,370.6 | \$2,983.0 | \$1,290.0 |
| 2010 | \$8,681.7 | \$2,257.2 | \$270.9 | \$1,562.7 | \$3,038.6 | \$1,823.2 |
| 2011 | \$10,083.1 | \$2,419.9 | \$297.7 | \$1,613.3 | \$3,024.9 | \$3,024.9 |
| 2012 | \$9,656.8 | \$2,510.8 | \$277.2 | \$1,352.0 | \$3,186.8 | \$2,607.3 |
| 2013 | \$10,358.1 | \$2,589.5 | \$265.2 | \$1,450.1 | \$3,418.2 | \$2,900.3 |

Using the public school pension system's reported annual returns, we calculate that \$1.00 invested in the Retirement Board in July 2004 grew to \$1.80 in June 2013 (the fiscal year ends on June 31). During this period, \$1.00 invested in energy stocks grew to \$2.31. If the Board had not invested in oil and natural gas stocks, \$1.00 invested in July 2004 would have grown to \$1.74 in June 2013. We also estimate the annual capital gains and losses of the public school pension system's total assets and the portion invested in oil and natural gas stocks. Over this period, the Board's net gains totaled nearly \$6.9 billion, including \$544 million in net gains from investments in the oil and natural gas sector. The Board's oil and natural gas investments, which accounted for 3.8 percent of its total assets, provided 7.9 percent of its total gains.

¹⁴⁴ *Ibid.*, S&P's; and author's estimates.

**Table A-NM-3: New Mexico Educational Retirement Board,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹⁴⁵**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|---------------|-----------------------------|---|--|--|--|--|---|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 9.9% | 36.8% | \$1.10 | \$1.37 | \$1.04 | \$817.2 | \$130.8 |
| 2006 | 12.3% | 22.5% | \$1.23 | \$1.68 | \$1.16 | \$1,142.6 | \$94.6 |
| 2007 | 17.6% | 26.0% | \$1.45 | \$2.11 | \$1.34 | \$2,043.8 | \$160.6 |
| 2008 | -6.2% | 23.1% | \$1.36 | \$2.60 | \$1.23 | (\$639.9) | \$117.3 |
| 2009 | -17.3% | -42.7% | \$1.13 | \$1.49 | \$1.07 | (\$1,394.8) | (\$118.7) |
| 2010 | 18.2% | -0.1% | \$1.33 | \$1.49 | \$1.28 | \$1,580.1 | (\$0.3) |
| 2011 | 19.7% | 49.8% | \$1.59 | \$2.23 | \$1.53 | \$1,986.4 | \$148.4 |
| 2012 | 2.0% | -10.0% | \$1.62 | \$2.01 | \$1.57 | \$193.1 | (\$27.8) |
| 2013 | 11.0% | 15.0% | \$1.80 | \$2.31 | \$1.74 | \$1,139.4 | \$39.7 |
| Total | | | | | | \$6,867.9 | \$544.4 |

New Mexico Public Employees' Retirement Association

The New Mexico Public Employees' Retirement Association provides retirement, survivor and disability benefits to state government employees. The System's members averaged 82,062 over this period, and the monthly pension payments averaged \$1,956 per-month.

**Table A-NM-4: New Mexico Public Employees' Retirement Association,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013¹⁴⁶**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|----------------|----------------------------|------------------|--------------------|---------------|----------------------------------|
| 2005 | 21,528 | 47,799 | 3,297 | 72,624 | \$1,618 |
| 2006 | 22,699 | 51,699 | 3,209 | 77,607 | \$1,705 |
| 2007 | 23,844 | 51,645 | 3,235 | 78,724 | \$1,776 |
| 2008 | 24,910 | 52,507 | 3,162 | 80,579 | \$1,849 |
| 2009 | 25,950 | 53,866 | 3,018 | 82,834 | \$1,982 |
| 2010 | 27,249 | 49,202 | 8,366 | 84,817 | \$2,058 |
| 2011 | 28,691 | 48,163 | 9,186 | 86,040 | \$2,139 |
| 2012 | 30,229 | 48,594 | 6,577 | 85,400 | \$2,205 |
| 2013 | 32,042 | 50,131 | 7,756 | 89,929 | \$2,273 |
| Average | 26,349 | 50,401 | 5,312 | 82,062 | \$1,956 |

¹⁴⁵ State of New Mexico Educational Retirement Board, Comprehensive Annual Financial Report; S&P's; and author's estimates.

¹⁴⁶ Public Employees Retirement Association of New Mexico, Comprehensive Annual Financial Report.

The state employees' pension system's investments are well diversified across and within asset classes. Domestic equities accounted for the largest share of assets, averaging 40.8 percent of all assets. Investments in the energy sector, more than 98 percent in oil and gas companies, are calculated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for between 3.9 percent and 5.8 percent of the System's total assets over this period.

**Table A-NM-5: New Mexico Public Employees' Retirement Association,
Asset Allocation, FYs 2005-2013¹⁴⁷**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 45.3% | 4.2% | 20.5% | 33.8% | 0.4% |
| 2006 | 100.0% | 41.6% | 4.1% | 27.3% | 30.9% | 0.2% |
| 2007 | 100.0% | 40.8% | 5.3% | 29.8% | 27.1% | 2.3% |
| 2008 | 100.0% | 36.2% | 4.8% | 26.5% | 26.8% | 10.5% |
| 2009 | 100.0% | 50.8% | 5.8% | 18.9% | 16.0% | 14.3% |
| 2010 | 100.0% | 47.1% | 5.7% | 21.3% | 11.2% | 20.4% |
| 2011 | 100.0% | 32.4% | 4.0% | 24.1% | 14.1% | 29.4% |
| 2012 | 100.0% | 35.0% | 3.9% | 25.2% | 13.4% | 26.4% |
| 2013 | 100.0% | 38.3% | 3.9% | 24.9% | 12.2% | 24.6% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$10,198.3 | \$4,622.9 | \$429.9 | \$2,088.6 | \$3,441.9 | \$44.9 |
| 2006 | \$11,125.8 | \$4,622.8 | \$453.0 | \$3,039.6 | \$3,440.1 | \$23.4 |
| 2007 | \$13,464.9 | \$5,499.1 | \$709.4 | \$4,016.6 | \$3,646.3 | \$303.0 |
| 2008 | \$12,258.4 | \$4,441.2 | \$590.7 | \$3,247.3 | \$3,288.9 | \$1,281.0 |
| 2009 | \$9,656.9 | \$4,901.8 | \$563.7 | \$1,826.1 | \$1,548.0 | \$1,380.9 |
| 2010 | \$9,583.5 | \$4,515.8 | \$541.9 | \$2,041.3 | \$1,068.6 | \$1,957.9 |
| 2011 | \$11,724.5 | \$3,795.2 | \$466.8 | \$2,830.3 | \$1,650.8 | \$3,448.2 |
| 2012 | \$11,648.2 | \$4,079.2 | \$450.3 | \$2,930.7 | \$1,564.4 | \$3,074.0 |
| 2013 | \$12,407.4 | \$4,754.5 | \$486.9 | \$3,091.9 | \$1,512.5 | \$3,048.5 |

Using the Association's reported returns, we calculate that \$1.00 invested in the System in July 2004 grew to just \$1.62 in June 2013 (the state's fiscal year ends on June 30). During this period, \$1.00 invested in the Association's oil and gas stocks grew to \$2.31. If the Association had not invested in oil and natural gas stocks, \$1.00 invested in June 2004 would have fallen to \$1.54 in June 2013. We also estimate the capital gains and losses of the Association's assets and the portion invested in oil and natural gas stocks. Over this period, the Association's net gains totaled \$7.2 billion, including \$600 million in net gains from investments in the oil and natural gas sector. The oil and natural gas investments, which accounted for about 4.6 percent of the Association's total assets, provided 8.3 percent of the Association's total gains.

¹⁴⁷ *Ibid.*, and S&P's; and author's estimates.

**Table A-NM-6: New Mexico Public Employees' Retirement Association,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹⁴⁸**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|---------------|-----------------------------|---|--|--|--|--|---|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 9.9% | 36.8% | \$1.10 | \$1.37 | \$1.04 | \$1,009.6 | \$158.0 |
| 2006 | 11.7% | 22.5% | \$1.23 | \$1.68 | \$1.16 | \$1,301.7 | \$102.1 |
| 2007 | 18.1% | 26.0% | \$1.45 | \$2.11 | \$1.34 | \$2,437.1 | \$184.6 |
| 2008 | -7.4% | 23.1% | \$1.34 | \$2.60 | \$1.22 | (\$907.1) | \$136.4 |
| 2009 | -24.1% | -42.7% | \$1.02 | \$1.49 | \$0.93 | (\$2,327.3) | (\$240.5) |
| 2010 | 15.0% | -0.1% | \$1.17 | \$1.49 | \$1.09 | \$1,439.4 | (\$0.7) |
| 2011 | 22.5% | 49.8% | \$1.44 | \$2.23 | \$1.35 | \$2,638.0 | \$232.7 |
| 2012 | -0.4% | -10.0% | \$1.43 | \$2.01 | \$1.35 | (\$44.3) | (\$45.2) |
| 2013 | 13.3% | 15.0% | \$1.62 | \$2.31 | \$1.53 | \$1,645.2 | \$72.8 |
| Total | | | | | | \$7,192.5 | \$600.2 |

NEW YORK

New York State Teachers' Retirement System

The New York State Teachers' Retirement System provides pension benefits for all public school employees in the State. Its membership of retirees and beneficiaries and current employees, both vested and non-vested averaged a total of 358,338 members (Data are not available on inactive members. The monthly pension payments paid to its qualified retirees and beneficiaries averaged \$3,425.

**Table A-NY-1: New York State Teachers' Retirement System,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013¹⁴⁹**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|----------------|----------------------------|------------------|--------------------|----------------|----------------------------------|
| 2005 | 7,182 | 260,356 | N/A | 267,538 | \$3,783 |
| 2006 | 7,281 | 264,410 | N/A | 271,691 | \$3,660 |
| 2007 | 6,900 | 270,045 | N/A | 276,945 | \$3,684 |
| 2008 | 6,330 | 274,901 | N/A | 281,231 | \$3,815 |
| 2009 | 139,297 | 280,338 | N/A | 419,635 | \$3,039 |
| 2010 | 141,716 | 285,774 | N/A | 427,490 | \$3,099 |
| 2011 | 146,843 | 280,435 | N/A | 427,278 | \$3,194 |
| 2012 | 149,812 | 277,273 | N/A | 427,085 | \$3,249 |
| 2013 | 152,822 | 273,328 | N/A | 426,150 | \$3,301 |
| Average | 84,243 | 274,096 | N/A | 358,338 | \$3,425 |

¹⁴⁸ Public Employees Retirement Association of New Mexico, Comprehensive Annual Financial Report; S&P's; and author's estimates.

¹⁴⁹ New York State Teachers' Retirement System, Comprehensive Annual Financial Report.

The public school pension fund's investments are well diversified. Domestic equities accounted for the largest share of assets averaging 50.8 percent of total holdings. Investments in energy companies, more than 98 percent in oil and gas companies, are estimated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for an average of 5.7 percent of total assets over this period.

**Table A-NY-2: New York State Teachers' Retirement System,
Asset Allocation, FYs 2005-2013¹⁵⁰**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 68.8% | 6.4% | 10.3% | 12.7% | 8.2% |
| 2006 | 100.0% | 58.3% | 5.7% | 12.1% | 12.7% | 16.9% |
| 2007 | 100.0% | 55.8% | 7.2% | 13.6% | 12.5% | 18.1% |
| 2008 | 100.0% | 49.0% | 6.5% | 13.3% | 17.2% | 20.6% |
| 2009 | 100.0% | 45.3% | 5.2% | 12.1% | 20.7% | 21.8% |
| 2010 | 100.0% | 45.9% | 5.5% | 12.2% | 19.0% | 23.0% |
| 2011 | 100.0% | 47.0% | 5.8% | 13.6% | 15.0% | 24.4% |
| 2012 | 100.0% | 44.4% | 4.9% | 15.2% | 14.5% | 25.9% |
| 2013 | 100.0% | 42.7% | 4.4% | 18.7% | 14.4% | 24.1% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$83,668.2 | \$57,572.1 | \$5,354.2 | \$8,584.4 | \$10,651.0 | \$6,860.8 |
| 2006 | \$90,048.6 | \$52,516.3 | \$5,146.6 | \$10,868.9 | \$11,463.2 | \$15,200.2 |
| 2007 | \$103,370.5 | \$57,660.0 | \$7,438.1 | \$14,058.4 | \$12,931.6 | \$18,720.4 |
| 2008 | \$94,148.0 | \$46,094.9 | \$6,130.6 | \$12,474.6 | \$16,212.3 | \$19,366.2 |
| 2009 | \$71,009.6 | \$32,195.7 | \$3,702.5 | \$8,606.4 | \$14,699.0 | \$15,508.5 |
| 2010 | \$75,457.9 | \$34,612.5 | \$4,153.5 | \$9,175.7 | \$14,321.9 | \$17,347.8 |
| 2011 | \$88,149.3 | \$41,439.0 | \$5,097.0 | \$12,005.9 | \$13,231.2 | \$21,473.2 |
| 2012 | \$86,019.5 | \$38,166.9 | \$4,213.6 | \$13,083.6 | \$12,481.4 | \$22,287.7 |
| 2013 | \$93,296.1 | \$39,874.7 | \$4,083.2 | \$17,483.7 | \$13,425.3 | \$22,512.3 |

Using the public school pension System's reported returns, \$1.00 invested in April 2004 grew to \$1.77 in March 2013 (state's fiscal year ends on March 31). For this period, \$1.00 invested in the S&P Energy Sector grew to \$2.31. Without any oil and natural gas stocks, \$1.00 invested in April 2004 would have grown to \$1.67 in March 2013. We also estimate the System's capital gains and losses. In this period, the System's net gains totaled \$63.6 billion, including \$7.6 billion from oil and natural gas stocks. Oil and natural gas investments, accounting for 5.7 percent of System assets, provided almost 12.0 percent of its gains.

¹⁵⁰ *Ibid.*, S&P's; and author's estimates.

**Table A-NY-3: New York State Teachers' Retirement System,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹⁵¹**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|--------------------|------------------------------------|--|---|---|---|---|--|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 10.6% | 36.8% | \$1.11 | \$1.37 | \$1.02 | \$8,868.8 | \$1,968.0 |
| 2006 | 11.8% | 22.5% | \$1.24 | \$1.68 | \$1.14 | \$10,625.7 | \$1,160.4 |
| 2007 | 19.3% | 26.0% | \$1.48 | \$2.11 | \$1.32 | \$19,950.5 | \$1,935.1 |
| 2008 | -6.4% | 23.1% | \$1.38 | \$2.60 | \$1.21 | (\$6,025.5) | \$1,415.3 |
| 2009 | -20.5% | -42.7% | \$1.10 | \$1.49 | \$1.02 | (\$14,557.0) | (\$1,579.6) |
| 2010 | 12.1% | -0.1% | \$1.23 | \$1.49 | \$1.15 | \$9,130.4 | (\$5.3) |
| 2011 | 23.2% | 49.8% | \$1.52 | \$2.23 | \$1.39 | \$20,450.6 | \$2,540.6 |
| 2012 | 2.8% | -10.0% | \$1.56 | \$2.01 | \$1.46 | \$2,408.5 | (\$423.2) |
| 2013 | 13.7% | 15.0% | \$1.77 | \$2.31 | \$1.67 | \$12,781.6 | \$610.7 |
| Total | | | | | | \$63,633.8 | \$7,622.0 |

New York State and Local Employees' Retirement System

The New York State and Local Employees' Retirement System has an average of 968,652 members over this period; and the monthly pension averaged \$1,596 per-month.

**Table A-NY-4: New York State and Local Employees' Retirement System,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013¹⁵²**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|--------------------|-----------------------------------|-------------------------|---------------------------|----------------|---|
| 2005 | 306,531 | 508,856 | 103,554 | 918,941 | \$1,359 |
| 2006 | 313,837 | 513,016 | 104,973 | 931,826 | \$1,407 |
| 2007 | 321,113 | 519,203 | 107,720 | 948,036 | \$1,456 |
| 2008 | 328,726 | 528,435 | 112,684 | 969,845 | \$1,518 |
| 2009 | 336,273 | 530,023 | 113,677 | 979,973 | \$1,582 |
| 2010 | 345,106 | 529,466 | 114,409 | 988,981 | \$1,643 |
| 2011 | 353,940 | 513,092 | 124,829 | 991,861 | \$1,719 |
| 2012 | 371,468 | 505,575 | 116,532 | 993,575 | \$1,816 |
| 2013 | 380,899 | 498,266 | 115,664 | 994,829 | \$1,863 |
| Average | 339,766 | 516,215 | 112,671 | 968,652 | \$1,596 |

¹⁵¹ New York State Teachers' Retirement System, Comprehensive Annual Financial Report; S&P's; author's estimates.

¹⁵² New York State & Local Retirement System, Comprehensive Annual Financial Report.

The state and local employees' pension system's investments are well diversified across and within asset classes. Domestic equities accounted for the largest share of assets, averaging 41.1 percent of all assets. Investments in the energy sector, more than 98 percent in oil and gas companies, accounted for between 3.6 percent and 5.6 percent of the System's total assets over this period.

**Table A-NY-5: New York State and Local Employees' Retirement System,
Asset Allocation, FYs 2005-2013¹⁵³**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 59.8% | 5.6% | 13.9% | 18.8% | 7.5% |
| 2006 | 100.0% | 48.7% | 4.8% | 14.3% | 20.6% | 16.4% |
| 2007 | 100.0% | 42.2% | 5.4% | 16.1% | 21.7% | 20.0% |
| 2008 | 100.0% | 38.0% | 5.1% | 16.0% | 23.8% | 22.2% |
| 2009 | 100.0% | 31.5% | 3.6% | 12.4% | 33.5% | 22.6% |
| 2010 | 100.0% | 38.9% | 4.7% | 16.0% | 25.4% | 19.7% |
| 2011 | 100.0% | 37.9% | 4.7% | 16.5% | 21.1% | 24.5% |
| 2012 | 100.0% | 37.1% | 4.1% | 15.4% | 22.2% | 25.3% |
| 2013 | 100.0% | 35.5% | 3.6% | 16.2% | 24.0% | 24.3% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$85,116.0 | \$50,899.4 | \$4,733.6 | \$11,831.1 | \$16,001.8 | \$6,383.7 |
| 2006 | \$140,453.0 | \$68,400.6 | \$6,703.3 | \$20,084.8 | \$28,933.3 | \$23,034.3 |
| 2007 | \$154,575.6 | \$65,230.9 | \$8,414.8 | \$24,886.7 | \$33,542.9 | \$30,915.1 |
| 2008 | \$153,877.7 | \$58,473.5 | \$7,777.0 | \$24,620.4 | \$36,622.9 | \$34,160.9 |
| 2009 | \$108,960.7 | \$34,322.6 | \$3,947.1 | \$13,511.1 | \$36,501.8 | \$24,625.1 |
| 2010 | \$132,500.2 | \$51,542.6 | \$6,185.1 | \$21,200.0 | \$33,655.1 | \$26,102.5 |
| 2011 | \$147,237.0 | \$55,802.8 | \$6,863.7 | \$24,294.1 | \$31,067.0 | \$36,073.1 |
| 2012 | \$150,658.9 | \$55,894.4 | \$6,170.7 | \$23,201.5 | \$33,446.3 | \$38,116.7 |
| 2013 | \$160,660.8 | \$57,034.6 | \$5,840.3 | \$26,027.1 | \$38,558.6 | \$39,040.6 |

Using the System's reported returns, \$1.00 invested in April 2004 grew to \$1.78 in March 2013 (the state's fiscal year ends on March 31). In this period, \$1.00 invested in the S&P Energy Sector grew to \$2.49. If the System had not invested in oil and natural gas stocks, \$1.00 invested in April 2004 would have grown to \$1.69 in March 2013. We also estimate the System's annual capital gains and losses. In period, the System's net gains totaled \$103.8 billion, including \$8.8 billion from investments in oil and natural gas. The oil and natural gas, assets, which accounted for about 4.6 percent of the System, provided 8.5 percent of its gains.

¹⁵³ *Ibid.*, and S&P's; and author's estimates.

**Table A-NY-6: New York State and Local Employees' Retirement System,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹⁵⁴**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 4/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 4/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 4/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|---------------|-----------------------------|---|--|--|--|--|---|
| 4/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 8.5% | 44.1% | \$1.09 | \$1.44 | \$1.00 | \$7,243.4 | \$2,088.3 |
| 2006 | 14.6% | 19.8% | \$1.24 | \$1.73 | \$1.16 | \$20,492.1 | \$1,327.2 |
| 2007 | 12.6% | 14.5% | \$1.40 | \$1.98 | \$1.29 | \$19,445.6 | \$1,218.0 |
| 2008 | 2.6% | 20.3% | \$1.44 | \$2.38 | \$1.32 | \$3,939.3 | \$1,582.4 |
| 2009 | -26.4% | -39.1% | \$1.06 | \$1.45 | \$1.00 | (\$28,743.8) | (\$1,542.8) |
| 2010 | 25.9% | 26.7% | \$1.33 | \$1.84 | \$1.24 | \$34,277.8 | \$1,650.2 |
| 2011 | 14.6% | 37.0% | \$1.52 | \$2.51 | \$1.41 | \$21,452.4 | \$2,536.2 |
| 2012 | 6.0% | -8.6% | \$1.62 | \$2.30 | \$1.52 | \$8,979.3 | (\$532.8) |
| 2013 | 10.4% | 8.5% | \$1.78 | \$2.49 | \$1.69 | \$16,676.6 | \$494.1 |
| Total | | | | | | \$103,762.6 | \$8,820.8 |

NORTH DAKOTA

North Dakota Public School Employees' Retirement System

The North Dakota Public School Employees' Retirement System provides pension benefits for all public school employees. The System's membership consists of retirees and beneficiaries; current employees, vested and non-vested; and inactive employees. Members averaged 18,082 over FYs 2005-2013, and the monthly pension payments paid to its qualified retirees and beneficiaries averaged \$1,519.

**Table A-ND-1: North Dakota Public School Employees' Retirement System,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013¹⁵⁵**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|----------------|----------------------------|------------------|--------------------|---------------|----------------------------------|
| 2005 | 5,586 | 9,801 | 1,545 | 16,932 | \$1,309 |
| 2006 | 5,893 | 9,585 | 1,552 | 17,030 | \$1,383 |
| 2007 | 6,077 | 9,599 | 1,581 | 17,257 | \$1,434 |
| 2008 | 6,317 | 9,561 | 1,688 | 17,566 | \$1,477 |
| 2009 | 6,466 | 9,707 | 1,782 | 17,955 | \$1,514 |
| 2010 | 6,672 | 9,907 | 1,803 | 18,382 | \$1,564 |
| 2011 | 6,933 | 10,004 | 1,870 | 18,807 | \$1,606 |
| 2012 | 7,151 | 10,014 | 1,951 | 19,116 | \$1,664 |
| 2013 | 7,489 | 10,138 | 2,063 | 19,690 | \$1,722 |
| Average | 6,509 | 9,813 | 1,759 | 18,082 | \$1,519 |

¹⁵⁴ New York State & Local Retirement System, Comprehensive Annual Financial Report; S&P's; and author's estimates.

¹⁵⁵ North Dakota Public Employees Retirement System, Comprehensive Annual Financial Report.

The public school pension fund's investments are well diversified. Domestic equities accounted for the largest share of assets averaging 33.9 percent of total holdings. Investments in energy companies, more than 98 percent in oil and gas companies, are estimated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for an average of 3.9 percent of total assets over this period.

**Table A-ND-2: North Dakota Public School Employees' Retirement System,
Asset Allocation, FYs 2005-2013¹⁵⁶**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 39.0% | 3.6% | 27.0% | 17.0% | 17.0% |
| 2006 | 100.0% | 38.0% | 3.7% | 22.0% | 24.0% | 16.0% |
| 2007 | 100.0% | 38.0% | 4.9% | 25.0% | 21.0% | 16.0% |
| 2008 | 100.0% | 35.0% | 4.7% | 21.0% | 26.0% | 18.0% |
| 2009 | 100.0% | 31.0% | 3.6% | 20.0% | 31.0% | 18.0% |
| 2010 | 100.0% | 36.0% | 4.3% | 20.0% | 27.0% | 17.0% |
| 2011 | 100.0% | 38.0% | 4.7% | 23.0% | 24.0% | 15.0% |
| 2012 | 100.0% | 27.0% | 3.0% | 23.0% | 23.0% | 27.0% |
| 2013 | 100.0% | 23.0% | 2.4% | 30.0% | 23.0% | 24.0% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$1,515.9 | \$591.2 | \$55.0 | \$409.3 | \$257.7 | \$257.7 |
| 2006 | \$1,705.4 | \$648.0 | \$63.5 | \$375.2 | \$409.3 | \$272.9 |
| 2007 | \$2,015.1 | \$765.7 | \$98.8 | \$503.8 | \$423.2 | \$322.4 |
| 2008 | \$1,829.5 | \$640.3 | \$85.2 | \$384.2 | \$475.7 | \$329.3 |
| 2009 | \$1,291.5 | \$400.4 | \$46.0 | \$258.3 | \$400.4 | \$232.5 |
| 2010 | \$1,418.4 | \$510.6 | \$61.3 | \$283.7 | \$383.0 | \$241.1 |
| 2011 | \$1,705.8 | \$648.2 | \$79.7 | \$392.3 | \$409.4 | \$255.9 |
| 2012 | \$1,631.3 | \$440.5 | \$48.6 | \$375.2 | \$375.2 | \$440.5 |
| 2013 | \$1,810.7 | \$416.5 | \$42.6 | \$543.2 | \$416.5 | \$434.6 |

Using the public school pension system's reported annual returns, we calculate that \$1.00 invested in the System in July 2004 grew to \$1.67 in June 2013 (the fiscal year ends on June 31). During this period, \$1.00 invested in energy stocks grew to \$2.31. If the System had not invested in oil and natural gas stocks, \$1.00 invested in 2004 would have been worth \$1.62 in 2013. We also estimate the annual capital gains and losses of the system's total assets and the portion held in oil and natural gas stocks. In this period, the System's net gains totaled \$1.2 billion, including \$101 million from investments in oil and natural gas stocks. The System's oil and natural gas assets, representing 3.9 percent of the total, provided 8.4 percent of the gains.

¹⁵⁶ *Ibid.*, S&P's; and author's estimates.

Table A-ND-3: North Dakota Public School Employees' Retirement System, Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹⁵⁷

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|---------------|-----------------------------|---|--|--|--|--|---|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 13.4% | 36.8% | \$1.13 | \$1.37 | \$1.08 | \$202.5 | \$20.2 |
| 2006 | 14.8% | 22.5% | \$1.30 | \$1.68 | \$1.24 | \$252.2 | \$14.3 |
| 2007 | 20.0% | 26.0% | \$1.56 | \$2.11 | \$1.46 | \$403.8 | \$25.7 |
| 2008 | -7.5% | 23.1% | \$1.44 | \$2.60 | \$1.32 | (\$137.4) | \$19.7 |
| 2009 | -27.3% | -42.7% | \$1.05 | \$1.49 | \$1.00 | (\$353.0) | (\$19.6) |
| 2010 | 13.9% | -0.1% | \$1.20 | \$1.49 | \$1.13 | \$196.7 | (\$0.1) |
| 2011 | 24.2% | 49.8% | \$1.48 | \$2.23 | \$1.38 | \$413.0 | \$39.7 |
| 2012 | -1.0% | -10.0% | \$1.47 | \$2.01 | \$1.41 | (\$15.8) | (\$4.9) |
| 2013 | 13.6% | 15.0% | \$1.67 | \$2.31 | \$1.62 | \$246.8 | \$6.4 |
| Total | | | | | | \$1,208.9 | \$101.4 |

North Dakota State Employees' Retirement System

The North Dakota State Employees' Retirement System provides retirement, survivor and disability benefits to state government employees. The System's members include an average of 28,527 retirees and beneficiaries currently receiving benefits, current employees including those vested and non-vested, and inactive employees entitled to benefits but not yet receiving them. The monthly pension payments averaged \$889 per-month over this period.

Table A-ND-4: North Dakota State Employees' Retirement System, Membership Classes and Monthly Benefit Payments, FYs 2005-2013¹⁵⁸

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|----------------|----------------------------|------------------|--------------------|---------------|----------------------------------|
| 2005 | 5,278 | 17,745 | 3,196 | 26,219 | \$769 |
| 2006 | 5,540 | 17,887 | 1,876 | 25,303 | \$796 |
| 2007 | 5,824 | 18,299 | 1,860 | 25,983 | \$825 |
| 2008 | 6,103 | 19,042 | 1,996 | 27,141 | \$855 |
| 2009 | 6,416 | 19,686 | 2,025 | 28,127 | \$880 |
| 2010 | 6,627 | 20,372 | 2,183 | 29,182 | \$906 |
| 2011 | 6,990 | 20,359 | 3,138 | 30,487 | \$945 |
| 2012 | 7,467 | 20,738 | 3,542 | 31,747 | \$1,000 |
| 2013 | 7,844 | 21,201 | 3,505 | 32,550 | \$1,023 |
| Average | 6,454 | 19,481 | 2,591 | 28,527 | \$889 |

¹⁵⁷ North Dakota Public Employees Retirement System, Comprehensive Annual Financial Report; S&P's; author's estimates.

¹⁵⁸ North Dakota Public Employees Retirement System, Comprehensive Annual Financial Report.

The state employees' pension system's investments are well diversified across and within asset classes. Domestic equities accounted for the largest share of assets, averaging 35.4 percent of all assets. Investments in the energy sector, more than 98 percent in oil and gas companies, are calculated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for between 2.3 percent and 5.3 percent of the System's total assets over this period.

**Table A-ND-5: North Dakota State Employees' Retirement System,
Asset Allocation, FYs 2005-2013¹⁵⁹**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 40.4% | 3.8% | 16.0% | 33.2% | 10.4% |
| 2006 | 100.0% | 41.0% | 4.0% | 14.6% | 33.3% | 11.1% |
| 2007 | 100.0% | 41.0% | 5.3% | 16.3% | 31.4% | 11.3% |
| 2008 | 100.0% | 37.7% | 5.0% | 13.9% | 35.7% | 12.7% |
| 2009 | 100.0% | 32.4% | 3.7% | 12.1% | 44.0% | 11.5% |
| 2010 | 100.0% | 36.5% | 4.4% | 13.3% | 39.8% | 10.4% |
| 2011 | 100.0% | 40.2% | 4.9% | 15.0% | 34.2% | 10.6% |
| 2012 | 100.0% | 27.3% | 3.0% | 23.0% | 22.8% | 26.9% |
| 2013 | 100.0% | 22.2% | 2.3% | 30.4% | 22.1% | 25.3% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$1,473.2 | \$595.2 | \$55.4 | \$235.7 | \$489.1 | \$153.2 |
| 2006 | \$1,632.2 | \$669.2 | \$65.6 | \$238.3 | \$543.5 | \$181.2 |
| 2007 | \$1,932.8 | \$792.5 | \$102.2 | \$315.1 | \$606.9 | \$218.4 |
| 2008 | \$1,809.2 | \$682.1 | \$90.7 | \$251.5 | \$645.9 | \$229.8 |
| 2009 | \$1,352.0 | \$438.1 | \$50.4 | \$163.6 | \$594.9 | \$155.5 |
| 2010 | \$1,509.1 | \$550.8 | \$66.1 | \$200.7 | \$600.6 | \$157.0 |
| 2011 | \$1,799.6 | \$723.4 | \$89.0 | \$269.9 | \$615.5 | \$190.8 |
| 2012 | \$1,771.6 | \$483.7 | \$53.4 | \$407.5 | \$403.9 | \$476.6 |
| 2013 | \$1,997.3 | \$443.4 | \$45.4 | \$607.2 | \$441.4 | \$505.3 |

Using the System's reported returns, we calculate that \$1.00 invested in the System in July 2004 grew to \$1.70 in June 2013 (the fiscal year ends on June 30). During this period, \$1.00 invested in the System's oil and gas stocks grew to \$2.31. If the System had not invested in oil and natural gas stocks, \$1.00 invested in June 2004 would have grown to \$1.65 in June 2013. We next estimate the capital gains and losses of the System's assets and the portion invested in oil and natural gas stocks. Over this period, the System's net gains totaled \$1.2 billion, including \$107 million in net gains from investments in the oil and natural gas sector. The oil and natural gas investments, which accounted for about 4.0 percent of the System's total assets, provided 8.9 percent of the System's total gains.

¹⁵⁹ *Ibid.*, and S&P's; and author's estimates.

**Table A-ND-6: North Dakota State Employees' Retirement System,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹⁶⁰**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|---------------|-----------------------------|---|--|--|--|--|---|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 14.1% | 36.8% | \$1.14 | \$1.37 | \$1.09 | \$207.3 | \$20.3 |
| 2006 | 12.0% | 22.5% | \$1.28 | \$1.68 | \$1.21 | \$195.9 | \$14.8 |
| 2007 | 19.0% | 26.0% | \$1.52 | \$2.11 | \$1.41 | \$366.5 | \$26.6 |
| 2008 | -5.6% | 23.1% | \$1.43 | \$2.60 | \$1.30 | (\$101.3) | \$20.9 |
| 2009 | -24.4% | -42.7% | \$1.08 | \$1.49 | \$1.03 | (\$330.2) | (\$21.5) |
| 2010 | 13.7% | -0.1% | \$1.23 | \$1.49 | \$1.17 | \$206.3 | (\$0.1) |
| 2011 | 21.4% | 49.8% | \$1.50 | \$2.23 | \$1.39 | \$385.7 | \$44.4 |
| 2012 | 0.1% | -10.0% | \$1.50 | \$2.01 | \$1.44 | \$1.1 | (\$5.4) |
| 2013 | 13.5% | 15.0% | \$1.70 | \$2.31 | \$1.65 | \$269.6 | \$6.8 |
| Total | | | | | | \$1,200.8 | \$106.9 |

OHIO

Ohio State Teachers Retirement System

The Ohio State Teachers Retirement System provides pension benefits for all Ohio public school employees. The number of retirees and beneficiaries averaged 482,848 persons over this period, and the monthly pension payments paid to them averaged \$3,018.

**Table A-OH-1: Ohio State Teachers Retirement System,
Membership Classes and Monthly Benefit Payments, 2005-2013¹⁶¹**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|----------------|----------------------------|------------------|--------------------|----------------|----------------------------------|
| 2005 | 115,395 | N/A | N/A | 454,692 | \$2,557 |
| 2006 | 119,184 | N/A | N/A | 461,624 | \$2,677 |
| 2007 | 122,934 | N/A | N/A | 469,475 | \$2,796 |
| 2008 | 126,506 | N/A | N/A | 476,287 | \$2,911 |
| 2009 | 129,659 | 174,807 | 133,561 | 486,333 | \$3,025 |
| 2010 | 133,103 | 175,842 | 130,588 | 493,617 | \$3,104 |
| 2011 | 138,088 | 177,897 | 134,301 | 498,395 | \$3,255 |
| 2012 | 143,256 | 173,044 | 134,974 | 500,432 | \$3,383 |
| 2013 | 149,221 | 169,945 | 136,105 | 504,777 | \$3,457 |
| Average | 130,816 | 174,307 | 133,906 | 482,848 | \$3,018 |

¹⁶⁰ North Dakota Public Employees Retirement System, Comprehensive Annual Financial Report; S&P's; and author's estimates.

¹⁶¹ State Teachers Retirement System of Ohio, Comprehensive Annual Financial Report.

The assets of the Ohio State Teachers Retirement System are well diversified. Domestic equities accounted for the largest share of assets, representing 35.9 percent of total assets over this period. Investments in oil and natural gas companies are estimated based on the System's asset allocation and benchmarks. These oil and natural gas investments averaged 4.1 percent of total assets, ranging from 3.4 percent to 4.9 percent. (Table A-OH-2, below)

**Table A-OH-2: Ohio State Teachers Retirement System,
Asset Allocation, FYs 2005-2013¹⁶²**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 44.2% | 4.1% | 19.1% | 21.5% | 15.2% |
| 2006 | 100.0% | 39.3% | 3.9% | 22.8% | 22.7% | 15.3% |
| 2007 | 100.0% | 37.8% | 4.9% | 22.3% | 22.0% | 17.9% |
| 2008 | 100.0% | 33.4% | 4.4% | 21.5% | 20.9% | 24.3% |
| 2009 | 100.0% | 31.8% | 3.7% | 21.0% | 20.1% | 27.2% |
| 2010 | 100.0% | 33.2% | 4.0% | 19.2% | 23.9% | 23.6% |
| 2011 | 100.0% | 35.9% | 4.4% | 19.1% | 19.4% | 25.6% |
| 2012 | 100.0% | 35.0% | 3.9% | 18.3% | 18.0% | 28.8% |
| 2013 | 100.0% | 32.8% | 3.4% | 20.0% | 20.2% | 27.0% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$59,636.8 | \$26,359.5 | \$2,451.4 | \$11,390.6 | \$12,821.9 | \$9,064.8 |
| 2006 | \$67,388.0 | \$26,483.5 | \$2,595.4 | \$15,330.8 | \$15,297.1 | \$10,276.7 |
| 2007 | \$79,599.2 | \$30,104.4 | \$3,883.5 | \$17,774.5 | \$17,511.8 | \$14,208.5 |
| 2008 | \$72,590.3 | \$24,208.9 | \$3,219.8 | \$15,606.9 | \$15,171.4 | \$17,603.1 |
| 2009 | \$54,736.5 | \$17,378.8 | \$1,998.6 | \$11,467.3 | \$11,002.0 | \$14,888.3 |
| 2010 | \$58,774.1 | \$19,530.6 | \$2,343.7 | \$11,290.5 | \$14,058.8 | \$13,894.2 |
| 2011 | \$67,992.6 | \$24,409.3 | \$3,002.3 | \$12,952.6 | \$13,217.8 | \$17,412.9 |
| 2012 | \$65,351.8 | \$22,860.1 | \$2,523.8 | \$11,926.7 | \$11,756.8 | \$18,808.3 |
| 2013 | \$69,883.5 | \$22,921.8 | \$2,347.2 | \$13,969.7 | \$14,109.5 | \$18,882.5 |

Using the System's reported returns, \$1.00 invested in the Ohio State Teachers Retirement System in July 2004 grew to \$1.86 in June 2013 (the plan's fiscal year ends on June 30). Over this period, \$1.00 invested in the S&P Energy Sector grew to \$2.31. If the System had not invested in oil and gas stocks, \$1.00 invested in July 2004 would have grown to \$1.74 in June 2013. We also estimate the capital gains and losses of the Ohio teachers' pension plans' total assets and the portion invested in oil and natural gas stocks. In this period, the System's net gains totaled nearly \$52.1 billion, including almost \$4.0 billion in net gains from investments in oil and natural gas stocks. The oil and natural gas investments accounted for 4.1 percent of the System's total assets and provided 7.6 percent of its total gains.

¹⁶² *Ibid.*, S&P's; and author's estimates.

Table A-OH-3: Ohio State Teachers Retirement System, Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹⁶³

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|---------------|-----------------------------|---|--|--|--|--|---|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 12.3% | 36.8% | \$1.12 | \$1.37 | \$1.07 | \$7,305.5 | \$901.0 |
| 2006 | 13.7% | 22.5% | \$1.28 | \$1.68 | \$1.21 | \$9,252.4 | \$585.2 |
| 2007 | 21.2% | 26.0% | \$1.55 | \$2.11 | \$1.44 | \$16,906.9 | \$1,010.3 |
| 2008 | -5.4% | 23.1% | \$1.46 | \$2.60 | \$1.35 | (\$3,948.9) | \$743.3 |
| 2009 | -21.7% | -42.7% | \$1.15 | \$1.49 | \$1.09 | (\$11,855.9) | (\$852.6) |
| 2010 | 13.5% | -0.1% | \$1.30 | \$1.49 | \$1.24 | \$7,958.0 | (\$3.0) |
| 2011 | 22.6% | 49.8% | \$1.60 | \$2.23 | \$1.50 | \$15,359.5 | \$1,496.5 |
| 2012 | 2.3% | -10.0% | \$1.63 | \$2.01 | \$1.56 | \$1,529.2 | (\$253.5) |
| 2013 | 13.7% | 15.0% | \$1.86 | \$2.31 | \$1.78 | \$9,546.1 | \$351.1 |
| Total | | | | | | \$52,052.8 | \$3,978.3 |

Ohio Public Employees Retirement System

The Ohio Public Employees Retirement System provides retirement, survivor and disability benefits to Ohio state government employees. The System's membership averaged 949,659 people over FYs 2005-2013, including retirees and beneficiaries, current employees vested and non-vested, and inactive employees entitled to benefits but not yet receiving them. The monthly pension payments averaged \$1,766 over this period.

Table A-OH-4: Ohio Public Employees Retirement System, Membership Classes and Monthly Benefit Payments, FYs 2005-2013¹⁶⁴

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|----------------|----------------------------|------------------|--------------------|----------------|----------------------------------|
| 2005 | 151,758 | 381,413 | 327,864 | 861,035 | \$1,471 |
| 2006 | 156,747 | 381,464 | 346,697 | 884,908 | \$1,545 |
| 2007 | 161,348 | 382,177 | 364,823 | 908,348 | \$1,620 |
| 2008 | 166,516 | 374,002 | 395,445 | 935,963 | \$1,696 |
| 2009 | 171,955 | 365,229 | 416,548 | 953,732 | \$1,774 |
| 2010 | 179,565 | 356,734 | 438,434 | 974,733 | \$1,838 |
| 2011 | 189,824 | 349,188 | 451,353 | 990,365 | \$1,901 |
| 2012 | 195,832 | 348,235 | 465,940 | 1,010,007 | \$1,954 |
| 2013 | 196,594 | 347,727 | 483,521 | 1,027,842 | \$2,090 |
| Average | 174,460 | 365,130 | 410,069 | 949,659 | \$1,766 |

¹⁶³ State Teachers Retirement System of Ohio, Comprehensive Annual Financial Report; S&P's; and author's estimates.

¹⁶⁴ Ohio Public Employees Retirement System, Comprehensive Annual Financial Report.

The System's investments are diversified across and within asset classes. Domestic equities are for the largest class of assets, averaging 33.7 percent of the portfolio over this period. Investments in the oil and natural gas sector, calculated based on the System's asset allocation and benchmarks, accounted for an average of 3.8 percent of its total assets over this period.

**Table A-OH-5: Ohio Public Employees Retirement System,
Asset Allocation, FYs 2005-2013¹⁶⁵**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 44.1% | 4.1% | 20.2% | 26.5% | 9.2% |
| 2006 | 100.0% | 43.8% | 4.3% | 20.3% | 27.7% | 8.2% |
| 2007 | 100.0% | 40.7% | 5.3% | 21.4% | 28.2% | 9.7% |
| 2008 | 100.0% | 36.1% | 4.8% | 18.8% | 31.4% | 13.6% |
| 2009 | 100.0% | 40.0% | 4.6% | 22.7% | 25.7% | 11.6% |
| 2010 | 100.0% | 30.5% | 3.7% | 26.5% | 27.0% | 16.0% |
| 2011 | 100.0% | 26.1% | 3.2% | 25.4% | 28.1% | 20.4% |
| 2012 | 100.0% | 21.1% | 2.3% | 24.6% | 28.7% | 25.6% |
| 2013 | 100.0% | 21.1% | 2.2% | 23.3% | 24.6% | 31.0% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$69,191.9 | \$30,513.6 | \$2,837.8 | \$13,976.8 | \$18,335.8 | \$6,365.7 |
| 2006 | \$77,848.7 | \$34,089.9 | \$3,340.8 | \$15,795.5 | \$21,564.1 | \$6,399.2 |
| 2007 | \$83,032.1 | \$33,794.1 | \$4,359.4 | \$17,777.2 | \$23,390.1 | \$8,070.7 |
| 2008 | \$58,718.8 | \$21,215.1 | \$2,821.6 | \$11,056.8 | \$18,437.7 | \$8,009.3 |
| 2009 | \$68,562.1 | \$27,452.2 | \$3,157.0 | \$15,556.7 | \$17,599.9 | \$7,953.2 |
| 2010 | \$76,316.2 | \$23,268.8 | \$2,792.3 | \$20,193.3 | \$20,628.3 | \$12,225.9 |
| 2011 | \$73,996.9 | \$19,335.4 | \$2,378.3 | \$18,787.8 | \$20,807.9 | \$15,065.8 |
| 2012 | \$80,398.5 | \$16,996.3 | \$1,876.4 | \$19,737.8 | \$23,058.3 | \$20,606.1 |
| 2013 | \$88,471.0 | \$18,632.0 | \$1,907.9 | \$20,640.3 | \$21,781.6 | \$27,417.2 |

Using the annual returns reported by the Ohio Public Employees Retirement System, we calculate that \$1.00 invested by the System in January 2005 grew to \$1.78 in December 2013 (the plan's fiscal year ends on December 31). Over this period, \$1.00 invested in the S&P Energy Sector grew to \$2.23. If the System had not invested in oil and natural gas stocks, \$1.00 invested in 2005 would have grown to \$1.73 in 2013. We also estimate the annual capital gains and losses of this System's total assets and of the portion invested in oil and natural gas stocks. Over this period, the System's net gains totaled almost \$57.7 billion, including nearly \$3.4 billion in net gains from investments in the oil and natural gas sector. The oil and natural gas assets of the Ohio State Employees Retirement System accounted for 3.8 percent of its total assets, and yet provided 5.8 percent of the System's total gains.

¹⁶⁵ *Ibid.*, S&P's; and author's estimates.

**Table A-OH-6: Ohio Public Employees Retirement System,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹⁶⁶**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 1/2005 | Return on \$1 of Oil and Natural Gas Assets Invested in 1/2005 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 1/2005 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|---------------|-----------------------------|---|--|--|--|--|---|
| 1/2005 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 9.0% | 29.1% | \$1.09 | \$1.29 | \$1.04 | \$6,227.3 | \$826.9 |
| 2006 | 14.7% | 22.2% | \$1.25 | \$1.58 | \$1.18 | \$11,443.8 | \$742.1 |
| 2007 | 8.5% | 32.4% | \$1.36 | \$2.09 | \$1.25 | \$7,082.6 | \$1,411.7 |
| 2008 | -26.9% | -35.9% | \$0.99 | \$1.34 | \$0.93 | (\$15,807.1) | (\$1,013.9) |
| 2009 | 20.6% | 11.3% | \$1.20 | \$1.49 | \$1.13 | \$14,123.8 | \$356.3 |
| 2010 | 13.9% | 17.9% | \$1.36 | \$1.76 | \$1.30 | \$10,607.9 | \$498.8 |
| 2011 | 0.0% | 2.8% | \$1.36 | \$1.80 | \$1.30 | \$14.8 | \$66.0 |
| 2012 | 14.4% | 2.3% | \$1.56 | \$1.85 | \$1.52 | \$11,577.4 | \$43.8 |
| 2013 | 14.0% | 22.3% | \$1.78 | \$2.26 | \$1.73 | \$12,385.9 | \$425.0 |
| Total | | | | | | \$57,656.4 | \$3,356.6 |

PENNSYLVANIA

Pennsylvania Public School Employees' Retirement System

The Pennsylvania Public School Employees' Retirement System provides pension benefits for all public school employees in the State. The System consists of retirees and beneficiaries receiving benefits, vested and non-vested employees, and inactive employees not receiving benefits. The System reports only current retirees, beneficiaries and employees, averaging 492,621 for FYs 2005-2013.

**Table A-PA-1: Pennsylvania Public School Employees' Retirement System,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013¹⁶⁷**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|----------------|----------------------------|------------------|--------------------|----------------|----------------------------------|
| 2005 | 156,519 | 255,465 | N/A | 411,984 | \$1,612 |
| 2006 | 161,813 | 263,350 | N/A | 425,163 | \$1,686 |
| 2007 | 168,026 | 264,023 | N/A | 432,049 | \$1,748 |
| 2008 | 173,540 | 272,690 | N/A | 446,230 | \$1,830 |
| 2009 | 177,963 | 279,701 | N/A | 457,664 | \$1,871 |
| 2010 | 184,934 | 282,041 | 111,931 | 578,906 | \$1,960 |
| 2011 | 194,622 | 279,152 | 115,102 | 588,876 | \$1,991 |
| 2012 | 202,015 | 273,504 | 122,286 | 597,805 | \$2,010 |
| 2013 | 209,204 | 267,428 | 18,911 | 495,543 | \$2,051 |
| Average | 180,960 | 270,817 | 92,058 | 492,691 | \$1,862 |

¹⁶⁶ Ohio Public Employees Retirement System, Comprehensive Annual Financial Report; S&P's; author's estimates.

¹⁶⁷ Pennsylvania Public School Employees' Retirement System, Comprehensive Annual Financial Report.

The Pennsylvania Public School Employees' Retirement System's investments are well diversified. Domestic equities' share declined sharply starting in 2009 while "Other Assets" increased. Investments in oil and natural gas stocks are based on the System's asset allocation and benchmarks. The plan's U.S. equity investments in oil and natural gas accounted for an average of 2.5 percent of the System's total assets over this period.

Table A-PA-2: Pennsylvania Public School Employees' Retirement System, Assets and Asset Allocation, FYs 2005-2013¹⁶⁸

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 42.5% | 4.0% | 19.0% | 22.0% | 16.5% |
| 2006 | 100.0% | 39.6% | 3.9% | 22.8% | 21.7% | 15.9% |
| 2007 | 100.0% | 32.0% | 4.1% | 28.3% | 20.5% | 19.2% |
| 2008 | 100.0% | 29.1% | 3.9% | 22.5% | 20.8% | 27.6% |
| 2009 | 100.0% | 16.4% | 1.9% | 16.0% | 28.6% | 39.0% |
| 2010 | 100.0% | 12.2% | 1.5% | 16.2% | 27.2% | 44.4% |
| 2011 | 100.0% | 11.6% | 1.4% | 15.0% | 27.0% | 46.4% |
| 2012 | 100.0% | 11.3% | 1.2% | 11.7% | 23.2% | 53.8% |
| 2013 | 100.0% | 9.2% | 0.9% | 10.2% | 23.7% | 56.9% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$52,739.7 | \$22,414.4 | \$2,084.5 | \$10,020.5 | \$11,602.7 | \$8,702.1 |
| 2006 | \$58,719.3 | \$23,252.8 | \$2,278.8 | \$13,388.0 | \$12,742.1 | \$9,336.4 |
| 2007 | \$68,526.5 | \$21,928.5 | \$2,828.8 | \$19,393.0 | \$14,047.9 | \$13,157.1 |
| 2008 | \$63,892.2 | \$18,592.6 | \$2,472.8 | \$14,375.7 | \$13,289.6 | \$17,634.3 |
| 2009 | \$43,343.9 | \$7,108.4 | \$817.5 | \$6,935.0 | \$12,396.4 | \$16,904.1 |
| 2010 | \$46,504.3 | \$5,673.5 | \$680.8 | \$7,533.7 | \$12,649.2 | \$20,647.9 |
| 2011 | \$51,829.2 | \$6,012.2 | \$739.5 | \$7,774.4 | \$13,993.9 | \$24,048.7 |
| 2012 | \$48,540.8 | \$5,485.1 | \$605.6 | \$5,679.3 | \$11,261.5 | \$26,115.0 |
| 2013 | \$49,534.4 | \$4,557.2 | \$466.7 | \$5,052.5 | \$11,739.7 | \$28,185.1 |

Using the returns reported by the Pennsylvania Public School Employees Retirement System, \$1.00 invested in July 2004 grew to \$1.87 in June 2013 (the System's fiscal year ends June 30). For this period, \$1.00 invested in the S&P Energy Sector grew to \$2.31. If the System had not invested in oil and gas stocks, \$1.00 invested in July 2004 would have grown to \$1.85 in June 2013. We also estimate the System's capital gains and losses. In this period, the System's net gains on all assets totaled more than \$44.5 billion, including \$2.6 billion in gains from investments in oil and natural gas stock. The oil and natural gas investments, accounting for 2.5 percent of the System's total assets, provided 5.9 percent of its gains.

¹⁶⁸ *Ibid.*, S&P's; and author's estimates.

Table A-PA-3: Pennsylvania Public School Employees' Retirement System, Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹⁶⁹

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|---------------|-----------------------------|---|--|--|--|--|---|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 12.9% | 36.8% | \$1.13 | \$1.37 | \$1.07 | \$6,787.6 | \$766.2 |
| 2006 | 15.3% | 22.5% | \$1.30 | \$1.68 | \$1.24 | \$8,960.6 | \$513.8 |
| 2007 | 22.9% | 26.0% | \$1.60 | \$2.11 | \$1.51 | \$15,713.1 | \$735.9 |
| 2008 | -2.8% | 23.1% | \$1.55 | \$2.60 | \$1.45 | (\$1,801.8) | \$570.9 |
| 2009 | -26.5% | -42.7% | \$1.14 | \$1.49 | \$1.11 | (\$11,503.5) | (\$348.8) |
| 2010 | 14.6% | -0.1% | \$1.31 | \$1.49 | \$1.29 | \$6,785.0 | (\$0.9) |
| 2011 | 20.4% | 49.8% | \$1.57 | \$2.23 | \$1.54 | \$10,557.6 | \$368.6 |
| 2012 | 3.4% | -10.0% | \$1.63 | \$2.01 | \$1.60 | \$1,665.0 | (\$60.8) |
| 2013 | 14.9% | 15.0% | \$1.87 | \$2.31 | \$1.85 | \$7,385.6 | \$69.8 |
| Total | | | | | | \$44,549.2 | \$2,614.8 |

Pennsylvania State Employees' Retirement System

The Pennsylvania State Employees' Retirement System provides retirement, survivor and disability benefits to employees of the state government. The System reports its membership for retirees and beneficiaries currently receiving benefits, and current employees including those vested and non-vested. These two categories totaled an average of 221,889 over this period. Monthly pension payments to qualified retirees and beneficiaries averaged \$1,514.

Table A-PA-4: Pennsylvania State Employees' Retirement System, Membership Classes and Monthly Benefit Payments, FYs 2005-2013¹⁷⁰

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|----------------|----------------------------|------------------|--------------------|----------------|----------------------------------|
| 2005 | 101,179 | 109,981 | N/A | 211,160 | \$1,318 |
| 2006 | 102,060 | 110,972 | N/A | 213,032 | \$1,352 |
| 2007 | 107,130 | 109,610 | N/A | 216,740 | \$1,437 |
| 2008 | 108,146 | 110,866 | N/A | 219,012 | \$1,470 |
| 2009 | 109,639 | 110,107 | N/A | 219,746 | \$1,510 |
| 2010 | 111,713 | 109,255 | 6,326 | 227,294 | \$1,557 |
| 2011 | 115,342 | 107,021 | 6,189 | 228,552 | \$1,620 |
| 2012 | 117,061 | 106,048 | 6,725 | 229,834 | \$1,658 |
| 2013 | 120,052 | 105,186 | 6,395 | 231,633 | \$1,704 |
| Average | 110,258 | 108,783 | 6,409 | 221,889 | \$1,514 |

¹⁶⁹ Pennsylvania Public School Employees' Retirement System, Comprehensive Annual Financial Report; S&P's; and author's estimates.

¹⁷⁰ Commonwealth of Pennsylvania State Employees' Retirement System, Comprehensive Annual Financial Report.

The Pennsylvania State Employees' Retirement System's investments are diversified across and within asset classes. Investments in equities – domestic and international, including oil and natural gas stocks -- declined in recent years, while holdings of “other assets” rose. The System's investments in the oil and natural gas sector are calculated based on the asset allocation and benchmarks. These equity investments in oil and natural gas companies accounted for between 1.7 percent and 3.5 percent of the System's total assets, averaging 2.5 percent of those assets over the period.

**Table A-PA-5: Pennsylvania State Employees' Retirement System,
Assets and Asset Allocation, FYs 2005-2013¹⁷¹**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | Internationa l Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|------------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 34.0% | 3.2% | 20.9% | 16.0% | 29.1% |
| 2006 | 100.0% | 35.8% | 3.5% | 20.5% | 15.3% | 28.4% |
| 2007 | 100.0% | 24.9% | 3.2% | 20.3% | 13.8% | 41.0% |
| 2008 | 100.0% | 19.6% | 2.6% | 13.7% | 14.3% | 52.4% |
| 2009 | 100.0% | 14.5% | 1.7% | 10.9% | 11.8% | 62.8% |
| 2010 | 100.0% | 14.8% | 1.8% | 12.8% | 14.9% | 57.5% |
| 2011 | 100.0% | 17.2% | 2.1% | 11.7% | 18.3% | 52.8% |
| 2012 | 100.0% | 18.9% | 2.1% | 14.8% | 15.3% | 51.0% |
| 2013 | 100.0% | 19.5% | 2.0% | 16.2% | 14.7% | 49.6% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$28,805.2 | \$9,793.8 | \$910.8 | \$6,020.3 | \$4,608.8 | \$8,382.3 |
| 2006 | \$32,100.5 | \$11,492.0 | \$1,126.2 | \$6,580.6 | \$4,911.4 | \$9,116.5 |
| 2007 | \$35,542.2 | \$8,850.0 | \$1,141.7 | \$7,215.1 | \$4,904.8 | \$14,572.3 |
| 2008 | \$22,907.4 | \$4,489.9 | \$597.2 | \$3,138.3 | \$3,275.8 | \$12,003.5 |
| 2009 | \$24,644.2 | \$3,573.4 | \$410.9 | \$2,686.2 | \$2,908.0 | \$15,476.6 |
| 2010 | \$25,913.5 | \$3,835.2 | \$460.2 | \$3,316.9 | \$3,861.1 | \$14,900.3 |
| 2011 | \$24,405.7 | \$4,197.8 | \$516.3 | \$2,855.5 | \$4,466.2 | \$12,886.2 |
| 2012 | \$25,392.1 | \$4,796.4 | \$529.5 | \$3,756.9 | \$3,885.0 | \$12,953.8 |
| 2013 | \$27,389.7 | \$5,335.0 | \$546.3 | \$4,435.9 | \$4,026.3 | \$13,592.5 |

Using the annual returns reported by the Pennsylvania State Employees' Retirement System, we calculate that \$1.00 invested by the System in January 2005 grew to \$1.78 in December 2013 (the System's fiscal year ends on December 31). Over this period, \$1.00 invested in the S&P Energy Sector grew to \$2.26. If the System had not invested in any oil and natural gas stocks, \$1.00 invested in January 2005 would have grown to \$1.73 in December 2013. We also estimate the annual capital gains and losses of the System's assets and of the portion invested in oil and natural gas stocks. Over this period, the System's net gains totaled more than \$21.7 billion, including \$948 million in net gains from its investments in oil and natural gas companies. These oil and natural gas investments accounted for 2.5 percent of the System's total assets and provided 4.4 percent of the System's total gains.

¹⁷¹ *Ibid.*, S&P's; and author's estimates.

**Table A-PA-6: Pennsylvania State Employees' Retirement System,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹⁷²**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 1/2005 | Return on \$1 of Oil and Natural Gas Assets Invested in 1/2005 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 1/2005 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|---------------|-----------------------------|---|--|--|--|--|---|
| 1/2005 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 14.5% | 29.1% | \$1.15 | \$1.29 | \$1.10 | \$4,176.8 | \$265.4 |
| 2006 | 16.4% | 22.2% | \$1.33 | \$1.58 | \$1.28 | \$5,264.5 | \$250.2 |
| 2007 | 17.2% | 32.4% | \$1.56 | \$2.09 | \$1.49 | \$6,113.3 | \$369.7 |
| 2008 | -28.7% | -35.9% | \$1.11 | \$1.34 | \$1.08 | (\$6,574.4) | (\$214.6) |
| 2009 | 9.1% | 11.3% | \$1.22 | \$1.49 | \$1.19 | \$2,242.6 | \$46.4 |
| 2010 | 11.9% | 17.9% | \$1.36 | \$1.76 | \$1.33 | \$3,083.7 | \$82.2 |
| 2011 | 2.7% | 2.8% | \$1.40 | \$1.80 | \$1.36 | \$659.0 | \$14.3 |
| 2012 | 12.0% | 2.3% | \$1.56 | \$1.85 | \$1.53 | \$3,047.1 | \$12.4 |
| 2013 | 13.6% | 22.3% | \$1.78 | \$2.26 | \$1.73 | \$3,725.0 | \$121.7 |
| Total | | | | | | \$21,737.4 | \$947.6 |

SOUTH CAROLINA

South Carolina Public School Employees' Retirement System

The South Carolina Public School Employees' Retirement System provides pension benefits for all public school employees in the State. The System's reported membership consists of retirees and beneficiaries, and current employees, vested and non-vested. These categories averaged 203,202 members over FYs 2005-2013. The average monthly pension payment was \$1,585 in this period.

**Table A-SC-1: South Carolina Public School Employees' Retirement System,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013¹⁷³**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|----------------|----------------------------|------------------|--------------------|----------------|----------------------------------|
| 2005 | 42,317 | 79,659 | N/A | 121,976 | \$1,505 |
| 2006 | 43,516 | 81,578 | N/A | 125,094 | \$1,553 |
| 2007 | 45,203 | 83,356 | N/A | 128,559 | \$1,590 |
| 2008 | 46,805 | 85,569 | N/A | 132,374 | \$1,623 |
| 2009 | 50,797 | 85,491 | 69,790 | 206,078 | \$1,586 |
| 2010 | 52,240 | 83,935 | 69,213 | 205,388 | \$1,621 |
| 2011 | 51,705 | 83,075 | 70,001 | 204,781 | \$1,605 |
| 2012 | 51,240 | 82,329 | 68,290 | 201,859 | \$1,590 |
| 2013 | 51,238 | 82,325 | 69,639 | 203,202 | \$1,590 |
| Average | 48,340 | 83,035 | 69,387 | 169,924 | \$1,585 |

¹⁷² Commonwealth of Pennsylvania State Employees' Retirement System, Comprehensive Annual Financial Report; S&P's; and author's estimates.

¹⁷³ South Carolina Retirement System, Comprehensive Annual Financial Report.

The public school pension fund's investments are diversified, but in a different pattern from most pension plans. There are no investments in international equities, and U.S. stocks accounted for just 19.2 percent of the fund's assets. However, fixed-income instruments averaged 41.4 percent of all System assets, and "other assets" averaged 39.4 percent of the portfolio. Investments in energy companies, more than 98 percent in oil and gas companies, are estimated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for only 1.6 percent of total assets over this period.

**Table A-SC-2: South Carolina Public School Employees' Retirement System,
Asset Allocation, FYs 2005-2013¹⁷⁴**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 20.2% | 1.9% | 0.0% | 48.4% | 31.4% |
| 2006 | 100.0% | 24.2% | 2.4% | 0.0% | 40.5% | 35.3% |
| 2007 | 100.0% | 17.3% | 2.2% | 0.0% | 48.8% | 33.9% |
| 2008 | 100.0% | 23.4% | 3.1% | 0.0% | 36.7% | 39.9% |
| 2009 | 100.0% | 10.8% | 1.2% | 0.0% | 32.6% | 56.7% |
| 2010 | 100.0% | 7.1% | 0.9% | 0.0% | 29.5% | 63.4% |
| 2011 | 100.0% | 7.8% | 1.0% | 4.6% | 26.2% | 61.4% |
| 2012 | 100.0% | 7.3% | 0.8% | 6.8% | 21.2% | 64.8% |
| 2013 | 100.0% | 6.4% | 0.7% | 6.3% | 31.8% | 55.4% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$9,962.4 | \$2,009.4 | \$186.9 | \$0.0 | \$4,825.8 | \$3,128.2 |
| 2006 | \$10,106.2 | \$2,448.7 | \$240.0 | \$0.0 | \$4,097.1 | \$3,557.4 |
| 2007 | \$11,027.9 | \$1,903.4 | \$245.5 | \$0.0 | \$5,376.1 | \$3,749.5 |
| 2008 | \$10,285.2 | \$2,405.7 | \$320.0 | \$0.0 | \$3,777.8 | \$4,097.6 |
| 2009 | \$8,133.5 | \$875.1 | \$100.6 | \$0.0 | \$2,648.4 | \$4,610.0 |
| 2010 | \$8,741.3 | \$621.1 | \$74.5 | \$0.1 | \$2,581.7 | \$5,538.5 |
| 2011 | \$10,287.5 | \$801.0 | \$98.5 | \$476.4 | \$2,696.9 | \$6,313.2 |
| 2012 | \$9,797.7 | \$714.5 | \$78.9 | \$666.2 | \$2,072.5 | \$6,344.4 |
| 2013 | \$10,592.1 | \$683.0 | \$69.9 | \$665.0 | \$3,371.2 | \$5,872.9 |

Using the public school pension system's reported annual returns, we calculate that \$1.00 invested in the System in July 2004 grew to \$1.51 in June 2013 (the System's fiscal year ends on June 31). During this period, \$1.00 invested in energy stocks grew to \$2.32. If the System had not invested in oil and natural gas stocks, \$1.00 invested in July 2004 would have been worth \$1.50 in June 2013. We also estimate the annual capital gains and losses of the public school pension system's total assets and the portion invested in oil and natural gas stocks. Over this period, the System's net gains totaled almost \$5.2 billion, including \$269 million in net gains from investments in the oil and natural gas sector. The System's oil and natural gas investments, which accounted for just 1.6 percent of its total assets, provided 5.2 percent of its total gains.

¹⁷⁴ *Ibid.*, S&P's; and author's estimates.

Table A-SC-3: South Carolina Public School Employees' Retirement System, Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹⁷⁵

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|---------------|-----------------------------|---|--|--|--|--|---|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 7.0% | 36.8% | \$1.07 | \$1.37 | \$1.04 | \$697.4 | \$68.7 |
| 2006 | 5.1% | 22.5% | \$1.12 | \$1.68 | \$1.08 | \$515.4 | \$54.1 |
| 2007 | 13.4% | 26.0% | \$1.28 | \$2.11 | \$1.23 | \$1,477.7 | \$63.9 |
| 2008 | -2.6% | 23.1% | \$1.24 | \$2.60 | \$1.16 | (\$267.4) | \$73.9 |
| 2009 | -19.0% | -42.7% | \$1.01 | \$1.49 | \$0.99 | (\$1,545.4) | (\$42.9) |
| 2010 | 14.6% | -0.1% | \$1.15 | \$1.49 | \$1.14 | \$1,278.0 | (\$0.1) |
| 2011 | 18.6% | 49.8% | \$1.37 | \$2.23 | \$1.35 | \$1,912.5 | \$49.1 |
| 2012 | 0.6% | -10.0% | \$1.38 | \$2.01 | \$1.36 | \$59.8 | (\$7.9) |
| 2013 | 10.0% | 15.0% | \$1.51 | \$2.31 | \$1.50 | \$1,058.2 | \$10.5 |
| Total | | | | | | \$5,186.1 | \$269.2 |

South Carolina State Employees' Retirement System

The South Carolina State Employees' Retirement System provides retirement, survivor and disability benefits to state government employees. The System reports membership among current retirees and beneficiaries and active employees, totaling an average of 129,465 over this period, including since 2009 "inactive" workers who left jobs working for the State but still are entitled to some coverage. The average pension benefit paid out over this period was \$1,461.

Table A-SC-4: South Carolina State Employees' Retirement System, Membership Classes and Monthly Benefit Payments, FYs 2005-2013¹⁷⁶

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|----------------|----------------------------|------------------|--------------------|----------------|----------------------------------|
| 2005 | 45,605 | 53,098 | N/A | 98,703 | \$1,426 |
| 2006 | 46,713 | 53,360 | N/A | 100,073 | \$1,469 |
| 2007 | 48,492 | 53,971 | N/A | 102,463 | \$1,494 |
| 2008 | 50,325 | 55,053 | N/A | 105,378 | \$1,521 |
| 2009 | 57,217 | 54,347 | 44,366 | 155,930 | \$1,467 |
| 2010 | 59,154 | 53,142 | 43,821 | 156,117 | \$1,500 |
| 2011 | 57,574 | 51,723 | 43,583 | 152,881 | \$1,460 |
| 2012 | 56,011 | 50,318 | 41,737 | 148,066 | \$1,421 |
| 2013 | 54,764 | 49,198 | 41,617 | 145,579 | \$1,389 |
| Average | 52,873 | 52,690 | 43,025 | 129,465 | \$1,461 |

¹⁷⁵ South Carolina Retirement System, Comprehensive Annual Financial Report; S&P's; and author's estimates.

¹⁷⁶ South Carolina Retirement System, Comprehensive Annual Financial Report.

The state employees' pension system's investments are also allocated unlike most other state pension systems, again with no holdings of international equities, low holdings of U.S. equities, and large holdings of both fixed-income instruments and "other assets" that range from cash accounts to hedge funds. Investments in the energy sector, more than 98 percent in oil and gas companies, are calculated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for between 0.7 percent and 3.1 percent of total assets, and averaged 1.6 percent.

**Table A-SC-5: South Carolina State Employees' Retirement System,
Asset Allocation, FYs 2005-2013¹⁷⁷**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 20.2% | 1.9% | 0.0% | 48.4% | 31.4% |
| 2006 | 100.0% | 24.2% | 2.4% | 0.0% | 40.5% | 35.3% |
| 2007 | 100.0% | 17.3% | 2.2% | 0.0% | 48.8% | 33.9% |
| 2008 | 100.0% | 23.4% | 3.1% | 0.0% | 36.7% | 39.9% |
| 2009 | 100.0% | 10.8% | 1.2% | 0.0% | 32.6% | 56.7% |
| 2010 | 100.0% | 7.1% | 0.9% | 0.0% | 29.5% | 63.4% |
| 2011 | 100.0% | 7.8% | 1.0% | 4.6% | 26.2% | 61.4% |
| 2012 | 100.0% | 7.3% | 0.8% | 6.8% | 21.2% | 64.8% |
| 2013 | 100.0% | 6.4% | 0.7% | 6.3% | 31.8% | 55.4% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$8,061.6 | \$1,626.0 | \$151.2 | \$0.0 | \$3,905.0 | \$2,531.3 |
| 2006 | \$8,084.8 | \$1,958.9 | \$192.0 | \$0.0 | \$3,277.6 | \$2,845.8 |
| 2007 | \$8,789.3 | \$1,517.0 | \$195.7 | \$0.0 | \$4,284.8 | \$2,988.4 |
| 2008 | \$8,187.7 | \$1,915.1 | \$254.7 | \$0.0 | \$3,007.3 | \$3,262.0 |
| 2009 | \$6,456.6 | \$694.7 | \$79.9 | \$0.0 | \$2,102.4 | \$3,659.5 |
| 2010 | \$5,534.4 | \$393.2 | \$47.2 | \$0.1 | \$1,634.5 | \$3,506.6 |
| 2011 | \$6,405.1 | \$498.7 | \$61.3 | \$296.6 | \$1,679.1 | \$3,930.7 |
| 2012 | \$5,988.2 | \$436.7 | \$48.2 | \$407.2 | \$1,266.7 | \$3,877.6 |
| 2013 | \$6,329.9 | \$408.2 | \$41.8 | \$397.4 | \$2,014.6 | \$3,509.7 |

Using the System's reported returns, we calculate that \$1.00 invested in the System in July 2004 grew to \$1.51 in June 2013 (the System's fiscal year ends on June 30). During this period, \$1.00 invested in the System's oil and gas stocks grew to \$2.31. If the System had not invested in oil and natural gas stocks, \$1.00 invested in June 2004 would have been worth \$1.50 eight years later, in June 2013. We also estimate the capital gains and losses of the System's assets and the portion invested in oil and natural gas stocks. Over this period, the System's net gains totaled almost \$3.4 billion, including \$206 million in net gains from investments in the oil and natural gas sector. The oil and natural gas investments, which accounted for 1.6 percent of the System's total assets, provided 6.1 percent of its total gains.

¹⁷⁷ *Ibid.*, and S&P's; and author's estimates.

**Table A-SC-6: South Carolina State Employees' Retirement System,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹⁷⁸**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|---------------|-----------------------------|---|--|--|--|--|---|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 7.0% | 36.8% | \$1.07 | \$1.37 | \$1.04 | \$564.3 | \$55.6 |
| 2006 | 5.1% | 22.5% | \$1.12 | \$1.68 | \$1.08 | \$412.3 | \$43.3 |
| 2007 | 13.4% | 26.0% | \$1.28 | \$2.11 | \$1.23 | \$1,177.8 | \$50.9 |
| 2008 | -2.6% | 23.1% | \$1.24 | \$2.60 | \$1.16 | (\$212.9) | \$58.8 |
| 2009 | -19.0% | -42.7% | \$1.01 | \$1.49 | \$0.99 | (\$1,226.8) | (\$34.1) |
| 2010 | 14.6% | -0.1% | \$1.15 | \$1.49 | \$1.14 | \$809.1 | (\$0.1) |
| 2011 | 18.6% | 49.8% | \$1.37 | \$2.23 | \$1.35 | \$1,190.7 | \$30.6 |
| 2012 | 0.6% | -10.0% | \$1.38 | \$2.01 | \$1.36 | \$36.5 | (\$4.8) |
| 2013 | 10.0% | 15.0% | \$1.51 | \$2.31 | \$1.50 | \$632.4 | \$6.3 |
| Total | | | | | | \$3,383.5 | \$206.4 |

WEST VIRGINIA

West Virginia Teachers' Retirement System

The West Virginia Teachers' Retirement System provides pension benefits for all public school employees in the State. Its membership consists of retirees and beneficiaries; current employees, both vested and non-vested; and inactive employees entitled to benefits at some time. Those members averaged 63,210 over FYs 2005-2013, and the monthly pension payments paid to qualified retirees and beneficiaries averaged \$1,452.

**Table A-WV-1: West Virginia Teachers' Retirement System,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013¹⁷⁹**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|----------------|----------------------------|------------------|--------------------|---------------|----------------------------------|
| 2005 | 26,332 | 17,939 | N/A | N/A | \$1,137 |
| 2006 | 29,062 | 19,208 | 2,931 | 51,201 | \$1,190 |
| 2007 | 29,738 | 21,016 | 2,836 | 53,590 | \$1,251 |
| 2008 | 30,290 | 21,405 | 2,731 | 54,426 | \$1,307 |
| 2009 | 30,913 | 35,844 | 2,807 | 69,564 | \$1,366 |
| 2010 | 31,771 | 36,611 | 3,089 | 71,471 | \$2,289 |
| 2011 | 32,113 | 35,883 | 3,256 | 71,252 | \$1,481 |
| 2012 | 31,913 | 35,807 | 3,243 | 70,963 | \$1,597 |
| 2013 | N/A | N/A | N/A | N/A | N/A |
| Average | 30,267 | 27,964 | 2,985 | 63,210 | \$1,452 |

¹⁷⁸ South Carolina Retirement System, Comprehensive Annual Financial Report; S&P's; and author's estimates.

¹⁷⁹ West Virginia Consolidated Public Retirement Board, Comprehensive Annual Financial Report.

The teachers' pension fund's investments are well diversified. Domestic equities and fixed income instruments accounted for the largest shares of assets, averaging 28.3 percent and 31.7 percent, respectively. Investments in energy companies, more than 98 percent in oil and gas companies, are estimated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for an average of 3.2 percent of total assets over this period.

**Table A-WV-2: West Virginia Teachers' Retirement System,
Asset Allocation, FYs 2005-2013¹⁸⁰**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|--------------|-----------------------------------|--|-----------------------------------|-------------------------|-------------------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 39.9% | 3.7% | 19.3% | 40.8% | 0.0% |
| 2006 | 100.0% | 35.0% | 3.4% | 18.0% | 47.0% | 0.0% |
| 2007 | 100.0% | 29.0% | 3.7% | 14.0% | 57.0% | 0.0% |
| 2008 | 100.0% | 30.0% | 4.0% | 29.0% | 30.0% | 11.0% |
| 2009 | 100.0% | 24.4% | 2.8% | 26.4% | 24.3% | 24.9% |
| 2010 | 100.0% | 22.5% | 2.7% | 24.7% | 22.5% | 30.3% |
| 2011 | 100.0% | 24.2% | 3.0% | 24.4% | 23.5% | 27.9% |
| 2012 | 100.0% | 24.5% | 2.7% | 25.0% | 20.1% | 30.4% |
| 2013 | 100.0% | 24.9% | 2.5% | 25.2% | 20.5% | 29.4% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$1,598.2 | \$637.4 | \$59.3 | \$308.7 | \$652.1 | \$0.0 |
| 2006 | \$2,079.4 | \$727.8 | \$71.3 | \$374.3 | \$977.3 | \$0.0 |
| 2007 | \$3,638.2 | \$1,055.1 | \$136.1 | \$509.4 | \$2,073.8 | \$0.0 |
| 2008 | \$3,347.6 | \$1,004.3 | \$133.6 | \$970.8 | \$1,004.3 | \$368.2 |
| 2009 | \$3,513.0 | \$857.2 | \$98.6 | \$927.4 | \$853.7 | \$874.7 |
| 2010 | \$4,099.3 | \$922.4 | \$110.7 | \$1,012.5 | \$922.4 | \$1,242.1 |
| 2011 | \$5,010.2 | \$1,212.5 | \$149.1 | \$1,222.5 | \$1,177.4 | \$1,397.8 |
| 2012 | \$4,968.6 | \$1,217.3 | \$134.4 | \$1,242.1 | \$998.7 | \$1,510.4 |
| 2013 | \$5,717.6 | \$1,423.7 | \$145.8 | \$1,440.8 | \$1,172.1 | \$1,681.0 |

Using the teachers' pension system's reported annual returns, we calculate that \$1.00 invested in the System in July 2004 grew to \$1.75 in June 2013 (the fund's fiscal year ends on June 31). During this period, \$1.00 invested in energy stocks grew to \$2.31. If the System had not invested in oil and natural gas stocks, \$1.00 invested in July 2004 would have grown to \$1.69 in June 2013. We also estimate the annual capital gains and losses of the public school pension system's assets and the portion invested in oil and natural gas stocks. Over this period, the System's net gains totaled an estimated \$2.6 billion, including nearly \$145 million in net gains from investments in the oil and natural gas sector. The System's oil and natural gas investments, which accounted for 3.2 percent of its total assets, provided 5.5 percent of its total gains.

¹⁸⁰ *Ibid.*, S&P's; and author's estimates.

**Table A-WV-3: West Virginia Teachers' Retirement System,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹⁸¹**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|---------------|-----------------------------|---|--|--|--|--|---|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 10.6% | 36.8% | \$1.11 | \$1.37 | \$1.06 | \$169.4 | \$21.8 |
| 2006 | 9.6% | 22.5% | \$1.21 | \$1.68 | \$1.15 | \$199.6 | \$16.1 |
| 2007 | 17.4% | 26.0% | \$1.42 | \$2.11 | \$1.34 | \$633.1 | \$35.4 |
| 2008 | -7.7% | 23.1% | \$1.31 | \$2.60 | \$1.21 | (\$257.8) | \$30.8 |
| 2009 | -16.1% | -42.7% | \$1.10 | \$1.49 | \$1.06 | (\$565.6) | (\$42.1) |
| 2010 | 15.2% | -0.1% | \$1.27 | \$1.49 | \$1.23 | \$623.1 | (\$0.1) |
| 2011 | 20.5% | 49.8% | \$1.53 | \$2.23 | \$1.46 | \$1,027.1 | \$74.3 |
| 2012 | 1.0% | -10.0% | \$1.55 | \$2.01 | \$1.49 | \$49.7 | (\$13.5) |
| 2013 | 13.0% | 15.0% | \$1.75 | \$2.31 | \$1.69 | \$743.3 | \$21.8 |
| Total | | | | | | \$2,621.9 | \$144.6 |

West Virginia Public Employees' Retirement System

The West Virginia Public Employees' Retirement System covers state government employees. Its' average membership over this period was 71,890; and the average monthly pension it provided to qualified retirees and beneficiaries was \$981.

**Table A-WV-4: West Virginia Public Employees' Retirement System,
Membership Classes and Monthly Benefit Payments, FYs 2005-2013¹⁸²**

| Fiscal Year | Retirees and Beneficiaries | Active Employees | Inactive Employees | Total | Average Monthly Benefit Payments |
|----------------|----------------------------|------------------|--------------------|---------------|----------------------------------|
| 2005 | 19,364 | 36,256 | N/A | N/A | \$819 |
| 2006 | 21,404 | 35,360 | 12,778 | 69,542 | \$856 |
| 2007 | 20,684 | 35,716 | 13,567 | 69,967 | \$901 |
| 2008 | 21,171 | 35,486 | 14,547 | 71,204 | \$945 |
| 2009 | 18,796 | 35,712 | 15,135 | 69,643 | \$1,057 |
| 2010 | 23,413 | 35,938 | 15,355 | 74,706 | \$1,013 |
| 2011 | 23,978 | 36,254 | 16,045 | 76,277 | \$1,054 |
| 2012 | 23,460 | 36,573 | 15,992 | N/A | \$1,205 |
| 2013 | N/A | N/A | N/A | N/A | N/A |
| Average | 21,534 | 35,912 | 14,774 | 71,890 | \$981 |

¹⁸¹ West Virginia Consolidated Public Retirement Board, Comprehensive Annual Financial Report; S&P's; and author's estimates.

¹⁸² West Virginia Consolidated Public Retirement Board, Comprehensive Annual Financial Report.

The public employees' pension system's investments are well diversified across and within asset classes. Fixed income instruments accounted for the largest share of assets, averaging 30.8 percent of all assets, followed by domestic equities at an average of 29.6 percent. Investments in the energy sector, more than 98 percent in oil and gas companies, are calculated based on the System's asset allocation and benchmarks. Equity investments in oil and natural gas companies accounted for between 2.6 percent and 4.9 percent of the System's total assets, and averaged 3.3 percent over this period.

**Table A-WV-5: West Virginia Public Employees' Retirement System,
Asset Allocation, FYs 2005-2013¹⁸³**

| Fiscal Year | Total | US Stocks: All Sectors | US Oil and Natural Gas Stocks | International Equities | Fixed Income | Other Assets |
|--------------------------------------|-----------|---------------------------|-------------------------------------|---------------------------|-----------------|-----------------|
| <i>As percentage of total assets</i> | | | | | | |
| 2005 | 100.0% | 40.7% | 3.8% | 20.3% | 38.9% | 0.0% |
| 2006 | 100.0% | 38.0% | 3.7% | 20.0% | 42.0% | 0.0% |
| 2007 | 100.0% | 38.0% | 4.9% | 24.0% | 38.0% | 0.0% |
| 2008 | 100.0% | 27.0% | 3.6% | 21.0% | 41.0% | 11.0% |
| 2009 | 100.0% | 24.8% | 2.9% | 26.6% | 28.8% | 19.8% |
| 2010 | 100.0% | 22.7% | 2.7% | 25.0% | 25.2% | 27.1% |
| 2011 | 100.0% | 25.2% | 3.1% | 25.1% | 23.1% | 26.6% |
| 2012 | 100.0% | 24.4% | 2.7% | 25.0% | 21.5% | 29.1% |
| 2013 | 100.0% | 25.4% | 2.6% | 25.7% | 18.9% | 30.0% |
| <i>In millions of US dollars</i> | | | | | | |
| 2005 | \$3,400.4 | \$1,384.9 | \$128.8 | \$691.3 | \$1,324.3 | \$0.0 |
| 2006 | \$3,696.0 | \$1,404.5 | \$137.6 | \$739.2 | \$1,552.3 | \$0.0 |
| 2007 | \$4,289.1 | \$1,629.8 | \$210.3 | \$1,029.4 | \$1,629.8 | \$0.0 |
| 2008 | \$3,934.4 | \$1,062.3 | \$141.3 | \$826.2 | \$1,613.1 | \$432.8 |
| 2009 | \$3,243.8 | \$804.5 | \$92.5 | \$862.8 | \$934.2 | \$642.3 |
| 2010 | \$3,682.1 | \$835.8 | \$100.3 | \$920.5 | \$927.9 | \$997.9 |
| 2011 | \$4,359.0 | \$1,098.5 | \$135.1 | \$1,094.1 | \$1,006.9 | \$1,159.5 |
| 2012 | \$4,352.1 | \$1,061.9 | \$117.2 | \$1,088.0 | \$935.7 | \$1,266.5 |
| 2013 | \$4,848.4 | \$1,231.5 | \$126.1 | \$1,246.0 | \$916.3 | \$1,454.5 |

Using the System's reported returns, we calculate that \$1.00 invested in the System in July 2004 grew to \$1.80 in June 2013 (the System's fiscal year ends on June 30). During this period, \$1.00 invested in the System's oil and gas stocks grew to \$2.31. If the System had not invested in oil and natural gas stocks, \$1.00 invested in June 2004 would have grown to \$1.74 in June 2013. We also estimate the capital gains and losses of the System's assets and the portion invested in oil and natural gas stocks. Over this period, the System's net gains totaled some \$2.9 billion, including about \$200 million in net gains from investments in the oil and natural gas sector. The oil and natural gas investments, which accounted for 3.3 percent of the System's total assets, provided nearly 7.0 percent of the System's total gains.

¹⁸³ *Ibid.*, and S&P's; and author's estimates.

**Table A-WV-6: West Virginia Public Employees' Retirement System,
Returns and Gains for All Assets and Oil and Natural Gas Investments, FYs 2005-2013¹⁸⁴**

| Fiscal Year | Annual Return on All Assets | Annual Return on Oil and Natural Gas Stocks | Return on \$1 of All Assets Invested in 7/2004 | Return on \$1 of Oil and Natural Gas Assets Invested in 7/2004 | Return on \$1 of Non-Oil and Natural Gas Assets Invested in 7/2004 | Capital Gains from All Assets (millions) | Capital Gains From Oil and Natural Gas Investments (millions) |
|--------------------|------------------------------------|--|---|---|---|---|--|
| 7/2004 | | | \$1.00 | \$1.00 | \$1.00 | | |
| 2005 | 10.7% | 36.8% | \$1.11 | \$1.37 | \$1.06 | \$363.8 | \$47.3 |
| 2006 | 9.5% | 22.5% | \$1.21 | \$1.68 | \$1.15 | \$351.1 | \$31.0 |
| 2007 | 17.6% | 26.0% | \$1.43 | \$2.11 | \$1.32 | \$754.9 | \$54.7 |
| 2008 | -6.5% | 23.1% | \$1.33 | \$2.60 | \$1.24 | (\$255.7) | \$32.6 |
| 2009 | -15.6% | -42.7% | \$1.12 | \$1.49 | \$1.08 | (\$506.0) | (\$39.5) |
| 2010 | 16.0% | -0.1% | \$1.30 | \$1.49 | \$1.26 | \$589.1 | (\$0.1) |
| 2011 | 20.7% | 49.8% | \$1.58 | \$2.23 | \$1.51 | \$902.3 | \$67.3 |
| 2012 | 1.1% | -10.0% | \$1.59 | \$2.01 | \$1.54 | \$47.9 | (\$11.8) |
| 2013 | 13.1% | 15.0% | \$1.80 | \$2.31 | \$1.74 | \$635.1 | \$18.9 |
| Total | | | | | | \$2,882.5 | \$200.5 |

¹⁸⁴ West Virginia Consolidated Public Retirement Board, Comprehensive Annual Financial Report; S&P's; and author's estimates.

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About the Author

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