

**Does Equity Investing Pose an Unacceptable Risk
for
Indiana Pension Funds?**



Fiscal Policy Report No. 12

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Foreword

The amount invested in pension and retirement programs throughout the United States now totals more than \$5 trillion. Pension income will become even more significant to the baby boom generation as it closes in on 65. Indiana has done a great deal to improve its public pension systems in the past 3 years, but its investment guidelines remain rooted in the mid-nineteenth century.

Investing is a risk versus return subject area. Although the issues are complex, the investment of pension funds is one of the most straightforward sub-disciplines within investing. This report of the Indiana Fiscal Policy Institute looks at the risks and the rewards of expanding the State's investment options to include stocks (equities).

To take this subject beyond the level of another editorial, the Institute developed an historical model with which to simulate the pension experience of Indiana's two largest funds, PERF and TERF, over a period long enough to draw valid conclusions. The gathering of data for these models was greatly aided by Garth Dickey at PERF, Ron Block at William M. Mercer, and Lee Tanner at Prime Capital. Dick Boggs at Brunley Associates and Doug Todd at McCready and Keene were especially helpful in reviewing the simulations. Thanks also to Mary Petterson and Bob Newland at TRF and Sandra Rodwan at Gabriel, Roeder, Smith and Company for their assistance in gathering data and in reviewing models for the Teachers' funds.

Few Indiana pension issues can be thoroughly researched without the aid of Mary Beth Braitman at Ice Miller Donadio and Ryan and Jim Sperlik at the Legislative Services Agency, and this one was no exception. Of course the calculations and conclusions presented in this report are the work of the staff of the Indiana Fiscal Policy Institute, as are any errors contained herein.

The Indiana Fiscal Policy Institute (IFPI), formed in 1987, is a private non-profit governmental research organization. It is the only independent statewide source of continuing research into the impact of state taxing and spending policies in Indiana. The IFPI is privately supported by a variety of organizations, corporations, associations, and individuals in Indiana and surrounding states. Contributions to the IFPI are fully deductible under section 501 (c)(3) of the Internal Revenue Code.

Does Equity Investing Pose an Unacceptable Risk for Indiana's Pension Funds?

Introduction

In November of this year, Indiana voters will be asked to address the question, “Should the State be allowed to invest its pension funds in stocks as well as bonds?” The question was a statewide ballot issue twice before, once in 1986 and again in 1990, failing both times by narrow margins. The prior public debates were surrounded by mis-information and demagoguery. This Institute report reviews the risks and rewards of saying “yes” to Question #2 on the statewide ballot.

1996 Ballot Language

Shall Section 12 of Article XI of the Constitution of the State of Indiana be amended to allow State retirement funds to invest in stocks and other securities?

Background

Article XI, Section 12 of the Indiana Constitution prohibits the State from holding stock in a bank, giving or loaning the credit of the State, or becoming a stockholder in any corporation.¹ The ban, inserted into the constitution of 1851, stems from the problems encountered by the State as a result of its financial backing of the Wabash and Erie Canal, in 1836. Although specifically inserted to prevent the involvement of the State in banks, the language in Section 12 had the larger purpose of keeping the State from becoming a partner in a speculative venture.

The practical application of this constitutional provision is to eliminate stocks as an investment option for State pension funds. Indiana is one of only three states in the nation for which that option is not available.

What is at Stake in this Issue?

Pensions are an area of finance that many persons avoid. It is a subject involving large sums of money, long periods of time, and esoteric mathematics. What could be less appealing? Unfortunately, the public cost of pensions will not simply disappear, if ignored. The voters/taxpayers of the State are, for all practical purposes, the employers of state and local government workers. The total number of public school teachers, police officers, fire fighters, state government workers, and local government employees comes to approximately 220,000 persons. Part of the cost of employing those individuals is providing for their pensions.

The State's two largest pension funds, covering 95% of those persons, are the Public Employees' Pension Fund (PERF) and the Teachers' Retirement Fund (TRF). Past reports by the Indiana Fiscal Policy Institute have examined the unfunded liability in the TRF and its consequences. During the 1993 through 1995 legislative sessions, the Indiana General Assembly put into place mechanisms to limit the burden that the TRF's liability places on the State's fiscal system in the next century. However, the last pension policy issue to be resolved, investment in equities, awaits the decision of the State's electorate this fall.

Fund	Active Members	Retired Members	Assets in 1995
PERF	145,802	42,413	\$ 5,476,672.9
Conservation and Excise Officers	244	115	21,750.4
Judges	334	191	48,943.6
1977 Police and Fire Fund	7,487	167	724,751.5
Legislators	180	21	8,208.8
Prosecuting Attorneys	308	10	3,872.2
TRF	66,546	29,372	2,983,579.1
Total	220,901	72,289	\$ 9,267,778.5

How are Indiana's Pension Funds Governed?

State law provides for both the Public Employees' Retirement Fund and the Teachers' Retirement Fund to be governed by oversight boards, appointed by the Governor [IC 5-10.3-3 and IC 21-6.1-3 respectively]. Both major political parties must be represented on the Boards and each provides for representation from the funds' membership. PERF and TRF are organized as state agencies with a director and employees to handle the administrative duties of distributing retirement benefits and maintaining the lists of members. The Boards of Trustees provide for the governing policies of the

funds and review the analysis of the funds' performance. As an example, PERF's Board of Trustees is required to gather data and provide for analyses within the following areas:

- ✓ Income and expenditures,
- ✓ Actuarial condition,
- ✓ Reserve accounts,
- ✓ Investments, and
- ✓ Other data necessary to interpreting the fund's condition.

Annually, the Boards must give a report to fund members on the status of the members' accounts and the performance of the funds. The analyses of the funds' performance are done by outside investment consultants retained by the Boards (regularly in the case of PERF and periodically in the case of TRF). The adequacy of each fund's asset base and contribution flow is annually determined by an actuarial valuation, a public report, made by an independent actuarial firm hired by the Board.

In addition to the direct control maintained by the Trustees, the Indiana General Assembly in 1985 established the Pension Management Oversight Commission (PMOC) and charged it with the general oversight of public pension policy in the State. The commission is a twelve member, bi-partisan, joint legislative/public body, required to make annual reports to the entire legislature. By statute, the four non-legislative commissioners are to be experts in "finance, investments and pension[s]." Although PMOC may direct its attention and analysis to any area of public pension policy, the commission is specifically directed to:

- ① Study the investment and management practices of the Boards of the public retirement funds.
- ② Determine what constitutes adequate wage replacement levels at retirement (including benefits from public retirement fund and social security) for public employees.
- ③ Study the impact of federal law and proposals concerning pensions, annuities, and retirement benefits.
- ④ Study the retirement funds established in IC 36-8.
- ⑤ Study methods and levels of funding for public retirement funds.

Beyond the provision for general oversight of public pensions, the State's statutes require the Trustees of PERF and TRF to observe what is called the "Prudent Investor Rule" in their governance of Indiana's pension funds. This provision, passed in 1996 to replace the "Prudent Person Rule," is the highest standard of governance that applies to pension management. The

rule dictates how and to what extent the trustees of a pension plan execute their fiduciary responsibility. The Prudent Investor Rule requires the fiduciary to evaluate the risk of the fund investments, as well as appropriate protections and diversifications.

This standard is sometimes called the ERISA standard and as applied to Indiana reads as follows:²

The Board shall invest its assets with the care, skill, prudence, and diligence that a prudent person acting in a like capacity and familiar with such matters would use in the conduct of an enterprise of a like character with like aims. The Board shall also diversify such investments in accordance with prudent investment standards. IC 5-10.3-5-3(a).

According to a survey by the National Conference of State Legislatures, 23 states use the Prudent Investor Rule, 14 use the Prudent Person Rule and 13 others have some standard of prudence applying to pension fiduciaries. A copy of the relevant section of the Uniform Prudent Investor Act can be found in Appendix A of this report.

Roles in the Investment Decision-Making Process

For many Indiana taxpayers and voters, the current process used by state pension funds to make investment decisions is a mystery. It should be clear from the discussion above that pension management receives a great deal of scrutiny. However, the question remains, “How are investment decisions actually made?”

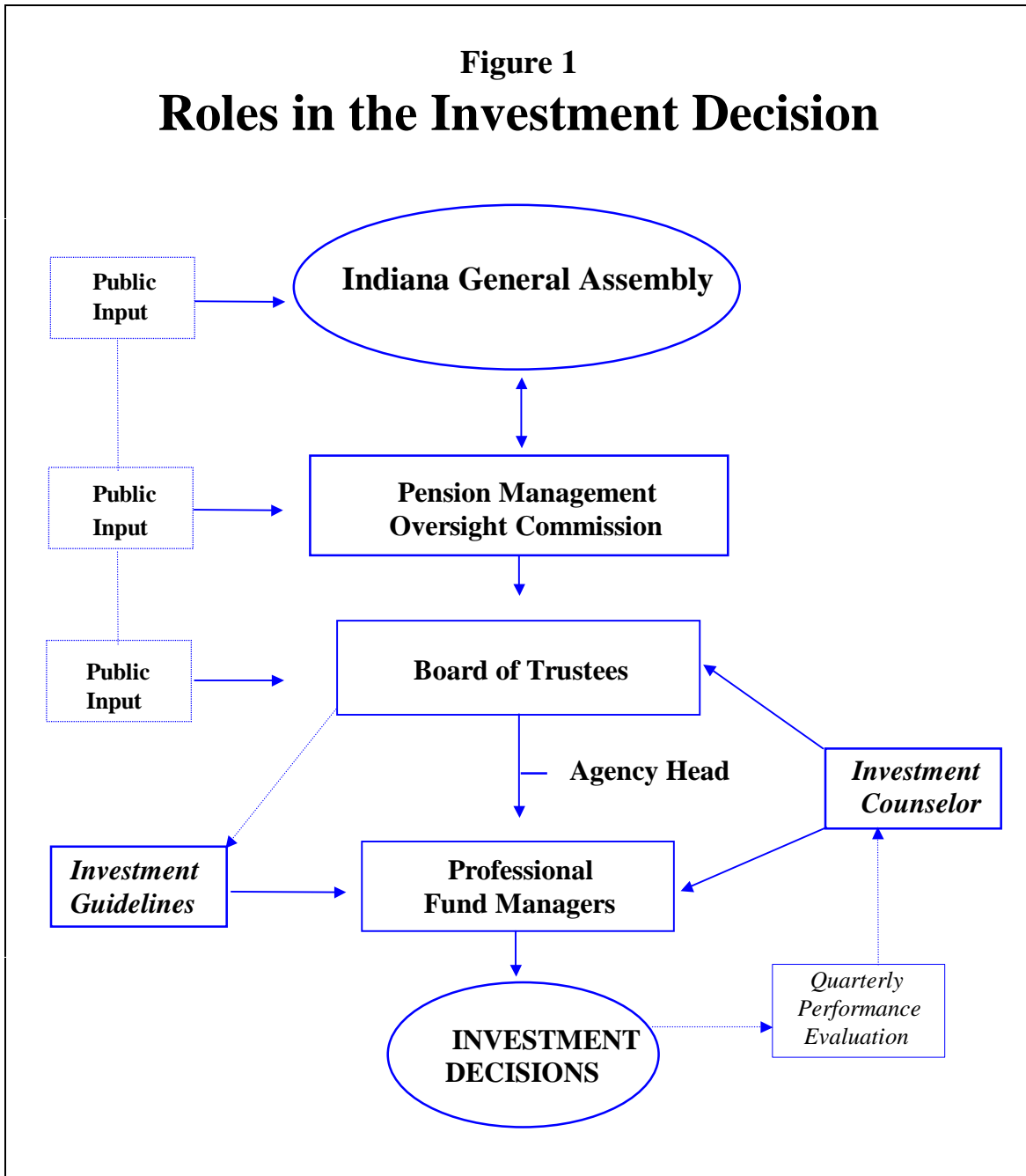
State law provides that the Trustees of PERF or TRF are responsible for seeing that the assets of the funds are invested according to constitutional limitations and statutory guidelines. In carrying out this function, the Trustees employ professional investment managers who are given portions of fund assets to invest, usually under certain constraints. In other words, each manager may be assigned a different investment strategy to pursue. Some managers invest according to a particular index, some are assigned a particular type of instrument, a Treasury Bond or a mortgage backed security, for example. The Boards are able to accomplish a certain level of diversification through this practice.

In the case of PERF, the fund managers are chosen by the Trustees with the help of an investment consultant, IC 5-10.3-5-4. The investment consultant reviews the performance of the funds' managers during each calendar quarter and reports the results to the Boards during their public meetings. This monitoring process provides the Trustees with expert analysis of the funds' performance and yields a public record detailing each of the investment managers' results.

The day to day investing decisions of fund assets are made by the professional fund managers on contract to the funds. PERF's money is managed by 15 professional outside managers, these

include the trust division of 3 local banks, as well as a variety of smaller and larger money management firms. Diversification of asset management firms also helps to spread the investment

risk. A graphic representation of the different responsibilities of the various actors within the investment process is shown in Figure 1.



An affirmative vote on Question #2 would allow the State's pension funds to place a portion of each fund in equities, in other words stocks. For more than 25 years, Indiana's funds have been invested in bonds, largely corporate bonds, U.S. Treasury bonds, and U.S. Agency obligations (see Table II). These investment instruments, while far from risk free, generally exhibit less volatility in earnings than do stocks. However, over the long term, stocks outperform bonds. According to data compiled by Ibbotson Associates, since 1926 large company stocks have generated a total return on invested funds of 10.2 percent per year compared to the return on corporate bonds of 5.4 percent annually (see Table III).³ This equates to a difference of 4.8 percent, or in the investment community's jargon 480 basis points, per year. The compounded effect of this difference in earnings is shown in Figure 2 (later in this report). These foregone earnings have resulted in substantially lower assets for Indiana's pension funds, a gap that taxpayers have been forced to fill.

Type	Amount in FY 1972-73	%	Amount in FY 1994-95	%
Cash & Money Markets	\$ 196,695	0.07%	\$ 202,697,757	3.70%
U.S. Treasury Bonds	42,440,162	14.03%	2,111,361,935	38.57%
School Bonds	1,533,450	0.51%	-	
University Bonds	2,506,152	0.83%	-	
Toll Road Bonds	249,330	0.08%	-	
City and County Bonds	348,302	0.12%	-	
Corporate Bonds	238,797,244	78.93%	1,246,227,071	22.76%
Pooled Mortgages	-		980,323,844	17.91%
U.S. Govt. Agency Bonds	3,984,281	1.32%	907,607,896	16.58%
Short Term Investments	12,468,984	4.12%	26,428,521	0.48%
Total Assets	\$ 302,524,600	100.00%	\$ 5,474,647,024	100.00%

Source: Public Employee's Retirement Fund Annual Report, June 30, 1973 and
Audit Report of PERF by the State Board of Accounts, June 30, 1995.

According to a study done for the AARP, the return on retirement system assets provides almost 60 percent of the income received by pension systems nationwide. Because of Indiana's constitutional limitations, in PERF, the State's largest and best funded pension system, investment income over the past 15 years accounted for only 46.8 percent of income. Based on the simulation model developed for this report, if PERF had been able to invest a portion of its assets in equities, investment income would have provided 58.9 percent of total income.

The Issue of Risk

The central issue raised by broadening the set of investment choices available to state pension fund's is risk. There are two types of risk involved when opening the State pension system to

equity investments. First, there is a risk of financial loss due to the purchase of stocks that perform poorly, which depresses the fund's annual earnings. Second, there is a political risk that State pension fund Boards, when given more options from which to choose, will invest State monies in companies and assets for political purposes rather than financial return. This risk could eventually result in lowered earnings.

This report analyzes these two forms of risk so that taxpayers and voters can evaluate the risks and the rewards for themselves.

Type	Compound Annual Return	Index Explanation
Small Company Stocks	12.2%	
Large Company Stocks	10.2%	S&P 500
Long-Term Corporate Bonds	5.4%	20 yr. Maturities
Long-Term Government Bonds	4.8%	20 yr. US Gov't Bonds
Treasury Bills	3.7%	30 day T-Bills
Inflation	3.1%	CPI

Source: Stocks, Bonds, Bills and Inflation (SBBI) Yearbook,
Roger G. Ibbotson and Rex A. Sinquefeld, 1995.

Modeling a Change in the Investment Portfolio

In order to evaluate both the risks and the rewards of allowing State pension funds to invest in equities, the Institute, with the assistance of PERF's actuarial firm, developed simulation models of both PERF and TRF with earnings, income, and expense data for the past 15 years. [This period was chosen because of the limited accuracy of the records for years prior to 1979. A more complete discussion of the models used for this evaluation is available in Appendix A.] The models describe the funds actual investment performance and simulate the actuarial techniques used in management of the funds.

The analysis performed using these models allowed the following observations:

1. When the restrictions on the type of investments are taken into account, PERF and TRF have demonstrated respectable earnings over the last 15 years. As an example, PERF earned, on a market basis, 10.11 percent per year on average over the past 10 years compared to a total return of 10.07 percent for the Lehman Brothers Aggregate index, an often used measure of the bond market's overall earnings [analogous to the "S&P 500" in the equities world].
2. If PERF had invested in equities, at the median commitment that other state pension funds had, during the past 15 years, PERF would have seen average earnings per year of an additional 2.39 percent or 239 basis points. This translates into \$933.2 million in additional revenue that would have been generated had PERF simply been allowed to make an "average" commitment to equities. The state median percentage invested in stocks has been rising during the past 40 years as Table IV indicates, from less than 1 percent in 1950 to more than 40 percent today.
3. If TRF had been able to invest in equities at the average level of commitment of other states over the past 15 years it would have, today, another \$584.8 million in fund assets.

Year	Total Assets		Equity		Bonds		Cash		Other	
			%		%		%		%	
1950	\$ 4.9	\$ -	0.0	\$ 4.6	94.0	\$ 0.1	2.0	\$ 0.1	2.0	
1960	19.7	.6	3.0	17.4	88.0	.2	1.0	1.5	8.0	
1970	60.3	10.1	17.0	43.7	72.0	.6	1.0	5.9	10.0	
1980	198.1	44.3	22.0	138.6	70.0	4.3	2.0	10.9	6.0	
1985	404.7	120.1	30.0	253.7	63.0	15.7	4.0	15.3	4.0	
1990	743.4	288.0	39.0	408.9	55.0	40.3	5.0	6.2	1.0	
1991	876.9	373.2	43.0	449.1	51.0	48.1	5.0	6.6	1.0	

Source: Public Employee Pension Funds: Retirement Security for Plan Participants or Cash Cow for State Governments, AARP, Hushbeck, 1993.

While the impact on the State's past performance is useful in quantifying the average difference in earnings, it understates the magnitude of the impact to taxpayers of making the change in the State's Constitution. This minimizing of the impact is due to the very demographic trends that are making state pensions such a problem throughout the country and to the corrective measures taken by Indiana legislators in the past four legislative sessions. Specifically, the appropriation of additional monies in the past 2 years for correcting the unfunded liabilities in the TRF and local Police and Fire pension systems means that any changes in future earnings will be leveraged against a significantly greater pool of assets. Table V lists the 30 year impact of allowing State pension funds to invest a portion of their assets in equities across all the funds.⁴

Table V				
The Impact of Equity Earning Power Over 30 Years				
Future and Present Value Terms				
[FV & PV Dollars in Millions]				
Fund		30 Year FV	30 Year PV	Impact per Person
PERF	\$	31,528.0	\$	8,302.2
Police and Fire - 1977 Fund		4,507.0		1,180.9
Pension Relief Fund		63.8		35.0
TRF - 1996 Fund		4,240.1		910.6
TRF - Pension Stabilization Fund		2,814.0		517.8
Total	\$	43,152.9	\$	10,946.5
			\$	1,886.2

Note: Present value calculations assume a discount rate of 6.5%.
A more complete analysis of the impact presented is shown in Appendix C.

Public financial decisions, like those made by families and businesses, should be made with a clear understanding of both the risks and the rewards that attend the decision. Table V presents the reward picture for Question #2. The next generation of state taxpayers, workers, and voters will pay an unnecessary \$43.2 billion for the same amount of public services simply by voting “no” on Question #2. In effect, the presence of Question #2 on the ballot means that Indiana taxpayers can vote themselves a tax cut by exercising their constitutional right.

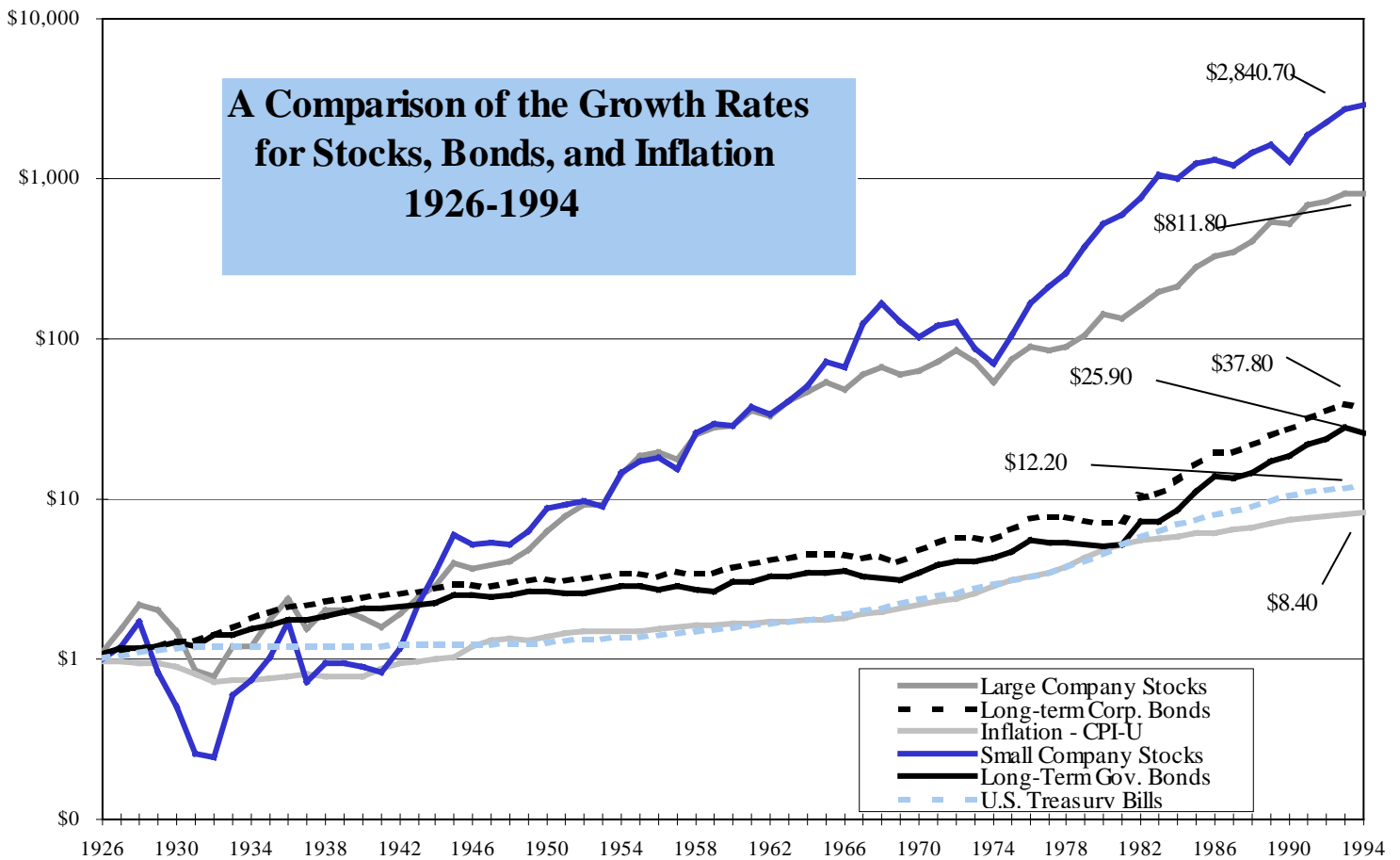
The Financial Risks Posed by Equity Investment

Since December of 1994, the two words “Orange County” have become synonymous with public sector financial disaster. For many Indiana voters, the fiscal debacle caused by one local government official’s decisions may answer the question, “Why should Indiana’s constitutional

limitation remain?" In fact, the losses incurred in Orange County were not the result of investing in equities. The scenario there could have happened in Indiana under our existing Constitution and did occur with different magnitudes in other parts of the nation.

The investments purchased by Orange County were "derivatives," an especially risky form of security, particularly when not used as a balancing mechanism within an investor's portfolio. The derivatives and other securities in the county's portfolio (these were not equity investments) were purchased with borrowed funds in order to make a "bet on interest rates." When rates moved sharply up in 1994, the county was forced to "cover the bet" and suffered losses estimated at \$1.7 billion. Most observers, however, have concluded that the loss suffered in Orange County was a function not of the type of investment, but of the concentration of the portfolio, the leveraging due to the borrowed funds, and the lack of oversight exercised by the appropriate authorities.

Figure 2



Source: Annual return data from Stocks, Bonds, Bills, and Inflation (SBBI) Yearbook, Ibbotson Associates.
 Calculations by Indiana Fiscal Policy Institute.

The irony of Indiana's constitutional limitation on investing in equities is that it does not reduce the financial risk attendant to the State's pension fund portfolios but, in fact, increases that risk by inhibiting the diversification of fund investments. The risk inherent in any investment vehicle is measured by "beta," or the standard deviation of the change in the total return accruing to the security over time. The beta for stocks is higher than that for bonds. This means that at any time, if the pension fund were forced to sell that asset, the probability is greater that the asset would yield a return substantially lower [or higher] than its average return.

Financial experts explain the relationship between financial returns and its attendant risk by reference to modern portfolio theory, developed in the mid-1950's by economist Harry Markowitz. He demonstrated that "Because the performance of separate asset classes is affected by different factors, their rates and patterns of return are distinct from one another." Statistically, the difference in patterns and rates is measured by correlation of the returns of one asset class with another. "Modern portfolio theory suggests that adding assets that have low correlations with the returns on an existing portfolio will result in overall returns that are more stable, or less risky, over time."⁵ In application this means that investments that are riskier (with higher betas) may be added to a portfolio without adding any additional risk, providing they are of a different asset class.

Some financial experts discount even the standard comparisons of risk applied to stocks and bonds. Standard deviation as a measure of risk is dependent on the time frame over which the percentage change is measured. Invariably this period is annual earnings or is expressed as an annual percent. Jeremy Siegal, Professor of Finance at the Wharton School, comments in his book, *Stocks for the Long Run*, (1994) "that stocks, in contrast to bonds or bills, have never offered investors a negative real (i.e., after inflation) holding period return yield over 20 years or more." Clearly the key to investing safely in stocks is maintaining a long term perspective.

One of the unique characteristics of public pension funds is the long term nature of their investment horizons. Because of the large number of workers covered and the objective of the investment - to provide a benefit at the end of a working career, pension investments can avoid the sudden pressures to liquidate a certain asset and can, therefore, approximate in earnings the long-term growth trends in the securities markets. Simply put, well managed pension funds should earn at least the market averages for the investment instruments in which they are allowed to invest. And as explained above, Indiana's funds have done just that. Given the State's record with bond investments, it is not unreasonable to expect a similar performance (i.e., tracking the market averages) if allowed to invest a portion of the funds' portfolios in equities.

The Political Risks Posed by Equity Investing

The primary challenge faced by voters and taxpayers in holding elected officials accountable for their management of pensions is adequate, actuarially sound funding. Indiana's elected officials have made great strides in this primary area of pension policy. However, as stated earlier, the increased discretion granted by allowing state pensions to invest in equities does allow a broader range of investments to be considered.

From the experience of other states it is possible to observe that the capture of pension assets for political usage may take one of two forms. In a few states, once public pensions have become well funded, they have quickly turned into an irresistible cache from which well meaning politicians have funded pet projects. As an example, this practice has resulted in pension investments in public construction projects, or the use of pension assets to finance economic development initiatives.

Pension assets may also be diverted through the practice known as “social investing.” The basic policy is to evaluate the public pension investments not only on the rate of return but on the economic benefits produced in the state or county as well. In these cases once the investment process is opened up to political pressures, the pension funds can be used in efforts to stimulate state economies in sectors that would not (absent the subsidy) attract capital. The result is often a lower risk adjusted return to the public employees whose retirement benefit is the stated objective of the fund. Recent horror stories include Alaska, where pension funds were used to back unsecured housing investments, and Kansas, where speculative local business ventures failed and cost pension assets. However, even in those cases it is important to recognize that the losses were minor compared to the funds’ overall favorable performance, derived in part from investing in equities.

A pension fund exists to provide retirement benefits for its members. A strict adherence by the Trustees of a fund to their legal fiduciary responsibilities will preclude dabbling in the type of investments which caused problems for Kansas in this century, and for Indiana in the last one. “Most pension experts believe that any kind of social investing, in the sense of making investments that provide a social benefit at the sacrifice of yield or safety, should be made illegal for public plans as it is for private plans.”⁶

How Safe is Safe Enough?

Within the constraints imposed upon them, Indiana’s pension funds have demonstrated prudence and skill in performing the task of investing fund assets over the past 15 years. Continuing to shackle the Trustees of PERF and TRF by eliminating the possibility of investing in stocks serves only to increase the cost of government in the State of Indiana. Modern portfolio theory and the experience of other states demonstrates that pension funds can invest in stocks safely and to the great benefit of the taxpayer and fund members.

Although the issue of political risk cannot be dismissed, the only effective long-term safeguard against the type of malfeasance that can be created by public officials in the pension arena is the attention of an alert electorate. As discussed above, Indiana law provides for a significant level of oversight of state pensions, by the Boards of Trustees, by the entire legislature and by a bipartisan legislative commission. There is certainly adequate reporting to the membership of the funds and the taxpayers of the State to provide a check and balance on these statutory oversight bodies.

No activity of either public or private life is without risk. However, this report demonstrates that the benefits are great and the risks are low for the State to begin investing its pension funds in equities. The current generation of voters and taxpayers can bequeath a tax cut to themselves and to the succeeding generation. The clear answer to the question posed in the title to this report is no. Equity investing for State pension funds does not pose an unacceptable risk but holds out a great opportunity. It is an opportunity that will pay large dividends for the next generation of taxpayers, and it should not be foregone.

¹ The precise language of Article XI, Section 12 of the Indiana Constitution reads, "The State shall not be a stockholder in any bank; nor shall the credit of the State ever be given, or loaned, in aid of any person, association or corporation; nor shall the State become a stockholder in any corporation or association."

² The Employee Retirement Income Security Act was passed by the U.S. Congress in 1974. It provides standards for private pension plans throughout the country.

³ Roger G. Ibbotson and Rex A. Sinquefeld, *Stocks, Bonds, Bills, and Inflation (S&BBI) Yearbook*, Ibbotson Associates, Chicago Illinois, 1995.

⁴ The calculation of the impact of higher earnings due to the investment in equities was done using the 240 basis point differential found in the historical examination of PERF and TRF of the period from 1979-80 to 1994-95. This higher earnings rate generated additional assets over a 30 year period, beginning with the asset base extant in 1995. The additional assets accruing to the Pension Stabilization Fund were calculated using the same 40 year period that was presented during the policy debates surrounding the creation of the PSF. The additional assets accruing to the TRF over the next 30 years was not included in Table III because greater than 80% of TRF's assets are in teachers' personal annuities, and therefore the additional income would accrue to individuals rather than a governmental entity.

⁵ Kathryn J. Engebretson, "A Multi-Asset Class Approach to Pension Fund Investments," *Government Finance Review*. February 1995, p. 11.

⁶ Clare Hushbeck, "Public Employee Pension Funds: Retirement Security for Plan Participants or Cash Cow for State Governments?," American Association of Retired Persons, 1993.

APPENDIX A

Excerpt from the Uniform Prudent Investor Act

SECTION 2. STANDARD OF CARE; PORTFOLIO STRATEGY; RISK AND RETURN OBJECTIVES.

(a) A trustee shall invest and manage trust assets as a prudent investor would, by considering the purposes, terms, distribution requirements, and other circumstances of the trust. In satisfying this standard, the trustee shall exercise reasonable care, skill, and caution.

(b) A trustee's investment and management decisions respecting individual assets must be evaluated not in isolation but in the context of the trust portfolio as a whole and as a part of an overall investment strategy having risk and return objectives reasonably suited to the trust.

(c) Among circumstances that a trustee shall consider in investing and managing trust assets are such of the following as are relevant to the trust or its beneficiaries:

- (1) general economic conditions;
- (2) the possible effect of inflation or deflation;
- (3) the expected tax consequences of investment decisions or strategies;
- (4) the role that each investment or course of actions plays within the overall trust portfolio, which may include financial assets, interests in closely held enterprises, tangible and intangible personal property, and real property;
- (5) the expected total return from income and the appreciation of capital;
- (6) other resources of the beneficiaries;
- (7) needs for liquidity, regularity of income, and preservation or appreciation of capital; and
- (8) an asset's special relationship or special value, if any, to the purposes of the trust or to one or more of the beneficiaries.

(d) A trustee shall make a reasonable effort to verify facts relevant to the investment and management of trust assets.

(e) A trustee may invest in any kind of property or type of investment consistent with the standards of this [Act].

(f) A trustee who has special skills or expertise, or is named trustee in reliance upon the trustee's representation that the trustee has special skills or expertise, has a duty to use those special skills or expertise.

Excerpted from the Uniform Prudent Investor Act drafted, approved, and recommended by the National Conference of Commissioners on Uniform State Laws for enactment in all the states at its Annual Conference Meeting in its One-Hundred-and-Third Year, in Chicago, Illinois, July 29-August 5, 1994.

APPENDIX B

Simulation Models of the Public Employees Retirement Fund and the Teachers Retirement Fund

In order to assess, as accurately as possible, the impact of equity investing on state pension funds, the Indiana Fiscal Policy Institute, with the help of two actuarial firms and the investment advisory firm of Burnley Associates, Inc., built a simulation model for each fund. Historical data from either the fund's annual reports or annual actuarial valuations was found to be reliable back to the 1979-80 fiscal year [July 1 to June 30]. The models therefore begin in that year. The most recent years for which actuarial valuations have been completed is 1994-95. The data used consisted of actual income and expenses, including investment earnings [valued at cost for PERF and TRF, but also at market for PERF].

Fiscal Year	S&P 500	LBA Index	PERF @Cost	PERF @Market	TRF @Cost	State Avg Equity_%	PERF Mixed Portfolio	TRF Mixed Portfolio
1980	17.1%	3.7%	11.1%	2.3%	7.6%	24.1%	12.5%	9.9%
1981	20.6%	-5.1%	8.3%	-5.6%	8.9%	28.6%	11.8%	12.2%
1982	-11.6%	13.3%	9.1%	12.3%	10.0%	24.7%	4.0%	4.7%
1983	61.6%	30.3%	10.5%	29.6%	13.3%	29.6%	25.6%	27.6%
1984	-4.6%	1.6%	8.5%	2.0%	11.4%	39.1%	3.4%	5.1%
1985	31.0%	29.2%	12.2%	25.4%	11.4%	41.2%	19.9%	19.5%
1986	35.8%	20.0%	14.2%	20.5%	13.7%	42.4%	23.4%	23.1%
1987	24.9%	5.7%	12.7%	5.0%	11.1%	27.3%	16.0%	14.9%
1988	-6.8%	8.1%	8.7%	8.2%	8.9%	26.8%	4.5%	4.7%
1989	20.5%	12.3%	8.5%	11.8%	9.0%	29.3%	12.0%	12.4%
1990	16.5%	7.9%	9.6%	7.1%	9.2%	30.5%	11.7%	11.4%
1991	7.6%	10.7%	9.8%	10.9%	9.4%	34.4%	9.0%	8.8%
1992	13.5%	14.0%	11.1%	15.0%	10.1%	50.5%	12.3%	11.8%
1993	13.6%	11.8%	10.2%	12.4%	9.3%	50.3%	11.9%	11.5%
1994	1.3%	-1.3%	8.5%	-1.0%	8.6%	49.9%	4.9%	4.9%
1995	26.1%	12.5%	6.6%	12.6%	7.3%	50.1%	16.4%	16.7%

Note: TRF and PERF report earnings on a "cost basis", which reflects realized gains and losses only. PERF's annual earnings on a market basis were obtained from Burnley Associates, Inc., PERF's investment consultant.

The simulation model allowed the calculation of the actual annual earnings rate for each fund, (Listed in Table 1). Those rates were compared to the S&P 500 total return and the Lehman Brothers Aggregate bond index return for the same period. To simulate the ability of the funds to invest in equities, a “mixed portfolio” rate was constructed, combining the earnings rate for the S&P500 with the PERF “Cost Basis” earnings rate. It was calculated by weighting the portfolio earnings by the average commitment to equities, by year, found across all states for the period. The impact of the simulated “mixed portfolio” is greatly affected by the fact that the median state commitment to equities begins at 24.1% in 1980 and rises gradually over the period to 50.1% in 1995. Because the historical reporting of PERF and TRF fund valuations (including the income and expense data) is done on a cost basis, the cost basis earnings rate was used as the baseline comparison rate against which to measure the additional earnings generated by the equities option. The simulation then applied the annual mixed earnings percentages to the asset bases for the two funds to calculate the additional assets that could have been generated over the period. Note that any market rate (in this case a partial market rate) exhibits more volatility than a cost based rate.

Appendix B, Table 2			
Simulation of Additional Assets Generated Through Equity Investing, 1980-1995			
[Dollars in Thousands]			
Fiscal Year	PERF Add'l Assets	TRF Add'l Assets	Total Add'l Assets
1980	9,236.7	10,509.9	19,746.6
1981	27,133.9	17,812.1	44,946.0
1982	(46,600.9)	(33,290.4)	(79,891.3)
1983	152,080.2	95,647.2	247,727.4
1984	(67,475.6)	(54,433.4)	(121,909.0)
1985	111,036.8	77,989.9	189,026.7
1986	164,013.6	112,420.5	276,434.1
1987	75,698.5	55,606.6	131,305.1
1988	(111,738.9)	(71,261.5)	(183,000.4)
1989	100,548.6	59,696.0	160,244.6
1990	69,954.1	44,913.6	114,867.7
1991	(28,958.1)	(14,283.0)	(43,241.1)
1992	49,896.0	42,609.6	92,505.6
1993	78,459.9	58,582.4	137,042.3
1994	(185,912.6)	(107,689.6)	(293,602.2)
1995	535,831.4	289,996.5	825,827.9
Total	933,203.6	584,826.2	1,518,029.8

The additional assets generated would have had differential effects depending on the fund in which they were generated and of course decisions by either the Trustees of the Fund or the legislature. The primary options are listed below.

1. Lower the employers contribution rate to the fund, thus saving public expenditures and in the long run lowering the state and local tax burden.
2. Allow for increased benefits to be distributed to employees and retirees. This option is a certainty for those additional assets generated by the employee annuity portions of each fund.

The calculation of the geometric mean earnings or Compound Annual Growth Rate (CAGR) for each of the earnings indices in Table 3 below, measures the average difference in earnings over the simulation period. Subtracting the "Eq/Bond" Portfolio rate (12.27%) from PERF or TRF's actual rates (9.88% or 10.08%) yields the foregone earnings rate per year, 2.39% for PERF and 2.34% for TRF.

Appendix B, Table 3							
Total Annual Return - Compounded							
Fiscal Year	S&P 500	LBA Index	PERF @Cost	PERF @Market	TRF @Cost	PERF Eq/Bond Portfolio	TRF Eq/Bond Portfolio
1980	117.1	103.7	111.1	102.3	107.6	112.5	109.9
1981	141.2	98.4	120.3	96.6	117.1	125.8	123.3
1982	124.8	111.5	131.3	108.5	128.9	130.9	129.1
1983	201.7	145.3	145.1	140.6	145.9	164.4	164.7
1984	192.5	147.6	157.4	143.4	162.6	170.0	173.1
1985	252.1	190.7	176.6	179.9	181.0	203.8	206.8
1986	342.4	228.9	201.7	216.8	205.9	251.5	254.5
1987	427.6	241.9	227.3	227.7	228.7	291.8	292.4
1988	398.6	261.5	247.0	246.3	249.1	305.1	306.1
1989	480.3	293.7	268.0	275.5	271.5	341.7	344.0
1990	559.5	316.9	293.8	295.1	296.4	381.7	383.2
1991	602.0	350.8	322.6	327.1	324.3	416.2	416.9
1992	683.3	399.9	358.4	376.2	356.8	467.5	466.0
1993	776.2	447.0	394.9	422.7	390.0	523.2	519.4
1994	786.3	441.2	428.5	418.6	423.4	548.8	545.1
1995	991.6	496.4	456.8	471.2	454.3	638.7	636.2
CAGR	15.31%	11.00%	9.88%	10.72%	10.08%	12.27%	12.42%

Note: The "Eq/Bond Portfolio" earnings index is calculated from the S&P500 and PERF or TRF's "Cost" earnings rate blended at the average commitment to equities made by states in that year.

APPENDIX C

Calculation of the Impact of Equity Investing on the Public Employees Retirement Fund and the Teachers Retirement Fund Over the 30 Year Period, 1996-2024

Analytical Framework

The decision facing voters and taxpayers in the fall of 1996, while perhaps informed by past history, is not adequately quantified in the historical simulation models developed for this report. Demographic changes are forcing a smaller cohort of earners and taxpayers to pay for the retirements of the growing elderly cohort. Even for those pension funds which are on a sound funding basis, the changes in demographics mean that rates at which the assets earn additional income from investments are more critical now than they have ever been.

To address this issue, models of Indiana's public pension funds were created to allow the calculation of the impact of earning higher rates on investments due to the option of investing in stocks. The funds are listed below, along with the tax base which would, if the voters so choose, receive the savings. The Teachers Retirement Fund (the "Pre-1996" fund which is now closed) is not included in the calculations of taxpayer savings. This fund, which has been the subject of much legislative "repair" in the last 3 years, possesses few public assets (the effective definition of an unfunded liability). More than 80% of the assets of the TRF consist of annuity accounts which were contributed by and are the possession of individual teachers. The higher earnings rate that comes with equity investments would boost the value of the assets of those individuals, not an inconsequential outcome for public employees, but would not directly affect taxpayers.

1. Public Employees Retirement Fund - 61% of the public employees covered are employed by local levels of government and are supported primarily by property taxes. The balance are state workers whose wages come from sales, individual income, corporate income and a number of dedicated or special revenue sources.
2. 1977 Police and Fire Fund - This fund covers those police officers and firefighters hired since 1977; it is actuarially funded and managed by PERF. Local governments which are the employers contribute 21% of payroll to maintain adequate funding. Much of the revenue comes from the property tax.
3. Pension Relief Fund - This is a reserve fund established in 1977 to assist local governments in providing benefits to policemen and firefighters who were hired before 1977 and are not covered under the 1977 Fund. It receives revenue from state dedicated revenue sources; cigarette taxes, alcoholic beverage taxes and lottery revenues. The additional earnings generated by equity investments will prolong the life of the fund and provide higher distributions to local governments in the intervening years, thus saving property taxes.
4. 1996 Teachers' Retirement Fund - This fund established in 1993 and actuarially funded, will provide the retirement benefits for teachers hired after

January 1, 1996. Although its asset base is small, (it will build up over the next 30 years), the additional earnings from equities will mean that the state's dollars appropriated for education will not be wasted on inefficiently funded pensions.

5. Pension Stabilization Fund - This state dedicated fund was created in 1995 to assist the state in providing benefits for teachers covered by the unfunded pre-1996 TRF. Its assets are scheduled to grow for the next approximately 12 years, after which the fund will pay out an amount necessary to maintain the growth in state GF benefit appropriations at the same rate as revenue growth. Higher returns on fund assets will payoff in lower GF appropriations in the next 2 decades.

Interest Rate and Portfolio Assumptions

A thirty year projection is, necessarily, very dependent on the assumptions chosen. The advantage conferred by the option to invest in equities is dependent on the assumed average rate of earnings for stocks as opposed to bonds. It is also critical to consider what portion of the portfolio will be committed to stocks. Table 1 demonstrates the importance of the assumptions about equity versus bond market earnings rates and the percentage of the portfolio allocated to stocks.

Appendix C, Table 1						
Possible Assumptions About Rates of Return						
Selections	Stock Earnings Rate	Bond Earnings Rate	Commitment of Portfolio To Stocks	Portfolio Earnings Rate	Equity Earnings Advantage	
#1 Last 15 years Actual Earnings, S&P500, LBA Index, Current Average State's % in Equities	15.3%	11.0%	50.0%	13.2%	2.16%	
#2 Long Term (1926-1994) S&P500 Earnings, Average of Corp and Govt Bond Index, Avg State % in Equities	10.2%	5.1%	50.0%	7.7%	2.55%	
#3 Last 15 years Actual Earnings, S&P500, LBA Index 40 % Commitment Equities	15.3%	11.0%	40.0%	12.7%	1.72%	
#4 Long Term (1926-1994) S&P500 Earnings, Average of Corp and Govt Bond Index, 40 % in Equities	10.2%	5.1%	40.0%	7.1%	2.04%	

This 30 year projection makes the following assumptions:

1. The state would invest only a portion of its assets in equities, namely at the current nationwide average for all states. Selection #1 in Table 1.
2. The difference between average yields for the bonds compared to stocks would remain at the same spread as experienced over the past 15 years. Selection #1 in Table 1.
3. State investment practices would allow state pension funds to earn at market averages over the period.

The record shows that the average commitment to equities for public funds across the nation has been rising over the past four decades. This trend may either continue or level off, but it is unlikely to reverse in the next 3 decades. Taking these assumptions together yields an annual 215 basis point differential to be applied to state pension fund assets for the next 30 years.

Results of Calculations

Table 2 lists the additional assets generated by applying the 215 basis points per year to the funds. The amount shown is not the total size of the fund at the end of the period, but only the additional amount produced by the option to invest in equities.

Appendix C, Table 2			
The Impact of Equity Earning Power Over 30 Years			
Future and Present Value Terms			
[FV and PV Dollars in Millions]			
Fund	30 Year FV	30 Year PV	Impact per Person
PERF	31,528.0	8,302.2	1,430.6
Police & Fire - 1977 Fund	4,507.0	1,180.9	203.5
Pension Relief Fund	63.8	35.0	6.0
TRF - 1996 Fund	4,240.1	910.6	156.9
TRF - Pension Stabilization Fund	2,814.0	517.8	89.2
Total	43,152.9	10,946.5	1,886.2

The assets are shown in both future value (current dollars) and in present value terms. The discount rate used in calculating the present value was 6.5%, a reasonable estimate of the long term cost of state funds. Present value analysis is used because the Indiana voter in 1996 faces a financial decision today about the use of future earnings. It is a decision whose impact really is quantifiable, and the use of present value appropriately presents the decision's consequences to the voters and taxpayers.