

# The Economic Impacts of CalPERS Investments on the California Economy

September 2007



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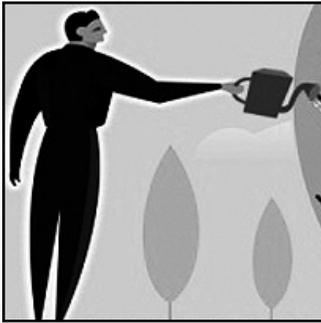
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# Executive Summary

## Background:

- The California Public Employees' Retirement System (CalPERS) collects, manages and invests contributions from public employees and employers in order to provide a secure retirement for 1.5 million members and more than 400,000 retirees. As a result of diversified strategies made possible from pooled contributions, today CalPERS pays three-quarters of retiree benefits from investment earnings.
- CalPERS is a defined benefit retirement plan. It provides benefits based on a member's years of service, age, and highest compensation. In addition, benefits are provided for disability and death, with payments in some cases going to survivors or beneficiaries of eligible members. By providing these types of benefits, CalPERS enables 2597 government employers (including public agencies and districts) at the state and local level to attract and retain employees. CalPERS benefits schedules are set by employers, following contract negotiations with employees, and not by the CalPERS Board.
- In 2006, the average monthly retiree left service at age 60, after 20 years of service, and received a monthly income replacement check for an average of \$1,876, or about \$22,512 per year.
- Over the past 10 years, taxpayer and employer contributions to the plan averaged 11.7%, and employees contributed 11.5%. The largest source of income (76.8%) to the pension fund -- and for retiree payments -- has come from market earnings. For the ten years preceding 2003, total member contributions exceeded total employer contributions.
- CalPERS' investment strategy starts with diversifying among stocks, bonds, cash and other categories of assets – to capture the greatest return at the least overall risk to market volatility. Many factors, including liabilities, benefit payments, operating expenses, and employer and member contributions are taken into account in determining the appropriate asset allocation mix. By examining a variety of assumptions and using computer modeling to project the results of different mixes, investment professionals can develop an optimal strategy. CalPERS then acts on a strategic asset allocation policy that identifies the percentage of funds to be invested in each investment category.
- Collectively, the System's assets are in excess of \$247 billion. Earnings on investments have averaged a healthy 9.3% over the past decade, despite a serious economic downturn at the beginning of this century. More recent earnings have been even stronger. These market earnings provide the bulk of retirement payments, but also have a strong impact on the California economy.
- If California's economic output were measured as though the state were a nation, it would rank consistently among the top ten most productive in the world, frequently 6th or 7th in size. CalPERS is a significant investor in California - providing jobs, services, and a financial boost to the State's economy while simultaneously receiving strong returns from California's many competitive investment opportunities. California investments and commitments are currently at approximately \$26.8 billion<sup>1</sup> – or 10.8 percent of CalPERS' total fund (as of June 30, 2007).

## Major Findings:

- CalPERS' total investment impact on the state's economy is considerable – slightly more than \$15.1 billion in 2006. That total economic impact includes the amount of the initial investments, the impact of those investments when they are then used in the local economy, and the induced impact or the ripple effect of tertiary economic activity.

Direct	Indirect	Induced	Total
\$8,266,375,586	\$2,583,030,936	\$4,285,204,435	\$15,134,610,958

- That total impact adds an additional value to the California economy of almost \$8.5 billion and creates more than 124,000 jobs while generating an additional \$832 million in state and local revenues for governments.

Direct Impact	Total Impact	Added Value	Employee Compensation / Jobs Created	State and Local Revenues
\$8,266,375,586	\$15,134,610,958	\$ 8,468,460,492	\$4,898,006,852 / 124,377	\$831,840,283

<sup>1</sup> CalPERS, *Facts at a Glance*, [www.calpers.ca.gov/index.jsp?bc=/about/facts/home.xml](http://www.calpers.ca.gov/index.jsp?bc=/about/facts/home.xml)

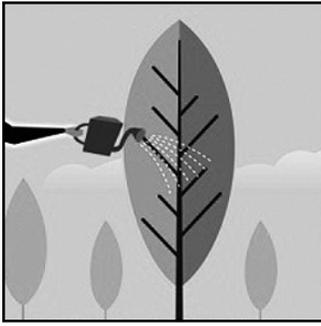
- CalPERS investments inject an added-value of nearly \$8.5 billion in the California economy annually, making CalPERS a larger player in the California economy than the machinery manufacturing, oil and gas extraction, amusements and recreation industries. This value-added figure is used by economists as a standard measure of the impact of economic activities because it reduces the effects of overlapping actions.<sup>2</sup>
- CalPERS investments create employment. CalPERS dollars injected into businesses generated approximately 124,377 jobs in 2006, topping the heavy construction, civil engineering, and motion picture and video production industries.
- The top statewide sources of economic impacts are the following categories of assets: Private Real Estate Equity, with 50.8% of the economic benefits, followed by the Domestic Public Equities (29.3%) and the Develop-Build Private Real Estate Partnerships (10.8%)
- A previous study, *The Economic Impact of CalPERS Pensions*, found payments to CalPERS' beneficiaries contributed almost \$11.8 billion per year to the California economy in 2006 and about \$5.77 billion of that falls into the value-added category.

Source of Impact	Direct Impact	Total Impact
Investments	\$8,266,375,586	\$15,134,610,958
Pension Payments	\$7,737,061,503	\$11,838,703,221
Total	\$16,003,437,089	\$26,973,314,179

- The cumulative total impact created on California's economy by CalPERS' benefit payments and investments in 2006 is \$26.9 billion.
- In order to produce transparent and replicable findings, the researchers used a conservative approach and therefore did not attempt to capture or characterize all of CalPERS investments in California. Thus, the report likely understates the System's full impact. Some investments, such as real estate that was built in previous years, while still holding value to the fund and contributing to future retirements, did not make new contributions to the state economy in 2006 and were excluded from this analysis. Additionally, it was not methodologically feasible to define the extent of California impacts from many investments, such as some global companies in which CalPERS has equity holdings. (For more on how researchers account for economic impacts in each category of CalPERS investments in California, see Methodology and Detail section.)

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<sup>2</sup> For more information including detailed definitions of impact categories, see *Appendix A Terminology and Outputs*.



## Background

### CalPERS<sup>3</sup>

Beginning in 1932, the California Public Employees Retirement System (CalPERS) began collecting, managing and investing contributions from public employers (local governments, schools and the State of California) in order to provide a secure retirement for hundreds of thousands of retirees. By doing so, three-quarters of the needs of those retirees are paid by investment earnings.

CalPERS is a defined benefit retirement plan. It provides benefits based on a member's years of service, age, and highest compensation. In addition, benefits are provided for disability and death, with payments in some cases going to survivors or beneficiaries of eligible members. By providing these types of benefits, CalPERS enables 2597 government employers (including 1544 public agencies and 1053 school districts) at the state and local level to attract and retain employees.

CalPERS also is the third largest public purchaser of health benefits in the nation, behind General Motors and the federal government. CalPERS health plans cover more than 1.2 million active and retired state, school and public agency employees and their families. About 62% are state employees and their families. Annual premiums paid to health care providers exceed \$4.3 billion.

CalPERS is a non-profit arm of California government, and does not compensate shareholders or board members. CalPERS employees are public employees. The System is governed by a 13-member Board of Administration, with six members elected directly by members, three ex-officio members who serve on the Board during their tenure in office (the State Treasurer, the State Controller and the Director of the State Department of Personnel Administration). The Governor appoints two members to the Board: an elected official of a local public agency and a life insurance official. The State Personnel Board also appoints a representative, and a representative of the public is jointly appointed by the Speaker of the Assembly and the Senate Rules Committee.

The benefits schedules are set by employers, following contract negotiations with employees, and not by the CalPERS Board. In 2006, the average monthly retiree left service at age 60 after 20 years of service, and their monthly income replacement check was only an average \$1,876, or about \$22,512 per year.

## Purpose of this report

In 2006, the CalPERS Board adopted a strategic objective calling for "the design and development of educational and communications initiatives to ensure broad understanding of the fiduciary role and value provided by CalPERS to the public and stakeholders."

In response to questions raised by legislators, members and stakeholders about CalPERS' impact on the California economy, the Board of Administration decided to engage in research. This study examines the impact of investments made in California companies, services and capital items on the California economy. It adds to previous research demonstrating the important role played in the state's economy by CalPERS by the benefits paid to retired members. CalPERS plans a future study on the economic impacts of CalPERS health benefit payments.

This report is one in the resulting series of studies documenting the contributions to California's economy that stem from CalPERS core mission to provide retirement, disability and health programs. A previous report, *The Economic Impacts of CalPERS Pensions*, examined the economic impacts of payments made to retirees and their families to the economies of California and its 58 counties. Researchers found that CalPERS' beneficiaries contributed almost \$11.8 billion per year to the California economy in 2006. About \$5.77 billion of that was value-added.

## What does a public employee pension fund do?

CalPERS administers "defined benefits" pension programs. A defined benefit pension fund collects, manages and invests contributions from both employees and the local agencies who hire them. The pension plan generally has a separate fiduciary board charged first and foremost with protecting retirees' and future retirees' interests, and holds these dollars in a pool that is separated from employers' budgets.

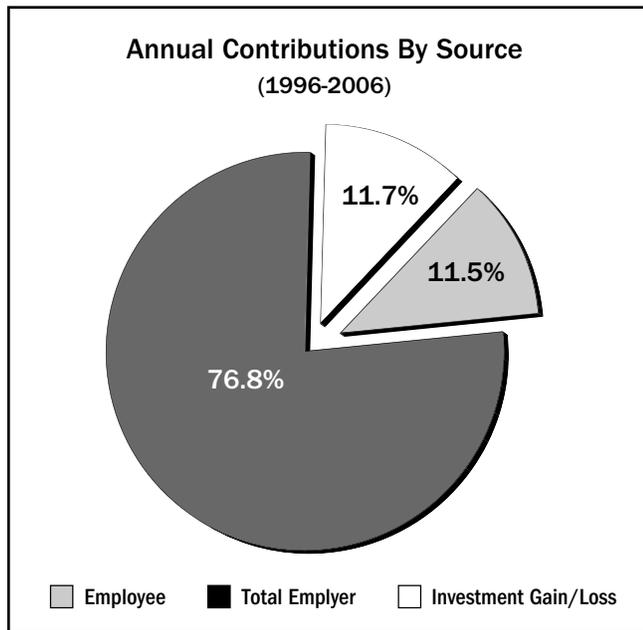
Defined benefits funds take thousands of individual contributions and invest them together in a diversified portfolio. The funds employ sophisticated analytical tools to create an "asset allocation" and hire skilled managers with proven expertise in

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<sup>3</sup> CalPERS, Facts at a Glance, [www.calpers.ca.gov/index.jsp?bc=/about/facts/home.xml](http://www.calpers.ca.gov/index.jsp?bc=/about/facts/home.xml)

the particular asset classes in the diversification mix. This pooling reduces individual risk, and the scale of these nonprofit operations helps keep the cost of investment operations per individual retiree well below that of the mutual fund industry.

**Figure 1: Sources of CalPERS' Fund Pool**



Investment earnings pay 76.8% of all pensions, and employees contribute another 11.5%  
 Source: CalPERS

Collectively, the System's assets are in excess of \$260 billion. Earnings on investments have averaged a healthy 9.3% over the past decade, even despite a severe economic downturn at the beginning of the century. These strong earnings provide the bulk of retirement payments, but also have a strong impact on the California economy.

CalPERS estimates that over the past 10 years, taxpayer and employer contributions to the plan averaged 11.7%, and employees contributed 11.5%. The largest source of income (76.8%) to the pension fund – and for retiree payments – has come from market earnings. For the ten years preceding 2003, total member contributions exceeded total employer contributions.

Defined benefit retirement plans provide benefits based on a member's years of service, age and highest compensation. In addition, benefits are provided for disability and death, with payments in some cases going to survivors or beneficiaries of eligible members.

## How does CalPERS invest the contributions made by employees and employers?

The starting point for successful returns on investment is asset allocation – strategically diversifying among stocks, bonds, cash and other categories of assets – to capture the greatest return at the least overall risk to market volatility. Many factors, including liabilities, benefit payments, operating expenses, and employer and member contributions, are taken into account when determining the appropriate asset allocation mix. By examining a variety of assumptions and computer modeling the results of different mixes, investment professionals can develop an optimal strategy.

CalPERS then follows a strategic asset allocation policy that identifies the percentage of funds to be invested in each asset class. Policy targets are typically implemented over a period of several years on market declines and through dollar cost averaging. CalPERS' current asset allocation mix (by market value and policy target percentages) as of June 30, 2007 are:

**Table 1: Summary of CalPERS' Assets**

Asset Class	Market Value (\$ Billion)	Target <sup>1</sup>
<b>Cash Equivalents</b>	<b>\$2.3</b>	<b>0.0%</b>
Domestic Fixed Income	\$52.0	23.0%
International Fixed Income	\$6.7	3.0%
<b>Total Global Fixed Income</b>	<b>\$58.7</b>	<b>26.0%</b>
AIM	\$15.3	6.0%
Domestic	\$97.3	40.0%
International	\$53.8	20.0%
<b>Total Global Equities</b>	<b>\$166.5</b>	<b>66.0%</b>
<b>Real Estate</b>	<b>\$20.2</b>	<b>8.0%</b>
<b>Total Fund*</b>	<b>\$247.7</b>	<b>100.0%</b>

<sup>1</sup> Target allocation effective January 1, 2005.

\* Figures for this document are rounded for viewing purposes

The results of this strategic approach have paid off. Over the past decade, and despite a sharp downturn in financial markets at the beginning of the new century, CalPERS' average annual rate of return on investment has been 9.3%. More recently, CalPERS' total returns have also been strong:

**Table 2: Recent rates of return on investments**

<i>Fiscal year to date ended 06/30/07</i>	<i>19.13%</i>
<i>3 years for period ended 06/30/07</i>	<i>14.62%</i>
<i>5 years for period ended 06/30/07</i>	<i>12.81%</i>

CalPERS, *Facts at a Glance*, [www.calpers.ca.gov/index.jsp?bc=/about/facts/home.xml](http://www.calpers.ca.gov/index.jsp?bc=/about/facts/home.xml)

## CalPERS' investments in California:

If California's economic output were measured as though the state were a nation, it would rank consistently among the top ten most productive in the world, frequently 6<sup>th</sup> or 7<sup>th</sup> in size. CalPERS is a significant investor in California - providing jobs, services, and a financial boost to the State's economy while simultaneously receiving strong returns from California's many competitive investment opportunities.

California investments and commitments are currently at approximately \$26.8 billion – or 10.8 percent of CalPERS' total fund (as of June 30, 2007).

Within these broad categories are specific subcategories defined by common business, industry or economic opportunities – initiatives or portfolios. The CalPERS Nationwide Single Family Housing Program, Member Home Loan Program, and private equity investments through limited partnerships that are either headquartered in the State or have charters to invest in California (the California Initiative), are among programs that provide superior risk-adjusted returns, while targeting California's strong economic opportunities.<sup>4</sup>

**Table 3: Summary of CalPERS' Investments in California**

Fixed Income	\$ 2.2 billion
Equities	\$ 15.8 billion
Real Estate	\$ 8.8 billion

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<sup>4</sup> See the Methodology and Details section for a listing and brief explanation of the portfolios studied in this report.

## Previous Research on the Economic Impact of CalPERS in California

### **Public Pension Funds and Urban Revitalization California Case Study A: Private Equity CalPERS' California Initiative**

Tessa Hebb

*Oxford University Centre for the Environment  
Harvard Law School, Pensions & Capital Stewardship Project,  
Labor and Worklife Program  
May 2006*

"The California Initiative is in its early stages of growth. Much of the capital allocation remains to be invested. The impact on California's underserved capital market is already noticeable. The \$500 million of CalPERS' capital allocation has leveraged commitments for a further \$725 million from other investors. The role of CalPERS as the lead (or first) investor is key. Because most of the investments have not been fully realized (i.e. CalPERS' has not exited from the investments), they are at the early stages of the J-Curve ... In the early years, private equity funds will show low or negative returns due to the management fees & expenses and the fact that investments will not yet have been exited. However, investment gains are achieved in later years when the companies have matured and returns can be realized.

By September 30, 2005 the annual returns on investment of the full California Initiative (now four years old) was 16.3%, well within the 15 to 20% range CalPERS is aiming for. Given that that we are still in the early stages of the J-curve we can expect significant performance as they mature. Table 3-5 demonstrates the impact of recent vintage years on the private equity portfolio. Within the California Initiative, as of Dec. 31st 2004, deals exited with cash out equals \$66 million out of \$220 million invested. Fully \$55 million comes from the Green Equity Investors, a long time partner of CalPERS dating back to 1994."

### **Pension Funds and Urban Revitalization California Case Study B: Real Estate CalPERS' California Urban Real Estate Initiative**

Tessa Hebb

*Oxford University Centre for the Environment  
Harvard Law School, Pensions & Capital Stewardship Project, Labor  
and Worklife Program  
October 2005*

"In 1992, the California Public Employees Retirement System (CalPERS) Board took a decision to target investment in the State of California as part of its overall investment policies. Two percent of the CalPERS' portfolio was to be invested in the State of California as part of its early Economically Targeted Investment Policy. This target crosses all investment categories including public equity in firms headquartered in California, private equity, fixed-income products and, of course, real estate.

CalPERS' targeted real estate program, the California Urban Real Estate (CURE) program committed an initial \$375 million with the aim of "creating value through the rehabilitation, repositioning, and development of real estate projects located primarily in the urban neighborhoods of California's major metropolitan areas. The program began with investments in affordable single-family homes in California. The investment was expected to generate a 22% return,

provide construction jobs, and fill a capital gap in the market, while increasing the supply of moderately priced homes in the State. Other targeted real estate opportunities soon followed, including offices, industrial, mixed-use developments, infill, mezzanine debt and preferred equity.

By March 31st 2005, the CURE program had a total asset allocation of \$3.4 billion with actual investment at \$1.2 billion across twelve real estate investment partners. The CURE program at that time had an IRR since inception of 22.2% (PCA, 2005). CalPERS' decision to invest in California's urban real estate market has paid off handsomely for the fund, its beneficiaries and communities across the state. This paper examines the CalPERS' CURE program as a best practice case study in urban revitalization through real estate investment."

### **Impacting California's Underserved Communities: An Initial Assessment**

*Pacific Community Ventures*

*June 2005*

A June 30, 2005 study of the CalPERS California Initiative found that a \$475 million fund earmarked for investment in "traditionally underserved markets primarily, but not exclusively, located in California," had successfully allocated the dollars to ten private equity funds. The funds had actively invested in 83 companies, 68 of which reported back to the researchers. Of those companies, 48 were headquartered in California, and 51 were located in areas that have traditionally had limited access to institutional equity capital. In addition, 65 of those reporting were directly impacting underserved markets. Approximately 40% of California residents employed lived in economically disadvantaged areas of the state, and 78% of the California Initiative companies offered health insurance to more than three-quarters of their employees. The study did not evaluate the financial performance of the California Initiative.

### **The Economic Impact of CalPERS Pensions**

*Professors Robert Fountain and Robert Waste*

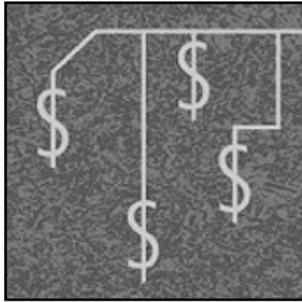
*Applied Research Center*

*California State University at Sacramento*

*May 2007*

"The California Public Employees' Retirement System (CalPERS) accepts moneys from public agency employers and their employees and then invests those dollars to provide a secure retirement at the end of these employees' careers. CalPERS earned a 9.3% rate of return during the past decade. Over the past decade, these earnings paid an average 76.8% of the retirees' monthly checks.

One consequence of this steady performance is that retirees have become a significant economic engine in their communities through spending their income payments, and the resulting 'economic spin-off'. CalPERS' beneficiaries contributed almost \$11.8 billion per year to the California economy in 2006, and about \$5.77 billion represent new dollars from value-adding ripple effects. Because of employee contributions, investment earnings and the spin-off effects of retiree spending, in 2006 the California economy gained about \$8.55 for every one dollar invested in pensions by employers and taxpayers."



## Major Findings Regarding The Economic Impacts of CalPERS Investments:

### Economic impacts of CalPERS' investments in California are significant

The results of a detailed analysis of the economic impacts of CalPERS investments on California and regional economies are contained in the Methodology and Details section and summarized here. The summary tables below show the statewide multiplied impacts from all assets total about \$15.1 billion.<sup>5</sup>

**Table 4: Summary of Economic Impacts of CalPERS' California Investments**

Direct Impact	Total Impact	Added Value	Employee Compensation / Jobs Created	State and Local Revenues
\$8,266,375,586	\$15,134,610,958	\$ 8,468,460,492	\$4,898,006,852 / 124,377	\$831,840,283

That total economic impact includes the amount of the initial investments, the impact of those investments when they are then used in the local economy, and the induced impact or the continued “ripple” effect of tertiary economic activity.

Direct	Indirect	Induced	Total
\$8,266,375,586	\$2,583,030,936	\$4,285,204,435	\$15,134,610,958

## Combined Economic Impact of CalPERS Investments and Benefit Payments

In March 2007 CalPERS released a study of the economic impacts of benefits paid to retirees who live in California. The combined impact of both benefit payments and investments made in California on the state economy in 2006 is almost \$27 billion.

Source of Impact	Direct Impact	Total Impact
Investments	\$8,266,375,586	\$15,134,610,958
Pension Payments	\$7,737,061,503	\$11,838,703,221
Total	\$16,003,437,089	\$26,973,314,179

## Comparison to economic impacts of other industries in California

Economists frequently use “value-added” or “gross product” calculations to measure economic impact, as that measure removes a variety of overlapping impacts.<sup>6</sup> CalPERS investments inject an added \$8.5 billion in the California economy annually, making CalPERS a larger player in the California economy than – as Figure 5 illustrates – the machinery manufacturing, oil and gas extraction, and amusements, gambling and recreation industries. CalPERS investments also created employment: 124,377 jobs in 2006 resulted from CalPERS dollars injected into businesses, more than the heavy and civil engineering construction, and motion picture and video production industries.

<sup>5</sup> For more information on the meaning of different terms, see Appendix A: *Model Terminology and Outputs*.

<sup>6</sup> See *Appendix A Model Terminology and Outputs* for more on the difference between value-added and total outputs

**Table 5: Comparison of Total Statewide Value-Added Output**

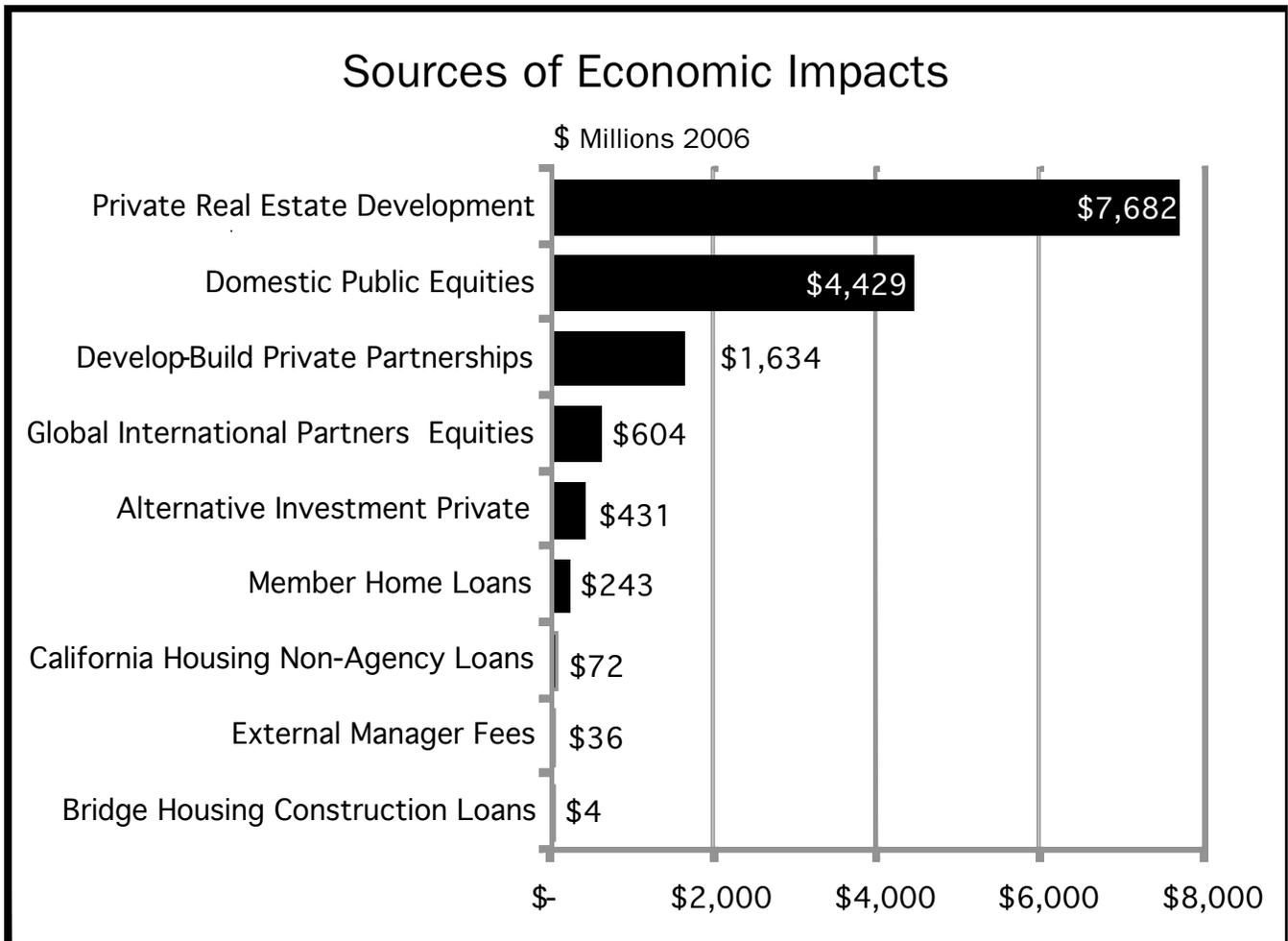
<b>CalPERS Investment Added Value in 2006</b>		<b>CalPERS Investment Job Creation in 2006</b>	
	<b>\$8,468,460,492</b>		<b>124,377</b>
Machinery Manufacturing	\$7,513,000,000	Heavy and Civil Engineering Construction	92,900
Oil & Gas Extraction	\$7,705,000,000	Semiconductor Manufacturing	61,800
Plastics Manufacturing	\$4,675,000,000	Chemical Manufacturing	85,000
Amusements, Gambling and Recreation	\$7,493,000,000	Motion Picture and Video Production	115,000

Sources: Bureau of Economic Analysis, [www.bea.gov/regional/gsp](http://www.bea.gov/regional/gsp), 2005 data (most recent) and Bureau of Labor Statistics, [www.bls.gov/PDQ](http://www.bls.gov/PDQ), 2006 data (most recent)

## Impacts by Investment Category

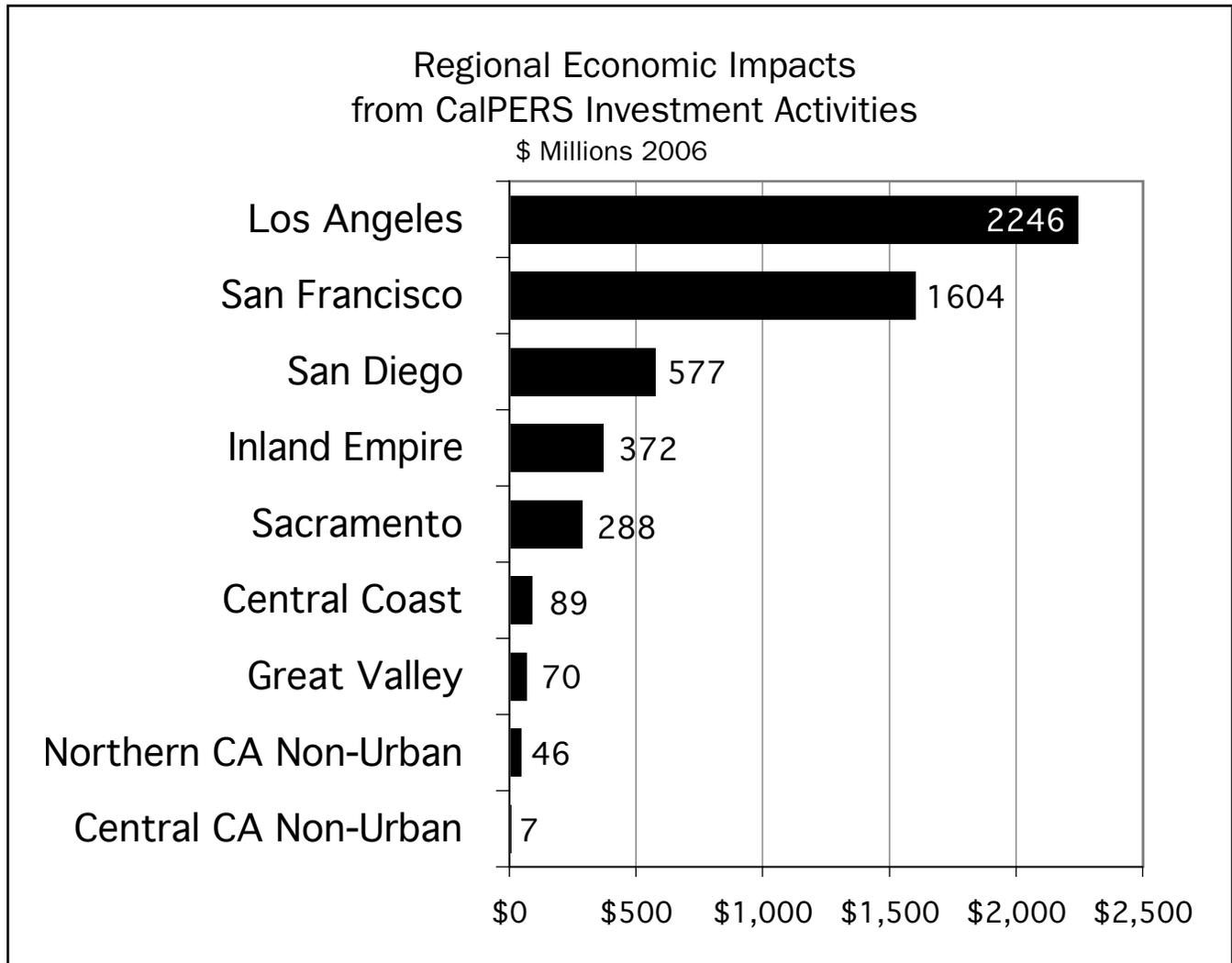
The top statewide sources of economic impacts are these categories of assets: Private Real Estate Equity Participations, with 50.8% of the economic benefits, followed by the Domestic Public Equities (29.3%) and the Develop-Build Private Partnerships (10.8%). None of the remaining investment categories come anywhere near these top 3.

**Figure 2: CalPERS Economic Impact by Category**



## Impacts of Investments by Region

The investments have impact throughout the state of California with the impact essentially mirroring the population and economic activity throughout the state.



### The research understates the full impacts of CalPERS' investments in California in 2006

CalPERS has a broad range of investments, and their interplay in the global and state economy is complex. The researchers developed a transparent and replicable methodology for stating the impacts of these investments in California during a specific time period. The economic impact of some asset categories are understated due to the lack of a feasible means of freezing the economic activities of those assets to the Calendar Year 2006 (the time period under consideration). These investments still have value and contribute to future retiree payments. In other cases, the challenge is measuring economic activity within the geographic boundaries of the State of California.

For example, the impact of domestic public equities is not based on the acquisition costs, but on the underlying firm's revenue supported by continued ownership of equities, and which occur in California. The challenge is even greater when seeking to determine which portion of a global company's revenues are attributable to CalPERS' continued investment and which portion take place in California. Some asset portfolios, such as Bridge Housing Loans, appear to be larger than presented here, but the researchers only counted projects completed in 2006.<sup>7</sup>

For more information on how researchers were able to account for impacts from CalPERS investments in different categories studied in this report, see the following section on Methodology and Detail.

<sup>7</sup> See *Methodology and Detail* section

# Methodology and Detail

## Introduction

The economic research involved in this report was conducted in two stages. The combined purpose of the Phase I and Phase II analyses was to estimate the economic impacts resulting from CalPERS investments during calendar year 2006.

The Phase I analysis set the foundation for Phase II by exploring feasibility in two questions for each class of assets. First, does the activity have a theoretically plausible impact within the state of California? Second, using the data available, can the researchers estimate a numerical direct impact for calendar year 2006?

Phase I determined which investment categories were most suitable for a quantitative economic impact analysis in Phase II. The Phase II report contains a complete economic impact analysis for investment categories using the IMPLAN input-output model. A detailed explanation of the IMPLAN model and the types of economic impacts is provided in Appendix A.

The investment categories for which a Phase II analysis was conducted are listed below in order of the size of the economic impact on the California economy.

- Private Real Estate Development Equity Participations: Equity share of ownership in housing throughout California.
- Domestic Public Equities: Ownership of stocks and equities in U.S.-headquartered companies.
- Develop-Build Private Partnerships: Private equity investments in construction projects in California, typically Class A office space or retail projects.
- Global International Partners Equities: Investments in asset-backed firms having large holdings in real estate assets including office buildings, hospitals, hotels, technical centers, etc.
- Alternative Investment Private Equities: Direct private investment in existing firms, mostly in small firms located in California, often related to buyout funds and venture capital.
- Member Home Loans: Provides financing to CalPERS members for home purchases, cash-out refinances, and interest rate refinancing.
- California Housing Non-Agency Loans: Based on mortgages issued, and is similar to the Member Home Loan Program described previously, except that being a CalPERS member is not required.
- External Manager Fees: Direct payments to outside consultants conducting investment management and transactions for CalPERS and located in California.
- Bridge Housing Construction Loans: Loans for development and construction of affordable housing.

Two major components necessary for the Phase II IMPLAN economic impact analysis were determined: the dollar amount of infused funds (often referred to as a direct impact), and; which industry sector will receive the funding.<sup>8</sup> With that information, the IMPLAN model was deployed to identify the multiplied (indirect and induced) economic impacts. While the direct impact for each investment category in Phase I is estimated, this estimation was refined in Phase II in order to provide the most accurate characterization of economic impacts possible.

Also, when possible, a regional characterization of economic impacts was provided. Please note that due to the fact that not all impacts can be allocated to a region and the IMPLAN models used for these regional impacts are calibrated specifically for the region under consideration (and therefore may have different multipliers), the sum of regional impacts for a particular investment category will differ from the statewide results. Appendix B contains the region names and definitions used for this analysis.

## Private Real Estate Development Equity Participations

These assets represent CalPERS equity participations in housing throughout California. Expenditures in this investment category are related to land development, construction financing, and other construction related activities.<sup>9</sup>

The data furnished by CalPERS contains information for nearly 300 projects and primarily identifies projects occurring in calendar year 2006. Additionally, because the data provided details each project type, researchers can easily assign funding to the proper industries. Industries represented in this analysis include multifamily housing construction, residential additions and alterations, and maintenance and repair.

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<sup>8</sup> The IMPLAN model uses a set of over 500 industry sectors and is based on the North American Industry Classification System (NAICS) codes used widely in governmental and business applications. This diverse set of industry classifications allows for a more dynamic characterization of economic impacts.

<sup>9</sup> As seen in the Phase I analysis, these are textbook examples of direct economic impacts.

The economic impacts for this investment category are summarized in the following tables.

**Table 6: Overview of Economic Impacts Resulting**

<b>Geography</b>	<b>Direct</b>	<b>Indirect</b>	<b>Induced</b>	<b>Total</b>
<b>California</b>	<b>\$4,247,286,888</b>	<b>\$1,037,144,972</b>	<b>\$2,397,167,356</b>	<b>\$7,681,599,216</b>
San Francisco	\$1,482,971,088	\$327,161,647	\$670,339,118	\$2,480,471,853
Sacramento	\$136,845,354	\$26,615,449	\$59,103,290	\$222,564,093
Northern CA Non-Urban Area	\$11,037,364	\$2,740,223	\$3,974,295	\$17,751,882
Central CA Non-Urban Area	\$1,173,290	\$173,872	\$415,793	\$1,762,955
Great Valley Area	\$2,853,409	\$807,861	\$1,287,747	\$4,949,017
Central Coast Area	\$52,855,162	\$14,053,981	\$20,944,783	\$87,853,926
Los Angeles	\$1,979,194,664	\$450,613,117	\$1,106,246,556	\$3,536,054,337
Inland Empire	\$161,466,674	\$26,648,511	\$75,496,382	\$263,611,567
San Diego	\$418,889,871	\$82,483,933	\$196,737,993	\$698,111,797

Note: Any differences due to rounding. Regions may not add to state total due to differences in the regional and statewide multipliers.

**Table 7: Economic Impacts by Category Resulting from CalPERS Private Real Estate Development Equity Participations**

<b>Geography</b>	<b>Total Output, Revenues</b>	<b>Value Added, Gross State Product</b>	<b>Employee Compensation</b>	<b>State &amp; Local Tax Generation</b>	<b>Employment</b>
<b>California</b>	<b>\$7,681,599,216</b>	<b>\$4,723,245,941</b>	<b>\$2,742,419,252</b>	<b>\$408,562,874</b>	<b>69,973</b>
San Francisco	\$2,480,471,853	\$1,550,568,879	\$936,193,315	\$126,648,913	20,395
Sacramento	\$222,564,093	\$140,636,333	\$84,109,671	\$12,597,538	2,183
Northern CA Non-Urban Area	\$17,751,882	\$9,506,351	\$4,271,722	\$840,990	162
Central CA Non-Urban Area	\$1,762,955	\$1,094,239	\$534,672	\$92,248	19
Great Valley Area	\$4,949,017	\$2,824,759	\$1,598,185	\$246,867	46
Central Coast Area	\$87,853,926	\$49,120,570	\$26,081,558	\$4,278,071	762
Los Angeles	\$3,536,054,337	\$2,198,775,999	\$1,251,725,379	\$183,997,840	32,555
Inland Empire	\$263,611,567	\$168,523,301	\$100,376,845	\$14,651,592	2,784
San Diego	\$698,111,797	\$441,179,178	\$266,388,526	\$37,475,858	6,718

Note: State and Local Government Taxes show only tax generation, not distribution to local government. Any differences due to rounding.

## Domestic Public Equities

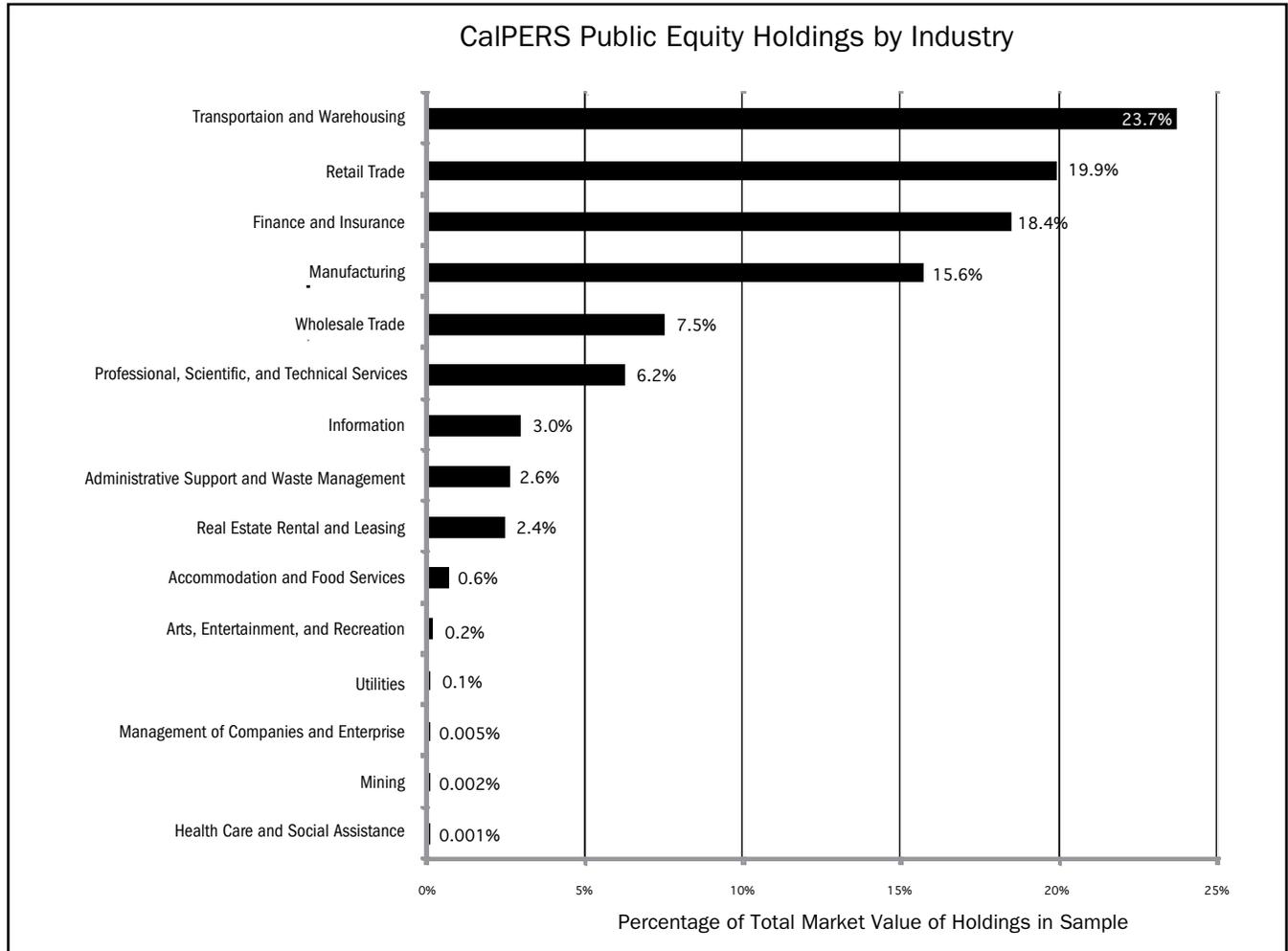
The domestic public equities holdings present a unique challenge in terms of analyzing an economic impact. The Phase I analysis for this asset concluded the computation of economic value is based not on the acquisition cost to CalPERS. Rather, the economic value is linked to the underlying firm's revenues which are supported by the continued equity ownership occurring in California. For the Phase II analysis, the researchers adhere to the methods outlined in Appendix- C, computing both the proportion of total revenues earned by the firm attributable to PERS (based on the total capitalization owned by PERS) and finding the percentage of the firm's revenues generated in California. The California-specific revenue is derived from corporate employment information provided by Dun & Bradstreet and using the production function embedded in the California IMPLAN model.

In their preliminary analysis, the researchers created a measure of direct impacts based only on information for the corporate headquarters. However, upon further consideration of the data available and the methods used, the researchers postulate that by doing so they ignored a significant portion of economic impacts. To address this underestimation, they

relaxed the assumptions in the Phase II analysis to include firm subsidiaries, branches, and other locations (as opposed to only parent company headquarter locations). As a result, the estimated economic impacts are significantly greater and more likely to be representative of the true effects of this infusion of capital funding.

Additionally, the number of unique firms in which CalPERS invests is large, at approximately 4,140. In the Phase I report, the researchers suggested selecting a larger sample of perhaps 10 to 20 percent of the total number of firms and then predict the direct impact using regression analysis. They maintain consistency in the Phase II analysis by selecting a random sample of 414 (10 percent) individual firms. Based on this expanded sample, the researchers approximate the following breakdown of CalPERS investments by major industry (ranked by percentage of total market value of holdings in sample).

**Figure 3: CalPERS Public Equity Holdings by Industry**



Note: Calculations are derived from a random sample of 414 companies taken from the total public equities portfolio. These figures may vary from the actual distribution of the entire CalPERS public equities portfolio. Industries are based on the North American Industry Classification System (NAICS).

After selecting the sample, the researchers collected the necessary data from Dun & Bradstreet and used the allocation model to estimate the direct impacts for each firm in the sample. Finally, the researchers projected the direct impacts for the entire CalPERS domestic public equities portfolio using a regression model. The economic impacts of CalPERS domestic public equities are summarized in the following two tables. Note that due to the complexity of this analysis, it was not possible to reliably calculate regional impacts.

**Table 8: Overview of Economic Impacts Resulting from CalPERS Domestic Public Equity Investments**

Geography	Direct	Indirect	Induced	Total
California	\$2,359,358,279	\$973,274,143	\$1,096,506,273	\$4,429,138,695

Note: Any differences due to rounding. Regions may not add to state total due to differences in the regional and statewide multipliers.

**Table 9: Economic Impacts by Category Resulting from CalPERS Domestic Public Equity Investments**

Geography	Total Output, Revenues	Value Added, Gross State Product	Employee Compensation	State & Local Tax Generation	Employment
California	\$4,429,138,695	\$2,438,863,042	\$1,445,015,374	\$284,010,459	30,837

Note: State and Local Government Taxes show only tax generation, not distribution to local government. Any differences due to rounding.

## Develop-Build Private Partnerships

This portfolio consists of CalPERS investments in private equity develop-build real estate projects. There are approximately 287 projects listed in this data set. The Phase I report determined that the actual accounting data for when funds were dispersed is not available. However, the researchers did have the start and end dates for each project. Thus, they can reasonably assume that funds are dispersed equally each month over the life of the project. This assumption allows us to allocate a specific amount to each month the project existed during 2006. The sum of these monthly amounts during 2006 is the direct impact for this investment category. Moreover, based on the description of the project, the researchers assigned an appropriate industry sector to each project (i.e. single-family housing construction).

An outline of the economic impacts resulting from CalPERS participation in develop-build partnerships are provided below.

**Table 10: Overview of Economic Impacts Resulting from CalPERS Develop-Build Private Partnerships**

Geography	Direct	Indirect	Induced	Total
<b>California</b>	<b>\$879,180,608</b>	<b>\$351,305,638</b>	<b>\$403,558,075</b>	<b>\$1,634,044,321</b>
San Francisco	\$102,586,384	\$33,630,721	\$38,399,973	\$174,617,078
Sacramento	\$111,491,136	\$39,811,061	\$38,923,979	\$190,226,176
Northern CA Non-Urban Area	\$9,232,640	\$3,103,475	\$3,034,260	\$15,370,375
Central CA Non-Urban Area	-	-	-	-
Great Valley Area	\$46,754,684	\$16,444,006	\$17,114,982	\$80,313,672
Central Coast Area	\$31,928,534	\$10,683,249	\$11,213,780	\$53,825,563
Los Angeles	\$241,197,712	\$91,789,646	\$107,451,523	\$440,438,881
Inland Empire	\$182,382,224	\$67,321,666	\$66,396,204	\$316,100,094
San Diego	\$153,607,264	\$52,470,722	\$57,462,311	\$263,540,297

Note: Any differences due to rounding. Regions may not add to state total due to differences in the regional and statewide multipliers.

**Table 11: Economic Impacts by Category Resulting from CalPERS Develop-Build Private Partnerships**

Geography	Total Output, Revenues	Value Added, Gross State Product	Employee Compensation	State & Local Tax Generation	Employment
<b>California</b>	<b>\$1,634,044,321</b>	<b>\$846,459,771</b>	<b>\$471,763,331</b>	<b>\$84,732,674</b>	<b>12,260</b>
San Francisco	\$174,617,078	\$93,710,561	\$54,343,989	\$8,856,969	1,217
Sacramento	\$190,226,176	\$98,189,353	\$56,449,338	\$10,218,996	1,515
Northern CA Non-Urban Area	\$15,370,375	\$7,579,018	\$3,436,749	\$761,366	132
Central CA Non-Urban Area	-	-	-	-	-
Great Valley Area	\$80,313,672	\$39,473,790	\$21,663,710	\$4,016,944	671
Central Coast Area	\$53,825,563	\$27,636,482	\$14,288,886	\$2,720,359	427
Los Angeles	\$440,438,881	\$229,047,505	\$124,977,416	\$22,326,547	3,278
Inland Empire	\$316,100,094	\$156,796,023	\$90,074,113	\$16,501,761	2,606
San Diego	\$263,540,297	\$136,677,930	\$78,863,931	\$13,495,710	2,056

Note: State and Local Government Taxes show only tax generation, not distribution to local government. Any differences due to rounding.

## Global International Partners Equities

The Global International Partners (GI Partners) portfolio consists of investments in asset-backed firms having large holdings in real estate assets including office buildings, hospitals, hotels, technical centers, and other assets. The investments are used to enhance the real estate holdings, assist in mergers and acquisitions, and manage turnarounds. These investments generate a variety of economic impacts through construction, renovation activities, and may also enhance the capital structure of firms located in California.

The initial data provided information about properties in California in which these types of investments have taken place. After further consultation with CalPERS staff, the researchers were able to determine how these activities ultimately relate to the economy and classify them in the appropriate industries.

A breakdown of the economic impacts resulting from CalPERS GI Partners investments is provided in the tables below.

**Table 12: Overview of Economic Impacts Resulting from CalPERS GI Partners Equities Investments**

Geography	Direct	Indirect	Induced	Total
California	\$327,497,443	\$97,982,142	\$178,650,470	\$604,130,055

Note: Any differences due to rounding. Regions may not add to state total due to differences in the regional and statewide multipliers.

**Table 13: Economic Impacts by Category Resulting from CalPERS GI Partners Equities Investments**

Geography	Total Output, Revenues	Value Added, Gross State Product	Employee Compensation	State & Local Tax Generation	Employment
California	\$604,130,055	\$362,923,867	\$205,308,707	\$32,828,566	5,266

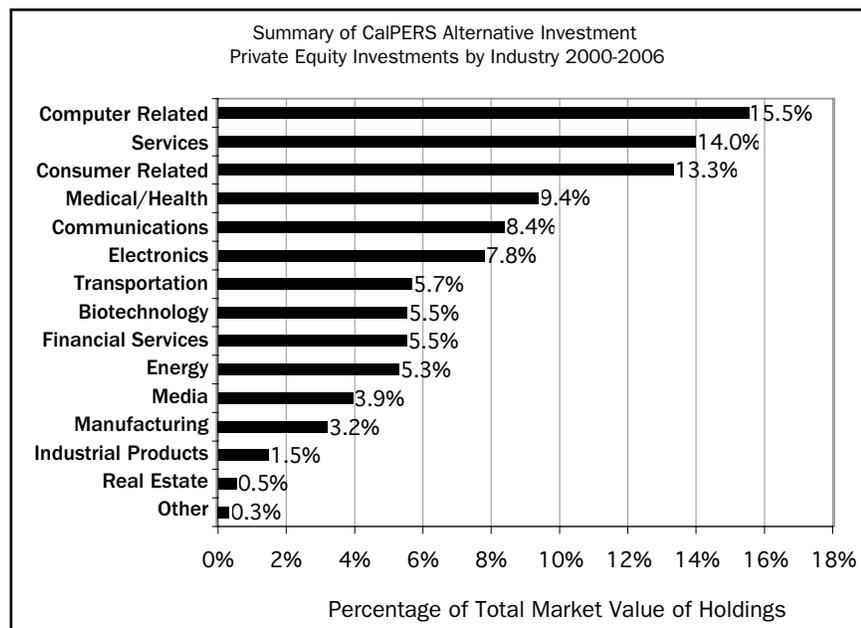
Note: State and Local Government Taxes show only tax generation, not distribution to local government. Any differences due to rounding.

## Alternative Investment Private Equities

The Alternative Investment Management (AIM) portfolios are direct private investment in existing firms. The data provided is for funds invested in firms that are relatively small and located in California. Activities in this portfolio are often related to buyout funds and venture capital.

Based on the portfolio snapshot from the years 2000 to 2006, the proportion of investments (ranked by dollar value of CalPERS investment) by industry is shown in the figure below.

**Figure 4: Summary of CalPERS Alternative Investment Private Equity Investments by Industry 2000-2006**



Note: Industry names and designations are provided directly in source data obtained from CalPERS.

Additionally, CalPERS provided the amount of funds invested for buyout activities and the amount of venture capital in 2006. It is these amounts which constitute a direct impact for analysis. Because the type of funding (buyout or venture) is provided, the researchers assigned IMPLAN industries accordingly.

The economic impacts resulting from CalPERS AIM private equity investments are illustrated in the tables below.

**Table 14: Overview of Economic Impacts Resulting from CalPERS AIM Private Equities Investments**

Geography	Direct	Indirect	Induced	Total
California	\$229,000,000	\$58,782,051	\$143,471,652	\$431,253,703

Note: Any differences due to rounding. Regions may not add to state total due to differences in the regional and statewide multipliers.

**Table 15: Economic Impacts by Category Resulting from CalPERS AIM Private Equities Investments**

Geography	Total Output, Revenues	Value Added, Gross State Product	Employee Compensation	State & Local Tax Generation	Employment
California	\$431,253,703	\$269,102,659	\$166,647,118	\$22,965,157	3,726

Note: State and Local Government Taxes show only tax generation, not distribution to local government. Any differences due to rounding.

## Member Home Loans

The Member Home Loan Program provides financing to CalPERS members for home purchases, cash-out refinances, and interest rate refinancing. As seen in the Phase I report, this program is similar to the California Non-Agency program (described in the next section), except this particular program is available only to CalPERS members. CalPERS provided data for all three types of activities for which these funds are provided—home purchases, cash out refinances, and interest rate refinancing. The assignment of industries and use of IMPLAN occur as follows. Purchase loans are used to buy homes or other real estate and can be entered into the consumer real estate sector of the IMPLAN model. The “cash-out” portion of cash-out refinances is essentially household income and is treated as such. Though the data does not contain the exact amount of each loan disbursed as cash to the borrower, the researchers used the nationwide average cash-out dollars as a percentage of aggregate refinanced originations to estimate the cash-out amount for each loan provided by CalPERS.<sup>10</sup> Interest rate refinance amounts cannot be included in this analysis as there is insufficient data to isolate only the savings to the borrower due to the change in the loan interest rate.

**Table 16: Overview of Economic Impacts Resulting from CalPERS Member Home Loan Program**

Geography	Direct	Indirect	Induced	Total
<b>California</b>	<b>\$158,139,557</b>	<b>\$43,734,177</b>	<b>\$40,911,674</b>	<b>\$242,785,408</b>
San Francisco	\$12,441,399	\$3,105,622	\$2,604,141	\$18,151,162
Sacramento	\$40,346,686	\$9,172,069	\$7,511,575	\$57,030,330
Northern CA Non-Urban Area	\$25,767,291	\$5,433,425	\$4,392,459	\$35,593,175
Central CA Non-Urban Area	\$6,101,068	\$1,070,243	\$761,669	\$7,932,980
Great Valley Area	\$20,585,634	\$4,743,533	\$4,043,895	\$29,373,062
Central Coast Area	\$4,350,111	\$943,142	\$808,974	\$6,102,227
Los Angeles	\$15,409,602	\$4,090,666	\$3,872,388	\$23,372,656
Inland Empire	\$28,451,634	\$6,397,107	\$5,522,290	\$40,371,031
San Diego	\$4,686,108	\$1,123,915	\$952,047	\$6,762,070

Note: Any differences due to rounding. Regions may not add to state total due to differences in the regional and statewide multipliers.

<sup>10</sup> The total cash-out dollars as a percentage of aggregate refinanced originations is obtained from Freddie Mac, Office of the Chief Economist, Cash-Out Refinance Report, First Quarter 2007.

**Table 17: Economic Impacts by Category Resulting from CalPERS Member Home Loan Program**

<b>Geography</b>	<b>Total Output, Revenues</b>	<b>Value Added, Gross State Product</b>	<b>Employee Compensation</b>	<b>State &amp; Local Tax Generation</b>	<b>Employment</b>
<b>California</b>	<b>\$242,785,408</b>	<b>\$142,529,238</b>	<b>\$43,995,218</b>	<b>\$22,516,664</b>	<b>1,559</b>
San Francisco	\$18,151,162	\$10,553,533	\$3,351,129	\$1,640,176	106
Sacramento	\$57,030,330	\$32,906,279	\$9,564,495	\$5,450,767	377
Northern CA Non-Urban Area	\$35,593,175	\$20,762,267	\$4,508,060	\$3,535,121	263
Central CA Non-Urban Area	\$7,932,980	\$4,698,636	\$936,424	\$844,035	52
Great Valley Area	\$29,373,062	\$16,405,413	\$4,578,535	\$2,701,270	205
Central Coast Area	\$6,102,227	\$3,306,870	\$1,012,901	\$512,733	39
Los Angeles	\$23,372,656	\$13,377,093	\$4,406,885	\$2,049,715	145
Inland Empire	\$40,371,031	\$23,199,438	\$6,233,174	\$3,911,076	275
San Diego	\$6,762,070	\$3,954,998	\$1,139,103	\$640,260	41

Note: State and Local Government Taxes show only tax generation, not distribution to local government. Any differences due to rounding.

## California Housing Non-Agency Loans

The California Non-Agency portfolio is based on mortgages issued, and is similar to the Member Home Loan Program described previously, except that being a CalPERS member is not required. These loans are used for home purchases, cash-out refinancing, and interest rate refinancing. Again, because the researchers do not have a feasible way of estimating the savings due to the rate change in the interest rate refinances, they can only calculate impacts resulting from the purchase loans and cash-out refinancing. In terms of industry sectors, purchase loans are considered real estate purchases and the cash-out portion of the cash-out refinances is treated as household consumption. See the previous section on the Member Home Loans for additional details on this process.

**Table 18 Overview of Economic Impacts Resulting from CalPERS California Non-Agency Loans**

<b>Geography</b>	<b>Direct</b>	<b>Indirect</b>	<b>Induced</b>	<b>Total</b>
California	\$46,647,301	\$13,016,243	\$11,980,326	\$71,643,870

Note: Any differences due to rounding. Regions may not add to state total due to differences in the regional and statewide multipliers.

**Table 19 Economic Impacts by Category Resulting from CalPERS California Non-Agency Loans**

<b>Geography</b>	<b>Total Output, Revenues</b>	<b>Value Added, Gross State Product</b>	<b>Employee Compensation</b>	<b>State &amp; Local Tax Generation</b>	<b>Employment</b>
California	\$71,643,870	\$42,900,183	\$12,581,956	\$6,870,345	456

Note: State and Local Government Taxes show only tax generation, not distribution to local government. Any differences due to rounding.

## External Manager Fees

The California External Manager Fees are direct payments to outside consultants conducting investment management and transactions for CalPERS. CalPERS supplied a breakdown of all fees paid to its consultants and fund managers located in California. Therefore, all fees in this data set can be treated as direct economic impacts to the State. Also, because the researchers know the various company types and operations, it is straightforward to assign IMPLAN sectors (i.e. the securities, commodity contracts, and investments sector).

Economic impacts for this investment category are presented in the following tables. Note that the only two regions with sizeable enough direct impacts to be considered individually are San Francisco and Los Angeles.

**Table 20: Overview of Economic Impacts Resulting from CalPERS California External Manager Fees**

Geography	Direct	Indirect	Induced	Total
<b>California</b>	<b>\$16,898,856</b>	<b>\$6,845,894</b>	<b>\$11,872,280</b>	<b>\$35,617,031</b>
San Francisco	\$6,524,000	\$2,233,689	\$3,856,959	\$12,614,648
Los Angeles	\$10,372,855	\$3,551,461	\$6,132,384	\$20,056,701

Note: Any differences due to rounding. Regions may not add to state total due to differences in the regional and statewide multipliers.

**Table 21: Economic Impacts by Category Resulting from CalPERS California External Manager Fees**

Geography	Total Output, Revenues	Value Added, Gross State Product	Employee Compensation	State & Local Tax Generation	Employment
<b>California</b>	<b>\$35,617,031</b>	<b>\$21,081,100</b>	<b>\$14,314,697</b>	<b>\$1,954,019</b>	<b>269</b>
San Francisco	\$12,614,648	\$7,907,750	\$5,772,507	\$686,485	84
Los Angeles	\$20,056,701	\$12,572,952	\$9,178,017	\$1,091,479	134

Note: State and Local Government Taxes show only tax generation, not distribution to local government. Any differences due to rounding.

## Bridge Housing Construction Loans

The Bridge Housing participation consists of loans for development and construction of affordable housing. Because many projects were completed outside of the year 2006, a large portion of the supplied data was not considered a direct impact for this analysis. Although it is the investment category with the smallest economic impacts, it is still significant enough to report results at the State level.

A summary of the impacts stemming from Bridge Housing Construction loans is provided in the tables below.

**Table 22: Overview of Economic Impacts Resulting from CalPERS Bridge Housing Construction Loans**

Geography	Direct	Indirect	Induced	Total
California	\$2,366,654	\$945,676	\$1,086,329	\$4,398,659

Note: Any differences due to rounding. Regions may not add to state total due to differences in the regional and statewide multipliers.

**Table 23: Economic Impacts by Category Resulting from CalPERS Bridge Housing Construction Loans**

Geography	Total Output, Revenues	Value Added, Gross State Product	Employee Compensation	State & Local Tax Generation	Employment
California	\$4,398,659	\$2,278,558	\$1,269,906	\$228,091	31

Note: State and Local Government Taxes show only tax generation, not distribution to local government. Any differences due to rounding.

## Combined Investment Impacts

Finally, all economic impacts resulting from the CalPERS investment types presented in this report are combined together to illustrate the overall impacts these activities have on the California economy. The tables below show these aggregate figures.

**Table 24: Overview of Economic Impacts Resulting from Combined CalPERS Investments**

Geography	Direct	Indirect	Induced	Total
<b>California</b>	<b>\$8,266,375,586</b>	<b>\$2,583,030,936</b>	<b>\$4,285,204,435</b>	<b>\$15,134,610,958</b>
San Francisco	\$1,604,522,871	\$366,131,679	\$715,200,191	\$2,685,854,741
Sacramento	\$288,683,176	\$75,598,579	\$105,538,844	\$469,820,599
Northern CA Non-Urban Area	\$46,037,295	\$11,277,123	\$11,401,014	\$68,715,432
Central CA Non-Urban Area	\$7,274,358	\$1,244,115	\$1,177,462	\$9,695,935
Great Valley Area	\$70,193,727	\$21,995,400	\$22,446,624	\$114,635,751
Central Coast Area	\$89,133,807	\$25,680,372	\$32,967,537	\$147,781,716
Los Angeles	\$2,246,174,833	\$550,044,890	\$1,223,702,851	\$4,019,922,575
Inland Empire	\$372,300,532	\$100,367,284	\$147,414,876	\$620,082,692
San Diego	\$577,183,243	\$136,078,570	\$255,152,351	\$968,414,164

Note: Any differences due to rounding. Regions may not add to state total due to differences in the regional and statewide multipliers.

**Table 25: Economic Impacts by Category Resulting from Combined CalPERS Investments**

Geography	Total Output, Revenues	Value Added, Gross State Product	Employee Compensation	State & Local Tax Generation	Employment
<b>California</b>	<b>\$15,134,610,958</b>	<b>\$8,849,384,359</b>	<b>\$5,103,315,559</b>	<b>\$864,668,849</b>	<b>124,377</b>
San Francisco	\$2,685,854,741	\$1,662,740,723	\$999,660,940	\$137,832,543	21,802
Sacramento	\$469,820,599	\$271,731,965	\$150,123,504	\$28,267,301	4,074
Northern CA Non-Urban Area	\$68,715,432	\$37,847,636	\$12,216,531	\$5,137,477	557
Central CA Non-Urban Area	\$9,695,935	\$5,792,875	\$1,471,096	\$936,283	72
Great Valley Area	\$114,635,751	\$58,703,962	\$27,840,430	\$6,965,081	923
Central Coast Area	\$147,781,716	\$80,063,922	\$41,383,345	\$7,511,163	1,227
Los Angeles	\$4,019,922,575	\$2,453,773,549	\$1,390,287,697	\$209,465,581	36,112
Inland Empire	\$620,082,692	\$348,518,762	\$196,684,132	\$35,064,429	5,664
San Diego	\$968,414,164	\$581,812,106	\$346,391,560	\$51,611,828	8,815

Note: State and Local Government Taxes show only tax generation, not distribution to local government. Any differences due to rounding.

# Appendix – A

## IMPLAN Model Details

In this study, the economic impact computations were made using the IMPLAN model, an input-output model. This model can show the inter-relationships in county and state economies and how they are affected by economic activities, such as investments by CalPERS. The USDA and the Forest Service in the mid-1970s developed IMPLAN with University of Minnesota economists for community impact analysis of federally funded projects. The Natural Resources Inventory and Analysis (NRIA) and Social Sciences Institutes (SSI) are supporting usage of IMPLAN throughout National Resources Conservation Service (NRCS). The model is currently specified as the part of the methodology required for analysis on many Federal and State public works and natural resources projects, and is widely used in California for CEQA environmental impact assessments.

The IMPLAN model must be calibrated for each local economy in which impacts are to be measured. The calibration creates a model for the local economy which shows all of the productive sectors, and measures the inter-connections between them. The calibration is made using a database created by the United States Bureau of Labor Statistics called the ES-202 data, which is based on a survey of all businesses and is updated every two years. The latest data is based on the ES-202 survey completed in 2004. Note that this database may not exactly match data or estimates from other sources, such as the Census Bureau, the Bureau of Economic Analysis, the Employment Development Department, or the Department of Finance population estimates.

## Model Terminology and Outputs

The model describes the economic structure and the economic impacts in several ways. One description is by the sequence of events which result in the multiplied total effect:

**Direct Impact** is the event which triggers the sequence, or in this case, the investment of funds in California enterprises.

**Indirect Impact** identifies the second-order effects on the economy when the retirement benefits are spent at businesses and government providers of goods and services.

**Induced Impact** occurs when the employees of the service providers spend their wages and profits, initiating a third-order effect.

**Total Impact** is the sum of the Direct, Indirect, and Induced impacts derived by the econometric model. This is the desired all-inclusive view of the economic impacts created by CalPERS investments on the economy.

A second description provided by the IMPLAN model is based on the specific measurement of the economic benefits. These range from the total revenues or sales of all businesses and government agencies, to the final impact on employment. The measures are described below.

**Total Output** is the total business and government sales or revenues generated by firms, government entities, and households involved in the economic activity. It is widely used because it is the measure most business and government entities use to measure their level of activity. It includes all types of income including profits, return of capital, return on investment, employee compensation, and taxes.

The additional measures below are all part of the Total Output, and are therefore smaller than the Total Output.

**Value-Added** is a net estimate which identifies the actual creation of new value in the economy. It excludes the costs of purchased materials and services, but includes profits, capital costs, worker compensation, and other aspects of the productive activity. The sum of all Value-Added activities in a region equals the Gross Regional Product (GRP). It is a better measure of the real economic contribution of an activity, but is a concept which individual business firms and government agencies often cannot readily compute.

**Employee Compensation** measures the part of Value-Added which goes to the employees of the firm or government agency. It is not just salary, but includes all costs of benefits, bonuses, vacation, sick leave, and all other forms of compensation.

**Employment** is the count of full-time equivalent employment generated by the project on an annual basis. It does not necessarily represent a count of employees active at a given time; a large number of temporary or part-time employees would be reduced to a full time equivalent number which would be lower in terms of actual numbers of employed persons.

**State and Local Tax Generation** is a model estimate of the corporate, personal, property, and sales taxes generated, as well as in-lieu charges for services. The measure is one of generation, not allocation. It is very difficult to estimate how much of this is retained by or returned to cities or counties, as the California fiscal structure and allocation processes by the State are complex and change rapidly.

## Appendix – B

### Regional Definitions

The table below contains the definitions of the regions used in this report. Region names are shown in bold with the corresponding counties listed below.

<b>San Francisco</b>				
Alameda	Contra Costa	Marin	Napa	
San Benito	San Francisco	San Mateo	Santa Clara	
Santa Cruz	Solano	Sonoma		
<b>Sacramento</b>				
El Dorado	Placer	Sacramento	Yolo	
<b>Northern California Non-Urban Area</b>				
Calaveras	Colusa	Del Norte	Glenn	
Humboldt	Lake	Lassen	Mariposa	
Mendicino	Modoc	Nevada	Plumas	
Shasta	Sierra	Siskiyou	Sutter	
Tehama	Yuba			
<b>Central California Non-Urban Area</b>				
Alpine	Amador	Inyo	Kings	
Madera	Mono	Trinity	Tuolumne	
<b>Great Valley Area</b>				
Fresno	Kern	Merced	San Joaquin	
Stansislaus	Tulare			
<b>Central Coast Area</b>				
Monterey	San Luis Obispo	Santa Barbara		
<b>Los Angeles</b>				
Los Angeles	Orange	Ventura		
<b>Inland Empire</b>				
Riverside	San Bernardino			
<b>San Diego</b>				
Imperial	San Diego			

# Appendix – C

## Public Equities Formula

### ***Computational Methodology***

Our computational methodology is based on the following sequence, where the desired output is the firm’s revenues generated in California as a result of the CalPERS capital contribution to the firm.

#### **Basic Framework:**

The CalPERS contribution to the California economy (measured in Direct Revenue or Total Output) is related to the firm’s total revenue by observing the allocation of capital or revenues to both California and to CalPERS. The two allocations are identified as:

1. The percentage of firm capitalization owned by CalPERS, or  $(C_P / C_T)$ , which is a known quantity.
2. The percentage of firm capitalization in California locations, or  $(C_{CA} / C_T)$ , which we do not know but can derive from our direct computation of California revenues for the company based on known employment and the NAICS production function for the firm.

$$\text{Then } R_{CA,P} = R_T * (C_{CA} / C_T) * (C_P / C_T)$$

Where:

- R = Revenues
- C = Capitalization based on public equity holdings
- CA = Amount in California
- P = Amount due to CalPERS investment
- T = Total for the firm

We do not know  $C_{CA}$  but can assert that  $C_{CA} / R_{CA} = C_T / R_T$  because of the uniform capital to revenue ratio (production function) for all locations, and we do know  $R_{CA}$ .

From this it can be shown that  $C_{CA} = (R_{CA} * C_T) / R_T$ , and inserting and simplifying, that  $(C_{CA} / C_T) = R_{CA} / R_T$ .

As a result, our desired computational framework is:

$$R_{CA,P} = R_{CA} * (C_P / C_T)$$

The revenue which can be attributed to CalPERS in California is the firm’s total revenue in California (which we have computed directly from the employment data and the NAICS production function) multiplied by the percent of firm capitalization owned by CalPERS.

