VILLAGE OF BARRINGTON HILLS

Finance Committee

NOTICE OF MEETING

Date: Monday, April 20, 2015
Time: 2:00 p.m.
Location: Training Room
Village Hall
112 Algonquin Road

AGENDA

1. Organizational
   1.1 Call to Order
   1.2 Roll Call

2. [Vote] Minutes - October 23, 2014

3. [Vote] Audit FY '14 Draft Recommendation – Sikich, LLP

4. [Vote] Police Pension Funding Bond Recommendation
   – William Blair and Company, L.L.C.
   - Graystone Consulting, a business of Morgan Stanley
   - Lauterbach & Amen, L.L.P.

5. 1st Quarter Review FY '15

6. Public Comments

7. Adjournment

Chairman: Karen Selman

NOTICE AS POSTED

OMA approved by Wendi L. Frisen
Village of Barrington Hills OMA Officer

Village of Barrington Hills
Minutes of Finance Committee meeting of October 23, 2014

Chair Selman called the meeting to order at 3:31 p.m. Roll Call.

DRAFT

Members Present
Karen Selman
Fritz Gohl
Patty Meroni
President McLaughlin (ex-officio)

Other Attendees
Robert Kosin, Director of Administration
Richard Semelsberger, Deputy Chief
Lieutenant Joe Colditz
Dan Strahan, Village Engineer
Colleen Konicek, Trustee
Alice Runvik, Asst. to Chief (arrived 3:42 p.m.)
Rosemary Ryba, Village Treasurer

MINUTES

Reviewed minutes from August 14, 2014 Finance Committee Meeting. Fritz Gohl motioned and moved for approval, seconded by Patty Meroni. All present said aye. Minutes approved.

THIRD QUARTER REVIEW

Treasurer Ryba reviewed the report provided through September 30, 2014. Property taxes were reported at 94% collected. Traffic fines were reported at 40% collected which was lower than budgeted as Deputy Chief Semelsberger explained the courts are imposing lower fines. There was a YTD variance vs. YTD budgeted surplus on expenditures in the General fund totaling $239, 479.16. All other Funds had shown a YTD surplus of $821,188.01. The surplus across all Funds totaled $1,060,667.17. This surplus across all Funds is mainly attributable to the Roads and Bridges (R&B) Fund's work in progress and to be expended by year end.

2015 REVENUE FORECAST

The matter of the vehicle sticker program on results of survey of walk-ins was 52% for keeping and 48% to cancel it. It was agreed to keep the program in place. Fritz Gohl asked how MFT funds are distributed – response was on a per capita basis. According to the Illinois Municipal Review's August, 2014 report on estimated stated shared revenues, it showed a projected increase in income tax revenue of 0.3%, state use tax increase of 4.3%, MFT decrease of 1.1% and the corporate property replacement tax decrease of 1.9%., which factored into the revenue projections on these line items for the 2015 proposed budget.

2015 BUDGET WORKSHEETS

Roads and Bridges. Patty Meroni stated the subject of why there are so many issues with the roads was that in 2005 there was a 10 year program adopted. A limit was set each year that could be spent and there were a lot of roads that weren't re-done because of keeping up with the increased costs of petroleum and asphalt which constrained what could get completed. Dan Strahan stated the past years' Roads and Bridges requests got cut back in order to keep the levy flat from 2008-2011 and was not able to do the projects they wanted to do road work on. There was also a drainage issue that used funds from Roads and Bridges.

DRAFT

2015 BUDGET WORKSHEETS (Continued)

Roads and Bridges (Continued) President McLaughlin stated the 10 year program was not followed and the residents should have been informed because the Board of Trustees wanted to not increase the levy. He suggested communicating to residents that the savings the Village have had on legal and other expenses would be utilized for Roads and Bridges. If in the future, the Village needs to raise taxes, it must be explained. Patty stated it is a maintenance issue that they did not do work on roads they had intended to do, as it is an ongoing battle to keep up with the roads' conditions.

It was agreed that the newsletter would be a good way to communicate to residents what work needs to be done for the roads according to the road study. President McLaughlin continued to state that he would like the residents to receive more communications on why the Villages holds or raises or lowers the levy and how it would be done from a budgeting standpoint. He suggested the possibility of creating a special assessment for Roads and Bridges. Patty Meroni said traffic counts and requirements differ to be able to establish a base line and is a moving target to be able to get road work completed. Options suggested were to maintain current conditions or maintain and improve the roads to a 5 year program. Next year's 1st quarter newsletter was suggested as a good time to provide an extended Roads and Bridges section.

On September 17, 2014 a meeting with Cuba Twp. Road District took place with regard to salt prices. They proposed charging an additional $3,600 per month to provide an additional truck specifically allocated for the Village based on historical police call outs. Cuba Twp.'s new superintendent informed at that meeting that damage to their trucks due to low hanging trees occurred. Chair Selman wants to see what type of agreement the Village and Cuba Twp. regarding callouts can be made.

Buildings and Grounds/Health and Environment/Insurance. The health insurance and property/casualty were held and a conservative estimate was provided until final quotes are provided. The demolition of property on Steeplechase was questioned if it is included in the budget request. The Committee would like to add $15,000 to outside services.

Public Safety. An increase in computer expenses was due to the server replacement/reader for the police department. Personal computers are at end of life and need replacement. Tuition increased to be sure there are enough funds budgeted if the Board of Trustees wants to hire new patrol officers that would need to be trained. President McLaughlin asked if the state mandates to have two employees at a time in dispatch, how that would impact that department's expenses. In March or April, 2015 the state will provide grid lines and the question would be addressed at that time.

Administration. Placeholder for administrative staff increases as requested by President McLaughlin at 1.5% in the aggregate to be discussed at Executive Session. Chair Selman asked if there is enough in the placeholder to cover individual employees. She then asked why the newly named position of Director of Communications was not a salaried position. The explanation provided was the Village wants to limit managerial responsibilities that salaried positions hold.

Legal. President McLaughlin stated that based on 36 meetings and preparation forecasting, the attorney fees for Village Attorney line item was submitted as $140,000 for 2015. Litigation and Other Legal Fees were held at the 2014 level. FOIA Records Management line item was decreased for 2015 to $40,000 vs. $60,000 for 2014 and will be fine tuned prior to final budget worksheets submittal to the BOT at the November Meeting of BOT. A question was raised as how much of Director of Communication's pay is FOIA Records Management related. Trustee Konicek stated that it should be documented the amount of time spent on FOIA related duties by the Director of Communications. A request of the breakdown of FOIA expenses through September 30, 2014 was made and will be provided by Treasurer Ryba.

DRAFT

POLICE PENSION FUND

Funding Policy. As submitted, to be on the Agenda for the October 27, 2014 BOT Meeting for adoption prior to December 31, 2014, in accordance with GASB 67/68.

Pension Funding Bonds. President McLaughlin wants to do more research and see how the Board feels about the idea. Chair Selman showed concern that the burden would be put on current taxpayers. He responded that the interest only would be, and it would be good for the Village but not sure how the residents would feel. The discussion will be brought to the BOT by President McLaughlin at the November BOT Meeting.

Investment Monitoring Report. Treasurer Ryba reviewed the memo provided by Wall and Associates. President McLaughlin would like the police pension fund investments be better managed and he and Chair Selman will send a letter to the PPF Board requesting to address the investment return performance.

GASB 67 & 68 Report. A document used for presentation by Lauterbach & Amen was provided that detailed the upcoming GASB 67/68 requirements with regard to pension fund reporting that detailed new terminology, actuarial assumptions and considerations as well as disclosures and other implications effective in fiscal year 2014 for GASB 67 and fiscal year 2015 for GASB 68.

REQUEST FOR PROPOSAL (RFP) FOR AUDITING SERVICES

Based on submitted RFP's, Fritz Gohl motioned and moved, seconded by Patty Meroni to recommend Sikich, LLP to the Board of Trustees as auditors for the Village for fiscal year 2014. All present said aye.

There being no public comments, Fritz Gohl motioned and Patty Meroni seconded to adjourn at 5:46 p.m. upon the consent of those present.

Adjournment.

Rosemary Ryba
Recording Secretary

Preliminary and Tentative
For Discussion Purposes Only

VILLAGE OF BARRINGTON HILLS, ILLINOIS

ANNUAL FINANCIAL REPORT

For the Year Ended
December 31, 2014

Sikich®

VILLAGE OF BARRINGTON HILLS, ILLINOIS
TABLE OF CONTENTS

Preliminary and Tentative
For Discussion Purposes Only

INDEPENDENT AUDITOR'S REPORT

INDEPENDENT AUDITOR'S REPORT

The Honorable President
Members of the Board of Trustees
Village of Barrington Hills, Illinois

We have audited the accompanying financial statements of the governmental activities, each major fund and the aggregate remaining fund information of the Village of Barrington Hills, Illinois (the Village), as of and for the year ended December 31, 2014, and the related notes to financial statements, which collectively comprise the Village's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express opinions on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Village's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Village's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Opinions

In our opinion, the financial statements referred to above present fairly, in all material respects, the respective financial position of the governmental activities, each major fund and the aggregate remaining fund information of the Village of Barrington Hills, Illinois as of December 31, 2014, and the respective changes in financial position thereof for the year then ended in conformity with accounting principles generally accepted in the United States of America.

Change in Accounting Principle

The Village adopted the GASB Statement No 67, *Financial Reporting for Pension Plans*, which modified certain disclosures in the notes to financial statements and the required supplementary information. Our opinion is not modified with respect to this matter.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis and the required supplementary information listed in the table of contents be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Information

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise the Village's basic financial statements. The supplementary information is presented for purposes of additional analysis and is not a required part of the basic financial statements. The information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the information is fairly stated in all material respects in relation to the basic financial statements as a whole.

The other information listed in the table of contents has not been subjected to the auditing procedures applied in the audit of the basic financial statements and, accordingly, we do not express an opinion or provide any assurance on it.

Naperville, Illinois
April XX, 2015

GENERAL PURPOSE EXTERNAL FINANCIAL STATEMENTS

VILLAGE OF BARRINGTON HILLS

MANAGEMENT'S DISCUSSION AND ANALYSIS
As of and for the Year Ended December 31, 2014

The management of the Village of Barrington Hills offers all persons interested in the financial position of the Village this narrative overview and analysis of the Village's financial performance during the year ending December 31, 2014. You are invited to read this narrative in conjunction with the Village's financial statements. The Village presents several tables and graphs in the management's discussion and analysis that display comparative information.

FINANCIAL HIGHLIGHTS

> The assets of the Village of Barrington Hills exceeded its liabilities by $5,871,893 (net position). Of this amount, $2,032,760 is restricted for specific purposes (restricted net position), and $1,798,881 is invested in capital assets, which leaves unrestricted net position of $2,040,252.

> Total governmental net position increased by $757,870 due to the Village effectively controlling expenses during the year.

> On December 31, 2014, the Village's governmental funds reported combined fund balances of $3,593,488, an increase of $640,950 from December 31, 2013.

> During the year, revenues totaled $8,433,480, while expenses totaled $7,881,544.

> The General Fund reported total ending fund balance of $1,954,375, an increase of $523,485 from the prior year.

> The Village's governmental funds reported total revenues of $8,433,480, compared to $8,281,305, which was forecasted.

> The Village's governmental funds reported total expenditures of $7,881,544, compared to $11,393,000, which was appropriated, and $8,387,289, which was budgeted.

OVERVIEW OF THE FINANCIAL STATEMENTS

This discussion and analysis is intended to serve as an introduction to the Village's basic financial statements. These financial statements consist of two parts: Management's Discussion and Analysis (this section) and the basic financial statements. The basic financial statements include two kinds of statements that present different views of the Village:

> The first two statements are government-wide financial statements that provide both long-term and short-term information about the Village's overall financial status.

> The fund financial statements focus on individual parts of the Village government and report the Village's operations in more detail than the government-wide statements.

> The remaining statements provide financial information about activities for which the Village acts solely as a trustee or agent for the benefit of those outside of the government.

OVERVIEW OF THE FINANCIAL STATEMENTS (cont.)

These financial statements also include notes that explain some of the information in the financial statements and provide more detailed data. The statements are followed by a section of required supplementary information that further explains and supports the information in the financial statements. The remainder of this overview section of management's discussion and analysis explains the structure and contents of each of the statements.

GOVERNMENT-WIDE STATEMENTS

The government-wide statements report information about the Village as a whole using accounting methods similar to those used by private-sector companies. The statement of net position includes all of the government's assets and liabilities. All of the current year revenues and expenses are accounted for in the statement of activities regardless of when cash is received or paid.

The two government-wide statements report the Village's net assets and how they have changed. Net position – the difference between the Village's assets and liabilities – is one way to measure the Village's financial health, or position. Over time, increases or decreases in the Village's net position is an indicator of whether its financial health is improving or deteriorating. To assess the overall health of the Village you need to consider additional non-financial factors such as changes in the Village's property tax base and the condition of the Village's roads.

The statement of activities presents information showing how the government's net position changed during the most recent year. All changes in net position are reported as soon as the underlying event giving rise to the change occurs, regardless of the timing of the cash flows. Thus, revenue and expenses reported in this statement for some items will only result in cash flows in future fiscal periods.

FUND FINANCIAL STATEMENTS

A fund is a grouping of related accounts that is used to maintain control over resources that have been segregated for specific activities or objectives. The Village, like other state and local governments, uses fund accounting to ensure and demonstrate compliance with finance-related legal requirements. All of the funds of the Village can be divided into two categories: governmental funds and fiduciary funds.

Governmental Funds – Governmental funds are used to account for essentially the same functions reported as governmental activities in the government-wide financial statements. However, unlike the government-wide financial statements, governmental fund financial statements focus on near-term inflows and outflows of spendable resources, as well as on balances of spendable resources available at the end of the fiscal year. Such information may be useful in evaluating a government's near-term financing requirements.

Because the focus of governmental funds is narrower than that of the government-wide financial statements, it is useful to compare the information presented for governmental funds with similar information presented for governmental activities in the government-wide financial statements. By doing so, readers may better understand the long-term impact of the government's near-term financing decisions. Both the governmental funds balance sheet and the governmental funds statement of revenues, expenditures, and changes in fund balances provide a reconciliation to facilitate this comparison between governmental funds and governmental activities.

OVERVIEW OF THE FINANCIAL STATEMENTS (cont.)

The Village maintains four individual governmental funds. Information is presented separately in the governmental funds balance sheet and in the governmental funds statement of revenues, expenditures, and changes in fund balances for the General Fund, Public Safety Fund, Roads and Bridges Fund, and Debt Service Fund, each of which are considered to be major funds. There are no non-major funds.

The Village adopts an annual appropriated budget for all of the governmental funds. A budgetary comparison statement for these funds has been provided to demonstrate compliance with this budget.

Fiduciary Funds – Fiduciary funds are used to account for resources held for the benefit of parties outside the government. Fiduciary funds are not reflected in the government-wide financial statements because the resources of those funds are not available to support the Village's own programs. The accounting used for fiduciary funds is much like that used for proprietary funds.

Notes to Financial Statements – The notes provide additional information that is essential to a full understanding of the data provided in the government-wide and fund financial statements.

Other Information – In addition to the basic financial statements and accompanying notes, *required supplementary information* presents certain budgetary comparisons. The debt service fund budget comparison and property tax information schedules are presented immediately following the required supplementary information.

FINANCIAL ANALYSIS OF THE VILLAGE AS A WHOLE

An analysis of the Village's financial position begins with a review of the Statement of Net Position and the Statement of Activities. These two statements report the Village's net position and changes therein. It should be noted that the financial position can also be affected by non-financial factors, including economic conditions, population growth and new regulations.

A summary of the Village's Statement of Net Position is presented below in Table 1.

Table 1
Condensed Statements of Net Position

	Governmental Activities	
	December 31, 2013	December 31, 2014
Current and other assets	$ 11,557,564	$ 12,187,419
Capital assets	1,992,654	1,886,083
Total Assets	13,550,218	14,073,502
Current liabilities	146,453	510,842
Noncurrent liabilities	1,724,469	1,238,762
Total Liabilities	1,870,922	1,749,604
Unavailable Revenue	6,565,273	6,452,005
Total Deferred Inflows of Resources	6,565,273	6,452,005
Net invested in capital assets	1,841,043	1,798,881
Restricted	1,812,055	2,032,760
Unrestricted	1,460,925	2,040,252
Total Net Position	$ 5,114,023	$ 5,871,893

FINANCIAL ANALYSIS OF THE VILLAGE AS A WHOLE (cont.)

One portion of the Village's net position reflects its investment in capital assets (e.g., land, buildings, machinery and equipment, and infrastructure), less any debt used to acquire those assets that is still outstanding. The Village had one capital lease outstanding as of December 31, 2014. The Village uses these capital assets to provide services to citizens; consequently, these assets are not available for future spending.

An additional portion of the Village's net position represents sources that are subject to external restrictions on how they may be used. The remaining balance of unrestricted net assets can be used to meet the government's ongoing obligations to citizens and creditors.

At the end of the current fiscal year, the Village reported positive balances in all three categories of net position for the Village as a whole.

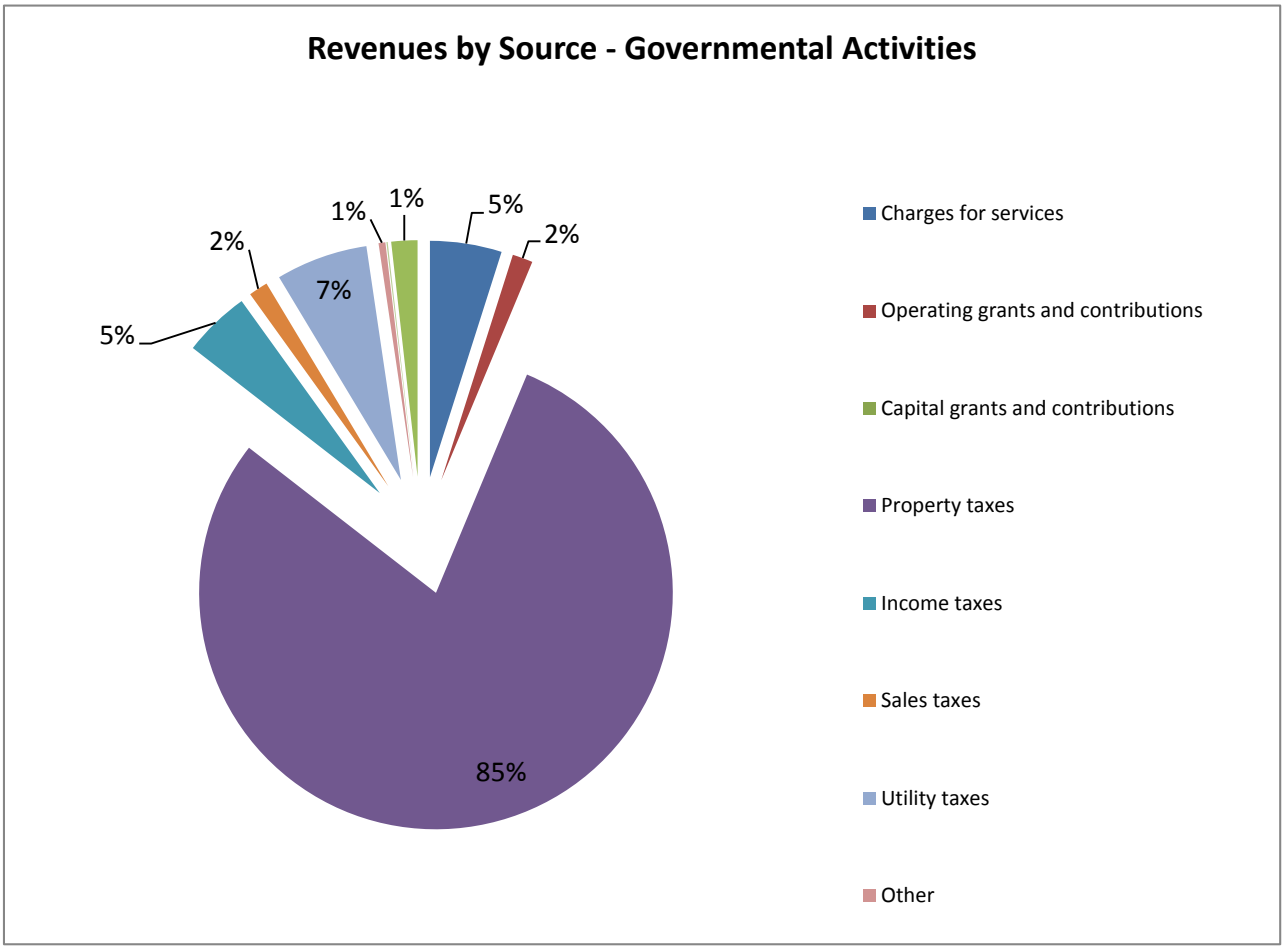
Table 2
Condensed Statement of Activities

	Governmental Activities	
	December 31, 2013	December 31, 2014
Revenues:		
Program revenues		
Charges for services	$ 455,464	$ 402,920
Operating grants and contributions	124,132	148,297
Capital grants and contributions	-	98,709
General revenues		
Property taxes	6,744,846	6,582,997
Utility taxes	533,709	548,223
Income taxes	388.951	402,987
Sales/Use/Replacement taxes	111,794	165,844
Other taxes	39,568	54,711
Investment income	7,432	10,203
Miscellaneous revenues	145,681	18,519
Total Revenues	8,551,577	8,433,480
Expenses:		
General government	2,896,070	2,001,690
Public safety	3,519,669	4,144,576
Roads and bridges	1,399,310	1,473,560
Health	9,621	2,869
Interest on long-term debt	55,531	52,915
Total Expenses	7,880,201	7,675,610
Changes in Net Position	671,376	757,870
Beginning Net Position, as restated	4,442,647	5,114,023
Ending Net Position	$ 5,114,023	$ 5,871,893

FINANCIAL ANALYSIS OF THE VILLAGE AS A WHOLE (cont.)

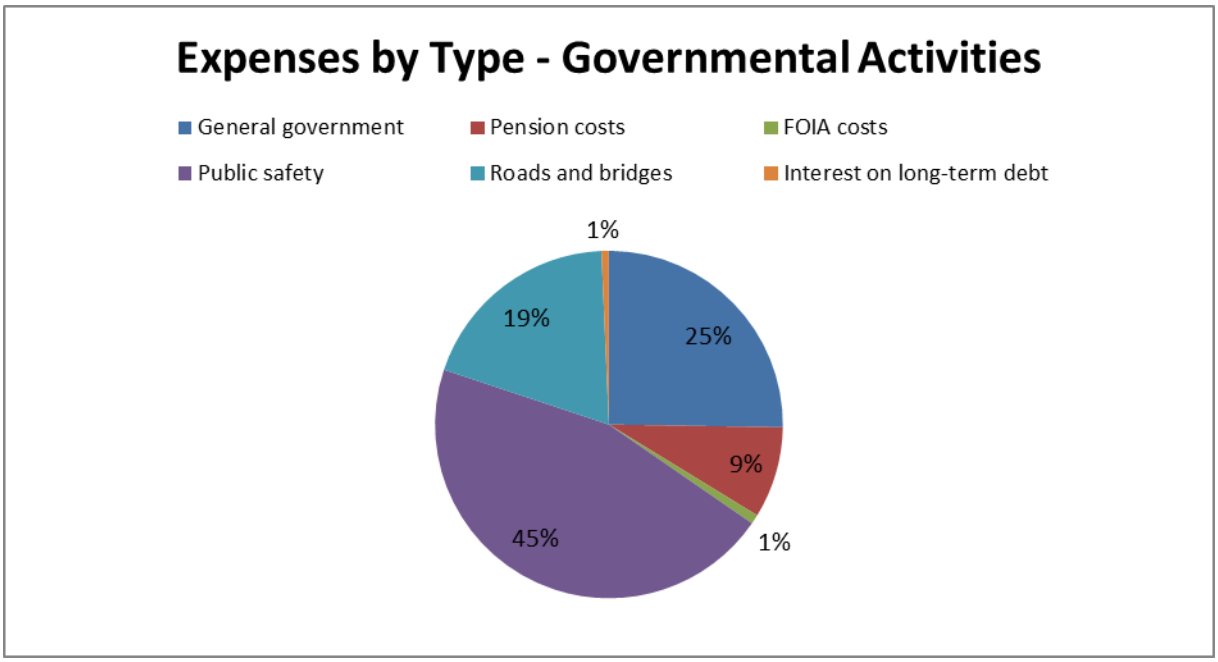
As previously noted, the Statement of Net Position shows the change in financial position of net assets. The specific nature or source of these changes then becomes more evident in the Statement of Activities as shown above in Table 2.

Chart 1



FINANCIAL ANALYSIS OF THE VILLAGE AS A WHOLE (cont.)

Chart 2



GOVERNMENTAL ACTIVITIES

Governmental activities increased the Village's net position by $757,870. This increase is primarily a result of the increased revenue from income taxes and capital grants and contributions.

The preceding revenues graph (Chart 1) depicts the major revenue sources of the Village. It depicts very clearly the Village's reliance on property taxes to fund governmental activities. It also clearly identifies the minor percentage the Village receives from sales taxes.

The preceding expense and program revenues graph (Chart 2) identifies those governmental functions where program expenses greatly exceed program revenues.

FINANCIAL ANALYSIS OF THE VILLAGE'S FUNDS

GOVERNMENTAL FUNDS

The focus of the Village of Barrington Hills' governmental funds is to provide information on near-term inflows, outflows, and balances of spendable resources. Such information is useful in assessing the Village's financing requirements. In particular, unrestricted fund balance may serve as a useful measure of the government's net resources available for spending at the end of the fiscal year.

At December 31, 2014, the Village's governmental funds reported combined fund balances of $3,593,488. Of this amount, $1,384,786 constitutes unassigned fund balance, which is available to meet the Village's current and future needs. The remaining $2,208,702 is nonspendable, restricted or assigned. The combined fund balance increased from last year's total of $2,952,538.

General Fund

The Village's General Fund is the chief operating fund of the Village. Total fund balance in the General Fund increased $523,485 or 36%. This was due primarily to the decrease in legal services expenditures and Voluntary Separation Plan (VSP) participation.

GENERAL FUND APPROPRIATION HIGHLIGHTS

The General Fund actual revenues for the current year were $4,007,157 compared to the revenue forecast of $4,271,195. This variance is primarily due to decreases in fees, permits, license and miscellaneous revenues over the course of the year.

The General Fund appropriation for the year ended December 31, 2014 had total expenditures of approximately $4,693,000. The General Fund actual expenditures were lower than the expenditure appropriation. Actual expenditures and transfers totaled $3,579,186. The variance reflects the Village's longstanding practice (and the statutory requirement pursuant to 65 ILCS 64 5/8-2-9) of appropriating more than it plans to expend, thereby ensuring the availability of adequate revenues to support essential Village functions.

CAPITAL ASSETS

At the end of 2014, the Village had invested a total of $1,886,083 in capital assets. This investment in capital assets includes land, buildings and improvements, equipment, furniture, and vehicles. This investment does not include infrastructure acquired prior to 2004, which the Village is not required to record.

Capital assets remained comparable to the prior year. The total decrease in the Village's investment in capital assets for the current fiscal year was $106,571.

Table 3
Capital Assets

	Governmental Activities	
	December 31, 2013, restated	December 31, 2014
Capital assets not being depreciated		
Land	$ 350,349	$ 350,349
Capital assets being depreciated		
Buildings and improvements	2,131,642	2,131,642
Equipment, furniture and vehicles	1,216,180	1,208,979
Total Capital Assets	3,347,822	3,690,970
Less: Accumulated Depreciation	(1,705,517)	(1,535,734)
Capital Assets, Net of Depreciation	$ 1,992,654	$ 1,886,083

Additional information on the Village's capital assets can be found in Note 5.

LONG-TERM LIABILITIES

At December 31, 2014, the Village had $1,470,834 of governmental debt and compensated absences outstanding as compared to $1,724,469 the previous year. This was a result of a restatement of general obligation debt, compensated absences payable and an addition of a capital lease.

In accordance with Illinois Statutes, total general obligation indebtedness of the Village is not limited. Total general obligation debt outstanding at year end was $1,370,000.

Table 4
Long-term Liabilities

	Governmental Activities	
	December 31, 2013, restated	December 31, 2014
General obligation debt	$ 1,570,000	$ 1,370,000
Capital lease payable	107,967	87,202
Compensated absences	46,502	13,632
Total	$ 1,724,469	$ 1,470,834

Additional information on the Village's long-term liabilities can be found in Note 6.

CURRENTLY KNOWN FACTS/ECONOMIC CONDITIONS

The Village's elected and appointed officials considered many factors when setting the fiscal year 2014 budget, including tax rates, and fees that will be charged for its various activities. One of those factors is the economy. The Village is faced with a similar economic environment as many of the other local municipalities, including inflation rates and economic trends, particularly as they pertain to building activity. None of these conditions are anticipated to significantly change the overall financial position of the Village.

REQUESTS FOR INFORMATION

This financial report is designed to provide our citizens, customers, investors and creditors with a general overview of the Village's finances. If you have questions about this report, or need additional financial information, contact Rosemary Ryba, Village Treasurer.

BASIC FINANCIAL STATEMENTS

VILLAGE OF BARRINGTON HILLS, ILLINOIS

STATEMENT OF NET POSITION

December 31, 2014

	Governmental Activities
ASSETS	
Cash and investments	$ 3,300,372
Restricted cash - cash with paying agent	234,615
Receivables	
Taxes	6,518,263
Other	93,988
Accrued interest	2,517
Due from other governments	208,566
Prepaid items	175,942
Net pension asset	1,653,156
Capital assets not being depreciated	350,349
Capital assets (net of accumulated depreciation)	1,535,734
Total assets	14,073,502
LIABILITIES	
Accounts payable	228,882
Accrued payroll	6,313
Accrued interest payable	24,615
Due to fiduciary fund	18,960
Long-term liabilities	
Due within one year	232,072
Due in more than one year	1,238,762
Total liabilities	1,749,604
DEFERRED INFLOWS OF RESOURCES	
Deferred revenue - property taxes	6,452,005
Total deferred inflows of resources	6,452,005
NET POSITION	
Net investment in capital assets	1,798,881
Restricted	
Employee retirement	126,215
Liability insurance	267,432
Public safety	1,441,283
Roads and bridges	98,452
Debt service	99,378
Unrestricted	2,040,252
TOTAL NET POSITION	$ 5,871,893

See accompanying notes to financial statements.

VILLAGE OF BARRINGTON HILLS, ILLINOIS

STATEMENT OF ACTIVITIES

For the Year Ended December 31, 2014

FUNCTIONS/PROGRAMS	Expenses	Program Revenues: Charges for Services	Program Revenues: Operating Grants and Contributions	Program Revenues: Capital Grants and Contributions	Net (Expense) Revenue and Change in Net Position
PRIMARY GOVERNMENT					
Governmental Activities					
General government	$ 2,001,690	$ 281,179	$ -	$ -	$ (1,720,511)
Public safety	4,144,576	121,741	7,826	-	(4,015,009)
Roads and bridges	1,473,560	-	140,471	98,709	(1,234,380)
Health services	2,869	-	-	-	(2,869)
Interest	52,915	-	-	-	(52,915)
TOTAL PRIMARY GOVERNMENT	$ 7,675,610	$ 402,920	$ 148,297	$ 98,709	(7,025,684)

General Revenues	
Taxes	
Property	6,582,997
Sales	50,038
Use	77,848
Replacement	37,958
Utility	548,223
Other	54,711
Intergovernmental	
State income tax	402,987
Investment income	10,203
Miscellaneous	18,589
Total	7,783,554
CHANGE IN NET POSITION	757,870
NET POSITION, JANUARY 1	5,075,058
Prior period adjustment	38,965
NET POSITION, JANUARY 1, AS RESTATED	5,114,023
NET POSITION, DECEMBER 31	$ 5,871,893

See accompanying notes to financial statements.

VILLAGE OF BARRINGTON HILLS, ILLINOIS

BALANCE SHEET
GOVERNMENTAL FUNDS

For the Year Ended December 31, 2014

	Major Funds			Nonmajor Fund	
	General	Public Safety	Roads and Bridges	Debt Service	Total
ASSETS					
Cash and investments	$ 1,666,809	$ 1,414,778	$ 122,074	$ 96,711	$ 3,300,372
Restricted cash - cash with paying agent	-	-	-	234,615	234,615
Receivables					
Taxes	2,369,407	2,312,151	1,576,738	259,967	6,518,263
Other	86,249	7,739	-	-	93,988
Accrued interest	2,517	-	-	-	2,517
Due from other funds	5,977	-	-	-	5,977
Due from other governments	117,250	-	91,316	-	208,566
Prepaid items	175,942	-	-	-	175,942
TOTAL ASSETS	$ 4,424,151	$ 3,734,668	$ 1,790,128	$ 591,293	$ 10,540,240
LIABILITIES, DEFERRED INFLOWS OF RESOURCES AND FUND BALANCES					
LIABILITIES					
Accounts payable	$ 100,151	$ 1,055	$ 127,676	$ -	$ 228,882
Accrued payroll	6,313	-	-	-	6,313
Bonds payable	-	-	-	210,000	210,000
Accrued interest payable	-	-	-	24,615	24,615
Due to other funds	-	5,977	-	-	5,977
Due to fiduciary fund	18,960	-	-	-	18,960
Total liabilities	125,424	7,032	127,676	234,615	494,747
DEFERRED INFLOWS OF RESOURCES					
Unavailable revenue - property taxes	2,344,352	2,286,353	1,564,000	257,300	6,452,005
Total deferred inflows of resources	2,344,352	2,286,353	1,564,000	257,300	6,452,005
Total liabilities and deferred inflows of resources	2,469,776	2,293,385	1,691,676	491,915	6,946,752
FUND BALANCES					
Nonspendable - prepaid items	175,942	-	-	-	175,942
Restricted					
Employee retirement	126,215	-	-	-	126,215
Liability insurance	267,432	-	-	-	267,432
Public safety	-	1,441,283	-	-	1,441,283
Roads and bridges	-	-	98,452	-	98,452
Debt service	-	-	-	99,378	99,378
Unrestricted					
Unassigned	1,384,786	-	-	-	1,384,786
Total fund balances	1,954,375	1,441,283	98,452	99,378	3,593,488
TOTAL LIABILITIES, DEFERRED INFLOWS OF RESOURCES AND FUND BALANCES	$ 4,424,151	$ 3,734,668	$ 1,790,128	$ 591,293	$ 10,540,240

See accompanying notes to financial statements.

VILLAGE OF BARRINGTON HILLS, ILLINOIS

RECONCILIATION OF FUND BALANCES OF GOVERNMENTAL FUNDS TO THE GOVERNMENTAL ACTIVITIES IN THE STATEMENT OF NET POSITION

December 31, 2014

FUND BALANCES OF GOVERNMENTAL FUNDS	$ 3,593,488
Amounts reported for governmental activities in the statement of net position are different because:	
Capital assets used in governmental activities are not financial and, therefore, are not reported in the governmental funds	1,886,083
Net pension assets are not financial resources and are not reported in governmental funds	1,653,156
Long-term liabilities are not due and payable in the current period and, therefore, are not reported in the governmental funds	
Compensated absences payable	(13,632)
Capital lease payable	(87,202)
Bonds payable	(1,160,000)
NET POSITION OF GOVERNMENTAL ACTIVITIES	$ 5,871,893

See accompanying notes to financial statements.

VILLAGE OF BARRINGTON HILLS, ILLINOIS

STATEMENT OF REVENUES, EXPENDITURES
AND CHANGES IN FUND BALANCES
GOVERNMENTAL FUNDS

For the Year Ended December 31, 2014

	Major Funds			Nonmajor Fund	
	General	Public Safety	Roads and Bridges	Debt Service	Total
REVENUES					
Taxes	$ 3,178,711	$ 2,586,893	$ 1,329,344	$ 256,826	$ 7,351,774
Fees, permits and licenses	197,203	-	-	-	197,203
Charges for services	82,372	8,450	-	-	90,822
Fines and forfeitures	109,374	5,522	-	-	114,896
Intergovernmental	410,813	-	140,471	-	551,284
Investment income	10,095	76	32	-	10,203
Miscellaneous	18,589	-	98,709	-	117,298
Total revenues	4,007,157	2,600,941	1,568,556	256,826	8,433,480
EXPENDITURES					
Current					
General government	1,889,591	-	-	-	1,889,591
Public safety	1,507,521	2,545,118	-	-	4,052,639
Roads and bridges	-	-	1,473,560	-	1,473,560
Health services	2,869	-	-	-	2,869
Capital outlay	179,205	-	-	-	179,205
Debt Service					
Principal retirement	-	20,765	-	210,000	230,765
Interest and fiscal charges	-	3,685	-	49,230	52,915
Total expenditures	3,579,186	2,569,568	1,473,560	259,230	7,881,544
EXCESS (DEFICIENCY) OF REVENUES OVER EXPENDITURES	427,971	31,373	94,996	(2,404)	551,936
OTHER FINANCING SOURCES (USES)					
Transfers in	6,500	-	-	-	6,500
Transfers (out)	-	(6,500)	-	-	(6,500)
Proceeds from the disposal of capital assets	15,016	-	-	-	15,016
Total other financing sources (uses)	21,516	(6,500)	-	-	15,016
NET CHANGE IN FUND BALANCES	449,487	24,873	94,996	(2,404)	566,952
FUND BALANCES, JANUARY 1	1,430,890	1,416,410	3,456	101,782	2,952,538
Prior period adjustment	73,998	-	-	-	73,998
FUND BALANCES, JANUARY 1, AS RESTATED	1,504,888	1,416,410	3,456	101,782	3,026,536
FUND BALANCES, DECEMBER 31	$ 1,954,375	$ 1,441,283	$ 98,452	$ 99,378	$ 3,593,488

See accompanying notes to financial statements.

VILLAGE OF BARRINGTON HILLS, ILLINOIS

RECONCILIATION OF THE GOVERNMENTAL FUNDS STATEMENT OF REVENUES, EXPENDITURES AND CHANGES IN FUND BALANCES TO THE GOVERNMENTAL ACTIVITIES IN THE STATEMENT OF ACTIVITIES

For the Year Ended December 31, 2014

NET CHANGE IN FUND BALANCES - TOTAL GOVERNMENTAL FUNDS	$	566,952
Amounts reported for governmental activities in the statement of activities are different because:		
Governmental funds report capital outlay as expenditures; however, they are capitalized and depreciated in the statement of activities		76,997
The repayment of the principal portion of long-term debt is reported as an expenditure when due in governmental funds but as a reduction of principal outstanding in the statement of activities		230,765
Proceeds from the disposal of capital assets are recognized in governmental funds but the gain (loss) is recognized in the statement of activities		(19,343)
Some expenses in the statement of activities do not require the use of current financial resources and, therefore, are not reported as expenditures in governmental funds:		
Depreciation		(164,225)
Compensated absences		32,870
Net pension asset		33,854
CHANGE IN NET POSITION OF GOVERNMENTAL ACTIVITIES	$	757,870

See accompanying notes to financial statements.

VILLAGE OF BARRINGTON HILLS, ILLINOIS

STATEMENT OF FIDUCIARY NET POSITION
PENSION TRUST FUND

December 31, 2014

	Pension Trust Police Pension
ASSETS	
Cash and cash equivalents	$ 391,750
Investments, at fair value	
Fixed income	4,117,305
Equities	3,472,843
Receivables	
Accrued interest	17,166
Due from Village	18,960
Prepaid expenses	2,960
Total assets	8,020,984
LIABILITIES	
Accounts payable	10,296
Total liabilities	10,296
NET POSITION HELD IN TRUST FOR PENSION BENEFITS	$ 8,010,688

See accompanying notes to financial statements.

VILLAGE OF BARRINGTON HILLS, ILLINOIS

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION

For the Year Ended December 31, 2014

	Pension Trust Police Pension
ADDITIONS	
Contributions	
Employer	$ 652,863
Employee	175,420
Other	50
Total contributions	828,333
Investment income	
Net appreciation in fair value of investments	242,068
Interest and dividends	155,405
Total investment income	397,473
Less investment expense	(21,839)
Net investment income	375,634
Total additions	1,203,967
DEDUCTIONS	
Benefits and refunds	310,872
Administration	28,485
Total deductions	339,357
NET INCREASE	864,610
NET POSITION HELD IN TRUST FOR PENSION BENEFITS	
January 1	7,146,078
December 31	$ 8,010,688

See accompanying notes to financial statements.

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The financial statements of the Village of Barrington Hills, Illinois (the Village) have been prepared in conformity with accounting principles generally accepted in the United States of America, as applied to government units (hereinafter referred to as generally accepted accounting principles (GAAP)). The Governmental Accounting Standards Board (GASB) is the accepted standard-setting body for establishing governmental accounting and financial reporting principles. The following is a summary of the significant accounting policies of the Village.

a. Reporting Entity

The Village is a body corporate and politic established under Illinois Compiled Statutes (ILCS) governed by an elected President and Board of Trustees. The Village is considered to be a primary government pursuant to GASB Statements No. 14 and No. 61 since it is legally separate and fiscally independent.

b. Fund Accounting

The Village uses funds to report on its financial position and the changes in its financial position. Fund accounting is designed to demonstrate legal compliance and to aid financial management by segregating transactions related to certain government functions or activities.

A fund is a separate accounting entity with a self-balancing set of accounts. The minimum number of funds is maintained consistent with legal and managerial requirements. Funds are classified into the following categories: governmental and fiduciary.

Governmental funds are used to account for all or most of a government's general activities, including the collection and disbursement of restricted or committed monies (special revenue funds), the funds restricted, committed or assigned for the acquisition or construction of capital assets (capital projects funds) and the funds restricted, committed or assigned for the servicing of general long-term debt (debt service funds). The general fund is used to account for all activities of the general government not accounted for in some other fund.

Fiduciary funds are used to account for assets held on behalf of outside parties, including other governments, or on behalf of other funds within the government.

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

c. Government-Wide and Fund Financial Statements

The government-wide financial statements (i.e., the statement of net position and the statement of activities) report information on all of the nonfiduciary activities of the Village. The effect of material interfund activity has been eliminated from these statements.

The statement of activities demonstrates the degree to which the direct expenses of a given function, segment or program are offset by program revenues. Direct expenses are those that are clearly identifiable with a specific function or segment. Program revenues include (1) charges to customers or applicants who purchase, use or directly benefit from goods, services or privileges provided by a given function or segment and (2) grants and shared revenues that are restricted to meeting the operational or capital requirements of a particular function or segment. Taxes and other items not properly included among program revenues are reported instead as general revenues.

Separate financial statements are provided for governmental funds and fiduciary funds, even though the latter are excluded from the government-wide financial statements. Major individual governmental funds are reported as separate columns in the fund financial statements.

The Village reports the following major governmental funds:

The General Fund is the Village's primary operating fund. It accounts for all financial resources of the Village, except those accounted for in another fund.

The Public Safety Fund is used to account for resources that are restricted, committed or assigned to supporting expenditures for the Village's public safety operation, including police protection, the school crossing guard program, expenditures related to the installations and maintenance of the emergency 911 telephone system, and expenditures related to drug, DUI and gang awareness and prevention programs.

The Roads and Bridges Fund is used to account for resources that are restricted, committed or assigned to supporting expenditures for the repair and maintenance of the Village's roads and bridges.

The Village reports the following nonmajor governmental fund:

The Debt Service Fund is used to account for resources that are restricted, committed or assigned to expenditures for the payment of general long-term debt, principal, interest and related costs.

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

c. Government-Wide and Fund Financial Statements (Continued)

Additionally, the Village reports the following fiduciary fund:

The Police Pension Fund is used to account for the police pension activities.

d. Measurement Focus, Basis of Accounting and Financial Statement Presentation

The government-wide financial statements are reported using the economic resources measurement focus and the accrual basis of accounting, as are fiduciary fund financial statements. Revenues and additions are recorded when earned and expenses and deductions are recorded when a liability is incurred. Property taxes are recognized as revenues in the year for which they are levied (i.e., intended to finance). Grants and similar items are recognized as revenue as soon as all eligibility requirements imposed by the provider have been met.

Governmental fund financial statements are reported using the current financial resources measurement focus and the modified accrual basis of accounting. Revenues are recognized as soon as they are both measurable and available. Revenues are considered to be available when they are collectible within the current period or soon enough thereafter to pay liabilities of the current period. The Village considers revenues to be available if they are collected within 60 days of the end of the current fiscal period, except for sales taxes and telecommunication taxes which use a 90-day period. Expenditures generally are recorded when a fund liability is incurred. However, debt service expenditures are recorded only when payment is due unless payment is due shortly after year end.

Property taxes, sales taxes (owed to the state at year end), simplified telecommunication taxes, utility taxes, franchise taxes, licenses, charges for services and interest associated with the current fiscal period are all considered to be susceptible to accrual and are recognized as revenues of the current fiscal period. All other revenue items are considered to be measurable and available only when cash is received by the Village.

The Village reports deferred/unearned revenue and unavailable revenue on its financial statements. Unavailable revenues arise when a potential revenue does not meet both the available criteria for recognition in the current period, under the modified accrual basis of accounting. Deferred/unearned revenue arises when a revenue is measurable but not earned under the accrual basis of accounting. Deferred/unearned revenues also arise when resources are received by the Village before it has a legal claim to them or prior to the provision of services, as when grant monies are received prior to the incurrence of qualifying expenditures. In subsequent periods, when both revenue recognition criteria are met, or when the Village has a legal claim to the resources, the liability and deferred inflows of resources for deferred/unearned and unavailable revenue are removed from the financial statements and revenue is recognized.

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

e. Cash and Cash Equivalents

The Village considers liquid deposits or investments with a maturity of three months or less when purchased to be cash equivalents.

f. Investments

Investments in non-negotiable certificates of deposit and other investments with a maturity of less than one year when purchased are stated at cost. Investments with a maturity of one year or greater when purchased are reported at fair value.

g. Prepaid Items/Expenses

Payments made to vendors for services, if any, that will benefit periods beyond the date of this report are recorded as prepaid items/expenses.

h. Capital Assets

Capital assets are recorded as expenditures at the time of purchase. Capital assets, which include property, plant, equipment, intangible and infrastructure assets (e.g., storm sewers and similar items), are reported in the applicable governmental columns in the government-wide financial statements. Capital assets are defined by the Village as assets with an initial, individual cost in excess of $2,500 for general capital assets and $15,000 for infrastructure assets, and an estimated useful life in excess of one year. Such assets are recorded at historical cost or estimated historical cost if purchased or constructed. Donated capital assets are recorded at estimated fair market value at the date of donation.

The costs of normal maintenance and repairs that do not add to the value or service capacity of the asset or materially extend asset lives are not capitalized.

Major outlays for capital assets and improvements are capitalized as projects are constructed. Capital assets are depreciated using the straight-line method over the following estimated useful lives:

Assets	Years
Buildings and building improvements	10- 45
Machinery and furniture	3-20
Land improvements	15-20

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

i. Compensated Absences

Vested or accumulated vacation and sick leave are reported as an expenditure and a fund liability of the governmental fund that will pay it once retirement or separation has occurred. Vested or accumulated vacation and sick leave of governmental activities is recorded as an expense and liability of those funds as the benefits accrue to employees.

j. Long-Term Obligations

In the government-wide financial statements, long-term debt and other long-term obligations are reported as liabilities in the governmental activities column. Bond premiums and discounts are deferred and amortized over the life of the bonds. Bonds payable are reported net of the applicable bond premium or discount. Bond issuance costs are expensed in the year of issuance.

In the fund financial statements, governmental funds recognize bond premiums and discounts, as well as bond issuance costs, during the current period. The face amount of debt issued is reported as other financing sources. Premiums received on debt issuances are reported as other financing sources while discounts on debt issuances are reported as other financing uses. Issuance costs, whether or not withheld from the actual debt proceeds received, are reported as expenditures.

k. Net Position/Fund Balance

In the fund financial statements, governmental funds report nonspendable fund balance for amounts that are either not in spendable form or are legally or contractually required to be maintained intact. Restrictions of fund balance are reported for amounts constrained by legal restrictions from outside parties for a specific purpose, or externally imposed by outside entities. None of the restricted fund balance resulted from enabling legislation adopted by the Village. Committed fund balance is constrained by formal actions of the Village Board, which is considered the Village's highest level of decision-making authority. Formal actions include ordinances approved by the Board. Assigned fund balance represents amounts constrained by the Village's intent to use them for a specific purpose. The authority to assign fund balance has been delegated to the Village Administrator. Any residual fund balance of the General Fund is reported as unassigned.

The Village's flow of funds assumption prescribes that the funds with the highest level of constraint are expended first. If restricted or unrestricted funds are available for spending, the restricted funds are spent first. Additionally, if different levels of unrestricted funds are available for spending, the Village considers committed funds to be expended first followed by assigned and then unassigned funds.

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

k. Net Position/Fund Balance (Continued)

In the government-wide financial statements, restricted net positions are legally restricted by outside parties for a specific purpose. Net investment in capital assets represents the book value of capital assets less any long-term debt issued to acquire or construct the capital assets.

l. Interfund Transactions

Interfund services are accounted for as revenues or expenditures. Transactions that constitute reimbursements to a fund for expenditures initially made from it that are properly applicable to another fund, are recorded as expenditures in the reimbursing fund and as reductions of expenditures in the fund that is reimbursed.

All other interfund transactions, except interfund services and reimbursements, are reported as transfers.

m. Interfund Receivables/Payables

Activity between funds that are representative of lending/borrowing arrangements outstanding at the end of the fiscal year are referred to as either "due to/from other funds" (i.e., the current portion of interfund loans) or "advances to/from other funds" (i.e., the noncurrent portion of interfund loans). All other outstanding balances between funds are reported as "due to/from other funds."

Advances between funds, if any, as reported in the fund financial statements, are offset by a nonspendable fund balance account in applicable governmental funds to indicate that they are not available for appropriation and are not expendable available financial resources.

n. Deferred Outflows/Inflows of Resources

In addition to assets, the statement of financial position will sometimes report a separate section for deferred outflows of resources. This separate financial statement element, deferred outflows of resources, represents a consumption of net assets that applies to a future period(s) and so will not be recognized as an outflow of resources (expense/expenditure) until then. In addition to liabilities, the statement of financial position will sometimes report a separate section for deferred inflows of resources. This separate financial statement element, deferred inflows of resources, represents an acquisition of net assets that applies to a future period(s) and so will not be recognized as an inflow of resources (revenue) until that time.

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

o. Use of Estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenditures/expenses during the reporting period. Actual results could differ from those estimates.

2. DEPOSITS WITH FINANCIAL INSTITUTIONS

a. Permitted Deposits and Investments

ILCS and the Village's investment policy authorize the Village to make deposits/invest in insured commercial banks, savings and loan institutions, obligations of the U.S. Treasury and U.S. agencies, insured credit union shares, money market mutual funds with portfolios of securities issued or guaranteed by the United States or agreements to repurchase these same obligations, repurchase agreements, short-term commercial paper rated within the three highest classifications by at least two standard rating services and Illinois Funds.

It is the policy of the Village to invest its funds in a manner which will provide the highest investment return with the maximum security while meeting the daily cash flow demands of the Village and conforming to all state and local statutes governing the investment of public funds, using the "prudent person" standard for managing the overall portfolio. The primary objectives of the policy are legality, safety (preservation of capital and protection of investment principal), liquidity and yield.

b. Deposits with Financial Institutions

Custodial credit risk for deposits with financial institutions is the risk that in the event of bank failure, the Village's deposits may not be returned to it. The Village's investment policy requires pledging of collateral for all funds on deposit, including checking accounts and certificates of deposit, that are in excess of FDIC. The collateral must be in the name of the Village and held at an independent third party institution and must be evidenced by a written agreement.

The following table presents the investments and maturities of the Village's debt securities as of December 31, 2014:

		Investment Maturities (in Years)			
Investment Type	Fair Value	Less than 1	1-5	6-10	Greater than 10
Negotiable certificates of deposit	$ 1,148,255	$ 850,269	$ 297,986	$ -	$ -
TOTAL	$ 1,148,255	$ 850,269	$ 297,986	$ -	$ -

2. DEPOSITS WITH FINANCIAL INSTITUTIONS (Continued)

c. Village Investments

In accordance with its investment policy, the Village limits its exposure to interest rate risk by structuring the portfolio to provide liquidity for short and long-term cash flow needs while providing a reasonable rate of return based on the current market.

The Village limits its exposure to credit risk, the risk that the issuer of a debt security will not pay its par value upon maturity, by primarily investing in negotiable certificates of deposit. The negotiable certificates of deposit are not rated but are each covered by FDIC insurance up to $250,000.

Custodial credit risk for investments is the risk that, in the event of the failure of the counterparty to the investment, the Village will not be able to recover the value of its investments that are in possession of an outside party. To limit its exposure, the Village's investment policy requires all security transactions that are exposed to custodial credit risk to be processed on a delivery versus payment basis (DVP) with the underlying investments held in a custodial account with the trust department of an approved financial institution. Illinois Funds are not subject to custodial credit risk.

Concentration of credit risk is the risk that the Village has a high percentage of their investments invested in one type of investment. At December 31, 2014, the Village had greater than 5% of its overall portfolio invested in negotiable certificates of deposit. The Village's investment policy requires diversification of investment to avoid unreasonable risk but has no set percentage limits. Therefore, the Village is in compliance with its investment policy.

3. RECEIVABLES

The following receivables are included in due from other governments on the statement of net position at December 31, 2014:

Income tax receivable	$	47,148
Sales and use tax receivable		31,685
Telecommunication tax receivable		34,070
Traffic fines receivable		4,347
Grant receivable		80,716
Motor fuel tax allotment receivable		10,600
TOTAL	$	208,566

4. PROPERTY TAXES

Property taxes are levied in December of each year on all taxable real property in the Village and attach as an enforceable lien on the property as of the preceding January 1. Property taxes receivable represent the balance due on the 2014 levy. Tax bills are prepared by the County and issued on or about February 1 (Cook County) and May 1 (Kane, Lake and McHenry County) and are payable in two installments on or about April 1 (Cook County) and June 1 (Kane, Lake and McHenry County(ies)) and on or about August or September 1 (Kane, Lake and McHenry County(ies)). (Cook County) and the County Collector collects such taxes and remits them periodically. Since the 2014 levy is intended to finance the 2015 fiscal year, the levy has been recorded as a receivable and deferred inflow of resources.

5. CAPITAL ASSETS

Capital asset activity for the year ended December 31, 2014 was as follows:

	Balances January 1, restated	Increases	Decreases	Balances December 31,
GOVERNMENTAL ACTIVITIES				
Capital assets not being depreciated				
Land	$ 350,349	$ -	$ -	$ 350,349
Total capital assets not being depreciated	350,349	-	-	350,349
Capital assets being depreciated				
Buildings and building improvements	2,131,642	-	-	2,131,642
Machinery and equipment	1,216,180	76,997	84,198	1,208,979
Total capital assets being depreciated	3,347,822	76,997	84,198	3,340,621
Less accumulated depreciation for				
Buildings and building improvements	1,014,750	47,862	-	1,062,612
Machinery and equipment	690,767	116,363	64,855	742,275
Total accumulated depreciation	1,705,517	164,225	64,855	1,804,887
Total capital assets being depreciated, net	1,642,305	(87,228)	19,343	1,535,734
GOVERNMENTAL ACTIVITIES CAPITAL ASSETS, NET	$ 1,992,654	$ (87,228)	$ 19,343	$ 1,886,083

Depreciation expense was charged to functions of the primary government as follows:

GOVERNMENTAL ACTIVITIES	
General Government	$ 82,575
Public Safety	81,650
TOTAL	$ 164,225

6. LONG-TERM DEBT

a. General Obligation Bonds

On June 1, 2003, the Village issued $3,155,000 General Obligation Bonds, Series 2003, for payment of a tort liability settlement. Principal is due annually each January 1 through January 1, 2020. Interest is payable semiannually each January 1 and July 1 at rates ranging from 2.7% to 3.8%.

General obligation bonds are direct obligations and pledge the full faith and credit of the Village.

b. Capital Lease Payable

On October 1, 2013, the Village entered into a lease payable at 2.94% interest to finance the purchase of IT equipment. The lease is payable in monthly installments of principal and interest of $2,038 and matures on October 1, 2018.

The assets acquired through capital lease are as follows:

Machinery and equipment	$ 154,181
Less accumulated depreciation	(17,988)
TOTAL	$ 136,193

c. Changes in Long-Term Debt

The following is a summary of changes in long-term debt for the year ended December 31, 2014:

	Balances January 1, Restated	Additions	Reductions	Balances December 31	Current Portion	Long-Term Portion
GOVERNMENTAL ACTIVITIES						
General obligation bonds	$1,570,000	$ -	$ 200,000	$ 1,370,000	$ 210,000	$ 1,160,000
Capital lease payable	107,967	-	20,765	87,202	21,557	65,645
Compensated absences payable*	46,502	194,439	227,309	13,632	515	13,117
TOTAL GOVERNMENTAL ACTIVITIES	$1,724,469	$ 194,439	$ 448,074	$ 1,470,834	$ 232,072	$ 1,238,762

*Retired by the General Fund and Public Safety Fund.

6. LONG-TERM DEBT (Continued)

d. Debt Service Requirements to Maturity

The annual debt service requirements to amortize the governmental activities outstanding debt as of December 31, 2014 are as follows:

Fiscal Year Ending December 31,	General Obligation Bonds Payable		Capital Leases Payable	
	Principal	Interest	Principal	Interest
2015	$ 210,000	$ 45,765	$ 21,557	$ 2,899
2016	215,000	38,591	22,379	2,077
2017	225,000	31,189	23,231	1,225
2018	230,000	22,697	20,035	345
2019	240,000	14,000	-	-
2020	250,000	4,750	-	-
TOTAL	$1,370,000	$ 156,992	$ 87,202	$ 6,546

e. Legal Debt Margin

The Village is a home rule municipality.

Article VII, Section 6(k) of the 1970 Illinois Constitution governs computation of the legal debt margin.

> "The General Assembly may limit by law the amount and require referendum approval of debt to be incurred by home rule municipalities, payable from ad valorem property tax receipts, only in excess of the following percentages of the assessed value of its taxable property …(2) if its population is more than 25,000 and less than 500,000 an aggregate of one percent: …indebtedness which is outstanding on the effective date (July 1, 1971) of this constitution or which is thereafter approved by referendum …shall not be included in the foregoing percentage amounts."

To date, the General Assembly has set no limits for home rule municipalities.

7. RISK MANAGEMENT

The Village is exposed to various risks of loss related to torts; theft of, damage to and destruction of assets; errors and omissions; injuries to employees; employee health and natural disasters. These risks are covered by commercial insurance purchased from independent third parties. Settled claims from these risks have not exceeded commercial insurance coverage in the current fiscal year or the two prior fiscal years.

8. CONTINGENT LIABILITIES

a. Litigation

The Village is a defendant in various lawsuits. Although the outcome of these lawsuits is not presently determinable, in the opinion of the Village's attorney, the resolution of these matters will not have a material adverse effect on the financial condition of the Village.

b. Grants

Amounts received from grantor agencies are subject to audit and adjustment by grantor agencies, principally the Federal Government. Any disallowed claims, including amounts already collected, may constitute a liability of the applicable funds. The amount, if any, of expenditures which may be disallowed by the grantor cannot be determined at this time although the Village expects such amounts, if any, to be immaterial.

9. INDIVIDUAL FUND DISCLOSURES

a. Due From/To Other Funds

Individual fund interfund receivables/payables are as follows:

Receivable Fund	Payable Fund	Amount
General	Public Safety	$ 5,977
TOTAL		$ 5,977

b. Interfund Transfers

Transfers between major funds are as follows:

Fund	Transfers In	Transfers Out
General	$ 6,500	$ -
Public Safety	-	6,500
TOTAL ALL FUNDS	$ 6,500	$ 6,500

10. DEFINED BENEFIT PENSION PLANS

The Village contributes to two defined benefit pension plans, the Illinois Municipal Retirement Fund (IMRF), an agent multiple-employer public employee retirement system and the Police Pension Plan, which is a single-employer pension plan. The benefits, benefit levels, employee contributions and employer contributions for both plans are governed by Illinois Compiled Statutes and can only be amended by the Illinois General Assembly. IMRF does issue a publicly available report that includes financial statements and supplementary information for the plan as a whole, but not for individual employers. That report can be obtained online at www.imrf.org.

a. Plan Descriptions

Illinois Municipal Retirement Fund (IMRF)

All employees (other than those covered by the Police Pension Plan) hired in positions that meet or exceed the prescribed annual hourly standard must be enrolled in IMRF as participating members. IMRF provides two tiers of pension benefits. Employees hired prior to January 1, 2011, are eligible for Tier 1 benefits. For Tier 1 employees, pension benefits vest after eight years of service. Participating members who retire at age 55 (reduced benefits) or after age 60 (full benefits) with eight years of credited service are entitled to an annual retirement benefit, payable monthly for life, in an amount equal to 1 2/3% of their final rate of earnings, for each year of credited service up to 15 years, and 2% for each year thereafter.

Employees hired on or after January 1, 2011, are eligible for Tier 2 benefits. For Tier 2 employees, pension benefits vest after ten years of service. Participating members who retire at age 62 (reduced benefits) or after age 67 (full benefits) with ten years of credited service are entitled to an annual retirement benefit, payable monthly for life, in an amount equal to 1 2/3% of their final rate of earnings, for each year of credited service up to 15 years, and 2% for each year thereafter.

IMRF also provides death and disability benefits. These benefit provisions and all other requirements are established by state statute. Participating members are required to contribute 4.5% of their annual salary to IMRF. The Village is required to contribute the remaining amounts necessary to fund IMRF as specified by statute. The employer contribution rate for the year ended December 31, 2014 was 5.86% of covered payroll.

10. DEFINED BENEFIT PENSION PLANS (Continued)

a. Plan Descriptions (Continued)

Police Pension Plan

Plan Administration

Police sworn personnel are covered by the Police Pension Plan. Although this is a single-employer pension plan, the defined benefits and employee and employer contribution levels are governed by Illinois Compiled Statutes (40 ILCS 5/3-1) and may be amended only by the Illinois legislature. The Village accounts for the Police Pension Plan as a pension trust fund.

Plan Membership

At December 31, 2014, the Police Pension Plan membership consisted of:

Inactive plan members or beneficiaries currently receiving benefits	6
Inactive plan members entitled to but not yet receiving benefits	-
Active plan members	19
TOTAL	25

Benefits Provided

The Police Pension Plan provides retirement benefits as well as death and disability benefits. Tier 1 employees (those hired prior to January 1, 2011) attaining the age of 50 or older with 20 or more years of creditable service are entitled to receive an annual retirement benefit equal to one-half of the salary attached to the rank held on the last day of service, or for one year prior to the last day, whichever is greater. The annual benefit shall be increased by 2.5% of such salary for each additional year of service over 20 years up to 30 years to a maximum of 75% of such salary.

Employees with at least eight years but less than 20 years of credited service may retire at or after age 60 and receive a reduced benefit. The monthly benefit of a police officer who retired with 20 or more years of service after January 1, 1977 shall be increased annually, following the first anniversary date of retirement and be paid upon reaching the age of at least 55 years, by 3% of the original pension and 3% compounded annually thereafter.

10. DEFINED BENEFIT PENSION PLANS (Continued)

a. Plan Descriptions (Continued)

Police Pension Plan (Continued)

Benefits Provided (Continued)

Tier 2 employees (those hired on or after January 1, 2011) attaining the age of 55 or older with ten or more years of creditable service are entitled to receive an annual retirement benefit equal to the average monthly salary obtained by dividing the total salary of the police officer during the 96 consecutive months of service within the last 120 months of service in which the total salary was the highest by the number of months of service in that period. Police officers' salary for pension purposes is capped at $106,800, plus the lesser of ½ of the annual change in the Consumer Price Index or 3% compounded. The annual benefit shall be increased by 2.5% of such salary for each additional year of service over 20 years up to 30 years to a maximum of 75% of such salary. Employees with at least ten years may retire at or after age 50 and receive a reduced benefit (i.e., ½% for each month under 55). The monthly benefit of a Tier 2 police officer shall be increased annually at age 60 on the January 1st after the police officer retires, or the first anniversary of the pension starting date, whichever is later. Noncompounding increases occur annually, each January thereafter. The increase is the lesser of 3% or ½ of the change in the Consumer Price Index for the proceeding calendar year. The Village is required to finance the Police Pension Plan.

Contributions

Employees are required by Illinois Compiled Statutes to contribute 9.91% of their base salary to the Police Pension Plan. If an employee leaves covered employment with less than 20 years of service, accumulated employee contributions may be refunded without accumulated interest. Contributions are recognized when due pursuant to formal commitments, as well as statutory or contractual requirements. Benefits and refunds are recognized when due and payable in accordance with the terms of the plan. The costs of administering the Police Pension Plan are financed through investment earnings. The Village is required to contribute the remaining amounts necessary to finance the Police Pension Plan as actuarially determined by an enrolled actuary. Effective January 1, 2011, the Village has until the year 2040 to fund 90% of the past service cost for the Police Pension Plan. For the year ended December 31, 2014, the Village's contribution was 42.6% of covered payroll.

10. DEFINED BENEFIT PENSION PLANS (Continued)

a. Plan Descriptions (Continued)

Police Pension Plan (Continued)

Investment Policy

Illinois Compiled Statutes (ILCS) limit the Police Pension Plan's (the Plan) investments to those allowable by ILCS and require the Plan's Board of Trustees to adopt an investment policy which can be amended by a majority vote of the Board of Trustees. The Plan's investment policy authorizes the Plan to make deposits/invest in insured commercial banks, savings and loan institutions, obligations of the U.S. Treasury and U.S. agencies, insured credit union shares, money market mutual funds with portfolios of securities issued or guaranteed by the United States Government or agreements to repurchase these same obligations, repurchase agreements, short-term commercial paper rated within the three highest classifications by at least two standard rating services, investment grade corporate bonds and Illinois Funds. The Plan may also invest in certain non-U.S. obligations, Illinois municipal corporations tax anticipation warrants, veteran's loans, obligations of the State of Illinois and its political subdivisions, Illinois insurance company general and separate accounts, mutual funds and corporate equity securities and real estate investment trusts (not to exceed 45% of the total assets of the Police Pension Plan). The pension fund specifically prohibits the investments in futures, options, derivations and other leveraged investments. During the year, the following changes to the investment policy were approved by the Board of Trustees: allowing investment in investment grade corporate bonds. The policy allowed for up to 30% of the fixed income portfolio to be invested in said instruments.

The Plan's investment policy in accordance with ILCS establishes the following target allocation across asset classes:

Asset Class	Target	Long-Term Expected Real Rate of Return
Fixed Income	52%	2.50% - 4.15%
Equities	45%	5.35% - 9.52%
Cash and Cash Equivalents	3%	(-0.25%)

ILCS limit the Plan's investments in equities, mutual funds and variable annuities to 45%. Securities in any one company should not exceed 5% of the total fund.

10. DEFINED BENEFIT PENSION PLANS (Continued)

a. Plan Descriptions (Continued)

Police Pension Plan (Continued)

Investment Policy (Continued)

The long-term expected rate of return on the Plan's investments was determined using an asset allocation study conducted by the Plan's investment management consultant in which best estimate ranges of expected future real rates of return (net of pension plan investment expense and inflation) were developed for each major assets class. These ranges were combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates or arithmetic real rates of return excluding inflation for each major asset class included in the Plan's target asset allocation as of December 31, 2014 are listed in the table above.

Investment Valuations

All investments in the Police Pension Plan are stated at fair value and are recorded as of the trade date. Fair value is based on quoted market prices at December 31 for debt securities, equity securities and mutual funds and contract values for insurance contracts.

Illinois Funds, an investment pool created by the state legislature under the control of the State Treasurer, is a money market mutual fund that maintains a $1 per share value.

Investment Concentrations

There were no investments (other than U.S. Government guaranteed obligations) in any one organization that represent 5% or more of plan net position for the Police Pension Plan. Information for IMRF is not available.

Investment Rate of Return

For the year ended December 31, 2014, the annual money-weighted rate of return on pension plan investments, net of pension plan investment expense, was 5.14%. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

10. DEFINED BENEFIT PENSION PLANS (Continued)

a. Plan Descriptions (Continued)

Police Pension Plan (Continued)

Deposits with Financial Institutions

The Police Pension Plan's investment policy requires that any funds deposited directly in financial institutions should be made with fully federally insured financial institutions and that any deposits in excess of FDIC insurance should be collateralized at 110% of the fair market value of the deposits. The collateral will be held in a safekeeping by a third party and evidenced by a written agreement.

Interest Rate Risk

The following table presents the investments and maturities of the Police Pension Plan's debt securities as of December 31, 2014:

		Investment Maturities (in Years)			
Investment Type	Fair Value	Less than 1	1-5	6-10	Greater than 10
U.S. Agency Securities	$ 3,142,834	$ -	$ 1,996,347	$ 1,146,487	$ -
Corporate Debt Securities	974,471	-	197,675	776,796	-
TOTAL	$ 4,117,305	$ -	$ 2,194,022	$ 1,923,283	$ -

In accordance with its investment policy, the Police Pension Fund limits its exposure to interest rate risk by structuring the portfolio into an equity portion and fixed income portion to allow the fund to maximize current returns while allowing stability of the fund and providing for long-term return on investment.

Credit Risk

The Police Pension Fund limits its exposure to credit risk, the risk that the issuer of a debt security will not pay its par value upon maturity, by requiring quarterly review of the returns of the equity portion of investments to address any standard deviations and by targeting 52% investment in secure fixed income investments, primarily investing in obligations guaranteed by the United States Government or securities issued by agencies of the United States Government that are explicitly or implicitly guaranteed by the United States Government. The U.S. Agency Securities are rated AA+. The Corporate Debt Securities have ratings ranging from AA- to AAA.

10. DEFINED BENEFIT PENSION PLANS (Continued)

a. Plan Descriptions (Continued)

Police Pension Plan (Continued)

Custodial Credit Risk

Custodial credit risk for investments is the risk that, in the event of the failure of the counterparty to the investment, the Police Pension Fund will not be able to recover the value of its investments that are in possession of an outside party. The Police Pension Fund's policy requires securities to be held by a third party custodian in a custodial trust account designated by the Treasurer or authorized depository. To additionally limit its exposure, the Police Pension Fund prepares all transactions that are exposed to custodial credit risk to be processed on a delivery versus payment (DVP) basis with the underlying investments held by a third party acting as the Police Pension Fund's agent separate from where the investment was purchased in the Police Pension Fund's name.

Net Pension Liability

The components of the net pension liability of the Police Pension Plan as of December 31, 2014 calculated in accordance with GASB Statement No. 67 were as follows:

Total pension liability	$	14,659,175
Plan fiduciary net position		8,010,688
Village's net pension liability		6,648,487
Plan fiduciary net position as a percentage of the total pension liability		54.6%

See the schedule of changes in the employer's net pension liability and related ratios in the required supplementary information for additional information related to the funded status of the Fund.

10. DEFINED BENEFIT PENSION PLANS (Continued)

a. Plan Descriptions (Continued)

Police Pension Plan (Continued)

Actuarial Assumptions

The total pension liability above was determined by an actuarial valuation performed as of December 31, 2014 using the following actuarial methods and assumptions.

Actuarial Valuation Date	December 31, 2014
Actuarial cost method	Entry-age normal
Assumptions	
Inflation	3.00%
Salary increases	5% to 11%
Interest rate	6.50%
Cost of living adjustments	3.00%
Asset valuation method	Market

The mortality rates and actuarial assumptions were based on results of an actuarial experience study conducted by the actuary in 2012.

Discount Rate

The discount rate used to measure the total pension liability was 6.5%. The projection of cash flows used to determine the discount rate assumed that member contributions will be made at the current contribution rate and that the Village contributions will be made at rates equal to the difference between actuarially determined contribution rates and the member rate. Based on those assumptions, the Fund's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members.

10. DEFINED BENEFIT PENSION PLANS (Continued)

a. Plan Descriptions (Continued)

Police Pension Plan (Continued)

Discount Rate Sensitivity

The following is a sensitive analysis of the net pension liability to changes in the discount rate. The table below presents the pension liability of the Village calculated using the discount rate of 6.5% as well as what the Village's net pension liability would be if it were calculated using a discount rate that is 1 percentage point lower (5.5%) or 1 percentage point higher (7.5%) than the current rate:

	1% Decrease (5.5%)	Current Discount Rate (6.5%)	1% Increase (7.5%)
Net pension liability	$8,862,585	$6,648,487	$4,827,866

b. Annual Pension Costs

Employer contributions have been determined as follows:

	Illinois Municipal Retirement	Police Pension
Actuarial valuation date	December 31, 2012	December 31, 2012
Actuarial cost method	Entry-Age Normal	Entry-Age Normal
Asset valuation method	5 Year Smoothed Market	5 Year Smoothed Market
Amortization method	Level Percentage of Payroll	Level Percentage of Payroll
Amortization period	30 Years, Open	28 Years, Closed

10. DEFINED BENEFIT PENSION PLANS (Continued)

b. Annual Pension Costs (Continued)

	Illinois Municipal Retirement	Police Pension
Significant actuarial assumptions		
a) Rate of return on present and future assets	7.50% Compounded Annually	6.50% Compounded Annually
b) Projected salary increase - attributable to inflation	4.00% Compounded Annually	3.00% Compounded Annually
c) Additional projected salary increases - seniority/merit	.4% to 10%	4% to 10%
d) Postretirement benefit increases	3.00%	3.00%

Employer annual pension costs (APC), actual contributions and the net pension asset (NPA) are as follows. The NPA is the cumulative difference between the APC and the contributions actually made.

	Year	Illinois Municipal Retirement	Police Pension
Annual pension cost (APC)	2014	$ 58,337	$ 619,009
	2013	67,017	550,053
	2012	22,412	492,041
Actual contribution	2014	$ 58,337	$ 652,863
	2013	67,017	762,171
	2012	22,412	834,565
Percentage of APC contributed	2014	100.0%	105.5%
	2013	100.0%	138.6%
	2012	100.0%	169.1%
NPO (Asset)	2014	$ -	$ (1,653,156)
	2013	-	(1,619,302)
	2012	-	(1,407,184)

10. DEFINED BENEFIT PENSION PLANS (Continued)

b. Annual Pension Costs (Continued)

The NPA at December 31, 2014 has been calculated as follows:

	Police Pension
Annual required contribution	$ 645,634
Interest on net pension asset	(105,255)
Adjustment to annual required contribution	78,630
Annual pension cost	619,009
Contributions made	(652,863)
Increase (decrease) in net pension obligation (asset)	(33,854)
Net pension obligation (asset), beginning of year	(1,619,302)
NET PENSION OBLIGATION (ASSET), END OF YEAR	$ (1,653,156)

The NPA is reported as a liability in the Village's governmental activities column in the government-wide financial statements at December 31, 2014.

c. Funded Status

The funded status of the plans based on actuarial valuations performed as of December 31, 2014 for IMRF and the Police Pension Plan is as follows. The actuarial assumptions used to determine the funded status of the plans are the same actuarial assumptions used to determine the employer APC of the plans as disclosed in Note 10b:

	Illinois Municipal Retirement	Police Pension
Actuarial accrued liability (AAL)	$ 3,668,829	$ 14,659,175
Actuarial value of plan assets	4,492,538	8,232,817
Unfunded (overfunded) actuarial accrued liability (UAAL/(OAAL))	(803,7090	6,426,358
Funded ratio (actuarial value of plan assets/AAL)	121.79%	56.16%
Covered payroll (active plan members)	$ 995,503	$ 1,522,210
UAAL/(OAAL) as a percentage of covered payroll	(80.73%)	422.17%

See the schedules of funding progress in the required supplementary information immediately following the notes to financial statements for additional information related to the funded status of the plans.

11. OTHER POSTEMPLOYMENT BENEFITS

The Village provides continued health insurance coverage at the active employer rate to all eligible employees in accordance with Illinois statutes, which creates an implicit subsidy of retiree health insurance. Former employees who choose to retain their rights to health insurance through the Village are required to pay 100% of the current premium. However, no retired employees have chosen to stay in the Village's health insurance plan. Therefore, there has been 0% utilization and, therefore, no implicit subsidy to calculate in accordance with GASB Statement No. 45, *Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions*. Additionally, the Village had no former employees for whom the Village was providing an explicit subsidy and no current employees with agreements for future explicit subsidies upon retirement. Therefore, the Village has not recorded any postemployment benefit liability as of December 31, 2014.

12. PRIOR PERIOD ADJUSTMENTS

Net position and fund balances have been restated as of January 1, 2014 as follows:

	General Fund	Total Governmental Activities
To correct revenue recognition in General Fund	$ 48,759	$ 48,759
To correct government-wide revenue recognition	-	(60,850)
To correct payroll amounts	25,239	7,412
To record opening balance of capital lease and related capital asset	-	43,644
TOTAL	$ 73,998	$ 38,965

REQUIRED SUPPLEMENTARY INFORMATION

VILLAGE OF BARRINGTON HILLS, ILLINOIS

SCHEDULE OF FUNDING PROGRESS
ILLINOIS MUNICIPAL RETIREMENT FUND

December 31, 2014

Actuarial Valuation Date December 31,	(1) Actuarial Value of Assets	(2) Actuarial Accrued Liability (AAL) Entry-Age	(3) Funded Ratio (1) / (2)	(4) Unfunded (Overfunded) AAL (UAAL) (OAAL) (2) - (1)	(5) Covered Payroll	UAAL (OAAL) as a Percentage of Covered Payroll (4) / (5)
2009	$ 2,825,585	$ 2,157,493	130.97%	$ (668,092)	$ 836,103	(79.91%)
2010	3,050,544	2,527,100	120.71%	(523,444)	905,722	(57.79%)
2011	3,157,853	2,786,278	113.34%	(371,575)	976,660	(38.05%)
2012	3,510,265	3,022,401	116.14%	(487,864)	953,705	(51.15%)
2013	4,075,320	3,282,294	124.16%	(793,026)	956,013	(82.95%)
2014	4,492,538	3,688,829	121.79%	(803,709)	995,503	(80.73%)

(See independent auditor's report.)

VILLAGE OF BARRINGTON HILLS, ILLINOIS

SCHEDULE OF FUNDING PROGRESS
POLICE PENSION FUND

December 31, 2014

Actuarial Valuation Date December 31,	(1) Actuarial Value of Assets	(2) Actuarial Accrued Liability (AAL) Entry-Age	(3) Funded Ratio (1) / (2)	(4) Unfunded AAL (UAAL) (2) - (1)	(5) Covered Payroll	UAAL as a Percentage of Covered Payroll (4) / (5)
2009	$ 3,419,133	$ 9,566,899	35.74%	$ 6,147,766	$ 1,579,973	389.11%
2010	4,209,906	10,518,825	40.02%	6,308,919	1,631,516	386.69%
2011	4,922,356	11,213,829	43.90%	6,291,473	1,659,147	379.20%
2012	N/A	N/A	N/A	N/A	N/A	N/A
2013	7,146,078	13,377,087	53.42%	6,231,009	1,789,031	348.29%
2014	8,010,688	14,659,175	54.65%	6,648,487	1,522,210	436.77%

N/A - Information not available.

(See independent auditor's report.)

VILLAGE OF BARRINGTON HILLS, ILLINOIS

SCHEDULE OF EMPLOYER CONTRIBUTIONS
ILLINOIS MUNICIPAL RETIREMENT FUND

December 31, 2014

Fiscal Year	Employer Contributions	Annual Required Contribution (ARC)	Percentage Contributed
2009	$ 7,236	$ 7,236	100.00%
2010	58,872	58,872	100.00%
2011	54,400	54,400	100.00%
2012	22,412	22,412	100.00%
2013	67,017	67,017	100.00%
2014	58,336	58,337	100.00%

(See independent auditor's report.)

VILLAGE OF BARRINGTON HILLS, ILLINOIS

POLICE PENSION FUND

SCHEDULE OF EMPLOYER CONTRIBUTIONS

Last Ten Fiscal Years

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Actuarially determined contribution	N/A	N/A	$ 365,544	$ 405,265	$ 428,890	$ 435,946	$ 467,496	$ 512,710	$ 573,223	$ 645,634
Contribution in relation to the actuarially determined contribution	N/A	N/A	455,935	753,829	665,578	647,219	856,690	834,565	762,171	652,863
CONTRIBUTION DEFICIENCY (Excess)	N/A	N/A	$ (90,391)	$ (348,564)	$ (236,688)	$ (211,273)	$ (389,194)	$ (321,855)	$ (188,948)	$ (7,229)
Covered-employee payroll	N/A	N/A	$ 1,369,386	N/A	$ 1,579,973	$ 1,631,516	$ 1,659,147	N/A	$ 1,789,031	$ 1,522,210
Contributions as a percentage of covered-employee payroll	N/A	N/A	33%	N/A	42%	40%	52%	N/A	43%	43%

N/A - Information is not available.

The information directly above is formatted to comply with the requirements of GASB Statement No. 67

Fiscal Year Ended December 31,	Employer Contributions	Annual Required Contribution (ARC)	Percentage Contributed
2009	$ 665,578	$ 428,890	155.19%
2010	647,219	435,946	148.46%
2011	856,690	467,496	183.25%
2012	834,565	512,710	162.78%
2013	762,171	573,223	132.96%
2014	652,863	645,634	101.12%

Notes to the Required Supplementary Information:

This information directly above is presented in accordance with GASB Statement No. 25. The information presented was determined as part of the actuarial valuations as of January 1 of the prior fiscal year. Additional information as of the latest actuarial valuation presented is as follows: the actuarial cost method was entry-age normal; the amortization method was level percent of pay, closed and the amortization period was 28 years; the asset valuation method was at market value; and the significant actuarial assumptions were an investment rate of return of 6.75% annually, projected salary increase assumption of 5.5% compounded annually and postretirement benefit increases of 3% compounded annually.

VILLAGE OF BARRINGTON HILLS, ILLLINOIS

POLICE PENSION FUND

SCHEDULE OF CHANGES IN THE EMPLOYER'S NET PENSION LIABILITY
AND RELATED RATIOS

December 31, 2014

TOTAL PENSION LIABILITY		
Service cost	$	424,764
Interest		878,254
Changes of benefit terms		-
Differences between expected and actual experience		-
Changes of assumptions		-
Benefit payments, including refunds of member contributions		(310,872)
Net change in total pension liability		992,146
Total pension liability - beginning		13,667,029
TOTAL PENSION LIABILITY - ENDING	$	14,659,175
PLAN FIDUCIARY NET POSITION		
Contributions - employer	$	652,863
Contributions - member		175,420
Contributions - other		50
Net investment income		375,634
Benefit payments, including refunds of member contributions		(310,872)
Administrative expense		(28,485)
Net change in plan fiduciary net position		864,610
Plan fiduciary net position - beginning		7,146,078
PLAN FIDUCIARY NET POSITION - ENDING	$	8,010,688
EMPLOYER'S NET PENSION LIABILITY	$	6,648,487
Plan fiduciary net position as a percentage of the total pension liability		54.6%
Covered-employee payroll	$	1,522,210
Employer's net pension liability as a percentage of covered-employee payroll		436.8%

(See independent auditor's report.)

VILLAGE OF BARRINGTON HILLS, ILLINOIS

POLICE PENSION FUND

SCHEDULE OF INVESTMENT RETURNS

December 31, 2014

	2014
Annual money-weighted rate of return, net of investment expense	5.14%

(See independent auditor's report.)

VILLAGE OF BARRINGTON HILLS, ILLINOIS

SCHEDULE OF REVENUES, EXPENDITURES
AND CHANGES IN FUND BALANCE - BUDGET AND ACTUAL
GENERAL FUND

For the Year Ended December 31, 2014

	Original and Final Budget	Actual
REVENUES		
Taxes	$ 3,168,007	$ 3,178,711
Fees, permits and licenses	221,200	197,203
Charges for services	72,850	82,372
Fines and forfeitures	122,000	109,374
Intergovernmental	434,041	410,813
Investment income	6,500	10,095
Miscellaneous	16,200	18,589
Total revenues	4,040,798	4,007,157
EXPENDITURES		
Current		
General government	2,066,130	1,889,591
Public safety	1,609,929	1,507,521
Health services	7,500	2,869
Capital outlay	202,964	179,205
Total expenditures	3,886,523	3,579,186
EXCESS (DEFICIENCY) OF REVENUES OVER EXPENDITURES	154,275	427,971
OTHER FINANCING SOURCES (USES)		
Transfers in	-	6,500
Transfers (out)	(15,000)	-
Proceeds from the disposal of capital assets	12,000	15,016
Total other financing sources (uses)	(3,000)	21,516
NET CHANGE IN FUND BALANCE	$ 151,275	449,487
FUND BALANCE, JANUARY 1		1,430,890
Prior year period		73,998
FUND BALANCE, JANUARY 1, AS RESTATED		1,504,888
FUND BALANCE, DECEMBER 31		$ 1,954,375

(See independent auditor's report.)

VILLAGE OF BARRINGTON HILLS, ILLINOIS

SCHEDULE OF REVENUES, EXPENDITURES
AND CHANGES IN FUND BALANCE - BUDGET AND ACTUAL
PUBLIC SAFETY FUND

For the Year Ended December 31, 2014

	Original and Final Budget	Actual
REVENUES		
Property taxes	$ 2,556,035	$ 2,532,182
VOIP surcharges	15,000	12,432
Wireline surcharges	37,000	25,252
Wireless surcharges	3,200	17,027
Special detail	5,000	8,450
Drug/gang/DUI fund	4,000	5,522
Interest income	26	76
Other	500	-
Total revenues	2,620,761	2,600,941
EXPENDITURES		
Current		
Crossing guard		
Regular salaries	2,400	2,400
Police Protection		
Regular salaries	2,444,886	2,393,259
Overtime	87,000	89,156
Longevity awards	29,750	30,250
Education benefits	2,000	2,158
Total police protection	2,563,636	2,514,823
Emergency 911		
Ameritech line charges	10,500	11,114
Equipment maintenance	14,000	11,381
Miscellaneous	7,500	2,062
Total emergency 911	32,000	24,557
Drug/Gang/DUI	12,000	3,338
Capital outlay	5,000	-

(This schedule is continued on the following page.)

VILLAGE OF BARRINGTON HILLS, ILLINOIS

SCHEDULE OF REVENUES, EXPENDITURES
AND CHANGES IN FUND BALANCE - BUDGET AND ACTUAL (Continued)
PUBLIC SAFETY FUND

For the Year Ended December 31, 2014

	Original and Final Budget	Actual
EXPENDITURES (Continued)		
Debt service		
Principal	$ 20,765	$ 20,765
Interest	3,735	3,685
Total debt service	24,500	24,450
Total expenditures	2,639,536	2,569,568
EXCESS (DEFICIENCY) OF REVENUES OVER EXPENDITURES	(18,775)	31,373
OTHER FINANCING SOURCES (USES)		
Transfers in	15,000	-
Transfers (out)	-	(6,500)
Total other financing sources (uses)	15,000	(6,500)
NET CHANGE IN FUND BALANCE	$ (3,775)	24,873
FUND BALANCE, JANUARY 1		1,416,410
FUND BALANCE, DECEMBER 31		$ 1,441,283

(See independent auditor's report.)

VILLAGE OF BARRINGTON HILLS, ILLINOIS

SCHEDULE OF REVENUES, EXPENDITURES
AND CHANGES IN FUND BALANCE - BUDGET AND ACTUAL
ROADS AND BRIDGES FUND

For the Year Ended December 31, 2014

	Original and Final Budget	Actual
REVENUES		
Property taxes	$ 1,262,000	$ 1,250,262
Road and bridge taxes	75,000	79,082
Motor fuel tax interest	25	32
Federal grant revenue	-	98,709
Motor fuel tax allotments	102,475	140,471
Total revenues	1,439,500	1,568,556
EXPENDITURES		
Current		
Road maintenance	560,000	622,807
Snow plowing	200,000	206,445
Mowing	40,000	40,015
Sign purchase and installation	14,000	15,387
Drainage management	200,000	3,577
Engineering fees	180,000	296,920
Road striping	30,000	19,536
Equipment maintenance	4,000	3,069
Road patching	20,000	4,304
Bridge inspections	12,000	11,500
Motor fuel expenses	250,000	250,000
Cuba Road bridge	75,000	-
Capital outlay	2,000	-
Total expenditures	1,587,000	1,473,560
NET CHANGE IN FUND BALANCE	$ (147,500)	94,996
FUND BALANCE, JANUARY 1		3,456
FUND BALANCE, DECEMBER 31		$ 98,452

(See independent auditor's report.)

BUDGETS

Annual operating budgets are adopted for all governmental funds. Budgets are adopted on a basis consistent with generally accepted accounting principles. All annual budgets lapse at fiscal year end unless specifically carried over.

SUPPLEMENTARY INFORMATION

VILLAGE OF BARRINGTON HILLS, ILLINOIS

DETAILED SCHEDULE OF REVENUES -
BUDGET AND ACTUAL
GENERAL FUND

For the Year Ended December 31, 2014

	Original and Final Budget	Actual
REVENUES		
Taxes		
Property	$ 2,488,007	$ 2,464,644
Sales	30,152	50,038
Use	77,848	77,848
Replacement	42,000	37,958
Utility	530,000	548,223
Total taxes	3,168,007	3,178,711
Fees, permits and licenses		
Building permits	140,000	110,085
Liquor and scavenger licenses	1,200	1,110
Vehicle stickers	32,700	31,579
Security link system fees	9,800	8,148
Zoning and petition fees	500	4,065
Overweight permit fees	37,000	42,216
Total fees, permits and licenses	221,200	197,203
Charges for services		
Police accident reports	1,000	1,959
Copy fees	250	280
Franchise fees	70,000	78,291
Rental income	1,600	1,842
Total charges for services	72,850	82,372
Fines and forfeitures		
Traffic fines - Cook County	60,000	30,580
Civil fine collections	-	750
Supervision fees	6,500	3,563
Police "C" tickets	55,000	74,481
Forfeited drug revenue	500	-
Total fines and forfeitures	122,000	109,374
Intergovernmental		
State income tax	426,215	402,987
Grant revenue - public safety equipment	7,826	7,826
Total intergovernmental	434,041	410,813
Investment income	6,500	10,095
Miscellaneous revenue		
Police training reimbursements	500	-
Animal services reimbursements	1,200	2,314
Subdivision reimbursements	2,500	-
Contributions/donations	5,000	5,100
Other	7,000	11,175
Total miscellaneous revenue	16,200	18,589
TOTAL REVENUES	$ 4,040,798	$ 4,007,157

(See independent auditor's report.)

VILLAGE OF BARRINGTON HILLS, ILLINOIS

SCHEDULE OF EXPENDITURES -
BUDGET AND ACTUAL
GENERAL FUND

For the Year Ended December 31, 2014

	Original and Final Budget	Actual
GENERAL GOVERNMENT		
Administration	$ 491,618	$ 459,257
Building department	172,000	186,644
Insurance and risk	664,262	593,414
Legal	533,250	459,929
Municipal building and grounds	124,200	111,814
Zoning and planning development	80,800	78,533
Total general government	2,066,130	1,889,591
PUBLIC SAFETY		
Police department	1,609,929	1,507,521
HEALTH SERVICES	7,500	2,869
CAPITAL OUTLAY	202,964	179,205
TOTAL EXPENDITURES	$ 3,886,523	$ 3,579,186

(See independent auditor's report.)

VILLAGE OF BARRINGTON HILLS, ILLINOIS

DETAILED SCHEDULE OF EXPENDITURES -
BUDGET AND ACTUAL
GENERAL FUND

For the Year Ended December 31, 2014

	Original and Final Budget	Actual	Variance
GENERAL GOVERNMENT			
Administration			
Salaries	$ 260,943	$ 260,943	$ -
Social Security	34,200	32,239	1,961
IMRF	21,700	20,418	1,282
Unemployment taxes	3,500	2,281	1,219
Office/computer supplies	4,500	4,769	(269)
Rental of office equipment	2,750	2,623	127
Telephones and fees	10,000	7,995	2,005
Vehicle stickers	2,100	1,590	510
Barrington Area Council of Governments	25,000	24,705	295
Audit	24,000	24,000	-
Hardware/software	4,000	3,303	697
Finance consulting	300	-	300
Dues and subscriptions	11,500	4,749	6,751
Tuition and travel	11,000	3,117	7,883
Newsletter and website	12,300	11,511	789
Vehicle	3,500	1,585	1,915
Postage	3,500	3,067	433
Clerical services	20,000	18,907	1,093
Communications committee	500	-	500
Messenger service	700	119	581
Payroll	3,600	3,547	53
Broadband data	17,000	11,428	5,572
Web services	6,000	2,154	3,846
Merchant fees	25	70	(45)
Special events	5,000	5,814	(814)
Other/meetings expenditures	4,000	8,323	(4,323)
Total administration	491,618	459,257	32,361
Building department			
Salaries	75,000	73,550	1,450
Outside services	47,000	53,891	(6,891)
Printing and office supplies	1,100	1,674	(574)
Field/office equipment	700	-	700
Automobile expenditures	100	-	100
Planning/zoning information specialist	18,600	25,421	(6,821)
Plumbing inspections	20,000	25,471	(5,471)
Records management	5,000	4,830	170
Surveying services	3,000	867	2,133
Office expenditures	1,000	940	60
Overtime	500	-	500
Total building department	172,000	186,644	(14,644)

(This schedule is continued on the following pages.)

DETAILED SCHEDULE OF EXPENDITURES -
BUDGET AND ACTUAL (Continued)
GENERAL FUND

For the Year Ended December 31, 2014

	Original and Final Budget	Actual	Variance
GENERAL GOVERNMENT (Continued)			
Insurance and risk			
Workers' compensation insurance	$ 112,641	$ 124,268	$ (11,627)
Employee medical and life	702,000	589,645	112,355
Wellness program	2,400	3,600	(1,200)
Employee dental plan	63,115	57,795	5,320
Vehicle/physical damage	6,708	7,914	(1,206)
Surety bonds	2,500	2,500	-
Long-term disability	19,606	19,917	(311)
Property/inland marine	6,733	6,785	(52)
Asset inventory	11,770	5,044	6,726
General liability insurance	13,696	13,696	-
Vehicle liability insurance	16,963	16,963	-
Employment practice liability	4,458	4,458	-
Law enforcement insurance	12,767	12,767	-
Public officials insurance	2,383	2,383	-
Excess liability insurance	44,201	44,201	-
Deductible payments	-	1,008	(1,008)
Public safety portion	(357,679)	(319,530)	(38,149)
Total insurance and risk	664,262	593,414	70,848
Legal			
Village attorney	221,750	88,557	133,193
Court attorney	65,000	65,000	-
Other legal fees	25,000	10,685	14,315
Litigation expenses	100,000	116,573	(16,573)
Publications	2,000	2,410	(410)
Expert witnesses	8,500	837	7,663
Court reporters	6,000	7,324	(1,324)
Labor relations	60,000	47,536	12,464
FOIA records management	40,000	66,567	(26,567)
Planning/zoning	5,000	54,440	(49,440)
Total legal	533,250	459,929	73,321
Municipal building and grounds			
Interior building and maintenance	36,500	34,750	1,750
Exterior building and maintenance	25,000	20,177	4,823
Grounds maintenance	8,000	11,525	(3,525)
Contractual services	5,000	3,012	1,988
Parking lot maintenance	4,000	1,952	2,048

(This schedule is continued on the following pages.)

VILLAGE OF BARRINGTON HILLS, ILLINOIS

DETAILED SCHEDULE OF EXPENDITURES -
BUDGET AND ACTUAL (Continued)
GENERAL FUND

For the Year Ended December 31, 2014

	Original and Final Budget	Actual	Variance
GENERAL GOVERNMENT (Continued)			
Municipal building and grounds (Continued)			
Taxes	$ 5,000	$ 2,831	$ 2,169
Landscape restoration work	22,000	22,669	(669)
Landscape irrigation	1,500	1,584	(84)
Snow removal	15,000	10,887	4,113
Street lighting	2,200	2,427	(227)
Total municipal building and grounds	124,200	111,814	12,386
Zoning and planning department			
Regular salaries	18,600	18,564	36
Overtime	1,000	872	128
Minutes and transcripts	8,000	18,660	(10,660)
Supplies/maps/printing	38,000	36,148	1,852
Engineering services	5,000	1,255	3,745
Subdivision review costs	5,000	264	4,736
Equestrian Commission	100	-	100
Development Commission	100	-	100
Professional services	5,000	2,770	2,230
Total zoning and planning department	80,800	78,533	2,267
Total general government	2,066,130	1,889,591	176,539
PUBLIC SAFETY			
Police department			
Social security	193,800	182,686	11,114
IMRF	40,300	37,919	2,381
Gasoline	108,000	75,972	32,028
Squad car repairs	28,000	27,217	783
Tires	3,000	2,467	533
Telephone	20,000	17,341	2,659
UHF network	16,500	20,383	(3,883)
Radio maintenance	12,000	12,986	(986)
Re-install radios	4,200	3,866	334
Nextel contract	6,750	7,196	(446)
Radar repairs	500	353	147
Security maintenance	9,000	6,080	2,920
Jail service contract	750	511	239
Membership and dues	12,900	10,340	2,560
Uniforms	13,500	12,465	1,035
I.T. consultant	39,000	26,421	12,579
Marking vehicles	1,200	1,190	10
Training and travel	11,000	11,709	(709)

(This schedule is continued on the following page.)

VILLAGE OF BARRINGTON HILLS, ILLINOIS

DETAILED SCHEDULE OF EXPENDITURES -
BUDGET AND ACTUAL (Continued)
GENERAL FUND

For the Year Ended December 31, 2014

	Original and Final Budget	Actual	Variance
PUBLIC SAFETY (Continued)			
Police department (Continued)			
Shooting program and armory	$ 7,000	$ 7,070	$ (70)
Purchase of vehicular accessories	5,200	3,594	1,606
Employee recognition awards	1,400	2,289	(889)
Office expenditures	8,100	7,938	162
Office supplies	6,000	6,002	(2)
Other expenses	25,000	27,388	(2,388)
Towing	750	170	580
Recruitment	2,500	-	2,500
Professional service/consulting	5,000	7,760	(2,760)
Drug education	1,000	918	82
Disaster and emergency services	6,000	4,980	1,020
CALEA expenditures	8,000	4,934	3,066
Live-scan monthly fees	4,900	4,983	(83)
Restitution exchange and bond transfer	1,000	-	1,000
Insurance	357,679	319,530	38,149
Pension contribution	650,000	652,863	(2,863)
Total public safety	1,609,929	1,507,521	102,408
HEALTH SERVICES			
Miscellaneous	7,500	2,869	4,631
Total health services	7,500	2,869	4,631
CAPITAL OUTLAY	202,964	179,205	23,759
TOTAL EXPENDITURES	$ 3,886,523	$ 3,579,186	$ 307,337

VILLAGE OF BARRINGTON HILLS, ILLINOIS

SCHEDULE OF REVENUES, EXPENDITURES AND
CHANGES IN FUND BALANCE - BUDGET AND ACTUAL
DEBT SERVICE FUND

For the Year Ended December 31, 2014

	Original and Final Budget	Actual
REVENUES		
Property taxes	$ 259,230	$ 256,826
Total revenues	259,230	256,826
EXPENDITURES		
Debt Service		
Principal retirement	210,000	210,000
Interest and fiscal charges	49,230	49,230
Total expenditures	259,230	259,230
NET CHANGE IN FUND BALANCE	$ -	(2,404)
FUND BALANCE, JANUARY 1		101,782
FUND BALANCE, DECEMBER 31		$ 99,378

(See independent auditor's report.)

OTHER INFORMATION

VILLAGE OF BARRINGTON HILLS, ILLINOIS

PROPERTY TAX, ASSESSED VALUATIONS, RATES, TAX EXTENSIONS AND COLLECTIONS

December 31, 2014

	Tax Year 2013									
COUNTY	**Cook**		**McHenry**		**Lake**		**Kane**		**Total**	
ASSESSED VALUATION		$ 217,695,579		$ 108,921,489		$ 78,558,720		$ 9,461,821		$ 414,637,609
	Rate	**Amount**	**Rate**	**Amount**	**Rate**	**Amount**	**Rate**	**Amount**	**Rate**	**Amount**
FUNDS										
General	0.3879	$ 844,377	0.2947	$ 320,958	0.3010	$ 236,462	0.2881	$ 27,255	1.2717	$ 1,429,052
Police protection	0.6977	1,518,966	0.5301	577,377	0.5400	424,217	0.5182	49,030	2.2860	2,569,590
Police pension	0.1776	386,636	0.1349	146,965	0.1370	107,625	0.1319	12,480	0.5814	653,706
Social security	0.0623	135,620	0.0473	51,551	0.0490	38,494	0.0463	4,378	0.2049	230,043
Audit	0.0077	16,834	0.0060	6,399	0.0070	5,499	0.0057	543	0.0264	29,275
Streets and bridge	0.3448	750,669	0.2620	285,339	0.2690	211,323	0.2139	20,239	1.0897	1,267,570
Street lighting	0.0006	1,309	0.0005	497	0.0010	786	0.0004	43	0.0025	2,635
Crossing guard	0.0007	1,428	0.0005	543	0.0010	786	0.0005	46	0.0027	2,803
Unemployment insurance	0.0010	2,082	0.0007	792	-	-	0.0007	67	0.0024	2,941
Liability insurance	0.0258	56,192	0.0196	21,360	0.0200	15,712	0.0192	1,814	0.0846	95,078
IMRF	0.0169	36,879	0.0129	14,018	0.0150	11,783	0.0126	1,190	0.0574	63,870
Prior year adjustment	-	-	-0.1049	(114,237)	-	-	0.0620	5,865	-0.0429	(108,372)
Bond and interest	0.0722	157,191	0.0538	58,612	0.0560	43,993	0.0531	5,027	0.2351	264,823
TOTAL	1.795	$ 3,908,183	1.2581	$ 1,370,174	1.3960	$ 1,096,680	1.3526	$ 127,977	5.8019	$ 6,503,014
TAX COLLECTIONS										
Cash collected through December 31, 2014		$ 3,824,516		$ 1,360,898		$ 1,080,499		$ 127,977		$ 6,393,890
Receivable at December 31, 2014		66,258		-		-		-		66,258
TOTAL TAX COLLECTIONS		$ 3,890,774		$ 1,360,898		$ 1,080,499		$ 127,977		$ 6,460,148
PERCENT COLLECTED		99.55%		99.32%		98.52%		100.00%		99.34%

Note: The Illinois Department of Revenue is required by law to calculate an equalization factor, known as the multiplier, to achieve uniform property assessment throughout the state. The final 2013 equalization factor for Cook County was 2.6621, which is used to bring the average level of assessment to the required 33 1/3% level mandated by state law.

CENTER for RETIREMENT RESEARCH at BOSTON COLLEGE

STATE AND LOCAL PENSION PLANS NUMBER 40, JULY 2014

AN UPDATE ON PENSION OBLIGATION BONDS

*By Alicia H. Munnell, Jean-Pierre Aubry, and Mark Cafarelli**

INTRODUCTION

This update shows how Pension Obligation Bonds (POBs) have fared since the financial crisis. This instrument, which is a general obligation of the government, alleviates pressure on the government's cash position; and it may offer cost savings if the bond proceeds are invested, through the pension fund, in assets that realize a return higher than the cost of the bond. At the time of our last study, 2009 data showed that most issuers had lost money by issuing a POB.[1] One question is the extent to which five additional years have changed that picture. The earlier study also looked at the factors leading a state or locality to issue a POB and concluded that those least able to absorb the risk were the most likely to do so. The second question is whether that continues to be the story.

The *brief* proceeds as follows. The first section presents a brief history of POBs from their introduction in 1985 to the present. The second section introduces the rationale for, and possible risks associated with, issuing a POB. The third section evaluates POBs at three points in time: 2007 (at the height of the stock market), 2009 (in the midst of the financial crisis), and 2014 (today). The fourth section summarizes the regression results – using an expanded sample that includes cities that do not administer their own pension plan – that relate the probability of issuing a POB to the financial pressures of the sponsor, the economic environment, and financial conditions such as the "expected spread" between interest rates and stock market returns. The fifth section presents a two-fold conclusion. On the one hand, five years of economic recovery have improved the performance of POBs; on average they have produced a real internal rate of return of 1.5 percent. On the other hand, while POBs could potentially be a useful tool under the right circumstances, evidence to date

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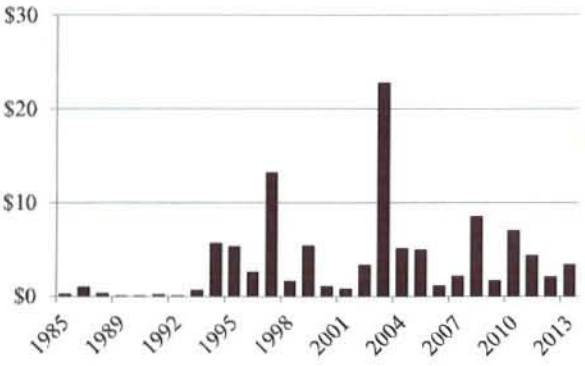
suggests that the jurisdictions that issue POBs tend to be the financially most vulnerable with little control over the timing.

Background

In 1985, the city of Oakland, CA, issued the first POB.[2] At the time, POBs offered city, municipal, and state governments a classic arbitrage opportunity. Issued on a tax-exempt basis, the government could immediately invest the proceeds through the pension fund in higher-yielding taxable securities, such as U.S. Treasury bonds, which would lock in a positive net return from the transaction.[3] However, because POBs (and all "arbitrage bonds") deprived the federal government of tax revenues, Congress stopped state and local governments from issuing tax-exempt bonds solely to reinvest the proceeds in higher-yielding securities. Indeed, the Tax Reform Act of 1986 (TRA86), which did away with the tax exemption for POBs, appeared to mark an end for this instrument.

Surprisingly, POBs re-emerged in the 1990s. The strong performance of the stock market led some governments (and bankers) to see a potential arbitrage opportunity for taxable POBs. Two factors were important. First, taxable interest rates had come down considerably, which meant that POB borrowing costs were lower as well. Second, pension funds had increased their equity holdings substantially over the decade,[4] which generated higher returns for the plans and, thus, led actuaries to assume higher future returns. The combination of these two factors was enough to convince some governments that POBs offered an attractive "actuarial arbitrage."[5]

Figure 1. Pension Obligation Bonds Issued from 1985-2013, Billions of 2013 Dollars

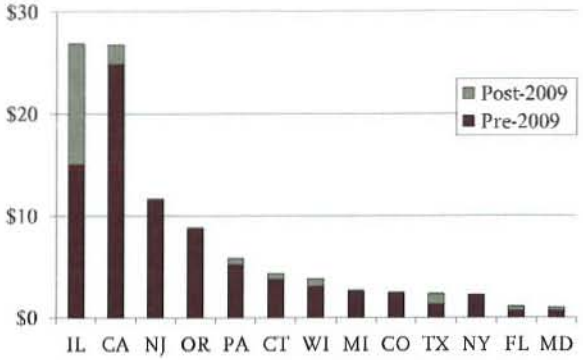


Source: Data set compiled from Bloomberg Online Service (2012), and SDC Thomson Reuters (2013) databases.

Since TRA86 and the end of arbitrage bonds, governments have issued about $105 billion in taxable POBs. The most notable characteristic of the pattern of new issues is the spike in POB dollars issued in 2003 (see Figure 1), which is partly due to a single POB issuance worth almost $10 billion ($12.4 billion in 2013 dollars) by the state of Illinois.[6]

Even with the 2003 spike, the total amount of POBs issued in any given year has never been more than 1 percent of the total assets in public pensions. However, certain states and localities are more active in the POB market than others. Figure 2 shows total issuances by state from 1985 to 2013.[7] It is clear that the bulk of activity in POBs has been centered in about 10 states, with Illinois and California being major players.[8]

Figure 2. Pension Obligation Bonds Issued from 1985-2013 for States with More Than $1 Billion Issued, Billons of 2013 Dollars



Source: Data set compiled from Bloomberg Online Service (2012) and SDC Thomson Reuters (2013) databases.

The Pros and Cons of Issuing a POB

While the market remains small, it is clear that certain jurisdictions see POBs as attractive policy instruments. The available literature suggests two primary reasons for their appeal:[9]

- Budget relief: During periods of economic stress, governments use POBs for budget relief. State and local governments often face legal requirements to reduce underfunding. With declining revenues, officials may see POBs as the "least bad alternative" among a variety of tough fiscal choices.

- Cost savings: POBs offer issuers an actuarial arbitrage opportunity, which, in theory, can reduce the cost of pension obligations through the investment of the bond proceeds in higher risk/higher return assets. By commingling POB proceeds with pension assets, the assumption is that bond proceeds will return whatever the pension returns. Given that actuarial practice assumes public pensions will return about 8 percent, POBs can be a compelling proposition (especially to governments whose taxable borrowing costs are in the 5-6 percent range).

While the actuarial arbitrage highlighted above may be persuasive, the issuance of POBs poses serious risks:[10]

- Financial: The success of POBs depends on pension returns averaging more than the cost of financing the debt. However, these assumptions may not turn out to be correct.

- Timing: POBs involve considerable timing risk, as the proceeds from the issuance are invested en masse into the pension plan. Dollar-cost averaging would be the more measured approach to investing large sums of money.[11]

- Flexibility: While the issuance of a POB does not change the total indebtedness of the sponsor, it does change the nature of the indebtedness.[12] Requirements to amortize unfunded pension liabilities may be relatively flexible obligations that can be smoothed over time, while the POB is an inflexible debt with required annual payments.

- Political: If the government uses the POB to fully fund the pension, it may end up with a pension system having more assets than liabilities. Such overfunding may create the political risk that unions and other interest groups will call for benefit increases, despite the fact that the underfunding just moved from the pension plan's balance sheet to the sponsor's balance sheet.[13]

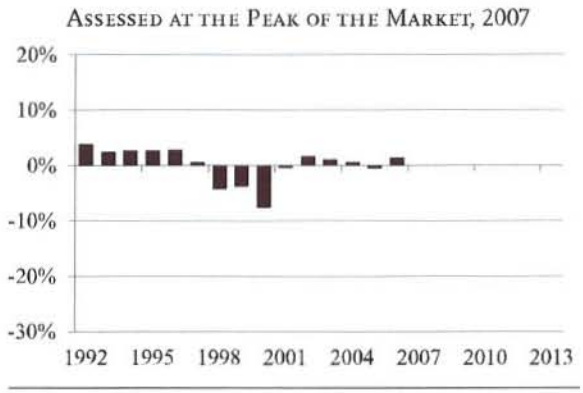
Evidence to Date

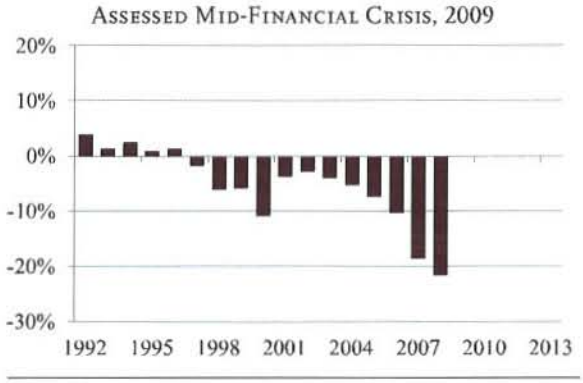
In order to assess the extent to which POBs have met issuers' expectations, we calculate the internal rate of return for all POBs issued in a given year. This analysis is based on the universe of taxable POBs issued since the passage of TRA86 through 2013.[14] The universe includes 5,109 POBs issued from 529 different governing entities, totaling approximately $98 billion in 2013 dollars.

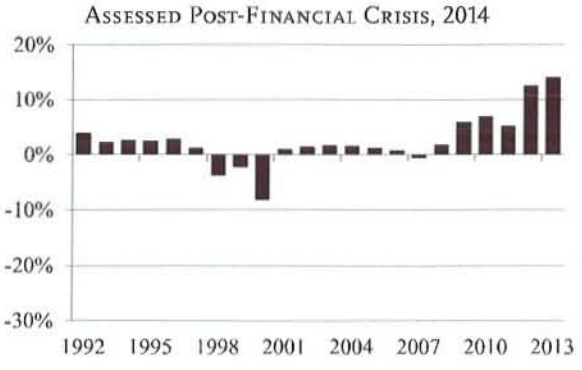
We begin by looking at each bond issued in a given year. Of the 5,109 bond issuances in our data, 4,538 provide the detailed data needed to perform a meaningful assessment – the date of issuance, the date of maturity, the coupon rate, the par value, and the purchase price as a percent of par. The assumption is that the proceeds from each bond are invested in accordance with the allocation of the aggregate assets of state and local pensions from the Federal Reserve's *Flow of Funds* – approximately 65 percent in equities and 35 percent in bonds. Accordingly, we use the S&P 500 total return index and the Barclays 10-year bond total return index to approximate how the POB proceeds have grown over time. For each bond, beginning in year one, we calculate the growth of the invested bond proceeds for that year, then subtract the interest payment (using the stated coupon rate) to get a new beginning balance for the following year, and this process is repeated until the bond matures. For bonds that have not yet matured, the process is repeated until the date of the assessment. At maturity or date of assessment, we compare the ending balance with the initial proceeds to calculate an internal rate of return (IRR). These IRRs are then weighted by the size of the bond and the maturity (or, if the bond has not yet matured, the number of years between the date of issue and the assessment date) in order to calculate an aggregate IRR for each annual cohort of POBs.

The results demonstrate the risk associated with a POB strategy. If the assessment date is the end of 2007 – the peak of the stock market – the picture looks fairly positive (see Figure 3 on the next page). If assessed in the middle of 2009 – right after the market crash – most POBs appear to be a net drain on government revenues. And, as of February 2014, the majority of POBs have produced positive returns due to the large market gains that followed the crisis. Only those bonds issued at the end of the market run-up of the 1990s, and those issued right before the crash in 2007, have produced a negative return; all others are in the black.

FIGURE 3. INTERNAL RATE OF RETURN ON PENSION OBLIGATION BONDS, BY YEAR ISSUED



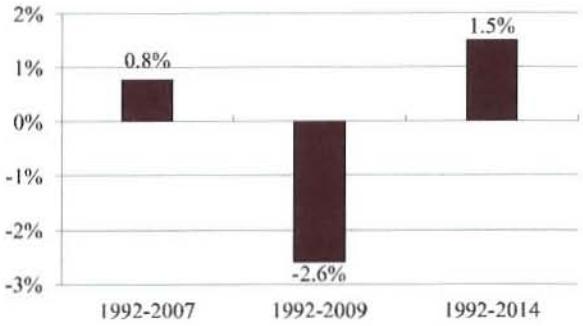




Source: Authors' calculations based on total monthly returns of the S&P 500 from Standard and Poor's Index Services (1992-2014); total monthly returns of U.S. Treasuries from the *Ibbotson SBBI Classic Yearbook* (2013); and the Barclays U.S. Treasury 10-year Term Index (2014). POB data are from Bloomberg Online Service (2012); and SDC Thomson Reuters (2013).

Weighting the bonds by their dollar amount and maturity (or, if the bond has not yet matured, the number of years between the date of issue and the assessment date), Figure 4 shows the average IRR for the three periods. Between 1992 and the peak in 2007, the average real return was 0.8 percent; by 2009 the average return had dropped to -2.6 percent; and over the period 1992-2014 – which includes both the financial crisis and the subsequent market rebound – the return was 1.5 percent. The story is still far from over, however, since many of these POBs have a 30-year life.

FIGURE 4. AVERAGE INTERNAL RATE OF RETURN ON PENSION OBLIGATION BONDS, 1992-2007, 1992-2009, AND 1992-2014



Source: See Figure 3.

WHAT CONTRIBUTES TO THE ISSUANCE OF A POB?

In theory, governments with well-funded pension plans and sound fiscal health might find POBs advantageous if issued at periods when interest rates are particularly low. This type of issuer could shoulder the additional risk of a POB without jeopardizing its fiscal health. Or, for governments facing severe fiscal stress, POBs could be implemented as part of a larger pension reform plan in which the POB helps provide immediate relief while other reforms put the plan on the path to long-term sustainability.[15] So, the question is which governments issue POBs and why. The following regression analysis attempts to answer that question.

The Data

The first step is to define the sample. The sample of issuers used in this analysis is larger than in the earlier study, because it includes both governments that sponsor their own pension plans and cities that participate in state cost-sharing plans. This broadening of the sample is important, because most of the POB occurrences come from local governments that only participate in a state-administered retirement system. Plan data for cities not administering their own plan are constructed based on the methods stipulated in the Governmental Accounting Standards Board's Statement 68.

The second step is to construct the dependent variable – a government issuing a POB in a given year. This step requires consolidating the multiple POB bonds into a single observation. For example, in 1997, the New Jersey state government issued 31 bonds; in this exercise, this information is consolidated to indicate that the New Jersey state government was a POB issuer in 1997. This process of consolidation results in 733 observations. Data limitations reduce the number of issues considered to 270.[16]

Analysis and Results

The probability of being one of the 270 POB issuances among the 140,000 states and localities is then assumed to depend on fiscal pressures facing the government, the economic environment, and financial variables such as the expected spread between interest costs and stock market returns.[17] The specific variables in the model included:[18]

Fiscal Pressure on Government

- *Contributions/revenue.* Government contributions to the pension plan as a percent of total own-source government revenue. The assumption is that as the pension expenditure increases as a percentage of total government spending, the more likely the government is to issue a POB.
- *Debt/revenue.* Government debt as a percent of own-source revenue. The effect could go either way. A government with substantial debt may find it costly to issue a POB and therefore would not find it profitable. On the other hand, governments with high debt burdens could also be those facing large pension payments for unfunded liabilities, since the government may be more likely to defer pension contributions to make fixed required debt payments.
- *Cash/revenue.* Government cash and securities outside of trusts as a percent of total own-source revenue. The more cash on hand, the less likely a government would be pressed to issue a POB.
- *Carry deficit.* States where it is possible to carry deficits from one year to another are likely to be in more fiscal stress than those states with a strict balanced budget requirement.

Economic Environment

- *Unemployment rate.* The average unemployment rate by county over 2000-2007. The higher the unemployment rate, the more likely a government would be to issue a POB.

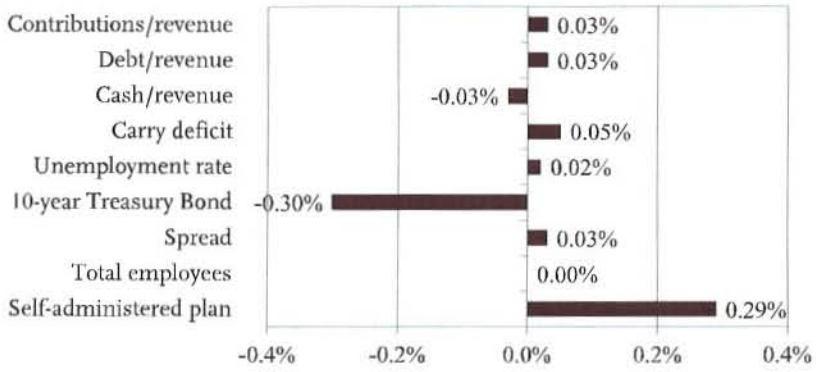
Financial Conditions

- *10-Year Treasury Bond.* In times of low interest rates, localities would be more likely to issue POBs as their cost of borrowing would be lower.
- *Spread.* The difference between the actual investment returns that each retirement system experienced in the previous three years and the 10-year Treasury rate. The greater the spread, the more likely to issue a POB.

Control Variables

- *Total Employees.* The expected outcome is that larger localities would be more likely to issue a POB as they could spread the transaction cost over a larger base.
- *Self-Administered Plan.* The Census identifies governments that administer their own pension plan. This variable could be positively related to issuing a POB because POBs are generally issued by governments in order to shore up the unfunded liabilities of their own plan. On the other hand, local governments that participate in state plans have less flexibility regarding required contributions demanded by the plan, and may issue a POB when unable to make payments.
- *Individual years.* Year dummies were included to control for changes in the health of the national economy.

FIGURE 5. FACTORS AFFECTING THE PROBABILITY OF GOVERNMENT ISSUING A PENSION OBLIGATION BOND, 1992–2013



Note: All results are statistically significant at least at the 95 percent level. For dummy variables, the effects illustrated reflect a shift from 0 to 1. In the case of continuous variables, the effects illustrated reflect a one-standard-deviation change across the mean in one variable while holding the others at their mean (see Appendix Table A1). For detailed regression results, see Appendix Table A2.[19]

Sources: Authors' calculations based on government financial data and retirement plan data from the U.S. Census Bureau (2011, 2012a, and 2012b); POB data from Bloomberg Online Service (2012); SDC Thomson Reuters (2013); and the St. Louis Federal Reserve (2014).

The results show that governments are more likely to issue POBs if the plan represents a substantial obligation to the government, they have substantial debt outstanding, and they are short of cash (see Figure 5). That is, financial pressures play a major role. Additionally, governments are more likely to issue a POB if they are in a relatively high unemployment state. Sponsors also appear to respond to financial conditions, being more likely to issue a POB when interest rates are low and the spread is high. Finally, governments that administer their own plan are much more likely to issue POBs than those participating in a state plan. While the magnitudes of the effects appear small, they are meaningful given that only 0.2 percent of governments in our sample issued a POB.

CONCLUSION

When plan sponsors issue a pension obligation bond, the bond proceeds are invested with pension plan assets. The question then is whether the government will earn more on the proceeds than it will have to pay in interest. Immediately after the financial crisis, governments appeared to have lost money on their POBs. Four years of economic recovery have improved the performance of POBs; today these bonds have netted 1.5 percent. But the story is far from over since many of these bonds have a 30-year life. And, because POBs turn a somewhat flexible commitment into a firm commitment, governments that have issued a POB have reduced their financial flexibility.

The second finding from this update – which includes a greatly expanded number of POB issuers – is that financial pressures continue to play a major role in the issuance of these securities. But the transaction also contains an element of investment speculation in that the spread – based on the plan's historical returns and current interest rate – is also positively related to the probability of issuing a POB. POBs could potentially be used responsibly by fiscally sound governments who understand the risks involved or could play a role as part of a broader pension reform package for fiscally stressed governments. But the results from this *brief* suggest that POB usage to date has not followed this formula – think Detroit, which issued POBs in 2005 and 2006 just as the market was approaching a peak.

Endnotes

1 Munnell et al. (2010).

2 Scanlan and Lyon (2006).

3 The decrease in borrowing costs in issuing tax-exempt state and municipal POBs often exceeds the differential in the risk premium of state and local bonds over federal bonds of the same duration.

4 See Peng (2004).

5 Bader and Gold (2003).

6 Thad Calabrese generated the POB data set from raw data on government bond issues from Bloomberg.

7 States with less than $1 billion in POB issuances are not shown in the figure.

8 California and Illinois are, of course, large states. On a per-capita basis, the biggest players are Oregon, Illinois, and Connecticut. California is number six.

9 Burnham (2003); Davis (2006); and Calabrese (2009).

10 Burnham (2003); Davis (2006); Calabrese (2009); Block and Prunty (2008); and Hitchcock and Prunty (2009).

11 Timing risk could be mitigated if the POB proceeds were applied more strategically, for example for purposes of matching retiree liabilities. This approach would be contrary to the principal of performance arbitrage but, in addition to avoiding timing risk, it would also reduce plan leverage and possibly improve funding.

12 Hitchcock and Prunty (2009).

13 Government Finance Officers Association (2005). The political risk of unnecessary benefit increases can be mitigated by legislatures and boards building in governance protections. For example, benefit increases could be prohibited until funding exceeds 115-125 percent.

14 A data set containing only non-federal pension financing bonds issued from 1992-2009 was drawn from municipal bond data from Bloomberg Online Service. This data set was combined with data on POB issuances from 1986-2013 from SDC Thomson Reuters.

15 A recent report by The PFM Group (2014) on the use of POBs states that they "should be considered only in conjunction with refining the ongoing benefit structure and investment policy of the fund or trust in order to position the issuer and employees for future sustainability." The report goes on to say that issuers who wish to take advantage of the appropriate window to issue a POB should lay the groundwork early by preparing legal documents and considering the size and structure of the issuance in advance.

16 Of the 270 POB occurrences used in the regression analysis, 157 come from jurisdictions that do not administer their own plan.

17 We apportion the pension finances of state plans to these localities according to the ratio of the locality's payroll to the total payroll of all localities in the same state that also do not administer their own plan. If the state-administered plan is employee-specific (i.e. a police and fire plan, or a teachers plan), then we apportion based on the ratio of the locality's payroll for that employee type to the total payroll for that employee type.

18 In addition to the variables described, it would also be useful to include the funding status of the plan. Presumably, poorly funded plans would be more likely to issue a POB. Unfortunately, historical funding data are not available for most plans in the sample.

19 Census data regarding state and local government and pension finances are only available up to fiscal years 2011 and 2012, respectively. For the regression, the most recent Census data – 2011 for government finances and 2012 for pension finances – were duplicated and used for 2012 and 2013. Limiting the regression to only years with Census data does not change the results.

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APPENDIX

TABLE A2. MARGINAL IMPACT OF FACTORS AFFECTING THE PROBABILITY OF GOVERNMENT ISSUING A PENSION OBLIGATION BOND, 1992-2013

Variable	Marginal effects
Contributions/revenue	0.00027***
	(0.000)
Debt/revenue	0.00030***
	(0.000)
Cash/revenue	-0.00030***
	(0.000)
Carry deficit	0.00050**
	(0.041)
Unemployment rate	0.00018***
	(0.008)
10-year Treasury Bond	-0.00203***
	(0.000)
Spread	0.00027***
	(0.000)
Total employees	0.00005**
	(0.025)
Self-administered plan	0.00286***
	(0.000)
Pseudo R^2	0.1396
Number of observations	139,323

Note: Standard errors are in parentheses and adjusted for within-plan correlation. The model includes year fixed effects. The coefficients report marginal effects from a probit estimation computed at sample means of the independent variables and are significant at the 95 percent (**) or 99 percent (***) level. The dependent variable is 1 for governments that issued a POB in a given year, and 0 otherwise.
Source: Authors' calculations.

GRS Gabriel Roeder Smith & Company **Research Report**

Pension Obligation Bonds: Risks and Rewards

By Lance J. Weiss and Amy Williams*

Introduction

States and local governments continue to be interested in Pension Obligation Bonds ("POBs") due primarily to low interest rates, rising underfunded pension liabilities and shrinking revenues. POBs are financial investments and, as such, involve both investment risks as well as investment rewards. Bob Eichem, Chief Financial Officer of the City of Boulder, Colorado, summarized the nature of POBs by stating "POBs are not for the faint of heart, you have to understand them."[i]

A POB issued by a financially strong government following careful analysis of all the risks may be a part of a prudent long-term pension funding strategy. On the other hand, a POB issued by a financially weak government may lead to significant problems for the government and the pension fund. Further context and balance is essential to truly understanding the nature of both the risks and potential rewards of POBs. The purpose of this Research Report is to provide more clarity on both the potential risks and rewards inherent in issuing pension obligation bonds.

Background

POBs are a form of pension financing using debt instruments issued by a governmental entity. The POB proceeds will typically be used to fund all or a portion of the unfunded actuarial accrued liability of a pension plan (or a retiree health care program). Today, most are issued in the form of taxable general obligation ("GO") bonds that are subject to constitutional debt limitations and are backed by the full faith and credit, as well as the taxing power, of the issuing state or local government.

Simply stated, the idea is for a state or local government to issue such bonds and contribute the proceeds into the pension fund. Essentially, the issuer of the POB is borrowing money to invest in the financial markets. The hope, of course, is that the pension fund will earn a higher rate of return on the invested POB proceeds than the interest rate that the sponsoring government pays on the bonds. If that happens, the transaction will reduce the overall cost of the pension plan to the plan sponsor (i.e., reduce the annual pension contribution requirement to the fund by more than the cost of borrowing) and, at the same time, improve the funded ratio, liquidity position and benefit security of the pension plan.

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However, it is very important to recognize that in order to achieve a net positive financial impact for the plan sponsor, the investment returns on the POB proceeds need to exceed the interest rate paid on the bonds ***over the life of the debt***.

It is also important to remember that the issuance of a POB itself does not reduce the total debt obligations of the sponsor. It does, however, convert the unfunded pension liability that is currently a "soft" debt of the plan sponsor and which can potentially be deferred into the future in difficult economic times, into a "hard" debt that must be paid to the bond holders even during the most trying economic times.

POBs in Perspective

According to a 2010 report on POBs by Alicia Munnell of the Center for Retirement Research at Boston College, the first POB was issued in 1985 by the City of Oakland, California.[ii] Prior to 1986, POBs could be issued on a tax-exempt basis which provided governments with the ability to invest the proceeds through the pension fund in higher yielding taxable securities, thus ensuring a positive net return from the transaction. However, the tax exemption for POBs was eliminated by the Tax Reform Act of 1986, and the interest in POBs waned for a while.

Interest in POBs picked-up again in the 1990s, as taxable interest rates decreased and pension plans were able to generate higher returns by increasing their equity allocation. Between 1984 and 2012, governments issued approximately $100 billion of POBs.[iii] The majority of POB debt, however, has been issued by about 11 states, with California, Illinois, Oregon and New Jersey being the major players.[iv]

Even though the $100 billion total of POB issues sounds large, the amount issued in any one year has never been more than one percent of total pension assets across the country.[v] However, for several states, POBs make up a significant portion of pension assets. For example, POBs represent approximately 19% of pension assets for Illinois, 15% for Oregon, 13% for Connecticut and 10% for New Jersey.[vi]

As the result of two financial crises in the last decade, public pension plans suffered a significant drop in average funded status and a corresponding increase in pension contribution requirements. The average funded ratios of state and local pension plans fell from a high of 103% in 2000 to 73% in 2012. In addition, the average GASB "ARC" (i.e., the Governmental Accounting Standards Board's Annual Required Contribution) for such plans increased from 6.4% of payroll in 2001 to 15.5% of payroll in 2012.[vii]

Nevertheless, pension costs as a percentage of state and local own-source revenues remain a modest percent of state and local budgets. Absent a new crisis and taking into account the impact of recent pension reform changes adopted by state and local pension plans, pension costs as a percentage of state and local own-source revenues are projected to change as follows: [viii]

Period of Time	Pension Costs as Percentage of State and Local Own-Source Revenues
Pre-financial crisis in 2007	4.1%
Post-crisis in 2011	6.5%
In 2028 as pension reform changes are partially recognized	5.3%
In 2046 as pension reform changes are fully recognized	3.3%

Even though pension costs, on average, represent a modest cost for state and local governments, a number of states and municipalities face net pension liabilities in excess of annual revenues, thus fostering continued interest in POBs. According to a 2013 report by Moody's Investors Service, nine states have adjusted net pension liabilities that are greater than annual revenues.[ix] Ratios range from a low of 6.8% of revenue for Wisconsin to a challenging 241% for Illinois, with the median being 45%.[x] The problem is even more acute,

however, for the larger municipalities. Thirty of the top 50 largest municipalities have unfunded pension liabilities greater than annual revenues. Ratios range from a low of 10% for Washington D.C. to a high of 680% for Chicago with the average being 100%.[xi]

Considering these circumstances, some states and local governments continue to look to POBs as one of several tools to help manage rising pension liabilities and related costs.

The Role of POBs in Pension Cost Management

As a financial investment, the issuance of POBs should be considered as a component part of a government's broader strategy to manage its pension costs. As previously pointed out, however, the issuance of a POB itself does not reduce the total pension debt obligations of the plan sponsor. It does, however, convert the unfunded pension liability that is currently a "soft" debt of the plan sponsor into a "hard" debt that must be paid even during the most trying times.

In this regard, the Government Finance Officers Association recommends that state and local governments use caution when issuing pension obligation bonds and undertake a careful financial analysis. The GFOA also states: "... the issuance of pension obligation bonds should not become a substitute for prudent funding of pension plans."[xii]

The State of Illinois Governor's Advisory Commission on Pension Benefits stated in their November 1, 2005 recommendation: "Consider the issuance of Pension Obligation Bonds ... as a financing instrument to reduce the State's pension costs, as long as (1) there are favorable market conditions and (2) the issuance of such POBs is a component part of a broader plan to reduce the Pension Systems' unfunded liabilities."

Gary Findlay, Executive Director of the Missouri State Employees Retirement System, has stated that if POBs are issued "it should be done with full disclosure of the potential downside, so policy makers are conversant with the risks involved."[xiii]

Timing Considerations

Given the inherent fluctuations in the investment markets, it is to be expected that there will be times during the life of the POB when the interest rate paid on the bonds exceeds the investment return of the pension fund and other times when the investment return of the pension fund exceeds the interest rate paid on the bonds. While in the long run, most people expect a diversified portfolio to produce returns in excess of current bond interest rates, it is important for the POB issuer to have financial strength sufficient to weather the ups and downs of the investment market over the life of the bond issue.

As previously stated, however, a POB issue should only be viewed as a success or failure after all the bonds are retired, not over the short-term. Given the inherent fluctuations in the investment market, it can be misleading to conclude that POBs are a bad investment because of market conditions at any one interim valuation date prior to retirement of the bonds.

A good example of this timing difference is illustrated by examining Connecticut's $2.28 billion POB issuance in April of 2008. When this bond was issued, the Dow Jones average was approximately 13,000 and by the following March it stood at just over 6,600. However, only looking at the Connecticut POB transaction immediately after the market crisis points out the flaw in trying to measure the success or failure of POBs at one point in time before the bonds mature.

According to Denise Nappier, Connecticut State Treasurer, based on a stochastic projection of the Connecticut POB results, there is an 88% probability of exceeding the 5.88% borrowing cost by the time the bonds mature in 2032.[xiv] Nappier also pointed out an additional important benefit of the POB, which was a much

needed liquidity cushion thus avoiding the need for the pension plan to sell assets during the credit crisis and market downturn. Finally, another less obvious but no less important benefit of the Connecticut POB transaction was a unique bond covenant that requires the State to fully fund the annual required contributions for as long as the POBs remain outstanding.

The 2010 report on POBs by the Center for Retirement Research at Boston College indicates just how important timing is in assessing whether a POB issue saves the plan sponsor money or not.[xv] The report shows that if the POBs' assessment date was at the end of 2007 (the peak of the stock market), the internal rate of return on the POBs by year issued is positive for 11 of the 16 years from 1992 to 2007. However, if the POBs' assessment date was at the middle of 2009 (post financial crisis), the internal rate of return on the POBs by year issued is positive for only 6 of the 18 years from 1992 to 2009. Further, the 2010 report concludes that " …POBs could well leave plan sponsors worse off than where they were before they issued the POBs" even though they admit "…the story is not yet over, since about 80% of the bonds issued since 1992 are still outstanding." In fact, in a just-released update to their 2010 report, the Center finds that the internal rate of return on POBs was positive for 18 of the 22 years from 1992 to 2013.[xvi]

Actuarial Projection Results

One way to analyze the potential success or failure of a POB issue is to model the long-term expected performance of the POB and associated pension plan. In this regard, Gabriel, Roeder, Smith & Company (GRS) performed a stochastic projection study showing a cost comparison for a hypothetical underfunded plan with and without a POB issue.

The modeled plan covered 30,000 active members and 20,000 retirees and included a benefit multiplier of 2.2% of final average pay per year of service and a normal retirement age of 60. At the time of the hypothetical bond issue, this plan was 45% funded and had an annual contribution requirement of $500 million per year. Finally, the plan's funding policy was to pay normal cost plus a 30-year closed period level percent of pay amortization payment of the unfunded liability. The assumptions used in the projection study included the following:

- A 7.00% investment return assumption and discount rate under the scenarios with and without pension obligation bond proceeds;
- The comparison of cost on a present value basis based on a discount rate of 7.00%;
- A 3.00% payroll growth assumption;
- An assumed open group, with the number of active members remaining constant;
- An interest rate on debt service of 5.00%, with a 2.00% spread between the expected investment return and interest on debt service;
- One 30-year pension obligation bond with a level dollar debt service schedule at 5.00%; and
- No benefit increases adopted during the life of the POB and the plan sponsor contributes the full ARC (normal cost plus amortization of the unfunded actuarial accrued liability) during the life of the POB and makes all required debt service payments.

This example is not intended to suggest or recommend an appropriate amount of POBs for a pension plan to issue or the characteristics of a plan that should issue a POB. This example is for illustrative purposes only.

GRS performed simulations on two POB issues: 1) a $6 Billion POB issue; and 2) a $2 Billion POB issue, with the results based on 1,000 trials of possible future investment returns. Returns were assumed to follow a lognormal distribution and included an expected return assumption of 7.00% and a standard deviation assumption of 10.00%. The bonds were assumed to be issued by the employer in 2012 and paid into the plan in 2013.

The results of the stochastic simulation show the following savings in employer contributions (including debt service) over 30 years with the POB as compared to without the POB. The results also show the increase in funded ratio after 30 years with the POB as compared to without the POB:

		$6 Billion POB		$2 Billion POB	
	Average Annualized Return	Savings in PV of Employer Contributions plus Debt Service (in Millions) Over 30 Years with a POB	Increase in Funded Ratio After 30 Years with a POB	Savings in PV of Employer Contributions plus Debt Service (in Millions) Over 30 Years with a POB	Increase in Funded Ratio After 30 Years with a POB
95th Percentile	10.2%	$ 1,955	103.2%	$ 841	23.6%
75th Percentile	8.2%	1,020	24.1%	435	4.0%
Median	7.0%	394	2.6%	192	0.6%
25th Percentile	5.7%	(242)	1.1%	(45)	0.3%
5th Percentile	3.9%	(954)	0.4%	(286)	0.2%

$6 Billion POB increased initial funded ratio to 90%.
$2 Billion POB increased initial funded ratio to 60%.

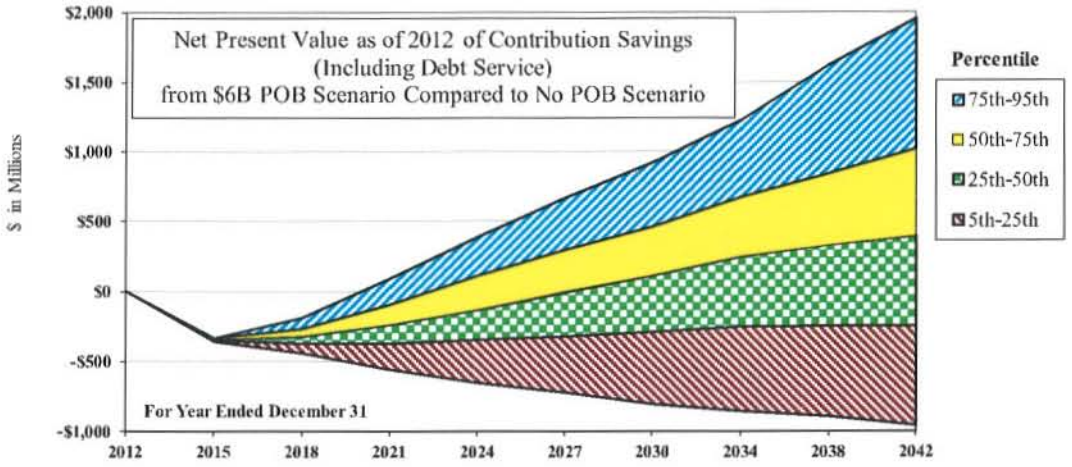
The simulation results indicate that, for this sample plan and under the given assumptions and funding policy (i.e., normal cost plus 30-year closed period amortization of the unfunded liability as a level percentage of pay), there is approximately a 70% probability that issuing a POB produces a savings in employer contributions (including debt service) over the life of the bond issue. The downside is that there is a 30% probability that issuing a POB produces an increase in employer contributions (including debt service) over the life of the bond issue. Of course, these probabilities depend on the specific situation that was modeled. Under different circumstances, different probabilities would result and, in some situations, the probability of producing a savings could be *less than* 50%.

In addition to the projected cost savings (70% probability) to the plan sponsor, the issuance of a POB also improves the funded ratio, liquidity position and benefit security of the pension plan. The additional assets from a POB may also provide a liquidity cushion to help the plan avoid selling assets, thus resulting in the plan achieving a higher return than if the POB had not been issued.

As shown in the chart above, our simulation indicated an increase in the funded ratio after 30 years at all percentiles under both the $6 Billion and the $2 Billion POB scenarios. The large increase in the funded ratio at the 75th and 95th percentiles for scenarios with a POB compared to without a POB is a result of a significant initial increase in the assets and funded ratio from the POB proceeds, and sustained favorable investment performance. These scenarios illustrate that, strictly from the pension plan's perspective, there is little or no downside risk on the funded ratio of issuing a POB (assuming that the funding policy would always be followed).

Despite the higher funded ratios under the scenario in which a POB was issued, the plan sponsor would be required to continue making the debt service payments. Whereas under the scenario in which no POB was issued, contributions would not be required in the small percentage of instances where the amortization of a surplus balance was more than the normal cost contribution.

The graph and chart on the next page show the net present value of the cumulative contribution savings of issuing a $6 Billion POB in 2012 (i.e., the assumed year of the POB issue). By 2042, the debt service is fully paid off and the full impact of the POB can be analyzed. As shown in the graph, there is approximately a 70% likelihood that issuing the POB will result in lower employer contributions (including debt service) on a present value basis than if a POB had not been issued.



95th Percentile	$ 0	$ (324)	$ (181)	$ 93	$ 386	$ 666	$ 919	$ 1,227	$ 1,620	$ 1,955
75th Percentile	0	(336)	(266)	(95)	112	297	464	674	842	1,020
Median	0	(343)	(320)	(235)	(129)	(3)	111	245	326	394
25th Percentile	0	(349)	(371)	(370)	(343)	(315)	(287)	(252)	(242)	(242)
5th Percentile	0	(358)	(439)	(556)	(655)	(722)	(801)	(856)	(889)	(954)

Because we have not assumed that any pension assets could be used to pay debt service (even in the case of a funded status in excess of 100%), the additional contributions under the POB scenarios result in funded ratios that are also much higher in certain future simulated outcomes. However, because of the required debt service payments, the likelihood of achieving savings on a net present value basis before the end of the 30-year period is much lower than 70% (e.g., less than 25% after 9 years and less than 50% after 15 years), and illustrates the importance of only evaluating the success of a POB over the long-term and not the short-term.

Finally, because of the higher amount of assets under the POB scenarios, there is likely to be more contribution rate volatility (i.e., there is a higher likelihood that the change in the contribution rate will be higher when there is favorable or unfavorable investment performance). However, the stability of the debt service payment helps mitigate the volatility of the total contribution rate (when also taking into account the debt service payment).

Refinancing Analogy

The issuance of a POB has often been characterized as being similar to refinancing a debt that bears a high interest rate (i.e., the interest rate used to amortize the pension plan's unfunded accrued liability) with one that bears a lower interest rate (the underlying borrowing rate of the POB). However, the long-term, actual investment performance of the POB proceeds is what determines the final savings or cost of issuing the POB and not the interest rate used to amortize the pension plan's unfunded accrued liability. Note that, although issuing a POB will usually produce a near-term reduction in contributions to the retirement plan, it is not possible to know in advance whether the POB will produce any long-term savings. However, it is possible (as shown above by our analysis) to conduct a stochastic projection of the pension plan in order to model the probability of the longer term success or failure of the POB issue.

Rating Agencies View of POBs

According to Moody's Investors Service, the issuance of pension obligation bonds may be neutral or negative for an issuer's credit rating depending on the use of the proceeds, the relative size of the bond issue and associated debt service, the level of future budget savings assumed and the assumptions on which such savings are based.

However, Moody's points out that pension obligation bonds are often a red flag associated with greater rigidity of long-term obligations, failure to find sustainable solutions to pension funding and a pattern of pushing costs off into the future. For this reason, Moody's indicates that most pension bonds have at best a neutral impact on the assessment of an issuer's credit quality.

Moody's cautions that if proceeds of POBs directly substitute for the issuer's pension contribution requirements, they would view the transaction as deficit financing and such transactions could have a material impact on credit quality. Moody's does offer that if the issuance of POBs is made as part of a broader effort aimed at restoring the balance between a plan's assets and liabilities and restoring affordability, the initiative would be considered as a credit positive effort.

Other Risk Considerations

POBs are financial investments, and like any other, they involve various forms of risk, including, but not limited to: 1) investment risk; 2) timing risk; 3) flexibility risk; and 4) political risk. The following issues should therefore be considered before issuing Pension Obligation Bonds:

1. Is the POB period sufficiently long to earn the needed return? To achieve any real savings from issuing a POB, the proceeds need to earn an investment return that exceeds the total cost of borrowing during the entire period the POB is outstanding. Further, what level of risk can the plan sponsor tolerate over this period to earn the desired return?
2. How will the pension fund invest the proceeds of the POB? Will the proceeds be invested all at once or via dollar-cost averaging? Will they be entirely invested in equity-type securities or will a portion be invested in debt instruments that are not that dissimilar to the POB itself? How will the influx of funds impact investment policy and asset allocation strategy?
3. How will the rating agencies view the transaction?
4. How will the transaction affect the debt capacity of the issuer?
5. Will a higher funded ratio lead to pressure for benefit enhancements?
6. Is the long-term expected financial reward of issuing the bonds (i.e., reducing the overall cost of the pension plan to the plan sponsor) worth the loss of potential funding flexibility? Issuing POBs converts the unfunded pension liability that is currently a "soft" debt of the issuer, and which can potentially be deferred into the future in difficult economic times, into a "hard" debt that must be paid to the bond holders even during the most trying economic times.

Another risk consideration is how market performance, particularly in the short-term, could affect the funded ratio of the plan. For example, even after issuing the POB, short-term market declines producing low or negative investment returns can cause the unfunded actuarial accrued liability (UAAL) to rise to the pre-POB level or higher. Therefore, a plan sponsor hoping to reduce or eliminate its UAAL amortization payment by using a POB may still find it owes a pension contribution (including the UAAL amortization payment) at the same time the POB debt payments are due. As a result, plan sponsors considering issuing POBs need to be aware of the impact of short-term market declines.

In summary, plan sponsors considering the issuance of POBs need to go into such transactions fully prepared with all available information and knowledge about the various potential risks.

Conclusions

POBs are not a silver bullet and will not, on their own, solve the challenge of pension funding and rising pension costs. In fact, if either the plan sponsor or the plan are having financial difficulties, it may be advisable to explore solutions that do not involve additional borrowing. Further, POBs are not a substitute for regular pension fund contributions made in accordance with a well thought out funding policy. However,

POBs do represent one of several management tools that state and local governments may wish to consider to address pension funding.

A POB issued by a financially strong government following careful analysis of all the risks may be a part of a prudent long-term pension funding strategy. A POB issued by a financially weak government as a last ditch effort to save the pension fund from ruin may lead to significant problems for the government and the pension fund.

Are there risks involved with issuing POBs? Of course there are and this Research Report describes many of them. But there are also benefits, primarily the potential for the transaction to produce net cost savings for the issuer. In addition, there are also less obvious benefits such as:

- The potential for POB proceeds to provide a liquidity cushion thus avoiding the need for a pension fund to liquidate long-term assets.
- The positive message perceived by both active and retired plan members of an immediate increase in benefit security resulting from the inclusion of the POB proceeds into the pension fund.

The bottom line is that state and local governments need to analyze both the risks and rewards of POBs and determine if the upside potential is worth the downside risk. It is also important to keep in mind that an open discussion and full disclosure of all the issues raised will go a long way to getting all of the interested parties on the same page with respect to making a final determination on whether to issue POBs or not.

About the Authors

Lance J. Weiss is a senior actuarial consultant with Gabriel, Roeder, Smith & Company. Lance has over 35 years of experience in employee benefits and retirement support planning, with special emphasis on the design, funding, security, administration and communication of qualified and nonqualified retirement and post-retirement medical programs for private-sector and public-sector employers. He is an Enrolled Actuary, a Member of the American Academy of Actuaries and a Fellow of the Conference of Consulting Actuaries. Lance is also a Past President of the Conference of Consulting Actuaries and a former member of the Board of Directors of the American Academy of Actuaries. He has a Bachelor of Science Degree in Mathematics/Actuarial Science from the University of Illinois at Urbana-Champaign. He frequently serves as a speaker and author on public pension topics and recently coauthored an article for the *Government Finance Review* entitled "Addressing Media Misconceptions about Public Sector Pensions and Bankruptcy."

Amy Williams is an actuarial consultant with Gabriel, Roeder, Smith & Company and has 15 years of actuarial experience. Amy's work involves consulting on pension and retiree health care valuations, funding projections, experience studies, actuarial audits and plan design. She manages, directs and monitors the work of actuarial analysts and senior analysts. Amy is an Associate of the Society of Actuaries, a Member of the American Academy of Actuaries and a Fellow of the Conference of Consulting Actuaries. She has a Bachelor of Science Degree in Mathematics/Actuarial Science from the University of Illinois at Urbana-Champaign.

Appendix: Additional Stochastic Projection Results

The following graphs provide additional details from the stochastic projection results under the "No POB" scenario and the two "POB Issued" scenarios.

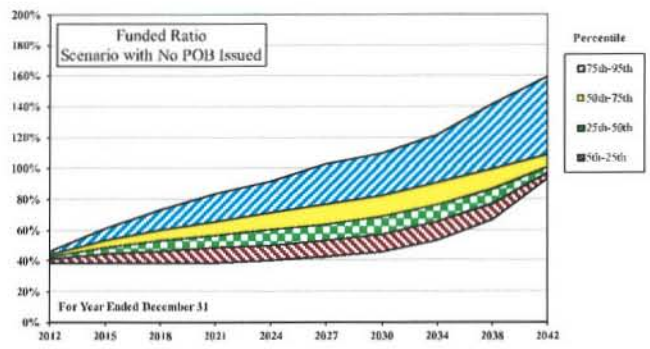
Graphs Ia through Ic illustrate the projected funded ratios of the plan. Initially, the contribution amounts and rates under POB scenarios Ib and Ic do not include the POB proceeds but do include the annual contribution amounts and annual debt service payments. The assets and funded ratio first reflect the POB proceeds in 2013.

As a result of the POB proceeds, the funded ratio increases by 41 percentage points under the $6 Billion POB scenario (Graph Ib) and 14 percentage points under the $2 Billion POB scenario (Graph Ic).

By the end of the 30-year closed amortization period, the median funded ratio is about 100% under all scenarios. However, the funded ratio at the 75th and 95th percentiles is significantly higher under the "POB Issued" scenarios as compared to the "No POB" scenario. The large increase in the funded ratios at the 75th and 95th percentiles in Graphs Ib and Ic is the result of the significant initial increase in the assets and funded ratio from the POB proceeds, and sustained favorable investment performance.

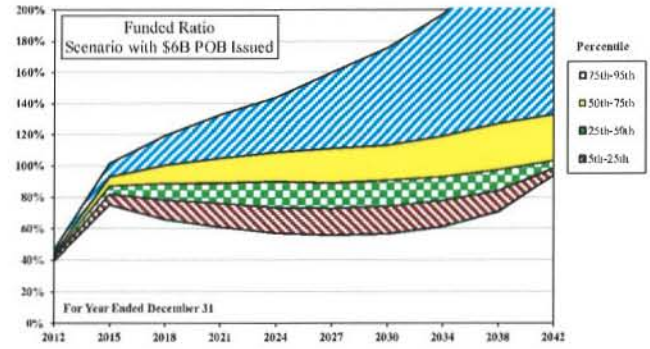
These scenarios illustrate that, strictly from the pension plan's perspective, there is little or no downside risk on the funded ratio of issuing a POB (assuming that the funding policy would always be followed).

Graph Ia



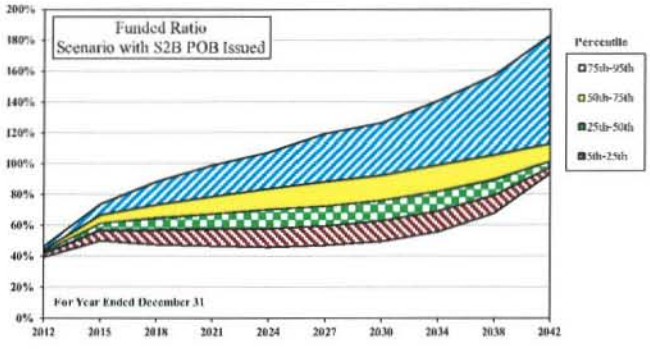
95th Percentile	46.4%	61.0%	73.3%	83.5%	92.1%	103.1%	109.8%	121.7%	141.9%	159.3%
75th Percentile	44.1%	53.5%	60.3%	65.9%	71.8%	77.3%	82.8%	91.1%	99.7%	108.9%
Median	42.7%	48.7%	53.2%	56.8%	60.5%	63.9%	68.7%	76.6%	86.8%	100.8%
25th Percentile	41.4%	44.4%	46.2%	48.5%	50.1%	53.1%	57.5%	65.5%	77.3%	97.2%
5th Percentile	39.6%	38.4%	38.5%	39.2%	40.3%	42.4%	46.0%	53.3%	66.8%	93.2%

Graph Ib



95th Percentile	46.4%	101.7%	119.3%	132.9%	143.6%	160.1%	175.6%	197.3%	230.4%	262.5%
75th Percentile	44.1%	93.1%	100.2%	104.7%	108.7%	110.9%	113.1%	118.7%	127.0%	133.0%
Median	42.7%	87.2%	89.0%	89.3%	90.1%	89.2%	90.9%	93.1%	97.7%	103.4%
25th Percentile	41.4%	81.8%	78.1%	75.9%	73.4%	72.9%	74.4%	77.7%	84.2%	98.3%
5th Percentile	39.6%	74.8%	65.5%	60.8%	57.0%	55.7%	56.4%	60.9%	70.4%	93.6%

Graph Ic



95th Percentile	46.4%	73.9%	88.2%	99.1%	107.5%	119.5%	126.7%	140.7%	157.6%	182.9%
75th Percentile	44.1%	66.6%	73.4%	78.6%	83.7%	88.2%	92.5%	99.1%	105.5%	112.8%
Median	42.7%	61.2%	64.8%	67.5%	70.2%	72.4%	76.0%	81.9%	89.8%	101.4%
25th Percentile	41.4%	56.7%	56.8%	57.6%	57.8%	59.7%	62.8%	69.3%	79.6%	97.5%
5th Percentile	39.6%	50.3%	47.3%	46.3%	45.7%	47.2%	49.6%	55.8%	67.7%	93.3%

Graphs IIa through IIc illustrate the total contribution rates (including POB debt service) as a percentage of pay under each scenario.

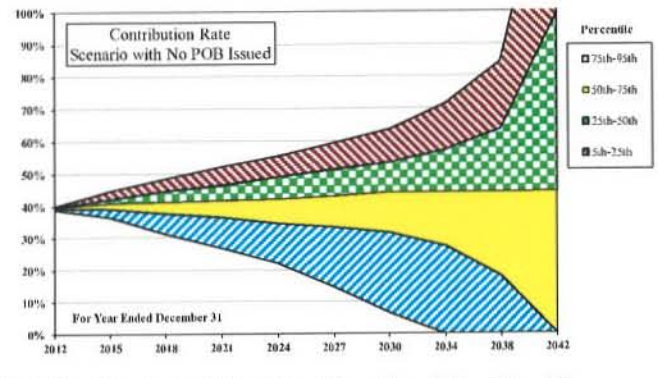
The total contribution rate is lower under both of the "POB Issued" scenarios between the 25th and 75th percentiles for most years when compared with the No POB scenario. Contribution rates are slightly higher in the earlier years under the POB scenarios due to the level dollar debt service payments.

At the 5th percentile (i.e., the line above the red shaded area indicating the most unfavorable investment performance), the contribution rate is higher under the POB scenarios than under the No POB scenario as a result of having to pay the debt service payments in addition to the required contributions to the pension fund.

At the 95th percentile (i.e., the line below the blue shaded area indicating the most favorable investment performance), the contribution rate is higher under the POB scenarios (Graphs IIb and IIc) in the later years. This is partly the result of favorable investment performance which causes the required contributions to the pension fund to be zero, but there are still remaining obligations to make the debt service payments under the POB scenarios.

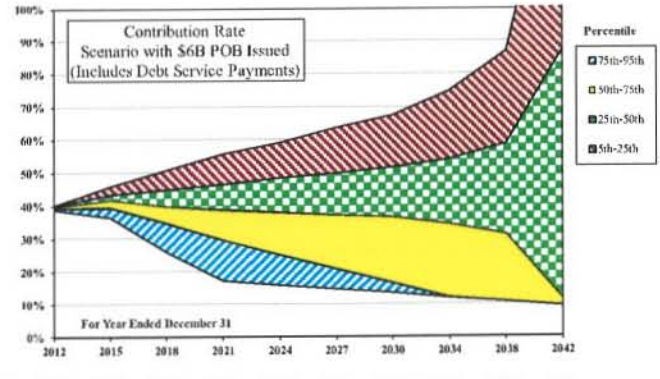
Because the illustrations are based on a plan with a closed-period amortization policy, the variability of the contribution rate increases as the amortization period decreases. Therefore, in 2042, there is significant variability because the contribution rate is based on amortizing the unfunded liability over the one year remaining in the closed amortization period.

Graph IIa



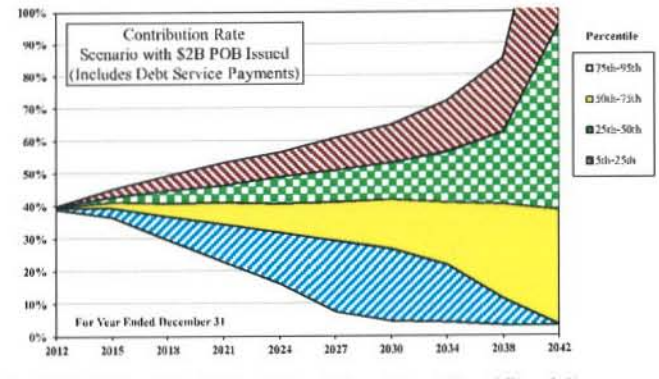
	2012	2015	2018	2021	2024	2027	2030	2034	2038	2042
95th Percentile	38.9%	36.4%	31.3%	26.8%	22.0%	14.6%	6.5%	0.0%	0.0%	0.0%
75th Percentile	39.3%	39.1%	37.6%	36.5%	34.6%	33.3%	31.4%	27.3%	17.8%	0.0%
Median	39.6%	40.9%	41.3%	41.8%	42.2%	43.0%	44.2%	44.2%	44.2%	44.4%
25th Percentile	39.9%	42.4%	44.6%	46.6%	49.1%	51.4%	53.6%	57.2%	63.6%	99.2%
5th Percentile	40.2%	44.8%	48.6%	52.1%	55.5%	59.4%	63.6%	71.6%	84.4%	155.9%

Graph IIb



	2012	2015	2018	2021	2024	2027	2030	2034	2038	2042
95th Percentile	38.9%	36.6%	26.0%	17.3%	16.0%	14.8%	13.6%	12.1%	10.7%	9.4%
75th Percentile	39.3%	39.6%	34.8%	29.6%	25.2%	20.9%	16.7%	12.1%	10.7%	9.4%
Median	39.6%	41.7%	39.7%	38.7%	37.9%	37.1%	36.4%	34.3%	31.2%	11.5%
25th Percentile	39.9%	43.3%	44.7%	46.3%	48.4%	49.7%	51.4%	53.8%	58.6%	87.4%
5th Percentile	40.2%	45.9%	50.8%	55.4%	58.9%	63.4%	67.1%	74.4%	86.6%	156.9%

Graph IIc



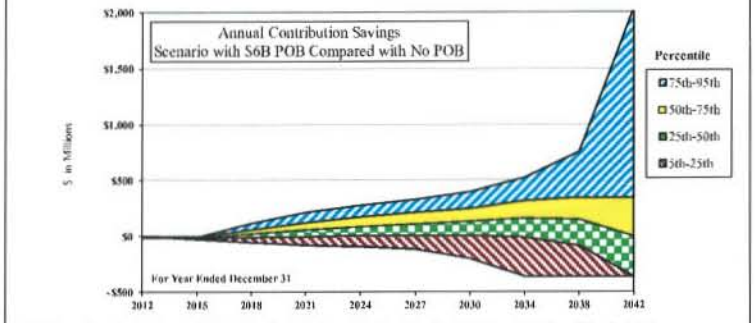
	2012	2015	2018	2021	2024	2027	2030	2034	2038	2042
95th Percentile	38.9%	36.4%	29.6%	22.9%	16.0%	7.6%	4.5%	4.0%	3.5%	3.1%
75th Percentile	39.3%	39.3%	36.7%	34.2%	31.6%	29.3%	26.8%	21.7%	11.2%	3.1%
Median	39.6%	41.1%	40.7%	40.9%	40.6%	40.9%	41.7%	40.8%	40.1%	38.4%
25th Percentile	39.9%	42.7%	44.7%	46.3%	48.9%	50.8%	53.0%	56.4%	62.1%	95.9%
5th Percentile	40.2%	45.1%	49.3%	53.2%	56.4%	60.7%	64.7%	72.2%	84.9%	156.2%

Graph IIIa shows the annual savings in total dollar contributions (including debt service) as a result of issuing the $6 Billion POB. Because, for purposes of the example, the debt service payments were calculated as a level dollar amount and the pension plan contributions were calculated as a level percent of pay (with increasing dollar amounts), contributions under the "POB Issued" scenario are higher in the early years.

However, in the later years, there is about a 75% likelihood that the annual contribution under the "POB Issued" scenario is lower than under the "No POB" scenario. In Graph IIIa, the results shown at the 5th percentile flatten out in the later years as a result of a continued required debt service payment under the "POB Issued" scenario and no required contribution to the pension plan (since under these scenarios the plan is 100% funded).

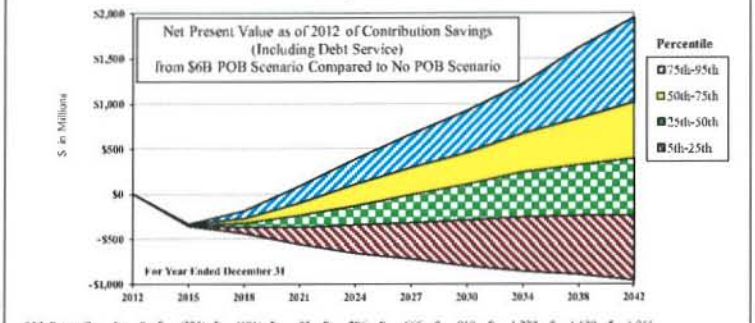
Graph IIIb shows the net present value in 2012 of the cumulative contribution savings. By 2042, the debt service is fully paid off and the full impact of the POB can be analyzed. There is approximately a 66% likelihood that issuing the $6 Billion POB will result in lower contributions on a present value basis than if a POB had not been issued.

Graph IIIa



	2012	2015	2018	2021	2024	2027	2030	2034	2038	2042
95th Percentile	$ 0	$ 6	$ 116	$ 214	$ 277	$ 333	$ 399	$ 523	$ 760	$ 2,010
75th Percentile	0	(5)	61	127	177	217	252	320	354	353
Median	0	(13)	25	58	88	111	133	164	154	4
25th Percentile	0	(19)	(10)	(0)	7	8	6	(11)	(88)	(359)
5th Percentile	0	(28)	(56)	(82)	(93)	(119)	(198)	(359)	(359)	(359)

Graph IIIb



	2012	2015	2018	2021	2024	2027	2030	2034	2038	2042
95th Percentile	$ 0	$ (324)	$ (181)	$ 93	$ 336	$ 666	$ 919	$ 1,227	$ 1,630	$ 1,955
75th Percentile	0	(336)	(266)	(95)	112	297	464	674	842	1,020
Median	0	(343)	(320)	(235)	(129)	(3)	111	245	326	394
25th Percentile	0	(349)	(371)	(370)	(343)	(315)	(287)	(252)	(242)	(242)
5th Percentile	0	(358)	(439)	(556)	(655)	(722)	(801)	(856)	(889)	(954)

Because we have not assumed that any pension assets could be used to pay debt service payments (even in the case of a funded status in excess of 100%), the additional contributions under the POB scenario results in funded ratios that are also much higher in certain future simulated outcomes. If pension assets could be used to make debt service payments or excess assets could be "refunded" from the pension plan, we project that the POB scenarios would result in lower contributions in 80% of the simulation trials.

Notes

[i] Eric Schulzke, "Pension Obligation Bonds: Risky Gimmick or Smart Investment?" *Governing*, January 2013.

[ii] Alicia H. Munnell et al., "Pension Obligation Bonds: Financial Crisis Exposes Risks," *State and Local Issue in Brief* 9, Center for Retirement Research at Boston College, January 2010.

[iii] "Pension Obligation Bonds: "Do you feel lucky?" Jean-Pierre Aubry, Assistant Director of State and Local Research at the Center for Retirement Research at Boston College. Presentation at 2013 Annual Meeting of the Conference of Consulting Actuaries. Source cited in presentation: Data set compiled from Bloomberg Online Service (1992-2009), supplemented with Thomson Reuters SDC Municipal Bond Dataset (1984-2012).

[iv] Ibid.

[v] "Pension Obligation Bonds: "Do you feel lucky?" Jean-Pierre Aubry, Assistant Director of State and Local Research at the Center for Retirement Research at Boston College. Presentation at 2013 Annual Meeting of the Conference of Consulting Actuaries. Source cited in presentation: Data set compiled from Bloomberg Online Service (1992-2009), supplemented with Thomson Reuters SDC Municipal Bond Dataset (1984-2012); The Census of Governments State and Local Government Finances (1986-2011).

[vi] Ibid.

[vii] Alicia H. Munnell et al., "The Funding of State and Local Pensions: 2012-2016," *State and Local Issue in Brief* 32, Center for Retirement Research at Boston College, July 2013.

[viii] Alicia H. Munnell et al., "State and Local Pension Costs: Pre-Crisis, Post-Crisis, and Post-Reform," *State and Local Issue in Brief* 30, Center for Retirement Research at Boston College, February 2013.

[ix] Moody's Investors Service, *Adjusted Pension Liability Medians for US States*, June 27, 2013. The report used Moody's measure of the "adjusted net pension liability" which is substantially different from the measures used to fund public pension plans and typically results in a higher unfunded liability.

[x] Ibid.

[xi] Pension Obligation Bonds: "Do you feel lucky?" R. Ray Kljajic, Managing Director of Citigroup. Presentation at the 2013 Annual Meeting of the Conference of Consulting Actuaries. Source cited in presentation: Moody's, September 19, 2013.

[xii] Government Finance Officers Association, "Evaluating the Use of Pension Obligation Bonds," *GFOA Advisory*, 2005.

[xiii] "Questions to Consider Before Issuing Pension Obligation Bonds," *GRS Insight*, Gabriel, Roeder, Smith & Company, February 2004.

[xiv] Eric Schulzke, "Pension Obligation Bonds: Risky Gimmick or Smart Investment?" *Governing*, January 2013.

[xv] Alicia H. Munnell et al., "Pension Obligation Bonds: Financial Crisis Exposes Risks," *State and Local Issue in Brief* 9, Center for Retirement Research at Boston College, January 2010.

[xvi] Alicia H. Munnell et al., "An Update on Pension Obligation Bonds," *State and Local Issue in Brief* 40, Center for Retirement Research at Boston College, July 2014.

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Pension Obligation Bonds

Type: Advisory
Advisory:
GFOA Advisories identify specific policies and procedures necessary to minimize a governments exposure to potential loss in connection with its financial management activities. It is not to be interpreted as GFOA sanctioning the underlying activity that gives rise to the exposure.

Approved by GFOA's Executive Board: January 2015
Background:
Pension obligation bonds (POBs) are taxable bonds[1] that some state and local governments have issued as part of an overall strategy to fund the unfunded portion of their pension liabilities by creating debt. The use of POBs rests on the assumption that the bond proceeds, when invested with pension assets in higher-yielding asset classes, will be able to achieve a rate of return that is greater than the interest rate owed over the term of the bonds. However, POBs involve considerable investment risk, making this goal very speculative.[2] Failing to achieve the targeted rate of return burdens the issuer with both the debt service requirements of the taxable bonds and the unfunded pension liabilities that remain unmet because the investment portfolio did not perform as anticipated. In recent years, local jurisdictions across the country have faced increased financial stress as a result of their reliance on POBs, demonstrating the significant risks associated with these instruments for both small and large governments.

Recommendation:
The Government Finance Officers Association (GFOA) recommends that state and local governments do not issue POBs for the following reasons:

1. The invested POB proceeds might fail to earn more than the interest rate owed over the term of the bonds, leading to increased overall liabilities for the government.
2. POBs are complex instruments that carry considerable risk. POB structures may incorporate the use of guaranteed investment contracts, swaps, or derivatives, which must be intensively scrutinized as these embedded products can introduce counterparty risk, credit risk and interest rate risk.[3]
3. Issuing taxable debt to fund the pension liability increases the jurisdiction's bonded debt burden and potentially uses up debt capacity that could be used for other purposes. In addition, taxable debt is typically issued without call options or with "make-whole" calls, which can make it more difficult and costly to refund or restructure than traditional tax-exempt debt.
4. POBs are frequently structured in a manner that defers the principal payments or extends repayment over a period longer than the actuarial amortization period, thereby increasing the sponsor's overall costs.
5. Rating agencies may not view the proposed issuance of POBs as credit positive, particularly if the issuance is not part of a more comprehensive plan to address pension funding shortfalls.

Committee: Retirement and Benefits Administration
Notes:
1 The Tax Reform Act of 1986 eliminated the tax exemption for pension obligation bonds.

2 Alicia H. Munnell, Jean-Pierre Aubry, and Mark Cafarelli, "An Update on Pension Obligation Bonds," Center for Retirement Research at Boston College, July 2014.

3 See GFOA Advisory – *Using Debt-Related Derivatives and Developing a Derivatives Policy (2015)*

Download

William Blair

April 16, 2015

To: Ms. Karen Selman, Chair
The Village of Barrington Hills Finance Committee

From: John H. Peterson and Michael McIntyre, William Blair & Company, LLC

On behalf of William Blair & Company, LLC, acting for the Village as financial advisor, we are pleased to present to the Finance Committee and the Board of Trustees of the Village of Barrington Hills our analysis of the Village's ability to issue Pension Funding Bonds. Our analysis is based on the Lauterbach & Amen, LLP actuarial projections for the Village's Police Pension Fund. This memorandum is intended to assist the Village in determining the cost of a solution to achieve a 100% funding level for the Police Pension Fund by the year 2040.

We developed a solution based upon several key assumptions:

1) We compare two cash flow scenarios: (i) a "Bond Proceeds" scenario to fund the Police Pension Fund with the issuance of Pension Funding Bonds, which eliminates the unfunded liability and then pays off the bonds through 2040; and (ii) a "No Bond Proceeds" alternative funding the Police Pension Fund by amortizing the unfunded liability with annual Village payments to achieve a fully funded level by 2040.

   Both scenarios include two different assessments used to fund the pension requirement: a Normal Cost and an Unfunded Payment.

2) The Normal Cost is a calculation of the Village's share of the budgeted cost for each year of an employee's working career. This cost is an established actuarial assessed cost of the employer and the basis for the payment will not change if the statute does not change.

3) The Unfunded Payment does not disappear in the "Bond Proceeds" scenario, but it becomes much less significant a cost—as long as the pension fund assets earn at the assumed rate of return.

4) Our analysis assumes average annual investment earnings rate of 6.5%.

5) The objective is to create a bond-funded solution that can achieve a 100% funding level and generate savings when compared to the cost of the "No Bond Proceeds" scenario. Based on the most recent actuarial projections, the par amount necessary to achieve that objective is $6,860,000.

The interest cost of the Bonds is based on indicative taxable interest rates. With an indicative interest cost, principal and interest payments were developed within the cash flow contraints of the Unfunded Payment. Savings are generated from the difference between the cost to fund the Pension Fund by amortizing the unfunded liability and the cost to fund the Pension Fund

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in addition to paying principal and interest on the Pension Funding Bonds. The result is illustrated in the attached tables (Exhibits A and B). Exhibit A outlines the annual costs associated with each scenario and the "Savings Generated from Issuance of Funding Bonds." The annual cost difference is discounted to produce a present value of the savings, an economic value of the Pension Funding Bond solution, or $1,657,985.

Exhibit B presents the schedule of principal and interest payments based on indicative taxable rates and is subject to change.

The issuance of Pension Funding Bonds can achieve important objectives:

- Bond proceeds will fund the Police Pension Fund at a 100% level, when measured against the Actuarial Accrued Liability within one year.
- The issuance of funding bonds will produce long-term savings by eliminating the unfunded liability payment of the Police Pension Fund. A favorable interest rate assumption (relative to the rate at which the unfunded liability would otherwise be amortized) keeps the debt service cost below the amortization cost of the unfunded liability.
- The combination of (i) fully funding the Police Pension Fund and (ii) lowering the annual contributions to the Police Pension Fund along with (iii) maintaining the projected investment return reduces the financial burden on the Village's taxpayers while also achieving a 100% funding level by 2040.

Issuing Pension Funding Bonds also carries certain risks that should be considered along with its potential benefits:

- Issuing bonds will increase the Village's overall debt burden and will be taken into consideration by the ratings agencies any time the Village seeks to access the capital markets for future financing. This has potential to affect the Village's credit rating, although the Village does have a very high rating and low level of debt.
- The assets of the Police Pension Fund may not realize favorable returns over the next thirty years which may result in an additional, higher unfunded liability payment to meet the desired 100% funding level by 2040. We have used an assumption of 6.5% as suggested by the Village, but the ability to earn at that level over time is not something we can predict. In other words, the cost of servicing the Village's pension debt will not change, but the value of the investments is not guaranteed to stay the same or grow, and it may not be necessary to fund both simultaneously.

If we can help with answers to any questions, please do not hesitate to give us a call.

Exhibit A

Barrington Hills Police Pension Fund

Pension Funding Bonds Analysis

Projected Par Amount	$6,860,000
Projections Assume Dated Date	7/1/2015
Estimated Market Value of Assets (12/31/2014)	$7,995,421
Estimated Actuarial Accrued Liability (12/31/2014)	$14,659,175
Estimated Unfunded Actuarial Accrued Liability (12/31/2014)	$6,663,754
Estimated Actuarial Value of Assets Percent Funded (12/31/2014)	54.5%
Assumed Investment Earnings	6.5%

		No Bond Proceeds			Bond Proceeds Scenario ($6.86MM in Proceeds)						
Plan Year	A Normal Cost (Statutory Requirement)	B Unfunded Payment	A + B = C Normal Cost + Unfunded Payment = Contribution to Pension Fund	Funded %	D Unfunded Payment	A + D = E Normal Cost + Unfunded Payment = Contribution to Pension Fund	F Principal & Interest Due on Bonds (Debt Service)	E + F = G Contribution to Pension Fund + Debt Service	Funded %	C - G = H Savings Generated from Issuance of Funding Bonds	Present Value Savings based 6.50% Investment Earnings
2014	**$330,172**	$307,424	$637,596	54.5%	$307,424	$637,596	$ -	$637,596	54.5%	$ -	$ -
2015	***345,029***	*324,185*	*669,214*	*56.8%*	***$7,090,127***	***345,029***	-	*345,029*	*100.0%*	-	-
2016	**298,129**	401,741	699,870	58.9%	401,741	699,870	296,753	996,623	102.1%	(296,753)	(287,554)
2017	**305,582**	418,168	723,750	60.9%	-	305,582	307,450	613,032	101.8%	110,719	100,739
2018	**313,221**	434,838	748,059	62.7%	(22,410)	290,811	302,086	592,897	101.5%	155,163	132,560
2019	**321,052**	452,221	773,273	64.4%	(21,295)	299,757	316,630	616,387	101.1%	156,887	125,853
2020	**329,078**	470,389	799,467	66.1%	(18,427)	310,651	330,793	641,444	100.8%	158,024	119,028
2021	**337,305**	489,393	826,698	67.7%	(15,149)	322,156	349,347	671,503	100.5%	155,196	109,763
2022	**345,738**	509,290	855,028	69.1%	(11,517)	334,221	367,339	701,560	100.2%	153,469	101,917
2023	**354,381**	530,144	884,525	70.5%	(7,499)	346,882	384,609	731,491	99.9%	153,035	95,426
2024	**363,241**	552,026	915,267	71.9%	(3,050)	360,191	410,973	771,164	99.7%	144,104	84,373
2025	**372,322**	575,018	947,340	73.3%	1,882	374,204	421,083	795,287	99.4%	152,054	83,594
2026	**381,630**	599,215	980,845	74.6%	7,359	388,989	435,539	824,528	99.2%	156,318	80,693
2027	**391,170**	624,726	1,015,896	75.8%	13,453	404,623	449,138	853,761	99.0%	162,136	78,588
2028	**400,950**	651,684	1,052,634	77.0%	20,253	421,203	466,737	887,940	98.8%	164,694	74,956
2029	**410,973**	680,244	1,091,217	78.3%	27,869	438,842	478,204	917,046	98.7%	174,171	74,431
2030	**421,248**	710,601	1,131,849	79.5%	36,435	457,683	498,679	956,362	98.5%	175,487	70,417
2031	**431,779**	742,994	1,174,773	80.8%	46,123	477,902	512,731	990,633	98.4%	184,140	69,379
2032	**442,573**	777,734	1,220,307	82.1%	57,160	499,733	530,348	1,030,081	98.2%	190,226	67,298
2033	**453,638**	815,229	1,268,867	83.6%	69,844	523,482	550,675	1,074,157	98.1%	194,710	64,680
2034	**464,979**	856,042	1,321,021	85.2%	84,593	549,572	569,469	1,119,041	98.1%	201,980	63,000
2035	**476,603**	900,978	1,377,581	86.9%	102,012	578,615	586,730	1,165,345	98.1%	212,236	62,159
2036	**488,518**	951,263	1,439,781	88.8%	123,027	611,545	612,458	1,224,003	98.1%	215,778	59,339
2037	**500,731**	1,008,907	1,509,638	90.9%	149,165	649,896	631,215	1,281,111	98.2%	228,527	59,009
2038	**513,250**	1,077,571	1,590,821	93.3%	183,224	696,474	658,220	1,354,694	98.4%	236,127	57,251
2039	**526,081**	1,165,035	1,691,116	96.0%	231,160	757,241	688,035	1,445,276	98.7%	245,840	55,968
2040	**539,233**	1,292,624	1,831,857	99.0%	309,332	848,565	725,441	1,574,006	99.3%	257,851	55,119
Totals	**10,183,405**	**17,688,075**	**$27,871,480**		**$9,162,836**	**$11,948,690**	**$11,880,676**	**$23,829,366**		**$4,042,114**	**1,657,985**

Bond Debt Service

The Village of Barrington Hills, Illinois
Proposed 2015 Taxable Pension Funding Bonds

Maturity Date	Principal	Rate	Interest	Debt Service
1/1/2016	$160,000	0.66%	$136,753	$296,753
1/1/2017	35,000	1.04%	272,450	307,450
1/1/2018	30,000	1.52%	272,086	302,086
1/1/2019	45,000	1.86%	271,630	316,630
1/1/2020	60,000	2.41%	270,793	330,793
1/1/2021	80,000	2.51%	269,347	349,347
1/1/2022	100,000	2.73%	267,339	367,339
1/1/2023	120,000	3.03%	264,609	384,609
1/1/2024	150,000	3.26%	260,973	410,973
1/1/2025	165,000	3.36%	256,083	421,083
1/1/2026	185,000	3.46%	250,539	435,539
1/1/2027	205,000	3.61%	244,138	449,138
1/1/2028	230,000	3.71%	236,737	466,737
1/1/2029	250,000	3.81%	228,204	478,204
1/1/2030	280,000	3.91%	218,679	498,679
1/1/2031	305,000	4.06%	207,731	512,731
1/1/2032	335,000	4.38%	195,348	530,348
1/1/2033	370,000	4.38%	180,675	550,675
1/1/2034	405,000	4.38%	164,469	569,469
1/1/2035	440,000	4.38%	146,730	586,730
1/1/2036	485,000	4.38%	127,458	612,458
1/1/2037	525,000	4.38%	106,215	631,215
1/1/2038	575,000	4.38%	83,220	658,220
1/1/2039	630,000	4.38%	58,035	688,035
1/1/2040	695,000	4.38%	30,441	725,441
	6,860,000		5,020,676	11,880,676

Inputs for GIC Asset Allocation

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Annual Update of Capital Market Assumptions

We present the Global Investment Committee's updated capital market risk and return forecasts for several major asset classes, incorporating enhancements to our forecasting methods. Our analysis suggests some changes to the strategic models that should be adopted as part of annual rebalancing.

This year, the most significant changes to our annual capital market assumptions involve our estimation of equity returns and our introduction of equity volatility assumptions for the seven-year strategic horizon. In the case of equity returns, we attempt to account for the distortions that global financial repression and Quantitative Easing (QE) introduced. This has the effect of crediting QE with some measure of success, allowing returns to normalize over the forecast period while mitigating the potential for overestimation when interest rates rise.

Executive Summary

Asset allocation is the single most important decision investors will make and, depending on the study, it accounts for as much as 90% of investment performance[1]. To develop its asset allocation advice, the Global Investment Committee (GIC) engages two steps. In the first step, we create a strategic asset allocation based on our seven-year outlook for risk and return. In the second step, called tactical asset allocation, we opportunistically overweight and underweight asset classes based on more short-lived or idiosyncratic factors such as sentiment, momentum and geopolitical developments. As is the case every year, our update explains both how we determine our seven-year outlook and what has changed from last year, and why, in terms of capital market realities and our process. We also describe the derivation of our extended, 20-plus-year horizon assumptions, which we call secular returns. These forecasts, which typically don't change much on a year-to-year basis, are inputs for estimating seven-year forecasts and also have important applications in their own right, such as for financial planning and institutional asset-liability management.

Year-to-year changes in our seven-year forecasts arise from two sources: market action—such as changes in interest rates, credit spreads and earnings—and changes to the forecasting models themselves. The notable market action of this past year included a US-led rally in global equity markets, a powerful resurgence of the US dollar, a modest recovery in the equity prices and macroeconomic fortunes of some of 2013's worst-performing emerging markets, collapsing commodity prices amid intensifying disinflationary forces and a powerful rally in the global bond markets. That rally highlighted the challenge of forecasting in a world of unprecedented Quantitative Easing (QE) and its associated distortion of asset prices.

Each of these factors played an important role in 2014's returns and each affects our 2015 forecasts. Their effects do not, however, account for all the year-over-year change in our forecasts because of changes to our methodology. For this update, we made both significant and minor changes to our forecasting models. The most significant change was in estimating the seven-year equity risk premium, in which we moved from estimating value based on forward equity multiples to doing so based on forward equity risk premiums and an earnings signal. The balance of market action and the methodology change led to slightly increased strategic equity forecasts and a sharp decline in our bond forecasts.

[1] The ultimate answer depends on how the question is interpreted and the data set used. The seminal studies in the field estimate 90+% of time series variation in return can be explained by asset allocation (e.g. Brinson, Gary P., L. Randolph Hood, and Gilbert L. Beebower. 1991 "Determinants of Portfolio Performance II: An Update." *Financial Analysts Journal,* Vol. 47, No. 3 (May/June):40-48). Regardless of interpretation or data, most studies find that asset allocation is the single most critical determinant of performance.

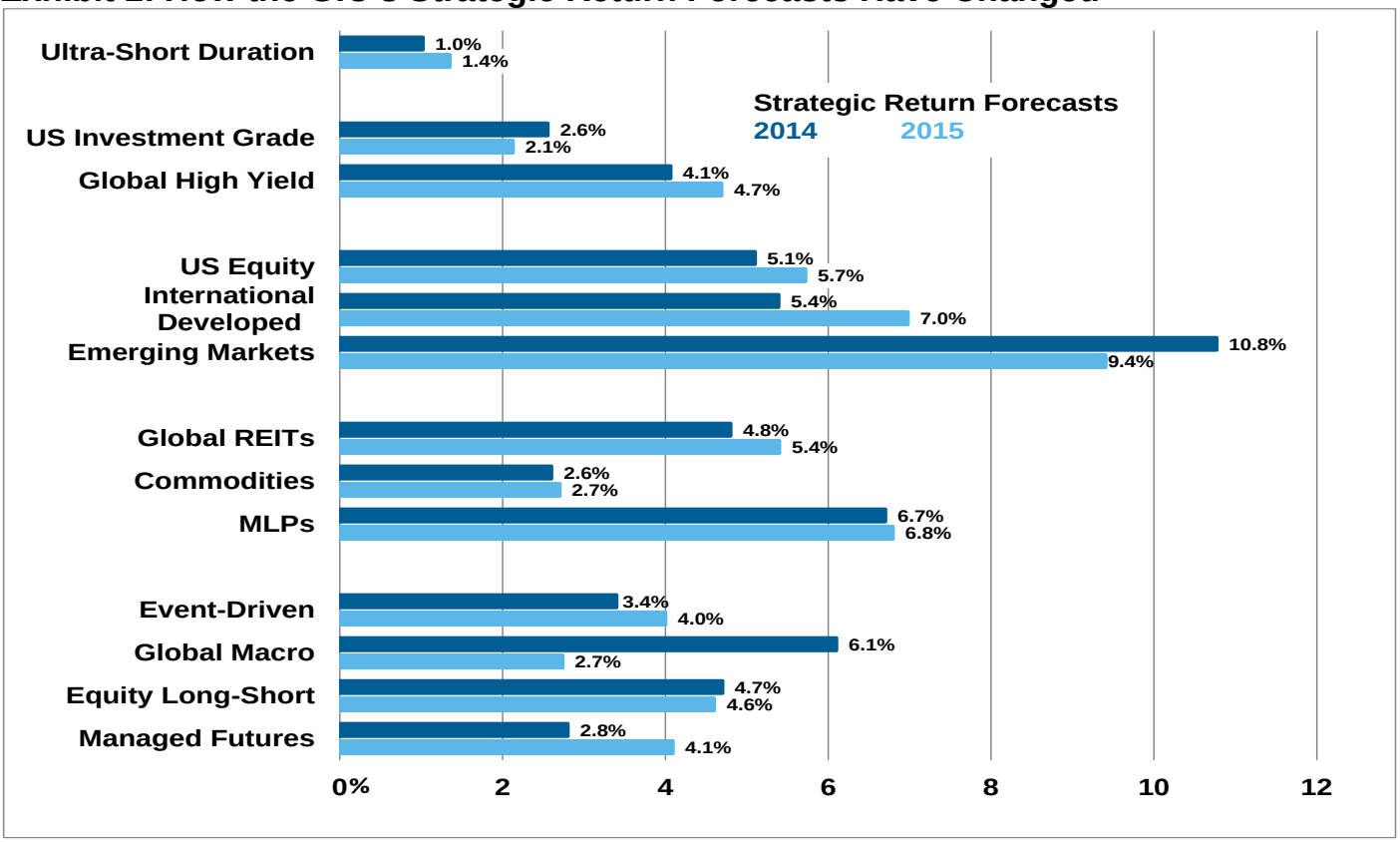
What's New in 2015

Our latest risk and return estimates for the secular and strategic horizon are listed in their entirety at the back of this document in Tables 1 & 2 (see pages 16 through 19). Exhibit 1 below summarizes some of the differences between last year's strategic forecasts and those of this year. As is clear from the chart, strategic bond-return forecasts declined this year while equity-return forecasts, with the exception of the emerging markets, increased. There are several reasons for this. First, the advance of equity prices in 2014 continued to occur at a somewhat faster pace than the advance in equity earnings, on average, leading to multiple expansion in the vast majority of markets. On the basis of valuation alone, equity estimates would have declined but, because of a change in our methodology, they have modestly increased.

Far less modest was the effect that the dramatic decline in interest rates had on the outlook for bonds. Indeed, given the bond-investor exuberance of 2014, one should expect to see double-digit interest rates and a hawkish Federal Reserve vowing to end persistent inflation. Instead, rates are trading through the zero lower bound in an environment in which central bankers are determined to reflate. The consequence, of course, is a woefully abysmal outlook for bonds and bond-linked investments going forward. As has long been the case, financial repression, global deleveraging and the attendant investor psychology continues to profoundly impact the capital markets outlook.

As we elaborate further in the "Strategic Assumptions" section (see page 11), the effect of market action alone would have led to lower return forecasts across the board but for a significant change to our seven-year equity risk premium forecasting methodology, which altered the picture for equities and some alternative investments that derive return from the public equity markets. Where previously we estimated the strategic equity risk premium (ERP) based on current forward price/earnings ratios (P/Es), we now base these estimates on

Exhibit 1: How the GIC's Strategic Return Forecasts Have Changed



Source:Morgan Stanley Wealth Management GIC as of Dec. 31, 2014
Ultra-Short Duration is represented by the US 3-month T-Bill; US Investment Grade by Barclays Capital US Aggregate Index; Global High Yield by Barclays Capital Global High Yield Index (hedged to USD); US Equity by Russell 3000 Index; International Developed by MSCI World ex-USA; Emerging Markets by MSCI Emerging Markets Index; Global REITs by FTSE EPRA/NAREIT Global Index; Commodities by the Dow Jones-UBS Commodity Index; MLPs by the Alerian MLP Index; Event-Driven by HFRI Event Driven Index; Global Macro by Credit Suisse Global Macro Hedge Fund Index; Equity Long-Short by HFRI Equity Hedge Index; Managed Futures by BarclayHedge BTOP50 Index.

two factors: current forward equity risk premiums (FERPs), defined as the equity earnings yield less the current government bond yield, and seven-year historical earnings growth. The change is based on the fact that we found equity multiples less effective in forecasting swings in equity premiums amid very low interest rates and very low inflation; in these environments, multiples are both theoretically more rational and empirically more sustainable than they have been in more normal conditions. Equity risk premiums, by contrast, also provide strong historical performance but appear more reasonable in an environment in which equities are inexpensive relative to bonds—especially in the non-US developed markets.

We also enhanced the equity risk premium model by incorporating a signal based on earnings growth. Of course, higher contemporaneous earnings growth corresponds to higher equity returns in the data, but leveraging that relationship would require knowledge of what earnings growth will be. We claim no special insight on that question, but instead look to exploit the fact that higher historical earnings growth tends to portend lower future earnings growth and vice versa. Essentially, we factor the historical tendency for earnings growth to revert to the mean independent of the mean reversion observed in valuations. This enhancement to the model lowers our prospective equity-risk-premium forecasts when historical earnings growth has been high and vice versa. We find that it substantially enhances model performance in periods in which equities are extremely expensive.

The precise specifics of this methodology change and its implications are detailed in the Strategic Assumptions section. Its principal effect was to increase the equity forecasts relative to where they would have been with the prior methodology. Also described is a significant change to our approach for forecasting equity volatility over a strategic horizon, based on the empirically robust volatility cycle. Finally, as detailed in the "Secular Assumptions" section, the approach to forecasting alpha for hedge fund strategies and baseline secular volatility and correlation was also enhanced. The effect of these new methodologies is generally to lower alpha forecasts for the hedge fund sector and raise secular forecasts of baseline volatility for most asset classes.

Using and Understanding GIC Capital Market Assumptions

The strategic and tactical asset allocation advice the GIC provides, as well as guidance for longer-term investment problems like financial planning, are based on research applicable to three distinct time horizons. Secular risk and return estimates pertain to long-term asset-class performance characteristics. Strategic return estimates are calibrated to a seven-year horizon and consequently take current market levels and valuations into account. Finally, the GIC's tactical asset allocation recommendations are designed to capitalize on perceived opportunities in the capital markets in a six-to-18-month horizon. At times, these distinct time horizons may lead to views and positions that may appear to be at cross-purposes with one another. However, such differing scenarios are actually an intended consequence of an approach that seeks to leverage insights into dynamics that operate across varying horizons in a single, integrated framework. For example, while we may choose to overweight an attractively valued asset class on a strategic basis, we may decide based on market sentiment that, in the shorter term, the market is likely to cause that sector to underperform. So while strategic circumstances will lead us to prefer more attractively valued asset classes, our tactical asset allocation will leverage the insight into sentiment to hopefully improve the performance of that decision relative to what operating on the basis of a valuation signal alone would provide. What's more, value has a well-earned reputation as a poor timing tool.

For those applying the GIC's capital market assumptions to financial planning or other portfolio-construction uses, as a general guide, if the investment horizon is 10 years or fewer, the strategic returns are appropriate inputs; for time horizons greater than 10 years, secular returns—or better yet, blended returns—are more appropriate. For those using these inputs in a portfolio-optimization context, we note that our estimates represent annualized, or geometric, returns, as this is conceptually consistent with the holding period associated with strategic allocations. However, most vendor-optimization tools assume that the return inputs are arithmetic averages. Consequently, the tools typically apply a downward adjustment to account for the fact that annualized geometric returns are typically lower than average arithmetic annual returns because of the effects of compounding. This can affect optimization results. Therefore, in the tables at the back of this document we also provide the approximate annual average return estimates that correspond to our annualized return estimates.

An Approach Based on "Fair Value"

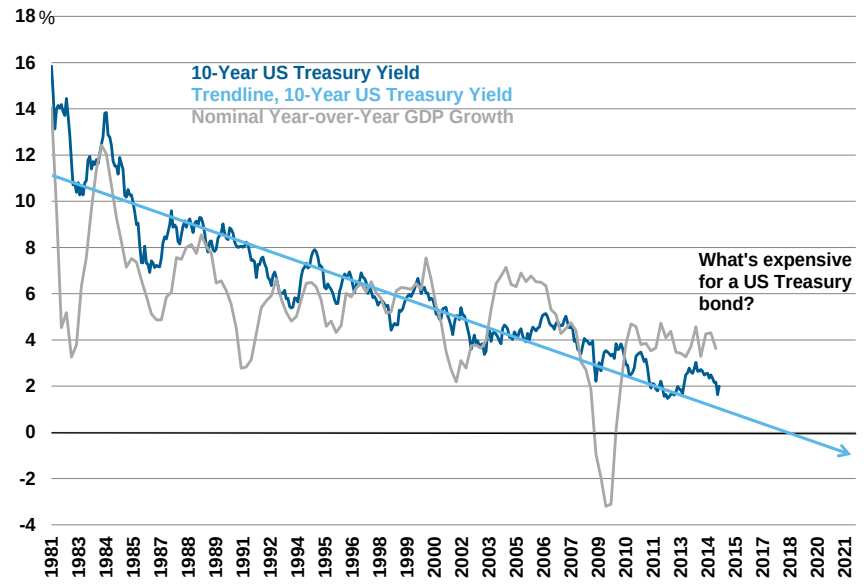
The GIC forecasts seven-year asset-class returns first by estimating "fair value" required rates of return for the major asset classes and then by calculating a horizon return assuming a transition from current markets to fair value. If you assume investors, on average, earn what they require—that, on average, asset classes trade at fair value—realized returns will equal required returns. Such an assumption is a poor basis for forecasts over a cycle-length horizon, because in such windows initial valuations play a very large role in realized returns. Over a multidecade, multicycle horizon such as what we use for our secular return forecasts, it is more reasonable to assume markets average out at fair value. Consequently, our secular return forecasts are simply our estimates of what fair value rates of return for the next several decades are likely to be.

This framing helps to explain our approach to strategic forecasting, which arises out of the calculation that markets start where they are and tend toward fair value. We assume a seven-year time horizon for that transition based on the trend in business-cycle length since the Great Depression, which is slightly greater than seven years, and the average length of time valuations take to mean revert, which is slightly less than seven years. Notwithstanding all the research that goes into it, our strategic returns are actually more sensitive to current valuations than to our long-term estimates of where pricing is headed. In fact, under some circumstances, initial valuations can be the only thing that matters. As we will explore later in the Strategic Assumptions section, it turns out we get nearly the same strategic return estimate for the US Treasury market when we assume the 10-year yields goes to 7% as we do when we assume it goes to 3%. That is largely a consequence of the ratio between the duration of the US Treasury market, which is around 5.5years, and the length of our strategic horizon, which is seven years.

In most instances, however, a forecaster's assumption about where valuations are headed does matter to their return estimate—in some cases a lot. This means estimating what fair value is and how and when markets will progress toward it isn't optional coursework. Be that as it may, we continue to see reluctance in the investment industry to making such calls, and nowhere more so than when it comes to interest rates. Indeed, capitulation on rates has become a common approach to forecasting—not to mention a common trade—and it isn't difficult to see why. It has now been 33 years since interest rates peaked at the height of former Federal Reserve Chairman Paul Volcker's war to save capitalism from inflation, and the trend that began then remains as locked in as ever (see Exhibit 2). All this is notwithstanding a continued, and increasingly robust, economic expansion.

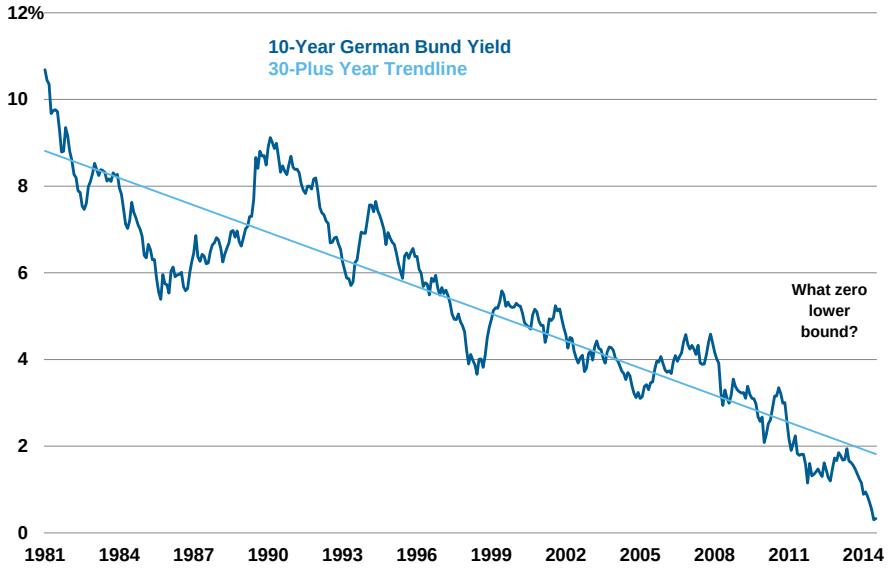
Indeed, if that trend is being challenged anywhere, it is in Germany, by the

Exhibit 2: Growth, or the 30-Year Plus Trend?



Source: Bloomberg as of Dec. 31, 2014

Exhibit 3: 10-Year German Yield Approaching Zero



Source: Datastream as of Dec. 31, 2014

breakout to the downside to the point where yields are at levels previously thought inconceivable (see Exhibit 3) or in Switzerland, where yields have blown past the inconceivable on their way to levels previously understood to be impossible. Long cycles—in interest rates, commodity prices, exchange rates or inflation—are a feature of capitalist economies and financial systems. Indeed, the current secular interest rate trend followed on the heels of a 30-plus-year upward secular trend that began in the Truman administration. Thirty-plus years that took 10-year US Treasury rates to 15% from 2% beginning, coincidentally enough, at the end of a long period of disinflation and, yet more coincidentally, during a time of

deleveraging and financial repression. Considering how difficult it can be to make investors see through short cycles, however, longer ones have a way of imbuing market participants with an almost religious belief in their indefatigability. With investors in some locales now paying in nominal terms to lend their money for five to 10 *years*, never has this been more evident.

Amid the chaos and conundrum it is easy to overlook the forces of macroeconomic gravity that govern these dynamics. As Nobel laureate Milton Friedman once observed, "What is unsustainable will not be sustained." From both a theoretical and, as Exhibit 2 illustrates, empirical perspective, we believe the present interest rate trend is only sustained at this moment because it needs to be—because central bankers understand that deleveraging requires rates to be held well beneath the growth in nominal gross domestic product (NGDP) when leverage is large. However, the arrangement is not sustainable and therefore will not be sustained. As the marriage of the gray and dark blue lines indicate, it is difficult to reconcile near-zero or negative long-term interest rates with ongoing growth in NGDP. In our view, rates ultimately need to converge toward growth and not the other way around. Growth is driven by largely independent variables like working-age population and productivity. While debt produces misallocation of capital and excess capacity, and thus deflationary forces, ultimately resource scarcity and inflation serve to rebalance markets, which is likely to lead to some normalization in interest rates.

All of which is to say, as difficult as it is to forecast a fundamentally derived fair value—let alone the path markets will take while averaging it—sidestepping that difficulty is likely to harm the accuracy of forecasts. That is as true for interest rates as it is for credit spreads as it is for equity valuations, albeit the latter's empirically shorter cycles make it more difficult for investors to forget their existence. As we will see later, a significant component of what accounts for our strategic return estimates, which are the forecasts that inform our strategic portfolio recommendations, can be accounted for by our use of estimates of unconditional fair-value rates of return, as well as the current market conditions considered in building them.

Secular Assumptions

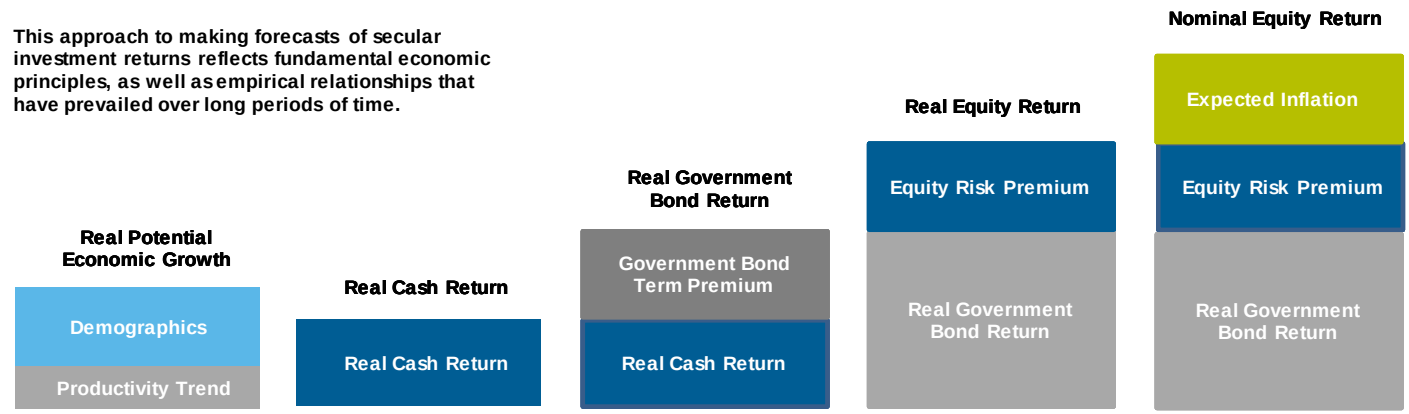
As previously discussed, secular returns are estimates of the fair-value required rates of return that, given the tendency of valuations to mean revert, we forecast will prevail over a multicycle period. To derive our secular return estimates, we employ a building-block approach that reflects fundamental economic principles and empirical relationships that have prevailed over long periods of time (see Exhibit 4).

CASH. The starting point for the first building block—the real (inflation adjusted) return on cash—is actually a forecast of an economy's "trend" or potential economic growth rate. This trend growth rate is derived from forward-looking estimates of productivity growth and growth in labor-force hours worked. For the developed economies, we source this information from the Organisation for Economic Cooperation and Development (OECD). To account for the theoretical and empirical gap between real-cash interest rates and trend growth rates, we subtract the spread observed since the demise of the Bretton Woods System—the post-World War II global monetary regime based on the gold standard and fixed exchange rates—after President Nixon closed the gold window in August 1971. We do not exactly use the evenly weighted historical average but rather a calculation that weights more recent data more heavily, which is known as exponential smoothing.

For the US, assuming a potential growth rate of 2.3% and real-cash interest rate discount aggregate growth of 1.3%, our estimate of the secular real-cash return is 1.0%. Incorporating a secular inflation assumption of 2.0%—also sourced to the OECD—our estimate of the secular nominal cash interest rate is 3.0%.

SOVEREIGN BONDS. In the next building block, we derive secular return estimates for sovereign bonds by adding country-specific term premiums to our

Exhibit 4: A Building-Block Approach to Secular Forecasts



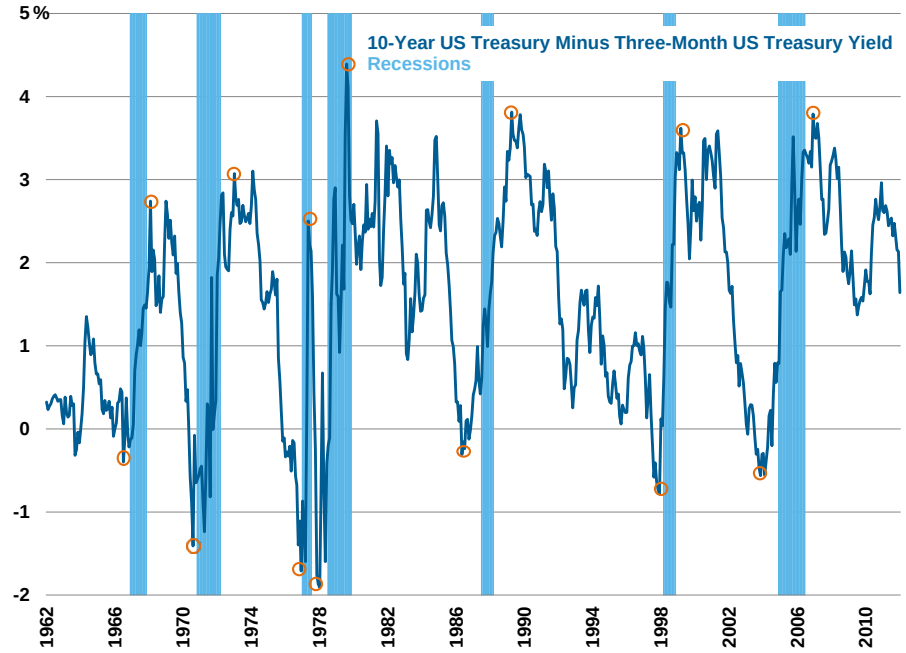
Source: Morgan Stanley Wealth Management GIC

cash estimates. The term premium of government bonds is a function of investors' perception of interest rate risk, which arises from uncertainties about real economic activity, inflation, the direction of monetary and fiscal policies, the balance of payments accounts, etc. Empirically, the term premium is sensitive to cyclical factors that tend to wash out over the longer period of our secular horizon, as Exhibit 5 summarizes succinctly.

Depicted there is the spread between the yield on 10-year US Treasury bonds and three-month US Treasury bills—as well as incidences of US recessions—during the last 50 years. Note the extremes of the term-premium bracket at the beginning (negative term premiums) and the end (large positive term premiums) of recessions in each instance during the period. In other words, the term premium at any given point in time is highly sensitive to where we are in the business cycle. Still, while these fluctuations are essential to the ultimate performance differential between bonds and bills over a cycle, as we will illustrate in greater detail later in this document, they are much less pertinent to determining the same over a multidecade, multicycle secular horizon. For purposes of the secular estimates, our interest lies in forecasting the *average* of the wavy blue line depicted in Exhibit 5 over the coming decades for each of the markets we forecast.

Our forecast of the future average term premium is based on term structure theory or, namely, the expectations theory of interest rates and the liquidity preference theory of interest rates. Expectations theory says that the term premium is based on what investors, on average, believe about future interest rates, while liquidity preference relates to the risk differential between holding longer- and shorter-term bonds. The factor that best captures the influence of expectations on term premiums in our model is nominal cash interest rates, on the grounds that lower interest rates positively skew the potential future evolution of rates, and higher interest rates negatively skew it. Our

Exhibit 5: US Term Premium Reflects Midcycle Dynamics



Source: Bloomberg as of Dec. 31, 2014

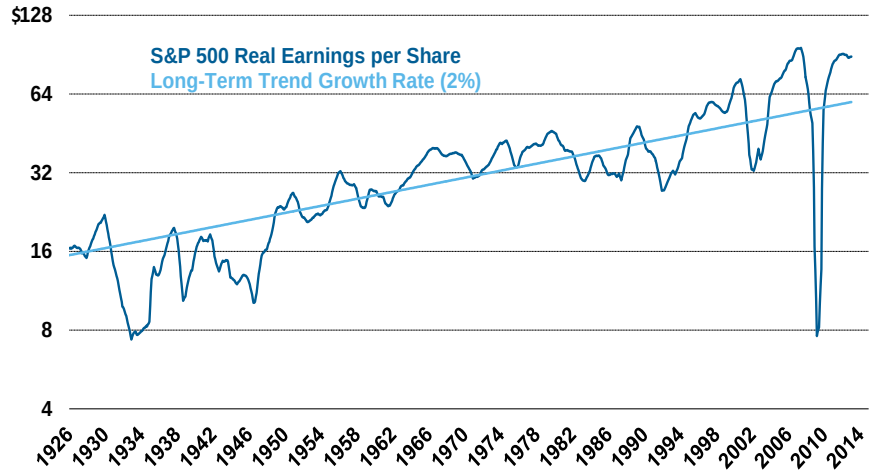
model's second and third factors seek to measure liquidity preference, which is the preference to avoid inflation and interest rate risk. Because higher expected inflation tends to correlate strongly with volatility in the inflation rate, the second factor in the model is the forecast level of long-term inflation rates. The final factor, sovereign credit ratings, seeks to quantify debt-sustainability issues that can, at the extreme, trigger default and capital flight.

Our secular sovereign bond return estimates incorporate the effect on returns of expected default and recovery rates based on historical experience, using transition, default and recovery data provided by Moody's Investors Service. Although debt-restructuring concerns would no doubt lead to a market disruption, our work indicates that factors such as the level of short-term rates and expected inflation play a greater role in determining bond term premiums. With that said, our default and recovery-rate assumptions lead to a small reduction in the forecast returns for highly indebted nations like Japan and Italy, and much smaller reductions for most other developed sovereigns.

EQUITIES. The final building block is our secular estimate of the equity risk premium over sovereign bonds. To estimate this, we use a discount model based on total cash flow to shareholders, which takes into account both dividends and net share issuance, i.e., the effect of buybacks. The model estimates the discount rates investors apply to anticipated cash flow to equity investments over and above sovereign bond yields on a monthly basis going back to 1926 for US equities. To accomplish this, the model requires assumptions of earnings-per-share (EPS) growth and payout rates, which we base on the long-term history. For the US, historical-trend real EPS growth has been 2.0% since 1926 (see Exhibit 6, page 8) and the payout rate has been 59.5%.

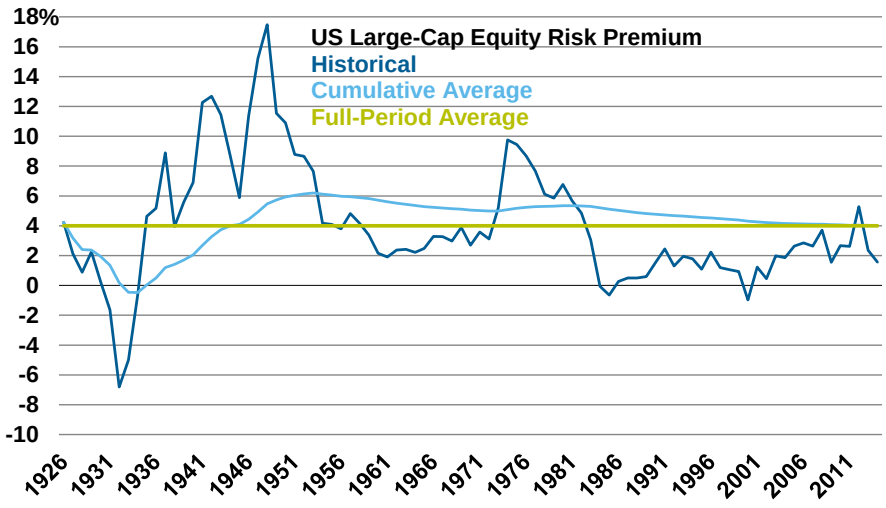
Finally, to derive our estimate, we take the average of the time series of ERPs we have calculated, which though constantly fluctuating remains at 4.0% for US large-cap equities in 2015 and 4.2% for the broader market (see Exhibit 7, page 8). Applying this risk premium to the return for the 10-year US Treasury bond brings

Exhibit 6: Trend EPS Growth Has Been 2% per Year



Source: Robert J. Shiller of Yale University as of June 2014

Exhibit 7: Equity Risk Premium for US Large-Cap Stocks Averaged 4%



Source: Datastream, GFD, Robert J. Shiller of Yale University, Morgan Stanley Wealth Management GIC as of June 2014

our estimate of the secular real return on US equities to 6.9%. Incorporating our secular inflation assumption, the estimate of the secular nominal return on broad US equities is 8.9%.

INVESTMENT GRADE BONDS. Investment grade is a weighted average of sovereign, agency, corporate and securitized debt. Our estimates of return for the nonsovereign sectors of the market are based on long-term historical average credit spreads, default probabilities and recovery rates. In each case, we calibrate the historical data based on current credit-rating profiles and transition matrix data provided by Moody's Investors Service. For US investment grade, our estimate of the secular real investment grade bond return is 2.5%. Incorporating a secular inflation assumption of 2.0%, our nominal secular forecast for US investment grade bonds is 4.5%.

INFLATION-LINKED SECURITIES. We assume that, over extended periods of time, markets do not display systematic biases in setting inflation expectations through the pricing of inflation-linked securities relative to standard sovereign debt. As such, we expect similar turns over time between nominal and inflation-linked government securities.

US LARGE-CAP, MID-CAP AND SMALL-CAP STOCKS. In order to refine our US all-cap equity estimate into the three standard capitalization categories, we examine the expected volatility and correlation of these sub-asset classes and set relative-return premiums for mid, small and large caps to levels commensurate with their differing risk profiles. Our secular return estimates for mid caps and small caps are 50 basis points and 100 basis points over large caps, respectively. The 8.9% return estimate for US all caps represents the weighted average of the three size categories, with percentage allocations to each based on their share of the capitalization of the MSCI USA Index—72% large cap, 14% mid cap and 14% small cap. The large-, mid- and small-cap secular return forecasts are 8.7%, 9.2% and 9.7%, respectively.

US EQUITY STYLES. We do not differentiate between growth and value in our secular forecasts, given the theoretically thorny nature of doing so over such a lengthy horizon. By consequence, estimates of the secular growth and value return are the same within each of the three capitalization categories.

EMERGING MARKET BONDS AND STOCKS. Our methodology for the emerging markets mirrors the building-block approach we use for developed markets. That is, we derive secular cash, bond and equity return estimates in local currencies, using the same fundamental inputs. For our first approximation of cash returns, we derive long-term growth estimates for emerging economies based on an assumption of "catch-up" productivity growth to the level of the US over several decades, as well as estimates of long-term, labor-force growth provided by the United Nations. The adjustment we apply to our projected trend growth rates to derive our real cash return estimates for the emerging markets is -2.8%. As with the developed markets, this estimate places greater weight on more recent experience.

For country-level secular inflation estimates, we use the latest survey results from Consensus Economics, an independent forecasting firm.

Our aggregate emerging market return assumptions represent weighted averages of our country-level assumptions. Country weights can vary considerably depending on whether they reflect share of global GDP (used for aggregate cash return estimates), share of the benchmark bond index (used for aggregate bond return estimates) or share of the benchmark equity index (used for aggregate equity return estimates). For emerging market bonds denominated in local currencies, we estimate a risk premium of 150 basis points over US Treasuries; this includes a return premium of 80 basis points over US-dollar emerging market bonds, reflecting the effect of anticipated currency appreciation over time. For emerging market stocks, the combination of higher estimated cash rates, inflation and bond term premiums suggests a higher secular equity return than for developed markets. Our estimate of the secular nominal return on emerging market stocks is 9.5%, compared with 8.8% for developed-market stocks.

ALTERNATIVES INVESTMENTS. Many of the models we use to compute return estimates for alternatives investments were developed in coordination with our colleagues at Alternative Investment Partners in Morgan Stanley Investment Management. In several instances, these models leverage our traditional asset-class return estimates, capturing the relationships between traditional and alternative asset classes.

GLOBAL REITs. Our return estimates for global listed real estate, including real estate investment trusts (REITs), are driven by our global equity market estimates, with adjustments to account for REITs' lesser market capitalization and value orientation relative to that of small-cap stocks. Our secular return forecasts for global listed real estate and US REITs are 7.8% and 7.7%, respectively.

MASTER LIMITED PARTNERSHIPS (MLPs). Our return estimates for midstream energy MLPs are primarily driven by our estimates for global equity markets in general and the energy sector in particular, as well as other high-yielding asset classes like REITs. Our estimate is also adjusted to reflect the idiosyncratic tax advantage of this asset class given its ability to avoid corporate tax liability with its pass-through partnership structure. Our secular MLPs return forecast is 11.3%.

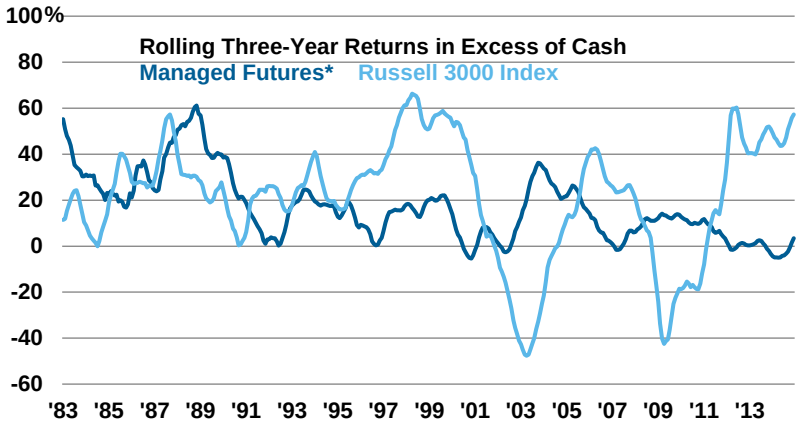
COMMODITIES. To determine forecasted return relative to commodity futures investment, we deconstruct historical performance across sector and source. For spot commodity-price appreciation, we assume inflation, which is roughly in line with historical estimates, depending on how sectors are weighted (e.g., agriculture has not historically kept pace with inflation while precious metals have increased at a faster pace). Another component of the return to investing in commodities futures is the cash return on the collateral. For our secular estimates, this was equal to 3.0%.

The final component of investing in commodities futures is the return that gets generated when commodities futures contracts are "rolled"—selling the near-term contract before it matures and buying a longer-dated one as necessary to maintain exposure. To estimate this, we use historical roll returns adjusted to account for the performance differential between the Dow Jones-UBS Commodities Index and the Dow Jones-UBS Roll Select Commodities Index. The Roll Select index is simply the standard index with an overlay to select those contracts whose futures prices are most favorable to investors with long positions, as is more appropriate for return-sensitive investors (as opposed to commodity consumers). This makes our secular forecast of diversified commodities 4.3%, which is unchanged from last year.

HEDGED STRATEGIES AND MANAGED FUTURES. Unlike the other investments discussed in this work, hedged strategies and managed futures are not themselves asset classes but investment strategies that have shown the ability to earn excess returns, as well as provide diversification when held alongside traditional assets. Because of this, there are questions specific to these strategies that require attention.

Return estimates require decomposing expected returns into their fundamental sources. Certain strategies, including relative value, event driven and equity long-short are more directional, and as such we utilize betas and correlations to equities and bonds to determine return forecasts. Other strategies, including global macro and managed futures, are nondirectional and source their returns to more idiosyncratic exposures, or "alpha."

Exhibit 8: Excess Returns From Managed Futures and the Broad US Equity Market Have Offset Each Other



*Represented by the BarclayHedge BTOP50 Index.
Source: Bloomberg as of Dec. 31, 2014

These return streams tend to target excess returns over cash with low volatility and we model them as such.

Additionally, measuring the broad performance of these strategies has difficulties not encountered among traditional asset classes. Here, private indexes rely on the self-reporting of independent investment managers, which can impart selection and survivorship bias from selective disclosures of existing and now-extinct funds. Further, managers of hedged strategies often hold less-liquid securities, and so reported returns appear excessively "smooth" due to lagging price discovery. We use statistical methods to mitigate these affects to establish returns as closely aligned with their true economics as possible.

By allocating to traditional assets in a manner that differs from traditional buy-and-hold, these strategies attempt to add value in a manner that diversifies core portfolio holdings. An example of this is shown in Exhibit 8 (see page 9), which plots rolling three-year returns to managed futures strategies against those of equities; notably, managed futures strategies have historically added value, while outperforming during periods when equities have suffered. Our secular return forecasts for hedged strategies and managed futures are 5.8% and 5.7%, respectively. (Please see the Appendix on page 25 for an explanation of hedge fund index performance biases.)

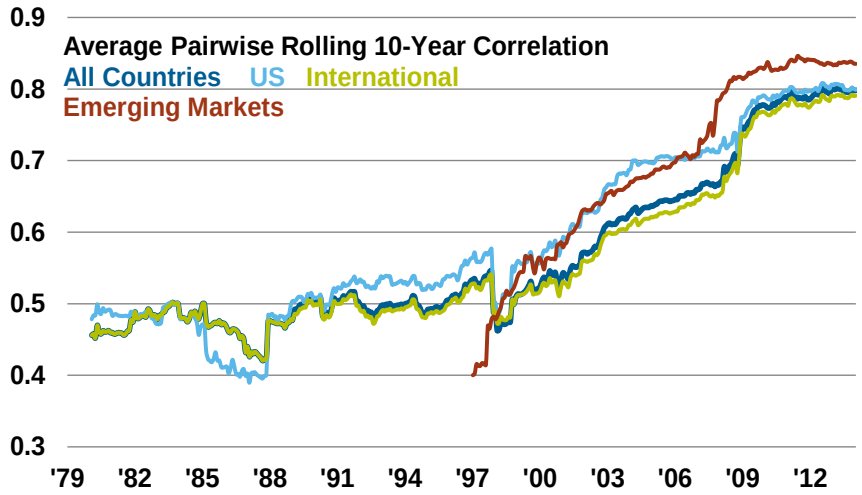
PRIVATE EQUITY AND PRIVATE REAL ESTATE. As with hedge funds, our approach in deriving return estimates for private real estate and the two major components of private equity—leveraged buyouts (LBOs) and venture capital (VC)—involves first redressing biases in the data. We accomplish this in two stages: first, through the elimination of the kind of return smoothing that is not seen in public markets; and, second, through a two-stage regression to quantify measurement error. In this second step, we simultaneously quantify the fundamental drivers of return to these asset classes, including other traditional and alternative asset classes. We model the returns to illiquid asset-class returns through these drivers, which include inflation volatility, GDP growth (which, unsurprisingly, private comer-cial real estate is particularly sensitive to), other illiquid asset classes (to account for variations in the liquidity premium) and publicly traded versions of the asset classes (such as public equities and REITs).

For the purpose of asset allocation, we combine LBOs and VC into one broad category—private equity—our secular return for which is 11.5%. For private real estate, we estimate secular returns of 5.8% for US and 5.1% for global. We expect private equity and real estate to provide important benefits to a well-diversified portfolio, both due to the additional return they add through the illiquidity premium investors receive in those asset classes and to their diversification relative to traditional asset classes.

For a variety of reasons, alternatives present risks beyond what volatility estimates would suggest. For example, alternative asset returns display more downside "event risks" than traditional asset classes. In addition, investments that lock up capital for extended periods impose costs on investors, such as limiting their ability to rebalance to lock in gains or to capitalize on dislocations during periods of stress in financial markets when available returns on other asset classes become more attractive. We recommend accounting for these considerations when making portfolio-construction decisions as we do for our model portfolios.

VOLATILITY. Volatility is the annualized standard deviation of monthly returns, i.e., a statistical measure of the variability of returns around their average value. We forecast the volatility of returns along with other moments of the return distribution to quantify the risk associated with investing in each asset class. For the traditional asset classes, we base our projections of volatility on the historical data. While in prior year's updates we had based our forecast on a rolling 20-year average historical volatility, this year we seek to extend our dataset deeper back into history wherever possible. The rationale for this change is that we feel a longer history is more representative of the regime we anticipate going forward than the shorter one. For example, as discussed at length in this document, interest rates have been falling on a secular basis for well over 20 years, and bond market volatility has been exceptionally low by

Exhibit 9: Correlation Between Regional Equity Markets Has Been Rising Steadily Since the Late '90s



Source: FactSet, Bloomberg, Morgan Stanley Wealth Management GIC as of Dec. 31, 2014. US is represented by the MSCI USA Index; emerging markets is represented by the MSCI Emerging Markets Index; International is the average correlation among Europe ex-UK, UK, Japan, Asia Pacific ex-Japan and Canada; All Countries is calculated as the average of all of the above regions.

historical standards during this period. Going back further in time increases our investment grade bond volatility forecasts from around 3% to around 5%, which is a very considerable difference meaningful for portfolio-construction decisions.

CORRELATION. An important input when constructing efficient asset-class blends is estimates of the degree to which returns among various asset classes influence one another or, at least, are jointly determined. The effectiveness of portfolio diversification largely hinges on the degree to which the asset classes that are blended together to produce it have a low correlation with one another. As with volatility, prior to this year we have forecasted the correlation between traditional asset classes based on 20 years of historical data. Unlike volatility, however, correlation appears to have trended significantly over time toward higher levels, which calls this approach into question. As can be seen in the rolling 10-year correlations (see Exhibit 9, page 10), correlation between regional equity markets has been rising consistently since the late 1990s. In our view, this move is not an aberration so much as a direct consequence of fundamentals such as globalization and the trend toward free capital flows. As this is the case, we are hesitant to apply simple historical correlations, which are substantially lower and imply greater regional diversification than we believe investment in global equities implies. As such, both our secular and strategic correlation forecasts place a much higher weight on recent than historical data. Note that both this adjustment and the adjustments made to the secular and strategic equity volatility forecasts lead to higher forecasted volatilities, in particular for equities, and lower forecasted Sharpe ratios for our portfolios.

Because of the generally high correlations among traditional equity sub-asset classes, investors should carefully consider including alternative investments when constructing long-term investment portfolios. In many cases, correlations between alternative investments and traditional asset classes are lower over time. In setting our volatility and correlation estimates for alternative investments, we apply significant statistical adjustments to correct for distortions typically associated with the indexes of returns for hedge funds, private equity and private real estate.

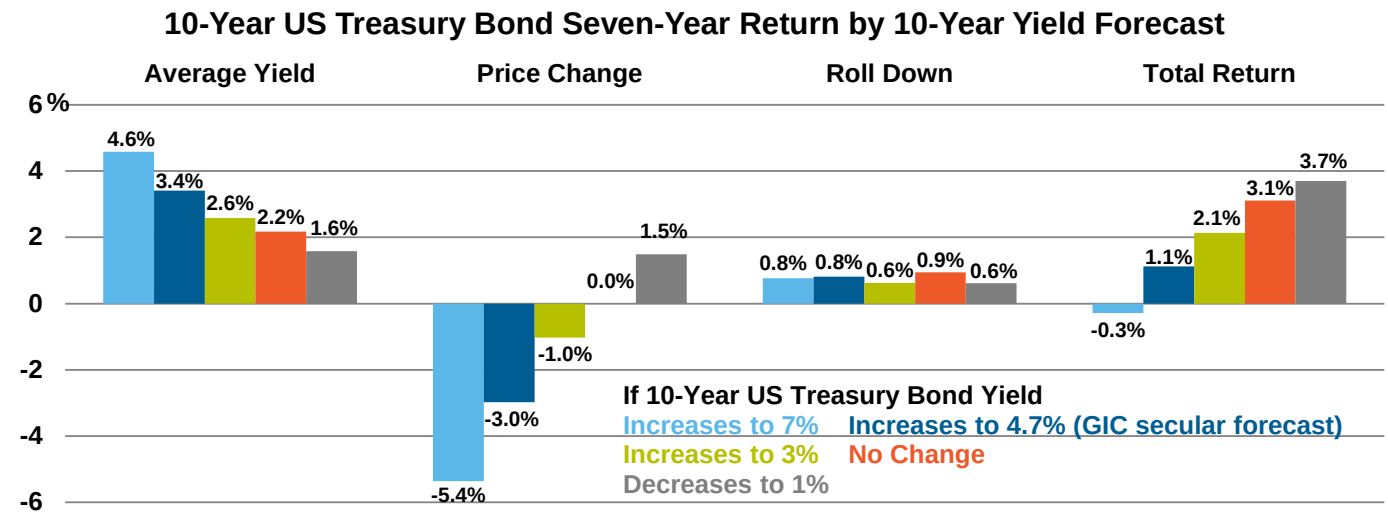
For example, a private equity fund may invest in infrequently priced securities and rely on book value, appraisals or other estimates to value them and to measure performance. Thus, price estimates tend to understate the true volatility of funds, as well as overstate the diversification benefit of combining them with traditional asset classes. The adjustments we make to offset the effect of stale prices and correct for outliers typically increase volatility and correlation estimates for hedge funds, private equity, private real estate and private real estate funds.

Strategic Assumptions

As discussed previously, strategic risk and return assumptions are a core input into the construction of the GIC's strategic model allocations. They are estimated based on a horizon return calculation that begins in the present, with current market conditions—interest rates, spreads, earnings yields—and transitions from there to our secular estimate of fair value by the end of the seven-year strategic horizon. The choice of a seven-year horizon is not random. We use it because it is both consistent with the trend in business-cycle length since the Great Depression, and because, on average in the markets we have studied, departures from fair value take about seven years to unwind.

Assuming a transition from existing pricing to some estimate of fair value for a given horizon implies that asset classes judged to be undervalued will have higher strategic than secular returns, and vice versa, as is consistent with the empirical evidence showing that above- or below-average valuation tends to presage a

Exhibit 10: Forecast 10-Year Bond Returns by Interest Rate Scenarios



Source: Bloomberg, Morgan Stanley Wealth Management GIC

below- or above-average return. The challenge of process arises from the sensitivity of our estimates to factors that are more difficult to forecast than the existence of a strong relationship between initial valuation and subsequent return. In particular, different assumptions of what fair value is and the path markets take to get there give differing estimates of return.

In years past, we have reported on the sensitivity of strategic returns to assumptions about the path and timing of transitions to fair value and generally found that sensitivities were modest with the exception of extreme assumptions, such as the presumption that equities or bonds complete the transition to fair value within a few months or only begin to transition at the end of the horizon. Now we ask, what about the sensitivity of our forecast to ever-contentious estimates of what constitutes fair value? Exhibit 10 (below) investigates that question in the context of 10-year US Treasury bonds in which, after a 30-plus-year one-way ride, forecasters are perhaps most gun-shy. Depicted there are returns to US Treasuries under three different rate-normalization scenarios: one using the GIC forecast for the horizon of 10-year Treasury yields and one each for higher and lower forecasts of rate normalization. The other two scenarios depicted are more consistent with the secular bull market trend; the first in which rates don't change from their present levels, and the second, in which rates continue to fall, in this case all the way to 1%.

Looking at the total-return bars at the far right, one notable takeaway is that the forecast range of returns, while wide, is less than might be anticipated for a long-term bond given the wide range of rate scenarios (spanning from 1% to 7% in terminal yield). The rationale here is that, in the bars to its left in particular, the effects on price returns and average yields an investor receives over the seven-year horizon are somewhat offsetting. The dynamic this reflects is that 10-year Treasuries, like all investments, throw off cash flows over time, in their case as issues make coupon payments and eventually mature. At least for the purposes of calculating index or asset-class returns, these cash flows are reinvested and, in the case of higher forecasted returns, done so at higher yields. In this example, the effect on price change for different 10-year bond yields is substantially more sensitive than the effect on average yield (as you can see by the rate of change going from one bar to the other in the two different sets). Thus, the offset is imperfect and returns increase as the yield forecast decreases.

The degree of the offset depends on the investment in question and the window over which it's being measured. If we ran the above example for the US Treasury market as a whole, the three rate-normalization scenarios would have the exact same return forecast of 1.7%. The outlier would be the scenarios for which rate normalization doesn't happen at all, wherein returns would be approximately 2.4%—showing once again that it's as least as easy to get too far out over your skis skiing too passively as it is too aggressively. Why the difference in sensitivity to forecasts? The duration of the US Treasury market as a whole at approximately 5.5 years is substantially lesser than it is for the 10-year bond, which reduces the sensitivity of price change to the rate forecast. Another component of the answer here is the length of the window in which returns are being measured. If we look again at the chart, while it is the case that the scenario in which the 10-year Treasury increases to 7% means much lower returns than the one in which the rate drops to 1%, consider the picture in the out years, where one investment is yielding 7% and the other 1%. The longer the time period, the more average yield dominates, until such time as average yield is the return.

For our seven-year strategic horizon, as GIC member Martin Leibowitz and colleague Anthony Bova have found[2], it turns out that initial yield is the primary determinant of returns. Given that initial yields can be measured, and horizon yields must be forecasted and are thus subject to error, this increases our confidence in the insights we can glean through our framework about the way in which initial conditions and mean reversion toward fair value should affect returns. The principles at work in all investments are the same as those examined here, albeit with less importance reserved for average yield with extremely long-duration securities like equities. As that goes, in the section below we detail our revised strategic outlook for the other major asset classes we forecast.

CASH AND BONDS. As anticipated at this time last year, the Federal Reserve did not raise interest rates in 2014, which meant that money-market investors earned nothing on their savings for the sixth straight year. Looking forward, the picture is different than it was last year at this time. With a more clearly self-sustaining economic expansion under way and a strengthening labor market signaling potential wage pressures, the outlook for rates as agreed by many forecasters, including the Federal Reserve itself, is that we will see rates lift off the zero lower bound at some time in 2015. By consequence of this substantially more closely anticipated liftoff in rates relative to 2014, as well as due to the increase in our secular estimate of fair value cash interest rates over last year, from 2.7% to 3.0%, our strategic cash return estimates for the US dollar increased 40 basis points this year to 1.4% from 1.0%.

The story was different for the other major developed market currencies, many of whose economies lay in the eye of 2014's intensifying disinflationary storm and many of whose central bankers eased policy last year while the US Fed was tightening it. As a consequence, the schedule for rate normalization got pushed back further than last year, and forecast cash returns in the major non-US developed markets actually declined, even as secular cash forecasts stayed the same or increased slightly.

[2] Leibowitz, Martin L. and Anthony Bova, *Historical Returns Convergence to Beginning Yield,* Morgan Stanley & Co. Research, July 9, 2012

So, if the year's developments were unkind to cash forecasts, how should we describe what happened to developed market bonds? Oh, what a year it was for bonds. Not only did they defy many forecasters' calls for further rate normalization after movement in that direction in 2013, but their yields also collapsed to record lows in market after market. So much was this the case that even the moderate amount of spread widening seen in investment grade credit was unable to prevent our hedged global investment grade bond return forecast, 1.3%, from falling beneath our 1.4% forecast for the US-dollar cash return. Such a downward bent to the efficient frontier is exceptional, and we have to wonder what it would require for some investors to take the hint. What it means for our positioning is less clear, given that our portfolios are US-dollar based and heavily tilted toward US investment grade debt, which at 2.1% remained comfortably at a premium to cash, for now at least.

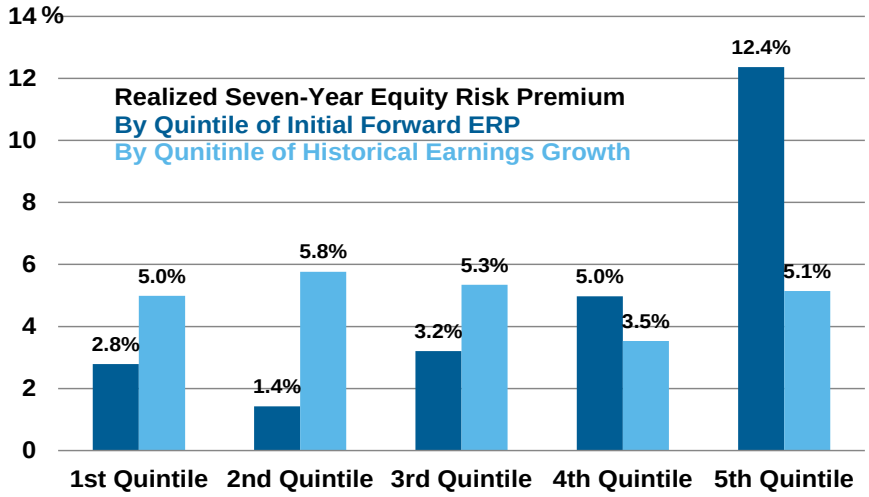
Note that our inflation forecasts have not fallen as much as one would expect given the movement in interest rates, and indeed stayed the same in the US—where our 2.1% investment grade bond return currently equates to a 0.1% real return over a strategic horizon. That's pretty thin gruel given the attendant risks, although the competition continues to offer a low bar. One thing that remains clear is that, with interest rate increases in the pipeline and a relatively flatter yield curve anticipating them, the short end of the bond market is more clearly attractive on a relative basis than it has been in some time.

The one bright spot in this year's forecast was the high yield bond market, where energy exposure led to significant spread widening in 2014. As a consequence, our high yield return forecasts actually increased during the past year, doubly increasing their attractiveness as a return sweetener and equity-like diversifier of fixed-income-centric portfolios. By consequence of all and sundry, we continue to believe with a relatively high degree of confidence that high-quality bond returns are likely to be extremely disappointing investments in the coming seven years. This continues to have implications for the way investors should size their fixed income allocations and how investments should be positioned within the asset class.

EQUITIES. Strategic equity returns are constructed using a building-block approach, as is the case for our secular estimates. Each market's forecast is derived by estimating a risk premium to its respective strategic 10-year government bond return to account for the additional risk in holding a claim on equity earnings relative to a sovereign bond. The model structure, which is based on the sensible idea that asset classes are priced in relation to one another, means that over extended horizons higher bond returns imply higher equity returns and lower bond returns imply lower equity returns. Of course, what is sensible in general is not always sensible in the specific context of abnormal periods of time, or perhaps not as historically specified.

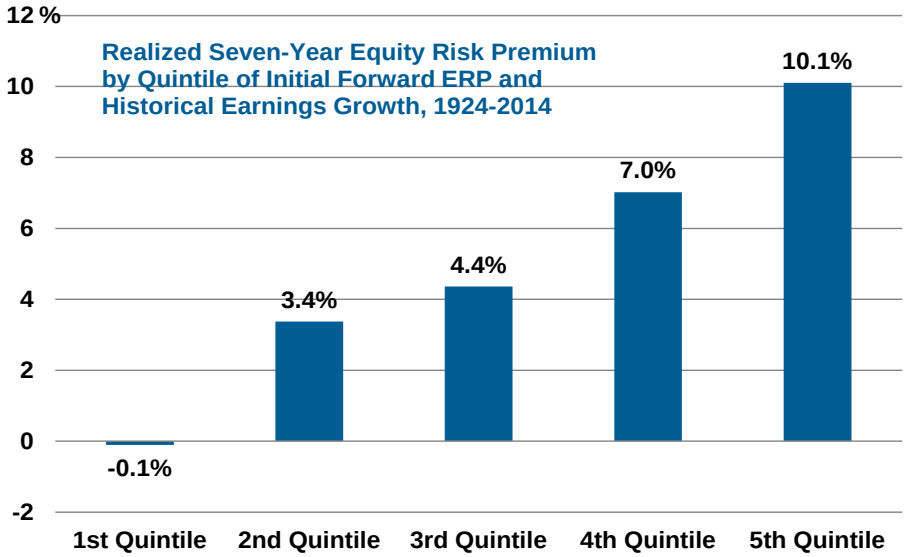
Equity market action in 2014 was less

Exhibit 11: Prior Earnings Growth Not as Effective as Forward ERPs in Predicting Future Stocks Returns



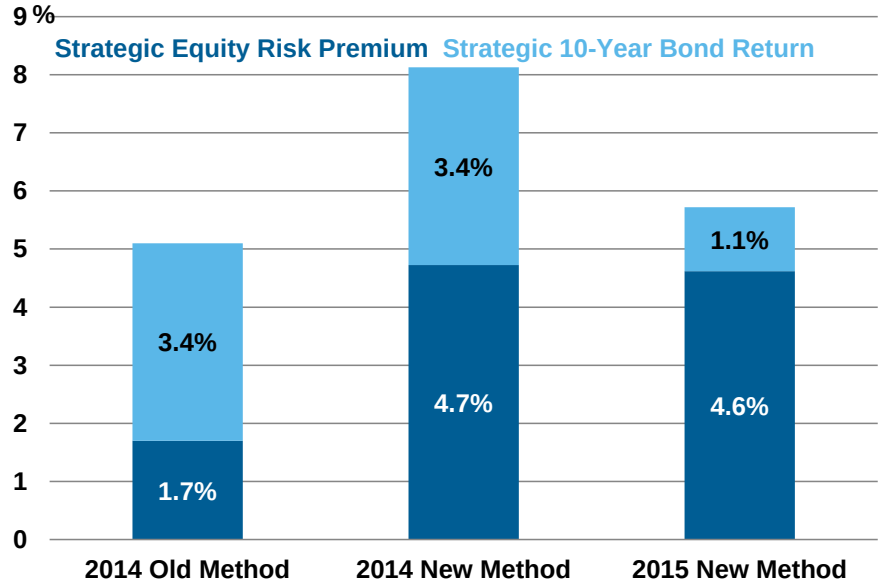
Source: I/B/E/S, MSCI, Robert J. Shiller of Yale University as of September 2014

Exhibit 12: Combining Forward ERP and Earnings Growth Is Even Better



Source: I/B/E/S, MSCI, Robert J. Shiller of Yale University as of September 2014

Exhibit 13: Our New Forecast Suggests 5.7% Average Annual US Equity Return for Seven-Year Strategic Horizon



Source: Morgan Stanley Wealth Management GIC as of Dec. 31, 2014

extreme than it was in the bond market, but it was still unfavorable for prospective returns, on balance, with equity valuations (as judged by forward P/Es) creeping up in many markets. This meant that forward equity risk premiums, which are defined as the difference between the forward earnings yield and the 10-year sovereign bond yield, increased in 2014. In past updates, this would have meant that our forecast of the return premium of equities over bonds would have declined at a time when equities were becoming relatively less expensive than bonds. That result, in effect, assumes that elevated P/Es signal the onset of irrational exuberance and the impending onset of a bear market. The question is whether interpreting P/Es in that context is appropriate in an environment in which very low inflation and financial repression are distorting pricing across the spectrum of asset classes.

It seems to us that it may not be, and that in fact elevated earnings multiples are a rational response to extraordinarily expensive bonds. On that basis, we postulate that FERPs might be a better indicator of the prospective return to be had in holding equities over bonds than equity multiples. But to what extent has this been true historically? Judging by the dark blue quintile bars in Exhibit 11, which summarize the average seven-year ERP realized by quintile of initial FERP, quite so. While the first two quintiles are not cleanly differentiated, the remaining quintiles are far more so. So, clearly, FERP—in addition to being intuitively sensible—does an admirable job of sorting the wheat from the chaff in theal data.

Of course, we are not satisfied with reasonably good, even less so given that where the model struggles the most is in providing a clean signal that the worst extreme of equity underperformance is imminent. In seeking avenues by which to bolster the model's effectiveness, we investigated a more explicit[3] factoring of earnings growth. Of course, it is easy to show that realized earnings significantly correlate with realized returns, but it is unclear that a strong correlation with a variable that itself is not known is likely to improve our forecasts. Perhaps more interesting is that historical earnings growth, which is known, correlates with future earnings growth, albeit inversely (meaning that weak/strong historical earnings growth tends to portend strong/weak prospective earnings growth).

As can be seen in the light blue bars in Exhibit 11, that does not mean the bivariate relationship between realized equity risk premiums and historical earnings growth is strong. In fact, that is not the case. Fortunately, we are not forced to apply bivariate models to a multicausal world. As can be seen in Exhibit 12 (above), it turns out that incorporating historical earnings growth into the FERP signal produces a much cleaner indication about future seven-year equity risk premiums, especially in that first quintile, where the need for an eye-catching result that motivates is most extreme.

So, both the data and the intuition supported a move to the new framework—but how exactly does using the new approach affect our forecasts? Exhibit 13 attempts to shed some light on that question by reconstructing last year's forecasts under both methods, and comparing them to this year's forecast for the US equity market. As can be seen, the difference in forecasted equity risk premiums in the current regime is significant. Last year's US equity return number would have been just over 8%, whereas our forecast at the time was just over 5%—with the difference owing to a large difference in the predicted equity risk premium. Going from last year to this year, returns have fallen substantially almost entirely by consequence of the reduced forecast for the 10-year Treasury return, but also due to a slight decrease in forecasted equity risk premiums, which is a function of much stronger historical earnings growth notwithstanding a more attractive FERP.

Another application of the new model is toward a better understanding of regional

[3] As our equity risk premium model has always been empirically based, we do not make assumptions about why low/high valuations portend high/low returns—just that they do. This leaves the door open for both an earnings-growth dynamic and a valuation dynamic to operate, for which our latest work bolsters the evidence.

variation in return. While the GIC has written a fair amount about the relative attractiveness of the non-US developed equity markets, few of the dynamics germane to that view have heretofore been reflected within the strategic model framework. For example, non-US developed markets have far lower bond yields and only slightly more attractive earnings multiples than the US market, which led to low returns in the old framework notwithstanding far higher FERPs. It also has had woeful historical earnings growth, which points to the potential for a substantial acceleration in earnings growth should those economies successfully put the troublesome monetary and macroeconomic issues behind them. With the move to the new framework, the evidentiary basis for these perspectives is now more transparent, as international developed returns at 7.0%—on the strength of very high equity risk premium forecasts—now comfortably exceed the US broad market forecast of 5.7%. Meanwhile, emerging market forecast returns remain substantially discounted to developed markets, and thus attractive within our framework, though less so in real returns, given the higher forecast inflation in developing economies.

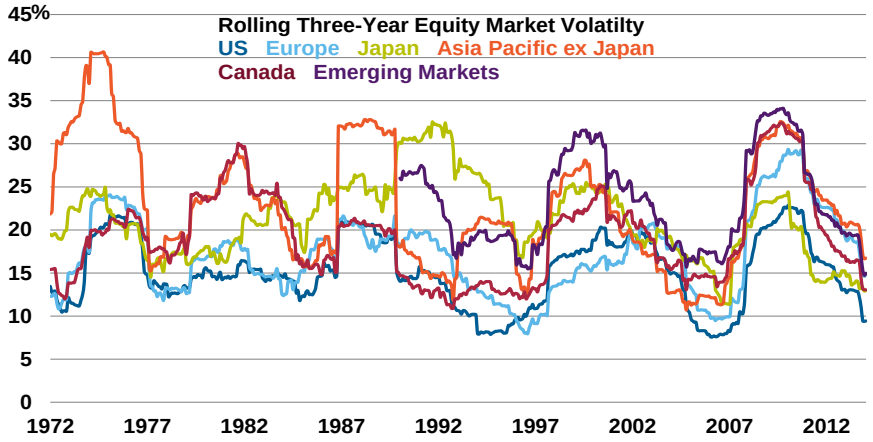
With all that said, our equity return forecasts remain low relative to history, as one might expect in a world of financial repression and deleveraging. However, their relative attractiveness over fixed income, an observation that led to our substantial overweighting of equities on a strategic basis two years ago, has only grown stronger with the developments of 2014. The implication is that, while the cyclical bull market has grown longer in the tooth, equities remain the best choice for safeguarding a portfolio against the ravages of financial repression.

EQUITY VOLATILITY. This year we took a hard look at our approach to forecasting volatility, given its importance to the construction of our strategic asset allocation advice. As part of this effort, we tried to be as sensitive to horizon for volatility as we are with return. This gave rise to a significant change in our approach to forecasting strategic equity volatility, the forecasts of which now differ from the long-term secular volatility estimates.

The insight employed to enhance these forecast is that, empirically, volatility clearly follows short-term cycles as summarized in Exhibit 14. Plotted there is the three-year rolling volatility for different regional equity markets. We note from that chart both the pronounced cycles and the degree to which they have become more unified across geographies in the last 15 years. Using this relationship, we are able to formulate a model that builds a seven-year volatility forecast based on the prior three years' volatility.

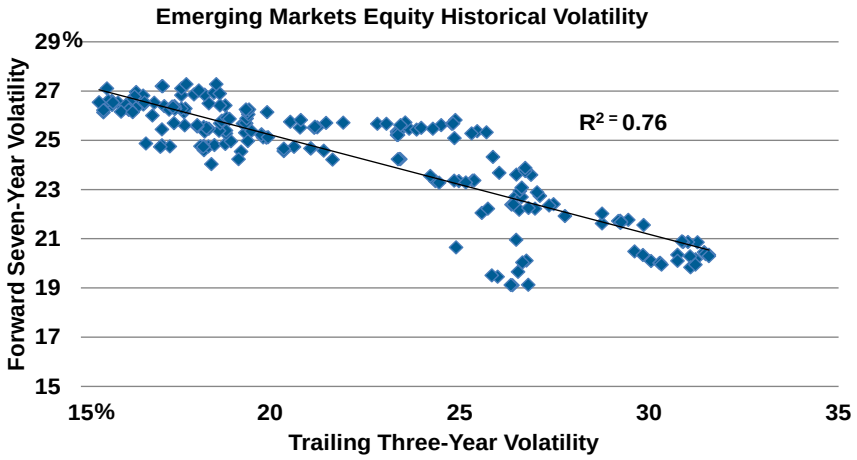
In the case of the emerging markets, the relationship between trailing and forward volatility is quite strong (see Exhibit 15). This gives us confidence that this work can provide another avenue through which to add value to our strategic portfolio-construction process. This model indicates that the period of lower-than-historical equity market volatility seen earlier in this cycle is behind us, and we should expect higher-than-historical volatility over the coming strategic horizon. ■

Exhibit 14: Equity Market Volatility Has Been Cyclical



Source: Bloomberg as of Dec. 31, 2014

Exhibit 15: EM Volatility Should Mean Revert, Implying an Increase From Current Levels



Source: Bloomberg as of Dec. 31, 2014

Table 1: Secular Return and Volatility Estimates, 20-Plus Years*

	Annualized Geometric Return Estimate (%)*	Average Arithmetic Return Estimate (%)**	Annualized Volatility Estimate (%)†
Cash (US$ 90-day T-bill)	3.0	3.0	0.9
Cash (US$ three-month LIBOR)	3.5	3.5	0.8
Global Investment Grade Bonds (hedged to US$)	4.8	4.9	4.5
US Short Term Investment Grade Bonds	3.6	3.7	2.7
Global Government Bonds (hedged to US$)	4.7	4.7	3.2
Global Corporate Bonds (hedged to US$)	5.1	5.3	6.7
US Investment Grade Bonds	4.5	4.6	5.5
US 10-year Government Bonds	4.7	5.0	8.5
US Municipal Bonds	3.0	3.2	6.9
International Investment Grade Bonds (hedged to US$)	5.0	5.1	4.2
Global Inflation-Linked Securities (unhedged)	4.4	4.6	7.8
US Inflation-Linked Securities	4.2	4.3	5.8
Global High Yield Bonds (hedged to US$)	8.0	8.4	9.7
US High Yield Bonds	7.9	8.2	8.5
Global Emerging Market Debt (US$)	5.2	6.0	13.0
Global Emerging Market Local Debt (unhedged)	6.0	6.7	11.9
Global Equities (unhedged)	8.8	10.1	16.7
Developed Markets Equities (unhedged)	8.8	9.9	16.2
International Equities (unhedged)	8.5	10.1	18.5
US All-Cap Stocks	8.9	10.0	15.5
US Large-Cap Core Stocks	8.7	9.7	15.3
US Large-Cap Value Stocks	8.7	9.6	14.7
US Large-Cap Growth Stocks	8.7	10.0	17.2
US Mid-Cap Core Stocks	9.2	10.5	16.9
US Mid-Cap Value Stocks	9.2	10.4	16.0
US Mid-Cap Growth Stocks	9.2	11.1	20.6
US Small-Cap Core Stocks	9.7	11.4	19.6
US Small-Cap Value Stocks	9.7	11.1	17.4
US Small-Cap Growth Stocks	9.7	12.0	22.9
US SMID Stocks	9.5	10.9	18.2
Europe All-Cap Stocks (unhedged)	8.7	10.1	17.5
Europe ex UK All Cap Stocks (unhedged)	8.5	9.9	17.9
UK All Cap Stocks (unhedged)	9.1	11.2	22.0
Japan All Cap Stocks (unhedged)	7.5	9.6	21.6
Canada All Cap Stocks (unhedged)	8.8	10.5	19.5
Developed Asia Pacific ex Japan All Cap Stocks (unhedged)	9.4	11.7	23.4

Source: Morgan Stanley Wealth Management GIC as of Dec. 31, 2014
Annualized geometric return, average arithmetic return and annualized volatility estimates are long-term estimates with a 20-year-plus time horizon. Annualized volatility estimates are based on data with longest available history through December 2014.
*Secular estimates are for illustrative purposes only, are based on proprietary models and are not indicative of the future performance of any specific investment, index or asset class. Actual performance may be more or less than the estimates shown in this table. Estimates of future performance are based on assumptions that may not be realized.
**The figures in this column represent the approximate arithmetic average equivalent of our annualized (geometric) return estimates. Certain optimization tools assume that the return inputs represent arithmetic averages.
†We apply significant statistical adjustments to correct for distortions typically associated with indexes of returns for hedge funds, private equity and private real estate.
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Table 1: Secular Return and Volatility Estimates, 20-Plus Years* (continued)

	Annualized Geometric Return Estimate (%)*	Average Arithmetic Return Estimate (%)**	Annualized Volatility Estimate (%)†
Global Emerging Market Stocks (unhedged)	9.5	11.9	23.5
Global REITs (unhedged)	7.8	9.3	18.5
US REITs	7.7	9.0	16.7
World ex US REITs (unhedged)	7.9	9.7	20.1
Commodities Diversified	4.3	5.4	15.7
Commodities - ex Precious Metals	4.8	6.1	16.9
Commodities - Precious Metals	2.0	4.4	22.8
Master Limited Partnerships	11.3	12.4	15.5
Hedged Strategies	5.8	6.0	6.1
Hedged Strategies - Relative Value	5.5	5.6	5.1
Hedged Strategies - Event Driven	6.6	6.8	7.2
Hedged Strategies - Global Macro	4.3	4.5	5.4
Hedged Strategies - Equity Long-Short	6.6	7.2	11.2
Managed Futures	5.7	6.6	13.8
US Private Equity	11.5	13.4	21.1
US Private Equity - Leveraged Buyout	11.2	13.1	21.2
US Private Equity - Venture Capital	12.8	16.7	31.0
Global Private Real Estate	5.1	5.7	11.3
US Private Real Estate	5.8	6.6	13.3
US Private Real Estate Funds	8.4	10.0	19.2
US Private Real Estate Funds - Core	7.2	8.3	15.9
US Private Real Estate Funds - Value-Added	8.2	10.3	22.0
US Private Real Estate Funds - Opportunistic	9.7	12.1	23.4

Source: Morgan Stanley Wealth Management GIC as of Dec. 31, 2014
Annualized geometric return, average arithmetic return and annualized volatility estimates are long-term estimates with a 20-year-plus time horizon. Annualized volatility estimates are based on data with longest available history through December 2014.
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Table 2: Strategic Return and Volatility Estimates, Seven Years*

	Annualized Geometric Return Estimate (%)*	Average Arithmetic Return Estimate (%)**	Annualized Volatility Estimate (%)†
Cash (US$ 90-day T-bill)	1.4	1.4	0.9
Cash (US$ three-month LIBOR)	1.7	1.7	0.8
Global Investment Grade Bonds (hedged to US$)	1.3	1.4	4.5
US Short Term Investment Grade Bonds	1.7	1.8	2.7
Global Government Bonds (hedged to US$)	0.8	0.9	3.2
Global Corporate Bonds (hedged to US$)	2.1	2.3	6.7
US Investment Grade Bonds	2.1	2.3	5.5
US 10-year Government Bonds	1.1	1.5	8.5
US Municipal Bonds	1.3	1.6	6.9
International Investment Grade Bonds (hedged to US$)	0.8	0.9	4.2
Global Inflation-Linked Securities (unhedged)	1.1	1.4	7.8
US Inflation-Linked Securities	2.1	2.3	5.8
Global High Yield Bonds (hedged to US$)	4.7	5.1	9.7
US High Yield Bonds	4.9	5.3	8.5
Global Emerging Market Debt (US$)	5.5	6.3	13.0
Global Emerging Market Local Debt (unhedged)	6.3	7.0	11.9
Global Equities (unhedged)	6.6	7.9	17.3
Developed Markets Equities (unhedged)	6.2	7.5	16.5
International Equities (unhedged)	7.0	8.3	17.4
US All-Cap Stocks	5.7	7.1	17.1
US Large-Cap Core Stocks	5.5	6.8	17.0
US Large-Cap Value Stocks	5.5	6.7	16.3
US Large-Cap Growth Stocks	5.5	7.2	19.6
US Mid-Cap Core Stocks	6.1	7.6	18.5
US Mid-Cap Value Stocks	6.1	7.4	17.0
US Mid-Cap Growth Stocks	6.1	8.5	23.4
US Small-Cap Core Stocks	6.5	8.5	21.1
US Small-Cap Value Stocks	6.5	7.9	17.4
US Small-Cap Growth Stocks	6.5	9.4	25.5
US SMID Stocks	6.3	8.1	19.9
Europe All-Cap Stocks (unhedged)	7.5	8.9	17.6
Europe ex UK All Cap Stocks (unhedged)	7.8	9.2	17.9
UK All Cap Stocks (unhedged)	7.0	8.6	18.6
Japan All Cap Stocks (unhedged)	6.3	8.1	20.0
Canada All Cap Stocks (unhedged)	5.5	7.5	20.7
Developed Asia Pacific ex Japan All Cap Stocks (unhedged)	6.5	9.0	23.8

Source: Morgan Stanley Wealth Management GIC as of Dec. 31, 2014

Annualized geometric return, average arithmetic return and annualized volatility estimates are long-term estimates with a seven-year time horizon. Annualized volatility estimates are based on data with longest available history through December 2014.

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Table 2: Strategic Return and Volatility Estimates, Seven Years* (continued)

	Annualized Geometric Return Estimate (%)*	Average Arithmetic Return Estimate (%)**	Annualized Volatility Estimate (%)†
Global Emerging Market Stocks (unhedged)	9.4	12.6	27.3
Global REITs (unhedged)	5.4	7.5	21.5
US REITs	4.9	6.0	15.1
World ex US REITs (unhedged)	6.2	8.4	22.3
Commodities Diversified	2.7	3.9	15.7
Commodities - ex Precious Metals	2.9	4.2	16.9
Commodities - Precious Metals	2.0	4.4	22.8
Master Limited Partnerships	6.8	8.0	16.5
Hedged Strategies††	3.5	3.7	6.4
Hedged Strategies†† - Relative Value	3.1	3.2	5.1
Hedged Strategies†† - Event Driven	4.0	4.3	7.5
Hedged Strategies†† - Global Macro	2.7	2.9	5.4
Hedged Strategies†† - Equity Long-Short	4.6	5.2	11.5
Managed Futures	4.1	5.0	13.8
US Private Equity	8.0	10.3	22.8
US Private Equity - Leveraged Buyout	7.6	9.8	22.4
US Private Equity - Venture Capital	9.4	14.9	36.7
Global Private Real Estate	5.4	6.0	11.3
US Private Real Estate	6.1	6.9	13.3
US Private Real Estate Funds	7.4	9.1	19.2
US Private Real Estate Funds - Core	7.8	8.9	15.9
US Private Real Estate Funds - Value-Added	7.2	9.4	22.0
US Private Real Estate Funds - Opportunistic	7.0	9.4	23.4

Source: Morgan Stanley Wealth Management GIC as of Dec. 31, 2014
Annualized geometric return, average arithmetic return and annualized volatility estimates are long-term estimates with a seven-year time horizon. Annualized volatility estimates are based on data with longest available history through December 2014.
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Table 3: Correlation Matrix

		1	2	3	4	5	6	7	8	9	10	11	12
1	Cash (US$ 90-day T-bill)	1.00	0.99	0.15	0.27	0.12	-0.04	0.05	0.04	0.01	0.15	0.01	0.02
2	Cash (US$ three-month LIBOR)	0.99	1.00	0.15	0.40	0.13	-0.10	0.15	0.08	0.09	0.15	-0.03	-0.01
3	Global Investment Grade Bonds (hedged to US$)	0.15	0.15	1.00	0.80	0.96	0.77	0.94	0.87	0.70	0.89	0.53	0.66
4	US Short Term Investment Grade Bonds	0.27	0.40	0.80	1.00	0.75	0.56	0.90	0.77	0.67	0.58	0.46	0.58
5	Global Government Bonds (hedged to US$)	0.12	0.13	0.96	0.75	1.00	0.55	0.87	0.87	0.61	0.93	0.37	0.55
6	Global Corporate Bonds (hedged to US$)	-0.04	-0.10	0.77	0.56	0.55	1.00	0.78	0.50	0.65	0.70	0.69	0.66
7	US Investment Grade Bonds	0.05	0.15	0.94	0.90	0.87	0.78	1.00	0.92	0.76	0.71	0.61	0.75
8	US 10-year Government Bonds	0.04	0.08	0.87	0.77	0.87	0.50	0.92	1.00	0.65	0.67	0.40	0.64
9	US Municipal Bonds	0.01	0.09	0.70	0.67	0.61	0.65	0.76	0.65	1.00	0.55	0.43	0.54
10	International Investment Grade Bonds (hedged to US$)	0.15	0.15	0.89	0.58	0.93	0.70	0.71	0.67	0.55	1.00	0.43	0.53
11	Global Inflation-Linked Securities (unhedged)	0.01	-0.03	0.53	0.46	0.37	0.69	0.61	0.40	0.43	0.43	1.00	0.76
12	US Inflation-Linked Securities	0.02	-0.01	0.66	0.58	0.55	0.66	0.75	0.64	0.54	0.53	0.76	1.00
13	Global High Yield Bonds (hedged to US$)	-0.03	-0.07	0.21	0.12	0.05	0.60	0.25	-0.04	0.29	0.17	0.45	0.30
14	US High Yield Bonds	-0.02	-0.06	0.18	0.18	0.04	0.56	0.29	0.04	0.35	0.12	0.46	0.28
15	Global Emerging Market Debt (US$)	0.03	0.01	0.33	0.22	0.22	0.67	0.36	0.17	0.30	0.29	0.39	0.37
16	Global Emerging Market Local Debt (unhedged)	0.09	0.04	0.33	0.34	0.13	0.57	0.40	0.11	0.27	0.27	0.80	0.46
17	Global Equities (unhedged)	0.01	-0.02	-0.05	-0.04	-0.11	0.33	0.02	-0.18	0.04	-0.05	0.42	0.08
18	Developed Markets Equities (unhedged)	0.02	0.00	-0.04	0.08	-0.16	0.32	0.12	-0.06	0.13	-0.06	0.41	0.07
19	International Equities (unhedged)	0.00	0.03	0.08	0.12	-0.05	0.38	0.15	0.01	0.15	0.09	0.49	0.11
20	US All-Cap Stocks	0.02	0.02	0.09	0.13	-0.03	0.24	0.20	0.04	0.22	0.07	0.31	0.03
21	US Large-Cap Core Stocks	0.02	0.03	0.10	0.14	-0.02	0.24	0.21	0.05	0.23	0.08	0.31	0.03
22	US Large-Cap Value Stocks	0.02	0.02	0.12	0.15	0.00	0.26	0.22	0.06	0.24	0.11	0.32	0.04
23	US Large-Cap Growth Stocks	0.01	0.03	0.07	0.11	-0.04	0.20	0.18	0.04	0.20	0.05	0.26	0.02
24	US Mid-Cap Core Stocks	0.00	-0.01	0.07	0.13	-0.06	0.28	0.20	0.03	0.23	0.06	0.34	0.07
25	US Mid-Cap Value Stocks	0.00	-0.04	0.11	0.02	-0.01	0.31	0.14	-0.05	0.22	0.10	0.37	0.10
26	US Mid-Cap Growth Stocks	0.02	-0.01	0.01	-0.03	-0.09	0.20	0.06	-0.11	0.13	0.00	0.26	0.02
27	US Small-Cap Core Stocks	0.00	-0.03	-0.01	0.06	-0.12	0.19	0.11	-0.05	0.15	0.00	0.27	0.00
28	US Small-Cap Value Stocks	0.00	-0.03	0.03	0.09	-0.09	0.22	0.15	-0.03	0.19	0.04	0.30	0.02
29	US Small-Cap Growth Stocks	-0.01	-0.02	-0.04	0.03	-0.13	0.16	0.08	-0.07	0.12	-0.02	0.23	-0.02
30	US SMID Stocks	-0.01	-0.02	0.02	0.09	-0.10	0.24	0.15	-0.02	0.19	0.02	0.30	0.03
31	Europe All-Cap Stocks (unhedged)	0.03	-0.01	-0.04	-0.05	-0.16	0.34	0.00	-0.22	0.03	-0.06	0.48	0.06
32	Europe ex UK All Cap Stocks (unhedged)	-0.01	0.06	-0.06	0.11	-0.17	0.32	0.13	-0.03	0.16	-0.07	0.46	0.05
33	UK All Cap Stocks (unhedged)	0.03	0.06	0.12	0.12	-0.03	0.36	0.16	0.02	0.17	0.11	0.48	0.08
34	Japan All Cap Stocks (unhedged)	0.01	0.01	0.04	0.09	-0.02	0.27	0.11	0.04	0.05	0.03	0.29	0.11
35	Canada All Cap Stocks (unhedged)	-0.01	-0.01	0.05	0.10	-0.07	0.34	0.16	-0.01	0.19	0.03	0.45	0.17
36	Developed Asia Pacific ex Japan All Cap Stocks (unhedged)	-0.03	-0.02	0.05	0.03	-0.15	0.44	0.05	-0.08	0.15	0.00	0.49	0.20
37	Global Emerging Market Stocks (unhedged)	0.03	0.01	-0.08	-0.07	-0.17	0.36	-0.04	-0.22	-0.01	-0.08	0.39	0.13
38	Global REITs (unhedged)	-0.05	-0.10	0.20	0.08	0.10	0.49	0.21	-0.01	0.26	0.22	0.54	0.27
39	US REITs	-0.03	-0.10	0.16	0.18	0.05	0.39	0.25	0.07	0.24	0.13	0.44	0.24
40	World ex US REITs (unhedged)	-0.06	-0.10	-0.01	-0.05	-0.11	0.42	0.03	-0.13	0.05	-0.03	0.44	0.17
41	Commodities Diversified	0.09	0.09	-0.06	-0.02	-0.15	0.25	-0.05	-0.13	-0.09	-0.12	0.52	0.32
42	Commodities - ex Precious Metals	0.12	0.12	-0.08	-0.02	-0.16	0.22	-0.06	-0.14	-0.09	-0.14	0.48	0.27
43	Commodities - Precious Metals	-0.05	-0.05	0.06	0.11	0.00	0.23	0.12	0.07	0.04	0.03	0.44	0.35
44	Master Limited Partnerships	0.02	-0.04	0.01	0.09	-0.12	0.31	0.04	-0.20	0.20	-0.02	0.25	0.12
45	Hedged Strategies[††]	0.16	0.11	0.11	0.08	0.01	0.43	0.12	-0.08	0.17	0.10	0.35	0.13
46	Hedged Strategies[††] - Relative Value	0.11	0.05	0.11	0.08	-0.04	0.56	0.14	-0.13	0.20	0.09	0.45	0.26
47	Hedged Strategies[††] - Event Driven	0.13	0.08	0.08	0.04	-0.04	0.40	0.09	-0.16	0.16	0.09	0.37	0.09
48	Hedged Strategies[††] - Global Macro	0.08	0.06	0.24	0.20	0.19	0.43	0.24	0.15	0.21	0.22	0.31	0.22
49	Hedged Strategies[††] - Equity Long-Short	0.19	0.15	0.07	0.06	-0.04	0.33	0.08	-0.13	0.11	0.06	0.37	0.07
50	Managed Futures	0.15	0.12	0.24	0.07	0.21	0.14	0.04	0.07	0.06	0.20	0.22	0.19
51	US Private Equity	0.08	0.05	-0.12	-0.17	-0.16	0.12	-0.15	-0.32	-0.04	-0.08	0.18	-0.21
52	US Private Equity - Leveraged Buyout	0.11	0.07	-0.12	-0.16	-0.17	0.14	-0.14	-0.32	-0.03	-0.08	0.21	-0.18
53	US Private Equity - Venture Capital	0.02	0.01	-0.11	-0.16	-0.14	0.08	-0.15	-0.30	-0.06	-0.09	0.12	-0.24
54	Global Private Real Estate	0.13	0.08	-0.07	-0.09	-0.13	0.21	-0.05	-0.20	0.06	-0.08	0.28	0.13
55	US Private Real Estate	0.13	0.08	-0.07	-0.09	-0.13	0.21	-0.05	-0.20	0.06	-0.08	0.28	0.13
56	US Private Real Estate Funds	0.20	0.15	-0.10	-0.11	-0.14	0.11	-0.10	-0.23	-0.01	-0.07	0.22	-0.01
57	US Private Real Estate Funds - Core	0.18	0.13	-0.10	-0.10	-0.14	0.14	-0.09	-0.20	0.02	-0.10	0.24	0.10
58	US Private Real Estate Funds - Value-Added	0.20	0.15	-0.10	-0.10	-0.14	0.13	-0.09	-0.23	0.00	-0.08	0.23	-0.01
59	US Private Real Estate Funds - Opportunistic	0.17	0.12	-0.09	-0.12	-0.14	0.07	-0.12	-0.23	-0.05	-0.01	0.18	-0.12

Source: Morgan Stanley Wealth Management GIC as of Dec. 31, 2014

Above is based on data with longest available history through December 2014. Correlation is a statistical method of measuring the strength of a linear relationship between two variables. The correlation between two variables can assume any value from -1.00 to +1.00, inclusive. Past performance is not indicative of future results. We apply significant statistical adjustments to correct for distortions typically associated with index returns for hedge funds, private equity and private real estate. Correlation assumptions are the same for the secular and strategic horizons.

[††]Hedged strategies consist of hedge funds.

Table 3: Correlation Matrix (continued)

		13	14	15	16	17	18	19	20	21	22	23	24
1	Cash (US$ 90-day T-bill)	-0.03	-0.02	0.03	0.09	0.01	0.02	0.00	0.02	0.02	0.02	0.01	0.00
2	Cash (US$ three-month LIBOR)	-0.07	-0.06	0.01	0.04	-0.02	0.00	0.03	0.02	0.03	0.02	0.03	-0.01
3	Global Investment Grade Bonds (hedged to US$)	0.21	0.18	0.33	0.33	-0.05	-0.04	0.08	0.09	0.10	0.12	0.07	0.07
4	US Short Term Investment Grade Bonds	0.12	0.18	0.22	0.34	-0.04	0.08	0.12	0.13	0.14	0.15	0.11	0.13
5	Global Government Bonds (hedged to US$)	0.05	0.04	0.22	0.13	-0.11	-0.16	-0.05	-0.03	-0.02	0.00	-0.04	-0.06
6	Global Corporate Bonds (hedged to US$)	0.60	0.56	0.67	0.57	0.33	0.32	0.38	0.24	0.24	0.26	0.20	0.28
7	US Investment Grade Bonds	0.25	0.29	0.36	0.40	0.02	0.12	0.15	0.20	0.21	0.22	0.18	0.20
8	US 10-year Government Bonds	-0.04	0.04	0.17	0.11	-0.18	-0.06	0.01	0.04	0.05	0.06	0.04	0.03
9	US Municipal Bonds	0.29	0.35	0.30	0.27	0.04	0.13	0.15	0.22	0.23	0.24	0.20	0.23
10	International Investment Grade Bonds (hedged to US$)	0.17	0.12	0.29	0.27	-0.05	-0.06	0.09	0.07	0.08	0.11	0.05	0.06
11	Global Inflation-Linked Securities (unhedged)	0.45	0.46	0.39	0.80	0.42	0.41	0.49	0.31	0.31	0.32	0.26	0.34
12	US Inflation-Linked Securities	0.30	0.28	0.37	0.46	0.08	0.07	0.11	0.03	0.03	0.04	0.02	0.07
13	Global High Yield Bonds (hedged to US$)	1.00	0.93	0.81	0.70	0.67	0.66	0.59	0.66	0.65	0.63	0.61	0.69
14	US High Yield Bonds	0.93	1.00	0.53	0.64	0.63	0.61	0.51	0.60	0.59	0.58	0.55	0.64
15	Global Emerging Market Debt (US$)	0.81	0.53	1.00	0.80	0.54	0.52	0.50	0.54	0.53	0.51	0.49	0.53
16	Global Emerging Market Local Debt (unhedged)	0.70	0.64	0.80	1.00	0.75	0.73	0.77	0.64	0.65	0.65	0.61	0.64
17	Global Equities (unhedged)	0.67	0.63	0.54	0.75	1.00	0.99	0.72	0.80	0.79	0.74	0.76	0.80
18	Developed Markets Equities (unhedged)	0.66	0.61	0.52	0.73	0.99	1.00	0.71	0.83	0.83	0.79	0.80	0.82
19	International Equities (unhedged)	0.59	0.51	0.50	0.77	0.72	0.71	1.00	0.65	0.65	0.63	0.62	0.65
20	US All-Cap Stocks	0.66	0.60	0.54	0.64	0.80	0.83	0.65	1.00	1.00	0.98	0.98	0.98
21	US Large-Cap Core Stocks	0.65	0.59	0.53	0.65	0.79	0.83	0.65	1.00	1.00	0.98	0.98	0.97
22	US Large-Cap Value Stocks	0.63	0.58	0.51	0.65	0.74	0.79	0.63	0.98	0.98	1.00	0.92	0.95
23	US Large-Cap Growth Stocks	0.61	0.55	0.49	0.61	0.76	0.80	0.62	0.98	0.98	0.92	1.00	0.96
24	US Mid-Cap Core Stocks	0.69	0.64	0.53	0.64	0.80	0.82	0.65	0.98	0.97	0.95	0.96	1.00
25	US Mid-Cap Value Stocks	0.67	0.64	0.50	0.65	0.74	0.77	0.63	0.97	0.97	0.97	0.93	0.99
26	US Mid-Cap Growth Stocks	0.62	0.58	0.49	0.61	0.77	0.78	0.64	0.96	0.96	0.90	0.97	0.99
27	US Small-Cap Core Stocks	0.65	0.61	0.48	0.59	0.75	0.78	0.60	0.94	0.93	0.91	0.91	0.95
28	US Small-Cap Value Stocks	0.65	0.62	0.46	0.60	0.72	0.76	0.58	0.93	0.92	0.93	0.87	0.93
29	US Small-Cap Growth Stocks	0.62	0.57	0.47	0.57	0.73	0.76	0.58	0.93	0.92	0.88	0.92	0.95
30	US SMID Stocks	0.68	0.63	0.51	0.62	0.78	0.80	0.63	0.97	0.96	0.94	0.94	0.99
31	Europe All-Cap Stocks (unhedged)	0.62	0.60	0.47	0.75	0.91	0.92	0.73	0.89	0.89	0.87	0.87	0.87
32	Europe ex UK All Cap Stocks (unhedged)	0.61	0.55	0.46	0.75	0.87	0.80	0.75	0.88	0.88	0.87	0.86	0.87
33	UK All Cap Stocks (unhedged)	0.59	0.49	0.46	0.70	0.67	0.64	0.78	0.86	0.86	0.84	0.85	0.84
34	Japan All Cap Stocks (unhedged)	0.32	0.27	0.32	0.50	0.45	0.46	0.82	0.60	0.60	0.58	0.59	0.60
35	Canada All Cap Stocks (unhedged)	0.67	0.57	0.58	0.69	0.77	0.75	0.64	0.81	0.81	0.78	0.81	0.83
36	Developed Asia Pacific ex Japan All Cap Stocks (unhedged)	0.65	0.52	0.60	0.83	0.78	0.70	0.61	0.82	0.83	0.80	0.82	0.82
37	Global Emerging Market Stocks (unhedged)	0.68	0.56	0.60	0.79	0.77	0.73	0.59	0.80	0.80	0.76	0.80	0.81
38	Global REITs (unhedged)	0.65	0.61	0.58	0.78	0.63	0.62	0.79	0.68	0.67	0.71	0.58	0.71
39	US REITs	0.59	0.61	0.41	0.62	0.55	0.59	0.46	0.62	0.60	0.66	0.51	0.67
40	World ex US REITs (unhedged)	0.44	0.47	0.27	0.71	0.55	0.53	0.40	0.34	0.33	0.39	0.24	0.38
41	Commodities Diversified	0.28	0.19	0.28	0.55	0.36	0.31	0.33	0.21	0.20	0.21	0.18	0.24
42	Commodities - ex Precious Metals	0.27	0.19	0.25	0.51	0.35	0.31	0.32	0.22	0.22	0.22	0.20	0.25
43	Commodities - Precious Metals	0.22	0.15	0.27	0.45	0.21	0.19	0.23	0.09	0.08	0.08	0.07	0.13
44	Master Limited Partnerships	0.52	0.55	0.31	0.38	0.41	0.40	0.38	0.39	0.39	0.41	0.34	0.43
45	Hedged Strategies[††]	0.60	0.51	0.56	0.60	0.61	0.59	0.56	0.57	0.56	0.47	0.57	0.61
46	Hedged Strategies[††] - Relative Value	0.72	0.69	0.55	0.64	0.60	0.59	0.59	0.61	0.60	0.58	0.56	0.64
47	Hedged Strategies[††] - Event Driven	0.78	0.73	0.58	0.65	0.72	0.71	0.67	0.77	0.76	0.71	0.72	0.81
48	Hedged Strategies[††] - Global Macro	0.28	0.19	0.38	0.46	0.21	0.20	0.16	0.22	0.22	0.20	0.21	0.24
49	Hedged Strategies[††] - Equity Long-Short	0.62	0.56	0.51	0.67	0.71	0.70	0.68	0.78	0.77	0.65	0.78	0.82
50	Managed Futures	-0.11	-0.05	-0.01	0.12	-0.06	0.00	0.00	-0.01	-0.01	0.02	-0.03	-0.02
51	US Private Equity	0.51	0.48	0.36	0.47	0.69	0.69	0.60	0.76	0.76	0.68	0.75	0.72
52	US Private Equity - Leveraged Buyout	0.50	0.47	0.35	0.45	0.67	0.68	0.59	0.74	0.74	0.69	0.71	0.70
53	US Private Equity - Venture Capital	0.49	0.45	0.36	0.47	0.65	0.66	0.57	0.72	0.72	0.59	0.76	0.69
54	Global Private Real Estate	0.38	0.40	0.18	0.39	0.33	0.33	0.28	0.32	0.31	0.38	0.22	0.35
55	US Private Real Estate	0.38	0.40	0.18	0.39	0.33	0.33	0.28	0.32	0.31	0.38	0.22	0.35
56	US Private Real Estate Funds	0.29	0.28	0.18	0.36	0.40	0.41	0.35	0.43	0.42	0.49	0.33	0.43
57	US Private Real Estate Funds - Core	0.29	0.30	0.14	0.33	0.29	0.30	0.24	0.28	0.27	0.32	0.20	0.30
58	US Private Real Estate Funds - Value-Added	0.33	0.32	0.20	0.37	0.42	0.43	0.36	0.45	0.44	0.50	0.35	0.45
59	US Private Real Estate Funds - Opportunistic	0.24	0.21	0.19	0.35	0.45	0.46	0.43	0.51	0.51	0.58	0.40	0.49

Source: Morgan Stanley Wealth Management GIC as of Dec. 31, 2014

Above is based on data with longest available history through December 2014. Correlation is a statistical method of measuring the strength of a linear relationship between two variables. The correlation between two variables can assume any value from -1.00 to +1.00, inclusive. Past performance is not indicative of future results. We apply significant statistical adjustments to correct for distortions typically associated with index returns for hedge funds, private equity and private real estate. Correlation assumptions are the same for the secular and strategic horizons.

[††]Hedged strategies consist of hedge funds.

Table 3: Correlation Matrix (continued)

		25	26	27	28	29	30	31	32	33	34	35	36
1	Cash (US$ 90-day T-bill)	0.00	0.02	0.00	0.00	-0.01	-0.01	0.03	-0.01	0.03	0.01	-0.01	-0.03
2	Cash (US$ three-month LIBOR)	-0.04	-0.01	-0.03	-0.03	-0.02	-0.02	-0.01	0.06	0.06	0.01	-0.01	-0.02
3	Global Investment Grade Bonds (hedged to US$)	0.11	0.01	-0.01	0.03	-0.04	0.02	-0.04	-0.06	0.12	0.04	0.05	0.05
4	US Short Term Investment Grade Bonds	0.02	-0.03	0.06	0.09	0.03	0.09	-0.05	0.11	0.12	0.09	0.10	0.03
5	Global Government Bonds (hedged to US$)	-0.01	-0.09	-0.12	-0.09	-0.13	-0.10	-0.16	-0.17	-0.03	-0.02	-0.07	-0.15
6	Global Corporate Bonds (hedged to US$)	0.31	0.20	0.19	0.22	0.16	0.24	0.34	0.32	0.36	0.27	0.34	0.44
7	US Investment Grade Bonds	0.14	0.06	0.11	0.15	0.08	0.15	0.00	0.13	0.16	0.11	0.16	0.05
8	US 10-year Government Bonds	-0.05	-0.11	-0.05	-0.03	-0.07	-0.02	-0.22	-0.03	0.02	0.04	-0.01	-0.08
9	US Municipal Bonds	0.22	0.13	0.15	0.19	0.12	0.19	0.03	0.16	0.17	0.05	0.19	0.15
10	International Investment Grade Bonds (hedged to US$)	0.10	0.00	0.00	0.04	-0.02	0.02	-0.06	-0.07	0.11	0.03	0.03	0.00
11	Global Inflation-Linked Securities (unhedged)	0.37	0.26	0.27	0.30	0.23	0.30	0.48	0.46	0.48	0.29	0.45	0.49
12	US Inflation-Linked Securities	0.10	0.02	0.00	0.02	-0.02	0.03	0.06	0.05	0.08	0.11	0.17	0.20
13	Global High Yield Bonds (hedged to US$)	0.67	0.62	0.65	0.65	0.62	0.68	0.62	0.61	0.59	0.32	0.67	0.65
14	US High Yield Bonds	0.64	0.58	0.61	0.62	0.57	0.63	0.60	0.55	0.49	0.27	0.57	0.52
15	Global Emerging Market Debt (US$)	0.50	0.49	0.48	0.46	0.47	0.51	0.47	0.46	0.46	0.32	0.58	0.60
16	Global Emerging Market Local Debt (unhedged)	0.65	0.61	0.59	0.60	0.57	0.62	0.75	0.75	0.70	0.50	0.69	0.83
17	Global Equities (unhedged)	0.74	0.77	0.75	0.72	0.73	0.78	0.91	0.87	0.67	0.45	0.77	0.78
18	Developed Markets Equities (unhedged)	0.77	0.78	0.78	0.76	0.76	0.80	0.92	0.80	0.64	0.46	0.75	0.70
19	International Equities (unhedged)	0.63	0.64	0.60	0.58	0.58	0.63	0.73	0.75	0.78	0.82	0.64	0.61
20	US All-Cap Stocks	0.97	0.96	0.94	0.93	0.93	0.97	0.89	0.88	0.86	0.60	0.81	0.82
21	US Large-Cap Core Stocks	0.97	0.96	0.93	0.92	0.92	0.96	0.89	0.88	0.86	0.60	0.81	0.83
22	US Large-Cap Value Stocks	0.97	0.90	0.91	0.93	0.88	0.94	0.87	0.87	0.84	0.58	0.78	0.80
23	US Large-Cap Growth Stocks	0.93	0.97	0.91	0.87	0.92	0.94	0.87	0.86	0.85	0.59	0.81	0.82
24	US Mid-Cap Core Stocks	0.99	0.99	0.95	0.93	0.95	0.99	0.87	0.87	0.84	0.60	0.83	0.82
25	US Mid-Cap Value Stocks	1.00	0.95	0.95	0.95	0.93	0.98	0.86	0.86	0.82	0.59	0.80	0.80
26	US Mid-Cap Growth Stocks	0.95	1.00	0.94	0.89	0.95	0.97	0.86	0.85	0.84	0.60	0.84	0.82
27	US Small-Cap Core Stocks	0.95	0.94	1.00	0.99	0.99	0.99	0.80	0.80	0.76	0.54	0.75	0.74
28	US Small-Cap Value Stocks	0.95	0.89	0.99	1.00	0.95	0.97	0.77	0.78	0.73	0.52	0.71	0.71
29	US Small-Cap Growth Stocks	0.93	0.95	0.99	0.95	1.00	0.98	0.79	0.79	0.76	0.55	0.77	0.75
30	US SMID Stocks	0.98	0.97	0.99	0.97	0.98	1.00	0.84	0.83	0.80	0.57	0.79	0.78
31	Europe All-Cap Stocks (unhedged)	0.86	0.86	0.80	0.77	0.79	0.84	1.00	0.99	0.96	0.68	0.83	0.89
32	Europe ex UK All Cap Stocks (unhedged)	0.86	0.85	0.80	0.78	0.79	0.83	0.99	1.00	0.93	0.68	0.81	0.88
33	UK All Cap Stocks (unhedged)	0.82	0.84	0.76	0.73	0.76	0.80	0.96	0.93	1.00	0.66	0.86	0.89
34	Japan All Cap Stocks (unhedged)	0.59	0.60	0.54	0.52	0.55	0.57	0.68	0.68	0.66	1.00	0.62	0.65
35	Canada All Cap Stocks (unhedged)	0.80	0.84	0.75	0.71	0.77	0.79	0.83	0.81	0.86	0.62	1.00	0.87
36	Developed Asia Pacific ex Japan All Cap Stocks (unhedged)	0.80	0.82	0.74	0.71	0.75	0.78	0.89	0.88	0.89	0.65	0.87	1.00
37	Global Emerging Market Stocks (unhedged)	0.77	0.82	0.73	0.69	0.76	0.77	0.87	0.86	0.85	0.68	0.88	0.94
38	Global REITs (unhedged)	0.75	0.59	0.65	0.70	0.58	0.68	0.61	0.59	0.73	0.54	0.69	0.70
39	US REITs	0.73	0.50	0.67	0.76	0.57	0.68	0.53	0.49	0.45	0.23	0.53	0.47
40	World ex US REITs (unhedged)	0.43	0.27	0.37	0.43	0.31	0.38	0.55	0.53	0.42	0.22	0.43	0.52
41	Commodities Diversified	0.22	0.23	0.21	0.19	0.21	0.23	0.39	0.35	0.33	0.22	0.47	0.40
42	Commodities - ex Precious Metals	0.23	0.24	0.22	0.20	0.21	0.24	0.38	0.34	0.32	0.21	0.45	0.38
43	Commodities - Precious Metals	0.11	0.12	0.14	0.12	0.15	0.14	0.19	0.18	0.18	0.18	0.38	0.29
44	Master Limited Partnerships	0.43	0.36	0.38	0.39	0.35	0.41	0.39	0.36	0.44	0.16	0.45	0.41
45	Hedged Strategies[††]	0.49	0.64	0.60	0.50	0.62	0.62	0.58	0.56	0.55	0.34	0.69	0.57
46	Hedged Strategies[††] - Relative Value	0.60	0.58	0.60	0.58	0.57	0.62	0.57	0.55	0.61	0.35	0.67	0.58
47	Hedged Strategies[††] - Event Driven	0.74	0.78	0.81	0.76	0.80	0.83	0.67	0.66	0.66	0.39	0.77	0.66
48	Hedged Strategies[††] - Global Macro	0.20	0.22	0.19	0.17	0.18	0.21	0.21	0.20	0.20	0.00	0.32	0.20
49	Hedged Strategies[††] - Equity Long-Short	0.67	0.85	0.82	0.71	0.85	0.84	0.65	0.64	0.67	0.43	0.78	0.64
50	Managed Futures	0.01	-0.04	-0.03	0.00	-0.05	-0.02	-0.05	-0.03	0.03	0.00	0.05	0.06
51	US Private Equity	0.63	0.72	0.68	0.57	0.70	0.69	0.63	0.60	0.62	0.39	0.64	0.54
52	US Private Equity - Leveraged Buyout	0.65	0.67	0.65	0.58	0.65	0.67	0.63	0.61	0.62	0.37	0.63	0.54
53	US Private Equity - Venture Capital	0.55	0.76	0.66	0.50	0.73	0.67	0.56	0.54	0.55	0.40	0.60	0.51
54	Global Private Real Estate	0.42	0.23	0.36	0.43	0.28	0.35	0.34	0.31	0.30	0.16	0.33	0.35
55	US Private Real Estate	0.42	0.23	0.36	0.43	0.28	0.35	0.34	0.31	0.30	0.16	0.33	0.35
56	US Private Real Estate Funds	0.49	0.31	0.42	0.48	0.34	0.42	0.41	0.39	0.39	0.21	0.38	0.36
57	US Private Real Estate Funds - Core	0.36	0.20	0.31	0.37	0.24	0.30	0.30	0.28	0.27	0.14	0.29	0.30
58	US Private Real Estate Funds - Value-Added	0.50	0.33	0.44	0.49	0.36	0.44	0.43	0.40	0.40	0.22	0.40	0.38
59	US Private Real Estate Funds - Opportunistic	0.56	0.37	0.47	0.53	0.39	0.48	0.46	0.45	0.46	0.26	0.41	0.36

Source: Morgan Stanley Wealth Management GIC as of Dec. 31, 2014

Above is based on data with longest available history through December 2014. Correlation is a statistical method of measuring the strength of a linear relationship between two variables. The correlation between two variables can assume any value from -1.00 to +1.00, inclusive. Past performance is not indicative of future results. We apply significant statistical adjustments to correct for distortions typically associated with index returns for hedge funds, private equity and private real estate. Correlation assumptions are the same for the secular and strategic horizons.

[††]Hedged strategies consist of hedge funds.

Table 3: Correlation Matrix (continued)

		37	38	39	40	41	42	43	44	45	46	47	48
1	Cash (US$ 90-day T-bill)	0.03	-0.05	-0.03	-0.06	0.09	0.12	-0.05	0.02	0.16	0.11	0.13	0.08
2	Cash (US$ three-month LIBOR)	0.01	-0.10	-0.10	-0.10	0.09	0.12	-0.05	-0.04	0.11	0.05	0.08	0.06
3	Global Investment Grade Bonds (hedged to US$)	-0.08	0.20	0.16	-0.01	-0.06	-0.08	0.06	0.01	0.11	0.11	0.08	0.24
4	US Short Term Investment Grade Bonds	-0.07	0.08	0.18	-0.05	-0.02	-0.02	0.11	0.09	0.08	0.08	0.04	0.20
5	Global Government Bonds (hedged to US$)	-0.17	0.10	0.05	-0.11	-0.15	-0.16	0.00	-0.12	0.01	-0.04	-0.04	0.19
6	Global Corporate Bonds (hedged to US$)	0.36	0.49	0.39	0.42	0.25	0.22	0.23	0.31	0.43	0.56	0.40	0.43
7	US Investment Grade Bonds	-0.04	0.21	0.25	0.03	-0.05	-0.06	0.12	0.04	0.12	0.14	0.09	0.24
8	US 10-year Government Bonds	-0.22	-0.01	0.07	-0.13	-0.13	-0.14	0.07	-0.20	-0.08	-0.13	-0.16	0.15
9	US Municipal Bonds	-0.01	0.26	0.24	0.05	-0.09	-0.09	0.04	0.20	0.17	0.20	0.16	0.21
10	International Investment Grade Bonds (hedged to US$)	-0.08	0.22	0.13	-0.03	-0.12	-0.14	0.03	-0.02	0.10	0.09	0.09	0.22
11	Global Inflation-Linked Securities (unhedged)	0.39	0.54	0.44	0.44	0.52	0.48	0.44	0.25	0.35	0.45	0.37	0.31
12	US Inflation-Linked Securities	0.13	0.27	0.24	0.17	0.32	0.27	0.35	0.12	0.13	0.26	0.09	0.22
13	Global High Yield Bonds (hedged to US$)	0.68	0.65	0.59	0.44	0.28	0.27	0.22	0.52	0.60	0.72	0.78	0.28
14	US High Yield Bonds	0.56	0.61	0.61	0.47	0.19	0.19	0.15	0.55	0.51	0.69	0.73	0.19
15	Global Emerging Market Debt (US$)	0.60	0.58	0.41	0.27	0.28	0.25	0.27	0.31	0.56	0.55	0.58	0.38
16	Global Emerging Market Local Debt (unhedged)	0.79	0.78	0.62	0.71	0.55	0.51	0.45	0.38	0.60	0.64	0.65	0.46
17	Global Equities (unhedged)	0.77	0.63	0.55	0.55	0.36	0.35	0.21	0.41	0.61	0.60	0.72	0.21
18	Developed Markets Equities (unhedged)	0.73	0.62	0.59	0.53	0.31	0.31	0.19	0.40	0.59	0.59	0.71	0.20
19	International Equities (unhedged)	0.59	0.79	0.46	0.40	0.33	0.32	0.23	0.38	0.56	0.59	0.67	0.16
20	US All-Cap Stocks	0.80	0.68	0.62	0.34	0.21	0.22	0.09	0.39	0.57	0.61	0.77	0.22
21	US Large-Cap Core Stocks	0.80	0.67	0.60	0.33	0.20	0.22	0.08	0.39	0.56	0.60	0.76	0.22
22	US Large-Cap Value Stocks	0.76	0.71	0.66	0.39	0.21	0.22	0.08	0.41	0.47	0.58	0.71	0.20
23	US Large-Cap Growth Stocks	0.80	0.58	0.51	0.24	0.18	0.20	0.07	0.34	0.57	0.56	0.72	0.21
24	US Mid-Cap Core Stocks	0.81	0.71	0.67	0.38	0.24	0.25	0.13	0.43	0.61	0.64	0.81	0.24
25	US Mid-Cap Value Stocks	0.77	0.75	0.73	0.43	0.22	0.23	0.11	0.43	0.49	0.60	0.74	0.20
26	US Mid-Cap Growth Stocks	0.82	0.59	0.50	0.27	0.23	0.24	0.12	0.36	0.64	0.58	0.78	0.22
27	US Small-Cap Core Stocks	0.73	0.65	0.67	0.37	0.21	0.22	0.14	0.38	0.60	0.60	0.81	0.19
28	US Small-Cap Value Stocks	0.69	0.70	0.76	0.43	0.19	0.20	0.12	0.39	0.50	0.58	0.76	0.17
29	US Small-Cap Growth Stocks	0.76	0.58	0.57	0.31	0.21	0.21	0.15	0.35	0.62	0.57	0.80	0.18
30	US SMID Stocks	0.77	0.68	0.68	0.38	0.23	0.24	0.14	0.41	0.62	0.62	0.83	0.21
31	Europe All-Cap Stocks (unhedged)	0.87	0.61	0.53	0.55	0.39	0.38	0.19	0.39	0.58	0.57	0.67	0.21
32	Europe ex UK All Cap Stocks (unhedged)	0.86	0.59	0.49	0.53	0.35	0.34	0.18	0.36	0.56	0.55	0.66	0.20
33	UK All Cap Stocks (unhedged)	0.85	0.73	0.45	0.42	0.33	0.32	0.18	0.44	0.55	0.61	0.66	0.20
34	Japan All Cap Stocks (unhedged)	0.68	0.54	0.23	0.22	0.22	0.21	0.18	0.16	0.34	0.35	0.39	0.00
35	Canada All Cap Stocks (unhedged)	0.88	0.69	0.53	0.43	0.47	0.45	0.38	0.45	0.69	0.67	0.77	0.32
36	Developed Asia Pacific ex Japan All Cap Stocks (unhedged)	0.94	0.70	0.47	0.52	0.40	0.38	0.29	0.41	0.57	0.58	0.66	0.20
37	Global Emerging Market Stocks (unhedged)	1.00	0.60	0.43	0.50	0.41	0.40	0.28	0.39	0.65	0.59	0.68	0.23
38	Global REITs (unhedged)	0.60	1.00	0.76	0.48	0.34	0.32	0.26	0.42	0.49	0.58	0.61	0.17
39	US REITs	0.43	0.76	1.00	0.50	0.18	0.18	0.15	0.36	0.33	0.50	0.51	0.11
40	World ex US REITs (unhedged)	0.50	0.48	0.50	1.00	0.26	0.25	0.13	0.25	0.31	0.42	0.38	0.10
41	Commodities Diversified	0.41	0.34	0.18	0.26	1.00	0.98	0.49	0.33	0.39	0.41	0.34	0.22
42	Commodities - ex Precious Metals	0.40	0.32	0.18	0.25	0.98	1.00	0.33	0.34	0.38	0.40	0.33	0.20
43	Commodities - Precious Metals	0.28	0.26	0.15	0.13	0.49	0.33	1.00	0.12	0.26	0.25	0.22	0.20
44	Master Limited Partnerships	0.39	0.42	0.36	0.25	0.33	0.34	0.12	1.00	0.38	0.58	0.51	0.12
45	Hedged Strategies[††]	0.65	0.49	0.33	0.31	0.39	0.38	0.26	0.38	1.00	0.65	0.76	0.54
46	Hedged Strategies[††] - Relative Value	0.59	0.58	0.50	0.42	0.41	0.40	0.25	0.58	0.65	1.00	0.77	0.29
47	Hedged Strategies[††] - Event Driven	0.68	0.61	0.51	0.38	0.34	0.33	0.22	0.51	0.76	0.77	1.00	0.32
48	Hedged Strategies[††] - Global Macro	0.23	0.17	0.11	0.10	0.22	0.20	0.20	0.12	0.54	0.29	0.32	1.00
49	Hedged Strategies[††] - Equity Long-Short	0.68	0.57	0.44	0.31	0.42	0.42	0.23	0.39	0.82	0.70	0.85	0.31
50	Managed Futures	-0.06	-0.01	0.01	-0.08	0.10	0.08	0.17	0.04	0.21	-0.10	-0.06	0.30
51	US Private Equity	0.50	0.52	0.44	0.39	0.15	0.16	0.01	0.25	0.53	0.47	0.62	0.16
52	US Private Equity - Leveraged Buyout	0.48	0.55	0.48	0.42	0.19	0.21	0.02	0.30	0.52	0.48	0.62	0.18
53	US Private Equity - Venture Capital	0.50	0.43	0.33	0.29	0.06	0.07	0.00	0.15	0.50	0.40	0.57	0.12
54	Global Private Real Estate	0.31	0.45	0.56	0.40	0.31	0.32	0.11	0.37	0.31	0.41	0.41	0.15
55	US Private Real Estate	0.31	0.45	0.56	0.40	0.31	0.32	0.11	0.37	0.31	0.41	0.41	0.15
56	US Private Real Estate Funds	0.29	0.46	0.53	0.40	0.29	0.31	0.05	0.30	0.34	0.37	0.42	0.16
57	US Private Real Estate Funds - Core	0.27	0.39	0.47	0.35	0.32	0.32	0.09	0.30	0.29	0.35	0.36	0.14
58	US Private Real Estate Funds - Value-Added	0.32	0.48	0.54	0.41	0.30	0.31	0.06	0.32	0.36	0.39	0.45	0.16
59	US Private Real Estate Funds - Opportunistic	0.26	0.48	0.53	0.40	0.23	0.25	0.00	0.27	0.34	0.33	0.42	0.16

Source: Morgan Stanley Wealth Management GIC as of Dec. 31, 2014

Above is based on data with longest available history through December 2014. Correlation is a statistical method of measuring the strength of a linear relationship between two variables. The correlation between two variables can assume any value from -1.00 to +1.00, inclusive. Past performance is not indicative of future results. We apply significant statistical adjustments to correct for distortions typically associated with index returns for hedge funds, private equity and private real estate. Correlation assumptions are the same for the secular and strategic horizons.

[††]Hedged strategies consist of hedge funds.

Table 3: Correlation Matrix (continued)

		49	50	51	52	53	54	55	56	57	58	59
1	Cash (US$ 90-day T-bill)	0.19	0.15	0.08	0.11	0.02	0.13	0.13	0.20	0.18	0.20	0.17
2	Cash (US$ three-month LIBOR)	0.15	0.12	0.05	0.07	0.01	0.08	0.08	0.15	0.13	0.15	0.12
3	Global Investment Grade Bonds (hedged to US$)	0.07	0.24	-0.12	-0.12	-0.11	-0.07	-0.07	-0.10	-0.10	-0.10	-0.09
4	US Short Term Investment Grade Bonds	0.06	0.07	-0.17	-0.16	-0.16	-0.09	-0.09	-0.11	-0.10	-0.10	-0.12
5	Global Government Bonds (hedged to US$)	-0.04	0.21	-0.16	-0.17	-0.14	-0.13	-0.13	-0.14	-0.14	-0.14	-0.14
6	Global Corporate Bonds (hedged to US$)	0.33	0.14	0.12	0.14	0.08	0.21	0.21	0.11	0.14	0.13	0.07
7	US Investment Grade Bonds	0.08	0.04	-0.15	-0.14	-0.15	-0.05	-0.05	-0.10	-0.09	-0.09	-0.12
8	US 10-year Government Bonds	-0.13	0.07	-0.32	-0.32	-0.30	-0.20	-0.20	-0.23	-0.20	-0.23	-0.23
9	US Municipal Bonds	0.11	0.06	-0.04	-0.03	-0.06	0.06	0.06	-0.01	0.02	0.00	-0.05
10	International Investment Grade Bonds (hedged to US$)	0.06	0.20	-0.08	-0.08	-0.09	-0.08	-0.08	-0.07	-0.10	-0.08	-0.01
11	Global Inflation-Linked Securities (unhedged)	0.37	0.22	0.18	0.21	0.12	0.28	0.28	0.22	0.24	0.23	0.18
12	US Inflation-Linked Securities	0.07	0.19	-0.21	-0.18	-0.24	0.13	0.13	-0.01	0.10	-0.01	-0.12
13	Global High Yield Bonds (hedged to US$)	0.62	-0.11	0.51	0.50	0.49	0.38	0.38	0.29	0.29	0.33	0.24
14	US High Yield Bonds	0.56	-0.05	0.48	0.47	0.45	0.40	0.40	0.28	0.30	0.32	0.21
15	Global Emerging Market Debt (US$)	0.51	-0.01	0.36	0.35	0.36	0.18	0.18	0.18	0.14	0.20	0.19
16	Global Emerging Market Local Debt (unhedged)	0.67	0.12	0.47	0.45	0.47	0.39	0.39	0.36	0.33	0.37	0.35
17	Global Equities (unhedged)	0.71	-0.06	0.69	0.67	0.65	0.33	0.33	0.40	0.29	0.42	0.45
18	Developed Markets Equities (unhedged)	0.70	0.00	0.69	0.68	0.66	0.33	0.33	0.41	0.30	0.43	0.46
19	International Equities (unhedged)	0.68	0.00	0.60	0.59	0.57	0.28	0.28	0.35	0.24	0.36	0.43
20	US All-Cap Stocks	0.78	-0.01	0.76	0.74	0.72	0.32	0.32	0.43	0.28	0.45	0.51
21	US Large-Cap Core Stocks	0.77	-0.01	0.76	0.74	0.72	0.31	0.31	0.42	0.27	0.44	0.51
22	US Large-Cap Value Stocks	0.65	0.02	0.68	0.69	0.59	0.38	0.38	0.49	0.32	0.50	0.58
23	US Large-Cap Growth Stocks	0.78	-0.03	0.75	0.71	0.76	0.22	0.22	0.33	0.20	0.35	0.40
24	US Mid-Cap Core Stocks	0.82	-0.02	0.72	0.70	0.69	0.35	0.35	0.43	0.30	0.45	0.49
25	US Mid-Cap Value Stocks	0.67	0.01	0.63	0.65	0.55	0.42	0.42	0.49	0.36	0.50	0.56
26	US Mid-Cap Growth Stocks	0.85	-0.04	0.72	0.67	0.76	0.23	0.23	0.31	0.20	0.33	0.37
27	US Small-Cap Core Stocks	0.82	-0.03	0.68	0.65	0.66	0.36	0.36	0.42	0.31	0.44	0.47
28	US Small-Cap Value Stocks	0.71	0.00	0.57	0.58	0.50	0.43	0.43	0.48	0.37	0.49	0.53
29	US Small-Cap Growth Stocks	0.85	-0.05	0.70	0.65	0.73	0.28	0.28	0.34	0.24	0.36	0.39
30	US SMID Stocks	0.84	-0.02	0.69	0.67	0.67	0.35	0.35	0.42	0.30	0.44	0.48
31	Europe All-Cap Stocks (unhedged)	0.65	-0.05	0.63	0.63	0.56	0.34	0.34	0.41	0.30	0.43	0.46
32	Europe ex UK All Cap Stocks (unhedged)	0.64	-0.03	0.60	0.61	0.54	0.31	0.31	0.39	0.28	0.40	0.45
33	UK All Cap Stocks (unhedged)	0.67	0.03	0.62	0.62	0.55	0.30	0.30	0.39	0.27	0.40	0.46
34	Japan All Cap Stocks (unhedged)	0.43	0.00	0.39	0.37	0.40	0.16	0.16	0.21	0.14	0.22	0.26
35	Canada All Cap Stocks (unhedged)	0.78	0.05	0.64	0.63	0.60	0.33	0.33	0.38	0.29	0.40	0.41
36	Developed Asia Pacific ex Japan All Cap Stocks (unhedged)	0.64	0.06	0.54	0.54	0.51	0.35	0.35	0.36	0.30	0.38	0.36
37	Global Emerging Market Stocks (unhedged)	0.68	-0.06	0.50	0.48	0.50	0.31	0.31	0.29	0.27	0.32	0.26
38	Global REITs (unhedged)	0.57	-0.01	0.52	0.55	0.43	0.45	0.45	0.46	0.39	0.48	0.48
39	US REITs	0.44	0.01	0.44	0.48	0.33	0.56	0.56	0.53	0.47	0.54	0.53
40	World ex US REITs (unhedged)	0.31	-0.08	0.39	0.42	0.29	0.40	0.40	0.40	0.35	0.41	0.40
41	Commodities Diversified	0.42	0.10	0.15	0.19	0.06	0.31	0.31	0.29	0.32	0.30	0.23
42	Commodities - ex Precious Metals	0.42	0.08	0.16	0.21	0.07	0.32	0.32	0.31	0.32	0.31	0.25
43	Commodities - Precious Metals	0.23	0.17	0.01	0.02	0.00	0.11	0.11	0.05	0.09	0.06	0.00
44	Master Limited Partnerships	0.39	0.04	0.25	0.30	0.15	0.37	0.37	0.30	0.30	0.32	0.27
45	Hedged Strategies[††]	0.82	0.21	0.53	0.52	0.50	0.31	0.31	0.34	0.29	0.36	0.34
46	Hedged Strategies[††] - Relative Value	0.70	-0.10	0.47	0.48	0.40	0.41	0.41	0.37	0.35	0.39	0.33
47	Hedged Strategies[††] - Event Driven	0.85	-0.06	0.62	0.62	0.57	0.41	0.41	0.42	0.36	0.45	0.42
48	Hedged Strategies[††] - Global Macro	0.31	0.30	0.16	0.18	0.12	0.15	0.15	0.16	0.14	0.16	0.16
49	Hedged Strategies[††] - Equity Long-Short	1.00	-0.01	0.65	0.61	0.65	0.32	0.32	0.36	0.30	0.38	0.36
50	Managed Futures	-0.01	1.00	-0.18	-0.14	-0.24	-0.04	-0.04	-0.02	-0.03	-0.02	-0.02
51	US Private Equity	0.65	-0.18	1.00	0.63	0.60	0.34	0.34	0.42	0.34	0.44	0.45
52	US Private Equity - Leveraged Buyout	0.61	-0.14	0.63	1.00	0.56	0.40	0.40	0.49	0.40	0.50	0.51
53	US Private Equity - Venture Capital	0.65	-0.24	0.60	0.56	1.00	0.20	0.20	0.26	0.19	0.28	0.29
54	Global Private Real Estate	0.32	-0.04	0.34	0.40	0.20	1.00	0.80	0.59	0.63	0.60	0.49
55	US Private Real Estate	0.32	-0.04	0.34	0.40	0.20	0.80	1.00	0.59	0.63	0.60	0.49
56	US Private Real Estate Funds	0.36	-0.02	0.42	0.49	0.26	0.59	0.59	1.00	0.60	0.64	0.60
57	US Private Real Estate Funds - Core	0.30	-0.03	0.34	0.40	0.19	0.63	0.63	0.60	1.00	0.61	0.50
58	US Private Real Estate Funds - Value-Added	0.38	-0.02	0.44	0.50	0.28	0.60	0.60	0.64	0.61	1.00	0.60
59	US Private Real Estate Funds - Opportunistic	0.36	-0.02	0.45	0.51	0.29	0.49	0.49	0.60	0.50	0.60	1.00

Source: Morgan Stanley Wealth Management GIC as of Dec. 31, 2014

Above is based on data with longest available history through December 2014. Correlation is a statistical method of measuring the strength of a linear relationship between two variables. The correlation between two variables can assume any value from -1.00 to +1.00, inclusive. Past performance is not indicative of future results. We apply significant statistical adjustments to correct for distortions typically associated with index returns for hedge funds, private equity and private real estate. Correlation assumptions are the same for the secular and strategic horizons.

[††]Hedged strategies consist of hedge funds.

Appendix

Hedge Fund Index Performance Biases

It should be noted that the majority of hedge fund indexes are comprised of hedge fund manager returns. This is in contrast to traditional indexes, which are comprised of individual securities in the various market segments they represent and offer complete transparency as to membership and construction methodology. As such, some believe that hedge fund index returns have certain biases that are not present in traditional indexes. Some of these biases inflate index performance, while others may skew performance negatively. However, many studies indicate that overall hedge fund index performance has been biased to the upside. Some studies suggest performance has been inflated by up to 260 basis points or more annually depending on the types of biases included and the time period studied. Although there are numerous potential biases that could affect hedge fund returns, we identify some of the more common ones throughout this paper.

Self-selection bias results when certain manager returns are not included in the index returns and may result in performance being skewed up or down. Because hedge funds are private placements, hedge fund managers are able to decide which fund returns they want to report and are able to opt out of reporting to the various databases. Certain hedge fund managers may choose only to report returns for funds with strong returns and opt out of reporting returns for weak performers. Other hedge funds that close may decide to stop reporting in order to retain secrecy, which may cause a downward bias in returns.

Survivorship bias results when certain constituents are removed from an index. This often results from the closure of funds due to poor performance, “blow ups,” or other such events. As such, this bias typically results in performance being skewed higher. As noted, hedge fund index performance biases can result in positive or negative skew. However, it would appear that the skew is more often positive. While it is difficult to quantify the effects precisely, investors should be aware that idiosyncratic factors may be giving hedge fund index returns an artificial “lift” or upwards bias.

Index Definitions

ALERIAN MLP INDEX A composite of the 50 most prominent energy Master Limited Partnerships that provides investors with an unbiased, comprehensive benchmark for this emerging asset class. The index, which is calculated using a float-adjusted, capitalization-weighted methodology, is disseminated real-time on a price-return basis and on a total-return basis.

BARCLAYHEDGE BTOP50 INDEX This index seeks to replicate the composition of the managed futures industry with regard to trading style and overall market exposure. The largest investable trading advisor programs, as measured by assets under management, are selected for inclusion in the index.

BARCLAYS CAPITAL GLOBAL HIGH YIELD INDEX (HEDGED TO USD) This index provides a broad-based measure of the global high yield fixed income markets. Currency exposure is hedged to the US dollar.

BARCLAYS CAPITAL US AGGREGATE BOND INDEX This index represents securities that are SEC-registered, taxable and dollar-denominated. The index covers the US investment grade fixed-rate bond index, with index components for government and corporate securities, mortgage pass-through securities and asset-backed securities.

CREDIT SUISSE GLOBAL MACRO HEDGE FUND INDEX This index is a subset of the Credit Suisse Hedge Fund Index, which measures the aggregate performance of dedicated short bias funds.

DOW JONES-UBS COMMODITY INDEX This index comprises futures contracts on physical commodities. These include energy, base metals, precious metals and agricultural commodities.

DOW JONES-UBS ROLL SELECT COMMODITY INDEX This is a version of the Dow Jones-UBS Commodity Index that aims to mitigate the effects of contango on index performance. For each commodity, the index rolls into the futures contract showing the most backwardation or least contango, selecting from those contracts with nine months or fewer until expiration. The index is calculated in price and total return.

FTSE EPRA/NAREIT GLOBAL INDEX Reflects trends in real estate equities worldwide. Relevant real estate activities are defined as the ownership, disposure, and development of income-producing real estate.

HFRI EQUITY LONG/SHORT (EQUITY HEDGE) INDEX Measures investment managers who maintain positions both long and short in primarily equity and equity derivative securities.

HFRI EVENT DRIVEN INDEX Event driven is also known as "corporate life cycle" investing. This involves investing in opportunities created by significant transactional events, such as spin-offs, mergers and acquisitions, bankruptcy reorganizations, recapitalizations and share buybacks.

MSCI EMERGING MARKETS (IMI) This index captures large-, mid- and small-cap representation across 21 Emerging Markets countries.

MSCI USA INDEX This index is designed to measure the performance of the large- and mid-cap segments of the US market. With 586 constituents, the index covers approximately 84% of the free-float-adjusted market capitalization.

MSCI WORLD EX-USA This index is a free float-adjusted market capitalization index that is designed to measure global developed market equity performance excluding the United States.

RUSSELL 3000 INDEX This index measures the performance of the 3,000 largest US companies based on total market capitalization.

S&P 500 INDEX Regarded as the best single gauge of the US equities market, this capitalization-weighted index includes a representative sample of 500 leading companies in leading industries of the US economy.

Hedged Strategy Definitions

EQUITY LONG/SHORT This strategy consists of a core holding of long equities hedged at all times with varying degrees of short sales of stock and/or index options. Some managers maintain a substantial portion of assets within a hedge structure and commonly employ leverage.

EVENT DRIVEN Investment managers in this strategy maintain positions in companies currently or prospectively involved in corporate transactions of a wide variety including but not limited to mergers, restructurings, financial distress, tender offers, shareholder buybacks, debt exchanges, security issuance or other capital structure adjustments. Security types can range from most senior in the capital structure to most junior or subordinated, and frequently involve additional derivative securities. Event driven exposure includes a combination of sensitivities to equity markets, credit markets and idiosyncratic, company-specific developments. Investment theses are typically predicated on fundamental characteristics (as opposed to quantitative), with the realization of the thesis predicated on a specific development exogenous to the existing capital structure.

GLOBAL MACRO This is a hedge fund strategy that bases its holdings—such as long and short positions in various equity, fixed income, currency, and futures markets—primarily on overall economic and political views of various countries (macroeconomic principles).

RELATIVE VALUE Investment managers in this strategy maintain positions in which the investment thesis is predicated on realization of a valuation discrepancy in the relationship between multiple securities. They employ a variety of fundamental and quantitative techniques to establish investment theses, and security types range broadly across equity, fixed income, derivatives or other security types.

Glossary

BETA A measure of the volatility, or systematic risk, of a security or a portfolio in comparison to the market as a whole.

CORRELATION This is statistical measure of how two securities move in relation to each other. This measure is often converted into what is known as correlation coefficient, which ranges between -1 and +1. Perfect positive correlation (a correlation coefficient of +1) implies that as one security moves, either up or down, the other security will move in lockstep, in the same direction. Alternatively, perfect negative correlation means that if one security moves in either direction the security that is perfectly negatively correlated will move in the opposite direction. If the correlation is 0, the movements of the securities are said to have no correlation; they are completely random. A correlation greater than 0.8 is generally described as strong, whereas a correlation less than 0.5 is generally described as weak.

EQUITY RISK PREMIUM The excess return that an individual stock or the overall stock market provides over a risk-free rate.

EXCESS RETURN This term represents the average quarterly total return of the portfolio relative to its benchmark. A portfolio with a positive excess return has on average outperformed its benchmark on a quarterly basis. This statistic is obtained by subtracting the benchmark return from the portfolio's return.

RISK-FREE RATE This is the theoretical rateof return of an investment with zero risk.The risk-free rate represents the interest an investor would expect from an absolutely risk-free investment over a specified period of time.

SHARPE RATIO This statistic measures a portfolio's rate of return based on the risk it assumed and is often referred to as its risk-adjusted performance. Using standard deviation and returns in excess of the returns of T-bills, it determines reward per unit of risk. This measurement can help determine if the portfolio is reaching its goal of increasing returns while managing risk.

STANDARD DEVIATION This statistic quantifies the volatility associated with a portfolio's returns by measuring the variation in returns around the mean return. Unlike beta, which measures volatility relative to the aggregate market, standard deviation measures the absolute volatility of a portfolio's return.

VOLATILITY This is a statistical measure of the dispersion of returns for a given security or market index. Volatility can either be measured by using the standard deviation or variance between returns from that same security or market index. Commonly, the higher the volatility, the riskier the security.

Risk Considerations

Master Limited Partnerships (MLPs)

Individual MLPs are publicly traded partnerships that have unique risks related to their structure. These include, but are not limited to, their reliance on the capital markets to fund growth, adverse ruling on the current tax treatment of distributions (typically mostly tax deferred), and commodity volume risk.

For tax purposes, MLP ETFs are taxed as C corporations and will be obligated to pay federal and state corporate income taxes on their taxable income, unlike traditional ETFs, which are structured as registered investment companies. These ETFs are likely to exhibit tracking error relative to their index as a result of accounting for deferred tax assets or liabilities (see funds' prospectuses).

The potential tax benefits from investing in MLPs depend on their being treated as partnerships for federal income tax purposes and, if the MLP is deemed to be a corporation, then its income would be subject to federal taxation at the entity level, reducing the amount of cash available for distribution to the fund which could result in a reduction of the fund's value.

MLPs carry interest rate risk and may underperform in a rising interest rate environment. MLP funds accrue deferred income taxes for future tax liabilities associated with the portion of MLP distributions considered to be a tax-deferred return of capital and for any net operating gains as well as capital appreciation of its investments; this deferred tax liability is reflected in the daily NAV; and, as a result, the MLP fund's after-tax performance could differ significantly from the underlying assets even if the pre-tax performance is closely tracked.

Duration

Duration, the most commonly used measure of bond risk, quantifies the effect of changes in interest rates on the price of a bond or bond portfolio. The longer the duration, the more sensitive the bond or portfolio would be to changes in interest rates. Generally, if interest rates rise, bond prices fall and vice versa. Longer-term bonds carry a longer or higher duration than shorter-term bonds; as such, they would be affected by changing interest rates for a greater period of time if interest rates were to increase. Consequently, the price of a long-term bond would drop significantly as compared to the price of a short-term bond.

International investing entails greater risk, as well as greater potential rewards compared to U.S. investing. These risks include political and economic uncertainties of foreign countries as well as the risk of currency fluctuations. These risks are magnified in countries with emerging markets, since these countries may have relatively unstable governments and less established markets and economies.

Alternative investments which may be referenced in this report, including private equity funds, real estate funds, hedge funds, managed futures funds, and funds of hedge funds, private equity, and managed futures funds, are speculative and entail significant risks that can include losses due to leveraging or other speculative investment practices, lack of liquidity, volatility of returns, restrictions on transferring interests in a fund, potential lack of diversification, absence and/or delay of information regarding valuations and pricing, complex tax structures and delays in tax reporting, less regulation and higher fees than mutual funds and risks associated with the operations, personnel and processes of the advisor.

Managed futures investments are speculative, involve a high degree of risk, use significant leverage, have limited liquidity and/or may be generally illiquid, may incur substantial charges, may subject investors to conflicts of interest, and are usually suitable only for the risk capital portion of an investor's portfolio. Before investing in any partnership and in order to make an informed decision, investors should read the applicable prospectus and/or offering documents carefully for additional information, including charges, expenses, and risks. Managed futures investments are not intended to replace equities or fixed income securities but rather may act as a complement to these asset categories in a diversified portfolio.

Risks of **private real estate** include: illiquidity; a long-term investment horizon with a limited or nonexistent secondary market; lack of transparency; volatility (risk of loss); and leverage.

Investing in commodities entails significant risks. Commodity prices may be affected by a variety of factors at any time, including but not limited to, (i) changes in supply and demand relationships, (ii) governmental programs and policies, (iii) national and international political and economic events, war and terrorist events, (iv) changes in interest and exchange rates, (v) trading activities in commodities and related contracts, (vi) pestilence, technological change and weather, and (vii) the price volatility of a commodity. In addition, the commodities markets are subject to temporary distortions or other disruptions due to various factors, including lack of liquidity, participation of speculators and government intervention.

Physical precious metals are non-regulated products. Precious metals are speculative investments, which may experience short-term and long term price volatility. The value of precious metals investments may fluctuate and may appreciate or decline, depending on market conditions. If sold in a declining market, the price you receive may be less than your original investment. Unlike bonds and stocks, precious metals do not make interest or dividend payments. Therefore, precious metals may not be suitable for investors who require current income. Precious metals are commodities that should be safely stored, which may impose additional costs on the investor. The Securities Investor Protection Corporation ("SIPC") provides certain protection for customers' cash and securities in the event of a brokerage firm's bankruptcy, other financial difficulties, or if customers' assets are missing. SIPC insurance does not apply to precious metals or other commodities.

Bonds are subject to interest rate risk. When interest rates rise, bond prices fall; generally the longer a bond's maturity, the more sensitive it is to this risk. Bonds may also be subject to call risk, which is the risk that the issuer will redeem the debt at its option, fully or partially, before the scheduled maturity date. The market value of debt instruments may fluctuate, and proceeds from sales prior to maturity may be more or less than the amount originally invested or the maturity value due to changes in market conditions or changes in the credit quality of the issuer. Bonds are subject to the credit risk of the issuer. This is the risk that the issuer might be unable to make interest and/or principal payments on a timely basis. Bonds are also subject to reinvestment risk, which is the risk that principal and/or interest payments from a given investment may be reinvested at a lower interest rate.

Bonds rated below investment grade may have speculative characteristics and present significant risks beyond those of other securities, including greater credit risk and price volatility in the secondary market. Investors should be careful to consider these risks alongside their individual circumstances, objectives and risk tolerance before investing in high-yield bonds. High yield bonds should comprise only a limited portion of a balanced portfolio.

Interest on municipal bonds is generally exempt from federal income tax; however, some bonds may be subject to the alternative minimum tax (AMT). Typically, state tax-exemption applies if securities are issued within one's state of residence and, if applicable, local tax-exemption applies if securities are issued within one's city of residence.

Rebalancing does not protect against a loss in declining financial markets. There may be a potential tax implication with a rebalancing strategy. Investors should consult with their tax advisor before implementing such a strategy.

Treasury Inflation Protection Securities' (TIPS) coupon payments and underlying principal are automatically increased to compensate for inflation by tracking the consumer price index (CPI). While the real rate of return is guaranteed, TIPS tend to offer a low return. Because the return of TIPS is linked to inflation, TIPS may significantly underperform versus conventional U.S. Treasuries in times of low inflation.

Equity securities may fluctuate in response to news on companies, industries, market conditions and general economic environment.

Companies paying **dividends** can reduce or cut payouts at any time.

Investing in smaller companies involves greater risks not associated with investing in more established companies, such as business risk, significant stock price fluctuations and illiquidity.

Stocks of medium-sized companies entail special risks, such as limited product lines, markets, and financial resources, and greater market volatility than securities of larger, more-established companies.

Asset allocation and diversification do not assure a profit or protect against loss in declining financial markets.

The **indices** are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment.

The **indices selected by Morgan Stanley Wealth Management** to measure performance are representative of broad asset classes. Morgan Stanley Smith Barney LLC retains the right to change representative indices at any time.

REITs investing risks are similar to those associated with direct investments in real estate: property value fluctuations, lack of liquidity, limited diversification and sensitivity to economic factors such as interest rate changes and market recessions.

Because of their narrow focus, **sector investments** tend to be more volatile than investments that diversify across many sectors and companies.

Investing in foreign emerging markets entails greater risks than those normally associated with domestic markets, such as political, currency, economic and market risks.

Investing in foreign markets entails greater risks than those normally associated with domestic markets, such as political, currency, economic and market risks. **Investing in currency** involves additional special risks such as credit, interest rate fluctuations, derivative investment risk, and domestic and foreign inflation rates, which can be volatile and may be less liquid than other securities and more sensitive to the effect of varied economic conditions. In addition, international investing entails greater risk, as well as greater potential rewards compared to U.S. investing. These risks include political and economic uncertainties of foreign countries as well as the risk of currency fluctuations. These risks are magnified in countries with emerging markets, since these countries may have relatively unstable governments and less established markets and economies.

Value investing does not guarantee a profit or eliminate risk. Not all companies whose stocks are considered to be value stocks are able to turn their business around or successfully employ corrective strategies which would result in stock prices that do not rise as initially expected.

Growth investing does not guarantee a profit or eliminate risk. The stocks of these companies can have relatively high valuations. Because of these high valuations, an investment in a growth stock can be more risky than an investment in a company with more modest growth expectations.

Yields are subject to change with economic conditions. Yield is only one factor that should be considered when making an investment decision.

Credit ratings are subject to change.

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BARRINGTON HILLS POLICE PENSION FUND

Target Allocation (45% Equity & 55% FI) Forecasted Returns

As of December 31, 2014

Asset Class	Target Allocation	Estimated Arithmetic Return	Estimated Arithmetic Return attributed to Asset Class
Domestic Equity	26%	10.00%	2.60%
International Equity	16%	10.10%	1.62%
Fixed Income	53%	4.60%	2.44%
REITS	3%	9.00%	0.27%
Cash	2%	3.00%	0.06%
Total Estimated Portfolio Return Forecast			**6.98%**
Inflation Estimate			**2.0%**

The long-term (20-Years) expected rate of return on the Fund's investments was determined using an asset allocation study by the Global Investment Committee of Morgan Stanley and was published in March 2014 . The best estimate ranges of expected nominal rates of return(including inflation) were developed for each major assets class as of December 31, 2014. These ranges were combined to produce the long-term expected rate of return by weighting the expected future nominal rates of return by the target asset allocation percentage. Best estimates or arithmetic real rates of return excluding inflation for each major asset class included in the Fund's target asset allocation as of December 31, 2014 are listed in the table above.

BARRINGTON HILLS POLICE PENSION FUND

Target Allocation (60% Equity & 40% FI) Forecasted Returns

As of December 31, 2014

Asset Class	Target Allocation	Estimated Arithmetic Return	Estimated Arithmetic Return attributed to Asset Class
Domestic Equity	33%	10.00%	3.30%
International Equity	24%	10.10%	2.42%
Fixed Income	38%	4.60%	1.75%
REITS	3%	9.00%	0.27%
Cash	2%	3.00%	0.06%
Total Estimated Portfolio Return Forecast			**7.80%**
Inflation Estimate			**2.0%**

The long-term (20-Years) expected rate of return on the Fund's investments was determined using an asset allocation study by the Global Investment Committee of Morgan Stanley and was published in March 2014 . The best estimate ranges of expected nominal rates of return(including inflation) were developed for each major assets class as of December 31, 2014. These ranges were combined to produce the long-term expected rate of return by weighting the expected future nominal rates of return by the target asset allocation percentage. Best estimates or arithmetic real rates of return excluding inflation for each major asset class included in the Fund's target asset allocation as of December 31, 2014 are listed in the table above.

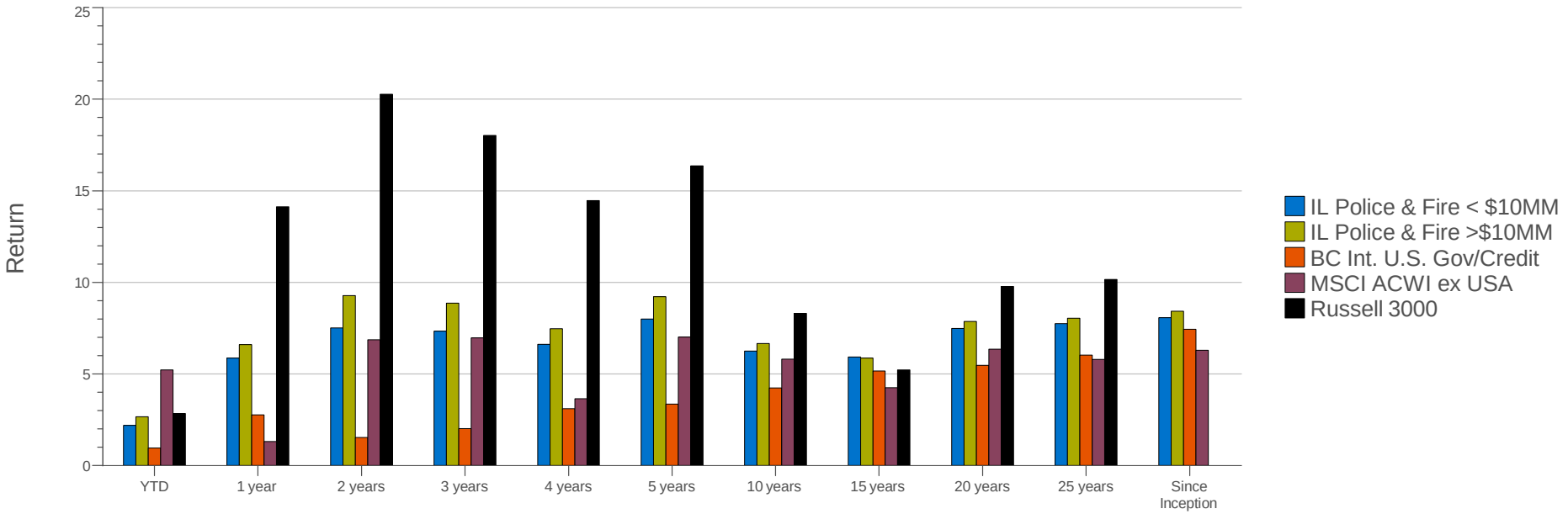
BARRINGTON HILLS POLICE PENSION FUND

Target Allocations

	IL Police & Fire Less Than $10Million	IL Police & Fire Greater Than $10Million
Large Cap Equity	20%	27%
Mid Cap Equity	3%	3%
Small Cap Equity	3%	3%
Real Estate Equity (REITS)	3%	3%
International Equity	16%	24%
Fixed Income	53%	38%
Cash	2%	2%

Manager vs Benchmark: Return

February 1989 - February 2015 (not annualized if less than 1 year)

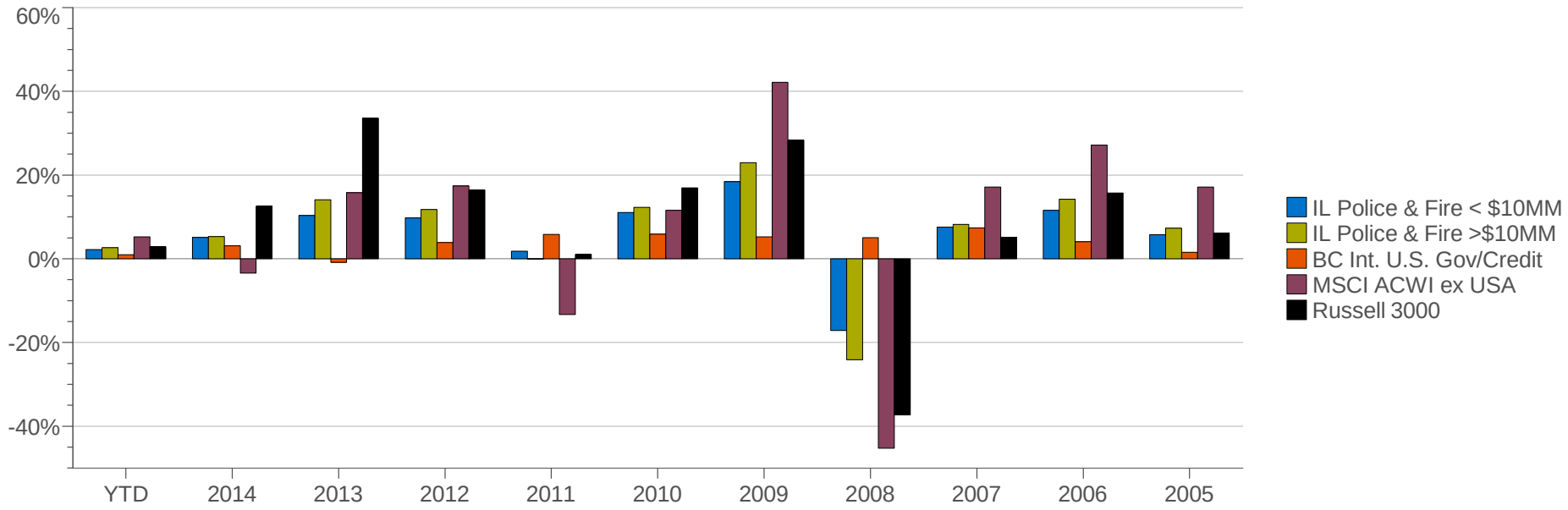


Manager vs Benchmark: Return

February 1989 - February 2015 (not annualized if less than 1 year)

	YTD	1 year	2 years	3 years	4 years	5 years	10 years	15 years	20 years	25 years
IL Police & Fire < $10MM	2.20%	5.87%	7.52%	7.34%	6.61%	8.00%	6.25%	5.93%	7.48%	7.75%
IL Police & Fire >$10MM	2.67%	6.61%	9.28%	8.87%	7.47%	9.21%	6.67%	5.87%	7.87%	8.04%
BC Int. U.S. Gov/Credit	0.95%	2.77%	1.53%	2.02%	3.11%	3.36%	4.23%	5.16%	5.47%	6.02%
MSCI ACWI ex USA	5.22%	1.31%	6.86%	6.96%	3.65%	7.02%	5.81%	4.26%	6.35%	5.79%
Russell 3000	2.85%	14.12%	20.27%	18.02%	14.47%	16.36%	8.30%	5.23%	9.77%	10.17%

Calendar Year Return
As of February 2015

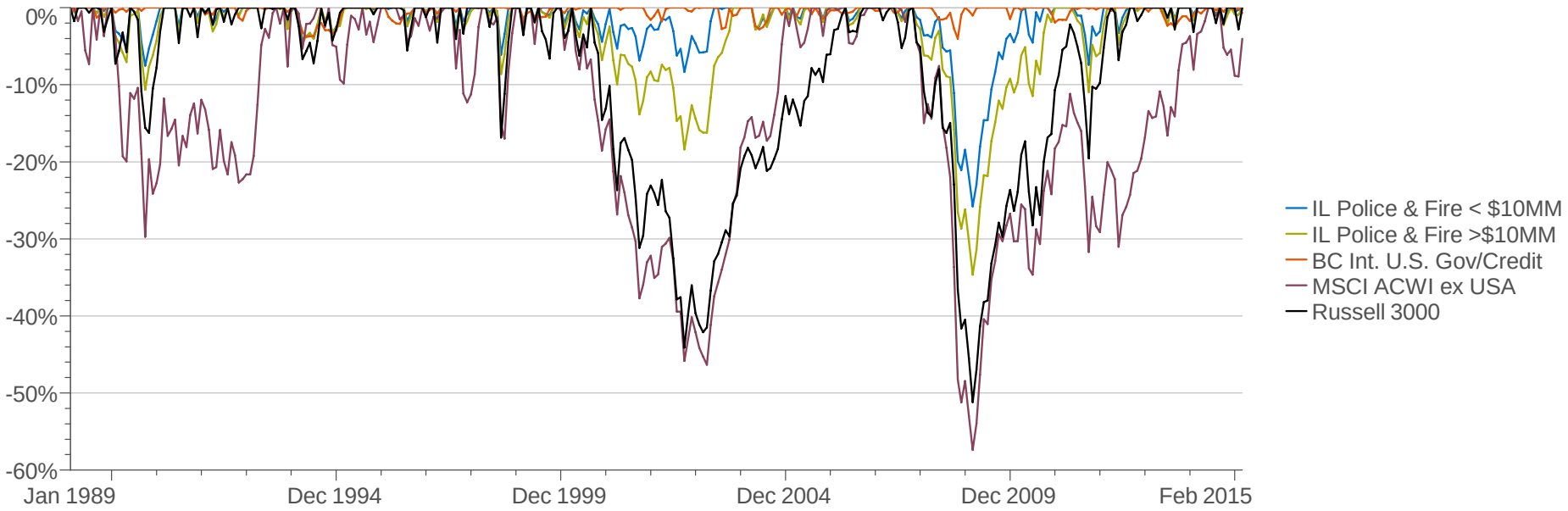


Calendar Year Return
As of February 2015

	YTD	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005
IL Police & Fire < $10MM	2.20%	5.12%	10.34%	9.78%	1.82%	11.08%	18.42%	-17.11%	7.55%	11.58%	5.76%
IL Police & Fire >$10MM	2.67%	5.28%	14.06%	11.75%	-0.08%	12.27%	22.97%	-24.11%	8.19%	14.21%	7.33%
BC Int. U.S. Gov/Credit	0.95%	3.13%	-0.86%	3.89%	5.80%	5.89%	5.24%	5.08%	7.39%	4.08%	1.58%
MSCI ACWI ex USA	5.22%	-3.44%	15.78%	17.39%	-13.33%	11.60%	42.14%	-45.24%	17.12%	27.16%	17.11%
Russell 3000	2.85%	12.56%	33.55%	16.42%	1.03%	16.93%	28.34%	-37.31%	5.14%	15.71%	6.12%

Drawdown

February 1989 - February 2015



Drawdown Table

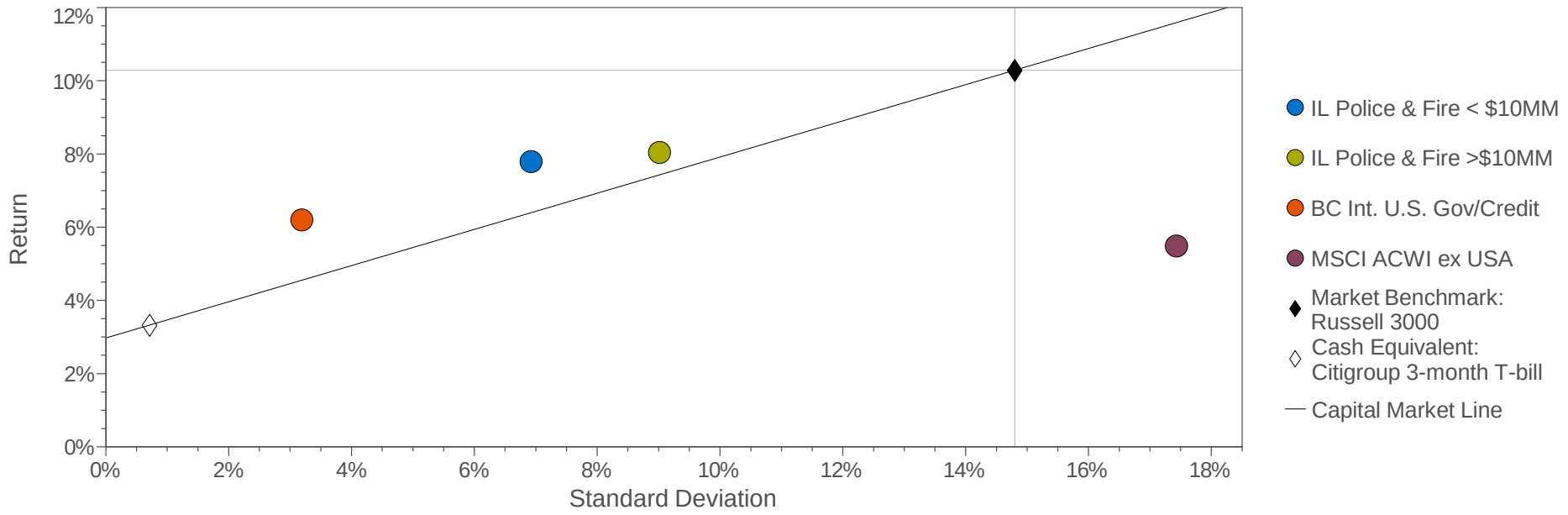
February 1989 - February 2015: Summary Statistics

	Average Up Return	Average Down Return	Best Period Return	Worst Period Return	Max Drawdown	Max Drawdown Begin Date	Max Drawdown End Date	Max Drawdown Length	Max Drawdown Recovery Date	High Water Mark Date	To High Water Mark
IL Police & Fire < $10MM	1.67%	-1.63%	6.32%	-9.98%	-25.77%	Nov 2007	Feb 2009	16	Apr 2010	Feb 2015	0.00%
IL Police & Fire >$10MM	2.13%	-2.07%	8.06%	-12.76%	-34.65%	Nov 2007	Feb 2009	16	Dec 2010	Feb 2015	0.00%
BC Int. U.S. Gov/Credit	0.93%	-0.61%	3.27%	-2.72%	-4.05%	Mar 2008	Oct 2008	8	Dec 2008	Jan 2015	0.70%
MSCI ACWI ex USA	3.80%	-4.03%	14.35%	-22.01%	-57.37%	Nov 2007	Feb 2009	16	May 2014	Jun 2014	4.22%
Russell 3000	3.40%	-3.55%	11.51%	-17.74%	-51.20%	Nov 2007	Feb 2009	16	Mar 2012	Feb 2015	0.00%

Created with Zephyr StyleADVISOR.

Risk / Return

February 1989 - February 2015 (Single Computation)



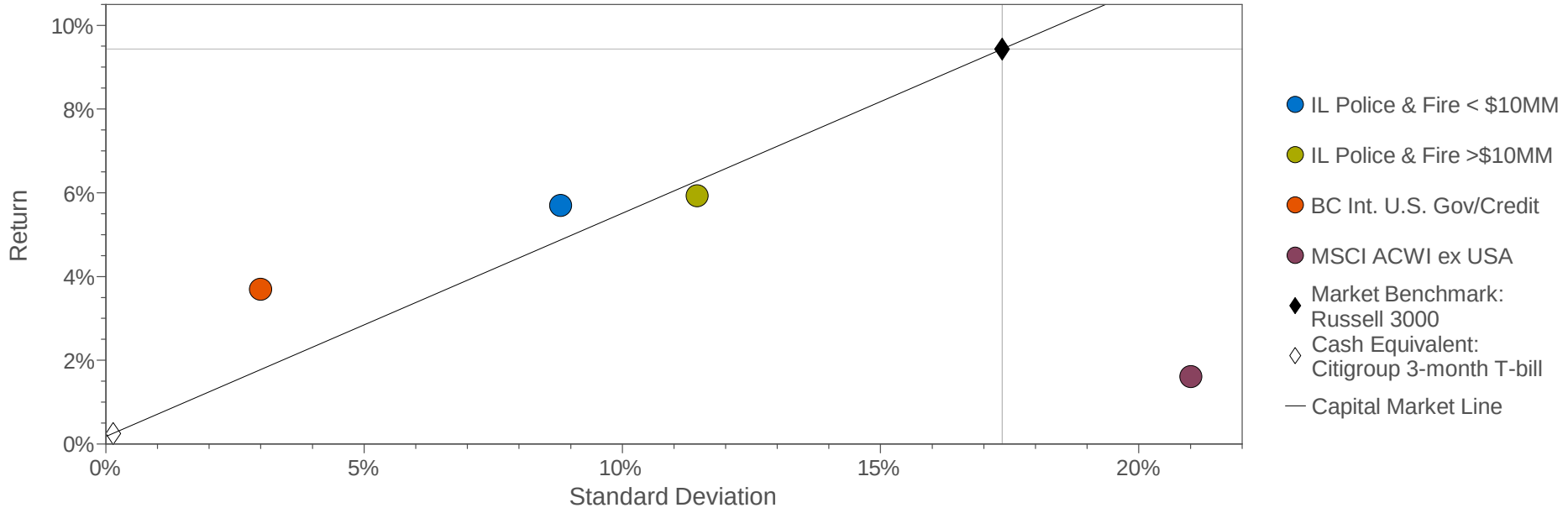
Performance Table

February 1989 - February 2015. Single Computation

	Portfolio Performance		
	Annualized Return (%)	Cumulative Return (%)	Std Dev (%)
IL Police & Fire < $10MM	7.80	608.81	6.92
IL Police & Fire >$10MM	8.05	653.19	9.02
BC Int. U.S. Gov/Credit	6.20	380.42	3.19
MSCI ACWI ex USA	5.49	303.22	17.43

Risk / Return

March 2008 - February 2015 (Single Computation)



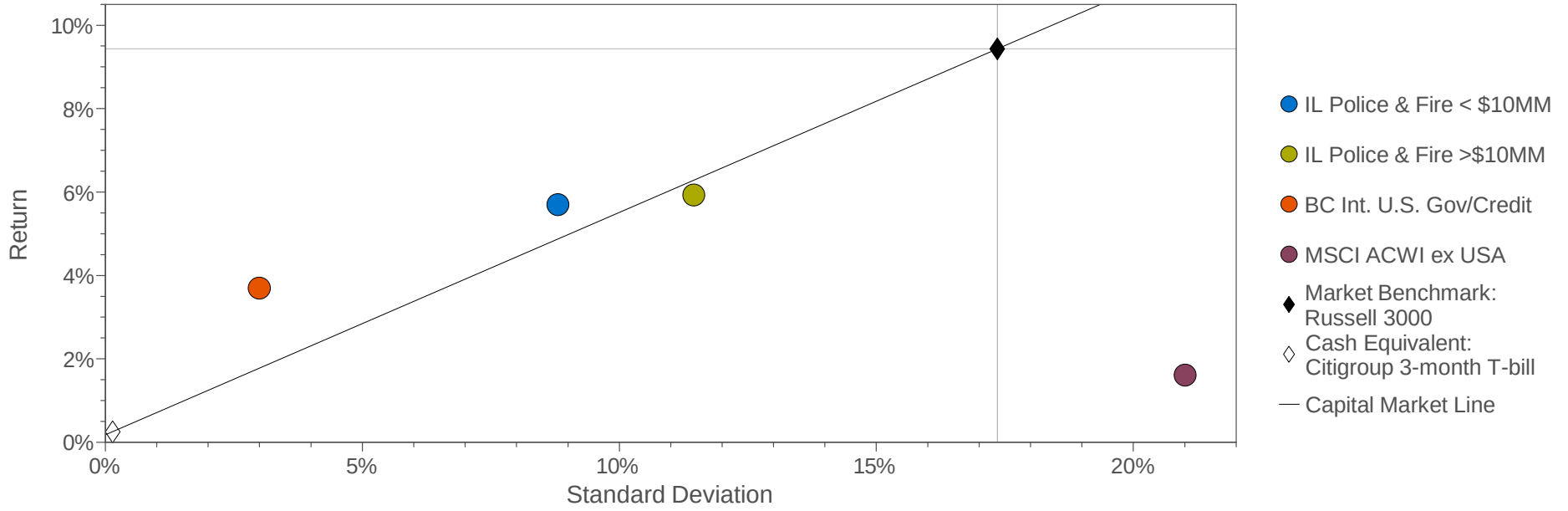
Performance Table

February 1989 - February 2015. Single Computation

	Portfolio Performance		
	Annualized Return (%)	Cumulative Return (%)	Std Dev (%)
IL Police & Fire < $10MM	7.80	608.81	6.92
IL Police & Fire >$10MM	8.05	653.19	9.02
BC Int. U.S. Gov/Credit	6.20	380.42	3.19
MSCI ACWI ex USA	5.49	303.22	17.43

Risk / Return

March 2008 - February 2015 (Single Computation)



Performance Table

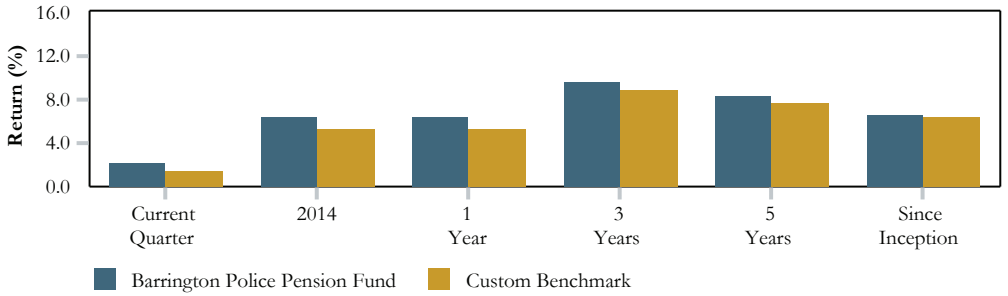
March 2008 - February 2015. Single Computation

	Portfolio Performance		
	Annualized Return (%)	Cumulative Return (%)	Std Dev (%)
IL Police & Fire < $10MM	5.70	47.42	8.80
IL Police & Fire >$10MM	5.93	49.69	11.45
BC Int. U.S. Gov/Credit	3.70	28.96	3.00
MSCI ACWI ex USA	1.62	11.87	21.00

Barrington Police Pension Fund

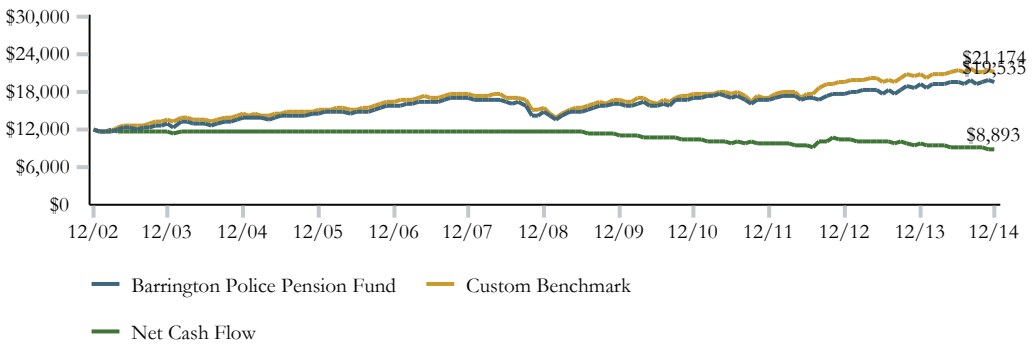
As of 12/31/14

Portfolio Performance (%)



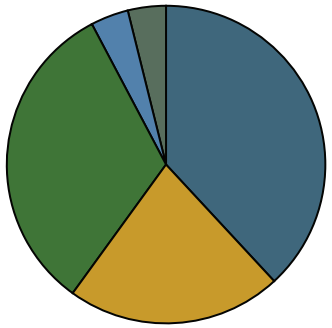
	Current Quarter	YTD	1 Year	3 Years	5 Years	Since Inception	Inception Date
Barrington Police Pension Fund	2.21	6.34	6.34	9.71	8.31	6.50	01/01/2003
Custom Benchmark	1.52	5.30	5.30	8.86	7.55	6.43	01/01/2003

	Current Quarter	YTD	1 Year	3 Years	5 Years	Since Inception	Inception Date
Barrington Police Pension Fund							01/01/2003
Beginning Market Value	19,331	19,124	19,124	16,677	16,020	11,863	
Net Contributions	-222	-775	-775	-954	-2,299	-2,970	
Fees/Expenses	-10	-38	-38	-120	-227	-366	
Income	185	475	475	1,394	2,127	3,471	
Gain/Loss	251	750	750	2,538	3,914	7,537	
Ending Market Value	19,535	19,535	19,535	19,535	19,535	19,535	



Asset Allocation ($000)

December 31, 2014 : $19,535

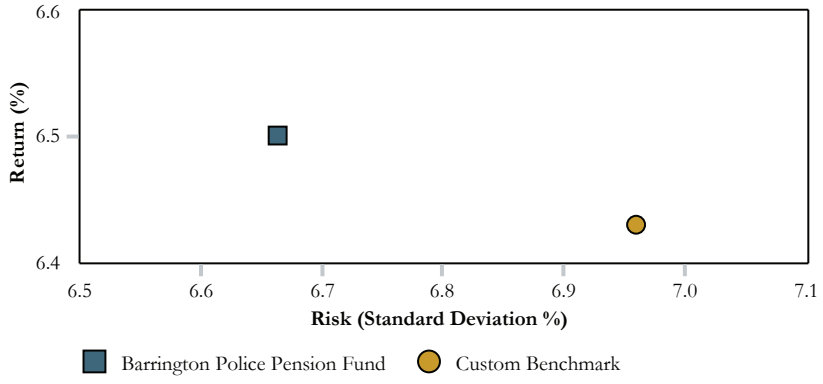


Segments	Market Value ($000)	Allocation (%)
Domestic Equity	7,447.38	38.12
International Equity	4,267.64	21.85
Domestic Fixed Income	6,312.96	32.32
Alternative Investment	749.42	3.84
Cash Equivalent	757.41	3.88

Portfolio Characteristics vs. Custom Benchmark Since Inception

	Beta	Alpha	R-Squared	Sharpe Ratio	Inception Date
Barrington Police Pension Fund	0.93	0.53	0.93	0.77	01/01/2003

Risk/Return Analysis Since 01/01/03



VILLAGE OF BARRINGTON HILLS
FY 2015
1ST QUARTER REVIEW-REVENUE
THROUGH MARCH 31, 2015

	Y-T-D PERCENTAGE COLLECTED
Property Taxes	37%
State Sales & Use	33%
State Income Tax	13%
Personal Prop Replacement Tax	17%
Utility Taxes	27%
Franchise Fees	20%
Traffic Fines	23%
Building Permit Fees	9%
Overweight Permit Fees	10%

VILLAGE OF BARRINGTON HILLS
FY 2015
1st QUARTER REVIEW-EXPENDITURES
THROUGH MARCH 31, 2015

		FISCAL YEAR	Y-T-D	Y-T-D	Y-T-D	
	GENERAL FUND	**BUDGET**	**ACTUAL**	**BUDGET**	**VARIANCE**	EXPLANATION OF VARIANCE
ACCT#	Administration Department					
100150203	Office/Comp/Software Suppies	$ 4,500.00	$ 1,980.46	$ 1,125.00	$ (855.46)	As needed basis-purchased $850 for toner in March
100150207	Telephone Lease/Purchase	2,500.00	-	625.00	625.00	As needed basis
100150215	Computer Accessories	250.00	-	62.50	62.50	As needed basis
100150401	Merchant Fees-Credit Card Fees	25.00	113.84	6.25	(107.59)	Fees/finance charges incurred
				Total	**$ (275.55)**	
	Building Department					
100250302	Outside Services	$ 49,500.00	$ 4,387.25	$ 12,375.00	$ 7,987.75	As needed basis
100250303	Printing and Supplies	1,000.00	89.00	250.00	161.00	As needed basis
100250305	Vehicle Expenses	100.00	-	25.00	25.00	As needed basis
100250309	Records Management	5,000.00	2,475.00	1,250.00	(1,225.00)	Quarterly payments-not to exceed budgeted by year end
100250310	Surveying Services	3,000.00	-	750.00	750.00	As needed basis
100250311	Overtime	1,000.00	-	250.00	250.00	Mgr. of Municipal Svcs. payable overtime not incurred to date
				Total	**$ 7,948.75**	
	Health Services					
100350403	Board of Health	$ 3,000.00	$ 1,329.00	$ 750.00	$ (579.00)	Unanticipated public properties level 2 testing by the Village
100350405	Potable Water	2,500.00	-	625.00	625.00	As needed basis
				Total	**$ 46.00**	
	Legal Services					
100450501	Village Attorney	$ 140,000.00	$ -	$ 35,000.00	$ 35,000.00	Disapproval of invoices submitted by Bond, Dickson & Associates
100450504	Other Legal Fees	40,000.00	-	10,000.00	10,000.00	As needed basis
100450506	Expert Witnesses	8,000.00	-	2,000.00	2,000.00	As needed basis
100450508	Litigation Expenses	100,000.00	-	25,000.00	25,000.00	Sears matter closed
100450509	Labor Relations	60,000.00	3,257.55	15,000.00	11,742.45	Ongoing mediation with MAP
100450510	Planning/Zoning	35,000.00	624.00	8,750.00	8,126.00	As needed basis
				Total	**$ 91,868.45**	

VILLAGE OF BARRINGTON HILLS
FY 2015
1st QUARTER REVIEW-EXPENDITURES
THROUGH MARCH 31, 2015

		FISCAL YEAR	Y-T-D	Y-T-D	Y-T-D	EXPLANATION OF VARIANCE
	GENERAL FUND	**BUDGET**	**ACTUAL**	**BUDGET**	**VARIANCE**	
ACCT#	Public Safety					
100550215	Restit. Exhange & Bond Transf	$ 1,000.00	$ -	$ 250.00	$ 250.00	If situation arises to be expended
100550602	Petroleum Supplies	98,000.00	7,610.29	24,500.00	16,889.71	Lower than forecasted gasoline prices
100550616	Radar Repairs	500.00	-	125.00	125.00	As needed basis-radars recertified in November
100550617	Security Maintenance	9,000.00	250.00	2,250.00	2,000.00	New security camera agreement -to be expended by year enc
100550618	Jail Services Contract	750.00	-	187.50	187.50	As neeeded basis-used to purchase lockup supplies
100550619	Memberships & Dues	12,900.00	1,007.00	3,225.00	2,218.00	To be expended by year end
100550630	Marking Vehicles	1,200.00	-	300.00	300.00	Two new squads to be marked in May
100550642	Shooting Program/Armory	7,000.00	-	1,750.00	1,750.00	Training/qualification shoots to be expended by year enc
100550651	Vehicular Expense	4,500.00	18.00	1,125.00	1,107.00	To be expended by year end
100550652	Employee Recognition/Awards	1,200.00	99.80	300.00	200.20	As needed basis
100550653	Equipment Replacement	18,000.00	336.35	4,500.00	4,163.65	As needed basis
100550657	Dispatch Consolidation Expense	-	7,930.00	-	(7,930.00)	New account created - as needed to begin consolidation to Quadcon
100550662	Towing Expenses	750.00	-	187.50	187.50	As needed basis
100550663	Recruitment/Promotional	3,000.00	-	750.00	750.00	As needed basis
100550665	Professional Services Counseling	5,000.00	-	1,250.00	1,250.00	As needed basis
100550667	Drug/Public Education Expenses	1,000.00	88.95	250.00	161.05	To be expended by year end
100550669	Disaster/Emergency	5,500.00	-	1,375.00	1,375.00	To be expended by year end
100550670	Furniture & Equipment	3,000.00	-	750.00	750.00	Anticipate purchase of desks/chairs
100550671	Calea Expense	8,000.00	4,065.00	2,000.00	(2,065.00)	Preparation of 2015 on site inspection and awarc
100550672	Public Safety Equipment	8,000.00	-	2,000.00	2,000.00	IPRF Grant to be used to begin updating tasers and first aid supplies
100550673	Lease Computer Aided Dispatch	29,100.00	-	7,275.00	7,275.00	To be expended by year end
100550677	Live-Scan Monthly Fees	5,123.00	-	1,280.75	1,280.75	Annual invoice due in October/November
				Total	**$ 34,225.36**	
	Buildings and Grounds					
100751001	Building Improvements	$ 20,000.00	$ -	$ 5,000.00	$ 5,000.00	Expect to replace furnace in MacArthur Room
100751002	Furniture and Equipment	5,000.00	-	1,250.00	1,250.00	Expect to replace furnace in MacArthur Room
100751004	Exterior Bldg Maintenance	20,000.00	88.00	5,000.00	4,912.00	Generator maintenance contract paid annual in Apri
100751005	Grounds Maintenance	8,000.00	-	2,000.00	2,000.00	Seasonal/mowing/blockhouse gravel
100751006	Contractual Services	5,000.00	-	1,250.00	1,250.00	As needed basis
100751007	Parking Lot Maintenance	4,000.00	-	1,000.00	1,000.00	To be expended by year end-lights and sweeping
100751008	Property Taxes	4,000.00	-	1,000.00	1,000.00	To be expended by year end
100751009	Landscape Restoration	27,000.00	-	6,750.00	6,750.00	Planting beds and tree care/spring and fall cleanup
100751010	Landscape Irrigation	1,500.00	-	375.00	375.00	Plan to turn on sprinkler system within next quarter
100751012	Safety/Security Equipment	9,000.00	-	2,250.00	2,250.00	As needed basis
100751098	Fire Station Maintenance	2,500.00	1,060.00	625.00	(435.00)	Unanticipated rodding
				Total	**$ 25,352.00**	

VILLAGE OF BARRINGTON HILLS
FY 2015
1st QUARTER REVIEW-EXPENDITURES
THROUGH MARCH 31, 2015

		FISCAL YEAR BUDGET	Y-T-D ACTUAL	Y-T-D BUDGET	Y-T-D VARIANCE	EXPLANATION OF VARIANCE
	GENERAL FUND					
ACCT#	Zoning and Planning					
100850801	Minutes-Planning & ZBA	$ 8,000.00	$ -	$ 2,000.00	$ 2,000.00	Audio recordings replace transcripts
100850802	Supplies/GIS/Printing	38,000.00	2,282.58	9,500.00	7,217.42	As needed basis
100850803	Engineering Services	5,000.00	2,474.00	1,250.00	(1,224.00)	Septic code amendments
100850804	Subdivision Review/Recording	5,000.00	-	1,250.00	1,250.00	No activity to date
100850808	Professional Consultants	5,000.00	-	1,250.00	1,250.00	As needed basis
100850840	Equestrian Commission	100.00	-	25.00	25.00	As needed basis
100850845	Development Commission	100.00	-	25.00	25.00	As needed basis
				Total	**$ 10,543.42**	
			GENERAL FUND TOTAL		**$ 169,708.43**	
	POLICE PROTECTION FUND					
200051108	Educational Benefits	$ 4,000.00	$ -	$ 1,000.00	$ 1,000.00	As needed basis
200051111	Vacation Compensation	10,000.00	-	2,500.00	2,500.00	As needed basis
				Total	**$ 3,500.00**	
	AUDIT FUND					
400051303	Finance Consulting	$ 550.00	$ 2,800.00	$ 137.50	$ (2,662.50)	Unanticipated amortization study related to pension bonding
				Total	**$ (2,662.50)**	
	ROADS AND BRIDGES FUND					
900050701	Road Maintenance Contracts	$ 986,846.00	$ 1,850.00	$ 246,711.50	$ 244,861.50	Going to be bid in May
900050702	Snowplowing Contracts	260,000.00	115,831.17	65,000.00	(50,831.17)	High snow totals
900050707	Road Striping	1,000.00	-	250.00	250.00	As needed-for touch ups
900050708	Equipment Maintenance	4,000.00	-	1,000.00	1,000.00	If equipment vandalized/destroyed funds for repair/replacement
900050709	Road Patching Contracts	15,000.00	1,018.13	3,750.00	2,731.87	As needed basis-weather dependent
900050710	Equipment Purchases	2,000.00	-	500.00	500.00	As needed basis
900050711	Bridge Inspections	8,000.00	-	2,000.00	2,000.00	Scheduled for Cuba Road Bridge 4x a year, next due in May
900050713	Cuba Road Bridge Expenses	160,000.00	-	40,000.00	40,000.00	Subject to IDOT approval to begin project-may bid in June
				Total	**$ 240,512.20**	
	E 911 FUND					
920050015	Purchase New Equipment	$ 30,000.00	$ -	$ 7,500.00	$ 7,500.00	Budgeted for call logger which is no longer needed due to dispatch cons
920050019	Maintain Equipment	17,500.00	-	4,375.00	4,375.00	CAPERS CAD Maintenance/AT&T 911 System maintenance-as needed
920050020	Other Expenses	3,200.00	-	800.00	800.00	NENA Membership/911 Conference*
						*The BH ETSB may be dissolved by BOT Resolution at the 5/27/15 BOT
				Total	**$ 12,675.00**	Meeting. As part of consolidation with Quadcom, and IGA
	DRUG/GANG/DUI FUND					will be proposed to migrate to the JETS Board
980050000	Drug/Gang/DUI Expenses	$ 12,000.00	$ -	$ 3,000.00	$ 3,000.00	To be expended for thermal printers
				Total	**$ 3,000.00**	
			TOTAL YTD BUDGET SURPLU		**$ 426,733.13**	