

# MSCI Risk Monitor: Asset Owners

## 2014 Q2

### About This Report

This quarterly Risk Monitor reports on the risk and return behavior of five model pension plan types.

We present the performance and risk of their assets over the past year and past quarter, adding in liabilities to examine funding status and surplus risk.

We apply stress tests and show the effects of the scenarios on both the asset portfolios and plans' funding status.

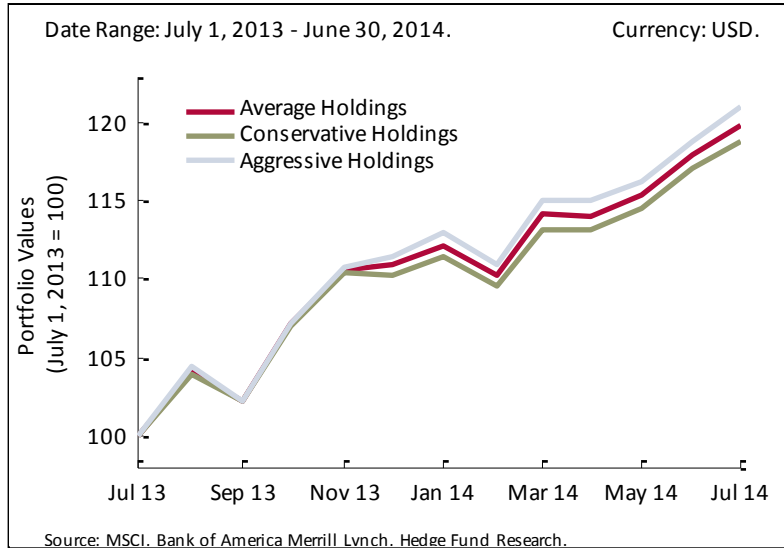
Finally, we present the evolution of risk and return of the asset classes that affect asset owners worldwide.

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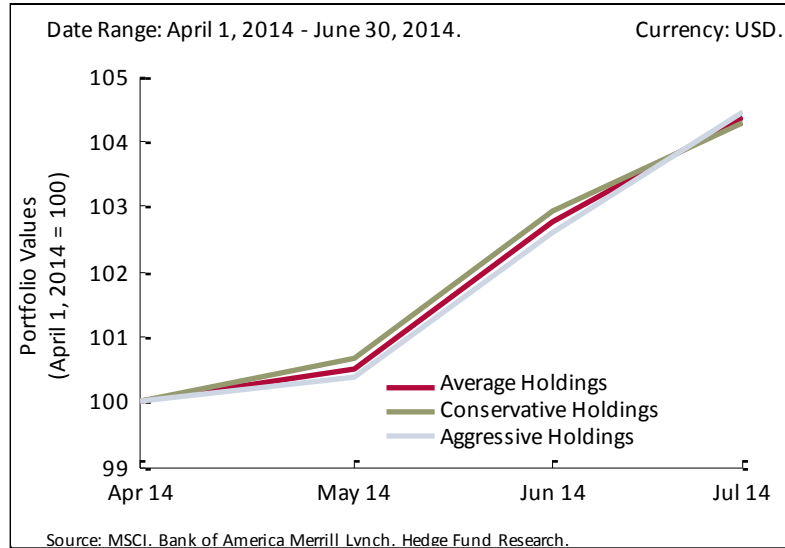
### Highlights

- Returns for all plan types rose during Q2, between 3.5% (Netherlands) and 5.0% (UK), with North American plans all rising by about 4%
- Funded ratios for most plan types fell, due to drops in bond yields, between 1.0 and 2.5%. The exception was the UK, which saw an increase in funded ratio of 2.5%.
- Volatility across all asset classes drifted slowly downward.
- Stress test results were mostly unchanged compared to Q1
- Equity and Alternatives saw strong performance (+5%), led by Real Estate.
- Fixed income markets were up about 2%, with most yields and spreads falling.
- Value and Size were the best performing equity factors, and Volatility was the worst

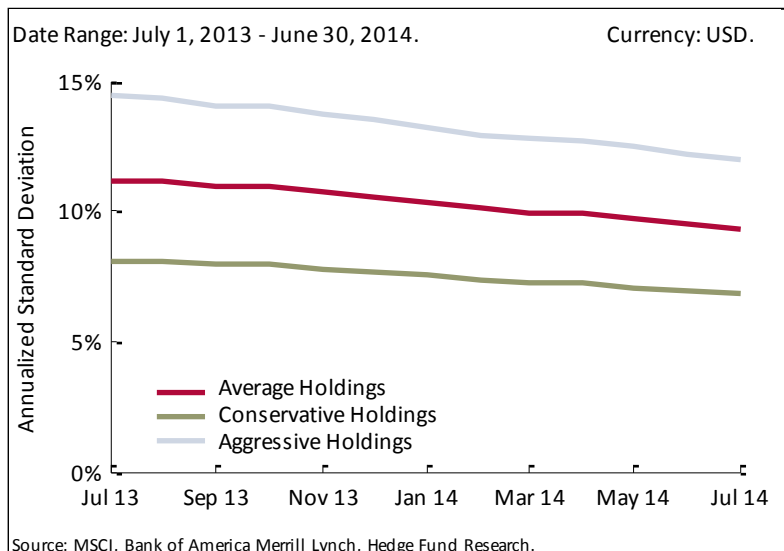
### 1. Historical Performance (One Year)



### 2. Historical Performance (2014 Q2)



### 3. Forecast Risk



### Comments

- US Public Pensions continued positive performance in Q2 (up by 4%) driven by positive equity returns. US Fixed Income markets also advanced in Q2 (Page 20, Chart 2) contributing to the positive returns.
- Forecast volatility continued its trend downward in Q2 following a similar trend over the previous 12 months

#### Methodology notes

#### Asset allocation:

49.1% Equities (15.7% Global Equities: MSCI ACWI IMI, 53.2% US Equities: MSCI USA IMI, 31.1% Global ex US Equities: MSCI ACWI ex USA IMI)

26.6% Fixed Income (28.0% US Corporate Fixed Income: Bank of America Merrill Lynch US Domestic Corporate Master Index, 58.2% US Treasuries: Bank of America Merrill Lynch US Treasury Master, 13.8% US TIPS: Bank of America Merrill Lynch US Treasuries Inflation-Linked Index)

9.6% Private Equity (70.4% US Private Equity: Barra Private Equity Model (PEQ1) portfolio with MSCI USA SMID CAP Index and MSCI USA IMI as public proxies, 25.35% MSCI Europe Small Cap Index, 4.25% MSCI AC Asia Small Cap Index)

8.1% Real Estate (MSCI ACWI IMI/REITS Industry Index)

4.4% Hedge Funds (Barra Hedge Fund Model (HFM2) portfolio (with 51% Equity Hedge, 25% Event Driven, 12% Macro and 12% Convertible Arbitrage Strategy Model portfolios))

2.2% Cash (USD)

We assume that no asset contributions are made during the analysis period. We update the portfolios regularly. Changes for the actual report are marked in *italics*.

**Data source:**

Average holdings based on MSCI survey of 57 representative US public plans (last updated in April 2013), with portfolios rebalanced to original weights monthly.

**Notes:**

Conservative holdings overweight fixed income by 20%; Aggressive holdings underweight fixed income by 20%; holdings in other asset classes are modified proportionally, keeping the cash position unchanged.

# US Public Plans

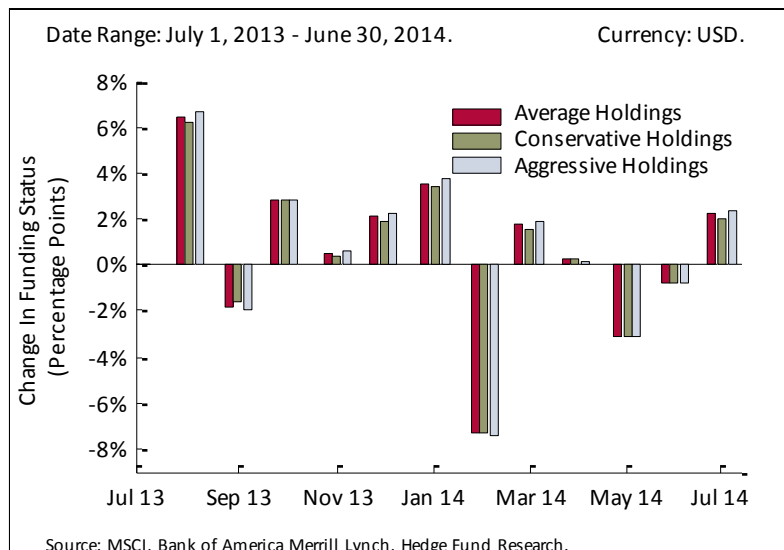
## Funding Status

MSCI

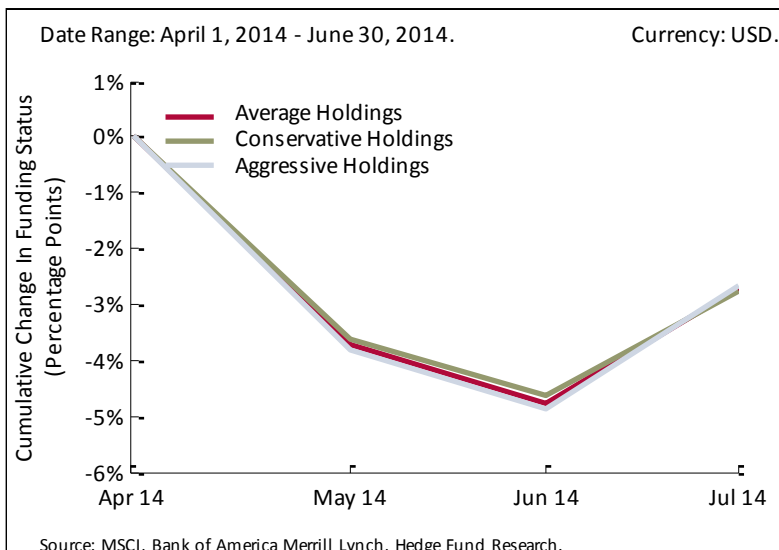
MSCI Risk Monitor: Asset Owners

2014 Q2

### 1. Market Effects on Funding Ratio (One Year)



### 2. Market Effects on Funding Ratio (2014 Q2)



Methodology notes

#### Funding status:

The funding status is modeled with a surplus portfolio that is constructed as long assets and short liabilities; the change in the funding status is measured relative to the present value of the liabilities.

#### Liabilities:

Liability portfolio is modeled with a representative cash flow stream with a duration of 15.2 years. We use the AA corporate curve as the discount rate. The initial reported funding ratio is 70.5% (last updated in April 2013). We assume that no liability payments or asset contributions are made during the analysis period.

We update the portfolios regularly. Changes for the actual report are marked in *italics*.

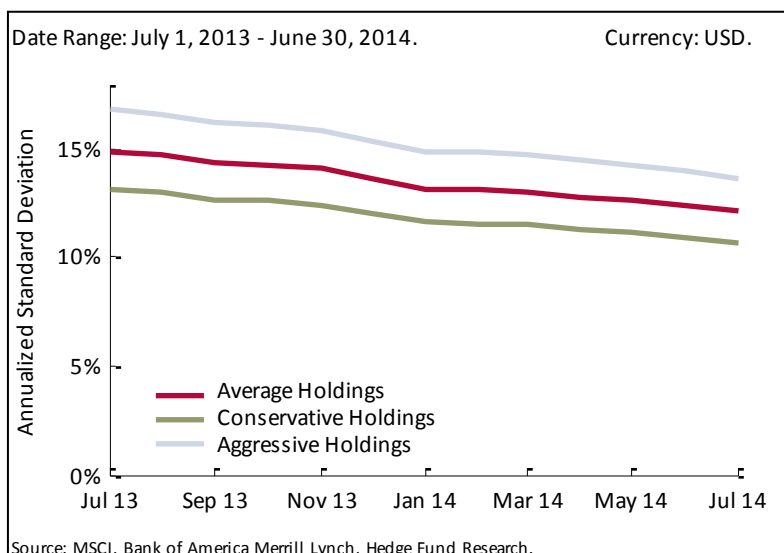
#### Data source:

Average holdings based on MSCI survey of 57 representative US public plans (last updated in April 2013), with portfolios rebalanced to original weights monthly.

#### Notes:

Conservative holdings overweight fixed income by 20%; Aggressive holdings underweight fixed income by 20%; holdings in other asset classes are modified proportionally, keeping the cash position unchanged.

### 3. Surplus/Deficit Risk Relative to Liabilities



### Comments

- Funding Ratio of representative US Public Plans dropped by ~ 2.5% over Q2. The Funding ratio decreased ~ 5% during April and May and rebounded by 2.5% in June. The decline in the Funding ratio was driven by the fall in US treasury rates observed by the negative US nominal shift factor return over the quarter (Page 21, Chart 3)

# US Public Plans

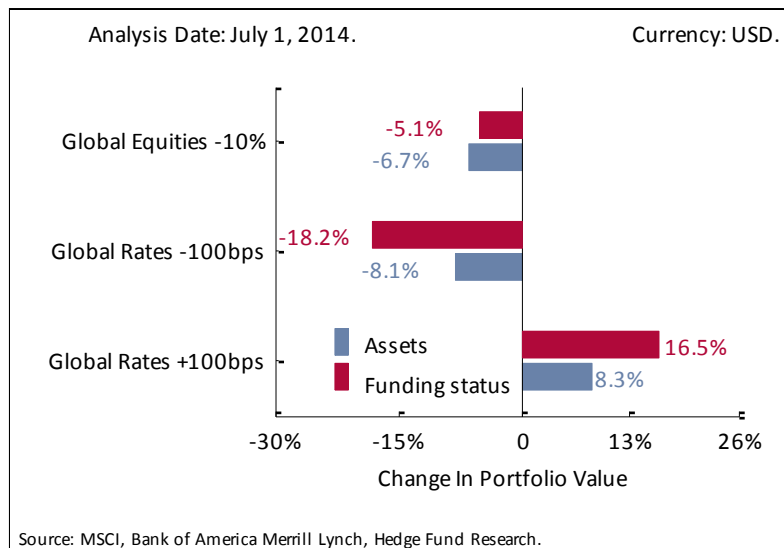
## Stress Test Results

MSCI

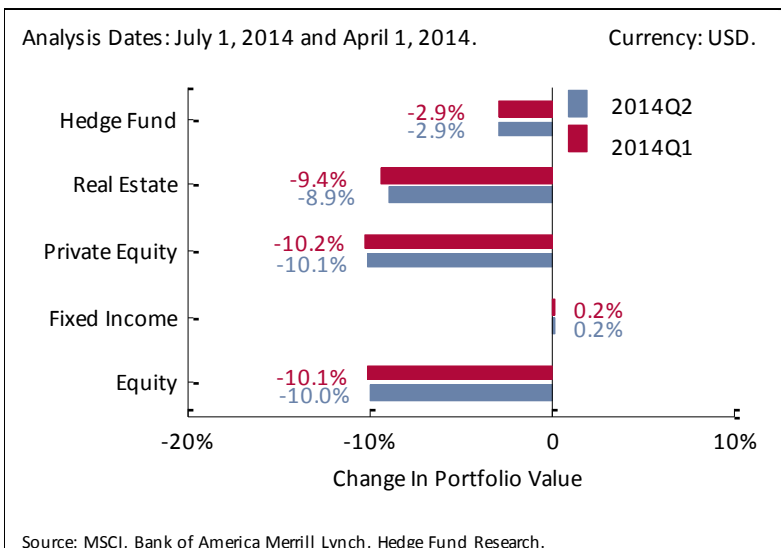
MSCI Risk Monitor: Asset Owners

2014 Q2

### 1. Correlated Stress Test Results



### 2. Assets P&L: "Global Equities -10%"



#### Methodology notes

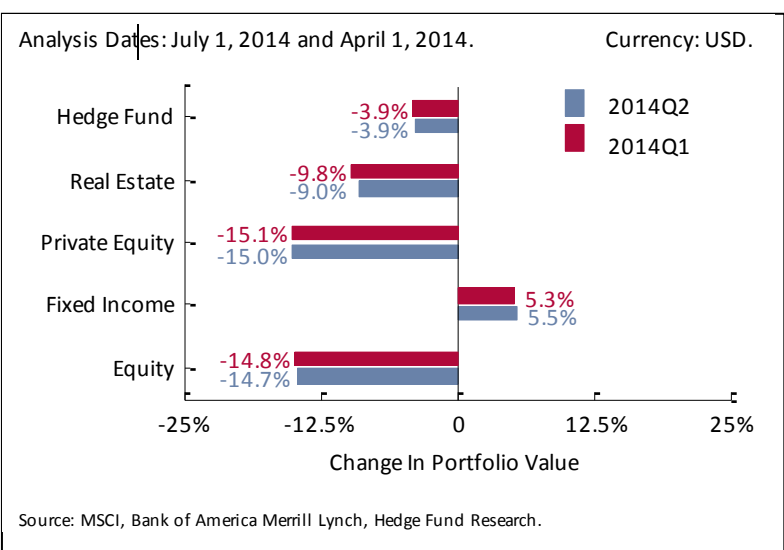
#### Stress tests:

The 'Global Rates -100 bps' is a correlated stress test with shifts in the USD, EUR, CAD, JPY, GBP and CHF government yield curves. The 'Global Rates +100 bps' is a correlated stress test with shifts in the USD, EUR, CAD, JPY, GBP and CHF government yield curves. The 'Global Equities -10 percent' correlated stress test incorporates equity market shocks to the estimation universe of the BIM301 model for selected countries: United States, United Kingdom, Germany, and Japan.

#### Data source:

Average holdings based on MSCI survey of 57 representative US public plans (last updated in April 2013).

### 3. Assets P&Ls: "Global Rates -100 bps"



### Comments

- The result of shocking Global Interest Rates down by 100bps results in a larger loss to the Funding Status of US Public Plans (-18.2%) relative to US Corporate Plans (-12.5%, Page 6, Chart 1). This is primarily caused by the higher duration of Public Plans' liabilities.

# US Corporate Plans

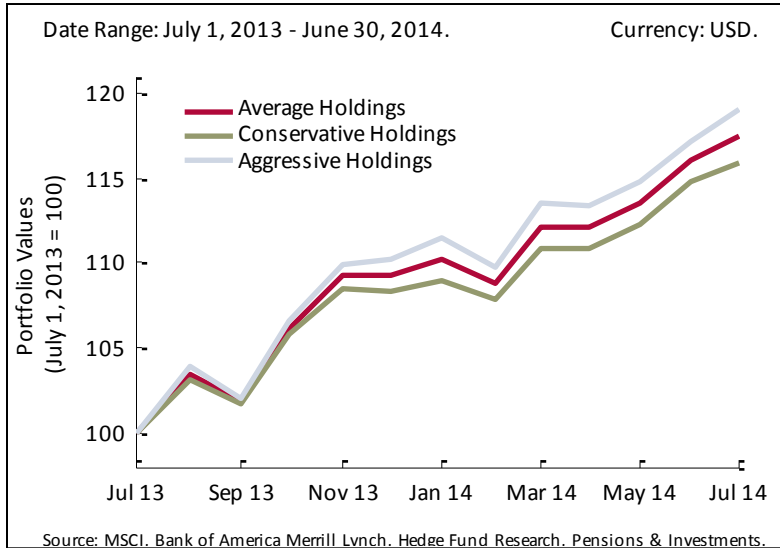
## Assets

MSCI

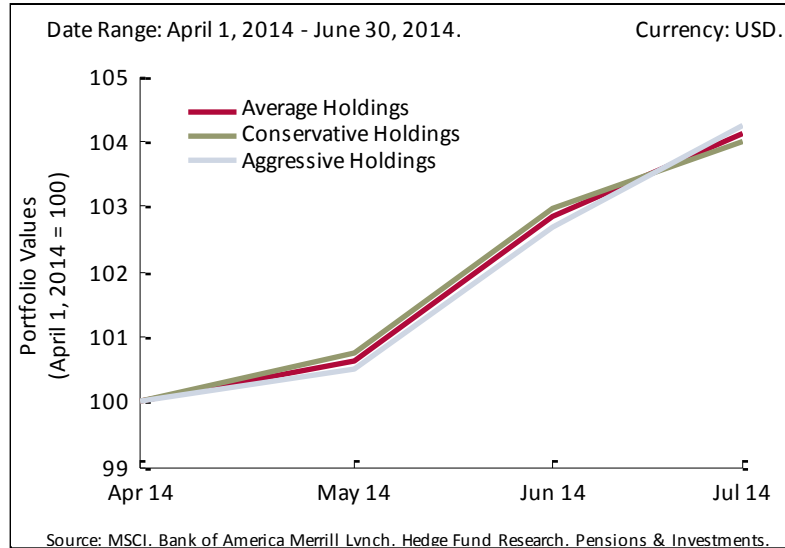
MSCI Risk Monitor: Asset Owners

2014 Q2

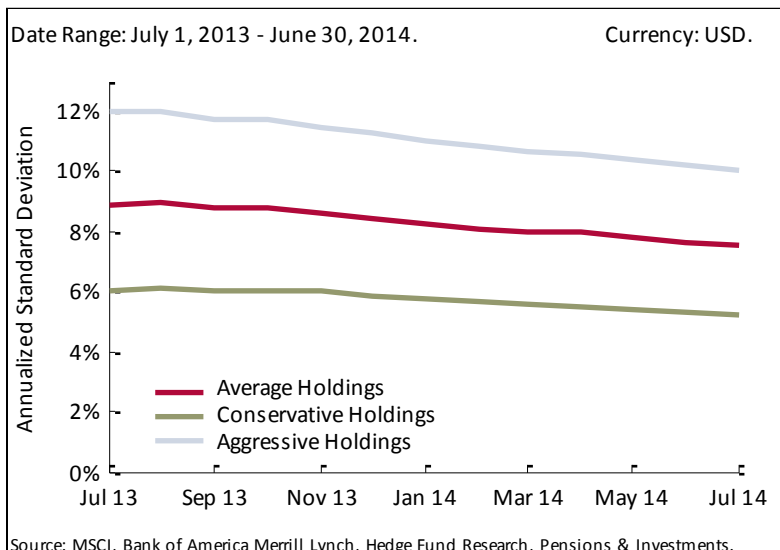
### 1. Historical Performance (One Year)



### 2. Historical Performance (2014 Q2)



### 3. Forecast Risk



### Comments

- US Corporate Plans had a similar positive performance over Q2 as US Public Plans with the average US Corporate Plan advancing 4%.

#### Methodology notes

#### Asset allocation:

37.5% Equities (40.5% Global ex US Equities: MSCI ACWI ex USA IMI, 59.5% US Equities: MSCI USA IMI)  
 41.2% Fixed Income (40% US Corporate Fixed Income: Bank of America Merrill Lynch US Domestic Corporate Master Index, 40% US Treasuries: Bank of America Merrill Lynch US Treasury Master, 20% US TIPS: Bank of America Merrill Lynch US Treasuries Inflation-Linked Index)  
 8.0% Private Equity (70.4 % US Private Equity: Barra Private Equity Model (PEQ1) portfolio with MSCI USA SMID CAP Index and MSCI USA IMI as public proxies, 25.35% MSCI Europe Small Cap Index, 4.25% MSCI AC Asia Small Cap Index)  
 6.6% Real Estate (MSCI ACWI IMI/REITS Industry Index)  
 4.4% Hedge Funds (Barra Hedge Fund Model (HFM2) portfolio (with 51% Equity Hedge, 25% Event Driven, 12% Macro and 12% Convertible Arbitrage Strategy Model Portfolios))  
 3.5% Cash (USD)

We assume that no asset contributions are made during the analysis period.  
 We update the portfolios regularly. Changes for the actual report are marked in italics.

#### Data source:

Pensions & Investments, 2012 data on the top 100 US corporate plans; portfolios rebalanced to original weights monthly.

#### Notes:

Conservative holdings overweight fixed income by 20%; Aggressive holdings underweight fixed income by 20%; holdings in other asset classes are modified proportionally, keeping the cash position unchanged.

# US Corporate Plans

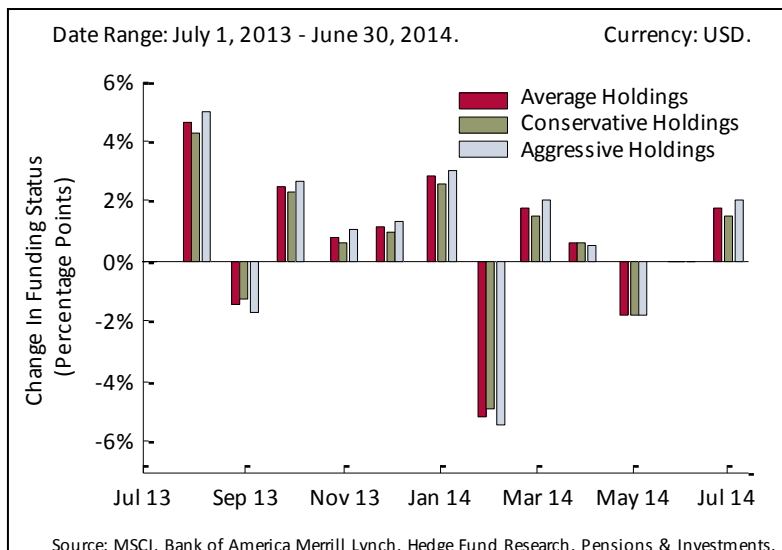
## Funding Status

MSCI

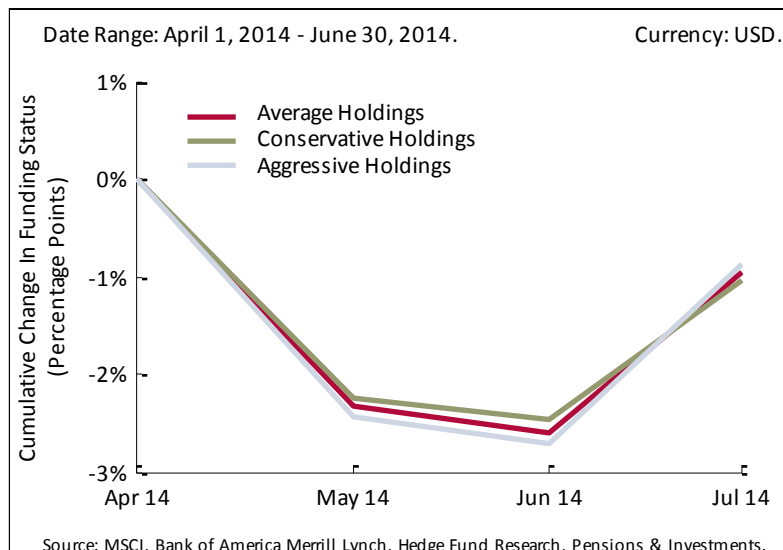
MSCI Risk Monitor: Asset Owners

2014 Q2

### 1. Market Effects on Funding Ratio (One Year)



### 2. Market Effects on Funding Ratio (2014 Q2)



#### Methodology notes

#### Funding status:

The funding status is modeled with a surplus portfolio that is constructed as long assets and short liabilities; the change in the funding status is measured relative to the present value of the liabilities.

#### Liabilities:

Liability portfolio is modeled with a representative cash flow stream with a duration of 10.4 years. We use the AA corporate curve as the discount rate. We assume that no liability payments or asset contributions are made during the analysis period.

We update the portfolios regularly. Changes for the actual report are marked in italics.

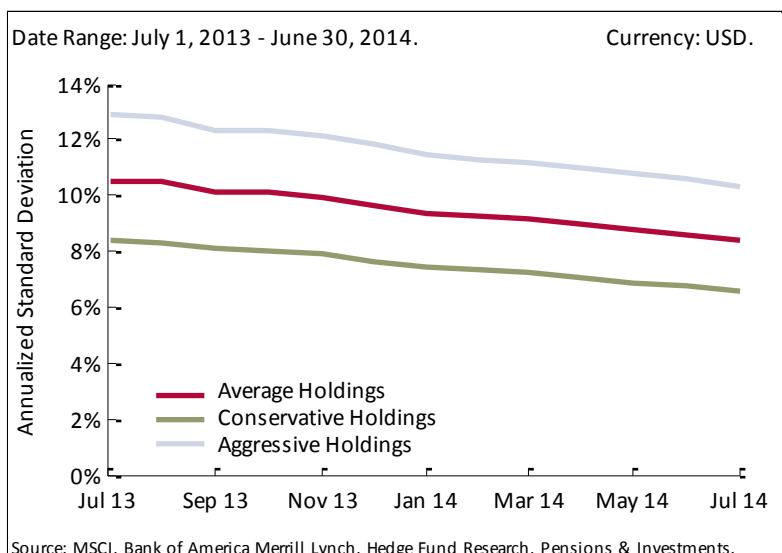
#### Data source:

Pensions & Investments, 2012 data on the top 100 US corporate plans; portfolios rebalanced to original weights monthly.

#### Notes:

Conservative holdings overweight fixed income by 20%; Aggressive holdings underweight fixed income by 20%; holdings in other asset classes are modified proportionally, keeping the cash position unchanged.

### 3. Surplus/Deficit Risk Relative to Liabilities



### Comments

- Average Funding ratios for US Corporate Plans decreased by 1%. This was significantly lower than US Public Plans given the shorter duration of US Corporate Plan liabilities relative to US Public Plans (15.2 Years v 10.4 Years)

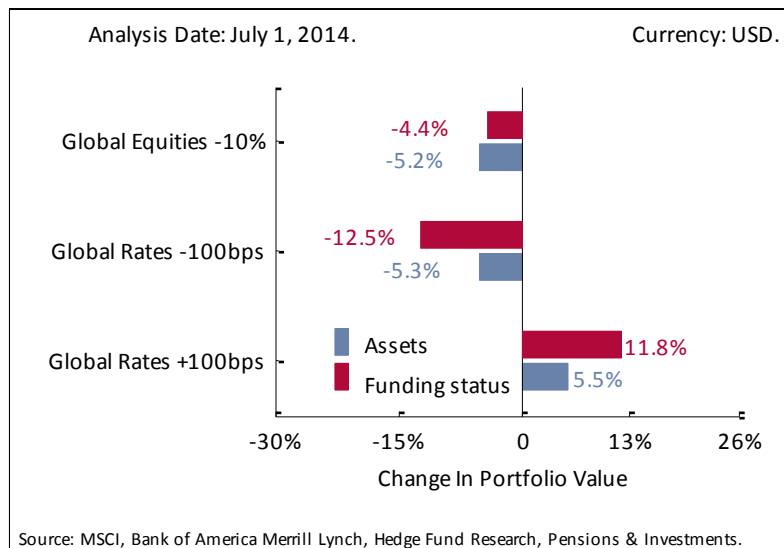
# US Corporate Plans

## Stress Test Results

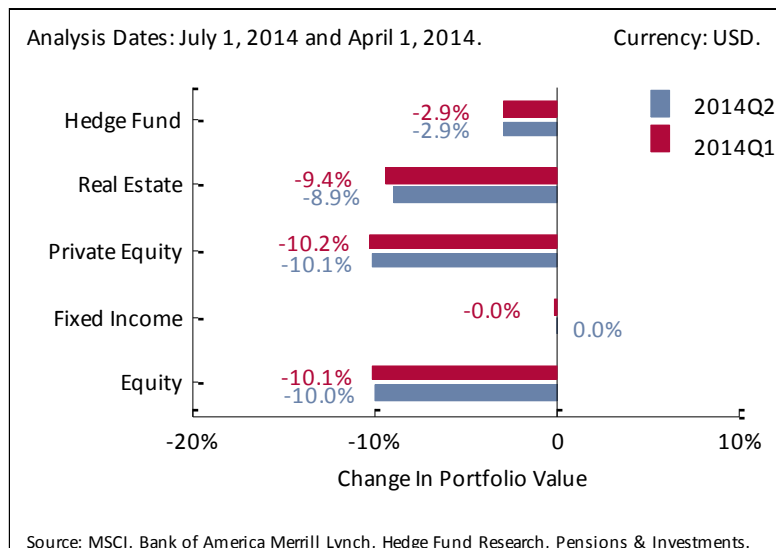


MSCI Risk Monitor: Asset Owners  
2014 Q2

### 1. Correlated Stress Test Results



### 2. Assets P&L: "Global Equities -10%"



#### Methodology notes

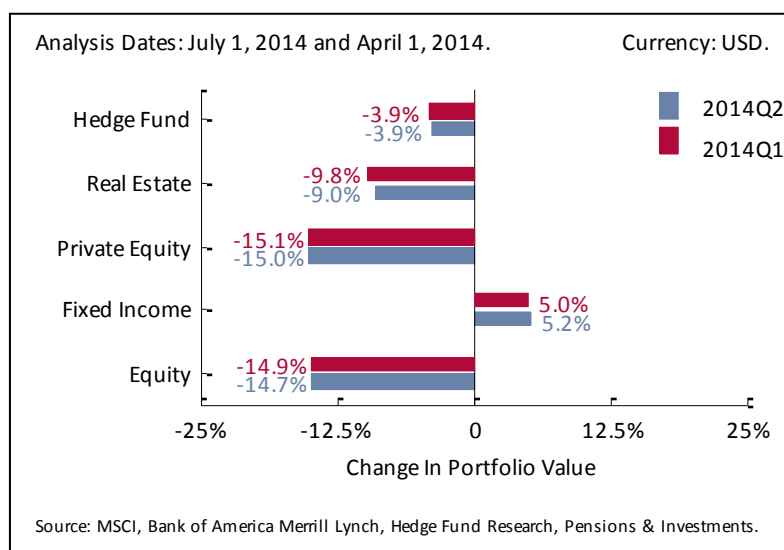
#### Stress tests:

The 'Global Rates -100 bps' is a correlated stress test with shifts in the USD, EUR, CAD, JPY, GBP and CHF government yield curves. The 'Global Rates +100 bps' is a correlated stress test with shifts in the USD, EUR, CAD, JPY, GBP and CHF government yield curves. The 'Global Equities -10 percent' correlated stress test incorporates equity market shocks to the estimation universe of the BIM301 model for selected countries: United States, United Kingdom, Germany, and Japan.

#### Data source:

Pensions & Investments, 2012 data on the top 100 US corporate plans.

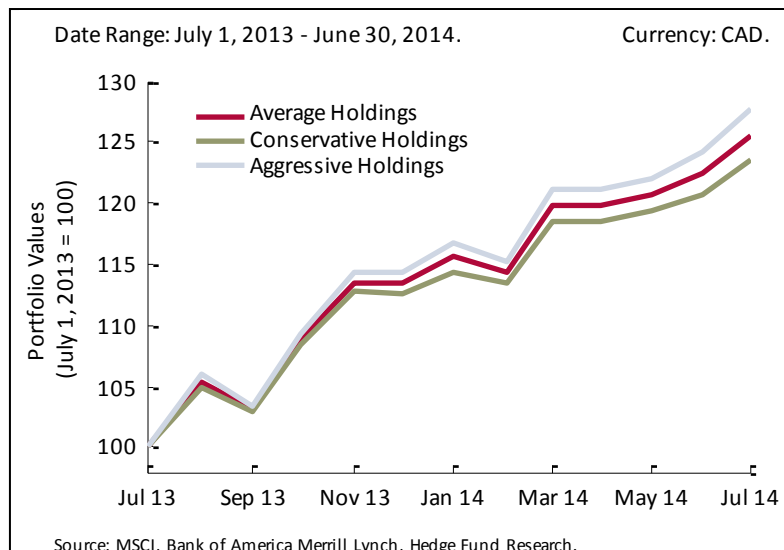
### 3. Assets P&Ls: "Global Rates -100 bps"



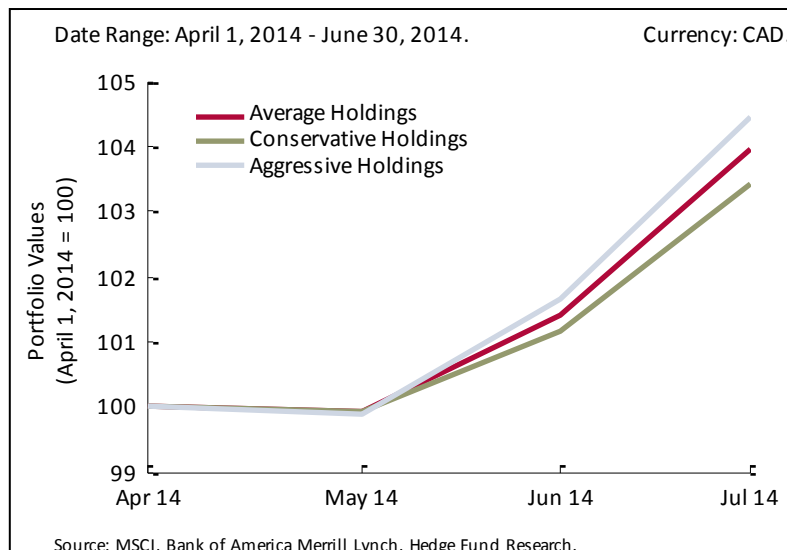
### Comments



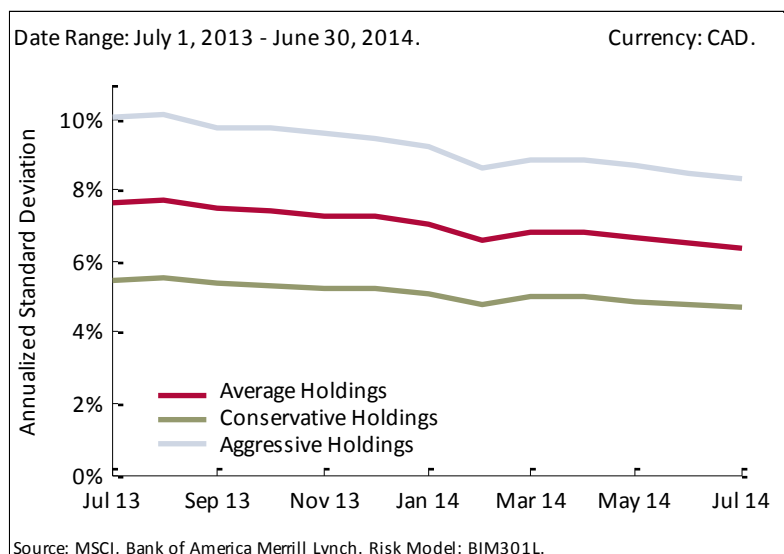
### 1. Historical Performance (One Year)



### 2. Historical Performance (2014 Q2)



### 3. Forecast Risk



### Comments

- Performance for Canadian Asset Owners continued its trend in a positive direction with the average Canadian Plan up by 4%. While US Plans saw most of the increase in May, Canadian plans saw the greatest increase in performance during the month of June.

#### Methodology notes

#### Asset allocation:

39.6% Equities (74.1% Global Equities: MSCI ACWI IMI, 25.9% Canada Equities: MSCI Canada IMI)

39.1% Fixed Income (74.0% Canada Fixed Income: Bank of America Merrill Lynch Canada Broad Market Index, 7.5% Global Government Fixed Income: Bank of America Merrill Lynch Global Government Bond Index II, 18.5% Global Inflation-Linked Fixed Income: Bank of America Merrill Lynch Global Governments Inflation-Linked)

10.4% Private Equity (70.4 % US Private Equity: Barra Private Equity Model (PEQ1) portfolio with MSCI USA SMID CAP Index and MSCI USA IMI as public proxies, 25.35% MSCI Europe Small Cap Index, 4.25% MSCI AC Asia Small Cap Index)

11.8% Real Estate (MSCI ACWI IMI/REITS Industry Index)

3.7% Hedge Funds (Barra Hedge Fund Model (HFM2) portfolio (with 51% Equity Hedge, 25% Event Driven, 12% Macro and 12% Convertible Arbitrage Strategy Portfolios))

-4.4% Cash (CAD) Negative average cash holdings are driven by the leveraged investments of Ontario Teachers' Pension Plan.

We assume that no asset contributions are made during the analysis period. We update the portfolios regularly. Changes for the actual report are marked in italics.

**Data source:**

Average holdings based on MSCI survey of ten representative Canadian asset owners (last updated in January 2014), with portfolios rebalanced to original weights monthly.

**Notes:**

Conservative holdings overweight fixed income by 20%; Aggressive holdings underweight fixed income by 20%; holdings in other asset classes are modified proportionally, keeping the cash position unchanged.



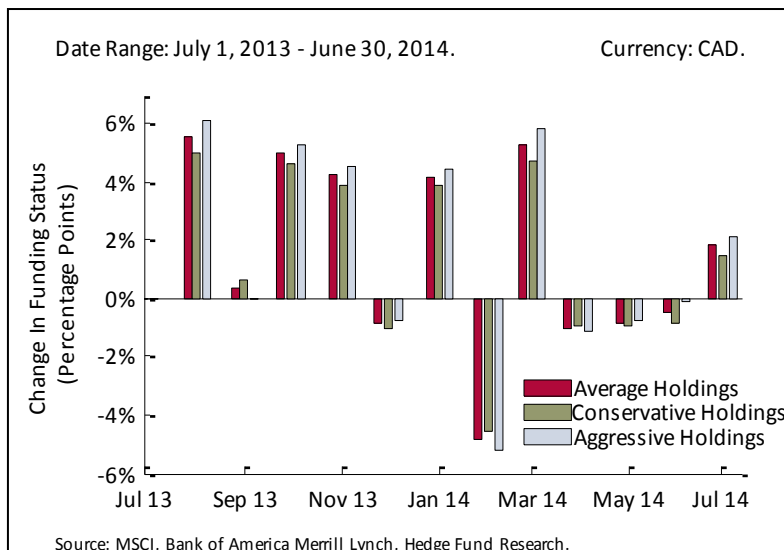
# Canada Asset Owners

## Funding Status

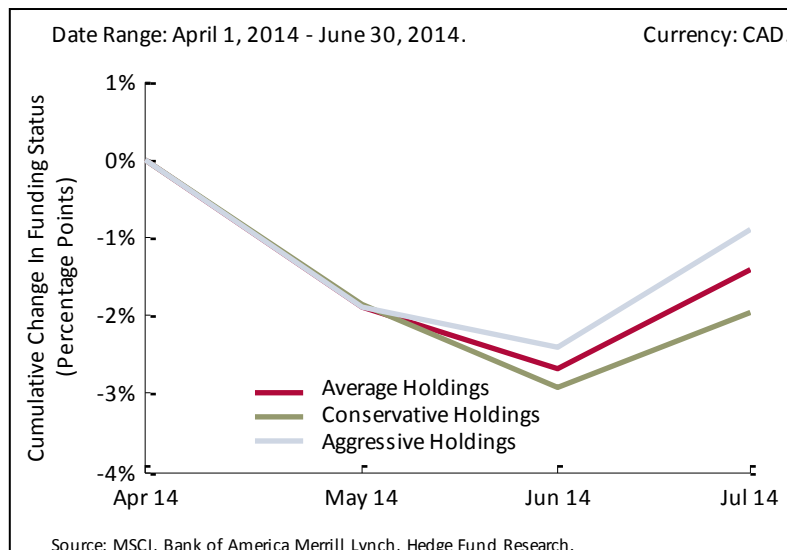


MSCI Risk Monitor: Asset Owners  
2014 Q2

### 1. Market Effects on Funding Ratio (One Year)



### 2. Market Effects on Funding Ratio (2014 Q2)



#### Methodology notes

#### Funding status:

The funding status is modeled with a surplus portfolio that is constructed as long assets and short liabilities; the change in the funding status is measured relative to the present value of the liabilities.

#### Liabilities:

Liability portfolio is modeled with a representative cash flow stream with a duration of 10.4 years. We use the AA corporate curve as the discount rate. The reported funding ratio is 93.4% (source: Aon Hewitt, last updated in January 2014). We assume that no liability payments or asset contributions are made during the analysis period.

We update the portfolios regularly. Changes for the actual report are marked in italics.

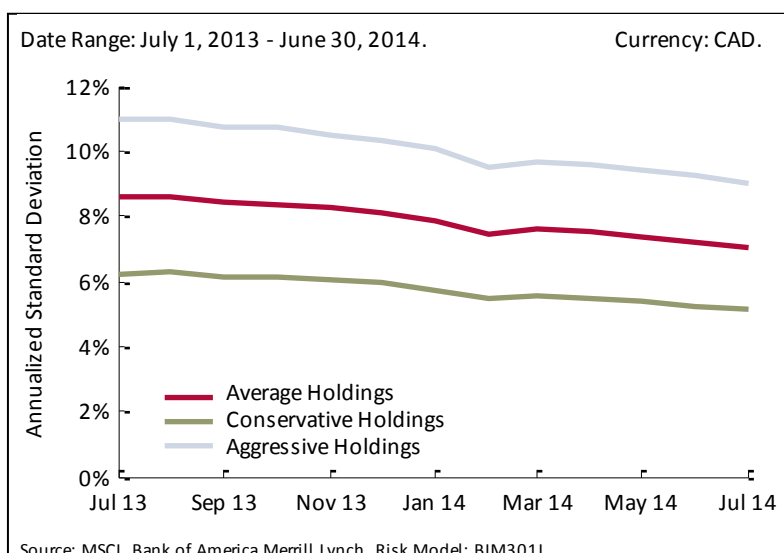
#### Data source:

Average holdings based on MSCI survey of ten representative Canadian asset owners (last updated in January 2014), with portfolios rebalanced to original weights monthly.

#### Notes:

Conservative holdings overweight fixed income by 20%; Aggressive holdings underweight fixed income by 20%; holdings in other asset classes are modified proportionally, keeping the cash position unchanged.

### 3. Surplus/Deficit Risk Relative to Liabilities



### Comments

- The funded status for the average Canadian Plan was down by 1.5%. April and May saw decreases in the funded status but there was a rebound in the funding ratio in June driven by the strong asset performance (Page 8, Chart 2).

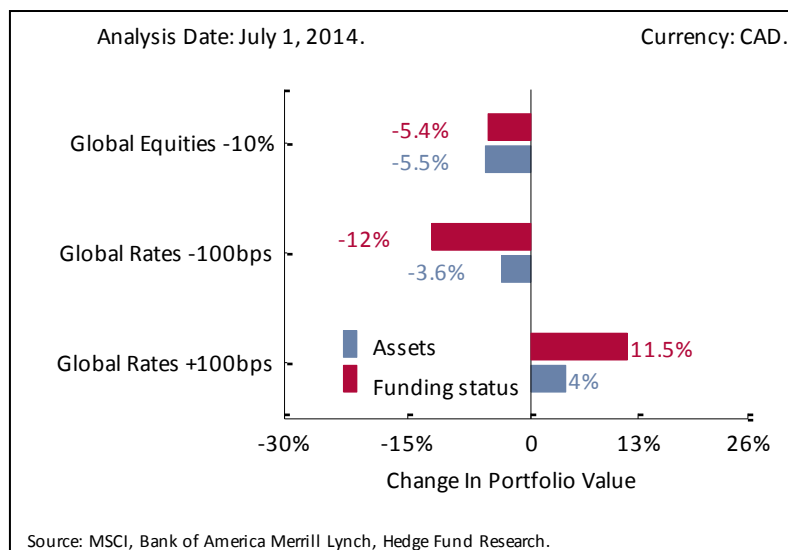
# Canada Asset Owners

## Stress Test Results

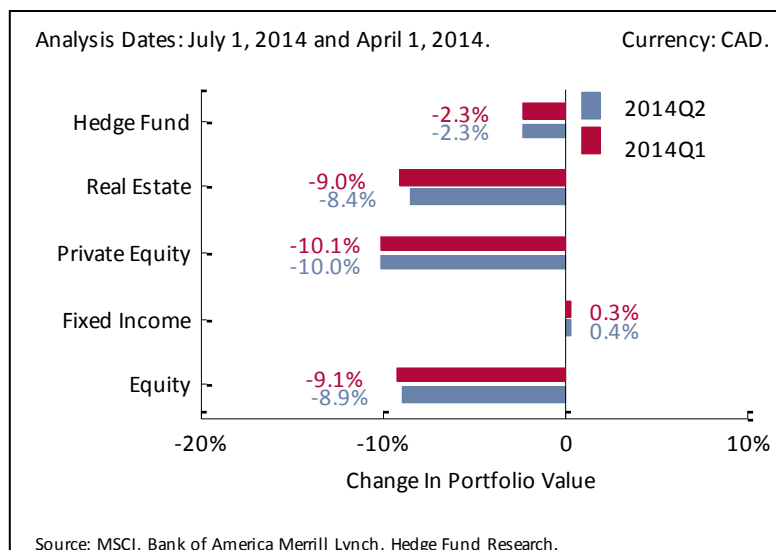


MSCI Risk Monitor: Asset Owners  
2014 Q2

### 1. Correlated Stress Test Results



### 2. Assets P&L: "Global Equities -10%"



#### Methodology notes

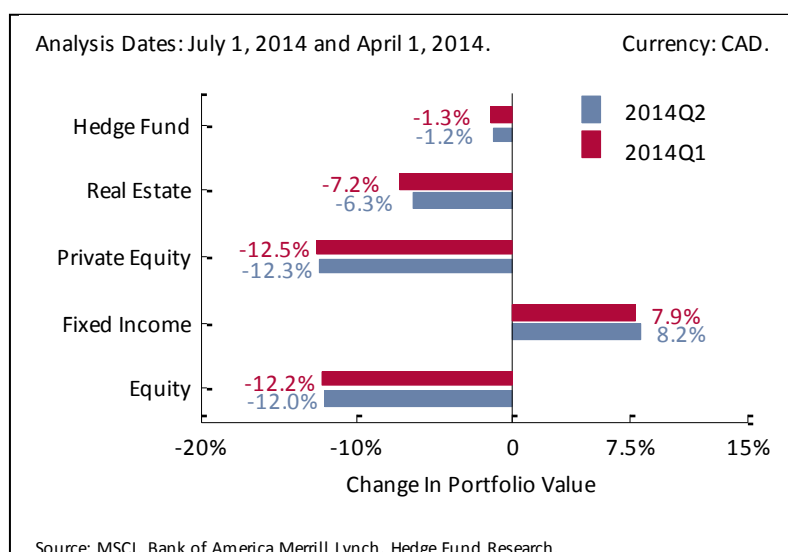
#### Stress tests:

The 'Global Rates -100 bps' is a correlated stress test with shifts in the USD, EUR, CAD, JPY, GBP and CHF government yield curves. The 'Global Rates +100 bps' is a correlated stress test with shifts in the USD, EUR, CAD, JPY, GBP and CHF government yield curves. The 'Global Equities -10 percent' correlated stress test incorporates equity market shocks to the estimation universe of the BIM301 model for selected countries: United States, United Kingdom, Germany, and Japan.

#### Data source:

Average holdings based on MSCI survey of ten representative Canadian asset owners (last updated in January 2014).

### 3. Assets P&Ls: "Global Rates -100 bps"



### Comments

# UK Pension Schemes

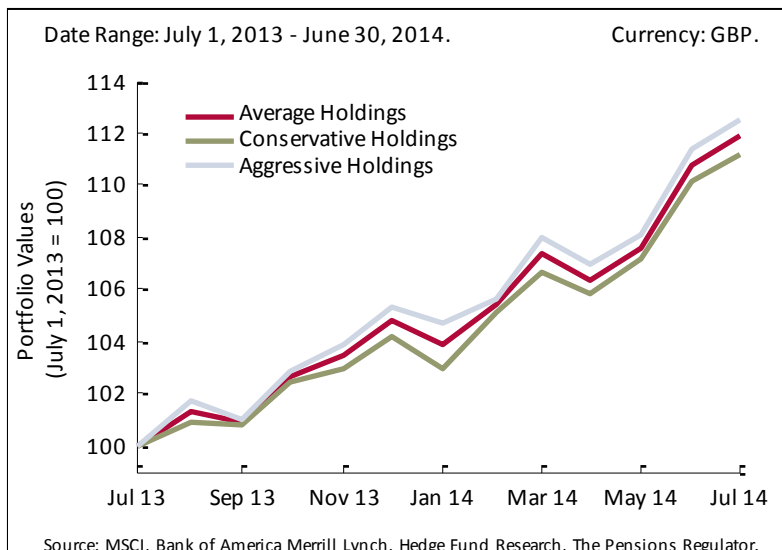
## Assets

MSCI

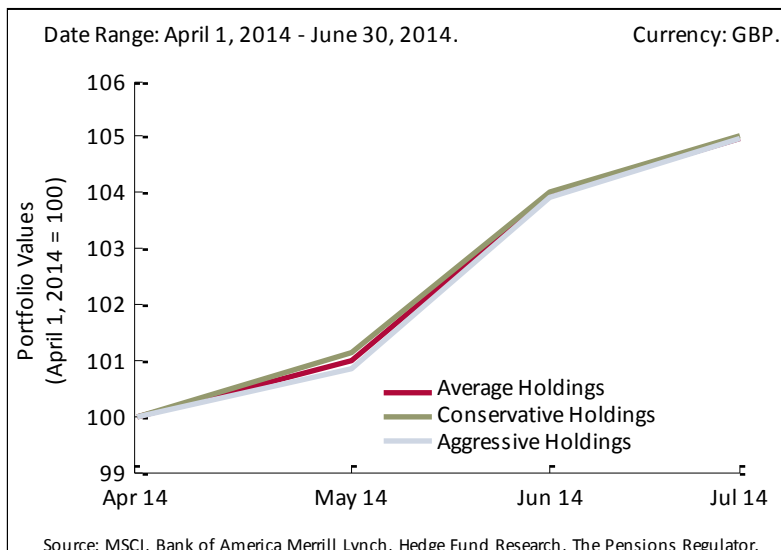
MSCI Risk Monitor: Asset Owners

2014 Q2

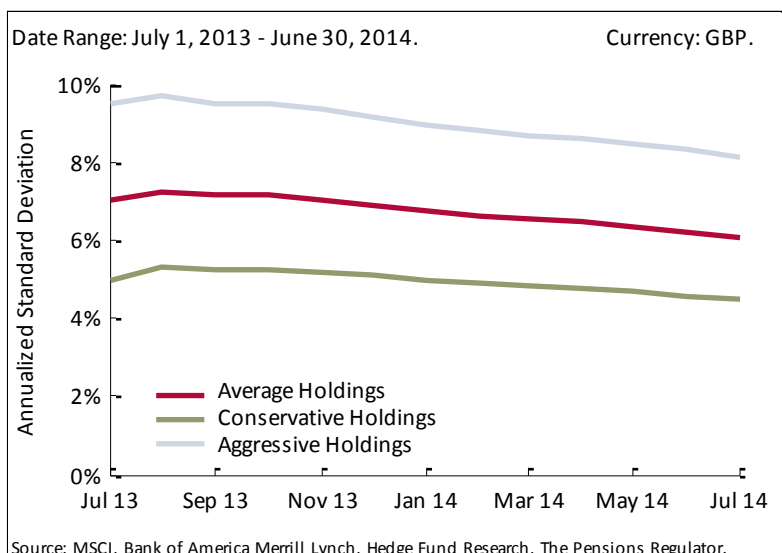
### 1. Historical Performance (One Year)



### 2. Historical Performance (2014 Q2)



### 3. Forecast Risk



### Comments

- Q2 2014 saw strong growth of Assets for the UK Pensions (p.11, ch.1), underpinned by positive returns of all major asset classes, and especially of Equity and Alternatives (p.17). Assets of the UK schemes have grown by ~8% since the start of the year, while growing ~5% in Q2 2014.
- Post July 2013 we continued to observe decreasing volatility of investment portfolios for the UK Pension Schemes (ch.3).
- It is interesting to point out that the Average, Conservative and Aggressive allocations performed similarly during Q2 (ch.2), the likely reason for this being the strong performance of the UK Fixed Income (p.20, ch.2).

#### Methodology notes

##### Asset allocation:

35.1% Equities (69.0% Global Equities: MSCI ACWI IMI, 31.0% UK Equities: MSCI United Kingdom IMI)  
 44.8% Fixed Income (18.5% UK Gilts: Bank of America Merrill Lynch U.K. Gilts, 40.6% UK Corporate Fixed Income: Bank of America Merrill Lynch Sterling Corporate Index, 40.9% Global Inflation-Linked Fixed Income: Bank of America Merrill Lynch Global Governments Inflation-Linked)  
 3.5% Private Equity (70.4% US Private Equity Model Portfolio with MSCI USA SMID CAP Index and MSCI USA IMI as public proxies, 25.35% MSCI Europe Small Cap Index, 4.25% MSCI AC Asia Small Cap Index)  
 4.7% Real Estate (MSCI ACWI IMI/REITS Industry Index)  
 5.2% Hedge Funds (Hedge Fund Model (HFM2) portfolio (with 51% Equity Hedge, 25% Event Driven, 12% Macro and 12% Convertible Arbitrage Strategy Model Portfolios))  
 6.7% Cash (GBP)

We assume that no asset contributions are made during the analysis period. We update the portfolios regularly. Changes for the actual report are marked in *italics*.

##### Data source:

Average holdings of 6,150 schemes based on data from The Pensions Regulator, The Purple Book 2013, with portfolios rebalanced monthly.

##### Notes:

Conservative holdings overweight fixed income by 20%; Aggressive holdings underweight fixed income by 20%; holdings in other asset classes are modified proportionally, keeping the cash position unchanged.

# UK Pension Schemes

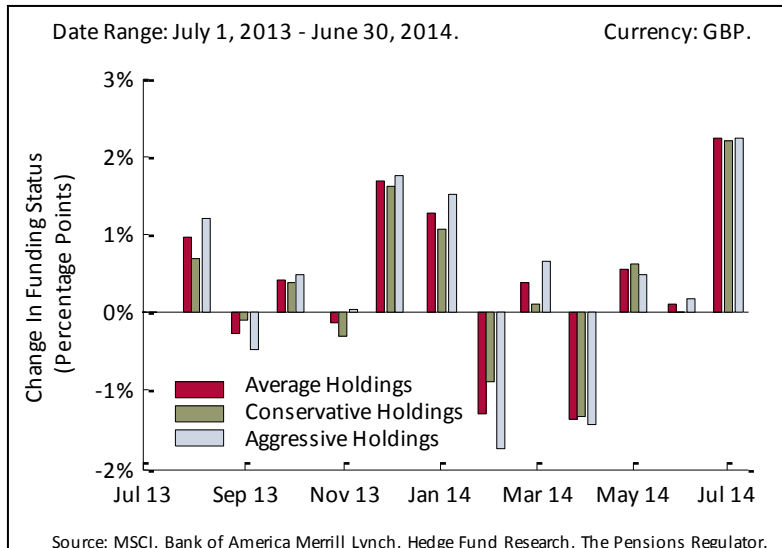
## Funding Status

MSCI

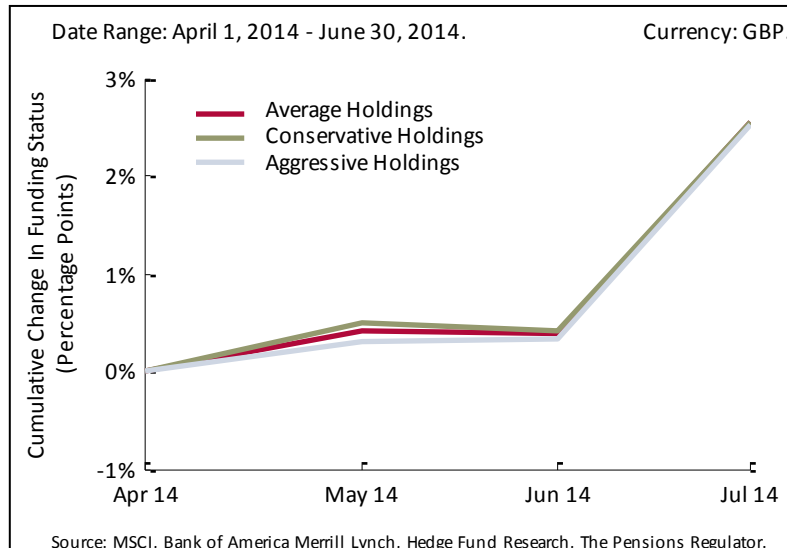
MSCI Risk Monitor: Asset Owners

2014 Q2

### 1. Market Effects on Funding Ratio (One Year)



### 2. Market Effects on Funding Ratio (2014 Q2)



#### Methodology notes

#### Funding status:

The funding status is modeled with a surplus portfolio that is constructed as long assets and short liabilities; the change in the funding status is measured relative to the present value of the liabilities.

#### Liabilities:

Liability portfolio is modeled with a representative cash flow stream of nominal and inflation-indexed cash flows with a Macaulay duration of 11.4 years and an inflation duration of 7.6.

The initial reported funding ratio is 61.2% (last updated in January 2014). Full buy-out funding ratio is used.

We assume that no liability payments or asset contributions are made during the analysis period.

We update the portfolios regularly. Changes for the actual report are marked in italics.

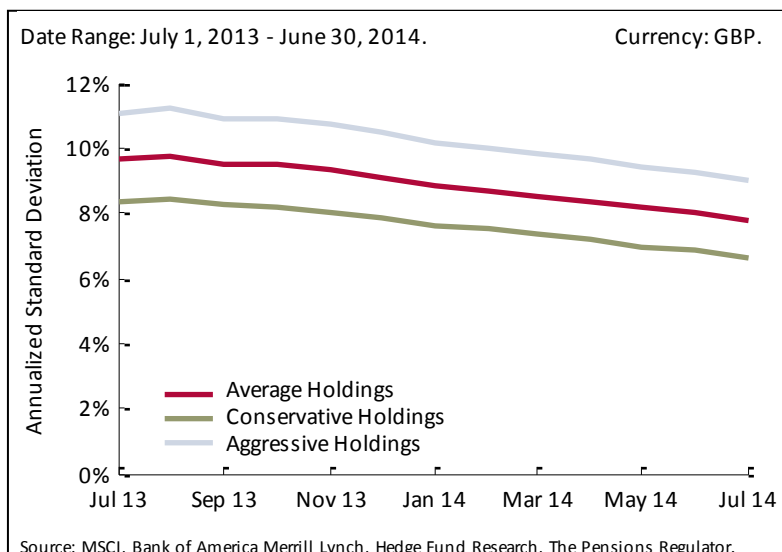
#### Data source:

Average holdings of 6,150 schemes based on data from The Pensions Regulator, The Purple Book 2013, with portfolios rebalanced monthly.

#### Notes:

Conservative holdings overweight fixed income by 20%; Aggressive holdings underweight fixed income by 20%; holdings in other asset classes are modified proportionally, keeping the cash position unchanged.

### 3. Surplus/Deficit Risk Relative to Liabilities



### Comments

- Q2 saw an increase in Funding Status by ~2.5% (ch2). The scale of changes in the UK discount rates (p.21, ch.3) and strong Asset value growth both helped to reverse the ~2% deterioration of Funding Ratios seen in Q1.
- In Q2 2014 Surplus volatility for the UK Pension Schemes continued its trend downwards (ch.3).

# UK Pension Schemes

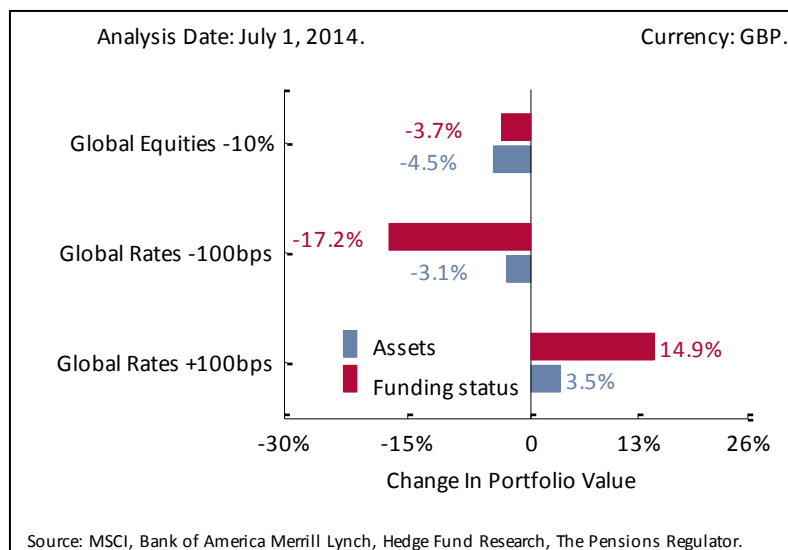
## Stress Test Results



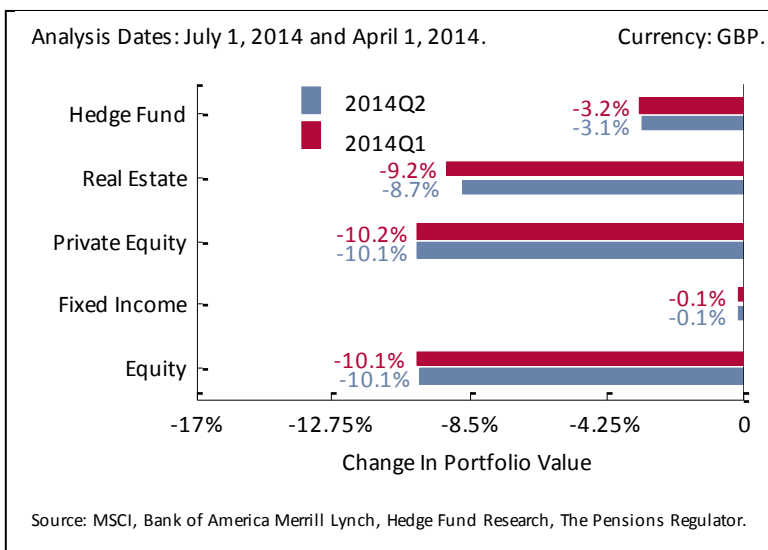
MSCI Risk Monitor: Asset Owners

2014 Q2

### 1. Correlated Stress Test Results



### 2. Assets P&L: “Global Equities -10%”



#### Methodology notes

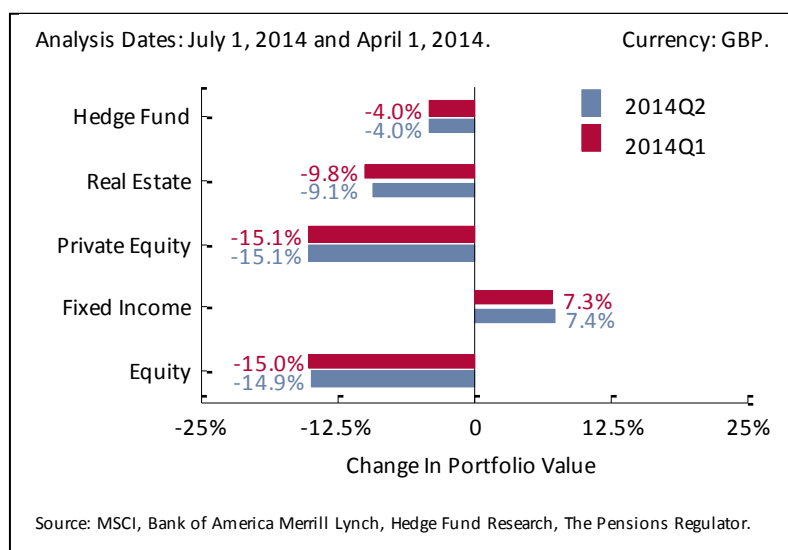
#### Stress tests:

The ‘Global Rates -100 bps’ is a correlated stress test with shifts in the USD, EUR, CAD, JPY, GBP and CHF government yield curves. The ‘Global Rates +100 bps’ is a correlated stress test with shifts in the USD, EUR, CAD, JPY, GBP and CHF government yield curves. The ‘Global Equities -10 percent’ correlated stress test incorporates equity market shocks to the estimation universe of the BIM301 model for selected countries: United States, United Kingdom, Germany, and Japan.

#### Data source:

Average holdings of 6,150 schemes based on data from The Pensions Regulator, The Purple Book 2013.

### 3. Assets P&Ls: “Global Rates -100 bps”



### Comments

- In Q2 2014 Market Value Sensitivity of different Asset Classes to Interest Rate movements remained largely unchanged when compared to Q1 2014. The exception was Real Estate, which continued the previous quarter trend of becoming less sensitive to Interest Rate movements (p.13, ch.3).
- A similar picture can be found when analyzing Market Value Sensitivity of different Asset Classes to Equity market movements (p.13, ch.2)

# Netherlands Plans

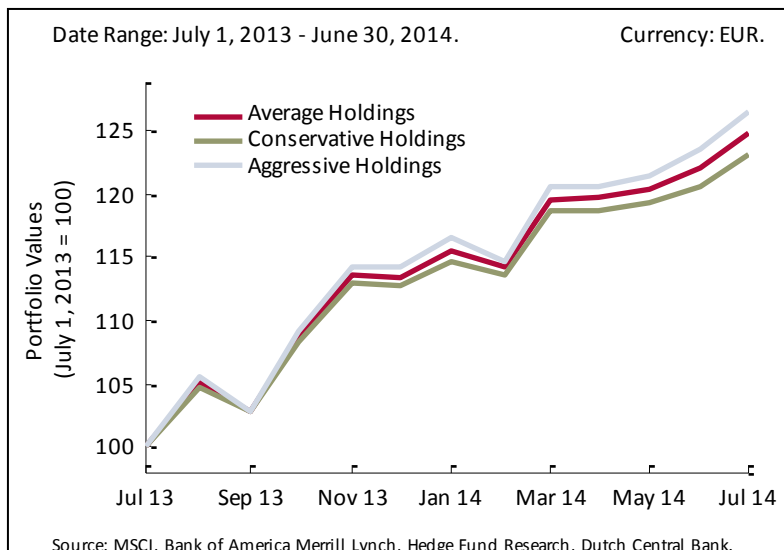
## Assets

MSCI

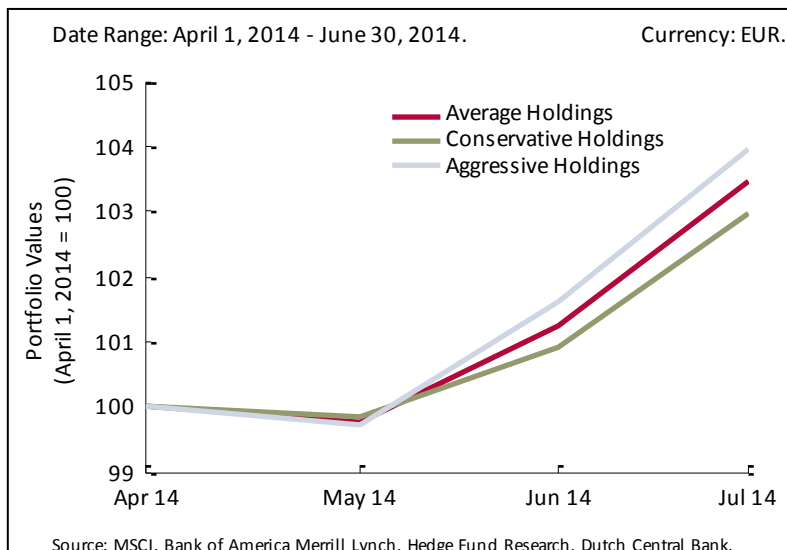
MSCI Risk Monitor: Asset Owners

2014 Q2

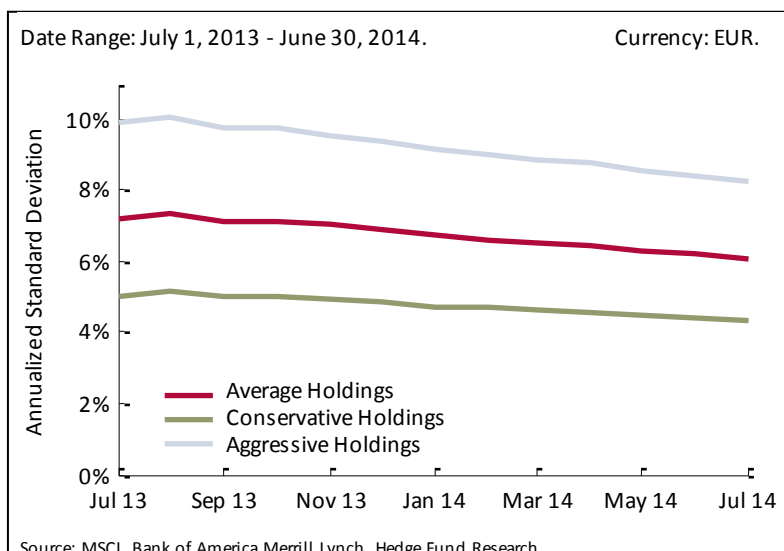
### 1. Historical Performance (One Year)



### 2. Historical Performance (2014 Q2)



### 3. Forecast Risk



### Comments

- Growth of Asset portfolios for Dutch Pensions remained relatively slow in Q2 2014 (~3.5%), following similar performance seen in Q1 2014 (~3%), p.14, ch.1 and 2. This was probably driven by both the sluggish performance of EU Fixed Income (p.20, ch.2) and by the global dynamics of Equity markets where EU Equities behaved out of sync with Asia and US Equities during a substantial period of Q2 (p.18, ch.2).
- Post July 2013 we continued to observe decreasing volatility of investment portfolios for the Dutch Pension Plans (ch.3).

#### Methodology notes

##### Asset allocation:

31.3% Equities (63.7% Global ex EMU  
Equities: MSCI World ex EMU IMI, 18.4%  
Eurozone Equities: MSCI EMU IMI, 17.9%  
Emerging Market Equities: MSCI EM IMI)  
53.6% Fixed Income (42.5% EMU  
Government Fixed Income: Bank of  
America Merrill Lynch (BofAML) European  
Union Government Bond Index, 18.9%  
EMU Corporate Fixed Income: BofAML  
EMU Corporate Index, 13.1% US  
Treasuries: BofAML US Treasury Master,  
7.8% Global Inflation-Linked Fixed Income:  
BofAML Global Governments Inflation-  
Linked, 5.1% US MBS: BofAML US Domestic  
MBS Master, 4.6% UK Gilts: BofAML U.K.  
Gilts, 8.0% EMU Short-Term Fixed Income:  
BofAML Euro Government Bill Index)  
4.5% Private Equity (70.4% US Private Equity  
Model Portfolio with MSCI USA SMID CAP  
Index and MSCI USA IMI as public proxies,  
25.35% MSCI Europe Small Cap Index,  
4.25% MSCI AC Asia Small Cap Index)  
8.2% Real Estate (MSCI ACWI IMI/REITS  
Industry Index  
2.7% Hedge Funds (Hedge Fund Model  
(HFM2) portfolio (with 51% Equity Hedge,  
25% Event Driven, 12% Macro and 12%  
Convertible Arbitrage Strategy Model  
portfolios))  
-0.3% Cash (EUR)  
We assume that no asset contributions are  
made during the analysis period.  
We update the portfolios regularly. Changes  
for the actual report are marked in italics.  
**Data source:**  
Holdings based on Dutch Central Bank data  
(updated in April 2014); portfolios  
rebalanced to original weights monthly.  
**Notes:**  
Conservative holdings overweight fixed  
income by 20%; Aggressive holdings  
underweight fixed income by 20%; holdings  
in other asset classes are modified  
proportionally, keeping the cash position  
unchanged.

# Netherlands Plans

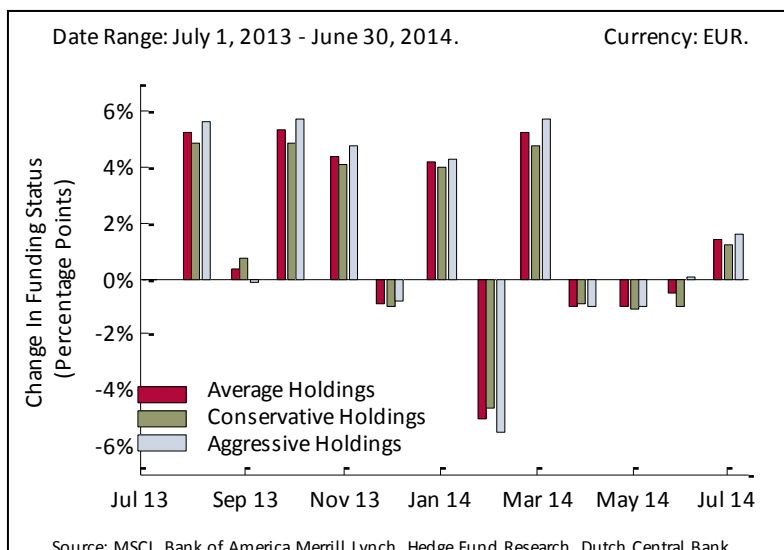
## Funding Status

MSCI

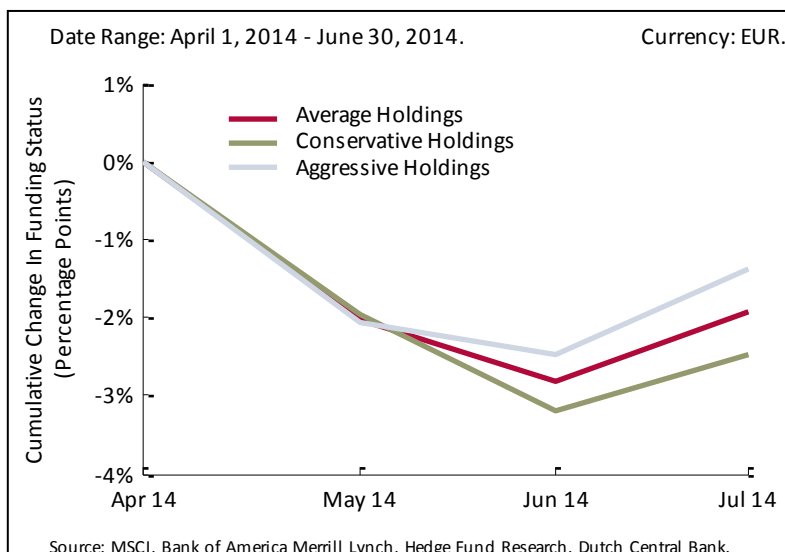
MSCI Risk Monitor: Asset Owners

2014 Q2

### 1. Market Effects on Funding Ratio (One Year)



### 2. Market Effects on Funding Ratio (2014 Q2)



#### Methodology notes

#### Funding status:

The funding status is modeled with a surplus portfolio that is constructed as long assets and short liabilities; the change in the funding status is measured relative to the present value of the liabilities.

#### Liabilities:

Liability portfolio is modeled with a representative cash flow stream with duration of 15.7 years. We use EUR LIBOR as the discount rate.

The initial reported funding ratio is 107.6% (last updated in April 2014, averaged over Q2 2013- Q1 2014).

We assume that no liability payments or asset contributions are made during the analysis period.

We update the portfolios regularly. Changes for the actual report are marked in italics.

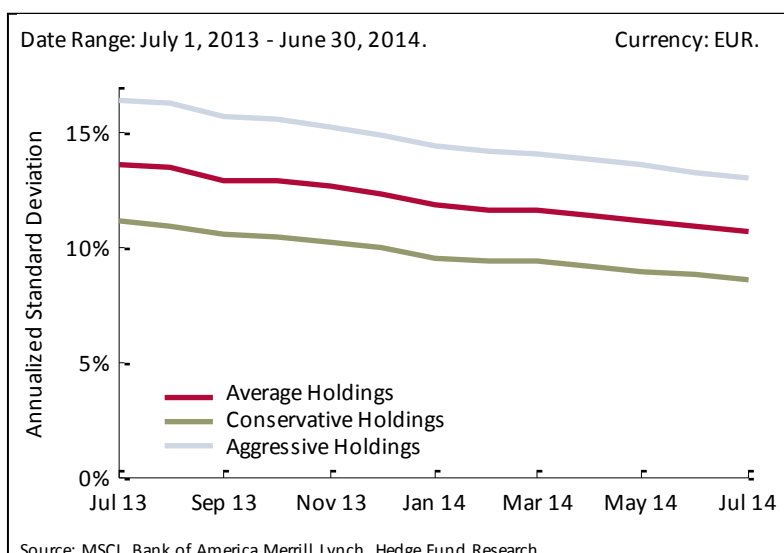
#### Data source:

Average holdings based on data from Dutch Central Bank for all funds (last updated in April 2014); portfolios rebalanced to original weights monthly.

#### Notes:

Conservative holdings overweight fixed income by 20%; Aggressive holdings underweight fixed income by 20%; holdings in other asset classes are modified proportionally, keeping the cash position unchanged.

### 3. Surplus/Deficit Risk Relative to Liabilities



### Comments

- Similarly to Q1 2014, ~3% Asset growth (p.15; ch.1, 2) was not enough to improve Funding Ratios of the Dutch Pensions. The Funding Status deteriorated by ~2%. Falling EU and US discount rates in Q2 (p.21, ch.3) possibly contributed to this outcome.



# Netherlands Plans

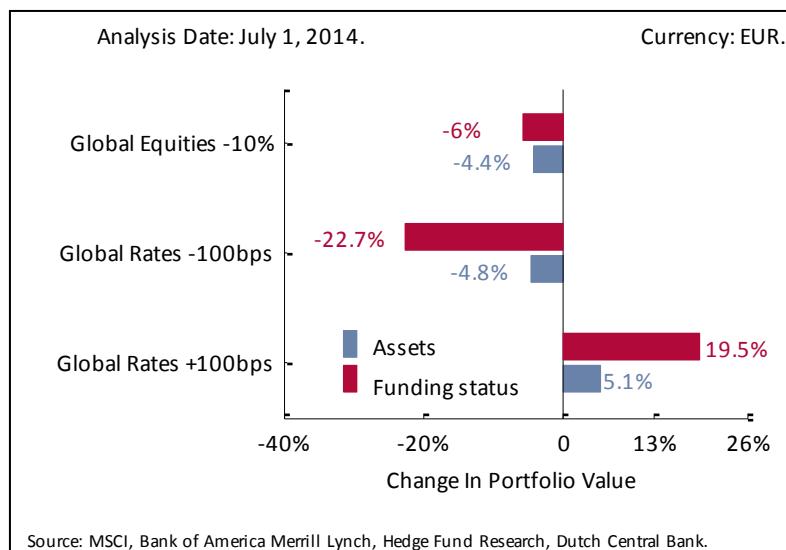
## Stress Test Results

MSCI

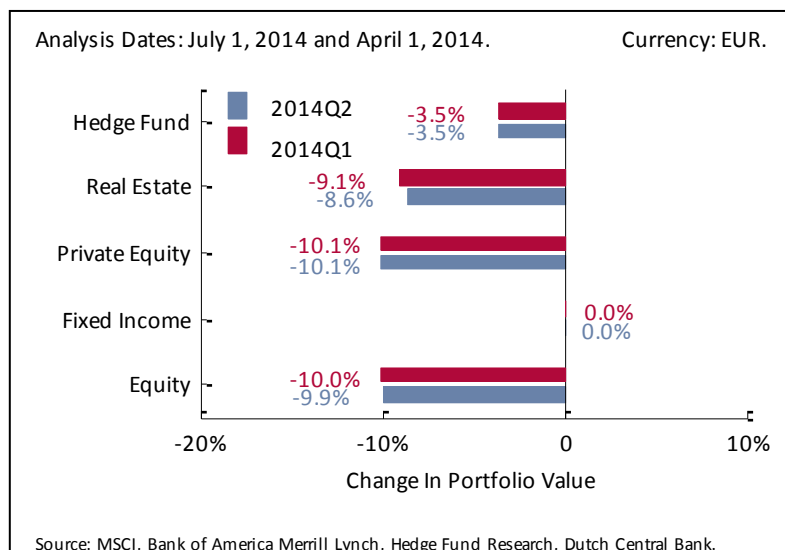
MSCI Risk Monitor: Asset Owners

2014 Q2

### 1. Correlated Stress Test Results



### 2. Assets P&L: "Global Equities -10%"



#### Methodology notes

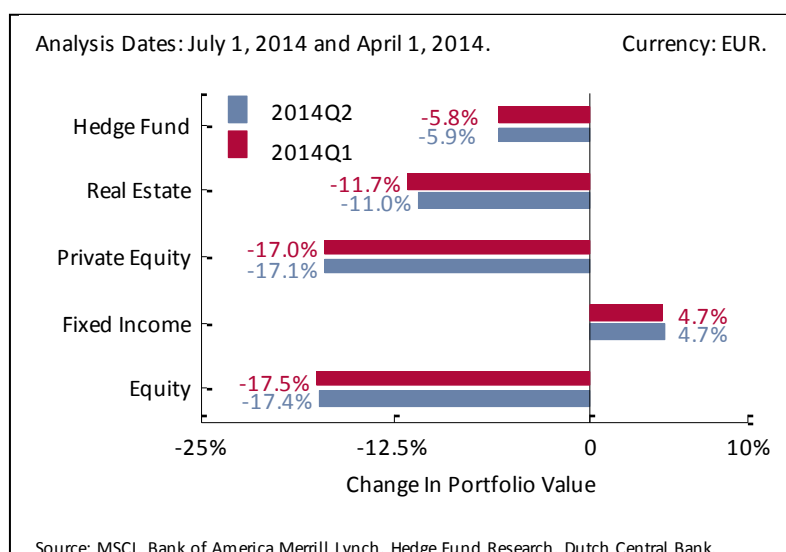
#### Stress tests:

The 'Global Rates -100 bps' is a correlated stress test with shifts in the USD, EUR, CAD, JPY, GBP and CHF government yield curves. The 'Global Rates +100 bps' is a correlated stress test with shifts in the USD, EUR, CAD, JPY, GBP and CHF government yield curves. The 'Global Equities -10 percent' correlated stress test incorporates equity market shocks to the estimation universe of the BIM301 model for selected countries: United States, United Kingdom, Germany, and Japan.

#### Data source:

Average holdings based on data from Dutch Central Bank for all funds (last updated in April 2014).

### 3. Assets P&Ls: "Global Rates -100 bps"



### Comments

- Similarly to the UK Pension Schemes, Dutch Pensions' Real Estate investments continued to become less sensitive to Interest Rate and Equity movements (ch.2, 3).
- Sensitivity to Interest Rates of Dutch Pensions Assets remained higher than those in other regions (p.4, 7, 10, 13; ch.1).

# Risk / Return Analysis of Asset Classes

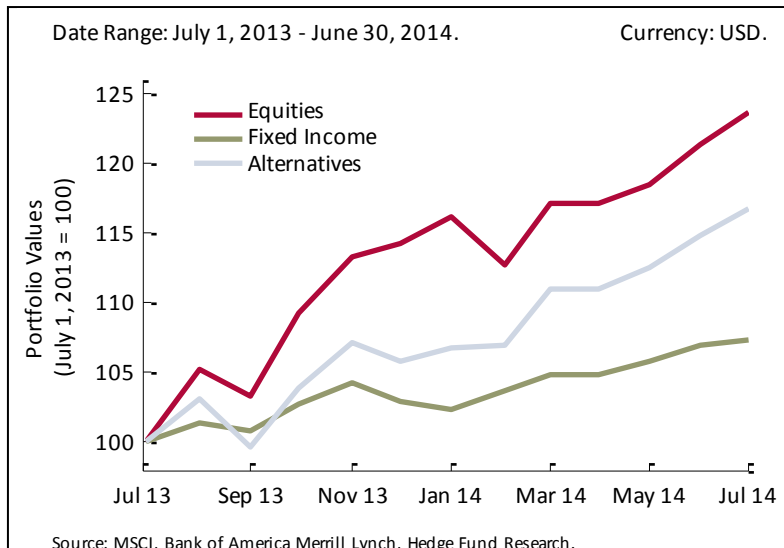
## All Asset Classes

MSCI

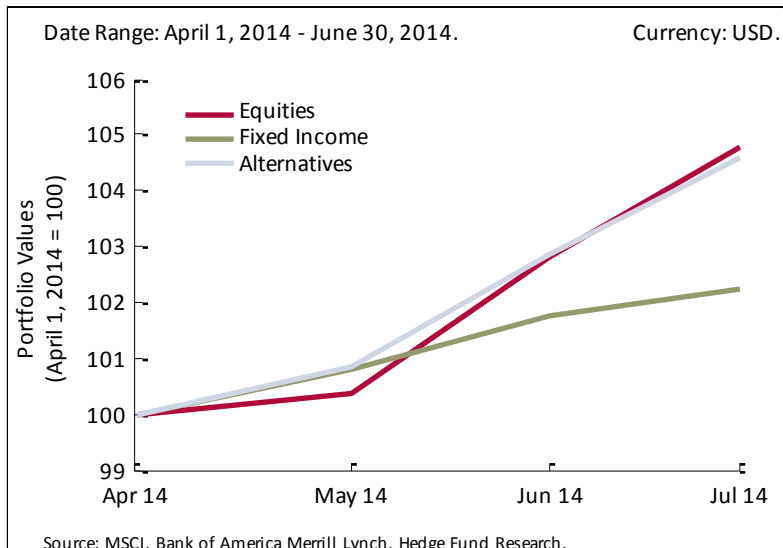
MSCI Risk Monitor: Asset Owners

2014 Q2

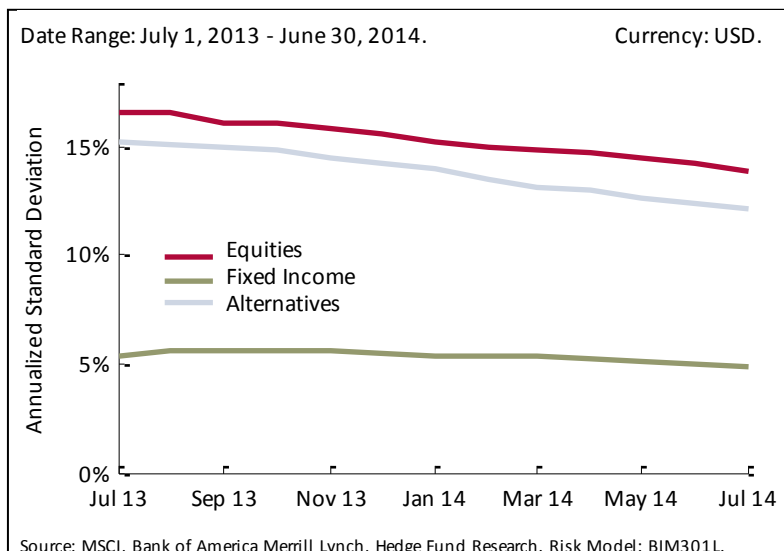
### 1. Historical Performance (One Year)



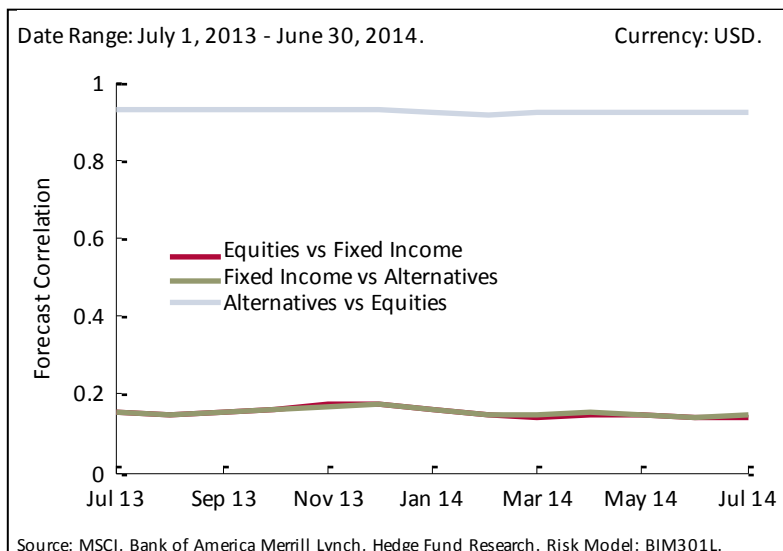
### 2. Historical Performance (2014 Q2)



### 3. Forecast Risk



### 4. Correlation Analysis



Methodology notes

#### Representative portfolios:

Equities:

100% MSCI All Country Investable Market Index (MSCI ACWI IMI)

Fixed Income:

60% Global Government Fixed Income (Bank of America Merrill Lynch Global Government Bond Index II)  
40% Global Corporate Fixed Income (Bank of America Merrill Lynch Global Broad Market Corporate Index)

Alternatives:

35% Private Equities (70.4% US Private Equity Model Portfolio with MSCI US Small and Mid Cap Index (MSCI USA SMID CAP) and MSCI USA Investable Market Index (MSCI USA IMI) as public proxies, 25.35% MSCI Europe Small Cap Index (MSCI Europe Small Cap), 4.25% MSCI All Country Asia Small Cap Index (MSCI AC Asia Small Cap)),  
20% Hedge Funds (Hedge Fund Model (HFM2) portfolio (with 51% Equity Hedge, 25% Event Driven, 12% Macro and 12% Convertible Arbitrage Strategy Model Portfolios))  
45% Real Estate (MSCI ACWI IMI/REITS Industry Index)

# Risk / Return Analysis of Asset Classes

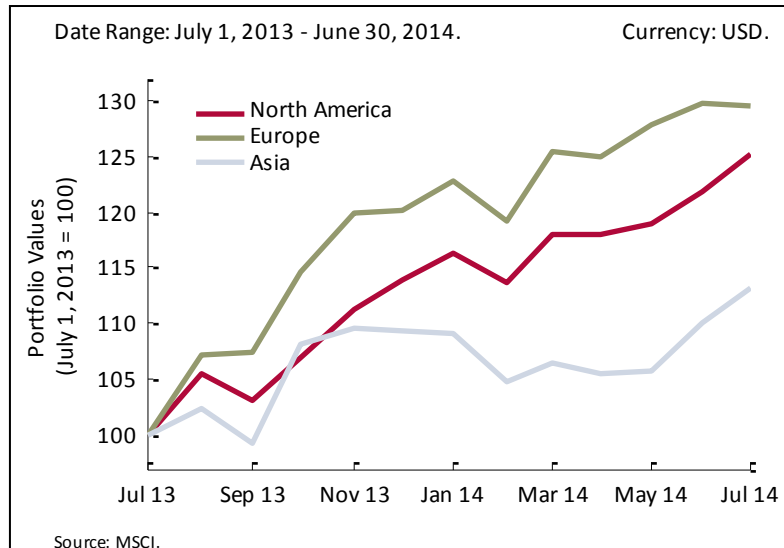
## Equities by Region



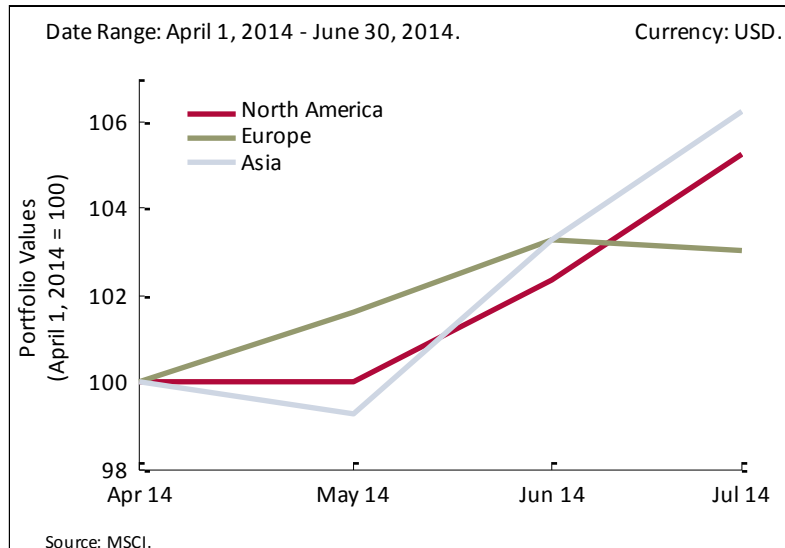
MSCI Risk Monitor: Asset Owners

2014 Q2

### 1. Historical Performance (One Year)



### 2. Historical Performance (2014 Q2)



Methodology notes

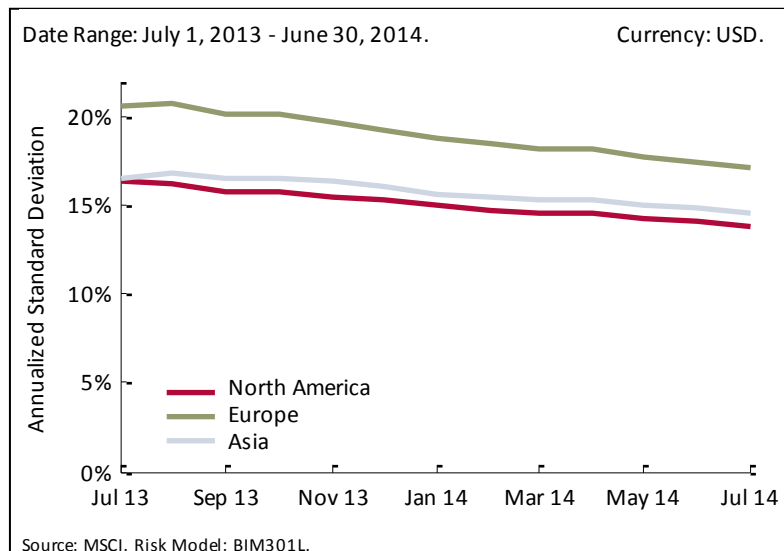
#### Representative portfolios:

North America:  
100% MSCI North America IMI Index

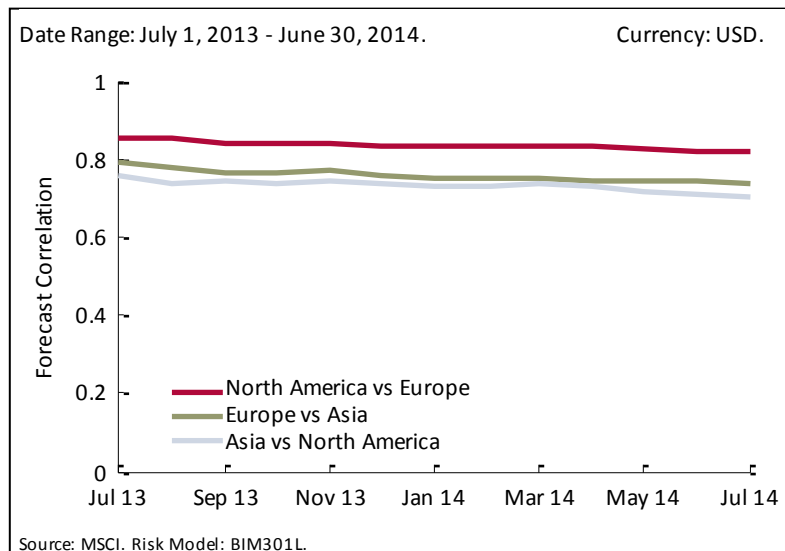
Europe:  
100% MSCI AC Europe IMI Index

Asia:  
100% MSCI AC Asia IMI Index

### 3. Forecast Risk



### 4. Correlation Analysis



# Risk / Return Analysis of Asset Classes

## Equities by Factor

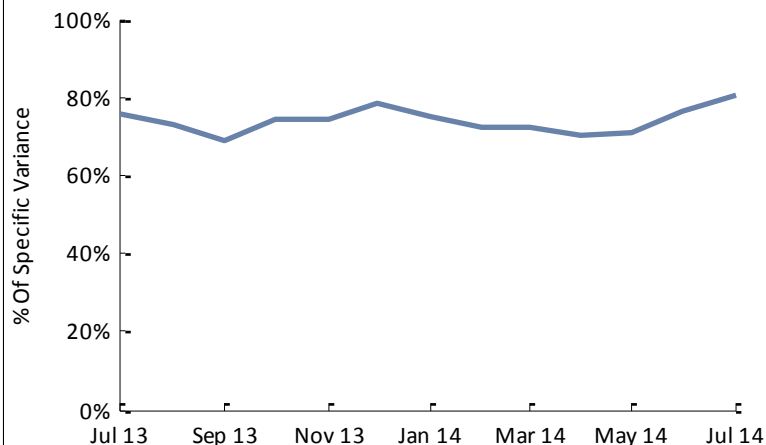


MSCI Risk Monitor: Asset Owners

2014 Q2

### 1. Asset Specific Risk

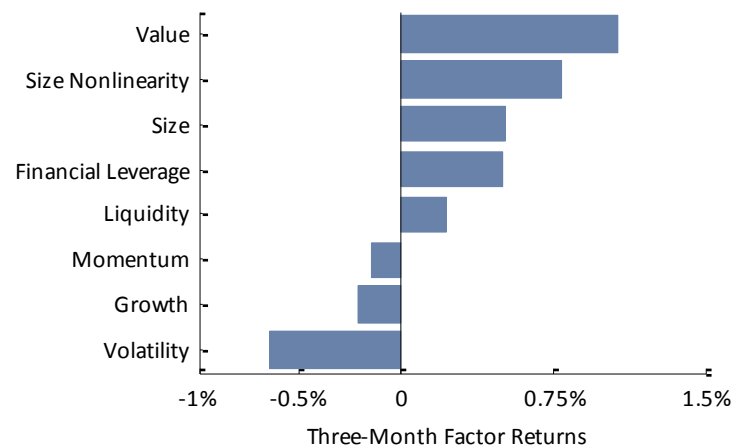
Date Range: July 1, 2013 - June 30, 2014.



Source: MSCI. Risk Model: GEM3.

### 2. Style Factor Returns (2014 Q2)

Date Range: April 1, 2014 - June 30, 2014.



Source: MSCI. Model: GEM2

Methodology notes

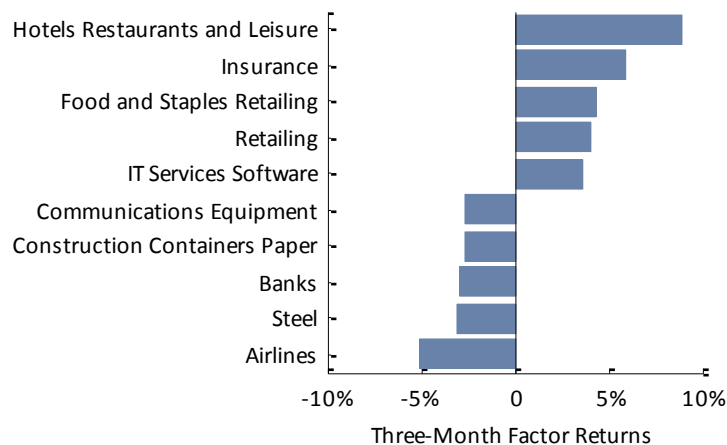
#### Notes:

Chart 1: Based on the R-squared statistic of the Global Equity Model (GEM3); daily values are averaged for each month. Higher values represent higher proportion of specific variance within total variance, and may indicate greater scope for active management.

Charts 2, 3, 4: Factor returns during the quarter are calculated as the sum of the monthly factor returns.

### 3. Top/Bottom Industry Factor Performance

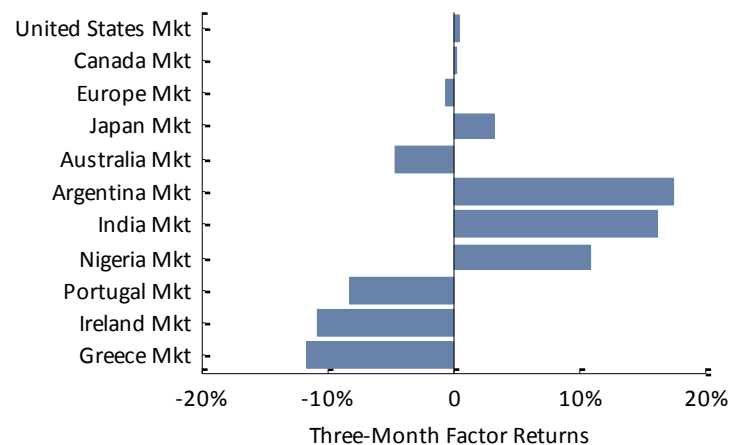
Date Range: April 1, 2014 - June 30, 2014.



Source: MSCI. Model: GEM2.

### 4. Select/Top/Bottom Market Factor Performance

Date Range: April 1, 2014 - June 30, 2014.



Source: MSCI. Model: GEM2.

# Risk / Return Analysis of Asset Classes

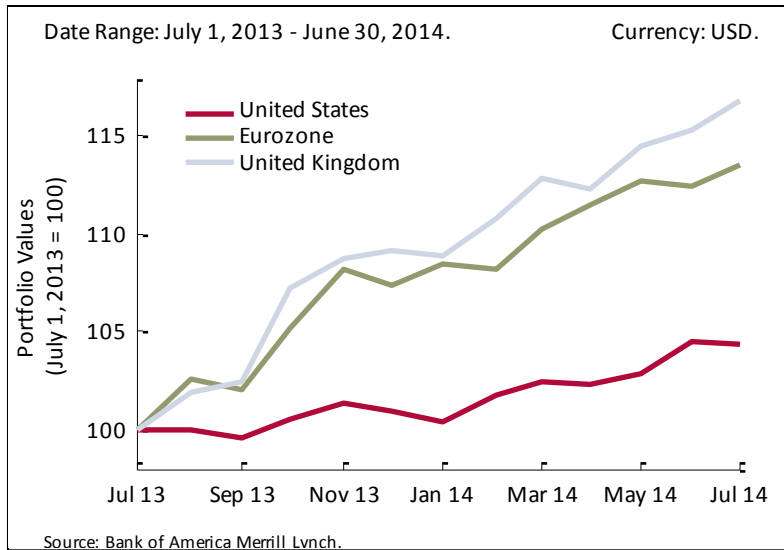
## Fixed Income



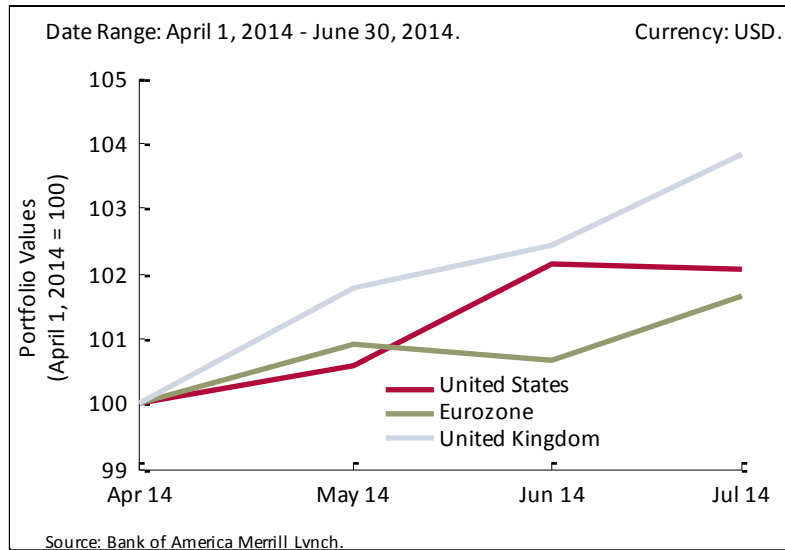
MSCI Risk Monitor: Asset Owners

2014 Q2

### 1. Historical Performance (One Year)



### 2. Historical Performance (2014 Q2)



Methodology notes

#### Representative portfolios:

United States:

100% Bank of America Merrill Lynch US Domestic Master

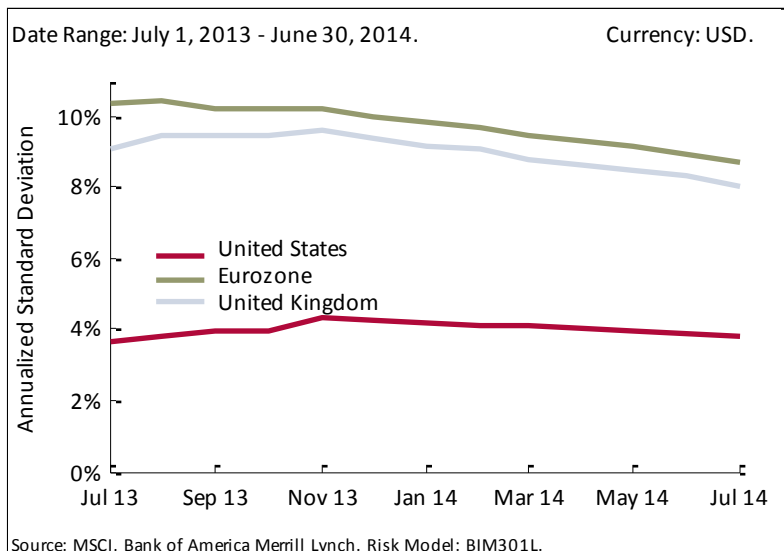
Eurozone:

100% Bank of America Merrill Lynch EMU Broad Market Index

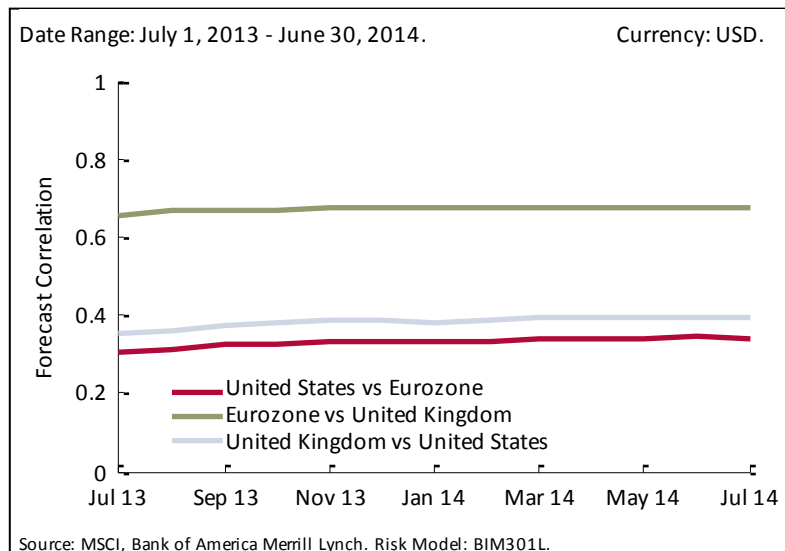
United Kingdom:

100% Bank of America Merrill Lynch Sterling Broad Market Index

### 3. Forecast Risk



### 4. Correlation Analysis



# Risk / Return Analysis of Asset Classes

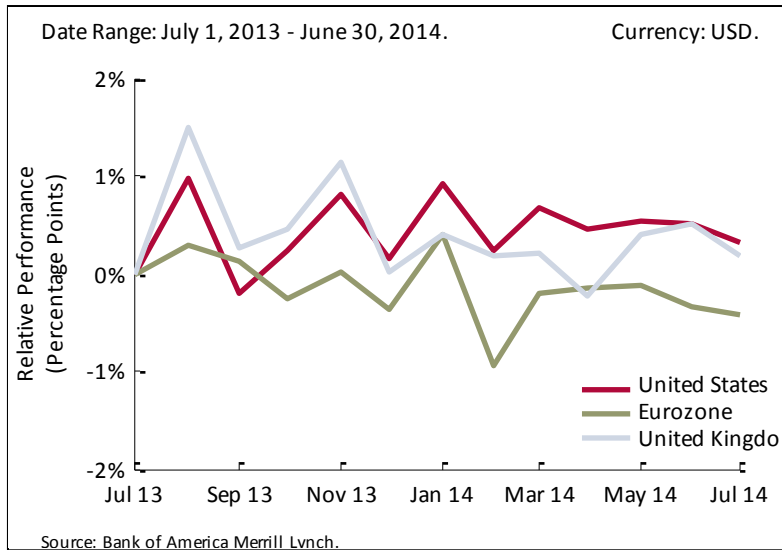
## Fixed Income



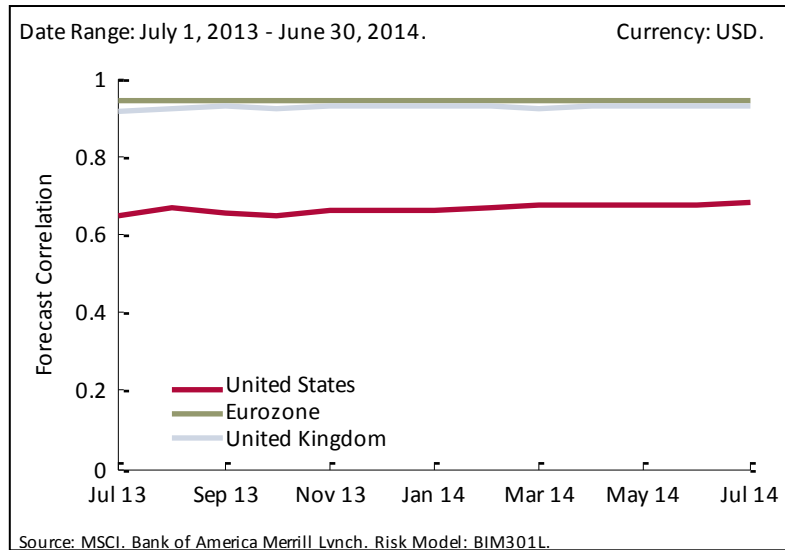
MSCI Risk Monitor: Asset Owners

2014 Q2

### 1. Corporate versus Government Bonds



### 2. Correlation of Government and Corporate Bonds



*Methodology notes*

**Representative portfolios for Chart 1,2:**

United States Corporate Fixed Income:  
100% Bank of America Merrill Lynch US Domestic Corporate Master Index

United States Treasuries:  
100% Bank of America Merrill Lynch US Treasury Master

Eurozone Corporate Fixed Income:  
100% Bank of America Merrill Lynch EMU Corporate Index

Eurozone Government Fixed Income:  
100% Bank of America Merrill Lynch European Union Government Bond Index

United Kingdom Corporate Fixed Income:  
100% Bank of America Merrill Lynch Sterling Corporate Index

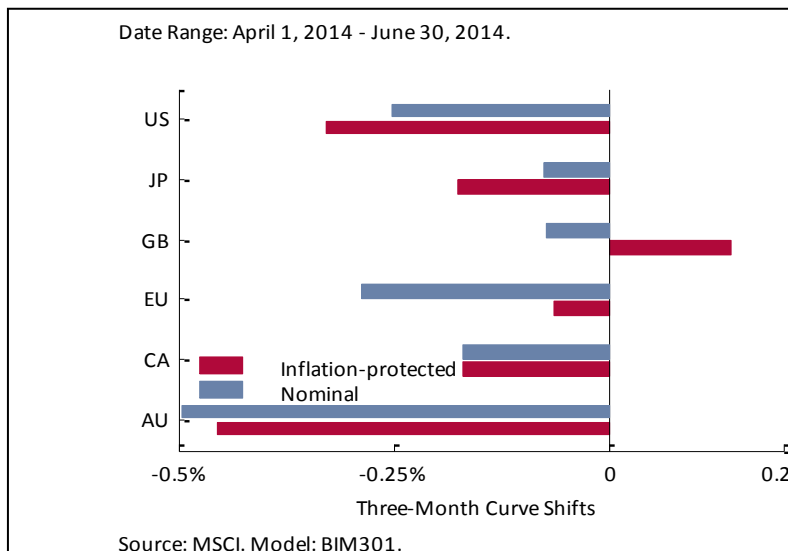
United Kingdom Gilts:  
100% Bank of America Merrill Lynch U.K. Gilts

#### Notes:

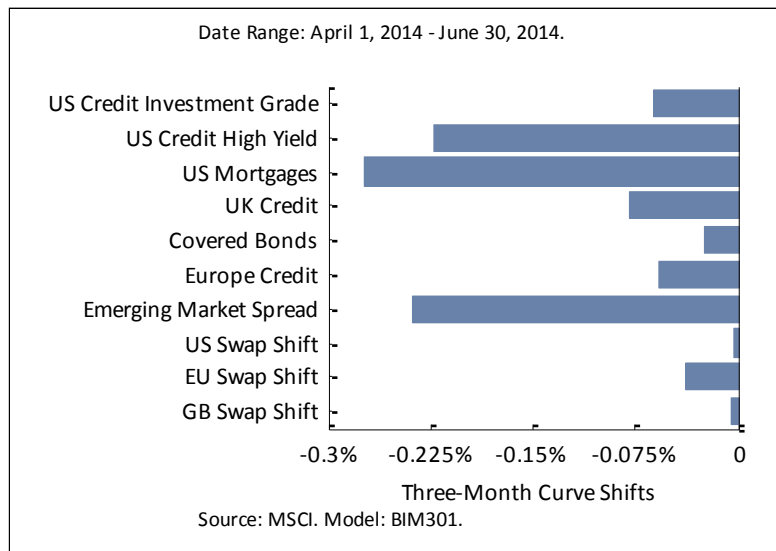
Chart 1: The figure shows performance of a portfolio consisting of a long corporate and a short government portfolio of equal value.

Charts 3, 4: Factor returns during the quarter are calculated as the sum of the monthly factor returns.

### 3. Shift Factor Change over Quarter



### 4. Spread Factor Changes over Quarter



# Risk / Return Analysis of Asset Classes

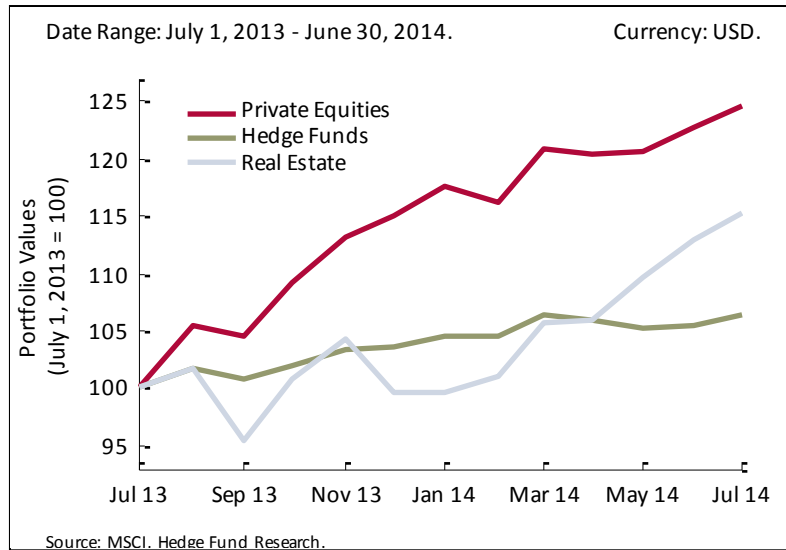
## Alternatives



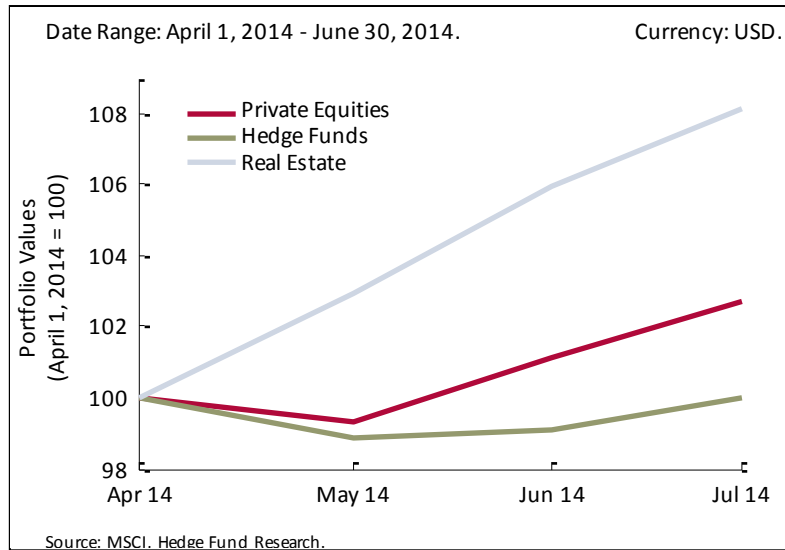
MSCI Risk Monitor: Asset Owners

2014 Q2

### 1. Historical Performance (One Year)



### 2. Historical Performance (2014 Q2)



Methodology notes

#### Representative portfolios:

##### Private Equities

70.4% US Private Equity Model Portfolio with MSCI US Small and Mid Cap Index (MSCI USA SMID CAP) and MSCI USA Investable Market Index (MSCI USA IMI) as public proxies

25.35% MSCI Europe Small Cap Index (MSCI Europe Small Cap)

4.25% MSCI All Country Asia Small Cap Index (MSCI AC Asia Small Cap))

Hedge Funds: Hedge Fund Model (HFM2) portfolio with strategy model portfolios:

51% Equity Hedge

25% Event Driven

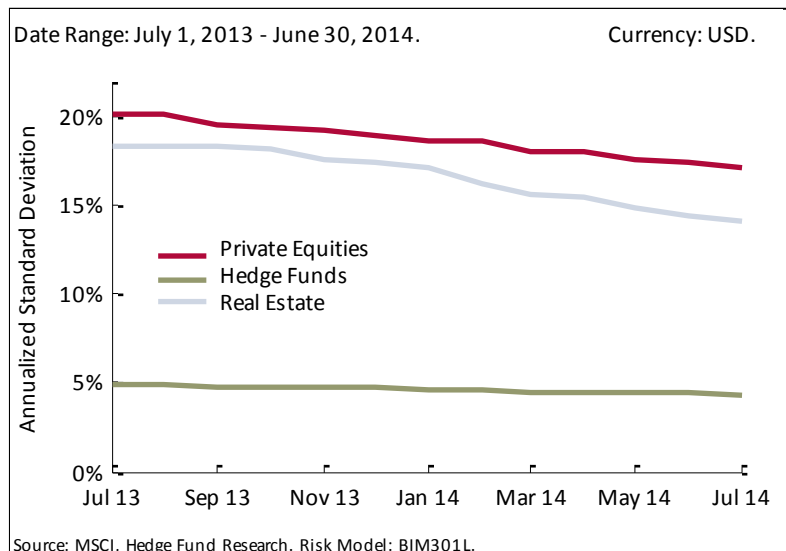
12% Macro

12% Convertible Arbitrage

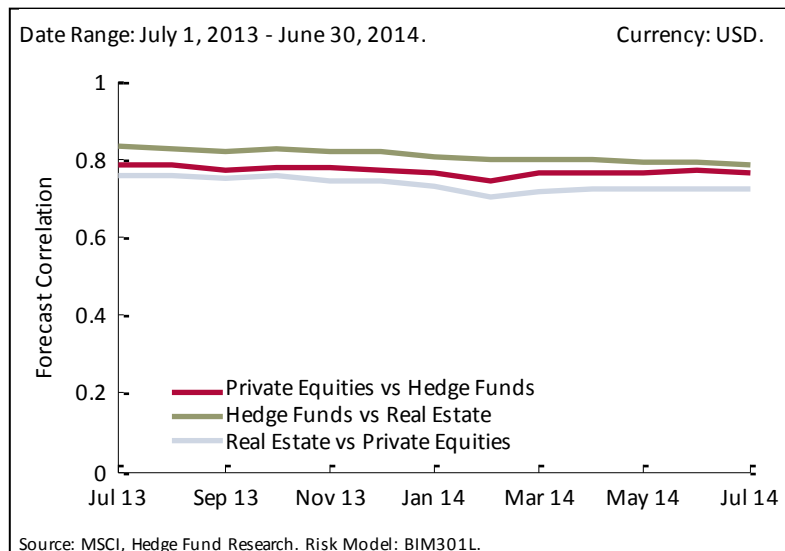
Real Estate:

100% MSCI ACWI IMI/REITS Industry Index

### 3. Forecast Risk



### 4. Correlation Analysis





# Risk / Return Analysis of Asset Classes

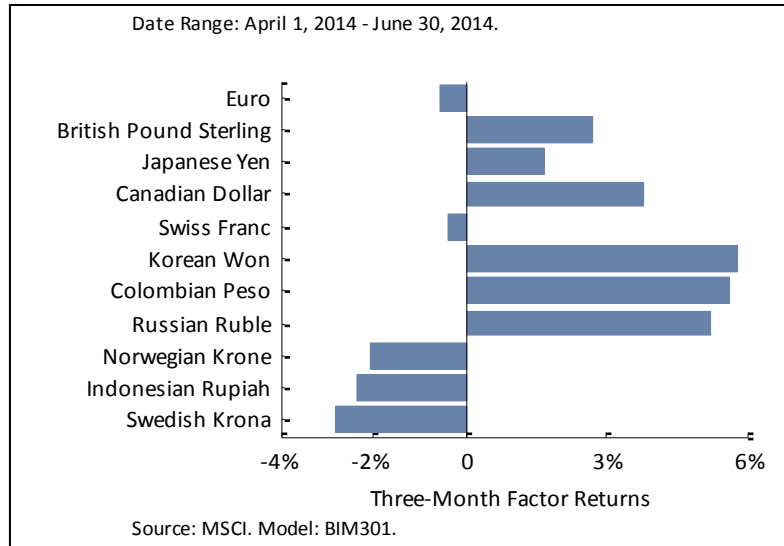
## Currencies



MSCI Risk Monitor: Asset Owners

2014 Q2

### 1. Select Currency Returns versus USD



*Methodology notes*

**Notes:**

Chart 1: Factor returns during the quarter are calculated as the sum of the monthly factor returns.

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The company's flagship product offerings are: the MSCI indexes with over USD 9 trillion estimated to be benchmarked to them on a worldwide basis<sup>1</sup>; Barra multi-asset class factor models, portfolio risk and performance analytics; RiskMetrics multi-asset class market and credit risk analytics; IPD real estate information, indexes and analytics; MSCI ESG (environmental, social and governance) Research screening, analysis and ratings; and FEA valuation models and risk management software for the energy and commodities markets. MSCI is headquartered in New York, with research and commercial offices around the world.

<sup>1</sup> As of March 31, 2014, as reported on June 25, 2014, by eVestment, Lipper and Bloomberg

July 2014

## Contributors to the Series

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