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# Hypothetical Equity Return Models Under Rising Rates

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# For Illustrative Purposes Only

**This presentation depicts a series of hypothetical return models under the assumption of rising rates.**

**These models should be viewed as strictly hypothetical illustrations and are not intended to be taken as market projections.**

# Basic Assumptions

**BONDS**

**0-Coupon Duration = 5**

**Starting Yield = 2%**

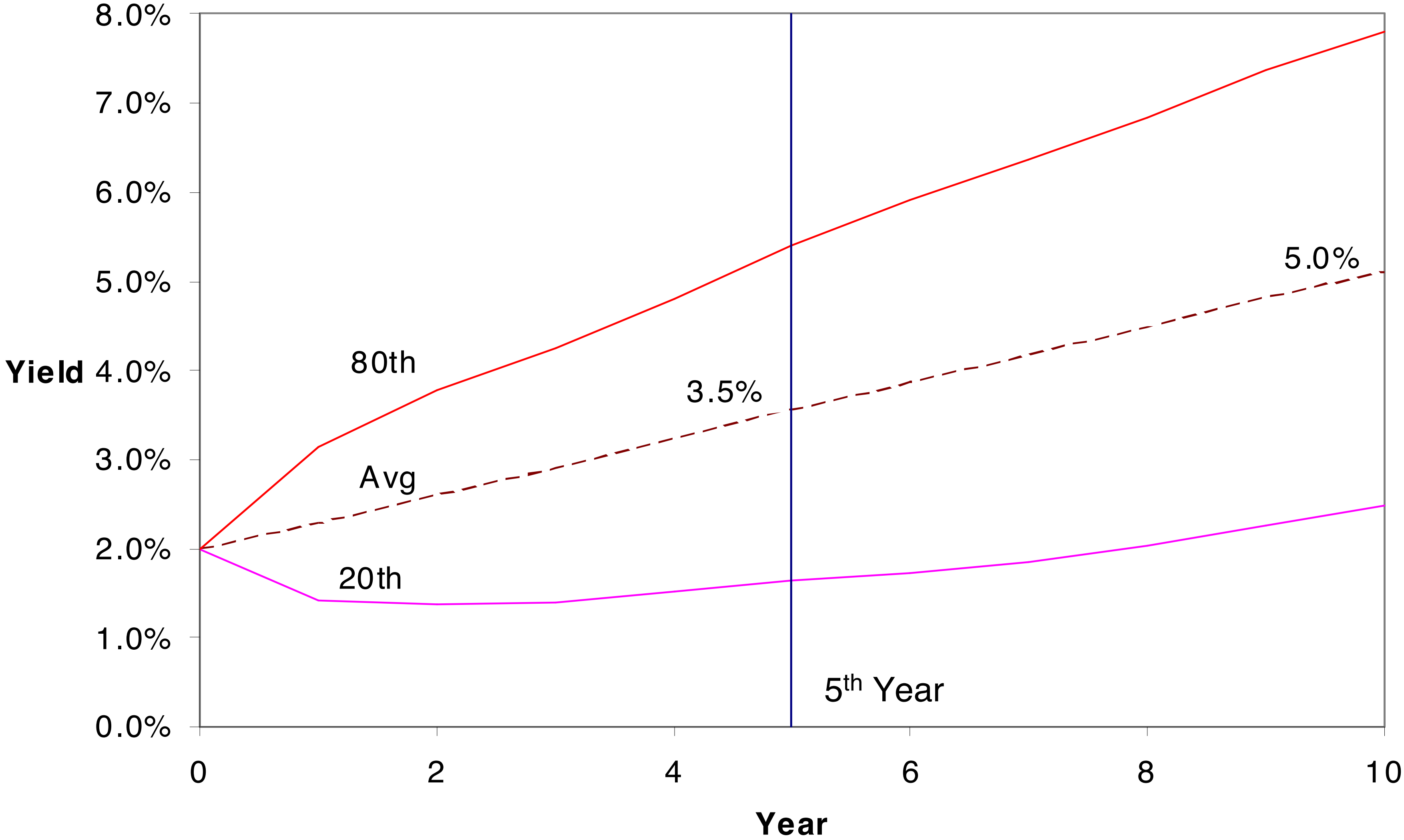
**Rate Volatility = 1%**

**EQUITIES**

**Standard Equity Risk Premium over Bonds = 3.5%**

**Volatility = 16%**

# Yields over Time with + 0.30% Drift

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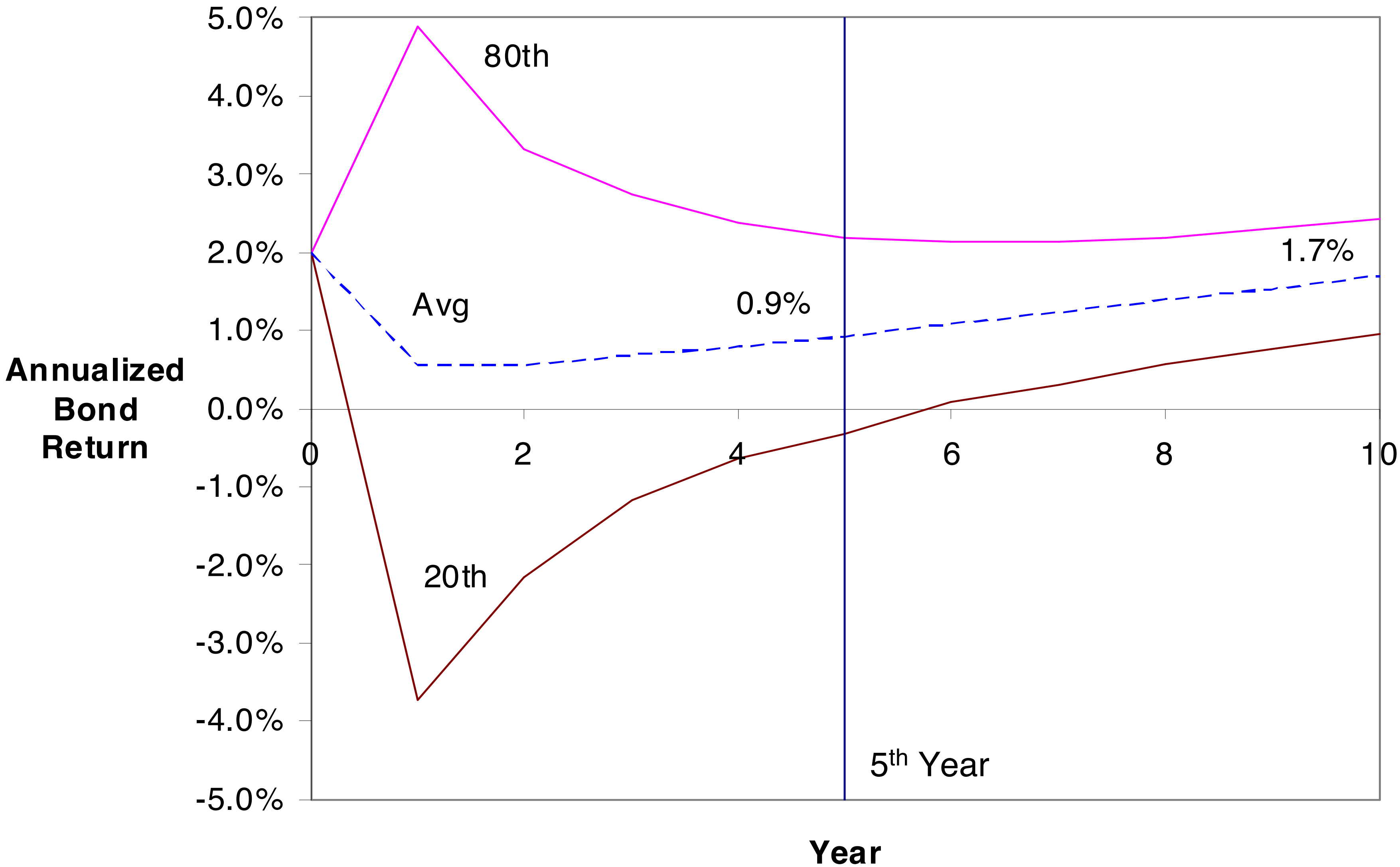
# Duration Targeting Bond Returns with + 0.30% Drift

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# Multi-Year Returns for 5-Year Duration Bonds

| Average Rate Drift Per Year | Average Yield 1yr | Average Yield 5yr | Average Yield 10yr | Annual Return 1yr | Annual Return 5yr | Annual Return 10yr | Annualized Return 5yr | Annualized Return 10yr |
|---|---|---|---|---|---|---|---|---|
| 0.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% |
| 0.3% | 2.0 | 3.5 | 5.0 | 0.5 | 1.8 | 3.2 | 0.9 | 1.7 |
| 0.5% | 2.0 | 4.5 | 7.0 | -0.6 | 1.5 | 4.0 | 0.4 | 1.6 |

# The 2001 and 2011 CFA Forums on the Equity Risk Premium Held at TIAA-CREF

## From 2001 Report

**Estimates of the Equity Risk Premium**

| | |
|---|---|
| Arnott & Bernstein (2001) | 0.0 |
| Campbell and Shiller (2001) | 0.0 |
| McGrattan and Prescott (2002) | 0.0 |
| Brown, Goetzmann & Ross (1995) | low |
| Reichenstein (2001) | 1.3 |
| Campbell (2001) | 1.5 - 2.5 |
| Phillips (2001) | 1.0 - 3.0 |
| Seigel (2001b) | 2.0 |
| Bansal and Lundblad (2001) | 2.5 |
| Shoven (2001) | 3.0 |
| Seigel (2001a) | 3.0 - 4.0 |
| Asness (2000) | 4.0 |
| Graham and Harvey (2001) | 4.0 |
| Ibbotson and Chen (2002) | 4.0 |
| Goyal and Welch (1999) | 3-5 |
| Fama and French (2001) | 4.3 |
| Cornell (1999) | 5.0 |
| Ibbotson and Sinquefeld (1976) | 5.0 |
| Welch (2000) | 6.0 - 7.0 |
| **Average** | **3.7** |
| **Range** | **0.0 - 7.0** |

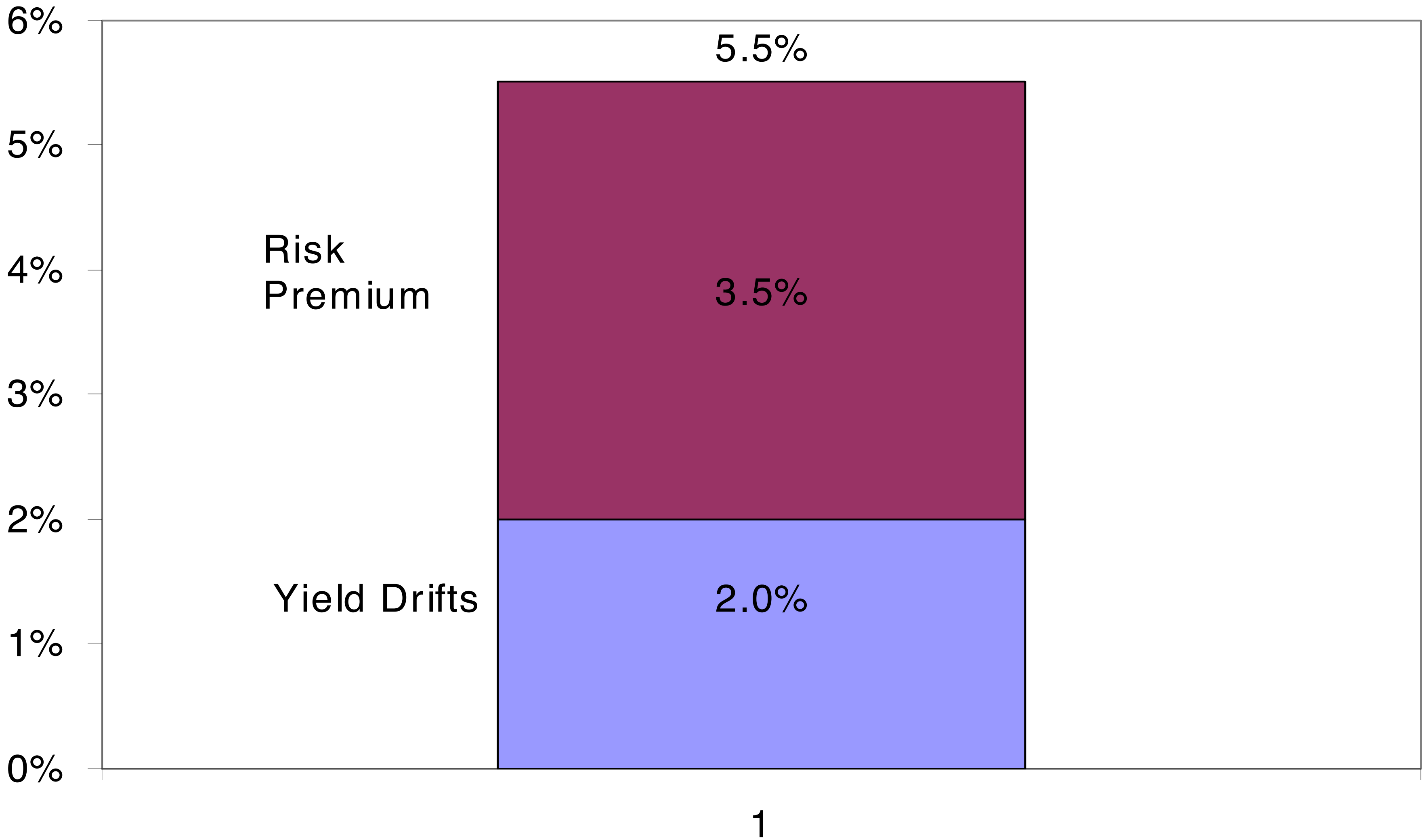
Note: ERP estimates are expected long-term geometric return of equities in excess of the real risk-free rate

## From 2011 Report

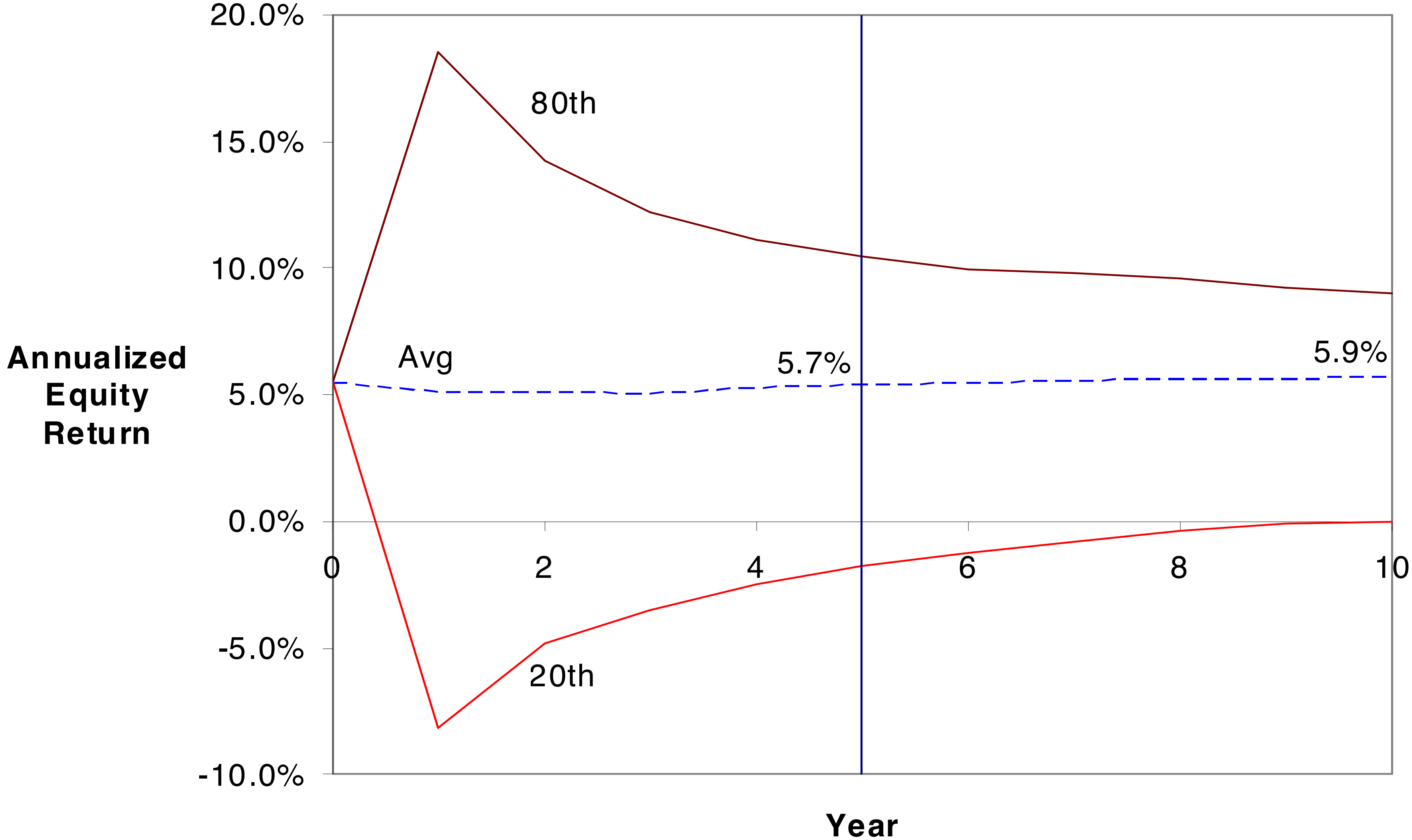
After 10 years of low and high volatile equity returns, there is little consensus about the stability of the ERP over changing regimes and time horizons. Interestingly, the group appears to be in agreement more on the actual size of the ERP over the next few years (most agree that it is in the 4% range) than on its stability.

*Source: Rethinking the Equity Risk Premium, edited by P. Brett Hammond, Martin L. Leibowitz and Laurence B. Siegel, December 23, 2011, Research Foundation of CFA Institute*

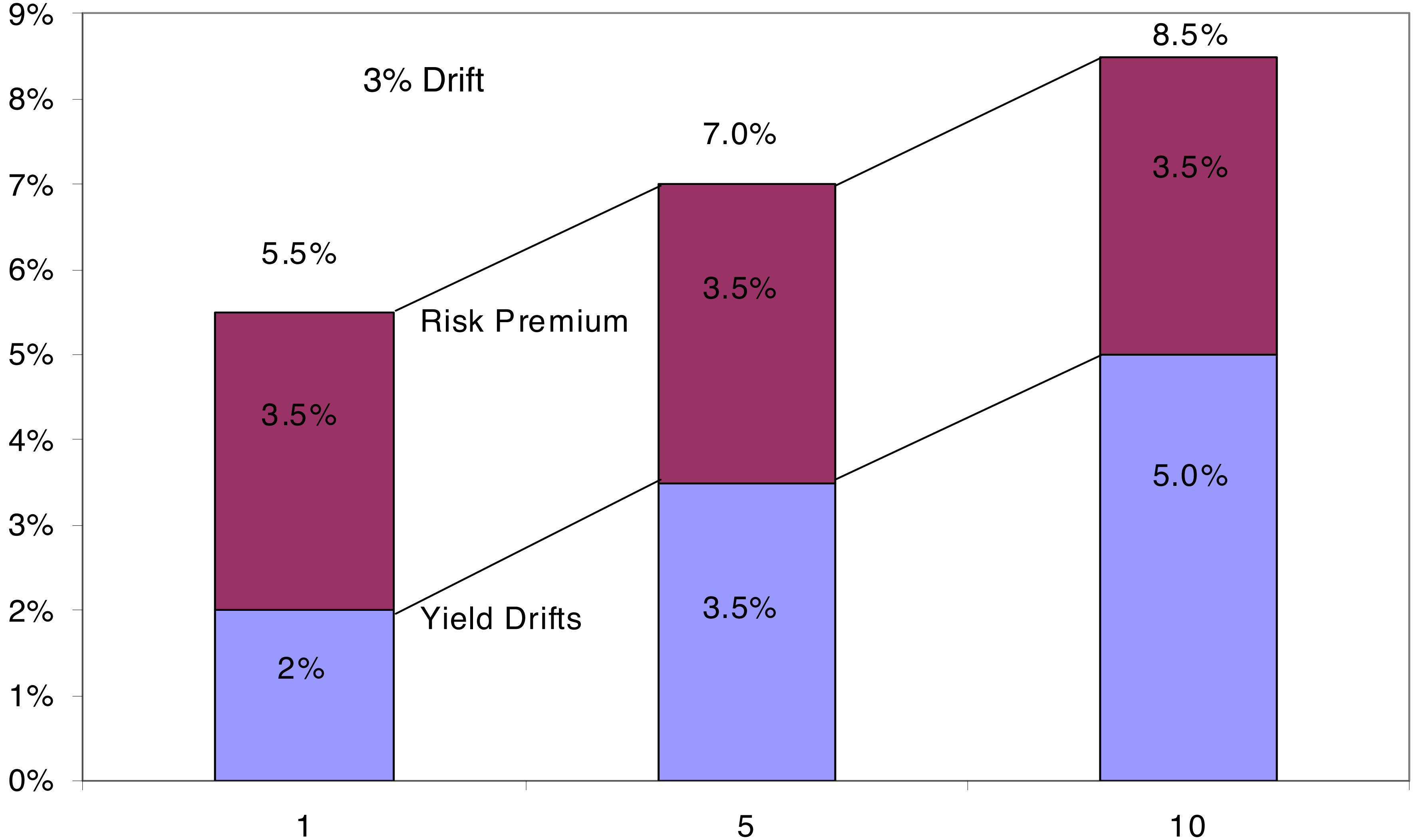
# Yields and Equity Return Expectations



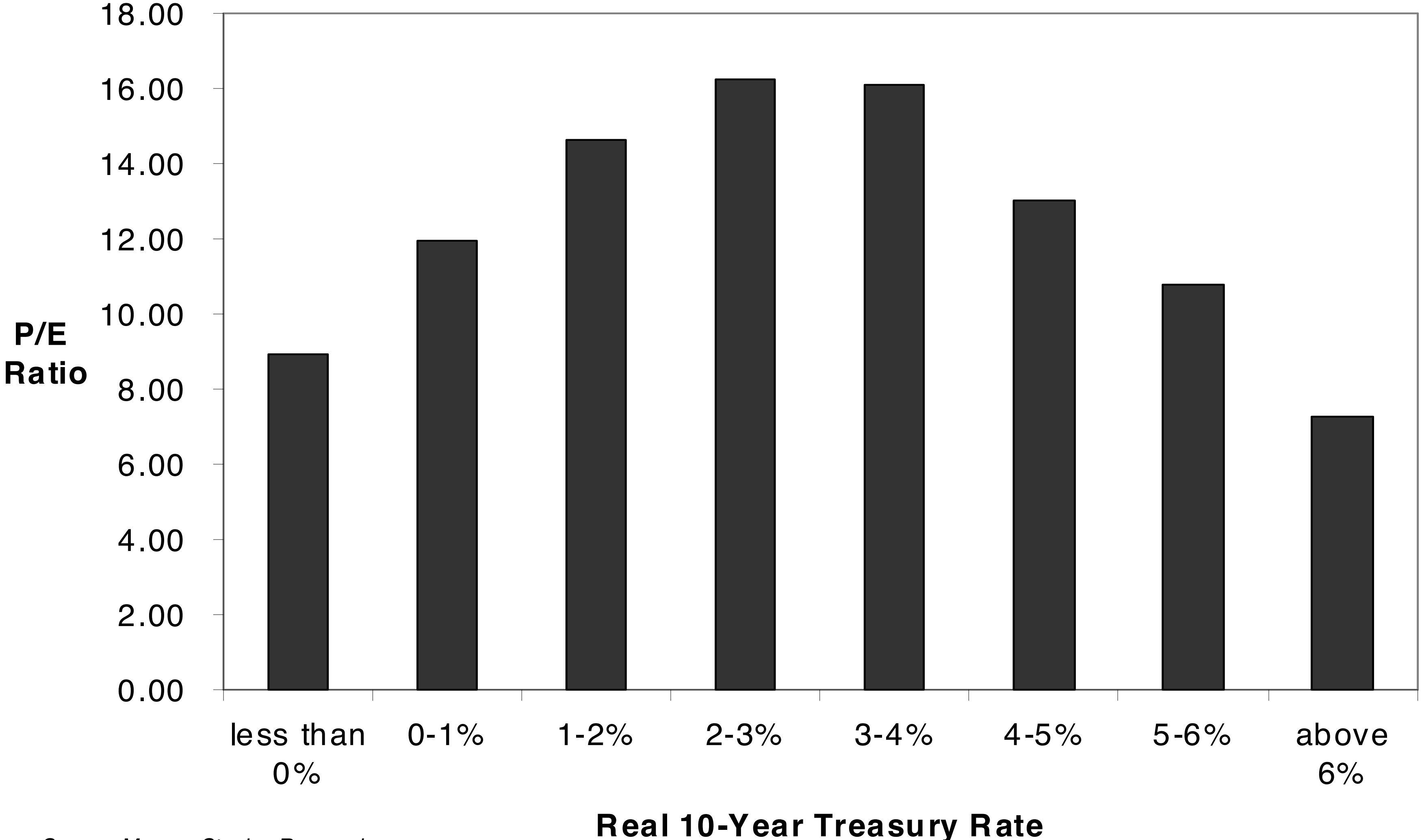
# Equities: Average Drift per year 0%, Min Return 0%, 0 correlation with rates



# Rising Yields and Equity Return Expectations

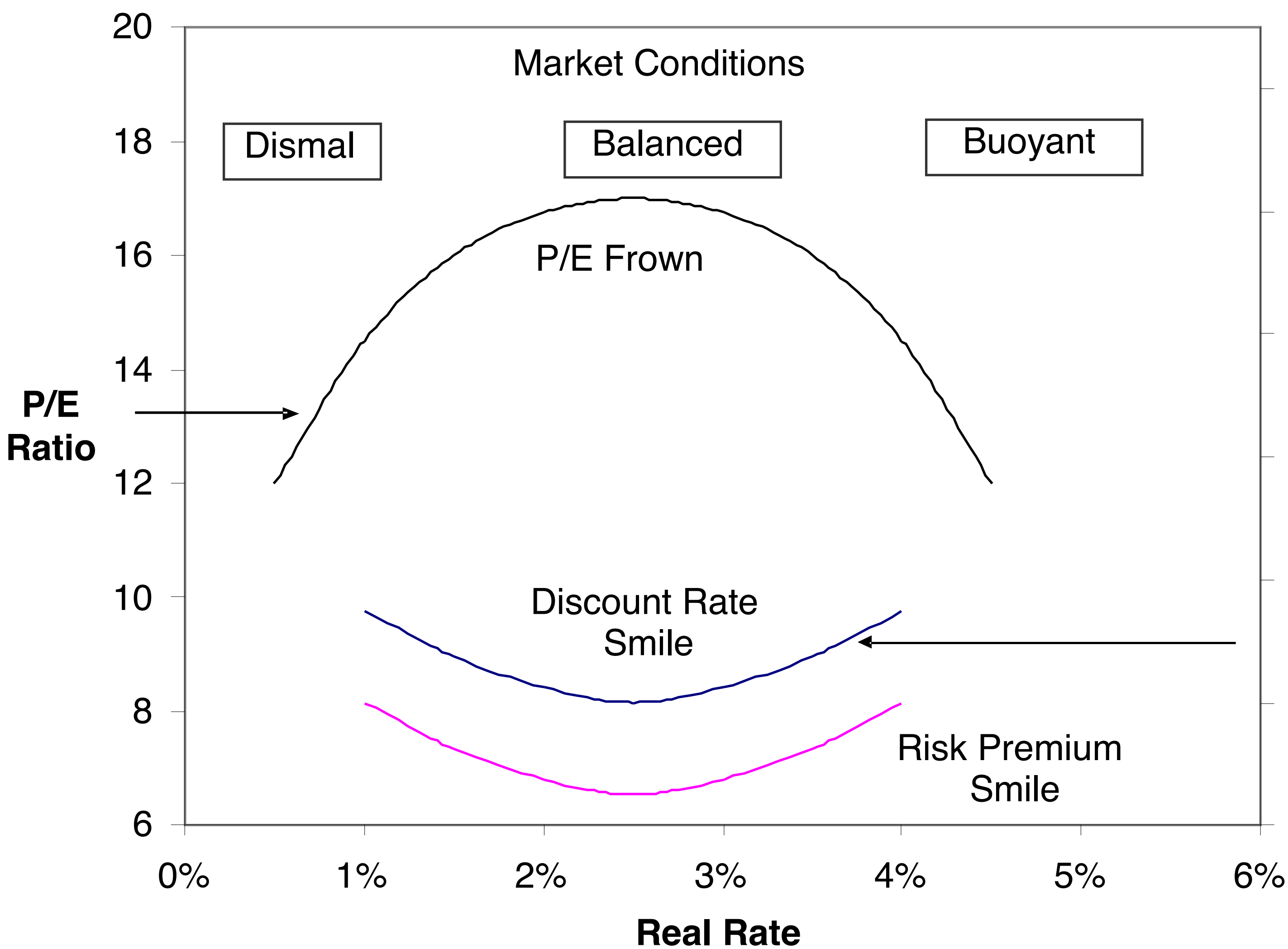


# P/E Ratios vs. Real Rates: 1978-2011



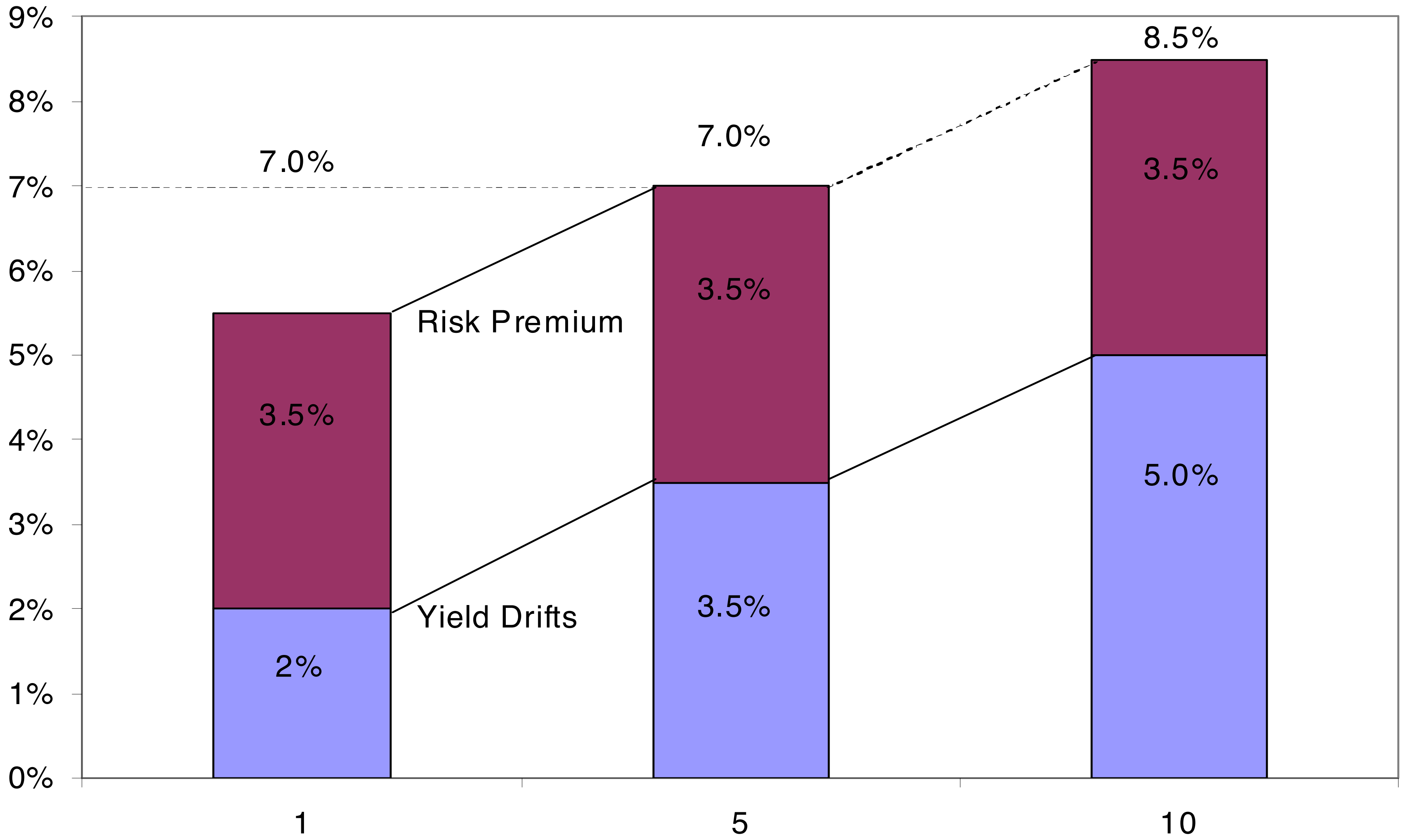

*Source: Morgan Stanley Research*

# P/E Frown

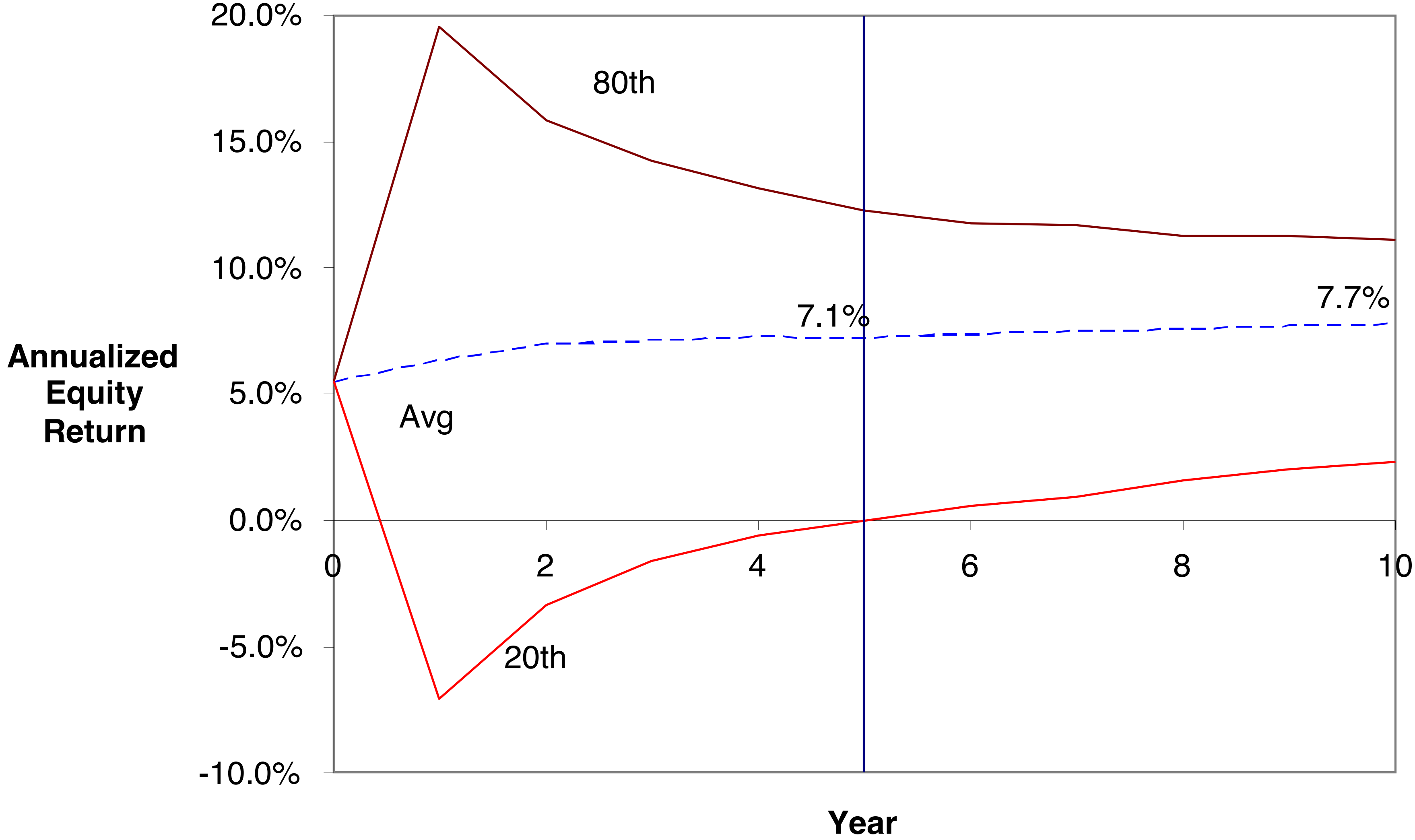



*Source: Morgan Stanley Research*

# Equity Return Expectations with 7% Minimum



# Equities: Average Drift per year 0.30%, Min Return 7%, 0 correlation with rates



# High Risk Premiums Do Not Necessarily Imply Bargain Valuations

**An asset's return premiums can be viewed as incremental returns for accepting the prospective risks.**

**Thus, higher premiums may not be a "bargain" in themselves, but may be an indication of greater prospective risks and/or lower growth prospects.**

**As such, they may not be cheap or a bargain in themselves, especially if the greater perceived risks should in fact be realized.**

**The models presented here are inherently overstated in accepting higher expected returns without fully addressing the greater prospective risks.**

# Multi-Year Equity Returns

Starting Yield =2%

Standard Equity Risk Premium = 3.5%

| Average Rate Drift Per Year | Minimum Equity Return Expectation | Equity/Rate Correlation | 1yr Expected Return | Annualized Return 5yr | Annualized Return 10yr | Probability of Below 5% in 10th year |
|---|---|---|---|---|---|---|
| 0.0% | — | 0.0 | 5.5% | 5.7% | 5.9% | 53% |
| 0.3 | — | 0.0 | 5.5 | 6.2 | 6.9 | 44 |
| 0.3 | 7.0 | 0.0 | 7.0 | 7.1 | 7.7 | 38 |
| 0.3 | 7.0 | 0.3 | 7.0 | 8.2 | 8.7 | 34 |
| 0.3 | 7.0 | -0.3 | 7.0 | 6.8 | 7.6 | 38 |
| 0.3 | 0.0 | -0.3 | 5.5 | 5.2 | 6.3 | 49 |

# References

1) Leibowitz, Martin L. and Anthony Bova. “The Risk Premium Smile Behind the P/E Frown”, *Morgan Stanley Research*, April 24,2012

2) “Rethinking the Equity Risk Premium”, edited by P. Brett Hammond, Martin L. Leibowitz and Laurence B. Siegel, December 23, 2011, Research Foundation of CFA Institute

3) Leibowitz, Martin L. and Anthony Bova. “P/E’s and Pension Fund Ratios”, *Financial Analysts Journal*, January/February 2007

# Additional References


1) Leibowitz, Martin L. and Anthony Bova. “Duration Targeting Over Multiple Yield Pathways”, *Morgan Stanley Research*, May 9, 2012

2) Leibowitz, Martin L. and Anthony Bova. “Convergence to Yield”, *Morgan Stanley Research*, May 24, 2012

3) Leibowitz, Martin L. and Anthony Bova. “Barclays Index and Convergence to Yield”, *Morgan Stanley Research*, July 16, 2012

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