

Investing and Spending: The Twin Challenges of Endowment Management

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Karl Borch Lecture

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Road Map

- What is an endowment?
- The inevitability of risk
- The endowment model
- Lessons of the financial crisis
- The flexibility imperative

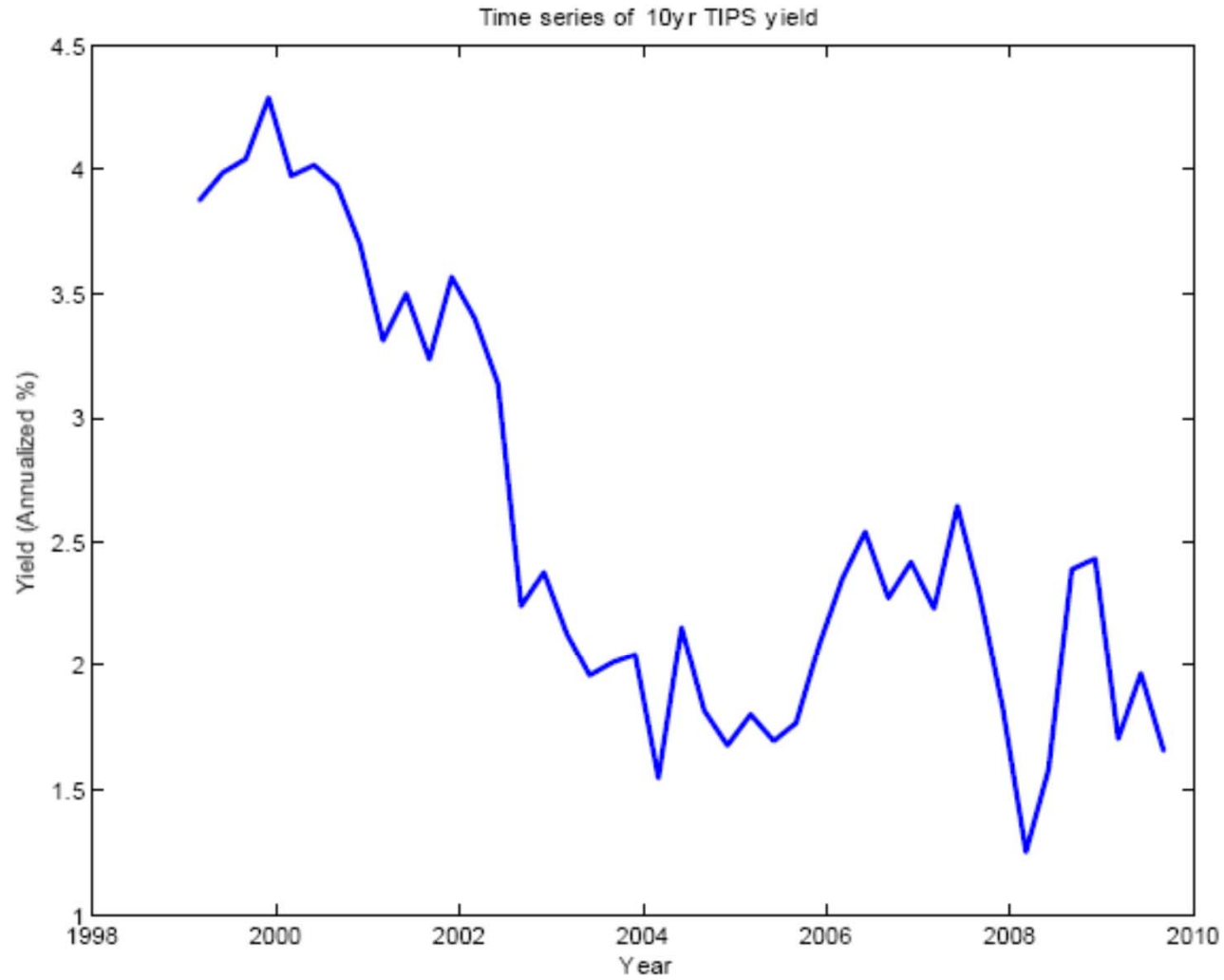
What Is An Endowment?

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- **A promise of vigorous immortality.**

What is an Endowment?

- **A promise of vigorous immortality:**
 - **Immortality** for donors (spending that can on average be sustained in real terms forever).
 - **Vigor** for donors, the university community, politicians, and the public (spending that makes a difference).
- Can both these conditions be met?
 - **Immortality** requires spending no more than the real return on the endowment.
 - **Vigor** requires spending enough, say 5% per year.



TIPS yield (long-term real interest rate) 1999-2009

The Inevitability of Risk

The Inevitability of Risk

- The riskless return is too low to deliver both immortality and vigor.
 - Real Treasury bill return is 0%
 - Long-term TIPS yield is 1.5%.
- So endowment managers must take risk to fulfill their promise:
 - This can work on average
 - But not in every state of the world.
- Universities must plan for risk:
 - Flexibility is vital.

The Inevitability of Risk

- Simple math relates risk and spending:
 - *Sustainable spending rate = Expected return*
 - *Expected return = Riskless rate + Risk premium*
 - *Risk premium = Risk × Reward/risk ratio*
- Rearranging,

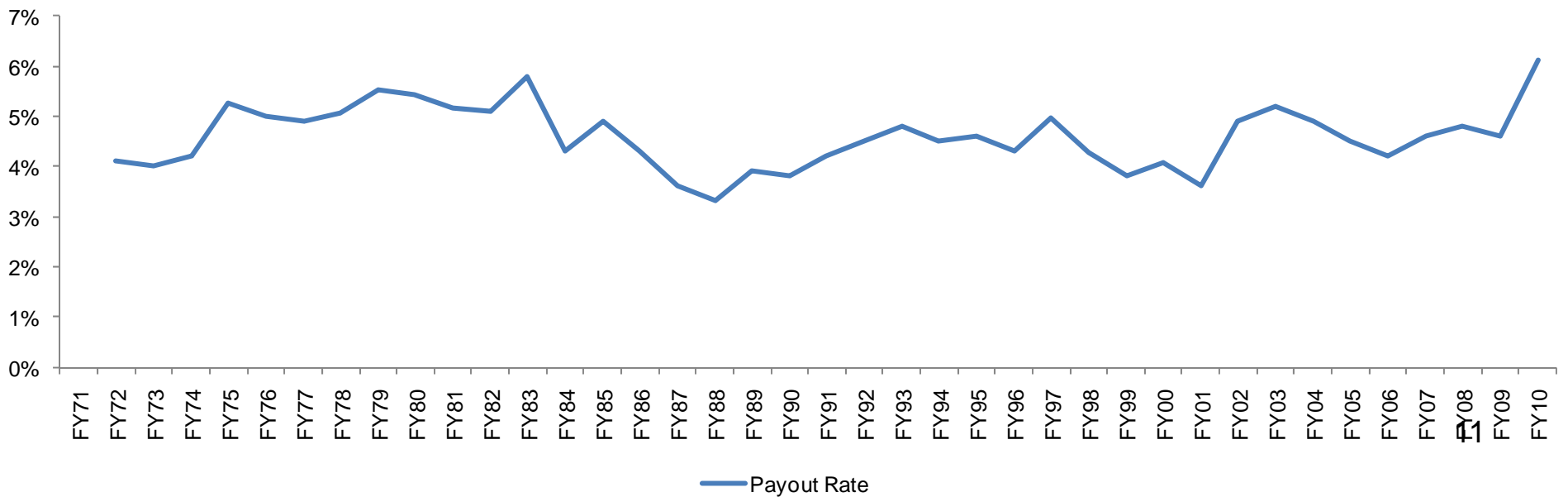
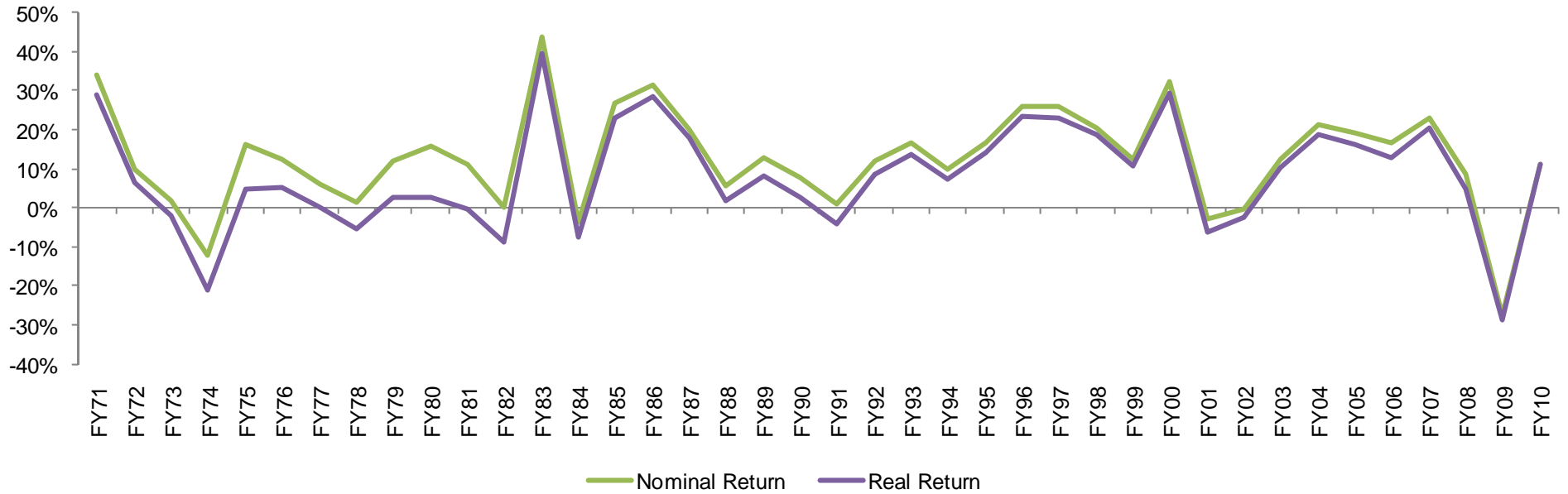
$$Risk = \frac{Spending\ rate - Riskless\ rate}{Reward/risk\ ratio}$$

The Inevitability of Risk

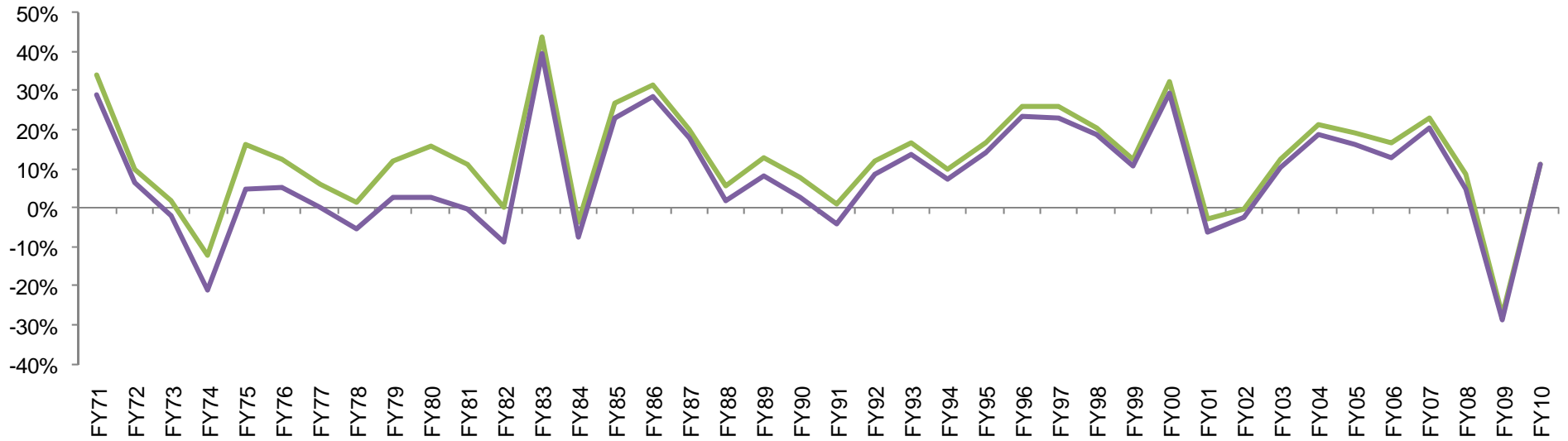
$$\text{Risk} = \frac{\text{Spending rate} - \text{Riskless rate}}{\text{Reward/risk ratio}}$$

- Example: 5% spending rate, 0% riskless rate, reward/risk ratio of 0.25 implies 20% risk.
- But a higher reward/risk ratio of 0.40 allows lower 12.5% risk, or higher 8% sustainable spending rate.
 - This is much closer to Harvard's experience.

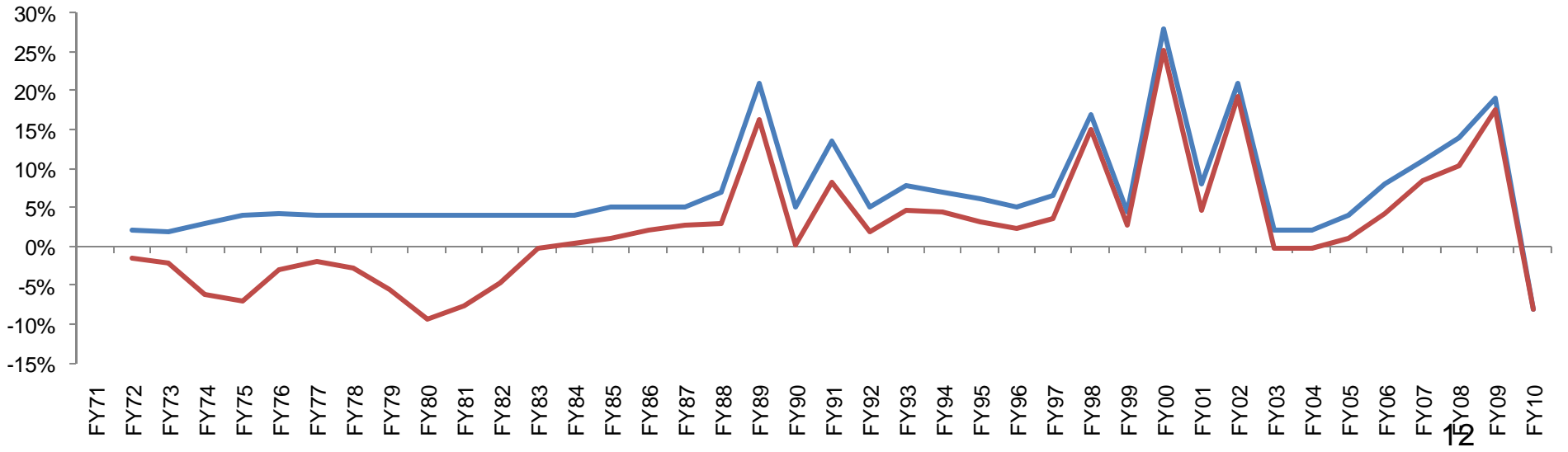
Harvard's Risk and Reward



Harvard's Risk and Reward



— Nominal Return — Real Return



— Nominal Distribution Change — Real Distribution Change

Harvard's Risk and Reward

- Harvard's average real return FY71-FY10 has been 8.2%.
 - With an average real interest rate over this period of about 2% (higher than today), this corresponds to a 6.2% risk premium.
 - Standard deviation of real return over this period has been 13.7%.
 - Putting these numbers together, Harvard's reward-risk ratio has been $6.2/13.7$ or about 0.45.
- Where does this reward come from?

The Endowment Model

Where to Find Rewards for Risk

- Traditionally (before 1985):
 1. The equity premium
 2. Market timing
- The “endowment model” (since 1985):
 3. Broad diversification across asset classes
 4. Strategic asset allocation
 5. The illiquidity premium
 6. Active management
 7. Leading the herd

Traditional Approach

1. The stock market has a reward-risk ratio of 0.3-0.4 over the long run
 - But there can be prolonged periods of underperformance.
2. Evidence that reward/risk ratio is higher when prices are low relative to earnings
 - Suggests the possibility of market timing
 - But it is easy to get this dead wrong!
 - Cautionary Yale tale 1929-1985.

Graphic omitted from slides on web, available from source

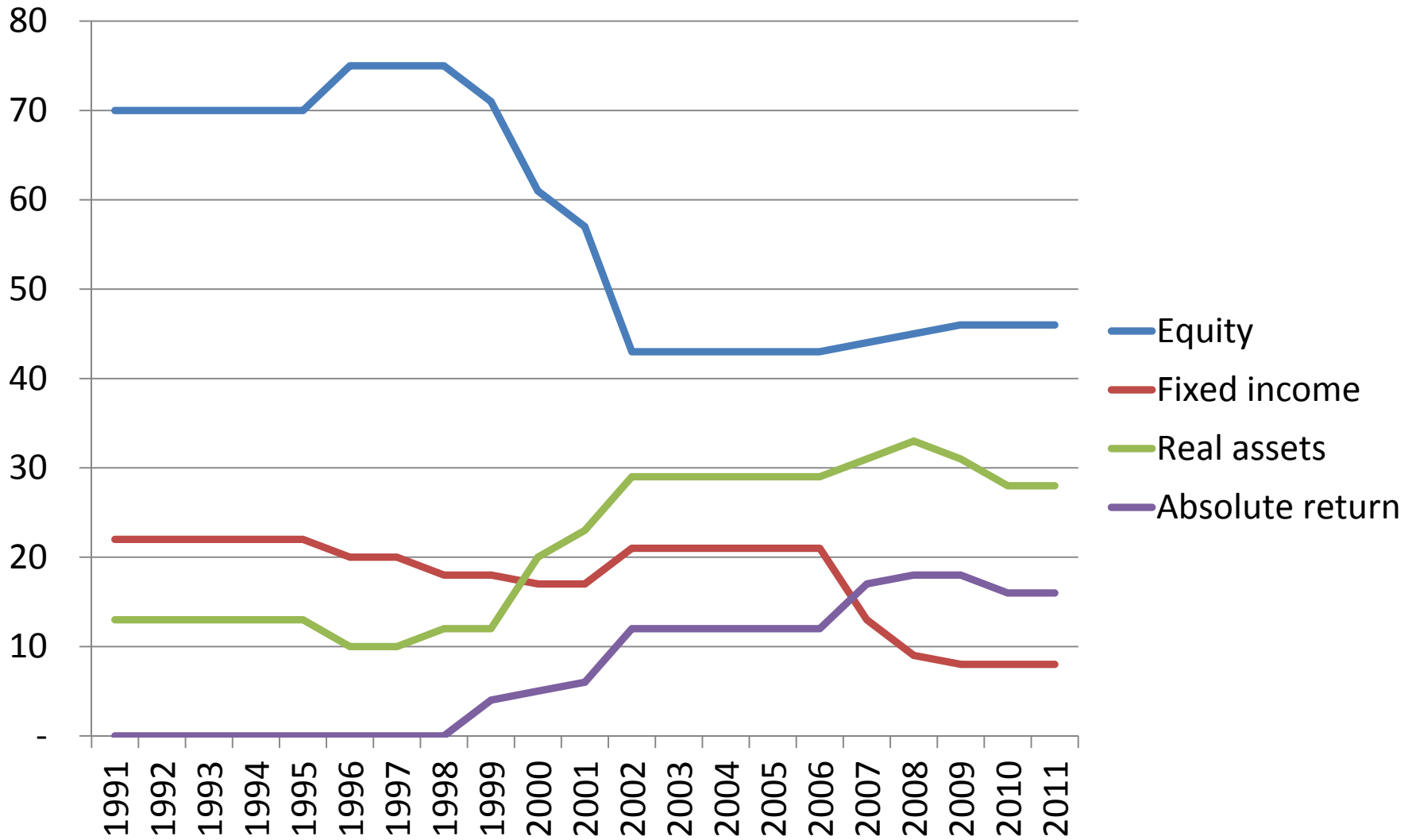
Source: “Unexpected Returns”, by Ed Easterling,
Crestmont Research, reproduced in New York Times

<http://www.nytimes.com/interactive/2011/01/02/business/20110102-metrics-graphic.html>

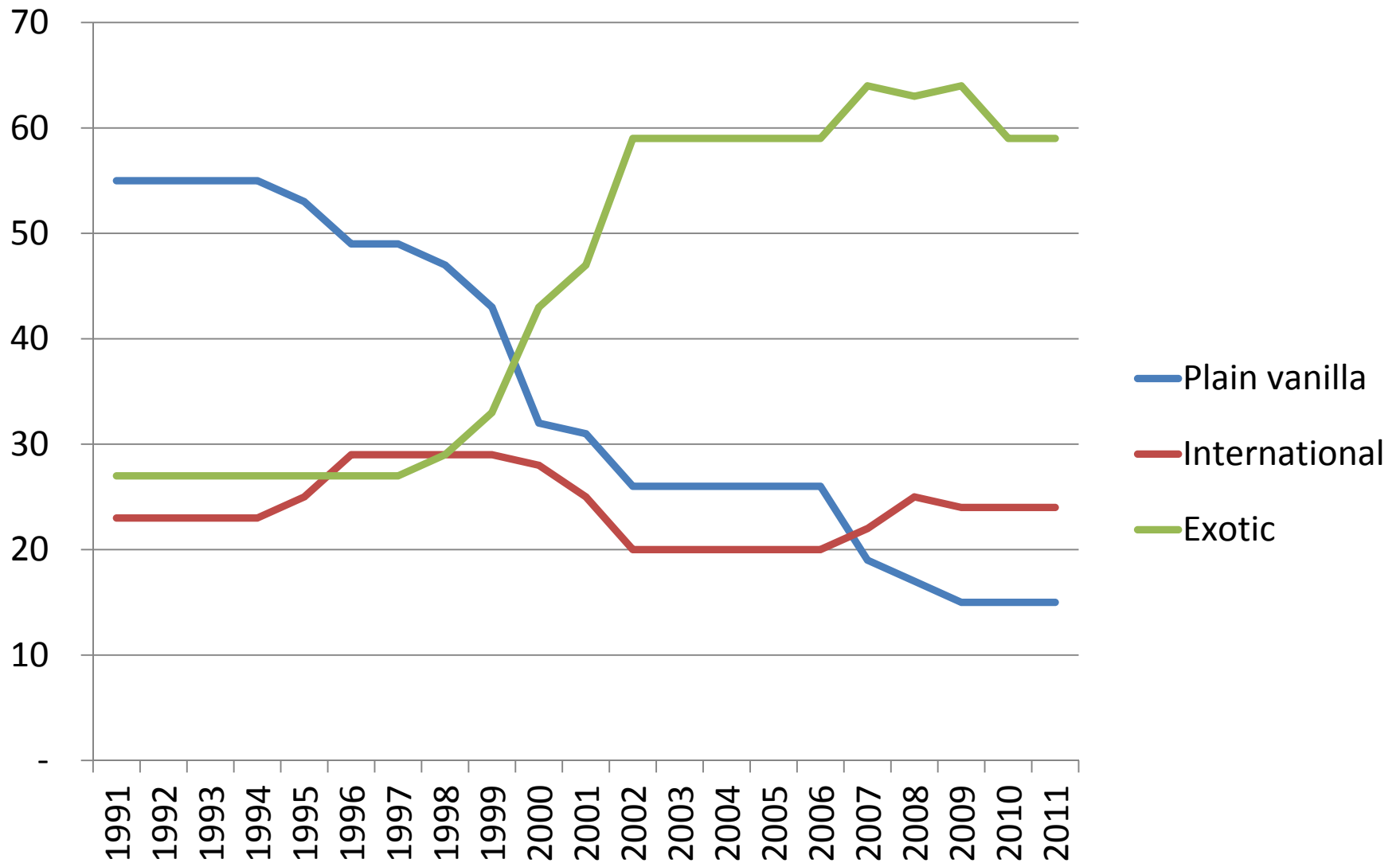
Asset Class Diversification

3. Diversification improves reward/risk ratio if asset classes are imperfectly correlated
 - Start from plain vanilla 60/40 domestic stock/bond portfolio
 - Add international stocks and bonds
 - Add private equity
 - Add real assets (commodities, real estate, timberland, etc.)
 - Add active strategies (“absolute return”).

Harvard Policy Portfolio

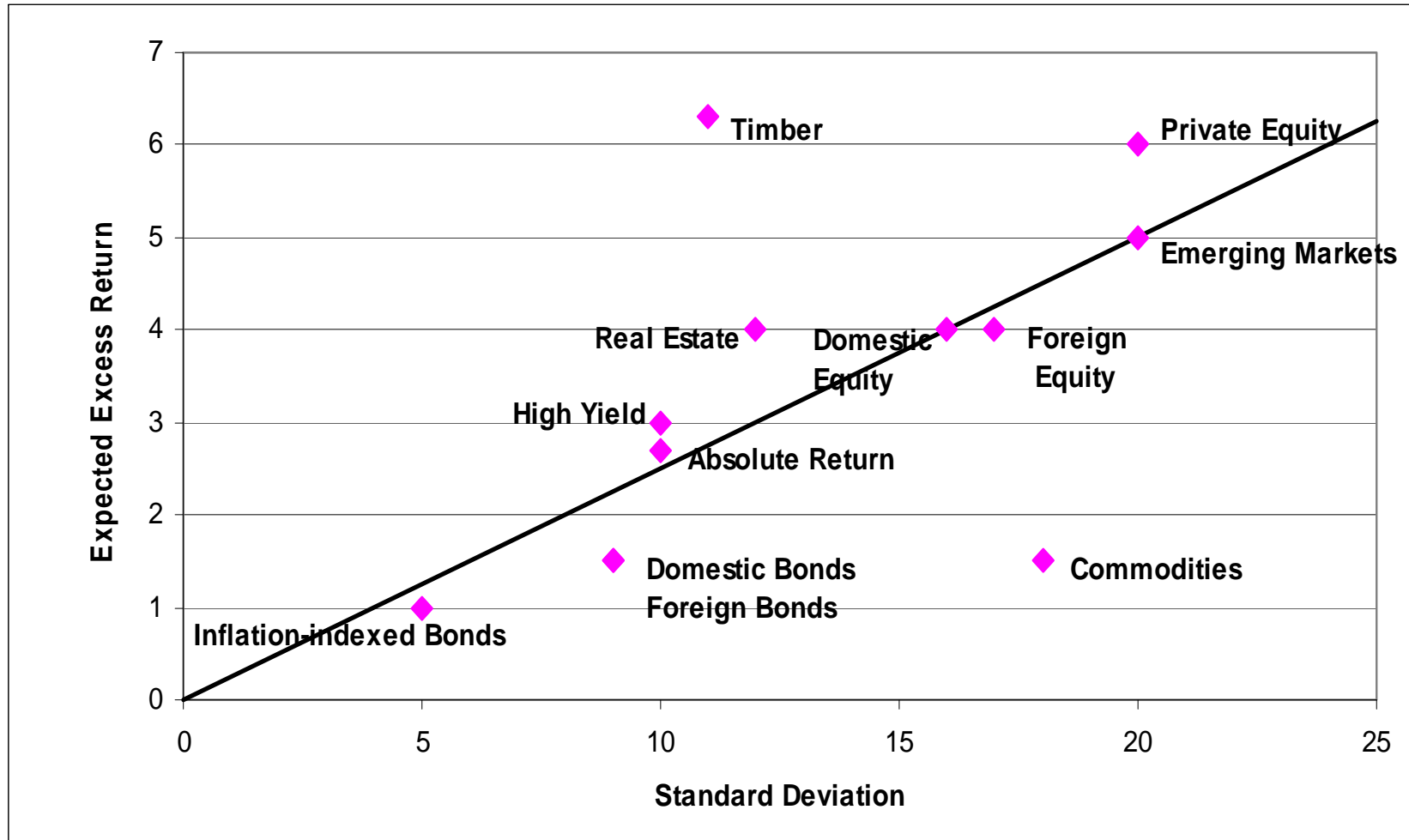


Harvard Policy Portfolio



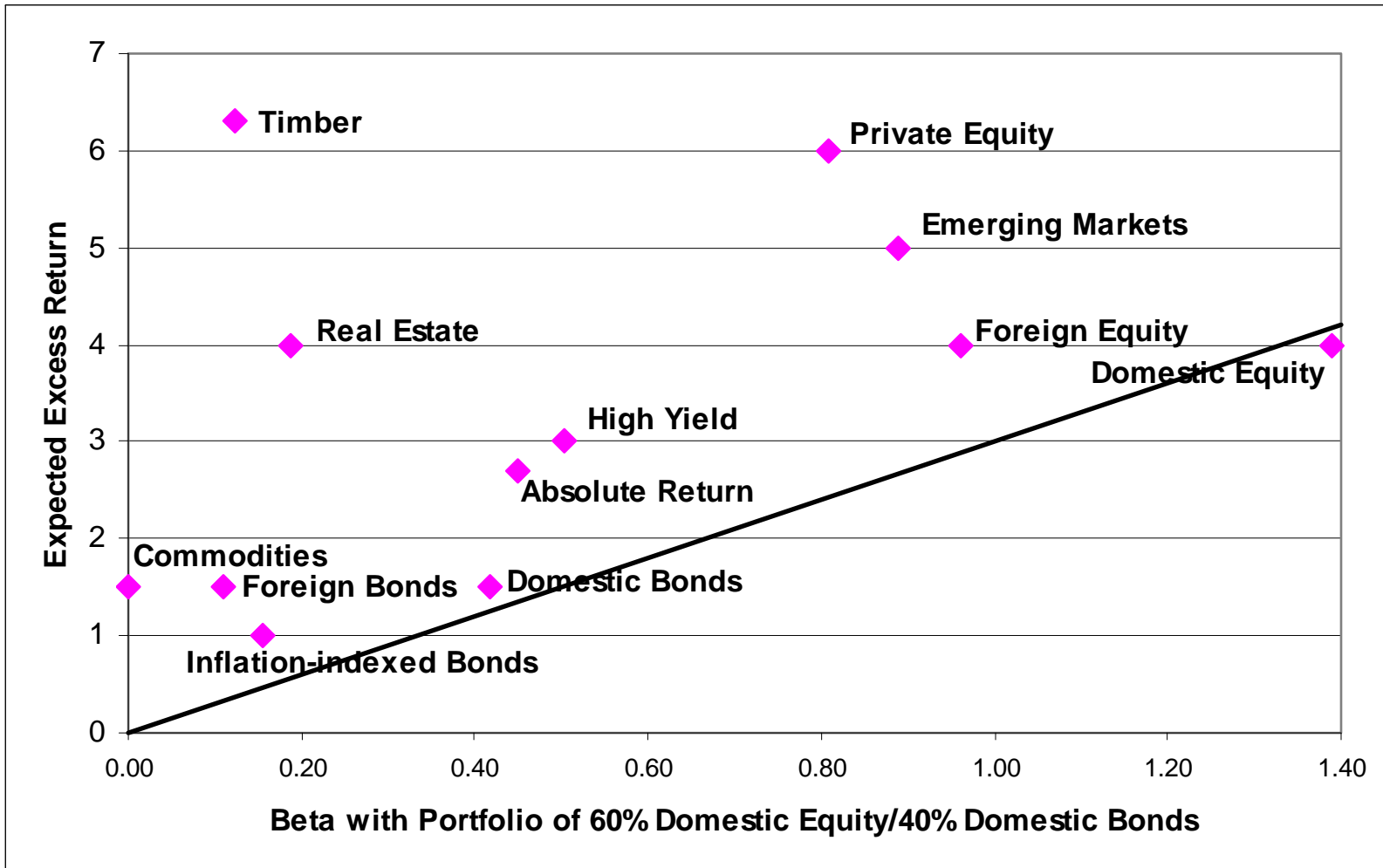
Harvard Investment Beliefs

Source: HMC Capital Market Assumptions, 2004



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Strategic Asset Allocation

4. Risk assessment should consider risks to the level of sustainable spending rather than short-term endowment value.

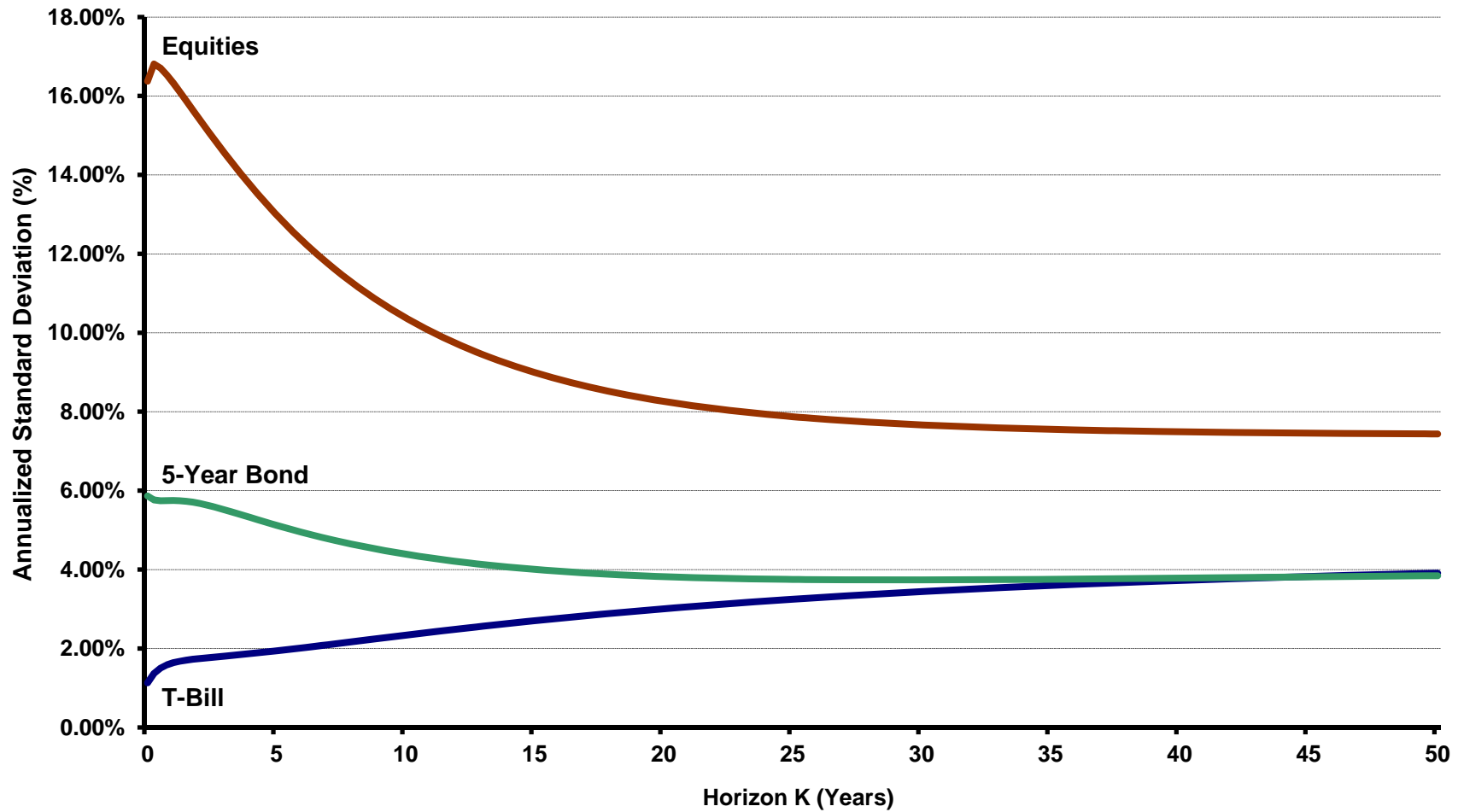
$$\text{Spending level} = \text{Spending rate} \times \text{Endowment value} = \\ \text{Expected return} \times \text{Endowment value}$$

- Risk to spending level is mitigated if endowment value rises when expected return falls.
- Long-term assets (bonds, stocks) do well when their expected returns fall.

Strategic Asset Allocation

- Another way to understand this is to calculate risks over long horizons, directly or using an estimated time-series model
 - Cash risks rise with the horizon (rollover risk)
 - Treasury bond risks decline (for a fixed maturity, given normal inflation behavior)
 - Equity risks also decline (mean-reversion)
- Thus the long-term reward-risk ratio is better for long-term assets (bonds, stocks)

Annualized Standard Deviations of Real Returns From Quarterly VAR Estimates (1952.Q-2002.Q4)



Campbell and Viceira, "The Term Structure of the Risk-Return Tradeoff",
Financial Analysts Journal, 2005

The Illiquidity Premium

5. Illiquid assets appealing for endowments that never need to liquidate the whole portfolio.
 - Why pay for liquidity you don't need?
 - Instead, profit by offering liquidity to others and charging for it.
 - Famously advocated by Yale's David Swensen.

Active Management

6. Active management can add value if skilled managers perceive endowments as attractive investors (or employers):
 - Deep pockets
 - Stable investors
 - Certification helps attract other business
 - Identification with the mission
 - Alumni loyalty.

Leading the Herd

7. Largest endowments have benefited by leading the herd
 - Buy a new asset class at depressed prices.
 - Sell at a profit to smaller investors who follow the leaders.
 - This works transitionally, not for ever.

Lessons of the Financial Crisis

Historical Investment Return

Annualized for Periods Greater than One year

	<u>Harvard</u>	<u>Policy Portfolio Benchmark</u>	<u>60/40 Stock/Bond Portfolio *</u>	<u>TUCS Median **</u>
1 year	(27.3)%	(25.2)%	(13.5)%	(18.2)%
5 years	6.2	3.9	1.0	2.5
10 years	8.9	4.5	1.4	3.2
20 years	11.7	9.5	7.8	8.0

* S&P 500/CITI US BIG

** Trust Universe Comparison Service as compiled by Wilshire Associates.

2009 HMC report: 1 year = 7/1/2008-7/1/2009

Lessons of the Crisis?

“The Endowment Model of Investing is broken. Whatever long-term gains it may have produced for colleges and universities in the past must now be weighed more fully against its costs—to campuses, to communities, and to the wider financial system that has come under such severe stress....

As long-term investors, colleges and universities have an important stake in the sustainability of both the wider financial system and the broader economies in which they participate. Rather than contributing to systemic risk, endowments should therefore embrace their role as nonprofit stewards of sustainability. Rather than helping to finance the shadow banking system, endowments should provide models for transparency, accountability and investor responsibility.”

Educational Endowments and the Financial Crisis: Social Costs and Systemic Risks in the Shadow Banking System, Center for Social Philanthropy and Tellus Institute, Boston, 2010

Lessons of the Crisis

1. Diversification fails when there is a global economic shock.
2. Liquidity can dry up in many markets simultaneously.
3. Universities need flexibility to cope with downturns.

The Limits of Diversification

1. Diversification fails when there is a global economic shock
 - Broad diversification normally reduces risk for given return.
 - One can increase risk again through leverage and aggressive strategies within asset classes.
 - Outperformance in normal times, underperformance when all asset classes fall together.

Evaporating Liquidity

2. Liquidity can dry up in many markets simultaneously
 - Biggest effect on investments that can draw down capital over many years, and promise distributions.
 - Private equity has become a “liquidity monster” for many endowments.
 - Yale 6/30/09 PE weight 24%. Target weight adjusted up from 21% to 26%.
 - Harvard policy portfolio weight only 13%, but actual weight greater than this.

Liquidity Monster



The Japanese kappa needs liquidity. It lurks in ponds and tries to drag children in. It can be bought off with cucumbers.



The Flexibility Imperative

3. Universities need flexibility to cope with downturns
 - Harvard, and many other universities, found themselves without it in 2008-09.

The Flexibility Imperative

Sources of Flexibility

- Universities have several sources of flexibility:
 - Gradual adjustment of spending
 - Other sources of income
 - Debt markets
 - Cost reduction

Gradual Spending Adjustment

- Most universities adjust spending levels gradually.

- A common rule is

- Spending level this year*

- $$= 0.7 \times \text{Spending last year} + 0.3 \times (5\% \times \text{Endowment value})$$

- This means that 30% of a shock is felt the first year, about 50% by the second year, etc.

- This approximates past Harvard Corporation decisions.

- Problem: large negative shocks can imply many years of falling endowment spending (Harvard FY72-FY82).

- Aggressive response to crisis is intended to avoid this.

Other Sources of Income

- Other sources of income are less helpful than one might have hoped
 - “Rich” and “endowment dependent” are the same thing.
 - Endowment share of Harvard’s income rose from around 20% in 1970s and 1980s to 34% in FY08 (with large variation across schools).
 - Thus a given endowment risk implies greater risk to overall university spending plans.
 - Other income sources (tuition, sponsored research) also under pressure.

Debt Markets

- Debt can be useful, but certainly not a panacea
 - Debt can smooth temporary shocks or allow gradual adjustment to permanent ones, but does not change the long-run constraints.
 - Harvard, like many universities, already borrowed during the boom, partly because of tax incentives to do so in connection with capital projects.

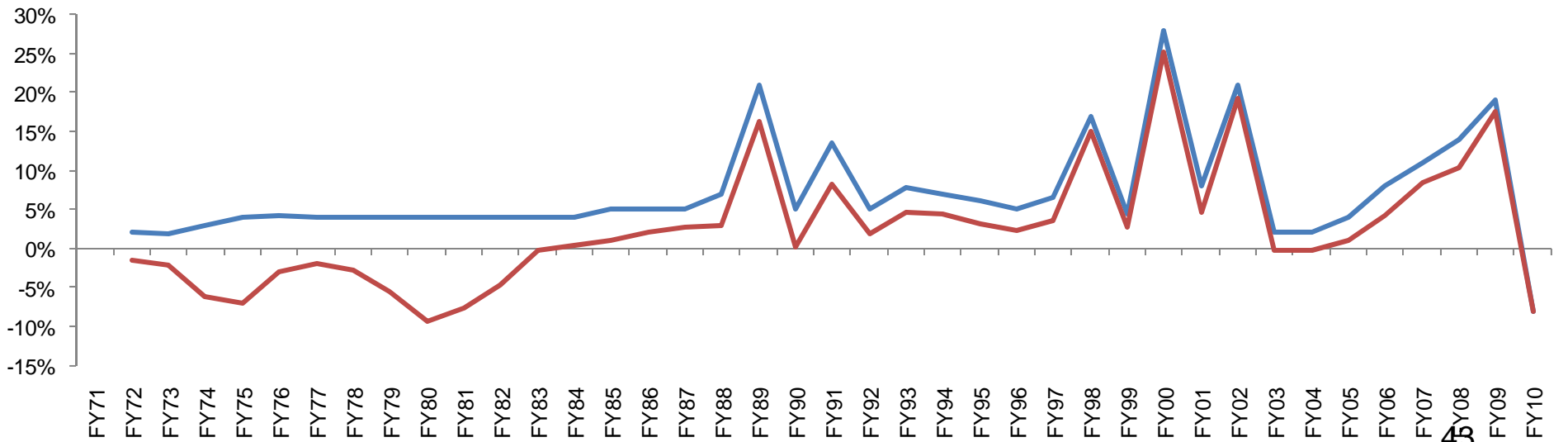
Cost Reduction

- University costs are dominated by salaries and benefits
 - These are much easier to cut in real terms when inflation is high than when it is low.
 - Thus continuing employees have contributed little to adjustment in the current downturn.
 - Cost reductions primarily through reducing employment and scaling back expansion plans.

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Flexible Planning

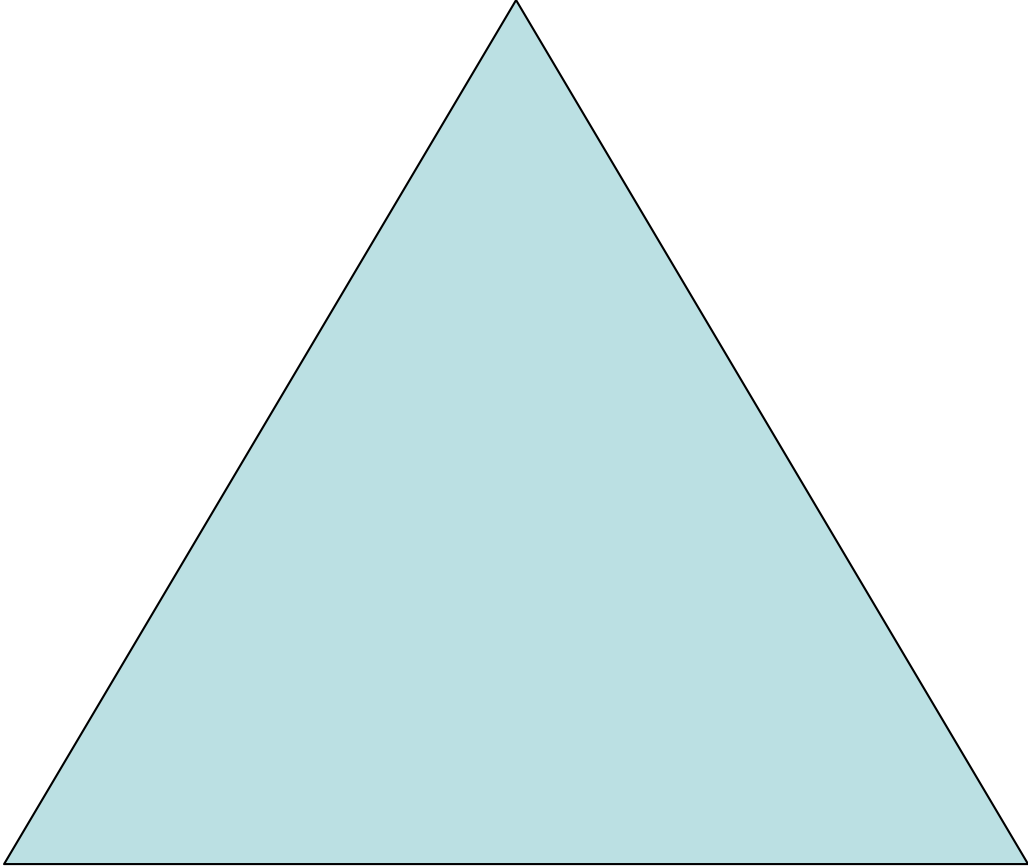
- Cost reductions are less painful if contingency plans have been prepared in advance
 - A first step is multi-year budgeting and capital planning.
 - It is conventional to assume a constant growth of endowment spending.
 - Helpful to develop plans based on a more pessimistic endowment scenario.

Conclusion

Risk and Flexibility

- The riskless return is too low to support vigorous sustainable spending.
 - So endowment managers must take risk.
 - The “endowment model” is still a good way to earn a reward for risk, if modified to place a greater value on liquidity.
- Universities must plan accordingly.
 - The more flexible a university is, the more endowment risk it can tolerate.
 - With greater risk comes higher average return and higher sustainable spending.

Sustainable spending



Flexibility

Reward for risk