

## The Causes and Consequences of Style Drift

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### **WHY WORRY ABOUT STYLE DRIFT?**

First, realized manager returns are very sensitive to style

Second, precisely measuring style drift allows an analysis of (for example):

- **Manager effectiveness in different phases of market “style rotation”**
  - e.g., can value manager still pick outperforming value stocks when growth is in favor?
- **Manager behavioral tendency to stray toward the styles that worked in the past**
- **Style drift that results from passive buy-and-hold actions**

## The Causes of Style Drift

- Individual stocks exhibit style drift over time
- Portfolios of stocks are more stable, but can still drift
  - **Asset weights change in a passive portfolio, as well as the component stocks changing characteristics**
    - **Hopefully, the stocks are becoming larger-cap from their superior returns**
- Managers tend to actively “tilt” the portfolio over time across different styles
  - **Changing strategies, behavioral tendencies**

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## The Portfolio-Holdings Approach to Measuring Style Drift

- **Rank all NYSE stocks by Market Cap--  
Divide into 5 Quintiles**
  - **Rank each quintile on the NYSE stock's *industry-adjusted* Book Value/Market Value ratio (BTM)...  
... then, subdivide into 5 more quintiles**
  - **Rank the 25 fractiles on the NYSE stock's return...  
... Subdivide into 5 more quintile**
- Finally, populate the 125 (5x5x5) fractiles with AMEX and Nasdaq stocks**

**A rank of:**

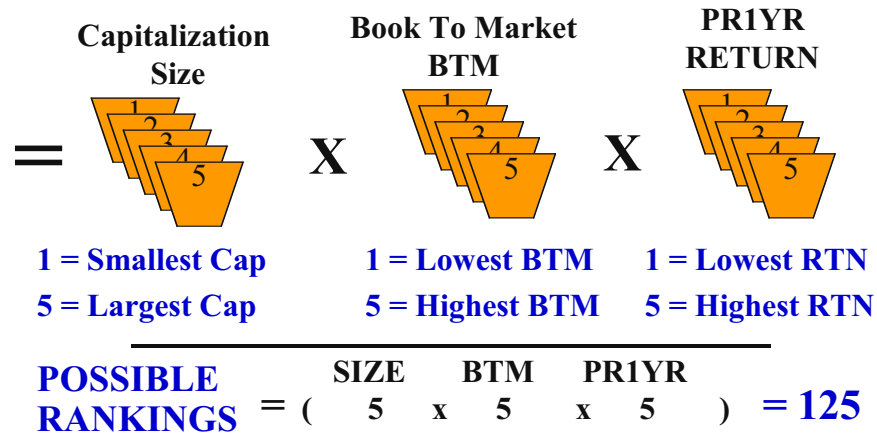
<b>Size=5, Large Cap</b>	<b>BTM=5, High BTM</b>	<b>PRIYR=5 High Past Return</b>
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## RANK ALL STOCKS NYSE - CRSP DATA



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### The "Style Benchmark Cells" Look Like This:

YEAR	SIZE	BTM	RETURN	JAN
2000	1	1	1	1.93%
2000	1	2	1	9.17%
2000	1	3	1	5.99%
2000	1	4	1	6.67%
2000	1	5	1	9.91%
2000	2	1	1	0.18%
2000	2	2	1	-3.09%
2000	2	3	1	0.88%
2000	2	4	1	0.04%
2000	2	5	1	-2.55%
2000	3	1	1	-4.52%
2000	3	2	1	-5.81%
2000	3	3	1	-6.38%
2000	3	4	1	-1.91%
2000	3	5	1	-3.15%
2000	4	1	1	-3.54%
2000	4	2	1	1.24%
2000	4	3	1	-6.16%
2000	4	4	1	-6.70%
2000	4	5	1	-8.48%
2000	5	1	1	-5.80%
2000	5	2	1	-4.07%
2000	5	3	1	-2.40%
2000	5	4	1	-5.60%
2000	5	5	1	-5.54%

( SMALL CAP ) ( LOWEST BTM ) ( LOWEST RTN )

( LARGE CAP ) ( LOWEST BTM ) ( LOWEST RTN )

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<i>Exxon</i>	Size	BTM	PR1YR	Exxon's style?
1992	5	3	2	Consistent Large-Cap
1993	5	3	2	
1994	5	3	2	Value to "Growth"
1995	5	3	3	
1996	5	4	3	Changing Momentum
1997	5	4	4	
1998	5	3	2	
1999	5	2	2	
2000	5	2	2	
2001	5	2	2	

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## How is "Total Style Drift" For a Portfolio Decomposed ?

- Using Portfolio Holdings Data -

**Total Style Drift = Active Style Drift + Passive Style Drift**

**TSD = ASD + PSD**

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## How is “Active Style Drift” (ASD) For a Portfolio Computed ?

– Using Portfolio Holdings Data –

*Active Style Drift* =

- (Current Stockholdings\*Current Price) → The actual current weights
- \*(Current Stock Characteristics) → e.g., the current book-to-market ratio of a given stock
- (Benchmark Stockholdings\*Current Price) → The buy-and-hold weights
- \*(Current Stock Characteristics) → e.g., the current book-to-market ratio of a given stock

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## How is “Passive Style Drift” (PSD) For a Portfolio Computed ?

– Using Portfolio Holdings Data –

*Passive Style Drift* =

- (Benchmark Stockholdings\*Current Price) → The buy-and-hold weights
- \*(Current Stock Characteristics) → Times the current characteristics
- (Benchmark Stockholdings\*Benchmark Price) → The year-ago weights
- \*(Benchmark Stock Characteristics) → Times year-ago characteristics

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**To Restate...**

**Active Style Drift =**

**(Current portfolio characteristics)  
Minus  
(Buy-and-hold portfolio characteristics)**

**To Restate...**

**Passive Style Drift =**

**(Buy-and-hold portfolio characteristics)  
Minus  
(Year-ago portfolio characteristics)**

### Overall Style Drift Example #1

	Size	BTM	PR1YR	
1991	4.7	3.2	3.1	<p><b>Telecommunication Pension Fund</b></p> <p>Maintained Large-Cap Presence</p> <p>Drift Toward Growth by 1995</p> <p>Drift to Increasing Momentum Presence</p>
1992	4.7	3.3	3.2	
1993	4.7	3.4	2.8	
1994	4.7	3.0	3.2	
1995	4.9	2.8	3.4	
1996	4.8	2.9	3.5	
1997	4.8	2.8	3.6	
1998	4.9	2.7	3.3	
1999	4.9	2.3	3.5	
2000	4.9	2.0	3.7	

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### Active Style Drift Example #1

	Size	BTM	PR1YR	
1991	---	---	---	<p><b>Telecommunication Pension Fund</b></p> <p>No Movement On Capitalization</p> <p>Continued Active Move Toward Growth</p> <p>Continued Active Move Toward Momentum Stocks</p>
1992	0.02	0.2	0.3	
1993	0.01	0.1	-0.03	
1994	-0.1	-0.3	0.2	
1995	0.1	-0.3	0.2	
1996	-0.01	0.1	0.2	
1997	-0.01	-0.1	0.3	
1998	-0.01	-0.2	0.2	
1999	0.1	-0.3	0.2	
2000	0.01	-0.1	0.5	

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## Investment Outcomes

	Gross Return (%)	S&P 500 (%)
1991	12.0*	13.9*
1992	8.1	7.7
1993	14.8	9.9
1994	- 1.7	1.4
1995	38.3	37.7
1996	25.1	23.2
1997	33.7	33.6
1998	33.0	29.3
1999	24.4	21.5
2000	- 7.1	- 8.5

### Telecommunication Pension Fund

\*1991 is April through December)

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## Overall Style Drift Example #2

	Size	BTM	PRIYR
1991	4.7	2.3	2.9
1992	4.6	2.5	2.8
1993	4.8	2.4	3.0
1994	4.7	2.4	3.1
1995	4.3	2.6	3.5
1996	4.3	2.4	3.2
1997	4.5	2.5	3.3
1998	3.2	2.4	3.3
1999	3.1	1.8	4.0
2000	3.7	2.0	4.2

### University Endowment

Drift to Smaller Cap

Drift to Growth

A Large Drift to Momentum Stocks

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## Active Style Drift Example #2

	Size	BTM	PR1YR
1991	---	---	---
1992	-0.1	0.1	0.2
1993	0.1	-0.1	0.1
1994	-0.1	-0.1	0.2
1995	-0.4	0.1	0.2
1996	-0.1	-0.1	0.1
1997	-0.1	-0.1	-0.1
1998	-1.3	-0.1	0.2
1999	-0.5	-0.2	0.5
2000	0.1	0.5	-0.3

### University Endowment

Move Toward Small Cap in 1998

Continued Active Move Toward Growth, Followed by Value

Continued Active Move Toward Momentum Stocks

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## Investment Outcomes

	Gross Return (%)	S&P 500 (%)
1991	15.2*	13.9*
1992	6.5	7.7
1993	8.8	9.9
1994	-1.0	1.4
1995	35.7	37.7
1996	29.1	23.2
1997	24.5	33.6
1998	25.0	29.3
1999	22.5	21.5
2000	17.9	-8.5

### University Endowment

\*1991 is April through December)

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## Why Not Regression-Based Style Models

- **Pros:**
  - Only need net returns data
  - Data easy to handle
- **Cons:**
  - **Shifting styles causes:**
    - Imprecise (and sometimes biased) style measurement
    - Imprecise return attribution and “alpha” measurement
    - See: “The Inconsistency of Return-Based Style Analysis,” by Buetow, Johnson, and Runkle, JPM, Spring 2000.

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## Work-in-Progress



**Analysis of all U.S. 13f institutions**

**Manager effectiveness in:**

**different market style phases**

**–Manager characteristics that predict effectiveness**

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## Overview

- Style-drift: A major challenge to asset management
  - **Individual stocks can drift**
  - **Sponsor’s portfolio can drift**
- Regression-based models have trouble with style drift
- New Framework - Precisely Measures Style Drift:
  - **Point-in-time manager style**
  - **Manager style attribution of returns**
  - **Manager style-adjusted “alpha”**
  - **“Active” vs. “passive” style drift**

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## Overview

- Style-drift: A major challenge to asset management
  - **Individual stocks can drift**
  - **Sponsor’s portfolio can drift**

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## Conclusions

- Institutions rely on style investing to enhance returns
- Security holding-based analysis is more precise than regression-based models
- Style drift can either passively or actively happen—using portfolio-holdings allows a precise tracking of this drift
- **New Framework - Precisely Measures Style Drift:**
  - **Point-in-time manager style**
  - **“Active” vs. “passive” style drift**
  - **Manager style attribution of returns**
  - **Manager style-adjusted “alpha”**