



CHARTER OAK  
INVESTMENT SYSTEMS, INC.

---

---



CHARTER OAK  
INVESTMENT SYSTEMS, INC.

# Problems with Using Four Quarter Trailing Numbers in Investment Models

August 2010

Marcus C. Bogue III, Ph.D.

President, Charter Oak Investment Systems, Inc.



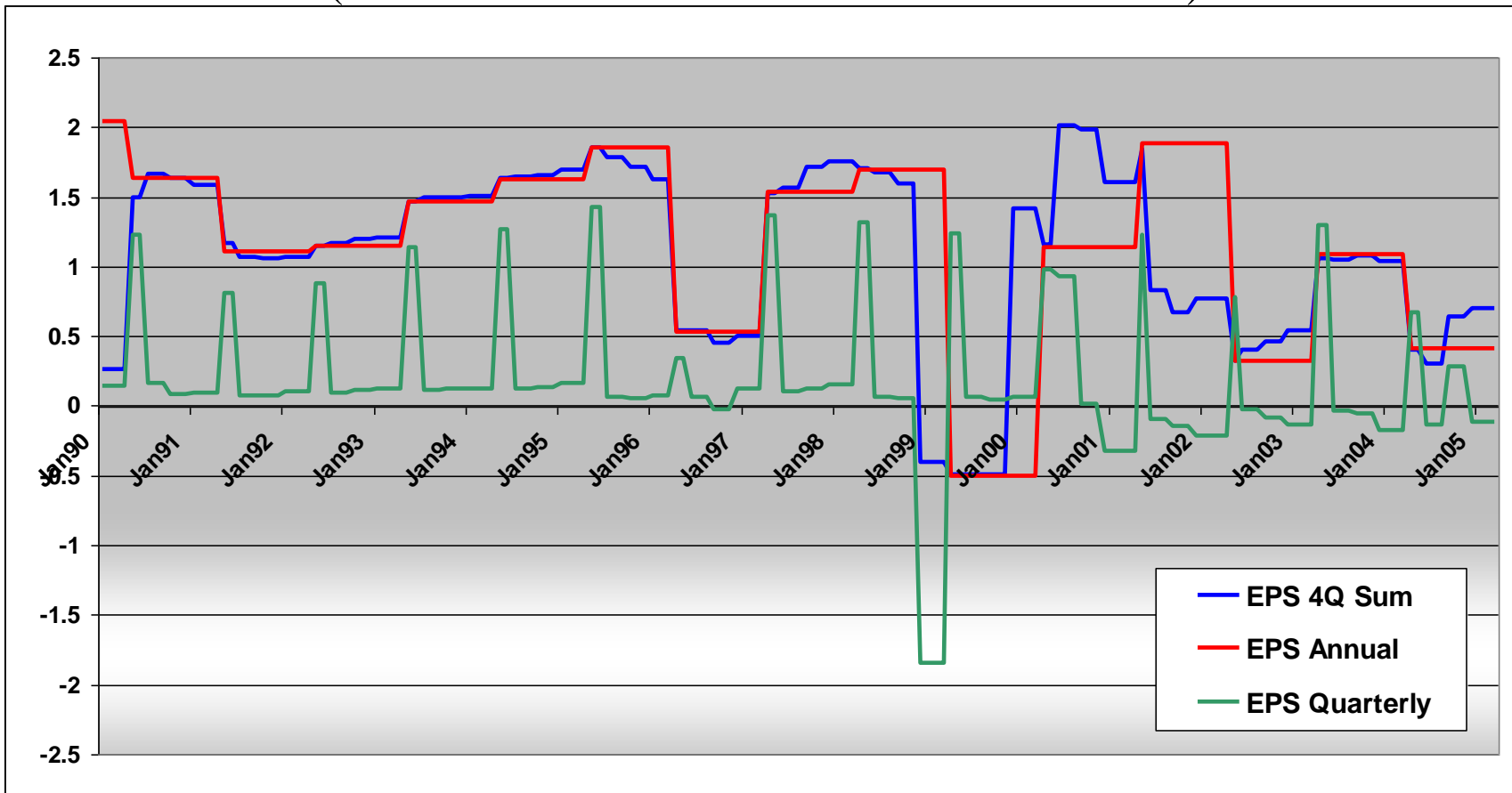
## Overview

- Four Quarter Trailing Numbers help Remove Seasonal Effects
- But when there are Restatements Four Quarter Trailing Numbers Mix Data from Different Accounting Regimes



## Toys R Us EPS

(source: Reuters Fundamentals Point in Time)





## Four Quarter Trailing thru 1<sup>st</sup> Quarter Spinoff

Report Date (Point Date) for Period

	Q(1,t-1)	Q(2,t-1)	Q(3,t-1)	Q(4,t-1)	Q(1,t)	Q(2,t)	Q(3,t)	Q(4,t)
Q(1,t-1)	100							
FQT(1,t-1)	400							
			1/2 Company Spun off					
Q(2,t-1)		100						
FQT(2,t-1)		400						
Q(3,t-1)			100					
FQT(3,t-1)			400					
Q(4,t-1)				100				
FQT(4,t-1)				400				
Y(t-1)				400				
Q(1,t)	50				50			
FQT(1,t)					350			
Q(2,t)		50				50		
FQT(2,t)						300		
Q(3,t)			50				50	
FQT(3,t)							250	
Q(4,t)				50				50
FQT(4,t)								200
Y(t)				200				200

Reporting Period

	As originally Reported
	Restated

Q(i,t) - Value for ith quarter year t

FQT(i,t) - Four Quarter trailing for ith quarter year t



# CHARTER OAK INVESTMENT SYSTEMS, INC.

## Four Quarter Trailing thru 2<sup>nd</sup> Quarter Spinoff

Report Date (Point Date) for Period

	Q(1,t-1)	Q(2,t-1)	Q(3,t-1)	Q(4,t-1)	Q(1,t)	Q(2,t)	Q(3,t)	Q(4,t)
Q(1,t-1)	100							
FQT(1,t-1)	400							
Q(2,t-1)		100						
FQT(2,t-1)		400						
Q(3,t-1)			100					
FQT(3,t-1)			400					
Q(4,t-1)				100				
FQT(4,t-1)				400				
Y(t-1)				400				
Q(1,t)					100			
FQT(1,t)					400			
Q(2,t)	50	50			50	50		
FQT(2,t)						300		
Q(3,t)			50				50	
FQT(3,t)							250	
Q(4,t)				50				50
FQT(4,t)								200
Y(t)				200				200

1/2 Company Spun off

Reporting Period

	As originally Reported
	Restated

Q(i,t) - Value for ith quarter year t

FQT(i,t) - Four Quarter trailing for  
ith quarter year t



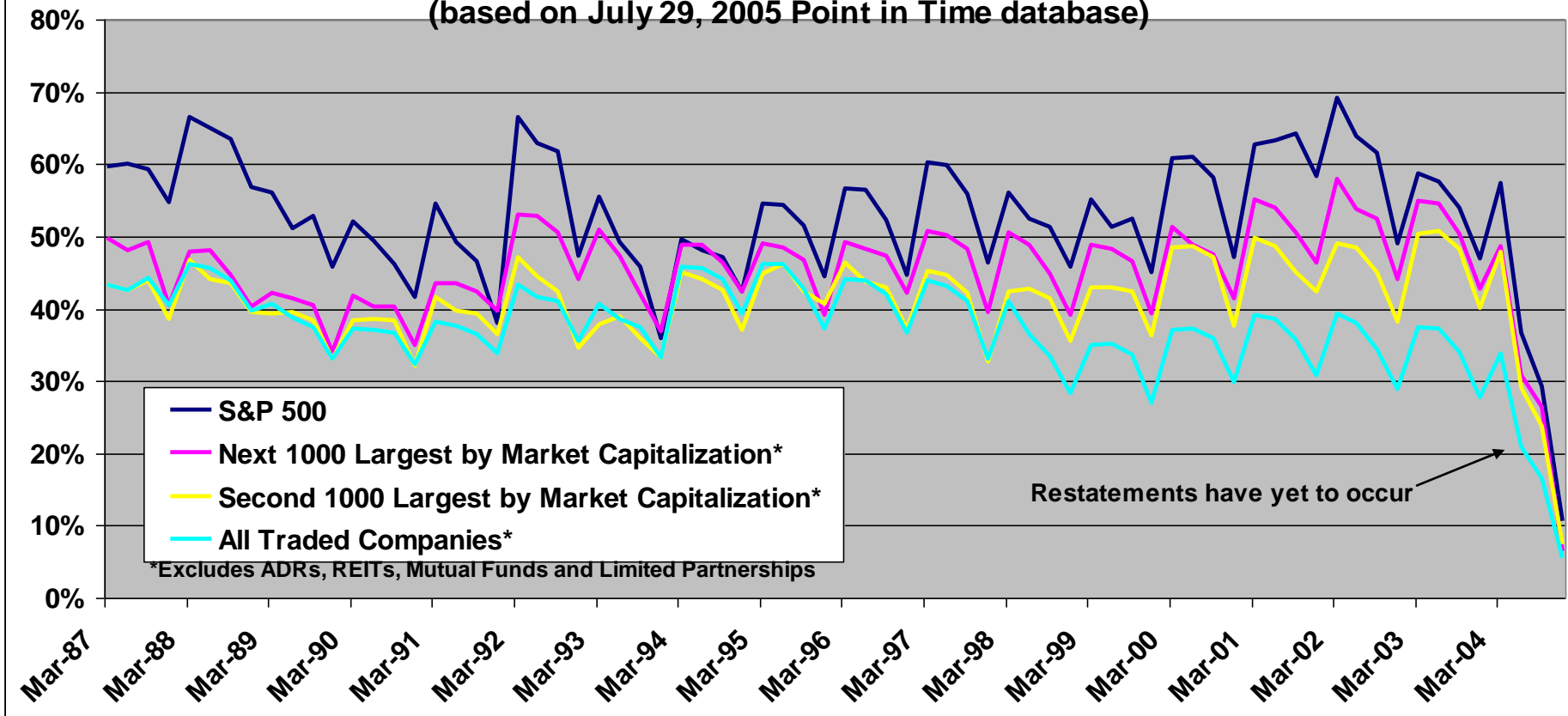
## Four Quarter Trailing thru Spinoff (Acquisition)

- Four Quarter Trailing Numbers, calculated as a sum of the last four quarters, through a Spinoff (Acquisition) do not decline (increase) as fast as they should due to delay in reporting of restated quarters
- The problem is worse the earlier in the year the Spinoff (Acquisition) occurs
- Ratios of Four Quarter Trailing numbers (Income statement and Cash Flow statement numbers) to Balance sheet numbers can be misleading.



## Companies with Restated Compustat Net Income or Component Data

(based on July 29, 2005 Point in Time database)

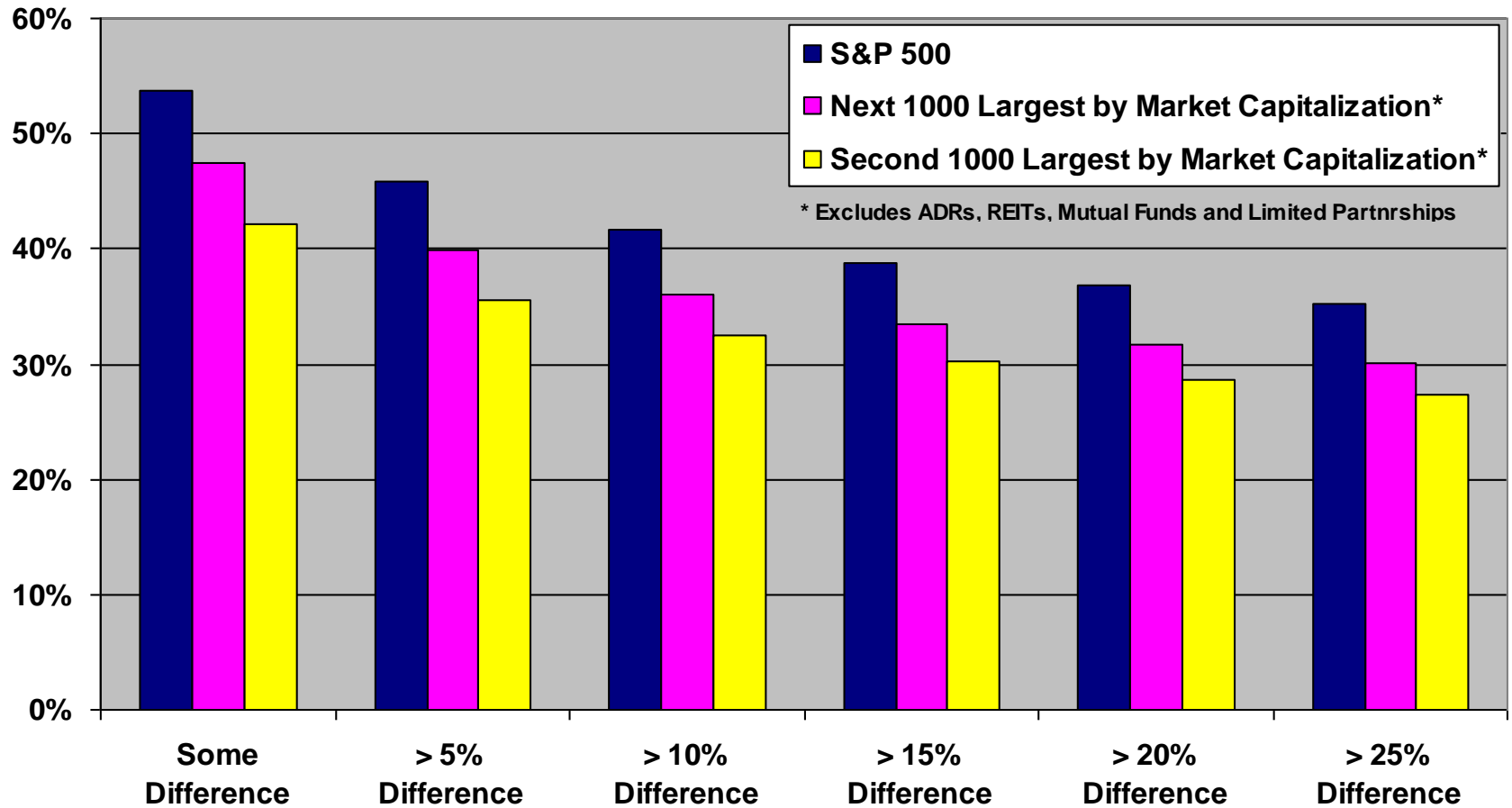






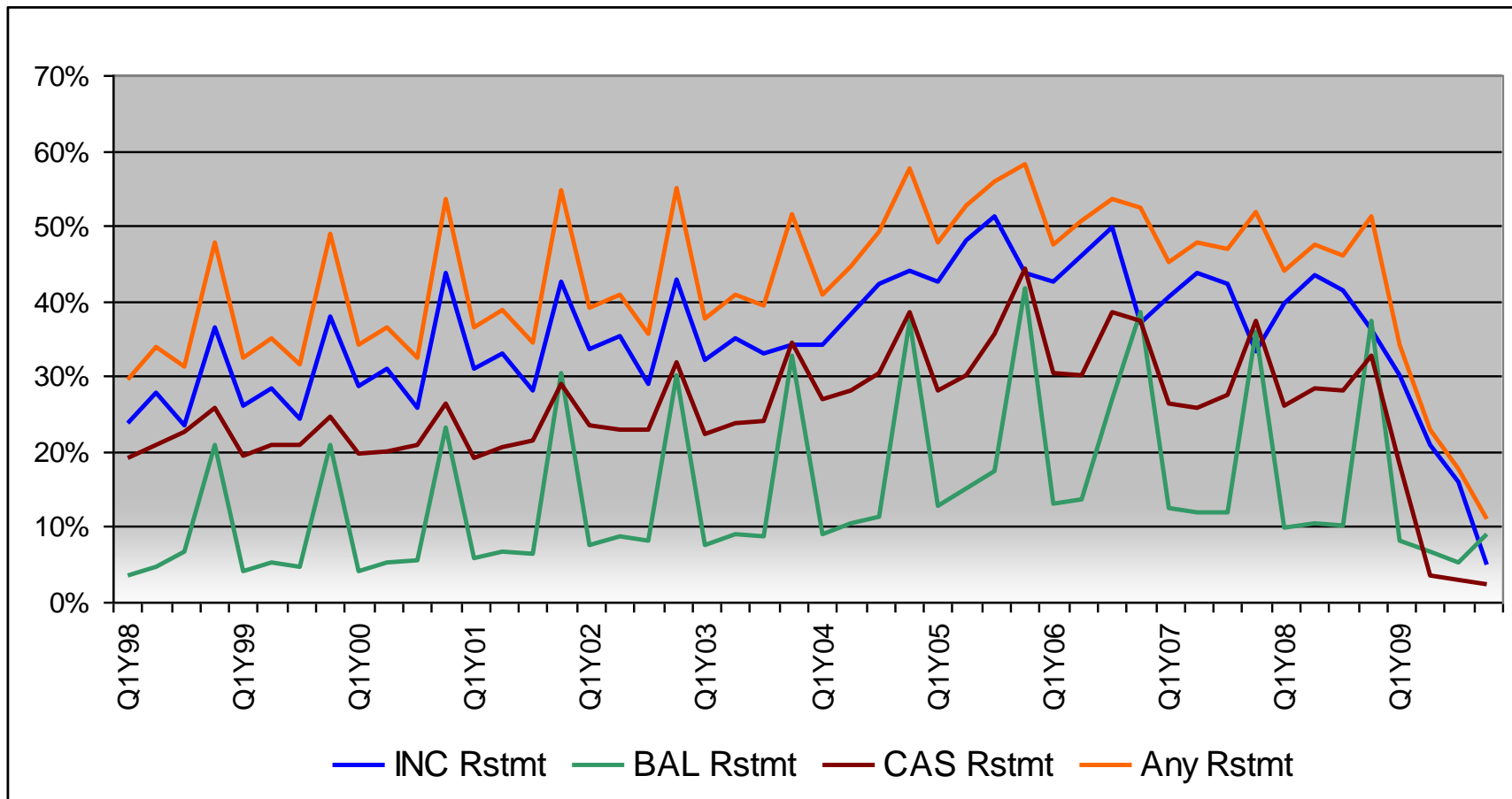
# CHARTER OAK INVESTMENT SYSTEMS, INC.

## Restatements to Net Income or Component Data from Q1Y87 to Q4Y02 (Based on August 12, 2004 Unrestated Quarterly database)



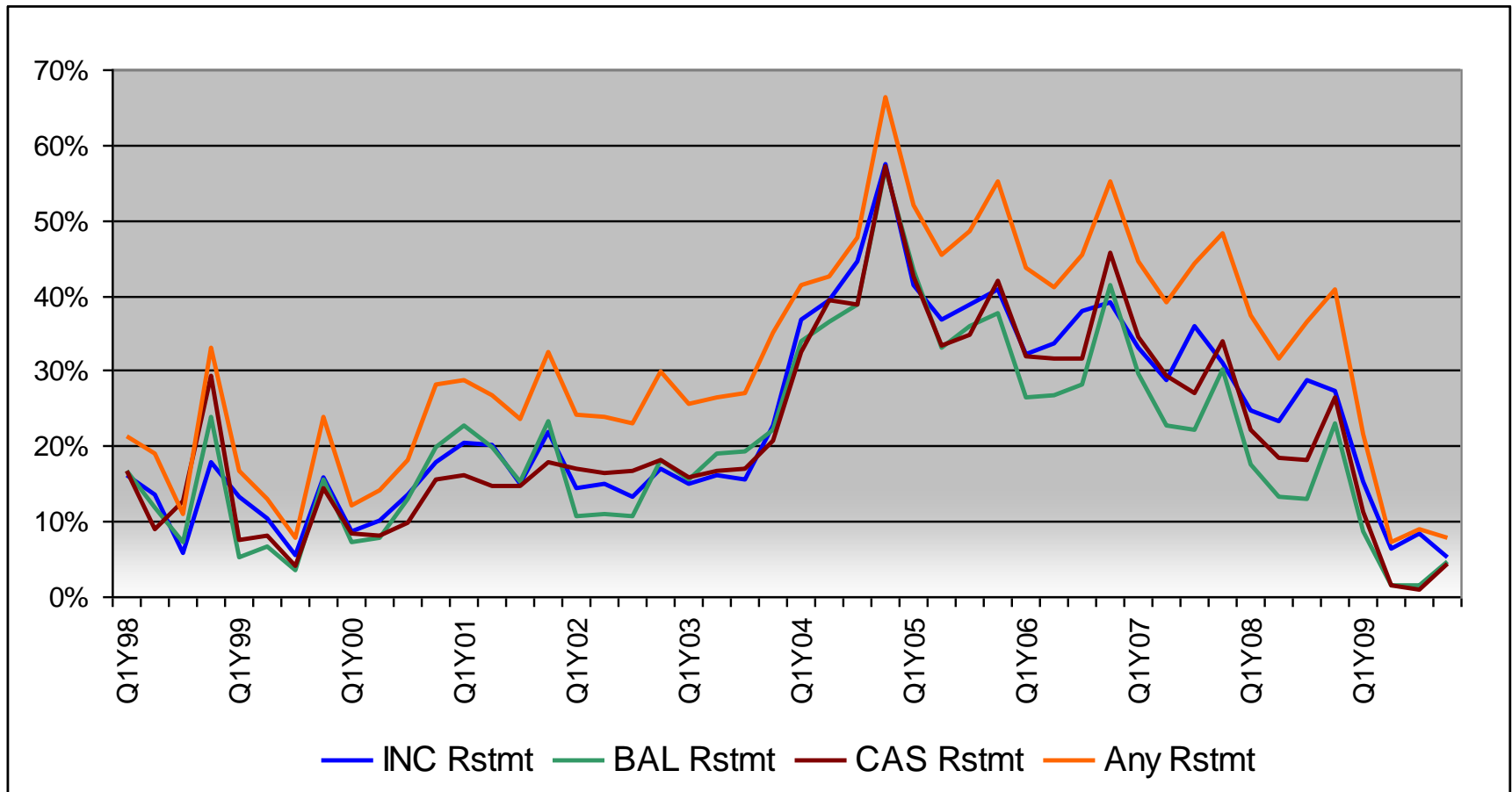


## % Interim Period Restatements U.S. (based on Thomson Reuters Fundamentals Point in Time Database)





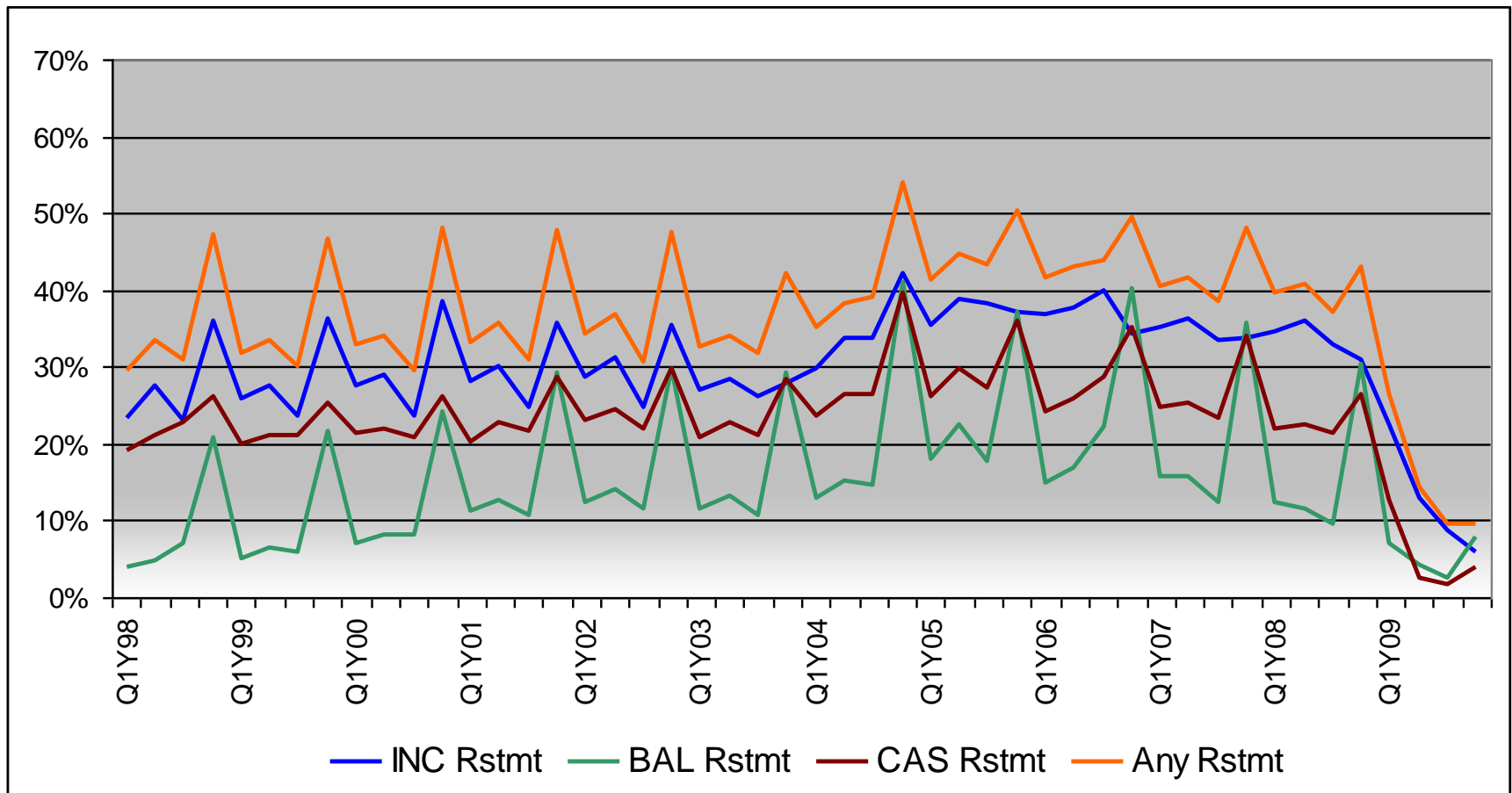
## % Interim Period Restatements N. Europe (based on Thomson Reuters Fundamentals Point in Time Database)





## % Interim Period Restatements All Companies

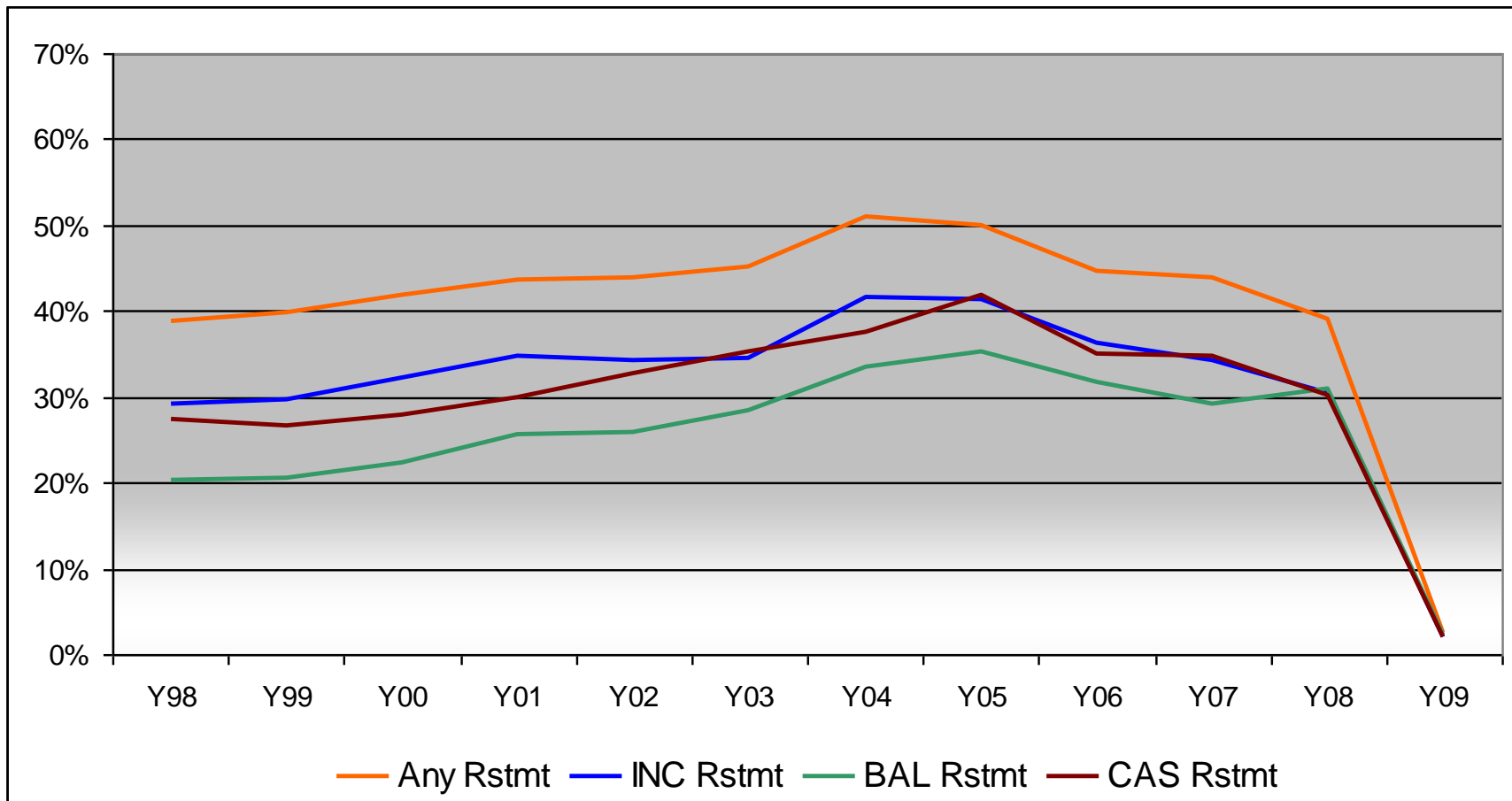
(based on Thomson Reuters Fundamentals Point in Time Database)





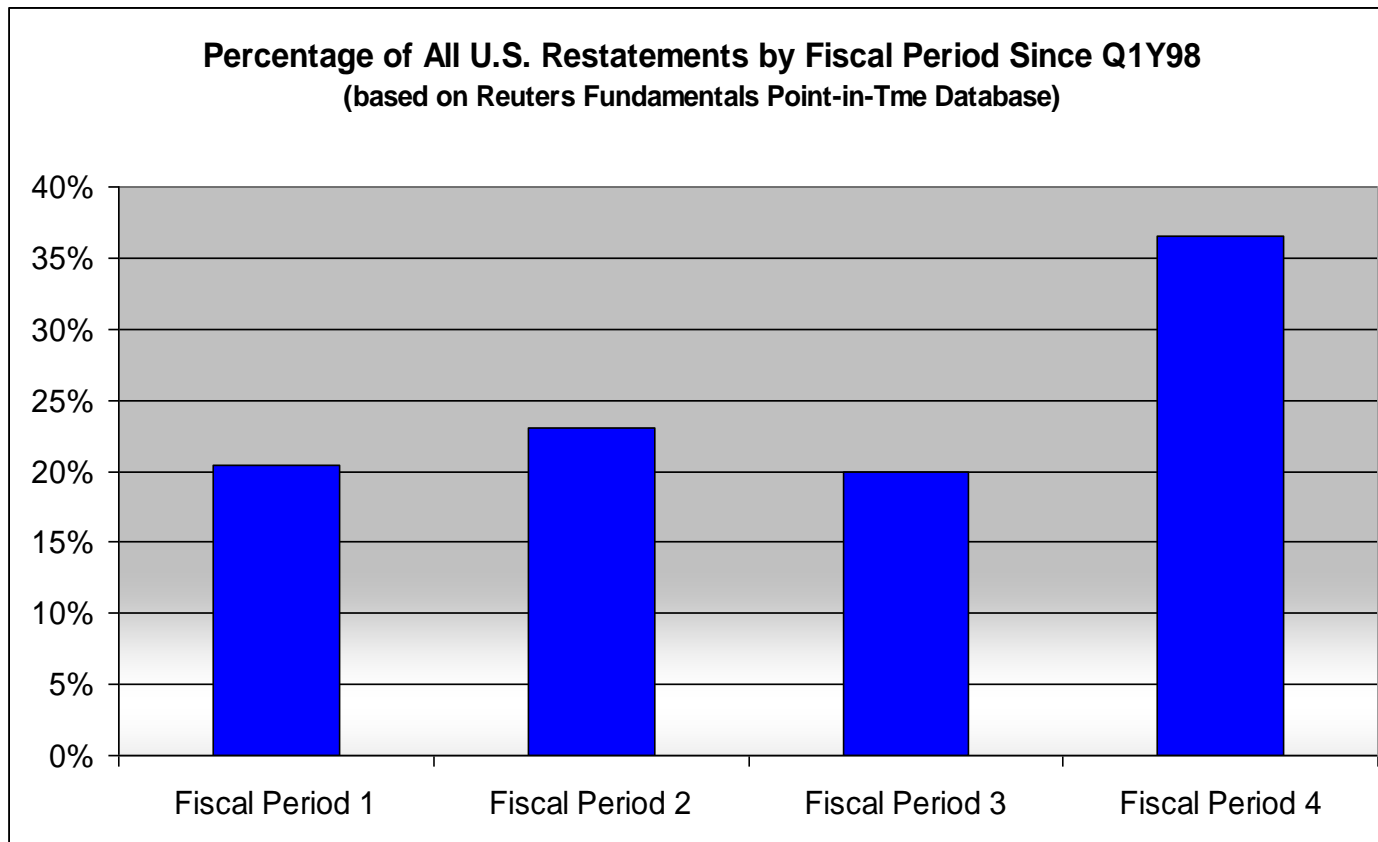
## % Annual Period Restatements U.S.

(based on Thomson Reuters Fundamentals Point in Time Database)





## Restatements by Fiscal Period





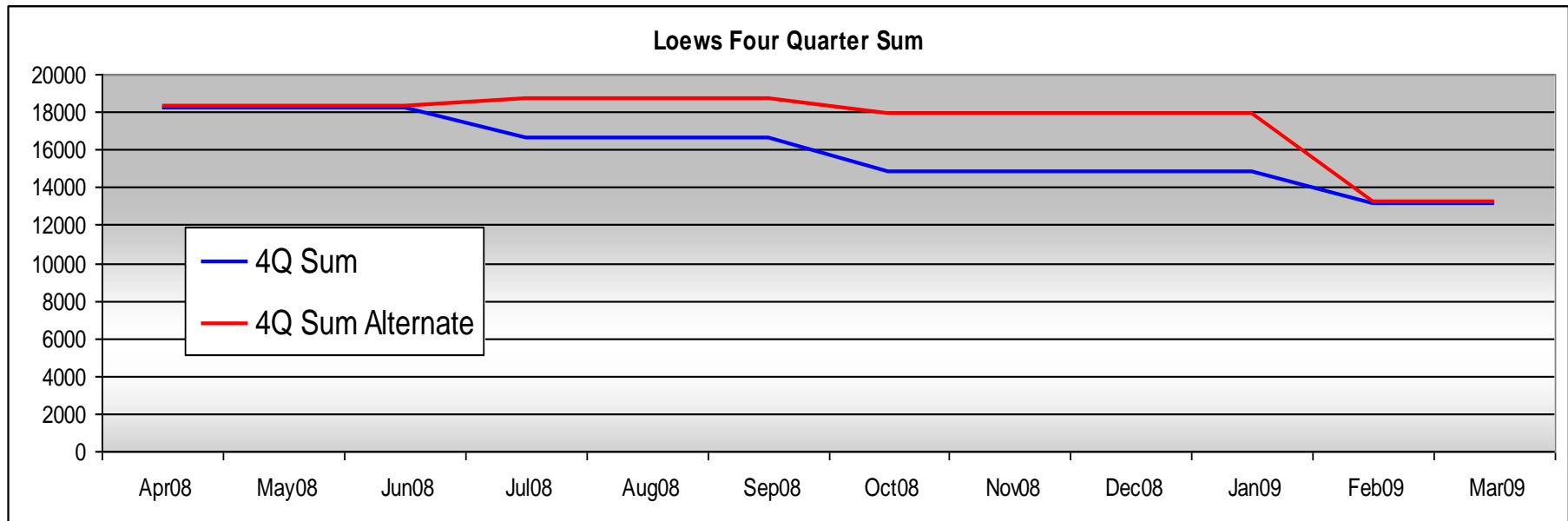
## Alternative Four Quarter Trailing

- FQT = sum of last four quarters
- $\text{Alt FQT}(i,t) = \text{YTD}(i,t) + Y(t-1) - \text{YTD}(i,t-1)$
- When there are no restatements, FQT and Alt FQT are the same.
- When there are restatements, Alt FQT makes the “jump” occur in the 4<sup>th</sup> quarter
  - $\text{Alt FQT}(i,t) = \underset{\text{unrestated}}{Y(t-1)} + (\underset{\text{restated}}{\text{YTD}(i,t) - \text{YTD}(i,t-1)})$



## Alternative Four Quarter Trailing

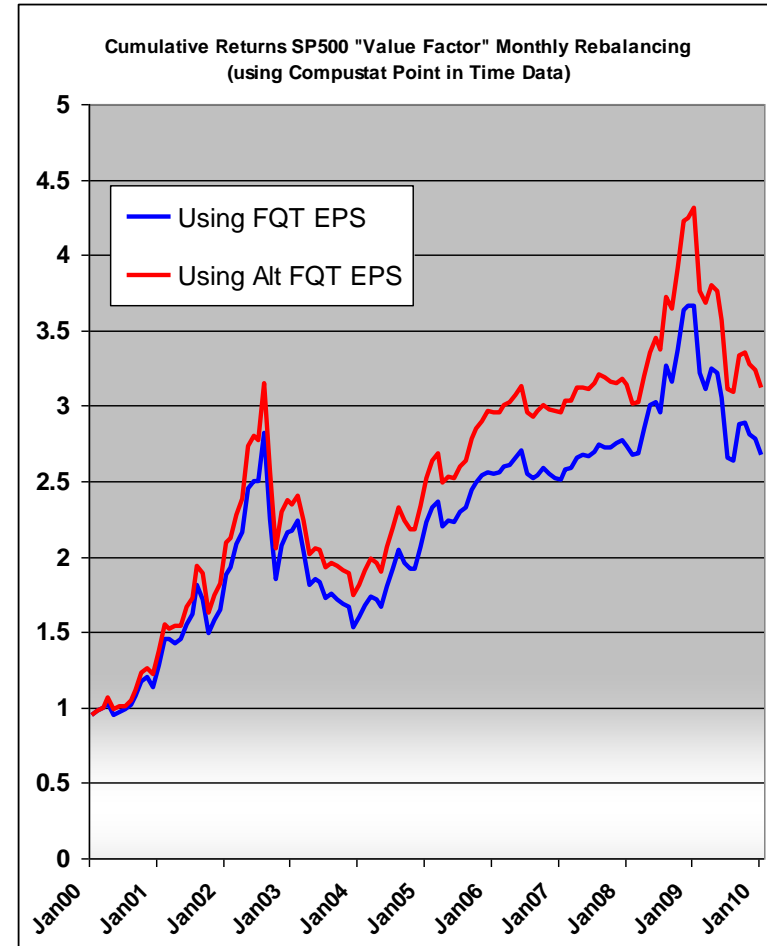
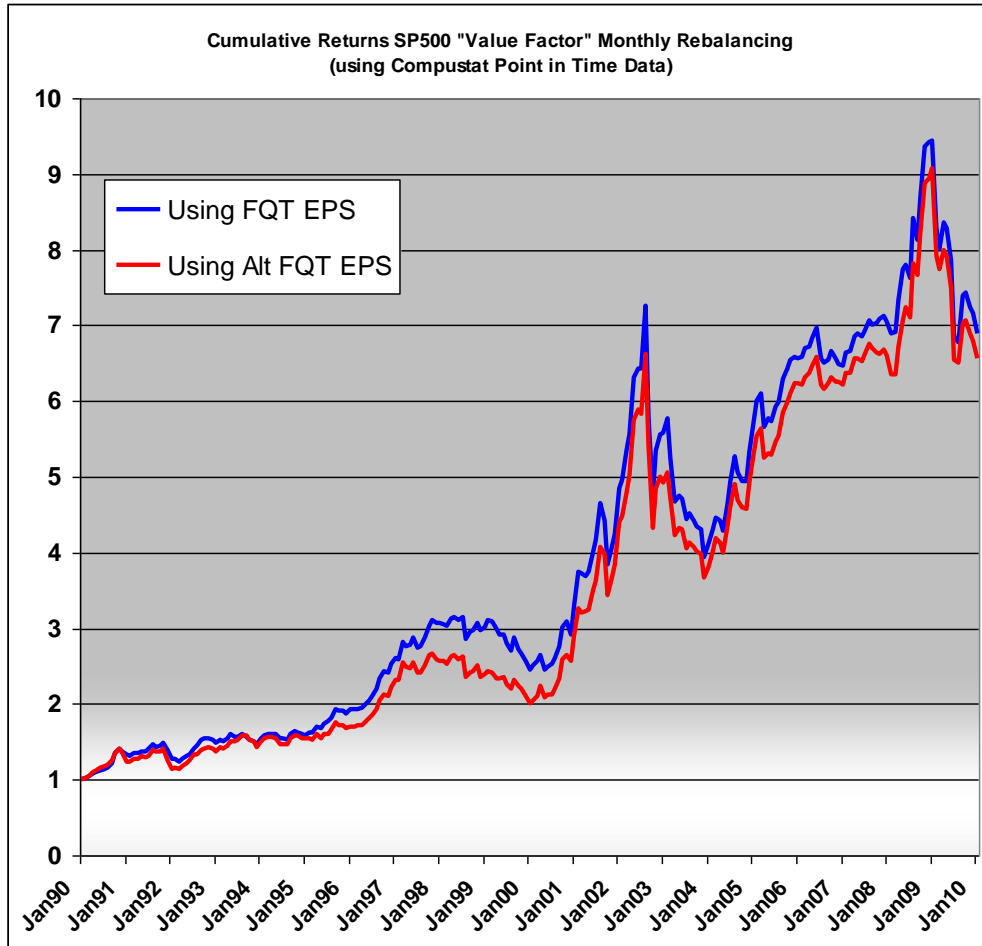
Company Name	MONTH	Fiscal Qtr0	Quarters Back					4Q Sum	4Q Sum Alternate
			0	1	2	3	4		
Loews Corporation	Apr08	1	4543	4430	4604	4637	4613	18214	18310
Loews Corporation	Jul08	2	3922	3612	4430	4604	3517	16568	18729
Loews Corporation	Oct08	3	2970	3767	3612	4430	3525	14779	17944
Loews Corporation	Feb09	4	2743	2970	3767	3612	3592	13092	13247
									Annual + (YTD(q,y) - YTD(q,y-1))







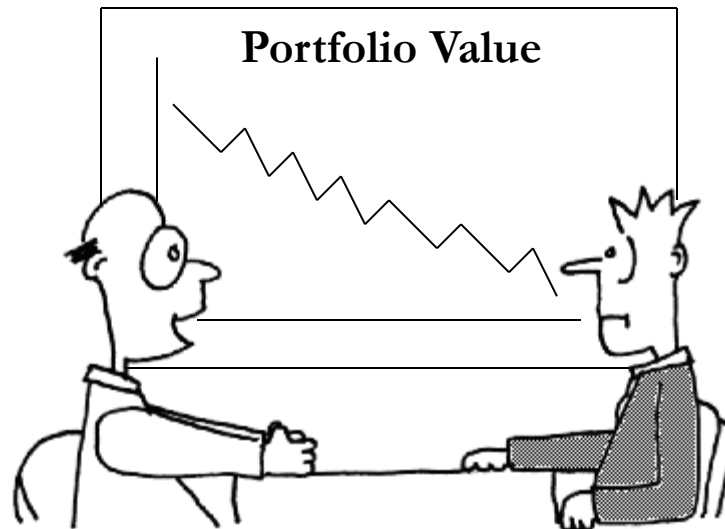
## Cumulative Returns to SP500 "Value Factor" With Different FQT





## Summary

- FQT and Alt FQT are different even at the portfolio level
  - Not clear which is better
- Mixing any Four Quarter Trailing numbers (however calculated) when there are restatements with balance sheet numbers is dangerous



But it backtested so well!

**Backtesting is an Art, Not a Science!**