



INTRODUCTION TO PORTFOLIO ANALYSIS

# **Time-Variation In Portfolio Performance**

# Bulls & Bears



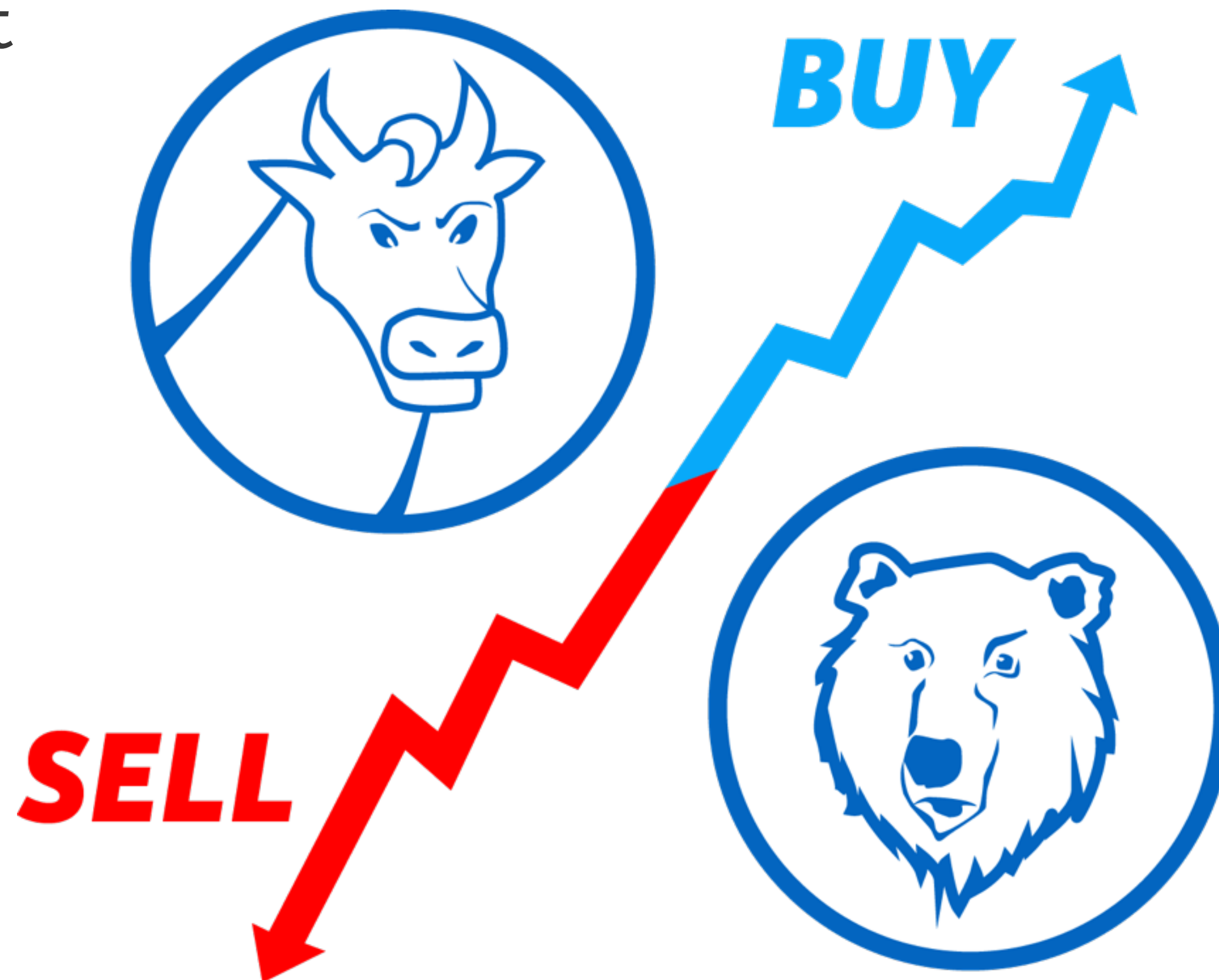
# Bulls & Bears

- Business cycle, news, and swings in the market psychology affect the market



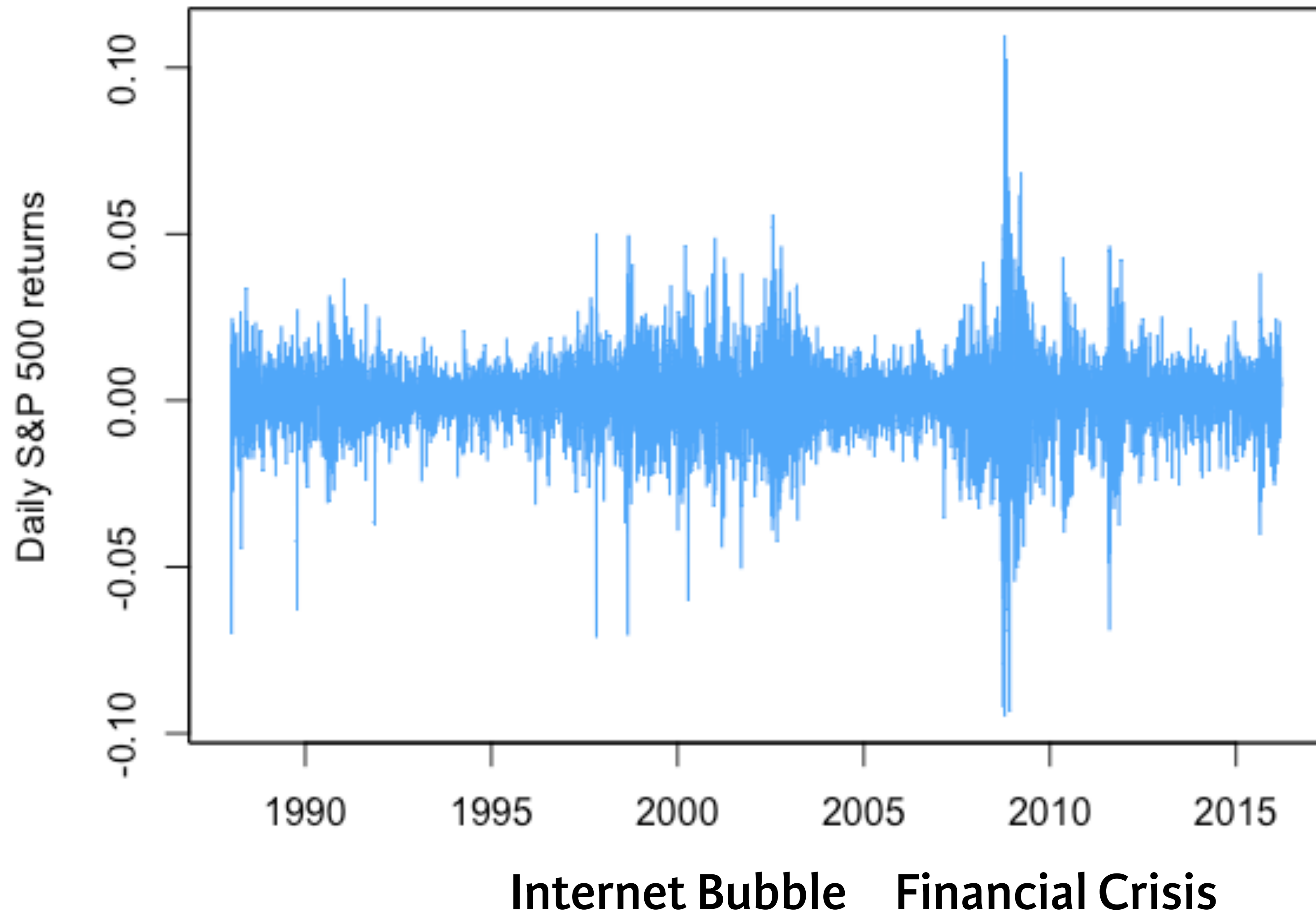
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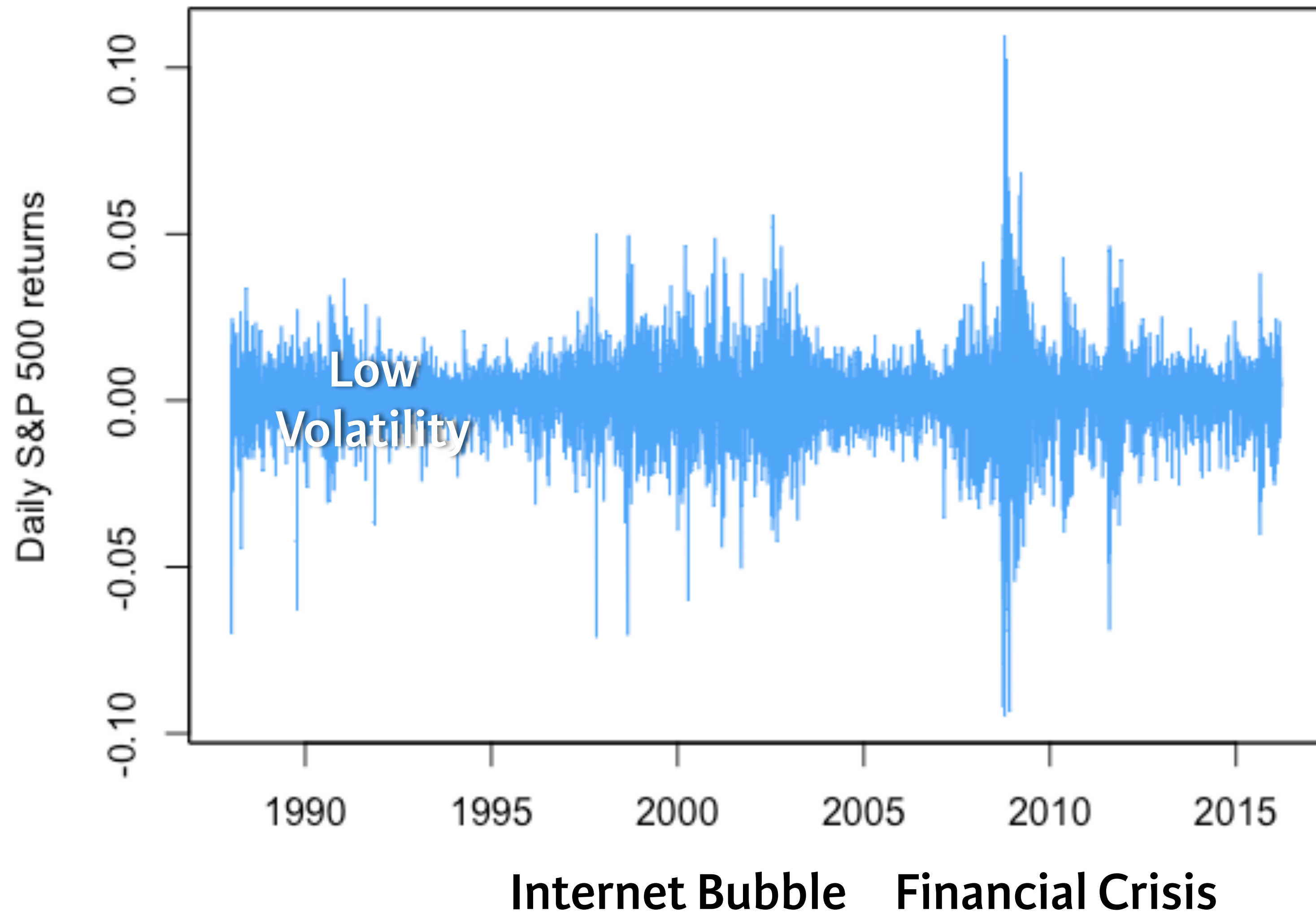




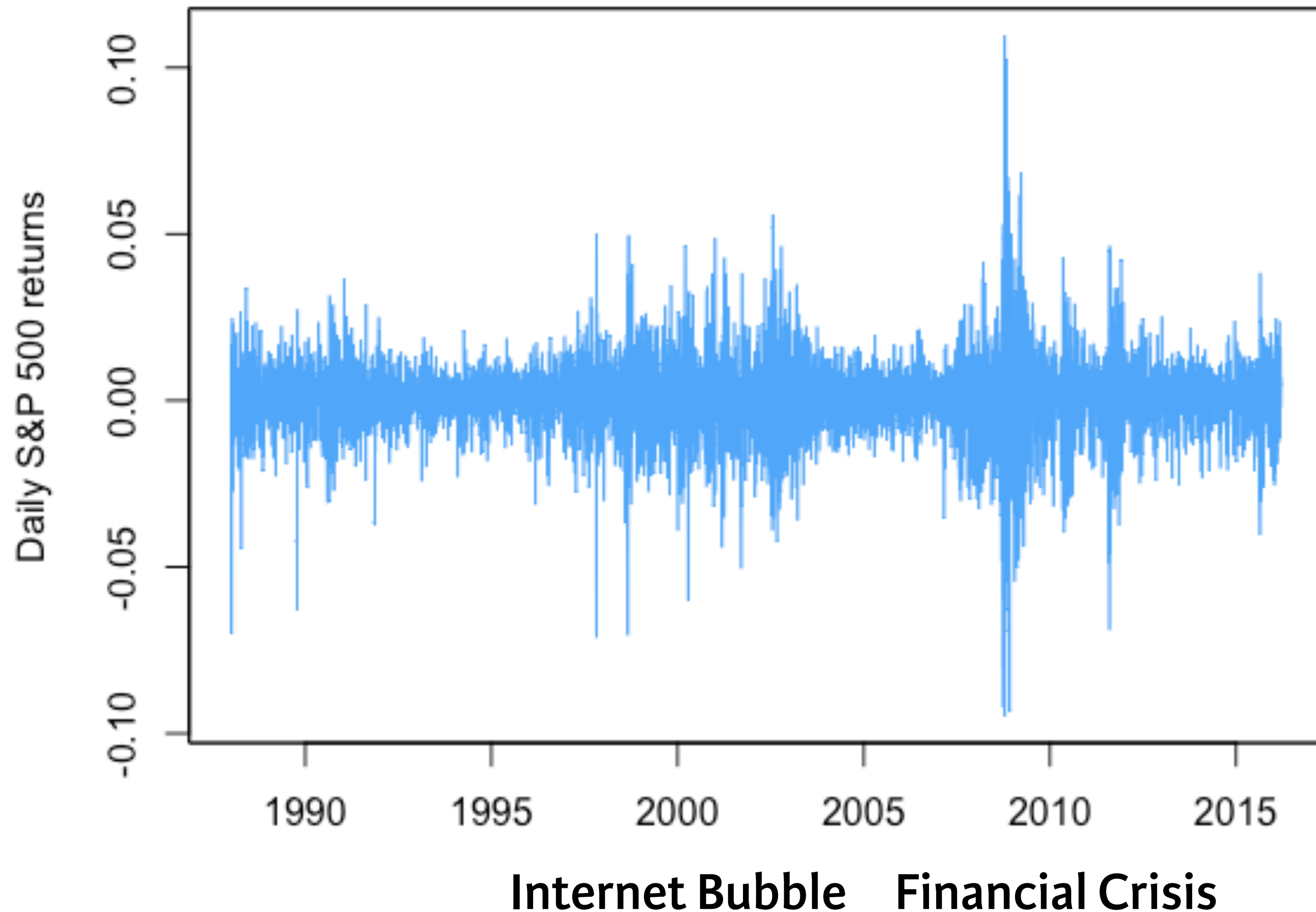
# Clusters of High & Low Volatility



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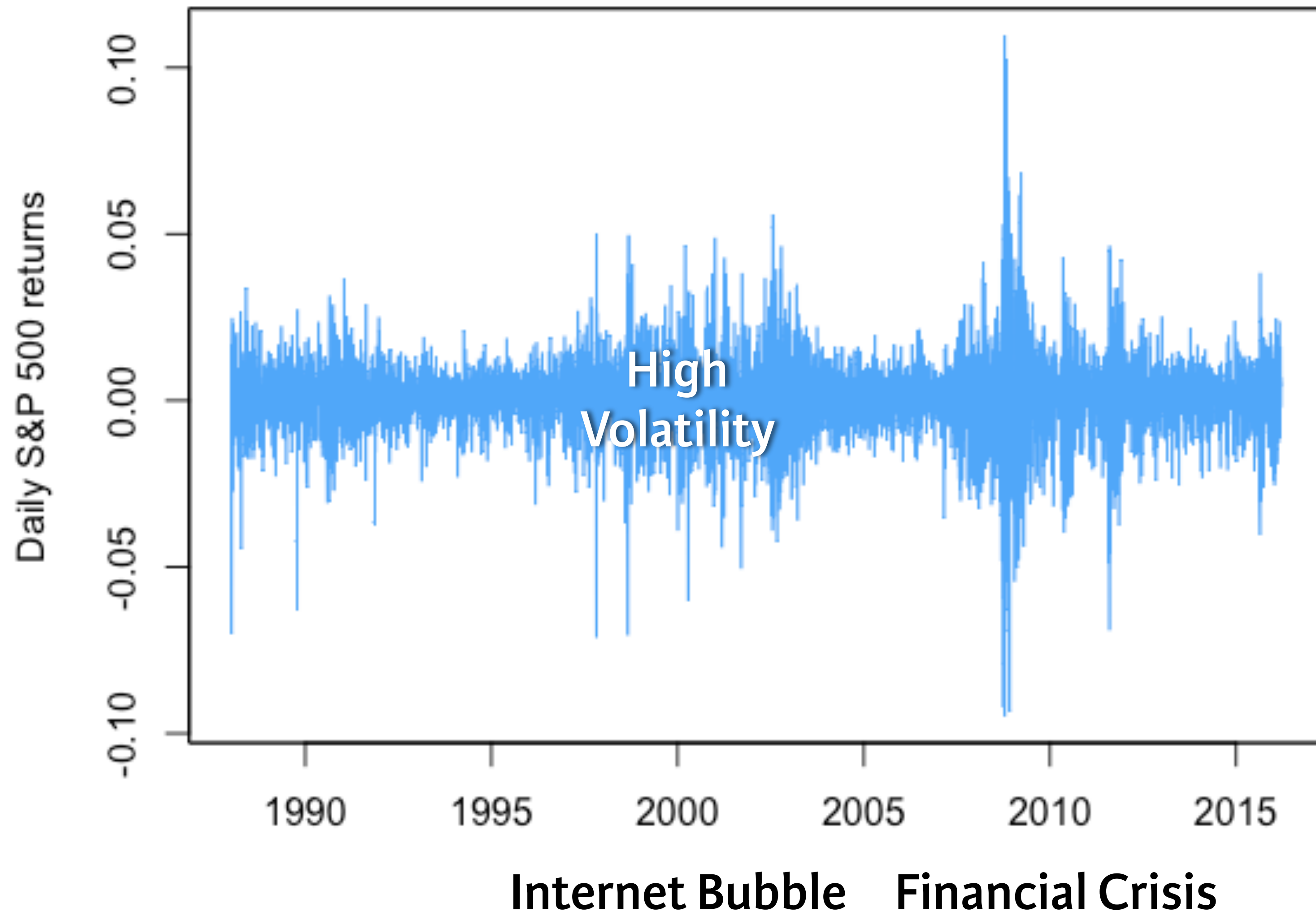


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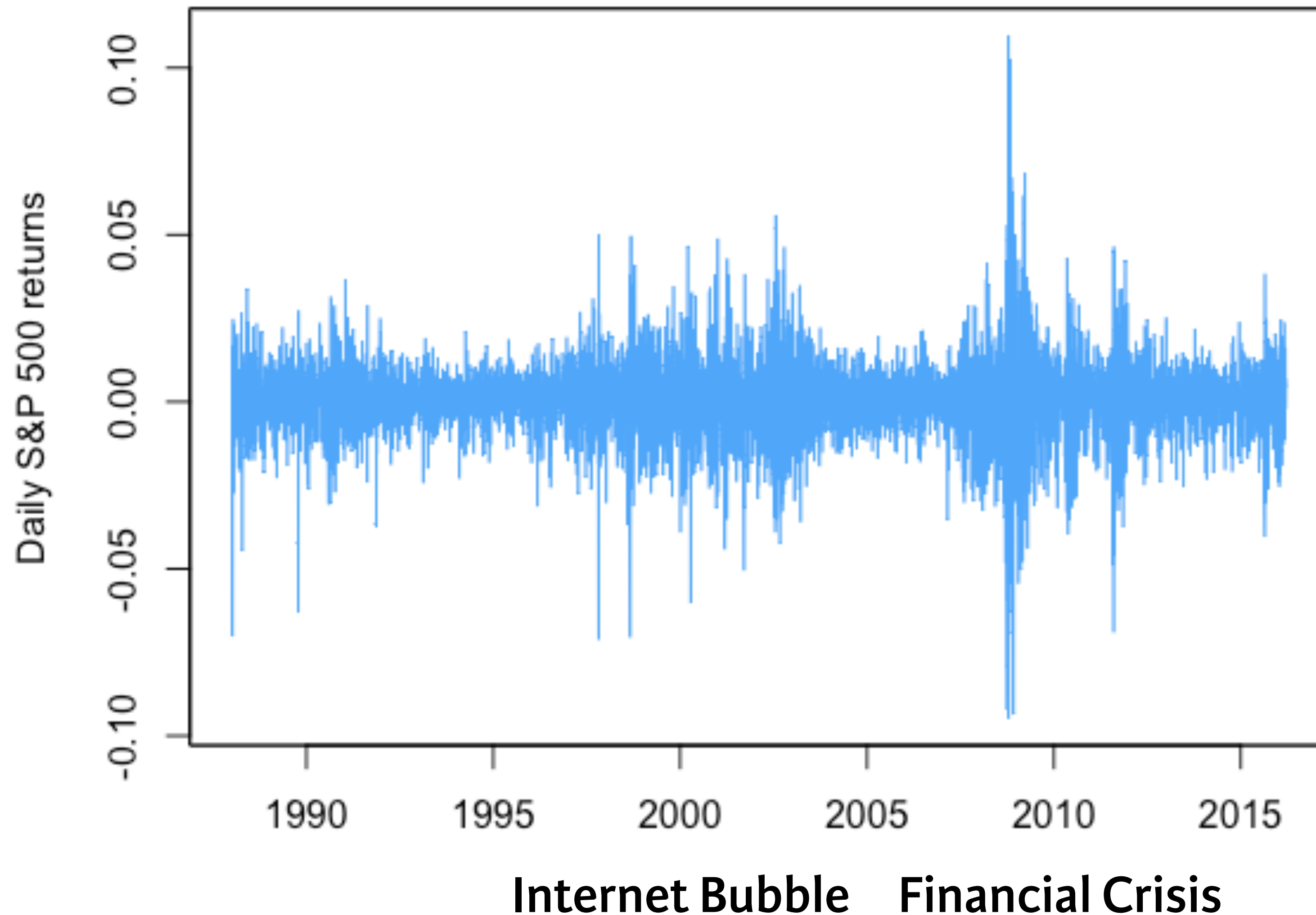


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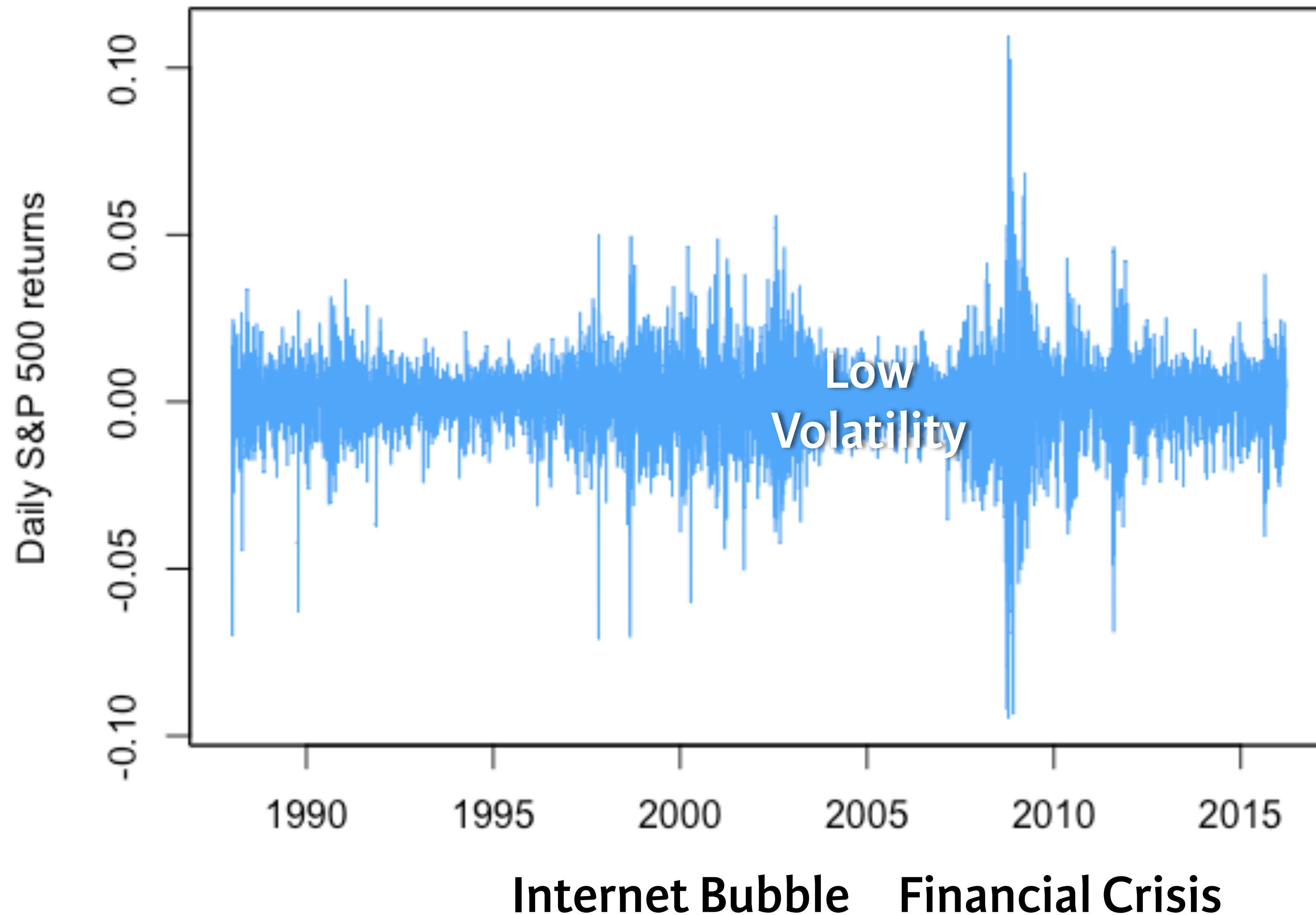




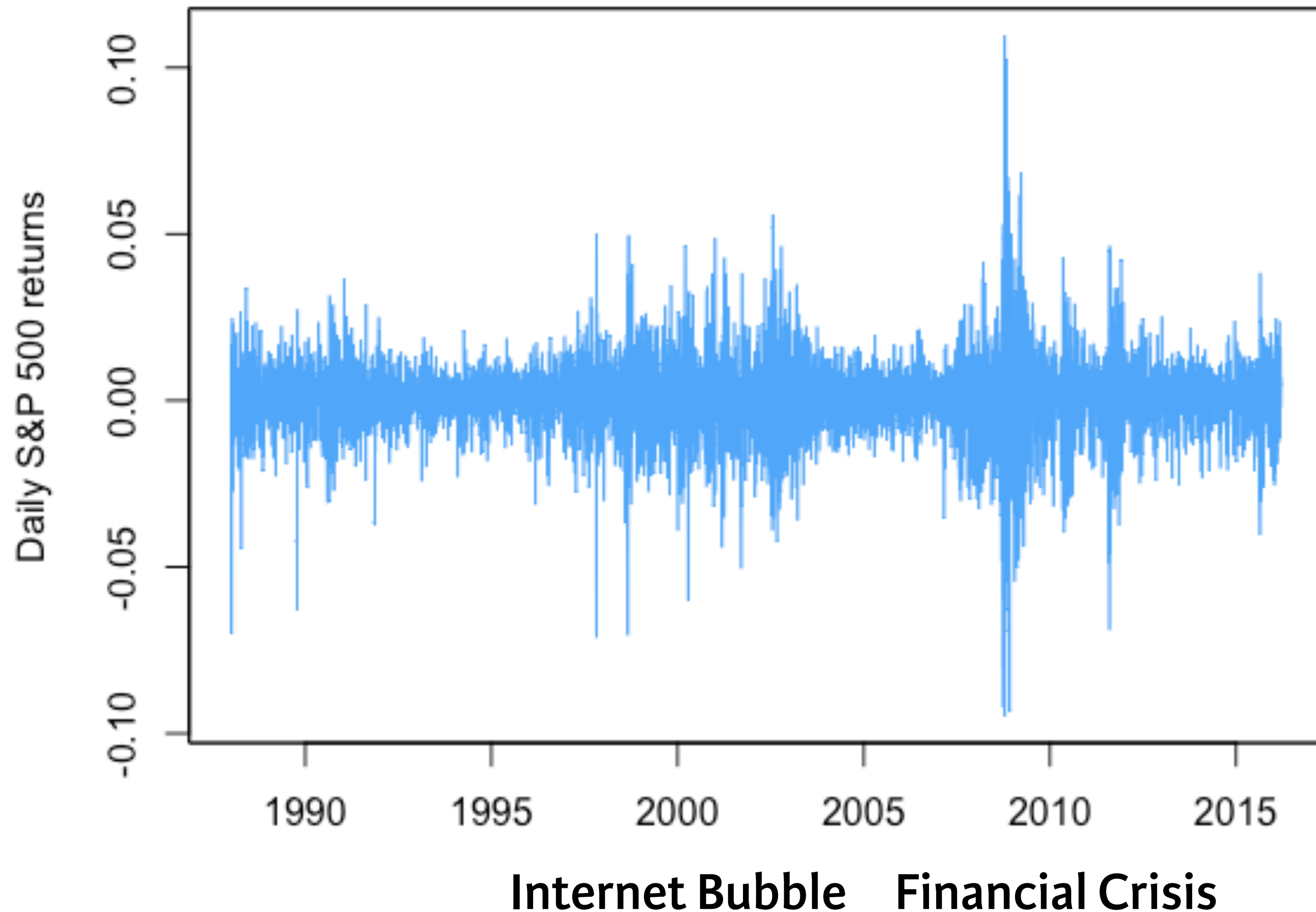
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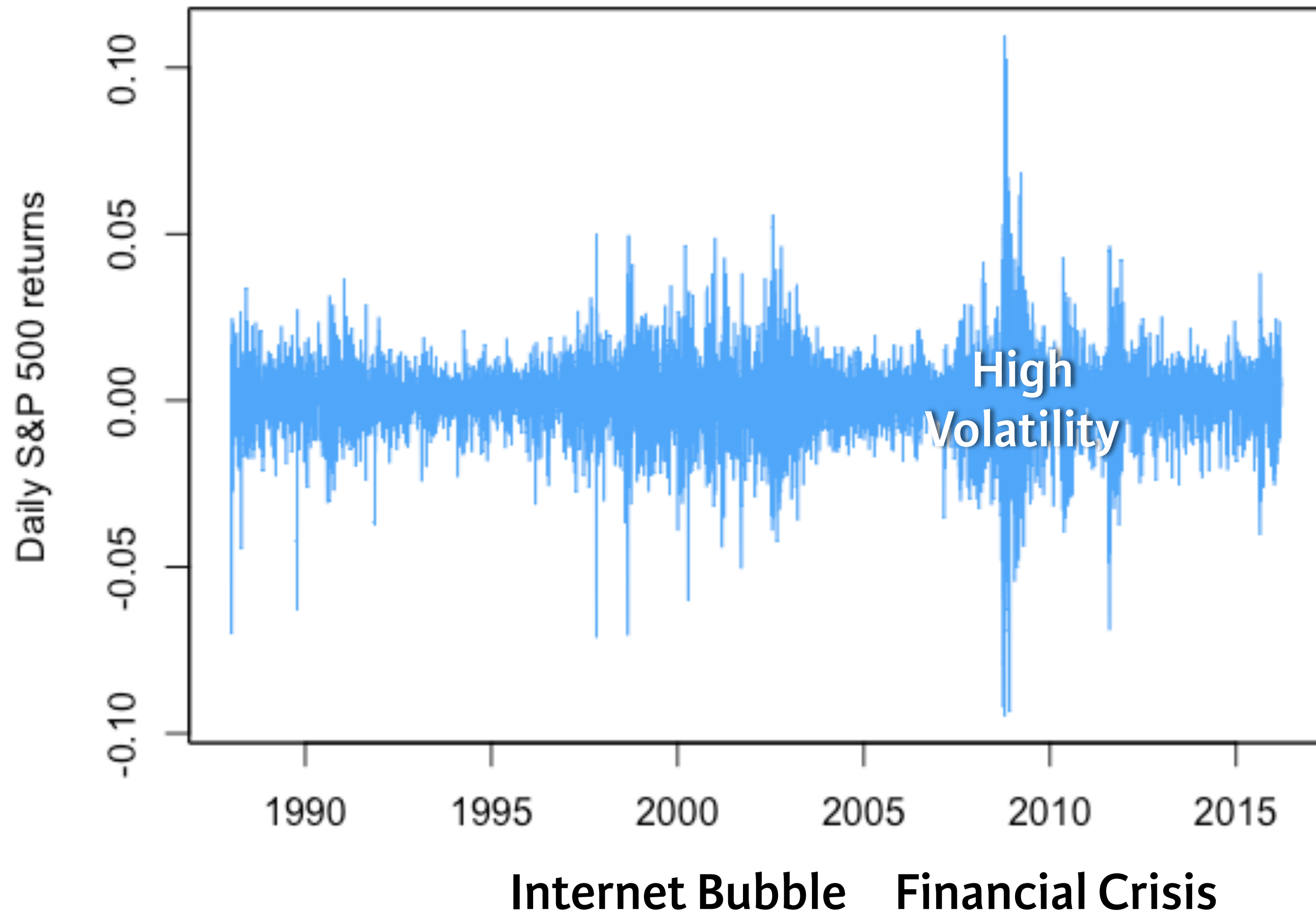


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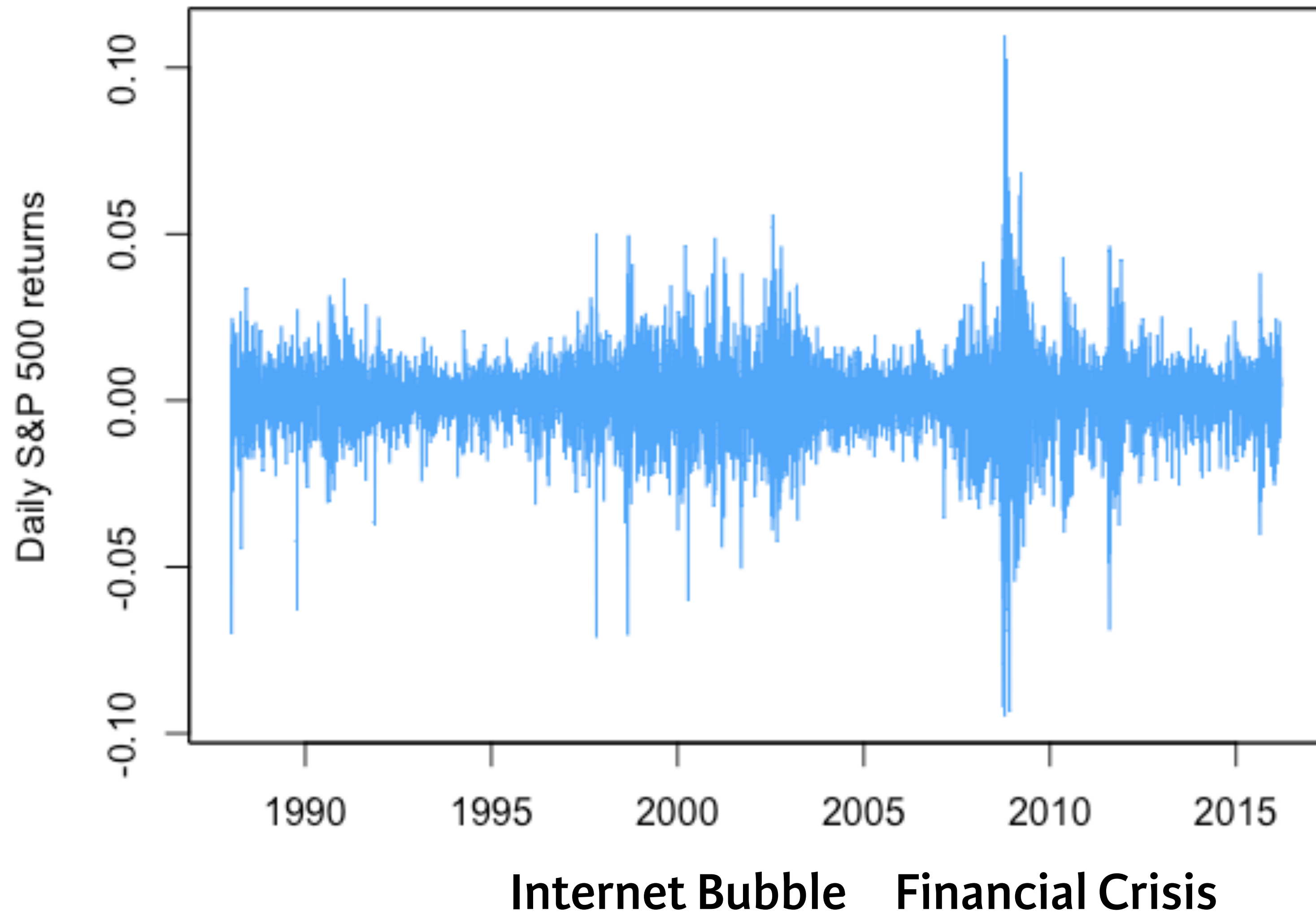




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# Rolling Estimation Samples

- Rolling samples of  $K$  observations:
  - Discard the most distant and include the most recent

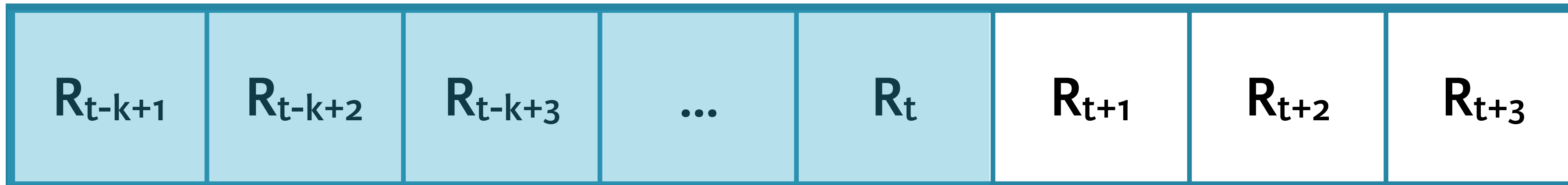
$R_{t-k+1}$	$R_{t-k+2}$	$R_{t-k+3}$	...	$R_t$	$R_{t+1}$	$R_{t+2}$	$R_{t+3}$
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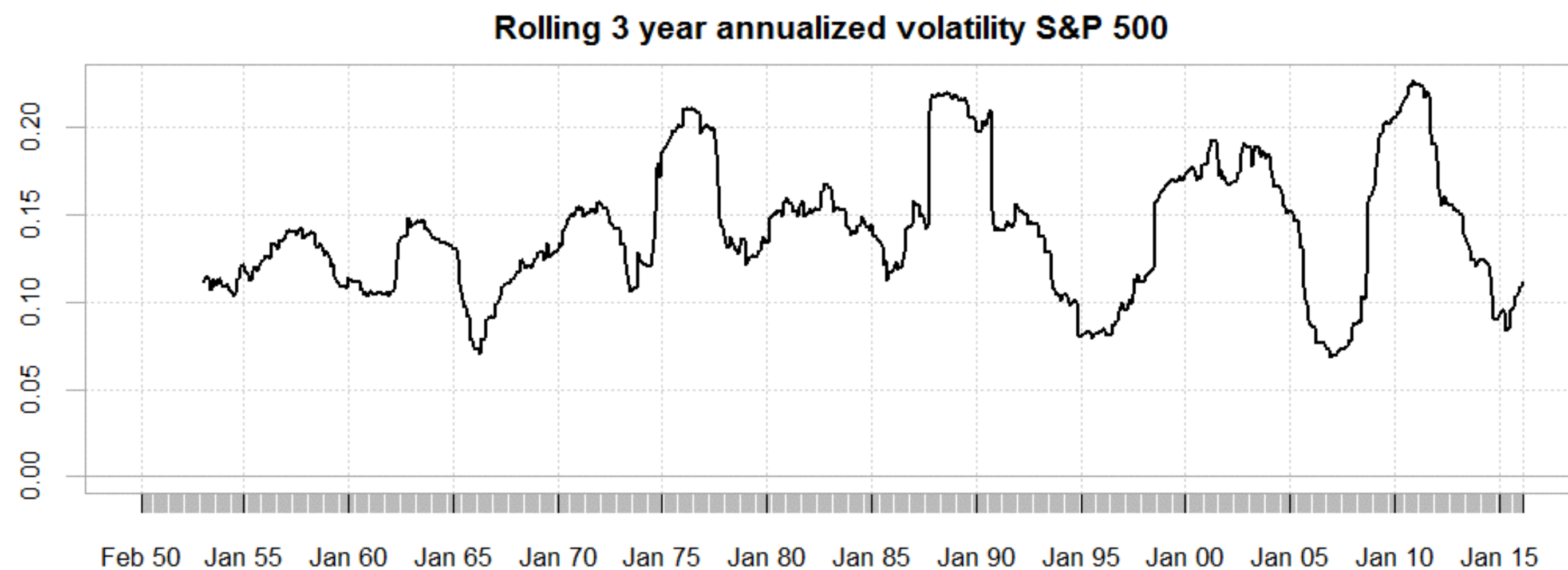
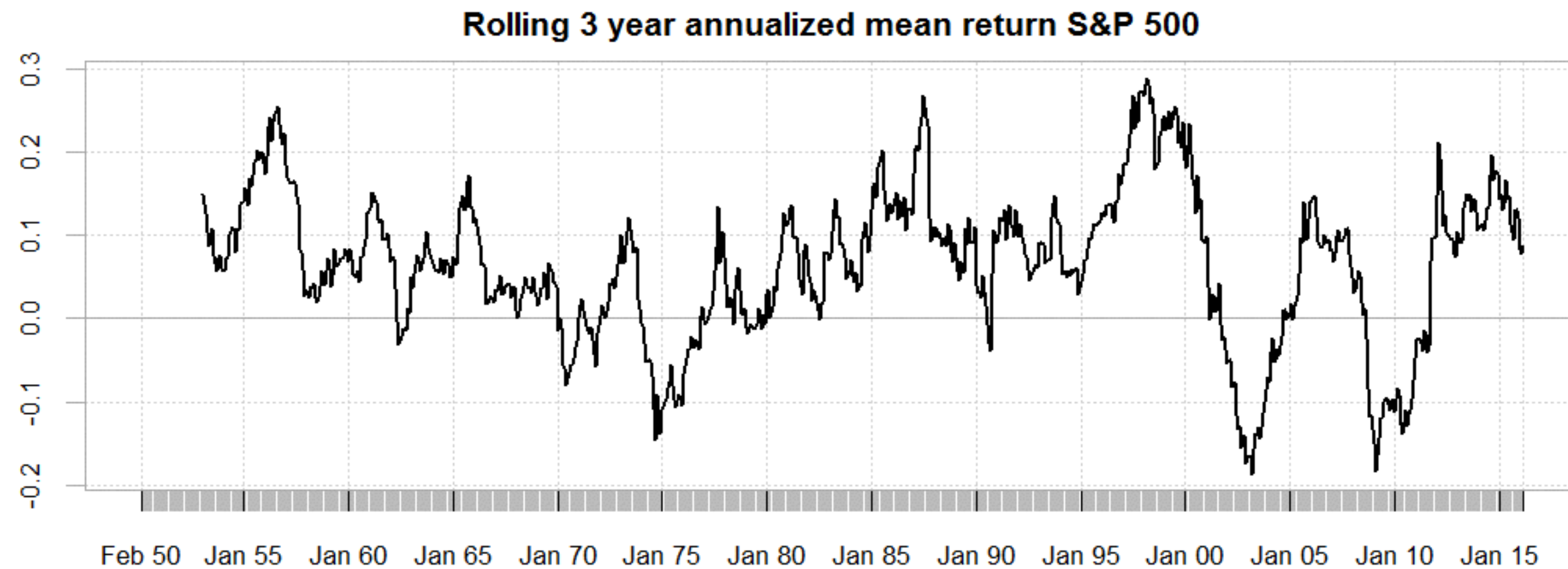




# Rolling Performance Calculation



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# Choosing Window Length



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- Need to balance noise (long samples) with recency (shorter samples)
- Longer sub-periods smooth highs and lows
- Shorter sub-periods provide more information on recent observations

