Global Research

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Crowding and Factor Investing: A synthesis of ideas

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"I have so many names…"

Smart beta

Alternative beta

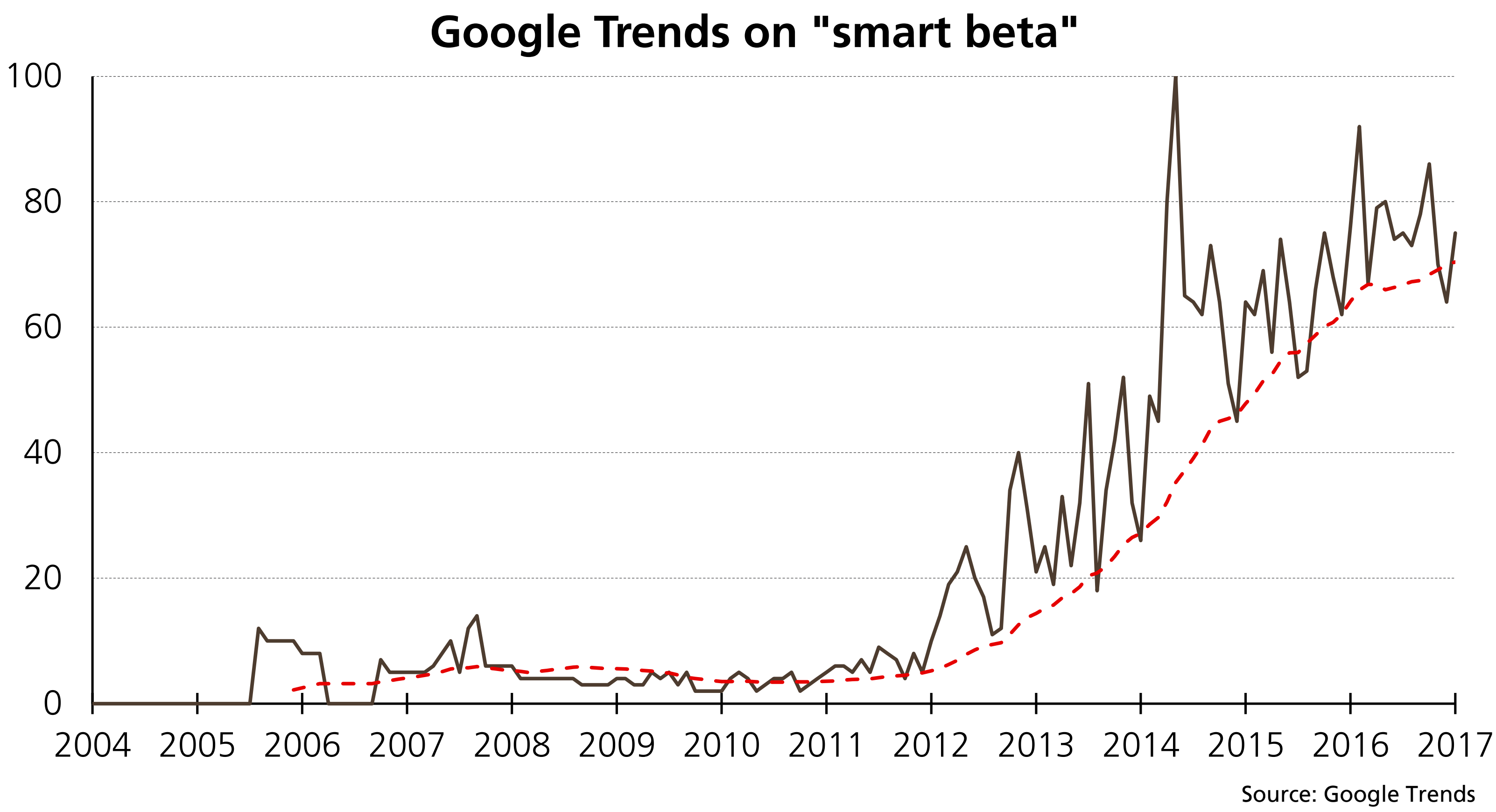
Factor premia

Risk premia

Equity styles

Alternative premia

People talk about it.



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People invest in it.

BlackRock projects smart beta ETF assets will reach $1 trillion globally by 2020, and $2.4 trillion by 2025

BlackRock Press Release, May 12, 2016

— 72% of asset owners are using or actively evaluating smart beta
— 62% with existing smart beta allocations evaluating additional indexes
— Percentage using five or more smart beta indexes up 10 fold in 2 years

FTSE Russell 2016 Smart Beta Global Survey

And investors are worried about it.

Smart beta strategies risk becoming crowded

Benefit of active tilt to passive investing will be lost as more investors join in

The Financial Times, May 26, 2015

Smart beta 'could go horribly wrong'

Rob Arnott, one of the pioneers of the strategy, warns against its soaring popularity

The Financial Times, February 22, 2016

Framing the right questions

- How many equity factors are there?
- What is driving the premia? Is it risk or mispricing?
- What is the impact of crowding in the profitability of premia?
- Can the premia (just) go away?
- Is style timing/rotation possible?
- Timing or diversification?

Section 1

How many equity factors are there?

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So, how many equity factors are there?

- 1960's: CAPM says 1 (the "market")
- 1993: Fama-French say 3 ("market" + Value and Size)
- 1997: Carhart says 4 (FF3 + MOM)
- 2016: Fama-French say 5 (but no MOM)
- 2015: Asness, Frazzini, Israel & Moskowitz say 6 (FF5 + MOM)

- Cochrane (2011) talks about a "*zoo of factors*"
- Harvey, Liu, Zhu (2015) identify >300 (definitions of) "factors"

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How many equity factors do we really need?

- PCA analysis:
  - "small" number of factors seem to matter

- Simple in-house exercise:
  - 3 least correlated factors: value, momentum, low-beta
  - 4 least correlated factors: value, momentum, low-vol, div. cover

Section 2

What is driving the premia?

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Is it risk or mispricing ("anomaly")?

Factors	Rational (i.e. "Risk")	Mispricing / Limits-to-Arbitrage
Value / Reversals	Distress risk	• Growth extrapolation • Delayed overreaction
Momentum / Trend	Skewness/tail risk	• Underreaction to public news • Overreaction to private news • Overconfidence • Disposition effect • High turnover/costs
Low-Risk / Quality	Skewness/tail risk	• Benchmarking • Leverage aversion • "Lottery tickets" • Flight-to-quality/safety
Carry / Income	Funding liquidity risk Tail/volatility risk	
Liquidity	Liquidity risk	• High costs/capacity barriers

- The academic evidence is rich, yet inconclusive!

Section 3

What is the impact of crowding on factor premia?

The dynamics of premia differ

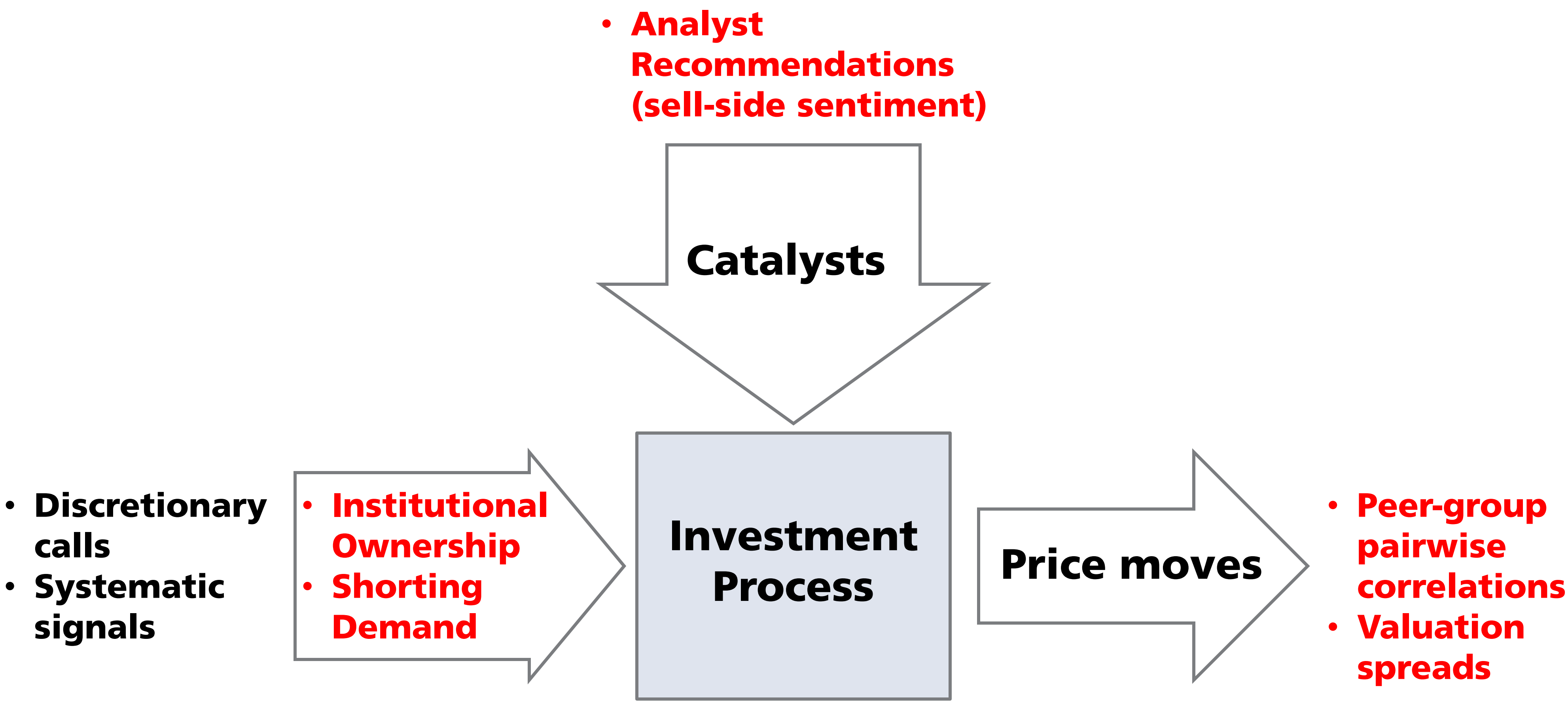
- Identify the mechanics of each premium.
- Risk premia behave genuinely differently to anomalies when capital flows in.
- To facilitate the discussion, let's use as examples:
  - Value as a Risk Premium
  - Momentum as an Anomaly

- *If capital flows in a value or a momentum strategy, then –ceteris paribus– what does this imply for each of them?*

The impact of crowding

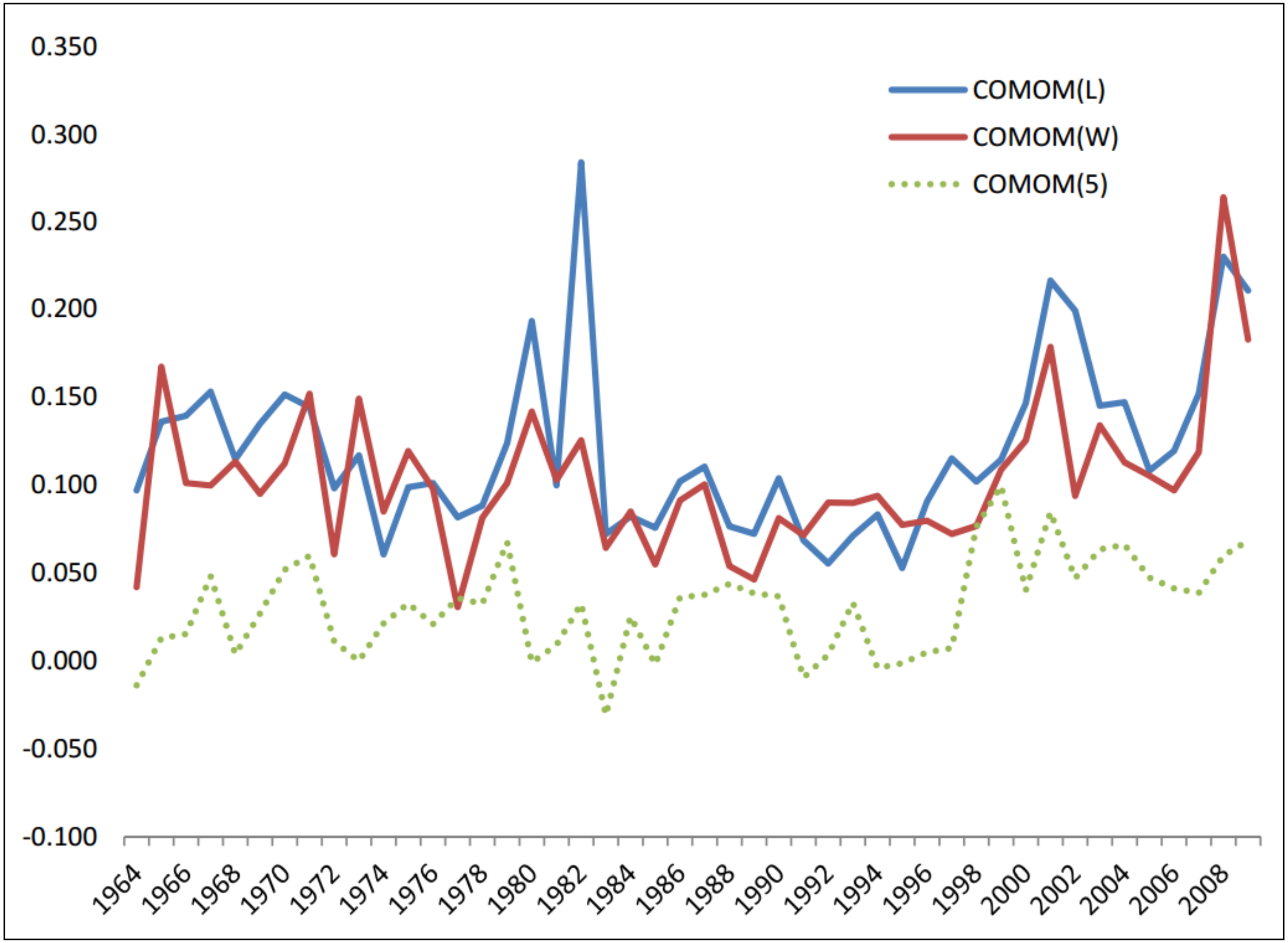
	Risk Premia	**Anomalies**
Type of Strategy	Anchored / contrarian	Non-anchored / positive-feedback loop
Impact of capital flow (all else being equal)	Premium realises itself	Premium becomes (even) stronger
Valuation spreads…	Convergence	Divergence
Crowing brings…	Faster convergence → Search for new opportunities → More turnover	Stronger divergence → Concentration → More leverage
Profitability implications	▪ Spreads progressively squeeze ▪ Premia harder (and more costly) to harvest	▪ Profitability strengthens ▪ Risk of a crash increases (e.g. when funding liquidity becomes scarce)

How to measure crowding?



Momentum activity

Comomentum (Lou and Polk, 2014): average pairwise excess (FF3) correlation across stocks in the same momentum decile during the portfolio ranking period.



Source: Lou and Polk (2014)

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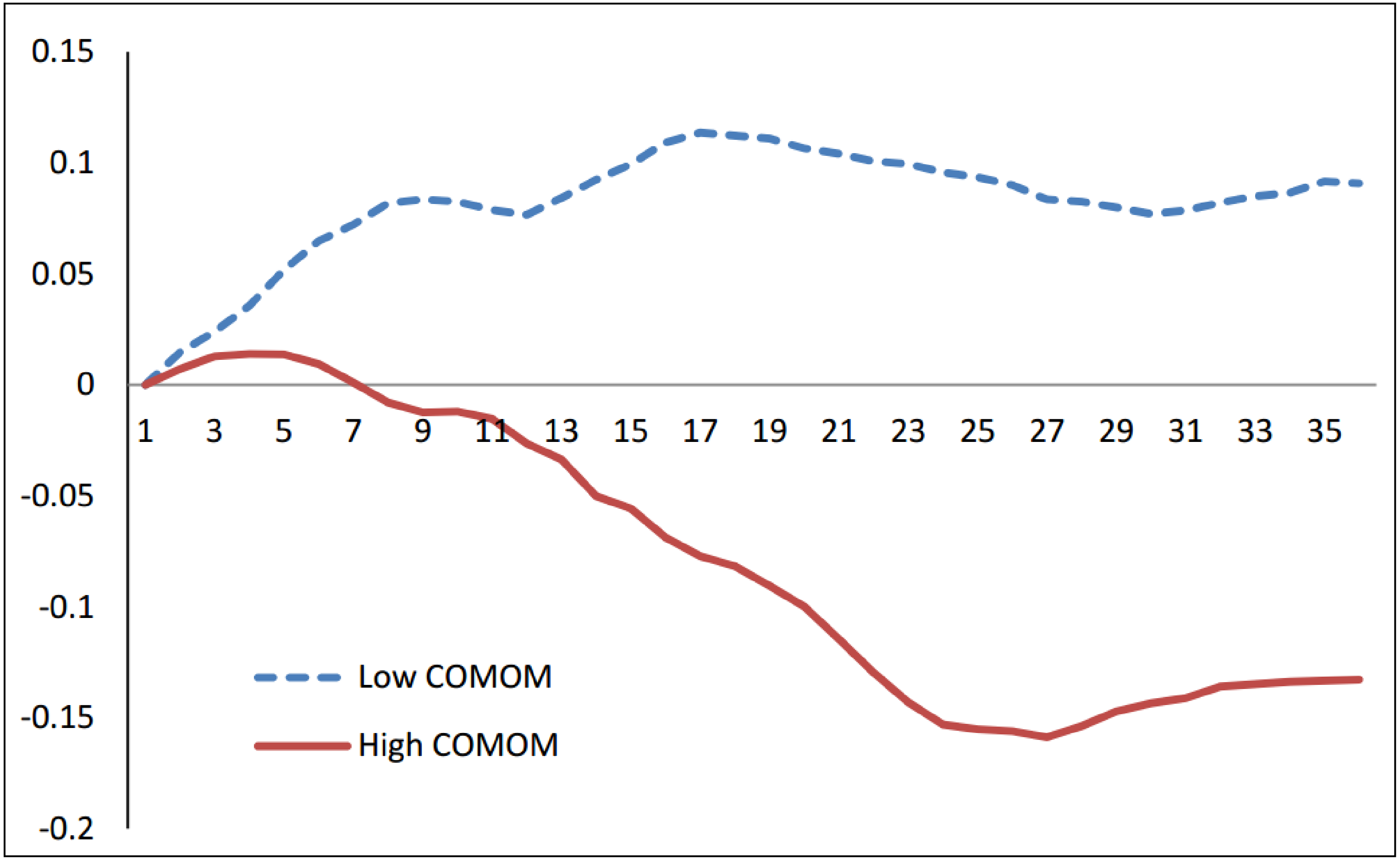
Momentum activity

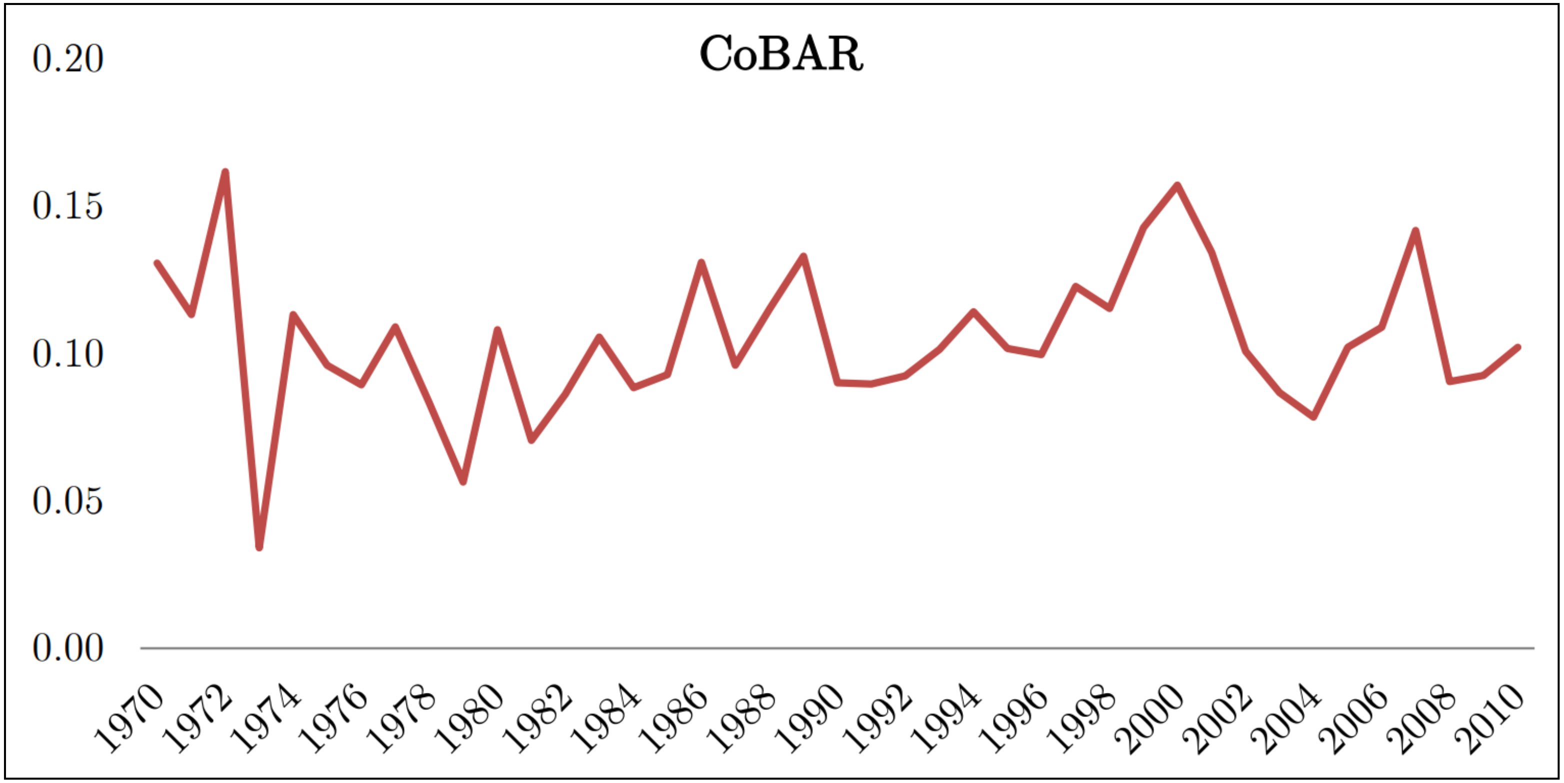
Momentum is much weaker and reverses strongly following periods of high momentum arbitrage activity.



Source: Lou and Polk (2014)

Beta arbitrage activity

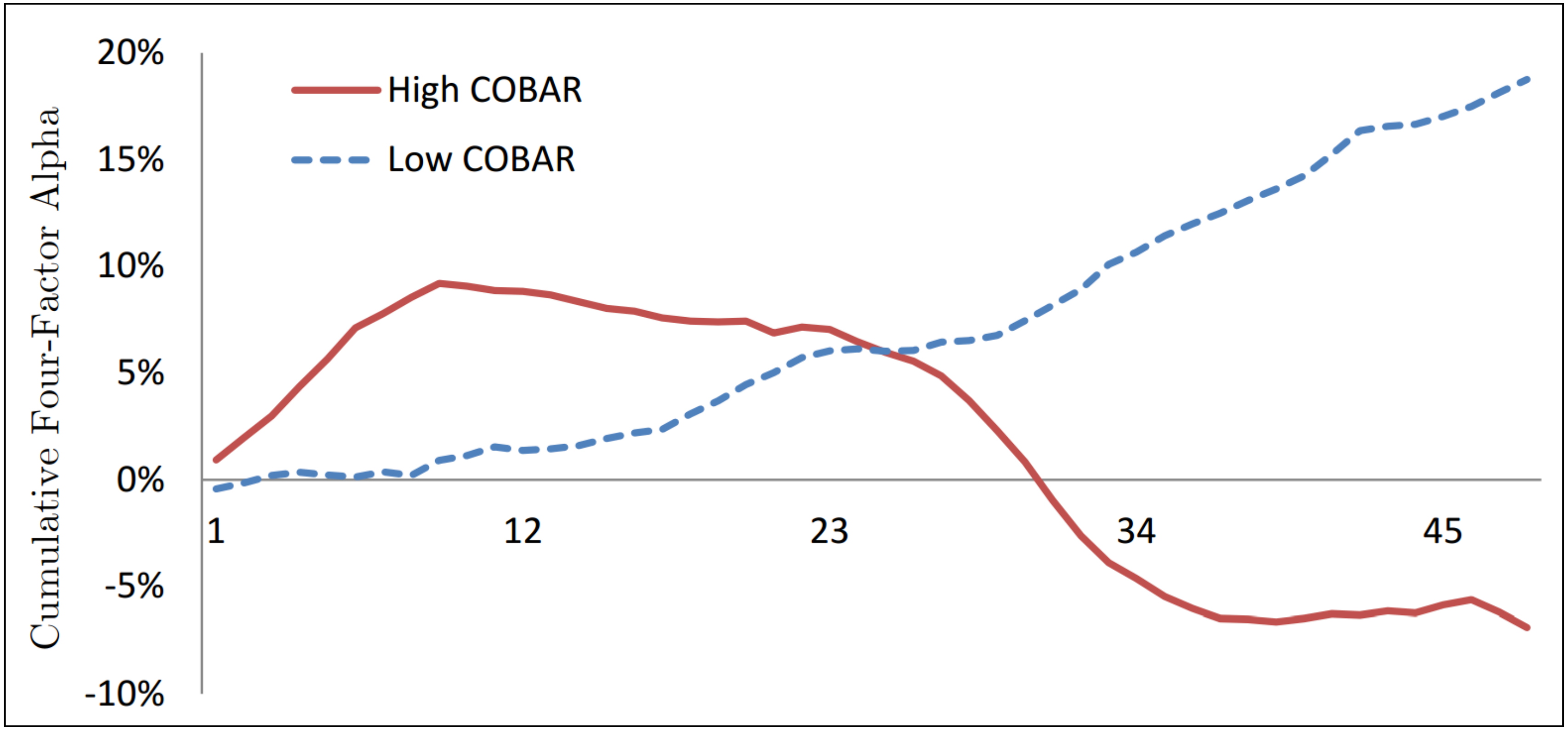
CoBetaArbitrage (Huang, Lou and Polk, 2016): average pairwise excess (FF3) correlation across stocks in the same beta decile during the portfolio ranking period.



Source: Huang, Lou and Polk (2016)

Beta arbitrage activity

Betting-against-Beta outperforms strongly and then reverses strongly following periods of beta arbitrage activity.



Source: Huang, Lou and Polk (2016)

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Section 4

Can the premia (just) go away?

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Can the premia go away?

Well, YES, but only if…

- …for Risk Premia:
  - the perception of "risk" changes
  - the risk preferences / tastes change
- …for Mispricing /"Anomalies":
  - human beings behave more "rationally" (in an economic sense)
  - enough capital becomes available to "take the other side"

So, it seems quite unlikely that premia can *just* disappear.

Section 5

Is style timing/rotation possible?

Is style timing/rotation possible?

- Style-timing is about the time-series:
  - One style
  - At the extreme: switch on and off
  - More realistic: increase/decrease exposure/leverage
- Style-rotation is (mainly) about the cross-section:
  - Two (or more) styles
  - At the extreme: switch from one (some) to other(s)
  - More realistic: overweight/underweight styles in a portfolio of styles

Timing Risk Premia and Anomalies

- **Risk Premia**
  - The premium is compensation for bearing systematic risk.
  - Timing systematic risk means that this is no longer systematic…
  - Too hard to time genuine risk premia

- **Anomalies**
  - Anomalies can crash following periods of crowding (high COMOM, high COBAR), if/when funding liquidity becomes scarce.
  - Momentum profits are exposed to funding liquidity risk (Asness, Moskowitz and Pedersen, 2013).
  - BAB profits are exposed to funding liquidity risk (Frazzini and Pedersen, 2014).
  - Are there possibly any links between momentum and BAB?

Timing (?) Anomalies

Fact:

Both momentum and BAB underperform during strong market reversals and "junk rallies".

Idea:

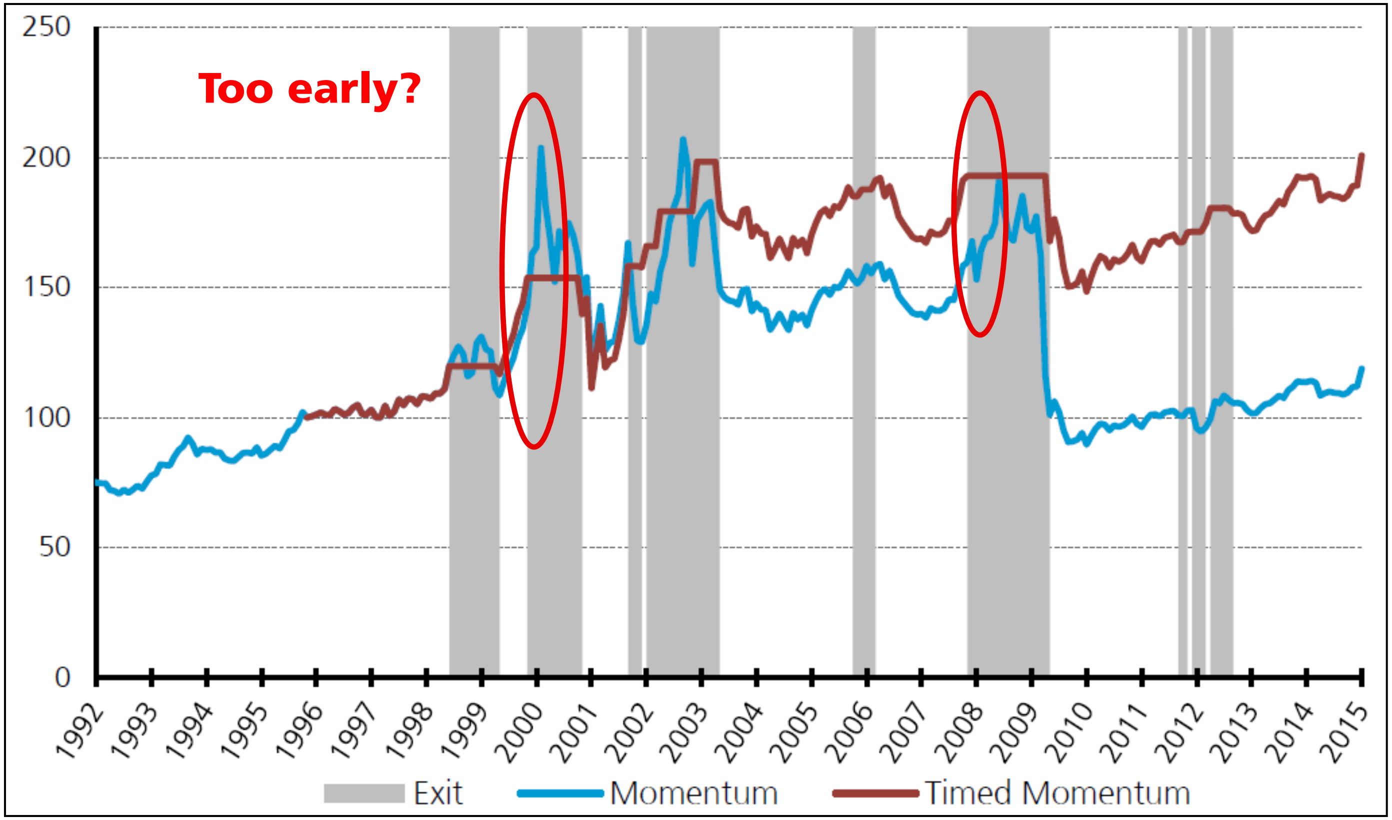
Why not exit when crowding increases "too much" (assuming we have a good measure)?

…good, but:

Managers have rational incentive to stay invested (even when aware of crash risk) because of competition.

Momentum and reallocation of "Blind Capital"

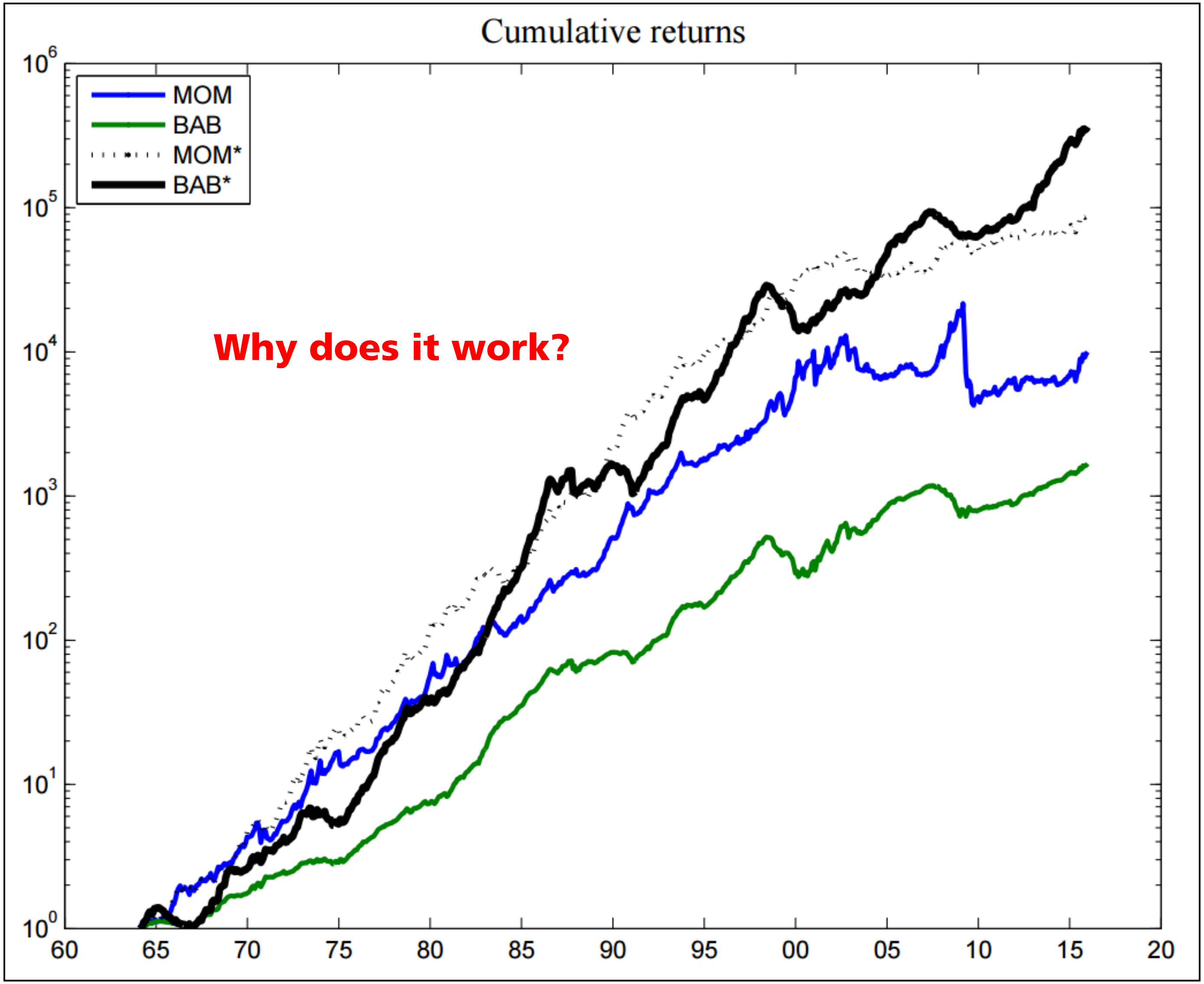
- Momentum becomes crowded following periods of outperformance, as it attracts "blind capital" from return-chasing investors (Chabot, Chysels and Jagannathan, 2014).
- Use the level of momentum outperformance (vs. the market) to time the exit from the strategy.



Source: UBS Quantitative Research

Managing the risk of Momentum and Low-Beta

Instead of on/off, introduce dynamic leverage and target a constant level of volatility.



Source: Barroso and Maio (2016)

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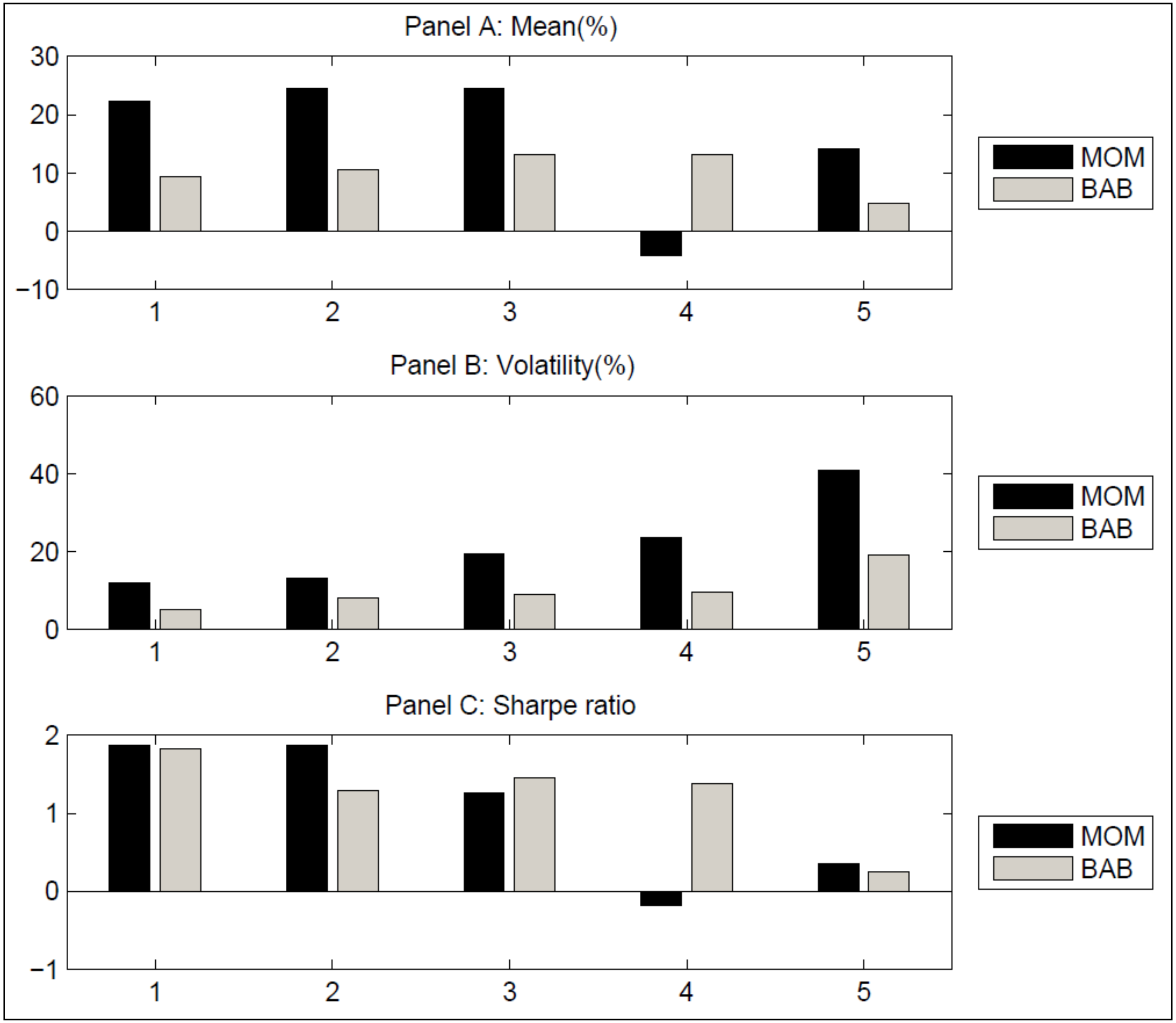
Managing the risk of Momentum and BAB

Factor volatility is persistent and there is no risk-return trade-off on a short-term basis (Barroso and Santa-Clara, 2015, Daniel and Moskowitz, 2016, Barroso and Maio, 2016)



Source: Barroso and Maio (2016)

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Are momentum and BAB special?

Fact:

Momentum and BAB are technical styles, and are independent to fundamental data; they only depend on price data.

Observation:

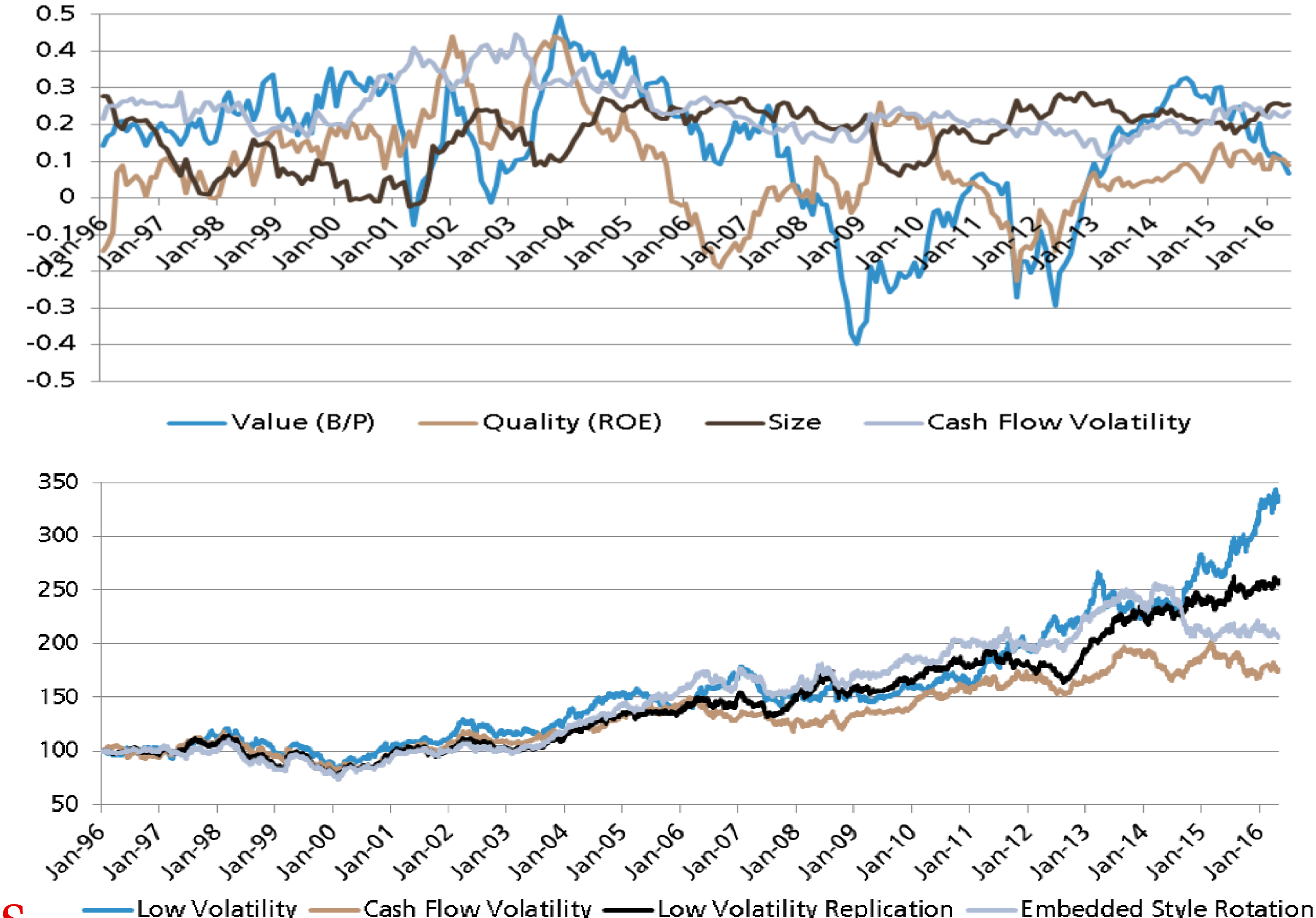
Equity factors are not (especially on a conditional basis) orthogonal.

Testable hypothesis:

Do the technical styles exhibit any systematic conditional tilts across fundamental styles (e.g. value, quality)?

Replicating Low-Risk (Betting-against-Beta)

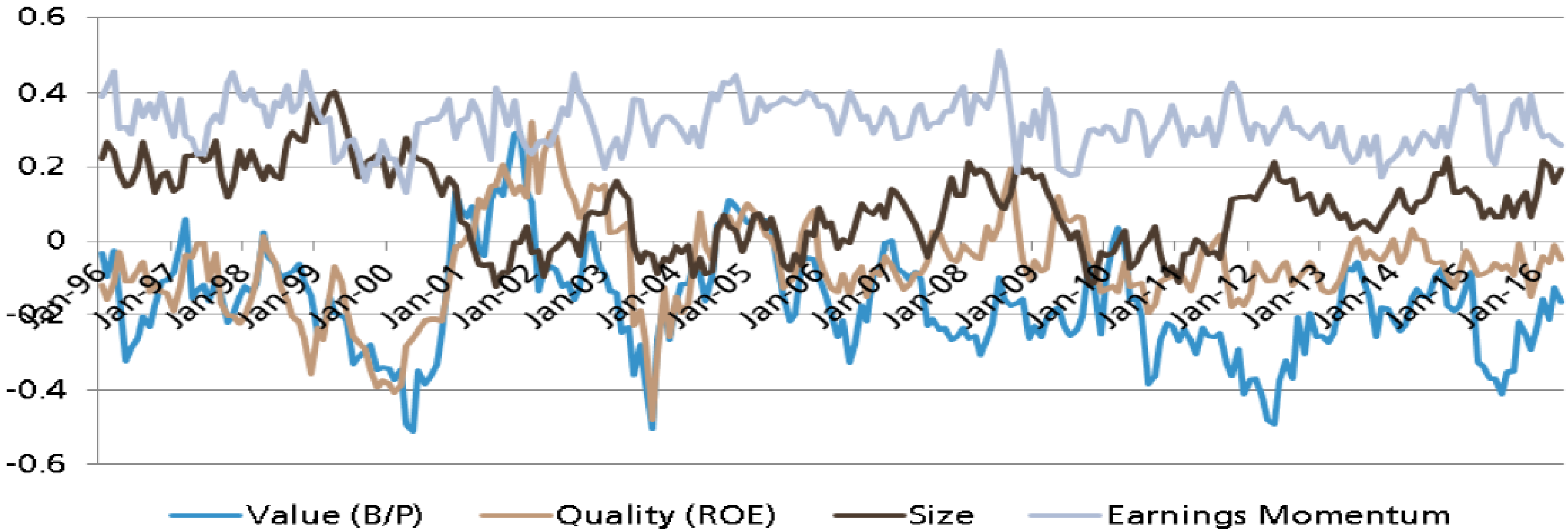
…using dynamic shifts across value, quality, size and earnings variability.

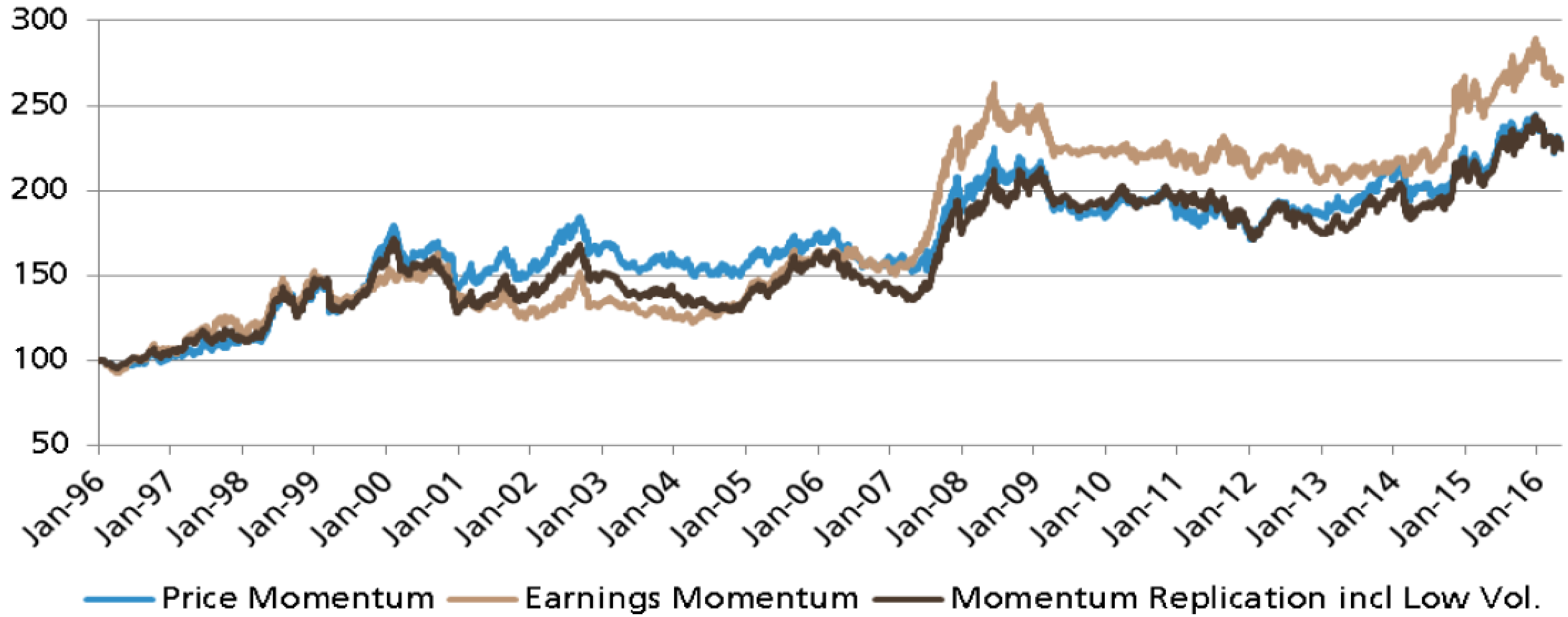


Source: UBS Quantitative Research

Replicating Momentum

…using dynamic shifts across value, quality, size, earnings momentum and low-vol.





Source: UBS Quantitative Research

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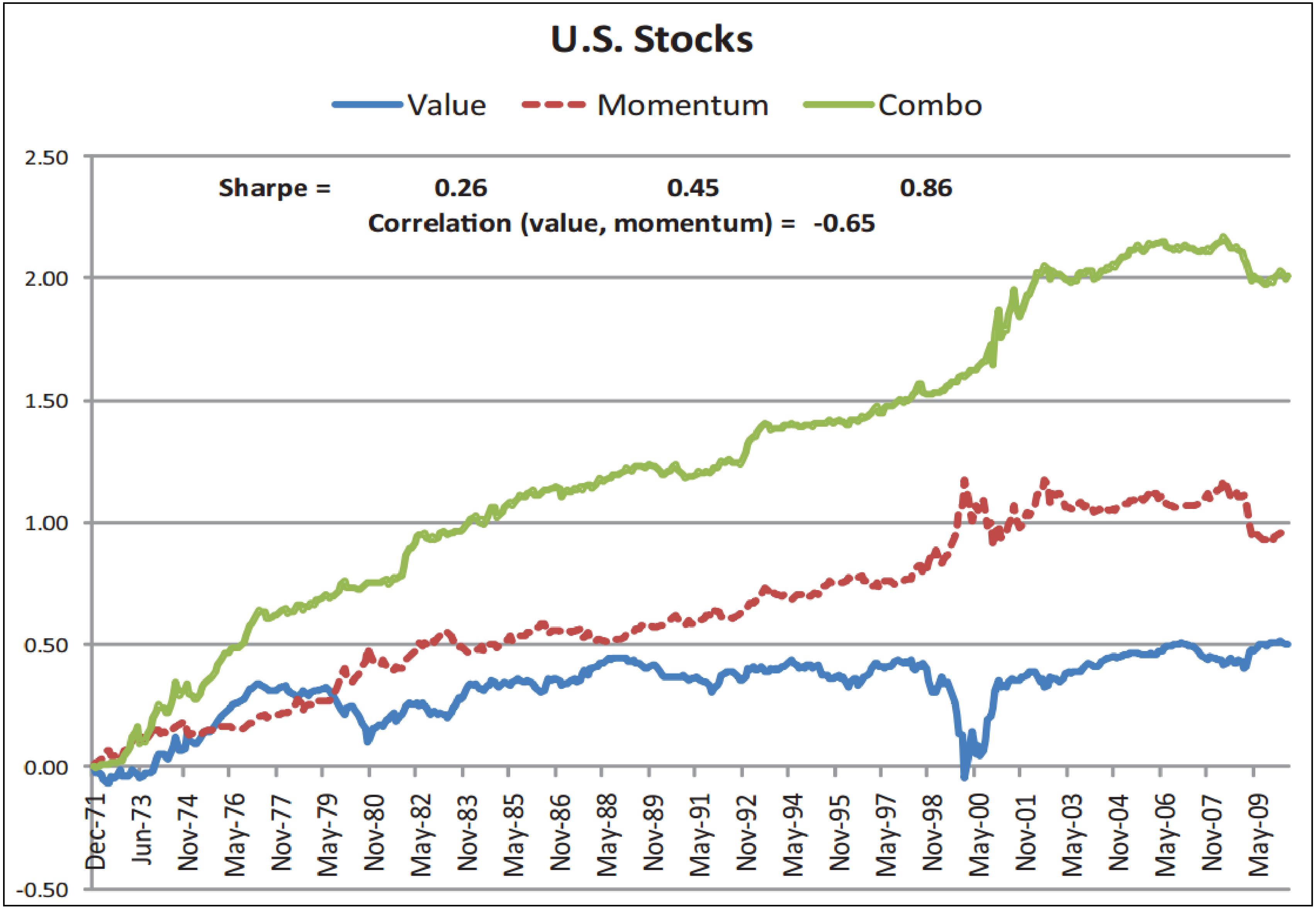
Section 6

The value of diversification

A few lessons worth learning and remembering…

- Combine value with momentum
  – *Naturally negatively correlated: pick "cheap" winners*
- Combine value with quality
  – *Naturally negatively correlated: pick "cheap" and profitable*
- "Clean" size from junk stocks
  – *Size is typically contaminated by junk (low-quality) names…*

Combining Value and Momentum



Source: Asness, Moskowitz and Pedersen (2013)

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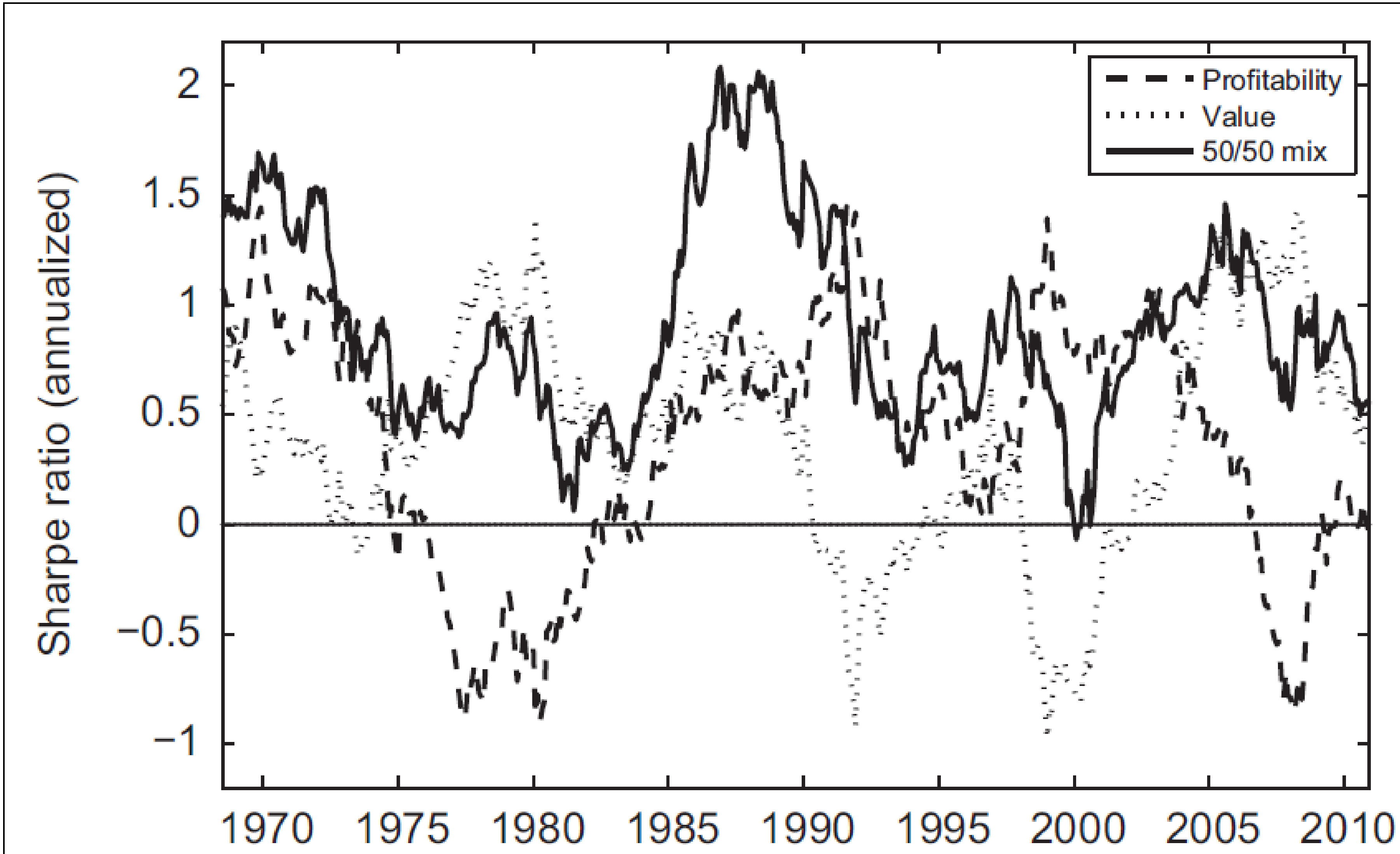
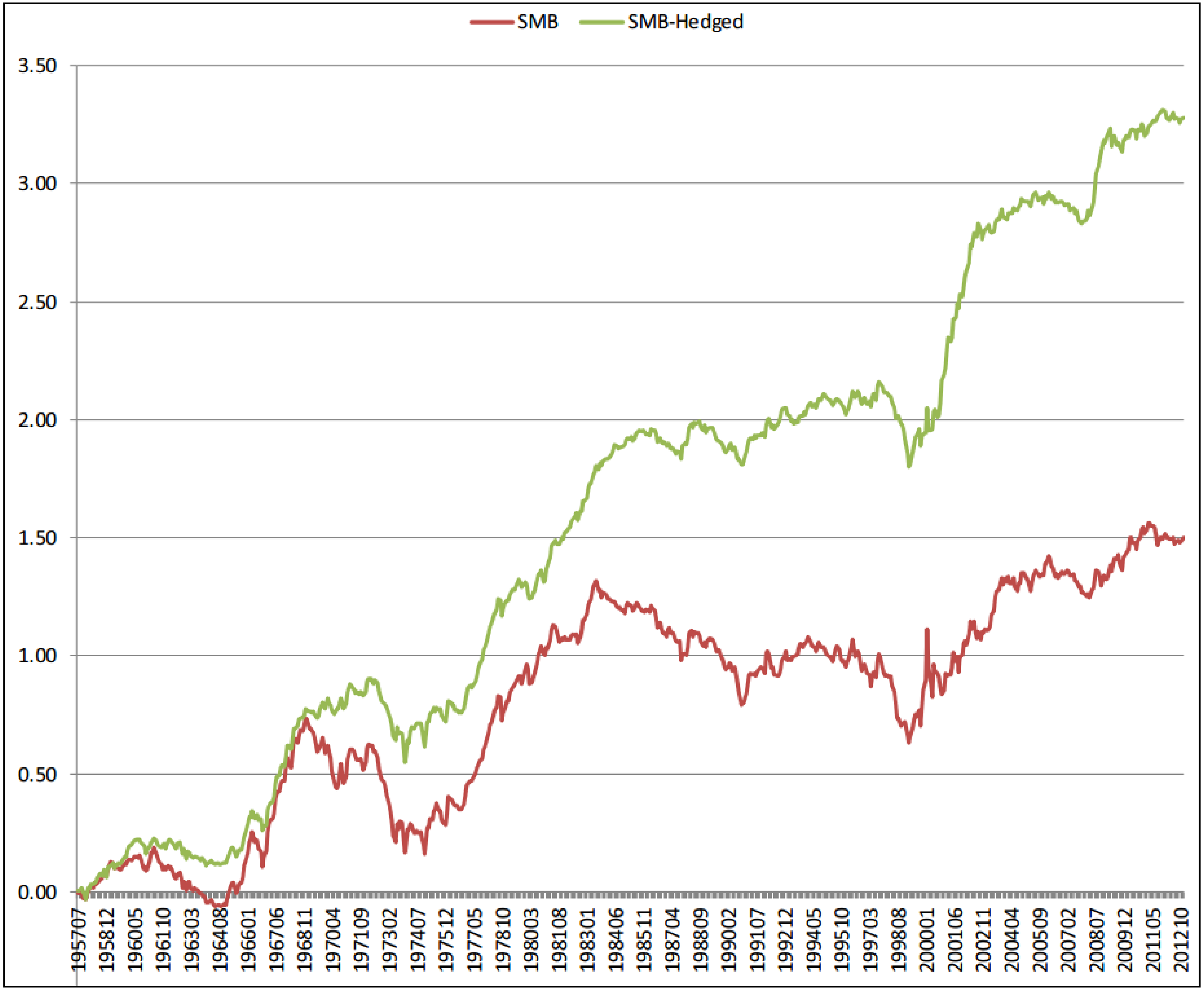
Combining Value and Quality



Source: Novy-Marx (2013)

Cleaning Size from Junk



Source: Asness, Frazzini, Israel, Moskowitz and Pedersen (2015)

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Conclusions

- Identify what is driving the various premia. The various dynamics are largely different for genuine risk premia versus anomalies.
- Crowding can impact the profitability of equity premia; risk premia will become harder to harvest and anomalies will experience for frequent bubble-like behaviour, followed by pronounced crashes.
- Crowding cannot just make the premia vanish. Different utility function and correction of cognitive biases can. Quite unlikely to happen.
- Timing risk premia is fundamentally hard.
- Timing anomalies is theoretically possible, but market competition raises the bar. Volatility-targeting can greatly improve the performance of technical styles.
- Technical styles are one type of factor timing!
- Diversification matters!

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