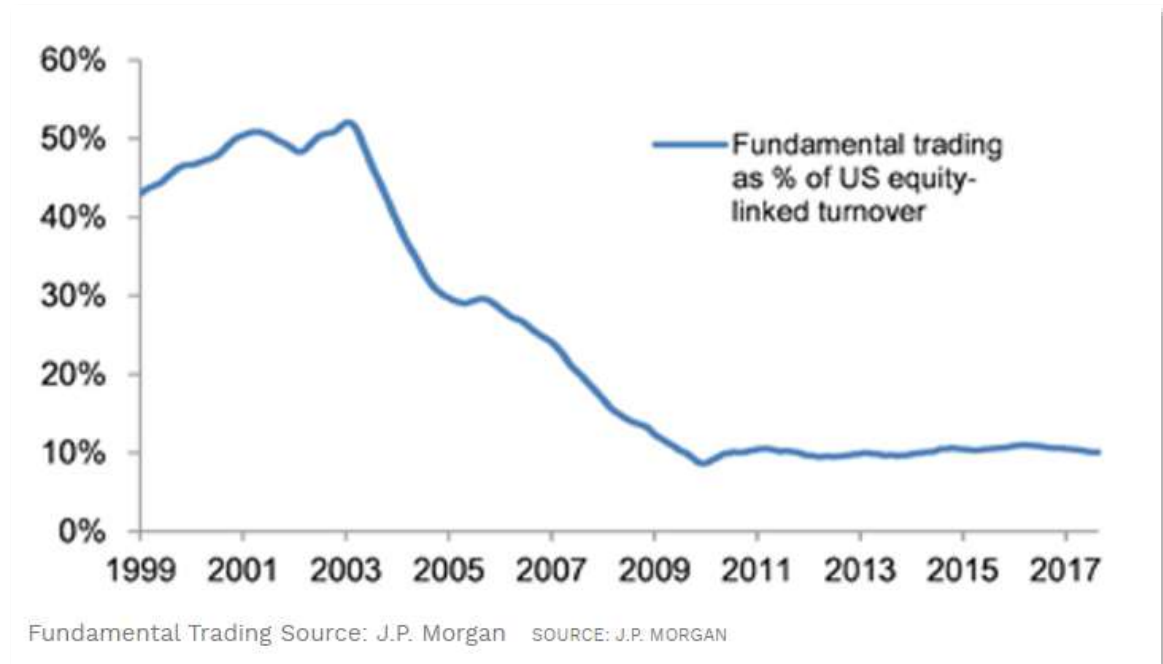
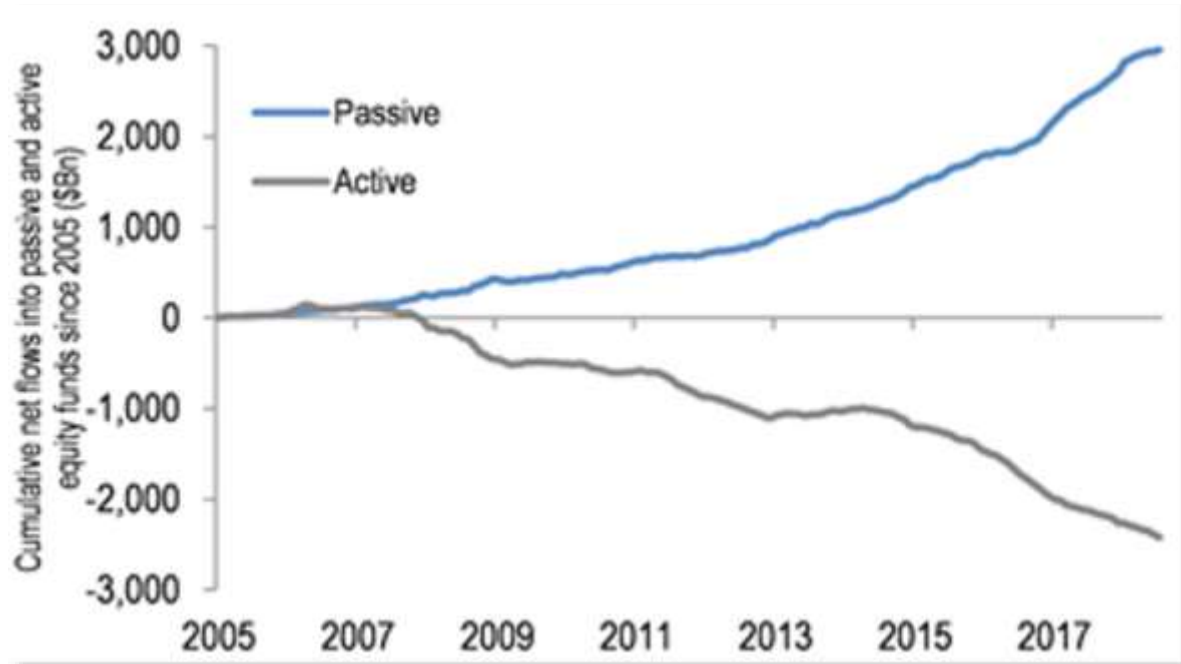


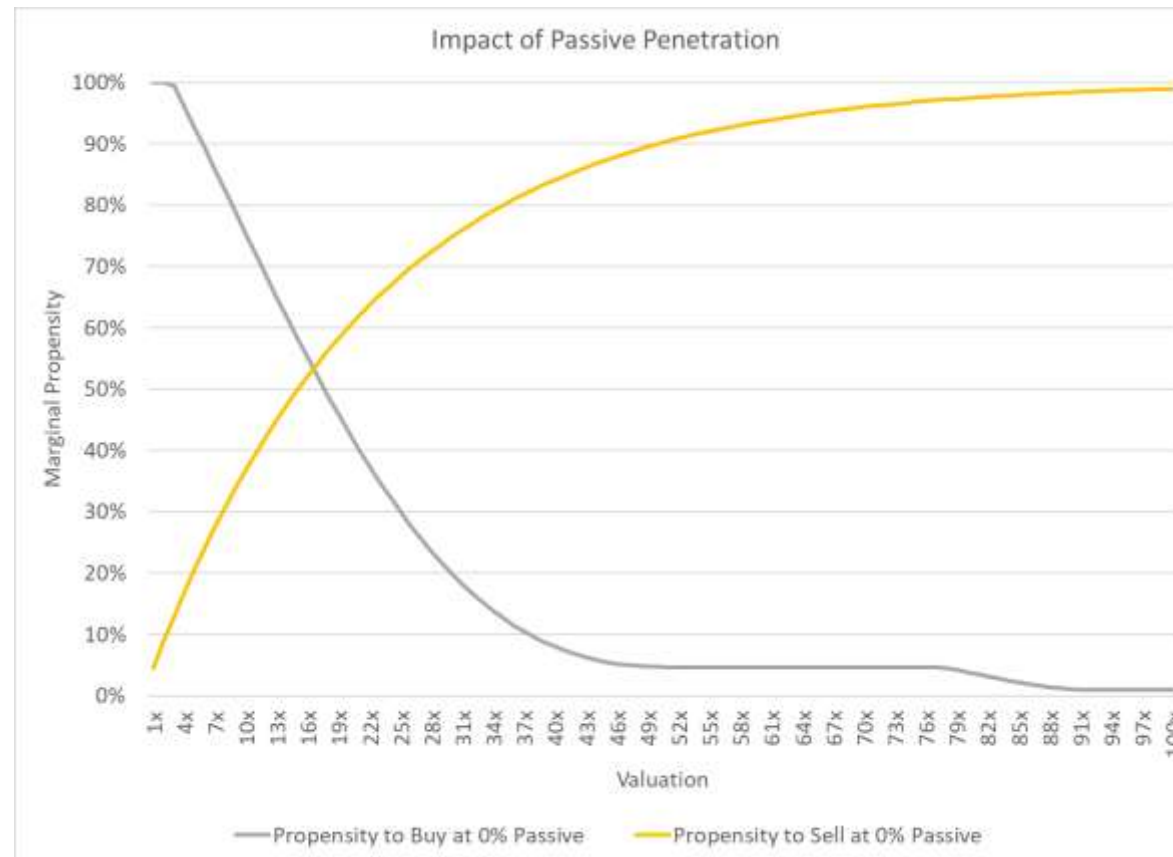
All aboard the crazy train...

*“If everybody indexed, the only word you could use is chaos, catastrophe...The markets would fail.”
- John Bogle, May 2017*

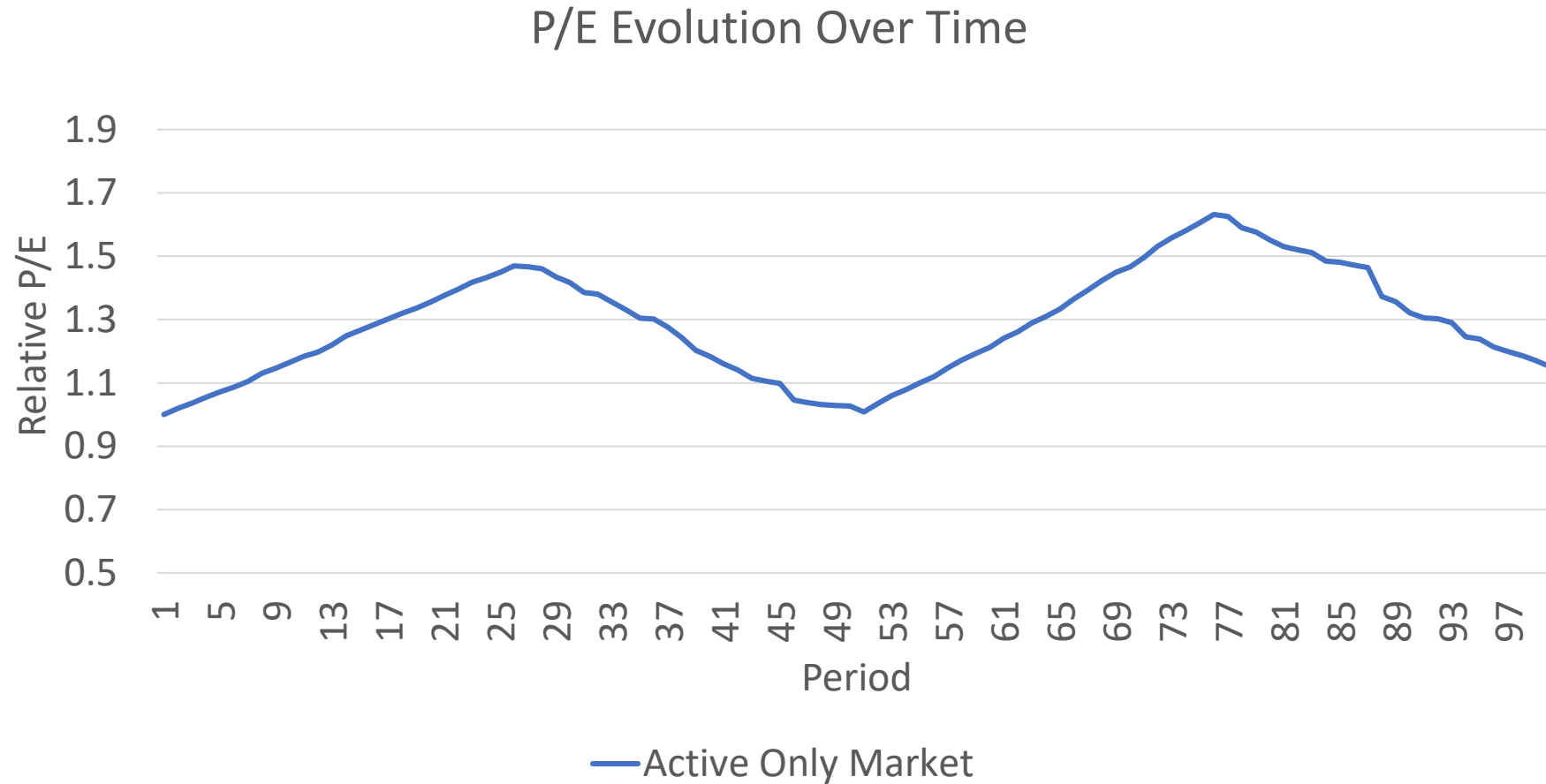


Why have markets historically functioned as discounting mechanisms?

Q: You are a PM with 5% cash in your portfolio and you receive a 1% new inflow/(outflow)... what is the likelihood (expressed as numeric probability without %, e.g. 50) that you will immediately deploy the funds (or sell securities to meet redemption) given normalized (Shiller-type) benchmark valuation?

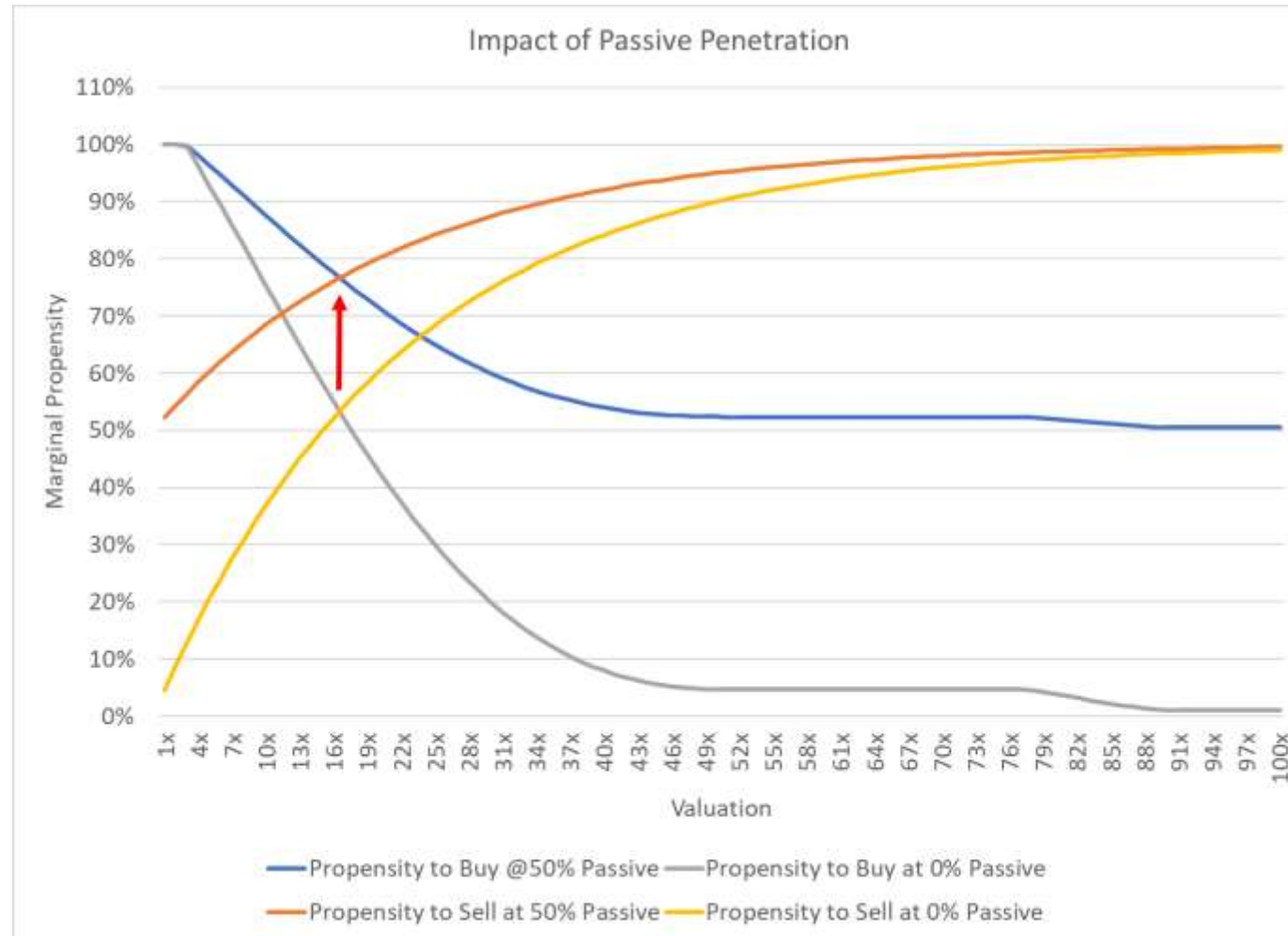


If participants discount, valuation is endogenous...



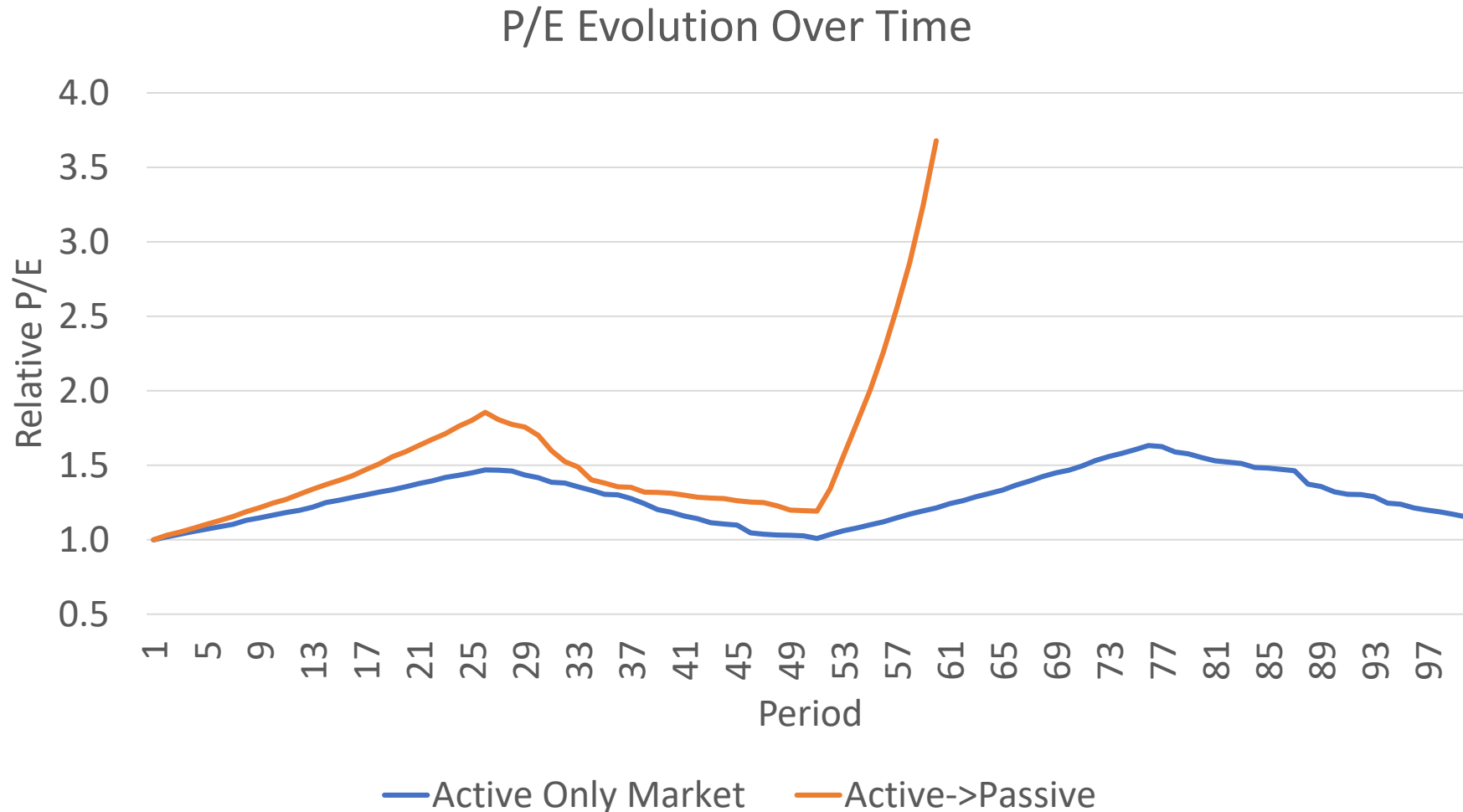
As Passive share increases, the market “loses” its endogenous valuation limits. This means flows not valuation are the key determinants of return.

Winter Forum
February 4-5, 2020
San Francisco, CA



Source: Proprietary survey of 408 investors subscribing to RealVision, Logica calculations

Introduction of Passive Has Little Initial Impact... But Rapidly Dominates



Parameters

- Passive starts 25% share
- Passive share gain of 0.5% per year

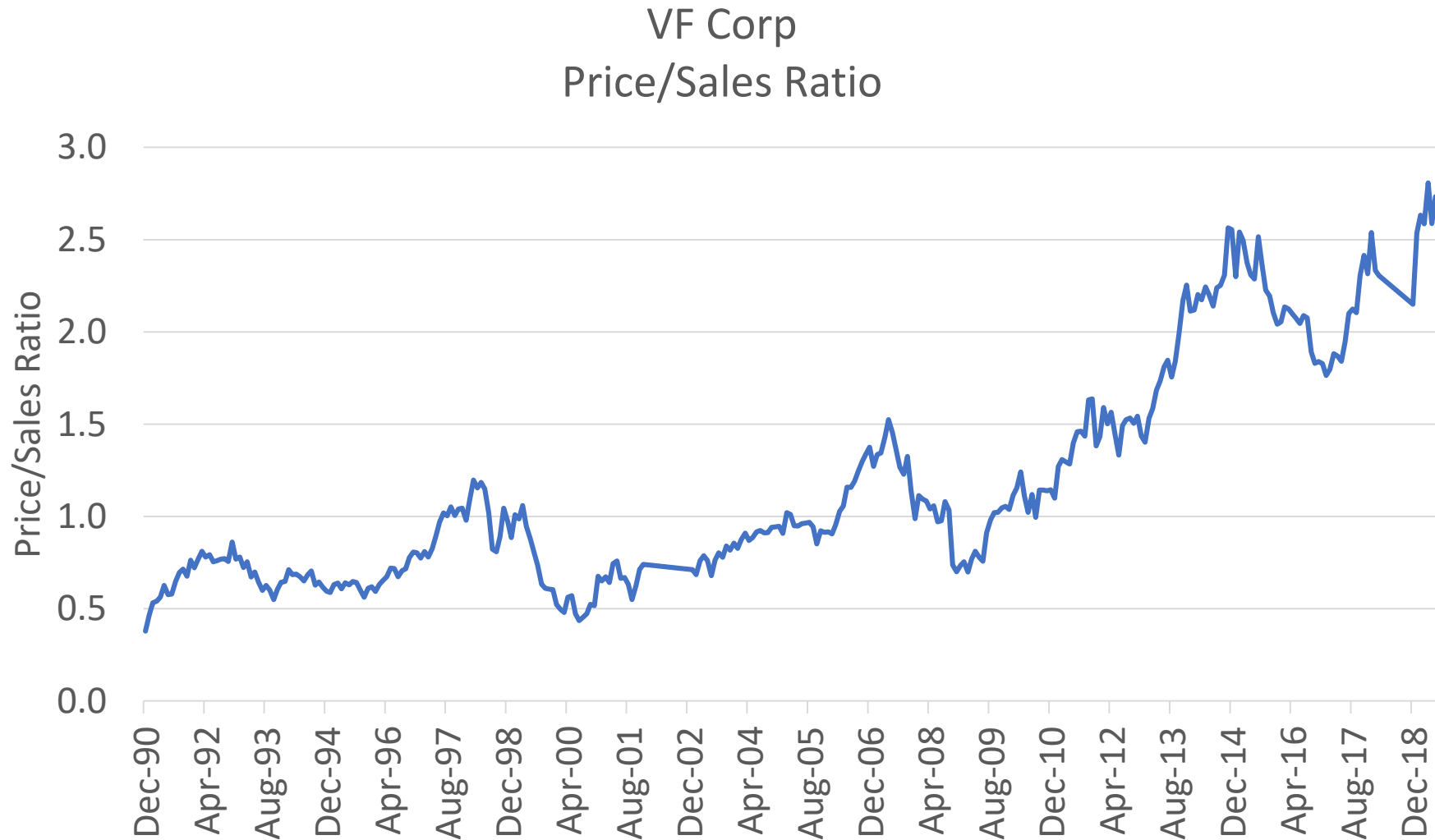
Outputs

- At inflows above ~30% passive share, markets become convex
- Outflows of passive above ~40% share result in collapse

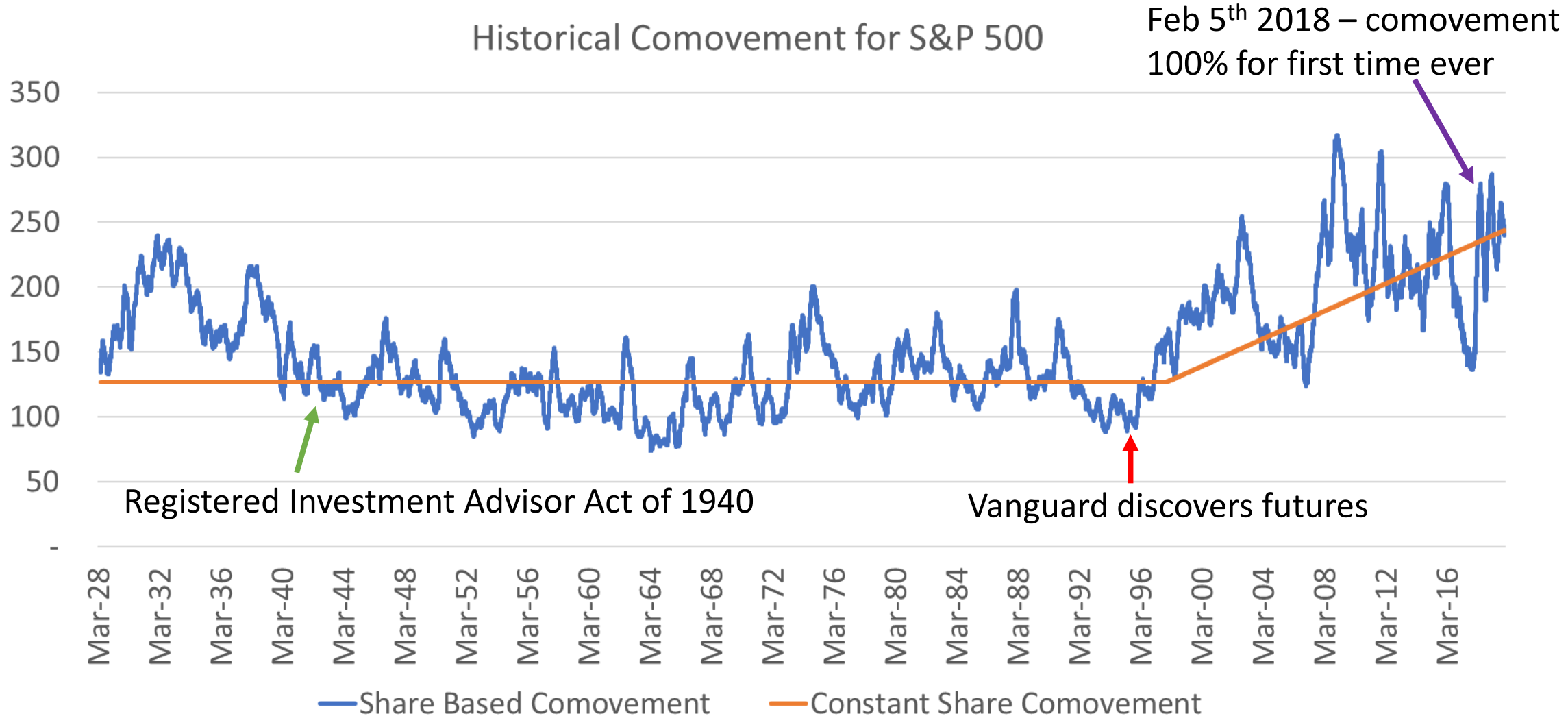
Introduction of Passive Has Little Initial Impact... But Rapidly Dominates



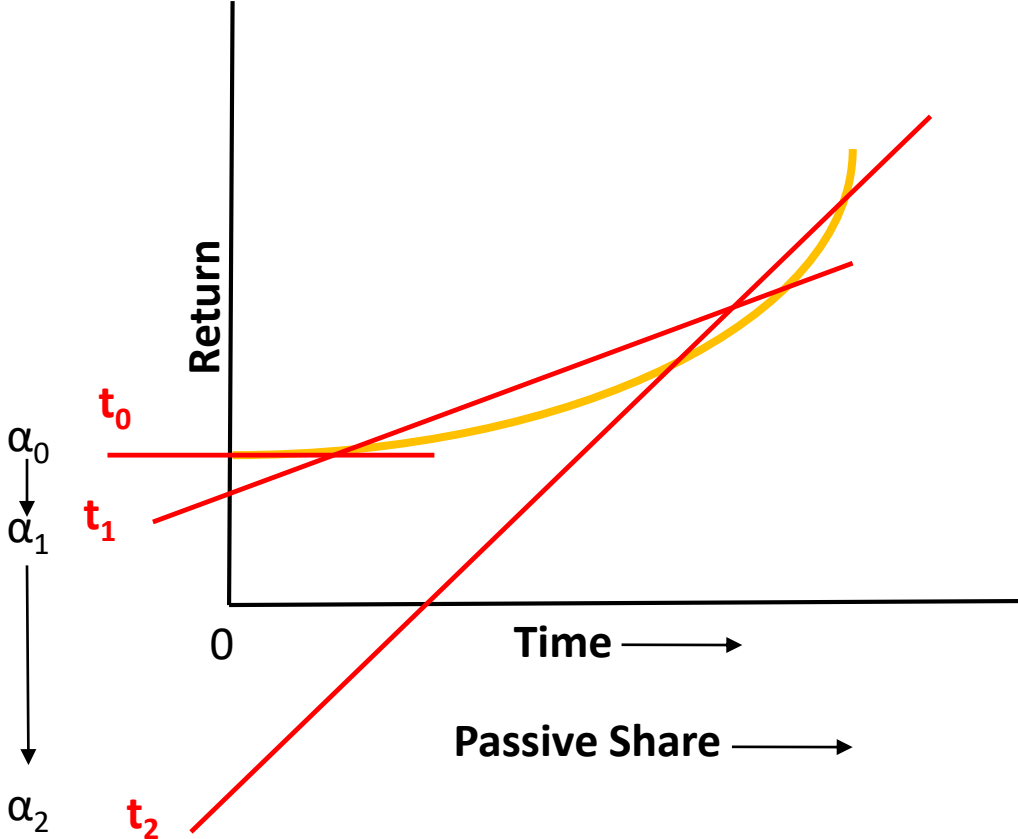
Introduction of Passive Has Little Initial Impact... But Rapidly Dominates



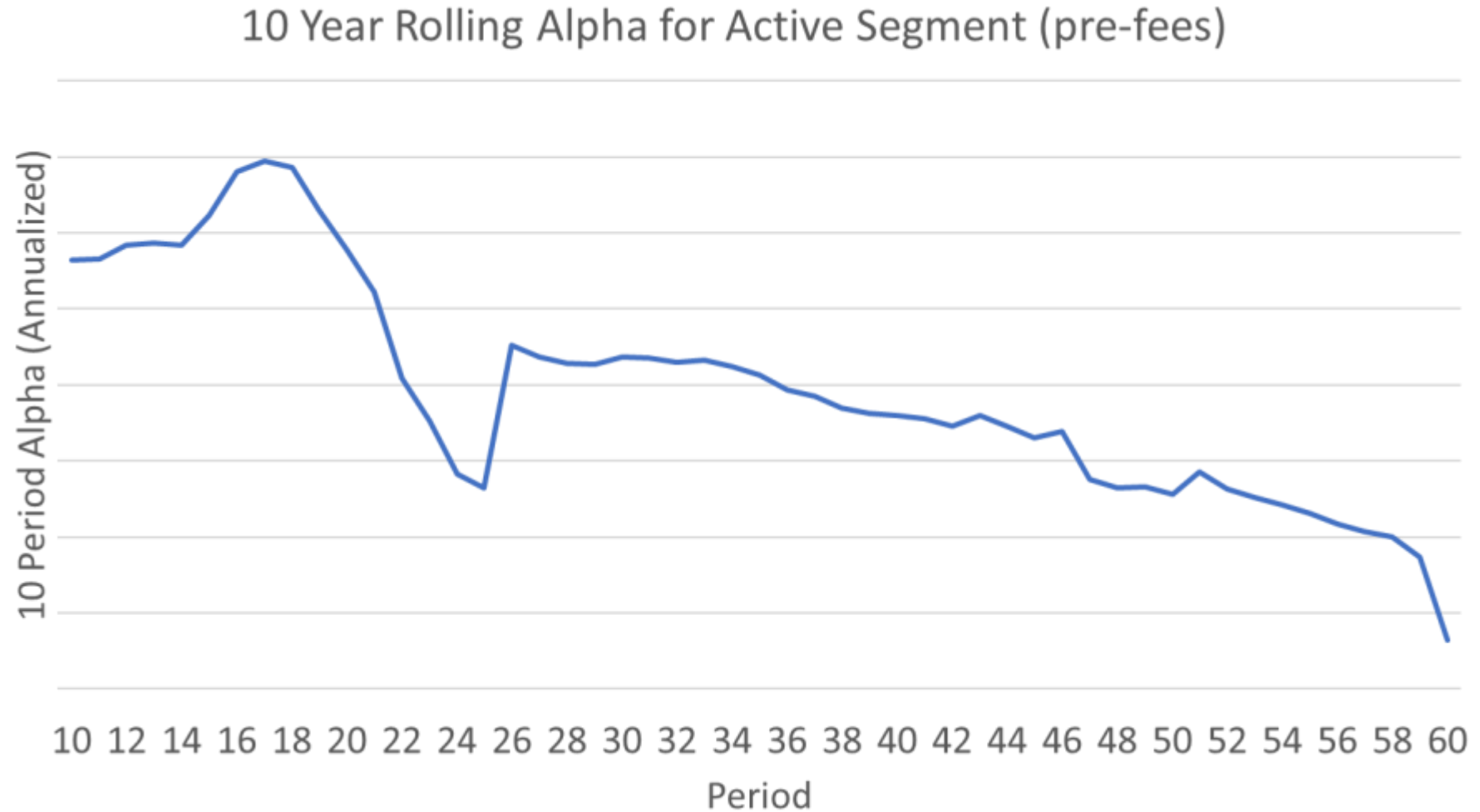
This is not a period of low correlation...



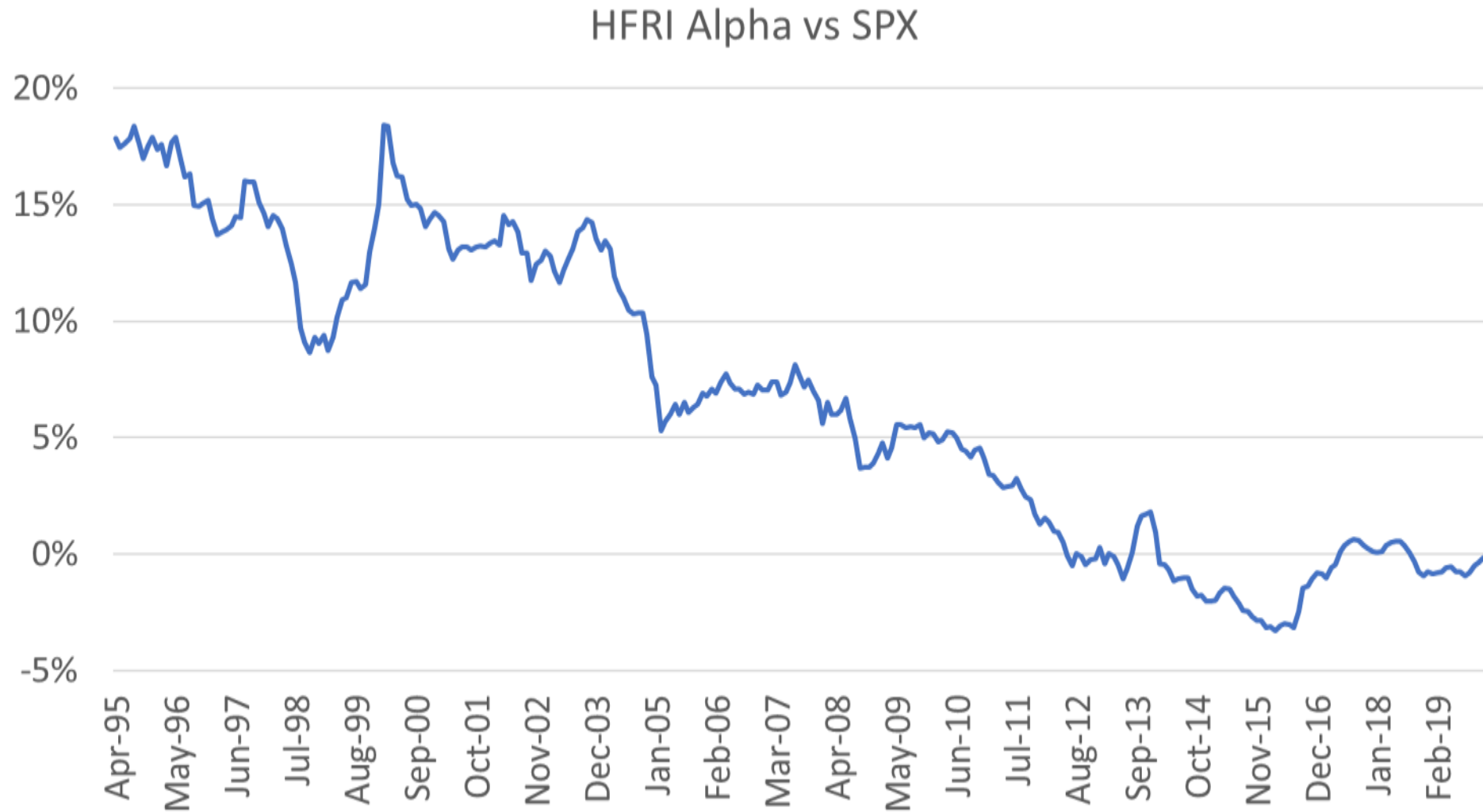
If this is correct, Active Manager “Alpha” is Negatively Correlated to Passive Penetration... and “Beta” is underestimated



Active Manager model “alpha” declines as a function of passive penetration, not active crowding



Empirical evidence supports this assertion...



And it's not the hedge fund fees... zero cost strategies are negative alpha as well now



Source: Bloomberg, Logica calculations

Bonds... who's buying all the negative yielding bonds? Americans...

DBR 0 1/4 02/15/29 €↑109.437 - .164 109.421 / 109.452 - .707 / - .710
At 9:58 -- X -- Source BGN

DBR 0 1/4 02/15/29 C 25) Export Settings Security Ownership
DBR 0 1/4 02/15/29 - DEUTSCHLAND REP CUSIP AW416188

1) Current 2) Historical 3) Matrix 7) Debt

Search Name All Holders, Sorted by Size 2) Save Search 2) Delete Search 2) Refine Search
Text Search Holder Group All Holders Investment Manager View
24) Color Legend % Out 7.84

Holder Name	Portfolio Name	Source	Opt	Position	% Out	Latest Chg
1. Vanguard Group Inc/The		ULT-AGG	All	934,737	4.25	101,432
2. BlackRock Inc		ULT-AGG		92,839	0.42	-117,808
3. Capital Group Cos Inc/The		ULT-AGG		77,405	0.35	68,165
4. DekaBank Deutsche Girozentrale	Multiple Portfolios	MF-AGG		71,951	0.33	2,579
5. Intesa Sanpaolo SpA	Multiple Portfolios	MF-AGG		47,481	0.22	7,211
6. FIL Ltd		ULT-AGG		46,025	0.21	32,214
7. Credit Agricole Group		ULT-AGG		41,333	0.19	29,093
8. CPR Asset Management SA/France	Multiple Portfolios	MF-AGG		30,900	0.14	30,900
9. Natixis SA		ULT-AGG		26,000	0.12	24,000
10. Deutsche Bank AG		ULT-AGG		25,026	0.11	-14,031
11. Societe Generale SA		ULT-AGG		25,000	0.11	0
12. Union Investment Luxembourg SA		ULT-AGG		23,313	0.11	21,307
13. STANDARD LIFE INVESTMENTS	Multiple Portfolios	MF-AGG		20,241	0.09	16,941
14. Frank Russell Co	Multiple Portfolios	MF-AGG		17,327	0.08	2,363
15. Van Lanschot Bankiers België	Multiple Portfolios	MF-AGG		16,800	0.08	0
16. RAIFFEISEN BANK INTERNATIONAL		ULT-AGG		16,200	0.07	6,400
17. Waddell & Reed Financial Inc		ULT-AGG		15,127	0.07	15,127
18. BancoPosta Fondi SpA SGR	Multiple Portfolios	MF-AGG		13,207	0.06	13,207
19. BNP Paribas SA		ULT-AGG		13,130	0.06	13,130
20. Power Corp of Canada		ULT-AGG		12,339	0.06	683
21. Allianz SE		ULT-AGG		12,243	0.06	5,143

Vanguard
10x the
size of next
owner

This is unsurprising as the methodology for index construction is “market value weighted”, ie higher price=higher weight

RAGB 2.1 09/20/17 €↓197.685 - .442 196.816 / 198.553 .720 / .705
AT 11:59 --X-- Source BGN

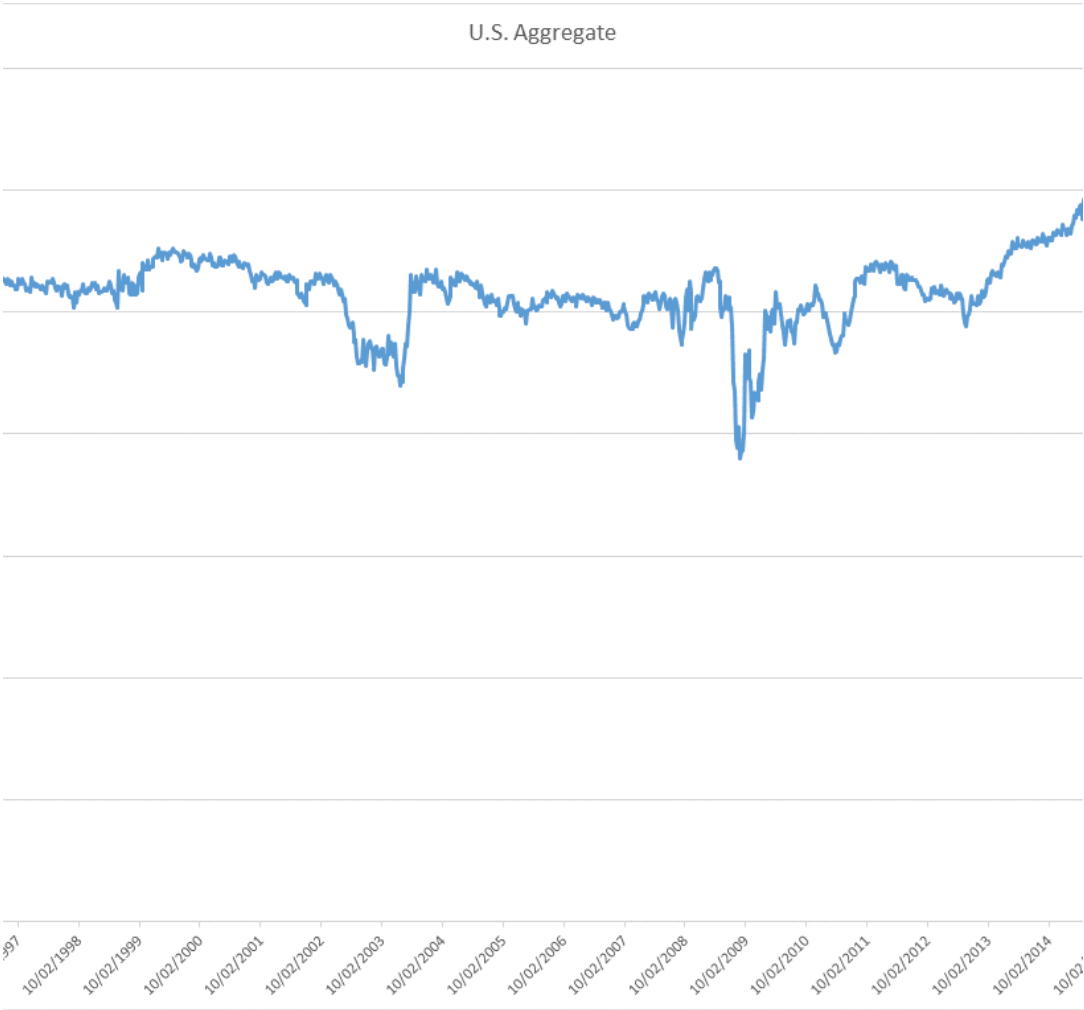
RAGB 2.1 09/20/17 C 25) Export Settings Security Ownership
RAGB 2.1 09/20/17 - REP OF AUSTRIA CUSIP AP115406

1) Current 2) Historical 3) Matrix 7) Debt
Search Name All Holders, Sorted by Size 21) Save Search 22) Delete Search 23) Refine Search
Text Search Holder Group All Holders Investment Manager View
24) Color Legend % Out 2.43

Holder Name	Portfolio Name	Source	Opt	Position	% Out	Latest Chg
1. Vanguard Group Inc/The		ULT-AGG		38,091	0.66	3,046
2. Deutsche Bank AG		ULT-AGG		16,690	0.29	9,530
3. Morgan Stanley		ULT-AGG		16,590	0.29	6,690
4. Allianz SE		ULT-AGG		13,725	0.24	4,700
5. BlackRock Inc		ULT-AGG		10,437	0.18	-142
6. Goldman Sachs Group Inc/The		ULT-AGG		4,980	0.09	0
7. Credit Suisse Group AG		ULT-AGG		4,306	0.07	-300
8. DB Advisors SICAV	Multiple Portfolios	MF-AGG		3,830	0.07	180
9. State Street Corp		ULT-AGG		3,459	0.06	125
10. Lyxor International Asset Management SAS		ULT-AGG		3,033	0.05	0
11. DekaBank Deutsche Girozentrale	Multiple Portfolios	MF-AGG		2,845	0.05	2,650
12. Credit Agricole Group		ULT-AGG		2,560	0.04	699
13. Franklin Resources Inc		ULT-AGG		2,300	0.04	2,300
14. Ameriprise Financial Inc		ULT-AGG		1,530	0.03	1,530
15. GAM Holding AG		ULT-AGG		1,241	0.02	-1
16. UBS AG		ULT-AGG		1,150	0.02	0
17. Zuercher Kantonalbank	Multiple Portfolios	MF-AGG		1,149	0.02	6
18. NN Group NV		ULT-AGG		1,120	0.02	0
19. STANDARD LIFE INVESTMENTS	Multiple Portfolios	MF-AGG		1,073	0.02	0
20. Prudential Financial Inc		ULT-AGG		1,040	0.02	0
21. Mitsubishi UFJ Financial Group Inc		ULT-AGG		960	0.02	0

Why is Vanguard the largest holder of an Austrian 100 year bond? Because it's huge in the index due to price appreciation

When a fixed income is market value weighted, a pattern of interest rate cuts will lead to inevitable duration extension



**“Those who can make you believe absurdities,
can make you commit atrocities.”
Voltaire**